TEST

GENE NAME	PRECUR	ORGANISM	CHR	STR	CHR-START AND OFFSET	CHR-END OFFSET	SOURCE REF-ID
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GAM3090	7135	hsa	chr20	+	49159877	49159947	AW082871
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GAM3112	10949	hsa	chr15	- 54021774	54021847	BF513924
GAM3113	9296	hsa	chr10	- 128401344	128401418	AA309076
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GAM3672	7895	hsa	chr9	+	105238660	105238733 W57821
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GAM4885	21184	hsa	chr10	-	32786122	32786184	BI906835
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GAM5226	19285	hsa			AW369260
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GAM5416	14115	hsa			BE300452	
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GAM5419	17409	hsa	chr15	- 72670981	72671043	AI698741
GAM5420	16975	hsa			AI860435	
GAM5421	2752	hsa			BG118577	
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GAM5426	2329	hsa			BG545194	
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GAM5796	17394	hsa	chr1	-	39682709	39682775	BQ004189
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GAM5946	3543	hsa	chr9	+	35078724	35078797 AW338016
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GAM6442	4573	hsa				AI749326	
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GAM6449	362	hsa				BF895204
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GAM6452	20493	hsa	chr8	-	37557187	37557266 AI086796
GAM6453	21522	hsa				BG719831
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GAM6456	19241	hsa	chr13	-	23939184	23939270 BG820599
GAM6457	2721	hsa				AI243391
GAM6460	10492	hsa				R74606
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GAM6519	5438	hsa					AW250805
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GAM6770	13642	hsa	chr4	+	88787269	88787346	AI440014
GAM6771	14929	hsa					AW887489
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GAM6777	13522	hsa					BQ068796
GAM6778	15255	hsa					BE280664
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GAM6798	12094	hsa					AW369106
GAM6800	3185	hsa	chr16	+	4745561	4745631	BF805191
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GAM6901	12772	hsa				BF930733
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GAM6903	7299	hsa	chr12	+	95628169	95628230 R67850
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GAM6936	4219	hsa	chr19	-	55669945	55670016 AI380025
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GAM6943	929	hsa				BI667529
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GAM6945	20078	hsa	chr1	-	211451729	211451804 AI025117
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GAM6957	680	hsa	chr18	-	47227977	47228048 BI113929
GAM6958	2942	hsa				BG425783
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GAM6960	8126	hsa	chr17	-	27235623	27235717 AW410409
GAM6962	16339	hsa				BI523372
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GAM6970	2230	hsa				AI571301
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GAM7014	9374	hsa	chr7	-	27577476	27577560	AI499145
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GAM7027	21143	hsa					BG682690
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GAM7035	20992	hsa	chr10	-	5987098	5987182	BF975738
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GAM7040	566	hsa	chr17	-	21043020	21043128	BF363643
GAM7041	6227	hsa					BE008312
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GAM7048	6536	hsa					AW024637
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GAM7071	5638	hsa	chr17	+	40972516	40972583	AV692588
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GAM7079	5311	hsa					BM461955
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GAM7086	7077	hsa					AV731397
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GAM7088	4278	hsa					BI038756
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GAM7113	1299	hsa					AI718896
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GAM7116	18575	hsa	chrX	+	151253075	151253134	BI602277
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GAM7129	7564	hsa	chr4	+	54093965	54094052 BG773245
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GAM7131	1512	hsa	chr15	-	70087214	70087285 BM149383
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GAM7144	22827	hsa	chr14	+	102030955	102031025 AU134021
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GAM7170	22146	hsa				R19435
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GAM7180	21436	hsa	chrX	+	61091212	61091281 BG203841
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GAM7184	14390	hsa				BM050444
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GAM7186	12434	hsa	chr17	-	80362227	80362310 BG912823
GAM7187	6155	hsa				AW958278
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GAM7189	13620	hsa	chr17	+	36469487	36469549 BE391085
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GAM7218	5835	hsa	chrX	+ 47735339	47735418	AW249869
GAM7219	3290	hsa			BG179611	
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GAM7285	10920	hsa	chr4	+ 78310594	78310683	AI829443
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GAM7470	12206	hsa	chr10	+	114338249	114338308	AA326353
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GAM7781	14735	hsa			AW578548	
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GAM7786	16327	hsa			AL157550	
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GAM7804	11858	hsa			BI915867	
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GAM7812	20256	hsa			BF310041	
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GAM7942	5636	hsa	chr19	- 59353111	59353187	BM784007
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GAM7979	4255	hsa		BE569145	
GAM7981	14456	hsa		BQ045448	
GAM7982	11898	hsa		AW363590	
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GAM7984	1543	hsa	chrX - 151618960	151619038	AU121424
GAM7985	18149	hsa	chr1 + 43870468	43870530	BI600958
GAM7986	4019	hsa		BI523518	
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GAM8027	13196	hsa					BG112701
GAM8028	3684	hsa					AI580125
GAM8029	10612	hsa					AA243818
GAM8030	17012	hsa					BG546883
GAM8032	785	hsa					BG153427
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GAM8064	7865	hsa					BM782106
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GAM8066	19518	hsa					BF243964
GAM8067	15176	hsa	chr5	+	149764537	149764613	BI262499
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GAM8072	16944	hsa	chr19	+	21229782	21229870	AW771423
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GAM8099	11398	hsa	chr18	-	47523644	47523769	AL602866
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GAM8158	7987	hsa			BG682656	
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GAM335896	16834	hsa	BI495169
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GAM336010	21078	hsa	AW204851
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GAM336075	21248	hsa	BF510826
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GAM336086	16611	hsa	BM683242
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GAM336089	8584	hsa	AV720492
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GAM336095	9263	hsa					AI953980
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GAM336106	13959	hsa					AI240278
GAM336107	20896	hsa					BM994909
GAM336108	8336	hsa					AA074983
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GAM336110	20592	hsa					AL046152
GAM336111	20674	hsa					AA731995
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GAM336113	18898	hsa					BE734448
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GAM336117	2832	hsa					AI690442
GAM336118	19925	hsa					AI683580
GAM336119	21212	hsa					AI922433
GAM336133	16409	hsa	chr16	-	2688452	2688532	AI682437
GAM336168	21811	hsa	chr12	+	9470674	9470758	AI961123
GAM336285	13762	hsa	chr15	+	28474249	28474359	W77897
GAM336346	11034	hsa	chr22	+	38515169	38515241	BM453495
GAM336402	2646	hsa	chr17	-	45468698	45468782	BF951409
GAM336443	22388	hsa	chr12	-	49295716	49295813	AA128859
GAM336455	254	hsa	chr16	+	51417562	51417623	BE268893
GAM336499	18529	hsa	chr19	-	60589041	60589103	BG766018
GAM336501	9710	hsa	chr11	+	61269536	61269597	BM785953
GAM336599	19248	hsa	chr6	+	74177512	74177595	AI935841
GAM336603	7497	hsa	chr7	-	74645845	74645921	BM757850
GAM336604	15556	hsa	chr17	-	74686303	74686372	W07039
GAM336638	6661	hsa	chr16	-	89199078	89199145	BG981180
GAM336639	6661	hsa	chr16	-	89199624	89199691	BG981180
GAM336655	8747	hsa	chr9	-	93178461	93178531	AW376951
GAM336693	1028	hsa	chr8	+	101576813	101576899	F37411
GAM336753	5382	hsa	chrX	+	116579421	116579482	BE278440
GAM336790	22410	hsa	chr9	-	129249757	129249883	AW072989
GAM336792	21415	hsa	chr9	-	129571824	129571884	AA609197
GAM336799	16107	hsa	chrX	+	132328169	132328242	AW514182
GAM336835	5317	hsa	chr2	-	172338036	172338117	AA308667

GENE PRECUR PRECURSOR-SEQUENCE GAM FOLDED-PRECURSOR
NAME SEQ-ID (5` TO 3`)
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GAM25 22599 GAGGCAGGAGAATTGCTTGA G AA GAA-- AG GCTT A - AGAA
ACCCAGGAAGTGGAGGCTTC GAGGCAG AG TTGCTT CCCAGGA TGGAG CAGTG GC TG

AGTGAGCTGAGAACACGCCA CTCTGTC TC AACGAG GGGTCCT ACCTC GTCAC CG AC
CTGCACTCCAGTCCTGGGCA - AG ACAAC G- AC-- - C ----
ACAGAGCAAGACTCTGTCTC
GAM28 829 GGGTTATCTGCAACTGAGAG TTA A - G CT T -- AAGTT
GGGCTGGTTAAGGCGTCCCC GGG TCTGCA CT GAGAG GG GGT AAGGCGTCC CC
AAGTTGGAAGGGCGCTTTGC TCC AGACGT GG CTTTT TC TCG TTTCGCGGG GG
TTCTGTTTTCTGGATGCAGA TG- A T G T- - AA -----
GTCCT
GAM29 19672 TGGTGGTGGCAGACTTTGGG T AGA ---- G--- ACGG ATAATGGAA
CTGTCACGGCTCATAATGGA TGG GGTGGC CTTT GGGCT TC CTC
AGAGAGGAAAAGGGCCCCCA ACC CCACCG GAGG CCCGG AG GAG
TGGAGAAGGCCACCCCCA C GAA TACC GAAA GA-- ---------
GAM30 17666 TGAGGCGAGAGAATCGCTTG G AA GAAC G-- AGA T GCCAAGATCGTA
AACTGGGAGGCAGAAGTTGC TGAGGC AGAG TCGCTT TGG AGGC AGT GCAGTGA
AGTGAGCCAAGATCGTATCA ACTCTG TCTC AGCGAG ACC TCCG TCA CGTTACT
TTGCACTCCAGCCTGGGCCA - AG AC-- GGG ACC - ----------
CAGAGCGAGACTCTGTCTCA
GAM32 11060 TGCATCTTCATCTTGGTCAC AT CT CACCACG GA- ATCCGC
CACGCCAGAGAGGATCCGCC TGC CTTCAT TGGT CCA GAGG
CTCGAATGGACACATTACCA ACG GAAGTG ACCA GGT CTCC
GTGAAGGGGCA GG -- TTACACA AAG ------
GAM33 3277 CACAACACTGCCATGCAACA A CA---- AC-- AGTCG
CCTTCAGAGTCGTTGGAGTC CACAAC CTGC TGCAAC CTTCAG
AAGTTGCAGGATCAGCAGGT GTGTTG GACG ACGTTG GAGGTT
TGTG - ACTAGG AACT -----
GAM34 7749 CCTGGGCCTGCCCACTCCCA CTGCC C- C CCT AT ----- C TGCT
CGCCCTTCACCAATGCCGTC CCTGGGC CACT CCA GC TCACCA GC CGTC AGC
CAGCTGCTGCTGACGCTGAA GGACCTG GTGA GGT CG AGTGGT CG GCAG TCG
GCTGGTGAGCCTGGCCAGTG AA--- CC C --- -- AAGTC - ----
AAGTCCAGG
GAM35 6589 TGGTGAGGAATGTATCATCT TG GAA CA- T CTCATATT
TTTTGTCTCATATTACAAAT TGG AG TGTAT TCT TTTGT
GGGCCAATACGGACTTGCCA ACC TC GCATA GGG AAACA
GT AG- ACC T --------
GAM36 16036 GAAGTGGTAAAGCCTGGGGC TG AA T -- T AGTTG
TTCAGTGAAGTTGTCCTGCA GAAG GT AGCC GGGGCTT CAG GA
AGGCTTCTGGCTACATCTTC CTTC CA TCGG CTTCGGA GTC CT
TA -- T AC - -----
GAM37 3023 GGCGCTATATATGGATCCAA AT G CAA - A ATCATGACA
TGGCAAGATCATCATGACAG GGCGCT ATAT GATC TG GCA GATC
ATCTGCGCGCGATCGATATC TCGCGA TATA CTAG GC CGT CTAG
AGCGCT C- G C-- G - ---------
GAM38 14069 GCTGGGCCTGTTGGTCAGGC ---- T T CAG T - T CACTG

ATGGAGGAGCTGTGTGGTCA GCTG GGCC GT GGT GCA GGAG GAGCTG GTGGT
CTGGCCACTGGCTCTCTTCT TGAC TCGG CG CCA CGT CTTC CTCGGT CACCG
GCACCACCGCCGGCTCTGAC AGTC C - CCA - T - -----
AGT

GAM39 5797 GTATGCACAGACAGAGTTGG G AGAG A-------- ACATAT GGCCTGGAGA
GACATGGGACATATCTTCAG GTAT CACAGAC TTGGG CATGGG CTTCAG
GGCCTGGAGACTGAAGCCAC CATA GTGTTTG GACCC GTATCC GAAGTC
CTATGACGCAGCCACCCAGG - AG-- ACCGACGCA ACC--- ----------
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GAM40 14487 GGTACAGTTGGTGGCTATCA - T TG A AA - T - AATT
AATTAGGACTCAGTAATTAC GGTA CAGT GG GCT TCA TTAG GAC CA GT
TTGTGTCACTGAGTGAAAGC CCGT GTTA TC CGA AGT AGTC CTG GT CA
TGCTCATTGCTGCC C C GT A G- A T T ----

GAM41 1460 GGCTAAATTTATTTTCTTGT AAATTTATT TT CCTAGCA TTC- TATTCTTT
GTCTGCCTAGCAAGATAATT GGCT TTC GTGTCTG AGATAAT TC
TCTCTATTCTTTGACAGTAT CCGA AAG CACGGAC TCTGTTA AG
TGTCTCAGGCACCTGAATCA ATCCAGACT TC ------- TGAC --------
GACCTAAGCC

GAM42 11077 GTAGTCTCCACTGGAGAAGT CTCCA ATTGA A GCC
TAATTGATGAGTAGTAGCCT GTAGT CTGGAGAAGTTA TGAGT GTA
ACAACTCAGGCTCTAGCTTC CATCA GACCTCTTCGAT ACTCA CAT
TCCAGGAACACTAC CAAG- CTCGG A ---

GAM43 18851 ACTTTAAGAACTCGAATATA AG C ATA- TTAAATTAAC AG AAAGTAACAA
GGTCTTTTAAATTAACCAGT ACTTTA AACT GA TAGGTCTT CAGTC AC
CAGACAAAGTAACAAGTAGG TGAAAT TTGG CT GTTCGGAA GTCAG TG
ACTGAAACGAACAAGGCTTG GG C AAGA CAAGCAAA-- GA ----------
AGAATCCGGTTGGTAAAGT

GAM45 7608 ACAAGTCTTGGGAAGTCCAT AG A CATCT TCT AAA
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GTCTCTGACCTCCCAGGAAG TGT AGGACCCT CAG CTG GAC
TGT GA C TCT-- TTT ---

GAM46 16366 TTTGGGTGGATGCTGCTCTC TG TG A - - --- C CATCT
GAATAAGTCGGACATCTTCT TT GG G TGCTGC TCT CGAATA AGT GGA
ACTCTTTGTTCGAAGGTGCG AA TC C GCGGCG GGA GCTTGT TCA TCT
GCGCTGCTTGAA GT GT - T A TTC - -----

GAM48 11049 GGCTTTTAGTGCTACTGGTG TTTT TG ---- TTGA GAC ---- AAAA
CTCTTGAAGGACAGATGTTC GGC AGTGCTAC G TGCTC AG AGATG TTCCGG
CGGAAAACTGGGAGGCTTAT TCG TCACGATG C ACGAG TC TCTAT AGGGTC
CTCACTGAGTGAGCAGAATC ---- GT TAAG TGAG AC- TCGG ----
TGGTAGCACTGCT

GAM49 4481 ATGCGTGACGCCATCCCGCA - - A CG TCATC T A CGAAGCC
GCTCATCCAGCTGGACCAGG ATGCGT G ACGCC TCC CAGC CAGC GG CCAGG
CGAAGCCCCTGGCCGCTGTG TGCGCA C TGTGG AGG GTCG GTCG CC GGTCC
CTGAAGGAGGTGTGCGACGC G G - AA T---- - - -------
GT

GAM50 13607 ATGTGGTCAGTGGGTTGCAT G A GGG - A T T--- GACTCAGA
CTTCGGGGAGCTGCTGACTC AT TGGTC GT TTG C TCT CGGGGAGC GCT
AGAAGCCTCTGTTCCCCGGG TA ACTAG TA GAC G AGG GCCCCTTG CGA
AAGTCAGAAATCGATCAGAT G C AA- T A - TCTC --------

GAM51 22145 TGTGGGGTGCCCCCGATGGG TGCCCCC A TCCCATCTCC

AGGCTGTCCCATCTCCCAGT TGTGGGG GATGGG GGCTG
CCCCATCTCTTTTTCCCCAC ACACCCC CTACCC CTGAC
A TTTTTCT - ----------

GAM52 1578 TGTCCCGTTCATCAATTTCT GTTCA A T -- ----- GG A TGC
CCTCTGCAGGGTGAGCTGTG TGTCCC TC ATT CTCCT CTG CAG TG GCTGTGG
GTGCCCGCAGCCAAACTGGG ACAGGG AG TGA GGGGA GAC GTC AC CGACGCC
TTCCAGTTAGGGGCAGTAGA GTTG- A C TT CTTGG AA - ---
GTTGGGGACA

GAM53 19756 TCTGCAATGGCTGCCAGGCG G- - GGA A CCT- C CATCCC
GATCACTCCTCCACTGGAGC TCTGCAAT GCTGCCAG GC TC CT CCA TGGAGC
CATCCCGCTCCATGGCCAAA AGACGTTA TGACGGTT CG AG GA GGT ACCTCG
GCGAGAGCATTGGCAGTGAA AG A AG- C AACC - ------
TTGCAGA

GAM54 19542 GGAGTGGAGGGGGCTGCCCA GT ------ CCCTC TACA
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GCCCAGATGGCCCCTTCTGA CCT TCTTCCCCGG CGGGT CGAC
TCC AG TAGACC ----- ----

GAM56 9366 GCTTCATTCATGGCTGTGTT TT- T---- TT TAACTAAAGTAAATTTTT
TGAGATAACTAAAGTAAATT GCTTCA CATGGC GTG TGAGA
TTTTTTCAGGTATTTGGTGT TGAGGT GTACTG TAT ACTTT
CATGTTTTGGAGT TTT TGGTT GG ----------

GAM57 10110 GCTTGGGTGACAGAGTGAAA T -- C G -- CC A AAATAAATAAATAA
GCCCCATCTCTAAATAAATA GC TGGG TGA AGA TGAA AG CC TCTCT
AATAAAGAGAGGTCCTGATT TG ACCC ACT TTT ACTT TC GG AGAGA
CAGTTTATCAATCCCATGT T TA A G AG CT - ----------

GAM58 16171 GCAATTCAACTTTGAGTTAT ------- C G CTTTTA T- TGTAT
CTTTTAAATATGTCTTGTAT GCAAT TCAA TTT AGTTAT AATATG CT
AGTTCATATTCATGGCTGAA CGTTA AGTT AAA TCGGTA TTATAC GA
ACTTGACCACACTATTGC TCACACC C G C----- TT -----

GAM59 5091 CGACCTCGGGTCCACGTGTC AC C A- T TACTCGCC AGCCT
CCGGTACTCGCCGGCCGGAG CG CT GGGTCC CG GTCCCGG GGCCGG
CCTCCGGCTTCCCGGGGCCG GC GA TCCAGG GC CGGGGCC TCGGCC
GGGGACCTTAGCG -- T GG - CT------ -----

GAM60 17495 TGCGTGTCCTAACTGGTTGG T--- A T G AAAACT ATCAC
AAAAACTGTGATCACCACTT TGCG GTCCT AC G TTGGA GTG
CAAGTGTAGGGACTCCTCGC ACGC CAGGG TG T AACTT CAC
A TCCT A - G ------ -----

GAM61 5240 CTGGCAGCGCTTCAAGTCAT G CTTCAA T G C A C GATCTCAGG
GGTCCCCATCATGCAGGATC CTG CAGCG G CAT GT CCCATC TG AG
TCAGGCTCCACGATGGGCAC GAC GTCGT C GTA CA GGGTAG AC TC
AATGCCATTCTGCTGGCAG G CTTAC- - A C C C ---------

GAM62 11969 CCTCGGCCGACTTTCCCAGG CCGA TC CA - - A- T AGTGTGCAG
CAGTGCAGGCTAGCCCAGTC CCTCGG CTT CCAGG GTG CAG GCT GCCCAG CCAGG
CAGGAGTGTGCAGCCTGGCT GGGGTC GAA GGTCT CAC GTC CGA TGGGTT GGTCC
TGGGTCGAGCTCTGTCACAT AAC- TA A- T T GC C ---------
CTGGATAAGCAACTGGGG

GAM64 15 GTGGCTCGGCTCAGCTGCCT CT T CT TG CC CCTA- CCTGT
GGGTTGTGGCCGCCCTAGCA GTGGCTCGG CAGC GC GGGTTG G GC GCAT
TCCTGTATGCCCACAGCTAC CACCGGGCC GTCG CG CCTAAT C CG CGTA
TGTAATCCCCGCTGCTGCTC TC T CC GT AT ACACC -----

CGGGCCAC

GAM65 14385 TCTGCTGCTTCAACAACAGT TTCAACAAC G G C T CAGT
GACTTGCTCTCCAATGGTAT TCTGCTGC AGT ACTT CTCT CAATGG ATC
CCAGTGATTCGTTGAAGAGG AGACGATG TCG TGGA GAGA GTTGCT TAG
AGGTGCTCTGTAGCAGA TC------- - G A - ----

GAM68 22078 GGTCAGACAGGGGGACAGGG AGAC GG GGCAGA - A- GCTT
CAGAGCTAGCATAACTCAGG GGTC AGG GACAG GCTA GCATA CTCAG
CTTTTGGGGATGTGCATGGC CCGG TCC TTGTC CGGT CGTGT GGGTT
AGCTGTTTTCCTTTGGGGCC GGTT TT GA---- A AG ----

GAM69 17542 TAACAACGAGGCCAGGAGGG AG C TTTTTACACAGA AGTGAG
ATTTTTACACAGACCCGAGT TAACAACG GC AGGAGGGA CCCG
GAGTGGGGGGACAATATTTT GTTGTTGT TG TCCTCCCT GGGT
CCCTCCTAGTTGTGTTGTTG GT A TTTATAACAGGG ------

GAM70 17353 CAGAGTATATGGGGGCCTCT AT--- GC TGC-- C-- GCTGGGA
GCCACCCCCCAGGCTGGGAC CAGAGT ATGGGG CTC CAC CCCCAG
TGGGGCCTGTGACCTTGAGA GTCTTA TACTCC GAG GTG GGGGTC
ACCTCATCTCACATTCTG CACTC AA TTCCA TCC -------

GAM71 12332 GCAGTTGTCAAATACCAGGA AG AAATA AGG CG AACTCCTC
GGGCATCAGCCGCAAACTCC GC TTGTC CCAGG GCATCAGC CA
TCTGAGCTGGTGTACCTGGA CG GACGG GGTCC TGTGGTCG GT
CAGGGCAGGGGC GG GACA- A-- A- --------

GAM72 12926 TCGAACTCCTGACCTCGTGA A- C A C GCC C CCTC
TCTGCCCGCCTTGGCCTCCC TCGA CTC TG CCT GTGATCT CGC TTGG
AAAGTGCTGGGATTACAGGC GGCT GAG AC GGA CATTAGG GTG AACC
ATGAGCCTCGG CC T - - GTC A ----

GAM73 14252 GGGAAATTTGCCTTTACCAC AA TA- AC AAGA T TG TTGAA
TGAAGATTATGACATGTTTG GGG ATTTGCCTT CC TG TTA GACA T
AAGTGTGTTTTGAGAGCAAG TCC TAGGCGGGA GG AC AGT TTGT G
GGAACAGGGCGGATACCT A- CAA GA GAG- T GT -----

GAM74 1790 CAGGATAATAATATGGGGTC TAATA GG T TC CACCTTTT
TTGTCCTTCACCTTTTAAGT CAGGATAA TG GTCT G CTT
TCAGGCAACAGTTTGTCCTG GTCCTGTT AC CGGA C GAA
TG--- AA - TT --------

GAM75 12089 GTCCTTTCTCTGGAGAGGCT TTCTCT---- TG CTCA ACGCTA
TGTGGGGCCTCAGGACGCTA GTCCT GGAGAGGCTTG GGGC GG
CCCACTGCTCTCCGGGCCTC CAGGG CCTCTCCGGGC CTCG CC
TCCTGCCGCCTCTGGGAC TCTCCGCCGT CT TCAC ------

GAM76 15194 CTGTGCACCTCGTGGTAAAA G -- TAA--- CTT - C -- G TCATATTTCAT
CTCTTTGGGGTTCGCCAGCT CTGT CA CCTCGTGG AACT TGGG GTTCG CA GCT TAGC
GTAGCTCATATTTCATGTTG GACG GT GGAGCACC TTGA ACCC CAAGC GT TGG GTTG
GGGTCATGCCGAACACCCAT G CA TTGATG AGT A C AC G ----------
GAAGTTGTAGTTCCACGAGG
ACTGGGCAG

GAM77 14503 ATCTGTAACTTAAATTGGGC - AAT - AATCA TG TTATCT
CAATCAGAATGGTTATCTTT ATCT GTAACTTA TG GGCC GAA G
GTTCAGGTCACATGAGTTGC TAGA CGTTGAGT AC CTGG CTT T
AAGAT A --- A A---- GT ------

GAM78 18244 GGTTAGAGAAACTCATCAGA --- ACTCATCAGA TT ATCACTTCAC
AGAAAGTTTCAATCACTTCA GGTT AGAGAA AGAAAGT CA
CTGTTATTTTCTGCAATTCT CCGA TCTCTT TCTTTTA GT

TATTCTCTTATAGCC TAT ATTCTTAACG TT ----------
GAM80 9120 GCCCACTGTGACGATGTCAC - TGT G ACCG- GACG AAG
CGATCTGGACGTCCCTGAAG GC CCAC GAC ATGTC ATCTG TCCCTG
CAGGGGGACAGGTGTACAGA CG GGTG TTG TACAG TGGAC GGGGAC
CATGTTCTTGTGGCGC C TTC - ACATG AG-- ---
GAM81 22716 CCACCATTAAGCAGTTCATG TAA TT - - TCGCTACC
GACATCTTCTCGCTACCGGA CCACCAT GCAG CA TGGA CATCTTC
GATGCTCTGCTGTCCTGTGT GGTGGTG TGTC GT GTCT GTAGAGG
GGTGG --- CT C C --------
GAM82 20307 CACATGTGATTGCATTACCT G GC- ATG - A ACTGA
TATGTGTATTAGAGACTGAC CACATGT ATT ATTACCTT TGTA TT GAG
TTAAGCTGCAACAAGGTGAT GTGTATA TGG TAGTGGAA ACGT GA TTC
AAAGGTGATATGTG G AAA CA- C A -----
GAM84 22365 GACTCCACCTTCTCCCTGGA TCCAC C CCAGCCC - CCT TGACCCT
CCAGCCCGGTGGCACCCTGG GAC CTTCTCC TGGA GGTGG CAC GGATC
ATCTGACCCTGATCCGTGCC CTG GAAGAGG ACCT CCGCC GTG CCTAG
CGCCTCCAGGAGAAGTTGTC TT--- - ------- C --- -------
GAM85 14138 CCCAGGGCATGAAGATCACA - - ATCACA G TTC TTTT
ATGGGCCTGGTTCAGATTTT CCCAGG GC ATGAAG ATGG CCTGG AGA
TCTCCAGGGCCGTGGCAGCT GGGTCT CG TACTTT TGCC GGACC TCT
TTCATGGCATCTGGG A G CGACGG G --- ----
GAM86 17426 GTGTAATGTGGTTCTAGTGT AATGT GT C - TT--- TC CTCG
CGCTGCGTGTTCATCCTCTC GTGT G TCTAGTGT GC TGCGTG CA CT
GAGCTTGTCTGTCACGTAGG CACG C AGATCACA TG ATGCAC GT GA
TCACACTAGACTCTGGGCAC GGT-- TC C G TGTCT TC ----
GAM87 5755 GCTCCGCGTGAATGGGGCTG CGCG AT G A CGGC
GATCTTATGCCGGCGTACAA GCTC TGA GGGGCT GATCTT TGC
GATTAGGCCTCTCAAAAGAG CGAG ACT CTCCGG TTAGAA ATG
C AAA- -- A C ----
GAM88 7804 TCTTAAGTCACATGGCTTCT ACA C - ACCTTTAA
GTCTTGGAAATTTTACCTTT TCTTAAGTC TGG TTCTGTCTTGGA AATTTT
AAAAGATTATTTAAGACAGG AGGGTTCGG ACC AGGACAGAATTT TTAGAA
AACCAGGAGGCTTGGGA AGG A A --------
GAM89 87 GGAACAAGGTGTTAACAGGC A TT CC - T A AAATCCCA
CTGGGAATCTAGAAAATCCC GGA CAAGGTG AACAGG TGG GAA CT GA
ATCAGCTTCACCATTTTGTT TCT GTTTTAC TTGTTT ACC CTT GA CT
TTCATTTTGTCT - TT T- A C - --------
GAM90 16700 CCTTCCCTTCCACAGAGTTT - - - A A CC GTA
AGTTTCCTCATTTGTAAAAT CCTTCCCT TC CAC AG GTTT GTTT TCATTT
GAAGACAAACCTCGTGAGAG GGAAGGGA AG GTG TC CAAA CAGA AGTAAA
AGGGAAGG G A C - - -- ---
GAM91 5070 CTGCGGAGCCCGCGTCGCAG C A C - A- GGA GGAAGA - - TCCGGT
CAGCCCGGACAGGAAGATTG CTG GG GC CGC GTCGCAGC GCCC CA TTGGTCTG GA
TGTGGG
GTCTGGATGTGGGTCCGGTC GGC CC CG GCG CAGCGTTG CGGG GT GACCGGGC CT
ACATTC
TTACAGTCGCGGGCCAGGAT - A C A GA A-- AG---- G G ------
GAGGGCAGGTTGCGACAGCG
CGCACCCGG
GAM92 22111 CAGTGTCCCATTGTCATCTA CCC--------- - A C CTAATA

CTCAGTCTCTAATAGGGCTA CAGTGT ATTGTCAT CT CT AGTCT
AGGAGCATGATAGTATCTAT GTCACG TGATAGTA GA GA TCGGG
TTATAAGCACTG AATATTTATCTA C G A ------
GAM93 5245 TGTGCATTTTCAGCAACTTG TT A- T AAG AATTTTCCTG
CCAAGTATAATTTTCCTGAT TGTGCAT TCAGCA CT GCC TAT
AAAGGCTGGGCTGCTGATAT ATATGTA AGTCGT GG CGG ATA
GTATA T- CG T AA- ----------
GAM94 3719 TCCAGTTTTATCCTGACTGA TTTTATCCT TCTTTTCTGTT CTTT T - --
TTCTTTTCTGTTGTCCTTTG TCCAG GACTGAT GTC GTTTTCTT CTCCT CTTCT AGAT
TTTTCTTTCTCCTCTTCTAG AGGTC CTGACTG CAG CAAGAGAG GAGGG GGGGG TCTA
ATCTCTAAATGATCTTTGGG --------- ---------- ---- T T TT
GGTGGGAGTGAGAGAACGAC TCTAAAT
GTCAGTCCTGGA C
G

GAM95 13147 GGAGCCCTTGATGTCCTGCA A - - --- AAA - --- ATGT
AATGAAGGAGGAGGATGTCC GG GCC CTTGA TG TCCTGC TG AAGGAG GAGG
TTAAGTTCCTTGCAGCAGGA CC CGG GGATT AC AGGACG AC TTCCTT TTCC
ACCCACTTAGGTGGCACC A T C CCA --- G GAA ----
GAM97 16416 GAGATGGGTTTCACCATGTT A TTCAC TT CT CTCGA
GGTCAGGCTGGTCTCGAACT GAG TGGGT CATG GGTCAGG GGT
CCTGACCTCATGATCCGCCC CTC ACCCG GTAC CCAGTCC TCA
ACCTC C CCTA- T- -- -----
GAM98 21612 CAGCTTCTCCTTCCGGGACA GC C GA --- T TGTTCCTCGTCCAT
GCTCCACCTGTTCCTCGTCC CA TTCT CTTCCGG CA GC CCACC
ATGGTGGTGTCGATGGGCCG GT AGGA GAAGGCC GT TG GGTGG
GAAGTAGGACATG AC T GG AGC T ----------
GAM101 6674 GAGGCTGTCTTCACGCTGAC GT - C CC GA - TGTTTGTG
CCAGACCTGGGGGGTGTTTG GAGGCT CTT CA GCTGA CA CCTG GGGGG
TGTCCTTACAGGATGTTCAG TTTCGG GAA GT TGACT GT GGAC TTCCT
TTTGCAAGGAGGCTTT AG C T T- A- A --------
GAM102 1092 GTGCCATCAGTCAGGTACCA CCA G AGG ---- A AC CGACT
CTTAAAGGATGTACAGGCGA GTG TCA TC TACCA CTTAA GGATGT AGG
CTTCTAGATATCTGTTGAGA CAC AGT GG ATGGT GAGTT TCTATA TCT
GCCTGGTAAGGGGTGAAACA AA- G GA- CCGA G GA -----
C
GAM103 18275 TCTGGTGTGGAGACTTCGTG G GGAGA GT--- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TCT GTGT CTTC GGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AGA CACG GAAG TCACCAC ATTCT
CAAGAAGAATAAGCACAAGA A AATAA AACCC - ----------
GAM105 5110 TGGCTGTGGTGTCTGGGTGT - T TGTGGCCT T CTGC
GGCCTGGGGCTCCCTCTGCA TGGCTGTGG TGTC GGG GGGGC CCCT
GGGGCCCCCCTCGGCAGCCA ACCGACACC ACGG TCC CCCCG GGGA
CAGCCA G C -------- - ----
GAM107 10574 GCACTCTGTGTCCAGACTTT A --- TC T- AAA-- ATTT AGACTA
AACTAAAGGCGGATTTCCCG GC CTCT GTG CAGACTT AACT GGCGG CCCG
AGACTACGGGTGTGCTGTTA TG GAGA CAC GTCTGGG TTGG TTGTC GGGC
GAAGGGTTCTGGGTCTGTGC - AAT GT TC GAAGA GTGT ------
ACTAAAGAGGT
GAM108 16125 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT G GTTTGGAA

ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT TTGTCGT
TTTGGAAATGATAAACTAAT CAGGAG TGA GGA TAATCA AATAGTA
TAAGGAAGGAGATATAGTGA AAG TATAGA AGGAAT - --------
AGAGGAC
GAM109 18835 CCTGCCCCTCTGCCTGTGCT C--- C -- C - T - TTCCCGGT
CCTGGCAGTGTGGCTTCCCG CCTGC CCTCTGC TGT GCT CTG GCAG GTG GC
GTGCTCACCTGCACAGCAGT GGGCG GGAGACG ACA TGA GAC CGTC CAC CG
TAACAGCAGAGGCCGAGCGG AGCC - AT C A - T --------
G
GAM110 11622 GGCAGCGAGTCCTCAGGGCG A G CTCAG C CACCAGTCT
CCCGGGAGCCACCAGTCTGC GGC GC AGTC GG GCCCGGGAGC
TCTCGGGCTCTACTCAGACT CCG CG TCAG TC CGGGCTCTCG
AGCGCC - A ACTCA T ---------
GAM111 8877 TCAGCCTTGGTCATCTGCGA T CA T GA C - ------ AA AGGAC
TGGAGCGCTTTCTCAGAACT TCAGCCT GGT TC GC TGGAG GCT TTCT CAG CTGT
GTAGGACATAGAACTGTGCA AGTTGGA CCA AG CG ACCTT CGA AAGG GTC GATA
CAGGAACAGCTTCCAGAGCC - AA C AG - C ACACGT AA -----
GAAAACCAGGTTGA
GAM113 1878 GTTAGTTCAGTACTTATTAG CA- - ATTA- ------ G TAAC
CTGCAGGAGCTAACGTTCAT GTTAGTT GTA CTT GCT GCA GAGC
GCAAGAACAGCAACAGGGGA CAATCAG CAT GGG CGA CGT CTTG
TACAGCGACTAAC CGA A GACAA CAAGAA A ----
GAM114 20741 AGTGATGGTCAGTATTTCTT G- TC--- A ACAA
TGAAATTCTACAAGGAACTT AGTGAT GTCAGTATT TTTGAA TTCT
CAGGCACATGGTGCTGATGA TTATTG TAGTCGTGG GGACTT AAGG
GTTATT AG TACAC C ----
GAM115 18184 GCCTGACCGAGGCGAACGCG AC CGAAC G- CAA GAAGC CAAGGAA
TGGACAAAGTGAAGCTGATC GCCTG CGAGG GC TGGA AGT TGAT
AAGGAAATCAAGAACTACAT CGGAC GCTCC CG ACCT TCA ACTA
CCAAGGCATCAACCTCGTCC CT AACTA GA ACA AGA-- -------
AGGC
GAM117 12780 GGCTAAGTGCCAGCTCCTCT AAGT C CCCT AG TCAA
TTGCCCTCAAGGTGCTCAAG GGCT GCCAGCT CTCTTTG CA GTGC
CATGATGCCCGAGGAGAAGC CCGG TGGTCGA GAGGAGC GT TACG
TGGTTGAGGCC AGT- A CC-- AG ----
GAM119 10742 GTAATGGCATAAGAATACTG CATAA TAC -- C T AAGCCC
ACTTATTCTCGTTTAGAAAG GTAATGG GAA TGACT TATTCT GTT AGA
CCCTCTGGCAGAATACAAGT CATTGCC CTT ACTGA ATAAGA CGG TCT
CATTTCAATTTCCGTTAC TTTAA T-- AC - - ------
GAM120 2962 GGCTCTCGGCCTTGGCAACG TCT AA- C GTCAT TACTG
GCCGTCGTCATGGTTACTGG GGC CGGCCTTGGC CGGC GTC GGT
CCCCTAGGCGCCGATGGCCG CCG GCCGGAGCCG GCCG CGG CCG
AGGCCGCGCC C-- GTA - ATCC- -----
GAM121 4059 GGCTTGGCCATGGCGGCTGG T- --- T TG GATAA TTTCT
TGCTGATAACCATTTCTTGG GGCT GGCCATGGC GGC GG CT CCA
CAGAAGTGCCCGCCAAAGCT CTGA CCGGTGTCG CCG CC GA GGT
GTGGCCCTAGTC TC AAA C GT AGAC- -----
GAM122 17199 GGTCCACATTCACTTTCCCG CACA TTTC T - AG - ACC
TGGAAGGTTCAGGAAGCGAC GGTC TTCAC CCG GGAAGG TTC GA AGCGAC
ACCGTTGTTATCAGGGGCCC CCGG AGGTG GGC CCTTCC GGG CT TTGTTG

TTCCTCGGATGTGGAGAAGG AAG- TA-- T C GA A ---
CC
GAM123 2240 AGGGTTTTAAACACTAATCA TTTTAA A TCACAAAC - TTGA CAA CAACAA
CAAACTGGAATGACTTGACT AGGG AC CTAA TGGAA TGAC CTT AAGG
TCAAAAGGCAACAACCTTAA TCCC TG GATT ACCTT ACTG GAA TTCC
AGGGCCGTCATTTCCATTAG TTA--- - -------- T CCGG A-- ------
GTATTCCCT
GAM124 715 GGAGGCGGGGCAGACGGGCT GG AGACGG A A C C ACG
GCAAGAGGGAGCCGGCCCGA GGA CGGGGC GCTGCA G GGGAGC GG CCG
CGCGGACCGCTTCCCTGCAG CCT GCCCCG TGACGT C CCTTCG CC GGC
TGCCCCGAGTCC GA ------ - - - A ---
GAM125 6635 GTCCATATTACCCTTCAGCA --- TTC--- C G CCCAA
CCTGAGTCCCAAGCTGAGGT GTCC ATATTACCC AG ACCT AGT
CTCAACATGGGTGATGTGAA CAGG TGTAGTGGG TC TGGA TCG
GGAC AAG TACAAC - G -----
GAM126 20717 TGTACGGCAGTTCAGTAGTT AC CAG CAAAT-- TT TCAG
ATCAAATCAGTTGGTCTCAG TGT GG TTCAGTAGTTAT CAG GGTC
GACCCCTGTGTACTCATAAT ACA CC GAGTTATTAATA GTC CCAG
TATTGAGACCCAAACA AA CA- CTCATGT C- ----
GAM127 15633 CAATGTGCAACTGACATCTG T-- - ACA T G AT CT AATATACA
CTAGTGATGATCTGGTAATA CAATG GCAA CTG TC GCTA TG GAT GGT
TACAACCTGTCCAGTAGCCG GTTAT TGTT GAC AG CGAT AC CTG CCA
AACAGTTTGTTTTTATTG TTT T A-- C G -- T- --------
GAM128 19116 GACGAATCCTTAGTACTGTG - TTAGT - AAA AGACAGAAATATAAACCA
GAAAAGAGCAGACAGAAATA GACGAAT CC ACTGTG GA GAGC
TAAACCAGCTTCTCTCACAG CTGCTTA GG TGACAC CT TTCG
TGGAATTCGTC A ----- T C-- ----------
GAM129 5346 CAGGGAGGCTGCATGGGGCC GCATGGGG G - G ACTCAG
AGCGCTAGGTGGCTGACTCA CAGGGAGGCT CCAGC CTA GGT GCTG
GCAGCAGCCATGGGGCTGGA GTCCCTTCGA GGTCG GGT CCG CGAC
AGAAGCTTCCCTG AGAA---- G A A ------
GAM130 18966 TTTTGAGACAGAGTCTCACT CA C A - CAG GACGG
CTGTTGCCCAGACTGGACGG TTTTGAGA GAGT TC CTCT GTTGCC ACTG
CAGTGGCAACAAGAGCGAAA AAAACTCT CTCA AG GAGA CAACGG TGAC
CTCCATCTCAAAA AC A C A --- -----
GAM131 18420 CGAGTGTGCCTCGGCAGGAG C- CG GA CTTC ACAGA AGCCCC
GGCTTGACTTTCTTCGGCAC CGAGTGTG CT GCAG GGGCTTGACTTT GGC GCT
AGAGCTAGCCCCAGTGCGGT GTTCATAC GA CGTC TCCGGGCTGAGG CTG TGA
CAACAGGAGTCGGGCCTCTC AA AT TC ACAA GCG-- ------
TGCTAAGAACATACTTG
GAM132 14049 GCTTGCTCATGATGTACGCG ACGCGCAG AAG CTACTAC
CAGTCCAAAGGCATCTACTA GCTTGCTCATGATGT TCCA GCAT
CGTGCAGTGGAGGATGACAT CGAACGGGTGCTACA AGGT CGTG
CGTGGGCAAGC GTAGG--- GA- -------
GAM134 21748 GCCCAGGCTTGGAGTTGCGG - T TTGC T - CAGTTTCAC C A TCC
GTGGCGTTGACCTTCAGTTT GCCC AGGC TGGAG GGGTGGCG TGA CCTT GTG AA GCC

CACGTGCAAAGCCTCCGGCC CGGG TCCG GCCTT TTTACCGC ACT GGGA CAC TT CGG

TTCACAGGGTTCACCGCCAT C T C--- C T --------- - C ---

TTCTTCCGTGCCTCGGGC
GAM135 15240 GTTTGAGTTCAAAGATGGAG AG AAAGA- GA AG T A - GGAAGGGG
CGAGGGTGGATATGGTGGGA GTTTG TTC TG GCG GG GGAT TG GTG
AGGGGCACACGGGTTCTCAC CGGAC AAG AC CGC CT CTTG GC CAC
GCAACAACGGAGGAAGGCAG GG GAGGCA AA A- - G A --------
GC
GAM136 15322 GAGAAGGGAGGCTGCAGTGA A GG AG-- A- A AT ---- CATT
GCCAAGATCGTGCCATTGCA GAGA GGGA CTGC TG GCC AG C GTGC
TTCAAGGCCTGGGTGACAAG CTCT CCTT GACG AC TGG TC G TACG
AAGCAGAATTCCATCTC A AA AAGA AG G CG AACT ----
GAM137 9011 GATGTCAGTCCCAAGGACCA CCCA---- - TA CCAT
GTAGCTGCCATCAGTTTGGA GATGTCAGT AGGA CCAG GCTG
TTCTGAAAACTAACTGGCAT CTACGGTCA TCTT GGTT TGAC
C ATCAAAAG A -- ----
GAM138 12154 CTGGCCAGGGTGGTGGCTAA G GGTGG A- GTAA- CACT
CGCCTGTAATCCCAGCACTT CTGGCCA GGT CTA CGCCT TCCCAG
TGGGAGGCCGAGGCGGGTGG GACTGGT TCA GGT GCGGA AGGGTT
ATCAACTGTGGTCAG G ACTA- GG GCCGG ----
GAM140 6864 AGGGTCTTTCCAACTGTTCT CC G GGT G GACC
GGTCAGTGAGGACCCTGACT AGGGTCTTT AACT TTCT CAGT AG
GCAAGGAGGAGTTCTGGAGA TCCCAGAGG TTGA GAGG GTCA TC
CCCT TC G AAC G ----
GAM141 9867 CATTGACTCAGCACACCAGG CACAC TGTCACAGCTT- TTTT
TATGTCACAGCTTGTGCTTT CATTGACTCAG CAGGTA GTGC
TGCACCTAATACCCTTTTAC GTAACTGGGTC GTTCAT CACG
TTGCTACTGGGTCAATG ATC-- TTTCCCATAATC ----
GAM143 5631 GGAAGCCATGAAGCAGTCTT G --- TC-- GTGAATGG
CTTGCCGTGAATGGGGTAAA GGAA CCATGAA GCAGTCT TTGCC
TATGGACTGCGCATTCATGG CCTT GGTACTT CGTCAGG AATGG
GTTCC G ACG TATA --------
GAM145 21050 GGCCCAGGGATCGGCAGGGC G - G- - GCT GA AGCT
TGCTGGCAGAGGAATCCCAG GGCCCAG GA TC GCAGG GCT GGCA GGAATCCC
CTGGGGTTCCCATGCCCCAG CCGGGTC TT AG CGTCC CGG CCGT CCTTGGGG
GCTCCTGCAGGACTTGCTGG G C GA T ACC AC ----
GCC
GAM146 1134 GCCATCACGCCACAGTTTCC - CAGTTT GCCATCCACAG
CGGAGGGGCCATCCACAGTC GCCATCAC GCCA CCCGGAGGG
TTCTGGGTGGCAGTGATGGC CGGTAGTG CGGT GGGTCTTCT
A ------ ----------
GAM147 4952 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT G GTTTGGGA
ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT TTGTCGT
TTTGGGAATGATAAACTAAT CAGGAG TGA GGA TAATCA AATAGTA
TAAGGAAGGAGATATAGTGA AAG TATAGA AGGAAT - --------
AGAGGAC
GAM148 1843 GTCAGAGTCTTCTCATCTGT ---- A G - CC C GGATTT
GCCAGCACCCTTCATGGATT GTCAG AGTCTTCTC TCT TGCC AGCA CTT AT
TGTAAAGTTTGTTCGGCAAG CAGTT TCGGGAGAG AGA ACGG TTGT GAA TG
AAGAGAGGGCTGTTCTTGAC CTTG A - C TT A ------
GAM149 8025 TTAGGATAACATTGCTGTCG AA TCGG T AA TAACG
GAGGTCACGCAAGCTAACGG TTAGGAT CATTGCTG AGG CACGC GC

CAAGTGTGTCTATCAGTAGT GGTCCTG GTGATGAC TCT GTGTG CG
GGTCCTGG -- TA-- - AA -----
GAM151 14514 CTGCAGCCCTTGTACCTCAA A-- GTA T AA A - --- A T CTCT
AGCGATCCCACAATGTCCAC CTGC GCCCTT CC CA GCG TC CC AC ATG CCA
TCTTGGTTATAGTACTGGTG GACG TGGGGA GG GT TGC AG GG TG TAT GGT
ACGTGGTGCGGCAAGGGGTA ACA AC- C GG - T TCA A T ----
CAGCAG
GAM152 14092 AAAGTCTTGTGATTTCCTCT TTGT T T ------ A CCTGCCAA
CATCTTTTAGAGATTCCTGC AAAGTC GA TTCCTC CATCTTT TAGAG TT
CAAAAATTCTACCAAGCAGA TTTCAG CT GAGGAG GTAGAGA ATCTT AA
GATGGAGGAGCTCGACTTT ---- C - CGAACC A --------
GAM153 3664 GACAAGAAATGCCCCTTCAC GAAA---- CC - - AA- GT T TTC CGGA
TGGTAATGTGTCCATTCGAG GACAA TGC CTTCA CT GGT T G CCA GAGGG
GGCGGATCCTCTCTGGCGTG CTGTT ACG GAAGT GA CCA G C GGT CTCCT
GTGACCAAGATGAAGATGCA ACCAGGAG TA A A GTG TG - CT- ----
GAGGACCATTGTC
GAM154 19149 GTCTTGCTAGGCCAGGTCTT AG A TCT G GT ACCGG
CCAGGTGGTTACCGGGGTCA GTCTTGCT GCC GG TCCA GTG T
CATGGATTTCTGGGCGGAGC TAGAGCGA CGG TC AGGT CAC G
GAGAT GG G TTT A TG -----
GAM155 1160 GGGTCAAGCTGAAAAGGCAA T - T - CAA- - AC TGAG
GGTTTCTTCAACTGGCTTGA GGG CAA GC GAA AAGG GGTTT CTTCA TGGCT
GAGCTATGAGGTAGGCTGTT CCC GTT CG TTT TTCC TCGGA GGAGT ATCGA
TCCTTCTTTCGCTTTGTCCC T T C C TTTG T -- ----
GAM156 19509 GCCAAGGAAACAGGATGCTG -- AC A TGA C - G- GGACATGT
ATAGTCTCCAGCAGGGCCTG GCCA AGGAA AGG TGC TAGT TCCA GCA GGCCT
GACATGTGGGCTGGTGTGTG CGGT TCCTT TTC ACG GTCA AGGT TGT TCGGG
GAACTGCTGCAACTTTCTTC GG CT A TC- - G GG --------
CTGGTGGC
GAM157 8446 GGGTCGGCAGGAAGTTGCGG AGTT A- CCC - T C GCC
CTGATGAGCAGCTCCCGGAG GGGTCGGCAGGA GCGGCTGATGAGC GCT GGAGC GG GGGG
GGG
CGGTGGGGCGGGGCCTCCTC TTTAGTCGTCCT TGCTGACTACTCG TGA CCTTG CC CTTC CCT

TTCTCCAGTTCCAGTACGCT CC-- CA --- A T T ---
CATCAGTCGTCCTCCTGCTG
ATTT
GAM158 19432 TAGGGGAGGGAAGAGAACTA GA ---- A A C ACAAA
AGATGATACTAACAAATGCT TAGGGGAGG AG AGAACTA G TGATA TA
ATCACTGGTTTTGTGGCTGC ATTCCCTCC TC TTTTGGT C ACTAT GT
CTCCCTTA G- GGTG - - C -----
GAM159 9653 TCTCCTCCATGTGTCTTGGC ATGTG G A ---- GTG TGTCG
AGGCACTCATTTCTGTGGCT TCTCCTCC TCTTGGCAG C CT CATTTCT GC
GTCGGCAGAGGGAATGTTCT AGAGGAGG GGAACCGTC G GG GTAAGGG CG
GGAGCTGCCAAGGAGGGAGG GA--- - A TCTT AGA -----
AGA
GAM160 9949 TGTGGTACTTCAGGAACTCT ACT A----- TTT A ACATCA TACAT
TTTTCAAACTCACATCACAG TGTGGT TCAGGA CTCTT CAA CTC CAG
TACATCTGGAGATTGTCTAA ACACCA AGTCCT GAGAA GTT GAG GTC
GAGGCAGCCTCCTGACACCA C-- CCGACG TCT A ------ -----

CA
GAM161 1534 GGAGGATCGCTTGAGCCCAG GA GA-- AGGA - GT C AGATGGCAC
GAGGCGGAGGTTGCAGTGAG GGAG TCGCTT GCCC GGC GGAG TGCAGTGAG TG
CTGAGATGGCACCACTTATT CCTC AGCGAG CGGG CCG CCTC ACGTTATTC AC
GCACTCCAGCCCGGGCGACA AG ACAG C--- A -- - ---------
GAGCGAGACTCC
GAM162 21563 GACGAACCTTGGCCGCAGTC A-- TG TT GA CGCAA
CTTGCGAACTGTTCGCAAAA GACG ACCT GCCGCAGTCC GC ACTGTT
CAGTGCGGGCTGCGGTGGGT CTGC TGGG TGGCGTCGGG CG TGACAA
CAGCGTC GAC -- -- -- -----
GAM163 15036 TTGTGGTCCATGGCGAGCCC - C- C A C --- AT - --- GCTCA
AGGCCTCAGACAATGGCTGT TTGTGGT CCATGG GAG CC GGC TCAG ACA G GCTGTG GTGTT

GGTGTTGCTCAGACATGCAC GACACCA GGTACC CTC GG CCG AGTT TGT C CGACAC TACAG

ACAGCTCTCTGTACCTTGAG C AC T A - CCA CT T ACG -----
CCAGGTCTCCACCATGGCAC
CACAG
GAM164 3243 TGTTTGTGCCGTCTTTGGTC TG TCTT AG ATTG--- ATCATG
TGGGAGGAGTCGGATTGGCA TGTT TGCCG TGGTCTGGGAGG TCGG GCAGTT
GTTATCATGGGCTGTAAAGT ACAG GTGGT ACTAGGCCCTTC GGTC TGTCGG
GGCTGGTGCTTCCCGGATCA GT T--- GT GGTGAAA ------
TTGGTGTGGACA
GAM165 2669 GCCGTCTCCCCTGCTCCCGG TCT CTC T C C CCCCTGACC
TGCTCTGCGAGATCTCCCCT GCCG CCCCTG CCGG GCT TG GAGATCT
GACCAGATCTCCACAGCCCG CGGT GGGGGC GGCC CGA AC CTCTAGA
GACCCGGGGGCTGGC C-- CCA - C - ---------
GAM166 5246 GAGATGGTGCCTTGGACACC GAT ACACCCT C CTCGTT AA CGAG
CTTGCCTGGAACTCGTTAGC GA GGTGCCTTGG TG CTGGAA AGC CTG
AACTGCGAGCAGAAGCTTTC CT TCGCGGAACT AC GACCTT TCG GAC
CAGTCACACATCAAGGCGCT AGT ACAC--- T ------ AA ----
TGATC
GAM167 22530 TTTCTGTCAAGAAGCAGTTT AAGAAG G A CTT
GAAGAATTAACCCTTGGTGA TTTCTGTC CAGTTT AAGAATT ACC
ATTTTTGAAACTGGACAGAG AGAGACAG GTCAAA TTTTTAA TGG
A ------ G G ---
GAM168 3320 AGATGTTATGTAAAAGTTTG TGT--- AA GAGG - TATCTGACACTCTGT
AGGTTGAGATGACATATCTG AGA TATGTA AGTTT TTGAGA TGACA
ACACTCTGTTGTTACTCTCA TCT GTACAT TCGAA GACTCT ATTGT
GAAGCTACTACATGTGAAAT TAAAGT CA ---- C ----------
TCT
GAM169 3887 GGCTAGTGTAATACTCCACA T -- CA AGAAGTAGACACCCCAAA
GAGAAGTAGACACCCCAAAC GGC AGTGTAATA CTC CAG
TGGAGAGCATGTTGCATTTG CCG TTACGTTGT GAG GTC
CC T AC AG ----------
GAM170 17471 GTGGGGTGAAGGGTCATTAA GAA CA AG AC A CATAA C CCCTT
GGGCACGCAGTAGCCATAAT GTGGGGT GGGT TTA GGC GCAGT GC TG CACA
GCCACACCCTTTGTGCCAGC CACCCCA TCCA GGT TCG CGTCA CG AC GTGT
CACTGCGCTTCTGGAAACCT --- AA CT -- C ----- C -----
ACCCCAC

GAM171 1098 CAGGTGTTCCGGGCCCCTTC TTCC CTT- GGG AAGT
ACCTGGGGCTCAAGTGAGAG CAGGTG GGGCCC CACCTG CTC
CAGGTGTTCTGGGCCCCTTC GTCCAC CCCGGG GTGGAC GAG
ACCTG TTC- TCTT GA- ----
GAM172 19 AAAAAGACATTGGACTAAAT ACATTG GC AT TAGAAGAT
GCTAATATATGGAATAGAAG AAAAAG GACTAAAT TAATAT GGAA
ATTTCCCAATGTTAATTTAG TTTTTC TTGATTTA ATTGTA CCTT
TTAACAACTTTTT AACAA- -- AC --------
GAM173 22335 TGTCCAGTTCCCATTTTGGT TC ---- CCTCATAA AAACAGCTTAACA
CCTCATAATCAAAACAGCTT TGTCCAGT CCATT TTGGT TCA
AACATGACAGTCATCACCAG ATAGGTTA GGTGA GACCA AGT
TAATAGTGGCATTGGATA C- TAAT CTACTGAC ----------
GAM174 17032 TCCCGTGGAGGCTCGCGCCG GT G G - A- --- GGGA
ACGGCGGCGGGGACGAGACT TCCC GGAG CTC CG CCG CGGCGG CG
GCCGAGCGGACGGAGGCTCC AGGG CCTC GAG GC GGC GCCGTC GC
GGGA -- G - A GA AGA ----
GAM176 10820 CTCTTCATCAGTACACCACT ATCAGTA C TG -- C AATGATAA
GTGAGCCGACTGAAATGATA CTCTTC CACCA TG AGC CGA TGA
ATCACTTGAAGCTATCATTG GAGAGG GTGGT AC TCG GTT ACT
GTGGGAGAG ------- T TA AA C --------
GAM177 21935 CTTCCTGGGCCATTGTGGCT - CA- C C CTGGT
GGAGGTGCTGGTGCTGGTCA CTTCCTGG GC TTGTGG TGGAGGTG TGGTG
CCATCATCTTCATCTACGAG GAAGGGCC CG AGCATC ACTTCTAC ACCAC
AAGCGCCGGGAAG G AAG T T -----
GAM178 569 GGACGAGGAGATGAACCGCA AGGAGA A CA AGA T A TCG
TGCATGAGAGCATGAAGCTA GGACG TGAACCGC TG TG GCA GA GCTAT
TTCGATAGCATCTGCAACAA CCTGC ACTTGGTG AC AC CGT CT CGATA
CAAGTGGTTCACAGACACGT ACAGAC A A- AA- - A ---
CC
GAM181 577 GTTGTTATTGGTGCAGGAGT TG-- TG AG AATAGG A GGTT
AATAGGTGTAGAACTGGGTT GTTGTTAT G C GAGT TGT GAACTG
CAGTTTGGCAAAGACTTGGT CGACAGTG C G TTCA ACG TTTGAC
GCAGATGTGACAGC TAGA GT G- GAA--- G ----
GAM182 2750 CGGCTGCCCAGGCCCTGCCT CCCA CT TT G- TCTC
TGGCATGTGTGTCTCCAGAG CGGCTG GGCC GCC GGCATGT TG
CGTGCCCGGCCAGGCCATCC GCCGAC CCGG CGG CCGTGCG AC
CAGCCG CCTA AC C- AG ----
GAM183 10918 TTTGTGAAGATGATTGGGAA AT GG TCAAAT T GCTG---- CTTTAAAAA
ATCAAATAAGTAAAAACGCT TTTGTGAAG GATTG AAA AAG AAAAAC GGTCAAAA
GGGTCAAAACTTTAAAAATT GAACATTTC CTGAC TTT TTC TTTTTG TCGGTTTT
TTGGCTACTTTAAGGTTTTT GT TT CCGT-- - GAATTTCA ---------
CTTTGCCTTTTTCAGTCTGC
TTTACAAG
GAM184 16829 TTCAAAACCAGAAGCAGTCG CA C AGACAT A CTAGCA
AGACATAGGACAACCTAGCA TTCAAAAC GAAG AGTCG AGG CAAC
GTTGGCCTTATAAGTGGCTC AAGTTTTG TTTC TCGGT TCC GTTG
TTTGTTTTGAA -- - GAATAT G ------
GAM185 22082 TTTCTTCAGTTCCAACAAAA --- ----- AAA C CATCTGATA
GGTCTGTCATCTGATAACAA TTTCTTCAGT TCCA AC AGGT TGT
ACCTATGGTTAACTTGGATA AAGGAAGTCG AGGT TG TCCA ACA

AGCTGAAGGAA AAT TCAAT GTA A ---------
GAM186 21600 TAGCATTGGGTGCCAATTTC G G ATTT G GGAATGGTG
GTGGTGTGGAATGGTGACAA TAGCATT GGT CCA CGTG TGT
CATGCGTGGAGCCAAGTGCT ATCGTGA CCG GGT GTAC ACA
A A A GC-- A ---------
GAM187 13313 AGCTTCAAAAGCACAACTAC AAAA-- AC CT- -- CAA
ACACTTTGCCCAAGGTCTGA AGCTTC GCACA TACACA TT GCC
TTCTGTGTATCTGTGCATCT TCGAGG CGTGT ATGTGT AG TGG
GAGGAGCT AGTCTA CT CTT TC ---
GAM188 18564 AATTCCTGCCAGAATGCGCA C AAT - CAG AT GCC G GTGCCA
CAGAACATAAGTCAGCCAAG AATTCCTG CAG GC GCA AAC AAGTCA AAGTGT TC
TGTGTCGTGCCAGGGATACT TTAGGGAT GTC CG CGT TTG TTCAGT TTCATA GG
TTGACTTTGGTTTGCTGCTG C GT- T --- GT --- G ------
CTGCTAGGGATT
GAM191 6463 GAGGGTACTGTAGAATCTTT - AG T TTATTATCTC A TAAAAAAT
ATTATCTCAACAATCTAAAA GAG GGTACTGT AA CT AACA TC
AATGATGTTTATTTCCTTAG TTC CCGTGATA TT GA TTGT AG
TTAGATAGTGCCACTT A GA - TTCCTTTAT- - --------
GAM192 13472 TTTTTTCTAAATGGGAAAAG AAAT-- A AATA T- TTCATTCT
GGTTAATAAGGGCTTATGTT TTTTTTCT GGGAA AGGGTT AGGGC TATG
CATTCTTGTATTGCTCTCTA AAAGAAGA TCCTT TTTCAA TCTCG ATGT
AACTTTGTTCCTTGTCACAG CACTGT G ATC- TT --------
AAGAAA
GAM195 15169 AAGCCTTGTTTTTTCCCAGA -- TTT AG-- A-- G GC- GACCTGGT
GCAACCATGTTTTAGCATAA AAGCCT TGTTT CCC AGC ACCAT TTTTA ATAATGGGAT
TGGGATGACCTGGTGTCCCA TTCGGA ACGAG GGG TCG TGGTG GAAAT TATTACCCTG

TTATAAATAAAGGGTGGTAT TG TAT AAGA GTA G AAA --------
GGCTAGAAGGGTATGAGCAG
TAGGCTT
GAM196 1307 GCGGAGGTGGGGGTCTGGCT T - G TG- CA GT - AGT- -- AATAT
TCAGGGTCTCAGTCCTTCCC GCGGAGG GG GG TC GCTT GG CT C CCTTCCCT TTAG
TTTAGAATATCTGAGAGGGG CGTCTCC CC CT AG CGAA CC GA G GGAAGGGG AGTC
AAGGTCAGGAAGGTCCAAGC - A G TTG -- TG A GACT AG -----
GTTGAGTCACCCCTCTGC
GAM197 22075 GAGAAGGGGGCCACGGCTTC GG-- ACGG A GG---- C CCTGGTGTA
TCACAGGGTGGGGCGGGCCT GAGAAG GGCC CTTCTC CAG TGGGG GGG
GGTGTACCCTCCCCGAAAGC CTCTTC CCGG GAAGAG GTC GCCCC CCC
ACTGGAGAAGGGGGCCACGG GGCA GG-- - ACGAAA T ---------
CTTCTC
GAM198 4913 GGAGGCGCGGTGAGGAGTCA C-- T T AAA- G TGGAG
GGCTTAAAACTTGTTGGAGG GGAGG GCGG GAGGAG CAGGCTT ACTT T
GGAGTAACCAGGCCTGCTCC CCTCC CGCT CTCCTC GTCCGGA TGAG G
TCTCGCTCTCCTCC TCT - - CCAA G -----
GAM199 18871 CTCTGTAAAGCGGGCTGATG T AA-- - TG - TGC CAGATAGC
ACTGTACCTGCCTCACAGAT C CTGT AGC GGGC ATGAC TGTACC CTCA
AGCTGGGATGGTGCATGTCA G GACA TCG CTCG TACTG ACGTGG GGGT
TGTGCTCAGCTGGGAACAGT T AGGG A TG T TA- --------
G
GAM200 3193 GGCCATCTTTGAACTCCTGG CATCT --- CTATATT- A ACCTCCTAAGCTGCCCAAC

ACTATATTGTGAACGAGCCA GGC TTGA ACTCCTGGA GTGAACG GCC
CCTCCTAAGCTGCCCAACGG CCG AACT TGAGGACCT CACTTGT TGG
TGTGTTCACCCCCGACTTCC TAAAT GTT TCAGCCCC G ----------
AGGAGTTTGTCAATAAATGC
C
GAM201 12474 CGGACAGACATTTGGTATGG -- AT - C TT-- CGTCACCTA
ATCACTGGTCATTCCTACGT CGGACA GACATTTGGT GG ATCA TGGTCA CCTA
CACCTATGGGCCACTGGCCA GTTTGT TTGTAGACCA CC TGGT ACCGGT GGGT
ATGGTGCCACCAGATGTTTT TT -- G A CACC ---------
TGTTTG
GAM208 15901 GTGGCTACACAGCTCGTTTC ACACAG G CT-- T T TTAA
CCCTGGGTCCTCTGTGTAGT GTGGCT CTC TTTCCC GGGTCCTC GTG AG
TAACTTTGCTGGGGACCCTG CACCGA GGG AGAGGG CCCAGGGG CGT TC
ATGGGAGAAGGGACAGCCAC CA---- A TAGT T T ----
GAM209 10121 CCAACATCTGCCACTTAGGA ACA - CA A C- GAAC A CATATGACGAA
GCCCTGGGAACGGGTGACCT CCA TCT GC CTTAGG GC CTGG GGGTG CCTT
TCATATGACGAAGAGGCACC GGT AGA CG GAGTTC CG GACC TCCAC GGAG
TCCAGCAGCCTTGAGAAGCA ACA A AA - AC ---- - ----------
AGAACATGG
GAM210 18840 GATGAAGGGAGAGAGAGGAG -- - AG CA--- GC AGAAATAGAGACCA
GAGAGAGGCAAGTGTTCCAG GAT GAAGGGAG AGAGAGG GAGAGAGG AGTGTTCCAG TAG

GCTAGAGAAATAGAGACCAC CTG CTTCCTTC TCTTTCC CTCTTTCC TTACGAGGTC GTC

GACCCTGAACTGGAGCATTG CC C CT TTCAG AA ----------
ACTTCCTTTCTCTCCCTTTC CGACC
TCCTTCCTTCCCGTC

GAM211 6973 TGACTCCTGCTGCCATCTCA CT --- G TCA TTCCTA ACAGT
AGGACATTTTCCTAAGGACA TGA CCT GCT CCATC AGGACATT AGG
GTCCTGGTGTCCTGATGGAG ACT GGA TGA GGTAG TCCTGTGG TCC
TGAAAGGGATCA AG AAG - --- ------ -----
GAM212 8978 GTGTTGTGTCCCTGGGTACT - -- ACT- A AG A TG G A TTAAC
TGAGATTAGGGAGTGGTGAT GTGTTGTGTCC CT GGGT TG GATT GG G GT ATG CTC
GACTCTTAACGAGCATGCTG CACGACACAGG GA CCCA AC CTAA TC C CG TAC GAG
CCTTCAATCCATTTAACCCT T GT ATTT - CT - GT - - -----
GAGTGGACACAGCAC
GAM213 18808 CCAGCCTGACGTAGGTGGGC G A - CACCAGCT GG-- - TCTCGTT
AGCACCAGCTGCAGGGTGGG CCA CCTGACGT GGTGG GCAG GCAG TGGGCTG GC
CTGGCTCTCGTTGCTCAGCT GGT GGACTGCG CCACT CGTC CGTC GCTCGAC CG
CGATGACTGCCTGCTTCACC A G T -------- AGTA T -------
GGCGTCAGGATGG
GAM214 16937 CGGTTGGTTTCTGGGCCTTC TTTC CAACA TT ---- CTCC
AACAACCTTTGTATGTTAGG CGGTTGG TGGGCCTT ACCT GTAT GTTAGG
CTCCCTTGATTCGGGTACCG GCCGGCC ACCTGGAG TGGG CATG TAGTTC
GGGTAGAGGTCCACCCGGCC C--- A---- GC GGCT ----
G
GAM215 1767 GACACCGCCGGGACAAAGCT CCG GACAA - TGTCTCTCCCTGC ACA
GATTGTCTCTCCCTGCAGCC GACA CCGG AGC TGAT AGCCAC

ACACAGTGGCTCCCTATCAC CTGT GGCC TCG ACTA TCGGTG
GCTGCCACCGGACCTGTC CCA ACCG- C TCCC--------- ---
GAM216 1736 GTGGGACCTTCTGTTTGGCA - T TT - CTTC CC TG T TCATGGTTT
GGCTTCCTCTCCCTTGCCTG GTGGGA CCTTC GT GGC AGG CTCT CT CC GG
GTCATGGTTTTCTGGTGAGA TACCCT GGAGG CG CCG TCC GAGA GA GG CT
AGAGTGTTCCTGGCCTTGCT T T TT G TTGT A- GT T ---------
GGAGGTTCCCAT
GAM217 7192 GGGGGCTCTAAGCGCCTATG A -- ATGA - CCTG
AGCAGGCCTTCCTGGGGGCC GGGGGCTCTA GC GCCT GCA GGCCTT
GTGCAGAGGGCCCGCTGGGG CCCCCGGGGT CG CGGG CGT CCGGGG
CCCCC - CC AGA- G ----
GAM218 16808 GGAATCTGCACATACTTATC --- A TATCTAAT - --- AA T - ACAA
TAATACTGTGTTTTCTGAAT GGAAT CTGCAC TACT ACT GTGTTT TCTG TTA GC TC
TATGCTCACAAGATGCTAAG CCTTG GACGTG ATGG TGA TACAAG AGGT AAT CG AG
ATGGAAAAGAACATGAGTGG GTC - -------- G AAA AG - T ----
TAGTGCAGCTGGTTCC
GAM219 504 GGGGTTTGGGTCCTGGTCAC -- -- T AA G A A GGAG
GTGGAACTGGGCAATGAAGG GGGGTTTGG GTCCTGGT CACG GG CTG GCA TGA G
GAGCTCGTGTGCAGACCTCG CCCCGGACC CGGGGCCG GTGC CC GAC TGT GCT C
TGCAGCCGGGGCCTCCAGGC TC AC T A- G - - ----
CCC
GAM220 20579 CACGCAGGGCCCATGAGAGG GG CATGAGA - A-- A CCTGACCCA
ACACCCAGTACATCCTGACC CACGCAG CC GGACAC CC GT CAT
CAATGACATCGGCGTGTCTA GTGCGTC GG TCTGTG GG CA GTA
ACCTGGACTGCGTG A- TCCAA-- C CTA - ---------
GAM221 17315 GTCCCTCCCTCCCCTGCTGT T- CC G A- GT -- AAACCTAGGCA
GACCTTGTGGGGGTTGAGAA GTCCC CCCT CCTGCT TG CCTT GGGGGT TGAG
ACCTAGGCACTCATGGCCCC CGGGG GGGA GGACGG AC GGAG CCCCCG ACTC
CTGGAGGGGCAGGGCAGGCA TC C- G GG GT GT ----------
GGGCTGGGGC
GAM222 1905 GACCCACTCTTGTGCTAACT CACTCTT- AACT CC T A CCCA
AGCCCCTTCTCTGAATAACC GACC GTGCT AGCC TTCTC GA TAA
CATTAATCTGAGAATGGCTC CTGG CACGA TCGG AAGAG CT ATT
AAGCACTTCCTAAAGGTC AAATCCTT AC-- T- T A ----
GAM224 4189 GATCCTGTCACGAACACATT CC ---- C-- - CAC--- AACCA
TAGCACACATGGAACCACCA GAT TGTC ACGAA ACAT TTAGCA ATGG
TAGGCCCTGCTGACATGTTT CTA ACAG TGTTT TGTA AGTCGT TACC
CTTTGTTTTGGACAATC -- GTTT CTT C CCCGGA -----
GAM225 4891 GGCTGGTTCCCCATCTTATT GT-- ATC A A - CC-- ATTAATA
CGAACTCTCCTGCATCATTA GGCTG TCCCC TT TTCG AC TCT TGCATC
ATAGATGCAAGTTAGATGTA CTGAC AGGGG AA AAGC TG AGA ACGTAG
CGAACAAGGGGACTCACAGT ACTC --- C A T TTGA -------
C
GAM226 9146 GACAGCCAGTATCATCCTGA G T C--- CA--- A AT-- TTCCAT
GCACTGAGGTATGCTTTCCA GACA CCAG ATCATC TGAG CTG GGT GCT
TGGCCGAGACCCAGCCCTAC TTGT GGTC TGGTAG ACTC GAC CCA CGG
TCATTGCGATGGTCTGGATG A - CGTT ATCCC - GAGC ------
TT
GAM227 5501 GGAAGCATTCAGCAGCTGGA AAGC A- AC T A GAGGAA CAA
CGCTGAGCTGAGGAACACCA GG ATTC GCAGCTGG GC G GCT CAC

AGTGGGAGATGGCCGCCCAG CC TAAG CGTCGACC CG C CGG GTG
CTGCGAGAATACC A--- AG -- - - TAGAGG ---
GAM228 1416 GACAACCTGCCACTCTATGA ACC C ATGA TA ------ CATCACA
GCTTAAGAACACCATCACAG GACA TG CACTCT GCT AGA ACAC
TGTCCCCCTTCTCGGGCGAG CTGT AC GTGAGA CGG TCT TGTG
AGTGACATCTGTC CT- A G--- GC TCCCCC -------
GAM230 20894 GGGGCAGCCTGCAACCCCCA GC--- CAAA- GGTG TG CCAAATGCTTC
AAGGCCGGTGTTGGGCTTCC GGGGCAGCCT AACCCC GGCC T GGCTT
AAATGCTTCAGGCCTGGGGC TCCCGTTGGA TTGGGG CCGG G CCGGA
CAGAAAGGGGTTACAAAAGG AAACA AAAGA ---- GT ----------
TTGCCCT
GAM231 9664 TCATGGCAGTGATTCAGTAA TGG GA --- A-- T AAAAGAAA
ACAAGTGCTGAAAAAGAAAT TCA CAGT TTCAG TAAAC AG GCTGA
CAGCCTATGGTTTAAGCCTG AGT GTCA AAGTC ATTTG TC CGACT
AAGAACTGGTTGA TG- AG CGA GTA - --------
GAM232 13687 GATGTCAATGCTGCCATTGC --- CT T C-- - AAAAC GCACATCCA
CACCATCAAAACCAAGCGCA GATGTCAA TG GCCA TG CACCA TC CAAGC
CATCCAGTTTGTGGATTGGT CTACGGTT AC CGGT AC GTGGT AG GTTTG
GCCCCACTGGCTTCAAGGTT GGA TT C CCC T GT--- ---------
GGCATC
GAM233 6976 TCCCCTGGTTTCTTGTCGTC C T T G TC -- A CTTG
TGTGCTTGATTCTTGAACAG TC CC GGT TCTT TCG TG TGCTTG TT
GTAACCACTTGAGAGGATGC AG GG CCG AGGA AGT AC ATGGAC AA
CGGCGA C - T G TC CA - ----
GAM235 15407 GGTAGGGAGTGAAAGGCCCG - AAAG - C-- AA AGCTG
GCCACCTAAAGGCACAGCTG GGTAGGGAG TG GCC CGGC ACCT AGGCAC
GTGCCTGGGTCAAGCTGAGG CCGTCTCTC AC CGG GTCG TGGG TCCGTG
CGGCATCTCTCTGCC T GG-- A AAC -- -----
GAM236 19227 ACCACGCCTGGCTAATTTTT C TTTTGAATTTT ACGGGG
GAATTTTTGGTAGAGACGGG ACCA GCCTGGCTAAT TGGTAGAG
GTTTTACCGTGTTGGCCAGG TGGT CGGACCGGTTG GCCATTTT
CTGGT - T---------- ------
GAM237 6661 AGTCCCTGCTGTGTACTAGA CCTG T - AAC- G-- GTGAGA
ACGACTGAGCGTGAGAGTTG AGTC CTG GTAC TAG GACT AGC
AGAGTCCCTGCTGTGTACTA TCAG GAT CATG GTC CTGA TTG
GAACGACT CAA- - T GTCC GAG ------
GAM238 10061 GGAGAGCCCGTCGCGGGAGT CC T GCA GA GGAC
GCAAGGAGCTGGACGGCCTC GGAGAG CG CGCGGGAGT AG GCT
TGGAGCTTCCGCGCCGACTT TCTCTT GC GCGCCTTCG TC CGG
CTCT CA C AGG TC ----
GAM242 14859 GTGGCATATCCAGGCATGCT - GG TGCT G CTAAC AGGGATTG
GTGCTCTAACTGGCGAGGGA GTGGCAT ATCCA CA GT CT TGGCG
TTGTGCCAAGGACTTGAATG CACTGTA TAGGT GT CA GA ACCGT
GATGATGTCAC G AA T--- G ----- --------
GAM243 21126 GGAGTGACCTGGAGCACTGT GA G ACT - GACTCCGCCTG
GGGGGACGGGACTCCGCCTG GGAGT CCTG AGC GTG GGGGACGG
CTGTTCCCGCGCTGAGCTAC CCTCA GGAC TCG CGC CCCTTGTC
AGGACTCC -- A AGT G ----------
GAM244 4593 GGATCATGGGTGGTGGTGAA TC -- T A - AG---- ATGGATG
CAGCAGAAAGGGATTATGGA GGA ATGGGTGGT GG GA CAGC AGAA GGATT

TGAATCTGCATTGTTCTAGC CCT TGCCCACCG CC CT GTCG TCTT TCTAA
TGCTCCCCATGCCACCCGTC C- TA C C A GTTACG -------
TCC
GAM245 11954 GAATTGCTTTTATTTCGGTA TTTA- G TA AT------- ATTTCAGCATTTA
TGCATCCACATTTCAGCATT GAATTGCT TTTC G TGC CCAC
TAGTGGTCCTGAACAGCAAG TTTAACGA AAAG T ACG GGTG
TGGAAAGACGCAGCAATTT CGCAG G GA ACAAGTCCT ----------
GAM247 818 GGCAACACTTCGATGGTTCC A GA- --- A A T G- TTA AATG
GGATCACCATGTGGGGTTGT GGCA CACTTC TGG TTCCGG TC CCA GTG GGTTG GGCG

TAGGCGAATGTGCCCTCGAC TCGT GTGAGG ATC AGGGCC GG GGT CAC TCAGC CCGT

TGGCACTGGGGCCGGGAGAT - ACA TAG - - - GG TC- ----
CTAACAGGAGTGTGCT
GAM248 21926 ACTTGGAGAGTTTGGCCCAG G ----- - G -- AC--- TTTGTTACT
GAGTTCCTGAACCATATTTG ACTT GAGAGT TTGGCC CAGGA TT CCTGA CATA
TTACTTGTGCTCACTCAGGT TGAA CTCTTA GACCGG GTCTT AG GGACT GTGT
TGAGTTCTGTGGCCAGTTTG A TGTTT T G TT CACTC ---------
TATTCTCAAAGT
GAM249 22089 GTCGCTGGGATAGAAGCCTT G A A CTT --- AGGCT
TGACCAAGCAGGTCAGGCTG GTC CTGGGAT GA GC TGACCAAG CAGGTC
ACCTGGTTCTTGGTCAGCTC TAG GGCCCTA CT CG ACTGGTTC GTCCAG
ATCCCGGGAT - - - --- TTG -----
GAM250 11011 CTTCTTCTGGGGTTCTCTAA T G C AAT AACATTAATC
TGGGGATAACATTAATCATC CTTCT CTG GGTT TCT GGGGAT
TCCTAAGATGACTATAGTAG GGAGA GAT TCAG AGA CCTCTA
AGG T A T AT- ----------
GAM252 7560 TCTCTAACAAGGTGCAGAGC AACA ATTG TGAT TTT
TTAGCTGATTGGTGAACAGT TCTCT AGGTGCAGAGCTTAGCTG GTGAACAG TGG
GATTGGTTTCCGCTTTGTTC AGAGA TCCACGTCTTGAATCGGT CACTTGTT GCC
ACAGTGGCTAAGTTCTGCAC AG-- GA-- TC-- ---
CTGAAGAGA
GAM253 1784 CTTCCTCCTCTCTGACCGGT CC T C GC-- CT CAGCCAT
TGGCCAGGGACTATGCAGCC CTTCCT TCTC GA CGGTTG CAGGGA ATG
ATCGTCTTCTTTGCTAACAA GAAGGG AGAG TT GCCAAC GTTTCT TGC
CCGCTTTGAGACAGGGAAG AC T C AATC TC -------
GAM254 9213 GCTCCAAACAGCGCAACACC AAACAGC C A ACCCCA-- ATCATGAAACA
ACAAGTACCCCACCATCATG GCTCC GCAA ACCACA GT CC
AAACAGGAAGACAGAACCTG CGGGG CGTT TGGTGT CA GG
TGGTTTGCAACCCCGGGGGC GCCCCAA - C AGACAGAA ----------
GAM255 12797 GTCCTGCGCCGTCAGCACAA GTC C CAC--- AGACACAA
GCCACGCTTCAGACACAAGA GTCCTGCGCC AGCA AAGC GCTTC
GGCCCAAGAGCTTCTGCTAG CGGGACGTGG TCGT TTCG CGGAG
GTGCAGGGC A-- C AGAACC --------
GAM257 2682 GAGATGGGGTTTCACCATGT GTT- A TT C C-- TCT
TGGCCAGGCTCGTCTCGAAC GAGATGGG TCACC TG GG CAGG TCG
TCCTGACTTCAGGTGATCCA CTCTACCC AGTGG AC TC GTCC AGC
CCCATCTC ACCT - T- A TCA ---
GAM258 3878 GTGGTGGCACATGCCTGTAG --- ----- G -- CCAT
CTCCAGCCATTTGGGAGGCT GTGGT GGCA CATGCCT TAGCT CCAG

GAGGTATGATAATTGCCTGA TACCA CCGT GTATGGA GTCGG GGTT
ACCAT AGT TAATA - AG ----
GAM260 14348 TGCTTTGTCGTTCAGTTGGT GTC G- TACTTCTTTTA A AAATG
TACTTCTTTTAATGTATTCA TGCTTT GTTCAGTT GT ATGT TTCAA
AAAATGTTGAACACATACAG ACGAAG TAAGTCAA CA TACA AAGTT
AACTGAATTAAGAAGCA AAT GA ---------- C -----
GAM261 2924 CGGGCGCAGGGTGTCCGAGC AG G G C --- CT TTC CACC
CGCTGCCTGTGCTTCCGCAC CGGGCGC GGT TCC AGC GC TGC GTGC CGCAC
CACCGTGCGCTGCATGCATC GCCCGTG CCG AGG TCG CG ACG TACG GCGTG
TGCTGCTGGAGGCCGTGCCC -- G - T TCT -- TC- ----
G
GAM262 12340 GTGTGTCCGCAGGCGCCCGA TC G C A T CGA C TGA GCGCCCA
CGCTGCCGATGTCCCGGGGC GTGTG CGCA GCGC CG CGC GC TGTCC GGGGC GCC
TGAGCCGCGCCCAGGTGTCC CGCGC GTGT TGCG GC GTG CG ACAGG CCCTG TGG
CGGACAGTGCGTGCGAGCGT CT G A - - TG- - --- -------
GTGTGTCCGCGC
GAM263 3931 GCTCCAGTGAACTGGCGAGT -- TG AC A T A-- CT CACCT
GTGGAACCTCCTGACACCTT GCTCCA G A TGGCG GTG GGA CCTC GA
CTGAGGACCTCCTGCCTGCC CGAGGT C T ACCGT CGT CCT GGAG CT
ATGTTGCTGTGGAGC GT GT GT C - CCA T- -----
GAM264 2200 GGGCTGCGGCAGGGACTCGG - ACTC CT-- A TTACCTCGCCCCCACTTGT
CCTCTGGGAGGTTTACCTCG GGGCTGCG GCAGGG GGC CTGGG GGT
CCCCCACTTGTGCCCCCAGC CCCGACGC CGTCCC CCG GACCC CCG
TCAGCCCCCCTGCACGCAGC A C--- ACTC - ----------
CC
GAM265 1340 TGGACGTCTCAGGATTCCCT AGG-- CT AC-- G TTATG
CTTTTGGAACTCTGGTTTAT TGGACGTCTC ATTCC CTTTTGGA TCTG T
GGGCGGAAGACTCCGAGGGC ATTTGCAGAG TAAGG GGGAGCCT AGGC G
AGGAATGTGGAGAGACGTTT AGGTG AC CAGA G -----
A
GAM266 20802 TGATGAGCAGAACAAAGATT ACAAA TG A CTTTCCC
TGAGAAGCACTTTCCCTGCA TGATGAGCAGA GATT AGA GCA
TCTGGTTCAGACTCTGCTCA ACTACTCGTCT TTGG TCT CGT
TCA CAGAC -- A -------
GAM267 9971 ACCAGAGGAGGACATCAGAT GA T TC TTA C-- TGATC
CCTGCATTATGTACACTGAT ACCAGAG GGACA CAGA CTGCA TGTA AC
CGTTTCTGCAGCTGCAGATT TGGTCTC CTTGT GTCT GACGT ACGT TG
CTGCTGTTCGACTCTGGT AG C TA CG- CTT -----
GAM272 3094 GAGGCTGGGAAGTGCAAGAC TG - AG-------- A - CAGA
CAAGATATGAACAGATTCAT GAGGC GGAA GTGCA ACCA GATA TGAA
TATCTGGTACAGATACCCTG CTCCG TTTT TACGT TGGT CTAT ACTT
CATATTTTTGGCCTC GT A CCCATAGACA - T ----
GAM273 18532 CCCTTTACAAGCCAGCTACT - A AG CTA AAAAGTG GG ACTGT
TTGCAGGAAAAGTGGGGGGC CCC TTT CA CCAG CTTTGCAGG GG GC
ACTGTGTTTCCATCCAACCT GGG AAA GT GGTC GGGACGTTC CC TG
TGCAGGGCAACTGGGGTGCA C C GG AAC CAACCTA TT -----
AACGGG
GAM274 7326 GAAGAGGCAGACCAGCTTTA - CCAGCT TT A-- ATCAC
TTTTTGAACCCAATCACTGG GAAGA GGCAGA TTAT TTG ACCCA
GTGCCCAACTATGACTCTGC CTTCT TCGTCT AGTA AAC TGGGT

TATCTTC A C----- TC CCG -----
GAM275 22707 GATGGGGCAACGGCTGAGGG CAAC A G GG T-- TAAGG
TGGGGGCAGTGTGTAAGGCA GATGGGG GGCTG GG TGG GCAG GTG
CCTTTTGCGGTCAGCCCAGC CTACCTC CCGAC CC ACT CGTT CAC
CACACTCCATC ACA- - G GG TTC -----
GAM276 2621 TTAATCGCCTTGCAGCACAT T C GCACA CCCT ----- G AGC--- A CC
CCCCCTTTCGCCAGCTGGCG TTAA CGC TTGCA TCC TTCGCCA GCTG CGTAAT GAAG
GGC
TAATAGCGAAGAGGCCCCGA AATT GCG AATGT AGG AAGCGGT CGAC GCGTTG CTTC
CCG

CCGATCGCCCTTCCCAACAG - - AA--- T--- AAGTC - ACAACC - --
TTGCGCAGCCTGAATGGCGA CGACCGATC
ATGGAAATGTAAGCGTTAA

GAM277 13592 CCCAGACGCCATGAAAGCTG AC C GA CTG T- AGAAAAAGCTGAA
CCATGGCCTGGAGAAAAAGC CCCAG GC AT AAG CCA GGCCTGG
TGAACCAGGCCTTTGGAATC GGGTC CG TA TTC GGT CCGGACC
TTAATGCCCTGGG C- - A- TAA TT ----------
GAM278 13257 CTCCTCTGCAGCTGATTGGC C---- CT TT - AGTGTGG
TCTGGAGTGTGGCCAGAAGC CTCCT TGCAG GA GGCT CTGG
CTCTCTCCTGCAATTAAAGG GAGGA ACGTC CT CCGA GACC
AG AATTA CT CT A -------
GAM279 9198 CACGGACCACCGCGGGGTCC GA -- CC AGCCTGGA TGTG
CCGGCAAGCCTGGAAGAGTT CACG CC ACCGCGGGGTC CGGCA AGAGT
GTGACTCTTGTTGAAGATCC GTGT GG TGGCGTCCTAG GTTGT TCTCA
TGCGGTATGGGATGTG AG TA AA -------- ----
GAM280 4651 GGAAAACCATTGTGTAAAAC AAAA A G A- A - A ACTC ATCA
AGTAGGCGGATCTTTCAGAG GG CC TTGT TAAA CAGT GGCG GATCTTTC GAG CAA
ACTCCAAATCATTGACAATT CC GG AACA GTTT GTCG CTGT CTAGGAAG CTT GTT
CAGAAGGATCTTGTCGCTGC AGA- C - AC - T A AACA ----
ATTTGACAACGGAGACC
GAM283 14853 TTCCCACTGAACTTTTTCTC - - C ------- - C ACTA
CAATTCGCGTACTAGCCGGA TTCC CA CTGAA TTTTTC TCCAA TTCG GT
CTTGGATTTTCTGGAAAGAT AAGG GT GACTT AGAAAG AGGTT AGGC CG
TTCAGTTGAGGAA A T T GTCTTTT C - ----
GAM284 22084 GTGCTAGGATTACAGGCTGA C TAC --- C- AATGCATCCTCAA
TCCCATAATGCATCCTCAAG GTG TAGGAT AGGCT GAT CCAT
TGGTCATCTTAAGCCTCATC TAC ATCCTA TCCGA CTA GGTG
CTACAT - C-- ATT CT ----------
GAM285 254 TCAGAGTCTCCTAAAGAGCC T CTAAAG GAA C AAGCT
CGAACAGCTGAGGAAGCTCT TCAGAG CTC AGCCC CAG TGAGG
TCATTGGAGGGTTGAGCTTT AGTTTC GAG TTGGG GTT ACTTC
GA - ------ AG- - -----
GAM286 17383 TGCCCATGCCTTGCTTTTGA AT- C TTT CAT TT ATAAT TTGAT
TCCATAGTTGTATAATGATT TGCCC GC TTGCT GATC AG GT GA
GATTCTGACCTTCTGATTAG ATGGG CG AACGA TTAG TC CA CT
CAAAGCCCAGGGTA ACC A --- TCT -- GT--- -----
GAM288 13689 AGAGAGATTCACCTGGGTAC A A--- TG A TA AG ATGTAAGC

CTACAGTAGTCGAGATGTAA AGAGAG TTC CC GGT CC CAGT TCGAG
GCCTTGGGGACTGGGAATTT TCTCTT GAG GG TTA GG GTCA GGTTC
GGGAAGAGAGATTCTCT A AGAA GT A -- GG --------
GAM290 5334 GACCTTATGTGGTTCATTCC T - - CC CATTTCAAAC
TTCAATCATTTCAAACATTG GACCT ATGT GGTTC ATT TTCAAT
AAAGTAGGGCCTACATGGGT CTGGG TACA CCGGG TGA AAGTTA
C - T A -- ----------
GAM292 20521 CTGGAGATCTCTGGTTCCCC CTG C - A GA AGCTT
GGGGAGTCTGAGAGCTTCGA CTGGAGATCT GTTCC CG GGG GTCT G
GGATGCCCATGTGGAGCACA GACCTCTAGA CGAGG GT CCC TAGG C
GATCTCCAG CA- T A G AG -----
GAM293 22992 TCCATCGGGCAGCCAGAGGC G A---- AG C C TCCGAT
CCAGCGTCTCCGATGACACT TCCATC GGC GCCAG GC CAG GTC
GAGCACCTGGTGAATGGCCG AGGTAG CCG TGGTC CG GTC CAG
GATGGA G GTAAG CA A A ------
GAM294 16038 CGACCGGTGGGACGACGCTT A- G - CGA TTC ACT TCACTACTCTTT
CAGACTGGTCCTCACTACTC CG CC GTGG GA CGC AG GGTCC
TTTGGACTCCACTCACGCGA GC GG CACC CT GCG TC TCAGG
CATCACCACGGGGACG AG G A ACA CAC ACC ----------
GAM295 2871 AACATGAAAGATTGGAATAC AG CA TAA GTAATGCATA
ATTTTAACTTAATGTAATGC AACATGAA ATTGGAATA TTT CTTAAT
ATAATTAAGAAACATGTTCC TTGTATTT TGACCTTGT AAA GAATTA
AGTACTTTATGTT CA AC --- ----------
GAM297 21509 CTGTCCCCAAGCGCATGCCA AAGCGCA CTG C CTTGGA
TCTGCAGCCAGCAGTCTTGG CTGTCCCC TGCCAT CAGCCAG AGT
AACTTTGGTTGGTGGCACCA GACAGGGG ACGGTG GTTGGTT TCA
GGGGACAG ACC---- --- - ------
GAM298 15071 CCTGTGCCTGTGCTTGTCAT G G ATAAATGAT CAGAAGAAAGGAAAGAA
AAATGATGCTTCCCAGAAGA CCTGT CCT TGCTTGTC GCTTCC
AAGGAAAGAAGGAGGTGAGG GGGCA GGA ACGAGCAG TGGAGG
AGAGGACGAGCAAGGACGGG - - GAGAGGAG- ----------
GAM299 13006 GTTAACTTAAACATGTTCCC CTTA AT- CC TGCAC TG T AATGG
CTTAAATGCACTTGATGGGT GTTAA AAC GTTC CTTAAA TTGA GG GTTGA
GTTGAAATGGTCAACCTTCT CAATT TTG CAAG GAATTT AATT TC CAACT
TAAAATTTTTAAGATGAACT C--- ATT TA TTAA- CT - -----
TAGTTCTTAAC
GAM300 17363 GTGCTGACCCCAGGAGGGGA CCCCA GA -- CA ATCAAGACGTTCC
GGGGCCGGCCACCATCAAGA GTGCTGA GGAGGG GGGGC CGGC CC
CGTTCCGGACGCCGGAGCTC CACGACT TCTCCC CCTCG GCCG GG
CCACCCTCTTCAGCAC ----- AC AG CA ----------
GAM301 1191 CTACCATCTTTATGGCAGCC A A A- GC GGACA--- AGACGAAACAGCA
GCATGGACAGGCAGACGAAA CT CC TCTTT TG AGCCGCAT GGC
CAGCAGCCCAGACAGAATGT GG GG AGAGA AC TCGGTGTA CCG
GGCTTACAACAGAGAGGAGG A - CA AT AGACAGAC ----------
GAM302 2064 ACCGAAGCTGGCTTTGGTGC G C-- TG GACATC T GAAA
TGACATCGGAATGGAGAAAT ACC AAGCTGG TTTGG CT GGAA GGA
TCTTCCACATCAAGTGCCGA TGG TTCGGCC GAGCC GA CCTT CTT
GCTTCCGGCTTGGT - TTC GT ACTACA - ----
GAM303 12213 TAAGGGCAAAGCGGGCATAC GG-- T CC ATC --- TGTCTT
TCCCATGGCATCGAACTTTT TAAGGGCAAAGCG CA ACTC ATGGC GA ACTTT

GTCTTAAAGTAAATCAAGGC GTTTTCGTTTCGT GT TGAG TGCCG CT TGAAA
CGTTGAGTTGAGAATGCTTT AAGA - T- GAA AAA ------
GCTTTTG
GAM304 14502 ACTGGTTAACTTCTTGAGCT AC----- T - TTTCG AAC C C--- C- CCAG
ATTTCGTGGAACTTGGAACA ACTGGTTA TTCT GAG CTA TGG TTGGAA ACAG CTG CAC
CAGCCTGCCACCCAGTGAAG TGACCGGT AAGA CTC GGT ACC AACCTT TGTT GAC GTG

TGTCCAGACCATTGTCTTCC CACCCAC T C CG--- CC- C ACCA CT ----
AACCCCAGCTGGCCTCTAGA TGAA
ACACCCACTGGCCAGT

GAM305 12907 GGCCAAAAGAGATCCACTGT AA- A- T TGTTG TT AAAAG CAGAT AACAT
TGCCCCAGTTGGTGGAAAAG GGCC AAG GA CCAC CCCCAG GGTGG ACTTTA GC
ACTTTACAGATGCAACATGC CCGG TTC CT GGTG GGGGTT CCACC TGAAGT CG
CATGAAGTACCACCCTTTGG GCA GG - ----- TC A---- AC--- -----
GGGTGGTCGGCTTACGGGCC
GAM306 387 GGCGTTGCACTGCATGGGCC GTT A CA-- A G ACG
CCAGGAGGGGGGTCGACGCG GGC GCACTGC TGGGCCC GG GGG GGTCG
GCCACTCACCGCAAGGGCCT CCG TGTGACG GTCCGGG CC CTC CCGGC
GGCAGTGTGCC --- - AACG A A ---
GAM307 6984 CGGCCGCCGCGGAGGCGCAG G AGG- A ATG GCG
CATGTCGGGGCGCCCGAGGG CGGCC CCGCGG CGC GC TCGGG
CGTGGAGGCCGCGGAGGCCG GCCGG GGCGCC GTG CG AGCCC
A GGAG - GG- ---
GAM308 5155 GCCATTGGCCAGGCCACCAG CA CCA C CAG C A A - TAGTT
GGGTCCCCATGATAATGCAC GC TTGG GGC AC GGGTC CCATGAT ATGC CA GC
AGCTAGTTGCTTGAGCATGG CG AACC CCG TG CTTAG GGTATTG TACG GT CG
TTATGGTGATTCGTGCCCCC AC C-- - --- T G A T -----
AACAGC
GAM309 20638 CGCCCCTGTTGACAGATGGA C TT--- G A - GCCTT TGCATT
GATTGGGCAGCAGGGCCTTG CGCCC TG GACAGAT GAG TTGGG CAGCAGG GC
CTGCATTGTTATCTGCTGTT GTGGG AC CTGTTTG TTC AGCCT GTCGTCT TG
CCGACTTGGTTTGTCTTGTC A CTGTT G - T AT--- ------
CAAGGGTG
GAM310 17613 GGATGAAGCCTCTGTGGGAT TG A TCTG ATC G CTGAATT
CTTTGGGCTTGGGGCTGAAT GGA A GCC TGGG TTTG GCTTGGGG
TTCTCAGGCATAAATACCTA TCT T CGG ATCC AAAT CGGACTCT
ATGGCCTTGTCT GT C TA-- AT- A -------
GAM311 9566 CCTGACTCCTGGGTCTCGGC T T G - TT---- GT AGCACAA
TTCCCGTATCCAGCACAAGG CC GACTCC GG TCT CGGC CCC ATCC
ATGGGTTCTCTGTCGCAGAG GG CTGAGG CC AGA GCTG GGG TAGG
CCTGGAGTCTGG T T G C TCTCTT -- -------
GAM312 17348 TGAAGATATACCAAATGTAG A TA ATGTA A- -- TGATAGACTTAAAATAT
CAGTTTATCCTCATAATGGG TG AGATA CCAA GCAGTTT TCCTCATA ATGGGAA
AATGATAGACTTAAAATATT AC TCTAT GGTT CGTCAAA AGGGGTAT TACCCTT
TCCCATATTATGGGGAAAAA A GG GTA-- AA TA ----------
ACTGCATGTTGGGGTATCTA
CA
GAM313 13278 TATTGTTTATGTATTGTCTA A A----- TATG TT CTT

TGGCTGCTTTTGTGCTTCAT TATTGTTT TGT TTGTC GCTGCT TGTG
ACAGCAGTGTTGACAAGTTA ATGACAGA ACA AACAG TGACGA ATAC
TGACAGAGACAGTA G GTATTG TTG- C- ---
GAM314 1127 TGTTGAATTTAGGGCAAAAT GAAT AA--- AT- A TAAAT
GACATGTTTATATTTTAAAT TGTT TTAGGGC AATGAC GTTT TATTT
AAATGAAATCTAGTCATTAA ACGA AATTCTG TTACTG TAAA GTAAA
AGAGTCTTAATAAAGCA AAT- AGAAA ATC - -----
GAM315 1716 GGGGAACTGACTTATAGAAA ACT ---- A CAGCAC GCCTAG
ATGCTCAGCACGTGGCCTAG GGGGA GACTTA TAGA AATGCT GTG
CACAAGGCATTCTTTAAATC CCCCT CTGAGT ATTT TTACGG CAC
TGAGTCTCTCCCC CT- CTAA C AA---- ------
GAM316 15277 GGGAGCCAGGCCAGGGCGAG GA CA-- A CGG G- GATG
GGGCCGGAGGCTGGGGATGC GG GCCAGGC GGGCG GGGGC AGGCT GG
CGAGGTCTGTCCCACGCCCG CC CGGTCCG CCCGC CCCTG TCTGG CC
CCCGCCTGGCCACC AC CCCG A --- AG ----
GAM318 14953 TCCGGAACCTGTGCTCAGAT A T TCAGAT A --- ---- CGGG
GACACCCCCATGGTGCGGCG TCCGG ACCTG GC GAC CCCCCA TGG TGCGG
GGCCGCAGCCTCCAAGCTGG AGGTC TGGAC CG TTG GGGGGT ACC ACGCC
GGGAGTTTGCCAGGTGCTGG G - T----- A CGA TCCG ----
A
GAM319 12339 TCTCTGAAGCAACAGGATCT GAAGCAACA G TAAA A AAACCTGG
GAGACTAAAAAAAGTGGTAA TCTCT GGATCT AGAC AA AGTGGT
ACCTGGGCCATTCTTGCTGT AGAGA CCTAGG TCTG TT TTACCG
CTGGATCCAGAGA --------- - TCG- C --------
GAM320 8367 CCGGGTAGAGGGATTGAGCC AGA - A- A T TGCACG
AAGAGGTGAGGGTGCACGTC CCGGGT GGGA TTG GCCA GAGG GAGGG
TTCCCTCCTGGTCCCAGCTC GGTCCG CCCT GAC TGGT CTCC CTTCT
CCCAAGCCTGG AAC C CC C - ------
GAM321 14251 GCATTTACTGCTAAGAACAT - GC---- - ----- C TGTTTGAC
TAAAGAATTCCTATGTTTGA GCAT TTACT TAAGAA CAT TAAAGAATT CTA
CTAGAAATTTTTTAGATTAG CGTA AATGA ATTCTT GTG ATTTTTTAA GAT
TGTTTCTTAAACTTGAGTAA T GTTCAA T ATTAG A --------
TATGC
GAM324 11322 CGCACGCGCTATGTGGAGCA C - GAGCA-- AGCCACA
TGTGTGTATGAGCCACACAT CG ACG CGCTATGTG TGTGTGTATG
ACACGCAGAAAAAGTATGTA GC TGC GCGATGTAT ACGCACATAC
GCGACGTCG - A GAAAAAG -------
GAM326 14980 GGAAGATTGTTTCAGGGTGT TTGTTTC- T -- CTC -- CTGCT
CTCAGGGTCCCTCTGTACCA GGAAGA AGGGTGTC CA GGGTCC TGTA CCAT
TCTGCTGTGGAATGCAGGAC CCTTCT TCTTACAG GT CCCAGG ACGT GGTG
CCTCTGTGACATTCTTTATC TCCCTATT T CT --- AA -----
CCTTCTTCC
GAM327 10459 TAGTGTTTCAGTCGGTGACG T TC-- CACTCTGAGAC
TCACTCACTCTGAGACGGTG TAG GTTTCAG GGTGACGTCACT
ACGTCACTCACTCTGAGACC ATC CAGAGTC TCACTGCAGTGG
TA - TCAC ----------
GAM328 15301 GCTTCAACCTGAGTTCTGCG ACC CTGC ATA C AGAAAG
TTATAAAGCCTGGAGAAAGC GCTTCA TGAGTT GTT AAGC TGG
TAAGCTTAGAACATAACTTG TGAAGT GTTCAA CAA TTCG ATC
CTGAAGT C-- TA-- GA- A ------

GAM331 8634 GGAGGTCCCCTTAGAGGAAA C TA AAT-- A- C GGGTGG
TCCTGGACCTGCAGTGGGTG GGAGGT CCCT GAGGA CCTGG CCTG AGT
GGCTCAGGGCCCAGGTGCTG CCTTCG GGGG CTTCT GGACC GGAC TCG
TCTTCCTGGGGCGCTTCC C TC GTCGT CG - ------
GAM332 4675 AGAGGAAAAAGCAAGTTGCT AAAA AGTT CA AA--- AAAGAAACAAAAG
CCAGAAAAACCTGTAAAGAA AGAGGA GCA GCTC GAA ACCTGT
ACAAAAGACAGGTGAGACTT TCTTCT TGT CGAG CTT TGGACA
CGAGAGCCCTGTCATCTTCT AC-- CC-- AG CAGAG ----------
GAM333 21932 CCAAGGAGAACTTCAGTTGC --- ACTT --- GA- T GATCA
TTGACTCGTTTGGATCACAA CCAAG GAGA CAGTT GCTT CTCG TTG
CCGAGCTAAAGCTCAAATTG GGTTC TTCT GTTAA CGAA GAGC AAC
CTCTTAAACTTGG AAA C--- ACT ATC C -----
GAM334 16277 CTTGGGGGCTATTAAAGCAA G ATTAAA AA T CTAAA GCGAA
ACATTTCGACTAAAGGGGCG CTTGGG GCT GC ACA TTCGA GGG
AATCCTCGAATTGTGCGATC GAGCCC CGA CG TGT AAGCT CCT
AAGCACCCGAG A ACTAG- -- T ----- -----
GAM336 20954 AGTTTATCTAGCCAATGTTT TT TCT TTT C TT T T TTT GATTA
GTCAATTTTATTGATGTTTT AG TA AGCCAATG GT AA TTA TGA GTT AAGT
TAAGTGATTAACTTTTGATT TC AT TTGGTTAC CA TT AGT ACT TAG TTCA
TCATTGATTTTCACCATTGG TT CTT --- C TT T T TT- -----
TTTTCTATTCT
GAM337 983 CCCAGTACCCACCTGGCCGT GTACCCA CCGT --- -- CATCTA
GGGGGTCCTCCCCACATCTA CCCA CCTGG GGGGG TCCTC CCCA
TGGGCCGAGGAGCACCCCCT GGGT GGACC CCCCC AGGAG GGGT
CCAGGCATGATGGG AGTAC-- T--- ACG CC ------
GAM338 16162 CGAAGTTCCATGTCATGTCT GTTCCA TGTC--- - TAGAA T CTTTA
TCAGTTGTAGAAGTTTTTCC CGAA TGTCA TTCA GTTG GTTTT CCT
TCTTTAAGGTAAAGCGACCA GCTT ACGGT AAGT CAAC CGAAA GGA
ACTTGAACTTTCTCTGGCAA AGCACA CTCTTTC T CAG-- T -----
CACGATTCG
GAM339 18435 GGTTCTTCATCTTGTGTTTG T - TG AAGA AA- A- - A CTGCTCTGT
AAGACAAGAAGCTGGATCCG GGTTCT CATC T TGTTTG CAAG GCTGG TCC GGA CTC
GAACTCCTGCTCTGTGAGGT TCGAGA GTGG G ACGGAC GTTC CGACC AGG CCT GAG
CCAGGAAGCCAGCCAGCTTG T T GT ACCG GAC GA A G ---------
GCCACAGGCATGGTGGTGTA
GAGCT
GAM340 4689 GTTCACCACCTGCTTGCGGA - - GACC ATG GCTG
CCCTGATATGGCGCTGGCGG GTTCA CCACC TGCTTGCG CTGAT GC
ATCAGCACGCGAGCGTGGTG CAGGT GGTGG GCGAGCGC GACTA CG
GATGGAC A T AC-- GG- ----
GAM341 14848 CCTCCACTTTTTTTAATCGG CCA T GGAAC T T ATTA
AACACCTCCATTTGATTACA CCT CTTTT TTAATC ACC CCAT TG
TATGGGGTATGGGATTGATG GGG GGGAG AGTTAG TGG GGTA AC
AGGGCATGGG TAC T GGTA- - T ----
GAM342 11532 GTTCTCTTGAGACTAGTAGG TT A - G A AAAGC AAAATAAATAGAAAGAAGG
CATAGAAGAAAGCAGAAGGA G CTCTTGAG CT AGTAG CAT GAAG AGAAGG
AAATAAATAGAAAGAAGGTC T GAGGACTC GA TTATC GTA CTTC TCTTCT
TTCTACCTTCATGGCTATTC GG G C G - CA--- ----------
AGGCTCAGGAGGGT
GAM343 1792 GAATGTAAAAGGAATATTAC AAA AA C CCATATA ATA

AGTGTTAACTGCCATATATG GAATGTA GG TATTACAGTGTTAA TG TGTA
TAATATACACAAACTCAATT CTTACGT CC GTAATGTTACGATT AC ACAT
AGCATTGTAATGGCCAAATG AAA G- A TCAAAC- ---
CATTC
GAM344 599 GATCGCCGGGTGCAATTTGG GCAA TG T AAGT A CCGT
CATTGAAAGTGGAAAGCTCC GATCGCCGGGT TT GCAT GA GGAA GCT
GTGGCTTCCTCCGTGTTGGA TTAGTGGTCCA AG TGTG CT CCTT CGG
GACCTGGTGATT G--- GT C ---- - ----
GAM345 12000 CATTGCTTCCTCCGTGTGAT - TGT- CC AAAGCAATGGGACCCTAC
TTCCGAAGCAAAGCAATGGG CATTGCTTC CTCCG GATTT GAAGC
ACCCTACGCTTCAGAGTCTT GTGACGGGG GGGGT CTGAG CTTCG
ATTGGGGTGGGGCAGTG T TATT A- ----------
GAM346 10327 ATGGACAGTATTAGCCATCA A T --------- - ACTCTGTC
TTGAGGCACTCTGTCGCACT ATGGACAGT TTAGCCA CAT TGAG GC
CAACATAGGGCGTGTTGGCT TACCTGTTA AGTCGGT GTG ACTC CG
GAGATTGTCCAT G T CGGGATACA A --------
GAM348 11806 CGGCGCTTCCGCAAGTTCCT TC C T C T TGTGG AACTTCGA
GGTGTTTGTGGCAAACTTCG CGGCGCT CG AAG TC TGG GTT CA
ATGAGAATGACCCCAAGACC GTTGCGG GT TTC AG ACC CAG GT
TTTGAGGGCGTTG GA - C A C TAAGA --------
GAM349 12468 TACAGCTGATAGCCTGTTTT A- - TTT-- TAAAGT
TGTAAATAAAGTTTTACTGG TACAGCTG TAGC CTGTT GTAAA
ATGGCAGAGTTGAATAGTTG ATGTTGAT GTTG GACGG CATTT
TA AA A TAGGT ------
GAM350 845 GATGGAAAGTTCAGCAAGAT GAA TCA - GCAACAAAACCAAGAAAAA
CAGCAACAAAACCAAGAAAA GATG AGT GCAAG ATCA
ATGATCCTTGCGTGCTGAAT CTAT TCG CGTTC TAGT
ATC AAG TG- C ----------
GAM351 18689 TCGGAGGTGTCTGAGGTTGC GT TTGCCATCA CGAGGTCA
CATCAGCCAGGGCGAGGTCA TCGGAGGT CTGAGG GCCAGGG
CCCTGGCCCTCAGGAACCTC GGCCTCCA GACTCC CGGTCCC
CGG AG --------- --------
GAM352 11089 GAATCTCATTAATCCATTCA A A T---- TTC G- - AATT
TGCGCGTCACTAATTAGATG GA TCTC TTAA CCA ATGC CGTCA CT
ACGAGGCATTTGGCTACCTT CT AGAG AATT GGT TACG GCAGT GA
AAGAGAGTC G - CCATC T-- GA A ----
GAM355 17331 TGTGAAGACAGTGAGAACAA ACA ACAA TGAC T CTATAATATACTTTCACAA

GTTTGACTTTTCAGTGATGT TGTGAAG GTGAGA GTT TTTTCAGTGA GTC
CCTATAATATACTTTCACAA ATATTTC CACTCT CAA GAAGGTCATT TAG
GATTTACTGGAAGATAACTC --- ---- TA-- - ----------
TCACCTTTATA
GAM356 3988 CTGGGGTGTTTATGGCAAGT GG T-- C CTTTT A ATTGTGGCA
CACTTTTGACAGACATTATT CTGG TGTT ATGG AAGTCA GACAG CATT
GTGGCAAATGTTGTCTGACT GACC ACAA TGTC TTCAGT CTGTT GTAA
TACTGTTTCAACAAACCAG AA CTT A ----- - ---------
GAM357 22293 TGGTTCGCCAGTGGTCACTT G- AGT A C GG G A G AGGT
GCCAACGGCGCCGGGACTGG TGGTTC CC GGTC CTTGC AAC CGCC GG CT GTC
TCAGGTGGCGAGCTAGGCGA ACCAAG GG CTAG GAACG TTG GCGG TC GA CGG
GTTAGCAAGGGATCCAGGAA AA AC- G A A- A - G ----

GAACCA
GAM358 5336 CATTGGACGCAACAAAGACG GAC - - C G GTA TATA
CCAAGATGTAGTTGTATACA CATTG GCA AC AAAGA GCCAA AT GTTG
ACAATGTTGGTTCTTTCGTC GTGAC CGT TG TTTCT TGGTT TA CAAC
TGCTACAGTG AT- C C - G A-- ----
GAM359 14315 GTAGATAAAAGGTGAACCAT AG AA GA ACATGGGCA TAAGT
GTGACATGGGCATTTTTGTA GT ATA AGGT ACCATGTG TTTTTG
AGTCAAAAACAAATTTCACA CA TAT TCCA TGGTATAC AAAAAC
TATGGTAAACCTAATATTCA CT AA AA ACTTTAAAC -----
C
GAM360 12140 TTTGGATGTATAATAGTTTA AATAG T A-- -- TTTT
GCAAGATGTTACTTTTGTAA TTTGGATGTAT TT AGCA GATGTT AC
GACATCAGATGTTCAAAAAA AAGCCTACGTG AA TTGT CTACAG TG
GTGCATCCGAA AAAA- C AGA AA ----
GAM362 21415 AGTTTAGTGGCAAGTTCTTT A AA TCTTTA TTT CTTTTCGA
AGCCTTTGCCTTTTCGAGCT AGTTT GTGGC GT GCC GC
TGGCGATACGAGCCACAGAC TCAGA CACCG CA CGG CG
T - AG TAG--- TT- --------
GAM363 11347 CCATCAGTCAGGTCTGAATA A CA AATAAC TT - TG AATG
ACTTTCGGGATTCTTTGGGA CCATC GT GGTCTG T CG GGATTCTT GG
ATGTTTTAAGAGTTCATGGG GGTGG CG CCAGAT A GT CTTGAGAA TT
ATAGACCGCAGGTGG A -- ------ GG A TT ----
GAM364 22041 GGTGGATCACCTAAGGTCAG --------- TAA-- AG TGA
GAGTTGGTGACCAGCCTGAC GGTGGA TCACC GGTCAGG TTGG
TAACATGGTGAAACTCTGAC TCATCT AGTGG TCAGTCC GACC
TCTACT CAGTCTCAA TACAA -- ---
GAM366 22305 GGTCCTGTTCTTACTATCTC - TT ---- AAAA G AT GAACAATCAATCTA
AAAAATGGGCATCGAACAAT GGT CCTGTTC ACTAT CTCA TG GC C
CAATCTAGGAGCGTGGCAGT CCA GGACAGG TGGTA GGGT GT CG G
GGGTAAAATGGTGGACAGGC C -- AAAT GACG G AG ----------
ACC
GAM368 8110 CGCTGTAAGCTTCTGCTGGG AA C-- C GAATTCT TG -- ATCGT
GATAGGAATTCTGGTGCTCC CGCTGT GCTT TG TGGGGATAG GG CTCCT GATC
TGATCATCGTGATTCTGGGG GCGACA CGGA AC ACTTCTATT CC GGGGG TTAG
GTGCCCTTGATTATCTTCAC AC ACT C AGTTC-- GT TC -----
CATCAAGGCCAACAGCG
GAM370 5743 GTGGGGTAAAACCCAGACGC G - AC C GCGG T--- T AG AAAGC
CATGAAAGCGGCCATGGCCT GTG GGTAA AACCCAG GC ATGAAA CCA GGCCT GG AA
TGGAGAAAAAGCTTAACCAG CAC CCGTT TTGGGTC CG TACTTT GGT CCGGA CC TT
GCCCTTTTGGATTTTCATGC G C C- - TA-- TTTC - AA -----
CCTGGGTTCTTGCCGCAC
GAM371 12079 GGAGGGGACTGGAGGAAACC - CT CC- G-- GAGA
CCCTTGTTGGAAGAGATTCC GG AGGGGA GGAGGAAACC CTT TTGGAA
AAGAGAAGCACGGTTTTCTC CC TTCCCT TCTCTTTTGG GAA AACCTT
TTTCCCTTGCC G T- CAC GAG ----
GAM373 21955 GTCTGGGCCAGATGCCCTGC - G ATGCC AAA- A GACCCA
CAGGAAAGGGACATGGACCC GTCT GG CCAG CTGCCAGG GGG CATG
ACGTGCTTGAGGCCTGGCAG CAGA CC GGTC GACGGTCC TTC GTGC
CTGGGCCAAGAC A G ----- GGAG - ------
GAM375 4178 TCAAAAGGCAGCATCTGATT AAAG G - ATT A T AAATTC

GTGATTTGGTCCAGAAATTC TCA GCA CAT CTG GTG TTTGG CCAG
CTGGCCAGAATATTTCCAGT AGT CGT GTG GAC TAT AGACC GGTC
GTGGTGCATGTGA GTA- G T CTT A - ------
GAM376 22640 CTTCATCTCCACTCTGCACG A- A CAC CG GA TTCTCT
GCGGCTGAGGGCCCTTCTCT CTTC TCTCC CTCTG GG GCT GGGCCC
GGGCCTGGGCACCCTTAGAG GAAG AGAGG GAGAT CC CGG TCCGGG
GGGAGAACGAAG CA G T-- CA G- ------
GAM379 6826 GAGGCCAGCGCCCCGTGGCC --- C- TG ----- G G T ATGTC
AGGCAGCAGCGTGTGCATGT GAGGCCA GCGC CCG GCCA GGCA CAGC TG GC
CGCCGGCTGTGCCACGCGTG CTCCGGT TGCG GGC CGGT CCGT GTCG GC CG
GCTGCGGAAGCGTGGATGGC AGG AA GT GCGCA - - - -----
CTC
GAM380 8450 GGTCGGAATTTTGGGATGGC ATT-- TG - TGTA GC TCAGTCG
GCTGTAGCAGCGGCTGTCAG GGTCGGA T GGAT GGCGC GCA GGCTG
TCGTAGCCCGTGCGCCCGCG CCGGCCT G CCTG CCGCG CGT CCGAT
CCTGTCCTGGTCCGGTCCGG GGCCT GT T CCCG GC -------
CC
GAM381 22062 GGGACCTGGTTAGTCTTGGG - CT AG GC AT ACTT
GCAGAGAGTATCTACTTGGG GG GAC GGTT TCTTGGG AGAGAGT CT
CACTCTCTTCCAAGAAAGAC CC CTG CCAG AGAACCT TCTCTCA GG
CTTGTCTCC T TT AA -- CG ----
GAM382 11213 GCCGTCGGAGTCCAGCACGG C CCAGCAC - - TCTT TTCTC
GAGGCGTGGTCTTGTAGTTG GCCGT GGAGT GGGAG GCG TGG GTAGTTG
TTCTCCGGCTACCCATTGCT CGGCA CCTCA CCCTC CGT ACC CATCGGC
CTCCCACTCCACGGC - ------- T T ---- -----
GAM383 18158 TCTCTAGGCAAATGCCTTCA G AAATG A T G TG GGT AGTTC
AGTTTTCCAGTTCTGAGGTA TCTCTAG C CCTTCA GTTT CCA TTC A AACT
ACTAGTTCAGTTTGTTGGGA AGAGATC G GGAAGT CGAA GGT AGG T TTGA
TGGAAGCATGAAGGAAAGGG - GGAAA A - - GT GT- -----
CTAGAGA
GAM384 1930 TGTCCAGCAACTTCATCACT CA- T TCAC C ATGAGC
GGGGCACAATGAGCTGTTCT TGTCCAG ACT CA TGGGG ACA
TCACATTTGAGTGTCCTGGA ACAGGTC TGA GT ACTTC TGT
CA CTG - TTAC T ------
GAM386 8304 ACAGAATGCTGTCTTGGACC TGTCTT C AACTTG- GCAA
AGTATTCAACTTGTGGGGCA ACAGAATGC GGA CAGTATTC TGGG
ACCTAAATTTGGGAGTATTG TGTCTTATG TTT GTTATGAG ATCC
CTTTTTCTGTATTCTGT TCTT-- C GGTTTAA ----
GAM387 779 AATGAGTTAGGCTGCAGAGG T---- -- G ACTG - TCTCCT
ACTGGTCCGTCTCCTCGGCA AATGAGT AGG CT CAGAGG GT CCG
TAAACCCTTTGAAGTTCCTT TTGCTCA TCC GA GTTTCC TA GGC
TTCCACTCGTT CCTTT TT A CAAA C ------
GAM389 20442 TCCGTAGTGACCGGCGGCGT G G -- GT A -- G- CCGCTT
CCAATCAGTCATGGGCTCCC TCC TAGT ACCGG CGGC CCA TCAGT CAT GGCTC
GCTTGGGCCAGATGGTGCTG AGG GTCG TGGCC GCTG GGT AGTCG GTA CCGGG
AGTGGGTGTCGACCCGGTGC G - CA TG G TG GA ------
TGGGGA
GAM390 19443 TGGGCCCACTGTGAGAGCCC CAC GAGA -- - GAGAAAAG
CCCCTTTGGGAGAGAAAAGT TGGGCC TGT GC CCCCC CTTTGGGA
CTCAGAGAGGGGGAAGTGTG ACCCGG ACA TG GGGGG GAGACTCT

GACAAGAGGCCCA AGA GGTG AA A --------
GAM392 18586 ATGCTGATACGTTAAGCTAT GAT-- TAA A---- TC C TTTCATTCAAT
GCATCACTTTCAGTTTCATT ATGCT ACGT GCT TGCA ACTTT AG
CAATCTCAAAGTACTGTAAT TGTGA TGCG CGA ATGT TGAAA TC
CCCAGCGTTGCGTTACCAAG ACCAT TTG CCCTA CA C ----------
TGT
GAM393 2884 GGCATAGACCATGTACAGGA AC TA GAA- TCTT TT CTCTCATACACCTC
ATCCATCTTCATCTTTCTCA GGCATAG CATG CAG TCCA CATC TCTCA
CTCTCATACACCTCTGAGAT CTGTGTC GTAC GTC AGGT GTGG AGAGT
TGGTGTGGAGACGCTGACCA -- CA GCAG ---- TT ----------
TGCTGTGTC
GAM394 20480 GCTGCTTGAGTCATGCTGAA - AG GCT - - G A TAT
GAGATAGGCTTCATAGATTA GCTGCT TG TCAT GAA GA GATAG CTTC TAGAT
TATTTAAGAAGTTGTCATCA TGACGA AT AGTA CTT CT CTGTT GAAG ATTTA
TTCTGAATGAGGTACAGCAG C GG AGT A A - A ---
T
GAM395 17139 GTTTGACCTGGCCTGGCAGT ACC AGT G C - GGATCACA
ACGGGCCCTGCACCGGGATC GTTTG TGGCCTGGC AC GGC CTGCA CCG
ACACGGCTGCAGCGCTGGTG TAGAC ACCGGGCTG TG TCG GACGT GGC
TCGGGCCAAGCAGAT GA- --- G C C --------
GAM396 20898 AACATGTGAATACTACCAAG ---- - A- AAGTT C TCA TCAC
TTTCTGTCCCCAAAGTCAGG AACAT GTGAATA CT CC TCTGTCCC AAAG GGCA
CATCACTGCTAGTCTTTTGG TTGTA CACTTGT GA GG AGACAGGG TTTC TCGT
GACAGATGGGACAGATGTTC ATTT A CA GT--- T TGA ----
ACTTTAATGTT
GAM397 12532 GTGTTGTACTCATTAATGTT T T TTA A T G TTAT
ATTATGAGGTTAATGTTATT GTGT GTAC CA ATGTT TTA GAG TTAATG
ATTAGGCTTTTAACAATATG TACA CATG GT TATAA AAT TTC GATTAT
ACTGTGTACACAT - T CAG C T G ----
GAM398 16212 GTTTTCATCCTCTAGTACTG A - G TGA C- AAGGT
AAGTGCCCTCAAGGTGGTAG GTTTTC TCCT CTA TAC AGTGCC TC
GCACTGTATAGCAGGAGAAA CAAAAG AGGA GAT ATG TCACGG GG
AC - C - --- AT -----
GAM399 15121 GTTAGAGTTGAGGGTACTGA -- A ACTGA CAA G CT TGTCACCCAGT
GGCCCAAGGCTGTCCTGCTC GTTAGAGT TG GGGT GGCC GGCT TCCTG CCA
CATGTCACCCAGTTGGTCAG CAGTCTCG AC CCCG TCGG TCGG GGGAC GGT
GGGGCTGCTGGCTGAGCCCC TA - AG--- TCG - T- ----------
AATGCTCTGAC
GAM400 5707 TCTACAGAGGCCCTGGCACA -- C---- TC CCACCCCTGAGTCCACC
TTTTTCCTTTCCACCCCTGA TCTACAGA GGCCCTGG ACATTTT CTTT
GTCCACCAAAGCAAAATGTC GGGTGTCT CCGGGACC TGTAAAA GAAA
CCCTCCAGGGCCCCTCTGTG CC TCCCC C- ----------
GG
GAM403 16584 GAGAAACAAGGCGAGGAGGA AAA - GA- GGA A ATTGTCAA
GGATGCAGAAATCATTGTCA GAG CA AGGC GGAGGA TGCAGA ATC
AGATCTTTGTGGAGTTTTCC CTC GT TCCG CCTTTT GTGTTT TAG
ATAGCCTCTGAGACTC AGA C ATA GAG C --------
GAM404 17 TCTGAGCCTCCTTCTGGCCC - C - CCCCT A C ACCAT - TGTGTC
CTGGAAGGGGACAGCATCAC TCTG AGCCT CT TCTGG GGA GGGGACAG ATC GG AATGG

CATGGAATGGTGTGTCCCGT AGAT TCGGA GA AGACT TCT CCTCTGTC TAG CC TTGCC
TGCCTGTTGGATCTGTCTCC A A C CACT- A - GTTGT G ------
ATCTTCACTCAGACAGAAGG
CTATAGA
GAM405 16725 GGAGCCCAGATGAACTTAAA CCCA AAC- AAG- AGC-- AT AGTTTTTC
GAAGCGAGCATGGGATTCTT GGAG GATG TTAAAG CG ATGGG TCTT
AGTTTTTCAAGATCCGTACA CCTC CTAC AATTTC GC TGCCT AGAA
CACGAAGCCTTTAATCAGCA AA-- GACT CGAA ACACA -- --------
TCAACTCC
GAM406 18336 CGGTATCATTCCTCGAATTT - TTCC AAT G GG A AT A C G TGGA
CAGTGCGGGAACCAATGCAG CGGT ATCA TCG TTCA TGC GA CCA GC GA TGGCATTAAG CTG

ACTGGCATTAAGGCTGTGGA GCCA TGGT AGT AAGT GCG CT GGT TG TT ACCGTGGTTC GAT

TAGCTTGGTGCCAATTGGTC G TATT C-- - A- - GC G A - ----
GTGGTCAGCGTGAACTGATT
ATTGGTGACCG
GAM407 19961 GGGACGTCCGCGACTACCTG C T GACTA- AGA GA- C A GGTCAGAAGA
GAAGAGAGGCTGGAAGCTGA GGGA G CCGC CCTGGAAG GGCTG AG TG ATTC
ATTCGGTCAGAAGAGAATCC CCCT C GGCG GGACCTTT CCGAT TC AC TAAG
ATCTGAATAGCCAGTTTCCA T - ACCCAC GA- AAG T C ----------
GGCACCCAGCGGCTTCCC
GAM409 7416 CTGGGATGGGGACCGCGGAA A- C AAGT- A ATGCGGC
GTTCCCACCGATGCGGCCGG CTGGG TGGGGACCG GG TCCC CCG
CGGGGCCCAGCCTTGGTCCC GGCCT ACCCCTGGT CC GGGG GGC
CAGCTCCGG CG T GACCC C -------
GAM410 10251 TGGAGGTAGAGCTCATCACC AG C - TTCCTCCC GCTCAT
AGGTTCCTCCCGATGCTCAT TGGAGGT AG TCATC ACCAGG GAT
GTCCTTCCTGGTGGATGACT ACTTTCA TC AGTAG TGGTCC CTG
ACACTTTCA CA - G TTC----- ------
GAM412 19865 CCCATCTCCAGCCCGGGCTT T GC G AAACT G GAGG
CAAACTGCTGCTGAGGGGGG CCCA CTCCA CC GGCTTC GCT CT
GCTGGGAGCCAGGAATGGGG GGGT GGGGT GG CCGAGG CGG GG
CTGGG C AA A GT--- G ----
GAM413 9950 CAGAATGTGGATCTGCCGAA TG CGAA AA- GC ATTT
TTGAAGAGGCCTGATTTCAG CAGAATG GATCTGC TTG GAG CTG
CTCCACCAGATGCAGATTTG GTTTTGT TTAGACG GAC CTC GAC
TGTTTTG GT TA-- CAC -- ----
GAM414 11738 GCAGGTTCTGGAGAACACTT AGG ACA - G - CCGA
CAGTGCCAGCATTAACCGAT GC TTCTGGAGA CTT CAGT CCAGCA TTAA
TAGCTGCTGGGCTGTGGGGA CG GAGACCTTT GGG GTCG GGTCGT GATT
GTTTCCAGAGAGGC GA- GAG T - C ----
GAM415 20017 CTAGGACAGCTTTGCTCTTC ACA TG TTC C TTA CCCTCACAGTTCATC
CTGCCCCTTATAGGAGCCCT CTAGG GCTT CTC CTGC CC TAGGAG
CACAGTTCATCTTCCTGGTG GGTTC CGGA GAG GACG GG GTCCTT
GCGCAGATGAGTGAGGCACC CCA GT TA- C TG- ----------
CTTGG
GAM416 6862 GATGATTATGTGTTCAGTTG TT--- T AGT ACC C ACTCC
TTTTACCTATTAGACTGTAA GATGA ATGTG TC TGTTTT TATTAGA TGTAA
ACTCCTTATAATCTAGTAAA CTACT TATAT AG ACGGAA ATGATCT ATATT

GGCATAGATTATATTTTATT TATTT T AT- --- A -----
CATC
GAM417 46 ACAGAGTTCCAAAATCTCCT TTC --- TTATC C C ACCC
TTATCACTCGACATACAGAA ACAGAG CAAAAT CTCCT ACTCGA ATA AGA
CCCTCTTGTCTTGAGTTTGG TGTTTC GTTTTA GAGGG TGAGTT TGT TCT
GAGTTAATTTTGCTCTTTGT TC- ATT TT--- C - ----
GAM418 21028 TTGGCTCCACAAGGAGGCTC TG AGGA A---- T TTGGAACCT
ACCAGCTCTTCTTGGAACCT T GCTCCACA GGCTC CCAGC CTTC
GAGGTGCTGGACCCAGAGTC A CGAGGTGT CTGAG GGTCG GGAG
TGTGGAGCTGA GT ---- ACCCA T ---------
GAM419 1994 TAAATAGGCCCAGAGTGAAG G ------- AAGAC- G A AAAAT
ACTTGAGAGCAAAATGCCTG TAAATAG CCCAGA GTG TT AG GC
AACACATGCACCTTATTTTT ATTTGTC GGGTTT CAC AA TC CG
TGGGGCTGTTTA G TTTATTC GTACAC G - -----
GAM420 761 CATCCCTAACACAAATCCAG AACACAAATC CTT TAACCTTAAAATT
GGACTTTGTTTCTTAACCTT CATCCCT CAGGGA TGTTTCT
AAAATTGGAAACACTTCTTG GTAGGGA GTTCTT ACAAAGG
CTACCAGGGATG CCATC----- C-- ----------
GAM422 19174 GGGGAAATCAAGGATGCTCG A AT C A- TA TTTCCAT T TTCTAC
GTTTAAGGTACACTGTTTCC GGGGA ATCAAGG GCT GGTTT AGG CACTG GT ATGT
ATGTTATGTTTCTACACATT CCTCT TAGTTTT CGA TCAAA TCC GTGAC CG TACA
GCTACCTCAGTGCTCCTGGA G -- T GG TC TCCAT-- T ------
AACTTAGCTTTTGATGTCTC
C
GAM423 17939 CAGGCAGGCAGTTGCAGTCA G TG AG C GACT AGGTTTTGA
CCTGGGACTAGCAAGGTTTT CAGGCA GCAGT C TCAC TGG AGCA
GATGCTTCAGTGAGTGACTG GTCTGT TGTCA G AGTG ACT TCGT
TGTGTCTG G GT -- - ---- ---------
GAM424 10861 GCAACTGGGGAAGGTATTTA AA- A TTTATT CACCATTTTCT
TTGATCCACACCATTTTCTT GC CTGGGGA GGTA GATCCA
GGATTTTCTATCCTCCCCAG CG GACCCCT CTAT TTAGGT
GGGGC GGG C CTT--- ----------
GAM425 1412 TTCATGCAAGCATGTGTTTT -- A--- A ACC AGCC
ACCTGGCAAGCCTGCCGCAA TTCA TGCA GC TGTGTTTT TGGCA
GACACAGGTAAGATGCAGGT AAGT ACGT TG ACACAGAA GCCGT
GAA GG AGAA G C-- ----
GAM427 4041 GCGTGGTGGGAGGCTGGGGC G T G - ---- G C CAG AGAT
TGGTGCTGCGGACAGTCCAG GC TGG GGGA GCTGGG GC TGGT CTG GGA TCC
ATGGAATCCCAGGCCACGGT CG ACC CCCT TGATCT CG ACCG GAC CCT AGG
GCTTCTAGTGTCCCCCCAGC - C G T TGGC - - A-- ----
GAM429 7369 TTGAAGGGATAGGCTCACTT G C TTT ATATT--- A ACATACCA
TGTTAATATTTGAGAACATA TTGAAGGGATAG CT AC GTTA TG GA
CCATCCATAGAACCATAGCT AACTTTCTTGTT GA TG CGAT AC CT
TGTCAGTTGTTCTTTCAA - C TT- ACCAAGAT - --------
GAM430 7864 GCACTTCCCACACTAAAATA - CACT AC TTTTTCTCAATCTT
ACCCAGTTTTTCTCAATCTT GCACTTC CCA AAAATA CCAG
TTGGTATTTTTGGAGAGGTG TGTGGAG GGT TTTTAT GGTT
T A ---- -- ----------
GAM431 3445 GCCGGAGATGGGCCCGGCGG AG C GGATACT TGGG
ATACTCCTCTTTTGGGGAAG GCCGG ATGGGCC GGC CCTCTTT

AGGTTCAAGCTGGCCCATGG TGGCC TACCCGG TCG GGAGAAG
CCGGT GG - AACTT-- ----
GAM432 8338 GCTGGAGATGCGCTTGGGGC GA C ----- G GGAAG
CGCGCTGGAAGGGCGAGGCC GCTG GATG GCTTG GGGCC CGCT
CTGGAGCAGGCCATCATCAG CGAC CTAC CGGAC CCCGG GCGG
C TA - GAGGT A -----
GAM433 5664 CTTCTGGCCTTATGTCTCAG T TAT CTC - - TATTTT
GAATGCAGTTTATTTTGATT CTTC GGCCT GT AGGA ATGC AGTT
GGCATCTTCTACCAGGCCTG GAAG CCGGA CA TCTT TACG TTAG
AAG T C-- --- C G ------
GAM434 21622 GATGGGCGTCCCAGTTCCCT - TCCC - CC TT TGAGCCTGAT
TTCCCATTCCTGAGCCTGAT GAT GGGCG AGTTCC CTTT CA CC
GGTTGTAAGAGTGGAATTAA CTA CCCGT TTAAGG GAGA GT GG
CTGCCCTATC T CAA- T AT T- ----------
GAM435 4179 GGGTAGATGTTTTCTTGGCA T GT- C A TAG CTGGATACTT
GCCATATTTGTAGGCACTGC GGG AGAT TTTCTTGG AGCCAT TTTG GCACTG
TGGATACTTTAGTGTTAGAA CCC TTTG AGAGAATT TCGGTG AGAT TGTGAT
GTGGCTATTAAGAGACGAGT - AGC A A --- ----------
TTCCC
GAM436 2238 TGGGAGGGCAAGAGAGGAAG A G- - G CAGCTTT TGAAAT
AGATGGCAGCTTTTTAAGTG TGGG GG CAAGA GAG AAGAGATGG TTAAG
AAATTTTAATCTTATCTATC ACCC CT GTTTT CTT TTTTCTATC AATTT
TTTTGTTCATTTTGAGTCCC - GA A G TATTCT- ------
CA
GAM437 22202 GTGTGGTTTGGACGAATTCC GGACGAA AAC---- CG ATATC
AACTTGTTTCACGCTATATC GTGTGGTTT TTCC TTGTTTCA CT
AGGATGAGATAACTGAAAGG CATACCAAG AAGG AATAGAGT GA
GAAGCAGAACCATAC ACG---- GAAAGTC AG -----
GAM438 9354 ACCTCTAGCTCGCCGTTGGC T TC - G - A CGCACCT
CGCCTCCAGGACGCGCACCT ACCTC AGC GCCGT TGGCC CCT CC GGACG
TGTCCAGGTAGGAGGCCAGG TGGAG TTG TGGCG ACCGG GGA GG CCTGT
CGGTCGTTGAGGT - C- G A T A -------
GAM440 18803 GGCAGAAGGCTTTTACACCA AGA ----- C - AA GAAAGA
CAAGTGCAGTGAAAGAACTG GGC AGGC TTTTA AC CAC GTGCAGT
CACGGTGAGTTTAAAACAAC CCG TTCG AAAAT TG GTG CACGTCA
CGCTTGTGGCC GTG CCAAC T A G- ------
GAM441 7201 CAAAGACTGAAGAAATTTCA GA-- A TTCACAGC TAATGTAT
CAGCAGTTTATTAATGTATA CAAA CTG AGAAAT AGTTTAT
TAAACTTATAAATATTTCTC GTTT GAC TCTTTA TCAAATA
CAGCAAATTTG AAAC C TAAATAT- --------
GAM442 2159 GGCAGTAGAGCCTAGCGCCC CA GCCTA TGAGCTGC
AGGCCCTTGAGCTGCAGGGT GG GTAGA GCGCCCAGGCCCT
CTGGGTGTGGACGTCTATGA CC TATCT TGTGGGTCTGGGA
CC AG GCAGG --------
GAM444 17210 TCCTGTACGATTGGGGATAT TGTAC -- TATAA - CACTAACTTTCCCT
AACGGGCTTCACTAACTTTC TCC GATT GGGGA CGG GCTT
CCTAGGCATTGAAACTTCCC AGG CTAA CCCCT GTT CGGA
CCAAATCTGATGGA TAGT- AC TCAAA A ----------
GAM446 16511 CTTGCTGTGAGGAGAGCCAA GTGAGGAGA AGCT G GGCCA
GCTGAGGGCATGTACAGGCC CTTGCT GCCA GA GGCATGTACA

ATGTGCATGCTGTTCCTGTG GAACGA CGGT TT TCGTACGTGT
GCATAAGCAAG ATA------ GTCC G -----
GAM447 21754 GCCTCAGCCTCTCAAGTAGC GC ---------- --- ACTACA ATGT
TGGGACTACAGGCATGTGCC GCCTCA CTCT CAAG TAGCTGGG GGC
AACACACCCAGCTAATTTTT TGGGGT GAGA GTTT ATCGACCC CCG
GCACTTTCAGTAGAGATGGG A- TGACTTTCAC TTA ACACAA ----
GT
GAM448 12757 CAACGGTCAGACGAGTCGAC CA GAGT G GAA TCGT
ACGTGGCAGAAATCATCATC CAACGGT GAC C ACACGTGGCA ATCATCATCTCC
TCCTCGTGGAGGTGATGGTT GTTGCCA CTG G TGTGTACTGT TGGTAGTGGAGG
GTCATGTGTGGGTCACCGTT -- ---- G --- ----
G
GAM449 15312 GCCCAGTTCACTTCTTTGCA --- C TTGCA C TA- - CACAGTTTAGAA
GAGCCTTTTACCCCTGCACA GCC CAGTT ACTTCT GAGC TTT CCC CTG
GTTTAGAACAGAGGGACCAA CGG GTCAA TGAGGA TTCG AAA GGG GAC
ATGCTTCTAGGAGTCAACTG TCG C TC--- T CCA A ----------
GCTGGC
GAM450 4485 GACTTATTTCTTCTTGGACA T G CAC GGT G CACG
CACCCACGGTGCGGCCACGG GACT ATTTCTTCTT GACA CCAC GC GC
CGGCCAGTGGTCTTGTCGAA CTGG TGAAGGAGAA CTGT GGTG CG CG
GAGGAAGTGGTC - G TCT AC- G ----
GAM452 6944 GAGGCAGGAGAATCGCTTGA A AA -- TGAA AGGC G A- GAGAT
ACCCAGGAGGCGGAGGTGTA GAGGC GGAG TC GCT CCCAGG GGAG TGTAGTG GCT
GTGAGCTGAGATGGCACCAC CTCTG CCTC AG CGA GGGTCC CCTC ATGTCAC CGG
TGTACTCCAGCCTGGGCAAC - AG TA CAAC GA-- - CA -----
AGCATGAGACTCCGTCTC
GAM453 446 GAGGGAAAAGGCACTGCTTA AAAAG TTATT GT AGCCA
TTCCAGTGCAGCCAGTCATG GAGGG GCACTGC CCA GC
GTAATGCAGTGCACCAGCCC CTCCC CGTGACG GGT TG
TC GACCA TAAT- AC -----
GAM454 20322 ACAGCACATCTCCATTAGCA - A T - CT AA- AGGAG CAGT
CTAGCCACAATTCAGGAGCT ACA GCAC TCTCCA TA GCA AGCCAC TTC CT
CAGTAGACACGAACTAGTGG TGT CGTG AGAGGT AT CGT TCGGTG AAG GA
CTTGCATATTGGAGAGTGCA A - T A -- ATC CACA- ----
TGT
GAM455 7105 GAGTTAATGGGTGCAGCACA AAT --- CCA -- ACA A ATAT
CCAACATGGCACATGTATAC GAGTT GGGTGCA GCACA ACATG GC TGT TAC
ATATGTAACAAAGCTGCATG TTCAA CCCATGT CGTGT TGTAC CG ACA ATG
TTGTGCACATGTACCCTAGA GAT ACA --- GT AA- - ----
ACTT
GAM456 19733 ACTGAAACTGAAAGGGAAAA A--- A- AA--- CAATCT
CCCACAATCTTGGGTGAAAC ACTGAA CTGA AGGGA ACCCA
TCCTTCCTCAGCTGGTTCAG TGACTT GACT TTCCT TGGGT
T GGTC CC CAAAG ------
GAM458 4714 CAGCCTTGTGTGAAAATGCC CTT G - - C CTCTTTAA
TTCTTCCTCTTTAAGAAAAA CAGC GT TGAAAAT G CCTT TTC
GGACAATTTTTAAGCTGCTG GTCG CG ATTTTTA C GGAA AAG
T-- A A A A --------
GAM459 18562 TGCGCATCAAGCTGGAGGAG CA AA-- TG A A A- GC ----- AC C- CGAG
CAGGCCCAGCAGATACGCCT TGCG TC GC G GG GC G CCAGC AGAT GCCTG AGGC

GCAGGCCGAGGCCTTTCAGG ACGT AG TG C CC CG C GGTCG TCTG CGGAC TCCG
CCCGTCTCAAGAGCTGGTTC AC AAGG GT - - AG TT AGAAC CC TT ----
GAGCCCCTGGTGGAAGACAT
GCA

GAM460 18814 GAGGCCCCTGGGCTGGTGGA CC - T AC - TGGT ---- AGCCT
CGTACCTGGTGGGCACCCTG GAGG CCTGG GCTGG GG GT ACC GGGCAC CCTG
AGCCTCAGGCCCTGTGCCCT CTCC GGACC CGACC CC CG TGG CCCGTG GGAC
GGTGGCAGCCCCCAGCACCA A- A C GA G T--- TCCC -----
GGACCTC

GAM461 7744 AGTCATTGTTTTCATGACAC TT T AC TC-- T T TTTACGTT
CACTCTTTTTTCTCTTTTAC AGTCA GTTT CATGAC CAC TT TTTC CT
GTTAGGAAACGACTACGTGT TCAGT CAAG GTATTG GTG AG AAAG GA
GGTTATGTGAACTTGACT T- T GT CATC C - --------

GAM462 820 GAGAAACCACACTGGAGTAA AAA CT TAA CTG TG TTT AAT
GGTAAGCTGTCCTGGAGAGC GAG CCACA GGAGTAAGG GCTGTC GAGAGC GAAGC ACTTG

TGGAAGCTTTACTTGAATCG CTC GGTGT CCTTATTTC TGACGG TTTTTG TTTCG TGGGC
GGTGCTTTGTTTTTGGCAGT --- -- --- --- -- --- ---
CTTTATTCCTGTGGCTC

GAM463 2187 GGGCTTCCGGTTAGGGCCGG TT-- TT - --------- G CTCTAGAA
GGATAGGCTCAGTCCTCTAG GGGC CCGG AGGGCCGG GGAT AGGCTCA TC
AAGAGTGAGCCTCTGTTCTA CCCG GGTC TTCCGGCC CCTA TCCGAGT AG
AATCCTCCGGCCTTCCCTGG TGCT CC T AATCTTGTC G --------
TCGTGCCC

GAM464 20157 TGAATCTACTCTGACGTGGC A AC A GCCAA A T- AGTAC AGC
CAAAGGCATCCTGCAGTACG TG ATCT TCTG CGTG AGGC TCC GC GTGGCTCGG
TGGCTCGGAGCCTGAGCCAC AC TAGA AGAC GCGC TTCG AGG TG CACCGAGTC
CGGTCCGGAGGCTTCTATAC G -- - ATATC G CC GC--- ---
GCGCAGAAGATGCA

GAM465 3062 TGAGGCAGGAGAATCACTTG A AA GAACC AGGC GT A - AGAT
AACCCCAGGAGGCGGAGGTT TGAGGC GGAG TCACTT CCAGG GGAG TGCAGTG GC TG

GCAGTGAGCTGAGATCACGC ACTCTG CCTC AGTGAG GGTCC CCTC ACGTCAC CG AC

CACTGCACTCCAGCCTGGCG - AG TCAGC GA-- -- - C ----
ACTGAGTGAGACTCCGTCTC
A

GAM466 10991 AAGGAGCAATGAGAAACAAA CA CAAA ATTTT --- GGTCTCTGGA
ACTAATTTTGGAGCAGATGG AAGGAG ATGAGAAA ACTA GGA GCAGAT
TCTCTGGAATTTGCATATCC TTCCTT TACTCTTT TGAT CCT CGTTTA
TGGCTAGTGATTTTCTCATC TC TAG- CGGT- ATA ----------
TTTCCTT

GAM468 1109 GACGACTAATGTTGGCTCCC CG-- AATG T C C- T- ACAACATCC
TGCCTGCTAACACAACATCC GA ACT TTGGC CC TG CTGC AAC
GTTCTGCAGCCCATGGGTCA CT TGA AACTG GG AC GACG TTG
AAGAGTAATTTC TTAA GA-- - T CC TC ---------

GAM469 16661 TTATTGCCCATTCTGGGAGT C TGG GTGT-- TTTAAGTTTGCT
GTTGAGCGTTTTAAGTTTGC TTATTGCC ATTC GA TGAGCGT
TATGCTTGTAAAAATCAATG GGTAACGG TAAG CT GTTCGTA
AATGGCAATGG - TAA AAAAAT ----------

GAM470 2301 TTTAGCCTGGGTTGCCTGTG A TGGGT- - ---------- TAA
GTTATATAATATGGCAAAAT TTT GCC TGCC TGTG GTTATA
TCTACTGAAGACACATGGTA AAA TGG ATGG ACAC CGGTAT
TAAAATGGTAAAA A TAAAAT T AGAAGTCATCTTAAAA ---
GAM471 5443 TGAGAATGTTCCCCCCATTG TGT CC T CT C TTG
GAAACTGACGCTTGGCTCCT TGAGAA TCC CCAT GGAAA GA GC
TTCTTGTGGATGGATTTTCT ACTCTT AGG GGTG TCTTT CT CG
CA TT- TA T C- - ---
GAM472 18399 GCAGGAGGCTCATGGGTGGT GA CATG - TG TGA-- G ACAGAA
TGCTGAATGAAGAACAGAAT GCAG GGCT GGTG GT C AT AAGA
CTTGGTGCTTTGTGGCTCAC TGTC CCGA CCAC CG G TG TTCT
CACAGCCATCTGT TA CA-- T GT TTTCG G ------
GAM474 7345 AGCACATCTAAGGGAATAAC AA AA C - GAAAT
ATGATTTAAGGTTGAAATGG AGCACATCT GGG TAA ATGATTT AAGGTT
CTTTAGAATCATTTGGGTTT TTGTGTGGG TTT GTT TACTAAG TTTCGG
GAGGGTGTGTT AG GG - A -----
GAM476 1901 GTGTCCCTGTGTCTCCCCAG GT - CT CCA T TAAT ATGT
GTAGTAATAAGGATGTCCTT GT CC CTGTGT CC GG AG AAGG
TTCCTCCAGGTATACAGTGG CA GG GACATA GG CC TC TTCC
GTAC TG T T- A-- - CTT- ----
GAM477 19594 GCTGTTCAGAGCCATGCAGT TCAGAGCC AG TG GAGGA AAAGCCCACCAAC

TGCTGAAGAGGAAGCCAGAA GCTGT ATGC T CTGAA AGCCAGA
AAGCCCACCAACTCTGGCTT CGACA TACG G GACTT TCGGTCT
TCAGTGGAGGCATTAAAGTA TGAAAT-- GA GT ----- ----------
CAGC
GAM478 20971 GCTACAGAAACAGTCATTAT A ACA TTATATAAAT --- ATATTC
ATAAATTAGCATCTATATTC GCT CAGAA GTCA TAGCA TCT
AGAATCTGCTATCTCATTGA CGA GTTTT TAGT ATCGT AGA
TATCTTTTGCAGC C CTA TACTCT---- CTA ------
GAM479 21216 GAGTGGGAGCTACAGCCAGC GC C CA- A CTAG GGACAGCAGACAAA
AGCCTAGCTATGGTGGACAG GAGTGGGA TA AGC GC GC CTATGGT
CAGACAAAGCTATGGACAAG CTCACCCT AT TCG CG CG GGTATCG
CAGCAAAGCTATAATCCCAC A- A AAA A AACA ----------
TC
GAM481 7667 GGTGAGAAGGGGTCTGCGGC AGA CT C CTC A GAG
CTCGTCTCCAGCCGAGGGCG GGTG AGGGGT G GGC GTCTCC GCC
GGAGGCGCCTCGCCCCTACA CCAC TCCCCG C CCG CGGAGG CGG
CC A-- -- T --- G ---
GAM482 2251 AGGACTTTAGCAGCTCGTTG A TTA --- T TA-- T AACCTCTCAGC
TATTTCCTGGTCAACCTCTC AGG CT GC AGCTCG TG TTTCC GGTC
AGCGACCTGGAGGGATTCGT TTC GA CG TCGAGC GC GGAGG CCAG
CGAGCTCCCGCCGCAGCTT - CGC CCC T TTAG T ----------
GAM483 12528 AGTCCACCGACTCACTGCCC A -- T CC C ACCGA TTC TATT
GCGCACGCGACCGAGTCTTC AGTCC CC GAC CACTGC GCGCA GCG GTC GC
GCTATTGCTGACCTACGTCT TCGGG GG CTG GTGGCG CGTGT TGC CAG CG
GTGCTGCGGTGTGTCCAGGG - AC T T- C ATC-- T-- ----
GGCT
GAM484 17606 CTATTATGAACACATGAGAA A- A A TTTT T CATT
TGATTTTTTTCTCTTAATCA CTATTATG AC CATGAGA TGA TTTC CTTAAT

TTATTAAGGAAATATTTTAA GGTAATAT TG GTACTTT ATT AAAG GAATTA
TTTCATGGTCATATAATGG AC - A TTAT - ----
GAM485 1648 TCCTAAATACTCCATCTGTT - TA- CTG - C TATT ATTTGA
TAGTACTGTATTGTGGAATA TC CTAAA CTCCAT TTTA GTA TG GTGGAAT
TTTGAGTTCTATTTCCATAC AG GATTT GAGGTA AAGT CAT AC TATCTTG
TTGAAAACATGGAGGATTTT A TAG CAA T - CTT- ------
AGAGA
GAM486 15989 ACACTGTGTTTCTGAGGGTC - TTC GT AT -- AGAACTGAA
CTGGAATGGCCAGAACTGAA ACACTG TGT TGAGG CCTGGA GG CC
GGATCCTCTCCAGGTTCTTC TGTGAC ATA ACTTC GGACCT CC GG
AATATCAGTGT T --- TT CT TA ---------
GAM489 8674 ACATGGAGTTCGCTGATTCT T T-- -- TTCTCA - CTTCCCATGTCC
CAGAGCCACTTCCCATGTCC ACA GGAG TC GCTGA GA GCCA
TGGCATCCATTGTTCAGCTT TGT CCTC AG CGACT CT CGGT
GATGTCTCCCTGT C TGT TT TGTTAC A ----------
GAM490 15236 ATAATTGTGTCATGATTAAT - ATGA- TG A TACTAAT
GTGTATTTACTGTACTAATT ATAAT TGTGTC TTAA TGTATTT CTG
AGAAAATATAGTTTGAGGCT TATTA ACACGG AGTT ATATAAA GAT
GGGCACACATTAT C GTCGG TG A -------
GAM491 10376 CTCTGCACAGCAGCCCAGCA GCACA C- G A- TAGAG TT CAAGG
GGGATGTCCTCTCTAGAGAT CTCT GCAGC CA CAGGG TGTCCTCTC ATGG TAT
GGTTTATCAAGGGTACCCCA GAGA CGTCG GT GTCCT ACGGGAGAG TACC ATG
TGAGAGGGCAGCTCCTGATG AGGC- AC A CG ----- CC -----
CAGCTGCCGGAAGAG
GAM493 21553 CTGCTGTTGTCCAACAGAAC C - AA GA AC- TTTGAATT
GACCTAGTATTTGAATTTGC CTG TGTT GTCC CA ACG CTAGTA
TAGTAACGTCATGGAGGATG GAC GCAA TAGG GT TGC GATCGT
AACGACAG A G AG AC AAT --------
GAM494 22244 GAAGCACGTAATGTTTAAAA ACGTAAT AAT CA-- AT TAGCATTATTAT
TGTGTTGTTTTTCACAAGTA GAAGC GTTTAA GTGTTGTTTTT CAAGTA TTAAGTA
ATTTAAGTATAGCATTATTA TTTCG TAGATT TACAGCAGAAA GTTCAT GGTTTAT
TTATTTGGTACTTGAGTCAA ACTTCT- --- CTGA -- ----------
AGACGACATTTAGATTCTTC
AGCTTT
GAM498 15553 GCGCCACTGTCAGCTTAGAA CCACT- CTT AGG A- GGCAGG
GGGGCCTTAGGGAACCTGGC GCG GTCAG AGA GGCCTTAGGGA CCT
AGGAGGAGTCCCTGAGGCCA CGT TAGTC TCT CCGGAGTCCCT GGA
ACTCTTCCTGATTTATTTTG TTTATT CT- CAA GA ------
C
GAM499 9083 GAGGGGTGACAAGTGTGTTT -- T-- - CT T CGCG
GAGCTGGAAGTGCCTGCGCG GAGGGGTGA CAAG GTGTT TGAG GGAAG GCCTG
CAGGCCTTTTCTCATGGCAT TTTTCCACT GTTC TACGG ACTC TTTTC CGGAC
GACCTTGACTCACCTTTT CA CAG T -- - ----
GAM501 20268 GTTGAAGCTGATGTTACTAG - ACTAG GT G TT ATA ATGCA
TGGTAGATTGGTTCATACGA GTTGA AGCTGATGTT TG A ATTGG C CG
TGCACGGAGGGGTCAATGTG CAACT TTGGCTACAG AC T TAACT G GC
TCAAAGACATCGGTTATCAA A AA--- TG G GG GAG -----
C
GAM502 4649 ATAGAAATATGTATTTTAAG TAT TT T GCAAA- AAATGAAC
CACTCATGCAAAGGTAAATG ATAGAAA GTA TTAAGCAC CAT GGT

AACACTGTTTAAATGTGTGC TGTCTTT TAT GATTCGTG GTA TCA
TTAGCTTATTTTTTCTGT TT- TC T AATTTG --------
GAM503 3681 GATCCTCAAGATGGGCGAAT T T A A -- A GGGC
CCAACTCGGGGCTGAGATGT GA CC CAAG TGGGCG ATC CA CTCG
TGATGCGCCCACTTGGGCTC CT GG GTTC ACCCGC TAG GT GAGT
C - - G TT A ----
GAM504 6291 GGAGAATCACTTGAACCCGG AA GAA-- AG AAG T A - AGAT
GAGGCAAAGGTTGCAGTGAG GGAG TCACTT CCCGGG GCA GT GCAGTG GC TG
CTGAGATCGTGCCACTGTAC CCTC AGTGAG GGGTCC CGT CA TGTCAC CG GC
TGCAGCCTGGGAGACAGAGT AG ACAGA GA --- - - T ----
GAGACTCC
GAM505 4154 GGAATATCTGATCCATGATT AAT- ATCCAT TC- TT- AAGTAC
TCACCTTAATGGTAGAAGTA GG ATCTG GATT ACC AATGGTAG
CCTGCTATTTTTGGTAATGA CC TAGAC CTAG TGG TTATCGTC
TCTTCAGGCAGATTTGGCC GGTT GGACTT TAA TTT ------
GAM506 19766 CCGTGCGCGTTGCTGCGGCC TGC G C- GT C TTCCTCGGC
GTGGTCCGCGCCCTTCCTCG CCG GCGTT CTG GGCC GGTCCG GCCC
GCGGGCCGGACTGGTCTCCA GGT CGTAA GAC CTGG TCAGGC CGGG
GAAATGCTTTGG TT- A CT -- - ---------
GAM508 17305 GCATCCCACAGTTCTGAGAC C- TTCT CA - TCTTTCCT
AAGCTTTAGTCTTTCCTCTA GCATC CACAG GAGA AGCT TTAG
GCAGCTTCTTCTGTGCAGAT CGTAG GTGTC TTCT TCGA GATC
GC AC ---- -- C --------
GAM509 6920 CCAGATTCAGCCCATTTGGC GA - C A T CC AC T T A CCGG
CCCGACGCCTCTGTTCTCGG CCA TT CAG CC TT GG CCG GCCTC GTTC CGG AT
AATCCGGGTGCTGCGGATTG GGT AA GTC GG AA CC GGC TGGAG TAGG GTC TG
AGGTCCCGGTTCCTAACGGA AG C A C T TT CC T C G ----
CTGCAAGATGG
GAM510 12835 ACCTGGAACAGCTGCCTGGA C- G ---- GGAA
TTGGCCTGGAAAGGTTTGTT ACCTGGAA AGCTGCCTG ATT GGCCT
GATGTGGGTAGTTATTTCCG TGGGCCTT TTGATGGGT TAG TTGGA
GGT TA G TTGT ----
GAM511 13283 GCTCAGCGCCGCACCCGGAA - G - A AA AG TC - G AGCC
GATGAGGCTCGCCGTGGGAG GCTCAG C CC GC CCCGG GATG GC GCC GT GG
CCCTGACTGGTCTGCGCCGT CGGGTC G GG CG GGGTC CTGC CG TGG CA TC
CAACTGGGGCTGGGTCTGGG T - T - AA CG TC T G ----
C
GAM512 21220 CCCGACAGGCCTCCCGGCTC A CT T CC --- C- CCGAGACAC
TCCCGCCCTCCCTCCCGAGA CCCGAC GGC CCCGGC CT CGCCC TC CTC
CACGAGCCGAACTGGGCGTC GGGCTG CCG GGGCTG GA GCGGG AG GAG
AGGTCGGGGAGCCGGTCGGG G AG - CT TCA CC ---------
GAM513 1465 TGGCATGGGGACCAGCTAGA -- GACCAGCTA AT TTCATCCATAATCCCTT
ACAATGCAGATTCATCCATA TGG CATGGG GAACA GCAGA
ATCCCTTTCTGCTGTTCACC ACC GTACCC CTTGT CGTCT
ACCACCCATGATCCA TA ACCACCA-- -- ----------
GAM514 15474 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT AG ATTGTGGCA
CACTTTGACAGACATTATTG CTGG TGTT ATGG AAGTCA GAC ACATT
TGGCAAATGTGGTCTGACTT GACC ACAA TGTC TTCAGT CTG TGTAA
ACTGTTTCAACAAACCAG AA CTT A ---- G- ---------
GAM516 9715 TTCCCCGGCAAGGTTTTATG CCC TTTAT CATAT TCTTTCTTTATC

TACATATGTAGTCTTTCTTT TTC GGCAAGGT GTA GTAG
ATCCTACTTTAATACTCATT AAG TCGTTTTA CAT CATC
TTGCTACAGAA ACA CT--- AATTT ----------
GAM517 11107 AGACAAGGCCTCGCTCTGTC CCTC--- TCA - C -- - GGATCA
ACCCAGGGCTGGAGTGCAGT AGACAAGG GCTCTG CCCAGG G TGGAG TGCAGTG GGTGT

GGGTGTGGATCAATACCTCA TCTGTTCC CGGGAC GGGTCC C ACCTC ACGTCAC CCATA

CTGCAGCCTCCAACTCCTGG TTCCTAA TCG T A CG T ------
GGCTCAGGGCAATCCTTCCT
TGTCT
GAM518 16738 CTGTGTACGCCGCCAGCTGG G -- - - G- A A-- CAG
GTGAGCATGGGGCAGCCCCA CTGT TAC GC CGC CAGCT GGTG GC TGGGG
GTGGCCACCGGAGCTGTGTG GACA GTG CG GTG GTCGA CCAC CG ACCCC
AGCAAGTGACAG - AA A T GG - GTG ---
GAM521 10968 GAGCAGAGGCTGGTTATAAA T- A --- ACTCCC
TTTGAACTCCCTCAGCCCAT GAGCAGAGGC GGTT TAAAT TTGA
TTGCAACTCTGCCTCTGTTC CTTGTCTCCG TCAA GTTTA GACT
TC C CCC ------
GAM522 7696 CAGAGATGAGGCAGAGTGGA AG C - A-- AACAA TGA
GAGAAACAACTCTGGCTGAG CAG ATGAGG AG AGTGG GAGA CTCTGGC
CCAGAGTCTCCAGCCACTAC GTC TATTCT TC TCACC CTCT GAGACCG
TTCTTATTCCTG CT - A GAC ----- ---
GAM524 18264 GGACAGGCTCTGCCCAGGAA CTCT AA-- --- C-- TCCT
GAGCTGCCGCCTCCTGGCAC GGACAGG GCCCAGG GAGC TGC GCC
AGCAAACGTTCCAGGCCTGG CTTGTCC CGGGTCC CTTG ACG CGG
GCCCTGTTC ---- GGAC CAA ACA ----
GAM525 8530 GCTCCTGGCCTAGGCCATGT T CCATGTCGA AT GCC T TCGC
CGAGCCGTATGGTGCCCCGG GC CCTGGCCTAGG GCCGT GGT CCGG GTCCCG
TGTCCCGTCGCCGGGACCCG CG GGACCGGGTTC CGGCG CCA GGCC CAGGGC
GCAACCCGCGGCCCTTGGGC - C-------- C- AC- - ----
CAGGGC
GAM526 3598 CTCGAAGTGATCCTGAGGCC AA- A -- AAGA G GC GTGTTGCAGAGA
GAAGATTGGGCTGCCTGGTG CTCG GTG TCCTGA GGCCG TT GGCT CTG
TTGCAGAGACAGAAGCCGGG GAGC CAC AGGACT TCGGC GG CCGA GAC
AGCGGCTGATCAGGAACACG GTG A AG GA-- G A- ----------
TGCGAG
GAM527 663 TTTCGAGTTTTTATAGGTTG AGTTTT GTTG G AA A GG G AGAA
GTGCAAAAGTGATTGTGGTT TTTCG TATAG GT CAA GTG TTGT TTT CATTG
TGCATTGAGAATAATGGAGA AAGGT ATGTC CA GTT TAT AGCA AGA GTAAT
AGACGAATATTTGGACAACT AAATAT AA-- G -- A GA G ----
GTATATAAATGGAA
GAM528 16303 TGTTCTTGTGTTCTTTGCCT CT CTT TTA T- TT GGCTTATCTAA
TATTCATCATTTTTAAGGCT TGTT TGTGTT TGCC TTCA CAT TTAA
TATCTAATTAACTGTGTTTG ACAA ACATAA ATGG AGGT GTG AATT
GAACTGGTATAAATACATCA CT AT- TCA TT TC ----------
ACA
GAM529 19246 ACTGCTCTCACCAGGTTCCC C- CA - CC- CC GAAAT CTGG
CACCACCCTGAAATAGCTGG ACTG TCT CCA GGTT CCACCA CT AG
CTTGAAAGAATGGTGGAATG TGAC AGA GGT CCGG GGTGGT GA TC

GCCTTGGGAAGATTCAGT TT AG T TAA AA AAGT- ----
GAM530 11482 GAGCCGGCCAGCCCTGACAG C - CCCTGA T- A TTC GAGACAGAGA
TCCAAAGGGTTCCTCGGGAG GAGC GG CCAG CAG CCA AGGG CTCGG
ACAGAGACCGAGCCTCCTGT CTCG CC GGTC GTC GGT TCCT GAGCC
GGCCCTGGCCCCTGGTCCAG A T CCCG-- CC G CC- ----------
CTC
GAM531 13563 TCCCAATGGCATTTCAGAAG AT A CAGAA- A T ATT
TGAGCAGTGGAATTTTCCTG TCCCA GGC TTT GTG GCAG GGA
CCATCCTAATAAGAGCCCTG AGGGT CCG GAA TAC CGTC CTT
GGA C- A TAATCC - - ---
GAM533 5272 GGCAGTAGAGGCCGCTATGG TA- - A CGAACG - TG AGAG
CGAACGTTCCGTGGGCAGAG GGCAG GAG GCCGCT TGG TTC CG GGC
GTCTGCGAGAAATTCCAGGC CTGTC CTC CGGCGG ACC AAG GC CTG
GGCGCTCGCTCTGTC TCG G - TTA--- A GT ----
GAM534 8797 GCTAACTAGCAGGGACCCCT AACTA G -- AA- G G ACCTCGAG
GCAAGTGTTAGGTCGGGGGG GCT GCA GGACCCCT GC GTGTTAG TCGGG GG
ACCTCGAGCTGCCTGAGCTG CGA TGT TCTGGGGA CG CACAGTC AGTCC TC
ACACGAGGCGGAGGGGTCTG ----- G GG GAG G G --------
TGTAGC
GAM535 2753 TTTGTTACTTTTTTCGGAGT T C GAGTT GATTGAAGACTGAA
TAGGGAGGGATTGAAGACTG TTTG TA TTTTTTCG AGGGAGG
AACCTCCCTTGGAAGAATAC AGAC AT AAGAAGGT TCCCTCC
CAGA C - ----- ----------
GAM536 15953 AGGTGAAATCAAAATAATCT AAA AATAA CTAGAA - T GCGCA
ATACTATCTAGAAGACTTTC AGGTG TCAA TCTATACTAT GAC TTTCT GAT
TTGATGCGCAGTCCAGAGAT TCCAC AGTT AGATGTGGTA CTG AGAGA CTG
GTCATGGTGTAGAACTTGAA A-- CA--- ------ T C -----
CACCT
GAM539 5022 GTCTCTGCAAGCTCTTGAGT T- A C TG G CC CA ATATTTTAAAA
CCCGCCAAGATGATATTTTA GTC CTGCA GCT T A TC GC AGATG
AAACGTCTGTATGAGTTGAA TAG GACGT CGA A T AG TG TCTGC
AGCTGCAGTTGAT TT - A GT G TA -- ----------
GAM540 9489 CTGAGTCAGCGCACGATCAC A- -- -- -- GT A-- CAA
TGTCGGGGGTGTACGAAGCGG CTG GTCAGC GCACGAT CAC TGTCGGGGT ACG AGCGGC

CCAAGCTGCTCAACGTCGAC GGC CGGTCG CGTGTTG GTG ATAGCCCCA TGC TCGTCG

CCCGATAACGTGGTGTTGTG GG TC TG CA GC AAC ---
CCTGCTGGCGGCGG
GAM541 19966 ATGCTTACAAAGCCAAATAA AA AATAA AGG--- AAG AGATAAAG
TCGCAGGGCAAGGCAGATAA ATGCTTAC AGCCA TCGC GC GC
AGGCAGGCAGGATAGTGACA TACGAGTG TCGGT AGTG CG CG
GTGGCTCGGTGAGCAT GC GAC-- ATAGGA GA- --------
GAM542 15159 GCCCGGCCGTGCACCCAGCC - - CC---- - - AGAGA C CGT
TGCGGCAGAGAGGGCGGCGT GCC CGGCCGT GCA CAGCCTG C GGC GGG GG
CCCCCACAAAGCCTGCCAGG CGG GCCGGTA CGT GTCGGAC G CCG CCC CC
CTGAGCCCTTGCAATGGCCG T A TCCCGA C T AAACA - ---
TGGC
GAM543 14504 GCCCTACCCAAGAAGGGAGA A- AAGAA AG CCC CT TTTCCAGCCCTT
CAGGCCCTGGGGTCACTTGT GCCCT CCC GGG ACAGG TGGGGTCA TG

TTCCAGCCCTTCATGACCCC CGGGA GGG CCC TGTCC ACCCCAGT AC
AAGACCTGTTCCCCACAGGG CC GACA- CT AGA -- ----------
GCCAGGGC
GAM544 9677 ATGGTTGTCACTTTCAGATT TT T- - TCT T G T AACAAATGGA
CTAGCTTGCTTGGACTTTCA ATGG GTCACT TCA GAT AGCT GCTTG ACT TCAGTGGC
GTGGCAACAAATGGAGCCAC TACT CAGTGG AGT CTA TCGG TGGAC TGA AGTCACCG
TGACAGTACAGGTGGCTTCA C- TC T CT- - A C ----------
TCTTGACTGGTGACCTCAT
GAM545 9718 CCTCCCCTCGTGGAGAGTAT CCCT - - A- - GCTGGTG- CGGTGTGA
ACCAGCTGGTGTGTAGCCCC CCTC C GTGGAGA GT TAC CA TGTAGCCC
GGTGTGAGGGCTACAAAGTT GGAG G CACCTCT CG ATG GT ACATCGGG
ATATGTGTAGAGCATCTCCA ATGT T A AG T ATATTGAA --------
CTGTGTAGAGG
GAM546 1144 TAAATTCAGGGTAATGGTTA T ATG AG GAGA GG C AT AG C
CAGTTAGGAGAGGAAAGGGA TAAAT CAGGGTA GTTAC TTAG GGAAA GAATA AATCAG
TATGGT TAAA
ATACAATCAGATTATGGTAG ATTTG GTCTCAT TAATG GGTC TCTTT TTTGT TTAGTT ATACCA
ATTT

TAAACAGGGATTTTAACCAT - AGG -- AAAG AT A -- -- -
ATTGATTATGTTTTATTTCT AGGGAT
GAAACTGGGTAATGGATACT
CTGGTTTA

GAM548 8266 CGGTACATGCAGAGCGAACG AC C CGCT CA GTCA TT - CTGGAAT
CTGTCGCAGAGTCATCTGTT CGGT ATG AGAGCGAA GTCG GA TCTGT GGTG GGAG
TGGTGGGAGCTGGAATCTCC GCCA TAC TCTCGCTT CAGC CT GGACG CTAC CCTC
ACATCCGCAGGCATCCCCGA CC C T--- CC AC-- C- A -------
CTTTCGCTCTCCATCCACCG
GAM549 18639 TAAAGGTGACCGTAAGGAGT GA TAA AGTCCC TTGAAAATTT
CCCTTGGGGAGGATTTGAAA TAAAGGT CCG GG TTGGGGAGGAT
ATTTGTCCTTCCCAAAAGTT GTTTCCA GGC CC AACCCTTCCTG
GCCCGGAACCTTTG A- --- GTTGAA ----------
GAM551 3316 ATCTCAGGACTCTGGATACC C CT A TTAT CT A GGCTTTTA
TTTATTTTTGCTTCAGGTGG ATCT AGGA CTGGAT CCT TTTTG TC GGT
CTTTTAATCAGATTCAAAAG TAGA TCTT GATTTA GGG AAAAC AG CTA
GGAATTTAGTTTTCTAGAT - TT A ---- TT A --------
GAM552 89 ATTCAAGTGGATGAAAAGGG A --- AAA AA T - TAAAACATTT
GAAGATTGTGGATGCTAGGT ATTCA GTGG ATGA GGGG GATTGTGGA GCTA GGTT
TTAAAACATTTGGCTGTGGT TAAGT CACC TACT CCTC TTAACGCCT TGGT TCGG
TCCGCAATTGCCTCCAGCTC - GAT CGA CG - G ----------
ATTAGCCACTGAAT
GAM553 13351 GGGGCTCCTCCTTCCCCTCA C C-- CTCAAA ATCA CTTCCCAA
AAGGCATCACTGCCCCTTCC GGGG TCCTC TTCCC GGC CTGCCC
CAAGGGCAGGCCAGCAGGGA CCCC AGGAG AAGGG CCG GACGGG
ACAAGAGGACCCC - AAC ACGA-- ---- --------
GAM554 18116 CTTTGGTCTTGGGGGTGCAG TCTT G AGG--- TG A C TGGTC
GGCTTGGTGACGCGGATGGT CTTTGG GGG GTGC GCT GTG CG GGA
CTCCTGGCACTGAGCATTGT GGGACC TCC CGCG CGA CAC GT CCT
AGCGCGCCTTCTCCAGGG TCT- G ATGTTA GT G - -----

GAM555 14533 TCAGCCTCTGTTTCCCTGGT - -- --- CA CCAC TGATCCT
CAAGGCCACGGCTTTTCTCT TCAG CCTCT GTTTCC CTGGT AGG GGCTTTTCTC
GATCCTGAGGAGAGTTTCCT AGTC GGAGG CGAAGG GACCA TCC TTGAGAGGAG
ACCAGAGTGGAAGCAGGGAG A GA TGA -- T--- -------
GACTGA
GAM558 11434 ATCATGTCCACCCCTGCAGA CCAC ATC--------- GGAA
TCCTTGGAAAAGAAAATGTT ATCATGT CCCTGCAG CTT
TATGTTGCAGGGTATTGCAT TGGTACG GGGACGTT GAA
GGT TTAT GTATTTGTAAAA ----
GAM559 10126 GATGTCAATGCTGCCATTGC A-- CT T C-- TCAAA GCAGCATCCA
CACCATCAAAACAAGCGCAG GATGTCA TG GCCA TG CACCA ACAAGC
CATCCAGTTTGTGGATTGGT CTACGGT AC CGGT AC GTGGT TGTTTG
GCCCCACTGGCTTCAAGGTG GGA TT C CCC TAGG- ----------
GCATC
GAM560 22952 CACGGCCATTTGCTCTTTTC A T CTTT ACT A GGGCCT
CTAGACTAGCTATGGCTGGG CACGGCC TT GCT TCCTAG AGCT TGGCT
CCTGGTCAAGCTTTGGGAGG GTGTCGG AG CGG AGGGTT TCGA ACTGG
CTGAGGCTGTG - T ---- --- - ------
GAM561 17583 TCCAGTTGCTATGGCAACAG A - AG- TC CA- C CTCT
GCCATTCTGGGCCAGCCACG TCC GTTGCT ATGGCAAC GCCAT TGGGC GCCA GT
TCTCTGCATGGCAGTGCCCA AGG CAACGG TATCGTTG TGGTA ACCCG CGGT CG
ATGGTGGAGTTGCTATGGGC - G AGG -- TGA A ----
AACGGA
GAM562 8197 CGGAAAACAGCTGGAAGATG AAA- G A TCGT C G ACTACAACATC
GTCGTACCCTGTCTGACTAC CGGA CAGCTG AAG TGG AC CT TCTG
AACATCCAGAAAGAGTCCAC GCCT GTCGAC TTC ACC TG GA AGAC
CTTGCAGCTGGTGCTCCG CGTG G C ---- A A ----------
GAM563 15072 GTCTCTCATGAAATGGAAAG ATGAA - - GA CAG G CTG GAAAGAG
ATTCAGATGAGGCAGACTTG GTCTCTC ATGGAAAG ATT CA TGAGG ACTT GTG GC
GTGCTGGCGAAAGAGGCAAA CAGAGAG TATTTTTC TAA GT ACTCC TGAA TAT CG
TATGAAGTGTCCTCAAATGT CAAG- G T AA TG- G AAA -------
AATGCTTTTTATGAACGAGA
GAC
GAM564 15347 GAAGAGGAACACTTCAGTGA - A CAG CAGT GGT C CAGGAAAA
GGACCAGTACTTGGTTGCAG GAAGAGG AAC CTT TGAGGAC ACTT TG AGT
TCAGGAAAAATTCACAAAGT CTTCTCC TTG GAA GCTCTTG TGAA AC TTA
CAGTTCTCGATCAAGGTTAC A - CTA AC-- AC- - --------
CTCTTC
GAM565 15895 GGAGATTTTATAGGATGGTT TTTTA A GG A- ATAATGC
CCTGGGCTGATTGATAATGC GGAGA TAGG TGGTTCCT GCTG TTG
CAAGGCAGCAGGGAGCTGAC CTTCT GTCC GTCGAGGG CGAC AAC
CTGCATTCTTC TAC-- A A- GG -------
GAM566 19038 TAGCCTGGGCGCTCTCCAGA - - ---- C AAAA TA C AACTGACACA
AAAGCTACACTTGAACTGAC TAGC CTGGG CGC TCT CAG GC CA TTG
ACACAATTGGGGCACTGAAG ATTG GACCC GCG AGA GTC CG GT AAC
ATGATGCGACCCAGAGTTA A A TAGT A A--- GG T ----------
GAM567 5558 AGGCAAAGAAAGCCTTAAGG A- AGCCTTAAG-- - A CTTG
GAGCAGAGGGCTTGTCTGTT AGGCA AGAA GG AGCAG GGG
GCTACCATTTCTTCAAATTC TCCGT TCTT CC TCGTT TCT
TACTGCCT CA AAACTTCTTTA A G ----

GAM568 4203 ACATTTACAATACCTCAGGC AC- A TCAG AA TTTTT GTCGAA
TAATTACTGTTATTTTTGGG ACATTT AAT CC GCT TTACTGTTA GGG
GTCGAACTTTTTTTTTGACAG TGTAGG TTA GG TGG AGTGACAGT TTC
TGAAGGGTGGATTATGGGAT GTA - ---- GA TTTTT ------
GT
GAM570 2321 GCAGCTATCTAGCATGGCAT A AGC G TTG ACTCCCTTCGCA
TGTCACCAACTCCCTTCGCA GC GCTATCT AT GCA TCACCA
TGGTGATGCGATTAAGGTAG CG CGATGGA TA CGT AGTGGT
CAGC A AT- G --- ----------
GAM571 19367 GTCTTCTATGAAAAGGCTGA TGAA - -- A - GCGGTG
TAATGGGCTGGGCGCGGTGG GTCTTCTA AAG GCT GAT ATGGGC TGGGC
CTCACGCCTGTAATCCCAGC CGGAGGGT TTC CGA CTA TGTCCG ACTCG
ACTTTGGGAGGC ---- A CC A C ------
GAM574 4540 GCTTACCAGGAAGCATTTGA T- AGCAT AAAT-- AAGAAAGAAAATTGCA
AATTAGTAAGAAAGAAAATT GCT ACCAGGA TTG TAGT
GCAGCTACACACCCAATTCG CGG TGGTTCT AAC ATCG
TCTTGGTCTGGC TC GCTT- CCACAC ----------
GAM575 16586 GCGGCCTCGGTGATGTGGAT CC GTGA T A GAGA
GTGAATGACTGGAGACAGCA GCGG TCG TGTGGATG GAATG CTG
TTCTATTTACAAGAACGGTA CGTC GGC ACATTTAT CTTAC GAC
CTGC AT AAGA - - ----
GAM576 13314 GGTGGATGGAAAGCAAGGTA GA AAAGCA T - A T - CA CT AGGAAG
GAGTAGGCTTCGTGGGACAC GGTG TGG AGG AGA GT GGCTTCG GG GA CAG GGGC
AGCTGGGCAGGAAGGCTTCT CCAT ACC TCC TCT CA CCGGAGT CC CT GTC TTCG
GACTCGCCTGAGGCCACATC AG AA---- - A - - G CA -- ------
TCCTAACCAGATACC
GAM577 4085 GGTCCAATTGGTTCCAAGAC CA- AAGA TA C GT-- C AA CCCCG
GCGTAGGCGAGTAGGTCTGA GGTC ATTGGTTCC CGCG GG GA AGGT TGA GC
AAGCCCCCGGTATCATACCT TCAG TAACCAAGG GCGT CT CT TCCA ACT TG
CGAATCTCAGTGCGGGGAAC ACG G--- GA - AAGC T A- -----
CAATGCAGACT
GAM580 21526 GCTGACACGATGGAGAAGGT - AT ---- A A GG ---- GGAGG
ATGTGCAGGGGACTCCTGGA GCTGA CACG GGA GAAGGT TGTGC G GAC TCCT
GGGGGACGAGGTTTTCAGCA CGACT GTGC CCT CTTCCG ACACG C TTG AGGG
CAGCCTTCATGTTCCCCGTG C C- TGTA - A TT GAGC -----
CTCAGC
GAM582 15835 GTCTACATAAATGAAGAGCT ATGA AG C ------ ATCA
CAAGATGACATCAGTCCCAT GTCTACATAA AG CT AAGAT GAC
TTGTCTTAAGTCCTGGTGTT TAGGTGTGTT TC GA TTCTG CTG
GTGTGGAT GTGG CT A TTTACC ----
GAM583 7754 AGATGAAATAATGTTCTGTC AAATA TCAC - TAAGTATAT
ACGTGAAATATTTAAGTATA AGATG ATGTTCTG GTGAA ATATT
TAGTATATTTATACTCTAGA TTTAC TACAAGAT TATTT TATGA
ACATGCACATTT ACG-- CTCA A ---------
GAM585 890 AAGGGGAGGTTTTTGCAAAT GG - TGCAAAT AA - G A CCACCATTAT
TCCCAAGGAAATGTCAAAAA AAGG AG GTTTT TCCC GG AAAT TCAAAAAGGCAAA TGG
GGCAAAATGGCCACCATTAT TTCC TC CAAAA AGGG TC TTTG GGTTTTTTCGTTT ACC
CCATTTGCTTTTTTGGGTTT TT A ------- GG A - - ----------
ACTGGGGGAAAAACACTTTC
CTT

GAM586 2135 GCCCTCAACCGGCGGCCGCG CAA --- G-- ----- GTAACA
CCATGCTGCGGGGTAACACC GCCCT CCGGCG GCCGC CCATGCT GCGGG
CGCGGGGCGGTATGGAGAGC CGGGG GGCCGC CGGCG GGTATGG CGCCC
GGCACACGCCGGGGGGC --- ACA AGA CGGGG ------
GAM587 15157 TGCTACGAGGAGGTCAAGGA A-- A CAA AC A TG AGAGAA
CCGCTGCACCCTGGCAGAGA TGCT CG GGAGGT GG CGCTGC CCC GC
AGCTGGGGGGCAGTGCCGTC ACGG GT CCTCTA CC GTGACG GGG CG
ATCTCCCTGGAGGGCA GAG C CTG -- G GT ------
GAM589 11870 GATGTGATCGCCAACCAGCC G ----- CTGTCG G A GATC
TGTCGTGATCGACAACGGAT GAT TGATCGCCA ACCAGC TGATC ACA CG
CCGGTGTGATTAAAGCTGGT CTA ACTAGTGGT TGGTCG ATTAG TGT GC
TTTGCTGGTGATCAGATC G CGTTT AA---- - G ----
GAM590 8396 TCTCTTGTCCCCTCCTTTGG TCT C- CT TG C TTTT AATGCAATGATAA
CTGCCATTTTCCAATGCAAT TC TGTC CCTC T GCTG CA CC
GATAAGGTCTGACAGCTGGT AG ACAG GGAG G CGAC GT GG
AGAGGCAGACATCTGA TCT AC AT GT A CT-- ----------
GAM591 1691 GGCTCTGAAGTCAGCGGTTG A--- G GTATGAA GG- AGTAC
TATGAAGCTGTGGGCACAGT GGCTCTG AGTCA CGGTT GCTGTG CAC
ACGTGGGACACAGCATGGAG TCGAGAC TCAGT GTCAG CGACAC GTG
GACTGTGACTGATGCAGAGC GTAG - GAGGTA- AGG -----
T
GAM592 778 GGCTGAGGTGGGTGGATCAC CT - GGA AA---- A GA GAGA
AAGGTCAAGAGATGGAGACA GG GAGGTG GGT TCAC GGTCA GA TG
ATCCTGGCCAACATGGTGAA TC CTCTAC CCA AGTG CCGGT CT AC
ACCTCATCTCTACT AT T A-- GTACAA C A- ----
GAM594 10529 GCAGCTGTACCTCCAGGCTT GT-- - - AG AGA GCAG
TGGAGAAAGAGGGCAGCCTC GCAGCT AC CT CC GCTTTGG AAGAGG
TTGTCAAAGCAGGAAGAGTC CGTCGA TG GA GG CGAAACT TTCTCC
CAAAGCTGC AACC A A A- G-- ----
GAM595 15812 GTAGCAGATTGGGAGAAATT ATTG AAATT CTGATT TC AACC
ACCTGATTGTTAACTCTCTG GTAGCAG GGAG AC GTTAACTC TGA
AAACCTTAAGGGGTTAACCG CGTCGTC CCTC TG CAATTGGG ATT
CTGTCTCGCTCCATTCCTGC CTTA GCTC- TCGC-- GA ----
TGC
GAM596 5307 ACAGGCTGCTATAAATGCGC CTATAA GCT A CTC- T CCTTGTCA
TTGATGGGCTCGGCTTCTTC ACAGGCTG ATGC TG TGGG GGC TCTT
CTTGTCAAGGATGCCTTTCT TGTTCGAC TACG AC ACCT CCG AGGA
CCACATAAGCATCAGCTTGT ------ AAT - CTTT T --------
GAM597 11528 ACAGCACAAACCCTAAAGTC CAA TAAA-- A T- T CCA CAAG
CATGTGCAGTCTCCATGTAC ACAGCA ACCC GTCC TG GCAG CT TGTA
AAGTATAAAAGTCTGTTTCA TGTCGT TGGG CAGG AC TGTC GA ATAT
GGACAACCCTGGGTTGCTGT --- TCCCAA - TT T AA- ----
GAM598 2823 AGATGCGCTGCTGCTGCTGT A G TG G TG GTCCT - G GCCTA
CGTCCTGCCTGGCGCCTTGG AG TGCGCT C CT C TC GCC TGGC CCTTG
CCTACAGGGGCCGCGGTTAA TC ACGTGG G GA G GG TGG GCCG GGGAC
GGGTGGGAGTGGGGGTGCAC - G GT G GT GAAT- C - -----
T
GAM599 21308 GGCTCTGCAGGCTTATCAGT T G - TTAT T-- ACAA T CATTCAAGAAA
TCAGCACAACGTGCTCCTGC GGC CT CAG GC CAGT CAGC CGTGC CCTG
ATTCAAGAAACAGGGCATGG CCG GA GTC CG GTCA GTCG GTACG GGAC

GGCTGCTCACTGGCACTGGA - G A ---- CTC GG-- - ----------
GGCC
GAM600 19104 GTGCTGGTGTAGAAGCTGCA C AA G GCA -- -- A AGAC
GCAAGTTCTCCACAAGACTG GTG TGGTGTAG GCT CA AGT TCT CC CA
AGGTAAGACCACTGATGAAG CAC ATCACATC TGA GT TCA AGA GG GT
TGGCTACACTACAC - GG A AG- CC AT A ----
GAM601 22498 GAGATAGGAGAAGAGAGAGA A- A GA-- C - ----- GGGA
TCGCTGTCTCGGGAGAGAAA GAGAT GGAGAAG GA GAT GCT G TCTC
TCACAAGCCGTCCCGATCCT CTCTG TCTCTTC CT CTG CGA C AGAG
TCTCTAGGTCTC GA - AGCC C A ACTAA ----
GAM602 2726 GTATGTTAGACTGGGATTGT TTAGA T C- ATCA ATCCAGTCATACAGC
CTTCATCATCATCTTTATCC GTATG CTGGGA TGT TTC TCATCTTT
AGTCATACAGCAGGGGTGAC CATAC GACTCT ACA AAG AGTGGGGA
AGAAAAACATTCTCAGGACT TCAG- T AA AC-- ----------
CATAC
GAM603 15175 CCCACTCTTGAAGAAGAAGG A CT --- AG -- T GGGGTCCAA
CGGCTCCTCCGGGGTCCAAG CCC CT TGA AGAAGA GCGGCT CC CC
GTGGTTGGCCGCGTCTTCTC GGG GA GCT TCTTCT CGCCGG GG GG
CCTCGGAAGCGGG C AG CCC G- TT T ---------
GAM605 19069 CACAGATCTTGTCTTGCTGG CT T CT TCA CTCC CGC
TCTTTGATCAGCTGCTCCAG CACAGAT TGTC TG GGTCTTTGA GCTG AGCTC
CTCCGCGAGCTCAGCCTTTA GTGTCTG ACGG AC TCGGGAATT CGAC TCGAG
AGGGCTCCACGGCACAGTCT AC C C- TC- ---- ---
GTG
GAM606 16632 GTCATCTTTCTCCTCCTCTT A- CC TC-- TTG AAGAGTA
GGTTGGTTTACAAGAGTAGT GTC TCTTTCT TCC TTGG GTTTAC
GAATACTTCAGTTATGGACA CAG AGAAAGA AGG GACT TAAGTG
GAAAGAAAGAC AA C- TATT TCA -------
GAM608 11207 TCGAGTGCTGGAAGGATGAA T AA--- T CT T C G GGCC
GGATTCCTGCATCACTGTGA TCGAG GCTGG GGA GAAGGATTC GCA CA TGT AT
TGGCCATGGCGCTGCTGTCT AGCTC CGGCC TCT TTTCTTGGG TGT GT GCG TA
GGGTTCTTTTTCTTCGCGCC - GCGCT T TC C C G ----
GGCCTCGA
GAM609 6859 GGTCAGAGTGAACTCTTGCT GA- A- T C TA AG AGCTCAGA
TCCTGTATTCAGGCAGCTCA GGTCA GTG ACTCT GCTTC TG TTC GC
GAGCAGAAAGTAAGGGGCAG CCGGT CAT TGAGA CGGGG AT AAG CG
AGTCATACGTGTGGCC GTG AC - A GA A- --------
GAM610 21587 TAACTTCTGTTATGATAGGG C G TGTCT ATGC ATACTAAG
TGTCTGAGGAAAAGAAGGAT TAACTT TGTTAT ATAGGG GAGGAAAAGAAGG GGTAC
GCGGTACATACTAAGGTACT ATTGAA ACAATG TATCTC TTCTTTTTCTTTC TCATG
ACTTTCTTTTTCTTTAAATC A - TAAAT A--- --------
TCTATGTAACAAAAGTTA
GAM611 19347 GCTCTGCCAGTAGGTTCCAA ---- ---- T AC GGTA
CTACTACATGGTAATGTGGT GCTCTG CCAGTA GGT CCA TACTACAT
GATGGTACCAAGTTACTGGA TGAGAC GGTCAT CCA GGT GTGGTGTA
ATCCAGAGT CTAA TGAA T A- ----
GAM612 8971 ATGCTGTATATCTTATGATT ---- A -- AA AG ACT
TCTTAAGGAGATGACTCATA ATGCT GTAT TCTT ATGATTTCTT GG ATG
CCAAAGGGAATCATCCAAGA TACGA CGTA AGAA TACTAAGGGA CC TAC
CATGCCAAAAGCAT AAAC C CC AA A- ---

GAM613 8240 GCTGGAGATAAGGAGTGGGC ATAAG TG C A ATGCT
CCTGGAAGATGCTCATTCAG GCTGGAG GAG GG CCTGGA G
GCCCTGCTCAAGATTCCAGT TGACCTT CTC CC GGACTT C
AGAA- GT C A -----
GAM614 1898 ATGACCCTCACTCGCGCCAG - AC- G C - TG C CTAGGAAAGAAAC
TGGAGGTGACATCCCTAGGA ATGA CCCTC TC CG CAG TGGAGG A ATCC
AAGAAACGGATTTGTCTCCA TACT GGGAG GG GC GTC ACCTCT T TAGG
GCTGACGGGCTGGAGGGTTC T GTC - A G GT - ----------
AT
GAM615 1297 GGGGACTACAATGGCCACGT TACA CCACGTC T TTAAGT A - CCA
CGGTCTGGGTGTTAAGTGCT GGGGAC ATGG GGTC GGGTG GCTCCA GGA GGTGG
CCAAGGAGGTGGCCACCGCC CCCCTG TACC CCGG CCTAC CGGGGT CCT CCGCC
ATCCGTGGGGCCATCATCCT C--- TCTCGAA T TAC--- G A ---
GGCCAAGCTCTCCATCGTCC
CC
GAM616 6558 GGCAGTGGCTGATTGACACC ------ - ATT C - CC AACAGTG
CTCTATGCCTTCAACAGTGG GGCAGT GG CTG GA ACC CTCTATG TTC
AAAACGTAGAGCGGTTCCAG CCGTCA TC GAC CT TGG GAGATGC AAG
ACTCTGAAGACTGCC GAAGTC A --- - C AA -------
GAM617 19364 GAGGGCCCAGGATTTTTGGA CCCA TTT CCCC GTGACA
TCCCCAGCCCTGTGACAAGG GAGGG GGA TTGGAT AGCCCT
GTTCCTGTCCAGTTTCCCCC CTCCC CCT GACCTG TTGGGA
TC ---- TT- TCC- ------
GAM620 17833 AATGTTGCTAGTGCTCCTTA CTA TA ----- T CT CT- - AGGAA
GGCCTTTAAGCTATAAACTC AATGTTG GTGCTCCT GG CCTT AAG ATAAA CAG CA
AGCAAGGAATGTCTGCATTT TTACGAC TATGGGGG CC GGAA TTC TATTT GTC GT
TATCTCTTTAAGGTACCACC AG- GA ACCAT T TC TAC T -----
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GAM621 13191 TTTGTGGGGACATTGGTCTG TT TG CATT- C G CC-- A CTCCTCCAT
TCGGTGCCAGTACATCCTCC T G GGGA GGT TGTC GTG AGT CATC
TCCATGATGACTTCCCTATG A C CCCT CCA ACAG TAT TCA GTAG
GACAACCTCATCTCCCTGCT CT GT CTACT - G CCCT - ---------
CA
GAM622 14718 TCCGGGAAAGGATTAAGATT GG- GA TTG-- A - AT GAAGACCTTA
GGAGAAGACTATGCGAAGAC TCC GAAAG TTAAGA GAGA GA CT GC
CTTAGCTAAGCTCTCTCAGA AGG CTTTC GGTTCT CTCT CT GA CG
ACTCTTGGCTTTCAAAGGA AAA -- CAAGA - C AT ----------
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AAGTAAACTTTGAAAGCTTT GATCA GTTT TCT GGTG AAG ACTTTG
CCAGAGTGTTGAATCTTCCA CTAGT CAAA AGA CCAC TTC TGAGAC
CCAGAAAACTTGATC T - - C- TAAGTTG ---------
GAM624 7116 TAGTTATCAGTCACCACCAG TT GTCACC-- ACCA TG C TAGA- - - GT
ACCATTATTGGCGGTTAGAA TAG ATCA ACCAG TTAT G GGT ATTCCA GAA ACG
GAATAGA
TTCCAGAAACGGTGAATAGA ATT TAGT TGGTC AATG C TCA TAAGGT CTT TGT TTTATCT
AGTTCATCTTCTATTTTGTC GG ATAAATCT GACA GT - CTATA A C --
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GGTAAACAGCTGGTTCTAAA AG
TATGATGGTTA TC

GAM625 5542 CCAGGAACTGATGGTGGAGT AA TG--- A CACA A ACTTCACTGAA
CACACAGGCTACTACTTCAC CCAGG CTGA GTGG GT CAGGCT CT
TGAAAGGGCCTGCACCCACA GGTCC GACT CACC CA GTCCGG GA
AGACTCAGAGCCTGG GA CAGAA - C--- - ----------
GAM626 2919 CAGGGTACATTGAAGACCTT GT C A- AC- AAGAAG ACCATATAC
AAGAAGTTTCTAAAACCATA CAGG A ATTG AG CTT TTTCTAAA
TACTTTAGAAGAACAGAAGA GTCC T TGAC TC GAA GAAGATTT
ACCTCACAGTCTGTCCTG TG C AC CAA GACAA- ---------
GAM627 21753 GGTTTGTATGTGTGTGTATA TT A ATGT
TATGTAAATATGTATGTATG GG TGTATGTGTGTGTATATATGTA ATATGT
TGTGTACGTATGTATATACA TC ACATACACATATATGTATGCAT TGTGTA
CATACACTCT TC G ----
GAM628 7252 GTCAGGCACGCTCACACGCA - GGCA A GCA - G CTCCTGAC
GTGTCCTGTGTTGGCTCCTG GT CA CGCTCAC C GTGTCC T TGTTGG
ACCCAGCAGGGGGACATGGT CA GT GCGGGTG G TACAGG G ACGACC
GGGCGGATGTAC T AG-- - --- G G --------
GAM629 10047 GGATCTTGGTTTAAAAGGGA G AAAA C CC GGGTTCA
TTTGGATCTCCCCTAGGGTT GGATCTTG TTT GGGATTTGGAT TCC TA
CATGTTGGAAATTCAGATCC TTTAGAAC AAG CCCTAGACTTA AGG GT
CCAGAACAAGATTT - AC-- A TT -------
GAM630 12800 TGTGATGATTTGATTCAGGT TGAT ATT-------- G T AAATTAGTAAG
ATAGCCCAAATTAGTAAGGG TGTGA TTG CAG TA AGCCC
GCTTTAGCTGTAAACTGAAA ACACT AAC GTC AT TCGGG
ACAATATTCACA TAT- AAAAGTCAAAT G T ----------
GAM631 3357 CTGCTGGACATTCCAAATCC CT- C T-- CA CGATT
CACCATCGATTGTGGCAGGC CTG GGA ATTCCAAA CC CCAT
GCTTTGGGATTTCCTTTCAG GAC CCT TAGGGTTT GG GGTG
TTT T CGC AC -----
GAM632 3547 TGTATTAAATTGTGTGAAAT TT- T AT- CCC TG TTGA
AGTCTCCCGTGGGTTGATTT TGTA AAA TGTGTGAA AGTCT G GG
GTATAGACTTCATTCATATA ACGT TTT ATATACTT TCAGA T TT
TTTTTTCTGCA CTT T ACT TA- GT ----
GAM633 4047 GGTATTTCCCAAGTCTCTGG TCC A CT- TG GGTTG C - ------ TAC
GTGGTTGGAAGGCTGTGGCT GGTATT CA GT C GGT GAAGG TGTGGCTGGT CTCAGT
TGGGT
GGTCTCAGTTGGGTTACTCA CCATAG GT CA G TCG TTTCT ATACCGACCA GAGTCG
ACCCG

ATGCCCAGGAGGGGCTGAGC TA- A CTT GT ----- - C GGGAGG ---
ACCAGCCATATCTTTGCTTG TCAAT
GTTCACATGATGATACC

GAM634 655 ATGCTAGGGTGAGTGGTAGG AG- GAG G G AGTTTT GGAGGTG
AAGTTTTTTCATAGGAGGTG ATGCT GGT TG TA GA TTCATA
TATGAGTGGGTCGTAGCGGA TATGG CTA GC AT CT GAGTAT
ATCGGGGGTAT GGG AG- G G GGGT-- -------
GAM635 20436 AAATCAAACTGTTTAATAGG AAAC AA AAT- -- GCTT
AATTTGGAGAGACAGGCTTT AAATC TGTTT TAGG TTGGAGA GACAG
TGTCATTTTCCAATGCACTT TTTAG ACGGA GTTC AACCTTT CTGTT

GGGAGGCACAAGATTT AAC- GG ACGT TA ----
GAM638 11025 CAGCCCTGGGCTGATCCCAG ----- AGCTGTGTG C- TTCCC
CTGTGTGTCACCAGAAGCTT CAGCCCTGGGCT GATCCC TCAC AGAAGCT
TCCCGGCTTCTCTGTGAGGG GTCGGGACCCGA CTGGGG AGTG TCTTCGG
GTCCCACCAGCCCAGGGCTG CCACC --------- TC -----
GAM641 11054 ATCTAAAAGAAGTTACTGAG A ---- AG---- TAATCAC
GAAGATTTGAATAATCACTT ATCT AAAG AAGTTACTG GAAGATTTGAA
TAAGTCTTTGGGAAGCAGTG TGGA TTTT TTTAGTGAC TTTCTGAATTT
ATTTGAAATTTTGAGGT G AAAG GAAGGG -------
GAM642 5502 CAGGGCAGAAGCATGAAAGG G - AA---- - ACCACG ACA
ACACCAACCACGAGTGACAC CAGG CAGA AGCATG AGGACA CCA AGTG
ACTATACTATGGCTGTCCTG GTCC GTTT TCGTAC TCCTGT GGT TCAC
TGTCACATGCTATTTGGCCT G A ACTGTG C ATCATA ---
G
GAM644 14762 GGTGATGCCCAAGATGGACC T CCAA T C- AA CA T GCCG
AGATAACATCACATGAAGGC GGTGA GC GA GGA CAGAT CAT CA GAAG
CGTTTCTGGAATGAAGTCTG CCACT TG CT CCT GTCTG GTA GT CTTT
ACTCCTCCAGTTTCACC T AC-- - CA AA AG - ----
GAM645 13173 GCTGGGGTCCCATAGGATGT CC T TC CATA GAAC
CCTCATATGGGCTTAGAACT GCTGGGGT CA AGGATG CT TGGGCTTA
GGGCCCGACAGCCATCCTTG TGACCCCG GT TCCTAC GA GCCCGGGT
AGCCCCAGT A- - C- CA-- ----
GAM646 7812 ATGGGGGCCTCCTTAAATAC CCTTAAAT A CCAGCAG GGAGGAAA
ACACCAGCAGTCAAGTGGAG ATGGGGGCCT AC CA TCAAGT
GAAAACTTGAACAATAATGA TATCTCTGGG TG GT AGTTCA
GTCGCTTCTTGGGTCTCTAT TTCTTCGC A AATAACA --------
GAM647 21360 TTGATCTCTTGGCGATCTTC CTCT AT TTC ATG TCACTT GGG A - TCAAT
TTCTTGCCCATGGCAGCTGT TTGAT TGGCG CTTC TTGCCC GCAGCTG TGC GGT GC GG

CACTTTGCGGGGGTAGCGGT AACTA ACCGT GGAG AGCGGG TGTCGGT ACG CCA CG CC

CAATTCCAGCCACCAGAGCA CT-- -- TCT GA- ------ AGA C A -----
TGGCTGTAGGGGCGATCTGA T
GGTGCCATCATCAA

-
GAM649 14606 GAGGCAGGAGAATTGCTTGA A AA -- AA- AGG GT A - AGAT
ACCCAGGAGGCGGAGGTTGC GAGGC GGAG TTGCT TG CCCAGG CGGAG TGCGGTG GT TG

GGTGAGTTGAGATCGTGCCA CTCTG CCTC AACGA AC GGGTCC GCCTC ACGTTAC CG GC

TTGCACTCCGGCCTGGGCAA - AA CA AAC G-- -- - T ----
CAACAGCAAAACTCCGTCTC
GAM652 12132 GGTCTCACTGACCCCACAAG A G - AA ---- A GGGAT
GGGCTCTGGAGCTGGGATGG GGTCTC CT ACCCCA C GGGG CTCTGG GCT
CCCCAGAGGGTTTCCCAAGT CCGGAG GA TGGGGT G CCCT GAGACC CGG
TGGGGTGAGGAGGCC - G T AA TTGG C -----
GAM653 16803 ATCAGCTCTTGATGCCTTTC CTT TAAATTAATTATAGAC
TTTTAAATTAATTATAGACA ATCAGCT GATGCCTTTCTTT
GAGAGAGGCATTTAGCTGAT TAGTCGA TTACGGAGAGAGA

```
                          T--          ----------
GAM656  900   TGTGGTACAGGAGGCTGCTT   GT   --   TG --  C  TT   ATAG
      AGCAGTTTTGAGATAGTTTA TGTG  ACAG  GAGGC  C  TTAG AG  TTGAG
      ATCTACTAAATGTGGCCTCA ACGC  TGTC  CTCCG  G  AATC TC  AATTT
      GCTGTGTCGCA          TG   GA    GT TA   A  T-    ----
GAM658  3203  ACTTGTGCTGATATTTTAAG    T  ----  TTTTAA--  TG   CAA  TAT-  GC   T  TTTT
      GATGTGCTCAAGAGTATGAA ACTTG GCT   GATA      GGA  TGCT   GAG   GAA  AGGG GC
      GCAGGGTGCTTTTGTCCCTT TGAAC CGA   CTAT      CCT  ATGA   CTC   CTT  TCCC TG
      TCTCTCCTCCCTAGTAATTC    -  TACC   CCCTCCTC   TA   TCC   CTCT   --   - ----
      CCTCCTCCCTATCCCATAGC
      CAAGT
GAM659  4226  CGCATAGCCGCCTCTTCGAC   A     CTCTT    GG     G T  CCCT
      CAGGCCTTCGGGCTGCCCCT CGC TAGCCGC    CGACCA  CCTTCGG C GC
      GCTGCCGGAGGAGTGGTCGC GCG ATTGGTG    GCTGGT  GGAGGCC G CG
      ATGTGGTTAGCG         -    TAC--    GA     - T  ----
GAM660  15735 AGCCACCTCCGCCACCCCTG   C  CT   CCA   - G    CGA   A  ACACCTAG
      CCCCGCCGACCCAGCACACC AGC AC  CCG   CCC CT CCCCGC   CCC GC
      TAGGCAGGGCCTGTGGGGAG TCG TG  GGC   GGG GA GGGGTG   GGG CG
      TGGGCGCCGGGAGTGCT     - AG   CGC   T  -    TCC   A --------
GAM661  20187 GGTCATTGTGCCCTGCCAAG   T  TTG    G-   A-  A   G  G        ---  AGAAT
      CACAGCGTAGATCTGGAAAG GG CA   TGCCCT  CCA  GC CAGC TA ATCTGGAAAG   AGC
      AGCAGAATGTTATCCTTTTC CC GT   ACGGGG  GGT  TG GTCG GT TAGACTTTTC   TTG
      AGATGTGGCTGGTCATGGAA   T TG-    AA   AC  -   - G        CTA   -----
      GGGGCAGTTGTCC
GAM662  5539  TTGGACCTAAGTGTAACTCC       AA     CTC----    TGCACTAA       AGCCATG
      TTCATGCACTAAACTGGACA TTGGACCT  GTGTAA      CTTCA       ACTGGACAG
      GAGCCATGCTGTCTAGTCTT GACTTGGA  CACATT      GAAGT       TGATCTGTC
      GAAGTCCTCATTTACACAGA       GA     TACTCCT    TC------       -------
      GGTTCAG
GAM663  6812  AGCACATCTTTGAGATCTCC       C---   - A  TC      CC   CCTAC
      CGCCGTCCTGACCTACTCAC AGCACAT    TTTG AG TC  CCGCCGT  TGA
      TATGGTGGTTGACTACAGAA TCGTGTG    AGAC TC AG  GGTGGTA  ACT
      CCCGTGTGCT             CCCA   A  -  TT      TC   -----
GAM664  1828  GCAAATAAAGTAGACATGGT       AAGT-  CA      ATA  G    AG   GTTTATA
      CTGGATAGTTGGTGGCAGTT GCAAATA    AGA  TGGTCTGG   GTT GTGGC  TTCT
      CTGTTTATAAGGAAGCCATG TGTTTAT    TCT  ACCGGACC   TAA TACCG  AGGA
      AATCACCCAGGCCATCTTAA       CAAAT  --       CAC  G    A-   -------
      ACTATTTGT
GAM665  14921 GCCGCACCAGGTCTTGTAGC       CAGG   T  A  A   --- C   GAGAAGCCAACA
      AGCGCCTCCTCGAGAAGCCA GCCGCAC    TCT GT GC GCGC   CT CTC
      ACAGAGCAGTAAGCGCAGCA CGGTGTG    AGG CG CG CGCG   GA GAG
      GCCGGAGTGTGGC            ----  C  A  A    AAT  C  ------------
GAM666  12292 TTATTAGTGATGAGTTATGT      GTG       GTGTTA  GG    CGTGTTGTT
      GTTAGCGGAGTGTCGTGTTG TTATTA   ATGAGTTAT     GC  AGTGT
      TTATACTAAGCGTAGGAGTG AATAAT   TGCTTAGTG     CG  TCATA
      ATTCGTAGATAATAA          AGA       AGGATG  AA   ---------
GAM668  3953  TCAACAGGGATTTGGTGCCA      - -      -----  C    GAG      ---  -  AATGG
      ACTGGAGTCTTGGTGACCAA TCAACAG GG ATTTGGT    GC AACTG   TCTTGGT   GA CC
      TGGGGATTATGATCAAGAAC GGTTGTC CC TAAACCA    CG TTGAC   AGAACTA   TT GG
      AGTTTGCTGATGACCAAATA       A  A      GTAGT  T    A--      GTA  A  -----
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GAM669 2733 TGTCTGAAGGAAACATTGGG TGA---- AACATT TCT---- ATG- AATGCAG
ATCTTCTGTGATATGGATGG TGTC AGGA GGGATCT GTGAT GATGGGA
GAAATGCAGTCTCATCAGGA ATAG TTCT CCCTGGG TACTA CTACTCT
ATCATTTGGTTTGGGTCCCT TTAATGG GTT--- TTTGGTT AGGA -------
TGTCTTGGTAATTGATA
GAM670 18613 GGTGGGGGACACAGGTGCGC - CA GC A ACAGAGTCA
AGCTGCACAGAGTCAGCAGC GGTG GGGGA CAGGT GC GCTGC
AGCAGCCTGCTCCCCGCACT TCAC CCCCT GTCCG CG CGACG
G C- A- A ---------
GAM671 2107 GTGCCTCAGCCTCCTGAGTA CTC T T - TG ATTCAC CTTGC
GCTGGGATTCACGGGTGCTT GTGC AGCC CC GAGT AGC GG GGGTG
GCCACCTTGCCTGGCTAATT CATG TTGG GG CTTA TCG CC TCCAC
CGGTGGTTTTAGTAC ATT T - A GT GT---- -----
GAM672 8202 AAGGTAATGCTCATTTAGAC A CTCAT- CTG CA - TTCCAATCCCTTC
TGACACAGGTATGAAAATTC AAGGT ATG TTAGA ACA GGTA TGAAAA
CAATCCCTTCTTTTCACTAT TTCCA TAC AGTCT TGT CTAT ACTTTT
CATTGTATCTGACACACACA C ACACAC A-- TA C ----------
TCACCTT
GAM673 1045 CCTGTTGGCACTGATGAAGA ----- AT- A------ TACAGTTC
ACCCTTACAGTTCAGGGTCC CCTGT TGGCACTG GAAG ACCCT
TGGAACTTCTACCAGTGCCA GGACA ACCGTGAC CTTC TGGGA
CTCTGACAGG GTCTC CAT AAGGTCC --------
GAM675 2961 AAATATTGTGCACCATATGG A A G AGT- G--- ATG
AAGTACTGCCTTATATGATA AAAT TTGTGCACC TAT GA ACT CCTTAT
AGGATAAAGTTAAATTGGTA TTTA AATATGTGG ATG TT TGA GGAATA
GGTGTATAACATTT C - G AAAT AATA ---
GAM676 16675 GGCTCCTGTGTCTTCTCACT T CTTCT TCTT AT TTGT
CTTGGTATTCCTGCTTGTGC GGC CCTGTGT CAC GGT TCCTGC
AGGAGCCTGTGTACACAGGG CCG GGACACA GTG CCG AGGACG
CC - T---- T--- -- ----
GAM677 13751 GTGGGTAGCAGTTAATCACA --- TAA-- GC AGGTA
TGCTGATAGGTAATCAATGT GTGGGTA GCAGT TCACAT TGAT
GGCAGATACTGTTAGTGCCC CACCCGT TGTCA GGTGTA ACTA
AC GAT TAGAC -- -----
GAM678 2415 GCTGGAGCGCAGTGGTGTGA GA C--- G TCACAG AACCTCAA
TCACAGCTCAGTGTAACCTC GCTG GCG AGTGGT TGA CTCAGTGT
AAACATTGGGGTTCAAGCCA CGAC CGT TTACCG ACT GGGTTACA
TTCTCCTGCCTCAGC TC CCTC A TG---- --------
GAM679 14590 GTGGGGTAAAAGCCCAGACG AA AC C A C CTT- C GAGAACAAGCTGAA
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CTGGGAGAACAAGCTGAACC CGCCCCGT TTGGGTC CG TACTT C ACG CCGG ACC
AGGCCTTTTGCATCTTCATG C- C- - - T TTTT - ----------
CCCTGGGTTCTGCCCCGC
GAM681 13962 CCGCCGCCGCCGCCGCCCCC - CCGCCCCC-- CACTC CTCTACCGCC
TGCAGCCACTCTCCCGCCTC CCGCCGCCG CCG TGCAGC TCCCGC
TACCGCCGCGGGAGCTGCAT GGTGGCGGC GGC ACGTCG AGGGCG
CGTCCACTCCGGTCGGCGGT T CTCACCTGCT ----- ----------
GG
GAM682 19221 TGGTAGAATGGAAACAGCAG AGA AAACA GTGA A AAG G CCTCCCAT

TGACTACATGGAAGGCAGAG TGGT ATGG GCA CT CATGG GCA AGGA
GACCTCCCATTCCTGTGCAG ACCA TGCC TGT GA GTACC CGT TCCT
CCATGGAGAAGATGTCCCGT GTG C---- AGAA G GA- G --------
GTGACCA
GAM683 19743 GACCAGCGACATTTTTGGGT ---- ATT-- CTCC--- CAC CTTCACGCT
CTCCGGTCACTGCCACTTCA GACCAGC GAC TTTGGGT GGT TGCCA
CGCTTGGCACACCCAAACAA TTGGTCG CTG GAACCCA CCA ACGGT
ACCCAAGTCAAGGTCCTCGG GCTC GAACT AACAAAC C-- ---------
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GAM684 6847 CATGGATGACTTGGGGACCT T-- -- CCT GGA-- A- GC A GATGAAC
TGTATGGACAGAACTGGCTC CATGGA GACT TGGGGA TGTAT CAG ACTG TC ATGACCAGGT

AATGACCAGGTGATGAACAT GTATCT TTGA ACTTCT ACGTG GTC TGAC AG TACTGGTCCA

GTATGGAGACCTGGTCATGG TCT TA TT- GAAAA CC AC G -------
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CATTTCTTCAATAGTTTCTT
CTATG

GAM685 10353 GCTAGAAGGGGCCTGGGAGG A AG --------- A C - CTTCCTGCAA
CGGGGCTGGACCTTCCTGCA GCT GA GGGCC TGGG GG GGGGCTG GAC
AGTCGCAGCTCCACCCCTCA CGA CT CCCGG ACTC CC CCTCGAC CTG
CTAACTGTTGGCCCTCAGC - -- TTGTCAATC C A G ----------
GAM687 3315 CGGGAGCGCTGGCGGCAGCA A C AGAACGTTAA CCTT
GAACGTTAACGGCGCCTTCG CGGG GCG TGGCGGCAGC CGGCG
CCGAGCTGAGGAAGCTGCTG GCCC CGC GCCGTCGTCG GCCGC
CCGACGCACCCG A A AAGGAGTCGA ----
GAM688 18668 GACAGTGAAGGATTCTTATC AAGGA- A AA -- T GCCTGTGA
ACATAATGTGCAGGCCATGT GACAGTG TTCTT TCACAT TGTGCAGGC CA GT
GCCTGTGAACTTGAAGTTTG TTGTTAC AAGAA GGTGTA ACGCGTTTG GT CA
CGCAAAATGTGGAAAGAAAG AGAAGA A AA AA T --------
AAGACATTGTT
GAM692 13106 CTTCGCCTGCCTCTCTGCCC T--- ---- T C- ATCACC
TTGTCCTCATCACCGACCGG CTTCGCCTGCC CTCT GCCC TGTC TC
CATGGGCTGCAGGAGCCGCG GAGGTGGGCGG GAGG CGGG ACGG AG
GCGGGTGGAG CGCC ACGT T CC ------
GAM693 8902 GGATTGACAGATTGATGCTC - T - TT T CCGT T GCATT
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TGTGCATTGCCGTTCTTAGT CTTAATTG TCTG TTA CGAGG G GTTGA TCTTGC CG
TGGTGGAGCGATTTGTCTGG G T G T- - T--- - -----
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CTGAAGTCGAAGATGGGGGT GACG ACGG GCCTTGA TGGGGGT CTGA
GTCACAGTTCCGAGGCAGCA -- A CACTG- AGAAG- ----
G
GAM695 13827 TACCTGGAGGCCATTCACAA TGG - - - TTC C AAACG
CTTCGTGGAGGTCTTAAACG TACC AGG CCA TTCACA AC GTGGAGGT TT
AATATTTCCACAATGTCTGT GTGG TCC GGT AAGTGT TG CACCTTTA AA
GAACTGGACCTGGTG --- A C C TAA T -----

GAM696 8872 GGGCTTCCCCAGTGTCTTTG TC T- TG - GTGAAAAAGA
GGGGTCTGTGAAAAAGAGGA GGGCT CCCAGTG CTT G GGGTCT
TCCTCTGAGGTTTACTGGGA CTCGG GGGTCAT GGA C CCTAGG
GGGCTC GA TT GT T ----------
GAM697 12445 GTTAAGGACTCTGAAGATGT GA ---- AAGA AC G C T - AAATGTG
ACCTATGGTCCTAGTAGGAA GTTAAG CT CTG TGT CTAT GT CTAG AGG AAAT
ATAAATGTGATTTGCCTTCT CGATTC GA GAC ACA GATG CA GATC TCC TTTA
AGAACAGTAGACACAGAACA AG CTCG AAG- CA A A T G -------
GGCTCAGGACTTAGC
GAM699 12022 TGCAGTGGCGTGATCTCTGA C --- ----- GCCAAAG
ATTGCCAAAGAATTCAGAAG TG AGTGGC GTGATC TCTGAATT
GCTGATTATTAAGCTACTCA AC TCATCG TATTAG AGACTTAA
- AAT TCGGA -------
GAM701 17281 CTGTCAGGGCTGATGGTGAA AGG-- T T- CGCGGA
GGGGTCAGCACGCGGATGTT CTGTC GCTGA GG GAAGGGGTCAGCA
GATCTTTTCTTTCTTCAGCA GACGG CGACT CT CTTTTCTAGTTGT
GTTCGGCAG CTTGA T TT ------
GAM703 15643 AGGCGGCCTCCAACGCGAGC CTCCAA- A AAA CC C CAGCGCGGACAT
GAAAGACGCCAGCCGAGTCA AGGCGGC CGCG GCG GACG AGC GAGT
GCGCGGACATACTCGCTCCC TCCGCCG GCGC CGC CTGC TCG CTCA
GTCCCGCCCGCGGTCCCCAG ACCCCTG C C-- CC - ----------
CCGCCT
GAM705 14625 GAGTCGGTGCTTGGTACCTG C - --- ------ GT CTCC CAAC
GTCTCTCCAGTCTCAACAGA GAGT GGT GCT TGGT ACCTG CT AGTCT
CTCAGGTCAGGTCTCTCAAC CTCA CCA CGA ACCA TGGAC GA TCAGA
CAGGAAGCAACCACTC - A AGG ACTCTC TG C--- ----
GAM706 13268 GTGAGAACTTGGTATTATTG A CT TTAT T AGAA AA AATC
GTTCGAGAAGGAATTGGTGA GTG GAA TGGTA TGG TCG GG TTGGTG
ATCCACCGGCCGTGATCCAT CAC CTT ACCAT ACC AGT CC GGCCAC
ACCATTCCAC - -- ---- T G--- -- ----
GAM707 9485 GAAGGGGTGACCACCCCCTT AA TG - TT CCTTCT GGAA
GGGCCTTCTGGGGGAACTCT G GGGG A CCACCCCC GGG GGG
CCCTTGGGGGTGGCTTGCCC C CCCC T GGTGGGGG CCC CTC
CCAC AC GT C TT T----- ----
GAM709 22814 TTAGAATGCAGATTCTCAGC G GATT C CC A---------- ATGGTGAA
CCCCTCCCAGACATGGTGAA TTAGAAT CA CT AG CCCTCCC GAC
GTCAGAAGCTCTCAGGGAGG AATCTTA GT GA TC GGGAGGG CTG
GACTCAGCAAATGATTCTAA - AAAC C A- ACTCTCGAAGA --------
GAM710 2770 AGACGCTCTTTGTGCTAGGG C T CT--- T --- AATTG
TGATGTCAATTGGACAGATT AGA GCTC TTGTG AGGG GA TGTC
CTCCCTTTCTTCACAATGGG TCT CGGG AACAC TCCC CT ACAG
CTCT - T TTCTT T TAG -----
GAM711 5273 CTAGAGCGGTCCTTGGGGAG A G TG -- A TCCCAGT
ACGCGGGTCCCAGTCCTGCG CTAG GCG TCCT G GGAG CGCGGG
GCTCCTACTGGGGAGTGCGC GGTC CGT AGGG C CCTC GCGTCC
TGG G G GT AT G -------
GAM712 9616 CTCTCCCTTGCAGTTGTTCG C - TT T- C C GCCAAA
CCCCTCTGGGCCAAACCAAA CTCT CCT TGCAG GT CG CCCT TGG
GGGACGCTGCTCTGTACAGG GAGA GGA ATGTC CG GC GGGA ACC
TAGAG T C T- TC A A ------

GAM716 22837 CCTCGGCGGCCCGGCTGGTG -- G--- --- CACACACTCTAT
AATCACACACTCTATGTTCA CCTC GGC GCCCGGCT GGTGAAT
CCTGCAGCCGGGCATGAGCC GGAG CCG CGGGCCGA CCACTTG
TGGAGG GT AGTA CGT ----------
GAM717 8039 GGGGACCGGTCTCACCGAAT A- -------- GAATGCA --- ATCTT
GCATCCTGTCGGGCATCTTG GGGG CCGGTCT CACC TCCTGT CGGGC
TCTGTGAACGGGAAGAAGGT CCCC GGCCAGG GTGG AGGGCA GTCTG
GCTGCACATGGACCGGAACC AA TACACGTC AAGA--- AGT -----
CC
GAM718 14198 GTAACCTAGAGAGGGGTGCC TA GTGCC GT A AAATCTC
CCCAGTGTGGGTTAGAAAAT GTAACC GAGAGGG CCCAGT GGGTT GA
CTCTCGGATCTTGATTGGGT CGTTGG TTCTCCT GGGTTA TCTAG CT
CCTCTTGGTTGC -- ----- GT G -------
GAM719 18849 GTCACGAAAGAGTGTCGGAT GAAAGAGT - GGA--- - GGATT
TCGGATCGCTGGTGGATTGC GTCAC GTCG GATTC TCG CTGGT
CAGACGAGGTTTAGGGTCGC CAGTG CGGC CTGGG AGC GACCG
GGCTACAAGTGAC AACAT--- G ATTTGG A -----
GAM720 7024 AGGCGCCATTCCTTCCACAT CC--- AT-- T- GAGGAAAGCCAGTAGGA
TCGGCTATGGGGAGGAAAGC AGGCG ATTCCTTCCAC TCGGC ATGGG
CAGTAGGACCCATTTGTCGA TCTGT TGGGGAAGGTG AGCTG TACCC
CATGGTGGAAGGGGTTTCAC CACTT GTAC TT ----------
TGTCT
GAM721 16262 CCACCAGTCCAGGGGTGGGA A C - --- AA--- AG G GAG GC GAGG
ATACAGGGGGTGGGAGGTGT CCACC GTC AGGG GT GGG TAC GGG TGG GTGT ATAA
GCATAAGAGGTTATAGGCAC GGTGG CAG TCCT CG CCC ATG CCC ACC CACG TATT
AGGCCAGCCCGGTACAGAAC A - G GAT AAGAC G- G GGA GA ----
CCTAGGCGTCCTGACAGGTG
G
GAM722 9724 ACTGGCGCTGCAAGGCTGTG TGCAA T - ---- - CT GAACGGGA
GGCAAGGTCATCCCTTGAGC ACTGGCGC GGC GTGGG CA AGGTCAT CC TGAGCT
TGAACGGGAAGCTCACTGGC TGACTGTG CCG CACCC GT TCCGGTA GG ACTCGA
ATGGCCTTCCGTGTCCCACT CAA-- T T GCCT C TC --------
GCCAACGTGTCAGT
GAM723 14388 GGCGTTTTTGGCTCCATTTA C TTT A AA - ----- T CATTTA
ACAGAAGAAGGACCATAGTG GG GTT GGCTCC TTT CAGAAGA AGGAC CATAG GAT
ATCATTTAATCTCTATGAGT CC CAA CCGGGG AAA GTCTTCT TTCTG GTATC CTA
CTGTCTTATCTTCTGGAAAA A T-- - AG A TCTGA T ------
GGGGCCTAACACC
GAM724 19887 CCAGATTGCCTCGTTAAATC ATT - AAA T TTGGTGAAAT
CTTAACCTTGGTGAAATGGT CCAG GCCT CGTT TCCT AACC
TTGGGAAAATGCAGGTCTGG GGTC TGGA GTAA AGGG TTGG
--- C A-- T ----------
GAM725 20889 ATCTTGGAAGGGACCTGTTC TGG ACCT - G G AGCTGTGAG
TCCTGCCAGAGCAGCTGTGA ATCT AAGGG GTTCT CCT CCA AGC
GGTTATGGAGGAAGAACCCC TAGG TTCCC CAAGA GGA GGT TTG
TTGGAT --- ---- A - A ---------
GAM726 22711 TGGGGAAAAGGTCAGAAAGA AAA-- A CC T CCA-- ACAGTA
CCTCCTGACTCCATGTTACA TGGGG AGGTC GAAAGA TCC GACT TGTT
GTAGACAAAACAAGTTGGAC ATCCC TCCAG TTTTCT AGG TTGA ACAG
TCTTTTGGACCTATAAACCC AAATA G C- - ACAAA ------

TA
GAM727 3184 CGGAGCTCGCTTCTTTGCCC - CTC- CTTT --- T -- A - A ATCT
AGGTTGGAGTGCAATGGCAC C GGAG GCTT GCCC AGGT GGAG TGCA TG GC CA
AATCTTGGCTCACTGCAACC G CCTC CGAA TGGG TCCG CCTC ACGT AC CG GT
TCCGCCTCCCGGGTTCAAGC T TTAA CT-- CCC - CA C T - ----
AATTCTCCTG
GAM728 7885 CGCGCGGCGACGCGGCACAC C A--- CG ACAC ACACAC TCTCG
CCGGACACACGCTCTCGGCA CGCG GGCG CG GC CCGG GC
CCCCCCCGGCAACGCAACGG GCGC CCGC GC CG GGCC CG
CAACGCCACGCG A AACG AA CAAC CCCCCA -----
GAM729 9173 GATCTAACATCCATTTATTG T AAC TT TGA CCACTT CACTTAGAT
AGAAGTTTCCACTTGCTGTA GA CT ATCCA TAT GAAGTTT GCTGTA
CACTTAGATTGCAGCCTTAG CT GA TAGGT ATA TTTTAGA CGACGT
ATTTTATATTTGGATCAAAG T AAC TT --- TTC--- ---------
TTC
GAM730 6068 GAGATCAAAGGGGAATGGGA TCA G T - A CC- TCCCCCACTGCCT
CTAAGACTGCAGAGCCCTGG GAGA AAG GGAA GGGACTA AGACTGCAG GC TGGC
CTCCCCCACTGCCTGCCAAT CTCT TTC CCTT CTCTGGT TTTGGCGTC CG ACCG
TGCCTGCGGTTTGTGGTCTC --- A - G - TTA ----------
TTCCACTTTCTC
GAM731 6731 GGAGGTTTCGAAATACACCA ------ GAAA- A TA GCATGACA
GTTACGAGCTGCATGACAAG GGAGGT TTC TAC CCAGT CGAGCT
TTTGGCTGGGTGAAAGGGAA CCTCCG AAG GTG GGTCG GTTTGA
TGGAATGCCTCC TAAGGT GGAAA - -- --------
GAM733 3342 GGAGTTTCGCTCTTGTTGCC TT CT TT A-- C -- A - A ATAT
CAAGCTGGAGTGCAATGGCA GGAG TCGCT TG GCCC AG TGGAG TGCA TG GC CA
CAATATTGGCTCACTGCAAC CCTC AGCGA AC TGGG TC ACCTC ACGT AC CG GT
CTCCACCTCCCGGGTTCAAG TT -- T- CCC C CA C T - ----
CGATTCTCC
GAM734 12373 TTCTGCACCACTGGCATGGA G C - C T AGTA - A GAA G GA AGCC
TGGCGGCATGAGTATCTGGG TTCT CA CA CTGG ATGGA GGCGGCATG TC TGGG TGT GA CTTG
GTC
ATGTGAAGAGCTTGGAGTCA AAGG GT GT GATC TACTT CCGTTGTAT AG GTCC GTA CT GAAC
CAG

GCCTTGAAGGACCTCAAGAT G C C C - AAGG T A AA- A TC ----
CAAATGACCTGTGAGGAATA TTGAAG
TGTTGCCTTCATCCTAGCTG
CTGGGGAA

GAM736 5616 GGGGTTCTCCGGGGAATCCT CC- GTCAG
CCAGCTTGGTCAGCAAGTTC GGGGTTCTCCGGGGAATCCT AGCTTG
TCGGGGTTCTCCGGGGAATT TCTTAAGGGGCCTCTTGGGG TTGAAC
CT CTC -----
GAM737 18659 TAGAGATGGGGTTTCAACTT A GTT- A TT CT CTTGA
GTTGGCCAGGCTGGTCTTGA TAGAG TGGG TCA CTTG GGCCAGG GGT
ACTCCTGGCCCCAGGTGATC ATTTC ACCC AGT GGAC CCGGTCC TCA
CACCCACTTTA - ACCT - C- -- -----
GAM738 13222 GTTCTTTTCCCTTGCTGCAA TTCCCTT A---------- ACAG
CCTACAGAGGTGCCATTGTG GTTCTT GCTGC ACCT

GGAATGATAGTAGCTGAAAT CAAGAA CGATG TGGA
TAAGAAC TTAAAGT ATAGTAAGGGTGTTACCG ----
GAM739 5403 GCATGCGATTTGTTAATCAT T T ------- A AGTC AG TTG
GATGGAGTCTCAGAGCTTTT GCA GCGATT GTTAA TCATG TGG TCAG CTT
GAAGAGCTGAACCGATATGA CGT TGTTGA CAATT AGTAT GCC AGTC GAA
GAAAGTCTTAACCAGTTGTT - C CTGAAAG A A--- GA ---
GC
GAM740 19872 TTTTTGGGGAAGTCATGCTG TG A-- T- A T TGT GCCTGAAAAA
AGGGTGGTAGTGTGACCCTG TTTT GGG AGTCA GCTG GGG GGTAG GACCCT
CCTGAAAAAAGGGTCTCTTA AGAA CTC TCGGT CGAC CCT CCATT CTGGGA
CCCTCCCAGCCCTGGCTCAA GT AAC CC - C CT- ----------
CTCTGAAGA
GAM741 2332 GGAGTGTGCATGGTGAGGGA G -- GGA - -- ACTGA
TAGTTCTTGGGCACTGAGCC GGAGTGT CATGG TGAG TAGT TCTT GGGC
TGGAAGAGGCTGGCACTCAC CCTCACG GTACC ACTC GTCG AGAA TCCG
TCCATGGGCACTCC G TC ACG G GG -----
GAM743 9228 GAGGACGTGGGGGCTGCTGC CG GCT AAC AG TG CTGG
CCAACACGGAGGCTGGGCTG GAGGA TGGGGGCT GCCC ACGG GC GG
GCCTGGTCCGTGGGCTCAGG CTCCT ACTCTTGG CGGG TGCC TG CC
TTCTCATCCTC -- ACT --- -- GT ----
GAM745 15281 TGAGGATTCCAATCTGATAC -- AT- TACCCAA---------- ATT
CCAAAGAGATTCTCTGGCGA TGAGG ATTCCA CTGA AGAG
CCAAAAGAAGCCTTCAGTGA ACTTC TAAGGT GACT TCTC
TGGAATAACTTCA AA AGT TCCGAAGAAAACCAGCGG ---
GAM746 6963 TGGCCAGCAGTTTTTAGGTC --- TT GTAC ACT
TGTCAGTACTGCACTGCAAG TGGCCAGCAG TTT AGGTCTGTCA TGC
AATGGCAGATTTTGGGATCT ACCGGTCGTC AGG TTTAGACGGT ACG
CTGCTGGCCA TCT GT AAGA ---
GAM747 14952 CTGCCTTTCATGGCTTCTTC - A TTCT CAAA CCCC--- AAT
TGGGCCAAATCCCCCCCTGA CTGC CTTTC TGGCTTC GGGC TCC CTG
ATCAGAAAATAAGGAGCAGC GACG GGAGG ACCGGAG CTCG AGG GAC
TCGAGGCCAGGAGGCGCAG C - ---- ACG- AATAAAA ---
GAM748 16995 GCAGCCTCCCTGAGGTAGAT CTCCCTGA T C TC AA A CTTCTC
GTGTTCTCCTGTCACTTAAA GCAGC GGTAGATGTGT CTC TG ACTT AGA CCAG
GAACCAGCTTCTCCTGGTCT CGTCG TCGTTTACGCG GAG AT TGAG TCT GGTC
GAGTAGTAAGAGGCGCATTT TTG----- - A GA -- - ------
GCTGTTGCTGC
GAM749 3079 AGGAAACAGAAAGTTTGAGC AA TT AG CTATA TCTTTATCCCAATCAAAT
CTATAAGCCTCTTTATCCCA AGGA CAGAAAG TG C AGCC
ATCAAATGGCTAACGTCCAC TCTT GTCTTTC AC G TCGG
TCTTTCTGGCTTCT CG TC CT CAA-- ----------
GAM751 19797 GCCTGCTGCTGTACTTCATC C-- GT TCATCAGAAAA T TG - AGGGC
AGAAAACACCTTCAGCTGCT GCCTG TGCT ACT CACCT CAGCTGC CAG GA
GCAGGAAGGGCTCTTTGTGG CGGAC ACGG TGA GTGGG GTTGATG GTT CT
TAGTTGGGGTGCACATTATC ATC GT TACTATTACAC - GT T -----
ATAGTTGGGCACTACAGGC
GAM752 4624 GCCATTCATTTTCATTAACA TTCATTTTCATTAACAC TG - G ATAC
CATATATTCTGTCCTGCAAT GCCA ATATATTC TC CT CA
ACTGGAGAGGTGGAATGTGT CGGT TGTGTAAG GG GA GT
CTGGC C---------- GT A G ----

GAM753 13058 AGCTCCGCGCCGCCGGCAAT - C - AATG TTCCT- AA CAGTAC
GAGAGTTTCCTGCAACGGCC AGC TCCGCG CGC CGGC AGAGT GC CGGC
AGTACGCCGAGGCCTCCGCG TCG GGGCGT GCG GCCG TCTCG CG GCCG
CTCTACGGCCGCGCGCTGCG T C C GCA- CGCCTC GA ------
GGTGCT
GAM754 13974 CCGGAACCTGCTCATCTGGA GA - - A CAA G -- AAAAGAGC
TCAAGAAGAATTTGCTAAAA CCG AC CTG CTC TCTGGAT GAA AATTT GCT
GAGCGGCCAGAGTTGTTCAT GGC TG GAC GAG GGACCTA CTT TTGAG CGG
CCAGGGAGACAGCGTGCGG G- C A - --- G AC --------
GAM755 12633 GTAGAGATGGGGTTTCACCA A A GTT- CAT TAGC T CTCG
TGTTAGCCAGGATGGTCTCG GT GAG TGGG TCAC GT CAGGA GGT
ATCTCCTGACCTCGTGATCC CG CTC ACCC AGTG CA GTCCT CTA
ACCCACCTCAGC A C ACCT CTC ---- - ----
GAM756 6044 CAGTTGGTCTTGGCACTCAA CT A - AC --- C G ATCTT
CCAGCTTCGCCTCCGTGATC CAGTTGGT TGGC CT CA CAGCTTC GC TCC TG
TTCAGGATGTCAGGGAGCTG GTCGACCA ACTG GA GT GTCGAGG TG AGG AC
CTGCAGGTCAACCAGCTG -- - C C- GAC T - -----
GAM757 12424 AATCTTCAATATCCAAGAAA A- AAGAAAAGAAACCC AATAGTACATG
AGAAACCCCCAAAGAATAGT AATCTTC ATATCC CCAAAG
ACATGCTTTGGACTAGTGGA TTAGAGG TGTAGG GGTTTC
AGGGATGTGGGGAGATT GG GAAGGTGATCA--- ----------
GAM758 16717 GGGACATCCCGAGGAAAGGC AT A AAA GC TA GATCA
TGCGTGTACGGATCACGGGC GGGAC CCCG GG GGCT GTG CG
ACAGCCAGCCGCGGGGCGTC CCCTG GGGC CC CCGA CAC GC
CC CG G GA- -- GG -----
GAM759 21037 TTGGAGCCAGGAGCCTGCCA A CA - -- TGAG A AGTG
TGAGGTTTTGAGAACAGAGT TTGG GC GGA GC CTGCCA GTTTTGAGA CAG
GCTGTTTTAGAGCTGGCAGC AACC CG TCT CG GACGGT CGAGATTTT GTC
AGCATCTCAGCCCAA - AC A AC ---- - ----
GAM761 22099 CACAGGAGGGATCCTTGGGT GGA T--- AGG ATTTA - CCAAAC
TAAGGATTGTATTTAAAAAC CACAGGAG TCCT GGGTTA ATTGT AAAAC CC
CCCCAAACGGCGTTTTAACA GTGTCCTC GGGA CCCAAT TAACA TTTTG GG
ATGGTAACCCCCCTAGGGCT --- TCCC GG- A---- C ------
CCTGTG
GAM762 20337 GGTGCTGTCGGGCGGCACCA --- - CACCA- A-- --- GCATTG
CCATGTATCCGGGCATTGCC GGTGCTG TC GGGCGG CC TGTATC CGG
GACAGATGCAGAAGGAGATC CCACGAC GG CCCGCC GG ACGTAG GCC
ACCGCCCTGGGCCCAGCACC CCG T ACTAGA AAG ACA ------
GAM763 11531 CTTCCTTTGGTTTCTGCCGG TC - T G C TCTGC
CCTCGGGCTTCTGCGGCCCG CT CTT TGGT TCTGCCG C TCGGGCT
ATGTGGCAGGCGCCGCGAGA GA GAG GCCG GGACGGT G AGCCCGG
GAG GA C C - T -----
GAM764 8930 GAGGGTGTCTATGGAGAGGC GT ------- - G G G GA GGAG
GGCGGCGCGGCTGCTGAGGC GAGG GTCTAT GGAGAGG CG CG CGC GCTGCT GGC

GGAGGCTGAGGCAGTGGCGA CTTC CAGGTG CCTTTCC GC GT GCG TGACGG TCG
TGGCGCCCTTTCCTGAAGAA TG AAGAAGT C G A G AG ----
GTGGACGTCTTC
GAM765 13424 TCTTGGGCATGAATTTACTG G AATTTACTGG- T ACA AAA
GTTATGTTCAACACGTAAAA TCTTGG CATG TTATGT CA CGTA

TATGCAATGACATGAATAAT AGAACC GTAC AGTACA GT GTAT
AGCTGCCATGCCAAGA - CGTCGATAATA - AAC ---
GAM766 5111 GTTGGGATTCCCATCGGGGA G - A GG ------- - ATGATGAA
GGGTGCTCATGATGAAGAGG GTTGG AT TCCC TCG GA GGGTGC TC
TACTCAAGACAATTGACGAG TAGCC TA AGGG AGC TT CTCATG AG
GGAGATGCCGAT G G - AG AACAGAA G --------
GAM768 7138 GGCTGCAGGTCTTGGAAGGA A- GAAGGA GCAA-- -- TTGATT
ATGTGGGCAAGGTTTTGAAC GGCTGC GGTCTTG ATGTGG GGTTTT GAAC
TTGATTGTTCTTGAAGCTAT CTGACG TCGGAGC TACACC TCGAAG CTTG
CAGACCACATCGAGGCTCAG AC ------ AGACTA TT ------
CAGTC
GAM769 6439 CTGGGGACTGAAGACCACTG G AAGA GAGTTG C C- GT CAGCC
AGTTGACCACATCCTCGTGC CTGGG ACTG CCACT AC ACATC TC GCCG
CGCAGCCTGGCCAGACAGAT GACCC TGGC GGTGA TG TGTAG AG CGGT
GTTGTAGTGGCGGTCCCAG - ---- ------ T AC AC -----
GAM771 4748 GCATTTGGTTTTAAAATTTT G TT ATT TAA CA- ATTTAAAA
TATGCTAATATAAATGCTCA GCATTTG TT AAA TTTATGCTAATA ATGCT AGTA
AGTAATTTAAAATATTGAAA CGTAAAT AG TTT AAATATGGTTGT TACGA TTAT
GCATCCCTGTTGGTATAAAT G TC --- CCC AAG --------
TTCTGAGTAAATGC
GAM773 12626 GCAGATTTGTGTTTTGTTTT - -- TTTTCT----- CA- TCACA
CTTGTTATCACTGTCACACA GC AGAT TTGTGTTTTG TGTTAT CTG
GCTTATAACATGTATGCTTT CG TCTG GACATAAGAC ACAATA GAC
TCAGAATACAGTTGTCTAGC A TT TTTTCGTATGT TTC -----
GAM774 19977 GAAGAACGAGTAACCTGAAA C T C AAT -------- A - AATCCCACC
TGAAGGAGCGAGAATCCCAC GAAGAA GAG AA CTGA GAA GG GC GAG
CCTCAGCCCCCCAACAGCTT CTTCTT TTC TT GACT CTT CC CG CTC
CCTCAGCTTCTTTTTCTTC T - C C-- CGACAACC C A ---------
GAM775 20290 CAGCCTAACTTCCTAGTGTG ACT T A AG- A AGCAGGCAC
CATCAGGCAAGATGAGCAGG CAGCCTA TCCTAG GTGC TC GCA GATG
CACCATCATGTAAAGAGCAC GTCGGAT GGGGTT CACG AG TGT CTAC
CTTGGGGTGTAGGCTG GT- C - AAA A ---------
GAM776 9892 GGAGAAGATCACCTCTTCTC A TC CT - A C---- TTTAT
ACAGCACACAAATTTTATGT GGAG AGA ACCT TCT CAC GCA ACAAAT
TTGTCTCATTGCAGTGTAGA CCTT TCT TGGA AGA GTG CGT TGTTTG
AGGTATTCTGTTCC G TA -- T A TACTC -----
GAM777 14588 ACCTTCACCTTCCTCACCAA CCTTCC AAAG - --- TTT
AAGCACTCACTTCCTGGTTT ACCTTCA TCACCA CACT CACTTC CTGG
CCAGAAAGAGGTGAAGTGAA TGGAGGT AGTGGT GTGA GTGGAG GACC
GTGGTGACTATGGAGGT ATC--- GAA- A AAA ---
GAM778 12989 GCATCCAGCATGATGCCCTG CA-- T CCT TC A CTTCTCCAACGC
CTCGTCCAGCTCTTCTCCAA GCATCCAG TGA GC GC GTCC GCT
CGCGGCCGGACATGTGCTTC CGTAGGTC ACT CG TG CAGG CGG
AGAACCTGGATGC CAAG T --- TA C ----------
GAM780 9911 CAGGTCCTGCCTGTTCCCCA G - ---- --- A ---- TCTCACC AACCC
TGGTGCTTCTCACCCTGAAA CAG TC CTGC CTGTTC CCC TGGT GCT CTGA
CCCTCAGAGCTACAGCCAGG GTC AG GACG GACGAG GGG ACCG CGA GACT
GATAGAGCAGATGAGCAGTG G T AGTA ATA - ACAT ------- -----
AGCTG
GAM781 19755 CTGTCTACTGGTCCAAATAG T GG AAATAG TGT T CC TTTGTGT

ACCATGTCAGTTCACCCCCT CTG CTACT TCC ACCA CAGT CACCC TGG
GGTTTGTGTCTATGGGTGGC GGC GATGA AGG TGGT GTCG GTGGG ATC
TGTGGTATATGGGAAAAGTA - AA GTATA- --- - T- -------
GCGG
GAM782 13852 GGCAGGCAGCTGGTGCCGGG GC GCC CACCTCCTGC A- TCAAATCC
GCGGTCACCTCCTGCTCAGA GGCAG AGCTGGT GGGGCGGT TCAGAG TG
GATGTCAAATCCCAGCCTCT CCGTC TCGACCA CCCCGTCG AGTCTC AC
GAAGCTGCCCCACCAGCTCT -- --- A--------- CG --------
GCC
GAM783 17997 GGGGTGTGAGGAAGCTGTCC GA---- AA-- GT AGA CTGG
CCAGAGCTCCCTGGGGAGTG GGGGTGT GG GCT CCCC GCTCC
AGGGGTGGGCAAAGCCAACT TCCCACG CC CGG GGGG TGAGG
AAGCACCCT AATCAA GAAA GT AG- ----
GAM784 6071 CGGTCTCACCAAACGCCCCA - AA A--- TCCTCCACACCCCCTCT
AACTCTCCTCCACACCCCCT CGGTCTCA CCA CGCCCCA ACTC
CTGAGTGCCCTGGGGCGCCT GTCGGAGT GGT GCGGGGT TGAG
GGCTGAGGCTG C CC CCCG ----------
GAM786 7765 AAGAGACTGTCCTTCCCTCA T- TTCCC AA- AT ---- TG CCCT
ATGTATATTCTTGGCACCCT AAGAGAC GTCC TC TGT ATTC T GCA
TGTTGAAAATGAGTTCACAA TTCTTTG TAGG AG ACA TGAG A TGT
TAGATGTATGGATTTGTTTC TT TATGT ATA CT TAAA GT ----
TT
GAM787 4330 TCGGGGCAGCGGTCACGGAG - AG CAC A GC - C CACCA
CAGGAGCTGCTGGCGCTGGA TCGG GGC CGGT GG GCAGGA TGCT GG GCTGGA
CACCATCCGGCCCGAGCACG AGCC CTG GCCG CC CGTCCT ACGA CC CGGCCT
TCCTGCGCCTCAGCCGGGTC A G- ACT G GC G - -----
ACCGA
GAM788 11084 GACATCATCATTGCAGCTGG ATCAT T AG GA - AG ACTGTG
ACGACGTGGTTAGCAGTACT GAC CAT GC CTG CG ACGTGGTT CAGT
GTGACTGGGCCACGTGTGGA CTG GTA CG GGC GT TGCACCGG GTCA
CGGAGGCCATGTACAGGTC GACAT C GA AG G -- ------
GAM790 16535 CGTTTGAAGAAGAGTGCAGA T ---- - ATACAC GGA
TACACTTTGGGGGATCCAAA CGTT GAAGA AGAGT GCAG TTTGGG
AGGAGCTGCAATTTTAAAGT GTAG CTTCT TTTTA CGTC AAACCT
CTTCTGATG T GAAA A GAGGA- ---
GAM791 1377 CTGTTTTTGTATCTTTATGC G T TAT A ACTTT TT--- TTAG
TGTATTTTAACACTTTGTAT CTGTTTTT TA CTT GCTGT TTTTAAC GTA AC
TACTTAGGTTATTTTGCTTT GACGAAAA AT GAA CGGTA AAAATTG CGT TG
GGTTAAAAATGGCTCAAGTA G - CT- - GTTT- TTTAT ----
GAAAAGCAG
GAM792 10724 CATGTCTTATCCCGCTGATG TTATCC AT TAT CTG C CTTATGA
ATTATGAGTCTGAGGCGGCT CATGTC CGCTG GAT GAGT AGG GG
TATGACCCCTACGCTTATCC GTATAG GCGAC CTA TTCG TCC CC
CAGCGACTATGATATG TATCA- C- --- CA- - -------
GAM793 3409 GGGAGGAAAAGCTATGAAAC AA TGAAA AG T- TATACT
TGTATAGGGCTGTATATATA GGGAGG AAGCTA CTGTAT GGCTG ATA
CTTGTCTCAGCTTAATGCAG CCTTTC TTCGGT GACGTA TCGAC TGT
GAAATTGGCTTACTTTCC A- TAAAG AT TC ------
GAM795 7909 AAGACTGAGCTGTGAATTTG C T T -------- AGTA
TCCCCTCAGTAGAGGATCAC AAGA TGAGCTG GAATTTG CC CCTC

CCTGGCCAAGTTCCAGTTCA TTCT ACTTGAC CTTGAAC GG GGAG
TCTT - - C TCCCACTA ----
GAM796 8340 ATTGTGGGAAGATTATCTCG - -- A TC C- A TGAA -- AGAT
ATCCTATTATGAACAGTTTT ATTGT GGG AAG TTA TCGAT CT TTA CAGTTTT GC
GCAGATGTTGGAAACTGAAA TAACA CCC TTC AGT AGCTA GA AAT GTCAAAG TG
CTAAGAGATATCGATTGACT A AA - T- TA G CAAA GT ----
TAACCCAACAAT
GAM797 3382 CTTGGCCTCGAGCAAGCCTG TG AGCAAG G TGTA
GCCTATCCCCTGTAGGGGGT CT GCCTCG CCT GCCTATCCCC
GGGTGAGGGGCGAGGCTGAG GA CGGAGC GGA TGGGTGGGGG
GT GG---- G ----
GAM798 19719 TGCTGAGCTGGGGTGGGCTC - G CTCC TC TCA TACC
CACTCAGTTCAAGCTTACCA TGCTGAG CT GGGTGGG AC AGT AGCT
GCTGCTTTGTTTACCTACTC ACGACTC GA CTCATCC TG TCG TCGA
AAGCCTCAGCA C A ATT- TT --- ----
GAM799 687 GCAGGCGGCGCGAATTCACT GGCGCGAA T GA---- TGAGATC
AGTGATTGTGAGCTGAGATC GCAGGC TTCACTAG GATTGT GC
GCACCCAAACAATCCTAGTG TGTCCG AAGTGATC CTAACA CG
AAGCCTGT -------- - AACCCA -------
GAM803 17425 CCTGCCCCCCTGCCTGCCAT C--- C C CT A- T -- T GCCCTGCCTACA
CTGAGAGCCCTGCAGTGTGC CCTG CCCCCTGC TGC AT GAG GCCC GC AGTGTGCC GC

CTGCGCCCTGCCTACAGCCG GGGC GGGGGGCG ACG TA TTC CGGG CG TCGCGCGG CG

GCGCGCTCAGCCGGGCAACT TCCT - - AC AA C AC C ----------
TCAATGCAGCGGGGGGTCCT
CGGG
GAM804 22828 CTTCCCATAAAAGTTTGCTC AAAAG C TT- GGAAA G C CAACA
TCTCTTTTTGAAGGAAATTT CTTCCCAT TTTGCT TCTC TTTGAA TTTCT GG AAA
CTGGGCAAACAACATTTCTG GAGGGGTA AAATGA AGGG AGACTT AAAGA TC TTT
AGAAAGAAATTCAGATATGG CTAG- A TAT AAAG- G - -----
GAAAGTAAAGATCATGGGGA
G
GAM805 5357 TCTCCATGTTTGCCTCTAAA G TG T AAA - TCCCAT- - TAGCA
TTCAGAACAGCTCCCATCAA TCTCCAT TT CC CT TTCAGAAC AGC CAAGA TCC
GATCCTAGCAGGACTTTTGT AGAGGTG AG GG GA AAGTCTTG TCG GTTTT AGG
GTAACTGCTGGTTCTGAAGT G GT - GTG G TCAATGT C -----
GAGGGTGGAGGTGGAGA
GAM806 10733 GTCCTGGTGAAGACCTAGTT ---- ACCTA CT GA CAAT
CTTGCAGGAGACAATTCCAC GTCCT GGTGAAG GTT TGCAG GA
TGCAGAAGCACTTTACTTAA CAGGA TCATTTC CGA ACGTC CT
AAGGAC AAAT A---- AG AC ----
GAM808 22524 GCAGCAGCAGCTCCAGCAGC --- A CC A C AGCAGCA
AGCAATTGCAGCAGCAGCAG GC AGCAGC GCT AGC GCAG AATTGC
TTACTGCAGCTCCAGCAGCT CG TCGTCG CGA TCG CGTC TTGACG
GCTCCAGC ACC A CC A A -------
GAM809 3667 GTGCCCTGGCCCCTAGGCAC GG- C AC - CT - AAGTGTC
CTGCGGCCTGGCCCAGAAGT GTGCCCT CCC TAGGC CTGC GGC GG CCCAG
GTCCTGGGACTGCCGGCGGC CACGGGA GGG GTCCG GGCG CCG TC GGGTC
CGCCTGCGGGAGAAGGGCAC AGA C CC G -- A -------

GAM811 10225 AAATTTTTCCTCTTATTTGC TT TA- TG GAA AGA CTGTTA
ATGAAAGGACAAGACACTGT AAATTT CCTCT TT CAT AGGACA CA
TATGCCCTGTCCTAAATGTG TTTAAG GGAGA AA GTA TCCTGT GT
AAGACAGAGGTTGAATTT TT CAG GT AA- CCC ------
GAM812 4690 AACAGATCTCAAAGATCTCA ATC GA--- ATTTT--- AAACA
TCATTTTTGACAAACAGTCA AACAG TCAAA TCTCATC TGAC
TCACAAAGGATGAGACAGAA TTGTT AGTTT AGAGTAG ACTG
TTTGAAATTGTT AA- AAGAC GAAACACT -----
GAM813 4909 GGCGCTCTACCGACTGATGA C A - ATGACTA T CA CC - GA TCAA
CTACCTGGACCAGCCCTGCC GG GCTCT CCG ACTG CC GGAC GC TGC CTTGA CG
TTGAGACGTCAACGGATCAA CC CGAGA GGT TGGC GG CCTG TG ATG GAACT GC
GTGTACAGTGAGTCCTGGCC - A A C------ T AG AC T AG ----
GGTATGGAAGAGCCC
GAM814 6275 GTTGCGCGTGCCTGGGAAGC -- C TG GGAA- A C---- TG TGTTGTTC
TAAACCCCTGCGGTGTTGTT GTT GCG G CCTG GCTA AC CC CGG
CCTGTGGGCAAGTGTCTAGC CAG TGC C GGAC CGAT TG GG GTC
GCATGCAGGTGCCGTCTGAC TC - GT GTACG C TGAAC GT --------
GAM815 18348 AGGGTTTGTTCATTATTGCT TCATTA G A CTGG
GATTTGGGGCCTGGGTCTCA AGGGTTTGT TT CTG TTTGGGGC
GGGCGGGGAGCACTGCAGGC TCCCGGACG AG GGC GGACTCTG
CCT TCACG- G G ----
GAM816 6977 TGGGGTGACGCCGCCTAGCC GCC A CT GTCACT AC- CCAG
TCAGTCACTCTGGGAACCGC TGGGGTGAC GCCT GC CA CTGGGA CG
CAGCGCCCTCCCAGTGGAGC ACCTCACTG CGGA CG GT GACCCT GC
AGGCTCAGTCACTCCA ACT - AG ------ CCC ----
GAM817 11156 GGAACATTAGTCTGAACTGC A CT-- T --- ACCTCCTGA
AGTTGGACCTCCTGACCAAG GG ACATTAGT GAAC GCAGT TGG
CACTGCGTTCTCACACTAGT CC TGTGATCA CTTG CGTCA ACC
GTGCC G CACT - CGA ---------
GAM818 20732 TGGCGGGCCAGTCCCTGCAG - T C AGGT G TA A CCATGA
GTGTCTTGCCCCTATGACTC TGGCGG GCCAG CC TGC GTCTT CCCC TG CT
CATGAAGCACTGGGGGAGGC ACCGCC TGGTC GG ACG CGGAG GGGG AC GA
GCAAGGCCTGGTGCCGCCA G C A ---- - TC - ------
GAM819 19640 AAAGCCACAGGTAAGAATTC CAG AAGAATTCTC TA- ACAAT
TCATTTGCTAAATTACAATG AAAGCCA GT ATTTGC AATT
ATTGGTGCAAATTATGCCTA TTTCGGT CA TAAACG TTAG
TGACATTGGCTTT TA- GTATCCGTAT TGG -----
GAM820 5166 GGGGTAGACATGCACGTTGT A C ACG A ------- TGGCTGTGAATAT
CAGGGGAAGAGATGGCTGTG GGGGT GA ATGC TTGTC GGGG AAGAGA
AATATTCTCTTGGACTGACC TTCTA TT TACG GACAG CCCC TTCTCT
CCGACAGGCATATTAATCTT A A --- - AGTCAGG ----------
GAM822 15588 TACACATTGAAGAGAACAAA A AG AAACAGTGGGA - - TAAG
CAGTGGGAGTGTTTATTCCT TACAC TTGAAG AAC GT GTTTATTC CT
TAAGAGAGAATAAACTGCAG ATGTG AGCTTC TTG CG CAAATAAG GA
AGATTAAAAGTTTCCTTCGA - CT AAAATTAGAGA T A ----
GTGTA
GAM824 19584 GCGGAGTGGCCGGGCCCGAG - C-- G TG AC--- T AGGA ACTGA
TGCACGTGTCTGAGGAGGGC GCGGAGT GGC GGGCCC AG C GTGTC G GGGC
ACTGAGCCCGATGCGATGCT CGTCTCG CCG CCCGGG TC G CGTAG C CCCG
CCAGGTGCTGGGCCCCAAGC G AAC - GT GACCT - GTAG -----

CGGCTCTGC
GAM825 9250 GAACTGCTCTGCAGAAAGGT ACT TC C- GCTCA GCTG
CGCTGCTCAAGTGGCTGCAC GA GC TGCAGAAAGGT GCT AGTG
TCACAGGCTAGCCTTTCTGC CT CG ACGTCTTTCCG CGG TCAC
ACTGCTGTC GT- TC AT ACAC- ----
GAM826 6397 GCTGCAATCCATGGTGATGT AA GGTGA C CA T- GACTATG
CGCGTCATGCATGCACTGAC GCTGC TCCAT TGTCG GT TGCA GCACT
TATGAGTGCCCTGCACTACT CGACG AGGTA ACAGT CA ACGT CGTGA
GACAATGGAGCAGC -- ----- - TC CC -------
GAM827 16356 GGCTCCTCCGAATGGCTGGC - GAATG GCTG T TTGGTCAG
TGTGGATGGGTTGGTCAGTC GGC TCCTCC GCTG TGGA GGG
CCTCCAACAACAGCAAGGAG CCG AGGAGG CGAC ACCT CCT
GATGCC T AA--- AACA C --------
GAM829 16405 TCATCGGTGGCGGAGTCTTC - G G TC C- CAA GTTT
CAGGCCATCAAGGGTTTCCG TCA TCGGTG CGGA TCT CAGG CAT GG
CAATGCCCCTGTTGGAATTC AGT GGCCAC GCTT AGG GTCC GTA CC
GGCACCGGTTGA T G A TT CC ACG ----
GAM830 3435 CTTGGCCCACATCCAGGCTA ACA-- A A -- C-- - -- CTTAGCC
CCCCCAGCCCGCTTCTCCCC CTTGGCCC TCC GGCT CCCCCA GCC GCT TCTCC CCTG

TGCTTAGCCCAGGGAGGAGA GAACCGGG AGG CCGA GGGGGT TGG TGA AGAGG GGAC

CAGTAAAGGTGATGGGGGCA GAGGG G C AG AAA C AG -------
GCCGGGAGGGAGGGGCCAAG
GAM831 9512 GAGAATCACTTGAACCCGGG ATCA AAC----- AGG GT A CAAGATCGT
AGGTGGAGGTTGCAGTGAGC GAGA CTTG CCGGG TGGAG TGCAGTG GC
CAAGATCGTGCCATTGCACT CTCT GAAC GGTCC ACCTC ACGTTAC CG
CCAGCCTGGTGACAAAGCAA GTCA GAAACAGT G-- -- - ---------
GACTGTCTC
GAM832 17486 AAGAGGAGATACCGTAGTCT - - -- - GTCT A AGA ATATG
AGATGTCTTGAGGTAGAATA AAGAGG AGA TACC GTAGTCT AGAT TG GGT AT
TATGATGGACCACATAGTTT TTCTCC TTT ATGG CATTAGA TTTG AC CCA TA
AAGATTACAAGGTACTTTCC C C AA A AT-- A GG- -----
CTCTT
GAM833 13853 TCGCCCGTCCCTTACCTACA - TC T CAT - A TG--- G CTGTTAA
TTGTTCCAACATGCCAGAGG TCGC CCG CC TACCTA TGTTC CA CA CCA AGG
CTGTTAACCTTGGAGACCTG AGCG GGC GG ATGGGT ATAGG GT GT GGT TCC
CTGCGGATATGGGTACGGCC C CC C --- C C CCAGA - -------
CGGCGCGA
GAM835 6342 GTTGCCAAGGAAGGCTTTTT AA TT TC TTTTT A TGAATT
CTGATTTTTTGACAAATGAA GTTGCC GGAAGGC TT TGA TG CAAA
TTTTTGCACACTTTCATTGG CAACGG CTTTCTG GG ACT AC GTTT
TGTCTTTCGGCAAC -- T- TT TTCAC - ------
GAM837 21749 GAAGGCCTGTGTTGTTAATC - G - TT GT-- AGGAT
TTTATCTGTGAGAGGATCTC GAAG GCCTGT TTGTTA ATC TATCT GAG
TGTGAGATACGATATGATAA TTTC CGGACA AATAGT TAG ATAGA CTC
ACAGGCACTTT A - A C- GTGT -----
GAM838 14538 GGCTTCCTGGCAGAAGATGG TCCT AGA A A T C TGCC
TGACTGGAGTGGCCAGTGCC GGCT GGC AG TGGTG CTGGAG GGC AG
CTGTCCTCCAGATACCACTG CCGG TCG TC ACCAT GACCTC CTG TC

AGCTCACTGGCC TCAC AG- - A - - ----
GAM841 20612 AGCACAGAACTGCTTTTTAT AC TTT TCTGTGAGTT
TTGGGGTCTGTGAGTTTCTT AGCACAGA TGCT TATTTGGGG
AGGTATTAGCAATCTGTGCT TCGTGTCT ACGA ATGGATTCT
A- TT- ----------
GAM843 22784 CCACAATGGCACTGGGGGCA CAA- AC ----- AA- ATC ----- A CGATGATGAA
AGTCCATCTATGGGAAGAAG CCA TGGC TGG GGGC GTCC TATG GGA GAAGTT
TTCGATGATGAAAACTTTAT GGT ACCG ACC TCTG CAGG ATAC CCT TTTCAA
CCTCAAGCATACGGGACCAG CTCA GT TATCA GAC GC- GAACT A ----------
GTCTACTATCCATGGCCAAC
TCTGG
GAM844 17125 GTGCAGTACCGCCCTGAGGA TACC ---- -- GA--- AAG
GTTCACGAAGGCCAAGGGCC GTGCAG GCCCTGA GGAGT TCAC AGGCC
TGCCTGGTGACAGCTTCTAC CATGTC CGGGACT CTTCG AGTG TCCGG
ATCAGGGCCCTGTAC C--- ACAT AC GTCCG ---
GAM845 21101 TGAGGGGCTCCTGAAAGACC AG GAA AC-- CT ACCAGTGAC
TACTGCCAGGACCAGTGACC TG GGGCTCCT AG CTA GCCAGG
CTGGTGATGGAACGCTCGGA AC CTCGAGGA TC GGT TGGTCC
GGAGCTCAACA AA GGC GCAA AG ---------
GAM847 9507 GGATGTCTGTGTCAGGCATG A T TC C CTTCAAAC T AGAT
TTAACTTCAAACAAAATCTG GG TG CTGTG AGG ATGTTAA AAAA CTG
AGATCGGCTTTTTCCATTGA CC AC GACAC TTC TACAGTT TTTT GGC
CATTCTTAGCACAGCACCC C - GA T ACCT---- C ----
GAM848 10497 AGAATCGCTTGAACCCAGGA AA GA-- AGGA AG T A - AGAT
GGCTGAGGTTGCAGTGAGCC AG TCGCTT ACCC GGCTG GT GCAGTG GC CA
AAGATTGTGCCACTGTACTC TC AGTGAG TGGG CCGAC CA TGTCAC CG GT
CAGCCCGGGTGACAGAGTGA AG ACAG C--- CT - - T ----
GACT
GAM850 20041 GGATCACAGATGGAGAAGTG T AGAT T AAA AT T G AAGAGG
TCAAACAAGGATGGTTGCGG GGA CAC GGAGAAG GTC CAAGG GG TGCGG C
GCAAGAGGGCTGCACCCTAT CCT GTG CCTCTTC CAG GTTCT CC ACGTC G
CTTGGAGACCTTCTCCCAGG - GAC- - AG- AT C - ------
TGTCC
GAM851 19661 GCTGGCGCGCGAGAACGCCG T C AGAAC CAT C GA - G GCAAG
CCATGCGCCTGGAGCTCGAC GC GGCG GCG GCCGC GCGC TGGAGCTC C GCGCT CGCG

GCGCTGCGCGGCAAGTGCGA CG CCGC CGC CGGTG CGCG GCTTCGGG G CGCGG GCGT

GGCGCTGCAGGGCTTCGCGC C - ----- CCT C AC T A -----
GCTCCGTGGCCGCCGCCCGC
GAM853 18514 TGGTGTGGCGTCAGCCCTAT G-- TATG G C GAA GATGTGAA
GTGCGCCCCGGAAGTGATGT TGGTGT GCGTCAGCCC TGC CC CG GT
GAAGCAGTGAGGGCAAAATG ACCACG CGCAGTTGGG ACG GG GT CG
GGTTGACGCGAAGCACCA AAG TAAA - A GA- --------
GAM854 5772 TCCGGTTGCGCTTTCCTTTC GG ---------- CC - AAGAAG G A CTT
TGTCAAGAAGCAGTTTGAAG TCC TTGC GCTTT TTTCTG TC CAGTTT AAGAATT ACC
AATTAACCCTTGGTGAATTT AGG AACG CGAGA AGAGAC AG GTCAAA TTTTTAA TGG

TTGAAACTGGACCAGAGAAA A- TTAAAACAAGAAC A- C ------ G G ---
GAGCCAAGAACAAAATTGCA

AAGGA

GAM855 14309 GTGTGAAGGCTCTAAGAGAC AG TA A- AAC--- TG GAA TGTTATTAT
ATTGAACCTGGAGAAGAAAT GTGTGA GCTC AGAG CATTG C GAGAA ATTTCT
TTCTTGTTATTATGGAGATG CACATT TGAG TCTT GTAAT G TTCTT TAGAGG
GGTTCTTTGGAGAAAATAAT G- CG GA AAAAGA GT GGG ---------
GAGTTCTGCGAGTGTTACAC
GAM856 7473 GCCGTGGCTCTTCCAGGCGT T TCTT T TGT G T AGGAGACAATGCA
CCGTGTGAGGGTTCGTGACC GCCG GGC CCAGGCG CCG GAGG TTCG GACC
AGGAGACAATGCAGGTCTCG CGGC CTG GGTCCGT GGT CTCC GGGC CTGG
GGCCTCGGTGGTGCCTGGGT T ---- - GG- - T ----------
CTCGGC
GAM858 14905 TGCCACAGCCTTGGTAAGAT ----- CT G TTGAA- G AATTCAG
CTTGAACTAGTGCAGAATTC TGCCACA GC TG TAAGATC CTA TGCAG
AGCTGTGGTAGAGTGCTGAT ACGGTGT CG AC ATTCTAG GAT GTGTC
CTTAGCATGCTTCGATGTGG AGCTT T- G TCGTGA G -------
CA
GAM859 15349 CTGTGAGTTATATGTGATGA - AT-- GAAAAAG A TC AATT
AAAAGTATAGCTTTCTTGAA CTGT GAGTT ATGTGAT TAT GCTT TTG
TTCAAATAAGCAATGGCAAA GACA TTTAA TACACTA GTA CGAA AAC
GATCACATTTAGAATTTGAC G GATT GAAACG- A TA ----
AG
GAM860 10180 CAGCCACTGCCCTTGCCCTG CA C CT--- A TTCAGGT
GTCAGCACCATTCAGGTTGG CAGC CTGCC TTGCC GGTC GCACCA
TGTCGACCTTGCAGGCAGCG GTCG GACGG GACGG CCAG TGTGGT
GCAGGAGCTG AG C ACGTT C -------
GAM862 3853 CGAATGGACCACTGGAGGGG T- A A T -- CG AGTAC
TTCAAAGGTTCGCGTCCCAG CGAA GG CC CTGGAGGGG TCAA AGGTTCG TCCC
TACGGGAATGAGCCTCTTTG GCTT TC GG GGCCTTCTC AGTT TCCGAGT AGGG
ATCTCTTCCGGGGCTTTTTC TT - - T TC A- -----
G
GAM863 17762 CTCAGACTTTTTGACTGCCA ACTTTTT C CT T - C TTGGCT
TGTCCTCCTTTAGAAGGACT CTCAG GA TGCCATGTC CCTT AGAAG GACTA AGT
ACAGTTTGGCTACTTGGTCT GAGTC CT ACGGTGTAG GGGG TCTTC CTGGT TCA
CTTCTGGGGCAGATGTGGCA ------- - AC - T - ------
TCCTGAG
GAM864 5390 GTGTGTCCGTGGGGCCTGCC CGTG - TT -- CTCCCT
TTGCCTTCTGCCTCCCTGCA GTGTGTC GGGCCT GCC GCCTT CTGC
GCTGAGGTGGCTAGGCTTGA CACACAG TTCGGA CGG TGGAG GACG
CACAC ---- T -- TC ------
GAM865 18519 TGGCTTCTCCTGCAGTGATA CTCC- A - T ACTCC
TTGATGAGTGTAGCTACTCC TGGCTT TGCAGTG TATTGAT GAG GTAGCT
AGCTACCTCTGTCAGTACCG ACCGAG GCGTCGC ATGACTG CTC CATCGA
CTGCGTCAACGAGCCA CAACT C T - -----
GAM866 6603 GGTGGACACTTCTGCCACCC CAC--- C - TATTC-- AG GACAGAGA
TATTCTGTAGCCCCAGACAG GGTGGA TTCTG CAC CC TGT CCCCA
AGATGGGGAAACATATGCCT CCACCT GAGAC GTG GG ACA GGGGT
GGAGTGACAGAGCCTTCCTC CCTTCC A A TCCGTAT AA --------
CACC

GAM867 6605 AGCTGCGGGGCCACCCTCCG TGC - - - T A TC AATAGA
GGCAGATCGGTAATAGAGCC AGC GGG GC CA CCC CCGGGC GA GGT
CTCCGTCTGGTGGGATGCGC TCG CCC CG GT GGG GGTCTG CT CCG
ACCCCCTGCT TCC A C A T C C- ------
GAM868 16239 AGAAAGTTTTTCAATCCTTC - AA ---- ------ AT ATCAC
ATGGAAATAACATCACGTTT AGAAA GTTTTTC TCC TTCATG GAA AAC
CTTCTACAGACATGAAACAT TCTTT CAAAGAG AGG AAGTAC CTT TTG
GGAGAGAGAAACATTTCT A AG TACA AGACAT CT -----
GAM870 20911 TATCGATAGTTGTTAGGTGT T G T A-------- ATGTA
CAGCTTCCATGTAGGAAGCG TATCGA AGTT TTAGG GTC GCTTCC
GCTGTACCGATCCTGAGAAC GTAGCT TCAA AGTCC TAG CGAAGG
TTCGATG - G - CCATGTCGG -----
GAM874 7237 GCCAGGCCCAGCCTCATAAG GC--- AA C AAC GGAA
CCACAACTTGGGAACAACGT GCCAGGCCCA CTCAT GC AC TTG
GCACATGGGATCCATGGGCT CGGTTCGGGT GGGTA CG TG AAC
TGGC ACCTA CA - C-- ----
GAM875 13520 TGCTGAGCTCGGCTTATATT T G TT TTC-- ACATGAA GCACA
TCGGACCACATGAAGGTGCA TGC GAGCTCG C ATAT GGACC GGT
CAGCCAGGTCCTCACCATGT ACG CTCGAGT G TGTA CCTGG CCG
CTGTGAGCTCTGCA T - TC CCACT A------ -----
GAM876 8016 GTGGCTGTGAAAGAGGATGC C- AGAG C GT CAAGGGGGAT
TTTGGTAGCAAGGGGGATCT GTGG TGTGAA GATG TTTG AG
GTCAGACATTAATATTCACA CACC ACACTT TTAC AGAC TC
TACCAC AT ATAA - TG ----------
GAM877 2504 CACGCGCCGGGCGCGGCCCC GCCGG G C--- ----- ----- GTGACT
CTCCCAAACTGTGACTGGTA CACGC GC CGGCCC CTC CCAA ACT
TTTATTGGACCCAGAGAACC GTGCG CG GCCGGG GAG GGTT TGG
GGGCCGGGCACAGCGTG ACA-- G CCAA ACCCA ATTTA ------
GAM878 11466 GCCGGAGCGCGCGGGGCCGG GAG GC G G GAG- GG AGT
AAGAGGCGGGCGGCCAGTGG GCCG CGC GG GCC GAA GCGGGC CC
AGGTCCGCAGAGTTTGGGCG CGGC GCG CC CGG TTT CGCCTG GG
CCAGGCGAGACGGC AGA GA G G GAGA GA ---
GAM879 13259 GGGCTGCGGCTGCAGAAGTA TG AAGT - CT -- A GCAA
CCGCCTGCGGAGTAACTGCA GGGC CGGCTGCAG AC CGC GCGGA GTA CT
AAGATGCTGTCCGTGCGCGT CCTG GCCGGCGTC TG GCG TGCCT CGT GA
TGCTGCGGCCGTGGTCC GT GT-- C -- GT A ----
GAM880 21437 GGGGAAGGGACGGGACGTTG GG A ACGT TTTAA TTTC TCGG
CAGTTTAAGGCATTTCTGGC GG AAGGG CGGG TGCAG GGCA TGGCT
TTCGGAGCCATCCCTGCCAC CC TTCCC GTCC ACGTC CCGT ACCGA
CTCTGCACCTGCCCCTTGAC AG C ---- TCCA- CCCT ----
C
GAM881 18272 GGGGTTCATTCACATTGCAA - CAA-- C-- T T TGAAC
GATTATTCCCACTTGTCTTT GG GGTTCATTCACATTG GATTATTC CAC TGTCTT GA
GATGAACTCAGGGCATGTGA CC CCGAGTAAGTGTGAC TTAGTGGG GTG ACGGGA CT

ACGGGTGATTGGGACCAGTG A CAGGG CAA T - -----
TGAATGAGCCACC
GAM882 20482 TCTTGACCATATACCTTGGA TG CATATACC TT GTTT CTGC
GTTGAATATTGTTTTCATAC TCT AC TTGGAG GAATATT TCATA
TGCTGTGGTTTGAATGTTCC AGA TG AACCTC CTTGTAA GGTGT

CTCCAACACTCATGTTGAGA GT TACTCAC- C- GTTT ----
GAM884 13766 TAAGGTTATGTCTGTGTATG -- CAT ACACTTA
TCATTCACACTTAGGCAAGC TAAGGTTA TGTCTGTGTATGT TC
ATACACAGGCACATGGCTTT ATTTCGGT ACGGACACATACG GG
A AC AAC -------
GAM885 5052 TGATAAAAATAGTGTGAGAC AAAA C-- AT GCTTT
TGTCCATCATCGATGCTTTG TGATA TAGTGTGAGA TGTCC CATCGAT
TTGATGGGACGTCCTCTCAT ACTAT GTCATACTCT GCAGG GTAGTTG
ACTGATGTATCA GTA- CCT -- -----
GAM888 968 CCCCGTGGAATTTTATGAGG - - A- AGTTA AACT
AGTTATGCCTAACAACTGTT CC CCGTGGA ATTTT TGAGG TGCCTAAC
GGGCAACCTCAGGGGGATAT GG GGTATTT TAGGG ACTCC ACGGGTTG
TTATGGTGG T A GG A---- ----
GAM889 2506 AAAATCATAAGGACAAAAAT - - ATCTGC AT G TAAAACCGATGAT
CTGCTGATGCTGTGAGATAA AAAATCATA AGG ACAAAA TG GCTGT AGA
AACCGATGATTCTGCAGTCA TTTTGGTGT TCC TGTTTT AC TGACG TCT
ATTTGTTTTGTACCTGTGTG G A GTTTA- -- - ----------
GTTTT
GAM890 9330 ATGGGTGTTACTTCTTTGAT TGTT - A A CTT
AGTTCTTACTACCTTGTGGG ATGGG ACTTC TTTG TAGTTCTT CTAC
GGAACTACCAAAGGAAGTTG TGCTC TGAAG AAAC ATCAAGGG GGTG
TCTCGT TGT- G C - ---
GAM891 8780 GTGGAGGCACACACCTGTTG A CACA G GTTC AA CCTG
GGTTCCATCTAACGCCTGCG GTGG GG CACCT TTGG CATCT CG
GGAGGTGTATACTAAGGGGT CACC CC GTGGG AATC GTGGA GC
GCGACCCCCAC - CAGC G ATAT GG ----
GAM894 6988 GTTGGGCCCTCTCTTGAAGA C TCTTG - CCT G TG G TTTTGCT
AGCGACCTTGCGGTGCCATG GTTGGGC CTC AAGAAGC GA TGC G CCAT TG
TGTTTTGCTCAGATGGTGTG CGACCCG GGG TTCTTTG CT ACG T GGTA AC
CACCCTCTGTTTCTTGTTTG C TTTG- T CCC - GT G -------
GGCGCCCAGC
GAM896 3820 CTTCCTATAAAGTTTGCTCT AAAG C TT- GGAAA G CAAACAACATT
CTCTTTTTGAAGGAAATTTC CTTCCTAT TTTGCT TCTC TTTGAA TTTCT GG
TGGGCAAACAACATTTTGAG GAGGGGTA AAATGA AGGG AGACTT AAAGA TT
AAAGAAATTCAGATATGGGA CTAG A TAT AAAG- G ----------
AAGTAAAGATCATGGGGAG
GAM898 1427 CTTCATCTGGTGTTGAGACT A G GAGA --- C AAAGGAAGAAGAAG
TCGGGGTGGTGCTAAGAAAA CTTC TCT GTGTT CTTC GGGGTGGTG TAAGA
GGAAGAAGAAGTCTTACACC GAAG AGA TACGA GAAG CCTCACCAC ATTCT
ACTCCCAAGAAGAACAAGCA G A ACAA AAC - ----------
TAAGAGGAAG
GAM899 5393 GATCACTCATGATGTTTCTT CATGA T ACT AAA
CCAAGAACTGCAAAGCCATC GATCACT TGTT CTTCCAAGA GC
TTGGAAGAGCAGCCCAGGTG CTGGTGG ACGA GAAGGTTCT CG
GTC ACCCG - AC- ---
GAM900 13197 AGGAGAAGGAATTTCAGGTG A TTC G G CA GCTAG CCCAACA
GGTTTAAGTCAGAGCTAGTT AGGAGAAGG AT AG TGG TTTAAGT GA TTC
CCCCAACAGAAAGATCATTT TTCTCTTCC TA TT ACC AAGTTTA CT AAG
GAAACCAGTTTTTATCCCTT C TTT G A -- AGA-- -------
CTCTT

GAM901 2015 GGAAGCAAAGATGACTTCCT - TGACT TC - A TGGC
CATATATGATAGATGTGGCC GGAAG CAAAGA TCC AT ATATG TAGATG
GTCTGGTATATCATCTGGGT CCTTC GTTTTT GGG TA TATAT GTCTGC
TGCCTTTTTGCCTTCC C CCGTT TC C G ----
GAM902 12524 GCAGAGCCAGAGAATAAGCT G A- ATAAGCTT - GTGTTG
TTTTCCTGTTTGTGTTGAAA GCA AGCCAG GA TTTCC TGTTT
CATGGAAGTCCCCTGGCTGT CGT TCGGTC CT GAAGG ACAAA
GC G CC -------- T ------
GAM903 20270 CTCTTGATAATCTGATTTAA A- A ACACAAATTT ---- CCTCATGA
CACAAATTTCCTCATTGAGT CTCTTG TA TCTGATTTA CCTCATTGA GTTTCT
TTCTCCTCATGAAGAAACGG GAGGAC GT AGGCTAAAT GGAGTGACT CAAAGA
CCTCAGTGAGGTAAATCGGA AC A ---------- CCGG --------
ATGCACAGGAG
GAM904 5077 AGCAGTCCAAAAAATGTGAA - CCAA- AA TG -- GTGA- AACA
TGTGCAAATTGTGAGTAAAA AGC AGT AA TG AAT GTGCAAATT GTAA
CATTGCATTTAAATTTGCAC TCG TCA TT AC TTA CACGTTTAA CGTT
TCATTTGCAAGTTACAGTAC A TGACA GA GT CT ATTTA ----
TAGCT
GAM905 20636 GAGGATCCCTTGTGCTAGGT C T ---- TGGA A TCTAGGC
GGAGTGGATGGATGATCTAG GAGGATC CTTG GCT AGGTGGAG TGG TGA
GCTCACTACAATCTCCACCT CTCTTAG GAAC TGG TCCACCTC ATC ACT
CCCAGGTTCAAGCGATTCTC C T ACCC TAAC - -------
GAM907 2393 TCAGCTAATGTCCTCAAAGA AA C AAGA CCA G TGACTGACTCTCTAAT
CACACCCATCAGACACACTG TCAGCT TGTC TCA CACAC TCA ACACAC
ACTGACTCTCTAATGTGTGT AGTTGA ATAG AGT GTGTG AGT TGTGTG
GTGAGTGTGCGTGAGATAAG GA - GC-- --- G ----------
AGTTGA
GAM908 20982 GCTGTCTGCTTGTGGATTTC GCT GGATT - T- TTTTACTTCTT
ATTTCTGCCTTTTAGATTTT GCTGTCT TGT TCA TTTCTGCCTTT AGA
ACTTCTTTCTTTGGAGGCAG TGACAGA ACG GGT AAAGACGGAGG TCT
AAATTGGGCATAAGACAGT AT- ----- T TT ----------
GAM909 2608 AGGGCGGCCGGGGAGCACCT G - C A T TTT- TT GTGCAGTGA
GGTTTTATTTCCGTGCAGTG AGG CG G CGGGG GCACC GG TAT CC
AGGGGATATCATCCTGGTGC TTT GT C GCTCC CGTGG CC ATA GG
CCTCGTCTTGGTTT G T T - T TACT GG ---------
GAM912 16962 GCAGTCGCGTCGCCGGCTGC - C- -- T C CCCA
TCGGGCCCCAGCCCCGGCCG GCA GTCG GTCGCC GGC GCT GGGC
CTGTGGTGACTCCGACGTGC CGT CAGC CAGTGG TCG CGG CCCG
G CT TG C C ----
GAM913 11389 CGGAATTTGGCACGAACCAT AA-- A- T----- CT TCA CCC TTACT
GCCACTGTTTCATGGGCCCG CGG TTTGGC CGAACCA GCCA GTT TGGG GAG
AGTTACTTTCCCCAGATGAC GTC AGACCG GTTTGGT TGGT CAG ACCC CTT
TCTGGTTTTGTTTGGTTTGC AGTG CC TTGTTT CT TAG --- -----
CGCCAGAGTGACTG
GAM914 21816 GGTGGTGTTTTGGTGTCTGT GG- TT-- T CCCTGT CCT TGCCCT
TTTTGCCCTGTGGCCTTAGG GGT TGTT GGTG CTGTTTTTG GG TAGGG
GTGCCCTTCCTGTCCCTTCT TCG ATAA TTAC GACAAAGAC CC GTCCT
TTCAGAAACAGTCATTCTGT ATA TGTC T TTTCTT CT- ------
AATAATAGCT
GAM915 18938 GGGGAAGTGGAAGCGCCGGG - AA AA --- G T TG G GGAGAG

CCCTGCTGCGGGGGGGAGAG GG GG GTGG GCG CCGG CCC GC CGG GG
CCACTGACGCCGGGACCGGG CC CC CGCC CGC GGCC GGG CG GTC CC
ACCGCCGCCGCCGCCGCC G GC GC CAG A C CA A ------
GAM916 19292 CAACAGAAATTTATTTTCTC A TT- - - AGT-- TACACTAGAAAT
ACAGTTCTGGTACACTAGAA CA CAGAAAT AT TTTCT CAC TCTGG
ATCCAGACCGAAGTGCAGGA GT GTCTTTA TA AAGGA GTG AGACC
ACATTCCATTTCTGATG A CCT C C AAGCC ----------
GAM917 5376 GGATCTAGACCATGCAGCTT TCTA C - TT A G CCAGAT
TTCCCTACTGTCACCAGATT GGA GAC ATG CAGCT TCCCT CT TCA
GGGAGCAGGGATTGGCTGCC CCT CTG TAC GTCGG AGGGA GA GGT
ATTGTCCTCTCC CTC- T C TT C G ------
GAM918 10586 GAGAGGATGTTATCCCCCAT G CC TA AG C G -------- AAAAGAAAA
AGCCAGAAACCAGGGTGGCT GAGAGGAT TTATCC CA GCC AAA CAGGGT GCT TCC
TCCAAAAGAAAAGGGTAGCA CTTTTCTA AGTAGG GT CGG TTT GTCTCA TGG GGG
TTCGGTGACTCTGCTTTAGG - A- TC A- C G CTTACGAT ---------
CCTTGAGGATGAATCTTTTC
GAM919 18667 ATGGCTGTCTTTTGGAGGTC CTTT GTCAT T - ATCTC
ATTTTTTTGAGCCTATCTCG ATGGCTGT TGGAG TTTTT GAG CCT
GGTCTCTAAGGGCAAACTCC TACCGACG ACCTC GGGAA CTC GGG
AGCAGCCAT ---- AAAC- T T -----
GAM920 9768 GGCAGCACAAAGGCGGGGCG CAAA C G - C C TGTAGT
GTGCACGTCGGAGTTGTAGT GGCAGCA GG GG GCGG TGCA GT GGAGT
ACTTCAGCTGCATCTGCGCC TCGTCGT CC CC CGTC ACGT CG CTTCA
ACCTGCTGCT ---- A G T - A ------
GAM921 7152 GACTCCTGCCCCAGCCCCAT TC CCCA- CCA- - -- CACCTAA
CCTCAGCTTCCACCTAAGAA GAC CTGC GCC TCCT CA GCTTC
GTAGTGCAGGAAAGTGGTGA CTG GACG TGG AGGA GT TGAAG
TAAGCAGATGTC TA AATAG TGAA C GA -------
GAM922 16629 CTGTGGAAAAACTAAGGGAT T AACTA-- GA-- TT-- ATA CAAA
GCTTTAGATATGGCAAACCA CTG GGAAA AGG TGC TAG TGG
GGCTGTAATGCAGAGACCTG GAC CCTTT TCC ACG GTC ACC
TGACTATTTCCTCAG T ATCAGTG AGAG TAAT GG- ----
GAM923 12108 GCTGACACGATGGAGAAGGT - T --- A A GG ---- GGAGG
ATGTGCAGGGGACTCCTGGA GCTGA CACGA GGA GAAGGT TGTGC G GAC TCCT
GGGGGACGAGGTTTTCAGCA CGACT GTGCT CTT CTTCCG ACACG C TTG AGGG
CAGCCTTCATGTTCTCGTGC C - GTA - A TT GAGC -----
TCAGC
GAM925 19660 CCCAAAACTATTGTTTGTGT AAA ATT TG TTT --- ATTCA
TTCTGTGTTTCATATTCAGT CCCA CT GTT TG CTGTGTT TCAT
GATTTAATACAGTATCATGG GGGT GA CGG AC GACATAA AGTG
GCTGAGGTGGG G-- GT- GT TAT TTT -----
GAM926 17366 GACTTACATAATGAAAACCA A -- CA AAA T A TATTTT
ATTCATTTTAAATATCAGAT GACTT CATAATGAAAAC CAATT TTTT TA CAG TTAT
TATTATTTTGTAAGTTGTGG TTGGA GTATTACTTTTG GTTAA GAAA GT GTT AATG
AAAAAGCTAATTGTAGTTTT A AT TC AAG - G ------
CATTATGAAGGTT
GAM927 15366 GCTTCAGTTCAGAAATTTAG - AG TA AA CC--- TGGC
TAATGGGCCAGGTGTGGTGG GCTTCAGT TC AAATT GT TGGG AGGTGTGG
CTCATGCCTACAATCCCAGC CGGAGTCG AG TTTAA CG ACCC TCCGTACT
AATTTAGGAGGCTGAGGC G GA -- -- TAACA ----

GAM928 6636 GCCGCCTCTTCGACCAGGCC ----- T GG GTT CCCG
TTCGGGTTGCCCCGGCTGCC GCCGCCT CT CGACCA CCTTCGG GC
GGAGGAGTGGTCGCAGTGGT CGGCGGA GA GCTGGT GGAGGCC CG
TAGGCGGC TTGGT C GA GT- ----
GAM930 12518 TTCTTTTTAGGGTGTTAATC TA - A T T AAAA TTGAT
TTTATGTGAAAAATCTTGAT TTCTTTT GGG TGTT ATC TTA GTG ATC
GATGGTATTGATGATGAACG GAGAAAG CTC GCAA TAG AGT TAT TAG
TCTCCGGAAAGAG GC T G T - GG-- -----
GAM931 18954 ATTTAGGATTCTCTGTGTGA AGG TCT TG ATG TG T AAAGTGATTCGTC
TGACCTTGGATGCTGTAAAG ATTT AT CTG TG ACCT GA GCTGT
TGATTCGTCATAGTCTCTGG TGAG TG GAT AC TGGG CT TGATA
GGTACCCATGTAGTTGTAGG GGA TT- GT CCA GT C ----------
GAGT
GAM932 13050 CAGGGCATTCCGCAGGGCAT TTC A ATCTGC-- G GCTCAGACTGA
CTGCCTCCTGGCTGCCGCTC CAGGGCA CGC GGGC CTCCTGGCT CC
AGACTGAGGAGCCAGGAGAC GTCCCGT GCG CCCG GAGGACCGA GG
CCCACCGCCCAGCGTGTTGC TGT A CCACCCCA - ----------
CCTG
GAM935 8889 TTCACCTGATCTCCAGAAGG CTG AGAAG CG--- ACCTATCGACTAATACC
CCTCGAAATCCACCTATCGA TTCAC ATCTCC GCCT AAATCC
CTAATACCGGATTTAAGCAA GAGTG TAGAGG CGGA TTTAGG
GGCAAAGGAGATAGTGAG A-- AAA-- ACGAA ----------
GAM936 14525 GGAGGAGCGTGCGGAGGACC A- A AGGAC GA AGGA GG - CGCGTACC
AGCAGGAGGAGGAGGCGGCG GG GG GCGTGCGG CAGCAG GG GGCGGC CG CCG
GCGCCGCGCGTACCTGGACG CC TC TGCGCGTC GTCGTC CC CCGTCG GC GGT
AGCTGCCGAGCCGCTGCTGC GG G ----- G- GAG- A- A --------
TGCGCGTGCTGGCC
GAM937 15568 GAGGAAGGGAGCTGGGGCTT A - CT TTC--- AC--- G - CCTGT
CGAGGGGACCTGCACATTCA GAGGA GGG AG GGGGC GAGGGG CT CA CATTCAGT
GTCCTGTGCTGGGTGCTGGA CTCCT CCC TC CCCCG CTCCCT GA GT GTGGGTCG
GACTCGTCCCTCCCCACTGC A G TC TCACCC GCTCA G C -----
CCCCTCTGCCCATCCTC
GAM939 19293 GCCTGGGACTTGGAGAAATG C CTTGG A AA--- TCCT
GGATTTGAAATTCCTCCTGG GC TGGGA AGAAATGGG TTTGA TTCC
AGAAAGCTCAGAATCTGTTT CG ACCCT TTTTTGTCT AGACT GAGG
TTTCCCAAGC A ----- A CGAAA ----
GAM940 752 GCGACCTTCAGCTCCTTTGG TCAGC TT CT CCTTATG CCT
CTTATGTCCTTATGCCCCCT GCGACCT TCC TGG TATGT CCC
GGGACTTCACGTGCTCCGTT CGCTGGA AGG GCC GTGCA GGG
GGATCAGGTCGC CT--- TT TC CTTCA-- ---
GAM941 13265 GCCTCCTTCTCAAAACTCAA TT AAAA AAT TATTCATCT
ATACTCTTTATTCATCTAAG GCCTCC CTC CTCA ACTCTT
GGTCTGGGAGAGTCGGGGGT TGGGGG GAG GGGT TGGGAA
CT A--- C-- ---------
GAM943 6267 GGCGGGGTGGGGAATAAATA G GGGGAA- A TCTT
TATTAAGTGCCTCTTGGCAT GGC GGGT TAAATAT TTAAGTGCC
TTGGGGTGTTTAAACAATAA CCG CCCA ATTTGTG GGTTTACGG
CCCGGCC G ATAACAA G ----
GAM945 2044 TGGGGCCTTCCGGTTCACAG - TC C-- AA G--- CCAA
CGAATTACTGGTTAACCAAT TGGG GCCT CGGTT ACAGCG TTACT GTTAA

TGACAAAAAGTAGAATGCTG ACCC TGGA GTCAA TGTCGT GATGA CAGTT
TAAAAACTGTTAGGTGCCCA G TT AAA AA AAAA ----
GAM946 18553 TGGAGCGTGGCGAACAGGTG -- T GAACA -- TG CG CT CTGCT
CTCTGGGCCTGGCGCTGCTG TGGA GCG GGC GGTG CTC GGCCTGG CTG GCTG
CTGCTGCTCGGCCTCGGACT ACCT CGC CCG CCGC GAG CCGGATC GGC CGGC
AGGCCTGGAGGCCGCCGCGA TT - AGCG- CG GT A- TC -----
GCCCGCTTTCCA
GAM947 2700 CTCAACCCTTTCTTTAATGT - AATG AG AGGGGG
CATCCAGGGAGGGGGCCAGG CTCAAC CCTTTCTTT TCATCC GG
GATGGAGGGGAGGGTGTTGA GAGTTG GGGAGGGGA GGTAGG CC
G T ---- GA ------
GAM948 21862 GTGCTGTCTTATGGTTGCGT --- TA TT--- G- CG - TTCAGAT
GGCGAGTTTCTGCTTCAGAT GTGCT GTCT TGG GC TGG AGT TTCTGC
GCAGAGCACTGTCCAGAGCT TACGA CAGG ACC CG ACC TCA GAGACG
TCCTCCAGTGGACAATAGCA TAA TG TCCTT AG TG C -------
T
GAM949 4192 TGAAGTCACACATGAAAGAA TCAC A CAT T CT TTT
GCCATGATCAAGCTTGGTTT TGAAG ACATGAA GAAGC GA CAAG TGG
CCACTTGCTCTGCTTCTTCA ATTTC TGTACTT CTTCG CT GTTC ACC
TGTATCTTTA TA-- - T-- C -- ---
GAM950 21128 CCTCCCATAGTTCTCCCGCG TC A C- - TT CCC TTCCTTTTCC
TCTGGTTGGCCCGTGTGTTC CC CCAT GTTCTCC GC GTCTGG GG GTGTG
CTTTTCCTATACCTCCCCAG GG GGTG CAAGGGG CG CGGACC TC CATAT
GCAGCCTGGGGAACGTGGTT TT - TC A CC --- ----------
GG
GAM951 20318 GGGTTTTAAGTATGCCAATG TA T AA G- T - CAAA
AGGAGAGTTGCCAAAGTCAT GGGTTT AG ATGCC TGAG AGAG TG C
CTCTAACTCAGGCATCTCTG CCTAGG TC TACGG ACTC TCTC AC G
GATCC TC - -- AA T T ----
GAM952 15082 AGCCACACCACCAGAATGTG CC CAGA - -- CCCAGC T TCACGC
TCTGTCCCCAGCAATAATGT AGCCACA AC ATGTGT CT GTC AATAA GT
TCACGCGCCTTATTCCAGTG TTGGTGT TG TACACA GA CAG TTATT CG
ACAAAGAACACATGTGTACT CA TG-- A AA TGACC- C ------
GTGGTT
GAM954 12999 TTTTAGTGATTATTAAGCAC T A - TTCTGTCAG-- GAAA
TTCTGTCAGTCTTTGAAAAA TTTTAG GATT TTAA GCAC TCTTT
AGAACGTATTTTTTGTGCTT GAAGTC CTAG AGTT CGTG AGAAA
TGAAGATCTCTGAAG T A T TTTTTTATGCA ----
GAM955 593 AGTGGGGGTGAATTCATGTG GTGA ---- A A CGATA AGACCA
TAGTACAAGCCGATAGACAG AGTGGGG ATTCA TGTGT GT CAAGC GAC
ACCAGTCCTTGCTTGACGCA TCACCTC TAAGT ACACG CA GTTCG CTG
CAAGTCTGAATGCTCCACT G--- CTGA - - TTC-- ------
GAM956 15361 GCCCAAAGACAAATATTGGG AA-- AAT GG - A- TCACT
CAGGAAATCAGTTCTCACTG GCCCA GACA ATT GCA GGAAATC GTTC
AGCCCGGTTTCCATGTAAAA CGGGT TTGT TAA TGT CCTTTGG CGAG
TCTCTGTTGTGGTGGGC GGTG CTC AA A CC -----
GAM957 8181 AGGAGACTCTTTTCCCCCCC A TTTTCCCCCCC ATG T T TTTGTTGAAAATGAGTT

AGTATGTGTTCTTAGTGCCT AGGAG CTC AGT TGT CTTAG GCC
TTGTTGAAAATGAGTTGGCT TTCTT GAG TCA ACA GAATC CGG

CTAAGTACAAAGACTTATTT - TCTTTAT---- GAA T T ----------
CTGAGTTCTT
GAM958 20304 TTGGCATGGACTAGTTCAAG G T AG A C- C CCATCAA TTTT
TATCAGTGCCTCCATCAATG TTG CA GGACT TTCA GTAT AGTG CT TGT
TTTTTACAAGTCACTAAATA AAC GT CCTGA AAGT CATA TCAC GA ACA
CTGAAAGTCCTTGACAA A T -- - AA T ------- ----
GAM959 6354 TCCAGGGGGCGCTTCCAGTT GGG C-- CA C CC GTGA
TACACCTGGCCCCACCATTT TCCAG GCG TTCCAGTTTA CCTGGCC CA ATTT
GTGAAAGTTGTGGCCAGGCT AGGTC TGC AAGGTCAGAT GGACCGG GT TGAA
AGACTGGAAAACCGTGCTGG G-- CAA C- T -- ----
A
GAM960 2422 CCCTGGGGTTGGGGCCTCAC GGG ACC TG AGGGC
CCCTCTGGAGGGCCTGGAGG CCCTGGGGTT GCCTC CCTC G
CAGGAGGTGGAAACCCCAGG GGGACCCCAA TGGAG GGAG C
G AGG GAC GT -----
GAM961 12941 TCTCGGAGAGCAGGACATCG C ACA- T AAAGCGCAGATGGG
AATGTAAAGCGCAGATGGGA TCTCGGAGAG AGG TCGAA GT
CTTCGACAGGCTTCTTCTCT AGGGTCTCTT TTC AGCTT CA
GGGA C GGAC - ----------
GAM962 18643 TACGCAGGTACACACGTGTA GG - CT T GTT GA C TGT
CCTGAGTGTGTTCATGAGGG TACGCA TACACACGTG TAC GAG GT CAT GGGCAT TGG
CATCTGGTGTCCATGTGTCT GTGTGT GTGTGTGTAC ATG TTC CG GTG TCTGTG ACC
GAGTGTAGCCTTTGTATCAT GT T T- - AT- AG T ---
GTGTGTGTGTGTGTG
GAM963 11672 GACTCAATGTGCAACTGACA T T-- - ACA T G AT CT AATATACA
TCTGCTAGTGATGATCTGGT GAC CAATG GCAA CTG TC GCTA TG GAT GGT
AATATACAACCTGTCCAGTA TTG GTTAT TGTT GAC AG CGAT AC CTG CCA
GCCGAACAGTTTGTTTTTAT T TTT T A-- C G -- T- --------
TGTGTT
GAM964 19548 GCGCGGTCTGCGCGTTCCCA CTGC TTC CACA- CGC-- TTTTTTT
TTTTCCACAGGAGGCGCCGA GCGCGGT GCG CCATTTTC GGAGG CGA
TTTTTTTTCGAACCACCTCC CGTGCCG TGT GGTAAAAG CCTCC GCT
CGCAAGAAAATGGTGTTGTC C--- TGT AACGC ACCAA -------
GCCGTGC
GAM966 16668 TTCTGAACTGTGACACTTTC AACTGT TT T - TTAAA TGACCT
TCAGTCTTTTCTTAAATTTC TTCTG GACACT C CAGT CTTTTC TTTCA
ATGACCTTGAGAACTTTGAA AAGAT TTGTGA G GTCA GAGAAG AGAGT
GAGTACTGGTTAGTGTTTTG GTT--- TT - T TTTCA ------
TAGAA
GAM967 2838 TTTTTGAGTCTGGGTCTCGC TC- CTCTGTCACCC G C G AGAT
TCTGTCACCCAGGCTGGAGT TTTTTGAGTCTGGG TCG AGGCTG AGTA AGT GTG
ACAGTGGTGAGATCATAGCT AGAAACTCGGGCCC AGC TCCGAT TCAT TCG TAC
TACTGTAGCCTCGACCTCCC TCC ---------- G - A ----
GGGCTCAAAGA
GAM968 20997 CCTTGTATTCGGGGAACGGG TC GGA- ------ C T-- T C TCCAG ATG
GCTGATGAGTTGACCGTGGT CCTTGTAT GG AC GGGG TGA GAGT GA CGTGGTG GG
GTCCAGGGATGTCAATCGCC GGAACATG CC TG CCCC ACT TTCA CT GCACCGC CT
ACGTTCCACTTTCCTCACCC TT AAGG TATAAA - CCT C T TAA-- ---
CAAATATGTGGAACCTTGTA
CAAGG

GAM971 14393 TGGGGTGGCAGGTATTAGGG -- - GATAATA T CTTCTGA
ATAATATTCATATAGCCTTC TGGGGT GGCAGGT ATTAGG TTCA ATAGC
TGAGCTATCTGGGCAGACTT ACCTCA CTGTCCA TGGTTC GGGT TATCG
GGTGACCTGTCGAACTCCA AG G AGAC--- C -------
GAM972 14403 CAGCACCTCGGCCCAGGTAT CTC - CCAGACGA ---- TGCAT
GGCCAGACGAGGGGCTGGCC CAGCAC GGCCCAGG TATGG GGGGCT GGCC
TGCATGGCTGGATGGCCCCC GTCGTG CCGGGTCC GTGCC CCCCGG TCGG
CGTGCCCTGGGCCACTGTGC TCA C -------- TAGG -----
TG
GAM974 9925 GCAGCCCTGAAGAAATCAGG A ATCA AAATT - CAGAGACGGCA
TAAATTCCGCTCCAGAGACG GC GCCCTGAAGAA GGT CC GCTC
GCAGAGCTGGTGGCGCCATT CG CGGGACTTCTT CCG GG CGAG
CTTCAGGGCAGC A A--- CGGT- T ----------
GAM975 6446 GAGAATGCAAAATTCACTTA AT ----- - ATTTTAAA - CACAC
CATTTTAAAGACAGAACACA GAGA GCAAAAT TCA CTTAC GACA GAA
CTTCATGTCAGTGGTAGGCT CTCT CGTTTTA AGT GGATG CTGT CTT
GATTCTGATTTTGCTCTC -- GTCTT C GTGA---- A -----
GAM977 5523 GAAGCTAGAGGGAGGTCAGG TA- G G AG GAA-- AA- A CAAAGCAGA
AGAAGGGTAACAGGGAGGAT GAAGC GA GGA GTC GA GGGT CAGGG GGATG
GCAAAGCAGACATCTACCCT CTTTG CT TCT TAG CT CCCA GTCCC TCTAC
GGTCACCCCAGGATCAGGAT TTC G A GA AGGAC CTG A ---------
ATCTGTCCTTGTTTC
GAM978 18822 CCCCCACGCCGAGGCTTTGG CC TG A---------- CGCTT
AGTGAACAGCCCGCTTGGCT CCCCCACG GAGGCTT GAGTG ACAGCC
GTGGCATCTCAGTCCTATTT GGGGGTGT TTTTGAG TTTAT TGTCGG
TTGAGTTTTTTTGTGGGGG TT TT CCTGACTCTACGG -----
GAM979 12444 CGCGACTCCGTGAGCGCCTC ACTCCGT CCTCC TCC C TCGCCGTTCT
CGCCGGTCCCGGGACGCGGG CGCG GAGCG GCCGG CGGGACG GGGAGCG
AGCGTCGCCGTTCTCGCTCC GCGT CTCGC CGGCC GCTCTGT TCCTCGC
TTGTCTCGCTCCCGGCTCCG CT----- CT--- CTC - ----------
CTCTCTGCG
GAM980 793 GCACCTCCCCTGTTGTGTAG T -- TG GT AG CACAA
CCAGCACAGGCACAATTTGT GCACC CC CCTGT T AGCC CACAGG
GGGTTTGGTGGCAGGTAGGT CGTGG GG GGACG G TTGG GTGTTT
GGTGC T AT GT GT -- -----
GAM981 21321 AGTGTGTTAGTAACTTGTCT TT T T T T T- TTGTG C -- ACATGG
AATTGAACTAATGTTGTGTC AGTGTG AG AACT G CTAA TGAAC AATG TC TAAT TGTTT
CTAATTGTTTACATGGAAAT TCACAC TC TTGA C GGTT ACTTG TTAC AG GTTG ATAAA
ACTGTTGAGAAGACCATTTT T- T - - C TT CAGA- A TC ------
GTTCACTTGGCAGTTTCTTC
ACACT
GAM982 9537 CGGACATTCCCTGTGACTCC - --- AC-- ACA GACC AACCTA
ACAGGCCAGACCTCAACCTA CGGACATT CCCTG TG TCC GGCCA TC
GAAAGATGGCCACAGGACTT GTCTGTGG GGGAC AC AGG CCGGT AG
GCAACTCAGGGTGGTGTCTG T TCA GTTC ACA AGAA ------
GAM983 2438 GATGACCCAGATCATAGTAA - C A ----- ATGACC AACAACCCC
TGATGACCGTTCAACAACCC GAT GAC CAG TCAT AGTAATG GTTC
CGAGCCATGTACGTTGCTAT CTA CTG GTC AGTG TCGTTGC CGAG
CCAGTGACTGTGTCTATC T T - ACCTA ATGTAC ---------
GAM984 20055 AGCCAGTCATTCTAAGGGGC - C ---------- TTGGTGC

TTTGTATTGGTGCTATAAAG AGCCAG TCATT TAAGG GGCTTTGTA
TCAACCTCAATTCCTTACAG TTGGTC GGTGA ATTCC CTGAAATAT
TGGTCTGGTT T C TTAACTCCAA -------
GAM985 12576 GCCGCCCTCGCCGCCGCCGT T C C C C CG GA- AGATCAATAG
CGCCGCCGCGGAGCAGATCA GCCGCCC CGC GC GC GT GC CCGCG GC
ATAGGCGAACGCGGAGCACA CGGCGGG GCG CG CG CA CG GGCGC CG
GCGCAGCGCGGGCGGC C A - A - A- AAG ----------
GAM986 17205 TATGGCCACCCGAAAGCGCT A A- G CCT AGGGA GC GAG
CCTCCAGCAGGGACAGCTCA TATGGCC CCCG AAGC CT CCAGC CA TCACTGAT
CTGATGAGGTCGGTGATGGC ATGTCGG GGGT TTCG GA GGTTG GT AGTGGCTG
GTTGGTAAAGGCTTCCTGGG - CC - AAT CG--- -- ---
GGCTGTA
GAM987 11069 TTTATTCATCTTCCATGTGC T CC ---- T-- GTCTC CTCCCTT
CTGCTGAGTCTCAGACTCCC TTTA TCATCTT ATG TGCC GCTGA AGA
TTTCTTTCCATCAGCTCTGG AAGT AGTAGAA TAC ACGG CGACT TCT
CAGCCTCATCAAGATGACTG C C- TCCG TCT ACCTT -------
AA
GAM988 11971 GGGGGTGCGGGGCTGGCCGT GG TG CC G CT GCTG
GGCTCTGCATTCGGCTGTGA GGGGGTGCGG C G GT GCT GCATTCG
GTGCCAGTGACCTGGAGCTG CCCCCACGTC G C CA TGA CGTGAGT
CACCCCC GA GT -- G C- ----
GAM989 8689 GGAAATGGTTATTGAATCAG T T AATCAG CC TTCT G TTAAA
ATAGACCAGTTCTGTTGAGG GGAAA GGT ATTG ATAGA AG GTTGAGG TC
GTCTTAAAGAGTCTCAATTT CCTTT CCA TAAC TATCT TC TAACTCT AG
TCTCATCTATAAAACCAATA - - CAAAA- AC TTT- G -----
CCTTTCC
GAM990 7596 TTACACACTCGTGATGTAGT C G A TT C T ------- G GCC ATAT
TCATCTGTGATTGTGAAGCC TTACACA TC TGATGT G CAT TG GA TTGT AA TCAGA
TCAGAATATTCTGGTTGACA AGTGTGT AG ATTACA T GTG AC CT AACA TT GGTCT
AGTGAATCTCCATGTGGGTG T A G GG T - CTAAGTG G --- ----
ACATTAAGATTGTGTGA
GAM991 13400 CTGGATGTGCTGCAGATGCA T T- TCCCAATAAT GGCCTCAAA
TCCCAATAATCAGGGTGGCC CTGGA GTGCTGCAGA GCA CAGGGT
TCAAAACCCTGTCTGTCCTC GATTT CACGATGTCT TGT GTCCCA
TGTAGCACTTTTAG T CC CT-------- ---------
GAM992 8448 AGTTGGAGCGGAAGGCAGGA ------- A A - ATCAC
TGGGACCATGATCACCACTG AGTTGGA GCGGAAGGC GGATGGG CCA TG
GATTCGTCCAGCTTTTCGCA TCAGCCT CGCTTTTCG CCTGCTT GGT AC
AATCATTCCGACT TACTAAA A A C -----
GAM993 406 GAAGGCGTCATCGAGAGTAA CGTCA TAAC- GA G A TTGA
CTGGAATGGAGATTGTTGAC GAAGG TCGAGAG TG AT GAG TTG
AGCTTTGATGACATGAACCT CTTCC GGCTCTC AC TA TTT GAC
CTCGGAGTCCCTTC CTGA- CAAGT AG G C ----
GAM994 5591 GGCTTCCTGTATGTGGCTGG TAT G CTT--- GCTCA
GCTTGGTGGCTCACACCTGT GGCTTCCTG GTG CTGGG GGTG
AATCCCAGCACTTTGGGAGG CCGGAGGGT CAC GACCC CCAC
CC TT- - TAATGT -----
GAM995 21180 GGCTTGATTTGTTGGTGACC G -- GAATTAC CTAGT
GAATTACTAGTGACTAGTTT GGCTTGATTT TT GGTGACC TAGTGA
ACTAACTAGGTCATTCAAGG TTGAACTGAA GA TTACTGG ATCATT

AAGTCAAGTT G AC ATCA--- -----
GAM997 18904 CAATTGGTAACTTGAGTTGT GG A G CTTGG TGG ATTGC
GTCTTGGTCATGGGAGAGTA CAATT TA CTTGA TTGTGT TCA GAGAGT
TTGCATTCTTGGTTGAATAC GTTAA GT GAATT GATACA AGT TTCTTA
ATAGTTAAGATGTTAATTG TT A - TA--- TGG -----
GAM998 20226 TACTTTGAAACGGAGATGTC GAA G G TTGG - TG T TCA
TTGGAACATTGGAATGTCTC TACTTT ACG AGAT TC AACA T GAA GTC
AGATTTCTGGTTGTTATGTG GTGAAA TGT TCTA GG TTGT G CTT TAG
GATCTGTGTGGAAAGTG GG- G - TGTA T GT - ---
GAM1000 21476 TGGTCTCAAGTGATCCACCC T A---- ACC C CCTC
ACCTTGGCCTCCCAAAGTGC TGG CTCA GTGATCC CAC TTGG
CGGGATTACAGACATGAGCC ACC GAGT CATTAGG GTG AACC
A - ACAGA GCC A ----
GAM1002 1301 GGTGGTTTGTTTCACCTATC T TT T TCAA C --- A TTTT- CCCC - TA
AACCCGTCATCTAGGTTTTA GG GG TGTT CACCTA CC GTCA TCT GG AAG GCA
TGCATTAGG
AGCCCCGCATGCATTAGGTA CC CC GTAG GTGGGT GG CAGT AGA CC TTC CGT
GTGTAATCC

TTTGTCCTAATGTGCTGCTT - TT T CCCC A CCC A CCCTT CCTT C --
CCCTTTTCCCCCAAGACCCT TTTGT
GACAGGCCCCTGGGTGTGAT
GTTCCCC

GAM1003 16815 CCCCATCGCCTCCAGTTGCT CCAT C A A- AG- TC CA- C CTCT
ATGGCAACAGGCCATTCTGG CC CG CTCC GTTGCT TGGCAAC GCCAT TGGGC GCCA GT

GCCAGCCACGTCTCTGCATG GG GT GAGG CAGCGG ATCGTTG TGGTA ACCCG CGGT CG

GCAGTGCCCAATGGTGGAGT TTT- C - GG AGG -- TGA A ----
TGCTAGGGGCGACGGAGCTG
TTTGG
GAM1004 14582 AATTGCTACTGAAGAGCTTG T - A CTT A TCATGACATTT
CCACATTCATGACATTTGTG AAT GC TACTG AGAG GCC CAT
AGGCTTCTCTCCAGTATGCA TTA CG ATGAC TCTC CGG GTG
TT - T C TT- A ----------
GAM1005 9555 CTCTGGGAAGCTTAGAAGAT AGC ATACT TGGGA A TTTACA
ACTTCAGCACTGGGAGGATT CTCTGGGA TTAGAAG TCAGCAC GG TTCT
CTTTTACAGGAACTGTGTGT GAGACCTT GGTCTTT AGTTGTG TC AAGG
TGATTTCTGGTTCCAGAG --- ----- TG--- - ------
GAM1006 3518 CACAAAAGAAATATTATTAC AAA T TACA - TA- CAATT
AAGGTTTCAGAGGTAGCCAA CACA GAAATA TAT AGGTTTC AGAGG GC
TTGCATTCTTTTGGAAATCT GTGT CTTTGT ATG TCTAAAG TTTTC CG
ACTGTACTGTTTCAATGTG AA- C TCA- G TTA -----
GAM1007 1036 GGTTGTTTTTAAAAAAGCTC AAAAAG CT- - AAA TATT
TTCTGTTTAAAACATATTTG GGTTGTTTTTA CT TCT GTTT ACA
TAAAACAAGATTTGGATGAC CTAACGAAGGT GG AGA CAAA TGT
ATGGAAGCAATC ACAGTA TTT A A-- ----
GAM1008 22301 CTACATGAAGAAGAGAGAAG A AG AA- G T------- AA CAAAAA
AGGAGATGCGTGATACCAAG CTACATGA GA AGAG GAGGAGATGC TGA ACC GAGT

AGTCAAAAAACTCGGGTCCT GGTGTACT CT TCTT CTTTTCTACG ACT TGG CTCA
ATACTTCAGCATCTTTTCAA - G- GAA - TCATATCC G- ------
GTTCTGTCTCATGTGG
GAM1010 2523 GGACCAGTTGGGGCGGAAAG AG--- G GAAAAC C CCGG
GGAAAACCGCCTGGCCGGCC GGACC TTG GGCGGAAAGG CG CTGG
AGTTGCAAAGGCCTTTTCGC CCTGG AGC CCGCTTTTCC GT GACC
CGCGAATAAGGGTCC GAATA G GGAAAC T ----
GAM1011 13294 GCGTTGCTGGTGTTGTTGGC - G G TTAG C--- GGGTTCGG
GTTAGCGGCAGCGGCGGCGG GC GTTGCTG TGTTGTT GCG CGGCAG GGCGGC
GTTCGGGCCGCCTTTCCTGC CG CGGCGGC GCGGCGG TGT GCCGTC CCGCCG
CGGATGTGTGGGCGGCGGCG A G G GTAG CTTT --------
GCGGCAGC
GAM1013 17587 TGGTTCTGGAGATGAGCATT T- TG AGA AG G C AA CCAGCAAC
GGGGCGCCGGAAGCCCAGCA TGGT C G TG CATT GGG GCCGG GC
ACGCCTGGCCCTGAGTGAGC ACCA G C AC GTGA TCC CGGTC CG
ACCTGGTTACCA TT GT C-- GA G - -- --------
GAM1014 692 GAGCTTTCTGGGCAGACTTG TTCT AC- ACCT C GC C TTCTTGTCCACT
GTGACCTTGCCAGCTCCAGC GAGCT GGGCAG TTGGTG TG CA TCCAG AGCC
AGCCTTCTTGTCCACTGGCT CTCGG TCTGTC GGCCAC AC GT AGGTT TCGG
TTGGATGACACCCACCGGCA ---- AAC CC-- A -- - ----------
ACTGTCTGGCTC
GAM1015 19378 GCCCGCCGCTCTTCCTGGCG CC- - CTGG G A CAGCATTGAGCAGAAAACA

TGTCATCTCCAGCATTGAGC GCCCG GCT CTTC CGT TC TCTC
AGAAAACAGAGAGGAATGAG CGGGT CGA GAAG GTA AG AGAG
AAGAAGCAGCAGATGGGC AGA C AAGA - G ----------
GAM1016 2683 GTCGGCTTTTATTATTCCTA TT TT CT AAAAGA TATTTTCTCAT
AACAAAAGAGCTTTATTTTC GTCGGC TTA ATTC AAAC GCTT
TCATGAGTAGGTTTTAGAGT CAGTTG AAT TGAG TTTG TGAG
TTTAATTGTTGAC TT TT AT GA---- ----------
GAM1018 1896 GGAGCCTCAGTCCCTCATCC CA CCTCAT - AAA- A AAGA
GTGAAATGGGGATACAAAGA GGAGCCT GTC CC GTG TGGGG TACA
TGTACCTCGCCCACACTGGC CCTCGGA CAG GG CAC GCTCC ATGT
CAGCAGACCAAGGCTCC AC ACGACC T ACCC - ----
GAM1019 21562 TGGAGTCCGTCCGGCACGGG AG CC A G A AAGGCG
GCTCCGGATGCAAGGCGGTA TGG TCCGT GGC CGG GCTCCGG TGC
CTGGGGCGTCGGGCCACGGA ACC AGGCA CCG GCT CGGGGTC ATG
AGCCA GA -- G G - ------
GAM1020 17014 GCTTTGTGCTCAGGCATCAC GTG TCACATA-- CAG
ATAGCAGGCAGCCTGCAGCC GCTTT CTCAGGCA GCAGG
TTTCTTGCCTGAGAGAAGAG TGAGA GAGTCCGT CGTCC
T AGA TCTTTCCGA ---
GAM1021 5857 GAGGTGCCGGTGGGCCTGTG C - TGTGTTG GA CTGT
TTGCTGCGATTTTAGTCTGT GAGGTGC GGTGG GCC CTGC TTTTAGT
GCTGGGAGGCAGGGCTCCGC CTCCGCG TCGCC CGG GACG AGGGTCG
TGCGCCTC - T ------- G- ----
GAM1024 17556 CTTGGACTTCCCCTCCCAGC CT-- - T TGTAC- T CACCTCT
TCGTGTACGGTCTCCCACCT CTTGGA TCCCCTC CCAGC CG GG CTCC
CTGGAGCCCCATCCCCGCGC GGATCT AGGGGGG GGTCG GC CC GAGG
TGGTGGGGGGATAATTCTAG TAAT T C CCCTAC C -------

```
        G
GAM1025 10414 GCCGGGTTGGGACCGCTGCG     T-    C CT G  C-   TGCCTTT
        GGCCCGCCTGCCTTTGGCGT GCCGGG  TGGGA CG  GC GGC  CGCC
        CGCCGGCCGTTCCCGTTCCC CGGCCC  GCCCT GC  CG CCG  GCGG
        GGC                  TT    T -- G  CT   -------
GAM1026 19901 TTAGAGGATCCCTGGGAGGC    AGG    G  GG  GA ---- GG    GACAAAGA
        AGGACACTGGAGGATGACAA TTAG   ATCCCT GGA  CAG  CA   CT  AGGAT
        AGAGTCTTAGGGAAAATGCA GATC   TAGGGA TTT  GTC  GT   GG  TTCTG
        CTGAGTTTGAGGGATAAACT    AAA    G  GA  AC  AAAA  GA   --------
        AG
GAM1027 18442 GGCCAGTTGCTCTAAGTGGA    A   -  AAG  A TG  A   - GAGTGGCA
        TTGGATATGGTTGGAGTGGC GGCC GTTGC TCT   TGG T  GAT TGGT TG
        ACAGACTGGATCTGGGCTAG CCGG TAGCG AGA   ATC G  CTA GTCA AC
        AGAGAGGCGATGGGCC       G    G  GAG  G GT  G   G --------
GAM1028 14325 TTGTCTTCTAGTACAGTCTG    -   - TAC- T  ---    TTCACCTTTT
        CAGGGTTCACCTTTTCCCTG TTGTC TTCT AG    AG CTG   CAGGG
        ACTCAGTCTTCTCCTAAGAG AACAG GAGA TC    TC GAC   GTCCC
        TGACAA               T   A  CTCT  T   TCA    ----------
GAM1029 18570 CCTGTTGCTGTGGGCCACGC   TG TG    --     CTGA   CC    T  TGCT
        TGAACGCCGCCTTCGTGCTC CC  T  CTGTG  GGCCACG    ACG  GCCT CG
        GTGGGCTCTGTGATTGTGGC GG  G  GATAC  TCGGTGT    TGT  CGGG GC
        TTTCATAGAGGTGGG       GT GA    TT      TAG-   CT    T ----
GAM1030 14928 GCCCCAGGGCAGCCTCGTGC   C     C CC-  T      A-   GCGAGC   CCTGGTGT
        GTGTGATCCAGCGAGCGGGC GC CCAGGG AG   TCG GCGTGTG  TCCA     GGG
        CTGGTGTTCCCCAACATGGA CG GGTCCC TC   GGC CGTATAC  AGGT     CCT
        AGCATATGCCGGTCTCTCCC  C     - TCT  -     GA    ACAACC   --------
        TGGCGC
GAM1031 12344 GGAGAATTGCTTGACCCGGG    AA    ----- A     AG C    GT      A  -  AGAT
        AGGCGGAGGTTGCAGTGAGC GGAG  TTGCT    TG CCCGGG  G GGAG  TGCAGTG GC CA
        CAAGATTGCGCCATTGCACT CCTC  AGCGA    AC GGGTCC  C CCTC  ACGTTAC CG GT
        CCACCCTGGGCAACAACAGC    AA    CAACA -     -- A   --      - C ----
        GAAACTCC
GAM1034 269   GAGGAACAGCCGGTAATGCC       -   -- -   CCC     A-- GAGCA    GCTGA
        CTCATGGATGGAGCATCTCA GAGGAACA GCCG  GT AATG   TCATGG   TG    TCTCA
        GCTGATGGGAGAAAACAGGA CTTCTTGT CGGC  CA TTAC   AGTACC   AC    AGGGT
        CCATGACCATTCACAACGGC       A   AA C   C--     AGG  AAAAG    -----
        ATGTTCTTC
GAM1036 17101 AAGTTCATTCTAGCAGTAAT      TTC-----  C--       TC    TCACTCAT
        TTATCAGAGGTCACTCATCC AAGTTCA      TAG   AGTAATTTA  AGAGG
        TCTATTAAATTATTAATCTA TTCAAGT      ATC   TTATTAAAT  TCTCC
        ATCACCTTTGAACTT          TTCCACTA   TAA       TA    --------
GAM1037 7016  GATTCCTCTATTGCCACTGA    CTCTAT   CA  GA  GG--     AATAAAACTGAAA
        TTGGAGCTGAAAATAAAACT GATTC    TGC  CT  TT   AGCTGAA
        GAAATTCAGCTAGAAAAAAA CTGAG    ACG  GA  AA   TCGACTT
        GGAGCATATGAGTC         TAT---  AG  AA  AAGA     -------------
GAM1038 12884 GGCCAAGTTCCAGAGGATCT   C   GT    A     --  -------     ATGAGTTGACC
        GTTTGCCAAATGAGTTGACC GG CAA  TCCAG GGATCT  GTT      TGCCAA
        TTGGTACCTATATAACAAAG CC GTT  AGGTT CCTGGA  CAA      ATGGTT
        GTCCCTTGGACATTGCCC    C  AC    C     AA   TATATCC     -----------
GAM1039 2141  AGCTCCCAGTATCGAGGGGC   CT     ATCGAG      CT   CATTA  TTAAT
```

AAACTTAACATTAGCTTAAT AG CCCAGT GGGCAAA TAA GC
GCGACTTATTTGCCCAGATT TC GGGTTA CCCGTTT ATT CG
GGGTCCT CT GA---- -- CAG-- -----
GAM1040 9163 TGTTGAGATGAGGGTTTCAG ---- TG TT AGG C AA-- AGTGC
GGAAGCAGAAAAACCAAGTG TGTTGA GA AGGGT C GAAG AGAAA CCA
CTGGATCATTTCTCCTTTGA ACGACT CT TTCCG G TTTC TCTTT GGT
GGGGCCTTTGTCCAATTCAG TAAC GT GG AG- C ACTA -----
CA
GAM1041 22936 GTCCGTTTTCTCTGGTTTTG GTT-- -------- AAGACTG
TGAAGACTGCACAAAACTCT GTCC TTCTCT GGTTTTGTG
CATGATGGAGAACCAAAGGA CAGG AAGAGG TCAAAACAC
C AAACC TAGTACTC -------
GAM1042 3292 CGGTTTCTGCGGGCCAAGCA TG-- AA G AAAGA
CGGTGCGCAAAGAGCGCGTG CGGTTTC CGGGCC GCAC GTGCGC
GTGCGGCCCGACTCGGAGCT GTCGAGG GCCCGG CGTG TGCGCG
G CTCA -- G -----
GAM1044 9365 GCTGTCGCGCCGCGCTGCGG - - G GG A A GAA
GGCCATGATCCGGAACGGGC GCTG TC GCGCCGC CTGCGG CC TG TCCG
GCGGGGCTGCAGGCGGCGCA CGAC AG CGCGGCG GACGTC GG GC GGGC
GAGCAGC G A - GG C - ---
GAM1045 8998 AATGGAGGGATTCAGCTTCA G AG- TCAGG - GA- T AAGGAGAA
GGTTAAAAAGGAGGAAGAGG AATGGA GGATTC CT TTAAAAAGGA GGAA GGAAA GCC
AAATGCCAAGGAGAAGGTTT TTATTT CCTGAG GA AATTTTTCCT CCTT CCTTT TGG
TTCCAAATTCCTTCCTTTTT A GTA TTTA- T AAA T --------
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TATT
GAM1046 2361 GCCCAAGATGTGCAGCTTCC AA - TTCCT GAC CAAAGT ATAAG
TGGAGTGGAGGGACCTCAAA GCCC GATG TGCAGC GGAGTGGAGG CT TGTCT
GTTGTCTATAAGAGATATGC CGGG CTAC GCGTCG CTTCATCTCC GA ATAGA
CAGCCTCTACTTCTGCTGCG AG C T---- --- CCGT-- -----
CCATCGAGGGC
GAM1048 5174 GAGTCAAGCCCAAGAGCTCC T CC A TCCCTT CT TCCCCACTCCCTCC
CTTGGCCCTGTTCCCCACTC GAG CAAG CA GAGC GGCC GT
CCTCCACTGGCCTCTGCTGT CTC GTTT GT CTTG CCGG CA
TCCTGTCTTTGCTC - CT C TCGTCT T- ----------
GAM1049 5654 CGCCCCGGCCCGGTGCAGCA C GTGCA C CA G A AGCCC
CCACCAGCGTGTCCAGGAAG CGCCC GGCCCG GCAC AC GC TGTCC GGA
CCCTCCCGGGCAGCGTCGTG GTGGG CTGGGC CGTG TG CG ACGGG CCT
CACGGGTCGGGTG - A---- C -- - C -----
GAM1050 15986 TGAGGGCCTGGGACTCGTCT G CT CTCG--- TT- TTT AATCC
TTACACTTTCAGAATCCCTG TGAG GC GGGA TC TACAC CAG
TGTGTGCCTGAAAAAATATC ACTC TG TCCT AG GTGTG GTC
CTTTGTGCTCA G TT ATAAAAA TCC T-- -----
GAM1051 4158 GGCGAGCACCGCGCCGGCCC ---- - GCCC--- CTCCC
TGAGCCTCCCGCTCGCTCCC GGCGA GCACCGCG CCG TGAGC
CACGGCCGCGGTGCATGTTC CCGCT CGTGGCGC GGC GCTCG
GCC TGTA C ACCCCTC -----
GAM1054 4451 GGGGGTGCTGTGATGCGTGA C AT G- --------- GGAGG
GGCAGCCGGGGGAGGCCCGG GGGGGTG TGTG GCGT AGGCAG CCGGG
AGTCCGAGACTGCTTGAGCG TCCCCAC ACGC CGCG TTCGTC GGCCC

CTGCGCACACCCCT - GT AG AGAGCCTGA -----
GAM1055 5160 GGTGCCTGGTCAATCAGTCC G T--- ATCAGT T AG CAACCC
TCGGGATGGCAGCCATCAAC GGT CC GGTCA CCTCGGGA GGC CCAT
CCGTGGGCCTCCTGGGGTGA CCA GG CCAGT GGGGTCCT CCG GGTG
CCTTACGGACC - CATT ------ - -- ------
GAM1057 14575 GGTAAAGTGGGGAAGGCCAC AAAG AGG T A G ----- GCTCG
ATCTGAGCGGGGTCGCGCTC GGT TGGGGA CCACA CTG GC GGG TCGC
GGTGATTGTTCCTGGCCAGT CCA ATCTCT GGTGT GAC CG TCC AGTG
GTGGAGTCTCTAAACACC CAA- GA- - - G TTGTT -----
GAM1058 1066 CTCTACGGTTCTCCATGCCC AC T A - C A GGGTCTAAA
CCTCCAGTTTGGGGGTCTAA CTCT GGTTC CC TGC CC CTCC GTTTGG
ACCAAACAGGAGAGGTGCAG GAGG CCAGG GG ACG GG GAGG CAAACC
GGGACCAGGAG A- - - T A A ---------
GAM1059 22762 GGCTGGCCTGGCTGACGGCA GG GACG A- C--- GGAT CG G AGGA
GCTGCCAAGGGGATGCCGCA GGCTGGCCT CT GC GCTGC AAGG GC CACT CAGG
CTGCAGGAGGACCTGGGGTG TCGACTGGA GA CG CGACG TTCC CG GTGG GTCC
GTGCTATACCTTCACAGCAG -- AAA- GA ACAC ATAT TG G ----
CAGGCAAAAGAGGTCAGCT
GAM1060 6264 TCTCTCCCTCTATGTTTTAT - T- AT- TA A CTG
TTCATTGCCTGGCAAAGAAG TCTCT CCC CT GTTT TTTC TTGC
ACAGACTTCAGTTGGGAAGA GGAGA GGG GA CAGA GAAG AACG
GG A TT CTT CA A ---
GAM1061 11529 GGGGGGCACCAATGACAAGG CAATGA ATTGG GACA
GAATTGGGATGGGGATGACA GGGGGGCAC CAAGGGA GATGGGGAT
GTCCCTATTTCCTTTGCTGT CCCCTTGTG GTTTCCT TTATCCCTG
GTTCCCC TC---- ----- ----
GAM1062 246 GCAGTGGAGGGGGCAGGACC GA A ACCT GGTG CCAG
TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GG CCTGCT CAGCA
TGCTGGAGCAGGTCCACCGG CGTTAC TCCCCG CC GGACGA GTCGT
CCCCTACATTGC A- G ACCT G--- ----
GAM1063 591 GTTTAGCCAGCTCTCCCGGC A GC C C- TAG G CCTG
AGTAGCAAGGCCACCTGTGG GTTT GCCA TCT CCGG AG CAAG CCA
TTTGAATCTTTCTGGAAGAA CGAG TGGT AGA GGTC TC GTTT GGT
ATGGTGGAGC G AA A TT TAA - ----
GAM1064 8342 CTGTAATGCAGAGACCTGTG ATG AGACCT GA TTCC A GGATGATA
ACTATTTCCTCAGCTACCGG CTGTA CAG GT CTAT TCAGCT CC
ATGATAGGGGCTGATGTAGA GACGT GTC TA GATG AGTCGG GG
ATTTGAGCTGAGTGCAG GA- GAGTT- A- T--- - --------
GAM1066 18330 GGCTTGGTCCGGTGGTCTCT TG G C-- --- C CT TGTACT
CGCGGCGCGCCTTTGTGTAC GGCT GTCCG TGGT TCTCGC GGCG GC TTG
TCGATGCTCGCTACGGCGGG CCGA CGGGC GCTA GGGGCG TCGC CG AGC
GTGCATCGGCGGGCTGAGCC GT G CGT GCA T T- ------
GAM1067 12456 CGCCCTGGGGTCATTGTCAG - G ATTG GTAAA - AGCCTG
GTAAAGATGGTAAAGCCTGT CGCC CT GGGTC TCAG GA TGGTAA
TGCTAGTCAAGTATTGAGGG GTGG GG CTCAG AGTT CT ATCGTT
ACTCAGGTGGTG T A GG-- ATGAA G ------
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GCCTCAGCCTCCCAAAGGGC GGCAC GAG CCTC TGCCT CAGCCT
TGGGATTATAGGCATGAGGC CCGTG CTC GGAG ACGGA GTCGGG
TCCGTGCC C--- -- T TATTAGG ------

GAM1069 19146 TGTTCTTGGTGAGAAGGGCC - T AA GGCGGA GG A TGCT
GGCGGATTCGGGAACTGACT TGTTCT TGG GAG GGGCC TTC GAACTG C
GCTGTAGTTCAGAAGAGGTT ACGGGA ACC TTC TTTGG AAG CTTGAT G
TGGCTTTCCAGAGGGCA G T GG AG---- A- - ----
GAM1070 3206 CTCCTGTGGTGAATGGATAA TGAATG A AGGCAGAAAAGA
GTAAAGGCAGAAAAGATTAT CTCCTGTGG GATA GTAA
ATGTCATACCTCCATGGGGG GGGGGTACC CTGT TATT
TCCATA A ----------
GAM1071 14414 CTTTAGGAGGCTGAGGTGGG A GCT GGAC TAAG- AA A T AGAC
AGGACTGCTTAAGGCAAGGA CTTT GGAG GAGGTGGGA TGCT GC GG G CTG
GTCTGAGACCAGCCTGGGCA GAAA CTTT CTCTACCCT ACGA CG TC C GAC
ATACAGCAAGATCCCATCTC - AT- AGA- CATAA GG - - ----
TATTTCAAAG
GAM1072 22475 GTGCCAGCGATGATGAGATA CGATGAT- ATA AGAA AGA AAGGCATCAA
GCCAGGCTGAAGAAGCCAGA GTGCCAG GAG GCCAGGCTGA GCC CC
CCAAGGCATCAAGGGGCGAT CGCGGTC CTC TGGTCCGACT CGG GG
CAGCCTGGTCTCTATGAAGA AGAAGTAT --- AG-- --- ----------
CTGGCGC
GAM1073 4719 TACCTGGATAATACACCCGT T AATAC TTTGC AATT
TTTGCCTCGTGCCGAATTCG TACC GGAT ACCCGT CTCGTGCCG
GCACGAGAACATATGGGTTA ATGG TCTA TGGGTA GAGCACGGC
AATCTCGGTA C AAT-- TACAA ----
GAM1074 15974 CCGGGGCGGCCTCGCGGGTG - CCTC T CTCC-- C T CTGT
ACTCCGGGCTCCGTGGCTGT CCGG GGCGG GCGGG GA GGG TCCG GG
CCCGGACCCCACCTCTTCCC GGCC CCGCC CGTCC CT CCC AGGC CC
TGCCGCCCGCCACCGG A CGC- - TCTCCA C - ----
GAM1075 10643 ATTAGGCCCTAATTGCCTGA - TT-- - TAAATTAATATT
CTTAAATTAATATTGGTTAA ATTAGG CCCTAA GCCT GACT
GGCCCACTTAGGGTCCTGGT TGGTCC GGGATT CGGA TTGG
T CACC A ----------
GAM1076 21596 GAGACTGCGGGCCCAGCGTT CTGC CCC TTC TGT TT A- TGTT
CCATGTCCTTGGCAATCTGT GAGA GGG AGCG CA CC GGCA TC
TGAGCTGTCTTGGTCTTGTG CTCT TCC TCGT GT GG CTGT AG
CTTCTCCTTCTTCTC TCT- TCT --- TCT TT CG ----
GAM1077 10588 CTCTTTCATCCTGTAGTCAG T TA A-- ATAG ACAAA
GCAGATAGGCCACAAAGGTG CTCT TCATCCTG GTC GGCAG GCC
CTGCCAAGGACCAGGATGAT GAGG AGTAGGAC CAG CCGTC TGG
GGAG T -- GAA G--- -----
GAM1078 2448 GAGACAGGAGAATCACTTGA A AA GAA--- GAGG GC A A CAAGATCAC
ACCGGGGAGGTGGAGGCTGC GAGAC GGAG TCACTT CCGGG TGGAG TGCA TG GC
AATGAGCCAAGATCACGCCA CTCTG CTTC AGTGAG GGTCC ACCTC ACGT AC CG
CTGCACTCCAACCTGGGCAA - AG ACAACG A--- -- C - ---------
CAGAGTGAGACTTCGTCTC
GAM1079 15338 GCTACCCGCCTTCGTCTCCG ACCC CTT TC - GA - GA GTCC
AGTTTGCGACTCGCGGACCG GCT GC CG TCCGAGTTT GC CT CGCG CCGG
GGTCCCCGGCGCGAAGAGGC CGA CG GC AGGCTCAGG CG GA GCGC GGCC
TGGACTCGGATTCGTTGCCT GTC- TT- TT T GA A -- ----
GAGC
GAM1080 18212 CAGCCAGGCCAGGACCCGGG ---- CCA- GCCAAGA G CC CAACCA ATACCA
CTTGCCAAGAGCAGAGGCCC CAGCC AGG GGACCCGGGCTT GCAGAG CCCTC AG GG

TCCCAGCAACCAGGATACCA GTCGG TCC TCTGGGCCTGGA TGTTTC GGGGG TC CC

CCACTTTGGGGGCTTTGTGT ATAC AGAG GACATG- - TT A----- ------
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CCTCATAGGCTG

GAM1082 11774 CGTGACCCTGCCCCAGCCTA CCTG AGG GT- - TCAGT AT- ACCCCT
GGCCTGTCTGCTGGCCTTCA CGTGAC CCCCAGCCT CCT CTGCTG GCCT GCC CCC
GTGCCATCCCACCCCTGGGC GCACTG GGGGTCGGA GGA GACGAT CGGA CGG GGG

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GAM1083 5782 TTTCAGTTCTTTACGTATTG - ACGTA ACC A-- C CACTAAA
TCACCCAGAGAACAGTGTTC TTTCA GTTCTTT TTGTC CAG GAA AGTGTT
ACTAAAAACATTATTCCCAC AAAGT CAGGAAA GATAG GTC CTT TTACAA
TGCCAGATAGAAAAGGACAT A A---- ACC ACC A -------
GAAA
GAM1085 22352 GGCCCCCTCAAAAGTGGTCT - CAAAA G- AA -- TTCG
CAACGGGGGGTTCGCCGGCC GG CCCCCT GTG TCTC CGGGG GG
CCGGGAGAAACACGCCAGGG CC GGGGGA CAC AGAG GCCCC CC
GGACC A CCG-- AA G- GG ----
GAM1086 18504 CTCTCCCTTGACCCAAGCCA C GAC AAG CG GA G GAATCTGCGGTA
CGAACGAGCTGGAGGGAATC CTCTC CTT CC CCA AAC GCT GAGG
TGCGGTACTTTGAGCAGTTA GAGAG GAA GG GGT TTG CGA TTTC
TTGGAGGAAGAGAGAG A --- A-- TA A- G ----------
GAM1091 5517 GTGAGGGTTTACCACATAAT A T CATA- GGAT-- C T AAGACTTTC
CCGGGATTTCTTGGCAATGC GTG GGG TTACCA ATCCG TTCTTGG AA GCCCA
CCAAAGACTTTCTGGGCCTT TAC CCC AATGGT TAGGT GAGAATC TT CGGGT
CTAAGAGCAACAGTGGATCA - C CGAAC GACAAC - C ---------
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GCGTAGGCGAGATGGTCTGA GGTC ATTGGTTCC CGC CGAG ATGGT CTG
AAGCCCCCGGTATCATTCCT TCAG TAACCAAGG GTG GCTC TACTA GGC
CGAATTTCAGTGCGGGAACC ACG GC-- ACTTTAA CT T --------
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CTGCATATGGTCATAGAAAA TTGA CAAAGCTTAA GCA TGGT GAAAATGCA
TGCATATTGGTTTGTGTTTT GACT GTTTCGGATT CGT ACTA TTTTTGTGT
TATCACTTGCTTCCAACTTA CG CAACCTT TC ---- --------
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GAM1094 2207 CTCGGCCTCCCCTTCAGCAG TCCC --- C TG CA TAA-- CCACTACTATC
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ACTACTATCGCTATGATGAG GAGTCGG GAGGTC GTC AA TG GAG TCG
CAGTTGAACCTGTGCCTGGA C--- CGT C GT AC TAGTA ----------
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GAM1096 17434 AACTCCCTGTGGGCTCCCTT -- - TC TT-- G TGGCC
TGGGGGTGTGGCCCACCTGC AACTCCC TGTG GGC CC TG GGGTG
ACATCGGAGGCCTCACATCG TTGAGGG ACAC CCG GG AC TCCAC
GGAGTT CT T GA CTAC G -----

GAM1097 14851 TCCTGGATCTGGCTGACAAC A ---- C AAC - TC AACAA GACGCTCATTA
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GACGCTCATTATTCATCGTC AGGACC AG GCC ACTG CG CCT CACTG CTT
ACCTCCAGCTAGTCATCCGT - CAAT T AT- A C- CTA-- ----------
AACGACCAGGA
GAM1098 7019 GCTGAGTGAACTGCACTGTG - AAC ---- T G A T GTGGA GA A TTCAA
ACAAGCTGCATGTGGATCCT GCTG AGTG TGC AC GT AC AGC GCAT TCCT GA C
GAGAACTTCAAGCTCCTGGG CGGC TTAC ACG TG CA TG TCG TGTA AGGG CT G
AAATGTGCTGGTGACCGTTT T CTA GTTT C G G - A---- TC C -----
TGGCAATCCATTTCGGC
GAM1100 5579 CCTGAATATAGGGTCTCCTT AA A TAA--- A G CACTGAC
AAACACATCTGAGCACTGAC CCTG TAT GGGTCTCCT AC CATCT AG
CTGGATGAGTGCACTTGGGA GGAC GTG TCCAGAGGG TG GTAGG TC
GACCTGGTGACAGG A- G TTCACG A - -------
GAM1101 21218 GCGCGCTCGTTCGGGATCGC C C A CG TGAGATA AAT TAAGAAGAAAATAAT

CGAGGGGGCTGAGATAGTGA GCGCGCT GTT GGG TCGC AGGGGGC GTG TCC
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GGATGCATATTAGTTGTTCT - - A AA TTGATTA GT- ----------
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GC
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TGGGCCCCAAAGGTTCCAGA GAAATTCC GATCTGT TGG CC
ATCCAGCAGATTACTCGGGA CTTTAGGG TTAGACG ACC GG
TTTC CTCA ACCTAAG TT ----
GAM1104 15206 GGCAAGTGTTGTCATGGTAG AAGTG - G C GA AA TT- AACACTTACTGCACT
TACAGGAGGCAAAACCATTT GGC TTGTC ATGGTA TA AG GGC AACCAT ATATTTTG
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ACTGATAGGATGTTTTGTGG ----- A G T AG AG TTT ----------
TTGAGCTGATTTTAGTACTG GA
TAGATAGGTC

--
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CCAGGGTAACCGTCTGACCC CTG GGA TGGCTTCC GG CCG TGAC CTG
TGAACTTCAGCACGTTAAGC GAC TCT ACTGGGGG CC GGC ATTG GAC
GGCCGGGGGTCATCTAACAG AA ------ - ---- GA CAC -----
GAM1106 20476 GTGCTTCAACTGGTATCTAT T T AT A - AGAG GGACAA TAAGAC
GAGGCCCTAGAGCTCCGGGA GTGCT CAAC GGT CT TGAGGC CCT CTCCG TGA
CAATGATAAGACTCGCTATA CACGA GTTG TCG GA ACTCTG GGG GGGGT GCT
TGGGGAAGGGTGTCTCAAAG - - -- A T AA-- ATATC- ------
GCTGTTGAGCAC
GAM1107 21710 GGCCGGGCGCGGTGGCTCAC CGC C --- CACT
GCCTGTAATTCCAGCACTTT GGCCGGG GGTGGCTCA GCCTGTAATT CCAG
GGGAGGATTACAGGCATGAG CCGGCCC CCACTGAGT CGGACATTAG GGTT
TCACCATACCCGGCC ATA A GAG ----
GAM1108 4908 GACATTCTGCCAGGTTTTCT T A ------ GCAATGACA
TGGGCAATGACACCAAGAAG GACATTC GCC GGTT TTCTTGG
TTGACAGCCAGGTGAATGTT TTGTAAG TGG CCGA AAGAACC

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                        -  A   CAGTTG     ---------
GAM1109 7458  TCCAGTCCATGGCAGGCGGG    T-  TG  A  C  GTA     AGGTAAGA   AGC
        TACAAGGGGAGGTAAGATGG TCCAG  CCA  GC GG GG   CAAGGGG      TGGG
        GAGCTCCACTCCTTGGACCA AGGTC  GGT  CG CC CC   GTTCCTC      ACCT
        CCAGCTGGTTCTGGA        TT  --  A  A  AG-     --------   ---
GAM1110 2099  TTGAACTTGAAACAGAAACC   ACTT--  -    C--     AAAATGCTTGCCT-  TCAA
        TGTGCTAAAATGCTTGCCTC TTGA    GAAA CAGAAA   CTGTGCT          CAT
        ATTCAAATGTTCCTTAAAAC AACT    TTTT GTTTTT   GACACGA          GTA
        CAGAGCACAGAGATTTTTGC   ATCATT   C    AGA     GACCAAAATTCCTT  ----
        TTTTTTACTATCAA
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        CTACCAGGACCTACGGCACC CCCCAAA TGGAGG CT TTG   CCAGG CC AC
        AGTGGCCTGGACAACAGACC GGGGTTT GTCTCC GA AAC   GGTCC GG TG
        TCTGTTTGGGG            -    A  C   A--    -  -  -------
GAM1112 8050  GCTAGGCAGCCAGAAACCTG   A   G    A   TG -- AAAA   A  GATG
        CGGAAAATGGTAGCGATGGC GCT GGCA CCAGA ACC  C  GG    TGGT GC
        GGCTGGGCCGAGTGGGTGTC CGG CCGT GGTCT TGG  G  CC    GTCG CG
        TGGTGCCGGC          -   -    G  GT AG  GG--   G  ----
GAM1113 1775  GATGGGATGGAAATGAAATG   T   TG  AA---     -  AAAAGAGCAAA
        GCCAAAAGAGCAAAGGCTTA GA GGGA  GA    TGAAATG GCC
        TTTCAAAACCTTTGTCCCTC CT CCCT  TT    ACTTTAT CGG
                    -  GT  CCAAA     T  -----------
GAM1114 14446 GTGAGTTTATCAATAACTCA     TTA--   T  TC     C--    CAAC
        GGCATACTAAGTCAACACTT GTGAGT    TCAA AAC  AGGCATA   TAAGT
        AAATTGTGTTTCTGTTTTGA TATTCA    AGTT TTG  TTTGTGT   ATTCA
        CCTGTACTTAT            TGTCC   -  TC     TAA    ----
GAM1116 17609 GCGGAGCTTATGATACACCA     - TA   A   AA-   A  GAGGGG
        ACAATAGTAGAGGGGTATCA GCGGAG CT  TGAT CACC   CAAT GTA
        TTGAGAGGTGATTAGGGGAC CGTCTC GG  ATTA GTGG   GTTA TAT
        TCTGC                A  GG   -   AGA   C   ------
GAM1117 15790 GCCAGAGCAGACTACTAAAG      C  ACTA  AAA   T  -  T  -    -   TTACAGATT
        CTTTACCTGTGAGGTTTTTG GCCAGAG AG    CT   GCTT AC CTG GA GGTTT TTGT
        TTTACAGATTACAATAGACT CGGTCTC TC    GA   TGGA TG GAC CT TCAGA AACA
        GTCCAGTGTAGGTGGAGAAA      T  AAA-  GG-   -  T  -  G    T   ---------
        CTTCTCTGGC
GAM1118 13832 CCAAAGAGCTGAATGTTATG   AA--      AA    TG TTA     A T  AAAA   GG  ACAAT
        TTTATTGAAAAGTGCAAAAG CC    AGAGCTG  TGTTA  T   TTGAAA G GC    GCT  AT
        CTGGATACAATGTAAAGCAG GG    TTTCGAC  ACGAT  G   AGCTTT C CG    CGA  TG
        CTCTTTCGACGTGTAGCAGC   GCCG      G-     GT C--     - T  A---   AA  -----
        AGCTTTGCCGGG
GAM1119 4431  TGAATTCAGTGAGATACAAA       T  GA-   AAAA---    TTCTGT    AGAATT
        AAGCTCCTTCTGTATTGGAG TGAATTCAG GA   TACA      GCTCC     ATTGG
        AATTCCGATGGAGTGAATAC ACTTAAGTC CT   GTGT      TGAGG     TAGCC
        ATGTGATATCCTGAATTCA         - ATA    ACATAAG    ------   ------
GAM1121 6020  CCGTCCGCGCGGACTCCGTT    CC   G    C  TTCCCGTG    CC    GCC
        TCCCGTGGTGCCCCGGGCGG CCGT  GCGC GACTC GT       GTGCC  GGGCG
        CCCGCTTCCGGCGCAGTTAG GGCG  CGCG CTGAG CA       CGCGG  TTCGC
        TTACGAGTCGGCGCACGCGG    CA   G    - TTGATTGA    CC    ---
GAM1122 22604 TAGGGAAGATCTAGGAGAAG    GA     AGG     GG----    -   AAGCC
        AGGAAGAACAGTAAGCCACT TAGG  AGATCT   AGAAGA     AAGAA CAGT
```

GCTTCTTGGAAAATCTTCTG GTCC TCTGGG TCTTCT TTCTT GTCA
GGGGTCTGACCTG AG GG- AAAAGG C -----
GAM1124 15180 GCCTGATGGTATACTACTGC -- G -- CT--- CG AAT CAAC
TTTGCGGAATTGCATACAAC GCCT GAT GTA TACTA GCTTTG G TGCATA
TGTGCATTACAAAGTTAATA TGGG CTG TAT ATGGT TGAAAC T ACGTGT
TGGTAATTATGGTCTGGGGT GT G TA ATAAT AT --- ----
GAM1125 4750 AAGGCGTTGGAAACGGGATT - AAA---- GAT CAC C-- ACCCCAAAACAATG
GCACAGGGGGGCGCGGGCAC AAGGC GTTGG CGG TG AGGGGGGCG GGGC
CCCAAAACAATGGCCCAACC TTCCG CAACC GCC AC TTTTCTCGC CCCG
GCTCTTTTAAACACACCGCC A GTGATCC AC- AAA CAA ----------
TAGTGCCAACAGCCTT
GAM1126 18998 AGGCAAACGAGAAGAAGGAG GA-- A-- AACC-- AGT TTTT
GAACCCAAGTAGCTTTTTGG AGGCAAAC GAAG AGGAGG CA AGCT
CTTCGTGTCCAACCCTCTTG TCCGTTTG CTTC TTCTCC GT TCGG
CCCTTCGCCTGTTTGCCT TCCG CCG CAACCT GCT ----
GAM1127 7676 GGGCCCTGAGATGGGGTCTG C GA TGACCTC- TGCGG
ACCTCAGTTCCTGCGGGGAA GGGC CTGA TGGGGTC AGTTCC
CTTCACCAGTGACCCCAGTC CCCG GACT ACCCCAG TCAAGG
AGTGCCC T G- TGACCACT -----
GAM1128 4761 TCCTTGTTTACTTGGAGAAG TTACT A C GACT CTTCCGAAA
ACCTGTGACTGGCTTCCGAA TCCTTGT TGGAG AGAC TGT GG
ACCTGAACATGTCTGCTTCA AGGAACG ACTTC TCTG ACA CC
TGCAAGGA T---- G T AGT- ---------
GAM1129 20104 CGCCTTGGGTGGGCCCCGCT ----- G GT TGTGCTT
GTTTCGTTGTGCTTACGGAA CGCCTT GGGTGG CCCCGCT TTCGT
GTGGGGCCACTCTTAAAAGG GCGGGA CTCACC GGGGTGA AGGCA
GCG AAATT - -- -------
GAM1130 19148 CTGCTTGGTGCGAGTGCCCG TT TG - CC G- GAGG
AGGGCGTTGGAGGCAGCGTG CTGC GG CGAG TGC GAG GCGTTG
ACTCCTGCACCTTGTGCTTT GATG TC GTTC ACG CTC TGCGAC
GTAG TT GT C TC AG ----
GAM1131 10018 GACTGTGAGGAGGGTGCTAT GTGA A TATC AAAT -- AACCA
CGAGGAAATCAGCTTGAACC GACT GG GGGTGC GAGG CAGC TTG
ACAGTCGCTGTACCTCTGCA CTGA TC CCCACG CTCC GTCG GAC
CCCCTGGAAAGTC AAGG - T--- AT-- CT -----
GAM1132 9635 GGATGAACAATAGTCTGCAA ACA C - TCCC- AG - TG ATTCGGACT
TTTCCCCTAAGCCAGGCCTT GGATGA ATAGT TG CAATT CTA CCAGG CCT GG
GGGATTCGGACTTTTGAGGA TCTATT TATCG AC GTTGA GAT GGTCC GGA TT
CCTGGGTAGTAGTTAGTTGA --- T A TTGAT G- A GT ---------
CATGCTATTTATCT
GAM1133 14569 GCTGCCTTCCTTGAGCTCCC C TTGA--- T G CG TT T GAGGTGGAGG
CAGGAGTCGGTTTCCACATC GCTG CTTCC GC CCCCA GAGT G TCCACATC GT
TGTGAGGTGGAGGGCTGGTG CGAC GAGGG CG GGGGT CTCG T AGGTGTGG CG
TGGAGGTGCTCATGGGGTGC A TTCGTGG T A -- GG T ----------
GGTGCTTGGGAGACAGC
GAM1134 9327 TACCTTTTTCCTGTCAGAAA - G AGAAA TTCC GCTA TAACTT
GGTTTTCCTCTGTGCTACCC TACCTTTT TCCT TC GGTT TCTGT CCCT
TTAACTTAGGGATGAACAGA ATGGAAAG AGGA AG TCAA AGACA GGGA
CTATAACTAGGAAAGGAGGA G A GA--- TATC AGTA ------
AAGGTA

GAM1135 12395 GGTGACAACATGCTGGAGCC AA--- G G- T TAACAT
AAGTGCTAACATGCCTTGGT GGTGAC CAT CT GAGCCAAG GC
TCAAGGGATGGCAAAGTCAC CCACTG GTA GG CTTGGTTC CG
C AAACG G AA - ------
GAM1136 8652 GGGGTGTGAGGAAGCTGTCC GA---- AA-- GT AGA CTGG
CCAGAGCTCCCTGGGGAGTG GGGGTGT GG GCT CCCC GCTCC
AGGGGTGGGCAAAGCCAACT TCCCACA CC CGG GGGG TGAGG
AAACACCCT AATCAA GAAA GT AG- ----
GAM1137 19520 CAGTGATTTTGTGATCTGCT G- T-- TC- TG---- CCACCCA
AATGGGTTGCCACCCACAAC CA TGATTT GTGA TGCTAA GGTTG
CATTGCTTTAGCACTTTTAC GT ACTAAA CATT ACGATT CCAAC
TTCAAATCAGATG AG CTT TTC TCGTTA -------
GAM1138 3520 CTTTATTAAAGTGAAACTAC AAA--- C CTAC A- CAGAAAA
TACTTCAATATATGCAGAAA CTTTATT GTGAAA TA TTCAATAT TG
ACAACATATTGGATATTTTC GAAATAG CACTTT AT AGGTTATA AC
ACCTCTGGGATAAAG GGTCTC T ---- CA -------
GAM1139 13291 CGCCCACTGTGACGATGTCA TGT G ACCG- GACG AAG
CCGATCTGGACGTCCCTGAA CGCCCAC GAC ATGTC ATCTG TCCCTG
GCAGGGGGACAGGTGTACAG GCGGGTG TTG TACAG TGGAC GGGGAC
ACATGTTCTTGTGGGCG TTC - ACATG AG-- ---
GAM1140 7385 GGCTGGGTGGCTGCATCGGA TG-- CATC GC GCTTCAAGATGA
GGCGTTCAGCTGCTTCAAGA GGC GGTGGCTG GGAG GTTCAGCT
TGAAGCTGAACATCTCCTTC CCG TCACCGAC CCTC CAAGTCGA
CCAGCCACTGGCTGCC TCGG CCTT TA ----------
GAM1141 644 GTTGCCTTGCTCCAAGTCTG TT-- CCAAG ACATTGC
GGCATCGTGACATTGCCGTG GTTGCC GCT TCTGGGCATCGTG
ATGCCCAGAAGAAAGTTAAT TAACGG TGA AGACCCGTAGTGC
GGCAAT TAAT AAGA- -------
GAM1142 19239 GCCGGGCTTGGAAGCCTTTG C AAGCCTTT TCCTGCACA GAGTCAATG
ACCTGGATCCTGCACAGTTG GCCGGG TTGG GACCTGGA GTTGGG
GGGAGTCAATGTCCAGCCCT CGGTCC AACC CTGGGCCT CGACCT
ACTCCGGGTCCCCAGCCAAC - GACCC--- CATCC---- ---------
CTGGC
GAM1146 4419 TCTCAATATCTATATGCTTT A TAT GAAAA AATC ACA
GAAAACAAGAATCTATTACA TCTCAAT TCTA GCTTT CAAG TATT
AATAAGCTTGGCCTAAGAGC AGGGTTG AGAT CGAGA GTTC ATAA
TAGAGTTGGGA - --- ATCCG GA-- ---
GAM1147 7181 CCTACAGCACAATCCCCCGC - AATCC T TGGCT CCTTC
TCAGCTGGCTGGTAGGGCCC CCTACAGC AC CCCGC CAGC GGTAGGGC
TTCGCCTTGCCCGCTGGCGG GGATGTCG TG GGGCG GTCG CCGTTCCG
GCAGTAGCTGTAGG A AC--- - C---- -----
GAM1149 20224 TTTTGGGCTTTCCTTCTCCT TT TTTA--- T C-- TTTTAAC
TTATAAATTGCATATATTTT TTTTGGGCTTTCC CTCC TAAA TG ATATAT
TAACATATATTAACACTTTA AAAATTTGAAAGG GGGG ATTT AC TATATA
AAACCGTGGGGTGGAAAGTT T- TGCCAAA C AAT -------
TAAAA
GAM1150 21446 TTGAGACAGAGTCTTGCTCT A - TC T TC C-- CTC-- - ACAATCTCA
GTCACCCAGGCTGGACTCCA TTGAG CAG AG TTGC CTG ACCCAGG TGGA CAGTG GC
GTGGCACAATCTCAGCTCAC AACTC GTC TC AACG GAC TGGGTCC GCCT GTCAC CG
TGCAACCTCCGCCTCCTGGG C C TA - T- TCC CCAAC T ---------

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        CAA
GAM1153 19680 AAAGGCCCTTCCGGTTTTGG      -   GT   TCAAGGAT  A  CAAC   CATTCTTA
        TCAAGGATGGTAGCCCAACG AAAGGCCC TTCCG  TTTGG      GGT GCC   GTTCA
        TTCACATTCTTATGAACCAG TTTTTGGG AGGGC  GAACC      CCA TGG   CAAGT
        GTAACCCCAAGGTCGGGACG       C    TG   --------  A  AC--   --------
        GGTTTTT
GAM1154 9764  GCAGAGCTGGGGCTGCGCGG   GA T    GCGCG      G--   GA  -  GGGA
        GGCCGGGCGAGCGGGACCAG GCA  GC GGGGCT   GGGCCGGGC  AGCGG  CCA GGC
        GCGGGAGCCATGGACCGCTA CGT  CG CCCCGA   TCCGGCCCG  TCGCC  GGT CCG
        GGGCCCGGCCTAGCCCCGCG   AG -    -----      GGA   A-  A  ----
        ATGC
GAM1155 20826 AATGTAATGACAACAATTTA      T   A    -  CA-----    AATACTGAACTA
        GGCATCATAAAATACTGAAC AATGTAA GACA CAATTT AGG      TCATAA
        TATTGTGACTTTATACTTAG TTACATT CTGT GTTAAG TTC      AGTGTT
        AATTGCTGTCTTACATT        -  C    A  ATATTTC    ------------
GAM1156 20933 AGCCCCAGGGCTCGACGCCT   CC     CGAC---   TCCC   -    A   A CCAGGCCCAATA
        GTCCCGTTCCTGGTCAATGA AGC  CAGGGCT     GCCTG   GTTC CTGGTC ATGAG CC
        GACCCCAGGCCCAATAGGCT TCG  GTCCCGA     CGGAC   CGAG GACCGG TATTC GG
        TATAGGCCAGTGAGCCCAGG   AA     ACATCCC    C---   T    A   - ------------
        CCCCTACAAGCCCTGAAGCT
GAM1158 16763 GGGTGTTGACCTTGGCCACA       CCTT    -----   ATGTCAT   - TCTTCAC
        TCAATGTCATACAGCTTCTT GGGTGTTGA   GGCCA    CATCA     ACAG CT
        CACAGCCTGTTTAATCTGGT CCTACAATT   TCGGT    GTGGT     TGTC GA
        GCTTGTTGGCTTTAACATCC       ----   TGTTC    CTAATT-   C -------
GAM1159 2027  GCGGCCTCCTTCCCAGGCTC    C-       ---    GGG-  AGC
        TGGGGCAGCGCAAGAGGGGT GCGGC  TCCTTCCCAG   GCTCT   GC
        AGGCTGGGAGGGGCTGCCGC CGCCG  GGGGAGGGTC   TGGGG   CG
                      TC       GGA    AGAA  ---
GAM1160 4268  AGAGCAAGATGAACAGAATC    -     A  A-  T   TTCTCAAAGA  ACATA
        TGTATTCTCAAAGAGCACAT AGAG CAAGATGA CAG  ATC GTA       GC
        AGCCAAACCCTTTGCCGATG TCTC GTTTTACT GTC  TAG CGT       CG
        CCTGTCATTTTGTCTCT      T     -  CG  C   TTCCCAAAC-  -----
GAM1161 21614 CCCGGAGACCCGCCCCGGCC    AGA      GCCC    ACA   CCCCA
        CGGTCCACATTCTCCCCAGG CCCGG   CCCGCCCCG   GGTCC   TTCT
        AAGCCGGACTCTATGGGGCG GGGTC   GGGCGGGGT   TCAGG   AAGG
        GGACCCTGGG            CCA      ATC-    CCG   -----
GAM1162 10337 GGAAAGGATGTCTGTGTCAG      AT  T  G    CA-   AACTTCA
        GCATGTTAACTTCAAACAAA GGAAAGG  GTC GT TCAGG   TGTT
        ATCTGAGATCGGCTTTTTCC CCTTTTT  CGG TA AGTCT   ACAA
                      --  C  G    AAA   -------
GAM1164 9134  GCTTGTCTGCAACAGCCCCA     C  CAACA   CAAA   --  AACCCATATCCATCAA
        AACTGGAAACAACCCATATC GCTTGT TG    GCCC   CTGGA  AAC
        CATCAAGTTTATCCAGCAGG CGAATA AC    TGGG   GACCT  TTG
        GTGGACAAATAAGC          A  AGG--   AC--    AT   ----------------
GAM1165 9416  CGAGTAGCTGCGCTCCCCTG   - ------  GC   C     TAGAA   C   CAA   CTCAA
        CTAGAACCTCCAAACAAGCT CGA GT     AGCT  GCT CCCTGC    CCT CAAA   GCT
        CTCAAGGTCCATTTGTAGGA GCT CA     TCGA  TGA GGGATG    GGA GTTT   TGG
        GAACGTAGGGTAGTCAAGCT   G  GAACCT   AC   T    CAAGA   T   ACC   -----
        TCCAAGACGTCG
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GAM1166 1690 CCTGGCACAGAATCTGGGAA TG - A --- ATTTCTG
TTTGTATTTCTGGCGAGTTT CC GCA CAG ATC TGGGAATTTGT
CCAATTGATGCTGATGCTGG GG CGT GTC TAG ACCTTTGAGCG
G GT A G TTA -------
GAM1167 16942 ATCTGCACTCCTTCAAAGCT C -- CA--- - CGGGCAC
TGCACGGGCACTGCAGGACT ATCTG AC TCCTT AAG CTTGCA
TGTCCCAAGGAAAGTCTAGA TAGAT TG AGGAA TTC GGACGT
T C AA CCCTG A -------
GAM1169 3869 CCCGAGGGTTGCCAGTTCCA GGG CAG - TC AGGATCTTG
CCTCCTCTTGTACAGGATCT CCCGA TTGC TTCC ACC CTCTTGTAC
TGGTACAGGGGCTGGTAGGA GGGTT GACG GAGG TGG GGGGACATG
GTACGCAGTTGGG --- CAT A TC ---------
GAM1170 18991 TTGTCTCAAAGTTATGCCTA T CAAAG G CC-- - GTAG
CCTGGCTCGTAGGATGCCAA TTG CT TTAT CCTA TGGC TC
CGTTAGGAGTGAAAATAGTC AAC GA AGTG GGAT ACCG AG
AA T TAAA- A TGCA T ----
GAM1171 1728 TGTGTCCCAGCTAGTTCACT T TTCA- C- TGCG
CCTTTCGCCGTGCGTGGTGG TGTG CCCAGCTAG CT CTTTCGCCG
AGGCTGGCCTCTCTGGCTGG ACGT GGGTCGGTC GG GGAGGTGGT
GTGCA - TCTCC TC ----
GAM1173 3157 GGTTGCGCAGAGGTGGTCTT - G -- T TTA G C C- - A ACCGT
ATCCAGCTCAGCTTCCCCTG GGT TGC CA GAGG GGTC TCCA CTCAG TTC CCT GGG CCC

GGACCCACCGTGGGACCTGA CCA ACG GT CTCC CCGG AGGT GGGTC AAG GGA TCC GGG

GGCAGAACTGGGGTGGACTT C - AC T TTC G - AC G A -----
GGCCTCCTCCATGGCACACC
GAM1174 5991 TGATTCTGGCACAGGAAATG C C AAAT CCAAAATCTCAAAATATC
GTCTCCAAAATCTCAAAATA TGATT TGGCA AGG GGTCT
TCAGATCTCTACCTTGTCAA ACTGA ACTGT TCC CTAGA
GTCA - - ATCT ----------
GAM1175 16868 CTGCTGAGGTTCTGGAGTGG AG GAG - A- GAGGAGCAAATGACA
CACAGGAACAGGAGGAGCAA CTGCTG GTTCTG TGGCACAG GA CAG
ATGACACTGGGTCTTTGTGC GGCGAC CAGGAC GTCGTGTT CT GTC
TGAGGCAGGACACAGCGG A- GGA T GG ----------
GAM1178 2808 TGCAATGTTCATCTCCCCAT GTCTTTTAAAGCTG
CAGGTCTTTTAAAGCTGCTG TGCAATGTTCATCTCCCCATCAG
ATGGGGAGATGAACATTGCA ACGTTACAAGTAGAGGGGTAGTC

GAM1179 17605 GGTGTCTTACCATGTTGCCT T C TG- G ----- - TCACACTCCT TGAAATG
AGGCTGGTAGGCTGGTCTCA GGTG CTTAC ATGT CCTAG CTGGT AGGCTG GTC GAGC
CACTCCTGAGCTGAAATGAT TCAC GAGTG TACA GGGTC GATCA TCCGAC CAG CTCG

GCTCCTGACTCAGCCTCCAC T A TTA - ACACC T TC-------- -------
AACTAGCTGGGATTACATAG AT
TGAGTCACT

--
GAM1180 17030 TTGGACAACTGCCCCTTCCA G C------- CT TGAC- CAC- A GAA ATTCT
TGACCAGCCACATCTGAAAA TT GACAA TGCCC TCCA CAGC ATCTG AAAG AGC

GGAAAGCATTCTGCTCTTTC AA CTGTT ACGGG AGGT GTCG TAGAC TTTC TCG
CAGATCTACGCTGTGCCTTG G CAAGTAAC -- TCCGT CATC C --- -----
GAGGGCACAATGAACTTGTC
GAA

GAM1181 8628 TTAGTTGTGGACTGATCCAA G ATCCAA TCG ATAA GTAC
CTTCGGGAGATAAGGGGGTA TTAGTTGTG ACTG CT GGAG GGGG
CCCCCCGCTCTATAGACTCC AGTCAATAT TGAC GA TCTC CCCC
AGTTATAACTGA - CTCA-- TA- GC-- ----

GAM1182 3721 GCTGGCGTGCCTGGGCAGCA G - G G C--- -- ACTCC
CCCTCGGGGGTAGCAGCTAC GCTG CGTGCC TGG CA CACC TCGGGG GTAGCAGCT
TCCAGCTGCTACAGCTTTGG CGAC GCACGG ATC GT GTGG GGTTTC CATCGTCGA
CTCTGGTGGTGGCTATGGCA - T G G TCTC GA -----
CGCAGC

GAM1184 11633 GGAGCAACCTGGCTTCAGAT G AC - - AG- CT A ATG ACAGCA
ACTTTCAAACATGTGGAGAC GGA CA CTG G CTTC ATA TTC AAC TGGAG
AGCACTTCAAAGTTAGAATT CCT GT GAC C GAAG TAT AAG TTG ACTTC
TATAAAGAAGACTCAGTGTC - -- T A AAA TT A AA- ------
C

GAM1185 19201 GGCTTTGCTGGGGCAGCAAG - ---- -- AAG GA C TCTT
CCTGATAAGCATGAAGCTCT GGCTTT GCTGGGG CAGCAA GCCTGAT CAT AGCT TTA
TATCTTTGGTGGCTGTGGTC CCGAAG CGACCCC GTCGTT TGGGCTG GTG TCGG GGT

GGGTGTTTGCTGGTGCCCCC T CGTG TG --- -- T ----
AGCTGAAGCC

GAM1186 20347 GGTTAAACTCTGCTTATTCA TA- CT -- A ------- CG TTAT
TGTTTAAAGACGCTGAAAAC GGT AACT GCT TATTC TGTT TAAAGA CTGAAAAC
TTATGTTTTCAGATTTTTAT CCA TTGG CGA ATAGG ACAA ATTTTT GACTTTTG
TCCCCTAACAGGATAAAAGC CCA TC AA - TCCCCTT A- ----
CTGGTTACCACC

GAM1187 10810 TCCTGGCTCCAGGTGGACAG T T A GA A--- GAGGCAGAA
AGCATGGGGATGGAGGCAGA TCCTGGC CCAGG GG CA GC TGGGGATG
ACGTTCTCAGACAGCAGTGG AGGGCCG GGTCC CC GT CG ACTCTTGC
CCTCCTGGGCCGGGA - T G GA ACAG ---------

GAM1189 3115 TTAAAGAACAGCATTTGATT A - CATT- CTTA- AAAG AACA
TGCTTAAACAAAGTAGTAAC TTA AGAA CAG TGATTTG AAC TAGT
AGCTGAAGTTCCTTCCAAAT AAT TCTT GTC ACTAAAC TTG GTCG
CACTTTTCTGATTCTCTAA C A TTTTC CTTCC AA-- ----

GAM1190 8888 GGCCGTGCTCTTTGGAATTT GT TT T-- ACAT TCAC
TCCTGTACATGGGAGTCACC GGCC GCTC TGGAATT TCCTGT GGGAG
TCCCTTAACGGGATCCAGTT TCGG CGAG ATCTTGA AGGGCA CCCTC
CTATGAGCGGCT -- T- CCT ATT- ----

GAM1192 1118 TCCACCTGCCGGGCATTGGT --- G TTG ACTTCTTGTGC
TGGGGGACTTCTTGTGCTCT TCC ACCT CCGGGCA GTTGGGGG
TCAATGTTTGCTCGGGAGGT AGG TGGA GGCTCGT TAACTTCT
ACAGGA ACA G TTG ----------

GAM1194 5761 CCCCACAGACGATTCCCTGT CAGA TTC C TCATGCTCC
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AGGGTACAGGCTCGCACCTG GGGGT GCT GGACA GGGACGG
GGG CCAC C-- T ---------

GAM1195 1065 TAAAGAAAATGTAATTCGAG AAAA A AGC TT A CCATTCTTTAA

CTGGTTAGCTTAATTTTGTG TAAAG TGTA TTCG TGG AGCTTA TTTTGTG
CCATTCTTTAACATAAGAGT ATTTC ACAT AAGT ATC TCGAAT AGAATAC
AAGCTCTATTATGAAATACA A--- A ATT -- G ----------
ACTTTA
GAM1196 9233 AAGTCAGAAACGGCCATCTC TC GCCA-- CA TC ATACAC
ACTGTTCACATATATACACG AAG AGAAACG TCT CTGT ACATAT
TATGTACAGGAAGAACCTAG TTC TCTTTGT AGA GACA TGTATG
TGTTTCTAGCTT GA GATCCA AG -- ------
GAM1198 10075 GCCGGCGCTTGCGCTCCTGC CG T--- - ATCTTCT CTTCTC
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CAGCTTCTCAGTGATGCGGG CGGTC GGACGCG GGGCG AGT CGAC
CCTCGCGCAGGGACTGGC AG CTCC T GACTCTT ------
GAM1199 4317 TCAGCAGCAAAGTCATGAGG C AGTCAT - CTTTTCTATA
TCCCAGGCTTTTCTATACTT TCAG AGCAA GAGGTC CCAGG
GGAGACTTTTTATTATTGCT AGTT TCGTT TTTCAG GGTTC
TTGA - ATTATT A ----------
GAM1200 119 TTTTTTGCTTTCAGGAAAGG - GGAAA T GT TGCC
TTTATTGTGGTGAGTGCCTT TTTTTTGC TTTCA GGTT ATTGTG GAG
CTGTACAGTCGACTGCAAAT AGGAGACG AAAGT TCAG TGACAT CTT
GAAACGCAGAGGA C AAACG C GT ----
GAM1201 11972 CTGATATAAGGTCCAGGTTG ATAAG AG T- T- CAAA
ATTCACTCCAAAGGGTGTTA CTGAT GTCC GT GAT CACTC
TCTTACGAGGACAGTCATTA GATTA CAGG CA CTA GTGGG
G CTGA- AG TT TT ----
GAM1202 5425 GCAAGTGACTAAGTGTTCAT A- GT T ---- ------- TT CACT
TACCTTTTGGTTAGCGTTGC GC AGTGACTAAGT TCAT AC CTTTTGGT TAGCG GCTAT
TATCACTGTAGCTGTGCTGC TG TTACTGATTCA GGTG TG GAGAGCTA GTCGT CGATG
CTTAACATCGAGAGTTGAGT AG -- T AGTT CAATTCC GT ----
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GAM1203 20668 CGAGATGTGTAATCATAAGC TG T - - ATGGAAG AAACGGA
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CGCAGGGTGACTTGTGCTTG TG C A G AAGTCAA -------
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GAM1204 20771 CACAGGCCAGGGAGAAAGAG AG --- AG GAC A - C A GTGG
GAGACAGAGGAAGCACCGAG CAC GCCA GGGAGAAAG GA AG GGAAG CA CG GG
GGTGGCTACGTTGTCTTCCC GTG CGGT TCTTCTTTT CT TC CCTTC GT GC TC
TAGATCAATTTTCTTCTGGA CT AGG AA AGA - T T A ----
TGGCTCGTG
GAM1205 21196 GAGACGGGGTTTCACCATGT ACG T-- CATGTT T CTCG
TGGTCAGGATGGTCTCGATC GAG GGGT TCAC GGTCAGGA GGT
TCCTGACTTTGTGATCTGCC CTC CCCG AGTG TCAGTCCT CTA
CACCTC CA- TCT TT---- - ----
GAM1206 6163 AGCACTGTGGCTTTTGTCAG CT TCAGAT GCC GCAGA
ATGGAGTGCCGGTCTGCAGA AGCACTGTGG TTTG GGAGT GGTCT
GGACTGCTCTTTCGAATCCA TTGTGACACC AAGC TCTCG TCAGG
CAGTGTT T- TT---- --- -----
GAM1207 4850 AGATAGGGCTTTCCCCATCC GCT A ---------- TTTTT
TTTTGCTTTTTTTAGGCAAC AGATAGG TTCCCC TCCTT TTGCTT
CCTTTCACAAAACCAGGGAA TCTGTCC AAGGGG AGGGA AACGGA

GGGGAACCTGTCT --- A CCAAAACACTTTCCC -----
GAM1208 17259 AAGGATTTATTAAAAAACCA GA TA- AA AA CTACTACATCATGACAC
GTAAGACACTACTACATCAT AAG TT TTAAAA CCAGT GACA
GACACTGTCACACTGGGCTT TTC AA AATTTT GGTCA CTGT
TTAACACAAGACTT AG CAC CG CA ----------
GAM1209 16494 AGTTCATAGAGAATTCTTCG AGAGAA A TGATG G TG AAGCACCA
CTTCATTTTTGATGGCTGGC AGTTCAT TTCTTCGCTTC TTTT GCTG CTC CA
TCTGCAAAGCACCATGTGGA TCAAGTA AAGGAGCGAGG GAGG CGGT GAG GT
GTGGCAGGTGGAGGGAGCGA AGTACC - TGGA- - GT --------
GGAACCATGAATGAACT
GAM1210 5504 GGTCTGTGTGTGTAGTGAGA TCT T GA-- TAG------ CTATTATAAC
GTGTGTAGCCACTATTATAA GG GTGTG GTAGT GAGTGTG CCA
CTGGAATTTAATTTACATTC CC TATAT CATCA CTTACAT GGT
ATAAACTACTATATTTCC TT- - AATA TTAATTTAA ----------
GAM1211 3912 GTGGCCTTTTTTCCTTTTTC TG TT TT T ---------- G AAG TAAA-- A
TGTAGGCCGCCTTAAGCTTT G GCCTT TTCCTTT CTG AG GCC CCTT CTTTC TTTGG
CTAAATTTGGAACATCTAAG C TGGAA AGGGAAG GGC TC TGG GGAA GGAAG GAATC

CAAGCTGAAGGGAAAAGGGG GT -- GG - ACTAAAACGCTT G AAG TCGAAC -
GTTTCGCAAAATCACTCGGG ACAT
GGAAGGGAAAGGTTGC

GAM1212 2021 CTGGGGAGGTGTGCTCTGCT G GGTGT CTCAACC C TCT
CTCAACCTCTGCGAGTCTCT CTGG GA GCTCTGCT TCTG GAG
CCAGAAGCACCTAGCAGAGC GACC CT CGAGACGA AGAC CTC
TGAATCACCAG A AAGT- TCCACGA - ---
GAM1213 15569 ATCATAATTCTGGAGGGAAG TAAT T- G A T T----- TGTGA
CTCTTGGAGGCTGTGAGTCT ATCA TC GGA GG AGC CT GGAGGC
CCCTGTACAGTGTTACCATC TAGT AG CCT CC TTG GA CCTCTG
CCCGACATCTGAT CTAC CC A A T CATGTC -----
GAM1214 12488 ACTCAGATGGCGACATGGTG A--- C--- - G T - CAGCCATC
GTCAGCTGCTCAGCCATCAG ACTC GATGG GAC ATG TGG CAG CTGCT
CAGCCTGCCCGACATCGTCT TGAG CTACC CTG TAC GCC GTC GACGA
TCACCATCAATGGAGT GTAA ACTT C A C C --------
GAM1215 18006 GGAAGACTTGAAGAGGTTAT --- T - ATCAC TAA T ----- T ACTTC
CACGACATTTAAGGAATCTG GGAA GACT GAA GAGGTT GACATT GGAA CTGA TCC CAGA

ATCCTCAGAACTTCTCTGGG TCTT CTGA CTT TTTTAA CTGTAA TCTT GACT AGG GTCT
ACAATTTCAGTTCTAATAAT GTC C A ATT-- TAA - TTAAC - -----
GTCTTAAATTTTATTCCAGT
CCTGTTCT
GAM1218 16729 CTTGTGGACCACGCCCGCCG A C GCCG AA A C CGGG
GGCCCAAGGATCCGCCGCCG CTTGTGG CCA GCCC GGCCC GG TCCGC GC
GGGCGCGGACCGGGGGCTGG GGACGCC GGT CGGG TCGGG CC AGGCG CG
GCTGGCCGCAGG - - ---- GG - - ----
GAM1219 22851 GCTGAGAAGGAGCTGGGGAT AAGG CT TCCC TCC CC ATGACA
CCCCGCTCTCCTGGACCCCA GCTGAG AG GGGGA CGCTC TGGA CCA
ATGACATGGTCTCCATGAGC CGACTC TC TCCCT GCGAG ACCT GGT
GTCCCTGACTGCCTCAGC CG-- AG ---- T-- CT ------

GAM1220 2318 CGACTTGTCTCCTCTATATA A - A TAA GT-- TTTTAGTTAAATG
AATGCGTAGGGGTTTTAGTT CG CTTGTC TCCTCT TA ATGC AGGGG
AAATGTCCTTTGAAGTATAC GC GGGCAG GGGAGG GT TATG TTCCT
TTGAGGAGGGTGACGGGCG - T A TCA AAGT ----------
GAM1222 20345 TCAGGATCCAACAAGAGGTT C ---- CGATGGCAG AAA
CTGCGGTTTAATATCCCGAT TCAGGATCCAACAAGAGGTTCTG GGTTTA ATATCC ATTCC

GGCAGATTCCAAAGGAATGG AGTCCTAGGTTGTTCTCCAAGGC TCAAAT TATAGG TAAGG

ATATAGGCTAAACTTCGGAA T CGGA --------- ---
CCTCTTGTTGGATCCTGA
GAM1223 5588 GGCTGAGGTGGGAGGATGGC G G - - CT AACAT AGTGA
TTGAACATGGGGCAGTGAGC GGCT AGGT GGAG G ATGG TG GGGGC
CTTGATTGCACCATACTCTC CCGG TCCG CCTC C TACC AC TTCCG
CAGCCTGGGCC G A T A -- GTTAG -----
GAM1224 3916 CGTAGTTTAATTTCTCTGTG T TA- TC- ATAAC- TCTT
TTTTTTATATAACCATCTTT CG AGTT ATTTC TGTGTTTTTTAT CA
GTCGACAGTAAAGGGCACGT GC TTAG TGAGG GCACGGGAAATG GT
CTGGAGTGATGATTTCG T TAG TCT ACAGCT ----
GAM1225 3366 CAAAGCGACCAGCTACATTT AA A ------ AAG TGGGTGATGT
ACCAAAGCCTGGGTGATGTG CA GCGACCAGCT CATT TACCA CC
GAGTGGTACATAGAGATGAA GT TGCTGGTCGA GTAG ATGGT GG
GCTGGTCGTCATG AC A AGATAC GA- ----------
GAM1227 221 GTGTTGGAAAATCTACTACA AAATCT A CAAAAGCAACACATCT
GGGAACAAAAGCAACACATC GTGTTGGA ACTAC GGGAA
TTTCTCAGTGGTTCCAACAC CACAACCT TGGTG CTCTT
------ A ----------
GAM1229 21491 ACTGGAACAACGTTTGACGG GGA AC TT - GGG- C A TTGGC
TGTTGGGGGGTGCTGTACAT ACT ACA GT GA CGGTGTT GGGTG TGT CA
TGGCTGATAACACTTAGCAA TGA TGT CA CT GTCACAA TTCAC ATA GT
ACACTGATCTTACTGTGTGA AG- GT TT A ACGA A - -----
AGT
GAM1230 22850 CAGGTCGCGCTGCCGCCGCC TC GC C A CCGCTCAAA
ACTGCTGCCGCTCAAACAGC CAGG GC TGC GCCGCC CTGCTG
AGGGTGGCGCGAGCCCCCTG GTCC CG GCG CGGTGG GACGAC
CC A- - - ---------
GAM1232 16153 TTTCACAGACTCTAAGTCGT C T G AAAA T CAAAGGAAA
AAAACTCTGTTACAAAGGAA TTTCA AGACTC AA TCGT CTC GTTA
ATGATTGAGAAAATGAATTC AAAGT TCTGAG TT AGTA GAG TAGT
GAGTCTTTGAAA T C A AAA- T ---------
GAM1233 22497 GTCTACAAGCATTTTGAAAT A AG--- TT- AT CCTT
ATTCTGTGCCTTCGCAGAAT GTCT CA CAT TGAAAT TCTGTG
TTCGTGTGTGATCACTGAGG CAGG GT GTG GCTTTA AGACGC
AC A CACTA TGT -- ----
GAM1235 20545 GTGGCCGCTTCAGTAGGCAG C TAG-- G AT GTGGTGGG
CGAGCATCTGTGGTGGGGGG GTGGCCG TTCAG GCAGC AGC CT
AGCTGCTGCAGTTCCTGAAC CACCGGC AAGTC CGTCG TCG GG
GGCCAC - CTTGA - AG --------
GAM1236 34 CTCCCAGCCCAGAACTTCCA --- G GAA - --- --- CA TCTA
GATGCCCTGGCACCTCTAGG CTCC CA CCCA CTTCCA GATG CCC TGG CC

GACCAACTGGGACTCATTAT GAGG GT GGGT GAAGGT TTAC GGG ACC GG
GGAAGAATGGGGTGAGAGGA AGA G AA- A TCA TCA AG ----
G
GAM1237 18123 AGCCAGGTCCTGCATGAGGC CA CT A G GA - TC CAG
AGCTGGAGAAGTTTGTCCGC AGC GGTC GCATG GGCA CTGGA AGTT TG CG
AGCGTGCATGGCTTCCAGAT TCG TCAG CGTAT TCGT GACCT TCGG AC GC
GCTGTATGCCGACTGCT -- C- G A -- T GT ---
GAM1239 21906 GATTTGCTTTTAATTACAAA C AATTACAAATACTG T C TGCCT
TACTGTGCATGACGATGCCT GATTTG TTTT TGCA GA GA
TCTTCTGCAAAACCAATAAA TTAAAC AGAA ACGT CT CT
TACAAGAACAAATT A CATAAATAACCAAA - T -----
GAM1240 6149 GAAGAGTTGCGATGTGGGGC -- - A ---------- - TGCA
CGGATCTTATGCATGACGAT GAAGA GTTG CG TGTGGGGCC GGATC TTA
CTTCCGCTGGCCTGGGCTCC CTTCT TAAC GC ACGCCTCGG TCTAG AGT
GCACGTCAATCATCTTC AC T - GTCCGGTCGCCT C ----
GAM1241 7080 GCTGGAGCCCAGCATGCTGG - CC AT-- G C GCTCCAC AGTA
GGAGTGCGGTCAGCTCCACA GC TGGAG CAGC GCTGGG AGTG GGTCA AC
CAGTAGTCCCCACGTGGCCC TG GCCTT GTCG CGGCCC TCAC CCGGT TG
ACTCCCGGCCCAGGCTGCTT T TC GACC - - GCACCCC ----
TCCGTGT
GAM1242 16412 GCTGCCTCACGGACACACTG CT A CACT - - GCCC AAGACTG
GAGCAGGTATTGGGCCCCCT GCTGC CACGG CA GG AGCAGGTA TTGG CCT
AAGACTGAGGTAACCGACTG CGACG GTGTC GT TC TTGTCCGT AGCC GGA
CCTGTTGCTTTGCTGTGTGC T- - T--- G C AAT- -------
AGC
GAM1243 7583 GAGGGAGGACTCTGCAGTCT GCAGTCTTATCC CCTC TCGC
TATCCAGGCTCTCCTCGGCA GAGGGAGGACTCT AGGCTCT GGCA
TCGCTGCCTTCAAGGGTCTC CTCCCTCCTGGGA TCTGGGA CCGT
TCCATCTTTAAAGGGTCCTC AATTTCTACCTC ACTT ----
CCTC
GAM1245 22137 CATCCCATCTCTGATCTGTG - T T ACA A A - GCCCC
ACACGAGGAGAGGAGCCCCT CATC CCATC CTGA CTGTG CG GG GAG GA
CACTCACCCGACACAGCTCA GTAG GGTGG GACT GACAC GC CC CTC CT
GGGTGGTGATG T - C A-- - A A -----
GAM1246 4742 TCTGTGTGTGGAGACTTCGT G- GGAGA G --- C AAAGGAAGAAGAAG
GGTGGTGCTAAGAAAAGGAA TCT TGTGT CTTC TGG TGGTG TAAGA
GAAGAAGTCTTACACCATTC AGA ACACG GAAG ACC ACCAC ATTCT
CCAAGAAGAATAAGCACAAG GA AATAA A CTT - ----------
AGA
GAM1247 508 TGGATGGTTTTAGCCATAGA TTA AGA CA A AGAAAATATTAACTGACC
TTACACTGCAGAAGAAAATA TGGATGGTT GCCAT TTA CTGC GA
TTAACTGACCTCGGCGGCAT ACCTATCAA CGGTA GAT GGCG CT
AGCAATGGCAACTATCCA --- AC- AC G ----------
GAM1249 20098 GTTCAGCAAATCCACTGTAA CAAAT C TAAGT - -- A CAATTTTCTTTCT
GTAGTGTGAGTACATAGCTC GTTCAG CCA TG AGTGTGAGTAC ATAG CTCACCT TCAA
ACCTATCAACAATTTTCTTT CAAGTT GGT AC TCGTATTCATG TATC GAGTGGA AGTT

CTAAACTTGAAGGTGAGAAC ----- - TGTT- A AA - ----------
TATAGTACTTATGCTTTGTC AAAC
ATGGTTGAAC

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                    ----
GAM1250 20193 CCTGATGGTATACTACTGCT  -  G  --   CT---    CG AAT    CAAC
        TTGCGGAATTGCATACAACT CCT GAT GTA  TACTA   GCTTTG  G  TGCATA
        GTGCATTACAAAGTTAATAT GGG CTG TAT  ATGGT   TGAAAC  T  ACGTGT
        GGTAATTATGGTCTGGG     T  G  TA   ATAAT    AT ---    ----
GAM1251 21825 AGAATCTTGCCTTTCTCCTT      -     TCCTTCA-   C  TAAAC
        CAGGCTCATATAAACTATTG AGAATCTT GCCTTTC      GGCT ATA
        GCTGACACCGTGGAGGGTAA TCTTAGAA TGGGAGG      TCGG TAT
        AGATTCT               A     TGCCACAG   T  -----
GAM1252 3385  TGGGCTACCAGTCTTGAGAA    ACCAG-  TG  ---    G--       AATGTAAAAAAGTAA
        GTAGGTGAGGGCATGCAAAT TGGGCT    TCT  AGA  AGTAGGT  AGGGCATGCA
        GTAAAAAAGTAATGTGTGTT ACTTGA    AGA  TCT  TCATCTA  TCTTGTGTGT
        CTGGGATCTACTAGTTCTTG     ACACGA  GT  TGA     GGG       ----------
        AGAAGCACAAGTTCA
GAM1253 19709 GCCAGGGTTCCAGCTTCACC   GGGTT  A--   AC-     ----------    TTCTCCTT
        AGGACCAGGCTCTTCTCCTT GCCA    CC  GCTTC  CAGGACC        AGGCTC
        GGGCCTCCCAGCTGACAGGT TGGT    GG  CGAAG  GTCCTGG        TCCGGG
        CCTGCCCGAAGCCCAGGTAG   AGAT- ACC   CCC     ACAGTCGACCC    --------
        ATGGT
GAM1254 9656  GTGATGAATTTGGAAGAAAA  - T   ---    AAAAA  -  C   A   TGGT
        AGACATTCCTCTACTTCTGG GT GA GAATT   TGGAAG   GAC ATT CTCT CTTC
        TGAGGAGAGTAATCGTCATA CA CT CTTAA   ACCTTC   CTG TAA GAGA GGAG
        GACTTCCACCTAATTCCTCT  T C   TCC    AGATA  C  T   -   ----
        AC
GAM1256 22039 CATAGCACAGGAGATTCAGA     ACA     C      --  -  ACTTCT  CTGCT
        GGGCTGGGATGACTTCTGAG CATAGC   GGAGATT AGAGGGCT  GGG ATG    GAG
        CTGCTCTCTATACCCAAGGC GTGTCG   TCTTTAA TTTCCCGG  CCC TAT    CTC
        CCTTTCAATTTCTAGCTGTG     A--     C      AA  A  ------  -----
GAM1257 13184 GAGGCGGGTGGATCACTCAA      TGGA   TCAA--      ATTTGAGACCA
        GGTCAGGCATTTGAGACCAG GAGGCGGG   TCAC    GGTCAGGC
        CCTGGCCAACATTGTGAAAC CTCTGCCC   AGTG    CCGGTCCG
        CCCGTCTC              CAA-   TTACAA     ----------
GAM1258 7123  GCGAACGTTGGGAACATTTT  -      GGAACATTTTA     T   T  CA   T  AGACGATAC
        AGGGTTTAATGAACTTTGTC GC GAACGTTG        GGGTTTAA GAACT TGT  TAAG AAC
        ATAAGTAACAGACGATACGT CG CTTGCAAC        CCTAGGTT CTTGA ACG  ATTC TTG
        TCTTAAAGCACAGTTCTTGG  A      ATAACCA----      -   C  AA  -  ---------
        ATCCACCAATACAACGTTCA
        GC
GAM1259 16288 GGCCAGGGAAGCCCGACGTG       A-------  - AC   T    GCT
        GTGGGGCGCTGCCTCCCGCT GGCCAGGGA      GCC CG  GTGG GGGGC
        CCGTGGCCTCCTTCCTCCCT CCGGTCCCT      CGG GC  CGCC CTCCG
        GGCC                  CCTTCCTC  T  CT   -    ---
GAM1260 14095 AGCTCTTCCGCCTGGCGCGG  CT    -  G -  GG  TG G   AGT  AC  AGTA
        CTTGAGGACCAGTGCACTGA AG  CTTCCGC CTG C GC  CT  A GACC   GC  TG
        GTACATGGCCAAGGTCATTG TC  GAGGGCG GGT G CG  GA  T CTGG   CG  AC
        AGAAGCTGGTGGAGCGGGAG  AG     A  G T  AA  GT A   AAC  GT  ----
        GACT
GAM1261 7704  TCACTGTGTCGCCCAGGTTG    G  TC   ---   T   --      CGCGATCTCCAC
        GAGTGCAGTGGCGCGATCTC TCACT TG  GCCC   AGGT GGAG  TGCAGTGG
```

CACCTACTGCAACCTCTGCC AGTGA AC TGGG TCCG TCTC ACGTCATC
TCCCGGGTTCAAGTGA - T- CCC - CA ----------
GAM1262 10320 TGCCCGCGTACATGGGCTGA GCGTACAT G T AAG GAAGAAA
GGAATGCTCAAGCAGAAGAA TGCCC GG CTGAGGAA GCTC CA
ATGGTAGAGTTTTCTTCAGG ATGGG TC GACTTCTT TGAG GT
CTTAAAGGGTA AAAT---- G T ATG -------
GAM1265 6540 TCCTGATGTTTGGGACAGCG TG TGTTT GC TC - AGT CTAAATAACAAA
TATCTGTACCAGTGCTCTAA TCC A GGGACA GTA TGT ACC GCT
ATAACAAAAGCTAGGGTGAC AGG T CCTTGT CAT ACA TGG CGA
AAGTACATGTTCCTTTGGGA GT T---- A- GA G GAT ----------
GAM1267 14920 CGTGGACCTTCCCTGTGGCC - CTTC- T - - ---- C C CAAC
TGTACCCGTCCCTCAACAGA CGT GGAC CCTG GGC CTG TA CC GTC CT
GACAGGCAATTACCAGCGCC GCA CCTG GGAC CCG GAC AT GG CAG GA
CAGGCTGTTGTCCGACG G TTGTC - C C TAAC A A ----
GAM1268 1210 ACCTCGATTCTCGTCTATAA CG TC ATAACAG CAC GATCTTAA
CAGGACTAAGTTCACTGTGA ACCT ATTC GTCT GACTAAGTT TGT
TCTTAAATAAGCTTGGTTAA TGGA TGAG CAGG TTGGTTCGA ATA
AATGGGACATGAGTGCAGGT CG TA GTAAAA- --- --------
GAM1269 14260 AGTTATATGTGATATCAATG ATAT- TG CAATG TTT A TAAA
AAGAAATATTTGTAGCATGT AGTT G ATAT AAGAAATA GTAGC TG
AAACGGTTATTTCTGTTTCT TCGG T TATG TTCTTTGT TATTG GC
TAAAAAGTATTGTTAGTGGG GTGAT GT AAAAA CTT - ----
CT
GAM1271 3397 TCTCCAGCCTGAAGTTCTCC CA- T- - C C CTGC AGCTG
TCCTGCAACTGCTCCAGCTG TCTC GCC GAAGTT CT CT CTGCAA TCC
GGATTGCAGCAGCAGCAGCT AGAG CGG CTTCGA GA GA GACGTT AGG
TCTTGGCAGTGAGA TGA TT C C C ---- -----
GAM1272 1200 AGAGGGCAAATGTCAACTGC A AAT---- TG G GCA AGAAG-- CAAG
TGGAGAGAGTGCATGGACAG AG GGGCA GTCAAC CTGGA AGAGT TGGAC TG
AAGTGCAAGCAAAATAAAGT TC CCCGT CAGTTG GACCT TCTCG ACCTG AC
CCAGCTCTTCCAGGTTGACC - GTTTCAC -- - --- AAATAAA ----
ACTTTGTGCCCCT
GAM1273 6128 GGGTCCTCTTCTTTTCCCAG TC TTT- CC ACCCCAACCA
AGCTCCACCCCAACCAGGAG GGG CTCTTC TC AGAGCTCC
CTCTAGATAATGGAGAGCTC CCC GAGAGG AG TCTCGAGG
CC TC TAAT A- ----------
GAM1274 6850 GAGAAGCAGGTAGCTCAGTA C AGC TA AGAG CTGTT
TTGCTGATGAGAGTGGCTGT GAGAAG AGGT TCAG TTGCTGATG TGG
TCCAAGCATCAGTAGGCCTG CTCTTC TCTA GGTC GATGACTAC ACC
GAATCTCTTCTC - A-- CG GA-- -----
GAM1275 7990 GCCGTCGGAGTCCAGCACGG C CCAGCAC - - TCTT TTCTC
GAGGCGTGGTCTTGTAGTTG GCCGT GGAGT GGGAG GCG TGG GTAGTTG
TTCTCCGGCTGCCCATTGCT CGGCA CCTCA CCCTC CGT ACC CGTCGGC
CTCCCACTCCACGGC - ------- T T ---- -----
GAM1276 10784 CTCGGGGAGGCCGCCGGGCC - C - - G TCCGAGACTCC
GGCCTCCGAGACTCCGGCGG CTCGGG GAGGC GC CGG GCC GCC
GCACCGAGTCGCCTCACTCG GAGCTC CTCCG TG GCC CGG CGG
AG A C A A G ----------
GAM1277 10058 CTTTTCCGACTTCCTTCCAT TT GA --- A AGTA CTGGGCC
CCGAGTAGAGTGACCCTGGG CTT CC CTTCCT TCC TCCG GAGTGACC

CCGGTCACTCAGCGGGGGAC GAG GG GAAGGA AGG GGGC CTCACTGG
ACAGGAAGGGCTGAG TC -- CAC - GA-- -------
GAM1278 7756 TGTGATCCTGGCCCGGAGCA ATC G- G T T A- TTG
CCTCCATGCCTCAGCTTGGC TGTG CT GCCCGGA CACC CCA GCCTC GC
GAGAGGTCTGGGGTGATCCG ACAT GA TGGGCCT GTGG GGT TGGAG CG
GGTGAAGCAATACA AAC AG A - C AG ---
GAM1279 11248 ATTCTGAGTTGTTGGTGCCT G CTGCC TC TG- TAAGAACT
GCCCTTCCCCTGAATCTAAG ATTCTGAGTTGTTG TGC CT CCC AATC
AACTGATTAGTGGGTTAGAC TAGGACTCGACGAC ACG GA GGG TTAG
TGCAACAGCAGCTCAGGAT A TCA-- TT TGA --------
GAM1280 6535 CAGATGACCAAGCGAGACGT TG CAA GACG - G - CA GGGC
GCCTGGCTTCGCCATCGGGG CAGA AC GCGA TGC CT GCTTC GC TCGG
GCCTGAGCGGGGGTGAGAGC GTCT TG CGCT ACG GA TGGGG CG AGTC
AAAGTCGCAGTTCTG -- A-- GAA- A G G -- ----
GAM1281 15825 GCCTCCCGGATCCAGGCGTC T CCA TCC A CCACCAGAACCTAGCCTCC

CGGGATCTGCGCCACCAGAA GCC CCCGGAT GGCG GGG TCTGCG
CCTAGCCTCCTGCAGACCTC CGG GGGTCTA CCGC TCC AGACGT
CGCCATCTGGGGGC - --- C-- - ----------
GAM1282 22161 GACACTGGCAACATTGCGGA C A - GAC CC GAA GA A-- TTTC
CACCCTCCAGGAAGCGAGAA GACA TGGCA CAT TGCG ACCCT AG GC GA TGCAGAG
TGCAGAGTTTCCTCTGTGAT CTGT ACCGT GTA ATGT TGGGA TC CG CT GTGTCTC
ATCAAGCACTTCAGGGTTGT T C G --- CT A-- AA ATA ----
AGATGCTGCCATTGTC
GAM1283 11638 ACTGTCCTCATGGAGCTTAC C ---- AG AGACTAATTACATAAA
AGACTAATTACATAAAGTAA ACTGTC TCA TGG CTTAC
GAGCTAAAACTGATGACAGT TGACAG AGT ATC GAATG
T CAAA GA ----------
GAM1286 15934 AGGAAGACACATAGGTGGGT AAGACA - GTTTA A-- A GAA
TTATGTTTCACCTCATTTGG AGG CATAG GTGG TGTTTC CCTC TTTG
AACAAAAGAGGACAGAAGCA TCC GTGTC CACC ACGAAG GGAG AAAC
GACCACTCTGTGCACCAACC AACCAC T AG--- ACA A ---
T
GAM1287 18165 CTCGTCAAAAAATATTCACA G AAAAATATTC - TAAA-- - - TTAT
GTTCATAAACTTTCCTATTT CTC TCA ACAGTT CA CT TTCC TAT
ATGTATGGAGCAGCAAGACT GAG AGT TGTCAA GT GA GAGG ATG
GAAACTGTTGAGGAG G ---------- A CAGAAC C T ----
GAM1288 1814 GGCTTTTTCTTAGTGCCTCT TT-- CCTCTG TT G TCTATTT
GTGCATTTGGGTGATGTTCT GGC TTTCTTAGTG TGCAT GGGT ATGT
ATTTACATGGCCTGTGTAAA CCG GAAGGGTTAC ATGTG TCCG TACA
TCTCCATTGGGAAGTCATGC TACT CTCTAA -- G -------
C
GAM1290 18263 TTGCTTCCTCTTGAGTGCAA CCTCTT C C AA CAGAT G GTTT
CGGAAAGGGCTATCAGATAT TTGCTT GAGTG AA GGA GGGCTAT ATCT CAC
CTGCACGTTTGTGAGATTTA AACGAA TTCAC TT CCT CTCGATA TAGA GTG
TAGCTCCTCCATTACACTTC TACTTC A A C- TT--- - ----
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GAM1291 12589 GTTGATGAAGATGAACCTAC - A AAC CT ACCAA--- C TGCAA
TGTAGTACCAACCACTTCTG GTTGATG AAG TG CTA GTAGT CCA TTC
CAAGAATGGAATCACAAGCT CAATTAC TTC GC GAT CATCG GGT AAG

ACTAGCGCTTCCATTAAC C - --- -- AACACTAA - -----
GAM1292 4332 TTGTGTTCAACAGTTAATCA TT A TTAATC CC T CAGCCTCT - - CAT
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GATGTACATTCAGTCCCTGG T- A TGTC-- CA T T------- T T ---
TTTCTCTACTTTTCTGTCTG
ATGTCACAG
GAM1296 3871 CAGTACAGCTTCTGGCTCTA C- T TCTATGA -- ATGTC
TGAGCTCTGTGATGTCTACT CAGTACAG TTC GGC GCTCT GTG
TGGAGTGCCTGAAACCTGTA GTCATGTC AAG CCG TGAGG CAT
CTG CA T ------- TT -----
GAM1297 20175 GACAGGGGCAGTTAGGCCGC - CAGTT CC CT TGA- TTACTTAGTTTTGCC
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ATTTACTTAGTTTTGCCATG CT GTTCCC TCT TGTATC CCTTTC CAGTGTA
TGACAGGTCTTTCCCCTATG A ----- AC C- TGGA ----------
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GAM1298 18770 CCCCTCCAGCCCCCATGTGC - CCCATGT TG CCCAAC
TCTGAGCCAGTCCCAACACT CCCCTC CAGCC GCTC AGCCAGT
GGCTGAGTTGGCTGCGAGGG GGGGAG GTCGG TGAG TCGGTCA
G C T------ -- ------
GAM1299 16445 CGTGTGGCTGTGACGCCGGG G TG C -- GA AT GAAGGTG
TCGCGATGTGACATTGTGAA CGTGTG CTG A GCCG GGTCGC TGTGAC TGT
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CAACGGCATTGTAGGCATGC G GT A AA AG -- -------
G
GAM1301 8619 GCATCGATTAAATCCACAGT TAAA ACAGT C AC CTCA
CAGCCATAATAACTCCTCAG GCATCGAT TCC CAGC ATAATA TC
ACATGTTATGCTGGGGCCGT TGTAGCTG GGG GTCG TATTGT AG
GTCGATGT TGCC ----- - AC ----
GAM1302 21832 GCCAATAGGTTCCATGATTC ---- AT- GATGCAGT TCATTTT
TGATGCAGTATAGATCATTT GCCAA TAGGTTCCATG TCT ATAGA
TTCTATCCAAGATTATATGG CGGTT ATCTAGGGTAT AGA TATCT
GATCTAAAAATTGGC AAAA ATT ACC----- -------
GAM1303 369 TTACTGTTTTATTTATACCA - ATTT-- -- GC- AG AAAAA
TGCATAGCTCAAAAAGAGAG TTACTG TTTT ATAC CAT AT CTC
ATAAAATGAAGTGTTAACAG AATGAC GAAG TGTG GTA TA GAG
GAAGTCAGTAA T GACAAT AA AAA GA -----
GAM1304 7316 AATGTGGTCGAAGATTCAAA TG AAGAT A-- ATGTTA-- - ACCAAG
AGCATGTTACCTTCAACCAA AATG GTCG TCA AAGC CCTT CA
GTGAAAGGCATTTTCGGCTT TTAC CAGC AGT TTCG GGAA GT
CACTGACAGCGACTGCATT GT GAC-- CAC GCTTTTAC A ------
GAM1305 6827 GCTACCTGCCAAAAATTCAT --- C AAAA-- GCTG GAACTTCCAA A - GA GAAAAT
GCTGAGCCTGAACTTCCAAG GCT AC TGCC ATTCAT AGCCT GTG CAG CA ACT
TGACAGCAGAACTGAAAATG CGA TG ACGG TGAGTG TCGGA CAC GTC GT TGG

GTATGTCTGCACAAATGCCA CAT T ACACAG AA-- ACCGTAAA-- - T A- ------
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GCATGTTACAGC

GAM1306 11057 TCCGCTCCAGACTTTAGTCA AG CACT GAGTGAG
CTAGGTTCTAGGAGTGAGCT TCCGCTCC ACTTTAGT AGGTTCTAG
GGGGCCTGCTGAGGTGGGGG GGGTGGGG TGGAGTCG TCCGGGGTC
TGGG G- ---- -------
GAM1307 8830 TATTCATTTTGCATTGATAG TT- --- -- G- AATTT
GCTTTGGGGGTAATTTGCAG TATTCATT GCATTG ATA GGCTTTGGG GT
CTTAGAGCTATTATAAATAG ATAAGTGG CGTGAT TAT TCGAGATTC CG
TGCTGTGGTGAATA TGT AAA TA GA -----
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CTGGAACAAGCTGGTGTAGA CTGG AGAAGAG GTTCTGC AAGCT TGT
TGCAAGTGAAAGCTTTGAAG GACC TCTTCTC CAGGATG TTCGA ACG
ATGTAGGACACTCTTCTGAT GTAG A TAGAAGT AAGTGA ----
GCCAG
GAM1309 14722 CGAGGCTGGTGTTGTGAAGA --- ---- GAA--- C T A- CGC
TCCTGGTGTCGCATGGGCCG CGAGGCT GGTG TTGT GAT CTGGTG CGC TGGGC
CGCCCGCCGTGTTACCGGTA GCTCTGA CCAT AACA TTA GGCCAT GTG GCCCG
TTGTAAGAACAAGCCGTACC AAC GCCG AGAATG T T CC ---
CAAAGTCTCG
GAM1311 14879 GGCTGCTGGGTGCACCCCCG G - G - GG GA - - GA AGGATGGA
GGGCCTGGGGGTGAACCCCC GGCT CTGG GT CACCC CCGG CCTGGGGGT ACCC CC GCT
TGGGGG
GCTGATGGGGGAGGATGGAC TCGG GGCC CA GTGGG GGTC GGATCCCCA TGGG GG CGG
GTCCCC
CCCTGGGGCTGGTGGGTGAA G T G T GG AG T T G- --------
CCCCTAGGGGCTGGTGGGTG
GACTCCGGGGGCT
GAM1312 22375 TTTGAGGCCCGTTTAGATAC T C -- CCA GCAGAGACAAA
CATGGCAGAGACAAACAGCA TT GAGG CCGTTT AGATA TG
TATCTTTAAATGGACCTTTG AG TTCC GGTAAA TCTAT AC
A T A TT ACG ----------
GAM1314 18515 CTAGAGCAAGCCTCAATAAG G A- - TA ATTTTATTACCTTG
TTTATTTTATTACCTTGGAA CTAGA CA GCC TCAA AGTTT
TTCTTTGATGGTGGTGTCTA GATCT GT TGG AGTT TTAAG
G - GG T TC ----------
GAM1315 15178 GAAGAGCCTAAACATGGTGT -- AA ------ A TCTA
TCAATAGTCTACTATGAATT GAAGAGC CT ACATGGT GTTCA TAG
AAACAATCGTGTGGAGAAGC CTTTTCG GA TGTGCTA TAAGT ATC
TTTTC AA GG ACAAAT - ----
GAM1316 17060 GGACTCGTGTGTAAGAAAAA C GTAA AA T TG- GTA AA AATTCTCTTAACTCC

CTAGGACTGTGTGGTGTAAA GGA TCGTGT GAA AC AGGACTG TGGT AAT CTAC
TAACTACAATTCTCTTAACT TCT AGCACA CTT TG TCCTGAC ACCG TTG GATG
CCGTAGCAGTTGCCAACTCA A ATTG CA T TCA --- AC ----------
GTCCTTGTACTTCGTTAACA
CGAATCT
GAM1317 3718 GTGCTTATAAAGTGAAGGGG CT T TG - -- G CTTCATTATTTT
TCATACAGTTGGGCCTTCAT GTG TA AAAG AAGGGGTCAT ACA GTT GGC
TATTTTGCTGAATTATGTGA CAC AT TTTC TTTCTTAGTA TGT TAA TCG
TGATTCTTTTGCTTTCTACC CC C GT G AT G ----------

CAC
GAM1319 12358 GTCTTTGGGTAATTTGACCC T AATTT ------ CTCTGGCCCTCA
CACGTGCTCTCTGGCCCTCA GTCTT GGGT GACCCC ACGTGCT
AGCATGTAACCTCGGGGTCT CAGGA CCCG CTGGGG TGTACGA
GAGGCCCAGGAC - GAGT- CTCCAA ----------
GAM1320 20882 CTTGGTGACAAATATGTTGT TG A T TAAAG AGGG
GTAAAGTTCAGGGGAGAGTC CTTGG ACAA TATGT GTG TTC
CGCCACATGTTGTTCCCAGG GGACC TGTT GTACA CGC GAG
CT - C CTGA- ----
GAM1321 17131 GGGCGTGAGTGCAGGAAGCA T - ACA---- GG GAG
CATTTGGCTTGGCAGGAGCT GGGCG GAGT GCAGGAAGC TTT CTTGGCAG
GTCAGGAAGGGGAAGCGGGT TCCGT CTTA CGTCCTTTG GGG GGACTGTC
TTCCTGCGATTCTGCCT - G GGCGAAG AA ---
GAM1323 19012 GGGGCTGAGGAGGAGGAGCA GG AG--- C G-- TG T G T TGCAG
GGGGGTGCTGCGTGGAAGGT GG CTG GAGGAGGAG AGG GG C GCGTG AAGG GC
GCTGCAGGTCCTTGCACGCT CC GAC CTCCTCCTC TCC CT G CGCAC TTCC TG
GTGTCGCGCCTCTCCTCCTC AA AAAGG - GCG GT T G - -----
GGAAACAGAACC
GAM1324 9847 CCTGCATGGGGTGTTTGTGG - - TGT GAGG - GACA
CCGAGGTGGAGGATGACAGT CCTG CATGGGGT GTT GGCC TGG AGGAT
CCTGCCAAGGGTCCTGACGG GGAC GTGCTCCG CAG CTGG ACC TCCTG
CCTCGTGCCAGG C G TC- GA-- G ----
GAM1325 22810 CTCTGGGTTACTGGCTGAGT G ACT G TCT - TG TTTCT
TCTGCCCTGTGTGGCTTTCT CTCTG GTT GGCT AGT GCCCTG TG GC
GCTGTGCCAGGGCTGCACTG GAGAC TAA TTGA TCA CGGGAC GT CG
AGTTCAAATGCAGAG G AC- G CGT C GT -----
GAM1326 15473 GTGAAGGAACAGTTTGCCTG AACAGT TG CT CATTTC - ACCAATG
GAGACATTTCTACTGGTACC GTGAAGG T C GGAGA TACTGG TACCTT
TTACCAATGAGGGTATCCAG TACTTCC A G CCTCT ATGACC ATGGGA
TATCTCCGTGATTACCTTCA ATT--- GT -- ------ T -------
T
GAM1327 16665 TACACTCTGATCGAGATCCT C A GATCCTA C A TTCC TATACT
ATTCCAGATGTTCCTGCAGT TACA TCTG TCGA TTC AG TG TGCAG
ATACTTTGTAATGCCAACTG GTGT AGAC AGTT AAG TC AC ATGTT
AAGAAAATATTGACAGAATG A - ATAAAAG - A CGTA ------
TG
GAM1328 7245 CTTCCTCTGTGGGGTACCAT - G T - TCAAT- T TGCA TTCTGT
CCTCAATCTCGGTGGGGATT CTTCC TCT TGGGG ACCAT CC CTCGG GGGGATT GGTT
TGCAGGTTTTCTGTGGCCCT GAAGG AGG ACCCC TGGTA GG GGGTC CCCCTAA CCGG

TAATCCCCCTGGGTTCTTTG T - - A TTTCTT - TTC- ------
GAATGGTCCCCAGGATGGAA
G
GAM1329 18004 AATGACTGGGTGTATTTTCT A TG A ATGCAAT TG- A TGGCATAACT
CTGATGATGCAATCCAGGTG AATG C GGTGT TTTTCTCTGATG CCAGG GC TGCC
GCATGCCTGGCATAACTGGT TTAC G CCACA GGAGGAGACTAC GGTCC CG GTGG
GGCATTCCTGGCATCAGAGG - GT A ------- TTA - ----------
AGGAACACCTGGCATT
GAM1330 8074 ATGTATAAATGTAAGGAGTA TAAGG T GAATACT CCCCAGAA
TATATTTTGAATACTATGAT ATGTATAAATG AG ATATATTTT ATGATCA

CACCCCAGAATGATCATTCA TACATGTTTAC TC TATGTAAGA TACTAGT
ATAAGAATGTATCTAATATC TATAA - ATAACT- --------
ATTTGTACAT
GAM1331 4134 GCTCATTCAGTTCAATGCTG TTCA AT G A A T G CAGCA
TGGAAACCGAGCCTGTAGGT GCTCA GTTCA GCTGT GA ACCG GCC GTAG TGA
GACAGCATCAGCTACTGGCC CGAGT CGAGT CGACG CT TGGT CGG CATC ACT
TGGTATCAGCAGCTGAGCCT C--- -- A A C T G -----
GAGC
GAM1333 3891 CCCGATCCGGCAGCTCATTT A-- G C AATAGAGC - ACAG
AAATAGAGCTCATCACAACA CCCG TCC GCAGCT ATTTA TCATCAC AACA
ACAGTGTTGGTGGTGAAGTG GGGT AGG CGTCGA TGAGT AGTGGTG TTGT
AGTAGCTGCAGGACCCTGGG CCC A - GA------ G ----
GAM1334 13652 GTAATTCACAAAAACTCACA AT AAAACT- - A ---- AATTTG
TTTACTTTGAAGAGCAATTT GTA TCACA CACATTTA CTTTG AGA GC
GGCAATGTCTATAAGGCTAA CAT AGTGT GTGTAAAT GGAAT TCT CG
ATGTGTTTATTCTGTGATAC -- CTTATTT C A GTAA ------
GAM1335 21643 GTGTGTACACGGGTCCTTTT --- CCTTTTTT-- A AAATA
TTGCAATGAAATACATGGTT GTGTGTACAC GGGT GC ATG
ATGACTTGAATCCAAAGTGT CACATATGTG CCTA TG TAC
ATACAC AAA AGTTCAGTAT G -----
GAM1336 10809 GGAATAGGCTAAATTGCTAG ATA - --- GTGCT TG ATTA
AGATGTGCTGTGGAATTATC GGA GGCTAA ATT GCTAGAGAT G GA
TGTATTTCTAGCTATGATCT CCT TCGATT TAG CGATCTTTA T CT
TAGCTTCC --- C TAT ----- GT ----
GAM1337 10823 AGCATACAGCAGCAAGAAGG A AAGAA G G GGTGCA
GGTGCAGGTGGTGGTGCAAC AGC TACAGCAGC GGGGT CAGGT GT
AGCCTGGCCCTGGGTTGCTG TCG GTGTCGTTG TCCCG GTCCG CA
TGGCT - GG--- - A ------
GAM1340 20713 TTGGAGGGGAGCGTGGGGAG G T - - - TGCTGGTAAAT
GGCGAGTGCTGGTAAATCTC TTGGAGGGGA CG GGG GAGG GC GAG
TGCACCTCACCCTGATCTCC AACCTCCTCT GT CCC CTCC CG CTC
TCCAA A - A A T ----------
GAM1341 22705 CTGTGGGCCAGAAAGCAGGC CCA CA- CT C AA--- GTATCAGAG
ACCAGGGCTGACCTCAAGGC CTGTGGG GAAAGCAGG CCAGGG GA CTC GGCC
CGTATCAGAGGGCCAAGCAG GACACCC TTTTCGTCC GGTTTT CT GAG CCGG
AGTTCTTTTGGATACCTGCT TAC ATA -- T ACGAA ---------
TTTCATCCCACAG
GAM1342 5918 GGTGAGTCCTTCAACTACAT G CA A TGCA TA TCTTAG A AAAGC
CTGCAAGGTTTTATTTCTTA GGTGA TCCTT ACTAC TC AGGTTT TT GAAA TATTT
GGAAAATATTTAAAGCAAAT TCACT AGGGA TGGTG AG TCTAAA AG CTTT ATAAA
ATTTCAAAAATGACTAAATC G -- - ---- TC TAAAAA - -----
TGAGTGGTAGGGAGTCACT
GAM1343 15970 GGGAGGGCAATTTTTCATCT A ATCTT A CG-- ACCT
TCCAATGGCGGCCTCAACCT GGGAGGGCA TTTTTC CCA TGG GCCTCA
TGAGGCGAATCCACTGGCGA TCTTTCCGT AGAAAG GGT ACC CGGAGT
AAGATGCCTTTCT - C---- C TAAG ----
GAM1344 12271 GCGACCGGGAGAGCTTTTCT GACC A-- AACGA ACTTTG
TTAACGATATCAACTTTGTG GC GGGAG GCTTTTCTTT TATCA
GTGCCAAAAGGAAAAGCGGC CG CCCTC CGAAAAGGAA GTGGT
CTCCCCCCAGC ACCC CGG AACC- ------

GAM1345 11540 GGGTCTACGTGTGTGATCCT ACGTGT A - A CAATTCACAGTATCACA
TATCGTAAGAACAATTCACA GGGTCT GTG TCCTTATC GT AGAA
GTATCACATTTTCACAGATG CCCGGA CAC AGGAGTAG CA TTTT
AGGACACTGAGGCCC GT---- - A C ----------
GAM1346 21223 TGAGCCAAGAGGAACGGAGC CCA--- ACG T A CT GGG
TTCCAAGACTATCTTGGGAA TGAG AGAGGA GAGCT CCA GA ATCTT
GATTCATGGGGCTTACTCCT ACTC TCTCCT TTCGG GGT CT TAGAA
CTGAGAAACTCA AAAGAG CA- - A -- ---
GAM1347 21012 TCCTGTAGTGTTCCTGGAGA - T- CCTG GA C - ATTG
AGCTAGAGCCTGATTGTAGG TC CTGTAG GTT GA AG TAG AGCCTG
CTACTACTCATCAATTAACT GG GACATC CAA CT TC ATC TCGGAT
TCTACAGTGG T TT TTAA AC - A ----
GAM1349 21401 GCCCCTCGGTTGGGACCGTT CT G T CA- CCCTACC
TCTCGGCACGAGCCCTACCC GCCC CGGTT GGACCGT TCTCGG CGAG
TTGAATCTGGGGCGCGGTCT CGGG GTTAG TCTGGCG GGGGTC GTTC
GGATTGTGGGC T- G C TAA -------
GAM1350 16002 AGGCTGGAGTACCGTGGCAC T TAC GGCAC CCCAT CCT
GATCTGGGCCCATTGCAACC AGGC GGAG CGT GATCTGGG TGCAA
TTTGCATCCGGGTTTAAAGC TCCG CCTC GCG TTGGGCCT ACGTT
GATTCTCCTGCCT T TTA AAAT- ----- ---
GAM1354 7707 CCCTGGGGTTTCCACCTCCT TCCACCTCCT - G CCAG
GCCTCCGGCCTCCAGAGGGT CCCTGGGGTT GCCTC CG CCT
GTGAGGCCCCAACCCCAGGG GGGACCCCAA CGGAG GT GGA
CCC------- T G ----
GAM1355 11835 CGGGGACAGCGACCTGCAGC A G - C A AAC A AC TAC
TGGAACGCATCAACGTGTAC CGGGG CA CG AC TGC GCTGG GC TCA GTG
TACAATGAGGCCACCGGCGG GCCCC GT GC TG ACG CGGCC CG AGT CAT
CAAGTACGTGCCCCG - - A A G AC- G AA ---
GAM1356 12542 GTTGCCACCGAGGAGGCGGC A GA A --- TGCGTCT
GGCCCTGCGTCTGGAACGCC GTTGCC CC GG GGCGGCGGC CC
GTTGCCACCGAGGAGGCGGC CGGCGG GG CC CCGTTGCCG GG
A AG A CAA -------
GAM1357 8970 GATTTGGTATTGGACTTGCA - ATT--- T- TC---- TT GAAAA
AGTCTCTTTACAGAAAATGT GAT TTGGT GGAC TGCAAG TC TACA
ATTGGCACATCCTTGCATTG CTG AACCG CTTG ACGTTC GG ATGT
TTCTACGCCGCCAATGTC T CCGCAT TT CTACAC TT -----
GAM1358 7121 TTACTCTGAATTAGAAACAT TGA AT TAT AAT-- TT- AAA GATT
GTTTATGATAATCCTATTAG TTACTC ATTAGAAAC GTT GAT CCTA AGA TTTGATT
AAAATTTGATTGATTGATTA AATGAG TAGTCTTTG CGA CTA GGGT TCT AAATTAG
AAGTGTCTTTTTGGGTCGAC TCC -- TCC CAGCT TTT GTG ----
ATCCCTAGCGTTTCTGATCC
TGAGTAA
GAM1359 12032 GTTTCTTGTAAAGGCGTCTG T - A G - G------- GAGA ATT
ACAGTCCTGAGAATTATTGA GT TCTT GT AAG CGTCTG ACA TCCT ATT
TGGTAAGGAATAAAAAATGT CA AGAA TA TTC GTAGAC TGT AGGA TAG
ACAGATGACTTCATGAAGAT T G C A A AAAAAATA ATGG ---
AC
GAM1360 9695 GGGAGAATCCCCTAAGCTCC AA A - AG- AG GT AACCTGAG
AGGGCCCAGGGTCTAACCTG GGGAG TCCCCTA GCT CC GGCCC G CT
AGAGGTCGGGGCTGCAGGAA CCCTC AGGGGGT CGA GG TCGGG C GA

GCTGGGGGAGGCTCCC GG - A ACG G- TG --------
GAM1362 21990 TTTTTTGTAGAGACGGGGCC TT- C G - A CTGGTTTTGAA
TTGCCATGTTACCCAGGCTG TTTT GTAGAGACGGGG CTT CC ATGTT CCCAGG
GTTTTGAACCTGGGAAACAT AAAA TATCTCTGTCCC GAG GG TACAA GGGTCC
AGGGAGACCCTGTCTCTATT TGT A - A A ----------
GTAAAA
GAM1364 8498 CTTCAGGAGCCAGCTGTAGG - - GTG T TCCTG
TGTCCTTGTCCTGCAGGAGC CTTCAGGAG CCA GCTGTAG TCCT G
TGCAGCATGGCCTTCTGAAG GAAGTCTTC GGT CGACGTC AGGA C
C A G-- - -----
GAM1365 16645 CGGCACCATCACGTGCTTGG -- ---- G C GTTC
GGACGGGTTCTCTCCCGGGG CGGCACCAT CACG TGCTT GGGA GG
CGTCTTCGTGCAGTGGTGCC GCCGTGGTG GTGC GCGGG CCCT CT
G AC TTCT G - ----
GAM1366 2890 TCATAAGTTCTGTAGATACT TCT TT TGAACATTTT TTTAGTTTT
TATGCATGAACATTTTCTCA TCATAAGT GTAGATAC ATGCA CTCA
TTTAGTTTTTGGGTTCATTA AGTGTTCA CATTTGTG TATGT GGGT
TTTGTATTGTGTTTACTACT T-- T- TTATTACTT- ---------
TGTGA
GAM1367 22771 TGGGGTTCCACTTTCTGGTG GG T TTT - ---- TGT
TGGTTCCTTTGTGTCAAAGG TGG T CCAC CTG GTGT GGTTCCTTTG
AATCAGGGACACACAGTGTG ACC G GGTG GAC CACA CTAAGGAAAC
GGTTCCA TT - T-- A GGGA ---
GAM1368 18159 AGACCTTCCTCTGGAACCTC CTTCCTCT AA --- A ATC
AGTTAAATTCACTTAATCTA AGAC GG CCTCAGT TA ATTCACTTA
AGTGGGTCTAGGTGCTGGGG TCTG CC GGGGTCG AT TGGGTGAAT
GCCCTTATCTTGTCT TTCTATT- CG TGG C ---
GAM1369 4489 CCTGGAGAGTGCACATGCCC T -- --- C-- - GGCA
CTTGGTCCTGGCAGGGCGCC CCTGGAGAG GC ACA TGCC CTTGGT CCT
AAGTCTGGCACCATGTTGGC GGACTTCTC CG TGT ACGG GAACCG GGG
CTCTTCAGG - GT ACC TCT C ----
GAM1370 8043 CTATGACTGCTCTGCCATGT TG G CCAT T GACCTCG GGGA
TGCTTTGCCGACCTCGCCCC CTA ACT CTCTG GT GCTTTGCC CCCCT
TGGGAAGGGGACCGGGCAAG GGT TGG GAGAC CA CGGAACGG GGGGA
GCCACTTCCAGAGGGTTGTG GT - CTT- C GCCA--- ----
G
GAM1371 20222 CCAAGAAGCTTGAGAGAAGA AAG- G A AAAAA AAAAA TC AT CTAGAATA
AAAATTTCAGAAAAATTGTC CCAAG CTT AG GAAG TTTCAG TTG TCA TTGA
TCAATTTGACTAGAATATCA GGTTC GAA TC CTTC GAAGTC GAC AGT AACT
ATGAACCAGGAAAACTGAAG AAAA A C CAC-- AAAAG CA -- --------
CACCTTCCCTAAAGAAAACT
TGG
GAM1373 12817 TGCGCTGGGCAGAAGCACGC - AA- AC- CA- ---- G CT ACCCGAGC
ACCGCATCCTGGGCAGCCTG TGCGC TGGGCAG GC GCACCG TCCT GG CAGC G
ACCCGAGCTGAGCTGGCCGA ACGTG ACCCGTC CG TGTGGC AGGG CC GTCG T
AGGGGAACTCGGTGTATGGC C AGC GTA TCA GAAG G AG --------
CGACTGCCCACGTGCA
GAM1374 9743 TCGGGCGTCTGTCCACACAC -- C- -- T TA A ACTGT
ATGAGTTATGTACCAACAAC TCGGGCGT CTGT CAC ACACATGAGT ATG CCA CAAC
ACTGTGTTGATGGCATTGCT AGTCCGCA GACG GTG TGTGTATTCG TAC GGT GTTG

TATGTGTAGGTGAAGCAGTC CT AA GA T -- A -----
ACGCCTGA
GAM1375 15023 TCCTTGAACTTGGAACCTGA GA- TGGAA- GACAAT G GTTGGAA
CAATGTTGGTGTTGTCGTGT TCCTT ACT CCT GTTGGT TTGTCGT
TGGAAATGATAAACTAATTA AGGAG TGA GGA TAATCA AATAGTA
AGGAAGGAGATATAGTGAAG AAG TATAGA AGGAAT - -------
AGGA
GAM1376 13587 CACCTCGTTCTGCTCACCTG C TCTGC GCC C CTT CA TACCA
GCCTGGCAGGCTGTGCTTGG CACCT GT TCACCTG TGGCAGG TGTG GGTTCA C
TTCACACTACCAGCCTGGAT GTGGA CA AGTGGGC ACCGTCC ACAC CTAGGT G
CCCACACCTGCCACGGGTGA C ----- --- - C-- CC -----
ACCAGGTG
GAM1377 9837 CTCCCACCCTGCCGGCCTCA ------- G AGGAACAG GCTC
GGAACAGCTGGCTCCAGATG CTCCCAC CCTGCCG CCTC CTG
GGGGGTGGCAGGCAGTGAAG GAGGGTG GGACGGT GGGG GAC
TGGGAG AAGTGAC G GTA----- ----
GAM1378 12453 GCCCGGAAACCACACTACGA - AA ACACT GA GG-- AA GTCAA
CATCTGGGGCAATACAGTCA GCCCG GA CC AC CATCT GGC TACA
ATGTAGCCAGCAGGATGGAG CGGGT CT GG TG GTAGG CCG ATGT
TCCACGGGGGTCATGGGC A GG GCACC AG ACGA -- -----
GAM1379 15376 GGCCGCTCTAGAGGATCCAA C-- C TCCAA T-- A TGCA
GCTTACGTACGCGTGCATGC GG CGCT TAGAGGA GCT ACGT CGCG
GACGTCATAGCTCTTCTATA CC GTGA ATCTTCT CGA TGCA GCGT
GTGTCACC ACT T ----- TAC - ----
GAM1380 14587 GCTGTCGTTTTTTCCTTGAC T TT C CACT- TCCTCTTCAT
ACTTGTAGGCTCCTCTTCAT GCTG CGTTTT C TTGA TGTAGGC
GTTTACATAACCTCAGTGGG CGAC GCAAAA G GACT ACATTTG
AAAACGCCAGC C GG T CCAAT ----------
GAM1383 13005 GCGGAGAGGTATCTGCTGCG A--- TA ---- GTAAACTG
CCTGAGATGAGTAAACTGTC GCGG GAGG TCTG CTGCGCCTGAGATGA
GTTTCGGGCGCGGGCGCTAG CGCC CTCC AGAT GGCGCGGGCTTTGCT
ACGCCTCGAAGCCGC GAAG GC CGCG --------
GAM1384 20029 TATATTTGTGAAATTCATCC T AA-- CCACACT - TGTTATCCATTTCCATT
ACACTGATGTGTATAACTGT TATATT GTG ATTCAT GATG TGTATAAC
TATCCATTTCCATTGTTGTA ATATAA CAC TAAGTA TTAC ATATGTTG
TAGCATTCCACCACATGAAT - CACA CACCACC G ----------
ACACCACAATATA
GAM1386 10709 TGCTACTATTTTATTGCCCG ACTA T GA GG- TATG
AGGTGGGGGTGTATGCACCG TGCT TTTTAT GCCC GGTG GGTG
CACACCGGGGCTATGAGAAG ACGA AGAGTA CGGG CCAC CCAC
CA ---- T G- ACG ----
GAM1387 16559 CCGGCCCGGGGAGGACAAGT G GA A - T CCTT
CGCTGCCACCTTTGGCTGCC CCG CCCGGGGAG CA GTCG C GCCA
GACGTGATTCCCTGGGACGG GGC GGGTCCCTT GT CAGC G CGGT
A A- G C T ----
GAM1389 9630 ACCCCGCCCGGGAAGGCAGC CC CC A- CA-- CACC TCTTCC- CATCT
CGCACCATGGAGTCTTCCAG AC CGC GGGA GG GCCG ATGGAG AGTT
TTCATCTAACTCTTATTTCT TG GCG CCCT CC CGGT TGCCTC TCAA
CCGTTGGCCCAACCAGTCCC TC A- GA AACC ---- TTTATTC -----
AGCGCTGT

GAM1390 2512 GCTAGAGGCCTTTGCTAGCT - CTTT T - T - AGGTCC
GCTACAGGTAGGTCCACACT GCTA GAGGC GC AGC TGC ACAG GT
GTCGCAGGCTGCTCTGTCTC CGAT CTCTG CG TCG ACG TGTC CA
TTAGC T TCT- - G C A ------
GAM1391 17633 CTCCAGTTTGTCAAGAGTTG - TCAA T - GCTCT- TG TGA
AAGGAGGCTCTGTGGCCAGG CTCCA GTTTG GAG TG AAGGAG G GCCAGG
TGACCTGGCTGCCTTCCACT GAGGT CAAAT CTC AT TTCCTC C CGGTCC
CCTTGTACCTCAGTCTAAAC A CTGA C G ACCTTC GT ---
ATGGAG
GAM1392 7392 GGGAAGGAGCTCCCCCCACT A A - - --- CCC TC TTGT
GCCCATCCTGCCCGCTTTGT GGGA GG GCT CC CCC CACTG A CTGCCCGCT
GGCGGGTAGAGTCAGTGACA TCCT CC CGA GG GGG GTGAC T GATGGGCGG
GGGAGGCAGCCCTCCT - - C A ACA --- GA ----
GAM1393 20975 GCGACGTCCTGTTTCTGGCT CGTCC T - AA--- A TA- CCTTCATCCT
GTGAAGCCACATATCATCCC GCGA TGT TCTGGCT GTG GCC CA TCATCC
CTTCATCCTGGATGAGATTG TGCT ACA AGACCGA CGT CGG GT AGTAGG
GGGCCGACGTGCAAGCCAGA ----- C A GCAGC G TAG ----------
CACATCGT
GAM1394 8364 CAGAGACTGTCCTTTGCAAA A GT GCAA AT --- CATTTCAA
GGAAATGACCAGCATTTCAA CAGAG CT CCTTT AGGAA GAC CAG
CTGTATGTCTTCCTGGAAGG GTCTT GA GGAAG TCCTT CTG GTC
GTAGATTCTG A TG G--- -- TAT --------
GAM1395 21473 GCCCCACCGCGCATGAAACC CACC GAAACCGAAAAAA - CCCA AAA
GAAAAAAGGGGCCCTTCCCC GCCC GCGCAT GGGGCCC TTC TTTGC
ATTTGCAAAGCGAACATGAA CGGG TGCGTA TTCCGGG AAG AAGCG
CGGGCCTTGACATTTTAATG T--- ATTTTACAG---- C TAC- ---
CGTTGGGC
GAM1396 16694 AGAAAAGCTAGATTTTTCGT AA T AT AC--- AA- G CACA
ATACTTTGAAATAATGTGTC AGA AGC AG TTTTCGTAT TTTG ATAAT TGT
ACAACAGATTGTATGCAGAA TCT TCG TC AAAAGTATA AGAC TGTTA ACA
ATAGATATGAAAATCCTGCT G- - CT GATAA GTA G ----
GTCT
GAM1397 8572 GCACGAGGACTGGTCCATTA G - CCATTATCA - CAACAC
TCATCTTCACCAACACGTGC GCAC AGGA CTGGT TCTT CAC
AAGACCTGCCAGATTCTGTG CGTG TCTT GACCG AGAA GTG
C - A TCC------ C ------
GAM1398 45 CTGCTGAAAGTCTACAGTCT TGC A C - CT AA CCTTTACAACTG- AGA T
GTGAATATACCAATTCCCCT C TGA AGT TA CAGT GTG TATACCAATTCC ATGC TCA TAT
TTACAACTGATGCAGATCAT G ACT TCG AT GTCA CGT GTGTGGTTAAGG TACG GGT ATA
TATGAAATACTGGAAGGCAT TTA C T C C- CG ATTTAACATCCCA GAA C
ACCCTACAATTTAGGAATTG GAA
GTGTGGCTGCCACTGCTATG
CTCTCAATTG

GAM1399 1999 TCTGTGTGAGACTTCGTGGT - GAGA- GT--- C AAAGGAACGAAGAAG
GGTGCTAAGAAAAGGAACGA TCT GTGT CTTC GGTGGTG TAAGA
AGAAGTCTTACACCACTCCC AGA CACG GAAG TCACCAC ATTCT
AAGAAGAATAAGCACAAGA A AATAA AACCC - ----------
GAM1400 13692 TTTGCGGATGTCCACGTCAC A --- A TGATGGAGT
ACTTCATGATGGAGTTGAAG TTTGCGG TGTCCACG TCAC CTTCA

GTGGTCTCGTGGATGCCGCA GAACGCC GTAGGTGC GGTG GAAGT
AG - TCT - ---------
GAM1401 2706 GATTCCTTTTAATCCTATAG T TTT - C T TT- TG TG TG GTTGTT
CTTTGTGTGTTTGTGTGTGC GAT CCT AATCCT ATAG TTTGTG GT G TGTGCA TATG T
ATGTATGTGTGTTGTTGTGT CTG GGA TTGGGA TATT AAACAC TA C GCACGT GTGT G
GTGTGTGCACGTGCTTTATT - TCT A T T TTT GT GT GT ------
CACAAATTTATAAGGGTTTC
TAGGGTC
GAM1402 19850 AGACAGGGGGCACATGCCAA A CCAAA C TCAGATGC
ACACCACAGGGCATCAGATG AGACAGGGGGCAC TG CAC ACAGGGCA
CTGCTCTGTGTGCTCACAAG TCTGTCCCTTGTG AC GTG TGTCTCGT
TGTTCCCTGTCT A ACTC- - --------
GAM1403 21488 GGTGTGCCCGATGTGCAGCG G CCG AG-- GTTC C ACTATGAC
AGCAGTTCCCTCCTGACTAT GGT TGC ATGTGC CGAGCA CCT CTG
GACCAGCAGGTGTTTGAAAG CCA ACG TGTACG GTTTGT GGA GAC
GCATGTGCAGACC G --- GAAA ---- C --------
GAM1404 14477 CCGGAACATTGGGGGGCAAA A T GG A C TATAGGCTGAC
CATAAGGGCAAGGTTATAGG CCGGA CA T GGGGC AA ATAAGGGCAAGGT
CTGACATCTTGTTCTTGTCT GGTCT GT G TCTTG TT TGTTCTTGTTCTA
TGGTTCTTTGCTGTCTGG - C TT G C ----------
GAM1405 15616 CAGCTCTTCTCTTTGGACAC C TTTG T TTCTT A- AGTCTA
ATGGGCCTTCTTAGAGGGTT CAGCT TTCTC GACACA GGGCC AG GGGTTC
CAGTCTAGGACCCGGCTCTC GTCGA GGGAG TTGTGT CCCGG TC CCCAGG
CTGGCCCTGTGTTGAGGGTA T ---- - TCCTC GG ------
GCTG
GAM1406 20082 CTGAGAGTTGGGGCCACACC A CACACCA A GG A- --- ACTCACA
ACCAGTGAGGGGTGCAGTAG CTG GAGTTGGGGC CCAGTG GG TGC GT AGTC
TCACTCACAGACTCAGACAA GAC CTTAACCCTG GGTCAC CC ACG CA TCAG
GCAACCCACTGGCTTGCCTG C TCCGTTC - A- AA GAC -------
TCCCAATTCCCAG
GAM1407 18703 GTTGGTGACTTTGGTGTATC TG CTTT- A GCA A CGCACA
GAGCATGGAGACCGCACAGT GT GTGA GGTGT TCGA TGG GAC
CCCATTGAACACCTTTCCTC CA CACT CCACA AGTT ACC CTG
ACTGAC GT CCTTT - --- - ------
GAM1408 15833 CTGGAAGAAGGAAGCTGTGA AGAA GA GATA TAT GAA- TCTCCT
TAGGTTATGTGAAAGAGATG CTGGA G AGCTGT GGT GT AGAGATG
TCTCCTCATCTCTAATGGCT GACTT C TCGACA CCA CG TCTCTAC
TACCGAGACAGCTCTCGATT AG-- TC GAG- TT- GTAA ------
CAG
GAM1409 18234 CGATGGTCTCAGCTTGGAGG T AG----- GG AAGT C TTGCCCT
CTGAAGTGAGCTACAGTTGC CGA GGTCTC CTT AGGCTG GAG TACAG
CCTCTGTACTCCAGCCTGGG GTT CCAGAG GGG TCCGAC CTC ATGTC
GGACAAAAGGAGACCTTG - GAAAACA GG ---- - -------
GAM1410 21516 CATCCAGGCAGGTGTTTCGA -- GTGTTTC A CT--- A ---- CTT TA
CAATGGCAGCATCTACAACC CATC CAGGCAG GACA TGGCAGCAT ACA CCCT GAAGTG
GGA
CTGAAGTGCTTGGATATCAC GTAG GTCTGTC TTGT ACCGTTGTA TGT GGGA CTTCGC
TCT
AGAGGAGAACTCTGCATTCT AC ------- G ACGCT G GGTC --- TA
CGCTTCCTGGAGGGGTGTTC TCA GAGAA

GCAATGTTGCCAGTGTTCTG CAGAG
TCTGCAGATG GTCTC
C-- -----
GAM1411 11486 GGTCATTGTGTCCTGCCAAG T TTG G- A A TAG --- AGAAT
GCACAGCCGTAGATCTGGAA GG CA TGTCCT CCA GGC CAGCCG ATCTGGAAAG AGC
AGAGCAGAATGCTTTCCTTT CC GT ACGGGG GGT CTG GTCGGT TAGACTTTTC TCG
TCAGATGTGGCTGGTCATGG T TG- AA A - G-- CTT -----
AAGGGGCAGTTGTCC
GAM1412 16423 CACCGCGGCCCAGGACGTGT C AC- T T T GGGG
GGATGCTGCTGGGGGGCCGC CACCGCGG CCAGG GTG GGA GC GCT
CTCCTCACCGGCCTGGCCTG GTGGCGTC GGTCC CAC CCT CG CGG
CGGTG C GGC T C C ----
GAM1413 13525 GTTGGAAGAGAAAATGGTAC TGG- A - C TTACAA T GACATGGAAGA
AGCAGTTACAAGAGGATGTG GT AAGAGAAA TGGT ACAG AG GAGGA GTG
GACATGGAAGATGCTCCTTA CA TTTTCTTT ACCA TGTC TC TTCCT CGT
AAAATCTCTGTAACCATTTC TGTA - A - TAAAAA - ----------
TTTTATGTAC
GAM1415 2367 CTGTGATGAATACCTGGACC G GAA- GA------ AAC ATTTCCC
AAACAAATGGGATTTCCCCT CTGT AT TACCTG CCA AAATGGG
CATTTATGTGGAAGCTGAAC GACA TA ATGGAC GGT TTTACTC
AGGTAGAAGATGACAG G GAAG AAGTCGAA GTA -------
GAM1416 7519 CATCACGCCAGTCATTTTAT ACG TCA CA T TCCT
TTCCATCATCATCCTTGTGA CATC CCAG TTTTATTTC TCA CA
AGAAATGGAAGTCTGGAGAG GTGG GGTC AAGGTAAAG AGT GT
GTG AGA TG- A- - ----
GAM1417 17220 CTGGGAGTGCTGGGGGACAG AGTG -- A - GGTG- ATGGC
GTACCCCCCGGTGGTCCTAT CTGGG CTGGGGGA CAGGT CCC CCC GTCCT
GGCAGGATGAGAAGGGAGGG GGCCC GACCCCCT GTTCA GGG GGG TAGGA
ACTTGGCTCCCCCAGAGCCC GA-- CG - A AAGAG -----
GG
GAM1418 15210 TGCATTTCGCCATGTTGCCC TTC A TG- - CAA--- AATCATCCTACCTCA
AGCACTCAAGCAATCATCCT TGCAT GCC TGT CCCAGC ACT GC
ACCTCAGCCTCCCAAGTAGC ATGTA CGG ACA GGGTCG TGA CG
TGGGATTACAGGCATGTA --- - TTA A ACCCTC ----------
GAM1419 12556 TTGTCTTCTGTAGACTAGAC GTA- GACTGG- A - AATAAGA
TGGGCATTAGTTCCTTAATA TTGTCTTCT GACTA GCATT GTT CCTT
AGAGAGGCAATGAGTGCAAT GACGGGAGA CTGAT CGTGA TAA GGAG
ATAATAGTCATGAAGAGGGC AGTA AATATAA G C -------
AG
GAM1420 3819 CTGCGTGCCCGGAGTCCCCG C AGTC -- ---- T GTCCCCGTCTCCTGCCA
CCTGTGTCGTCTCTGTCGCC CTGCGTGCC GG CCCGCCTGTG TCGT CTCTG CGCC
GTCCCCGTCTCCTGCCAGGC GACGCGCGG CC GGGTGGGCGC AGCG GAGGC GCGG

GCGGAGCCCTGCGAGCCGCG A CC-- CG TCCC - ----------
GGTGGGCCCCAGGCGCGCAG
GAM1421 13373 GCTTACATGGAAGAGTATAT A -- AG ATATA AAA GC ATCAGAAA
ATGGGAAAATAGCTCATCAG GCTT CA TGGA AGT TGGGA TA TC
AAAGAAATATCCTGGAAACG CGAA GT ACCT TCG GTCCT AT AG
CTTCTCCAGATGAAAGC A AG CT CAAAG --- AA --------
GAM1422 3640 GGCTCAAGGAACAGCTGGCA CAA A TG CAAG AGAGAAGGCACAGGAAGGA

AGGGGGGCAGAGAAGGCACA GGCT GGA CAGC G GGGGGC
GGAAGGAGCCCTCACTCTGG CCGA CCT GTCG C CTCCCG
CTGTCCAAGCC A-- - GT TCA- ----------
GAM1424 506 GGACTCATAGTGGTAGATAG A AT - CTT T GG G TATGT
CTTATTGGTCAGGGTAGATA GG CTC AGTGGTAG ATAG ATTGG CAG TA ATAGAGA
GAGATATGTTTTCTGTGTAA TC GAG TTACCATC TGTT TGATC GTC AT TGTCTTT
CTGTCTAGTTTTTGTCCTAC A GC C TT- T A- G -----
CATTCGGAGACT
GAM1425 11020 GGATTGGTATAACAAGGCAC AT G CA A A A GAATTTACCCTTTA
AAGATTTGGAATTTACCCTT GG TG TATAA AGGC CA G TTTG
TACAGACTGGCTTTTATAAC CC AC ATATT TTCG GT C AGAC
ACCC C- A -- - - - ----------
GAM1426 1849 CAGAAGTCTCCCTGCTGAAT AAG C--- -- C- A GCTACA
CGAAAGGAAGTGCTACAATA CAG TCTC CTGC TGAAT GAAAGGA GT
TTCTTTCAAATTCATCGCAG GTC AGAG GACG ACTTA CTTTCTT TA
TTGAGAGAAAACTG AAA AGTT CT AA A ------
GAM1427 17179 ACTATTCAGGCGCAGTACAA ATTC -- CAAGT CACTG TTTGT
GTTGGGGCACTGCATCCTTT ACT AGG CGCAGTA TGGGG CATCC
GTGGATGGATTTCCGTTGCT TGA TCC GTGTCGT GCCTT GTAGG
GTGTTCCTCACAAGT ACAC TT T---- TAG-- -----
GAM1428 5777 GGCAGGGACCAACCCCTAAT - AACC- AT- TCC GC GC T AGAGT
CCCTCCCCAGCGGCAAGCCC GGCAGGG ACC CCTA CCC CCA GGCAA CCCTCT TTC
CTCTTTTCAGAGTGGGCAGA CCGTCCC TGG GGAT GGG GGT CCGTT GGGAGA GGG
GGGTTGCCTATGGTGGGCAC C AGTAA CAC T-- AT -- C -----
TAGGAATGAGGTCCCCTGCC
GAM1430 16240 GCTCGTGTGGGGTCTCCGGT G GGT--- T ---- G A - GTCCTG
CCAGGGCGCGGCATGGGCGT GCTCGT TGG CTCCGG CCAGG GCGC GC TG GGC
CCTGGCCGCAGCGGCGCGCT CGAGTA GCC GGGGCC GGTCC CGCG CG AC CCG
GCCTGGTCCGGGGTGCGGAC A AGGCGT T GTCG G - G ------
CGAATGAGC
GAM1432 14539 CCCTGGAGTTTACTTCCTGC GAGTTTA CT GA---------- TGGG
CAGGTGACCTCCTGGGGGAG CCCTG CTTC GCCAGGT CCTCC
GGAGCCTTCAAGCGAGCCTG GGGGC GAAG CGGTCCG GGAGG
GCCAGAAGCGGGG ------- AC AGCGAACTTCCGAG ----
GAM1433 12868 GTCCTTGTGCTCCGCGGCAC TTGT C- A CC AC-- - CCTGAAC
CCCCAAGGTCACTCAGGCCC GTCC GCTC GCGGC CCC AAGGTC TCAGG C
TGAACGTCCTGACCACGACC CAGG CGAG CGTCG GGG TTCCAG AGTCC G
TTCGGGCGCTGCCAGAGCCC TCCC AC C C- CACC T -------
CTGGAC
GAM1434 9445 TCATTGTGGGGCTCATTTTG TT TG GG T ATTA-- ATTCTG
AGATTACCATTCTGGGGACA TCA G G CTCATTT GAG CC
ACCTTCAGATGAGAACTGCT AGT C C GAGTAGA TTC GG
TTGA TT GT AA C CAACAG ------
GAM1435 13097 TGTTGTGGTGGATGCACTGA TG GA - - G - AG C GCTG
GTGGCCTGAGGGTGACCTTG TGTTG GTG TG CA CT AGTG GCCTG GGTGAC TT
CTGGACGTTACTATAGGCTC ACGAC CGT AC GT GA TTAC CGGAT TCATTG AG
ATTGAGATGACAGATGCTGC GT AG A A G T A- C ----
AGCA
GAM1436 15697 CCTCAACTGCTGTTCTAGAC AA GTTCTAGA - ------ ATTCCTGTCTCA
TGTGGGGGTGCATTCCTGTC CCTC CTGCT CTGT GGG GGTGC

TCAGCACCAAGGATCCCAAC GGAG GACGG GACA CCC CCACG
AGGCAGGCAGGGAGG G- ACG----- A TAGGAA ----------
GAM1437 4319 ATTGGAAGCTGTGCAGTATA GAA G A- AAAATTCA TG- TGGA
AAATTCAAGTTGTTGCTGGA ATTG GCT TGC GTAT AGT TTGC
GCAAATTACTACATTAAGGT TAAT TGG ACG CATG TCA AACG
ACGAGCAGGTGATAAT AG- - AG GAATTACA TTA ----
GAM1438 17431 GAAGAATGAGTTTACAGTAT - TTTAC TAT TA-- T AGATTTCA
GGATAGCTCCTCCTAGATTT GA AGAATGAG AG GGA GCTCC CCT
CAAGGGGAGTAAATTCCCCC CT TTTTACTC TC CCT TGAGG GGA
CTCTCATTTTGTC G ----- CCC TAAA - --------
GAM1441 2816 CAGGGACAGAAGGCAGCTCC A-- G ---------- CCCA
CTTCCCCCAGGAAGGGCAAG CAGGGACAG AGGCA CT CCCTTCC
AGGAGACAGGTGCCTGGGCT GTCCCTGTC TCCGT GA GGGAAGG
GTCCCTG GGG G CAGAGGAGAAC ----
GAM1442 10175 GGCCCGGCCCGCAGCCCGAG - CC CCGA AAGC GCTAG
CAGGAAGCGCCGGCGCTAGG GGC CCGGC GCAGC GCAGG GCCGGC
CTGGCCCCTGCGCTGCCAGC CCG GGTCG CGTCG CGTCC CGGTCG
TGGAGCC A AC ---- C--- -----
GAM1444 18301 CGCCTCAGCCGCCTCGCACA -- TCGCACATTTA C- GGTGTG
TTTAGTCTTGCCGGGAGTGG CGCCTCA GCCGCC GTCTTG CGGGAGT
TGTGATTCCCGACCAAGATG GCGGGGT CGGCGG TAGAAC GCCCTTA
GCGGCCGTGGGGCG GC ---------- CA ------
GAM1446 10986 GTTTTGTATAACTTTATTGC TAA A- --- ACAT CTTG
AAGTCACATAATCTTGGTTT GTTTTGTA CTTT TTGC AAGTC AAT
AGACTTGACGCAACGGGAGG CGAGACAT GAGG AACG TTCAG TTG
TTACAGAGC TG- GC CAG AT-- ----
GAM1448 22891 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT GTT GTTTGGAA
ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT GTCGT
TTTGGAAATGATTAACTAAT CAGGAG TGA GGA TAATCA TAGTA
TAAGGAAGGAGATATAGTGA AAG TATAGA AGGAAT AT- --------
AGAGGAC
GAM1449 1914 CGAAAAGCTATGGCAAATAT AAA A GCAAATATC C TG GAA GAAACGAAG
CAGTGAGCGTGTGGGAACTG CGA GCT TG AGTGAG GTG G CTGA
AGAAACGAAGTCGGGGCTGT GCT CGA AC TCACTC CAT C GGCT
ACACTCACTCTAACAAGCGA AAG - AATC----- A GT GG- ---------
ATCG
GAM1450 2852 GTTGTGGGGCTGGTTGCTGT -- CT---- - T A TTCACAACC
CTTTACGTTTCACAACCATG GTTGTG GGG GGTTG C GTCTTT CGT
GAAGGACTGCCAACCTCTAC CGACAC CCC CCAAC G CAGGAA GTA
TCCCTTCACAGC TT TCATCT C T G ---------
GAM1451 12262 AGGCCTGCTCTCGGGGAGGG GGAG A T TCCT C A GAAA
TACCGTGCATCCTTGCAGAT AGGCCTGCTCTCGG GGT CCG GCA TG AG TG
GGAAACGCCTTCATGCTGGA TCCGGACGGGAGCC CCA GGT CGT AC TC GC
CCAGGCCGAGGGCAGGCCT GGA- - - ---- T C ----
GAM1453 21480 GTTCCCGCCTCAAGATGTTG C AGA - AAA AGCTGAA - CCCG
CAAAGGAGCTGAAGCTGGTG GTTCCCGC TCA TGTTG C GG GCTGG TGTT
TTCCCGGGCGCCCAGCGAAT CGGGGGTG AGT ACAGC G CC CGACC GCGG
GAACCGAGGTCGACATGAAG A --- T GAG AAGTAAG C ----
TGGGGGC
GAM1454 995 GGAGGCTCTCTGTGTTGCCC TC TTGCCCAA - TG ACTC

AAGCTGGACTTGAACTCTTG GGAGGCTC TGTG GCTGGA CT A
GGCTCCAGCAGTCCTCCCAC CCTCCGAG ACAC CGACCT GG T
ATGAGCCTCC T- CCTCCTGA C GT ----
GAM1455 6108 CTGGGCTTCAAGGAAGGGCA CAA G AAAGCA AA---- ATCGGGA
AAGCATCAAGTAGTGTATCG CTGGGCTT GGAAG GC TC GTAGTGT
GGAACATTACAAACAAGAAA GACCCGAA TCTTC TG AG CATTACA
GGAGGTGCTTCTAAGCCCAG --- G GAGGAA AACAAA -------
GAM1457 2927 CTGGGAAGAACTGATATCTG A AA ATATC AA- AA GGCGATTTTA
AGAACAACTTAAACGGCGAT CTGGG AG CTG TGAG CAACTT AC
TTTAGTGAAGTTGACGCTCA GACCC TT GAC ACTC GTTGAA TG
AGAGCAGGATTCCCCAG C AG GAGA- GCA G- ----------
GAM1458 4524 GCCGGGGGTCTGGCAGGAAT - TGG AA- GGA CA AGAACGAGAA
GGGAGGCATCCAGAACGAGA GCCGGG GGTC CAGG TG GG TCC
AGGAGACCATGCAAAGCCTG CGGTCC CCAG GTCC AC CC AGG
AACGACCGCCTGGC G CAA GAA GTA AG ----------
GAM1459 14501 CCCCAGCATCTGATGTTTTG CATCT GAGAA TG CCT
AGAAGTGCATGGAGTTTCCT CCCCAG GATGTTTT GTGCA GAGTTT
AAACTTTGCACAGAAGAATA GGGGTC CTATAAGA CACGT TTCAAA
TCCTGGGG ----- AGA-- -- ---
GAM1460 292 GCATGTGGGCAACTCTGTGT G CT - TT -- CA- TGA AGTATTGGAA
TCCTGTCAGTCCACGGGTTG GCAT TGGGCAA CTGT G CCT GT GTCCACGGGT GC
AGCAGTATTGGAAGCCCCAT CGTG ACCCGTT GGCA C GGA CA CGGGTGCCTA CG
CCGTGGGCAGCACTGAGGTC G AG A CT GT CGA CCC ----------
CAACGGGATTGCCCAGGTGC
GAM1462 12338 GGATATCCATCAACACTAGT ATAT AA CT G A A A TTGGT
GGTGGCAGCTTCAGGAACCG GG CCATC CA AGT GTGGC GCTTC GG ACCGGT
GTTTGGTGCTGGTGCTGGAG CC GGTGG GT TCG TATCG CGGAG TC TGGTCG
GCGGCTATGGCTTTGGAGGT GT-- AG T- G G G G -----
GGTGCC
GAM1463 15777 GCTGGTACGATCAATACCAT G- T- ----- CCAG- CCAAA
ATGACCAGAGCCCAGGCCCA GCTGGTAC ATCAATACCA ATG ACCAGAGC GC
AAGCATCTTGCTTTGGTTGC TGACCGTG TAGTTGTGGT TAC TGGTTTCG CG
TACATTCTGGTGTTGATGGG GG CT ATCGT TTCTA -----
TGCCAGT
GAM1465 8078 GTAGAGTTAAGCCTGGCAGG GA ---- - ---- A G CT TT TAAAT
AGCGTGCTCTGTTGCACTAA GTA GTTA AGCC TGGC AGG GC TGCT G GCAC
ATGTGTGGTGGCAGGCCCCT CAT TAAT TTGG GCCG TCC CG ACGG T TGTG
CAAAGCCGTGGTTGGAATAA TC AAGG T AAAC C G -- GG -----
TCTTAC
GAM1466 2260 TGAGAAGGCAAACATGTTCA - - AACA T AA TAACT AAAAATAAA
GAAGTCAAGTAACTGGAAAA TGAG AAGG CA TGT CAG GTCAAG GG
ATAAACCTCCTTGGCCTGAT ACTC TTCT GT ATA GTC CGGTTC CC
AGAAATGATCTTACTCA A A AAAG - -- CT--- ---------
GAM1468 12208 GGTAGGAGGATCGCTTGAGT G A-- GA CAGG AG T A TTGT
CCAGGAGGTTGAGGTTGCAG GGTAG AGG TCGCTT GTC AGGTTG GT GCAGTG GC
TGAGCTTGTGCCACTGTACT CCGTT TCC AGCGAG CAG TCCGAC CA TGTCAC CG
CCAGCCTGAGTGACAGAGCG G CAG A- TGAG CT - - ----
AGACCCTGTTGCC
GAM1470 16482 CTGGGCTTTGGGCCTGGTGG G TGG T T - -- CCTA ACAT
TTGGGAGTCACCTACTGACA CTGG CTT GCC GG GGTT GGGA GTCA CTG

TCGGGACTGACATTCCTGAA GACC GAG TGG CC CCAA TCCT CAGT GGC
CCCCTGGTATGAGGCCAG G TA- T - G TA CAG- ----
GAM1472 11685 GGGCTGATCTGGAGGGGCCG CTG T --- A CTAC TTAC
GCCGACGGCTACGGTTACCC GGG ATC GGAGGG GCCGGCCG CGG GG
CCGCGGCCGGCACATCCTCT CCC TGG TCTCCT CGGCCGGC GCC CC
CGGTGTTCCC TTG C ACA - ---- ----
GAM1473 15532 TTGAGATGGAGTATTGCTCT AT- T T TCT - C-- -- - ACAATCTCG
GTGGCCCAGGCTGGAGTGCA TTGAG GGAG AT GC GTGG CCCAGG TGGAGT GCAGTG GC

GTGGCACAATCTCGGCTTAC GACTC CCTC TA CG CACT GGGTCC GCCTCG CGTCAT CG

TGCAAGCTCCGCCTCCTGGG CAT T C --- T TCC AA T ---------
TTCACGCCATTCTCCTACCT
CAG
GAM1474 17243 GGGCATGAAGGGCTTTAAGG A G TA GACAG GAG- AG G GATCAGA
GACAGCTGAGCCGGCAGGTG GGGC TGAAGG CTT AGG CT CCGGC GT GCA
GCAGATCAGATGTGGCAGGC TTCG ACTTCC GGA TCC GA GGTCG CG TGT
TGGGAAAAGACAAGCCTCCA - G CC GAACA AAAG GA G -------
GGGCCTTCAGCTT
GAM1475 18103 GTGTCACTTGTGCTTTGCTC - TT -- G CACGT C- T TGAGCCGTGAAC
TTGTCCCACGTGTCTTCCAC GTG TCAC GTGCTT TGCTCTT TCC GTCTT CACT TGCATA
TTTGCATATGAGCCGTGAAC CAC AGTG TACGGG GTGAGGG AGG TAGGG GTGA ACGTGT

TGTGCATAGTGCTGGGATGG T -- TT G ----- TC T ----------
AGGGGAGTGTTGGGCATGTG
ATCAC
GAM1476 17010 CAGGGTTGCTGGGTCAGACT - --- - A- G ACC CCTT
GTGCAAGACCCCCCTTGGCC CAG GGTTG CTG GGTC GACT TGCAAG CC
ACTTGTAAAGTTCGGATCTC GTC CCGAC GAC CTAG TTGA ATGTTC GG
AGTTCCAGCCACTG A CTT T GC A ACC ----
GAM1477 16110 GAGGCAGGAGGCCCCTGAAG - AGG CCT A C CGGTGGAGAA
GCAAGGCAGGTAGACGGTGG GAGG CAGG CC GAAGGCA GG AGGTAGA
AGAATCTGCCTCCCCTGCCT CTCC GTCC GG TTTCCGT CC TCCGTCT
TTGGACCCTGTCCTC T CA- --- C C ----------
GAM1478 16440 CTCCATAGCCATCATCTGCT TAG ATC TACA-- G A -- T - CCAG
ACAGGGCCAAAGCCACCTCC CTCCA CC ATCTGC GG CCA AGC CACC CCAG CGC
AGCGCCCAGGTGATTGGGGT GGGGT GG TAGGCG CT GGT TCG GTGG GGTT GTG
GCTGCTCTGGGTCGAACATG TA- GTC TACAAG G C TC - A ----
CGGATCTGGGATTGGGG
GAM1480 1246 CTCGGGCTGAGTGAGGCACA GAGTGA -- T A TTT
GGTTATGATGGCTTTGTCAC CTCGGGCT GGCA CAGGT ATG TGGC
ATCACCTGAATGCTGTGGAG GAGCCTGA TCGT GTCCA TAC ACTG
TCCGAG GGTG-- AA C - ---
GAM1482 5133 CACAGTGGGGCACCTGATCT C TG - - GA A A- CA GG GG GGAAGGGA
AGCACACATTCAGAGGGTAG CA AG GGG C ACCT TCT GC CA TTCAGAG TAG AGG
GGAGGGGAAGGGATCTAGCT GT TC TCC G TGGA GGA CG GT GGGTCTC ATC TCT
ATACTCTGGGCATGGAGCAG A GT T C AG - AG AC AT GA --------
GGAAGGTCGTCCTTGCTATG
GAM1483 19505 CTTCCTGGGCATCGTGGCTG T - A-- C - C CTGGT
AGGTGCTGGTGCTGGTCACC CTTCC GG GC TCGTGG TGA GGTG TGGTG

ATCATCTTCATCTACGAGAA GAAGG CC CG AGCATC ACT CTAC ACCAC
GCGCCGGAAG - G AAG T T T -----
GAM1487 22368 TAGCATGAGGTGTGTGCATT TGA - -- G CA TCTATTCTC
TGCCAGGGGCAAATTTCTAT TAGCA GGTGTGT GCATTTGC CA GGG AATT
TCTCAATTAACCCATGCAGC GTCGT CTACGCA CGTAAACG GT CCC TTAA
AAATGCTACGCATCTGCTG --- T AC A AA ---------
GAM1488 8703 TCTCTTCTGAACAAGCCCCA T GAACAA -- T GAA- - ACAAAGTAGCGA
TCATTTGGTGAACCTCCACC TCTC TCT GCCCCAT CA TTGGT CCTCCA CCCTA
CTAACAAAGTAGCGATGGGG AGAG AGG CGGGGTG GT AATTA GGGGGT GGGGT
TTGGGGGCTAAATTAATTGG C AG---- AG T AATC T ----------
AGTGGGGCGAGGACGAGA
GAM1489 15915 GGAACTCTGCTTTGCCTCAC AACT GCC A TCATTAT AATGAACTG
ATCATATCATTATGGCTCAG GG CTGCTTT TCAC TCATA GGCTCAG
AATGAACTGCTGAGCTTTAC CC GACGAAG AGTG AGTAT TCGAGTC
TATGAGTGAAAGAAGCAGCC ---- AA- - CATT--- ---------
GAM1491 6512 GGAGAAAAAGTCCTACTTTT A CTACTTT TCCCC CAG
CTGGGTCCCCAGGTGCAGCA GGAGAAA AGTC TCTGGG AGGTG
CCTCCCAGAGACTGTTTCTC CCTCTTT TCAG AGACCC TCCAC
C G ------- ----- ---
GAM1492 21300 ATCCTATAGATACAGCCCTG AG CCCT A---------- CTTATAAT
GTATGAGGCCTTATAATGCC ATCCTAT ATACAG GGTATG GGC
AGCTATATGCACATGCCCTG TAGGGTA TATGTC CCGTAC CCG
TATAATGGGAT A- ---- ACGTATATCGA --------
GAM1493 14451 GTAGAGCTTTATGCTGAAAA - TA GAAAA - T AGGT
GGTGGCCACTAGAGGTCTGT GTAGAG CTT TGCT GGTGGC CAC AG
GTGCCATTGCCCAGGCAGAG CGTCTC GAG ACGG TTACCG GTG TC
TCTCTGC T -- ACCCG T - ----
GAM1494 9842 GGTGGTGGACTGCACTCCGG GTG CACT --- T TTTA
GGCCATTTAATGTCTTTAGG GGTG GACTG CCGGGGCC ATTTAA GTC
CCTTGAGTCTCGGCTTCGGT CCGC CTGAC GGCTTCGG TGAGTT CGG
CCCAGTCAACGCC AA- CCT- CTC C ----
GAM1496 18286 GGCTTGAGCCAGCCTCAGGT A AGCCTCA AACA C A T C GC- TTTCTC
CTCGAACATGGCACAGCTGG GGCTTG GCC GGTCTCG TGG AC GC GGTG ACA AC
TGCACAGCACTTTCTCGTAC CCGGAC TGG CCGGAGC ACC TG CG TCAC TGT TG
ATGTCACTGCAGTCCACGAG A GACACA- ---- - A - - ACA ------
GCCACACAGGGTACAGGCC
GAM1497 5044 TTACATTTTCTTTTACTAAA TA A---- A GAAGCCGA
AAAGAGACATAGAAGCCGAT TTACATTTTCTTT CTAA AAAGAGAC TA
GAGTCTTTTTGGATCTTGGA GGTGTAAAAGAAA GGTT TTTTTCTG GT
CAAAGAAAATGTGG CA CTAGG A --------
GAM1498 11980 GCCTTGTGCATTAGAAACCT CTT A AACCT G G AAGAACAACAAAAAAG
GCAGCTTGGCAAGAACAACA GC GTGCATT GA GCA CTT GC
AAAAAGGTGAAGGTGTCACA CG CACGTGA CT TGT GAA TG
GTCAGTGCACTCAGC ACT - GACAC G G ----------
GAM1499 13763 AGGACTGCAGCCTAAATTCC T CTAAATTC CCA ---------- ATT
AAATACCAGAGACTGAAATT AGGAC GCAGC CAAATA GAGA CTGAA
TTCAGCCTTGCTAAGGGAAC TTCTG TGTTG GTTTGT CTCT GACTT
ATCTCGATGTTTGAACCTTT - TTTCCAA- AG- ACAAGGGAATCGTTCC ---
GTTGTGTCTT
GAM1501 22117 GGCTTGGCCATGGCGGCTGG T- --- T TG GATAA TTTCT

TGCTGATAACCATTTCTTGG GGCT GGCCATGGC GGC GG CT CCA
CAGAAGTGCCGCCAAAGCTG CTGA CCGGTGTCG CCG CC GA GGT
TGGCCCTAGTC TC AAA - GT AGAC- -----
GAM1504 8029 CATTCTGGATTTGGTCGATT ATTT- C -- CT- TTTT ATCTTTA
GCTTCTTTTTAGTATCTTTA CATTCTGG GGT GA TTG TCT AGT
ACTTATTAGATCTCAAACTC GTAAGACT TCG CT AAC AGA TCA
AGCTGCACATCAGAATG ACACG A CA TCT TTAT -------
GAM1505 16497 TGGTCGATGAACGGCTAGCT ATGAACG G A ATT AG- TAA
GTGGATGTCTATTGTGAGAT TGGTCG GCTAGCT TGG TGTCT GTG ATGG
GGTAACTATGCGCACTGAAG ACCAGC CGATCGA ACC GTAGA CAC TATC
ATGCCAGAGCTAGCAGTGCG GTGA--- G - AGT GCG ---
ACCA
GAM1506 3294 GGTCGCGGAGATGGAATTGG T G TGGAA TG AGAGAGAAGGGA CAG
AGCAGAGAGAAGGGACCATG GG CGC GAGA T GAGC CCATGG
GCAGCCGTGGGCTTTGAGGA CC GCG CTCT A TTCG GGTGCC
GTTCTCAGCGCC - A TGAGG GT ---------- ---
GAM1507 10111 TCAGTCTGCCTGCGGGCTCT A C TGC-- T --- ATCCCT- TGACACT
GTTGGCATCCCTTGCCCTGA TC GT TGCC GGGC CTGTT GGC TGCCC
CACTGGGCACCTTGTGGCCC AG CA ACGG CCCG GACGA CCG ACGGG
CTAGCAGGCCCACCTTGGCA C C TTCCA - TCC GTGTTCC -------
CACCGA
GAM1508 6338 GCGCCAGGTTTCAATTTCTA G G T A - GCCTAT TAAATGGT
TCGCCTATACTTTATTGGGT GC CCA GTT CA TTT CTATC ACTTTATTGGG
AAATGGTTCCGGTAAGGTTG TG GGT CAG GT GAA GATGG TGGAATGGCCT
TCAGGTAGTAAGGTGGACGT - G - G T ACTGT- --------
GGGT
GAM1509 4631 AGTTAATATAGAGAATTCTG A GAATTCT -- A - GGAATAATGAG
GCTTTAACAGTGAACTGGAA AGTTAAT TAGA GGC TTTA CAGTGAA CT
TAATGAGGGCTTCACTGGTA TCAGTTA GTCT TCG AAAT GTCACTT GG
AAATGCTTCTGAATTGACT A ------- TA G C ----------
GAM1510 8142 ACAGGAAGGACGGGCGTGGT GA ---- CGT T A A TCCA
CTGCAGGAGGATCTCCAGGC ACAG AGGAC GGG GG CTGCAGG GG TC
CCCTGCAGCCCTCCCTACAG TGTC TCCTG CCC CC GACGTCC CC GG
TCCTCTCTGT TC ACAT TC- - - - ----
GAM1511 10594 GATGGACTCATTTCCTGGTC AC- TCCT A TGCAGCC
CTTAAAGATGCAGCCTCTTA GATGG TCATT GGTCCTTAA GA
AGGGCTCCTTGATGGATGCC CTACC GGTAG TCGGGAATT CT
ATC GTA TTCC - -------
GAM1512 19330 CTGTGAAAGAGACTGGTCAT GA- -- CCTGCA G AG GGG T AGAAT
CCTGCATTAGTATGACAGAG CTGTGAAAGA CT GGTCAT TTAGTAT AC AG GGC GC
GGGGGCTGCAGAATGTTGCT GATACTTTTT GG CCGGTA GGTCATG TG TC TCG TG
ATACTGGTGGTACTGGATTA AAG TC CTATTA G G- ATA T -----
TCATGGCCCTGGGAATTTTT
CATAG
GAM1514 12516 GCAGGAATTGAAGCTTTTAC AA TG CT C G C AGAAGTAGG
AGCTGGAGACTGAGAAGTAG GCAGG T AAG TTTACAG TG AGA TG
GCATCTGTACTGTAAACCTT TGTCC A TTC AAATGTC AT TCT AC
TGACCTGT -- GT C- - G - ---------
GAM1515 18893 TGAAATCTACATTAGCAGTG - A T TGCAAGAT ACATAATTC
CTGTGCAAGATTCTTACATA TGAAATCT ACATT GCAG GCTG TCTT

ATTCAAGACCTAAAACCAGC ACTTTGGA TGTGA CGTC CGAC AGAA
CTGCAGTGTGAGGTTTCA G - - CAAAATCC ---------
GAM1516 15891 GTGTGCGGCAGTAGAAATAG C GAAA--- A- GGGACACG
CACAGGCCTTGGGGACACGC GTGTG GGCAGTA TAGCAC GGCCTTG
AGGGCTGGGTGTTAACCCTG CGTAC CCGTCAT ATTGTG TCGGGAC
ATACTGCCTCATGC T AGTCCCA GG --------
GAM1517 10715 GCCATCCTGTCGGTGAACGG A - G AACGG C A CA ACCCACGACCA
CACCGACCTGCGCCAGGCCA GCC TCCT GTC GTG CA CG CCTGCGC GGCC
CCCACGACCAGGCCGTGCAG TGG AGGA CGG CGC GT GC GGACGTG CCGG
GCGCTGAAGCGCGCGGGCAA - A G GCGAA C - -- ----------
GGAGGT
GAM1518 564 CTGTAGGAATTGTGTGCATT A TGC CAT - TT TTTA
CCATTCACACAGTATTTCTT CTGTAGGA TTGTG ATTC TCA CACAGTAT C
TAGGGATGCTGTGATGATTT GACATCCT AACAT TAAG AGT GTGTCGTA G
GAATTACAAATCCTACAG A --- TTT A GG ----
GAM1519 4628 CGGAATGCAGTACCCTCAGC GCAG CCT- A TGTG TCCC
AGCAGGTTTGTGCTGGTCCC CGGAAT TAC CAGCAGC GGTT CTGG
CCGGAACCGGCTGCTGTTTT GTTTTG ATG GTCGTCG CCAA GGCC
GTAATAGTTTTG ATA- TTTT G ---- ----
GAM1520 21537 CGGCTGCGCGGGTCGCGGTG G GGTC G G - G G G AA GGCCCA
CTGTGAGGTCTGCGGGCGCT CGGCT CGCG GCG TGCTGT AGGT CTGC GGC CTG CA TCC

GGCAAATCCGGCCCAGGATG GTTGA GCGC TGC GCGGCA TCCG GACG TCG GAT GT AGG

TAGAGCTGGCAGTGCCTGAC G AGTC - G T G A - -- ------
GGCGCGTCTGACGCGGAGTT
G
GAM1521 19161 GTTCGTAGGTTATAAATTCT AG -- TT- T ---------- AAGA
GTTAGTTGCTAAGAAGCATT GTTCGT GTT ATAAA CTGT AGT TGCT
TTTAAAATTATGTACTATAG CAAGCA CGA TATTT GATA TCA ACGA
CTCTTTATTCAGCAGACGAA GA CT CTC - TGTATTAAAATTTTT ----
C
GAM1522 18588 GGGAAAAGCTGTTCCCATCA A TTCCC A TGGCATCCTCTTCAAATT
AGGATGGCATCCTCTTCAAA GGGAAA GCTG ATCA GGA
TTTCCCTGGTTAGCTTTCCC CCCTTT CGAT TGGT CCT
- ----- C ----------
GAM1524 14350 GTGGGACAAATATAAACAAA ATATAAACAAA A- TTTA GTG
GCATGATTTAAATATATATA GTGGGACAA GCATG TTTAAATATATATATA ATGT
TATTTAATGTGTGATATGTT CATCTTGTT CGTAC AAATTTATATATATGT TATA
TGTATATATATTTAAACACA AA--------- AC TTG- ---
TGCAATTGTTCTAC
GAM1525 21459 GTGATGTTAGGGTGTCAATT A T- TGTC - AT TT--- TG TTTCTCTT
TTAGATCTTTCCTGCTTTCT GTG TGT AGGG AATTT TAG CT CC C
CTTGTGGGCATTTAGTGCTA CAC ACA TCCC TTAAA ATC GA GG G
TAAATTTCCCTCTACACAC - TC T--- T GT TTTAC GT --------
GAM1526 8180 GTGGCTTCACGCAATCCCCA C ---- CA CTC CCTT
CACCTCGGCCTTCCAAAGTG GTGGCTT ACGC AATCCC CAC GG
CTGGGATTACAGGTGTAAGC CACCGAA TGTG TTAGGG GTG CC
CAC - GACA TC AAA ----
GAM1527 6532 CCTCTCCTCCTCTTCCCTCC T - CT- C T- AAAGG

CCATCTAAAGGGGTTTGGGG CCTC CCT CCT TC CTCCCCA CT
AGAGACACAGGCAGGCGAGG GGAG GGA GGA AG GAGGGGT GG
C C CAC A TT -----
GAM1528 20621 TTTCAGATGTGCTTCGCTTT GTG - ATG ---------- AACTAATGAG
TGAATGTCTGTATCTAACTA TTTCAGAT CTT CGCTTTTGA TCT GTATCT
ATGAGGGATGCAAAATAACC AAGGTCTA GAA GCGAAAATT AGA CGTAGG
AAGAAGTTAAAAGCGTAAGA --- T GA- ACCAATAAAA ----------
TCTGGAA
GAM1529 2285 TCGTTCTTAAATGTGCATAG - TAAA GCATA TT TT - C- TCCCT
ATTTTTTTAAGTAAACATGT TC GTTCT TGT GA TT TAAGT AAA ATGT
TCCCTACATACTTTAGCTTA AG CAAGA ACA CT AA ATTCG TTT TACA
CTAACTTCCACAAACAGCAG T CG-- AACAC TC TC A CA -----
AACTGA
GAM1530 19092 GGGGAGAAAAAGCTGTAGAA GC- A AATGT GTTACCATTGAAAA
CAAATGTTTGGGGTTACCAT GGGGAGAAAAA TGTAGA CA TTGGG
TGAAAATCTAATGTCTGCAA CTCCTCTTTTT ACGTCT GT AATCT
TATTTTTCTCCTC ATA - ----- ----------
GAM1531 20033 CTCTGTTGCTCAGCAGGAAT TT C GAATG CAATCACGACTCACTA
GCAGGGGTACAATCACGACT CTCTG GCTCAG AG CAGGGGTA
CACTATACCCTTGAACTTCT GGGAC CGGGTC TC GTTCCCAT
GGGCTCAGGG T- T AA--- ----------
GAM1533 17745 TTTTATGTCACCAGTTGGTC GTCA T AT AATAAAAT TTA
CTCATCAAATAAAATTTCCT TTTTAT CCAGT GGTCCTC CA TTCC
TAGGAGTGCAGAGGGCTCAT AAAATA GGTTA TCGGGAG GT GAGG
TGGGAAAATAAAA AAAG C AC -------- ---
GAM1534 7602 GGGTCCCGGTTGCAGACTTG CGGTT TT T-- - GAA-- TTCTGT
CCATGGCCTCCGAAGCTTCT GGGTCC GCAGAC GCCA GGC CTCC GC
GTGCGTCTAGGGGTGCCCCC CCTAGG TGTCTG CGGT CCG GGGG CG
TGGCCGTCTGTGGATCC ----- C- CCC T ATCTG ------
GAM1535 12766 CTGGGACTCAGAGCCCCGCT AC ---- -- CTCC TTGTT
TCTTCCCACTCCACTTGTTG CTGGG TCA GAGCCCCGCTTCTTCC CA AC
TCCCATGAAGGAAGAAGTGG GACCC AGT CTTGGGGTGAAGAAGG GT TG
GGTTCCTCCTGACCCAG -- CCTC AA ACCC -----
GAM1536 8192 GCAGCTGAAGGCTAGGCGCC CT A - C GG ----- A - ACA
ACTGGGCCTGGAATTCGCCA GCAG GA GG CTAGG GCCACT GCCT GGA TTCG CC
CAGGACGGATCTTACAGAGG CGTT CT CC GGTCC TGGTGA CGGA TCT AGGC GG
CAAGTGGTCCCTGGACCTCT CT - A C A- GACAT - A ---
CTTGC
GAM1537 14220 TAATTTAGTGAGGTGAACGA TT GAACG - TTACTGGAT
CTTCAGATTTCATTACTGGA TAAT AGTGAGGT ACTTCAGAT TTCA
TTGGATATTTGAGGTAAAAT ATTG TTACTTTA TGGAGTTTA AGGT
TTCATTTGGTTA GT AAA-- T ---------
GAM1538 6327 GCTCAAGTATTTTTTTGGTG A ---- TG G---- C ATCCACA
TGCATTCTAGCTAATCCACA GCTCA GTATT TTTT GTGT CATT TAGCTA
TAGCTAAAGTGAAAAAACAC TGAGT CGTAA AAAA CACA GTGA ATCGAT
TGAAAAGATCAATGCCTGAG C CTAG GT AAAAA A -------
T
GAM1539 2079 CTCTGAAACCCTCCTCCACA TCCTCC C--- CC TC CCC CTCCCT
GCTGCAGCCCATCCTCCCGG CTCTGAAACCC ACAG TGCAG CA CT GG
CTCCCTCCTAGTCTGTCCTG GAGACTTTGGG TGTC GCGTC GT GA CC

CGTCCTCTGTCCCCGGGTTT CCCC-- TCCT CT CT T-- ------
CAGAG
GAM1540 13019 CCGCTTTGATTGGCTCCGAA - TT ----- ATCCTCT - CATACG-- CA A TGCCT
TCCTCTTGGGTCCACATACG CCG CTTTGA GGC TCCGA TGGGTC CA GC TC CTCC
GCCATCACTCCTGCCTGGAG GGC GAAACT TCG AGGCT ATCTAG GT CG AG GAGG

CGAATGCGATTCCAATGAGA A T- CACAC GTCAT-- A AACCTTAG TA C -----
TCTATACTGTCGGACACACG
CTTTCAAAGACGG

GAM1541 22310 CCCCTTTTTGGACACTTATA - GA TA AA T GAAA
CAAGGTGTGGGAAACCCACT CCCC TTTTTG CACT TAC GGTG GG
GGTACCAGTGCAAGAATGGG GGGG AAGAAC GTGA ATG TCAC CC
G T -- CC G- - ----
GAM1542 15455 CCTGCGGTCTGGTTCCTCCA C G CA- --- TGTGG
TCAGGGCGCTGTGGGTATGG CCTG GGTCTG TTCCTC TCAGGGC GC
CCCTGAGGTGAGGGGCAGGC GGGT CCGGAC GGGGAG AGTCCCG TG
CTGGG - - TGG GTA -----
GAM1544 17646 GTATTTTGCTTCTGTCTGTG TT TCT C -- TTG TG CATT
AATTCTGTTGCTTCTGGGGC GTATT GCT GT TGTGAAT TCTG CTTC GGG
ATTTCCTGGAAGGTTGGAAA CGTAA TGA TA ACATTTG AGGT GAAG CCT
GTTTACAAATCTCAGTCCAA CC CTC A AA TG- GT ----
TGC
GAM1547 463 ATATTATGGCTTGCAACCTG A ---- AC CC TGGTA
GAGACCTCTGGTAGATTTCT ATATT TGGCT TGCA CTGGAGA TC
TTAGTGCATCCCAGCCAAGT TGTGA ACCGA ACGT GATTTCT AG
GT - CCCT -- TT -----
GAM1548 15570 GAGGTCGAGGTGATTGGGGG GAGG T- G A AG CACTCC
AGCAGACAAGTACCACTCCG GAGGTC TGA TGG GGAGC GACA TAC
TGTGTCGGCTCTGCTACTTC CTCCGG ACT ATC TCTCG CTGT GTG
AAGAAGGCCTC AAGA TC G G -- ------
GAM1549 16347 TATCGCAGTGTGGGAACAAG AGT AA GA- T G CT- AAGA CTAC
ACTTTTCATTGCCTTTTGCT TATCGC GTGGG CAA CTT TCATT CCTTTTG CAGT TTGT
CAGTAAGATTGTCTACACAA ATAGTG CACCC GTT GAA AGTAA GGAGGGC GTCA AACA
ACTGCCACGGGAGGAATGAC GT- A- GAC C - ACC ---- ----
AAGCAGTTGACCCACTGGTG
ATA
GAM1551 14141 AAGTCCAACATCCCGGGCCG T A- CC-- CC T - C TTGCTTGT
TTCTGTATTTATGTCGCCAC AAG CCA CATC GGG GT CTGT ATTTATGTCGC ACAG
AGTTGCTTGTTTGTAGTGGC TTC GGT GTAG CTC TA GACA TAGATACGGTG TGTT
ATAGATGACAGCATCTCTCA T CG CCTA TC C G A --------
TCCGATGGCTGGTCTT
GAM1553 20090 GTTTCCCGGTGTGGGGCTGG CCC GG--- CT C CG AGCGG
ACCAGGCGGCGGGCAGCGGG GTTT GGTGT GG GGACCAGG GG GGC
TTTTCCTCCTGGTCCTCCAA CAAG TCGCG CC CCTGGTCC CC TTG
AATGCGCTTCAGAAC ACT TAAAA T- T TT -----
GAM1555 10315 GGTGTGGTCATGCATACCTG - A C CAG CTA A GAGGAAGGA
CAGTCCCAGCTACTTAGATG GGTGTGGTCATG C TAC TG TCCCAG CTTAG TGA
AGAGGAAGGATCACCTGAGC CCACACTAGTAC G GTG AC AGGGTC GAGTC ACT

CTGGGAGATCAAGTGAGTCA T A A TAG C-- C ---------
TGATCACACC
GAM1556 4498 CAGGTGGGTCTCCTGTTCCC G - CT C G TGCATAA GC CT GCT
AGTGCTACCCTGCATAACGG CAG TG GGT CCTGTTCC AGT CTACCC CG CTC TCCCAG
CCTCCTTCCCAGGCTCTGGG GTC AC CCG GGGCAAGG TCG GATGGG GC GAG GGGGTC

GCAGAGCACGACGGGTAGGC G G TC - - CA----- AC AC ---
TGGAACGGGCTGCCGCAGCT
G
GAM1557 7716 TGTCCTCTCTTGACTTCTCA TTG-- - A AGAAGGG
GAGAACAGAAGGGGTTCCTG TGTCCTCTC ACTT CTCAG GAAC
AGCAGGTAGCCTGGGGGGAC ACAGGGGGG TGGA GAGTC CTTG
A TCCGA C - -------
GAM1558 6794 GTGTGAGGACCGAAATTTGC GA CGAAAT - T ATATCCCTCTAAGAC
CCTATGTCTATATCCCTCTA GTGT GGAC TTGC CCTA GTCT
AGACGGACCTGGGTGCAGCC CGCG CCTG GACG GGGT CAGG
GCAGTCCAAGCGC AA ACGCC- T C ----------
GAM1559 1035 CTTCAAGTGTCTTGATGGTA - - ---- T ACAA CGTTTCCTCCTTCTCAAA
GACAAGGTGAACGTTTCCTC CTTC AAGT GTCT TGA GGTAG GGTGAA
CTTCTCAAATTCATCCCCTA GAAG TTCG CGGA ACT CCATC CTACTT
CCTCATCCCAGGCTGCTTCG C T CCCT - CC-- ----------
AAG
GAM1560 14699 GTAAGTCCTGCTCATGTATG CTGC TA-- CCTT T- AA TACA
TTCCTTTATTTGAAGCAAAC GTAAGTC TCATG TGTT TATT GAAGC ACC
CTACAGGTGTTTCTTAATAT CGTTCAG AGTAC ACAG ATAA CTTTG TGG
GACAGAATCATGAAGACTTG A--- TAAG T--- TT -- ----
C
GAM1561 11802 ACCCGTGCCGGCCAGCGCAC T CA- CCA- AA--- TTTGT
CAGGTTCAAGGCATTTGTTG ACCCG GCCGGC GCGCA GGTTC GGCA
CTATCGGGGACTACAATGTG TGGGT TGGCTG CGTGT TCAGG TCGT
CCACGTCGGTCTGGGT C CAC AACA GGCTA -----
GAM1562 3190 TCCAGTGACCTGGGAAGCGA TGA TG GAAG - AGG AATTTGGG
AGAAGAGGAGGTGGAATTTG TCCAG CC G CGAAGAAG AGG TGG
GGCCAGGACTTACTTCTTTG AGGTC GG T GTTTCTTC TTC ACC
ACATTGGGATCTGGA TA- GT ACA- A AGG --------
GAM1563 6766 GTCAGGCAGAGGTGACGCCA C TGAC AGA TTTAAA A GACAAG
GGAGATGATTTAAAGGTGAA GTCAGG AGAGG GCCAGG TGA GGTG AAAT
AATGACAAGGTTTCCACCCC CAGTCT TTTCC CGGTTC ACT CCAC TTTG
TCAAACCTTGGCTCCTTTTC - T--- CAA CC---- C ------
TGAC
GAM1564 14512 GAAGGAACAATGGTCGTGCC GGAAC- G - AAAAA - ---- - C--- CTATTC
AAAAAGGGCCGCGGCCACGT GAA AATGGTC TG CC GGGC CGC GGC CA GTGCAGC
GCAGCCTATTCGCTGCACTA CTT TTACCGG AC GG CCCG GCG CCG GT CACGTCG
ACTGTGCCCGATGCGTGCCC AAAGAA A A AA--- T TAGC T CAAT ------
AAGGACAAGGCCATTAAGAA
ATTC
GAM1565 20738 AGCCTCCAGTCCCAAGCAAG - G AAGCAA CA C- G TT GATGCCTGA
CCTCCAGGCCCTGAGTGTTC AGC CTCCA TCCC GCCTC GGCC TGA TG CT
TGATGCCTGAAGGGTAGTCA TCG GAGGT GGGG TGGAG CTGG ACT AT GA
TAGGTCCCGAGGTGGAGTCG T G CTGAGG CC AT G GG ---------

GGGGTGGAGTGCT
GAM1566 10398 GCCGTCGGAGTCCATCATGG C CCATCAT T TG CTT TTCTC
GAGGTGTGGTCTTGTAGTTG GCCGT GGAGT GGGAGG G GT GTAGTTG
TTCTCCGGCTGCCCATTGCT CGGCA CCTCA CCCTCT C TA CGTCGGC
CTCCCACTCCACGGC - ------- - GT CC- -----
GAM1567 20670 ATTCATCTGTACTTCAATAT CTTCAA - TCCATAGC
CTAGTTTCCATAGCAACTGA ATTCATCTGTA TATCT AGTT
GATGCAGTTTGCAGGTGGGT TGGGTGGACGT GTAGA TCAA
TTGAC- G --------
GAM1568 16083 GCTGAGTGAGCCTCCGCCAT A GAG C CA - A AA- CCGA
CCAGCATGACAAACTGTGGC GCTG GT CCTC GCCATC GC ATG CA CTGTGG
CGACCGCAGCTGTGCCGTGG CGAC CG GGAG CGGTAG CG TGC GT GACGCC
CACGATGGCGAGGAAGCCAG - AA- - CA G C GTC ----
C
GAM1569 13315 GCCTTCTCAGAGTACGGCTC CTT A T--- G G -- T GGGT
AGGCTTGGGGGCCGGCTGCT GC CTC GAG ACGGCTCAGGCTTGGGG CCG CT GCT GG

TGGGGGTCCGGTTGAGGTGG CG GAG CTC TGCCGAGTCCGAACCCC GGT GA TGG CC

ACCCCAAGCCTGAGCCGTCC CAT A TTCC A G GT - ----
TTCTCAGAGTACGC
GAM1570 14763 AGGATCATTCTTCCTCGGCG AT- - C TAACA GCAGTG
GATAACAAGAGCGCAGTGGC AGG CATTCT TCCTCGG GGA AGAGC
TCTTCCCTGGGGATAGAGTG TCC GTGAGA AGGGGTC CCT TCTCG
CACCCT CAC T - ----- ------
GAM1573 14731 CACACGGCTGGGTACCGGGG C--- CT CCG GA TTCG
TCCGGGAATTCTTCGGGATG CACA GG GGGTACCGGGGT G ATTC
TCAAATCCTGGTATCCTTCC GTGT CC CCTATGGTCCTA C TAGG
CCAATGTG AACC TT AA- TG ----
GAM1574 22574 GCCCATCCGCGAACTCACCC - A C - A AAC A- GGACCTG
AGAACTGGGATGTGGACCTG GC CC TCCG GA ACTC CCCAG TGGG TGT
GCGGCCCCACTGGGCGAGTA CG GG AGGT CT TGAG GGGTC ACCC GCG
TCTGGAGGAGC A - - A C --- CG -------
GAM1575 12137 GATCTCGGCGTTGTGCATGT C T T TGCT TCTT GC ATC CGACCA
CGGGCGACTGCTCCATGATC GATCTCGG GT G GCATGTCGGGCGAC CCATGA GCGCC TCG
TG
TTGCGCCGCTCGATCTGCGA CTGGGGCT CA C CGTGTAGTTCGCTG GGTACT TGCGG AGT AC

CCACACCATGAAGGCGTTCA - - C ---- ---- A- ACC ------
TGGGTCGCTTGATGTGCCCA
CTCGGGGTC
GAM1576 5710 AACTCTGGTGGGTCTGATAC T G TCT T TAG-- GTAATTTGAAATCA
AGGTAGCAATGTAATTTGAA AAC CTG TGGG GA ACAGG CAAT
ATCAGTTGAATTTCCTGTTT TTG GAT ACTC TT TGTCC GTTG
TTCTCTCATAGGTT - - TCT T TTTAA ----------
GAM1578 6779 GACGGGACACATCTGGCTAT C A CTATTT CC CA-- ATCC
TTTGTCCCAGCGGTCAGAGG GACGGGA AC TCTGG TGT CAGCGGT GAGG
ATCCCCTTGGGTACTGCTGC TTGTCTT TG AGACC GCA GTCGTCA TTCC
AACGCCAGTTCCAGAAGTTT - A TTGACC AC TGGG ----
CTGTT

GAM1580 382 GGAATTGAAAAGTAAAAACA TTGAAA A- C -- T T CGTT
AAGTGTGCATTTTCCTTACT GGAA AGTAA AA AAAGTG TGCAT TTCCT ACTA
ACGTTTAGTCAGGAATATGC CCTT TCATT TT TTTTAC GCGTA AAGGA TGAT
GGTCATTTTATTGGTTACTG TGGG-- GG A TG T C ----
GGTTTCC
GAM1581 1090 GCTGGGGAGAGCCCCCTCGG - A CCCCTC CA CAAGCT
GGGGCATCGGTCAAGCTGCT GCTGG GG GAGC GGGGGG TCGGT
GAACCCCCTGCTCACCGCCA CGACC CC CTCG TCCCCC AGTCG
GC G A ------ A- ------
GAM1582 15702 TCTTTGCTTTAAATAATACT TG AA T- A ATTA
ACTGGGCTGATTACAGTTCA TCTT CTTTA TAA ACT CTGGGCTG
GAGGTCCTTAGATAGAGAGG AGAG GAGAT ATT TGG GACTTGAC
AGA GA AG CC A ----
GAM1583 14277 TTCTTAACGATATAAGCAAC AA ATAA AACG A-- AAAACTA
GGCTTTGAGAGAGAAAACTA TTCTT CGAT GC GCTTTG GAGAG
CTTTCAAACAAAGCACAGTA GAGAA GTTG TG CGAAAC CTTTC
ACAGTTGAAAAGAG AA ACAA ACA- AAA -------
GAM1584 13390 AGGACTTGACGGAGAGGTGA AC -- AG G CCAGAC - ATATTTATTC
AGGCTCCAGACGCCAGGATA AGGACTTG GG AG GTGAA GCT GC CAGG
TTTATTCCCTGTGCCAATAC TCCTGGAC CC TC CACTT CGA CG GTCC
AGCATTCACACCTGACCTCC CT AG CA A CATAAC T ----------
AGGTCCT
GAM1585 4070 GTAAGTTACTGACAAGCCTC TTAC CCT CAAAC AT AA TTTTAAGAAGT
AGCAAACCCAAAGATGTTAA GTAAG TGACAAG CAG CCAAAG GTT CAGTA
CAGTATTTTAAGAAGTTGCT CGTTC ATTGTTT GTC GGTTTC TAG GTCGT
GCAGATTCCTTTGGCCACTG TTTA AT- ACC-- CT AC ----------
TATTTGTTAATTTCTTGC
GAM1586 16989 GCGGGGGGTTGCTGCGCCGT ------- T TCCT CTAC
CCTCCACTACTGGCTACTGG GCGGGGG GTTGC GCGCCG CCA
CGCTGCAGCCATGCAGCCCC CGCCCCC CGACG CGCGGT GGT
CGC GACGTAC T CATC ----
GAM1588 15716 GGGCATCTGGATCAAGTTCA T AT AG---- CA- C CCTGCTCCTCT
GGCACAGCCCTGGTCTCCTG GGGCATC GG CAAGTTC GCA GCC TGGTCT
CTCCTCTGGACTGTGGCGTT TCTGTGG CC GTTCAAG CGT CGG GTCAGG
TGCAGCTGAGAACTTGGCCC T CG AGTCGA TTG T ----------
TGGTGTCT
GAM1589 15994 CCACAGTTCAAGAATCACTG A TCAA A- T G AGA TGCA
GTGTCCGAGGAGATCGTGCA CCAC GT GA TCAC GGTGTCC AGG TCG
CGACCTGGATACCTGTGAGG GGTG CA CT AGTG CCATAGG TCC AGC
TCACGGTGG G ---- GG T - --- ----
GAM1590 17140 CAAATTGTGCCAGCGTTGGG TT C CGTT ATAA T AACAGGAA
CAATAAAAGTTAGGAACAGG CAAA GTGC AG GGGCA AAG TAGG
AACTTATCTTGGTGTGCCCT GTTT CATG TC CCCGT TTC ATTC
TCCTGTACTTTTG T- - CTT- GTGG T --------
GAM1591 20106 CTCAGTATGCATGGTTGGCA TAT ---- TT A T CT CTGCTGCTC
ATGTAGAGTGACTGTGCTGC CTCAG GCA TGG GGCA TGTAGAG GA GTG
TGCTCCACCATCTTCTACAC GAGTC CGT ACT CCGT ACATCTT CT CAC
TGCCTTCATACTTGCCCTGA C-- TCAT T- C - AC ---------
G
GAM1593 15962 GGCCAGTGCATTGAAAGGTC ---------- A AA- C - AGAGAATCTTAGATAAA

TCCAGGCCTAGAGAATCTTA GGCCAGT GC TTGA GGT TCCAG GCCT
GATAAAAGGCACTGGAACCA TCGGTCG CG AACT CCA AGGTC CGGA
GATCAAAGCCCATCTTTTCA ACTTTTCTACC A AGA - A ----------
GCTGGCT
GAM1594 16215 TGGGGGCTGTGGCAGGGCCG AGG CGC-- TG-- TCCCTT
CCTGCCTGGGGTTCCCTTAC TGGGGGCTGTGGC GC CTGCC GGGT
TCATCTGGTAGTTCATGCAG ACTCCCGGCACCG CG GATGG CTCA
GCCACGGCCCTCA GA- TACTT TCTA ------
GAM1595 6460 TTGTCTTCAGGACTGCTCTG T CA - CT TC-- TTTT
TTCCAGTATTTTTGCTGTCA TTG CTT GGAC TG CTGT CAGTA
TACAGTACATGTCCCAGAGC AAC GAG CCTG AC GACA GTCGT
AA - AC T AT TACT ----
GAM1597 18270 CTCTGTCTCCTGAGTAGCTG GTCT A A-- GA C A CACTGCACACT
GAATTACAGGCATGAGCCAC CTCT CCTG GT GCTG ATTA AGGC TGAGC
TGCACACTGCTTACGCTTTG GAGG GGAC CA CGAC TAGT TTCG ATTCG
ATCTCAGCACAACCAGGCTA ATC- - ACA TC - C ----------
GGAG
GAM1598 6179 GGTGTGAGCTCTGAGGAGTC A TCT- G AACCCT - CATC
CTGAACCCTGGGTGCAGCAT GGTGTG GC GAGGA TCCTG GGGTGC AG
CCTAGCATCCTGGGAGTCCT TCACAC CG TTCCT AGGGT CCTACG TC
TTTCTGCCCACACT C TCTT G ------ A ----
GAM1599 18396 GGGGTCAGAAGACTGGATTG C A GAGTA CAG AGTACAGG
TGAGTAGGCCAGTTTTCAGT GGGGTCAGAAGA TGG TTGT GGC TTTTC
ACAGGGAAAAAAGCTACAGA CCCCAGTTTTCT ACT GACA TCG AAAAG
TCACTCTTTTGACCCC C A ----- AA- --------
GAM1600 8890 CATCCCCAAGGAGAACTTCA CC --- ACTT --- GA- GATCA
GTTGCTTGACTCGTTGGATC CAT CCAAG GAGA CAGTT GCTT CTCGTTG
ACAACGAGCTAAAGCTCAAA GTG GGTTC TTCT GTTAA CGAA GAGCAAC
TTGCTCTTAAACTTGGTGTG T- AAA C--- ACT ATC -----
GAM1601 833 GGCCCCGCAGGAACAGGCTC - GAACAG GGTAGA GTA ACGT
TGGTAGATCTGTAATCCTGT GGCC CCGCAG GCTCT TCT ATCCTGTTGGCTGGCGAC
TGGCTGGCGACACGTGTCGC CCGG GGTGTC CGGGA AGG TAGGACAACCGACCGCTG

CAGCCAACAGGATGGGAGGA T AGA--- AGG--- G-- ----
AGGGCAGACTGTGGTGGCC
GAM1604 4390 CTTCAGCTTGATGCATGGTC AG GAT -- CACT AC AAAA TACACATT
ACTTCTTTACTATTTAAAAT CTTC CTT GCA TGGT TCTTT TATTT TAC
ACTACACATTGTACAAAATA GAAG GAA CGT ACCA AGAAG ATAAA ATG
TCGAAGACACTACCATATGC -- AT- AT TCAC CT AC-- --------
TAAAGGAAG
GAM1605 17193 ATACAGGACTAATTGTCAGC --- A CCTAGAA TGC TG AAGAACTGAGA
CTAGAAAAGGAACTTGCTCC ATACA GGACTA TTGTCAG AAGGAACT TCCAT TTTG
ATTGTTTGAAGAACTGAGAC TGTGT TTTGGT GACAGTC TTCTTTGA AGGTG GAAC
AAGTTGTGGAAGTTTCTTAA GAC - TAA---- --- TT ----------
TCTGACAGTGGTTTCAGTGT
GT
GAM1606 6800 GTGGGAACCCCTTTGCCTGA TTTGCC- -- TTACTAAT
ACGCCTTACTAATGGCAAGT GTGGGAACCCC TGAAC GCC
TTAACCCCCCGGGGTTCCCA CACCCTTGGGG ATTTG CGG
C CCCCCCA AA --------

GAM1608 15808 TTTCCTGCTTGTATTGGCGT TAT C ATATC CTCCT
ATATCGTTCCTCCTGAGCAG TTTCCTGCTTG TGG GT GTTC
CAACCCACAGTAGGTAGGAA AAAGGATGGAT ACC CA CGAG
A GAC - ACGA- -----
GAM1609 20386 CCACCATGGTGCGGCCGGTG A - TG GAG - ACCAA CC CGTCTA
GCCGAGAGCGGGGCCACCAA CC CCA TGGTGCGGCCGG GCC AGCGG GGCC GA AGCCG

GACCAGCCGCGTCTACGGCT GG GGT GTCGCGCCGGTC CGG TCGTC CCGG CT TCGGC

TCATCGGCCTCTGCTGGCTG - C GT --- T CTA-- -- ------
CTGGCCGCGCTGCTGGGG
GAM1610 9265 GGCAGGAGTGGGAGAAGGAG A G AA A--- CT TCCTCT
TCTTTACACCCACAGCT
GAGAGAAAAGCTGGTCCTCT GGCAGG GTGG AG GGAGGAGAG AAAG GG GCAG
GCAGTCTTTACACCCACAGC TCGTCC TACT TC CCTCCTCTC TTTC CC CGTC
TCTGCCCTTTTCCCTTTCAA G G G- CAAC -- TTTTCC ----------
CCTCTCCTCCGCTGTCATGC
CTGCT
GAM1612 1086 GTGGCTTCAATTCTAAGAGT - AA AA ACAGC- GG T AA TGGAAAGTT
GGACAGCGGGGATCTTCCAA GT GGCTTC TTCT GAGTGG GG ATCT CC GTC
GTCTGGAAAGTTGACAAGGA CA TCGAGG AAGA CTTACC CC TAGA GG CAG
GATGACCTTCAGGCCATTCA G A- -- GGACTT AG - AA ---------
GAAAGGAGCTGAC
GAM1613 21896 GGCCTGAGAACATGGTTCGC AACAT-- - TC C GACGA
ATCGCTTTGCAGCTGGACGA GGCCTGAG GGTTC GCA GCTTTG AGCTG
TGGCTCGAGGTTGCAGGACT CCGGACTT TCAGG CGT TGGAGC TCGGT
CTTTCTGTTCAGGCC GTCTTTC A -- - -----
GAM1615 1186 TCATTGCTGATGGAGGAATC T A AA AATGT TATT GAAA
CAAAATGTGGGTCATATTGC TCAT GCTG TGGAGG TCCAA GGGTCA GC
GAAAGCCTTGGCCCTTGGGG AGTA TGAC ACCTCC GGGTT CCCGGT CG
CCTCCACAGTCATGA C - G- ----- TC-- ----
GAM1618 4894 GTTATGATCCTATAAGCATG T A A ACAGA GG TGGA
GCAACAGATATGTGGAGCAT GT ATG TCCT TAAGCATGGCA TATGT AGCAT
TGGAGTGTTAACATATGTCA CA TAT AGGA ATTCGTACTGT ATACA TTGTG
TGCTTACAGGAATATCAC C A C ----- A- ----
GAM1619 15844 ACGGCCCAAGGGCTGGAGCT CC - TA------- AACA
GTATGAGAACACTCGGACCC ACGG CAAGGG CTGGAGCTG TGAG
CTACCAGCTCCAGACCTTTG TGTC GTTTCC GACCTCGAC GCTC
TCCTGT CT A CATCCCCAG ----
GAM1620 20742 TTGAGAAGCGCCGACGAGAC G CGACGAG A AATAA GTCT
CGGATCAATAACAGTTTGTC TT AGAAGCGC ACCGG TC CAGTTT
TGAGCTGAGAAGGCTGGTAC GA TTTTCGTG TGGTC GG GTCGAG
CCAGTGCTTTTGAG G ACCCA-- - AAGA- ----
GAM1621 20267 CCATGGGCCTCACCGTGTCC TG TC ---- - - - G ATCT
GCGCTCTTTTCGCGGATCTT CCA GGCC ACCGTG TCCGCG CT CTTTT C CGG
CGGGAAGAAGCAGATGCGGA GGT TCGG TGGTAC AGGCGT GA GAAGA G GCT
TTCTCATGGTTGGCTTGG -- T- TCTT A C A G ----
GAM1622 10537 TTGCCAAATGCATCAAAGGT CAAA A ATT - G GATAA
ATTATATGGTCAGAGGATAA TTGC TGC TCAAAGGT ATATGGT CA AG
TTGTGCACTATGTCGCCTTT AACG ATG GGTTTCCG TGTATCA GT TT

GGGTAGCAA ---- - C-- C G -----
GAM1623 13915 GCCATGGCAGTGACAGCGAC - AG CGAC CC------- TCCCCGCT
GGCTCCCAGAGTCCCCGCTC GCCATGG C TGACAG GGCT CAGAG
TCTGCCCCCCTCCAGCCCTG CGGTACC G ACTGTC CCGA GTCTC
TCAGGCCCATGGC C G- ---- CCTCCCCCC --------
GAM1624 6177 GTTATTTTGACTTGCCTCTT T A CTCT ---- AAATCTCTGAACCAC
CATCTGGCAAAATCTCTGAA GT ATTTTG CTTGC TCATCT GGCA
CCACTGCTCTGGAGATGACA CA TAAAAC GGACG AGTAGA TCGT
GCAGGCAAAATCAC C - AC-- GGTC ----------
GAM1625 15689 TGCATTACAAACCTGCAGCT - ---- GCAGC AACAACAACAAAAAA
TGCCAACAACAACAAAAAAG TGCATT AC AAACCT TTGCC
GTAAAGGTTTCACAGTCAGT ACGTGA TG TTTGGA AATGG
GCA C ACAC ----- ----------
GAM1626 2410 CTACAGGACACAATGTGGCT TA A - - GG TG C- TG T ACTCAAG
GACCTGGTGGTGATACTCAA C CAGG CA CAAT GT C AC TGG G GAT
GATTCTGCCAACGTTGGAAG G GTCC GT GTTG CG G TG ACC C TTA
CTGTTGCTGCCCTGGGG GG C C T AA GT CA GT - -------
GAM1627 7481 TTAGCATGAAGTCCCTCTGG T AG C--- CT CTG - TCAATC
ATCTTGAGCTGGTTTATGGA TTAGCA GA TC CTCTGGAT TGAG GTTTATG GAC
CTCAATCGTCTCATGGATCT GGTCGT CT AG GAGACCTG ATTC TAGGTAC CTG
TACTGTCCAGAGCACTGATC C CT TCAC TC --- T ------
TCCTGCTGG
GAM1628 13437 CTGTGGCAGGGGAGGACAGA CAG A ACT ATCCTTACCTCC
ACTTTGATCCTTACCTCCCA CTGTGG GGG GGACAGA TTG
ACCTCTGTCTACTCACCACA GACACC CTC TCTGTCT AAC
G A-- A CC- ----------
GAM1629 153 GCGGGAGGCGTGCTGGGCGC - TGCT G GC- - AGG
GGGGCTGCGGTGCCCAGAGG GCGGGAGG CG GGGCGC GGGCT GGTGCC CAG
CTGCGGCATTAGGGGCTCGG CGCCTTCC GC CCCGCG CTCGG TTACGG GTC
CGCCCCCGACCTTCCGC A C--- G GGA C ---
GAM1630 11692 GGACATAGTGGAAGTGAGCT A A GA TG ACAA AC- TG TAG
ACAACGTTATACGTGTCGTG GG CAT GTG AG AGCT CGTTAT G TCGTG
TAGTACGATGTCTAGTGATG CC GTA CAT TC TTGA GTAGTG T AGCAT
AGTTTGCTAATACAATGCC - A AA GT ---- ATC GT ---
GAM1631 15356 TTAGATTGGGGCAGGTTAAG - AG GCAGG-- GAATT GGC
GCAGGCGGCCGAATTTGGGG TTAGATTG GGGC GTTAAG CGGCC TGGGGCTAATTG
CTAATTGGGCCAATTGGCCT AATTTGGC CCCG TAATTT GCCGG ATTCCGGTTAAC
TATGGGGGGCCGAATAACAT G G- ACAATAA GGGGT ---
TTAATGGCCCGCGGTTTAA
GAM1632 16929 GCACTGAGCTTGGAGGAGGT - C GGAGG TG - AGATGAC
ACAGGTGGACCAGATGACGG GCACTG AG TTGGA TACAGG GA CC
CTCTGCCTGTGAAATCCAAA TGTGAC TT AACCT GTGTCC CT GG
TTCCAGTGT C A AAA-- GT C -------
GAM1633 14027 GAGCATCTCAAGGGGGCCTT - CAAG G A-- ATT A AACTA
ATTCAATTCTAGGTAACTAG GAG CATCT GGG CCTT TTCA CT GGT
CCAGGTGTGAAAGAAAGGGC CTC GTGGG CCC GGAA AAGT GG CCG
CCAGGGTGTCTC T A--- G AGA GT- A -----
GAM1635 4870 TCATGGTCTCAGCGAATAGC T T CGAA- G GG CCC ATGT
GGCCCTTAGGGCTGGCCCCT TCA GG CTCAG TAGC GCCCTTAG CTGG CTTAC
TACATGTGTGAGTGCCCAGG AGT CC GAGTC GTCG TGGGAGTC GACC GAGTG

GCTGAGGGTGGCTGGCCACC - T CACCG G GG CGT ----
TGAGTCCTGA
GAM1637 14986 ATGGACTAAGCTTCATTCCA CTA G C TCAATAACTAA GG CATA
GTTCAATAACTAAACGAGGG ATGGA A CTT ATTCCAGT ACGAG CC
CCCATAGGACTTGTGCTGAA TACCT T GAA TGAGGTTA TGTTC GG
ACCCATTGGAGTCAAGGTTC --- G C CCCAAAGTCG- A- ----
CAT
GAM1638 452 TCCTTGTGGGAGCAGCTATG GCAG-- GTC CCTCCT
GCAAGTCCACCTCCTTGCAT TCCTTGTGGGA CTATGGCAA CA
TGTCATAGGTCACATTCCAC AGGAACACCTT GATACTGTT GT
AAGGA ACACTG AC- ------
GAM1639 9858 ATTATGTATTTATTATTGGC G A -- - AAA - TTTC
GATTATAAAGTTTGTTTTCA ATTAT TATTT TTATTG GC GATTAT GTT TGT
CAGGGCGTAGTAGTTAGCAA TAATA GTAAA AGTAAC CG TTGATG CGG ACA
CAATGAAAATGAATAAT A - AA A ATG G ----
GAM1641 1746 GCGAGTGCCAGCATGCCTGG T GCAT TTTT TATT AGAG
CTAATTTTTTGTATTTTTAG GCGAG GCCA GCCTGGCTAAT TG TTTAGT
TAGAGACTGGGTTTCACCAT TGCTC TGGT CGGACCGGTTG AC GGGTCA
GTTGGCCAGGCTGGTCTCGT - ---- TACC TTT- ----
GAM1642 8215 AGGGAGTAAAGATAATCTGG GA A AA- ------ CATAAGACAGAACA
GCTGCTCCATAAGACAGAAC AGG GT AAGAT TCTGG GCTGCTC
AGGGTAGCGGGGTACTAGGC TCC CG TTTTA GGATC CGATGGG
AGATTTTAGCAACCT AA A GAC ATGGGG ----------
GAM1644 21591 AGAGGGTCGTTTCTGGCAGG - T T ACGGAG G A CTCAG
AACGGAGTGGTTGGTAGTCT AGAG GG CGT TCTGGCAGGA TG TTGGT GT
CAGGCGCCAGGCGTCCTGCC TCTC CC GTA GGACCGTCCT GC GACCG CG
AGGTATGCCCGCTCT G C T ------ G - -----
GAM1645 11872 TTTTCTCTGGTTCCTCTCTG TTCCT TG T CTTTCAG CTT
CAGTCTCCTTTCAGCCTGCT TTTTCTCTGG CTC CAG CTC CCTG
TCAGGAATGAGCTTGTGGAG AAGAGAGGCC GAG GTT GAG GGAC
CCCCGGAGAGAA CC--- GT C TAA---- ---
GAM1647 10215 TGAGGCAGTCACAGCTTGAA GC A G GT--- TTAGT
GTGTGACGCTTAGTGTGTCA TGAG AGTC CAGCTT AA GTGACGC
CTGATGTTGGAGCTGGGCTC ACTC TCGG GTCGAG TT CACTGTG
TCA -- - G GTAGT -----
GAM1648 14384 GGACCACAGGTGTAGGCCAC C - T A T GCT--- TTTT
CATGTCTGGCTGATTTTTTA GGAC ACA GGTG AGGCC CCATG CTG GATT
ATTTTTTTGTAGTCATGGGG CCTG TGT TCAC TCTGG GGTAC GAT TTAA
GTCTCACTATGTTGTCC T A - G T GTTTTT ----
GAM1649 18219 CCGAGGACCTCCTGACCCCG A TCCTG C- A GG - CT - GGCTAA
CGGTGGCAGCTGGGACCGCG CCG GGACC ACCCCG GGTGGC GCTG AC CGCG AC GC

CTACGCGGCTAAGCAGTTCG GGC CCTGG TGGGGC CCGCCG CGGC TG GCGC TG CG

CGCGTTACGGCGCCGCCTCC C ----- CT - AT C T- A ------
GGGGTGGTCCCCGG
GAM1651 17712 CCTGGTCAATCAACAAAGTC CAATCAACA TCTT GTT TCACTCTCT
TTGCCAATGGTTTCCATCAC CCTGGT AAG GCCAATG TCCA
TCTCTTGGACATTGGTTTAC GGACCG TTC TGGTTAC AGGT
CTTGCCAGG --------- CATT --- ---------

GAM1652 673 CTGAACCCAGGAGTTTAGGG A- AGTTTA GT T A TGATC
TTGCTGTGAGCATTGATCAT CTG ACCCAGG GG TGC GTG GCAT
GCCACTGCACTCCAGCCTGG GAC TGGGTCC CC ACG CAC CGTA
GTGACAG AG GA---- TC T - -----
GAM1654 4720 TATTTAAGAAATGTCTTTGA A TCTTT CCCATGT ACCCCA
CCCCATGTGTTAGGACCCCA TATTTA GAAATG GAC GTTAGG
TCTAATTCCTTGTCTCCTTG GTGAAT CTTTGT CTG TAATCT
TTTCCTAAGTG C TCCT- TTCCT-- ------
GAM1655 14116 GGGGATGGAAGGCGATGGCC G A C G - T-- A AT CCG
CCTGCGAGGACGATGGCCCG GG GATGG AGG GATG CC CC GCGAGG CG GGC
GCCCGCCTCGCCCCGGCGGC CC CTGCC TCC CTAC GG GG CGCTCC GC CCG
ATCCCTGCCGTCGCC G G - - C CCC - -- ---
GAM1657 8434 GAGAATCGCTTGAACCTGGA AA GAA-- GG - GT A- AGA
GGCGGAGGTTGCAGTGAGCA GAG TCGCTT CCT AGGC GGAG TGCAGTG GCAG
GAGATTGCACCATTGCACTC CTC AGCGAG GGG TCCG CCTC ACGTTAC CGTT
CAGCCTGGGCAACAGAGCGA AG ACAAC -- A -- CA ---
GACTC
GAM1658 4323 GTGTTTGAAAGCTCTGTTTA TT CTC AAA ATT TTATC
TAAATAGTGATTGATACATT GTGT GAAAG TGTTTAT TAGTG GATACAT
TATCATGTATTTGGTGCTGA TACA TTTTC ACAAATA GTCGT TTATGTA
AGATAAACACTTTTTACAT T- --- GAA GGT -----
GAM1659 2511 CGGACTTCCATAAACTCAAC GA - AAA AA- C -- CCCA CCACAGAC
CTTCCTTAACCCCAGAAACC CG CTTC CAT CTC CCTTC TTA AC GAAA
ACAGACTTTCAAGAGTGATG GC GAAG GTA GAG GGGAG AGT TG CTTT
ACGAGGGGAAGAGATGAGAA A- A --- AAG C AG AGAA --------
GACG
GAM1660 18892 GTTTCAGAGCATAACTCGAT G A GATTG -------- TC GAAA
TGCCCATCATCCTGAAAGGG GTTTCA AGC TAACTC CC CA ATCCT
ATTTTGACAAAAGAGGATGC CGAAGT TCG ATTGAG GG GT TAGGG
AGAGTTAGCTGTGAAGC G - ACGTA AGAAAACA TT ----
GAM1661 22046 GTGGAAACATACAGAAGAAG TG A A - AGAA- A ACAGT-- CAC- CCCGAAGC
CAAGGAAATTACAGTTAGAG G G AACAT CA GA GCA GGAAATT TAGAGGT AACTG
GTCACAACTGCCCGAAGCCA C T TTGTA GT CT CGT CCTTTAA ATTTTTA TTGAC
GTTCTAAATTTTTATGAAGC GT A G A GTAAA C CCGAAGT AATC --------
CAATTTCCCTGCAAATGTCA
TGGATGTTATTGC
GAM1662 14381 TACTGCTTGCAAGAGCCTCC C- C GCCT T A-- TC CAAAC
ATGTGAAGTTTCTGTGCAAA TACTG TTG AAGA CCA GTGA GTT TGTG
CCACACTAACATATTACTGG ATGGT AAC TTCT GGT CATT CAA ACAC
CATCTTCAATCTGGTA CT - AC-- - ATA TC -----
GAM1663 2153 TGGGGTATTACCAGGTTAAG A A----- A AG- CC CCCT
AGGCTGCCCGTCCCCCTGGA TGGGGT TTACC GGTT AG GCTG CGTCC
TGCTCAGCAGGCTGAACCCA ACCCCG AATGG CCAA TC CGAC GTAGG
GAAGGGTAAGCCCCA - GAAGAC G GGA TC ----
GAM1665 22862 ACGAACGGTTAAGCTGGCTG -- GT GCTG C GAA-- ATTATAAC
TCCTGAACACTATTATAACG ACGAA CG TAA GCTGT CT CACT
GTGGACTGAGAATGGCAAAA TGCTT GC ATT CGGTA GA GTGG
TTAGTCGCCTTCGT CC TG AAAA A GTCAG --------
GAM1666 17152 GCTAAGAATTCAGATGTCAG AGAAT ATG-- GAATCTTG
GAAGTCTGTGAATCTTGATG GCTA TCAG TCAGGAAGTCTGT

GATTTTCTGAGAAACCTGAC CGGT AGTC AGTCTTTTAGGTA
TCAATGGC AACTC CAAAG --------
GAM1668 12876 GCCACCGGGGTCTGCGATGG A TCTG - A- AGT GAGCCG
CACGCCAGTGCTGGAGCCGC GCC CCGGGG CGA TGGC CGCC GCTG
AGCCAGGCGAGGCCACTCGA CGG GGCCCT GCT ACCG GCGG CGAC
CTCCCGGGGC - CA-- C GA AC- ------
GAM1669 1163 GAGATGAGGGGGCACATTTA AT - -- AAT TGTATG AG GTGA
AATCTGTGTATGTCCAGAGT GAG GAGG GGGCACA TTTA CTG TCC AGTCC
CCGTGAGGATTGGGAATCAG CTC CTTC CTCGTGT AAAT GAC AGG TTAGG
TCTAAAGCTGTGCTCGCTTC CT G CG CT- TA---- G- ----
TCCTC
GAM1671 4180 GCTTTGTTAAATGTGCATCA TAAA-- T - T C TTTT
TTTCACTCTTTTGATTGAAT GCTTTGT TG GCA TCATT CA TC
GATTGCCGGAAAGTGCAAGG CGGAACG GC CGT AGTAA GT AG
C TGAAAG - T - T ----
GAM1672 9317 GAGGCATGGGGGATGGTCCA G GG G - A C-- TCTAGTAAC
ATCATGGCCTGCTCTAGTAA GAG CAT GGGATG TC CAATC TGGC TGC
CGCATCTGCCAGGTTGAGAA CTC GTG CCCTAT AG GTTGG ACCG ACG
TATCCCAGGTGGCTC G GA A A - TCT ---------
GAM1673 19922 TGCTGATGAAATTTATCACC - AAAT CA ACA CTATTTAA
AGACAGCTTCTATTTAAAAG TGCT GATG TTAT CCAG GCTT
CAACTGGCTGTGACATTGAG ACGA TTAC AGTG GGTC CGAA
CA G ---- TC AA- --------
GAM1676 11116 CGCTGAACTCATGCAGACGC CTGAA G GACGC - TT GA TACA
TCCGATTTCTTGGACTCTAC CG CTCAT CA TCC GAT CTTG CTC
AGAGATGAGCATCAGGATTT GC GAGTA GT AGG CTA GAGT GAG
TATGGATGAGCAAAACG AAAAC G ATTTT A C- A- ----
GAM1678 20274 GGGGGGTGGCCAGCCCTGAA G- C GAAGTTG AGGAACCAG
GTTGCCCTCCCAGGGAGGAA GGGGG TGGC AGCCCT CCCTCCCAGGG
CCAGCTCTGGGAGGGAGGGG CCTCC ACTG TCGGGG GGGAGGGTCTC
CTGTCAGACCTCC AG - A------ ---------
GAM1679 16712 GACAAGGACCAGGACCTGAT - A-- GA GATCA- A A AA AGGACG
CACCATCATTGGAAAGGAGG GA CAAGG CCAG CCT CC TC TTGGA GG
ACGCCGTCCGAGAGGCACAG CT GTTCC GGTC GGA GG AG AGCCT CC
AAGGAGCTGGAGGCCTTGAT A GGA GA AGACAC - - G- ------
C
GAM1680 16567 GCAGCAGTATCTGCAGTCCA - C----- G CATAGA G AGAAACTGGA
TAGAAGAGCGTGAGAAACTG GCAGCAG TAT TGCA TC AGAGC TG
GACGGGCTCTACGAGTGCAT TGTCGTC GTG ACGT AG TCTCG GC
TCTCTGTGCCTGCTGT C TCTCTT G CA---- G ----------
GAM1681 22792 CCGTGCGCGTTGCTGCGGCC GT C G C- GT C TTCCTCGGC
GTGGTCCGCGCCCTTCCTCG CC G GCGTT CTG GGCC GGTCCG GCCC
GCGGGCCGGACTGGTCTCCA GG T CGTAA GAC CTGG TCAGGC CGGG
GAAATGCTGTGG TG - A CT -- - ---------
GAM1682 8994 ATCCCTTGCATTTCCATATG TG T-- TA AA AACA CTTAATAAATTT
AATTTTAACATCAGCTTAAT ATCCCT CA TTCCA TG TTTT TCAG
AAATTTCTGAGAAAAAGCCA TAGGGA GT AAGGT AC AAAA AGTC
GTTGGAATTTTGATAGGGAT TA TTT TG CG AG-- ----------
GAM1683 10924 CAAGTAATTATAATCTCTCT - A- - T C- CA GAGTGCAGTGTTGA
CTCTGGCCATCATTGGCGAG CAAGTAA TTATA TC TCTC CTCTGG CAT TTGGC

TGCAGTGTTGAGCTAAAAGT GTTCATT AATAT AG GGAG GAGACC GTG AATCG
GACCCAGAGGAGGTGAACTA T CA T - CA AA ----------
TAATTTACTTG
GAM1684 21719 CCCGGCCCTCCCTGCCCTCC C - CCT - - TC--- AACC
ATTCAGGGAGAAACCTCTCC CC GG CCCTC GCCCT C CAT AGGGAGA
TTCCCGTGTGAGAAGGGCCA GG CC GGGAG CGGGA G GTG TTCCTCT
GAGGGTCCAGG A T AC- A A TGCCC ----
GAM1685 816 GCTGACGAGCGGGTCTGGCT A --- G T- A TCCACCCTC CTCACA
CAGAGCAGCGTCCACCCTCG GCTG CGAGC GG TCTGGC CAG GCAGCG GGCC
GCCCTCACAGGCCCCGCTGC TGAC GTTCG TC GGACCG GTC CGTCGC CCGG
CCTGCCGCCAGGGCTTGAGC - AGT G CC C C-------- ------
TTGCAGT
GAM1686 4765 AGACGAGGAGGTGATTGAGC A AT-- --- T A- A C---- ATACCAG
TGTATGGGGGTACCCAGCAC AG CGAGGAGGTG TGAGCTGT ATGGGGG ACCC GC CAT
CCACT
ATCCCACTATACCAGATGAG TC GCTCTTCTAC ACTTGACG TACCTCC TGGG CG GTA GGTGA

TGGCTTCTATGGCAAGGGTC - AGGT AAT C AA - TCTTC -------
CCTCCATTAAGCAGTTCATG ATG
GACATCTTCTCGCT

GAM1687 9085 GGATTACAGCTAGGACCTCC T CA T CC GAA G AAAAAGAA
AGAACACTGACAAAAAGAAG GGA TA GC AGGA TCCA CACT AC
TGGTGCAGTGGAAATCCTTG CCT GT CG TCCT AGGT GTGG TG
CCTTGTTCC T TC T AA GAC - --------
GAM1688 16690 TTTCCCCTTAAATTGGTCAG CTTAAA GT CATA--- ATTTT
CATAGTGCCCCATTTTGGGG TTTCCC TTG CAG GTGCCCC
CATCCTTCATCTGGACAAGG AAAGGG AAC GTC TACGGGG
GAAA ------ AG TACTTCC -----
GAM1689 22922 CACGAGGTCATTTAAAAGTT - T A - A GA AACATGTAA A GAAATA
CATTTTGAGGGAATAACATG CACGA GGTCA TTA AA GTTC TTTTGAGG AT TATA TTT
TAATATAATTTGAAATAAAG GTGTT TTAGT AAT TT CAAG AAAATTCC TG ATAT GAA
GTATAGTAACCTTAAAAAGA G C A A A AA --------- G ------
ACATTATAACTGATTGTTGT
G
GAM1690 20557 TTCATGGGGGCCAGCAGCTT T - CA CA TGC CAC
CACAGTGCTGCGTTGCACCA TTCA GG GGGC GCAGCTT CAGTGC GTTG
GCTTTGCACTGGAGAGCTGT AAGT CC CCCG TGTCGAG GTCACG CGAC
GCCCACCCTGAA C A -- AG TTT ---
GAM1691 7471 GAGCAGGAAGAATGTACTTC AAGAA TTCT AT G CACTC
TGAGATTCGGCAGTCACTCA GAGCAGG TGTAC GAG TCG CAGT
CTGACGAGCCTCCCCTGTAT CTCGTCC GTATG CTC AGC GTCA
GCCTGCTC ----- TCCC CG A -----
GAM1692 17849 GCCTCCCAAACTGGTGAGAT - AA GG TTA- ATGAGCACCACAACTG
TACAGGCATGAGCACCACAA GC CTCCCA CT TGAGA CAGGC
CTGGCCTGAAATTCTTAAAG TG GAGGGT GA ATTCT GTCCG
GATGGGAGTGT T AG A- TAAA ----------
GAM1694 16409 GCGGCTGGGGTGGCAGGGCC GG C---- --- T GATTTCAG
GGTGTTTCTGTGCTGATTTC GCGGCT GGTGG AGGGCC GGTGTT CTGTGCT

AGGGTACAGGACACTGTTGG TGTCGG CCACC TTTCGG TCACAG GACATGG
CTTTAGAGACCACCAGGCTG A- AGAGA TTG - --------
T
GAM1695 20273 AGCCGGGGGTCTGGCAGGAA G TGG AA- GGA CA AGAACGAGAA
TGGGAGGCATCCAGAACGAG AGCCGGG GTC CAGG TG GG TCC
AAGGAGACCATGCAAAGCCT TCGGTCC CAG GTCC AC CC AGG
GAACGACGCCTGGCT G CAA GAA GTA AG ----------
GAM1696 15992 TATATGCACTTGAAAGTATT AC AT- AAA- T CGGACAAAA AG - TACT
CAAAAGTCTTCCCGGACAAA TATATGC TTGAAAGT TCA GTC TCC TG GACTTGGTA CT
ATGAGGACTTGGTACTTACT ATGTACG GATTTTCG AGT CAG AGG AC TTGGACCAT GG
GGATACCAGGTTGACAAAAA AC GGC CGAG T AACAAAA-- AG A ----
CAAGGATGACGAGCTGACGG
GCTTTTAGCAGCATGTA
GAM1697 5583 GCTCCGCCCCTCTCTGGGTT - CC TCT C TTCTC
CAGGCGATTCTCTTGCCTCA GCTCC GC CTC GGGTT AGGCGA
GCCTTCCGAGTAGCTGGAGC CGAGG CG GAG TCCGA TCCGTT
T AT CCT C -----
GAM1700 17628 TAAGATTACAGGCATGAGCC --- C C AG CACACCTGGGCGCAAT
ACCACACCTGGGCGCAATGT TAAG ATTA AGG ATG CCAC
GGTCCATTCCTTTAATGTCC ATTC TAAT TCC TAC GGTG
TTA CTG T T CT ----------
GAM1701 969 GGTTCTTGCAGATTCCCAAG TTCT AG - A G G A CCAGCATTAT
GAAATGTCAGAAAGGCAAAA GG TGC ATTC CC AG AAAT TCAGAAAGGCAAA TGG
TGGCCAGCATTATCCATTTG CC ACG TAAG GG TC TTTG GGTTTTTTCGTTT ACC
CTTTTTTGGGTTTACTGGGT TTTC A- T G A - - ----------
GAATAGCACTTTCC
GAM1702 17781 GAGTAGCTATGACAATGAGG ATGACAATGA A T AACACAAT AGAA
AGTTTTAAGAGTGAGAAAAC GAGTAGCT GGAGTTTT AGAG GAGAA GTCTATG
ACAATGTCTATGAGAACATG CTCATCGA CCTCGGAG TTTT CTCTT CAGGTAC
GACTTCTCTTTTAGAGGCTC GTA------- A - -------- ----
CATGAGCTACTC
GAM1704 20264 TAGCCTGGGCGCTCTCCAGA - - ---- C AAAA TA C AGCTGACACA
AAAGCTACACTTGAGCTGAC TAGC CTGGG CGC TCT CAG GC CA TTG
ACACAATTGGGGCACTGAAG ATTG GACCC GCG AGA GTC CG GT AAC
ATGATGCGACCCAGAGTTA A A TAGT A A--- GG T ----------
GAM1705 5943 ATGATTTCATTATGAAATGG - - ATG A- TATAT TAC GAGCTACAA
TAAAAAGTATATGTGCAATA ATGA TTTCA TTATGAA GTAAA AG GTGCAA TTCT
CTTCTGAGCTACAAAGAACA TACT GAAGT AATATTT CGTTT TC TATGTT AAGA
CTTGTATTTTCTCCTTTGCA T C A-- CC TTT-- CAC ---------
TTTATAACTGAAGTTCAT
GAM1707 1698 CTGAATCCTTCCATTTCTTC --- CA-- C ACAT TTGCTTAAATT
TGCACATCTACTTGCTTAAA CTGA ATCCTTC TTTCTT TGC CTAC
TTGTGGGCAAAAGAGAAAAA GACT TAGGAAG AGAGAA ACG GGTG
GAAGGATTGATCAG AGT AAAA A ---- -----------
GAM1708 11605 GTCTTTGAATGGAAAACAAC TT - CAA TT C TTGG ATAT
TATTTTCTCATCATTGGGTC GTCT GAATGG AAAA CTATT CT ATCA GTCA
AATATTGACTGATCAGTAGT CAGG CTTACC TTTT GATGA GA TAGT CAGT
AGGTCTTTTACCATTCTGGA T- A CTG T- C ---- ----
C
GAM1709 19283 TCAGGATCAGGTTCCCCTTC --- CC- T ACGA AGGTCATA

GCTCCACGATGGGCAGGTCA TCAGGA TCAGGTT CCT CGCTCC TGGGC
TAGCCCAAGGGAGCGCAGGC AGTCCT AGTTTAG GGA GCGAGG ACCCG
AAGATTTGAATCTCCTGA CTA AAC C GA-- --------
GAM1710 7144 GAACCCAGGCAAGGCGTAGT CA C AGTT - TGG
TCGAGGGAGCCCTGGGGGTT GAACCCAGG AGG GT CGAG GGAGCCC
CCATTCGGCCCTCCTGGGTT TTTGGGTCC TCC CG GCTT CCTTGGG
T -- - ---- A ---
GAM1711 1283 AAAGGATGCTGCTGCACAGC A - ACA TCC TACCAGT
TTCTCCAATGTACCAGTCAT AAAGG TGCTGC TGC GCTTC AATG
TGAGGCCAGCGCGCAGCACT TTTTC ACGACG GCG CGGAG TTAC
TTT - C AC- --- -------
GAM1712 7 GCATTTCTCTGATAACCAGT CTC A A - - CATTTT
GATGATGAGCATTTTTTCAT GCATTT TG TA CCAGT GATG ATGAG
ATGTCTGCTGGCTGCATAAA TGTAAA AC GT GGTCG CTGT TACTT
TGT T-- - C T A ------
GAM1713 11095 CAGCTGAAAAGAGAGGGTCA - AAA ------- G - --- TG GCTT
GGGGGAGGCTGGCTGCTTGC CAG CTG AGAG AGGGTCA GGGGAGGCT GG C CTT
TTAGGTGGAATCCAAGTTTT GTC GGT TCTC TCCCGGT CCCTTTTGA CC G GGA
CCCGTGGCCCTGCCTATACT C GG- ATATCCG G A TAA GT ----
CTGGTGGCCTG
GAM1715 16033 GCGCGTCTGTGATTCTTCCT - G ---- TT CTT CTTCTCTCCCC
TCTTGACTTTTTGCTGCCTT GCGC GTCTGT ATTCT TCC CTTGA TTTGCTGC
CTCTCCCCGCAGCGGACTTT TGCG CGGATA TAGGA AGG GGATT AGGCGACG
AGGGGATTACAGGATGATAG T G CATT -- TC- ----------
GCTGCGT
GAM1716 3 GGCGGGGTCATTGCATGACA -- TT A AC AA-- - C-- TCC
GCAAGAAGGCACGAGGTCCC GGCGGGGT CA GC TG AGC GAAGG CA GAGG
CTCATCTGTCCTTTCCCAGC CCGCCCCA GT CG AC TCG TTTCC GT CTCC
TCGCAGGCCTTGGAACCCCG AG TC G GC ACCC T CTA ---
CC
GAM1717 336 GTGGCTTTTCCAGAACCAGC TCC - ------ CCCT--- AGTAAAC
ATGTTCCCTTTCCTCAGTAA GTGGCTTT AG AACCAGCA TGTT TTCCTC
ACGAGGAATCCATAAAACAA TACTGAGA TC TTGGTTGT ACAA AAGGAG
GTTTTTGTTGGTTACTACCA CCA A TTTTGA AATACCT -------
GAGTCAT
GAM1718 7398 GTAGAAAGAAAAGCCCCTGA AGAAAA ATG ---- - TCTT
TGCTGGAGGCTGTCTTCACG GTAGAA GCCCCTG CTGG AGGC TG
CTTGACCCCAGACCTGGGGG CATCTT TGGGGGT GACC TTCG AC
TGTTGTGTTCTAC GTGTTG CCA CCAG C ----
GAM1719 22395 TCTTAGTATAGTGTTAGGTC GTAT TTA - C CTACCAACGATTCCA
AGACACGGCTACCAACGATT TCTTA AGTG GGTCAG ACA GG
CCACCTGTCCTGACCCATTT AGGAT TTAC CCAGTC TGT CC
CTATAGGA ATCT --- C - ----------
GAM1721 15624 CTGTGTAATTTTTGGCCTAA AATTTTTGGC ATAGC A- TATTAT
ATAGCCCTGTGAAGTAGATA CTGTGT CTAA CCTGTGAAGT GA
TTATTCCAACTTTACAGGTT GACACG GATT GGACATTTCA CT
AGAAAATTTGAGGCACAG GAGTTTAAAA ----- AC ------
GAM1722 8234 GGGTCGTCGCCTCGTCCAGT TCG CC TCTC TG AT-- T- TTATGT
CTCTCTGGGTGGCCATGCTT GGGTCG CCTCGT AGTC TGGG GCC GCT GGTT
GGTTTTATGTAACTCTGGCC CCCAGT GGAGTA TCAG ACCC CGG CGG TCAA

TAGGGCATCCCACTGACTCT GA- TC TC-- TA GATC TC ------
ATGAGGAGTGACCC
GAM1723 3555 CCTGCTCAGTGTTTGGCATC CA- TT CT- CTA G CAGAGTTC
TGGTGGCTAAGCTGGTCTTC CCTGCT GTGT GGCAT GGTGG AGCTG TCTT
AGAGTTCAAGACAGCTTCAT GGATGG CACG CCGTA TTACT TCGAC AGAA
TCTCATGCCTGGCACCTTGG TTC GT CTC --- - --------
TAGG
GAM1724 19490 GGGAAAGAATGCCAAGATGG GAA AGAT TTT AAGA TTTGGTTGT
TATTTTCTTTTGGCAAGATG GGGAAA TGCCA GGTATTTTC TGGC TGC
CTTTGGTTGTGCAGTCATTG TCTTTT ACGGT TCATAGAAG ACTG ACG
AAGATACTTGGCACTATTTT ATC ---- TT- ---- ---------
CT
GAM1726 20897 GTCCGGGGCGAGGGGCCCAT ------ G ------- - ACACTG
CTTCTTCTACACTGGGAACG GTCCGG GGCGAGGG CCCAT CTTC TTCT
AGGGCGACGTGTGGGCCTTC CGGGCT CCGCTTCC GGGTG GGAG AAGG
GCCAACAACTCGGGC CAACAA - TGCAGCG C ------
GAM1727 15174 GGTAGCATGATGCTTCCAGC T --- T C-- TT---- TTTTGCTT
TTTATTCTTTTTGCTTAGGA GG AGC ATGA GCTT CAGCT ATTCT
TTATCTTGGCTGTATAGGCT CC TTG TACT CGGA GTCGG TAGGA
CATTAGGTTCC - GAT - TAT TTCTAT --------
GAM1728 13543 GGAATGAAACTGGGGTCTTC AACT C AGT GACAATCTG
AAAGTGGGTTGTGACAATCT GGAATGA GGGGT TTCAA GGGTTGT
GGCAACCTTTGAAACCCTTT CCTTATT TCCCA AAGTT TCCAACG
GCTTATTCC CGTT - --- ---------
GAM1729 2518 AGCCCGAAAGTGTCTCCACC CC AAGT CCA G AAT-- TCCA
AGGCGGCTTCAATGGATCCA AGC GA GTCTCCA GGC GCTTC GGA
TCCCTAAAGAGGTGGCCCCC TCG CT CGGAGGT CCG TGGAG CCT
TGGAGGCCATCTTGCT TT AC-- CCC G AAATC ----
GAM1730 14882 ACAATGTCTTTAATTCCTCA - - - CA T ACT- CAAT
TATGCTGACTTGGCAATCCA ACA ATGTCTT TAATT CCT TA GCTG TGG
TATGCAGCCTAAAAGGTGGT TGT TGTAGAA GTTGG GGA AT CGAC ACC
TGAAAGATGTCTGT C A T AA C GTAT ----
GAM1731 3866 GGACTTGCAGAGAGAGTTTT AC- --- T-- GGAATGTAAGA
CTACTGGAATGTAAGAGGTT GG TTGCAGA GAGAGTTTTC ACT
TTGAAGGCTCTCTTTTCTGC CC AACGTCT CTCTCGGAAG TGG
AAAGGCC GGA TTT TTT ----------
GAM1733 18242 GTGCATCAGCCGGCTTGAGT T - G- TG GT ATATCAAAGC
TTGTTCAATATCAAAGCTGA GTGCA CAG CC GCT AGTTT TCA
AAACTAGCGAGGTCTGCTGT CATGT GTC GG CGA TCAAA AGT
AC C T AG -- -- ----------
GAM1734 8284 AGGCGCTGGTCCCCTTCAAA - C-- - - GC GG C-- ATGGGG
AGGGCAGGGGGACCGCATGG AGGCGC TGGT CCCTT CAA AAGG AGG GA CGC
GGGCGTCTTTTTCTTAACCT TCCGTG GCCA GGGAA GTT TTCC TTC TT GCG
TATTGCAAGGGAATACCGTG T TAA C A AA TT TCT ------
TGCCT
GAM1736 10494 GTCAGGGAAATCATGCAGCC G AAA G-- TC-- CACAG C GACG
ATCAGGACACAGGCTCCGGG GTCA GG TCAT CAGCCA AGGA GCTC GG
ACGTCGAGCATCATCCTCTC CAGT TC AGTA GTCGGT TCCT CGAG CT
CTGGCTGAAAATGACAACTA A AAC AAA CCTC ACTA- - ----
TGAC

GAM1737 14669 GTGGCGGCGGCGCGTGCGAC C GC GACGG CCTC G AG -- GCC
GGTCACCTCGGTTTGGGGAA GTGG GGCGGC GTGC TCA GGTTT GGGA ATGGAAGAGTTG
AGTCAG
GATGGAAGAGTTGAGTCAGG CACC CCGTCG CACG AGT CTAGA CTCT TGTCTTTTCGAT
TCGGTC
CCCTGGCTAGTAGCTTTTCT - A- ACA-- ---- A G- GA ---
GTGTCTCAAGATCTGAACAG
CACAGCTGCCCCAC
GAM1738 4782 CAGCTTCTCTTTCTTTCTGC TC--- C CAGATG TTCTTTC
CTTTCAGATGGGCTTCTTTC CAGCTTC TTTCTTT TGCCTTT GGC
GCCGAAGGTACAAAGAAATT GTCGAAG AAAGAAA ATGGAAG CCG
ATCGAAGCTG CTATT C ------ -------
GAM1739 2981 CCGACAAGAAAGCCGAGGCT GA--- GAAA C C -- G A A T A TAGA
GGGGCTGGGTCAGCAACCGA CC CAA GC GAGG TGG GGCTG GTC GC ACCGAAT CC GTT

ATTCCAGTTTAGAGGCGGAT GG GTT TG CTCC ACC CTGGT CAG TG TGGTTTA GG CGG
TTGGTCGTGGACGTGGTCAG AGCAG AAAA A - GA G G C - - ----
CCACCTCAGTAAAATTGGAC
GAGG
GAM1740 17178 GCCCTCAGGGAACTTTGTGG A- AAC T C - TT CAACA
CCTGTGGGGGGTTGGACAAC GCCCTC GGG TTTG GGC TGTGGG GGG GGA
ATCTGCTCCATCTACAGCCT CGGGAG CCC GAAC CCG ACATCT CCT TCT
CAAGACCCGCGAGGGC CG A-- T - A CG -----
GAM1742 11777 AGTCTCTGACCAGCCTGAAC --- AGC CGT AT - TG TGGA
GTGTCTTATGTCACTTGTTT AGTCTCT GACC CTGAA GTCTT GTCAC T TT
GGAAATGATGTGATTGAAGA TCGGAGG CTGG GACTT TAGAA TAGTG A AA
TTTCAGAGAGGTCATTGGAG TTA AGA --- GT T GT ----
GCT
GAM1743 5696 AGTCTAATATAGAGATTACT T A GATTACT -- A - GGAATAATGAG
GGCTTTAACAGTGAACTGGA AGTC AAT TAGA GGC TTTA CAGTGAA CT
ATAATGAGGGCTTCACTGGT TCAG TTA GTCT TCG AAAT GTCACTT GG
AAAATGCTTCTGAATTGACT - A ------- TA G C ----------
GAM1745 2117 GCCAGCACGCCAAGTACACT CACG A CA - CTG- CAAAA
TGCTCTTTCTGTGGCAAAAC GCCAG CCA GTA CTTG CTCTTT TGG
CAAGATGAAGAGACGAGCTG CGGTC GGT CGT GAGC GAGAAG ACC
CGTGGATCTGGC TA-- G C- A TAGA -----
GAM1746 14392 AGACTGGGCAATATAGCAAG A C - AG- - C AAAA
ACCCCATCTCTAAAAAATTA AG CTGGG AATATAG CA ACC CCAT TCTAA
GGCATGGTGGTGCATGCCTG TC GACCC TTATGTC GT TGG GGTA GGATT
TATTCCCAGCT - - C ACG T C ----
GAM1747 1645 GTTGCTGTTCATAAGTTTAG TTCA- TT ---- ATCTGAAAAAATC
TATCTATATCTGAAAAAATC GTTGCTG TAAG TAGTA TCTAT
ATAGAAAATTGCTGGGTTTA CGACGAC ATTT GTCGT AGATA
GCTCTCAGCAGC TCTCG GG TAAA ----------
GAM1749 3265 ACTTGTATTTGCTGAGCCAG T- - CC TT CATGCATAAAACAAATTTC
TGGTATTAACTCATGCATAA ACTTG ATTTGCT GAG AGTGGTA AACT
AACAAATTTCGGTTTGCTAT TGAAC TAAACGA CTT TTATCGT TTGG
TTCTTCTAGCAAATTTCAAG TT T CT -- ----------
T
GAM1750 16241 ATGCTGTTTTACCAAGACTT G T CCAA TT TGGACCCAGAAAGAATTT

TATAGCAGATGGACCCAGAA AT CTGTT TA GAC TATAGCAGA
AGAATTTTCTGCTATGTGTT TA GACAA AT TTG GTATCGTCT
CACTACAACAGGAT G C CAC- T- ----------
GAM1751 17386 GAAAATATAAGAACATTCTA ATAA- C-- T GTGAG ATAAG
GAAGGTTGTGAGACATAAGG GAAAAT GAA AT CTAGAAGGTT AC
TACAAAAACCTTCTAGCATA CTTTTA CTT TA GATCTTCCAA TG
ATTTCAAAAAATTTTC AAAAA TAA C AAACA -----
GAM1752 3346 CTCTGCTGCCCTTTCTGTGC G T TGCCCC TCTAT CCCGTCACACCC
CCCCCAGGTTCTATCTCCCC CTCTGCT CCCTT CTG CCAGGT CTC
GTCACACCCGAGGCCTGGCT GAGGCGA GGGAG GAC GGTCCG GAG
TCAGGAGGGAGCGGAG - - TTC--- ----- ----------
GAM1753 12770 GTTGTTTCTTTAGCTCTCCT T TTA CA ACA- AT- CAACTGAA
CCAAGACACTATGGCCAACT GT GTTTCT GCTCTCCTC AG CT GGC
GAAGCCCAAAGCCAGCTGAG CG CAAGGG TGAGGGGAG TC GA CCG
AGGGGAGTCTGGGAACTGC T TC- AG GACC AAC --------
GAM1754 3371 TGCTGGCGCTGCGCTGCGGC T T C CTCC- -- T CC TCTCCGTCCC
TCCCGCTGGCTCGGCCTGCT TGC GGCGC G GCTGCGG CGC TGGC CGG TGC
CTCCGTCCCGCGCTCCGTGC ACG CCGCG C CGGCGCC GCG GCCG GCC GCG
CGCTGCGCCTCCCCGCGGCC T - C CCTCC TC T TC ----------
CGCGCCTGCA
GAM1755 17110 TAAGAGTGGCAGGGCGGACT G GG G AACAGG AG A TACAG
AACAGGAGGCAGGCCAGCTA TAAGA TGGCAG CG ACT AGGC GCC GC
CAGGCAGGCAGGCCTAAAGG GTTCT ACCGTT GC TGG TCCG CGG CG
GTGCGATTGCCAATCTTG A A- G GAAA-- GA A -----
GAM1756 15149 GCCCAGCCCATGGCTGCCAT ---- ATG A A- GAA TTCT
GGGAGGCCTGAAGGTGCTTC GCCCAG CCC GCTGCC TGGG GGCCT GGTGC
TGCACTGGGCTGGTCCAGGC TGGGTC GGG CGGCGG ACCT TCGGG TCACG
GGCGGGGAGCCCTGGGT CCGA G-- - GG --- ----
GAM1757 1564 TCATCGAGATAGACACTGTT C A C T-- G GCATA
TAAGGCCGCATAGGTGTTAG TCAT GAGAT GA ACTG TTAA GCC
TCCCAGTTCCATTTTCATGA AGTA TTTTA CT TGAC GATT TGG
C C - CCT G -----
GAM1758 8262 GATACAAGACAGGCAAGAAC A - --- AA TG - TTCCA
AAGTGGTTCTTCCAGAAACT GAT CAAGACAG GCA AGAAC G GTT C
GCGGTTTTAGATGCTTTGTT CTA GTTTTGTT CGT TTTTG C CAA G
TTGATC - T AGA G- GT A -----
GAM1759 3810 TCTAAATTAATTTGGCAAAA AAATTAA- -- A -- -- TTCCTGTT
GATAGGGTACTTAGTTTCCT TCT TTTGG CA AAGAT AGGGT ACTTAGT
GTTACTGAGTTAGCTCTACG AGA AAACC GT TTCTG TCTCG TGAGTCA
TCTTCTGGACCAAAGCAACA GTACAACG AG C CA AT --------
TGAGA
GAM1761 4887 GAGCCAAGCCGCCAGCGCTG A G A T-- AT GCCACGCTG
CGATGTGGGCCACGCTGCCG GAGCCA GCC CC GCGC GCG GTGG
CTGCTCTGCGCCGGGGCCTG CTCGGT CGG GG CGCG CGT CGCC
GCTC C - C TCT -- ---------
GAM1763 10174 TGGCAGGACCCGCTGGTGCT A ------ C CT CGGAG - ACCA
GGACGGAGCAGCTGACCACA TGGC GGA CCCG TGGTG GGA CAG CTG
GACTGAGATCCTCATCACGG ACCG CCT GGGC ACTAC CCT GTC GAC
GACACCTTCCGCCA - TCCACA - T- AGA-- A ----
GAM1765 9131 CCCTCACCTTATTGGGCAAA - A--- G - TCAATCTCCTTT

ACTGCATCAATCTCCTTTTG CC CTCACCTT TT GGCA AAACTGCA
CAGTTTCTGCTGGACATCAG GG GAGTGGGA AG TCGT TTTGACGT
GGTGAGTGG T CTAC G C ----------
GAM1766 1860 GTCACACATGGGTTGAACCT AAC-- ACTGA A C CA GGGACCATG
CACTGATTTCTGGGAGGCTA GTCACACATGGGTTG CTC TTTCTGGG GG TA GC
CAGCGGGACCATGGCATAAC CGGTGTGTACCTAGT GAG AAGGGCCT TC AT CG
TATCCGGGAAGAGACTTGTG GTTCA ----- A A A- ---------
ATCCATGTGTGGC
GAM1767 20648 GGCGCAAATGGGCCCCGGGC GCAAA -- - -- AG - - TACTGT
GGCCCAGGTCCTCCTACTGT GGC TGGG CCC CGGGCGGC CC G TCCT CC
GGAAGGAGCAGGGAAGCTGC CCG ACCC GGG GCCCGTCG GG C AGGA GG
CCGAGGGAACCCAAGCC A---- AA A AA GA G A ------
GAM1769 1866 TGATGTCTTTGACCTGAGGT A- GAG T G GTCCTCTA
ATAGAGTTGTCCTCTAAAAT TGATGTCTTTG CCT GTA AGA TT
CTTTGCATAAGGCATAGGGA ACTACAGGGAT GGA CGT TCT AA
CATCA AC ATA T A --------
GAM1772 2648 GGAACAGGGAGGGCCTGTGT A AG C TC -- - AGGTTC
CTGGCCAGGCTGAGGTTCCA GG AC GGAGGG CTGTG TGGC CAGG CTG
GATCTGTTGCCATCATGGCC CC TG CTTCCC GGTAC ACCG GTCT GAC
CCTTCAGGTGCC G GA C T- TT A ------
GAM1773 13707 GGTCCTTTAGGAGGTGATAG C - ATA TC TGT GA TCATA
TCATCGCTGTCCGAGGTGTC GGT CTTTAGGAG GTG GTCA GC CC GGTG
ATACACCAGGTTGTTGGCGA CCA GGAGTCCTC TAC CGGT TG GG CCAC
ACATACTCCTGAGGAACC A A AAG -- TT- A- -----
GAM1774 15452 CTGTATCGATATGGTTCCTT TC AT-- TCC C C A ATT
TTCCGTCACCACTGGACATT CTGTA GAT GGT TTTTC GT ACC CTGGAC
GTCCAGGGTATTGAAAGTGC GACGT CTA CCG GAAAG TA TGG GACCTG
CTGAGATCCTGCAG C- GAGT T-- T - - ---
GAM1775 14232 GATGAACGCTACCGACATTT - AC- A A C TGTT
AGGATTCTCTGTTGATGACC GATGAA CGCT CG CATTTAGG TT TC
TTGGATGCTGTAAAGTGATT CTGCTT GTGA GT GTAGGTTC AG AG
CGTC A AAT C C T ----
GAM1776 1054 TCTGTGTTTGAAGTGTCTAT TT ---- - GGG ATG
TGGGCTAGCATGGTTAGAAA TCTGTG TGA AGTGT CTATT CTAGC
TAGAACATTACCATCATTGC AGACGT ACT TTACA GATAA GATTG
AGA T- ACCA A A-- ---
GAM1777 3717 GTCGCCCAGGCCGGAGTGCA CCA G T- - --- TCA
GTGGTGCGATCTCAGATCAG GTCGC GGCC GAG GCAG TGGTGC GATC
TGTACCATTTGCCTCTCGGG TAGCG TCGG CTC CGTT ACCATG CTAG
CTCAAGCGAT AAC G TC T TGA ---
GAM1778 7418 TGTGAATAAAACTTTTAATA - -- - AA-- CAGC AT CAGG
ATGTACAGCAGAAATTGGGC TGTGA ATA AAA CTTTT TAATGTA AGAA TGGG
AGGCTCATTCTTATATTAAA ACATT TAT TTT GAAAA ATTATAT TCTT ACTC
ACAAAAGATTTCCTATATTA A CC A CAAA ---- -- ----
CA
GAM1779 5497 GGAGTCTCACTGTCACCCAG TC GTC - - C T AG T TCCTGAC
GCTGGAGTGTAGTGCTGCGA GGAG TCACT AC CCAG G TGGAG GT TGC GCGA
TCCTGACTCGCTGCAACCTC CCTC AGTGG TG GGTC C ACCTC CA ACG CGCT
CACCTCTGGAGTTCAGGTGA TT ACT A T C - -- T -------
TTCTCC

GAM1780 20085 GGACTCCAGCCCGCCCCAGA A - - AGAAG GGTT TGA- G GAGC
AGCCGAGGTTTCTCCTGAGC GG CT CCAGCCC GCCCC CCGA TCTCC GC AGGT
GAGGTGAGCACCTGTACCTG CC GA GGTCGGG CGGGG GGTT GGAGG TG TCCA
GAGGTTGGAGACAGGGGCAG - C A ACAGA ---- TCCA - ----
GGCTGGCAGCC
GAM1781 12979 GCTCCTGGGCTGAAGCGATC TCC AA- ATC- C - C CTAAAGTTCT
TTCCTGTCTTGACCTCCTAA GC TGGGCTG GCG TTC TGTCT TGA CTC
AGTTCTGAGATTACAGGCAT CG ACCCGAC CGT GAG ACGGA ATT GAG
GAGCCACTGCACCCAGCCCA TC- CCA CACC T C A ----------
CTGC
GAM1783 13480 GCCTAGAGTGATGTGCCGCC C G A- CGC-- CA AC CCTCA
TGCAGGACCAGGGCCTCATC GC TA AGTG TGTGC CTG GG CAGGG
CTGTACCACCAGCACCAGCA TG GT TCGT ACACG GAC CC GTCCT
CAGCTGCTGTGAGT A G CG ACCAC CA AT -----
GAM1784 18666 GTGAGGGGTGGCATATCGGT - A T C AAAAC TAT GG GGCAT
CGCTACCGGAAAACTCGCTA GTGAGGGGT GGCAT TCGG CG TACCGG TCGC G GGCGC

TGGGGGCGCGGCATGTGCCA CGCTTTCCA CTGTA GGCC GT ATGGTT AGCG C CCGTG

ACGCGATGCTTGGTATGCCG A - - - CGT-- --- AA -----
GATGTCAACCTTTCGC
GAM1785 3057 TCAAGACTGGTGTTTCCTAG GG TT C AGCT TT- AATGC
AGCTTTCCATTGGCAAATGC TCAAGACT TGT C TAG TTCCA GGCA
TGCCTCCTGGAACTGAGGGA AGTTTTGG ACA G GTC AAGGT CCGT
CAAAGGTTTTGA AA GG A ---- CCT -----
GAM1787 5329 GGACTTTTATTTCCACCTGT TTT TTC C - - CA- AGGACTG
TGACAGGACAGCAGGAGGAC GGAC TAT CA CTGTT GAC AGGA GCAGG
TGCCTGCCCTTCCTGGTCTG CTTG GTG GT GGCAG CTG TCCT CGTCC
ACGGTTGCTGTGTTGTTC TT- TC- T T G TCC -------
GAM1788 22309 ACAACTACGGACCTTGGTCC A- CC C----- - TTTAT
CGGCCTTTATGGACTATTAT ACAACT CGGA TTGGTCC GG CC
TGGACCAACTCCGAAAGTTG TGTTGA GCCT AACCAGG TC GG
T AA C- TTATTA A -----
GAM1790 19742 TTGGGGTTGAAGAGTTTATT GG A- ATTTA C CCCTT
TATTGCTCTGCCCCCTTGGC TTG GTTG AGAGTTT TTGCT TGCC
ACAGCAAGCCCAGGCTCTAC AGC CGAC TCTCGGA AACGA ACGG
CAGCAACGA AA CA CCCG- C -----
GAM1791 22932 GACATTAATAATGAGGCAAA T T G A- TTAAAATTG T A - A AA-------
TGGCATTAAAATTGGCCCTC GACA TAA AAT AGGC AATGGCA GCCC CAGC TGCTG CT CC

AGCATGCTGCTACCAATGCA CTGT ATT TTG TCTG TTGTCGT CGGG GTCG ACGAC GG GG

ACACATGCAGGCAATCAGGG C T - AG CGG------ - G A A GACTAACGG
AGGACAGCAGGCTGGGGCGG ACACA
CTGCTGTTGAGTCTGTTTTT TGCA
ACTGTC ACGT

GAM1792 2060 GGCGACAGGTGCAGAACAAA CAG G AACAAAAA GGA CCACGA
AACAGCAGGACAAACCCACG GGCGA GT CAG CAGCA CAAAC
AGTTTGAATGTTGGAAAGAC CCGCT CA GTC GTTGT GTTTG

ACTGACAAATCGCC AAA - ACAGAAAG AA- ------
GAM1793 14919 TGTCTGCAAGATTCCGATTA C A- ------- AT - GGTTCCAAATTTAAG
ATGCTATTTTTATGGTTCCA TGTCTG AAG TTCC GATTA GCTATT TTTAT
AATTTAAGATAGACAATAGC ACAGAC TTC AAGG CTAGT CGATAA AGATA
TGATCATAATAGGGAACACT A AC GATAATA -- C ----------
TACAGACA
GAM1794 6861 CTGGGCACGTAGGCCTCCCG A T CT GCAGT A- TC C ATCCCGCCC
CAGTGAGATGAGGATCGGGT CTGGGC CG AGGC CCC GAG TGAGGA GGGT GGC
CGGCATCCCGCCCGCTCACC GGCCCG GC TCCG GGG CTC ACTCCT CCCA TCG
CACTCCTCAGCCTCCAGGGC G - TC AC--- CG CA C ---------
TGCCTCGGGCCCGG
GAM1795 18946 CTGTGGGCGAGTGAAAGGGT GG-- AAAGG- AAC GAA GGAA
TCCAACCGGAAGGGGAACTG CTGTG CGAGTG GTTCC CG GG
GACGCAAGGGACAACACGCA GACAC GCTCAC CAGGG GC TC
CTCGGGAACACAG AAGG GCACAA AAC AGG ----
GAM1796 7440 GCCATCAGCTCCTTGGGACT ---- C - A GA ACAGAG
GATGAACAGAGTCAGAAGCC GCCAT CAG TCCTT GGG CT TGA
CAAAGGAATTGCACTGTGGC CGGTG GTT AGGAA CCC GA ACT
TCAC A A - AG ------
GAM1797 12829 GGCGCCTATGGGCAGGCGGT CTAT--- C--- - AC-- G GCGCGCA
GCGCTACCAGGGCCGCGCGC GGCGC GGGCAGG GGTGC GCT CA GGCC
AGGCCGTGCTGCAGCAGTAC CCGCG CCCGTCC CCATG CGA GT CCGG
CAACACCTGCCCTCGTTCCG CCTTGCT ACAA A CGTC G -------
CGCC
GAM1798 12505 CTTGGTTGTGCATCTTCCCA -- TCTTCC TC CTTC
GTCTATTTCTGCTTCTAGAA CTTG GTTGTGCA CAG TATTTCTG
ATACCCTGTGTACAACAGCA GAAC CAACATGT GTC ATAAAGAT
AG GA ------ CC ----
GAM1799 6785 GGTGAGGTGGGTGGATCACC - TGGA - A- A-- CAA
TGAGGTCAGGAGTTCAAGAC GGT GAGGTGGG TCACC TG GGTCAGG GTT
CAGCCTGGCCAACATGGTGA TCA CTCTACCC AGTGG AC CCGGTCC CAG
AACCCCATCTCTACT T CAA- T AA GAC ---
GAM1800 21366 GACAGCTCCTATGATGGGCC A- TCC G CCCAACCC-- ATCCCA
CAACCCAATATATCCCAATG GAC GC TAT ATGGG AATAT
TTTTCCCAATTTCCCATGAT CTG CG ATA TACCC TTGTA
AACTGCAGGTC GA TCA G TTTAACCCTT ------
GAM1802 1306 GGCATGGGGAGGTTCCCGGG TG G -- C AT ACAC
TATCTCCGACACTGGGGGGG GGCA GGGAG TT CC GGGT CTCCG
CCCAGGCCGAGCTCCTTGTG CCGT TCCTC AG GG CCCG GGGGT
CC GT G CC A GG ----
GAM1803 4539 TAACTGCAGCAATTTCCTTG CAATTT - C--- GAAATTCTGGAA
AACTGTCTGTAGAAATTCTG TAACTGCAG CC TTGAA TGTCTGTA
GAATGCAGATATTTATTCAA ATTGACGTC GG AACTT ATAGACGT
TGGTACTGCAGTTA AT---- T ATTT ----------
GAM1804 17105 CACTTGAGCCCAGGAGGCGG GA-- AGGC GT G A- TGAGATT
AGGTTGGAGTGAGCTGAGAT CACTT GCCCAGG GGAG TG AGTG GC
TGTACCACTGCACTCCAGCC GTGAA TGGGTCC CCTC AC TCAC TG
TGGGTGACAAAGTG ACAG GA-- -- G CA -------
GAM1805 18256 GTTTTTTAAGGTTTTGGAAG TTAAG G ACA - ACATACAGCAAG
TAACAAAGGGATACATACAG GTTTT GTTTTGGAA TA AAG GGAT

CAAGATCCACTTACATAGTT CAAAA CAAAATTTT AT TTC CCTA
TTAAAACATGCAAAAC CGTA- G ACA A ----------
GAM1807 5030 CCATCTGATTTTGAGCACAC T A A CA -------- - TT TTTGAT
CATCCATGTTGGCTTTGATG CCA CTG TTTTG GCA CCA TCCA TG GGC
CTGTTACTGGAGAATTCACT GGT GAC AAGAC CGT GGT AGGT AT TCG
GGCATGCCAGAACAGTGG - - - AC CACTTAAG C TG ------
GAM1808 13127 TTGGGAATATGCATGGGAAT GAATA-- AA- A TT- C AACTG
GAGGCTGTTGGACGAGAACT TTGG TGCATGGG TG GGCTG GGA GAG
GCTCATTTTCTTGGCCCAGT GACC ACGTATCC AC CCGGT TTT CTC
ACCTATGCAACGAATACCAG ATAAGCA ATG - TCT A -----
GAM1809 982 TGAGCTGCTTCATCTCAGAC CTCA--------- TAAGCC
GCACTAAGCCGTGTGTCCTC TGAGCTGCTTCAT GACGCAC
GCCCTCTCCCGTGAGGCAGT ACTTGACGGAGTG CTGTGTG
TCA CCCTCTCCCGCTC ------
GAM1810 5509 TGATGAAATGCACTTTCCCG A CTTTC G GTTCTTTTGCCTGTCA
TGCAGCAGTGTTCTTTTGCC TGATGAA TGCA CCGT CAGCAGT
TGTCAACTGCTGGGTGGTTT ACTACTT ACGT GGTG GTCGTCA
TTGCATTCATCA - TTTT- G ----------
GAM1811 4576 TTTGGGGGGTTTGGCCAAAC GG- - A TT- TTAAT
TTTTTATTTAATATTCTGGA TTTGGG GT TTGGCCAA CTTT AT
GTTGGTTAACACACACTTAA AAATTC CA AATTGGTT GAGG TA
A ACA C - TCT -----
GAM1812 6468 TCACTTTTTACGTGAGCGTA A GAGCG CCAAG GT A C AGAAG
TAATCCCAAGATCAGTGTTA TCACTTTTT CGT TATAATC ATCA GTTAT TTTTA TGG
TATTTTACTGGAGAAGCTAT AGTGGAAGA GTA GTATTAG TAGT TAGTA GAAGT ATC
TGAAGATGATGATGATGATT A ----- ----- AG - T -----
ATGATGAAGAAGGTGA
GAM1813 2854 GTATTGCTATTTGTTTAAAG TTTGTTTA CACATAAA A CACCCA
CACTCACATAAATCCATTTC GTATTGCTA AAGCACT TCC TTT
ACCCAAAAAGGAAACATAAA CATGACGAT TTCGTGA AGG AAA
GTGCTTCTAGCAGTAC C------- AATACAA- A ------
GAM1814 15836 AAGGCGCAAACCCGCCACGT - AAC - TCTGGAAA AA GATCGAG
TCTGGAAACTATCCGCAAGT AAGG CGCA CCGCCA CGT CTATCCGC GT
GATCGAGACGGCGGGTGGCA TTCC GTGT GGCGGT GCA GGTGGGCG CA
CGATGGCGGATGTGACCTT A A-- A C------- G- -------
GAM1815 21741 GGTGGCCCCCTGCGCAAAGA -- - G AAAG T -- TG GTCGG
CCTAGGCCCTGGTGTCGGGC GGTG GCCC CCT CGC ACC AGGCC C GT
TGGCAGGCCTGGTAGGCGGA CCAC CGGG GGA GCG TGG TCCGG G CG
GGCGGGCACCACC CA C G GA-- - AC GT -----
GAM1816 14237 AGTAACTGCAAAGATGCTGT C C CTG TGC G C- GT C TTCCTCGGC
CCGTGCGCGTTGCTGCGGCC AGTAA TG AAAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC

GTGGTCCGCGCCCTTCCTCG TCGTT AC TTTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG

GCGGGCCGGACTGGTCTCCA - - TT- T-- A CT -- - ---------
GAAATGCTTGGGTTCATCTT
TCATTGCT
GAM1817 11266 TGTGTTGATGCATTTTCACT A ATT - G TCA GAAATGGA
TCTGTGGTCATAGGAAATGG TGTGTTG TGC TTCACT TCT TGG TAG
ACTGGTCTAAAGAGAGTGAG ACACAAC GCG GAGTGA AGA ATC GTC

GCGCAACACA - --- G A TG- --------
GAM1818 15589 GGGGCTCAAGTGAGAGCAAG AAGT A AG G --- - TCACC
TGGTCCCGGGCCCCTTCACC GGGGCTC G GAGCA TG TC CC GGGCCCCT
AGGGGCTCAGGTGAGAGCAG CCCCGGG C CTTGT AC AG GG CTCGGGGA
GTGTTCCCGGGCCCC ---- C GG G AGT A -----
GAM1821 6026 CTGGTGCTACCAAGAAGTCA GG A T ----- ATTGA
GATGGAAACAATTGATGTTT CT TGCTACCA GAAG CAG ATGGAAACA
CTATTGAAGCTGCTTCTGGT GA ATGGTGGT CTTC GTC TATCTTTGT
GGTAAAG A- - - GAAGT -----
GAM1822 918 GGTCCGGCTGCCCTTGACCG T T----- TT-- ACCT TC CCCCGATA
GTCCGACCTGGCGTCCTCCC GG CCGGC GCCC GACCGGTCCG GGCG CT
CGATAAGCCGCCCCACGGGC CC GGCCG CGGG CTGGCCGGGC CCGC GA
CGGTCCCCCGGGCCACACCG - CCACAC CCCC ACC- C- --------
CCGGCC
GAM1823 4269 CCTGGCCTGCAACTTCAGCC T AA--- A TTT- AAAAT - CACGG
TTTCTCAAAATCGGGGCACG CCTGGCC GC CTTC GCC CTC CGG GG
GTCATCGTGGAGCGCTGGTG GGGCCGG CG GAAG TGG GAG GCT CT
GAAGGTACCGCTGGCCGGG T CCATG G TCGC GT--- A -----
GAM1824 22590 GAGAGTTGCTTGAGCCCAGG TT GA-- AG----- A TAGTCAGC
AGGCGGAGGTTGTAGTCAGC GAGAG GCTT GCCCAGG GCGG GGTTG
CAGCCACTGTACTCTAGCCT CTCTC CGAG CGGGTCC TGTC CCGAC
GGGCAACAGAGCTCTCTC T- ACAA GATCTCA A --------
GAM1825 20774 GCGTGTTGGCTTGGCTGTTG T -- - G GA GGA- AA GAAA
ACATGGATGAAATTGAAAAG GCGTG TGG CTTGG CT TT CAT TG ATT
TACCAAGAAGTGGAAGAAGA CGTAC ACC GAACC GA GA GTG AC TGA
CCAAGACCCATCATGC T CA A A AG AAGA CA ----
GAM1826 1844 CAGAATGTCAGAGCTGAGTC AAT - - T - A GACTA
TGGTGTTACTGACTAAGGAA CAG GTC AGAGC TGAGTC GGT GTT CT
CAACCTGACTCAGGCTCTAG GTC TAG TCTCG ACTCAG CCA CAA GA
ATGGCTG GG- A G T A G -----
GAM1827 19238 GCTTGGAGTTCTATGATTTT T- A A- CA-- AC- ACATTTA
CTCAGGTACCGACATTTACG GCT GG GTTCTATG TTTTCT GGT CG
AGCACCCGTTAGAAAGAGCG CGA CC CAGGGTGC GAAAGA CCA GC
TGGGACCCTCAGC CT - GA TTGC CGA -------
GAM1828 6474 CGGTGCTGGGGAAGTCGGAG T GA - AG----- T ACAACCAC
GAGTGGGCGGACAACCACCT CGGTGC GGG AGT CGG GAG GGGCGG
GCCCCTTACGGATGCCGAAC GCTACG CCC TCA GCC TTC CCCGTC
TGGCCCGCATCG - GG A GTAGGCA - --------
GAM1829 13983 GCTGGGCTTGCGCTTGCGGC CTTGCGCTT - T TA TG T T TCTGACTTC
CGGTGTACTGGGTGTCAGGT GCTGGG GCGGC CGG G C GG G CAGG
CTGACTTCCCTGCCCTGGCG CGACCT CGCCG GTC C G CC C GTCC
CCTGTGCCGCTCCTTCTTCT CTTCTTCCT T - GC GT - - ---------
CCAGC
GAM1831 10665 AGTACCGTTTTTGAGGTTCA C TT - ------ CATTTGC
GTCCTTAAACATTTGCTTTA AGTA CGTT TGAGGTTCA GTC CTTAAA
AGAAAACAGGCTTGAATTTC TCGT GTAA ACTTTAAGT CGG GAATTT
ACAATGCTGCT C C- T ACAAAA -------
GAM1832 10277 CTAGCCAAAATGTACAAGAC - AAA ACAAGA - TCA TT ATTTGG
CACACCGGATGTCATCTTTG CTA GCCA TGT CCAC ACCGGATG TCT GT
TATTTGGATTCAGAACTCAT GAT CGGT ACA GGTG TGGTTTAC AGA TA

TTGGTGGTGGCAAGACAACT T CA- GAAC-- G TCA CT ------
GGCTTAG
GAM1833 12762 GGCCTTCTGCATGTAGTGAT TCTG - - TCCG---- --- CAA
CCGGGGCTCCCCCAAGGGGA GGCCT CATG TAG TGA GGGC TCCCC
ACCGCCCAGCCATCCTCACC CCGGG GTAC ATC ACT CCCG AGGGG
TACCATGATGTGGGCC TGTA C C CCTACCGA CCA ---
GAM1834 20903 AATTTTGGGATGGTATCTAT G GG - TAT- - AAAGGAACGG
GTCTCTGAAAAAGGAACGGT AATTTT GGAT TAT C GTCT CTGAA
TCAGCAGGCTGATGAATAAG TTGAGA TCTA ATA G CGGA GACTT
ATCTAAGAGTT A GA A TAGT C ----------
GAM1836 4008 CCCCACGCTCAGTCCTGGTC C AG TCAAA T - CCTT
AAAGGCTGCCAGACCTTTCT CCCCA GCTC TCCTGG GGC GC CAGA
GAGTGCCCCCAGGGAGGGGC GGGGT CGGG GGGACC CCG TG GTCT
TGGGG - GA C---- - A ----
GAM1837 20618 GCAGACAAAATGAAAGAAAA C-- G AT- GA- A- GTAAGCA
TGAGAGCAGAAAGTAAGCAT GCAGA AAAAT AAAGAAA GA GC GAAA
TTCCAGCCTATCTAATTTCT CGTTT TTTTG TTTCTTT CT CG CTTT
TTAGTTTTCTATTTGC ATC A AAT ATC AC -------
GAM1838 17500 TCATCTGTTAATCCCAGGTG T TCCC TG CCTCAT - ATA
TCCTCATGTTGCTGAAATAT TCATCTGT AA AGG T GTTG CTGAA
TTAGATAGCTAAAATATCCC AGTAGACA TT TCC A CGAT GATTT
TTAATTTCACAGATGA C TAAT CT TAAAAT A ---
GAM1840 964 CCAACGTCTGTTCATGGCTG A TTCATG TG-- - - CC CAAC
TGGTTTTAAAAGAGTCCCTC CCA CGTCTG GC TGGTT TTAAA AGAGT CT
AACAGATGCTCTATTTAATA GGT GTAGAC TG ACCAA AATTT TCTCG GA
ACCAGTTTGTACCTCAGATG - TCCA-- TTTG T A TA ----
TGG
GAM1841 12924 TAGGTCAAATGTGTCCTCCA ATGTGTC-- CTG CCCT
TCACTGCTTCCCTGAGATTT TAGGTCAA CTCCATCA CTT
GATGGAGCCCTGAATGTTGA GTCCAGTT GAGGTAGT GAG
CCTG GTAAGTCCC TTA ----
GAM1842 16164 TAAGATTCTGCTGAGGAGCC AT TGAGG C GG C GCT
CCCGCTGGTCCCTCTGGGCA TAAG TCTGC AGCCCC GCT TCC TCTGGGCAT
TGCTGTGCTCGGACGGAAAG GTTC GGGCG TCGGGG CGA AGG AGGCTCGTG
CGGGGCTGCGGGTCCTTG CT ----- - A- C ---
GAM1843 13316 AGGAATTCCTGCCCAGCTCA TCCT C CACAA A T ATACTC
CAATCTAAGTTTCAATACTC AGGAAT GCC AGCT TCT AGTT CA
TGCAGCTCAGACAGAAAGTT TCCTTG CGG TTGA AGA TCGA GT
TGGCCTGTGTTCCT TGTC T AAGAC C C ------
GAM1844 6556 TCTTGAGAAGTGGGTGAGGG TG --- G-- AA- GTAAAAAA
CATGCAAATGTAAAAAAGTA TCT AGA AGTGGGT AGGGCATGC AT
AGGTGTGTTCTGGGATCTAC AGA TCT TCATCTA TCTTGTGTG TG
TAGTTCTTGAGA GT TGA GGG GAA --------
GAM1845 20829 TGATCCCCCCAGGAGGGCAA AGGAG A CA GG A GCGT
CACCACTTGGTGTCAGGGGC TGATCCCCCC GGC ACAC CTT TGTC GGG
GTCCCGGCAGAGAAGTGTGG ACTGGGGGGG TCG TGTG GAG ACGG CCC
CTAAGGGGGGGTCA AA--- G AA -- - ----
GAM1846 13796 CTATAGGGAAAGCTGGTACG GAAA T T C CA AC GT AATTC
CCTGCAGGTACCGGTCCGGA CTATAGG GC GG ACGC TG GGT CG CCGG
ATTCCCGGGTCGACCCACGC GATGTCC CG CC TGCG AC CCA GC GGCC

GTCCGCATTACCTGTAG ATTA - - C -- -- TG -----
GAM1847 18529 GAGGAGGCGGGCCGCCTGCT G --- --- - GAGAACTA
CTTGGAGAACTACGAGGAGT GAG AGGCGGGCC GCC TGCTCTT G
ATGCGGCTCGGGCCCGTCTG CTC TCTGCCCGG CGG ATGAGGA C
CTC G GCT CGT G --------
GAM1848 9814 TAAACATTTCATGGGAGACA - TCA A C AA- AAA AGAATC
ATATCATAAGGGTAAAGAGG TAAA CATT TGGGAG CAATAT AT GGGT GAGGT
TAGAATCACTTTCAGACTTA ATTT GTGA ACCCTT GTTGTA TA TTCA TTTCA
GAATAATGTTGATTCCCAAG C --- A A AGA GAC ------
TGCTTTA
GAM1850 9299 CTGCTCTTCCAAAGCTCCTG TCCAAAG CG TAAAGGG- GAAAAATACTG
CGTCTGTTTTTAAAGGGCCT CTGCTCT CTCCTG TCTGTTTT CCTGGG
GGGGAAAAATACTGCCTAGG GATGAGA GAGGAT AGGTAAAA GGATCC
AAAATGCCAAAATGGAATTA ------- TA CCGTAAAA ----------
GGAGAGAGTAG
GAM1851 282 AGGGGGCCGGTGGACCTGCT C TGGA CCA TGGT
CCAGCAGCTGGTGCTGCACC AGGGGGC GG CCTGCT GCAGC
AGCAGGAGGTCCTGCCCCCT TCCCCCG CC GGACGA CGTCG
T TGGA CCA ----
GAM1852 12402 CTTTAAGGAGGCGAGGAAGT AG GA AA GCC GTCTGA TTAAA G
TAAATAGTAGT
GCCGGCAAGTCTGATCTTTA CTTTAAGG GC GG GT GGCAA TCT ATGGT AC
AAATGGTGACTAAATAGTAG GGAGTTTC CG CC CA CTGTT AGA TATCG TG
TGTGGCTATAGAATTTATTG AA AG -- AAT ATTTA- ----- G ----------
TCTAAACCCGAGCAACTTTG
AGG
GAM1853 17344 TGCAAGAGGGTCAGGTATAT G G TG CT - TGGT
GTGTGTCTAATACAGTGGTC TGCAA AGGGTCA GTATATGTG T AA TACAG
TGTACTTCCATCCACATATA ATGTT TTTCGGT TATATACAC A TT ATGTC
TGTGGCTTTGTTGTA G G CT CC C ----
GAM1855 7691 GGCGAAGCCGGGAGTGTGGG A - G - G C G GTC
CGCGGCTGGGGTCCTGGGCC GGCG AG CC GGAGT GTG GCG GGCT GG
CGCGCGCTGCTCCGGGACTA CCGC TC GG CCTCG CGC CGC CCGG TC
CGCC A A G T G - G ---
GAM1856 22487 GCGCCGGCCGATCCCGCCTG G C TCCC T A C CCTG
GGGACACACTCTCCTGGGAC GCGCC GC GA GCC GGGGAC CA TCT
TGGTCCCTGGCACACTCGTG CGCGG TG CT CGG TCCCTG GT AGG
GGCGC G - CACA - - C ----
GAM1857 2454 CGTCTTGGCTCTCTCCGCTT T C T CT--- T C CTTCGCAC
CGTCCTTACCAGACTTCGCA CG CTTGGCT TC CCG TCG CCTTAC AGA
CTTTGTGAGGCGGTTCAATG GT GAACCGA AG GGT GGC GGAGTG TTT
GTGAAGCCAAGTG - - T AACTT - - --------
GAM1858 5747 TTGAGTGTTTGATAAGAGTA TG T A- AG T - ATT GG GATTGG
GCATTAGGTATTAGTGGGAA T AGTG TTGATAAG GT CA TAG GT AGTG AAAT
ATGATTGGATTTTTCATTTA G TTAC AATTGTTC CA GT GTT CG TTAC TTTA
AGCATTGTTGGGACAACTTG GT C AA GG T A AAT TT ------
TTAACCATTTGG
GAM1859 3508 CGTATATCTGTTCTCGGTAC T C-- CT - - A TTGAT
TATAGGGCACCAGAGTTGAT CGTATATCTGT CT GGTA AT AG GGC CCAGAG
CTTTGGAGCCACTGATTATA GTATGTAGATA GA CCAT TA TC CCG GGTTTC

CCTCTAGTATAGATGTATG T TCT AT G A A -----
GAM1861 13178 TTCTGTGAGGCTGTGGCCAT TGA - A----- AC CATCAT AATT TAGCAAC
CTACGGCATCATCATGGCAA TTCTG GGCTG TGGCC TCT GGCAT GGC GTCAT
TTGTCATTAGCAACATGGCT AAGGC CCGGC ACCGG AGA CCGTG CCG CGGTA
GAGCCTTTCAGTGCCACAGA TA- T AACCCC CA ACTTT- AGT- -------
CCCCAAGGCCATCGGCCATC
GGAA
GAM1862 11884 GCTAGTTGACCTTTGCCATT A- - TT CA C CACCCC
TTCCCCACACCCCTGGAGAA GCT GTTGA CCT GC TTTTC CCA
AAGAGCCAGGATCAGCCAGG CGG CGACT GGA CG AAAAG GGT
C AC A C- AG A ------
GAM1865 4353 GCTCGCCAAGTCGCTGGGGT G AG GG TAGG GG - T C-- ATCA
TAGGTGGGGCAAGAGTTTCG GCTC CCA TCGCTGG T TG GCAAG AGTT CG CGGCGC
CCGGCGCATCAGCGCTGCTT CGAG GGT AGCGACC G GC CGTTT TCAG GC GTCGCG
CGGACTGTTTGCAACGTGTT - CG TT T--- AA G - TTC ----
CCAGCGAGCTGGGAGC
GAM1866 3983 TTTGCACTAAGTCATTTGCA TG TAAG T TGGAGTTGTG GGCCTTGA
CTCGTTGGAGTTGTGGAGAC TT CAC TCAT TGCACTCGT GAGAC
GGCCTTGAGTCTCAGTACGA GA GTG AGTG GTGTGAGCA CTCTG
GTGTGCGTGAGTGTGAG GT ---- C TGA------- --------
GAM1867 3261 CACTGTTTCCTCCTGCTATT ---- TC--- TT - TAACTCAGCTGA
AGCCCGGGTAACTCAGCTGA CACTG TTTCC CTGCTA AGCC CGGG
TCCGTGGCTTTGGTAGTTCC GTGAC AAAGG GATGGT TCGG GCCT
TGGAAATCATCAGTG TACT TCCTT T- T ----------
GAM1868 21811 GTGGCAGAAGATCCCAGCTG TG AAGA A CA G C----- TT GGGT
ACCACGGCCCCTTTCTCTGG G GCAG TCCC GCTGAC CG CC CT CTCTG
GGTCAGAGGGAGAAGACAGG C TGTC GGGG CGACTG GC GG GA GAGAC
CGCAGTCAGCAGGGGCAGCT GT GAC- A AC - ACAGAA GG ----
GTTGC
GAM1869 17739 GGCACCTCTAGAAGTATACG TCTAG ATAC T AC ----- AGC GATA
TGTGTGTCTCCAACCAGGTG GGCACC AAGT GTGTG GTCTCCA CAGG TGTCAGA CA
TCAGAAGCCAGATATGTTTG CTGTGG TTCA CACGT CGGAGGT GTCT ACAGTTT GT
ACAACCACTCTGTCTGGAGG TA--- ---- C CT CACCA --- ----
CCTGCACACTTATGGTGTC
GAM1870 16493 AGCGGAGGGACTGATATCTC - ---- ATCTCT - TTTGTCCTTT
TGGCTAAATATTTGTCCTTT AGC GGAGG GACTGAT GGCTA AATA
TATTATGGTTTCTAAATCAG TCG CTTCT TTGACTA TTGGT TTAT
TTATTTTCTTCAGCT A TTTA AATCT- A ----------
GAM1871 15221 TCACCAGCTTCCTGGAGCTG A - GA A CCTT G CCCACAGA
CACTGCCTTGAGAGCCCCAC TCACC GCTTC CTG GCTGC CTG GA AGC
AGAGCTGTCTCAGAGCAGCG AGTGG CGGAG GAC CGACG GAC CT TCG
ACAGTGAGGCCGGTGA C T AG A T--- G --------
GAM1872 19934 ACAAAGATCTGACATGTCAC AT ACAT CC ACCCATTTCACCCACTG
CCAGGGACCCATTTCACCCA ACAAAG CTG GTCA CAGGG
CTGCTCTGTTTGGCCGCCAG TGTTTT GAC CGGT GTCTC
TCTTTTGT CT CGC- TT ----------
GAM1873 21051 GGGACTCTGGCTAAGGCTCT AAGG- --- GAG
TCATTTCCCCTGGAGCAGGG GGGACTCTGGCT CTCTTCATTT CCCCTG
GCAGAAGTGAGGAGGGGAGG CTCTGAGGCTGG GAGGAGTGAA GGGGAC
GTCGGAGTCTC GAGGG GAC ---

GAM1874 106 AGCCAAAATGTACAAGACCA AAA ACAAGA - TCA TT ATTTGG
CACCGGATGTCATCTTTGTA AGCCA TGT CCAC ACCGGATG TCT GT
TTTGGATTCAGAACTCATTT TCGGT ACA GGTG TGGTTTAC AGA TA
GGTGGTGGCAAGACAACTGG CA- GAAC-- G TCA CT ------
CT
GAM1875 14673 GAAGACAAATTGAAGGGAGA A A-- ------- ------ A ATCT
GATGATGGATCTCCAACATG GA GACAA TTG AAGGGAGAG ATG TGG
GCAGCCTTTTCCTTAGAACA CT CTGTT AAC TTCCTTTTC TAC ACC
CCAAAGATTGTCTC - AGA CACAAGA CGACGG A ----
GAM1876 9058 GTTGTTCGGGACTTAAAGAC TT-- ACTTA T-- CT ---------- TGTT
ACTTGACCTGTTTGGGCTGT GTTG CGGG AAGACACT GAC GTTTG GGC
TGCCACTTAAAAGTTCATGA CAAT GTCC TTCTGTGA CTG TAAAC CCG
CCACAAATGTCCACAGTGTC TATT CC--- CAC -- ACCAGTACTTGAAAATTCA ----
TTCCCCTGTTATTAAC
GAM1877 898 CTTCACCCACGTAATGTATG - TAA TA--- TG G TCCCA
TCCTGCAAGCTGTCCCACAG CTTCACCC ACG TG TGTCC CAA CTG
TTGTGGGGCACGTCTCGGTT GAAGTGGG TGT GC ACGGG GTT GAC
GTCGGGTGAAG C TG- TCTGC GT - -----
GAM1879 2606 TGTGGAGGAGGATGACGATG A ATGACG - GGACAGCA
ATGAGCTGGACAGCAAGCTC TGTGG GGAGG ATGAT GAGCT
AATTATAAGCCTCCACCACA ACACC CCTCC TATTA CTCGA
A GAA--- A --------
GAM1880 7346 GAATGTCTCAAAGAAAATGT T CA AAA C TTAATTATG C GGCT
CCTTGATTTAATTATGGTCC GAA GTCT AAG ATGTC TTGAT GT CAAGGT
AAGGTGGCTGCTTTGCACAA CTT CAGA TTC TACAG GACTG CA GTTTCG
GCTTGTCAGTGACATGAACT - AG AAG T TTCGAA--- C ----
TGAAGACTTC
GAM1881 13021 GTTGGGAATGCGCCTCTTCG A----- CT-- ------ ACCCT
CTGTGCCGGGAGACCCTTTC GTTGGG ATGCGCCT TCGCTGTGCC GGGAG
CCAAATGGGGCGCGGCGGTA CAGCCC TGCGCGGA GGCGGCGCGG CCCTT
ACAGGCGCGTGGGGGACCCG AGGGGG CAAT GGTAAA -----
AC
GAM1882 11341 AACCCAGCAGCTCTCCATGT - TCTCCA A ----- --- GAGGA
CCACAGCTGATTTCCAGAGG AACC CAGCAGC TGTCC CAG CTGAT TTCCA
ATGGAAGAAGTCAGGAAACT TTGG GTCGTCG ACAGG GTT GACTG AAGGT
TGGGACACCGCTGCTGAGGT A CC---- - CAAAG AAG -----
T
GAM1884 21771 GGGCCCCTCTGCGGATGGAG --- TG AGCC - T AACAGG
CCCCAGGTGCAACAGGGCCC GGGC CCCTC CGGATGG CCA GG GC
ATGGTCATCTGTGGAGGGAC CCCG GGGAG GTCTACT GGT CC CG
AGCCC ACA GT ---- A - ------
GAM1885 14089 CTGTGTGTGCCGTGCGAGGA ---------- CC - A- C GAGAACATGAA
CGCAACGTCGAGAACATGAA CTGT GTGTG GT GCG GGACGCAA GTC
GATCTTGCGTCTAATGCTGC GGCA TACAC CG CGT TCTGCGTT TAG
TCCACATCAAATACCTGTAC TGTCCATAAAC CT T AA C ----------
GG
GAM1888 21940 GGTGCCGAGGTCAGAGATGG CGAG A- ---- G - A---- CATAG
TGGCCCTAGAGTCATAGGCT GGTGC GTC GAGA T GTGGC CCT GAGT
TGAGCAGGGAGCCACGATAA CCATG CAG CTCT A CACCG GGG TTCG
TTCTCCAGACAGTACC A--- AC TAAT G A ACGAG -----

GAM1889 13121 GCGGAGCTCGGGTGGTAACG G TC----- - C CGGGGAGT A AATACAGA
CCAGCGACGGGGAGTGGCTA GCG AGC GGGT GGTAA GCCAGCGA GGCT TA
TAAATACAGATGAAGCTTCG CGT TCG CCCG CCGTT CGGTCGCT TCGA GT
CTGGCTTGCCGGCCCCTAAC G TCCAATC G - -------- A --------
CTGCTGTGC
GAM1890 13919 TGGGAATGTGTGGGGGGCTT ATGTGTG CC AC-- A TCAA
CCATGGGCACATGATCCTCA TGGGA GGGGGCTT ATGGGC ATG TCC
AGGGCATTCTAGCCCATTAG ACCCT CCCTCGGA TACCCG TAC GGG
GCTCCCAGTCCCA GA----- T- ATCT - ----
GAM1891 16394 TATTTCTGATCGATATTTTT T TTT-- AT -- GGAA
GTGTAATAAGCATGGAAATG TATTTCTGA CGATAT TGTGTA AAG CAT
AACTTTATACACACCACTGT ATAGAGACT GTTGTG ACACAT TTC GTA
GTTGTCAGAGATA - TCACC AT AA ----
GAM1894 8175 GAATTTCATGCCTGGGCAAA --- -- C-- CAA- A-- CCTTTAATCACATTACTC
GTCAAAGTTTTTTCCTTTAA GAATTT CA TGC TGGG AGTCAA GTTTTTT
TCACATTACTCAAAGAATAA CTTAAA GT ACG ACCC TCAGTT TAAGAAA
GTTGACTATATCCCAACAGC CCT TC ACA TATA GAA ----------
ACTTGTCCAAATTC
GAM1895 22668 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AGAACACGA GAAG TCACCAC ATTCT
CAAGAAGAATAAGCACAAGA ATAA AACCC - ----------
GAM1897 22846 TGCTCCCTGGACGGTGGCTC CCT GG T C- AAG
TAGACTTTTGAGAAGCTCAA TGCTC GGAC TGGC CTAGA TTTTGAG
AACTTTTAGCGCCAGTCTTG ACGAG TCTG ACCG GATTT AAAACTC
AGCA T-- -- C TC ---
GAM1899 13488 TCCTCATCGGCAAGGGGGGC G A CG AAATTC AA- GCGACA
GGAAAATTCGCAAGGTGCGC TCCTCATCG CA GGGGGG GA GC GGTGC
GACAGCACTGGAGCCACGTG AGGAGTGGC GT CCCTTC CT CG TCACG
TCATCTTCCCTGCGGTGAGG - - TA GTGCAC AGG ------
A
GAM1901 8011 ATGCAGGTCCAGAGCCAACT TCCA- ACTGCA - - AATCCCATA
GCAGTCCTGTCCAATCCCAT ATGCAGG GAGCCA GTCCT GT CC
AGGTACAAGGGCCTGGCTCC TGTGTCC CTCGGT CGGGA CA GG
TCTTCCTGTGT TTCTC C----- A T ---------
GAM1902 11702 CTGCCTGTAGAGGATGCCGC T A CCGCACA AT C A ATA
ACAGAGATTGACTTGATTCA CTGCC GTAG GGATG GAG TGA TTG TTC
TAGAGACAATTCACTCCATC GACGG TATC CCTAC CTC ACT AAC GAG
CCTATGGCAG - - ------- -- T A ---
GAM1903 1826 GGTGTATTGCTTTGCCCTCT TA TTT--- CT TTC TG A - AGAAAG
TTTTCACTGAGAACCATTCA GGTG TTGC GCC CTTT AC AGA CCAT TC
GAAAGGATATGGTCTGTATC CCGT AACG CGG GAAA TG TCT GGTA AG
AAAGTTGGCCAACATGCAAC TC TACAAC TT CTA -- - T ------
TTGCC
GAM1904 14941 ACATGCATAAGTCAGGCTCT A TAA C TC AAATAT AAAGC
CTTGAAATATACAAAGCGTT AC TGCA GTCAGG TC TTG AC
AGCGGCAGAGGATCTTGACT TG ACGT CAGTTC AG GAC TG
GCAAGT A --- T GA GGCGAT -----
GAM1905 8756 CTGGAAACTGATCTCGGAGT GA CTCG TAAG AT TCAAGAACACAAACT
TAAGGCGAATTGTTCAAGAA CTG AACTGAT GAGT GCGA TGT

CACAAACTACATCGCACTCG GAC TTGACTG CTCA CGCT ACA
TCAGTTGTCAG TG ---- ---- -- ----------
GAM1907 15894 GCACTGCTCTGGCATAGGAA A - - ATA TTAAATG A CAGGAGAT
TACTTGAATAGCTTGGTTAA GC CTG CTCTGGCATA GGA CTTGAATAGCTTGG AAGGG TGGC

ATGAAGGGATGGCCAGGAGA TG GAC GAGACTGTAT CCT GGACTTATCGAACC TTTTC ATTG

TGTTACTTTTCCAAGCTATT C A T CAC ------- - --------
CAGGCACTCCTTATGTCAGA
GACAGCGT
GAM1908 7996 GAGACGGGGAATCCTCAGGG AC - TC CCTA --- ATC-- CCATGGTC
CCTATTACCAGGAGAGGAAT GAG GGGGA ATCC AGGG TTACCAG GAGAGGA GAG
CGAGCCATGGTCCTCCTTAC CTC TTCCT TAGG TCCT AGTGGTC TTCTCCT CTC
TCCTCTTCAGCTGGTGAATC CT C CC A--- GAC CATTC --------
CTCCGGATCTCCTTTCCTC
GAM1909 8593 GAGCTGTTTGAAGCTACCAG GAAG AGT- -- TT - TTTTCAGGCTCT
TCTGAGCCCTATTGACTATT GAGCTGTTT CTACC CTGAG CCCTA GA CTATTT
TTTTTCAGGCTCTGAATAGC CTCGACAAA GGTGG GACTC GGGAT CT GATAAG
TCTAGGGATCTCAGCAGGGG GGAG GGAC TA -- C ----------
TGGGAGGAAACAGCTC
GAM1911 1381 CAACTTTTCAGGTGGAGAGC TCAGG G ATT T GA--- GAGAATA
CATTTCTTCAAGACCGGGGA CAACTTT TG AGAGCC TC TCAA CCGGG
GAATACCTGGGCAAGTTGGT GTTGAGA AC TCTTGG AG GGTT GGTCC
GAGGTTCTGCAAAGTAGAGT TGAA- G --- T GAACG -------
TG
GAM1912 2008 GGGAACACAAGGGCTGGCCG ACACAA C GACTC AA GA A- AAGAA
GACTCTGAGAAGCTGAGGGA GGGA GGGCTGG CG TGAG GCT GGG CA
CAAAGAATGGACCCCAAGCA TCCT CTCGACC GC ACTC CGA CCC GT
CCTCACGCCCAGCTCCCATC ACC--- C ----- CA AC AG -----
CT
GAM1913 19597 AGAGGGGACCCTAACAGGCT GA TAACA GGACAG TG AATGGTAA
GGACAGAGTTGGAGCAATGG AGAGGG CCC GGCT AGT GAGC
TAAGTTCTGACTAGAGTGGC TCTCCT GGG CCGG TCA CTTG
CGGGGATCCTCT AG ----- TGAGA- GT --------
GAM1915 12562 GGTTTCCACCTCCTGCCTCC TC - C CTCCG CCAGA- TGAGG
GGCCCTCCAGAGGGGTGAGG GGTT CA CCT CTGC GCCCT GGGG
CCCCAACCCCAGGGCAGCAG CCGG GT GGA GACG CGGGA CCCC
AAGGATGAGGGCC GA A A A---- CCCCAA -----
GAM1916 5079 CCGGCCTCTGAGCAAGACAG T AAGACAGT - AAC CAA ACCAA
TGCGCTTCAACGTGCTCAAG CCGGCCTC GAGC GC GCTTC GTGCT GGTC
GTCACCAAGGCTGCCGGCAC GGTCGGAG CTTG TG CGAAG CACGG TCGG
CAAGAAGCAGTTCCAGAAGT T AAGACCT- A AAC CCG -----
TCTGAGGCTGG
GAM1917 15256 TAGACTCCAGGCTTGGTCTT A CTTG- CACAGCCATCAC
CTGGGCACAGCCATCACCCC TAG CTCCAGG GTCTTCTGGG
AGGAGACAACTCCTTGGAGC GTC GAGGTTC CAGAGGACCC
TG - CTCAA ----------
GAM1918 1883 TGTGATTCCTCAGCCAGAGC G A AGA A CTCTA AA ACA G AGGGAGAAG
AACCTCTCTATGCCAAGTAC TGT ATTCCTC GCC GCA CCT TGCC GT GGCACT CTC
AGGCACTGCTCAGGGAGAAG ACG TAGGGAG TGG CGT GGA ACGG CA TCGTGA GAG

GAGAGTGCTGAACGGCAAGG G G A-- G ----- -- AG- - ---------
GTGCAGGTGGAGGGATGGCA
GAM1919 11908 GGGTGCTGGAATCACTTTTG G TCACT A CATCATAT
CCAAAGGCATCATATCCTTG GGGT CTGGAA TTTGCC AAGG
GGCGAATTTTTCCGGAATCC CCTA GGCCTT AAGCGG TTCC
A TTT-- G --------
GAM1920 17114 CCACTTCTGAAAACATCCAC - AAACA C AAG A G GG TGGCTGT
GGTGAAGGGCAGGGCCAGGC CCACTTC TGA TCCA GGTG GGC GG CCA CC
CTGGCTGTGGAGTGGGCCAG GGTGAAG ACT GGGT CCAT TCG CC GGT GG
CTGAGTACCTGGGCGTCACG C GC--- - GAG A G GA -------
AAGTGG
GAM1922 618 TTAAGCATCTGCAATGGTGA TCTGCAAT G CC ACTCCTGGCTCAATAC
CTTCCACCTCAACTCCTGGC TTAAGCA GGT ACTTCCA TCA
TCAATACTGATGGAAGTAAT AATTCGT CTA TGAAGGT AGT
CTGCTTAA -------- A -- ----------
GAM1923 13325 GCTGCCAGGAACTGCCCCAC A G -------- TA TGTTG
TACTGTGTTGCGGGGGTGGC GCTGCC GGAACT CC CCAC CTG
AACTTTAGGGGGTTCCAGGC CGACGG CCTTGG GG GGTG GGC
AGC A G ATTTCAAC GG -----
GAM1925 6444 GTCCCAGATCACTGCCGCTG A A--- CG AC---- GAC
AACCTGTAGGGACCTTATAG GTCCC GATC CTGC CTGA CTGTAGG
TACAAATTAGATGCAGCGTA CAGGG CTAG GACG GATT GATATTC
GATCAGGGAC A ATGC TA AAACAT ---
GAM1928 22639 GGAGAGTGCAGATTCACTTG - ----- --------- C A AACAGCTACAGC
ATGGGAACAGCTACAGCTCC GG AGAGT GCAGA TTCA TTG TGGG
AGCGATGAAAAACTGAATTC CC TCTCA CGTCT AAGT AGC ACCT
TGCAACAGACTCTACC A GACAA TAAGTCAAA - G ----------
GAM1929 7187 TGTTTCATGACTGGTAACAG A CT AA -- G GAT
AGTAGTCTCGAGGGGATCCT TGTTTC TGA GGT CAGAGTAG TCTC AGGG
TGGAGAACCTGTTCTGACTT ACGAAG ATT TCA GTCTTGTC AGAG TTCC
TAGAAGCA - -- -- CA G ---
GAM1930 1422 TCTGCCTCCAGTGTCAATCC CCTC CAA AA --- --- CCATCT
CAAACCCCGAACAACCATCT TCTG CAGTGT TCCC AC CCC GAACAA
TTGTTTAGTGGGCAAGTGAG AGAC GTTACA AGGG TG GGG TTTGTT
GGACCACATTGATTTCAGA TTTA CC- AG AAC TGA ------
GAM1931 9955 GCGTCCGGGGGACCACGCCC --- CA CCCA GACAGAACTTAGCCCCGA
CACACCCGGGGGACAGAACT GCGTCC GGGGGAC CGC CACCCGGGG
TAGCCCCGACCCCGGGTGCG CGCGGG CCCCCTG GCG GTGGGCCCC
CGGCGTCCCCCCGTGGGCGC TGC CG C--- ----------
GAM1932 10763 AACAGAGATTTACCGCATTG GA TT-- T CA AG AA GACAGACGCGAAAA
TTTCTCAGAAGCAAATGTCA AACA GAT ACCGCATTGTT CT GA CA TGTCA
GACAGACGCGAAAATGACAT TTGT TTA TGGTGTAACAA GA CT GT ACAGT
GTCTCCAAGCAACAATGTGG AC TCCT C AC CT -- ----------
TTCCTATTCATGTT
GAM1933 5767 GGTGTCGGCGCGGGAGCAGC TC CGG ACTT A --- AG CC - GTTTTTG
ACTTCCACAGCCAAGTGCGG GGTG GGCG GAGCAGC CC CAGC CA TGCGGGAGT ACG GTT

GAGTCCACGGTTGTTTTTGA CCAT TCGT TTTGTCG GG GTCG GT ACGCTCTCA TGC CGA

GCACGTTCACTCTCGCAGTG TT --- ---- - ACT G- CT A -------

TCAGCTGGGGCTGTTTTGCT
TTTACC
GAM1935 14286 TGAAGATCCTCACTGAGCGA A TCAC G A T A A---------- A GCCGAG
GGCTACAGCTTCACCACCAC TGAAG TCC TGA CG GGC ACAGCTTC CC CC CG
GGCCGAGCGGGAAATCGTGC GCTTC AGG GCT GC TCG TGTCGAAG GG GG GC

GCGACATCAAGGAGAAGCTG - TCCC - A - A AACTACAGCGCGTGCTAAA - ------
TGCTACGTCGCCCTGGACTT
CG

GAM1936 4813 GTGGTCTGCCACCAGCTGTC T ---- CTGT CT C AAT TACCGTTCTTT
CTCTTCCCTGAATGCCACTT GTGG CTGCCA CCAG CCT TC CTG GCCACT
ACCGTTCTTTGGTGGCCAGA CACC GGCGGT GGTC GGA AG GAC CGGTGG
GAGAAGGTCTTCTGGGACCT - CCAG TTCT AG A --- ----------
GGCGGCCAC
GAM1938 13204 CTGGGGCTGTTAAATTACAT GC AA CATTT TAA ACT
TTTATTGGCATAAGGTTGCA CTGGG TGTT ATTA TATTGGCA GGTTGC
CTGCAATCTGCCAGTATCAC GACCT ATAG TAAT ATGACCGT CTAACG
ATAATGATAATCCAG A- -- ACACT --- ---
GAM1939 4097 GGTGCCCATCCTTATGTACA GCCC TA- C- AG TCAAT TAGCTCC
TAGTGTTTTCAATGTTTAGC GGT ATCCT TGTA AT TGTTT GTT
TCCGACTACCAAACGAGATC CCA TAGGA ACGT TA GCAAA CAG
ATGCAGCTAGGATACC ---- TCG AC GA CCAT- -------
GAM1940 18346 CTTTCTGACCACTTGTGGTG TCTGA- TTG - ACTGATTTG
TCATTGGACTGATTTGCCAG CTT CCAC TGGTGTCAT TGG
ATGACATCAATGTGGGAATT GAG GGTG ACTACAGTA ACC
TGAG TTTAAG TA- G ---------
GAM1941 21095 GCCCGCTCATAAGGGGATGG - AAGGGGATG GG G- TATA
CCATGGCGAGGTTTATAGAT GCC CGCTCAT GCCAT CGA GTT
AGTTGGGGTGGTGAGTGTAA CGG GTGAGTA TGGTG GTT TAG
ATGAGTGAGGC A AATGTGAG- GG GA ----
GAM1943 9541 GAGAACTGCCAGTGCAGGAA AA C - AAA GG- CGCC-- T AAGCTC
AGCCAGGGGACGCCGTGGTG GAG CTG CAGT GCAGG GCCA GGA GTGG GGCAGG
GCAGGAAGCTCTTTGCCCCA CTC GGC GTCA CGTCC CGGT TCT CACC CCGTTT
CACAGATTCTGCATGGCCCC CA A A C-- ACG TAGACA - ------
TGCAACTGACGGACCTC
GAM1944 4299 GTGGCCCAGACCCAGCTGGG C A TG C CT GCAG
TCCCTTCCTCCTAGGCAGCT GTGGCC AG CCCAGC GGTCC TTCCTC AG
GAGGGAAGGACTGCTGGGAT CACCGG TT GGGTCG TCAGG AGGGAG TC
TGGCCAC - A -- A -- ----
GAM1945 4706 GCAGGTTTTTTCTTCTTCAA A T AAA A T - ATTA -- AGC TGTG
AACCATTCTACCTCATTAGC GC GGTTTT TCTTCTTCA CC TTC AC CTC GCAT TCA GAGC
ATTCAAGCGAGCTGTGGCTC CG TCAAAA GGGAGGAGT GG GAG TG GAG TGTA AGT CTCG

TGATGATCATGTAGCAGAGT G C CAC - - T ACGA CT AGT ----
GTGAGGGCACTGAGGAGGGC
AAAACTGGC
GAM1946 21342 GAAGTGAAAATGTTTTACAA AG - TA- CTCTA TCTCTTAAC
TCTCTAGGTTTGGCTAGTTC GA TGAAAA TGTTT CAAT GGTTTGGCTAGT

TCTTAACACTGGTTAAATTA CT ACTTTT ACAAA GTTA TTAAATTGGTCA
ACATTGCATAAACACTTTTC GA C TAC CAA-- ---------
AAGTC
GAM1947 3084 GTTAAAATGTCTATTGGGGT AA TC TTG C- AC C AGGG
CCTTATTTAACTCTCAAAAG GTT AATG TA GGGTC TTATTTA TCT AAA
GGTTTTAGAAGTAAATAGCA CGA TTAC AT CTTAG GATAAAT AGA TTT
GATTCAACTATCCATTGAAG AG CT CAA AC GA T ----
C
GAM1948 3289 GTGGGAAAACTGCTTGACAG GAAA T- TGA - C CCGA
AATTCACATACTCCGAGGTA GTGG AC GCT CAGAATT CA ATACT
TATGCAGTTCTGAGTCTGTG CACC TG TGA GTCTTGA GT TATGG
CCAC G--- TC --- C A ----
GAM1951 6218 AAAGAAAACCGGGTGGCAAA G GG ATACC- AAATTTTTACC
TACCCGGGAAATTTTTACCC AAAGAAAACC GGT CAA CGGG
CCGCCCATATTGAACCGGGT TTTCTTTTGG CCA GTT GCCC
TTTCTTT G A- ATACCC ----------
GAM1952 9347 AGCCATACAAGGTGGCAGCG ATACAA - TA CTGCTT TCATC
GGTAACCTGCTTGTTCTGTC AGCC GGTGGCAG CGGG AC GTTCTG
ATCCAGGGCCTCTTTGTGCC TCGG CCACTGTC GCCC TG CGGGAC
CCGTCTGTCACCCAGGCT AC---- T CG TTTCTC -----
GAM1953 16979 GACATAGTTTCAGACGCCAG A TT - - AGT---- CCT - CAAT
TATAAGCCTTTGAGTCTCAA GAC TAG TCAG ACG CC ATAAG TTG AGTCT
TAGACTGCAGTATCTTATTG CTG ATC AGTT TGC GG TATTC GAC TCAGA
ATTTGGGTCGTGTTGATCCT - CT G T GTTTAGT TAT G ----
AGTC
GAM1954 21083 TGCCTCTGCTTTCATTTCTA --- TTTCATT T - GTG
TGGTTATTCGTGGAATGACT TGCC TCTGC TC ATG GTTATTC
CATTGACCACGCGGAGAAGG ACGG AGGCG AG TAC CAGTAAG
CA AAG CACC--- T T ---
GAM1955 11847 GCAGCCTTGCTCTGTGGCTT C-- G ---- A AATCAGTGCTA
TTCCCAACACAATCAGTGCT GCAGC TTGCTCT TGGCT TTTCCCA CAC
AGTGCTGGGGAGGAACAGTC CGTTG GACGAGA ACTGA GAGGGGT GTG
AAGAGCAGTCAGTTGC ACT - CAAG C ----------
GAM1957 21767 GTGCTAAATGTGTTCGTGAC AAA CG GGA - TG--- - ATC
AGGATCAAGCGTGCTTTCCT GTGCT TGTGTT TGACA TCA AGCG CT TTCCTT
TATCGAGGAGCAGAAAATCG CACGA ACACGG GTTGT AGT TTGC GA GAGGAG
TTGTGAAAGTGTTGAAGGCA --- AA GAA G TAAAA C ---
CAAGCAC
GAM1958 18304 GGTGCGTGACGTCTCAGAAG TGAC-- TCA AA ATTCACTCA TACT
AAGGGATTCACTCAGTACTA GGTGCG GTC GAAG GGG GTAC
CTGTACCCCCACTTCGTGAC CCACGT CAG CTTC CCC CATG
TAGAATTGCACC TAAGAT TG- AC --------- ----
GAM1959 13060 TATGGCATTCTGTTTAATAC A--- AAT AAG T CACTT
ACGAAAGGTTTCCACTTGAT TATGGC TTCTGTTT ACACGA GT TC
ATACATTGTGTTAAAACAGA ATACCG AAGACAAA TGTGTT TA AG
AGATAGCCATA ATAG AT- ACA T -----
GAM1960 22460 AGGAGCAACCTCTGGAGCCA C-- CT GCGAT- ATTCCTCC
TCGCGATTGATTCCTCCCAT AGGAG AACCT GGAGCCATC TG
CCCAAGATGGCTTCTGGGTT TCCTC TTGGG CTTCGGTAG AC
CCACTCCT ACC T- AACCCT --------

GAM1963 22667 CGTCGCTGGGGCTCGTGTCG - G- T T G -------- AAG CACGGC
CTGGGCGGCAAGGCGACCAC CGTCGC TGG GCTCG G CGCT GGC GGC GCGAC
GGCGTCGCAGGCCAAGGCAG GCAGCG GTC CGAGC C GCGA TCG CCG CGCTG
TGCTGAGCGCCGAGCAGCTG C GA - - G TGACGGAA GA- ------
CGCGACG
GAM1964 1247 TTCAAAATGTTCACTTTTAA AAATG - AACACAAA T T AAAAA- CTA TTCCCCCC
CACAAAGTCTTCCCATAAAA TTCA TTCA CTTTT G CT CCCAT ATGTGG CATT
AATGTGGCTACATTTTCCCC AAGT AAGT GAAAA C GA GGGTA TACATC GTAA
CCAATGACTACATACATAGA AA--- A GAACGA-- - T GATACA A-- --------
TGGGTAGCAGCAAGAAAAGA
TGAAAATGAA
GAM1965 16393 GGAGTTTTGTTCTTGTTGCC TT TT TT C-- -- A - A ATCC
CAGGCTGGAGTGCAATGGCA GGAG TTG CTTG GCCCAGG TGGAG TGCA TG GC CA
CAATCCTGGCTCACTGCAAC CCTC AAC GAAC TGGGTCC GCCTC ACGT AC CG GT
CTCCGCCTCCTGGGTTCAAG TT -- T- TCC CA C T - ----
CAATTCTCC
GAM1966 6607 TTTTCTCTACCCCAGCCTCT TCTACC T C A CCTATAGC
CCCTAAGACCCTATAGCGTC TTTTC CCAGCC CT CCT AGAC
TAAGGAAGGGCTGGATTGAA GAAAG GGTCGG GA GGA TCTG
AG TTA--- - A A --------
GAM1968 11834 CAGCCCTGAGTGCCCAGTCC C A G A GA TGGAA
ACTGAGGCCCTGGAAGGGCT CAGCC TG GT CCC GTCCACT GGCCC
AAGTGGGCGGGGACCCAAGG GTCGG AC CA GGG CGGGTGA TCGGG
CTG A C G - A- -----
GAM1970 9297 GTCTTTTGTAAATCAAGTAA A- A GAATC A AATTAA
GAATCCATTAAAGAAATTAA GTCTTTTGT AATCA GTAA CATT AAGA
TTTTAAATGTGCATTACCTG CAGGAAATA TTGGT CATT GTAA TTTT
GTTACATAAAGGAC CA C ACGT- A ------
GAM1971 11441 GGACAGACATGATGACTTTG ACAT GA G C - AG TAA GCAA
AGCTCTGAGGCAAAGGTGAT GGACAG GAT CTTT AGCT TGAGG CAA GTGA TG
AATGGCAACGCTCACATTGA CCTGTC CTA GAAG TCGA ACTCT GTT CACT GC
TCTCAAAGCTGAAGATCCTG ---- -- - A A A- C-- ----
TCC
GAM1972 3930 CGGAGAGTGCTTGGGTGGTG A T GG GTG AGGA TC CACGTA
GGTGCTGGAGGATTTCCAGT CGG GAGTGCT GGGT TGG CTGG TTTCCAGT TGAA
TCTGAACACGTATTTATATT GCC CTCACGG CTCG GCC GACC AAAGGTTA ATTT
GGAAAGAGACCAGAACCGAA C - AA AA- AGAG T- ------
GCTCGGCACTCCCCG
GAM1973 9031 GAATTGGTGAACGGAAGAGT TT - AACG A C GT TATG
CCTTATGTTGCAGTATGCTG GAA GG TG GAAG GTC TTAT TGCAG
TATAGTAATGGCCTTCAGCA CTT CC AC CTTC CGG AATG ATGTC
TCCTCTTC CT T GA-- - T AT ----
GAM1974 17617 CCCATCTGGCCGTGGGGGTC TG GT-- ---- C- GCTA
CTCCCCCAGCTATGGGCCGA CCCATC GCC GGGGG TCCTC CCCA
GGAGCTACCCCCTCCAGGCA GGGTAG CGG CCCCC AGGAG GGGT
TGATGGG TA ACCT ATCG CC ----
GAM1977 8853 TGGTCACTTCGTGGCTCAGG TT T GG A- T GGAAG
TAAGAACGTGCTTGTGGAAG TGGTCAC CG GGCTCA TAAG ACG GCTTGT
ACAAGTCTGTGGCTTGGTGA ACCGGTG GT CTGAGT GTTC TGT TGAACA
GTCTGTGTGGCCA T- - G- GG C -----

GAM1978 13885 ACTTCTTCTCTTATGTTAGC CTCTTATG C- T ATTG TTTT
TTCATTATTAGATTGTTTCA ACTTCTT TTAG TTCAT ATTAG TTTCA
TTTTTGAAAATTCCTGATGT TGAAGAA AGTC GAGTG TAGTC AAAGT
GAGACCTGAATATTTTTAAG TTTTTATA CA - CTTA ----
AAGT
GAM1979 13955 GGGTTCCTGTTCACTCTTGA TC CTT-- - T CAA ATTT
CTCTGTGGCAAATTGTATTT GGGT CTGTTCACT GAC TC GTGG ATTGT
ACAGTAGACCGCTGACGTTT CCTA GACAGGTGA TTG AG CGCC TGACA
CCCAAGTGGACAGATCC -- ACCCT C T AGA ----
GAM1980 12190 GCAAGTAGTTATACTCAGGA A G T TCA C ACACTTA
AGAACTTCGACACTTACGGG GC AGTA TTA AC GGAAGAA TTCG
TTTCTTCTGTTTGATACTGG CG TCAT AGT TG TCTTCTT GGGC
C G - T --- T -------
GAM1981 1589 AAAAGGGCAAGAATATCACG AATATCAC- T AGT- TTGAAACT
GCATGGGCATGAGTAGCTTG AAAAGGGCAAG GGCA GGGCATG AGC
AAACTGCTTAAGTATGTCCT TTTTCTCGTTC TTGT CCTGTAT TCG
GTTTTTCTTCAACTTGCTCT AACTTCTTT - GAAT --------
TTT
GAM1982 17153 CTTCCTATAAAAGTTTAGCT AAAAG A C TT- GGAAA G CAAACAACATT
CTCTCTTTTTGAAGGAAATT CTTCCTAT TTT GCT TCTC TTTGAA TTTCT GG
TCTGGGCAAACAACATTTTG GAGGGGTA GAA TGA AGGG AGACTT AAAGA TT
AGAAAGAAATTCAGATATGG CTA-- A A TAT AAAG- G ----------
GAAAGTAAAGATCATGGGGA
G
GAM1983 7376 TTCGGCTGGCTAGCAGGACA A -- AGACTC TCTGCTTT
CTGAGACTCCCCTCTGCTTT TTCGGCTGGCT GCA GGACACTG CCC
GGGCAGTGTCCGCTGCAGCC AGGCTGACCGA CGT CCTGTGAC GGG
AGTCGGA - CG ------ --------
GAM1985 2524 ATGGTGACACACATGCTGGA - ACA- G G- T TAACAT
GCCAAGTGCTAACATGCCTT ATGGT GAC CAT CT GAGCCAAG GC
GGTTCAAGGGATGGAAAGTC TGCCA CTG GTA GG CTTGGTTC CG
AACCGT A AAAG G AA - ------
GAM1987 13855 GTAACAGGTGGGGCTGGCTA TA TG -- TG ACA TG CA CGGTGC
CATTGGCAGCCACACGGTGC G ACAGG GG GC GCT T GCAGC CA
TGGAGCTGCTGGAGGCTGGC T TGTCC TC CG CGG G CGTCG GT
TACTTGCCTGTGGT GG GT AT GT A-- GT AG ------
GAM1988 14460 CCCAGGGACTAGTCTACCAA - TCTAC - T -- CTA TAGATTT
GGTTATTTGGCAGCTAATTC CCCAGG GACTAG CAAG GT ATTT GGCAG ATTC
TAGATTTGGATCATTGCCCA GGGTTC CTGGTC GTTC CG TGAG CCGTT TAGG
GAGTTGCACTTGCTGGTCTC T ----- A T AC AC- -------
TTGGG
GAM1991 11147 TGAATGGCCGCTCGCCGAGT A -- T-- A G AAACT AAC TCGCGC
GCTGTTTGCAAACTTAGGAA TGA TG GCCGC CGCCG GTGCT TTTGC TAGG CCCC
CCCCCTCGCGCGGGGCCTAG ACT AC TGGCG GCGGT CATGG GGGCG ATCC GGGG
CGGGGGTACGTGGCGCATGC C AA TAC G - ----- --- ------
GGTAACACTCA
GAM1992 17160 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A ATGTGGCA
CACTTTGACAGACATTATGT CTGG TGTT ATGG AAGTCA GACAG CATT
GGCAAATGTTGTCTGACTTA GACC ACAA TGTC TTCAGT CTGTT GTAA
CTGTTTCAACAAACCAG AA CTT A ---- - --------

GAM1993 10584 GGGAGAAAGGCTTAAGTCCT AA-- - A- T AGGAGAAAC
TGGGGTGGGAGGAGAAACCC GGGAGA GGCT TA GTCCTTGGGG GGG
CTCCCCGGGGATCCTGCAGC CCCTCT TCGA GT TAGGGGCCCC CCC
TCTAGTCTCCC GATC C CC T ---------
GAM1994 19532 CCTGTCCTTCGGTCCCCCAG TTC--- T C -- -- AAGC
GCCTGCCGGTCAGAAGCCTG CCTGTCC GG CC CCA GGCCTGCCGGT CAG
GGGCTGGTAGGCCCTTGGTG GGGTAGG CC GG GGT CCGGATGGTCG GTC
GTCCTCATGTGGATGGG TGTACT T T TC GG ----
GAM1995 537 TTATGTGAACACAATTTCCC CAATTTCCCCTTC TAAG T A ATATG
CTTCTGTTAAGACTATAAAC TTATGTGAACA TGT AC ATA ACT
TATATGAGTATGTGTACTGC AATACATTTGT ACG TG TGT TGA
ATGTTTACATAA ---------- TCA- - A -----
GAM1996 14199 CAGAAATGCTTCCTGGAATA AAAT -- AATATT-- - TTGGT
TTACGTCAGCTTGGTGCTGA CAG GCTTCCT GG AC GTCAGC
CAGTTTAACAAGCCTTAGGA GTC TGAAGGA CC TG CAGTCG
AGTTAGCTG GAT- TT GAACAATT A -----
GAM1998 22143 GGGGTGGAGCAGGTGGGCGA G - -- - CA A TCGCCTTT
CATGATCGATCGCCTTTTCG GGG TGG AGCAGGT GGGC GA TG TCGA
ACACCTCTGCCTGAGCCTGC CCC ATC TCGTCCG TCCG CT AC AGCT
TGCTAGCCC G G AG T CC - --------
GAM1999 9068 GATGTCCTTTTATAAAGTTG TC-- - TG TTCTCTTCT
AGGAACTTCTCTTCTGTTCC GATG CTTTTA TAAAGT AGGAAC
TACTTTGCTGAGAGTCTCCA CTAC GAGAGT GTTTCA TCCTTG
TC CTCT C -- ---------
GAM2000 6965 AGGGAAATGGCCTTCCCGCC AT TCCCGCC C GC CT TGACA
GGACGAAGGCTTATCTGCCT AGGGAA GGCCT GGA GAAG TTAT GCC
GACAGGCTGTGACTCTTCTC TCCCTT TCGGG TCT CTTC AGTG CGG
TCAACCTTGGGCTTCTTCCC CT TTCCAAC - TC T- -----
T
GAM2001 19780 AGTCTGTATAGCAATATGCT T CA- A - TG G AATA
TGGAGAGGAGAATACTTATC AGTC GTATAG AT TGC T GAGA GAG
TCTGGCGCACATCACCTATA TCGG TATATC TA ACG G CTCT TTC
TTGGCT T CAC C C GT A ----
GAM2002 8375 TCCAGGTCTTTTTAAAGAAT - TAA- A AA T TCACA
CAACATGTATTCACAGTACT TC CAGGTCTTTT AG ATC CA GTAT
TGGGATGCTAAGCAAAGGAC AG GTCCAGGAAA TC TAG GT CATG
CTGTGA T CGAA G G- T -----
GAM2003 12499 CTGGGTGAACCAGGATGGTC - A--- - T T T TCTCGTT T CTCTTGCCCT
GCTTTCTGTCTCGTTCAATG CTG GGTG AC CAGGA GG CGCT TCTG CAA GATC
ATCCTCTTGCCCTGATCTTG GAC CCAC TG GTCCT TC GTGG AGAC GTT CTAG
TTCAGACGGTGTCTCTCCTG A GACA T C T C TT----- - ----------
TGTACAGCACCACAG
GAM2006 19498 ATAAGAAAATCAAAGACAAT AAT A C CAGCTCCCTCTCACCCCA
GACATCCTCAGCTCCCTCTC ATAAGAA CAAAGACAATG CAT CT
ACCCCAAGTATGCCATTGTC TATTCTT GTTTCTGTTAC GTA GA
TTTGTAATTCTTAT AAT C T ------------------
GAM2007 22748 GCTCAGCGTCGCCGCGATGG A GCCGCGA TG G CGAG--- TGAC
TGTTGTTGGAGAGCGAGCAG GCTC GCGTC TGG TT TTGGAGAG CAGTTCC
TTCCTGACGGAGCTGACCAG CGGG TGCAG GCC GA GACCTTTT GTCGAGG
ACTTTTCCAGAAGTGCCGGA C ------- GT A CAGACCA ----

CGTCGGGC
GAM2008 9833 GAGATTTTGTATTGGTACTG TTT- GG - - TGT- ACCTTGGC
CGTTCTGTGTTTTAAACCTT GAGA TGTATT TACTG C GTTC GTTTTAA
GGCTTAAGATTTCTGAATAG CTCT ACATAA ATGGC G TAAG TAGAATT
TCGGTAAAATACATTTTTCT TTTT A- T A TCTT --------
C
GAM2011 16568 GGCTGTCTAGAAGAGTCAGT TCTA -- -- -- A C TG TTTATTTCTAC
TGTTGCACCACTAGTGTCTG GGCTG GAAGA GTCAG TTGT TGC CCA TAG TCTGT
TTTTATTTCTACATGGGTGT CCGGC CTTCT TAGTC AACG GCG GGT ATT GGGTA
TATGGGCGATGCAAACCTGA TAAG TT CA TA - - GT ----------
TTTTCTTCGAATCGGCC
GAM2013 14580 GGACGATTCTGCAGAGGCAT GA C A A AACGCTG A TCTCCC
TAAGATAACGCTGTCCAGAT GGAC TTCTG AGAGGC TTA GAT TCCAGAT CATAC
ACATACTCTCCCGTGTGCAT CCTG AGGAC TTTCCG AGT CTG GGGTCTA GTGTG
CTGGGATCCTGGGTCCTGAG -- - G C GGTCCTA C ------
GCCTTTCAGGAGTCC
GAM2016 4404 GCTGGCGGCCTTGGACGGGG G T C C TG TCCCC A-- - CC CCTTGT
CAGTGGCTCCCCCGGCCTGA GCTGGCG CCT GGA GGGG AG GC CGGCCTG GG AGTG GCC

GGAGTGCCGCCCCTTGTGGC CGACCGC GGG TCT CCCT TC CG GCCGGAC CC TCGC CGG

CACGCTGCCCAGCAGGCCGG - C - - CT ----- GAC G AC ------
CTCCTTCCCTCTCGGGCGCC
AGC
GAM2017 1608 CCCGGATCCTCAGTCGTGCG T G G C T GAGG
GGAGTCTGGGAGGCCTGGCT CCCGGA CCTCA TC TG GGGAGTC GG
TCCTCAGGGGTGAGGTTTGG GGGTTT GGAGT GG AC CCTTCGG CC
G - G G T T ----
GAM2018 19502 GAGGCTGGTGGTCTTGAGCT T TG C- CT TG C AATT
TTTGGCCTGGAATTCCAGTC GAGGC GG GT TTGAG TT G CTGG
TGAATTTTCAAATATTCCCT CTCCG CC TA AACTT AA C GACC
GCCTC T CT TA TT GT T ----
GAM2019 19224 GGAGACATGGAGTGGGAGGT CAT G A A- TGGAT TG AGATA
CAGCAGTGGTGATGGATTCT GGAGA GGAGTGGGAG TC GC GTGGTGA TC G
GGAGATACTGGATCACCATG CCTCT CTTTACTCTC AG CG TACCACT AG C
AGCAGAGCTCTCATTTCTCT --- G A AG ----- GT -----
CC
GAM2020 16946 GGTTACAAGCGATATCTCCT GCGATATCTCCTG CCCAATT
GCCTCAGCTTCCCAATTAAG GGTTACAA CCTCAGCTT
CTGGGGATTACACAGGCTAT CCGATGTT GGGGTCGAA
TGTAGCC ATCGGACACATTA -------
GAM2023 18489 GGAGGAGAGGCTGGTGGTCT A A-- T TG C- CT TG C AATT
TGAGCTTTTGGCCTGGAATT GG GG GAGGC GG GT TTGAG TT G CTGG
CCAGTCTGAATTTTCAAATA CC CC CTCCG CC TA AACTT AA C GACC
TTCCCTGCCTCCAACCCC - AAC T CT TA TT GT T ----
GAM2024 12226 CACAGGCGAGTGGAGCCCAA ------ G TG - A GA CTC TTGCGT
GGAACCCCTCAGCTTGCGTG CAC AGGC AG GAGC CCA G ACCC AGC
CTGGGTACTGGTGTTCTCCT GTG TCCG TC CTTG GGT C TGGG TCG
GGCCTCAATCCGTG CCTAAC G CT T - A- --- ------
GAM2025 3730 GGGTGCATGGCCGGATGTCT C CC T- C-- CTGAAC - - TGTGAT

CTGGGACTGAACGGGGGAGG GGGTG ATGG GGA GTCT TGGGA GGGGGAG GG AG
GAGTGTGATCTGCTGCTCCT TTCAC TACT CCT CAGG ACCCT CCTCCTC TC TC
CCAAATTCCCACAAGGACTT - AT TT AAC TAAA-- G G ------
TCCTATCATCACTT
GAM2026 10234 CTTCATGAGCTCTTCCACAT G CT G G - ATCCAAA TGCTTT
TTGTGTGGCCCAGGAACACA CTTCAT AGCT TCCACATTT TGTG CCCA GGAACAC GAGGCGT

TCCAAAGAGGCGTTGCTTTG GGAGTG TCGA GGGTGTGGG ACAT GGGT CCTTGTG CTTCGCG

CGCTTCGTGTTCCTTGGGAT - C- - A T ------- ------
ACAGGGTGTGGGCAGCTGTG
AGG
GAM2028 15733 GGGTGTAAGCAATAAGTGAA GT-- AATAA TTA TGG ACCC
GTTACATTGGCCCTAACCCT GGGT AAGC GTGAAG CAT CCCTA
AGGGATGATTCTTTACCCAG CCCG TTTG CATTTC GTA GGGAT
TTTTAAAGCCC AAAT ACC-- TTA --- ----
GAM2029 5053 GGCAGGTTGCTGTGTTGTGC C G--- C CT A--- AATATGAAAA
TTCCTTCTACAGCCAATATG GGCAGGTTG TGTGTT TGCTT CTT AC GCC
AAAAGGCCTAAGTTAAAGAA CCGTCCAGT ACGCAA ACGAA GAA TG CGG
AGCAAGTAAACGCATGACCT - ATGA A AT AATC ----------
GCC
GAM2030 15241 GCCAGCTCAGCCTTGGCTTT AGCT ----- CAAT AGTCCATA
TAACTCAATATTCCAGTCCA GCC CAGCCTTG GCTTTTAACT ATTCC
TAGGGGTGGTTAAAAGTTGC CGG GTCGGAAC TGAAAATTGG TGGGG
TGCAAGGCTGCAGGC AC-- GTCGT ---- --------
GAM2031 11133 TGGAGAAGGACTTCATTGGC A - - T GC CGC ACAAC
TTTCTGCTCTTCAACGCCAC TGGAGA GGA CTTCATTG GCT TCT TCTTCAA CAC
ACAACGTGTCCTTGGAGAAG ACTTCT TCT GGGGTAAC CGA AGA AGAGGTT GTG
ACAGCACAATGGGGCTCTAT A C A C -- CCT -----
CTTCA
GAM2032 19140 TGTGCAAGGCGGAAAGGCTG G A C AA TG A- -- GAGAAT
GGGCAGCAGCTGGAGAATCA TGT CA GG GGA GGC GGGC GC AGCTG
GCTCAGCAGGCCTTGGCCCT ACA GT CC CCT CCG TCCG CG TCGAC
CCCCCGTGGACA G G C C- GT GA AC ------
GAM2034 22330 GGCTTGATTTGCTTGGTGAC - G - GAATT----- GTGA
CGAATTACTAGGTGACTAGT GGCTTGAT TT CTTGG TGACC ACTAG
TTACTAACTAGGTCATTCAA TTGAACTG AA GAACT ACTGG TGATC
GGAACGTCAAGTT C G T ATCAATCATT ----
GAM2035 39 GCCTGGGACGTGCCCATTTT T GG G CCATTT T- AAA ATTC
TACTGTAAATTATGATTCCG GCC G AC TGC TTAC GT TTATG
TAACTGACTTGTAGTAAGCA CGG C TG ACG GATG CA AATGC
GGTTTCTGGC T TT G AAT--- TT GTC ----
GAM2036 261 TAGGCGCCGGGTGCCGATGA C --------- T --- TT TGCTCTC
CTGGGCCTTCTTGCTCTCGG TAGG GCCGGG TGCCGA GACT GGGCC CT
TCGGCTTCTTGGTCTCGGCG GTCC CGGCCC GCGGCT CTGG TTCGG GG
TGCCCCATTCCCGGCCCTG - TTACCCCGT - TTC CT -------
GAM2037 14818 ATGCACGGTCAGCCAATTTT A T - TT-- CTTA-- ATCA
ATTTATCTTAAGCATCAGCT ATGC CGG CAGCCA ATT ATTTAT AGC
GGTTCAATAAGTCCCCAATC TACG GCC GTTGGT TAA TGAATA TCG
TGGTTGCCGGCAT - - C CCCC ACTTGG ----

GAM2038 7931 TCTTGTGTGGAGACTTCGTG GGAGA GT--- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TCTTGTGT CTTC GGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AGAACACG GAAG TCACCAC ATTCT
CAAGAAGAATAAGCACAAGA AATAA AACCC - ----------
GAM2041 18320 GCAGAGGTACTGAGCCATAA GT - - TA A - TACGCT
CAGAGAGGCGACTACGCTGT GCAGAG ACT G AGCCA ACAG GAGGCGA C
TTGCTTCCTGTATTGGCTGC CGTCTC TGA C TCGGT TGTC CTTCGTT G
AAGTCTCTCTGC TC A G TA - T ------
GAM2042 9884 GCTCCTGAAAAGTACATCAA TGAAAA A ---- A AA ACCAGCTAAC
GTCTAAAGTGAACCAGCTAA GCTCC GT CA TC AGTCT AGTGA
CTCATTAAGACTGGAATCAT CGAGG CG GT AG TCAGA TTACT
GAGCAACAATGGAGC TAACAA A ACTA G A- ----------
GAM2044 9356 CGGGGGTTCGGGGGGATGCC ---- A CC T CTCG
CAGGCCCGGTGAGCTCGCTC CGGGGGTTCGGGG GG TGCCCAGGC GG GAG
TCCGCCTGGGCACTTGGGCT GTTCCCGGGCCTC TC ACGGGTCCG CC CTC
CCGGGCCCTTG GGGT - -- T ----
GAM2045 3361 AGCCTTGTGGCTGAGGCCTG - GGCTGA GACA C AAC GGAGG
TGACACTCCGGAACACTGGG AG CCTTGT GGCCTGT CTC GG ACTG
AGGCAGTACCCCAGAGCCTA TC GGAACG CCGGACG GAG CC TGAC
GCAGGCCGACAAGCAAGGAC A AACAG- ATCC A CCA -----
T
GAM2046 19762 TGACATGAGGAGTTGTATTA CA - TT- T - T--- C T AATACG
TTATATATGTGCCGAGATGT TGA TGAGG AG GTA TATTAT ATATG GC GAGA GT
AATACGATTTCTTCGCCCTC ACT ATTCC TC CAT ATAGTA TATAC CG TTCT TA
CATATCATGATATTACTTTC AC G TTT T C CTCC C T ------
TGCCTTACATCA
GAM2047 21267 TGCAGACAAACCAGTGTTAA AACCAGTG- AAAG CACCATCATTTAAACA
GAAAGTATTCACCATCATTT TGCAGACA TTAAG TATT
AAACAAATAACCACTTAAAT ACGTCTGT AATTC ATAA
AGAACAGTGTCTGCA GACAAGATA ACCA ----------
GAM2048 18684 GAGAAAGATTGTCCTTCAGG TT GGGGA T C AATA
GGACATGACATCAATAGGTT GAGAAAGA GTCCTTCA CA GA ATC
TCTGGAATGAGGGACTCTTT CTCTTTCT CAGGGAGT GT CT TGG
CTC -- AAG-- - T ----
GAM2049 20432 GCCCTCCCGGCAGGCACTAC - - -- ACTA G ACTAT
TCATCGAGAGGTACTATGCC GC CCTCCCGG CA GGC CTCATC AGAGGT
TTTGATGAGGCCTTTGTTCG CG GGAGGGCT GT CCG GAGTAG TTTCCG
GGAGGTGC T T TT ---- - -----
GAM2050 2597 GGTGCGTCGGGCGGCACCAC T - CACCA- A-- - --- GCATAG
CATGTACCCGGGCATAGCCG GG GCGTC GGGCGG CC TGTA CC CGG
ACAGGATGCAGAAGGAGATC CC CGCGG CCCGCC GG ACGT GG GCC
ACCGCCCTGGCGCCC - T ACTAGA AAG A ACA ------
GAM2052 10528 GGCGCGGGAGGGAGCGAAGC -- - - A- C C C-- C ATGC- ACCGAG
AGCGCGGGCAGCGAGCGAGA GGCG CG GGAGG GAGCG AGCAG GCGGG AG GAG GAG AGC

TGCAGCACCGAGGCTTCCTC CCGC GC CCTCC CTCGC TCGTC CGCTC TC CTC CTC TCG

CTCCTCACCCTCCTCGCCCT TG G A GG C C CCA - CTCCT ------
GCTGGCGCTCACCTCCGCGG
TCGCC

GAM2053 21846 GGCCCAAGGAATGAAGAGAA CAAGG AACCAA ATGTA TG G TAACAAGC
CCAATGGTATGTACTGGTGG GGCC AATGAAGAG TGGT C GTG CAGA
CAGATAACAAGCTTTGCACT TCGG TTATTTTTT ACCA G CAC GTTT
GGGCTGACCAACTGTTTTTT TAAA- GTCA-- GTCG- GT - --------
ATTAAATGGCT
GAM2054 16141 TTCAGTTGCTTCAGGCCATC TGCT A AT ATATGT - - GGGTTA
TGGATGTATATGTGCAGGTC TTCAGT TCAGGCC TCTGG GT GC AGGTCA CA
ACAGGGTTATGATGGCTTAG GAGTTA AGTCCGG GGACT CG CG TTCGGT GT
CTTGGGCTCAGGGGCCTGAC C--- - -- GGTT-- A A ------
ATTGAG
GAM2055 16066 TTCTGGTGTTTCCTAGAGAG T TT --- C ATGGA G T CTG
CCAATGGACTGTATATAAAT TTC GGTG TCCT AGAGAG CA CT TA ATAAATG
GCTGCGTTTGTTTGGAGAGG AAG TCAC AGGA TCTTTC GT GA GT TGTTTGC
GTGTCTTTCTGTAAGGATCA - T- ATG T GGGA- G T ---
CTGAA
GAM2056 5080 GATGGAATAGTTCAGAAGGA ATAGTT AAG GG TTCCTCCTTGTACCT
ATGGTACCAGTTCCTCCTTG GATGGA CAG GAAT TACCAG
TACCTCTGGTAGAATTCGGC CTACCT GTC CTTA ATGGTC
TGTGAATCCATC AAGT-- GG- AG ----------
GAM2057 266 TGTTTTTCTCCTCATCCTGT T TCATCCT - TTTCA AA TGCCT
ACCTCTTTTTTCATTAAGAA TGTTTT CTCC GTA CCTCTTT TTAAG TCC
TCCTGCCTGGAAGTTTAGGT ATAAAA GAGG CGT GGAGAAA GATTT AGG
CAAAGAGGCTGCTTGGAGCA C TT----- C CTG-- GA -----
AAATA
GAM2059 17923 TCCTTCTGTAAATACCCGTT T AATACCCGT - TCCATTTGTAAT
ACCATATTTATCCATTTGTA TCCT CTGTA TACCATA TTTA
ATTAAATTATGGTATTAACT AGGA GACAT ATGGTAT AAAT
TGCTACAGAGGA - CGTTCAATT T ----------
GAM2060 20258 TACAGCCATGTCACTCCTGG - TGTCAC TG G - GG - T ACAGTGGC
CGACCCTGGGGCTGGAGCTG TAC AGCCA TCC GC ACC CTGG CTGG AGC GG
GACAGTGGCCCTGCTCCCAG ATG TCGGT AGG CG TGG GATC GACC TCG CC
ACTAGTGGTGCTGGGATGGC C ------ GT - T A- C T --------
TCGTA
GAM2061 5980 TTTATTGACTACTTTAAGTA T - ACTT A -- --- ACAT
GAACAAACTAAATACATATT TTTA TG ACT TAAGT GAAC AAACT AAAT
TAACAGTTTTGGTTCATTTA AAAT AC TGA ATTTA CTTG TTTGA TTTA
TACAGTACATTAAA T A CAT- - GT CAA ----
GAM2063 6887 CATCTGGATTGTTAAGACCA TTAAGACCACA A- C A A AAGTTCTTA
CAGCAACTGGCACATTCGAC CATCTGGATTG GC ACTGG AC TTCG CC
CAAGTTCTTAGGGTGAAGTC GTGGACCTGAC CG TGACT TG AAGT GG
TCAGTAGGCCAGTCCAGGTG ---------- GA C - G ---------
GAM2064 11715 TGAGCAAGAGTATAATGCAA A ATAAT ACA - GA AAGC
CAGTGGCCAGGATGAAGCCA TGAGCA GAGT GCA GTGGCC AG TG
CACTGGGCCATCTGCACTCT ACTCGT CTCA CGT TACCGG TC AC
GCTCA - ----- C-- G AC ----
GAM2065 10349 GGAGCTCATGCTGGAGGAGG CTCA ---- A--- CAA ATCCAGCAC
TGGAGGTCTTCAAGGATCCA GGAG TGCT GGAGGAGGTGG GGTCTT GG
GCACCCGTCAAGACCATGAC TCTC ACGG TCTTCTCTACC CCAGAA CC
CATCTCTTCTAAGAGGCAAC AACA AGAA AGTA CTG ---------
AACTCT

GAM2066 16354 CCGATGATCAAGCTGATGAA --- AA TGA-- AC- TA GAGAG
CGCCTACTGCGAGAGGCAGG CCGA TGATC GC TGA GCC CTGC
GCTTGTCAATGATGCAGATC GGCT ACTAG CG ACT CGG GACG
ATATTCGG TAT A- TAGTA GTT -- -----
GAM2067 13610 CTGTGCCTTGTTTTTTAAAA C TTTTTA AT - GA AATG
GATAAGATGCTAGAAATTCA CTGTGC TTGT AAAG AAGAT GCTA AATTC
ATGGGATTTGGTGGTCTTTC GACACG AACG TTTC TTCTG TGGT TTAGG
CTTTGCAAGCACAG - ------ CT G -- ----
GAM2068 11358 TACAAGTAAACTTAAAAGGA A - A G- AA ATC TAAAGATGT
GTGTCAAGTTATCAGACTTT TACA GTAAA CTTAAAAGG GT TC GTT AGACTTTG
GTAAAGATGTTGAAGTTTTA ATGT CGTTT GAGTTTTCC CG AG TAA TTTGAAGT
AATGGGAAAGCCCTTTTGAG - C - AA GG AT- ---------
CTTTGCTGTA
GAM2069 17349 GTCATCCTCGTCCTCCTCTG TC T GC G TG TGCG
CCTGTGGCTGCTGCGGTGGC GTCA CTCGTCC CCTCT CTGT GC C
GGCAGAGGAGGGGATGAGTC CAGT GAGTAGG GGAGG GACG CG G
TGAC CT - A- G GT ----
GAM2070 6598 GAAGAGTGAATGGCTTGACG G T - T - TAC TA G CA AT- TGGCT
TACTTGCAGTTAACGGTGCA GAA AG GAAT GGC TGA CG TTGCAGT AC GTG AA GGGC
AAATGGGCTGGCTGCCTCTG CTT TC CTTG CTG ACT GT AATGTCA TG CAT TT TCCG
TTCCTACGGTACTGTAACTT G - T T A TTC -- G CC GTC -----
TGATCATGTCTGTTCCTGTT
C
GAM2072 15383 ACTGGTGCAGAGAACCATTG GG - C AC GCCTAAA
CAAGACTTCGCCTAAAGAAA ACT TGCAGAGA ACCATTG AAG TTC
ATTTTTAGTGGTGTCTTTGT TGA ATGTTTCT TGGTGAT TTT AAG
AAAAGT AA G T AA -------
GAM2073 14040 CCGGTAAATTTTGGAAAAAT A TT-- AAAA --- AAAA T CAGTCAATTT
CGCGGAAAATTTTTGGTAAA CCGGT AATT GGA TCG CGG TTTT GGTAAA
CAGTCAATTTTTTACCCAAA GGCCA TTAA CCT GGC GCC GAAA CCATTT
GCCCGAATCGGAAAATCCTT A TTTT AAAA TAA C--- C ----------
TTAATTAACCGG
GAM2075 2143 CCTAGGCCTGGAGCCCCTGG --- CC -- CTCCCACC
CACCCAGCTCAGCTCCCACC CCTAGGCC TGGAGCC TGGCACCCA GCTCAG
CTGGGCCCTGGGTGCTGCTG GGATTCGG ATTTCGG GTCGTGGGT CGGGTC
GCTTTATTTGGCTTAGG TTT TC CC --------
GAM2076 17621 GCGGGGCGGAGGCACTCGCG G G CAC G AAT T--- --- TCTGGT
CGGGGGGTAATTCGGGGTCT GC GGGC GAGG TCGCGCGG GGGT TCGGGG CTG GGT

GGGTTCTGGTGCCGCGCAGC CG CTTG TTCC AGTGCGTC CCCG AGCCCC GAC CCG
TTTCCCCGATGGCCCACTGC A G --- A GT- TTTC GCG ------
GTGACCTTGGTTCAGC
GAM2078 10336 GATGCTCCACAGATAATCCT TCCA AA TAAG- TTCATTACATTT
AAGAGGTTTTCATTACATTT GATGC CAGAT TCC AGGTT
AGCCTAATCTGGAAGATCTG TTACG GTCTA AGG TCCGA
GCATT ---- GA TCTAA ----------
GAM2079 6475 CTCTTAGTTTTGATTTGAGG T TT A ATCCCGTAAAG-- AGTT
CATCCCGTAAAGTTGTAGTT CTCT AGTTTTGA TG GGC TTGT
GCAGAATCCCAAACTAGGCT GGGA TTAAAACT AC TCG GACG
ACATTTCAAAATTCAGGG C TT A GATCAAACCCTAA ----

GAM2080 20469 CTGGATGAAGCTGACGAAAT A AA AC A- GTTAAGCC AT A CCAGA
GTTAAGCCGTGGATTCAAGG CTGG TG GCTG GA AT GTGG TCA GGA
ACCAGATCTATGACCATATT GACC AC CGAC CT TA TACC AGT TCT
CCAAAATGCTCAACAGCAAC C AA AA CG AAACCTTA -- A -----
ACCCAG
GAM2081 9763 AGGTCCTCCTTTCCTTTTAA TCC TTAATT A AA - AATTTTACTA
TTAAATGAATTAAGTACATT AGGTCC TTTCCTT AA TGAATT GTA CATT
AATTTTACTAAGTGATACGA TTCAGG GAAGGAG TT ACTTAG CAT GTGA
TTCAATTTTCATTGAGGAAG TGT TTACTT A -- A ----------
TGTGGACTT
GAM2082 9901 CGCTTTCTTCTTCCTCTTTT TCT TTTTAT ATCA TA A GAACCATGAGT
ATTCCCATCAGTCCTAGGAC CGCTTTCT TCCTC TCCC GTCC GGACC GAGAGT
CAGAGAGTGAACCATGAGTG GTGAGAGA GGGAG AGGG CGGG CTTGG TTCTCG
CTCTTGGGTTCCCGGGCAGC C-- T----- ACGA CC G ----------
AGGGATGAGGGCAGAGAGTG
GAM2083 14863 CGTCGGCATGGCTGTCATTC -- - --- - GA--- A GGATTTCG
TGAGGGTGGAAAATAACTGG CGTCG GCATGGCT GTCAT TCT GAGGGTG AA TAACT
ATTTCGGGTTAATTGGTGAC GCGGC TGTACCGA CGGTG AGA CTCCTAC TT ATTGG
ATCCTCAAGAGCTGTGGCAA TC A TCG A AGTGG A --------
GCCATGTCTCGGCG
GAM2084 15343 GGTTTCTTAATTAGATATAG AATTA - - CTA CCAAAT- TCTCT
CTGAAAAGAACGCTAGACCA GGTTTCTT GATA TAGCTGAAA AGAACG GA AGGT
AATAGGTTCTCTGCCTTGCC CCAAGGGA CTAT ATCGATTTT TTTTGT CT TCCG
TTTTCGTTTGTTTTGTTTTA ----- T G TTG TTTCCGT -----
GCTATTATCAGGGAACC
GAM2085 11238 GCAGCTGGATCGGGCCTCAG - GG--- AGCA A-- GTT
AGCAGGCGGCAGGCGTTGCC GCAGCTG GATC GCCTCAG GGCGGC GGC
CACGCTGTCAGCTGAGGTGT TGTCGGT CTGG TGGAGTC CTGTCG CCG
CAAGGTCATGGCTGT A AACTG GA-- CAC ---
GAM2086 174 CCATGGACCGCCTGTACTTT A C T -- T GA ATGG GCGA
GTGATGGAGTACGTGAATGG CC TGGACCG CTG ACTT TG GATG GTACGTGA GG
GGGCGACCTCATGTATCACA GG ACTTGGC GGC TGAA AC CTAC TATGTACT CC
TCCAGCAAGTCGGCCGGTTC A C - CG - AC ---- ----
AAGG
GAM2087 3960 GAGTGTCCAATTCTAGGGTA C TTCTAG CTCCT A TTTA
TTTCTCCTTGATAAATGATT GAGTGTC AA GGTATTT TGATAA TGA
TATTATTGTCACAAAAGATA CTCATAG TT CCATAGA ACTGTT ATT
CCAAATTTTGATACTC T TAAA-- AAAC- - ----
GAM2088 15234 CTGGGCCCGGGAGACAACTT GC ACA TTG TC CT TCGCCACTCTCTTCT
GGCGTCACCCCTCAGCGGTC CTGG CCGGGAG AC GCG ACCC CAGCGG
GCCACTCTCTTCTCTGTTGT GACT GGCCCTT TG CGC TGGG GTTGTC
TGGGTCCGCATCGTATTCCC AA A-- CTA C- TT ----------
GGAATCAG
GAM2089 14412 GCAGATGGGGCACTCGCTGC TG- CTC C-- AGA-- CACAC
CCTCAGCGCAGAGCTCACAC GCAGA GGGCA GCTGCC TCAGCGC GCT
AGCGCAGCGTGTTGGCACGG TGTCT CCCGT CGACGG GGTTGTG CGA
CAGCACTGCCCGCTTCTGT TCG CA- CAC CGACG -----
GAM2090 1501 GAGGAGTATGGGGTAGAGCA T - C T GT - - AGGAATGG
ATGGTCTGGGCCAAGGAATG GAGGAGTA GGGGT AGAG AA G C TGGGC CA
GTGAGCTTAGGGTCTTCCTC CTCCTCAT CCTCA TCTC TT C G ATTCG GT

TGACTCCTTACTCCTC T G C - TG G A --------
GAM2091 11578 CCATCCATTCACTGTTCAGC CT C- T ACT TTTAGTTT
TGTACTGTGATTTAGTTTTT CCATCCATTCA GTT AGC GT GTGA
ACACCGTTAAAACCCTGAGT GGTAGGTGAGT CAA TTG CA CATT
GGATGG CC AA C --- --------
GAM2092 7774 GCAGTGTTGGGGATCCAGAG - T TC A AT-- A GCTACTACT
CCATGTCGGACCTGCTACTA GCAGT GT GGGGA CAG GCC GTCGG CCT
CTGGGCCTGATTGGGGGCCT CGTCG CA TCTCT GTC CGG TAGTC GGG
GACTCTCTTACTGCTGC T T CA - GGGT C ---------
GAM2093 11177 GAGACTCTATGTCTGCCCGT T T T - TC T G A TCATTAAAACTT
CCATCAGTGAACTCATTAAA GAGAC CTA GTC GC CCG CA CA TG AC
ACTTGTGCAGTGTTGCTGGA CTCTG GGT CGG CG GGT GT GT AC TG
GCTGGCCTGGTGTCTC T C T A C- T G G ----------
GAM2094 18888 AGTTTCTTCCTCCTGGGGGG TCT- C - - TG TC GGCTTTAGG
GTCGTGGTCTCGCTGGCTTT AGTT TCCTC TGG GGGGGTC G G TCGCT
AGGAGTGAAGCTGCAGACCT TCAA AGGAG ACC CTTCCAG C C AGTGA
TCGCCAAGAGGATTACAACT CATT A G A GT GA ---------
GAM2095 2654 GCAGAATATAAGTCTTTAGC AG ATA T TTCCCA--- TT AAATGCAACA
CTTCCCAAGTTTCTTGGCAA GC AAT AGTCTT AGCC AGTTTC GGC
ATGCAACAGCTTGAAACTCA CG TTG TCAGGA TCGG TCAAAG TCG
AATCTGCGGCTTAGGACTGT GA --- T CGTCTAAAC T- ----------
TAGGC
GAM2096 19068 GGCCAGGCGGACGAACCCCT --- - CGA CTCAGT ATCTT
CCTCAGTGCTTGGTCATCTT GGCC AGG CGGA ACCCCTC GCTTGGTC
GGCCGGGCTCGGGGGGTATC CCGG TCC GCCT TGGGGGG CGGGCCGG
CGACCTTCAGGCC ACT A A-- CT---- -----
GAM2097 22511 GGCAGCTCCCAAGACCACCC C CAAGA-- A GC A- C CCAC
GCCCCCAGGTGCAGCCACCT GG AGCTCC CC CCC CCCC GGTG AG
ACACCCCGGGGAAGGGGGAA CC TCGAGG GG GGG GGGG CCAC TC
GAGCAGGAGCTCC - ACGAGAA - AA CC A ----
GAM2099 21934 TTAACAGGTAAATGAGAAGA GTAA - G ----- T TTATTGGC
GCATTGTGGACATTATTGGC TTAACAG ATGA GAA AGCAT TG GGACA
TGTCCCCAATAAAATGCTGT AATTGTC TATT CTT TCGTA AC CCTGT
TCATTATGCACTGTTAA ACG- A G AAATA C --------
GAM2100 15024 GAGAGGAGAATCGCTTGAAC - AA GA-- TG AG GTTA A - AGAT
CTGGGAGTTGGAGGTTACAG GAGA GGAG TCGCTT ACC GG TTGGAG CAGTG GC CG
TGAGCCGAGATTGCGCCACT CTCT CCTC AGCGAG TGG CC GACCTT GTCAC CG GT
GCATTCCAGCCTGGGTGACA G AG ACAG GT -- AC-- - C ----
GAGCGAGACTCCGTCTC
GAM2101 13534 CTGTGGACCTTTGGGACACA GA CACAA ACCT GA- AACACAC
AGGTGGACCTGTACTGATAG CTGTG CCTTTGGGA GGTGG GTACT TAGAGA
AGAAACACACTCTCTAAGAA GACAC GGAAACCTT CCACT CGTGA ATCTCT
GTGCTTACTCACCCTTTTCC GA TTC-- CATT AGA -------
AAAGGAGCACAG
GAM2102 20669 GAAGAAGGGACCCCAGGTCA A-- A - A-- - - - CCATTA
GAGACTGGAGCCATTACTTC GAAGA GGG CCC CAGGTC GA GA CT GGAG
AAGATCATCGAGGACCTGAG CTTCT CTC GGG GTCCAG CT CT GA CTTC
GGCTCAGATCTTC AGA - A GAG A A A ------
GAM2103 18948 CCTGAAGCCTTGAAGCCTCT AA TTG CTTC - T C- A- AGCAG
TCGGGATGTCTTCCAGCGTA CCTG GCC AAGCCT GG GA GTCTTCCAG GT ATC

ATCAGCAGGATGGGCAATTG GGAC CGG TTCGGA CC CT CAGGAGGTT CG TAG
GAGGACTCACCAGGCTTGTG -- TG- ---- A - AA GG -----
GCCAGG
GAM2105 19242 ATTCAGGTGCCTCTGCCCCA T GC- C G CTGGA
CGCGGTGTCCTGGAGAAGCC ATTCAGG GCCTCT CCCACG GGT TC
CGTGGGATGAGAGGCCCTGG TAGGTCC CGGAGA GGGTGC CCG AG
AT - GTA - A -----
GAM2106 10718 GTATCAGAAAGACTTGTGTT - AA- T T A G - TTTAA GCGCA
AAATCAGTCCGCCCTTTAAC GTA TCAG AGACT G GTTAA TCA TCCGC CC CTT
TTGCGCAAAGGCATGGCGCG CGT AGTC TCTGA C CGGTT AGT GGGCG GG GAA
GGGTGACTTGGCCAGTCTGA G CAG - - C G C TACG- -----
CCTGAGTGC
GAM2107 17081 GGGGACTTAGTTAGGTAGAT CTT--- A T AATA- G CTC
TAATATCTGGAGCTCCTCGA GGGGA AGTT GG AGATT TCT GAG
GGGACCAAATCTCCAACTTT CCCCT TCAA CC TCTAA GGA CTC
TTTTTCCCC TTTTTT - - ACCAG G ---
GAM2108 14450 GGATCACCCCTTCTTTGTTA - CC T AAG TACTTCACATTTC
AGCTTTACTTCACATTTCAG GGAT CAC CTTCTT GTT CTT
GACGACGAGAAGCTGTGTAT CCTA GTG GAAGAG CAG GGA
CC T TC - CA- ----------
GAM2109 11022 GGCCTCTGCAACTTACTAGC TG AACT---- A TGTGT- AAAGAAC
TGTGTGTCCTTGGGAAAGAA GGCCTC C TACT GC GTCCTTGGG
CTTCAAGGACTTCTTTGCAG CTGGAG G ATGG CG CAGGAACTT
GTATCTGATTAGTGGAGGTC GT ATTAGTCT A TTTCTT -------
GAM2110 13779 CGAGGAGAGACTGTTTAAAG AG C - GCAAGA G AGAAA
TCAGCAAGAATGAGGAGAAA CGAGG AGA TGTTTAAA GTCA AT AGG
CCTGTGCAAATGATGTTTAA GTTTC TCT ACGAATTT TAGT TG TCC
GCAATCTACTTTG A- A G AAACG- - -----
GAM2111 12334 GCCCTTGATGTCCTGCAAAT - - --- AAA - --- ATGT
GAAGGAGGAGGATGTCCTTA GCC CTTGA TG TCCTGC TG AAGGAG GAGG
AGTTCCTTGCAGCAGGAACC CGG GGATT AC AGGACG AC TTCCTT TTCC
CACTTAGGTGGC T C CCA --- G GAA ----
GAM2112 17492 GAGCTGGGGAGAGGAGTTCC T TT- TTAAAAG AG CTGCCT
TCCCTTAAAAGCCAGCAACT GAGC GGGGAGAGGAG CCTCCC CC CAA
GCCTTTGGGGAATGTCGGGG TTCG CCTCTTTCCTC GGGGGG GG GTT
GGTCTCTCCTTTCTCCTGCT T TCT CTGTAA- G- ------
T
GAM2113 22865 TTGTTCTTGCTTCCAGGCTT TT TCCAGG TG CAAATCCAGTGCTAC
TGCGCTGCAAATCCAGTGCT TTGTTC GCT CTT CGCTG
ACCAGTGTGAAGAATTCCAG AACAAG CGA GAA GTGAC
CTGAACAA T- CCTTAA GT ----------
GAM2114 660 ACCTTCGCATTCAGAATTTG GCAT G TGA--- - AGAAACATTAAGACCTAC
ACCATCTTGGTGAGAAACAT ACCTTC TCA AATT CCATCT TGGTG
TAAGACCTACTACCAGAGAT TGGAAG AGT TTAG GGTAGA ACCAT
GGGGTGATGATTATGATGAA AAGT A TAGTGG G ----------
GAAGGT
GAM2115 10590 TACATCTGCTGCCTACATTC A- G A TTC TCACACATACGCTT
CTGCTCACACATACGCTTGC TAC TCT CTGCCT CA CTGC
AGCTTTGAGGCAGGAGAGGG ATG AGA GACGGA GT GACG
TA GG G - TTC ----------

GAM2117 22086 TCACTTGAGCCCAGGAGATC GA-- AGATCG C A A ATGATTG
GAGGCTGTAATGAGCTATGA TCACTT GCCCAGG AGG TGTA TG GCT
TTGGGCCACTGCACCCTAGC AGTGAG CGGGTCC TCC ACGT AC CGG
CTGGGCGATAGAGTGA ATAG GA---- C C - -------
GAM2118 15814 TTTGGAAGGCCTTTCAAAAG A - ----- TCA- TG GAACA
CCTCACCTGGGAACATTGGG TTTGGA GGCCTT TCAAAA GCC CC G
AATTGGTTAATTTTTTGATG AGGCCT CTGGAG AGTTTT TGG GG T
AGGTCATCCGGA A T TTAAT TTAA GT -----
GAM2119 11793 GGCAAACAGACTTGACCATC A T------ T ACCCACTGCATTCTCAAG
TTCAGACCCACTGCATTCTC GGCA ACAGACT GACCA CTTCAG
AAGCTGAAGTGGTCTGCTCA CCGT TGTTTGA CTGGT GAAGTC
TAGTTTGTGTGCC G TACTCGT - ------------------
GAM2120 18010 GGGAAACTCCGAGGACAGAG AAA A--- - GA AA GAAGTCT
GGCTAAATCCATGAAGTCTG GGG CTCCG GGA CA GGGCT ATCCAT
TGGATGGCCTGATGATCCAC CCC GAGGC CCT GT TCCGG TAGGTG
AGCGGAGACCC A-- GACA A AG -- -------
GAM2121 8801 CTCTGTGGCCTACAAATCTG CTA AAT- - - - CTAA
GGCACCAGTGGTTCTAAAAT CTCTGTGGC CA CTG GGCAC CAG TGGTT
CGCCTGCGTGCCTCAGCAAG GAGGCACCG GT GAC CCGTG GTC GCTAA
TGCCAGCCACGGAG ACC GAAC T C C ----
GAM2122 1149 GCAGTGGAGGGGGCAGGACC GA A--- --- T--- CAG
TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GGACC TCC GCTGGTG
CTCGTGGAGCAGGTCCACCG CGTTAC TCCCCG CCTGG AGG CGACCAC
GCCCCTACATTGC A- GCCA ACG TGCT ---
GAM2123 18527 GGTAGCAGGCCCCAAGTTAT CAG- CC TTAT- CCCGCCCT
TATTCCCCGCCCTGAATATT GGTAG GC CAAG TATTC
CATCTTGTAGCAGCTCTGCC CCGTC CG GTTC ATAAG
TCGA AT TACTT --------
GAM2124 22386 GACAGAACTCTGCTTCCAGC AA ------ T C -- - CAGCTT
GCTGTGTGCCAGCTTGCACC GACAG CTCT GC TCCAG GCT GTG TGC
ACCGAGCTCTGGACGCTGAG CTGTC GAGG CG AGGTC CGA CAC ACG
GAGGAGGCCTGTC CG AGGAGT C T GC C ------
GAM2125 8529 CTTTTGGAGACAATCTGACA -- GA T --- AAC- GA T TTA
GGTTAAAACAGGAACTGTTG CTTTT GGA CAATC GACA GGTTAA AG AC GTTGGAA
GAATTATTCTAGCTGTAACT GAAAG CCT GTTAG TTGT TCGGTT TC TG CGATCTT
ACTATTGGCTATGTGTTGAT AT AG - GTA ATCA AA T ---
TGGATCCTAGAAAG
GAM2127 15709 TTTTCCCCCATCCCCCTCCA - CA- -- ---- ATAGC
AAGTCTTGATAGCCAAGCGT TTTTC CCC TCC CCCTCCAAAGT CTTG
TATTTTGGGGGGTAGGAAAC AAAAG GGG AGG GGGGGGTTTTA GAAC
GGGTGAAAA T CAA AT TTGC -----
GAM2128 11534 TTGGTCTGCTAGCCTAGAGG - G A TA TTCA AAAGGGA
TTTCAGTTCCAAAGGGAGGA TTG GTCT CT GCC GAGGT GTTCC
ATGCTTCCGGCAGGAGACAC AAC CAGA GA CGG CTTCG TAAGG
AA A G - C- ---- -------
GAM2129 8 TGTGTTGGCAAAGGCTGTTA G -- T T---- AAGTGTTAA
ATAGTAGTTAAGTGTTAAGA TGTGTTG CA AAGGC GTTAA AGTAGTT
CTGCTTTTCTTTAACGTTTT ACGTAAT GT TTTTG CAATT TCGTCAG
CATGGTAATGCA G AC - TCTTT ---------
GAM2130 17175 TTTTAGAAAAGAATATGACA AAGAATA - CAC-- G ATACA

TTTTATTTTCACTTATGGAC TTTTAGAA TGAC ATTTTATTTT TTATG AC
ATACAGTACATGAATTTAGA AAAGTCTT GCTG TAAAATAAAG AGTAC TG
AATAAAATCGTCGCAGGATT AGGAC-- C ATTTA A -----
CTGAAA
GAM2131 12470 CTTCTTAAACTCCGTGGCTT - A G CTTGT TCATT GA ACG GGGGCTGA
GTGCTTTCATTTTGTTTCAG CTT CTTAA CTCC TGG GCTT TTGTTTCA CC TAG
ACCACGTAGGGGGCTGACTG GAA GAGTT GAGG ATC TGGA AACAAAGT GG GTC
AAAGGGATGAAACAATTCAG C A G TTT-- CTT-- AG AAA --------
GTTTTCTAGGGAGATTGAGC
AAG
GAM2132 22958 TCTGGAGTCCTAAGGCTGGT TG A AA GT GAG- A GGTC
TGGCGAGAACTAGCAGGGTC TC G GTCCT GGCTG TGGC AACT GCAG
CTGCAAGTTATAGGTTATTC GG C TAGGA CCGAC ATTG TTGA CGTC
AGCCCAGGATACTGGG GT A C- TT GATA A ----
GAM2133 7427 GGCAGAACACACAGCAAGGA C CA- A CTT --------- ATCA
AAGGTCCTTTCTGGGGATCA GGCAGAACACA AG AGGAA GGTC TCT GGGG
CCCCATTGGCTGAAGATGAG CCGTTTTGTGT TC TTCTT CCAG AGA CCCC
ACCATTCTTCCTCTTGTGTT - TCC A AGT AGTCGGTTA ----
TTGCC
GAM2134 5261 TCACCCTGTCGCACTTCACC CT C --- - AACGGG
GTGGGGATAACGGGGTCTAC TCACC GT GCACTTC ACCGTGG GGAT
CATGGTCTAGAAGTGCACTG AGTGG CA CGTGAAG TGGTACC TCTG
GTGA T- - ATC A ------
GAM2136 13933 TGAGTATACCTGTCTGTATC TACC G CGGTT A ATGGC
GGTTCAGAGTTCATGGCGAA TGAGTA TGTCT TAT CAG GTTC
CCTGTCAAGTGAAGACACTA ACTCAT ACAGA GTG GTC CAAG
CTCA C--- A AACT- - -----
GAM2137 10143 GAGTGGAGGGCTGTGGAGTT TG CT G CCCCTGTTCT
GGGGGCCCCTGTTCTTCCCC GAG GAGGG GT GAGTTGGGGG
AACTTGGCTTTCCTTTTCTT TTC TTCCT CG TTCAACCCCT
TT TT G ----------
GAM2138 17276 CATATGGTCCAATATCAAAG - CCAA AAA TGA CAT GAC---
GATATCTAACAGCAA
GGAATGATAGCATTGAAGGA CATATG GT TATC GGGAA TAG TGAAG TCGGG
CTCGGGGATATCTAACAGCA GTATAC CA ATGG CTCTT ATC GCTTC AGTCC

ATACCTGATCACTACTTCGC G TC-- --- TG- AC- ATCACT ----------
ACTAGTTTCTCGGTACTACG TA
CATATG

--
GAM2139 8650 GGCCAATTGAAACAAACAGT C T ACAAACAG GTT T A GATTAAG
TCTGATACCGTTCTTCCACC GGC AA TGAA TTCTGATACC CT CC CCACT
ACTGATTAAGAGTGGGGTGG CCG TT ACTT GGGATTATGG GG GG GGTGA
CAGGTATTAGGGATAATATT A T ATAATA-- AC- T - -------
CATTTAGCC
GAM2140 22472 TGCAGGGGATGGATAAACAG A ATGGATAAA AA- -- ATTCCTCACA
GGAAACACTGTGCATTCCTC TGC GGGG CAGGG ACACTGT GC
ACAGCCAACAGTGTAGGTCT GCG CCCC GTTCT TGTGACA CG
TGGTGAAGCCCCGGCG G GAAGTG--- GGA AC ----------

GAM2143 5217 GGTGCTCTGGGCACTGCAGG G ACT A- - -- ----- GA TTA
GGTGCTGGCTGGACTGCGGT GGTGCTCT GGC GC GGGGT GCT GG CTG CTGCGG
TACCGCAGCGCGGAACCCCC TCACGAGG CCG CG CCCCA CGG CC GGC GACGCC
TAGGCGACCCCGCGCTGGCC G GT- CG G AT CCCAA GC ---
GGGAGCACT
GAM2144 15280 GCTGCTGGTGTTAGAGCAGT GGTG TA - AGC CCCAGGAGATCAGA
TCCTGAGCCATCCTGCCCCA GCTGCT T GA GCAGTTCCTG CATCCTGC
GGAGATCAGAGCAGGGTGCA CGGCGA G CT CGTCGAGGAC GTGGGACG
GGAGCTGCATCCGGAGAGCG GA-- GC A --- ----------
GC
GAM2145 9439 CGCCTTCTCTGTCCCCCAGA CTCTGTC A- -- ACTC
ACAGAACAAACTCTTGTTCT CGCCTT CCCCAG ACAGA ACAA
CTGTGGTTGGGGAAAAGGTG GTGGAA GGGGTT TGTCT TGTT
AA----- GG CT ----
GAM2146 9175 GCCATGAGCACAGGCGGGTC AGCAC CACACACAG - ACCTCCAC
CACACACAGGCGGCGAACCT GCCATG AGGCGGGTC GC GGCGA
CCACTCGCTGGCAGACGGCT CGGTAT TTCGCTCGG CG TCGCT
CGCTTTTCGTATGGC GCTT- CAGA----- G --------
GAM2147 16097 AATGTCCATTCTTATTAAAT - ---- AAATGA CTCAA- CCCTA
GAATGTATCTCAAGGCCCTA AATGTC CAT TCTTATT ATGTAT GG
CCAAATAAGTACATGTAAAA TTATAG GTA AGGATGA TACATG CC
AGTAGGAAGAAATGTGATAT T AAGA AAAATG AATAAA -----
T
GAM2148 7723 GTAAGCCTACCAGGAGGAAC -- C-- CCA ---- CT ACTT CATCTA
CAGAACAGCTGCATAACTTG GTAA GCCTAC AGGAGGAA GA ACAG GCATA GG
GCATCTACCTATGTGCTCCT CATT TGGGTG TCCTCCTT CT TGTC CGTGT CC
GTCCCTTCCACTTCCTCCTT AA TCT CAC TCCC CT AT-- ------
CTGTGGGTAATTAC
GAM2149 22951 TCTAAGGAAGAAATGGGTTG TG TGAG AAT GT A - GGGAT
AGAAGCAATTGGTGAGGTCC TCTAAGGAAGAAA GGT AAGC TG G GGT CCTTAG
TTAGGGGATCTGAGGTGCCC AGGTTTCTTCTTT TCG TTCG AC C CCG GGAGTC
GTCAGCTTGCTTGTTTCTTC GT ---- --- TG - T -----
TTTGGA
GAM2151 13699 GCAGGGGCTGGCACTGATGG GC A TG TGGGCG AAGTG
GCGAGGGGAGGAAGTGCCTC GCAGGG TGGC C A AGGGGAGG
CCTTAGAAACTTGGGCCAAA TGTCCC ACCG G T TTCCCTCC
CCCTGT AA - GT CAAAGA -----
GAM2152 18153 GGCAGCAGGGGTGGGCATCC AG GG --- ---------- GCTTTA
GGGCTAAGGCTTTACTTGGC GGC CAGGGGT GCA TCCGG GCTAAG
GGCAGTCTCATCGGATTTTG CCG GTCTTCG CGT AGGCT CGGTTC
CAGCTTCTGGGCC G- A- TTT ACTCTGACGG ------
GAM2153 21794 TGTAAGTCATGACTGTTATC A- C A ------- GA AGATTAGG
ACAGGGGAGAGAGATTAGGC TGTAAGTC TGA TGTT TCAC AGGG GAG
TCAACTCTGAATACAGTGAA ATATTTAG GTT ACAG AGTG TCTC CTC
GACAATTGGGGATTTATA GG A A ACATAAG AA --------
GAM2154 17836 GGCTGCTGCCTTATGGGTCA T TG TTA-- T A TGT A TGATG
GTGGTATGGGTGTGAGGACA GGC GC CC TGGG CAGTGGT TGGG GAGGAC TC
TCTGATGGAGTTCTCTTCCA CCG TG GG ATCC GTCACCA ACCT CTCTTG AG
ACCACTGCCTACAATTGGTG - GT TTAAC - - T-- - -----
GTGCC

GAM2155 2595 GGTCTCACACTGGTTTCTCG TC- TG TCTC - A GCTTGTAA
TGCCCACCAGCTTGTAATGG GGTC ACAC GTT GTG CCC CCA
AGGGATACAATTGGTGTCAT CTAG TGTG TAA CAT GGG GGT
GATC TAC GT ---- A A --------
GAM2157 7354 CACCTTTTAAATATTTAATT AAATATTTAAT TGT C T AAAAC
CTTATGTGGACTTATTTCCA CACCTTTT TCTTA GGA TTATT CCAG
GAAAACTTGGTGATAATTCT GTGGAAAA AGAGT TCT AATAG GGTT
TGAGACAAAAGGTG C---------- --- T T -----
GAM2158 9382 GACATGACATTAGGAACTTA C AACTTAGC - TC GTTCAA
GCATTTTAGATCTGTGTTCA GACATGA ATTAGG ATTTTA GA TGT
AACAAGTCTTAAAATTGTCT CTGTACT TGATCT TAAAAT CT ACA
AGTCTCATGTC C GT------ T GA ------
GAM2159 6893 CTGTGGGCTCTGGCATATAT TG TCT CATATATT T GA - TCAC
TAGCTGTGTGACTGTGGGTG CTG GGC GG AGCTG GT CTGTGG GTGAG
AGTCACTTCACTTCATGGAG GAT CTG CC TTGAC CG GGTACT CACTT
GCTCAGTTTCCTCGTCTGTA GT CT- T------- T GA T ----
G
GAM2162 745 TCCCCACCGTGACCTGCCTG CC CC C-- TCT
GCCTCCCCTGTCTCAGGGAG TCCCCA GTGACCTG TGGCCT CCCTG
CAGGTCACAGGTCACCATGG AGGGGT CACTGGAC ACTGGA GGGAC
GGA AC -- CGA ---
GAM2163 6088 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAAGGATAGAAGAAG
GTGGTGCTAAGAAAAGGATA TCTTGTGTT CTTC GGTGGTG TAAGA
GAAGAAGTCTTACACCACTC AGAACACGA GAAG TCACCAC ATTCT
CCAAGAAGAATAAGCACAAG ATAA AACCC - ----------
A
GAM2164 2995 GTGGAGCAGATAACCATTGT A TAACCATT -- A- GGTCAG
TTCTCGGCCGCTATCTGGTC GTGG GCAGA GTTTCTCGGCC GCT TCT
AGAGGGGAGCTGGGCCGGGA CATC CGTCT TAAAGGGCCGG CGA GGA
AATTCTGCCTAC - -------- GT GG ------
GAM2167 22006 TGCTTCGGGCTGCTACATCA C C ACATCA TCT- T TG - - TTGGA
ACTCTCTCAGTGTGTGACTT TGCTT GGG TGCT ACTC CAG GTG A CTTC C
CCTTGGAGAGAAGATTGCAT ATGAA CCC ACGA TGGG GTC TAC T GAAG G
CTGTTTTGGGTATCAGCACC A C CTA--- TTTT - GT A A -----
CCAAAGTA
GAM2168 8616 GTCTTGGGGAAGCTTTGTTA --- TTT--- TT A GTGG
AATTTTTGTTAATGTGGGTA GTCT TGGGGAAGC GTTAAATTT GTT AT
AATCTGAGTTTAATTCAACT CAGA ATCCCTTCG TAATTTGAG TAA TG
GCTTCCCTATATAGAC TAT TCAACT TC A ----
GAM2169 12361 GTGGTGGCAGGCGCCTGTAG GCA---- GC- - C G A AG--- GAGGCAGGAGAAT
TCCCAGCTACTCGGGAGGCT GTGGTG GGC CTGTA GT CCA CT CTCGGG GCT
GAGGCAGGAGAATGGCATGA CACCGC CCG GACGT CA GGT GA GGGCCC CGG
ACCCGGGAGGTGGAACTTGC ACTAGAG AGT T A G - AAGTA ----------
AGTGAGCCGAGATCACGCCA
C
GAM2170 10728 GTATTCTGTATGTTTAGCCA A TAT- AAAGC- - ATAT
AAAGCACTAAGGTCATATGA GT TTCTG GTTTAGCCA ACT AAGGTC
TCTTAAGTTCAAAATGGCTA CA GAGAC CAAATCGGT TGA TTCTAG
AACTAACCAGAGAAC A CAAT AAAACT A ----
GAM2172 2867 TGTTATGTTATTAAATCAAA A TATT AACAAAACA C- TACTTCACT

ACAAAACACAAGGTACGGAT TGTT TGT AAATCAA CAAGGTA GGAT
TACTTCACTGTCCTTTATCT ACAA ACA TTTGGTT GTTCTAT CCTG
TGATTGGTTTCTTACAAAAC A TTC- A-------- TT ---------
A
GAM2173 18534 GAGGACCAAGACTGACACAG AGACT -- CT C TTTCCCTTATCTCCTTTC
ACTCTCTTCTGTTTCCCTTA GAGGACCA GA CACAGACT CTT TG
TCTCCTTTCCAAAGTAAGTC TTCCTGGT CT GTGTCTGA GAA AC
TGTGAATCTACCCTGGTCCT CCCAT AA AT - ----------
T
GAM2174 19067 GGTCCTGGTGTACAATAATA ---- TA T A- ATTGTTCA
CATCCATTGTTCAGGATGAG GGTCCT GGTG CAA AAT CATCC
ATTCTTGCTCACCGTCTGGG TCGGGG CCAC GTT TTA GTAGG
GCT TCTG TC C GA --------
GAM2175 17327 CGCCGAGCACAGCTTCTCCT ------ T TTATG CA TTTCCCGC
TATGTCACGCACGATTTCCC CGCCGAGC ACAGCTTC CC TCACG CGA
GCTCGGCCGTGGTGGTGAAG GTGGCTCG TGTCGAAG GG GGTGC GCT
CTGTAGCCGCGCTCGGTG CGCCGA T T---- CG --------
GAM2176 14997 GCTAGGATTACAGGTATGAG T A - A ACA ----- TTTTCTTTCGTTGTTGT
CCACCACACCCAGCTAGTTG GCTAGGAT ACAGGT TGAG CC CC CCCAGCT AGTTG
TTTTCTTTCGTTGTTGTTAA CGGTCCTA TGTTTA ACTC GG GG GGGTTGA TTAAT
TTCTTAAAGTTGGGGGGGGT T - T - G-- AATTC ----------
CTCAATTTGTTATCCTGGC
GAM2177 18239 GGCAGAGGGCTCTCCTAATG GAG C - TGG C AG A CT AAAAAG
GGTTCACAGTGAGATTTCTT GGCA GG TCTC CTAA GTT AC TGAG TTT TTGAAG
TGAAGAAAAAGCTTCAGTTG CCGT CC AGAG GATT CAA TG ACTC GAG GACTTC
AGCTCAGTAACATCTTAGCG GAA A C CTA - -- - TT ------
AGAACCAAGTGCC
GAM2178 9403 GCTGCCGGACGCGGTGCTAG GA C A- G- G T G CTCACCCCCACGCA
TCGCCGGATGAAGTGAGGGC GCTGCCG CG GGTGCT GTC CC GA GAAGT AGGGC
CTCACCCCCACGCAGCCTTA CGACGGC GT CCACGA CAG GG CT TTTCG TTCCG
GCTTTCTCGGGAGGACCGAG G- T GC GA G C A ----------
CACCTTGGCGGCAGC
GAM2179 19314 GGTTGTTAACATCTGACACA AC--------- ACA G AGAAAAAATCCAGCA
GTGAGTGAGAAAAAATCCAG GGTTGTTA ATCTG CAGTGA TG
CACAGTCACTGGGCAGGTTT CCGACGGT TGGAC GTCACT AC
AAGAAGAAGTGGCAGCC GAAGAAGAATT GG- G ----------
GAM2181 15927 GCCAGGGCTCATGGTCACTC ---- A-- T CT T-- A G GCTCTCA
GTGACTTACTAGTTTGATAG GCCA GGGCTC TGG CA CG GACTT CTAGTTT ATAG
GCTCTCACTGTGGAGCTAGA CGGT TCCGAG ACC GT GT TTGAA GATCGAG TGTC
AGTTCCTTGGCTGTCCAATG GACG GTA T CG TCC - G -------
GAGCCTGCAGTGGC
GAM2182 7886 TTTTTTTGAGACGGTGTCTC C T A - CCAG TAGA
ACTCTGTCGCCCAGGCTAGA TTTTTTTGAGA GG GTCTC CTCT GTCGC GC
GCGCAGTGGCAAGAGCGAGA AAAAAAACTCT CC CAGAG GAGA CGGTG CG
CTCCATCTCAAAAAAA A T C A ACG- ----
GAM2183 14207 TATTCTAAGTATTCCAAATA T ATTCC - TCATAC TGTTTATT
AGTTGACTCATACAGTGTTT TAT CTAAGT AAATAAGTT GAC AG
ATTCTTTTATGTCTGGCTTA ATG GATTCA TTTATTCGG CTG TC
TTTCACTTAGCGTA C C---- T TATTT- --------
GAM2184 16237 AGCCTTCCATTGGAAGAAGG CT- A G A CC AGGA ATAACTA

TGCCGTCTAGGACTTTCATA AGC TCC TT GAAG AGGTG GTCT CTTTC
ACTAGAGAGAAGACAACATC TCG AGG AA TTTC TCTAC CAGA GAGAG
TGCTTTGAAAGGACATGCT TAC A G G AA A--- -------
GAM2185 1305 GGTCCCTCTGGCGCCGTTCG CTC C TTC- TTT TTATTG CACT
GTTTCTCTTATTGCCTTCAC GGTCC TGG GCCG GG CTC CCTT
TGAGGATGAGTCCCTTTGTG CCAGG ATC CGGT CC GAG GGAG
GCTCTATGTGGACC TGT T GTTT CT- TA---- ----
GAM2186 14578 GTGCTGGGATTACAGGTGTG T T CA-- GCC TTGTTTTT
AGCCATCTTTGTTTTTAGAT GTGC GGGA TA GGTGTGA ATCT
TCACATTCATATACTCCCGC TACG CCCT AT TTACACT TAGA
AT - C ATAC --- --------
GAM2187 8936 GGCCAGCGCAGGGCCTCGTG CAGG CT C AT-- A - TGTCCC
GCACCCATGCAGGAGAAGGT GGCCAGCG GC CGTGGCA CC GC GGA GAAGG
GTCCCCCTTCTTCCAGTCCT CTGGTCGT CG GCACCGT GG TG CCT CTTCC
CGGCTGCCACGCGCAGTATG ATGA C- C CTCC A T ------
CTGGTC
GAM2188 22385 GCCACGTGGGGAACTATGAG A G GA A- AG T GGA - AGAAG
GGACTGGGAGCCAGGCAAGA GCC CGT GG ACT TG GGAC G GC CAGGCA
AGTGCCTGAGCAACGTCCGG CGG GCG CC TGA AC CCTG C CG GTCCGT
CAGGAGTACCGGCGGGC - G A- GG GG - AA- A -----
GAM2190 3827 GGCTGCGGCGGGCTCCACGG GGC CC- G AGGA TG - - ATGT
GGGGGCAGGAGTGGGCCGTG GGCTGC GGGCT ACGGGG GGC G GGC C GTG
ATGTCGCTGTGCTTGTACGC CCGACG CCTGG TGCTCC CCG T TCG G CGC
CGCCTCGTCCAGGTCCAGCA A-- ACC G CA-- GT T T ----
GCC
GAM2191 8210 GGCATCAGATTCTCATAAGG C A G CAACCTACAT CG TGCAGTT
AGCGTGCAACCTACATCCCT GGCAT AGATTCTCATA G AGCGTG CCCT TGTG
CGTGTGTGCAGTTCACAATA CCGTA TCTAAGAGTAT C TCGTGC GGGA ACAC
GGGCTCGTGCTGCTATGAGA A - G TC-------- TA -------
ATCTAATGCC
GAM2192 22791 CTGTCTTTGCCCGGGGAAGG CCC AGGTATC TG GAGC ACAGTACC
TATCCTCCGATGACGAGCTG CTGTCTTTG GGGGA CTCCGA AC TGTCCG
TCCGACAGTACCCGGATGAA GACGGAGGC CCCCT GAGGCT TG GTAGGC
GTTGTCGGAGTCCCCATCGG TA- ------- GT AA-- --------
AGGCAG
GAM2193 2580 TTTTGGGGGTCGGCAGCAAG ---------- CA -- A- A GCAGCA
TTTTATTTGCAAAGCAGCAT TTTTGGGGGT CGG GCAA GTTTT TTTGC AA
TAGCAAACAGAAGCAATTGC GAAATCTCCA GCC CGTT CGAAG AAACG TT
ACCGTAAATGAGTAACCTCT ATGAGTAAAT A- AA AC A ------
AAAG
GAM2194 14404 TCTTGTTCAACATAGGGTAG TTC A T A AC A- GCTT
GTGGCAGCCACGGGTCCAAC TCTTG AACATAGGGT GG GGC GCC GGGTCCA CTC
TCGCTTGAGGCTGGGCCCTG AGGAC TTGTGTTTTA CC TCG CGG CCCGGGT GAG
GGCGCTCCATTTTGTGTTCC C-- - - - GT CG ----
AGGA
GAM2195 11948 TGGAAAGCGGAGTTCCTAAC --------- TTC AACA TAAAAGTTCCCCCATCAGT
AGGATAAAAGTTCCCCCATC TGGAAAGC GGAG CT GGA
AGTTCCCCCAGTACCTCCAA ACCTTTCG CCTC GA CCT
GCAAGTAGCTTTCCA ATGAACGAA CAT CCC- ----------
GAM2196 4882 GCTAAGTGACACGTGAATGA AG C GA---- CCGG

TAATGTGATAGCCGGCTATC GCTA TGACA GT ATGATAATGTGATAG
ACATTATCATGGTGGAGCTG TGGT ACTGT CG TACTATTACACTATC
TCATCTGGT CT - AGGTGG ----
GAM2197 5183 TACTGATACAAGTTTGATAC - A GATACA AATTG GG AGA
ATGCAATTGTTGGGAGGAAA TAC TGATACA GTTT TGC TT GAGGAA
GATTCCTCAGAAGGCACAAA ATG GTTATGT CGAG ACG AG CTCCTT
GAGCTGTATTGTGTA T - AAAC-- GA--- A- ---
GAM2198 16540 CTGAGCTCCGGCAGCCTCAG CTCC CCTCA C---- T TCCCA
CGGCTCTGAGTCTCCCAGCC CTGAG GGCAG GCGGCT TGAG C
TCAACCCTGGCCGCCGCCTG GACTT CCGTC CGCCGG ACTC G
CCAATCTTCAG CTAA CGC-- TCCCA C -----
GAM2199 16135 CCTCTTCCTCCTCTTCCTCC TC TT TCTT--- AT C CTCCCCCCTCCTC
TCTTCCTCATCCACTCCAGC CCTCT CTCCTC CCTCC CCTC CCA TCCAG
TCCCCCCTCCTCCTGGATGG GGAGA GAGGAG GGAGG GGGG GGT AGGTC
GAGGGGTCCCCTCGGAGGGA C- -- CTCCCCT AG - ----------
GGAGCAGAGG
GAM2200 15546 GCAGGCCTGGCACAGCCTTG T - --- - TC CTGA
GCTTCCACGCCTGAGCGTGA GCAGGCC GGC ACAGC CTTG GCT CACGC
GAGCACGAGTTAGTTGTAGT CGTTCGG CTG TGTTG GAGC CGA GTGCG
CCGGCTTGC C A ATT A GA ----
GAM2201 8397 GCCAAGAGCCATCTGAAGCC AAGA AA T CT G CCTCCC
ACCTCTCTGCCTGTTCCTCC GCC GCCATCTG GCCACC CT GCCT TT
CAAGAGGCCAGGGTGGCCAC CGG TGGTGGGC CGGTGG GA CGGA AA
GGGTGGTGAGGGC GAG- AC - C- G ------
GAM2202 14878 CACTTCGCTGGCTCGGAAGA - T AAGA G C AAAC
CTGGGGTCGGAAACCCTGCC CA CTTCGCTGGC CGG CT GGGT GG
CGGGCCGTGCCAGCGGAGCT GT GAGGCGACCG GCC GG CCCG CC
G C T ---- G T ----
GAM2203 9995 GGCCGGAAGATGGATGTGGC CG -- G T CTTC TG TGTGGT
TGACTTCGAGTGGGTGATGT GGC GAAGATG GATGT GC GA GAG GGTGA
GGTTCACCTCCTTTCGCAAC CCG TTTCTAC CTGCA CG CT TTC CCACT
GTCATCATCTTTGCC -- TA A - ---- CT ------
GAM2204 22591 CCCCTGTAATCTCAGCTACT - A A AGGTTGAGG AAT
CAGGAGGTTGAGGCAGGAGA CCC CTGTAATCTC GCT CTCAGG CAGGAG
ATCTCTTGAATCTGGGAGGC GGG GACGTTGGAG CGG GGGTCT GTTCTC
GGAGGTTGCAGTGGG T G A AA------- ---
GAM2206 7817 TGCGTCTTCCCTTCCTGGAC G - T T CTCA- A---- GTGG
TCACAGACTGGGGTGGCCCA TGC TCTTC CC TCC GGA CAG CTGGG
GAACAACTGCTACATCTGGA ACG AGAAG GG AGG TCT GTC GACCC
TGGAGAAGAGGCA G A T - ACATC AACAA ----
GAM2207 2834 CTACCCCCACCACCACTTCC -- - CA ----- GAGAT
TGAGATGAGATGTCTAGGTA CTACCCC CA CCAC CTTCCTG AGAT
TAGGAGGATGTGGCTGTTGG GATGGGG GT GGTG GGAGGAT TCTG
GGTAG TT C TA ATGGA -----
GAM2209 3475 GAGGGGTCCATACGGCGTCG G ATAC C TCT A GTCGTAACTTAAA
TTCTGGATTCCCGTCGTAAC GAGGG TCC GGCGT GT GG TTCCC
TTAAAGGGAAACTTTCACAA TTCCC AGG CTGTA CA TC AAGGG
TGTCCGGAGCCCTT G C--- A CTT A ----------
GAM2210 788 GCACCATGGCCAGCTTCCTG - T CA- T GAAGGG A ACCATCAA
AAGGGGGCCCATGTGACCAT GCAC CA GGC GC TCCT GGCCC TGTG

CAACGCACGGGCCGAGGAGG CGTG GT CCG TG AGGA CCGGG ACGC
ATGTGGAGCCTGAGTGC A - AGG T GGAG-- C --------
GAM2211 19555 ACATAGATGGCTGGTACATT AT------ - ACA- T ATCACGCCTA
GCTGTGCTGGAATCACGCCT ACATAG GGCT GGT TTGCTGTGC GGA
ATCTGTATAGTAAAGAAGCC TGTATC CCGA CCG AATGATATG TCT
AAGCCCACAGAGACTATGT AGAGACAC A AAGA - ----------
GAM2212 21419 GTCCCGGGAGCGTGTGTTCT GA---- GTG GAC CCCGCT T C GATTGTG
CCGAGGACCGGGCCCGCTTC GTCCCGG GCGT TTCTCCGAG CGGG TCTA GG GCTGA

TATGGCGCTGAGATTGTGTC CAGGGCC TGCA AAGAGGCTC GTCC AGGT CC CGACT
AGCCCTGGACTACCTGCACT ATGTGG AG- AC- ATC--- - - -------
CGGAGAAGAACGTGGTGTAC
CGGGAC
GAM2213 7380 TGAGGAGCTGTTGGGTCGTG ---------- G TG GT TGTA TG C- TAAT TTGA
TAGTTGATGCCCTTGGTAAT TGAGGA GCT T G CG GT ATGC CTTGG GCTA TGGA
GCTATTGATGGAAAGGGTCC GCTCCT CGA A C GT CG TGCG GAACC TGGT ACCT
AATTGGTTCCAAGACGCGTA TACTATGGCCCC A GT TG TGAG GA CA T--- TA--
GGCGAGTTGGTCTGAAAGCC AAGGG
CCCGGTATCATTCCTCG

GAM2214 4151 GCCTTCTTGTCCACTGCTTT TCT CCACT- GAT AC- -------- AA-- C CTTATATC
GATGACACCCACCGCAACTG GCCT TGT GCTTT GAC CCAC CGC CTGT TGT
TCTGTCTTATATCACGAACA CGGG ACA CGAAG CTG GGTG GCG GACA GCA

GCAAAGCGACCCCAAAGTGG TAC CAACCT AGT ATA AAACCCCA AAAC A --------
ATAGTCTGAGAAGCTCCAAC
ACACATGGGC

GAM2215 18110 GGCGGGGAGTGGGAAAGGGT G A GAA- GG GG GTGCCG AAGGAGA
CCGGGGCGGAGTGCCGTTGG GGCG GG GTGG AG TCC GGCGGA TTGGTT
TTAAGGAGAAGCCAAAAATG TCGT CC CACT TC GGG CCGTTT AACCGA
TTTGCCAAGGGAACTGAGAT A - AGAG AA AA GTAAA- -------
CACCCATGCT
GAM2216 20434 GTGACTCCTGCGGGCGCCCC C- G- G - TTTT
CACTTCTTTTTGGGGGTGGG GTGACTC TGC GGC CC CCCACTTCT
AGGGCCAGGCGTCGGGTTAT TATTGGG GCG CCG GG GGGTGGGGG
CT GA - A ----
GAM2217 3301 TATCAGCAATCTTCTCTACT A-- CTACTTT TT- CAC TCCAT A TAC TG
TTCATTGGGGAGCACTATGT TATCAGC ATCTTCT CA GGGGAG TATG GTGA CGC TTATG
CCATGTGAACGCTACTTATG GTAGTCG TAGAAGA GT CTCTTC ATAC CGCT GTG AATGC

TGAACGTAAAATGTGTCGCT CAA CTACT-- TGT CT- CT--- - TAA --
CCATATCCTTCTCTGTTGTC AA
ATCAGAAGATAACGCTGATG

--
GAM2218 20355 GCACCCCTCCCCTCTTGGCA A C - T CAGT C AAC
GCCAGTGGGCAAGAACCTTA GC CCC TCC CC CTTGGCAGC GGG AAG

CCCTACGCTGCCAGGTGGAG CG GGG GGG GG GGACCGTCG CCC TTC
GGTGGGGC - T A T CAT- A ---
GAM2219 15305 TGTAGTCTCAGCTACTCTAG AGCTA AGAA A GAGGA
AAGGCTAAGGCAGGAGGATT TGTAGTCTC CTCT GGCT AGGCAG
GCTTGAGCCCAGGAGGTGGA ACGTCGGAG GAGG CCGA TTCGTT
GGCTGCA GTG-- AC-- G -----
GAM2222 19223 GTGAGGGTGGCTGGACAAGT - TG--- CAAGT G - - AA AGC
TGGGTAGACCTGCAAAAGGG GT GAGGG GCTGGA TGG TAGA CC TGCA AGGGCC
CCAGCGGCTCTCTGCATGGC CA TTCCC CGGCCT ACC GTCT GG ACGT TCTCGG
TCTGGCCATCCGGCACTTTC G TTTCA ----- G C T C- ---
CCTTGAC
GAM2225 3781 TGGCTGACGGTCGCAGCAAA GACG G- - AAT A G GGCT
TCCAGCTGCTGCTGCGGCGG TGGCT GTC CAG CA CC GCTGCTGCTGC GC
CTGTGGCGGCGGCAGCGGCG ACCGA TAG GTC GT GG CGACGGCGGCG TG
GTGACTGAGGATAGAGAGCC GAGA GA A GGC - G ----
A
GAM2226 14964 CAAGACTTACCCAAGGATGC A- CCA- T TA G ACAACG A TTAGAT
TTACCTGAGTACAACGGGAT CAAG CTTAC AGGA GCT CCT AGT GG TCT
CTTTAGATAGAACCACCACT GTTC GAATG TCCT CGA GGG TCA CC AGA
GGGATAGCTCCTGCAAGTAA AG AACG - TA - CCA--- A ------
GGACTTG
GAM2227 7681 GCATTGGGCAAGAAGATGGA - AAGA ATG CA- CATGAAGCTGCTA
TGCAGGGAGGACCATGAAGC GCA TTGGGC AG GATG GGGAGGAC
TGCTAGTTTTCCCGGACATC CGT GACCCG TC CTAC CCCTTTTG
GACTGAGGCCCAGTTGC T GAG- AG- AGG ----------
GAM2228 17339 TTCAGAATGATGGGCCTGTG ATGATG CT A ATA AATCG
ACCATAGAGCTGGAATCGCC TTCAGA GGC GTG CC GAGCTGG
AGCTCCCGGCACTGCTACCT AAGTCT TCG CAC GG CTCGACC
CTGAA CCA--- T- - CC- -----
GAM2229 19409 GCAGCCTCATCTGTTTGCGG C A T A AACCCG - TTGTG
ATCAGAACCCGAGCTGTGCT GCAGC TC TCTGT TGCGG TCAG AGCTGT GC
TGTGGCTGCGGCTGCTAACT TGTCG AG GGACA GCGTC GGTC TCGGCG CG
GGCTGCGCACAGGGAAGCTG A - C - AATCG- T -----
T
GAM2230 14492 AGCCCTCACCGCCCCCACCT CA ------- CA- A ACCTCAA
ACCCCAACCTCAATGGGGAA AGCCCT CC GCCCC CCT CCCCA
GGAAAGGGGCCTGAGCTGGG TCGGGA GG CGGGG GGA GGGGT
CAGGGCT CG TCGAGTC AAA A -------
GAM2231 3162 CTGAAACGCTACACCAGGCA TACA G- AA T - C TGAAAT
AATTCTTAGTCCTACTGTGA CTGAAACGC CCAG CA TTCT AG TCCTA TG
AATCGATGGGGTCTTGGAAA GACTTTGTG GGTC GT AAGG TC GGGGT GC
ATGGACTGGGACTGTGTTTC TCAG AG AA T T A ------
AG
GAM2232 7688 TATAATCTAGCCACAGTGTG T A- A CT - GGCA TATTGC
GCTATAATGAGGCACGGCTT TA AATCT GCC CAGTGTGG ATAAT GA CGGCT
ATTGCAGCTGGAAATCAATT AT TTAGG TGG GTCGCACT TATTA CT GTCGA
ATCCTCACGCTGAGGTGGGG C GG A CC A AAAG ------
ATTCTA
GAM2234 7234 TCATGTTCCCCGTGACAGGT CC ACAGG CCT GGCGT
GGGCCTGAGGGGTCGGCGTG TCATGTT CCGTG TGGG GAGGGGTC

ACCCCTCCCCAGCATGGTAG AGTACGA GGTAC ACCC CTCCCCAG
CATGA T- G---- --- -----
GAM2235 11894 GACTTCCCGATGGATGCGCA CC -- A C- T CTCTGAAATTT
CGCTTGCCCTCTGAAATTTG GACTTC GAT GG TGCGCA GCT GCC
GCAGCTATGCGTACCCTAAT CTGAAG TTA CC ATGCGT CGA CGG
TCTGAAGTC TC AT C AT - ----------
GAM2236 16325 GATCCTTTTAGTTACTTGAC - GT CT C T-- CCATGAAAAAAGAAC
ACTTCCATTGCCCATGAAAA GATCC TTTTA TA TGA ACTTCCA TGC
AAGAACGCACCTTGGAAGTT CTAGG AAGAT AT ATT TGAAGGT ACG
TACTTAGTTAGAATGGATC T TG TC - TCC ----------
GAM2237 7913 GTTTTATAATTCCTTAAAAC AA A-- A AAA GGACAACATACTTTACG
AGCTGAAAATTGGGACAACA GTTTTAT TTCCTTA AAC GCTG ATTG
TACTTTACGCAATGAACAGT CAAAATA AAGGGAT TTG TGAC TAAC
AGTTAAATAGGGAAATAAAA -- AAA A AAG ----------
C
GAM2239 14494 CCGCGTGCAGTACCAGTTCG - -- TT A- AGCTTCGA
AGATGGAGAGCTTCGACTCC CCGCGT GCAGT ACCAG CG GATGGAG
ATCCCCGGCCTGGTGCGCTG GGTGCA CGTCG TGGTC GC CTACCTC
CTACGTGG T CG CG CC --------
GAM2240 22260 ATTTAAATTATTTTCCTTTC AAT---- TTC C - TCCA
TGGACTTCCAAGTCCACTTG ATTTA TATTTTCCT TGGA TT CCAAG
GCAATTTTACTTAGGAAAAT TAAAT ATAAAAGGA ATTT AA GGTTC
ATCATGCGTAAAT GCGTACT TTC T C ----
GAM2241 13833 CCTCCTTCTGCTTGCACAAG CT G T C- TCC GGACCG AACA
TTTCCTGGGCTGGACCGTTT CCTC TCT CT GCA AAGTT TGGGCT TTTC
CAACAGAGAGGCTTATTTGA GGAG AGA GA CGT TTCAG ATTCGG AGAG
CTTTATGCTAGAAGATGAGG T- A T AT TTT ------ ----
GAM2242 18673 TGATCTCCTGTGGGTCTGGT TC GG - TATA TAGA
GCTATATTCTAGAGAAGTTT TGA TCCTGT GTCT GGTGC TTC
GCACCTGGACAATAGGAATT GCT AGGATA CAGG CCACG AAG
CG TA A- T TTTG ----
GAM2243 13762 GTGACCTACAAGTCTCTTTA A A G ------ T C----- TATAGAC - TAA
TTTGCCCTCCATTATAGACT GTG CCT CAA TC TCTTTATT GCC TCCAT TGAGCT GTTAA
GAGCTGTTAATAACATTTAA TAC GGA GTT AG AGAAATAA CGG AGGTA ACTCGA TAATT

TGAGCTCACATGGATTCACT A - G ATAAGA T TCACTT C------ G ---
GGCTAATAAAGAAGAATAGA CAT
GTTGAGGACAT

GAM2244 22902 GGAGCTGGGGTTTAATCGGC GG - GA -- CTGGG
CGAGGAGGGAGTCTGGGGCC GGAGCT GGTTTAA TCGGCCGAG GGGA GT
ATTCTGACTTGGTTGACTTA CCTCGG CCGGATT AGTTGGTTC TCTT CG
GGCCAGGCTCC A- C AG AC -----
GAM2245 8061 CTGTTGCGCCTCCATGTGCT GCG TC T ATCAGCA CCAGT
TTGGATCAGCAACCCCAGTG CTGTT CC CA GTGCTTTGG ACC
GTATTCTACCAGAGCATTGT GACGA GG GT TACGAGACC TGG
GGGAAAGCAG AA- GT - ATCTTA- -----
GAM2246 21225 AAGCTGAAGGTGCTGGAGGT AA- - TG CA ----- TGTG
GCCAAGTGAAGTGTGTGCAT AAGCTG GGT GC GAGGTGC AGT GAAGTG

TTTTGATAACTGTGTACTTC TTTGAC TCA TG CTTCATG TCA TTTTAC
TGGTGACTGTACAGTTT ATG G GT TG ATAGT ----
GAM2248 3461 AGTTGTGTGCGTTCAACACG T TG G - AA G--- ACTGGA
ATAATACCTGTTGCCACTGG AGTTG G C TTCA ACACGAT TACCTGTT CC
AGGAACAGATGGGTACGTCG TCGAC C G AGGT TGTGCTG ATGGGTAG GG
TGTCTGGAAGTGCCAGCT - GT A C C- ACAA ------
GAM2249 4702 GATCGCTCAAAAAGAATACA - AAA C AAAGG CA ACCAAAAACTAAG
AGGAAAGGGGTGTCATTCCA GAT CGCTC AAGAATA AAGG GGTGT TTCC
CCAAAAACTAAGGGAAAAGC TTA GCGAG TTTTTAT TTCC TCACG AAGG
ACTGTCCCTTTATTTTTAAG T GAA - CTG-- AA ----------
GAGCGTATT
GAM2250 10496 GCATTGCTGGGGCCATGCAG TT TG - CC--- T -- ACCAAG
GGCCTAGCTCTCCACCAAGG GCA GC GGGCCATG CAGGG TAGC C TCC
GAAAGTGCTGATTTTCCTTG CGT CG CCTGGTAC GTTCC GTCG G AGG
TCATGGTCCTGGCCTTGC TC GT T TTTTA T AA ------
GAM2253 13844 ACCCCAGAAGTTCCAACCTG AA CCAAC - AT- A AAAT
TGCCTTATATCTTGAAGAAA ACCCCAG GTT CTG TGCCTT ATCTTG AGA
ATTTTCCAGGATCGCGAGGC TGGGGTC CAG GAC ACGGAG TAGGAC TTT
AGCAGCGACCACTGGGGT AC C---- G CGC C ----
GAM2255 1087 CCGCTGCGGACCAGTGCCCC - AC T C-- GTG- GTGC A C ACAGTCAA
GCGCTGTGCGAGTGCTCCGA CCGCT GCGG CAG GCCC GCGCT CGA TCCG GG AGCGCGC

GGCAGCGCGCACAGTCAAGT GGTGA CGCC GTC CGGG CGTGG GTT AGGC CC TTGCGTG

GCGTTACCCGGATTGACCAG T -- - ACC ACCA ---- - A --------
GTGCCCAGGGCCTGCCGCTA
GTGG
GAM2257 4704 GTCGCCGCTGTGGGGCAGCG --------- - A CCT- C CGGG
CCTGGCGGGCGGCCCGCGGG GTCGCCGCT GTG GGGC GCG GG GGGCGGCCCG
CGGGTCGCCTCCCCTCCTGT CGGCGGCGA CAC CCCG TGT CC TCCGCTGGGC
AGCCCACACCCTTCTTAAAG AATTCTTCC A A CCTC C ----
CGGCGGC
GAM2258 9927 TAGAGACAGGGTTTTGCCAT ACA TTTGC GTT- A TAGTCTTGAAT
GTTGCTCAGGCTAGTCTTGA TAGAG GGGT CAT GCTC GGC
ATGCCCGGGCTCAAGTGATC GTCTC CCCA GTG CGGG CCG
CACCCCCCTCTG CC- CCTA- AACT C ----------
GAM2259 16102 TCTTTTTGGGGGAAAACCCC T A CC --- CA GGTAA
GATAGGGTTGTGCACTGGTA TCTTTT GGGGGA AACC GATAGGGTT GTG CT
AAGAACACCTGAATCTTATC AGGAAA CTCCCT TTGG CTATTCTAA CAC GA
TCGGTTCTCCCTCCAAAGGA C C CT GTC AA -----
GAM2261 15266 AACTTTAATGATTATTTATT TT TTATTT- A- GAAAACCACACTATAAAA
CAGACCCTGGAAAACCACAC AACT AATGA ATTCAG CCCTG
TATAAAATAGGGCACTGGAT TTGG TTGCT TAGGTC GGGAT
CACAAGTTCGTTTGGTT T- TGAACAC AC ----------
GAM2264 6230 TTCATTCCCTTGGGTAGACA - - - GACAAAA ATTCAACGACA
AAATCCAACATTCAACGACA TTCAT TCC CTTGG GTA TCCAAC
GTTGGAGGTATACACCAAGC AAGTG AGG GAACC CAT AGGTTG
GGAGGTGAA G C A ATGG--- ----------
GAM2265 7155 TCCGCCGGTCCCAGTCCAGG - ----- ---- TCTC C TCTTCCT
TCTCGCTGGCGCTTTTCTTC TCCGCC GGTCC CAGT CCAGG GCTGG GCTTT

CTGGAGCCTCAGCTTCTCCT AGGCGG TCAGG GTCG GGTCC CGACT CGAGG
GGATTTGCTGCTTCTGGACT A TCTTC TTTA TCTT C -------
AGGCGGA

GAM2266 1946 CCCCGGACACACCCTTACTC CC ACACAC AC AAAA- GA AACCAGAACAAC
TCCAAAAATTGATGGAACCA CC GG CCTT TCTCC ATT TGG
GAACAACCCGAGATGACGAG GG CC GGAG AGAGG TAG GCC
GAGAAGAGGCCAAGG AA ------ A- AGCAG A- ----------

GAM2268 12005 GGCCTGCTGAGGTCCCTCCT CT --- - TG C TT CAGTC
TGAGTCTCATGTTCAAGCAG GGC GCTGA GGTC CCTCCT AGT TCATG CAAG
TCTTTGTCCATGAAACTGGG CCG CGATT CCAG GGAGGG TCA AGTAC GTTT
AGGCGACCGTGTTAGCTGCC T- GTG C -- A CT -----

GAM2269 22646 TTATAATATAGAGACTTCAG AA A - TCAGT TA AGTTA
TAGGTATAAATAGGAGTTAC TTAT TAT GA GACT AGG TAAATAGG
CTATTTAATTCTCCCAGTCA AATG GTA CT CTGA TCT ATTTATCC
TCAATGAGGTAA GA A A CCC-- TA -----

GAM2271 4099 TCCTAAGTCTTCTTCCATCC GT ATCCAG AGAAG G CAGG
AGTCAAGCCAGAAGATGCCC TCCTAA CTTCTTCC TCAAGCC AT CC
AGGGGAGTAGGGAGGTTTGG GGGATT GAGGGAGG GGTTTGG TG GG
GGAGGGAGGTTTAGGG TG ------ AGGGA A ----

GAM2273 14370 CTGACAGATTTCTTCCCTCT CA CC TTCCCTCCCC- CCACCTCA
TCCCTCCCCATCACCCACCT CTGA GATTTCTTC TC ATCAC
CAGTGATAACACATTACTGA GATT CTGAAGGAG AG TAGTG
TAGAGGAAGTCATTAG A- AT TCATTACACAA --------

GAM2274 5949 GTGGTGCCACCGCAGTTGCA - C CAGT AA---- T - GAAA
GAAAGGAATGTCAGTCAGAA GTGGT GC ACCG TGCAGA GGAATG CAGT CA
ATGAATTGTGTTTCAGTCAC CACCG CG TGGT ACGTCT CTTTGT GTTA GT
TCTGCATGGTTGCTGCCAC T T ---- CACTGA - A ----

GAM2277 18390 CTAAAACGGCTTTTGATGAG AA TT- CCAT AA GATACAC A AGAC
GCCATTGCTGAACTTGATAC CTAA CGGCT TGATGAGG TGCTG CTT TG ATGA
ACTGAATGAAGACTCATACA GATT GTTGA ACTACTCC ACGAC GAA AC TACT
AAGACAGCACCCTCATCATG C- CGT C--- A- ------- A ----
CAGTTGCTTAG

GAM2280 15715 GTTTTGATAGTCTGAGGCTG TG T --- AG C-- -- - TGAAGT
GGCCTCTGCCTTTGTGAAGT GTTT A AGTC TG GCTGGG CTCT GC CTTTG
TGAAGAGCCAGGAGCTACTC CAAA T TTAG AC CGACTC GAGG CG GAAGT
AGCAACAATTGATTTTTGAA GT T TTA AA ATC AC A ------
AC

GAM2281 18580 AACAGAGTCTCACTCTGTTG TCTC T GTT C-- TA-- - ACGATCTCA
CCCAGGCTGGAGTACAGTGG AACAGAG AC CT GCCCAGG TGGAG CAGTG GC
CACGATCTCAGCTCACTGCA TTGTCTT TG GA TGGGTCC ACCTC GTCAC CG
ACCTCCACCTCCTGGGTTCA ---- C ACT TCC CAAC T ---------
AGCGTTTCTGTT

GAM2282 4780 GAAAAGCACTTTTACACATA AAGC TT TATTCAC A TCA GCCCAA
TTCACATTTGACCTCACTGC GAA ACT TACACA ATTTG CC CT
CCAAAGATGGCCAAATCCAC CTT TGG ATGTGT TAAAC GG GA
TTGTGTATGGGTTTC ---- GT TCACC-- C TA- ------

GAM2283 2416 CTGGTAACCTGGCGTCCGGT AA --- --- C-- T-- CCACC
GGGGCCGCTGGGGCCACCTC CTGGT CCTGGC GTCCGGTGGG GC GC GGGG
CCTTTGCTTTGTCTACCCGC GACCA GGATCG CAGGTCGCCC TG CG CCCT
TGGACTTTGCTAGGACCAG -- TTT ATC TTT TTT -----

GAM2284 22710 AGTGTAGGTAGGAATGAGGT - TA-- --- TT -- TC TTAATT
TTCCTGGTCGGCTTAATTGT AGT GTAGG GGAA TGAGG TC CTGG GGC
TCTAGATGATTCCTCAATAT TCG CGTCC CCTT ACTCC AG GATC TTG
TCCCTTCCCTGCTGCT T CTTC ATA TT TA -- ------
GAM2286 376 GAGAGACACTCAGAATGGAC A - -- CGATCTAA CCTTCC
GATCTAAAGTTCCTTCCAGC GAGAG CA CTCAGAA TGGA AGTT
TTCCAAATTCTGGGCTGGTT CTTTT GT GGGTCTT ACCT TCGA
TTC G C AA -------- ------
GAM2287 11571 CCTCCCCTCACCCCTGAGGA CC GA ACCAAA ---- G - AAACCCTCGCTG
CCAAATAGGGGTGGCAGAGC CCT CCTCACCCCT GG TAGG GGT GCAGA GCC
CAAACCCTCGCTGGGCGTCT GGG GGGGTGGGGA CC ATCC CCA TGTCT CGG
GTGACCAAAGCCTAAGAAGC CC -- GAAGA- GAAA G G ----------
CAGGGGTGGGGCCGGG
GAM2288 3077 CTTTTAACTCTGGAGTAGAT ----- TG A GA---- TG AACCCCCACCACCTTG
GTCTTGCTAACCCCCACCAC CTTTT AACTC G GTA TGTCT CT
CTTGAGTGAGGCAGTACCAT GAGAA TTGAG T CAT ACGGA GA
ACTTGGAGTTCATCAAAGAG ACTAC GT - ACCATG GT ----------
GAM2289 925 GCTCACAATCTCTGTCATCG ACAA - G -- AT CC CTT
GCTGATCCAACCGTTCCTTG GCTC TCT CT TCAT CGGCTG CCAA GTTC
AGCTTGGCAGCTGGCATGAA CGAG GGA GA AGTA GTCGAC GGTT CGAG
GAAGGAATAGAGC ATAA A - CG -- -- ---
GAM2291 2501 GTTAGGTAGGTAGCCCGCCA G CCCG- AAAAGATCTAGCCCAG
GAAGAAAAGATCTAGCCCAG GTTAGGTA GTAG CCAGAAG
TTTCTGGACATATTGCGTGC CAATCCGT CGTT GGTCTTT
CTAAC G ATACA ----------
GAM2292 2536 AAAGTTATTTTGGGTGTAAG - ---- G GTG AA GC GG------- TTAC
TGGTGAATGAATGTGAAGGC AAAGTTAT TTTGG GT TAAGTG AATG TGTGAAG CTA ACA
CTAGGACATTACTGTACACT TTTTAATA AAATC CA ATTCAC TTAC ATATTTC GAT TGT
ACTATAGACTTTATAAACAT C ACAT G ATG AA A- ATCATCACA ----
TGTACACTTAGACTACACTA
AACATAATTTT
GAM2293 9344 TTATTGGTCTGAATTCATTT TGG GAA TTTA TTTAACATTTTAATTTCCT
TAGGTTACTTTAACATTTTA TTAT TCT TTCAT GGTTAC
ATTTCCTGTAACTGTCCATG AATA AGA GAGTA TCAATG
AGAGAATATAA TA- --- CCTG ----------
GAM2294 514 TGGTTCTGTTTACCTTGATT AC - ---- TG GTAA
AGTGAAGTAATTTGCTGCAG TGGTTCTGTTT CT TGAT TAG AA
TGTTACAGAGGAGCAGAATC ACTAAGACGAG GA ATTG GTC TT
A GA C TGAC GT ----
GAM2295 1128 TTCGCTGGCTCGCAAATCAC GG C AATC -- CA G A TATTT
ATTTCATCAAGCTCAGATGA TTCGCT CT GCA ACATTT CAT AGCTCA ATG CT
CTTATTTGGCATGTGGGCTC AAGTGA GA CGT TGTAGG GTG TCGGGT TAC GG
GTGCAGGATGTCATGCAGAA A- - AC-- AC C- G - -----
GTGAA
GAM2296 802 GGTGTTCCTGAAGTATCTGA C AGTA - T TTAGCTCTGTTCCCACT
AAAATATGAAATTAGCTCTG GGTGTT CTGA TCT GAAAAATA GAAA
TTCCCACTTTTCTGTTTTTC CTACAA GACT AGA CTTTTTGT CTTT
AAGAATTCTCAGAAACATC A CTTA A - ----------
GAM2297 5222 GGAATGTAAGTAAGTGACAA G - ----- T TTAT AAG AGTTAG
TGCTTATGGAAAGCCAGTTA GGAAT TAA GT AAGTGACAA GC GGA CCAGTT

GTTAGAATTGGAAATCTGTC CCTTA ATT CG TTTACTGTT TG TCT GGTTAA
TTGTCATTTTACAAGCATTA G A AACAT C ---- AAA ------
GATTCC
GAM2299 12701 TGCTCTACAAAGTTGAGGGT C AG GGA A ATATA AATT
CAGAGGGGGAACAATTATAT TGCTCTA AA TTGAGGGTCAGAGGG ACA TT GA
AGAAATTTCGGAGATGTGTA ACGAGGT TT AGCTTCCGGTTTCTT TGT GA CT
TTCTTTGGCCTTCGAAATTC C AA ATG A GG--- ----
TGGAGCA
GAM2301 21167 TACCTGAAATTGATCTTGTA GAA T- -- AAT- AAAG--- C- A CCAGAAGA
ATGCAGAAAGTGGCTATATG TACCT AT GA TCTTGT GCAG TGG TAT TGTTAT
TTATCCAGAAGAGTAACAGA GTGGA TG CT AGAACA CGTT ACC ATA ACAATG
TACCCCAAATACACTTGCTA AG- TC AA CAAT CACATAA CC G --------
ACACAAGAAATCCTGTGAAG
GTG
GAM2303 22290 TGGGCCAATGTCCACAAAGA -- CACAAAGAA - CA- ACCGATGTCCAAA
ATTCCTGGTCAGCACCACCG TGGGCCA ATGTC TTCCT GGT GCACC
ATGTCCAAAGGTGCAATATC ATTCGGT TGCGG AAGGA CTA CGTGG
AAGGAAGGGCAGGCGTGATG AG ACGGG---- A TAA ----------
GCTTA
GAM2304 11449 CTTGGAGCCAGGAGCCTGCC A CA - -- TGAG A AGTG
ATGAGGTTTTGAGAACAGAG CTTGG GC GGA GC CTGCCA GTTTTGAGA CAG
TGCTGTTTTAGAGCTGGCAG GAACC CG TCT CG GACGGT CGAGATTTT GTC
CAGCATCTCAGCCCAAG - AC A AC ---- - ----
GAM2305 20368 GGAGTCTATGAACTGGCCAC CTA G A C AA-- G TG CCAGC
TTTTCAGATGAAACCTGGTG GGAGT TGAACTG CC CTTTT AGATG ACCT G GG
GGCCAGCTCTGTGGGGTGAT CTTCG ACTTGAC GG GAAAA TTTAC TGGG T CT
GCATTTAAAAGGGCAGTTCA TA- - - - GTAG G GT -----
ATGCTTC
GAM2307 12930 CTGGAACTGCCTTCGTGCCG T CT TGCCGCCT- TC TTCATCTCATCTT
CCTCAATCTCTTTGTTCATC CTGGAAC GC TCG CAA TCTTTG
TCATCTTTAAGGATCTTGTT GATCTTG CG AGT GTT AGGAAT
CTCTTTGTGACAGCGTTCTA - AC GTTTCTCTT CT ----------
G
GAM2308 1400 GCTGTCGGTGCCGGTTGCGT G- G CAT CTGCTCATC A TTCCT
CATCTTCCTGCTCATCATCA GCT TCGGTGCCG TTGCGT CTTC ATC TC
TCTTCCTGACGGTCCTACTA CGG AGCCACGGC GACGCA GAAG TGG AG
CTGAAGCTACGCAGGCGGCA AA G TC- TCATCATCC C -----
CCGAAAGGC
GAM2310 14431 GAAGGCTGCGAAGGTGGAGA CGAA - G ACC GAAG--- AGCTCC
GTTACCGGTGTCGAAGCGCC GAAGGCTG GGT G AGAGTT GGTGTC CGCCTTCA
TTCAAGCTCCTGGAGGTGAA CTTCCGGC CCG C TCTTAG CCACGG GTGGAGGT
CGAGAGGCACCAGATTCTGC ---- G G A-- AGAGCAA ------
GGCCCGGCCTTC
GAM2312 16401 TCACTAAGTTCATCTGTGGG A A T--- T TG - GGAA GA AGAAA
GCTGGAAGGGGAGGGTTGGC TC CTA GT CA C TG GGGCT GGG GGGTTGGC
AGAAAGTCAGCCCCACCCAG AG GGT CA GT G GC CCTGA CCC CCCGACTG
TCCACGTGGTTGCTATACAT - A TATC T GT A ---- AC -----
GGGA
GAM2313 3627 GGGGCCCCCTGTGACCCTGG ----- A--- - TGTCC
AGAGTGTCCCTCTCTCAGGG GGGGCCCCC TGTG CCCTG GAGAG

ATGCCACAACCATGGGGGCC CCCCGGGGG ACAC GGGAC CTCTC
CC TACCA CGTA T -----
GAM2314 5535 TCCTCTATCCCCTGACCTTC C T CCTTCAGCT TCAAATCC TAGG
AGCTGAACCTCAAATCCTGG TCCT TA CCCCTGA GAACC TGG
TAGGCCACCCTTTGGTTCTC AGGA AT GGGGACT CTTGG ACC
AGGGGTACAGGA C - --------- TTTCCC-- ----
GAM2315 21370 GAGGGAAATACCTTGGCATG A TA TT- T -- CCAGTC A CCCAAACC
CAGCTCCAGTCCGAGCAGCC GAGGG AA CC GGCA GC AGCT CG GCAGC
CCAAACCGCTGCCGCCCGAA CTCCC TT GG CCGT CG TCGA GC CGTCG
GCTAAGCCTGCCTCTGGCCT C CC TCT C AA AGCCC- - --------
TCCCCTC
GAM2316 5848 GGCTTGCGATTCCACTCCGG A ACTCC G ATCTG A AGA
GCAGGCTTCAGGCTATCTGG GGCTTGCG TTCC GGGCAGGCTTCAG CT GG CGG
GACGGAGACTGCCAGGCTGA CCGGACGC AAGG CTTGTCCGAAGTC GA CC GTC
AGCCTGTTCCTGCGGAACGC - CGTC- G ----- - ---
AGGCC
GAM2317 14681 GGATTGAGTATGTCTTTCTT - TA- CT TT- TT- CT TTGAT
GTTTTTCCTGGTCTTGATGA GGA TTGAG TGT TTC GTT TC GGTC
CCTTGATGTGACTATGAATT CCT AACTC ACA AAG CAG AG CCAG
ACAGATCTCAACTCC C TAG TT TAT TGT TT -----
GAM2319 7832 GGAGGTCAGCTACCAGGAAG CA TA A- TC GA G AT--- ATGC
ATCCATGATCTGGGCATTGG GGAGGT GC CCAGG AGA CAT TCT GGC TGGCAG
CAGATGCCTGCCATCACAGC CCTCTA CG GGTCC TCT GTA AGG CCG ACCGTC
CAGGAAGATGCCTCTGACCT -- TG AG CC GA A ACACT ----
GGGTGCATCTCC
GAM2320 5474 GCAACCTCTGAAGATGGAAC - AAGATGGAACAG CAG GAGTAT
AGTCATTGCTCAGGCTGAGT GCAACC TCTG TCATTGCT GCT
ATGGCAGTAGTGGATATAAG CGTTGG AGAC GGTGATGA CGG
GAGGACAGAGGGTTGC G AGGAGGAATATA --- ------
GAM2321 1312 GTTGAGGCTGATCCCAGGCA AG A C TGCA AGCT
CTGTTGCAACCCAGCTGGGT GTTG GCTG TCCCAGGCA TGT ACCC
GTGTGCATGCTTGGGGCAGC CAGT CGAC GGGGTTCGT ACG TGGG
ACTGAC CA - - TGTG ----
GAM2322 16250 ACAACAACCAGTACTTTGAT A ACC A A- CC C C GT TTGT
ATCTCCGCCCTCTCGTGTGT ACA CA AGT CTTTG TATCT GCC TCT GT GTTCC
TCCTTGTGGAGCTAACCAGA TGT GT TCA GGAGC GTAGA CGG AGA CA CGAGG
GGCAAGATGCCCGAGGAACT - ACT A CC A- - C AT ----
TCATGTGT
GAM2323 18861 CGTTTCTAGTAAGAACTTGG A A- A CATC AAGAAGAA
CATCAAGTCTAAGAAGAAGG CGTTTCT GT AG ACTTGG AAGTCT
GCTTTACCAAGTACTGCGCA GTAAAGA CG TC TGAACC TTCGGG
GAAATG - CG A AT-- --------
GAM2324 13516 GACATGAGTTTGTGATGGCA GA A G AA GTGAATGAA - TGA-- C A
CAATATGTGAATGAATTTCA GACAT GTTTGTG T GCAC TAT TTTCAGG GTAA TGCAC
TGTTGA
GGGTAATGATGCACCTGTTG CTGTA CAAACAT A TGTG ATG AAAGTTT CATT ACGTG
ACAATT

AACAAGAAATTAACAGTGCA -- - G AG AGACCGTG- T CAAAG - -
GAAACTTACTTTTGAAAGTG CAAGAAA

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        CCAGAGTAGAGTGTGATACA
        AACATGTC
                  -------
GAM2325 381   CCCCCCAGGTCGCAGGTGTC  -  G   AG  -  -  CCAGCCAA
        TGAGGCCAGCCAACCTGCAG CCC CCCA GTCGC  GTG TCTG AGG
        AGCACTCGCGGCGTGGGTGG GGG GGGT CGGCG  CAC AGAC TCC
        G              T  G   CT  G  G  --------
GAM2326 12447 CTTCTGGGACCTGCCAGCAC     - C-  CC  AC    TTG   A-  TCCTTCTT
        CGTGGTTTGTGGTTAGCTCC CTTCTGG GA  CTG  AGC  CGTGGT  TGGTT  GC
        TTCTTGCCAAGCCAACCATG GAAGACT CT  GAC  TCG  GTACCA  ACCGA  CG
        AGCTCCCAGATTCGTCAGAA      G  TA  CC  A-    ---   AC  --------
        G
GAM2327 20069 GAGGTTTCCAGGCTAGTGGT    TTCC   TAGT    --    G  CACA
        TTCTTCCTCTGACCACAGTA GAGGT   AGGC   GGTTTCT  TCCTCT AC
        AGAGGAAAGGAAGCTTTGCC CTCCA   TCCG   TCGAAGG  AGGAGA TG
        TCCACCTC            CC--   TT--     AA    A  ----
GAM2328 20632 GGCCTGCCACTGGTCATGGG   T  -  -   -  T    AGCTG
        TAGCTAGAGCTGCTGGCTTC GGCC GCCA CTG GTCAT GGG AGCTAG
        CCTGTGGCTTAGCTGGTGGC CCGG TGGT GAT CGGTG CCC TCGGTC
        C              -  C  T   T  T    -----
GAM2329 3904  GGGCAGGGGAGGGGCTCAGT  C  -      C  CTTTC-   A  AGCTTTCCTCATG
        CTTTCTTGGCAGCAGCTTTC GGG AG GGGAGGGGCT AGT    TTGGC GC
        CTCATGGCGGCCAGTACGTT TCC TC CCCTCCTCGA TCG    GACCG CG
        GCTCAGCTCCTCCCGCTTCC   T  G      C  TTGCAT   G  ----------
        T
GAM2330 4105  GGGTTGAGATTGCTGTCCTC   TT    G  TCCTCC-  A    ----   GTCC
        CCAAAGGTGATGTCGGTCCT GGG  GAGATT CTG     CA AGGTGA   TGTCG
        GACGCTCCTCATCTATGAAC CCC  CTCTGA GAC     GT TCTACT   GCAGT
        TGCTCAGAGTCTCCTCCC    TC    -  TCGTCAA  A    CCTC    ----
GAM2331 22488 CTCAGCTGGTCCTGACTCGT  CA    -    C- TG A-  T-  G  TTAG
        GGAGATGCAGACTTAGGTGT CT  GCTGGTC CTGACT  G  G  GA  GCA AC
        GCCCTCGGTTGCTAGGTCAG GA  CGACCAG GACTGG  C  T  CT  CGT TG
        CGACCAGCAG          --     C    AT GT GG  CC  G  ----
GAM2333 16688 GGGGCTCATTTGCAGGGGGG   -  TTT      A  CAAA   TCATCAT
        AGCCAAAAGGGTCATCATCT GGGGC TCA  GCAGGGGGG GC   AGGG
        CTGCCCCCTCTGCTGACGCC CCCCG AGT  CGTCTCCCC CG   TCTC
        CC                C  ---       -  ----   -------
GAM2334 912   GCCTACCCCATCTGCTCCTC   --     TCT  TC   T  GT---   ----   GCCC
        ATCTGTGCTGGGGGAGGCCC GCC  TACCCCA  GC  CTCA CT   GCTGG   GGGAG
        CTCCCCTCACCGGCCCCGAA CGG  GTGGGGT  TG  GAGT GA   CGGCC   CCCTC
        GCTGAGTTGTTTGGGGTGAT   TA     T--  TT   C  AGCCC    ACTC    ----
        GGC
GAM2335 4939  GAGTAAAGGAGTGTCTCAAG   TA    T-  T   T   ----   ACGT
        GTACTTGATCACGTGGTTCT GAG  AAGGAG  GTC CAAGG ACTT   GATC
        TGAAGTCCTTGGATTTCTCT CTC  TTTCTC  TAG GTTCC TGAA   TTGG
        TTCTC             --    TT  -   -  GTTC   ----
GAM2338 15248 GGGCCCCCAAGCTGGGGCCC       A  G   ---   AC-  G  G   -  GGGATGG
        GCGACTCGAAGGGGACTGGG GGGCCCCCA GCT GGGC  CCGCG  TC AA GGGA CT
        ATGGGGATCTCGTTGGACTG TCCGGGGGT CGG TTCG  GGTGC  AG TT CTCT GG
        CGTGGCTAGCTTGGGCATGG       A  G   ATC   GTC  G  G   A  -------
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GGGCCT
GAM2339 9178 GGAGAAACAGACAGGAGGGG ACA CA ------ A - AAACTG TAA- CGGTT
GGAAGGAACCAAACTGTTTT GGAGAA GA GGAGGGGG GA GGAA CC TTTTC GGAT
CTAAGGATCGGTTGTCTGCA CCTCTT CT CCTCCCCC CT CCTT GG AGAAG TCTG
TGAAGAAATTTCGGTTTCCC AG- -- GCCAAC C T CTTTAA TACG -----
TCCAACCGCCCCCTCCTCGA
TTCTCC
GAM2340 3288 CTGATCAATCCTTCTTTTTC TCA TT C CC A AGCAAG
TCTTTTGCCCACAATTTAAG CTGA ATCCTTCT TT TCTTTTGC ACA TTTA
CAAGTAGATGTGCAGAAGAA GACT TAGGAAGG AA AGAAGACG TGT AGAT
ATGGGAAGGATTCAG --- GT - -- - ------
GAM2341 12 GGACATGGTAACCTGGTCCA TG AA T--- - GGC CACCCTC
CGGAGGGCGGCCGCCACCCT GGACA GT CCTGG CCAC GGAGGGC CGC
CGCGTAGCTTTCCTGTGGTT CCTGT CA GGACC GGTG CCTTTCG GCG
TTCCAGGACTGTCC -- -- TTTT T AT- -------
GAM2343 20871 TAGTTCAGGCTTTCCAGTTC G C GT AGAA GGGGAA
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GTGCCAGTGGTGGAAACCTG GT AGGTCC AAAGGT GGTGAC TGTG
GAGTG G - -- CG-- ------
GAM2346 18386 CCCTCCAGTTTGTCAAGAGT - - TCAA T - GCTCT TG TGA
TGAAGGAGGCTCTGTGGCCA CC CTCCA GTTTG GAG TG AAGGAG G GCCAGG
GGTGACCTGGCTGCTTCCAC GG GAGGT CAAAT CTC AT TTCCTC C CGGTCC
TCCTTGTACCTCAGTCTAAA T A CTGA C G ACCTT GT ---
CATGGAGTGG
GAM2347 15375 GGTTTTCAAGGTGTCATGAA CA G A AAAAGA GA AAA- - CTGCTAC
AAGATGGGGATTTAAAGGCC GGTTTT AGGT TC TG TGGG TTT GGCCA GC
AGCCTGCTACGCATGGTCAA TCGAGG TCCA AG AC ACCC AAG CTGGT CG
ACGAAAACCCACAGGAGACC -- G G ------ AA CAAA A -------
TGGAGCT
GAM2348 20202 CCGGAACCTGCTCATCTGGA GA - - CA CAA G -- AAAAGAGC
TCAAGAAGAATTTGCTAAAA CCG AC CTG CT TCTGGAT GAA AATTT GCT
GAGCGGCCAGAGTTGTTCAT GGC TG GAC GA GGACCTA CTT TTGAG CGG
CCAGGAAGACAGCGTGCGG G- C A A- --- G AC --------
GAM2349 21229 CGTCATGTCTAAGTCAGAGT -- C- CA G TA- -- GAACAGCTGA
CTCCTAAAGAGCCCGAACAG CGTCA TGT TAAGT GA TCTCC AAGAGC CC
CTGAGGAAGCTCTTCATGGA GTAGT ACA GTTCG TT GGAGG TTCTCG GG
GGGTTGAGCTTGAAACAACT CA AA AG G TAC AA ----------
GATG
GAM2351 22077 GTTAATTATTCAAGGGGGTG AATTAT G CTCT A CACCTGT - AG - T
TCTCTGCCAAGAGAAAGTCA GTT TCAAGGG GTGT GCCAAGAG AAGT GGA GA AGT
TCTGTG C
CCTGTGGAGAAGAGTTCTGT CGG AGTTCCC CACA CGGTTCTC TTCG TCT CT TCG
AGGCAC G
GTCTGGACTTGGAGCACAGC AACCT- A ---- C ------- A G- T C
CACGGATGCTGTCATCTGCT GA TTGGA
TCCTCTTGGCACACACCCTT TG C
GATCCAAGGC AC G
AC -----
GAM2352 2663 CTTGAAACGCTTTGTCATGC TG AAC GTC CTT CC- GA GAAAT
TTCTTCAGTACCATGGATTT CT A GCTTT ATGCTT CAGTA ATG TTT

GAAATGAACTCATCCTTGCT GA T CGAGG TACGAG GTCGT TAC AAG
GTGAGCATCCAGGAGCCCTT GT CC- ACC T-- TCC TC -----
GAG
GAM2353 14137 CTTCTACCACTGTGGTATAT T C TGT- TTCACC CT ATAAATAAC
TTTCACCATGTCTCTGTATA CT CTAC AC GGTATATT ATGTCT GTAT
TAAATAACATACTTAGATAT GA GATG TG CCATATAG TATAGA CATA
TTGATATACCTTTCGTGTAG T - CTTT TT---- TT ---------
TAG
GAM2354 20308 CCCTCAAGTTTACTGAGTTG AAGT - - G GAAATGT - TAGA
GTGGAAATGTGGGCGTTCTA CCCTC TTA CTG AGTT GTG GGGC GTTC
GAGAACTGCCCTAATATAGA GGGAG AAT GAC TCAG TAT CCCG CAAG
CTACAGCTAAGAGGG ---- C A A AAT---- T ----
GAM2355 20110 CAGCCTCTCCCCTTCTGGGG T C CT CT AAACACG AATT
TCTCGGGAAACACGCGGTAA CAGCCTC CC CTT GGGGT CGGG CGGT
TTACCGAAGAACCCCGCACT GTCGGAG GG GAG TCTCA GCCC GCCA
CTGTGAGAGGCGAGGCTG C A TG C- CAAGAA- ----
GAM2356 5282 CAGGCCCTGCCACGGCCAAC ------ AAC CAGCCA
TCAGGTCAGCCAGCCTGAGG CAGGCCCT GCCACGGCC TCAGGT
CTGTGGCCTCCAAAGGGTCT GTCTGGGA CGGTGTCGG AGTCCG
G AACCTC --- ------
GAM2357 17137 ATTGTTGAGATTATAATATC AGA ATAACTTAC GTT AGC
AATAACTTACTGCAGTTTTG ATTGTTG TTATAATATCA TGCA TTGAGTG
AGTGAGCTACTTAGTGCATG TAGCAAC AATATTATGGT ACGT GATTCAT
GTATTATAAAACAACGAT AA- --------- --- ---
GAM2358 17559 GCTCTCAGCCTTAGTAAGGA CA AG AG C GG - - GGAGGAG
AGCACGTGGAGGAGGGACGG GCTCT GCCTT TA GAAGCA GT AG GAGGGA C
AGGAGGTTCCCTTGCTGGGC CGAGG CGGGA AT CTTCGT CG TC TTCCCT G
ATGCTTCGTAGAGGGCCAGG AC G- G- A GG G T -------
AGC
GAM2359 2142 TCCGCAGTGTGAGAAGTAGA GTG AG A AC -- GTCA
TAGGGTTACTGGTTACGTCA TCCGCA TGAGA TAGAT GGGTT TGGT TAC
GTAAAACCGAGGCTCAGTTT GGGCGT GTTCT ATTTG CTCGG GCCA ATG
AATCTTGAGATGCGGG AGA A- A A- AA ----
GAM2360 8379 GTTTAGTGGCTTCACGCAGA - CTTCAC AGT GC AGCA - --- TATAGCCC
AGTTGGCAGGAGCATGGGCT GTTTAGT GG GCAGA TG AGG TGG GCTTC GGAGGCC
GCA
TCGGAGGCCTATAGCCCGCA CAAATCA CC CGTTT AC TCC ACC CGAAG CCTTTGG TGT
GGGATTAAAGCCTGTGGTTT A ACAC-- AT- TA ---- A ACA --------
CCACAGAAGCACCACCTATC GATTAAAG
ATATTTGCCACACCAACTAA GG
AC CC

GAM2363 19576 GCGCCGGAGGGCTGGCACTG GGA TG A- T ACCCATTACA
CTGGGGGACCCATTACACCC GCGCC GGGC GC CTGC GGGGG
TCCGCAGCCGCTGGCCCAGG CGTGG CCCG CG GACG CTCCC
TGC A-- GT CC C ----------
GAM2364 22065 GTCAACTACATCTATCGTTC TACATC - AGAC T GG GC TCCTC
AGACAGAGTACTGTGGACTG GTCAAC TATC GTTC AGAGTAC GT ACT TGAGAATG
CTGAGAATGTCCTCTATTCT TAGTTG ATAG CGAG TCTTATG CG TGA GTTCTTAT
TGAAGTAGCGTATTCTTGGA TCTCC- T GT-- - A- A- -----

GCTGATACCTCTGTTGAT
GAM2365 21340 CAAGGACATCGGCTCCAAGT GACA T A T A AC TG TTTAC
CTGACCCACTCTGCATCCTT CAAG TCGGC CCA G CTG CCC TC CATCCT
TTACAGGATGTGGGAGGGGG GTTC AGTCG GGT C GAC GGG GG GTAGGA
CAGCTGGGCTGAGCTTG G--- - - - G GA GT -----
GAM2366 6180 CATCTCACTAAGTGCTGATC ACT T GATCA A AGTT
AGTTTTGATTCAGTTGGAGT CATCTC AAG GCT GTTTTG TTC
AGAGCACATAGGTTCTTTGG GTAGAG TTC TGG CGAGAT AGG
AGATG GT- T ATACA G ----
GAM2367 2328 CATGTCAGAAGCTCAAAGCG G -------- - C- ATGCA
ACTCATAATGCATGTGAATT CAT TCAGAAG CTC AAAGCGA TCATA
TGCTTTGGAGAGACTTATCT GTG AGTCTTC GAG TTTCGTT AGTGT
TCTGAGTG - TATTCAGA G TA -----
GAM2368 144 CAGGCCGAGAAGAACGTGGA G A AA AGA--- AAA- GAAAATAA
GAAGAAAATGGAAAATAACA CAGGCC AG AG CGTGG AGA TG
GAGGTCTCAAGAACCATGGA GTCTGG TC TC GTACC TCT AC
CTCCTGGGTCTG G C AG AAGAAC GGAG --------
GAM2369 1339 GTCAGTTGTGGAAGAGGTCA T ---- TCACTCC GGAA
TCACTCCCCGGAAGGACCTG GTCAGTTG GGA AGAGGTCA CC
GCCTCTTTAATCCTCAATTG TAGTTAAC CCT TCTCCGGT GG
AT T AATT CCA---- ----
GAM2370 11396 ATCACAAGTGGGGTGTACTC AGT - T - C- A GGAA
CCCCTTGCATATTGGGAACA ATCACA GGGGT GTAC CCCC CTTG AT TTG
ACATCACAAGTGGGGTGTAC TAGTGT CTCCG CATG GGGG GAAC TA AAC
TGCCTCTGTGAT --- T T T AC C ----
GAM2371 13632 AGTGGCACTTAACATGCAGC G AACA A -- A TC GC C CCAGA
TTCTTTGACCTCGTGGCCAC AGTG CACTT TGC GCTTCT TTG CC GTG CAC AGGCCT
CAGGCCTCCAGAGGGCCTTG TCGC GTGAA ACG CGAGGA AAC GG TAC GTG TCCGGG

TGCACATCGGACAAACAGGA A GAGG A CA A C- AC T -----
GCAGCAGGAGAAGTGACGCT
GAM2372 17793 GAAGCCCGAGGCTGCTCCTG CCGA C CT GGAAG -- ACCA
TGGAAGTGGCTCTGGGCACC GAAGC GGCTG TC GT TGGCTCT GGGC
AGCCTGTGGGGCTAAAGACT CTTCG TCGAC AG CA ATCGGGG TCCG
TGACAGCTAGCTTC A--- - TT GAA-- TG ----
GAM2373 2825 ATGGCAGGATGACGGATGGC - GGA A-------- A - AAGGA
AACGAAGCAGCTGGAGAAGG ATGGCA GGATGAC TGGCA CGA GCAG CTGGAG
ACTTCAGCCTGCATCGAAGA TACTGT CCTACTG ACCGT GCT CGTC GACTTC
AGTACTGCCAAGGTCATCCG G GA- CATGAAGAA A C -----
TGTCAT
GAM2374 923 CCAGTCAGGGTCTTCACGAA TC TT GAAGA CCA- AAGAC
GATCTGCATCCCACCTCTAA CCAG AGGGTC CAC TCTGCATC CCTCT
GACGGAGGACCAGGTGCAGG GGTC TCTCAG GTG GGACGTGG GGAGG
GTGGACTCTTTCTGG TT -- ----- ACCA -----
GAM2377 22339 TTTTGGAACAGACTTTCTTA AA GA CT- T-- AATTAAGAACC
CTGCAATTAAGAACCGCTAT TTTTGG CA CTTT TAC GC
GTGTTAGAAGATGGACCAGA GAGACC GT GAAG GTG CG
G AG A- ATT TAT ----------
GAM2378 16349 TGTCCCATAGAGCTTTTGCA - ATAG GCATCC A GCGAAA
TCCTCTGGATGTATTGCGAA TGT CCC AGCTTTT TCTGGATGT TT

AGAAATGTCCAGACTTTGAG ACA GGG TCGGGAG AGACCTGTA AG
GGCTACAGGGTACA T ACA- TTTC-- A ------
GAM2379 13236 GGACCAACTGATACCTCGCT - A- CTC G CTTTACTCCTTTATCCT
ATGTAGCTTTACTCCTTTAT GG ACCA CTGATAC GCTAT TAG
CCTCTAGGTGGCGTATTAGA CC TGGT GATTATG CGGTG ATC
ATGGTGCC G AA --- G ----------
GAM2381 7860 GTGTCCGACCCAGGCTAAGC G- ACC ---- A TGA A A-- AGTGA
TTGAGCATGGCTGAGCAGTG GT TCCG CA GGCTA GCT GC TGGCTG GC
AGCCCACAGCCGAGCAGCTG CA AGGC GT CCGGT CGA CG GCCGAC CG
GCCAGATTGCAGCGGAGAAC AG GAC TAGA - --- A ACC -----
GAM2382 11365 TGCCCGTCTTTCTTGGTTCA G ----- T CA- AT TGGG
CCTTATCGGGGGTGGGCCTC TGCCC TCT TTCT GGTT CCTT CGGGGG
CGGCAGGGAACGGCCTGGGA ACGGG GGG AGGG CCGG GGGA GCCTCC
CAACTGGGGGGGCA G TCAAC T CAA CG ----
GAM2383 13868 GCGCCCCCTTGGCGCCGGGT CT C TCCT--------- TTGC
GTCCTGCCGCTGCTTGCGCA GCGCCCC TGGCG CGGGTG GCCGCTGC
GCGGCCCTTGTTTCTTCTTA CGCGGGG ATTGT GCCCAT CGGCGACG
CCCGTTGTTAGGGGCGC -- T TCTTCTTTGTTCC ----
GAM2385 10279 GCCGCGTTGCGGGCCGCCCG C - C- C CA - G TGTCC
GCTTCGGCACCAGGAGCTTG GCCG GTTGC GGGCCGCC GGCTT GG CC AG AGCT
TCCGGCTGCTCGGGATCAAG CGGT CGATG CCCGGTGG CCGGA CT GG TC TCGG
GCCCAGGTGGCCCTGTAGCT - T AC A AG C G -----
GGC
GAM2386 17908 TGGCCTTGAGCCACTGCTTC T A CA TCT C T TC-- TGTA
TCCGTCAGTGAGTCGCTGTA TGGCC TG GC CTGCT CCGT AG GAG GC
GTCCACCTCCTTGCGGTGGC GCCGG AC CG GGCGG GGCG TC CTC TG
GGGAGCCACGGCCG C - AG T-- T - CACC ----
GAM2387 14079 CGGCAATTGATCAGATCAAC AAT--- - - A C- G --- - - CCCGT
CAACCCGGTCAGCCCGCTCT CGGC TGATC AGA TCA CCAA CC GTCA GCCCGCT CTCC GGC

CCGGCCCCGTGCCTGGGGTG GCCG ATTAG TCT AGT GGTT GG CGGT CGGGCGG GGGG CCG

GCGGGCGCCTGGCAGGCTTT GGCTCC A C - TC A CCG T T -----
GGTGACTCTAGATTACCTCG
GGCCG
GAM2388 22900 GTGAGTGTTCTAATGATTCC G TCTAAT TC AACTA - CTTA
TAAACTACAGTCCCTTAGGA GT AGTGT GAT CTA CAGT CC
ACTGCGTGGCTATCACACTG CA TCACA CTA GGT GTCA GG
AC G ------ TC GC--- A ----
GAM2390 16553 GACTTTGACAGTTTCATCTG - CA - - C -- - ATGTTCAGA
CTGCTTCGTTAGGCTGGAGG GA CTTTGA GT TTCATCTGCTG CTT GTTAG GC TGGAGGGC

GCATGTTCAGAGCTTTTCAT CT GAAACT TA GGGTAGACGGT GGA CAGTT CG ACTTTTCG

GCATTTGACAAGGATGGCAG C AC T A A TA T ---------
ATGGGTATCATCAAAGCTC
GAM2392 4474 AGCCACATTTTGGGGTTGTG C TTT T GCGTA TT GCAAGA
GTGCGTATACCATTTGCGCG AGCCA AT GGGGTTG GGT TACCA TGCGC
CAAGAGCGCATGGTGGCCCG TCGGT TA CCCCGGC CCG GTGGT ACGCG
GCCCCCTATATGGCT A TC- - ----- -- ------

GAM2394 14280 AGTAAAACAGGTTTGAACTT AA GAA A CCAG
CTTAACTTCCAGAAGATAGG AGTA ACAGGTTT CTTCTTA CTT
AGGATGGGACCTGTGATACT TCAT TGTCCAGG GGAGGAT GAA
AG GTA A ----
GAM2395 18501 TTAGAAACTATTGACTGTCC ACTATT-- GTCCAT T ATT TATTCC
ATAGTGGTTATTGATATTCC TTAGAA GACT AG GGTT GA
TCTCAACCCTTTTAAGTCTG AATCTT CTGA TC CCAA CT
ATCCCCTTCTAA CCCCTAGT ATTT-- - CT- ------
GAM2396 18431 GACTTGTCGTGGCCCCGGTC TT T CCC - TT T CCT TAGTTTCTCAT
TGACTTGTCGTGGCCCCTGT GAC GTCG GGC GGTC TGAC GTCG GGCC GTC
CTAGTTTCTCATGGCTGCGG CTG CAGC CTG CCGG ACTG CAGC CTGG CGG
TCCGACTTGTCATGGCCCCT TT - TCC T TT - CGT ----------
GTCCGACTTGTC
GAM2397 7914 ATGTCAATTCTATTTACTGC T TC TTTACT G TA- ACA CTCATAA
AGGAGCCTAGTACCTGGCAC ATG CAAT TA GCA GAGCC GTACCTGGC GAGTAGGTA
AGAGTAGGTACTCATAATAT TAC GTTA GT CGT CTCGG TGTGGGCCG CTCATTTAT
TTACTCAGGCCGGGTGTGGT - TT TC---- A TGG GA- -------
GGCTCATGCCTTGTTATTGC
AT
GAM2399 20064 GACTCTCGCCGGCCGCGCGA T--- GC -- ACC T A C TAT
ACCCGTTTGAGCTCGGTATC GACTC CGCCG CGC GCGA CGT TG GCT GG
CTAGTGCACACGCCTTGCAA CTGAG GCGGC GCG CGTT GCA AC TGA CC
GCGACGGCGCCATGAGTC TACC A- AA CC- C G T ---
GAM2400 17692 CCCCACGCTCAGTCCTGGTC C AG TCAAA C TG - CCTT
AAAGGCGTGCCAGACCTTTC CCCCA GCTC TCCTGG GG G C CAGA
TGAGTGCCCCCAGGGAGGGG GGGGT CGGG GGGACC CC C G GTCT
CTGGGG - GA ----- - GT A ----
GAM2402 1732 CAGTTCTGATGGGGCTCCAA TG- CTCCAA-- C C T TCCTTTGACGTT
CAGCCAGGCTGTGGTCCTTT CAGTTC ATGGGG CAGC AGG TG GG
GACGTTCCTCACCTGTTGCC GTCAAG TGCCCT GTTG TCC AC CC
AACCTATCCCGTAGTGAACT TGA ATCCAACC - - T ----------
G
GAM2403 17369 CAGCAGCTATTGCTATTCAA CA - TATTCAAT GCCACCATTTCCCCTG
TGGAGACGGTGGCCACCATT CAG GCT ATTGC GGAGACGGTG
TCCCCTGCATCGTCTCTCCT GTC TGA TAATG TCTCTGCTAC
ACGTAATCAGTCCCTG CC C CATCC--- ----------
GAM2404 7242 GATCACTACTCTTGGAATCA TAC----- G- C TC A - ATATCAGAAACAACAG
AAGATAAATCCAAATACTGC GATCAC TCTT GAAT AAAGATAAA CAA TACT GC
ATATCAGAAACAACAGGCAA CTAGTG AGAA TTTA TTTCTATTT GTT ATGA CG
GTAGTTGTTTATCTTTAATT TCTACTTC AG A -- G A ----------
TGAAAGACTTCATCTGTGAT
C
GAM2405 12135 GGAAACTGGGGCCTTCTTTG A TG CT--- G A GA ACAT
AGTACTAGTGAGTAAGACAT GGA AC GGGCCTT TT AGTACT GT GTAAG
TTTGCAACAGTGCTGAGTAT TCT TG CCCGGAA GA TCGTGA CA CGTTT
GAAAGGCCCTGGTCTCT C GT AGTAT G - A- ----
GAM2406 10558 CCTCCGGCCTCGGTAGAACC C GGTAGA - - ---- - G AAGG
GCCAGCCCGCGTCCGAAGGC CCTC GGCCTC AC CG CCAG CC CGC TCCG
GGAGGCGAGGGGAACTGGCC GGAG CCGGGG TG GC GGTC GG GCG AGGC
GCGTGAGGGGCCTGAGG T AG---- C C AAGG A G ----

GAM2407 19697 TTGGTTTGGTGGCCCTGTCT - GG CT ----- CAAATATT
GTGAGGACCAAATATTGTCT TTGGTTT GGT CC GTCTGTGA GGAC
CTATTTCACAGATGAGGAAA AACCGAA TCA GG TAGACACT TCTG
CTGAAGCCAA G AA AG TTATC --------
GAM2408 20662 TTGTCCTTCATATACTGCTC CTT TACT CCT A CT TCTTCCAAAACCATTCAT
CTGAAAAATGCTCAAGTCTT TTGTC CATA GCT GAAA ATG CAAG
CCAAAACCATTCATCTTGTC AACAG GTGT CGA CTTT TAC GTTC
ATCTTTCCAGCTTCCTGTGT AT- CCTT C-- C T- ----------
AGACAA
GAM2409 21058 GGCCGCTTCGGGCTGGCGGC C - - G TGGAG G CA T - GACTGCGAG
TGGAGAGCGCTCGGGTCATG GGC GCTT CGGG CT GCGGC AGC CTCGGGT TG CTGC
CCAGGGG
TCTGCCCAGGGGGACTGCGA CCG CGGG GTCC GA CGCCG TTG GGGCCCG GC GACG
GGTCCTT
GTTCCTGGTGCAGCGAGCCC A T A A TGG-- A A- - T ---------
GGGAGTTGGTGCCGCAAGAC
CTGTGGGCAGCC
GAM2410 21438 GGTCATGATGTTGGATTCTG TG T- GG G G ACCA AGAG
TTGCCTGGGTACCACCAGAG GGTCA ATG T ATTCT TTGCCT GGT CC
GGAAAGCTGGGGCGGAGGGA CCAGT TGC G TAGGG GGCGGG TCG GG
TTTGTTCGTGTTGACC TG TT TT A G AAA- ----
GAM2411 10216 CTGGGCATGGTGGCGCGCGC CAT- CGCGCG AT ACTCAAGA
CTGCATCTCAGCTACTCAAG CTGGG GGTGG CCTGC CTCAGCT
AGGCTGAGGCAGGAGAATCA GGCCC TCACT GGACG GAGTCGG
CTTGAACCCGG AAGT AAGA-- -- --------
GAM2412 19353 GATTAAAGGGAGACAATGGT A GACA ----- GA TACA
GTCTTGGAGGCAAACTACAG GATT AAGGGA ATGG TGTCTTG GGCAAAC
TTTGCTGTAAGATAACTTTC CTAA TTTTCT TGCC ATAGAAT TCGTTTG
CGTGCATCTTTTAAATC A ACG- TTTCA G- ----
GAM2413 4399 TTTAGTAAGGTCAGTTTGAT T TCA GA A AG ATGAGAAAAATACAGAG
TGGATACTTAAGTTTTAGAA TTTAG AAGG GTTT TTGGAT CTTA TTTTAGAA
ATGAGAAAAATACAGAGTTT AAATC TTCT CAAG GATCTA GAGT AAGATTTT
TAGAAATGAGATCTAGAGAA - GCA A- - A- ----------
CACGTCTTCTAAA
GAM2414 10025 GCCCCCCTACTTCCGCTTCC - TACT TGA CATG T-- G- CCTCCAA
TGACACTCATGGCCTTCCAC GCCCC CC TCCGCTTCC CACT GCC TCCAC TCTT
GTCTTCCTCCAAGAGAAGGT CGGGG GG GGGTGGAGG GTGA CGG AGGTG AGAG
GGACCTGGCAGTGGTGGAGG C TTAC TG- ---- TCC GA -------
TGGGCATTGGCGGGGC
GAM2415 19848 GGGGACAGCGCGTGTGGTGG - A T TG G --- A- T GTGTA
CCGAGGATGCTGCGGGGCGT GGGG AC GCGCG G GT GCC GAGG TGC GCGGGGC
GTAGCTCCGTGCGCCCCTCG CTCC TG CGCGT C CA TGG CTCC GCG TGCCTCG
CTGGTGACTGCTGCGCCGTG G C - GT G TCG CC - -----
CCTC
GAM2416 16653 GGGGAGGAGGATTAGGCTGG A AT GG ACTGA C CAGG
ACTGATCGCGGGTCGCAGGT GGGG GGAGG TA CTGG TCG GGGTCG
GACCCCGGGACCAGATGTCC CTCC CCTCC GT GACC GGC CCCAGT
CTCCCCTC - CT A- AG--- - ----
GAM2417 2067 GCACCGAGGGGCCAGTACCT C CC TTCT ACC A G - A CACTGAACCAAAC
TCTGGATACCTCCACATGGT G ACCGAGGGG AGTACC GGAT TCC CAT GTC CG GTG

CCGAGTGCACTGAACCAAAC C TGGTTTCCT TCATGG CTTA AGG GTA CGG GT CAC
CACATGTGGCAATGGGATGA C A- TCT- GT- - A T A ----------
TTCTCTGGTACTATCCTTTG
GTCC
GAM2418 20712 ATGTAGCCAGAGCAATGGTG AG C GG TTAT TC---- AATT
ATGTTCTTATTGCTCCCTGA ATGT CCAGAG AAT TGATGTTC TGC CCTG
ATTCAGGTCTATTGCATGGA TACA GGTCTC TTA ACTACAGG ACG GGAC
CATCAGGATTCCTCTGGGAC G- C GG T--- TTATCT ----
AT
GAM2419 5071 GACGAGAGCCCTGAAGGCAG AGA AA-- CAG - ACGA ACA ATG GAGGAG
CGCTGCCGACGACCTCTACA GACG GCCCTG GG CGCTGC CG CCTCT GC CTC
GCATGCTCGAGGAGGAGAGG CTGC CGGGGC CC GCGACG GT GGAGA CG GAG
CAGCAGAGGCATGAGCAGCG GG- GGCG CA- A AC-- CGA GA- ------
ACCCGCGGCGGGGCGGCGTC
GAM2420 560 GCTTGAACCCGGGAGGCAGA GAAC AG AGGT A- GAGAT
GGTTGCAGTGAGCTGAGATG GCTT CCGGG GCAG TGCAGTG GCT
GCACTACTGCACTGCAGCCT CGAA GGTCC CGTC ACGTCAT CGG
GGTACAAAGC ACAT GA ---- CA -----
GAM2421 17888 GATTTTGCCCAGCTAAAGGC TTTTG AAA--- AACG TCAGAAC
CAACGTTAAGTGTTCAGAAC GA CCCAGCT GGCC TTAAGTGT
ACATTTAAGATAGGCTAGGC CT GGGTCGA TCGG AATTTACA
TAAGCTGGGATGTTC TGTA- ATCGGA ATAG -------
GAM2422 18011 GTGGCTGCAGAGCTCCACAG - TC AA---- AT AGTGAGA
AGAAGGGGATCAGAGTGAGA GTGGCTGCAGA GC CACAGAG GGGG CAG
CTGGGCTCTACAAGCCTTTG CACCGACGTCT TG GTGTTTC TCTC GTC
TGATGTATCTGCAGCCAC A TA CGAACA GG -------
GAM2424 11142 TCGCTTGAACCCGGGAGGCA GAA-- AGGCA - A A- TGAA
GAGGTAGTAGTGAGCTGAAG TCGCTT CCCGGG GAG GTAGT GTG GC
TCCCGCCACTGCACTCCAGC AGCGAG GGGTCC CTC CGTCA CGC TG
CTGGGCAACAGAGCGA ACAAC GAC-- A C CC ----
GAM2428 22400 CCTCCCCGGGGGGTGTGGCT C GGG-- T AAG CAGT
AAGGGACGAGGCAGTTCTCG CCT CCCGGG TG GGCT GGACGAGG
TCCAGAGCCCAGGTAATCCG GGG GGGCCT AC CCGA CCTGCTCT
GGCGGG C AATGG - GA- ----
GAM2429 5889 GATGAGTGGCTTTTCGAGGG A TTC G C GG T A C--- GGAA
ACCTGGCACGTACATCCCCC GATG GTGGCTT GAG GA CT CACG AC TCC CC
GGAAGGAAGTGGAGGTCGTG CTAC CACCGGA CTT CT GA GTGC TG AGG GG
GAGATCATTCAGGCCACCAT - --- A A G- - G TGAA ----
C
GAM2430 16513 AGCTGAGACTGACGGGTGAT A- C T T TG A CC C GCATA
GTTGCTCATAGGCTCCAGCT AGCTG GACTGA GGG GA GT CTC TAGGCT AG TCT
CTGCATAAGACCTTGGCTTG TCGAC CTGACT TCC CT CA GAG GTTCGG TC AGA
GAGACCTCCCTCTCAGTCAA AA C - C -- - T- C -----
CAGCT
GAM2431 21289 TGCTGCTTCTTGGCTGGCTT - - - --- TT- T- TCA
GCTTTGGCAGTCACTGCCAC TGC TGCTTCT TG GCT GGC GCT TGGCAG
TGGCCTTGCCTTTGGCACAT ACG ACGAAGG AC CGG CCG CGG ACCGTC
GGAAGCATGCA T T A TTT TTC TC ---
GAM2432 18208 GCGGGGGGTTTCACACGCGG TTTCACA TT TGC-- - C AGCGTC
TTTTGGGTGCGTGTCGCCGC GCGGGGGG CGCGGT TGGG GTGTCGC CG CA

CAAGCGTCTGCCGCGCGACA CGCTTCCC GCGCCG ATCC CACAGCG GC GT
CATTCTCCTATGCCGCGCAT TAC---- T- TCTTA C C ------
CCCTTCGC
GAM2433 18046 GCCTCAGCCTCTCCTCAGTA --- -- TA A-- AAA A - TTCCGGACT
CAGTCTCATGGGTGGAAAAG GCCTCAGCCTC TCCTCA G CAGTCTC TGGGTGG AG CCAG GC

ACCAGGCTTCCGGACTGCTC CGGGGTCGGGG AGGGGT C GTCGGAG ACCCATC TC GGTC CG

TGGGCTACTACCCAGGAGAG GGA GA GG AGG A-- G T ---------
GCTGGGCAGTGGGGAAGGGG
GGCTGGGGC
GAM2434 5445 GGGGTCCAGGCTCTGGTTGG GT T TG G GG TGA ATCT AGGCT
GGCTGTGGACTGAGGTCTGA GGG CCAGGC C GTT GGGCTGT AC GGTCTG CC
TCTCCAGGCTGGTATGTGGA CCC GGTCCG G CAG TTTGACG TG TCAGGT GG
CTGTGGGCAGTTTGGACTGG TG - GT G GG --- GTAT -----
GCCTGGGTCCC
GAM2435 9240 AAGGATGGGGAGCAAGCTCC A- ----- C C G C TAACA
AGCTCTGTAACACATGGTGG AAGG TGGGG AG AAG TCCA CT TG
AACTTCTTTTAGCCCCAGAC TTCC ACCCC TC TTC AGGT GG AC
CTT AG GATTT - A - T -----
GAM2436 2062 GCGTCGCCGCGAATGGTGTT C -- AA TG G CGAG--- TGAC
GTTGGAGAGCGAGCAGTTCC GCGT GCC GCG TGG TT TTGGAGAG CAGTTCC
TGACGGAGCTGACCAGACTT TGCG CGG TGC GCC GA GACCTTTT GTCGAGG
TTCCAGAAGTGCCGGACGTC A GC AG GT A CAGACCA ----
GGGCAGCGT
GAM2437 4264 TCACCACGGTGATTAGTGAA CGGT T AGT AC- C----- AATTTCC
GTAACAGACAGCAGCCTGGA TCACCA GAT AGTGA AACAG AGCAG CTGGAA
AAATTTCCTTCCGGCCTTTT AGTGGT CTA TCACT TTGTC TCGTC GGCCTT
CTGCTTAACTGTTTTATCAC ---- - ATT AAT TTTTCC -------
TATCTGGTGA
GAM2438 16872 TTGTGTCTTACTAAAGCAGC C CTAAAGC T GT-- CTAA
TTATTGTAGGTGTGGCGTTC TTGTGT TTA AGCT ATTGTAGGT GGCGTT
TAAAACGTTTCCTGCCTGCG AACACA AAT TTGG TAGCGTCCG TTGCAA
ATGGTTCACAAAATAAACAC - AAAACAC - TCCT ----
AA
GAM2439 11851 CTGGGCATGATGGTTGGCGC --- AT GGC- A -- CTAC
CTATAGTCCCAGCTACTTGG CTGGG CATG GGTT GCCT TAGT CCCAG
GAGGCTGAGGCAGGAGACTG GGCCC GTAC TCAG CGGA GTCG GGGTT
GCATGAACCCCGG CAA GG AGGA - GA ----
GAM2441 1927 CTGGTAGCATTCAGTGTACC G - - A ATA TG AAAGAA
ATACCTATGTGGAAAGAACT CTG TAGCAT TCA GTGT CC CCTATG G
CCGTAGGGGACACATGAGGT GAC GTCGTG AGT CACA GG GGATGC C
GCTGGCAG G G A - --- CT ------
GAM2442 4935 CCAGGAGCTACACACCTTCG - - CA-- --- GA GCCAGGAAA
AGGTGACCGGCCAGGAAACG CCAG GAG CTACA CCT TC GGTGACCG
GTCGCCCAGATCAAGGCTCA GGTC CTC GATGT GGA AG CCGCTGGC
TGTAGCCTCACTGG A C ACTC ACT AC ---------
GAM2443 17753 CTTTCAGAGCTTTGGTCCCT CT GTC - AT CC-- CT TGTC
GTAATGCCCGTCTTTCCTGT CTTTCAGAG TTG CCT GTA GC GT TTCCTG
GTCCAGGAATAACCTTTGCT GAAAGTCTC GAC GGA CAT CG CA AAGGAC

ACTAGGCAGTCCTCTGAAAG CT --- T -- TTTC AT ----
GAM2444 3297 CATGTGTGCATGTGTACATG TG GT-- TG TG GGGG
CATGCATGTGTGTATGTGTG CATG TGCATGTGTACATGCATGCAT G TATGTG CATAT
CATATGGGGATGTGTGTGCG GTAT GTGTGCGCGTGTGTGTGTGTG T GTGCGT GTGTA

TGTGTTGGAGTGTGTGTGTG GT AGGT GT GT ----
TGCGCGTGTGTGTATG
GAM2445 13067 GGTGACTCAGTGCTCAGGAT TG -- G AGG AT ------- AGCTT
CTTATGGCTCCTTCCTCCAG GG ACTC AGT CTC ATCTT GGCTCCT TCCTCC
CTTGGGGGACTCTTAAAGGG CC TGAG TCA GAG TGGGG TCGGGGA AGGGGG
GCTGGGGTAGAGACTAAGAG GT AA - A-- -- AATTCTC -----
TTGCC
GAM2446 10774 CGCTGCGGTAGGCCGTTTCC T T - TTCCG ---- TTG G TTAGCCCCT
GAGGCAGCAGTTGCGGCCGC CGC GCGG AGGC CGT AGGCA GCAG CG CCGCTT
TTTTAGCCCCTGAGCGGCGA GTG CGTC TCTG GCG TCCGT CGTC GC GGCGAG
TCTGCGGACTGCCTGCGAGT T - A ----- CAGG TA- - ---------
CTCTGCTGTG
GAM2447 2686 TTAAGTTTTAGGGTTATTGT T TTATT A AG AA- A C- GCACA
AAAGATGTACAGCAGTTAAA TTAAGTTT AGGG GTAA GATGTACAGC TTA AG GT TCTG
AGAGTCTCTGGCACATAGAA AGTTCAGA TCTT TATT TTATATGTTG AAT TC CG AGAT
AGCACTATATAAAAGTTGTA - ----- A AA ATA A AA -----
TATTATTATTTCTAGACTTG
A
GAM2448 4730 CCAGCATGATGGGTGCGGCC ATG G - G A CCTC
AGCAGCGAGTCCTCACACGT CCAGCATG GGTGC GC CAGCA CG GT
GTTGTGCAGCACCAGTGTGT GGTTGTGT CCACG CG GTTGT GC CA
TGG GA- A T - A ----
GAM2450 20692 GCCACCAGGTCATGAAGGAG CATGAAG G G - GAAGAT
GCGTTTGGGCCCGAAGATGG GCCACCAGGT GAG C TTTG GGCCC
GTTACAGAGGCTCACCTGGT TGGTGGTCCA CTC G AGAC TTGGG
GGT ------- - G A ------
GAM2451 5241 CCTGTTGGCGGGCCATCTGC TT G A- CAG ACATGCCGC
AGGGGCACACATGCCGCGTG CCTG GGCGG CC TCTG GGGCAC
CCTAGACAGAAAGGGCTGCT GGAT TCGTC GG AGAC TCCGTG
TGTAGG GT G AA AGA ---------
GAM2452 17967 CCCCTTCCAGGAAGGGCCTG - - AAGG GCA ATCCAGTCTTAC
GTGTTGCAGCTGATCCAGTC CCCCTT CCA GG GCCTGGTGTT GCTG
TTACCAGCGGATGCCAGGCA GGGGAG GGT CC CGGACCGTAG CGAC
ATGCCATGGTGAGGGG T A GTAA G-- ----------
GAM2453 20010 ATCTTCATGGTGCTGGGCGC T GTG --- --- -- T- ATCT
CAGGGCGGTGGATCTCCTTC ATC TCATG CTGGGC GC CAGG GCGG GG
TGCATCCTGTCAGCAATGCC TGG GGTAC GGCCCG CG GTCC CGTC CC
CGGATACATGGTGGT T ATA TAA ACT TA TT ----
GAM2454 4580 CCGGTTGCCAATGTATGCTT GTT ATG --- CTC
GTACTCCAGGCTCCTTGGAG CCG GCCA TATGCTTGT ACTCCAGG
TTATACAGGTATGAAATGGC GGT CGGT GTATGGACA TGAGGTTC
CATGG AC- AAA TAT ---
GAM2457 16174 TTTTCAATTGACTCACTGGA -- TCAC T CT ATGTGA AGAG
TATCTTGGTATGTGAATCAG TTTTCAAT TGAC TGGA AT TGGT ATC
AGGATAAAGAGACTATTGTT AAAAGTTA ACTG ACCT TG ATCA TAG

CCATGTCAGAATTGAAAA AG T--- - TT GAGAAA ----
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CCAGGGCAGACTCAGTGGCT GGTGA GGTT AGAGCCC GG AG
TCCTATCCAGGGCTCTTCCC CCACT TCGA TCTCGGG CC TC
ACAGCTCGTCACC GC CACCCT A TA ----------
GAM2459 8161 TACGTAGTGAGGATCACATG AG-- A A GAAGAA TTG- - GCTGAAA
CATGAAGAATCCATTGCTCG TACGT TG GGATC CATGCAT TCCA CT C
CTGAAAGAAGATCTTGGAAT ATGTA AC CCTAG GTGCGTG AGGT GA G
GAGTGCGTGGATCCACAATT CTTA A - AGTA-- TCTA A -------
CATGTA
GAM2460 9093 CTTATTTTCTCACAAGCCTG TCTC C- TT ---------- TTGTAAC
GTTATTTGAGGATGTGCTTG CTTATTT ACAAGC TGGTTA TGAGGA TGTGC
TAACGTATGCTTTCTCTTCT GGATAAG TGTTCG ACCGAT ACTCTT GTATG
ATTTCTCATAGCCAATGCTT TCCA TA -- TATCTTCTCTTTC -------
GTACCTGAATAGG
GAM2461 9613 AAGAATTCTAAGAACACTAC CACTACTA TG CCCTCCT
TAGAAGCATTTGTTCCCTCC AAGAATTCTAAGAA GAAGCATT TT
TAGTCAATGCTTCATACTTT TTCTTAGGGTTCTT CTTCGTAA GA
TTCTTGGGATTCTT TTTCATA- CT -------
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CATCCAAAAATTTCCTGATA AGTCGG CGGT TTGTCAA TTTTTGT CTAT GT
TCCTTGTTTTTAACTGTTGT T G -------- TC A ----------
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CATATACACTGTGGACTGGA AG ATGACTG GA GTG ACATATAC
GAAAGTCAGTATGGA GT AAA GGTCAG TC --------
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TGTTGCGGAAGAGGAATTTT GCTA GAGGTGGA AACTTG GGAAGA AATTTT
TACAAGAAGCTAGAGTTGCA CGGT CTTTACCT TTGAAC CCTTCT TTGAGA
TCTTCCCAAGTTCTCCATTT -- C- ---- ACG ----------
CTGGC
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GTTCCCTCCTTCC TT GGA AAACC ---
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GAM2467 7547 GCGATGCAACAGAGAAGAAT T AACA AGAATAAGG- TT CGCGTTTA
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AGGAGCTACTATTGAACATA CGCT TG CTCT TCA GAGG
TCTCAGTCTCGC C A--- ATACAAGTTA TC --------
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TTGTC GT G T --- ----
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GCCT GCTAC TCT- - ------
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CTGACAGAGATGTGAGAGGT AG TTGGTG TCTGT AGCTG CAGAG TG GGTC C
CCCACCCTGAGGCCAACAAA TC AATCAC AGACG TCGAC GTCTC AC CCGG G
GACTCTGCAGCTCTGGCAGA G CA GTC- - AGAA AA- A -----
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TTATTGAGCTGCAACTGTGT CTCACTGCTATATTC ATT TTGAGC GCA
GCTCAGCAATGAGAATATAG GAGTGACGATATAAG TAA GACTCG TGT
CAGTGAG AG- C- - ----
GAM2474 7897 TCACTATAAAGCGATGAAGT C AAAGC- C AG ATA T -- TAAT
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TGCTAATGTAAAGTTATACC AGT ATA CTATTTCAG TG ATGT CATAT GA TG
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TCAAGATATGA
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C AAAG G A T - ------
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CTTAGATTGTGTTATCTTCT CCT CATAG TC ATGAGATT CTTC TATT TG
TCTTAGAGTACTGATACTTT TT -- - CTT ---- G- -------
CC
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TCGTGCTCCTGGCAGGCGCG GCATTGCCCGGA TCGT CTCC GG GG
CCCCTGGAGGATGAGGCCAC CGTGACGGGTCT AGTA GAGG CC CC
TCTGGGCAGTGC CACCGG-- G T -- ----
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TGTAGAATGACAGCCTTTTT GT ACAT GAGC AGA TG CAGCCT
CAGGTTGCCAGTCTGCTCAT CG TGTA CTCG TCT AC GTTGGA
CCATGTATGC TA- CCTA- ----- G C -----
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CAGGATCCAAGCTCCCGGAA GAGTG GA GG GGGTCC CCGGG CACGG AGG CCT
GCTGGCACTGGGCCCGCCCT AC C AT- CGC-- T TCGA C -------
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GAM2483 150 GGTGTCTCTGGAAGTGTCTA --- TG GTCTATA T- T T TGCT
TACAGATGTGTGCTGCTGCT GGTGT CTC GAAGT CAGA GTG GC GC
GCTGCTGCTTTCTGCCTTAA CCACA GAG CTTTA GTCT CGT CG CG
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GAM2485 96 CAAACAATCTGTGGATGGGA CAA TG G- AAG C C TG C GGAGAT
AAAGCACCACTTGTTACTTG CAAA TCTG GAT GGAA CA CA T TTA TT
GAGATGATGATGATGATGAA GTTT AGGT CTA CCTT GT GT A AGT AG
GTTCCAGATCTGTGGAGAAT AAG GT GA GAA A - GT - ------

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GGGCTGGGGTGGGAAGGGTG ACCT TCCGAAG GAAC CG TGGG GGGT GGTCG
GCTCAAGGAAGCCTCTTTCT CTTTC - T G AA GG-- ----
CCA
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TTTTACATTTGAAAATAATG GG AGG GTTCA TT TTTTTA TTTG AAAT
AAATAAATTTACAAAATAAA CC TCT TAAGT AA GAAAAT AAAC TTTA
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C
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AGTGGTGCAGCATCTCTTTG CCCTG TCCA GGA GT AGTG G AG ATCTCTTTGGC AGGTG GG

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GG
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GATGCCAGCGACGCTTATCA GCGG TC GGT TGG TGCCAGCGACG CT
GTTGTTGCTGGCAATCAAAC CGCC AG CCA ACT ACGGTCGTTGT GA
CCGACACCCGC CAC--- C A- A T ----
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CTGCTTGATTCGTGAGGATA CTGGCC CCATCT CGC TTG ATTC
CAACGATGCGAGACAAGGTG GACCGG GGTGGA GCG AAC TAGG
GTGGCCAG T ACAGA TAGC A ----
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AGGACATGAACCAAGACAAA AATGCT GATGGT TTAGG TGA CC AGA
CAACTTCGAATCTGGGTCAC TTACGG CTACCG AATTC ACT GG TCT
TTAAACAAGCCATCTATCCA ACCTAT AACA --- - G ----------
GGCATT
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GAAGCCCCGGCGCCAGCCCG AGC CTGTC CC CCCT TCGG GCCC GGC
GGCCCTCGGCAGGGAGGATG TCG GGCAG GG GGGA GGCT CGGG CCG
ACGGAGCT A TA A- C CC C ----
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GCAAAATGGCCAGCATTATC TTCCTTTCA GA GT GGGT TTTG GGTTTTTTCGTTT ACC
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TT
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GGCCCTTGGAAGCGGATACC TGGAACTCGATTCCATAGGCGAAG CCGG
TTAGCTCAAGGT GTTC ----------
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CTGCCTCTCAGCTTGGCTTC GGGTGTAATT GGGCCT CCTGCTG CCTC GC
ATCTGTAAAATGGGGACAGT CCCACATTGG TCCGGG GGATGAC GGGG TG
AGGCCAGGGGCCTGTGGTTA TG GACC A TAAAA--- -------

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GCAAATAACATCTAGTACCT GTTCT CC CCA AGAA GCAAATA ACAT AGTACC GCAGTT
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TCAGAGC
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ACATGAACCCAG AA AC GGT GTCGG ----
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CATTCCTT
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GGGGCATCTGATCTCAGTTG TC TCG CGG CTCGTCG GACTCTAG TCTAC
CTGCTCAAGGCACAGCTGCT G ACA AA TT - ---------
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CCTGTATGAAGGTCCACTTC GGT TAGGT CTTGTGA CC GT ATGAAGG CCA TTCCTTCCT
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AATGGTCTTCGTGGCTTGGA C ACT- AA TT G - - -------
ATTATAAGTCAACCTGCACC
GAM2506 1052 TTGGATGTGGCTGGCTCACA ----- --- AC--- CT- - AATCT
CTCTAGAGGACAATCTGTCC TTGGATG TGGCT GGCTC ACT AG AGGAC
TACTCAAAGTCCATGGAGCT AACCTAC GTTGA TCGAG TGA TC TCCTG
AAAAGTTGATTTTCATCCAA TTTTA AAA GTACC AAC A -----
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GCCGTTCTTTTGACTTCCTC GTTGAGG TCCAG CTTG GTTCT TTGA
AGCAGAGCATACCTTCCAAG TAGCTCC AGGTC GAAC CGAGA GACT
AAACTGGACTTCTCCTCGAT TCTTC AAA CTTCCATA C -----
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CCACGGTGGTCATGCTCACT TGGCACCA TCCC AGCC GGTGGT GC
GTGCCCCACCACCAGCAGGC ATTGTGGT AGGG TCGG CCACCA CG
TGGGATGGTGTTA -- --- ACGA CCC -------
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CGACGAACGCTCCTCCGCCA CGT GCTGGGCG TCGT CGAC GCCTC TCGC AG
GCTTGCTCGCGGGTCGTGC - C T C- C A- ------
GAM2510 10050 CAGGATTTCACTGCGCTAAC CTG TAAC- TG TCTCGA
CAGGATGGGTCTCGATCTCC CAGGATTTCA CGC CAGGA GG
TGACCTCGTGATTGAAATTC GTCTTAAAGT GTG GTCCT CT
TG TA- CTCCA -- ------
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TGTAGGCCACACGAACTTTC GGTGAG AGGA GCA AGG CCA
TGGTCCTCTTATCTCCTGCC TCACTC TCCT CGT TCC GGT

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        TAGGATGCTTCTTTTCTCTT GACCGT GGATCCGT      TCTCT  TCTTCGT  GA
        CCCCCAGTGCCTAGGTTGCC     T      GACCCCCT    TT     AG -----
        AG
GAM2513 3400  TGGTTTTGGTGGCCCAGGCT   TTT  T-   C ----------     G  AAGGGC
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        TCAGCTCAGTGAAACCTCGG ACC   GCC  CCGG TC       CGACTCT ACG
        CCTCCCGTGTCCA        TGT   CT   C  CAAAGTGACT     A  ------
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        CAACAATAAATTCGTTGGGG CTCTTG     CT GGT TCAACAA    TCGTTGG  AAGTG CT
        AAGTGTCTAATCTTCCAGCA GAGAAC     GA CCA AGTTGTT    GGTAACT  TTTAC GA
        TTTATCAATGGCACGTTTGT     ------ C   A     TGCAC     A-    -  --------
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GAM2516 12801 CTGGGGTGTTTATGGCAAGT    GG   T--   C    CTTT    A   ATTGTGGCA
        CACTTTGACAGACATTATTG CTGG  TGTT   ATGG AAGTCA   GACAG CATT
        TGGCAAATGTTGTCTGACTT GACC  ACAA   TGTC TTCAGT   CTGTT GTAA
        ACTGTTTCAACAAACCAG      AA   CTT   A     ----    -   ---------
GAM2517 19504 GGGTCCGGTGCGGCTCCGGA   - --   CG   CGGAAGTAGTC      TTGCT
        AGTAGTCGTGCCCTTTGCTG GGGT CC  GGTG  GCTC        GTGCCCT
        GGGCATTCAGAGACAGAGTT CCCA GG  CCAC  TGAG        TACGGGG
        TCACCGTGGTACCC        T  TG   TT   ACAGAGACT--      -----
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        GCAGGCTTCAAAAATGTTAG AGGA AACGGG     GGATTGT     TTCGGA
        GATTGGGGGGCAACAGGA     C     GGGTTA     AAAAAC     ----------
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        CCACAACTCTCCCTGGGTCC AGGGT   GGGTCC TC       CTGTCC
        TGGGA              CCT     C  TCAACACCC     ----
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        AGTAGAAAAGAAACAGTGAA AGGGG AG  GA  GGTGGGAGGGA   AGC  CATG  GTG
        GTACCCCGATAGGGAGGGTG     T  GA  GG        T--   CC    AA  ----------
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        GGAACCAAAATGTGTTCACT GCC CTTACCC       AC GGGATAG GAAC C
        GTCCCTGTTTAGCCAAGGGT CGG GGATGGG       TG CCCTGTC CTTG G
        AGGTGGC             T      AACCGATT  T      A    T -----
GAM2523 22780 ATAGCATTGAAGGACTCGTG    C    AG    C  -  TATCTAA--   CAATAC
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        GATCACTACTTCGCACTAGT TATC TGGCT  TTGA CAC CT        GTC
        TTCTCGGTACTAT         A    CT   T   G  TCATCACTA  ------
GAM2525 19512 CTTCCTATCAAAGTTTGCTC       CAAAG     C    TTTG-   GGAAA     G  CAAACAACATT
        TCTCTTTGTGAAGGAAATTT CTTCCTAT     TTTGCT TCTC     TGAA     TTTCT GG
        CTGGGCAAACAACATTTTGA GAGGGGTA     AAATGA AGGG     ACTT     AAAGA TT
        GAAAGAAATTCAGATATGGG       CTAG-     A    TATAG    AAAG-    G ----------
        AAAGTAAAGATCATGGGGAG
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GACCCACGCGTCCGAAACTG A- CC G AAA - C -- -- TG -----
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ATTGACTGAATTTACTTTGG CG GT TTTA G --- - ------
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GGCACCCA A TT T-- T TT ---------
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GTGCTGGTGCTGGTCACCAT GG CC GC GGAG CCG AAGG CC CG AGCATC ACT CTAC ACCAC

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CTGG
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CTCAATGGCGCGATGACGGC CGA AC TGGGTCC ACCTC ACGTCACT CG AG AGC CGG
TCACTGCAACCTCCACCTCC - T- TCC CA - GC T G ----
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GGACC TAAA TG- A GA CC ------
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AGGGC A C A-------- ------
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GCTTCATGGCGGCTGAAGAG AGT CCTG TCCGGT ACGTAG AGTCG GGTA
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GCCTCTGCCATAGCTTCTGT T- TC A TC G T---- ---
CGCCTGTGCTG
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GTATGCAAGAAGCCCCGGAG AG-- AA--- ATCCTA CCCGA A TATG ------
GCTATCCTATCCAAAGCTGT
AGAGATTG
GAM2538 14239 ATTGCAGGATGGAGCACTGA CAG AC- CAAGA TT A GAAA
GAAAGCAAGATGTTGGCTAC ATTG GATGGAGC TGAGAAAG TG GGCT CCA
CAGAAATGGAGTTTCAAAAA TAAC TTATCTCG ATTCTTTT AC TTGA GGT
TTTTCTTAAAAGCTCTATTG AGG AAA AAAA- T- - ----
GACAAT
GAM2539 6395 GGGAGGTCACACTGCCCGTC TCACACT TC C- - CCA- TGACCT
GGACCTTGGCATGCTCCATT GGGAGG GCCCG GGA CTTGGC ATGCT TTCAGC
CAGCTGACCTGCTGAGGACA CCCTCC TGGGT CCT GAGCCG TACGG GAGTCG
GGCATCGCCGAGACTCCTTG ------- T- CA C ACAG ------
GGTCCTCCC
GAM2541 9027 GTTCTGGGAGCTCTGCAAAA TC GCAAA AGTA A GGAAAA
TCAGTAGCAAGTGCTGGAAA GT TGGGAGCTCT ATC GCA GTGCT
AGGCACATGCCGAAGATACT TA ACCCTCGAGA TAG CGT CACGG
CAAGAGCTCCCAAGAT GA ACTCA AAGC A ------
GAM2542 13329 GAAGGCCCACTGCACGGGCG C A ---- G AAATTTCTC
GGTGCTTGTGAAATTTCTCC GAAGGCCCA TGC CGG GCGGGTGCTT TG
AGGGGCACCTGCAGCCCCGG CTTTCGGGT GCG GCC CGTCCACGGG AC
CGCTGGGCTTTC C - CCGA G ---------
GAM2544 3680 TTTTTTTCCTCCCCTCTCAG T TCTC AGCAC ATTAA
TAGCACGGAGTCCGAATTAA TTTT TTCCTCCCC AGT GGAGTCCGA
TTGGATTTCATTCACTGGGG AAAA AAGGAGGGG TCA CTTTAGGTT
AGGAACAAAA C ---- CTTA- -----
GAM2546 19087 GGGGAAATGACTGGCCCAAG AAA ACT CCC GA A --- TTAA
GGGACAAGACGCATCTTAAG GGGG TG GG AAGGG CA GAC GCATC
ATGTCAAGTCCTGGACCCTT CCCC AC CC TTCCC GT CTG TGTAG
CCCTGCAAGGCCCC GGA GT- C-- AG C AAC ----
GAM2547 169 GCCCCATTCTTACCGTTTTT CAT CC TT AC ATTTGAC
GTTACTTCGAAATCATTTGA GCCC TCTTA GTTT GTT TTCGAAATC
CGATTTTGGGTGGACCTGGA CGGG GGAGT CAGG CAG GGGTTTTAG
CTGAGGCGTGGGC TGC -- TC GT -------
GAM2548 19483 CTCCCGCTACACGGAGGCTA TACA- A TACC - A--- GCTC
CCAGTACGAGCAGCGCTCGC CTCCCGC CGG GGC AGT ACG GCAGC
TGTCCCCCGTCGCTGCCCCG GAGGGCG GCC CCG TCG TGC TGTCG
CCCCTGCGGGAG TCCCC - ---- C CCCC ----
GAM2549 7154 ACCGAGCTCCGTCGTCTCGT G CC- GT TTTC-- T - T- GGA
TTCCGGCGGTCGCGCGCTCT ACCGA CT GTC CTCG CGGCGG CGC GCGC CTTTTCTCG

TTTCTCGGGACGGGAGAGGC TGGCT GA TAG GAGC GCCGCT GCG TGTG GGAGAGGGC

CGTGTAGCGTCGCCGTTACT - CCA AG CTCATT - A CC ---
CCGAGGAGATACCAGTCGGT
GAM2550 22491 CTACTCTTATTCCTACTCAT TTATT C TA - A TATT
TTAGCAGTAGTTCTATTGGG CTACTC CCTACT ATT GC AGT GTTC
CACTAGTAGTCAGTAGGGAG GGTGAG GGATGA TGA TG TCA CGGG
TGG ----- C -- A - ----

GAM2551 12972 TTCATCCATTTCTGTATTTG CAT T --- ATTT CCCCAGTGCTTC
TATCCATTTCTGTATCCCCA TTCATC TTCTGTAT TGT ATCC CTGTAT
GTGCTTCATACAGTAGGATT GAGTAG GGGACGTA ATA TAGG GACATA
TAATATATGCAGGGTGATGA T-- T ATT AT-- ----------
G
GAM2552 17403 GCAGGAGAGCATACTTGGCA GCATACT - AG AGAATAC GATAA
AGGATGAGAATACCTGTGTG GCAGGAGA TG GCA GATG CTGTGT
ATAAACACAGCATCTGCACA CGTCCTTT AC CGT CTAC GACACA
TATTTCCTGC AT----- A -- ------- -----
GAM2554 7518 GTCACCCTGGCTGGAGGTGC CT -- ------- - G ATCT
AGTGGCGTGATCTCAGCTCA GTCACC GGCT GGAGGT GCAGTG GC TG
CTGCAGTCTTGACCTCCCAG CAGTGG CCGG CCTCCA CGTCAC CG AC
GCCCAGGTGAC AC AC GTTCTGA T - ----
GAM2555 20339 GAGATGTGGCCGAGACTGCG AT C ---- G T T- AG GCT- GTGA
CTGGCATCCAGCAGGTCGCT GAG GTGGC GAGA CT CGC GGCA CCAGC GTC GG
GGGTGACTTCTGGGCAGCTG CTC TATTG CTCT GA GCG CCGT GGTCG CGG TC
GCTTGCCTGCGAGTATCTCT CT T CTAT - T TC A- GTCT ----
CTGTTATTCCTC
GAM2556 9798 ATGGCTGATGGCAACGAGGA - G AA- AT --- TGACGACTT
TCTGCGGGCTGACGACTTGC ATGG CT ATGGC CGAGG CTG CGGGC
CTGGGCCAGCCTTCGAGAGC TACC GA TATCG GCTTC GAC GTCCG
TATGAGTCCAT T G AGA C- CGG ---------
GAM2557 14347 CCCCTGCCTGACCAAGCCAT - - A A C AACA A TCA A GGG
GTCTGAACAGGAGGCTCAAG CC CCTGC CTG CCA GC ATGTCTG GG GGC AGCCCC GG

CCCCAGGGGGCCGGGGGCTG GG GGACG GAC GGT CG TACAGGC CC CCG TCGGGG CC

CCCCCGGACATGCTGGCAGA T A - - - ---- - --- G ---
GCAGGTGG
GAM2558 11701 TTATGTTTTGTTGTTTGATT TTTTGT TTT TAGTTCATAA TTG ACC
TCCTAGTTCATAACAGAAGG TTATG TGTTTGA CC CAGAAGGGGTT TAAGCTG
GGTTTTGTAAGCTGACCTAG AATAT ACAAACT GG GTTTTTCCTAA GTTCGAT
CTTGACAATCCTTTTTGGGT TCTAGT TT- TTTTTTGG-- CA- ---
TTTTTGGTTTCAAACATGAT
CTTATAA
GAM2559 1466 TCTGAAGGAGGCTTGGCGGT AA CT- C TG TG GGTGGCTG
GGTTGGGCTGGTGGCTGAGC TCTG GGAGG TGG GG GT GGCT
CTGACTGCCTCATCTTCTCC AGAC CCTCT ACT CC CA CCGA
GCCAGA CG TCT - GT GT --------
GAM2561 17319 TCTCTGTCCTTCTACAGGAG - T TACAG TTCC TGCCTACTAC
GTGTTCCGCTTTGCCTACTA TC TCTG CCTTC GAGGTG GCTT
CAAGCTGCTTCACGAAGGCA AG AGAC GGAAG CTTCGT CGAA
GATGA T - CA--- ---- ----------
GAM2562 11062 AAAGGTGGGTGCAGAATCTG G----- -- CT G TC TCTCT
TATGGGAGTTCCAAATCTCT AAAGGTGG TGCAG AAT GTATGG AGT CAAA
TTTGTGCTTCATGCCAATTA TTTCCATC ACGTC TTA CGTACT TCG GTTT
CCTGCAGTTTTACTACCTTT ATTTTG CA AC - T- -----
GAM2563 16225 GGCCGTCTCCGGAGTCGCAG TCT-- A CGCA- T CG T T GCGGA
TGTCCTCGGCCGCCGAAGAG GGCCG CCGG GT GTGTCC CGGCCGC AAGAG GGG GAAGT

TGGGTGAAGTGCGGAACTTC CCGGT GGCC CA CACAGG GTCGGTG TTTTC CTC CTTCA

CTCCTTTTGTGGCTGTGGAC CCTTC A CCTTC T -- - - -----
ACCTTCCACACCGGCTTCCT
GGCC

GAM2566 20979 GTGATGGGCACAATGGGCCC T G AT- TT-- - T- TGCTGCT
TTGGTACCTGCTGCTGCTGC GTGA GG CACA GGGCCC GGT ACC GC
TTGGTCACTGTGTGGGCCTC CGCT CC GTGT TCCGGG TCA TGG CG
TATGTGGCCTCGC - G ATC TGTG C TT -------

GAM2567 18091 AAGGTGTTTGTCAGTTGTTT CAGTTGTTTCAT A TT------ G GACAAA
CATAAACCAGATTGAGGAGG AAGGTGTTTGT AA CCAGA GAG AG
ACAAACTGCTCTGCCAATTT TTTCACAAACG TT GGTCT CTC TC
CTGGATTTCTTTATTTTCAG ACTTTTATTTCT A TTAACCGT G ------
CAAACACTTT

GAM2570 15362 TCCCGGATGAAGAGGTGAGC AT G AGC TT CCC- AGC
TCCCCTTCGCCCCCTCAGCG TCCCGG GAAGAG TG TCCCC CGC CTC
AGCCCAGCGTGGGGACCACT AGGGCC CTTCTC AC AGGGG GCG GAG
CTTCCCGGGA -- - C-- T- ACCC ---

GAM2571 15834 TGGGCATCATCTCCTCCAGG GG C C - GG TTGAT- AAAGAG
GACATTGATTTTCTCAAAGA TG CAT ATCTC TCCA G ACA TTTCTC
GGAGGAACATGACTGTTTCT AC GTA TAGAG AGGT C TGT AAGGAG
TGGAAGAGATAATGACA A- A A T TT CAGTAC ------

GAM2572 2950 AGGTCTGGAGGGGCCATGGG - CCATG GT GTG A GTCG
GCAGTCCTGGGTGTGGGACA AGG TCTGGAGGGG GGGCA CCTGGGT GGAC CC
CCGTCGGGGTTTGACCCAGG TCC AGACCTCCCC TCTGT GGACCCA TTTG GG
GTTGTCTCCCCTCCAGAGCC G ----- TG G-- - ----
T

GAM2573 12892 GCCTCATCCTCCCAAGTAGC - CCC-- G TG - TTTTGCCATTAT
TGGGATTACAGGCTTTTGCC GCCTCATC CT AAGTA C GGATTAC AGGC
ATTATGCCTGGTAATTTTGG TGGGGTAG GA TTTAT G TTTAATG TCCG
TATTTTTAGTAGAGATGGGG A TGATT - GT G ----------
T

GAM2574 13330 GGCTTTCTGAGAAATCGAGT T AATC TCA CCA TATCCT
TCAGGCTGCCAAGTATCCTC GGCTT CTGAGA GAGT GGCTG AG
TCTTAGTCGCTTCATCTCAG TTGAA GACTCT TTCG CTGAT TC
AAGTT - AC-- --- TC- ------

GAM2575 14839 GGTCTTTGCGGATGTCCACG T C A TC A-- TGATGGAGT
TCACACTTCATGATGGAGTT GGTCTT G GG TGTCCACG AC CTTCA
GAAGGTAGTTTCGTGGATGC TCAGGA C CC GTAGGTGC TG GAAGT
CACAGGACT - A - TT ATG ---------

GAM2576 22861 GGTGAACTCGGCGCACACTT - C- G ACACTT GA C AGGT
CACAGAACTCCTTTAGGTAA GGT GAA TCG CGC CACA ACT CTTT
AGCGGTTGTGCCCTTCGCGA CCA CTT AGC GCG GTGT TGG GAAA
CGATTTTCTACC T TT A CTTCCC -- C ----

GAM2577 2255 TGTTCATAATCCCAAACAAG ATAA- AAACAAG TG - GCAGCAACAGGA
GGCCCTGCTGGCAGCAACAG TGTTC TCCC GGCCC C TG
GACAGGTGGGGCCAGGACAG ACGAG AGGG CCGGG G AC
GGAAGCTGGAGCA GTCGA ACAGGA- GT G ----------

GAM2579 10232 TCCTATGGAAGCTGGTAGCA A - G----- A- TGTTTAT
GTATTATCTTGTTTATGGAT TCCT TGGAA GCT GTAGCAGT TTATCT

AAAAATTGCTGCGAAAAGAG AGGG ACCTT CGA CGTCGTTA AATAGG
CTTTCCAGGGA - T GAAAAG AA -------
GAM2580 7030 CAAGAGGAGTTGCACCCTTC - TTGC CTT--- CTT T A -- AAC- CTCT
CAGACTTGCGGATGAGTAGC CAAG AGGAG ACC CCAGA GCGGA GAGT GCTTG CC
CTGACC
TTGCCAACCTGACCCTCTGT GTTC TCCTC TGG GGTTT CGTCT CTTA CGAAC GG GACTGG

CAGGTCAGCCAGGGTACAAG G TTTC CTCTTC AAC - - AT GACC ----
CATTCTCTGCCAATTTGGCT GTCA
TCTCGGTCTTTCTCCTGCTT
G

GAM2581 5124 CCCTGCCAAGCTGCACAACT AAGCT AA CTCAT CACCAA CCGTCTGA
CCCTCATTGGCACCAAGGGC CCCTGCC GCAC CTCC TGG GGG
CGTCTGATCCGCTCCATCAT GGGGCGG CGTG GAGG ACC CCT
GGAGGAGTGCGGCGGGG ----- AG TACT- TCG--- --------
GAM2582 6860 GGGTTTCGCCATGTTGCCTC CG--- CC- -- CTGG
GGCTGGTCTAGGCTGGTCTG GGGTTT CCATGTTG TCGGCT GGTCTAGG
GACCTAGGCTGGTCTCAACA CTCAAG GGTACAAC GGTCGG CCAGGTCT
TGGACTCTGAACTC TCTCA TCT AT ----
GAM2583 22773 CTGTGCACCTCGTGGTAGAA G -- --- G CTT - C -- G TCATATTTCAT
CTCTTTGGGGTTCGCCAGCT CTGT CA CCTCGTGG TA AACT TGGG GTTCG CA GCT TAGC

GTAGCTCATATTTCATGTTG GACG GT GGAGCACC AT TTGA ACCC CAAGC GT TGG GTTG

GGGTCATGCCGAACACCCAT G CA TTG G AGT A C AC G ----------
GAAGTTGTAGTTCCACGAGG
ACTGGGCAG
GAM2584 11725 GCATGGAAGAGGAGCTCGGG AT CTC A ACAGG TG G TCCA
AGGACAGGGTTGGGGCCTCC GC GGAAGAGGAG GGG GG GT GG CC
AGGGTCTGACACCACCCCAC CG CCTTCTCCTC CCC CC CA CT GG
TCCTCTTCCTAGC AT AC- A A---- GT G ----
GAM2585 2629 TCTTCCTCTAATATTGCCTT CTCTAATAT ---- - C C C - TCTTTT
TTCTTGTACAAGGCAGACCA TCTTC TGC CTTTTCTT GTA AAGG AGA CAG GTA
GGTATCTTTTTATGCTGTTT AGAAG ACG GAAAAGAA CAT TTCC TTT GTC TAT
TTCCTTTACTAAGAAAAGTA TTCT----- TTAT T - T T G ------
TTGCATCTTGAAGA
GAM2586 8062 GACTTTGTTGGAAGGGGAGG TT TT - A CG A T CTGGGGCGAT
CGGGGAGAGAGTGCTGGAGG GACT G GGAAG GGG GG GGGAGAG GTGC GGAGGCT

CTCTGGGGCGATGGCTTCCG CTGA T CTTTC CCC CC CCTTCTC CACG CCTTCGG
CACCTCTTCCAACCACCCTC GG CC T A AA - - ----------
TTTCCCTGGAGTC
GAM2588 15122 GCTGCTCACAATAGTTGATA T AG A C AGGATTGGAGATGCA
CCCCAGGATTGGAGATGCAG GCTGC CACAAT TTG TA CCC
GGATAATAGTAATTGTGGCA CGACG GTGTTA GAT AT GGG
GC - AT A A ----------
GAM2589 8122 CATTTCCAACAGGACATGGA AACA TGGAG G TAAG
GGGAAGGCTTCCTAAGGGAA CATTTCC GGACA GGAAG CTTCC
GACTTCCTGTCCCAAAGGAA GTGAAGG CCTGT CCTTC GAAGG

GTG AAAC ----- A ----
GAM2590 14028 AGTACCACCTGCCCAGAGCA C-- ----- GAG --- - CTGACT
AATCTGATGGACTGACTTCC AGTAC ACCTGC CCA CAAATCT GAT GGA
GATCAATAGGTTTGATGGCC TCATG TGGACG GGT GTTTGGA CTA CCT
TTAGCAGGTTCTGTACT TCT ATTCC A-- TAA G ------
GAM2592 18349 CTGTCAAGAAGGAACATCAA G - AACAT T A A TC GCAAA
AGTGAAGACATTTTCTGTCA CT TCAAG AAGG CAAAG GA GAC TTTTCTG AG
GGCAAATTTTCAGGAAAGTC GG AGTTC TTCC GTTTC CT CTG AAAGGAC TT
TCCTTTGCACCCTTACTTGA G A CAC-- - - - TT -----
GGG
GAM2593 20605 GCGCCTGAGAACCCAATTGA C A CCC AC C-- G AT- ACACG
CTACGCGCGACGATCCAGGA GCG CTG GAA AATTG TA GC CGACG CCAGG
CACGCCTGGCCCCGTTGGTC TGC GAC CTT TTAAC AT TG GTTGC GGTCC
CCTATCCAATTCTTCCCAGA A C C-- CT CCC - CCC -----
CGT
GAM2594 2537 TCCTAGAACCTGAACATTTG A- --- G - GCA GAAACGTA AAGCTTTA
GCTTGGCAGGTGCGAAACGT TCCTAG ACCTGA ACATTT GC TTG GGTGC TCTAG
ATCTAGAAGCTTTACTGGAG AGGATC TGGATT TGTAAA CG AGC TCACG AGGTC
CCAGCACTCGACGCAAAATG CC TCC A C --- ACCG---- --------
TCCTTTAGGTCCCTAGGA
GAM2596 6519 AACCCAACATGCCATGGTTT AA CAT TA-- - TCATTCCC
ATGGAGCCTTCATTCCCAGG AACCC CATGC GGTT TGG AGCCT
TTGCCACTTTGGCCTCAGTG TTGGG GTGTG CCGG ACC TTGGA
TGGAGGGTT AG ACT TTTC G --------
GAM2597 10777 GCTTGTAACTACTGATCTTG ACT TG GAGCTCATAAAA TAAATAATGT
AGCTCATAAAATACCTAAAT GCTTGTA AC ATCTT TACC
AATGTGGTGGAACAACTGAA TGAACAT TG TAGAA GTGG
AGATTGGTTATACAAGT AT- GT AGTCAACAAG-- ----------
GAM2598 6543 GAAACCTAGGAAGAACAACA A TA- A ACAA TGAGA A AGCAGCA
CAGTTGAGACAATGTAGCAG GAA CC GGA GA CACAGT CA TGT
CAGCAGTGGGTGCTGTGTCC CTT GG CCT CT GTGTCG GT ACG
TCCACTGGATTC A TCA C ---- TGG-- G -------
GAM2599 21202 GAGTGGAGCGGAGCGGGCTG GAGCGGAG GC- T - G ATCG
GTGCTGGGGCCGCGGAGATC GAGTG CGG TGG GCTGGGGCC GCG AG
GCTGTGCTGGCCCCAGCCCC CTCAT GCC ACC CGACCCCGG CGT TC
ATCACCGAAACACATACTC ACACAAA- ACT C T G ----
GAM2600 11957 GCTTGTCTCATGCCTCGCCG T-- CCTC TG T T T GCG TG GTGA
TGGAGCTGCAGTGCTGGTGC GCTTGTC CATG GCCG GAGC GCAG GC GGT CC GG
GCCTGGGGTGACCTGGGACT CGAACAG GTGC CGGT CTCG CGTC CG TCA GG CC
CGCCTGCTGCTCTGTGGCCT CGC TTC- GT T - C --- GT ----
TCGTGCGCGACAAGC
GAM2601 1515 GCCAGCACGCCAAGTACACT CACG AAG - - CTG- CAAAA
TGCTCTTTCTGTGGCAAAAC GCCAG CC TACA CTTG CTCTTT TGG
CAAGATGAAGAGACGAGCTG CGGTC GG GTGT GAGC GAGAAG ACC
TGGGGATCTGGC TA-- G-- C A TAGA -----
GAM2602 12573 GGGGTGGTGGAATGGTCCTT T T-- - AAGCCCCGGA
CCTTTAAGCCCCGGAAAAGG GGGGTGG GGAA GGTCC TTCCTTT
GATGGACCCACTTTCTCCAC CCCCACC CTTT CCAGG AGGGAAA
CCC T CAC T ----------
GAM2604 10224 GAGGTCCCAGCACATGTGTT C- AT- TTTTC - ACTA

TTCAAGAGGCCACTAGGCAT GAGGTC CAGCAC GTG AAGAG GCC
TCTTCACTGAGTGCTGCTGA CTTCAG GTCGTG CAC TTCTT CGG
CTTC TC AGT ----- A ----
GAM2605 2824 GCTGTCTTGGAAGACATGGC - T CATG - ACATGGA
TCGTCCGGACAGACATGGAT GC TGTC TGGAAGA GC TCGTCCGGACAG
TGTCTGGACGATGTGGCTTT TG ACGG ATCTTTT TG AGCAGGTCTGTT
TCTATGGCATGT T T CGG- T -------
GAM2606 13306 CGCCGCGGGGATGCTGAGCT - GA CT T -- G-- -- ACGTT
TCGGCGGGCGGCTGGACGTT CGC CGCGGG TG GAGCT CG GCGGGC GCT GG
CCTAAGCAGAGCTCGCAGCG GCG GCGCCC GC TTCGG GC CGCTCG CGA CC
TGGCTTGACGGCCCGCGAGC A G- AG T GA AGA AT -----
G
GAM2607 21681 TGGCGCTGCACAGGTGGCTG - T - GGA - CCTTC
GACTGTCCCACCTTCTGTGG TGG CGC GCAC AGGTGGCT CTGTCC CA
ACAGAGCCACTTGGTGCTGC ACC GCG CGTG TTCACCGA GACAGG GT
GACCA A T G --- T -----
GAM2609 805 AGTATTGCCTATTTGCATGG TT-- C TTT ----- AAT CTG
GAGAAATGATTTCTGAAGTC AGTA GC TA GCATG GGAGA GATTT
CGTCTCCTGAAACATGCCCT TCGT CG AT CGTAC CCTCT CTGAA
TATGCTCTTTGCT TTCT T TCC AAAGT GC- ---
GAM2610 6021 CTCAAGCTTCCCAGAATCCC AA AATC TG C---- ACTTT
TTGTCCCTCCCCACTTTGGG CTC GCTTCCCAG CCT TCCCT CCC
CACTTAGGGGTGGGGCTGGG GAG TGAGGGGTC GGG GGGGA GGG
GAGTGAGAG AG ---- GT TTCAC -----
GAM2611 4881 AGAAAGGAAGAGGCAGGCGC A CA --- -- ACC- TTCGTGTTTT
CAGGGGGAACCCACTTCGTG AG AAGGAAGAGG GGC GCC AGGGGGA CAC
TTTTGTGACCCTCCCTTTTA TC TTCTTTTTCC CCG TGG TTTCCCT GTG
GGTGAAGCCCCTTTTTCTTG G -- AAG AT CCCA ----------
CT
GAM2612 3560 GGGGACCGGTCTCACCGAAT A- T-------- GAATGCA --- ATCAT
GCATCCTGTCGGGCATCATG GGGG CCGGTC CACC TCCTGT CGGGC
TCTGTGAACGGGAAGAAGGT CCCC GGCCAG GTGG AGGGCA GTCTG
GCTGCACATTGACCGGAACC AA TTACACGTC AAGA--- AGT -----
CC
GAM2613 16187 TTTTTTCCTTTTTCTGTAGG TT T ---------- G AAG TAAA-- AACAT
CCGCCTTAAGCTTTCTAAAT TTTTTTCCTTT CTG AG GCC CCTT CTTTC TTTGG
TTGGAACATCTAAGCAAGCT GGAAAGGGAAG GGC TC TGG GGAA GGAAG GAATC
GAAGGGAAAAGGGGGTTTCG GG - ACTAAAACGCTT G AAG TCGAAC -----
CAAAATCACTCGGGGGAAGG
GAAAGG
GAM2614 12486 GAGGCAGGAGAATGGTGTTA A AA - TAA- AGGC CT A - AGAT
ACCCAGGAGGCGGAGCTTGC GAGGC GGAG TGG TGT CCCAGG GGAG TGCAGTG GC CG

AGTGAGCCGAGATCGCGCCA CTCTG CCTC ACC ACA GGGTCC CCTC ACGTCAC CG GC

CTGCACTCCAGCCTGGGAGA - AG G CAGA GA-- -- - C ----
CACAGCCAGACTCCGTCTC
GAM2615 5387 GGCACCCTCGGCTGTGCCTC C GG G- A---- G- GT TTCCT
CTCTGAGGCTGGCAGTTCCT GGCAC CTC CTGT CCTCCTCTG GGCT GCA TCC
TCCTGGATATGCAAGGTCAA CCGTG GAG GACG GGGGGAGGC CTGG CGT AGG

GAGCGGAGGGGGAAGCAGAG A A- AA GAGAA AA AT -----
AGAGTGCC
GAM2616 15422 TGGCTACACTAAAAAATGAC GCTA A GAC AA TCAGC- AGAGAA
CTGGGAAGCCAAAGGTCAGC TG CACTAAA AAT CTGGGAAGCCA GG TCAAA
TCAAAAGAGAATTTGATTAA AC GTGGTTT TTA GACCTTTTGGT CC AGTTT
TTCCTGGTTTTCCAGACGAT ACAG G GCA -- TTAATT ------
TGTTTGGTGGACACA
GAM2617 2965 GAGCTGGCAGGTTGGATGAC --- GGATGACACA G ATG AAAACTCTGAACAAT

ACACTGGGAAGCGTATGGGG GAGCT GGCAGGTT CT GGAAGCGT GGG
AAAACTCTGAACAATTCCAA CTCGA TTGTCCAA GA TCTTCGTA CCT
AATGCTTCTAAGAACCTGTT AGT ---------- A AAA ----------
TGAAGCTC
GAM2620 15700 GCTTAATGATCCTGAAGGGA ATGATC- GATT- - - G TTTT
TTTCTTCTGATGGTAGCTTT GCTTA CTGAAGG TCTT CT GATGGTA C
TGTATTATCAAGTAAGATTC CGAAT GACTTTT AGAA GA CTATTAT G
TATTTTCAGTTGTGTGTAAG GTGTGTT ATCTT T A - ----
C
GAM2621 10344 ACTACTGAAGTTCTGCAGAA C TTCT AC TC T -- G GTC
CAGTATCGAGCTTGAATTTG ACTA TGAAG GCAGA AGTA GAGC TGAATT TG GG
GGGGTCTCGCAGTAATTTAT TGAT ACTTT CGTTT TCGT CTCG ATTTAA AC CT
GCTCTTTGCTTTTGCCTTTT - TC-- -- TT T TG G ---
CATAGT
GAM2622 10830 TGAGGCAGGAGAATCGCTTG CA AA AA--- A----- TGCA GCCGAGA
AACCCAGGAGGCGAAGGTTG TGAGG GGAG TCGCTTG CCCAGG GGCGAAGGT GTGA

CAGTGAGCCGAGATCATGCC ACTCT CCTC AGTGAGT GGGTCC CCGTTTCCG TACT
TTTGCCCTCCAGCCTGGGCA A- AA GCAAC GACCTC ---- -------
ACGTGAGTGAAACTCCATCT
CA
GAM2623 12095 GTATGCTATGCTAATTTTTA TG---- T --- AACATAACACTAAGATC
AAAAGTAACATAACACTAAG GTATGCTA CTAAT TTTAAAA AGT
ATCACTGAATTTTAAGTATT CGTGTGGT GATTA GAATTTT TCA
AGATTTTCTGGTGTGC CTTTTA T AAG ----------
GAM2625 4789 GAAGGCTTCGTCTGCCAAAC CG G CA---- CAAGTGTGCC
AGAGACTCAAGTGTGCCAGT GAAGGCTT TCT CCAAA GAGACT
CTCCAAAAATTTGGAGAAAG CTTTCGAG AGA GGTTT CTCTGA
AGCTTTC AA - AAAAAC ----------
GAM2626 18211 ATTTACACTTTCCCATGTTA A CC TGTTA CA TCA- AATATTTCTTG
CAGCACAATATTTCAATGGA ATTT CACTTT CA CAGCA ATATT ATGG
ATATTTCTTGCCATAAATAA TAAA GTGAAG GT GTCGT TATAA TACC
TATCTTGCTGATTTGTAGAA - AT TTA-- TC TAAA ----------
GTGAAAT
GAM2627 1632 CTCCCTCTTTTTTGATTTAC CTCTTTTT - AC C TTAAAATAAT
TGGTACATTTTTAAAATAAT CTCC TG ATTT TGGTA ATTT
AAATCTGCCATAAAATGCAT GAGG AC TAAA ACCGT TAAA
TATATCTGGAG TCTATATT G AT C ----------
GAM2629 5106 AGGTACCTCACCTAAGTGGA T CTCAC- CATAC ATTT TTTTTGT
ATCATACAGTATTTGTCTTT AGG AC CTAAGTGGAAT AGT GTC
TTGTGACTAGCTTATTTCAC TCC TG GATTCACTTTA TCG CAG

TTAGCATTATGTCCT - TATTAC T---- AT-- -------
GAM2630 18699 GACAGGATCTTGCTCTGTTG C TT C TT C-- T A CAATCATAGCT
CCCAGGCTGGAGTGCAGTAG GA AGGATC GCT TG GCCCAGG TGGAG GC GTAGTG
TGCAATCATAGCTCACTGCA CT TCCTAG TGA AC CGGGTCC ACCTC CG CGTCAC
GCCTCCAACTCCTGGGCTCA - -- - T- TCA - A ----------
AGTGATCCTTC
GAM2632 8793 GTCCCTTCCCTCCCCAGGCC C- C - G CT A--- GAAAGA
TCGCTTCCCCAGCCTTCTGA GTC CTTC CTCC CCAG CCTCG TCCCC GCCTTCT
AAGAAGGAGGTCCAAGGGGA CAG GAAG GGGG GGTC GGAGC AGGGG TGGAGGA
TCGAGGGCTGGCGGGGAGAA AC A C G T- AACC ------
GCAGAC
GAM2633 12707 GGCTCGCTCTGGACCTCACT TC- T A TCA T - GCAGGG
GCTGGTCTCCAGCTGGGCAG GGC GCTC GG CC CTGC GGTCTCCAG CTGG
GGCCGGTCTGGGGGCTGCAG CCG CGAG TC GG GACG TCGGGGGTC GGCC
CCTGGCTCGAGCACTGCC TCA C - TCC - T ------
GAM2634 15982 CCCCACGCTCAGTCCTGGTC - AG TCAAA T - CCTT
AAAGGCTGCCAGACCTTTCT CCCCA CGCTC TCCTGG GGC GC CAGA
GAGTGCCCCCAGGGAGGGTG GGGGT GTGGG GGGACC CCG TG GTCT
CTGGGG C A- C---- - A ----
GAM2636 5672 CCTTGCTGTCCTCTGGGCTT GCT--- CT CTCC A - TCAC
CTCCTCTGACCCAGGTCACC CCTT GTCCT GGGCTT TCTG CC CAGG
CTGTGGCAGGCCATGGGCCC GGAA TAGGA CCCGGG GGAC GG GTCC
TCAGGATGTTTCAAAGG ACTTTG CT TACC - T ----
GAM2637 16747 TATTAGGTGGTGCATAAGTA - T - - CTT
ATGTGGTTTTGCCATGACTT TATTAGGT GGTGCA AAGTAAT GT GGTTTTGCCATGA
TTATGGCAAAACCTGCAATT ATAATTCA CCACGT TTCATTA CG CCAAAACGGTATT
ACTTTTGCACCAACTTAATA A T A T ---
GAM2638 15142 GTATGATGTCTATCAGTATT T T A TTT G G AA ACCT
TTCTGCCTGAGAATGACCTC GTA GATG CT TCAGTA TCT CCT AG TG
ACTGAGGAGATGTTGCTGAA CGT CTAC GA AGTCGT AGA GGA TC AC
GCATCTGC - - - TGT - G -- ----
GAM2639 16007 AGCCGACGGGACCGGCTCAA CG A G CAAA GG TTT
ACCCCCGGGGGTTTTCAACG AGC ACGGG CC GCT CCCCCG GG
GGGGGCGGCGGGACCCGTGC TCG TGCCC GG CGG GGGGGC CT
T -- A G CG-- AA ---
GAM2641 587 GGCCCAGGCTGCCCGTTCCT CA C TCC T - AG CGC C CCA
CTCCTTCTCCGCCAGTCTGC GGCC GGCTGCC GT TCTCCT CTCCG CC TCTG TG GGCTG

GCTGCGGCTGCCACGGCTCA CCGG CCGACGG CG GGAGGA GGGGT GG AGAC AC TCGGC

CACCAGAGGGATGGGGTAGG A- A C-- T A G- CAC - ---
AGGCGCAGGCAGCCAGGCC
GAM2642 1840 GCGCAGGTCGGTAGTGAGGG GGT TA G G T C T GCAGCATCAGG
GATCGTGCTGGATCGTCTGG GCGCA CGG GTGA GG ATCGTGC GGAT G CTGGT
TGCAGCATCAGGGCCAGCAA CGCGT GTT TACT TT TGGCGCG CCTA C GACCG
TCCCGCGCGGTTTGTCATGG --- GG G - C A - ----------
TTGTGCGC
GAM2643 14895 GGGCTCAGCCCCCTTCCCCC TC CTTC A A -- A ACTGTG
ACGTCACGTCTGCATCACTA GGGC AGCCCC CCCC CGTC CGTCT GC TCACT
CTGTGGGTGAGCCTGGACGG CCCG TCGGGG GGGG GCAG GCAGG CG AGTGG

```
        ACGGGGGCTGGGGCTGCCC    --    TC--   -   -    TC  -    ------
GAM2644 13693 AGGCCTAAGGAGCACTAGCA      A   C-----      CATTTG  ATATT
        ACATTTGGCTATATTGGTTT AGGCCTA GGAG     ACTAGCAA     GCT
        GCTAGTCACCAACTTCTGGG TCTGGGT CTTC     TGATCGTT     TGG
        TCT                  -   AACCAC      ------  -----
GAM2646 1044  GGGACCTACCAGGGGCTTCT   A--  A        TG CAA  TA  AGGAAAG
        GGCAACTTTAAGAAGGAAAG GGG   CCT CCAGGGGCTTC  G   CTT  AGA
        TCTGAGCAATTGGAGGCTCC CCC   GGA GGTCCTCGGAG  T   GAG  TCT
        TGGAGGCTGCCC         GTC  -        GT AAC  --  -------
GAM2647 13125 GTCCCATGGAAGCTTCATGA   C  GAAGCTTCA       G  GTTCATTTTTCTCTA
        CTGTATGCTGTTCATTTTTC GTCC ATG       TGACTGTAT CT
        TCTAAGATGCAGTCACATAG TAGG TAC       ACTGACGTA GA
        GAT                  A  ---------       - ----------------
GAM2649 14574 TTTAAAAATCTTACTTCTCG    AAAA  TACT  T    CA    ACA  AAAATTAAAAA
        TGACAGTCCTACATGAAAAA TTTA    TCT    TC CGTGA  GTCCT   TGA
        TTAAAAATCACAAGGATTCA GAGT    AGG    AG GTACT  TAGGA   ACT
        TGGATGGAAAACTGAG       CAAA   T---  -    --    AC-  -----------
GAM2650 8883  GTCATGTGATGCTCAATCAG   A  GA    ATC   AAA---    ATTGGCTTCA
        CAAACCAGGGATTGGCTTCA GTC TGT  TGCTCA   AGC     CCAGGG
        TCCTGGGAAAAAGCTATCTG CAG ACA  GTGGGT   TCG     GGTCCT
        GGTGCAACAAGAC        A  AC     CTA   AAAAAG    ----------
GAM2651 15114 GGTGGTGTCTTCCGGCTTCT    T    CC    T  T   G   G  AAAC
        GCTGCTGGCTGGCAAAACTG GGTGG GTCTT  GGCTTC GC GCTG CTG CA
        TAGTAGTTGTTGGGGCCCAG CCACC CAGGA  CCGGGG TG TGAT GAT GT
        GACCCACC             -   C-    T  T   -  - ----
GAM2652 10873 CTCAGTGAGTTCAGAATATC    G    TC  AATATC   AC-   CCCCCCTC
        CTACACCTAACCCCCCTCTT CTCA TGAGT  AG     CTAC   CTAA
        AGATGGTAGCTATGCTCAGT GAGT ACTCG  TC     GATG   GATT
        GAG                  G    TA  ------   GTA   --------
GAM2653 22528 GCCCTTTTCCCACTTTTTTT   CC      CTTTT-  TG TT   TA   TA   GACAAA
        GCTTGTTTAATTTTAGAGTG GC  TTTTCCCA     TT  C  GTT  ATTT  GAGT
        ACAAAACTCAGATCCAGCTT CG  AAAGGGGT     AG  G  CGA  TAGA  CTCA
        GTGGATGCTCTTGGGGAAAC   AC       TCTCGT  GT TT   CC   --   ------
        AGC
GAM2654 14411 CGGGTGGTAAAGTGGCAACG    T   A      CGCGAA     TATCTGGTCT
        CGAATTTGGGTATCTGGTCT CGGG GGTA AGTGGCAA     TTTGGG
        CCCAAAAGTACTTGCCGCTC GTCC CCAT TCGCCGTT     AAACCC
        TACCCCTG             -  C       CATGA-     ----------
GAM2655 19882 CTCCTCCAGGAGACCATAAG       -------   AC   AA-    ATCCCCCATCCTCTCAGCC
        ATAGATCCCCCATCCTCTCA CTCCTCCA      GGAG  CAT   GATAG
        GCCCTATTCCCATGCCTCCC GAGGAGGT      CCTC  GTA   TTATC
        TCTCATTGGAGGAG            TACTCTC   C-  CCC    -------------------
GAM2656 7731  TCAACGCAGTGAAAGATGTA     GCAG  AA  A      AAA---  C   -   GACC
        GCCAAAGCCCTGTGAGACCT TCAAC    TG  AG TGTAGCC     GC CTG TGA
        CATCAGTGCAACGAAGGCTG GGTTG    AC  TC ACGTCGG     CG GAC ACT
        CAGCTGGCAAAGTTGG         AA--  GG  G     AAGCAA  T  T  ----
GAM2657 19173 CGGGGGAGAGGGGCAAATGC          -    --    CC   ACTGACAC
        CTCCGGGACTGACACTCCAG CGGGGGAGAGG GGCAAA  TGCCT  GGG
        GCAGCTTTGCCTTCTCTCCC GTCCCCTCTCT CCGTTT  ACGGA  CCT
        CTG                      T     CG    --  --------
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GAM2658 8491 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A AT TGGG
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TGGGCAAATGTTGTCTGACT GACC ACAA TGTC TTCAGT CTGTT GTAA AC
TACTGTTTCAACAAACCAG AA CTT A ---- - -- ----
GAM2659 8427 GCCCTGAGTTGGGAGCCTCC - T---------- GAACA
GCGAACAGTGGTCCTGTACA GCCCT GAGTTGGGAGCC CCGC
AGTGCGTGGTTTCCGGCTCT CGGGG CTCGGCCTTTGG GGTG
GGGGC T TGCGTGAACATGTCCT -----
GAM2660 6696 GGATCCGGGTCCCCGACCAA - ------ AAA ACAC AGGTGCG
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CGCTCGGACCCGGCCGGTCC CCTAGGCTCGG GGG CTGG CCGGC GGCTC
CCCGAGGGTGGCTCGGATCC T AGCCCC --- CCA- -------
GAM2661 20964 TGTGCCACTGCACTCCAGCC T A T A GGCAACAGAGT-- CCT
TGGGCAACAGAGTGAGACCC TG GCCACTGC C CC GCCTG GAGAC
TGTCTCTAAAATAAATAAAT AC CGGTGGCG G GG CGGAT CTCTG
AGGCCGGGCGCGGTGGCTCA T C - C AAATAAATAAAAT ---
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CCATCTGCAATCTGGGCCCC TTTAC CCGG GTCTA CG TCTA AG
ATTT C - A - CCTAA ------
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GATTTCAACTGGTTATCTGT TC GTG GAGG AGTGTT ACTGG TAT GTT
TAAAAGGCTTGTGTCCCAGT AG CGT TTCC TCACAA TGACC GTG CGG
GCAACACTACCTTTGTGCAG A GT A CG------ CT TT ----
A
GAM2666 11257 AGGTTTTGCTCTGTTACCCA TT C TTA T---- AA - GTGATCATA
GGATGGAATGCAGTGGCGTG AGG TTGCT TG CCCAGGA GG TGCAGTG GC
ATCATAGCTCACTGTAACCT TCC AACGA AC GGGTCCT TC ATGTCAC CG
TGAACTCCTGGGCTCAAGCA T- - TC- CAAGT CA T ---------
ATCCT
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GGCATGTTCTGTGAAAGTCA TTGC ACA AAA AGG ATGT CTG GA AAGTC
GCATGGCTTCCATCTCAGAC AACG TGT TTT TCC TACA GAC CT TTCGG
ATCCTTTTCTGTGCAA ------ C -- - - T ACC -----
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TGTATAATTGATATGTCAAG CCAAATT CT ATCT CCTT TAA TTG GTATA
TTACTAATCATTCCTCTATT A--- T - AC TCA- AACT -------
CATTAAACC
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CCTTCACTTTGGGCAATAGC AAG GGGATTATCT CC TTC CTTTGGG AAT
TATTTCCTAAAGGAATGGAA TTC TTTTAGTGGA GG AAG GAAATCC TTA
AAAGGTGATTTTGCTACTT ATCG AAAA T - T ----
GAM2671 16728 GGAATACATCAATGGGGACA T A A- GTATT-- CAGCA
AGTATTTCCAGCAGATTTTT GGAA AC TCA TGGGGACAA TC

GATTGTCCCCGGCTGAAGTT TCTT TG AGT GCCCCTGTT AG
TTCT T A CG AGTTTTT -----
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GAM2674 1492 GATGTACCAACAGTACCAGC T CAAC GCAAC--- CG AT CAC AGCCGCAG
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CAGCAGCCGCAGGCTCCACC CT TATG TTATGGT TCCG CGA CCAC TCG
TCAGCAGCCTCAACAGTATG - AC-- ATGACAAC A- CT C-- --------
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GAM2675 21674 TCCGTGCGCGTTGCTGCGGC TGC G C- GT C TTCCTCGGC
CGTGGTCCGCGCCCTTCCTC TCCG GCGTT CTG GGCC GGTCCG GCCC
GGCGGGCCGGACTGGTCTCC GGGT CGTAA GAC CTGG TCAGGC CGGG
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CCCCAAGAAACGAGAGGCTC GG TCTC GAGAGCA CC GTGGAAAT
TTGG T G AAGAA CC -----
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GGTGGCAAACA A T TT AA AA- ----
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TC
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AAAGCTGGGGAGAGCTTTTC CC TCACC TTCGA GAG GG CG AAAC
CACTGCC G TT ----- - GT A ----
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CTTTGACTGGGTCATCGAGA GTT ACGA GGTC CGCCG AC GTTGAGGT CC GAG ACTG
ACCATGGAGTTGAACAGCCG G GGA- --- - AA A AA CT ---
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GGTGATTGGAGTCCTCCACC GTGATTTTGTT TGAGAGAAGGTGATT GTCCT ACCT TGAT

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CAAAATTAT
GAM2687 491 AGGGCAGGGGAGAGCAAGGG A - A A--- TG CGA TGGG
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GGGGAGGGTAGCCCTGGGGC TCCCG CTC CTC CGT CCCCGGG CCCG GGAGG
CCCGCTGTGCCCTCACTCGC - A C GTCG GT ATG ----
CCT
GAM2688 7204 TGTGTGTGTATGTGTGTGAG G T G A G G GGGG
TGAGATGGGTAGCGGGGGTG TGT TGTG AT TGTGTG GTGA ATGG TAGCG
CTATCATGTCGCCCACGCGG GCA GCAC TG GCGCAC CGCT TACT ATCGT
GTCACGAACG A - G C G - ----
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GAACATAAGTCAGCCAAGTG TTCCTG CAG GC GCA CAGA CA AAGTCA AAGTGT TC
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TGCTGCTAGGGG
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GCTCTGCCCAGGTGGGGGTG CGGG GGTGGGGGT GACCCG CGG ACC
GGTGGGC TG G TCT TC ----
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GGTATTACAGGTGATATGAT AGC TATGTAGTT ATGTTTT TAGTATA TATAGT
ATGATAGATTTTTGTATTGA AT- --- TAGA- G--- ----
TGTATTACGA
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TGAACGAGCTAGAGCGACAG AGACAT GG GG GGACAT CT GAGC CAGT
TTTCTTGAATTGCTGCAGTT TCTGTG CC TC CTTGTA GA CTTG GTCG
CAGACATCAATGTTCCTTCC A-- T - ACTACA- - AC ----------
AGTGTCT
GAM2697 2281 CAACTAATGTTGGAACTATG AATGTT A---- A- CTTCTCTACTTTTAACAA
AAAAGCTCTTCTCTACTTTT CAACT GGAACT TGA AAGCT
AACAAAGCTTAGTCACAAAC GTTGA CCTTGA ACT TTCGA
AGTTCCCCAGTTG CC---- CAAAC GA ----------
GAM2698 2498 CTGCGGCCGGGCGGCTCGGC CGG GG G- A- A-- AG- AGTAA
GGGGCCAGCAGCAGGAGCAG CTGCGGC GC CTC GCGGGGCC GC GC GAGC
TAAGCTCAGCGCCCCGCGCG GACGCCG CG GGG CGTCCCGG CG CG CTCG

GCCCTGCAAGGGAAGCGCCG --- AA AA CG CCC CGA -----
CAG
GAM2699 21139 CTTTTGGCAGAGCTCCCACT AGA CACTATTTG GATAAA
ATTTGCAATGGATTTTGGAT CTTTTGGC GCTCC CAATGGATTTTG
AAACAAGATCTGTTGAAGGA GAAAACCG CGAGG GTTGTCTAGAAC
GCGCCAAAAG --- AA------- ------
GAM2700 6081 CGGCTCCGAGAGCAGGTTCT - AGAG C-- - -- CAGGGC
TCGTGAGTTCCTCGCAGGGC CGGC TCCG CAGGTTCTT GTG AGTTCC TCG
CGGTCGGAGCTACACATTGA GCCG AGGT GTCCAAGAG CAC TCGAGG GGC
GAACCTGAACATGGAGGCCG G ACAA TTA A CT ------
GAM2701 13308 GGGTTGACCAGAAAATGTAG GA AAAA T AA-- CA A TG A AAGGCCA
AATGCATCAGAAGCATGTCC GGGTT CCAG TG AG TGCAT GA GCA TCC TGAT
ATGATAAGGCCAATCAGGAT CCCAG GGTC AC TC ACGTA CT CGT AGG ACTA
GCTCATGCAGAAGCTCAGTG AC GTG- - GAAG -- - -- - -------
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TATCACTGAAGCTTTTTAGT CCTACCCTCC TCCC CACTGA GC
GCATTAGTGGGGAGGAGGGT GGGTGGGAGG AGGG GTGATT CG
GGG ------ --- A --------
GAM2703 2366 CAGATTCTGAAAATGTCCTA -- AA--- A ----- TGAG
GGAGAAGATGAGTCTTCTGA CAGATTC TGA ATGTCCT GG AGAAGA
TGACCAGGACATGGAAGTCA GTCTGAG ACT TACAGGA CC TCTTCT
ACGAGTCTG CA GAAGG - AGTAG ----
GAM2704 11416 CTTTTCTGGGGATTCATCAT T - C---- - TA CACACAC
CTATGACACACACTCACTGA CTTTTC GGG GATT AT CATC TGA
TGCATAAACTGGTCACCTGA GAGAAG TCC CTGG TA GTAG ACT
AGAG - A TCAAA C TC -------
GAM2705 1975 CCGGGTGCGGCTCCACCCCT G G C- - TTC TCATCC AACAA
TCCACGTCATCCGCATCAAC CCGGGT CG CT CA CCCC CACG GCATC
AAGATGTTGTCCTGTGCTGG GGTTCG GT GA GT GGGG GTGT TGTAG
GGCTGACAGGTGAGCTTGG A G CA C TC- CCTGT- -----
GAM2706 2693 GGCAGTCTTCTAAGACTAGT CTTCTA ACT- AAT ---- A GAGCTTTTTTGAA
ATCAATATTTTAAGAGTATG GGCAGT AG AGTATC ATTTTA AG GTATGGT
GTGAGCTTTTTTGAAATTAT CTGTCG TC TCGTAG TAAGAT TC CATATTA
ACCTATAATAGAATTAGATG ------ GTAT AT- AATA - ----------
CTTATGCTGCTGTC
GAM2707 15102 CACCGCCTGCTGCTGGGACT - G GAC AC G GTTCCTGG
GCACAGTGAGCTGTTCCTGG CACCGCCT GCT CTGG TGC AGT AGCT
AGCTGCTAAGTAACCAGAGC GTGGCGGA CGA GACC ATG TCG TCGA
GAGGCGGTG G - A-- AA - --------
GAM2708 9313 TAGTATGGAAAGATTTATGA --- A --- TT- TTACTT ATCGTA
CATAATTTTATTACTTACTG TAGTAT GGAAAG TTTATGA CATAA TTA ACTGTA
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GGTTTTCCTAAATACTG
GAM2709 616 CGGAGTGGTGGCCAGCCAGC GT- G ------ GC G AGTGGACGA
CTGCTCGTGTAGTGGACGAA CGGA GGT GCCA GCCA CTGCTC TGT
CGGGAGCAGATGGCCATCAG GCCT TCG CGGT CGGT GACGAG GCA
TGGCGGCTTCATCCG ACT G GACTAC A- G ---------
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GAACAGCAGAGGGGCTGCCG CGAG GT GGA GGGT GGT TCGGGGA
ATGGGTGGGTAGGGTGTGGA GT G T G AGCCG----- ----------
GC
GAM2711 9987 ACCCAAAGCAGTGGCCAACA AA G-- AT GC- CCT TG TGTCACAGAT
TCGCGGACCCCTGTGCCTTG ACCCA GCAGTG CCAAC C GGACC G CCT
TCACAGATGGGTGCTGGTCC TGGGT CGTCAC GGTTG G CCTGG C GGG
TCAGGCGTTGGGGACACTGC -- AGG CG ACT T-- GT ----------
TGGGT
GAM2713 19972 CCTTCTGTGCATGGGGAACA CT G A CAA CTA TG GAGAATGGAGAA
CAAGGACTAAGTTGGGAGAA CCTT GT CATGGGGA CA GGA AGT G
TGGAGAATTGGCTTCCTGTC GGAA TA GTATTTCT GT CCT TCG T
TTTATGGATTCAAGG CT G - --- --- GT ----------
GAM2714 11229 GCGTCCTCCTGCGCTGAACC TC G AA- G TC C---- GAGC
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CAGGGAGCCTTGATCACTTC CGC GAGGA GTGGC GGCCCT GCG TCCGCCCT AGTTC
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GACTTCCTTCTTGCCGGCTC AGTCGACCAT TC GCCTC AAC GG CCGTTCT
AACTTCTCCGACTCTACCAG C A TTC TC - ----------
CTGA
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TGGATAAAAGATTCATGCTT TCGTC CGACTTGGAG AG CTCG GACC TCTT CGTACTTA
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CCAATGCTATATGTCAGTTG GGGC TCT CTGGAGTG GC TGC TGT TT AGGTT
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CACAGAAATGCAGAATGCCA - A - TAAG TAAAG CCGA G ----
CTCCGGAAGGGTCC
GAM2720 13700 CCGAGGGTACCTCGCCGGGG - - ACC- C CCACCT
CCGCCGCTCCACCTGGCGAT CC GAGG GT TCGCCGGGGCCG CGCT
GGCCTCGGTGGACTCGCTCC GG CTCC CG GGTGGCTCCGGT GCGG
TCTGG T T CTCA A ------
GAM2721 18591 GATGATCTTCTACTGAAATG - TC C CT G AA------- CAGGC
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GCTTCTGTTTTATTCAGGGA CTA CT AA AT TTTTA GGA TCTTCGGT
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GAM2723 11961 ATATGGTTACATTCTATAGC T CTA G - CTTGT
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GTTGGGAAATGTTACCATAT TATACCA TGTAA GTTG TGA CCG
T AGG G G -----
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TCGGTGAGACTGTTTCTG TT AGAG AAA GT- TC ----
GAM2725 12923 CTCACTGCCCTGGAGAAAGA CT--- C AA AGA- AAT CCACC
GAGGAATGACACCACCTGTC CTCA GCC TGGAG AG GG GACA
CCGTTGCTGACTCTAAGGCT GAGT CGG ATCTC TC CC CTGT
TTTATGAG ATTTT A AG GTTG --- -----
GAM2726 3128 GGAAGCGAGCGAGCGCTTCG A A-- C CG T ATCCA
CTGCCGGCTACATCCAGTGC GGA GCGAGCG GCGCTTCG TGC GC AC
ATGCACGAGGTGCACACGTT CCT TGCTTGC CGTGGAGC ACG CG TG
CGTGTCC G ACA - TA - -----
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AAACTTGCTGTAGGTCTGCT TAGGA TCGTC TG ATGT CGTTCAAAC
TGAGGAT GT - G ------- ---
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GACGTAAGCTGGGGAAGGAC CAGGGGG TCG AGGCCTCAG GTCG AG
TCCGGACCGCTGGGGGGAC G CC GAAGGG AATGC ----
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TCTGCTGTTGATACTGCTGG CGGAG TGG CCTAAGGT GTC ATAG TCG
AATCCAGAGTGGTGAGGC -- TGAGA- C - TTG- ----
GAM2730 14490 GGGCGAGCTCGGTGGTGACG C C -- C-- C- - G CCC A AGAGCGAC
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GAGCTGCAGAGCGACGCAGC CCC CTCGA CCATCG CTGCGC CTG GA GTG GCT TC CGACG

CTTCGGTGCAGTCGTCACTC - - GT TCA CT C - --- - --------
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C
GAM2731 13659 TTGAAAATGGAATGGAATCT AA AA-- AA --- AG CATG
CCAGGAGTGAGGGTTTCCAT TTG AATGG TGG TCTCCAGG AGTG GGTTTC
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GGGACACCACTGACCATTAA AA AGTC AC CTA GA ----
CAA
GAM2733 19734 CGGCCGCCGCGCTGCCGCAG C C G - CCGTTAAGCCGC - GAAA
CTGCTTGCCGTTAAGCCGCG CGGC GCCG GCT CCG CAGCTGCTTG GCCCG G
CCCGGGAAACTTGGGCCGAG GCCG CGGT CGG GGC GTCGACGAGC CGGGT C
CAGCTGCCGGGGGCTGGCGC - - G C ---------- T ----
CG
GAM2734 17984 TTATACAGCAAACAATTTCT - AAC TTCT AGCA AC ATAAAC
TCAATTAGCAGTCTAGACAT TTATACAG CA AAT TCAATT GTCTAG ATTTCT
TTCTATAAACAGAAATCTTG AATATGTC GT TTA AGTTAA CAGGTT TAAAGA
GACAATTGATAATATTTCTG A CT- TAAT ---- C- ------
ACTGTATAA
GAM2735 19437 GGCATGTGGCTGGGCAGGTG GT----- T- AAGGCT TTGAGTCCT

GATTACAAGGCTGGTCTTGA GGCAT GGC GGGCAGGTGGATTAC GGTC
GTCCTGACCTCAAGTGATCC TCGTG CCG TCCGTCCACCTAGTG CCAG
ACCTGCCTCTGCCTCCCAAA AAACCCT TC AACT-- ---------
GTGCT
GAM2737 8176 GCAGCTTGCTCTGTGGTTTT --- - --- A AAATCCGTGCTA
CCCAACACAAATCCGTGCTA GCAGCT TGCTCTG TGGTTT TCCCA CAC
GTGCTGGGGACGGAACCGTC CGTTGA ACGAGAC GCCAAG GGGGT GTG
AGAGCAGTCAGTTGC CTG T GCA C ----------
GAM2738 21765 CCAGGTTAAATAAGGGTTCC TAA- A-- AATTCTCT- - - TTTTAACCT
AAAAATTCTCTGGTCCGGGA CCAGGT AT AGGGTTCCAAA GGT CCGG GA
TTTTAACCTTCGCTGGAATC GGTCCA TG TCCCAAGGTTT CTA GGTC CT
TGTCACACGTTTGGAACCCT CCTG AAC GCACACTGT A G ---------
CAAGTGTCCACCTGG
GAM2740 12881 CGAGGCAGCGAGCGACCCCC A A ACCCCCA ATCCC CGAA
AGCATCCCGCGGCCTCCGAA CGAGGC GCG GCG GC GCGGCCTC
GGGGCCGCCGCCGCCGCCGC GCTCCG CGC CGC CG CGCCGGGG
CTCG C - ------- C---- ----
GAM2741 13874 CCTTTAAAGAAACCTTTAGA A -- ------- AGAC - ATTA
AGGACTTAGACCTCACATAT CCTTTA AGAAACC TTTAGA AGGACTT CTCA CAT
TAATGTTGAGAAGTTCTGCT GGAAAT TCTTTGG AAATTT TCTTGAA GAGT GTA
TAATTTTAAAATGGTTTCTA A TA TAATTCG ---- T ----
TAAAGG
GAM2742 11443 GGCTTTTCCTAATCTCTTTG C TCTCTT T TGG AG CTC
GTCTTTGGAAGTGGGCAGGG GGCTTTT CTAA TGGTCT TGGAAG GC GGTTT
TTTCTCAAACCAAGTGTCTT TCGGAAA GGTT ACCGGG ACCTTC TG CCAAA
CCATGGGCCATTGGCAAAGG C ------ T TG- AA ---
CT
GAM2743 19426 GAGGCTAGGAAAATCAGAGG A AAAATCA CGATC- AG TCT
CAGCCCCGATCGGAAGCAGG GAGGCT GG GAGGCAGCCC GGA CAGG
TCTCCTGACTCCTAGGCAGG CTCCGA CC CTTCGTCGGG CCT GTCC
GCTGCTTCCCAGCCTC - ------- ACGGAT CA ---
GAM2744 21992 GATTCAGTAAAAAGTGCTGA AAAA TG T- AAAAGAAA TAT AAGCCTGAA
AAAAGAAATCAGCCTATGGT GATTCAGT AG C GA TCAGCC GGTTT
TTAAGCCTGAAGAACTGGTT CTGGGTCA TC G CT AGTTGG TCAAG
GACTACAAGTCTTGTGCTCA GTAC GT TT GAACATC- --- ---------
TGACTGGGTC
GAM2746 20576 CGCGGGAGGCGTGCTGGGCG - TGCT G GC- - AGG
CGGGGCTGCGGTGCCCAGAG CGCGGGAGG CG GGGCGC GGGCT GGTGCC CAG
GCTGCGGCATTAGGGGCTCG GCGCCTTCC GC CCCGCG CTCGG TTACGG GTC
GCGCCCCCGACCTTCCGCG A C--- G GGA C ---
GAM2747 15442 GGGGATGAATTCTTCAAATA CTT AG- T ATC - - TTTG
GGAGCCGATGGATCTGTGGT GGGGATGAATT CAAAT GAGCCGA GG TG TG GTCC
CCTTTGGGACTCATCAAAGC CTTCTATTTGA GTTTA TTTGGTT CC AC AC CAGG
CTTGGTTTAGCATTTGTCAG CT- CGA - GAA T T ----
TTTATCTTC
GAM2748 8461 GCTGCTGGGGAGCAGAGAGG - AG AGA G ATCGCTGGCTTC
GACCCTCTATCGCTGGCTTC GCTGCTGG GG C GAGG ACCCTCT
AGGGGGTGCCTTGGGTCCCT CGATGACT CC G TTCC TGGGGGA
TCAGTAGC T CT GG- G ----------
GAM2749 15016 CATGACCACAGTCCATGCCA A CCATG ATCACT- - - AAGA

TCACTGCCACCCAGAAGACT CATG CCACAGT CC GCCA CC CAG
GTGGATGGCCCCTCCGGGAA GTGC GGTGTCA GG CGGT GG GTC
ACTGTGGCGTG - AA--- GCCTCCC A T ----
GAM2750 9903 ACACCACATGCAGATTTTGG - ACAT TT T T - TT TAA TAAACAAT
TGCTTTCCCAACCTTCTTGG ACA CC GCAGA TTGG GCT TCCC AACC CTTGGTA AGG
TATAAAGGTAAACAATTCTA TGT GG TGTTT GATC CGA AGGG TTGG GGACCAT TCT
TTACCAGGGGTTCGGGACAG C AGAT T- - C C -- TA- --------
CCTAGTTTTGTTAGAGGCTG
T
GAM2751 18971 CAGAAAGGACATCACAGGTA A A A- TAA ACCCTGCGAA
AACTGAAGGACCCTGCGAAC CAGAA GGAC TC CAGG ACTGAAGG
TTTCAGTATCCTGCCGAGTC GTCTT TCTG AG GTCC TGACTTTC
TGTTCTG G - CC TA- ----------
GAM2752 13782 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A TTGTGGC
CACTTTGACAGACATTATTG CTGG TGTT ATGG AAGTCA GACAG CATTA
TGGCTAATGTTGTCTGACTT GACC ACAA TGTC TTCAGT CTGTT GTAAT
ACTGTTTCAACAAACCAG AA CTT A ---- - -------
GAM2753 15696 GTGTTTTAGAAGCATTTGCG TT - TT-- CAA AAGGC
GTGGACAATGGAAGGCCCGG GTG TTAG AAGCA TGCGGTGGA TGG
CTTCATCGTATTCCTGTTTG CAC AGTC TTTGT ATGCTACTT GCC
CTGATCCAC CT G CCTT CG- -----
GAM2754 10318 ACGGTCATTCTGGTAGGTAG TT A AGGGGTA AG AAGGA
GGGTAGGGCCAGAGCAAGGA ACGGTCA CTGGT GGT GGGCCAG C
GTCCTGGTTTGTGAACCACC TGCCGGT GACCA CCA TTTGGTC G
AGCTGGCCGT C- - AGTG--- CT -----
GAM2755 3095 GAGGTTGGCCCCCTGAGGTG TTG CT T T ---------- TTT
TGAGTGAAATGAGCTTTGCT GAGG GCCCC GAGGTG GAG GAAAT GAGC
TTATTTTCCAAGTTTCTCTC CTTC CGGGG TTCCAC CTC CTTTG TTCG
TCACCTTCAGGGGCATTCTT TTA AC T T AACCTTTTAT ---
C
GAM2756 18935 GGCCAGGCACGGTGGCTCAC CACG - C - G ------- G - GAGA
GCCTGTGATCCCAGCACTTT GGCCAGG GTGG CTCA GC CT TGATC CCA CA CTTTGG
GGGAGACCAAGGCTGGTGGA CCGGTCC TACC GAGT TG GG ACTAG GGT GT GGAACC

TTACAAGATCAGGAGTTTGA ---- A T A - AACATTA G C ----
GACCATCCTGGCC
GAM2757 6817 CTGGGACCCTGTACACGTAT A ACAC TC AAACTG-- TTCAA
CCTGAAAACTGGAGGGCCTT CTGGG CCCTGT GTA CTGA GAGGGCC
CAAGGCTCTCATCGCTGCTC GACTC GGGGCG CAT GACT CTCTCGG
AGTACAGCGGGGCTCAG - A--- -- CGTCGCTA -----
GAM2758 7264 GGGATCTTGTTCCACTGATT ----- ---------- C- T- TCTCTGAC
ACTCTCTCTGACGAGTCCAT GGGAT CTTGTTC CA TGAT ACTC
CACCTGCAACTTAAATGAAC CCCTA GAACAAG GT ACTA TGAG
AAGCTTACATCCC CATTC TAAATTCAAC CC CC --------
GAM2759 20995 TTGGAATGAGTTACAGAGAT AA GT AGA-- ------- AATGAGAGAGAAG
ATCGATATGAGTACAATGAG TTGG TGA TACAG TATCGATAT GAGTAC
AGAGAAGGTACTTTAGTCAT AACC ACT ATGTT ATAGTTGTA TTCATG
ATGTTGATAAAAACTTGTAC C- AC CAAAA TACTGAT ----------
ATCACCCAA
GAM2760 1478 GAACCAGTCAGGTTTACTTA A T GTT AC A GAGTGTGAAG

CGCTGGATGTTTGAGTGTGA GAACC G CAG TACTT GCTGG TGTTT
AGAAATACCGGCCCAAGTAC CTTGG C GTC ATGAA CGGCC ATAAA
TGCGGTTC - - --- CC - ----------
GAM2761 12501 ATGAGTAGTAGCCCTTTTGA -- T AAAA A CCAACCTTATTTC
AAATGATAGACCAACCTTAT ATGAGTA GTAGCCCT TTG TG TAGA
TTCTCTGACAGCCAACAGGG TATTCAT TATTGGGA AAC AC GTCT
TTATGATACTTAT AG C CG-- A ----------
GAM2763 6908 CTGGGGTGTTTATGGCAAGT GG AT CACTTT AG A GTGG
CACTTTGACAGACATTATGG CTGG TGTTT GGCAAGT GAC ACATT TG
TGGCAAAATGTGGTCTGACT GACC ACAAA TTGTTCA CTG TGTAA AC
TACTTGTTTCAAACAAACCA AA CT TTCAGT G- A ----
G
GAM2764 6174 CTGCCAAATATCCATTAGAC - CAT CA AG AAACA T CAAGAT
ATTGAGTGAGAAACAGGTCA CTGCC AAATATC TAGA TTG TGAG GG CA
CAAGATTGCCACTCCCTTAA GATGG TTTATGG ATCT GAC ATTC CC GT
GCAGGATCTAGGTATTTAGG A --- AG GA CCTCA - ------
TAG
GAM2765 4986 GGCTAGAAAGATGCTAAGGG C A CTA-------- GCT AGCT
GATGCTACAGCTGTTTGTCC GG TAGA AGATG AGGGGAT AC
CCTGACAGAGATTCCATCTA CC ATCT TCTAC TCCCCTG TG
TCTAACC A A CTTAGAGACAG TT- ----
GAM2768 19690 TGACCATCCTGCAGGCCCCG CC CTG C C G ----- TCCACCATCCCT
AGCCCGGCCCCCTCCACCAT TGA ATC CAGG CC GAGCCC GCC CCC
CCCTGGGACCCCGGCGGGGC ACT TAG GTCC GG CTCGGG CGG GGG
TCCGGTCCTGAGATCTTCA TC A-- T C G CCCCA ----------
GAM2769 5927 ACCATTGCCATTTCTACATG T TTTCT A T TACCC
TTATTCGCTTGGTACCCTCA ACCA TGCCA AC TGT ATTCGCTTGG
AGTGGATACAAGTCTGGCAT TGGT ACGGT TG ACA TAGGTGAACT
TGGT T C---- A - -----
GAM2771 15842 GTTCCCACACTGGCGGTGTG ACACT G - T CAGGG GG GACAT
GCTGCCTGCTCAGGGCCTGG GTTCCC GGC GTGT GGCTGCC GCT CCT CTCCTCC
CTCCTCCGACATGGAGGAGG CAGGGG CCG CACG TCGACGG CGG GGA GAGGAGG
AAGGGGCGGCAGCTGGCACA ----- A G - ----- AG -----
GCCGGGGAC
GAM2772 22418 GCAATACTCCCACCCCAGCC CTCCC-- GC - G TG -- TGCCAC
TCTCGAGTAGCTGGGATTAC GCAATA ACCCCA CTCT CGAGTA C GGATTA CAGGCGTG
AGGCGTGTGCCACCATGCCT CGTTGT TGGGGT GAGA GTTTAT G TTTAAT GTCCGTAC
GGCTAATTTTTGTATTTGTA ACCGTTT A- T - TT CG ------
GAGATGGGGTTTTGCCATGT
TGC
GAM2773 20650 TACGTCCTAGTAGCTCTGTG T T CC- ATTTGTT AGCAAG
ACCTTGAATTTGTTGCACAA TACGTCCTAGTAGC CTG GA TTGA GCACAACT
CTAGCAAGGGTTGTGCTCCT GTGCAGGGTTGTCG GAC CT GACT CGTGTTGG
CAGCTTTCTCAGTGCTGTTG T T TTC CCT---- ------
GGACGTG
GAM2774 21917 TAGGTTGAGAAAAGACAGAC TT A- CA-- GG GAGC
TTGGGGTAGAGCTAGGCCGA TAGG GAGAAA GA GACTTGG TA
GTCGCCCTCCCTTTCTCTTT ATTT CTCTTT CT CTGAGCC AT
TTA TT CC CCCG GG ----
GAM2775 11058 GGGAGGGGCCTGTGTCTGAG AG CT G --- --- ----- GAC

CCAGAGCCTGGGACCCAGGA GGG GGGC GT TC TGAGC CAGAG CCTGG
GGTTCTCTGCCAGCTCAAGC CCC CCCG CA AG ACTCG GTCTC GGACC
GAGACCAGCCCAGCCC GA AC G CGA ACC TTGGA ---
GAM2776 17685 GTTTCAGATAAAGTAGAAGT TT A - TCT T C CAAA
TGTCTGTACTTCTTCCCTAG GT CAGATA AG TAGAAGTTG GTACT CTTCC TAG
CAAACTGAGGGAGTGGTACT CG GTCTGT TC GTCTTCAGT CATGG GAGGG GTC
GACTTCTGTCTCTGTCTGGG GG C T --- T A ----
GC
GAM2777 21662 CCTGTTTTCCCGGGGTGAGC - G A-- A TCCCCA
CAGTATCTCCCCAGACACTG CCTGTTTT CCCGG GTG GCCAGT TC
GCAGGCACGCCGGGCAGAGT GGATGAGA GGGCC CAC CGGTCA AG
AGG C G GGA C ------
GAM2778 2365 CCACTTAGTCTCAACCCGGA AG ACCCG---- TATGA- GACT
ATGAAATATGACTGAGGACT CCACTT TCTCA GAATGAAA CTGAG
CTCAGAGAAACTTTCGTTCA GGTGAA AGAGT CTTGCTTT GACTC
GTATATTATGAGAAAGTGG -- ATTATATGA CAAAGA ----
GAM2779 15705 GCAGCCGGGGCCTTCTCAAC C C-- AA AG-- CT- GCCAT
GCCTCAGTACCTCGGCGGGA GCAGC GGGGC TTCTC CGCCTC TAC CGGCGGGACC
CCGCCATGGTTCTGCTGCAC CGTCG CCTTG GAGAG GCGGGG GTG GTCGTCTTGG
GTGAAGCGGGGCGACGAGAG T ACC CA CGAA CAC -----
CCAGTTCCTGCTGC
GAM2782 9328 CCACGAGAGAACATGGGTTG A ACA GA C- CCGG
ACCCGAATCACCGGTGATTC CCACGAG GA TGGGTT CC GAATCA
TTGGAGGACCCATCCTTTGT GGTGTTT CT ACCCAG GG CTTAGT
GG C --- GA TT ----
GAM2783 15510 TAGTGCTGACTTTTTGTTTG - - --- G TTAAA AT A TAATT
AAATTAAACAGATGGGTAAC TAGTG CTG AC TTTTT TTTGAAA CAG GGGT ACC
CTAATTGGTGGCCTCCTGAC ATTAC GAC TG AAAAA GAATTTT GTC TCCG TGG
TTTTTAAGGAAAAACGTGTG C G TGC G TCA-- C- G -----
CAGCCATTA
GAM2784 13639 CTGTGGCCTACCAGGTGAAT -- - A ATA TGGAAATGATAAAATT
ATTGGCTTGGAAATGATAAA CTGTGG CCTA CC GGTGA TTGGCT
ATTAGCCAGCTTACCAGGAT GACACC GGGT GG CCATT GACCGA
GGGACCCACAG CA A A C-- ----------
GAM2785 21397 TCTCTATCTGTCCACCATCT TC G ACCA T - TCCT
TGCCTTGCCCTTCCTGGGGC TC TATCT TCC TCT GCCTT GCCCT
TGAGGCAGACAAAGGAAAGG AG ATGGA AGG AGA CGGAG CGGGG
TAATGA TA A AAAC - T ----
GAM2787 12651 CTTGATAGGTGTCAGTCTTG G --- G T TA - AGTATATAAAAGAA
TAATCAGTATATAAAAGAAG CTT ATAGGT GTCA TC TG AT C
AATCCCATGATGATAAAGCC GAA TATCCG TAGT AG AC TA G
TATGAAG G AAA - T CC A ----------
GAM2788 11336 CTCGTCGATCTCGTTCTCCA GATCTC - - CT TGTGC
TGTCTTCCGTGTGCTGGATA CTCGTC GTTCT CCA TGT TCCG
CACTGGCAGAGCTCACAGAT GAGTAG CGAGA GGT ACA AGGT
GAG ACACT- C C T- -----
GAM2789 469 GCCCCGCGGGGAGCCCGCGG CGGGG CGG TCAC ACACAAC
GCTCGTCACCACACACAACG GCCCCG AGCCCG GCTCG CAC
TGCGCTCGAGCACACGGGCT CGGGGC TCGGGC CGAGC GTG
ACACGGGGC ACA-- ACA TCGC -------

GAM2790 6600 AGGGAGCATCTTCTCTCGGA A A C - G A GTT
CTCGGGACCTGGTTCGGGCC AGGG GC TCTTCT TCGG ACTC GG CCTG
GGGGTGCTGAAGGAGAAGCC TCCC CG AGAGGA AGTC TGGG CC GGGC
CCT - A - G G - ---
GAM2791 7867 GCGGTCCGAGGTGGAAGAAG C AG AAGAA GATTT - -- - AAACCC
TGGATTTTGCCGGCTGGTTG GCGGT CG GTGG GTG TGCCGG CTGGTT GT GTA
TGTAAAACCCTGCGGCTGAA CGCCA GC CACC CAC ACGGCC GACCAA CG CGT
CCAGCCCGGCACACCCACGC C G- ----- ----- C GT G ------
GCACCGC
GAM2792 2407 CACTGCTTGAATACACTGAG GAATACA CCC A- - T TGAGC
ACCCGGAATCAGTTCCTTGA CACTGCTT CTGAGA GGA TCA GTTCC TGA
TGAGCTCATGGAGCTTGAGA GTGACGAG GATTCT TCT AGT CGAGG ACT
TCTTCTTAGCCCAGAGAGCA AGACCC- --- AG T T -----
GTG
GAM2793 19098 GGGGGCTTGCCCAGGTGCTG CC---- G AC A- A CGTCT
GGACAGGACGATGAGGTTGA GGGGGCTTGC AGGTGCTGG ACAGG GATG GGTTG CCAG

CCAGCGTCTCTGGGTAGCCA CTCCCGGACG TCCGCGATC TGTTC CTAT CCGAT GGTC

CTATCCTTGTCTAGCGCCTC ACGTCC - -- CA G -----
CTGCAGCAGGCCCTC
GAM2794 11353 ACCTACTTTGAGATGGCAAG C T G GAAC C CACTGGA
AACTGCTGGAGACACACTGG AC TACTT GAGATG CAA TG TGGAGACA
ATGTTTTTACCATGATTGAC TG ATGAA TTCTAC GTT AC ATTTTTGT
ATCTTTAAGTATGT T T A AGT- C -------
GAM2795 20365 CAGGAAAAGCACTTGTGTTA - GCACTT ATTAT TT T AAC
TTATTAGAGTTGCATGCTGA CAGG AAAA GTGTT TAGAG GCA GCTG
ACTAGCTGCTTTTTTATGGA GTCC TTTT CATAA ATTTT CGT CGAT
ATACTATTTTACCTG A AT---- GGT-- TT - ---
GAM2796 22292 CCTGATGTGGGGACTCTCCT TG C---- --- AG ATGT
TTCTTTTTAGGTCTATTCAT CCTGA TGGGGACT TCCTT TCTTTTT GTCTATTC
GTGGGTGGGCAGGAAGGATG GGACT ACCTCTGG AGGAG AGGAAGG CGGGTGGG
TGAGGACTCTAGGTCTCCAG TG ATCTC TGT A- ----
TTCAGG
GAM2797 7065 GTGTGTGTGCTAGGAGCTGG CT C CGCTAG----- CTTCA
AGCGCTAGCACTCTTCAGGT GTGTGTGTG AGGAG TGGAG CACT
GACAATTCTCAACTCCATTT TACGTACAC TCCTT ACCTC GTGG
CCTCCACATGCAT C- T AACTCTTAACA -----
GAM2798 10845 CTTATTCTGTTTACCTGGAT GTTTACC - CAA CCTTA
TTTTATTTCAATTTATACCT CTTATTCT TGGATTTT TATTT TTTATA
TATATGAAAAAATACAAAAT GAATAGGA ACTTAAAA ATAAA AAGTAT
TCAAAAGGATAAG AA----- C A-- -----
GAM2800 1028 AATGGTCGTGCCAAAAAGGG G - AAAAA - ---- - C--- CTATTC
CCGCGGCCACGTGCAGCCTA AATGGTC TG CC GGGC CGC GGC CA GTGCAGC
TTCGCTGCACTAACTGTGCC TTACCGG AC GG CCCG GCG CCG GT CACGTCG
CGATGCGTGCCCAAGGACAA A A AA--- T TAGC T CAAT ------
GGCCATT
GAM2801 18509 GGACGATTGCATGGTTATTT GGT CTT T GATCCCCATGA
CTTGAATATTTGACTTGATC GGACGATTGCAT TATTT GAATATT GACTT
CCCATGAAGGTCAATATTTT TTTGTTGACGTA GTAAA TTTATAA CTGGA

AAATGTGATGCAGTTGTTT GT- T-- - ----------
GAM2804 13211 AGTTATCTCTACCAGTGGTT TAT T - CTTTAGACTT
CTCAAACTTTAGACTTTTTG AGT C CTACCAG TGGTTCTCAAA
AGAATCACCTGGTGGGTTGC TCG G GGTGGTC ACTAAGAGTTT
T TT- - C ----------
GAM2805 20895 AATTTGGCTAAACTTAAAAG AAACTTAAAAGCA GG G GA TAAATAAGCAT
CAAGCTGGGTTCCTCTGGGG AATTTGGCT AGCTG TTCCTCT GG TA
ATATAAATAAGCATTGGACT TTAAACCGG TCGAC AAGGAGG TC GT
GGGAGGAAACAGCTGGCCAA ---------- A- G AG ----------
ATT
GAM2806 10592 GCAAGGTCATCCCTTGAGCT A - GA A GGAA A - CTA
GAACGGGAAGTCAATGGGAT GCA GGTCA TCCCTT GCTG ACG GTCA TGGGATT GG
TGGCTACCGGGTCCCAATGG CGT CCAGT AGGGGG CGAC TGC CGGT ACCCTGG CC
CCAACGTGCAGCGGGGGGAC A C G- G AAC- A G ---
TGACCATGC
GAM2809 15848 GAGAAAGGGTCTGGCTATGT AA T TAT CT- TG TCTCAAACTC
TGCCTAGGTTGGTCTCAAAC GAGA GGG CTGGC GTTGC AGGT G
TCCTGGCCTCAAGTAATCTG CTCT CTC GACCG TAATG TCCG C
CCAGTCTCAGTCTC GA T TC- AAC GT ----------
GAM2810 16881 CCATGCAGGCTACTCCATGT GCT TTT CT- TCA GTA
TTGGGGCTGGCATCACCGTA CCATGCAG ACTCCATG GGGG GGCA CC
GGCCTGTCTAACCTCTTCTG GGTGCGTC TGAGGTGT CTCC CTGT GG
TGGAGTCTGCGTGG --- CTT AAT CC- ---
GAM2811 17943 CCTCTTCCCTGGGAGGCGTT T- AG --- C C- AG CAG
CACTCCCGCCGGGCCGAGGA CCTCTTCCC GGG GCGTTCACTC CCGC GGG CG GAC
CCAGGTCGCCGATCCCAGCG GGGGAGGGG CCC CGCGAGTGGG GGCG CCC GC CTG

GCTAGGGTGAGCGCGCCCTC CT G- ATC A TA CG ---
GGGGAGGGG
GAM2812 3176 GCCTGTCACCTAAATCTTAT - AAA - CAA ATCA A CTTCTA
GCAACTTATCAAAGAAATGC GCCT GTCACCT TCTTA TG CTT AAGAA TG
TTCTACATTCTTACAAAGAC TGGA CGGTGGA AGGAT AC GAA TTCTT AC
CACTAGGAAGAGGTGGCAAG A GA- C CA- ACA- - ------
GT
GAM2813 1451 GACTGAAGGAGGAATATCAG GA GA AT CCTTATC G-- GAGAACAA
TCCCTTATCCGGTATGTGGA GACT AG GGA ATCAGTC CGGTAT TG
GAACAACAAGAATGCTGACA CTGA TC CCT TGGTTAG GTCGTA AC
ACGATTGGTTCCGACTGGAG GG AG -- CAACA-- AGA --------
TC
GAM2814 904 GGTGTCGGCTCCGTCAACCA G TCC AAC T G CC CCACGA
CTTTTGTGCACCTGTCCCCA GGT TCGGC GTC CACT TTGT CA TGTCC
CGAGGACACATGGACAATAG CCA AGTCG CAG GTGA AACA GT ACAGG
TGCGACTGCTGAGACC G T-- C-- T G AC ------
GAM2815 12632 CCTCATGAGCAAGGTTGCAG A AG TG -- TC TCCTC
ATCGGTCCTTCCTCAGCTCC CCTC TG CAAGGT CAGATC GG CT
TTGATTTGTGACCTTGACCA GGGG AC GTTCCA GTTTAG CC GA
AGGGG A CA GT TT TC -----
GAM2816 12992 GCCCGCGTGGCCTTCTCCTC C C C C A CTCCC T TTCACTC
GTAGGACTCCCAAACTCGTT GCC GCGTGGC TT TCCT GT GGA AAAC CG
CACTCTGCGTTTATCCACAG TGG CGCACCG AA AGGA CA CCT TTTG GT

GATAAAGCCACGCTGGT T A T - - A---- C -------
GAM2818 22634 AGCCGCAGTCTGTATGGCCT AGT T C GGG AA-- - ATCT
GGGGGGCTCCAAGAGGATCT AGCCGC CTG ATGGC TGG GCTCC GA GG
CCATTGGAGGGGGCAGCTGT TCGGCG GAC TACCG GTC CGGGG TT CC
GCCATCAGTGGCGGCT GT- - T GA- GAGG A ----
GAM2819 8539 TACAGGACCAGGGCAGCAGA GA- G --- -- A CTT
TTGAGCCACCCCTTGGGAGG TACAG CCAGGGCA CAGAT TGA GCC CCC
CGATCAGGAGTCTGTGCCTT GTGTC GGTTCCGT GTCTG ACT CGG GGG
GGCAGCTGTG GAC - AGG AG A ---
GAM2820 2279 CTTCTTCAGCAGCCCAAGCT T G-------- -- GTCA ATCT
GTCAGGATCTCTTAAGTTTT CTTCT CAGCA CCCAA GCT GG
TGGGACATTTATATGCTGCA GAAGA GTCGT GGGTT TGA TC
GAAG C ATATTTACA TT AT-- ----
GAM2821 13741 CCCCAGATGCAATGCGATCA - A - ----- -- G TC- - TCTTCTTTATTAAT
CAGGGTCGTTACCATCTTCT CC CCAG TG CA ATGC GATCACA GG GTT ACCA
TTATTAATTGGTCAACATTT GG GGTC AC GT TACG CTAGTGT TT CAA TGGT
TGTGTGATCCAGCATTTGAG T - A GAGTT AC G TTA C ----------
TGACACTGGTGG
GAM2822 6375 GGATGGGACGTACTCATACT A CT A CA G- TTC TTACTCTT
CAGGATGCTGTTCCCCTTAC GG TGGGACGTA CAT CT GGAT CTG CCC
TCTTGGGCAGGAATTTAGGT CC ACCTTGTAT GTG GA TTTA GAC GGG
GGTTATGTTCCACCC C TG - -- AG --- --------
GAM2823 7442 GAAAAATATCATTCACTTCT ATAT ---- T TG CAGAAG ACCGGA
TCTTGGTGCAGAAGGCATAG GAAAA CATTCA CT CTTCT GTG GCATAG
ACCGGATTATGCAATCACTG CTTTT GTAGGT GA GAAGA CAC CGTATT
AGAAGTAGCTTCTGGATGTG GT-- CTTC T GT TAA--- ------
TTTTC
GAM2824 5360 TCAAGAGACAACTTTAAAAA AAG -- AAAA--- AT - CA TCTA
CTCCATTGTGGTCCATTTTC TC AGACA ACTTTA CTCC TGTG GTC TTT
TAAAACAGACACACACGGAG AG TCTGT TGAAAT GAGG ACAC CAG AAA
GGTGGAGTAAAGTAATGTCT GA- AA GAGGTGG C- A AC ----
AGGA
GAM2825 3856 TGCCTGTGTCCTGTCGCAAG - G C AG GT T TG T- TGTCTGGGT
AGGTGAGTCCGTCTTGTGGG TGCCT GT TCCTGT GCA AGGTGAGTCC CTTG GGG C GC

TGCTGCTGTCTGGGTGCCTG ACGGA CG AGGACA TGT TCCGCTTAGG GGAC TCC G CG

TGCCTCAGGGGATTCGCCTT A A - CT -- - GT TC ---------
CTGTACAGGAAGCAAGGCA
GAM2826 573 GGGTAATGAGTAGGTGAGAG AGGTG G --------- AAG
GGTCTGGAGGAAGCCTCCCT GGGTAATGAGT AGAGG TCT GGAGG
ACTGCTGGAGCCTCTACTTA CCCATTATTCA TCTCC AGG CCTCC
TTACCC ----- G TCGTCATC ---
GAM2829 3760 CCGCTGTCCAACAACCAGGA - ACAA- A- GAG GGGAAGACGG
GGTGAGTGCCTTTGGGGAAG C CGCTGTCCA CCAGG GGT TGCCTTTG
ACGGCGAGGGCGACCGACCT G GTGACAGGT GGTCC CCA GCGGGAGC
GGACCTATGGACAGTGCG C ATCCA AG --- ----------
GAM2830 5537 TGCAGAAGTCTCCCTGGGAG A C GGAGTAATTT TCA TTTT
TAATTTTGGTGAAGTCAGCT TGC GAAGTCT CCTG TGGTGAAG GC
TTTGCCTTTTTCATCACAGG ATG TTTCGGA GGAC ACTACTTT CG

CAGGCTTTAGTA A C ---------- TTC ----
GAM2831 16079 CTGCGCGGGGGGGTACAAAT GTACAA A C CACCACT
TATGGCGGACACCACTTCCT CTGCGCGGGGGG ATT TGG GGA
CCAAATAAATTCCCCGCGCG GGCGCGCCCCTT TAA ACC CCT
G AAA--- - T -------
GAM2832 1967 GGGCACCGGGCCGGCGGCCG ACC ----- GGGC GCCGTGA
GGCCCGGGCCGTGACCGGAG GGGC GGGCC GGCGGCC CCGG
GCCGCCCATTTGGCCCCGCG CCCG CCCGG CCGCCGG GGCC
CCC CGC TTTAC A--- -------
GAM2833 12718 CCAATGGGAGGTTTGTGTAC GAGGT C ---- AAT GAACA
AGTCAGTGAAATTGAAGAAC CCAATGG TTGTGTA AGTC AGTGA TGAA
ATTTATGTCATTAATGGACT GGTTATC GATACAT TCAG TTACT ATTT
TACATAGCTATTGG ----- - GTAA GT- -----
GAM2835 6434 GCCCGTTAATTTTTTACCCT TTA A C TTA- TTGA A GTCTG
ATGTTTACATCTTGAGGCAG GCCCG ATTTTTT CC TATGT CATC GGC GCAGA
CAGAGTCTGTCTGCAGCTAT CGGGT TAAAAAA GG ATGTA GTGG TCG CGTCT
GTGGTGAGCTATGTAAGGAA C-- A A TCGA TGTA A -----
AAAAATCTGGGC
GAM2836 20134 GAACCGATGCACTGGCACCT ----- CTG CTA A AC C- ATACATCCC
AGACATGTACAACAGGAACC GAACCGA TGCA GCAC GACATGT CA AGGAAC GTGTGG
GTGTGGATACATCCCCCACA TTTGGCT ACGT TGTG CTGTACG GT TCTTTG CACACC
CCTGTTTCTTGGCATGTCAT TCTCG A-- TA- - -- TC ---------
GTGTATGCAGCTCTTCGGTT
T
GAM2838 1111 AAGCTGGGGGCACTGGCTTC C CT CTTCT TT- TCT A TTATTC
TGCTCTTGCTCTTTCTTCTG AAG TGGGGGCA GG GCTCTTGCTC TCT GGAA CA
GAAACATTATTCTGTTCCTT TTC ATCCCTGT CC TGGGAACGGG AGG CCTT GT
TGGACATGGGCAAGGGTCCT A -- ----- TAC TTT - ------
GTCCCTAACTT
GAM2840 21262 GCCGCTCGCCCCAGGCCTGG C--- - A TG C CCTGTAGC
GCCCGCTCCTGTAGCGGCTG GCCGCT GC CCC GGCC GGCC GCT
GCCGGCCAGGGAGCCCACAG CGGTGA CG GGG CCGG CCGG CGG
TGGC CACC A A -- T --------
GAM2841 9527 ATGGCCGAGGAGAAGCGCGA G -- A AGG A------- CCTGA
GGGCTACGAGCGTCTCCTGA ATG CC GAGGAGA GCGCG GCTACG GCGTCT
AGATGCAAAACCAGCGTGGC TAC GG CTTCTCT CGCGC CGGTGC CGTAGA
GGCGCGCTCTCTTCCAGGAC A AC - GG- GACCAAAA -----
AT
GAM2843 22561 GATCGCGTGGCCGCCAAAAG G CAAAAG GGACCCC ACTGATCA
ATGAGGACCCCGCCAACTGA GATC CGTGGCCGC ATGA GCCA
TCATGGCAGCAAATCATAGG CTAG GCGCCGGCG TACT CGGT
CAAGCGGCCGCGGATC - AACGGA AAACGA- --------
GAM2844 7085 GGCAGCACAAAGGCGGCGCG CAAA C - C C TGTAGT
GTGCACGTCGGAGTTGTAGT GGCAGCA GG GGCGCGG TGCA GT GGAGT
ACTTCAGCTGCATCTGCGCC TCGTCGT CC CCGCGTC ACGT CG CTTCA
ACCTGCTGCT ---- A T - A ------
GAM2845 14063 GGCTACGAAGTCCAGATACC - C ATACC AAA TT G- TGCTT
TTGAAACATTGTGGGGCCTG GGCTAC GAAGTC AG TTG CA GTGGG CC
CTTGGAATCCACTTGACAAC CCGGTG CTTCAG TC AAC GT CACCT GG
TGACTTCTGTGGCC T - ----- A-- T- AA -----

GAM2848 11634 GGGTCTCTTTTTTTCATCTA T- T TT T TA CGGAG ATAAAACCTA
GGTAAACCGGAGCAAATAAA GGG CTC TTT TCATC AGG AAC CAA
ACCTATTGAAGAGTTCTCCT CCC GAG AAG AGTAG TCC TTG GTT
GATGATTGAATGAGTTCCC TT T TT - TC AGAA- ----------
GAM2849 8621 CGCTGCGTCCCAGCGACTCT - AG ----- G G CGTC
GCGGGGGTTTCGTCGAGGCC CGCTGCGTC CC CGACT CTGC GGG TTT
CGGCAGGCTTGGGTCGGGAG GCGGCGCAG GG GCTGG GACG CCC GAG
ACGCGGCG A -- GTTCG G G ----
GAM2851 12362 GGGGTCAGTACATCCCCCAG T ----- C GTC- - T GGACAGT
TCGTGGCCCTCTGGACAGTG GGGG CAGTACAT CCC CA GT GGCCC CT
GCGGGCCTGCCTCATGAGGG CCCC GTCGTGTA GGG GT CG CCGGG GG
CTCCAATGTGCTGCCCC - ACCTC A ACTC T C -------
GAM2852 12849 GGGTTGGGGGGACTTCAGAT TGG A A- A ---- TG AAAAGAA
CATACAGTCTGCCATGGAGA GGGT GGGG CTTC GATCAT CA GTCTGCCA GAG
AAAGAACTTGCTGGCAGACA CCCG CCTC GGAG TTGGTA GT CAGACGGT TTC
GCCTGATGGTTCAGAGGCTC TGA - AC - CCGA CG -------
CAGTGCCC
GAM2853 19190 TAGGAGTAGAAATGTGACTA T TGACTAAG AACAA AA GAATGCTAAA
AGATGTTTGAACAAATAACA TAGGAG AGAAATG ATGTTTG AT CATATG
TATGGAATGCTAAACATATG GTCCTC TTTTTAC TGCAAAT TA GTATAC
GAATGCTAAACGTATGCCAT - CGTA---- CG--- AG ----------
TTTTCTCCTG
GAM2854 4931 TCCAAATATGTTATATTAAA -- TAAAA TT C CAATTTCA
ACCTTGTTCCTTGGCAATTT TCCAAATAT GTTATAT CC GTT CTTGG
CACTAAGCAGCTGGATGTAA AGGTTTATG TAATGTA GG CGA GAATC
TCTGTATTTGGA TC ----- T- C --------
GAM2855 14564 CTGGGTCTTGCTGTGCCCTC -- CCTCCCA - - TCCCT- CAA- C CAGCCA
CCAGGCTTAGTGTTCCCTCC CTGGG TCTTGCTGTGC GGC TTA GTGT CCCT AGA TGA
CTCAAAGACTGACAGCCATC GACCT AGAATGATACG CCG AAT TACG GGGG TCT GCT
GTTCTGCACGGGGCTTTCTG GA AATCGA- C G TCTTTC CACG T ------
CATGTAACGCCAGCTAAGCA
TAGTAAGAAGTCCAG
GAM2856 11114 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A ATGGTGGC
CACTTTGACAGACATTATGG CTGG TGTT ATGG AAGTCA GAC GACATT
TGGCAATGTCGTCTGACTTA GACC ACAA TGTC TTCAGT CTG CTGTAA
CTGTTTCAACAAACCAG AA CTT A ---- - --------
GAM2860 16144 GCTGGTGGTGGGCGGGGACG T GG C GG- TACAT
GCCGGTTCTACATGAAGGAG GC GGTGGTGGGC GGA GGCC TTC
GCCATCCAGCTCATCGCTCG CG TCGCTACTCG CCT CCGG AAG
C C A- A AGG -----
GAM2861 2734 CCAGTGCCAGGCAGAGGTGG G GAG- AT- A---- G TT GAAA
GATGCAGGGGGTTCCTGAAA CCAGT CCAGGCA GTGGG GC GGG G CCT
GGGGGTGCCTGGGAGGCTTG GGTCA GGTTCGT TACCC CG TCC T GGG
CCCATGGGATGCTTGGACTG - AGGG GTT GAGGG G GG ----
G
GAM2862 9097 CCGGGGTTCCACCCCTTTCT GT CCACC TTTCT ---- T CCTCCCCCGTA
CCGGCCCTCAGCCTCCCCCG CCGGG T CC CCGGC CC CAG
TACTGTGGCACTGCCGGCCC GGCCC A GG GGCCG GG GTC
CTGGCCCTAGTCCCGG TG TCCC- TCCCC TCAC T ----------
GAM2863 5745 TCTTGTGTCGAGACTTCGTG CGAGA GT--- C - AAACAGGAAGAAGAA

GTGGTGCTAAGCAAACAGGA TCTTGTGT CTTC GGTGGTG TAAG C
AGAAGAAGTCTTACACCACT AGAACACG GAAG TCACCAC ATTC G
CCCAAGAAGAATAAGCACAA AATAA AACCC - T ----------
GA
GAM2864 2692 CCTCCCAGACTGAGCCCCCG C ACTG CC- GA CC ---- C CCAATCCAGT
ACCTGGCCCAGCCTGGCCCG CCT CCAG AGC CC CCTGG CA GCCTGGCC GTCC
TCCCCAATCCAGTGGGCTGG GGA GGTC TCG GG GGACC GT CGGACCGG CGGG
CCAGGCCACCTGCACCAGGG C G--- ACA AG AC CCAC T ----------
AGGACAGCTGCTGGCAGG
GAM2865 1057 CATGGGAAACAACCTGAAAA ACAA TGAAAA GC C GGTCA
AGCAGGCAGGCCTCCCGGTC CATGGGAA CC AGCAG AGGC TCCC
AGGGAGCCTCTGCTGTGCTG GTACCCTT GG TCGTC TCCG AGGG
GCTTCCCATG C--- TCGTG- -- - -----
GAM2866 226 TGGCCTCCCACCCAGCTCAG CC AG - G A G A ACCA
AGACCTGGTGAGGACCACCC TGGCCTC ACCC CT CA AG CCT GTG GG
ATAAGGGCTGTGCAGAGGGT ACCGGAG TGGG GA GT TC GGA TAC CC
TAGAGGCCA AT A- C G G A - ----
GAM2867 22119 GCAGTTCTTGTGCTATGGGT T A T CTTCTTC AGT TGTGCT
GGGAGTCTTCTTCCTCAAGT GCAGTTCTTG GCT TGGG GGGAGT CTCA TTCGGCAGC
TTCGGCAGCTGTGCTGCTGC TGTCGGGAAC CGG ACCC TCCTCG GGGT AGGTCGTCG

TGGATGGGCTGCTCCTCCCA T G - TC----- --- ------
GGGCTCAAGGGCTGT
GAM2869 12346 GTGTACGGGCAGTTCACGGG A TCAC AG CTC AGGGC
CCAGGCCCTCCTCTCAGGGC GTGT CGGGCAGT GGGCC GCC CTCTC
GAGAGATGGTGGGGCCCACG CATA GCCCGTCG CCCGG TGG GAGAG
CTGCCCGGATAC G CA-- GG TA- -----
GAM2870 825 GAGGTTGGAAGAATGACACG T AATGACA - -- CA GAGG
GGCTCAGGACACAGAGTGAG GAGG TGGAAG CGG GCTCA GGACA GAGT
GACTCATGTCTAATGAGCAC CTTC ACCTTC GCC CGAGT TCTGT CTCA
CGGCCAAAACTTCCATCTTC T AAAACCG A AA A- ----
GAM2871 1870 TGGGGGGATGACCAGTACAG GG A--- GTA GA CCAGTTAAGTT AG-- ATCCCAAA

ACATGCCAGTTAAGTTTATA TGG GG TGACCA CA CATG TATACT TGGG
CTAGTGGGATCCCAAATCCA ACC TC ACTGGT GT GTGC ATGTGA ACCT
AAGCAGTGTACGTGGTGATA AA AGTG ATA G- ---------- CGAA --------
TGGTCAGTGACTAACCA
GAM2872 17625 GGCAATGTCTTGACCTGGGT AT----- -- TT AGGTA--- TGGG
TGGAAGGTAGGGTGGGTCTG GGCA GTCTTGA CCTGGG GGA GGG
GAAAAGCTTTGGTCCAGGGT CCGT TAGAACT GGACCT TTT TCT
TCAAGATTTGAGAGTGCC GAGAGTT TG GG CGAAAAGG ----
GAM2873 5979 GTGTCCTCCCTGCATCCCCC - CAT CCC- A T CCTG
CACCAAGTGCCTTCCTGAAG GTGTCCTC CCTG CC CACC AG GCCTT
GCCTGGGTGTATTGGCCAGG CACAGGAG GGAC GG GTGG TC CGGAA
AGAGGACAC A C-- TTAT G - ----
GAM2874 17807 TGGGCAAGGATTGGCACCGG - GATT CC C--- - C GAG C AAGACACTGAC
CCCTGCCTGCGCTGCGAGCG TG GGCAAG GGCA GGCC TGC CTGCG TGC CGCTG GGG

CTGCGGGAAGACACTGACCC AC CCGTTC CCGT CCGG ACG GGCGC ACG GCGGC CCC

CCGGCGGGCACGCGGAGCAC A ATTC A- CAGC A - G-- - ----------
GACGGCCATGCCCTTACTTG
CCACA
GAM2875 8305 ATGTCTTTAATTCCTCATAT - - CA T ACT- CAAT
GCTGACTTGGCAATCCATAT ATGTCTT TAATT CCT TA GCTG TGG
GCAGCCTAAAAGGTGGTTGA TGTAGAA GTTGG GGA AT CGAC ACC
AAGATGT A T AA C GTAT ----
GAM2876 15805 AGAGGGGCCACGGGGCGCCC -- C ---- C---- CAAAAC
ATGTACAAAACTACGTGTTC AGAGGGG CCA GGGGC GC CATGTA
CCGCCATAGCCCCTTGGATT TCTCCCT GGT CCCCG CG GTGCAT
CCCTCT TA T ATAC CCCTT ------
GAM2878 5578 GAGGTATCTGCTGCGCCTGA TA ---- GTAAACTG
GATGAGTAAACTGTCGTTTC GAGG TCTG CTGCGCCTGAGATGA
GGGCGCGGGCGCTAGACGCC CTCC AGAT GGCGCGGGCTTTGCT
TC GC CGCG --------
GAM2879 4519 TAACTGGCGAAAAGCTTTCA GGC AAGC TT A T ATCGTTAGCTTCCCTG
GAAACACTGGAGATATCGTT TAACT GAA T C GAAACAC GGAGAT
AGCTTCCCTGATTTCTTGTG ATTGG CTT A G CTTTGTG TCTTTA
TTTCCGGGAACGTTCTAAGG AAT GCA- GG C T ----------
TTA
GAM2880 12073 GGCTGTGGGAAGCGATTTGC TG AGC TT - C AC- TATTT TGTG
GATGTTCACCTCCACGATAT GGCTG GGA GAT GCGA TGTTCA CTCC GA GC
TTGCTGTGGTTGGATTCTTG CCGAC TCT CTA TGCT ATAGGT GAGG CT TG
GGAGCTGGATACTCGTTTAT -- A-- TT C C GTT TAGGT ----
CATCTCAGCC
GAM2881 19947 GGCGGCGGGGCCGATGAGCG ---- C G - A - GA- -- ACCC
GGATGGATGGCTCCGAGCGC GGCGG CGGGGC GAT AGCGGGA TGG TGGC TCC GC GCTG

TGACCCCGGCATGTCCAGGA CCGTC GTCTCG CTG TCGTCCT GCC ATTG AGG TG CGGC

TGTTACCGTTCCTGCTGTCT TTTG T - T - T ACC TA ----
GCTCTGGTTTCTGCC
GAM2882 16166 TGCTCTGCTTTTAAATTTCT CT TTTAAA TG CTT A AAATTAAAATA
GAACTTCTTCAATACAAATT TGCT GCT TTTC AA CTTCA TAC
AAAATAGTACTGGAGTCTTT ACGA CGA GAGG TT GAGGT ATG
TGGGAGGCCAATAGCTAGCA T- TAACCG GT TCT C ----------
GAM2883 6501 CTGCTCCTTGTGGAAGAATA - T A AT ACATT AGG
AGGACATTCAGAGGCTGTTA CTGC TCCTTG GGA GA AAGG CAG
CCTTCTCCTCTCAAGGATGC GACG AGGAAC TCT CT TTCC GTC
AG T - C C- ATT-- ---
GAM2884 4897 GACAGATGGACTAAAAGGAT C A GA -- GG CTGCTTC
TTTATAGGGGCATGTCTGCT GACAGATGGA TAA AG TTT TATA GGCATGT
TCATATGCTGGTATATCAGA TTGTTTACCT ATT TC AGA ATAT TCGTATA
GACTGTTATCCATTTGTT - G AG CT GG -------
GAM2885 1813 GCCCAAGAATTTGATAATGC ----- T TA C GA CTT
TGGATGCCTTGCAGACATCA GCCCA AGAA TTGA ATG TG TGC
TTCAGTTTCTAATATTGGGC CGGGT TCTT GACT TAC AC ACG
TATAA T -- T AG ---
GAM2886 22101 AGTGGGTGAAAATGTCCCAT - TCCCA- ACCAGTACACAG
CTGCACCAGTACACAGGCAG AGTGGGTGAA AATG TCTGC

GCATTATCATTCTTCACCTA TCATCCACTT TTAC GGACG
CT C TATTAC ----------
GAM2888 14640 GAACAGAATCTTGTGGAAGA ATC--- --- AA T GATTATGA
AGAATGAAGTTGCTGATTAT GAACAGA TTGTGGAAGA AGAATG GT GCT
GAAGCTACAACATTTTCCAT CTTGTCT AATATCTTCT TTTTAC CA CGA
CTTCTATAACAACACTCTGT CACAAC ACC AA T --------
TC
GAM2889 2459 GGGCCTGGACCCACACCGCG - G - C C - TCG - AGGT GCAGG
GGAGGACTCGGGCGTGACCA GGGC CT GACC CA AC GCG GGAGGAC GGCGTG ACC TGCC

GGTTGCCGCAGGGGTAGGTC CCTG GA CTGG GT TG CGC CCTTCTG TCGCGC TGG ATGG

CGCGCTGTCTTCCGCGCCGT C G C C C G --- C ---- -----
CTGCGGTCGAGCGTCC
GAM2890 2302 TACCAGAGCATACATATATC - A C A AA- AA TTTTC
AACAGTAAGATGTAATTTTT TAC CAGAGC TA ATAT TC CAGT GATGTAAT
CATTACATCACTGCTAGAAT ATG GTTTCG AT TATA AG GTCA CTACATTA
ATTTAGCTTTGTGTA T - T - ATC -- -----
GAM2893 21250 GGATTCTTGTTTTCCACATG T TTCCA T C AGTATC
TGGTATCTTCCAGAGTATCC GGATTCT GTT CATGTGG AT TTCCAG
TGGAATGTCTACATGCCCGA CCTAAGA TAG GTACATC TG AAGGTC
TTAGAATCC T CCC-- - T ------
GAM2895 21297 TTGTATAGTAATGTTTCAGA A-- - ACCATCATC TTTG
CCATCATCCAGCTTTGGCTG TTGTATAGT ATG TTTCAG CAGC
CTGAAATCATACAGCTGTGC AACGTGTCG TAC AAAGTC GTCG
AA ACA T --------- ----
GAM2896 8381 GTAACTCTTCTCTTGTACCA - - T AG --- AGGTGGGGTA
GGAAGCAGCTGTAGGTGGGG GTAA CT CTTCTCT GTACCAGGA CAG CTGT
TAATGGGATCTGTCTCCTGG TATT GA GGGGAGA CGTGGTCCT GTC GGTA
TGCAGAGGGGCAGCTTAT C C - CT TAG ----------
GAM2897 10989 AGAGGTGGAACTTTGAAGAA - T- ATTCAC GT ---- CACAG
TTCACTGGTCGTTTTGTATC AGA GGTGGAAC TTGAAGA TG CGTTT TGTAT
ACAGGTACAACTAGAGCGTA TCT CTATCTTG AACTTTT AC GCGAG ACATG
CACTTAACTTTTCAACTGTT A TC CAATTC AT ATCA -----
CTATCATCT
GAM2899 3052 CTAACCATTGATGAGCACTC A T CTCC ATTTT A ACAT
CTGATTTTAATCTAGAACAT CTA CCATTGA GAGCA TG AATCT GA
TCAGATTTACCATAATGTTC GAT GGTGATT CTTGT AC TTAGA CT
CTTAGTGGTAG - C AAT- CAT-- - ----
GAM2900 11042 CCAGTCACCAGCCTCAGGAC TCA CTC C CAA GTCT
AGATACAAAGCTGTCTGGCT CCAG CCAGC AGGA AGATA AGCT
TATCTTCTTCATGCTGGGTC GGTC GGTCG TTCT TCTAT TCGG
TGG TG- TAC - --- ----
GAM2901 13218 GGCTCCTTACTGCTTATTAA TA--- ATTA-- - ATGTAC
TCTGTATGTACACATGATGA GGCTCCT CTGCTT ATC TGT
AATGAAGCAGAAGCTGGGAG CTGAGGG GACGAA TAG ACA
TC TCGAA GTAAAG T ------
GAM2903 18156 GAGGAGCGGAGCGGCACAGC A G C C ACCC C TGGTGTTAGT
CTCCCACCCTCCCGGCTGGT GAGG GCGGAGCG CA AGCCT CC TCC GGC
GTTAGTGCCCGGACGGCGGG CTCC CGCCTCGC GT TCGGG GG AGG CCG

CTCTGCGCTCCGCCCCTC C - C C C--- C ----------
GAM2904 3631 GGGCCCCAAGCTCGCTAGTC - TCG- A- TCCCAGAAACATAAC
CTCGGATCCCAGAAACATAA GGGCC CCAAGC CT GTCCTCGGA
CTCCGGGGGTGCAGACCTGC CCCGG GGTTCG GA TGGGGGCCT
TTGGAGGCCC A TCCA CG ----------
GAM2905 16326 GTAGACGCCCAGCATCTTCA C AG- TCAA--- CAT TCTGA
AAGACATGCTCTGAGTTATT GTAGA GCCC CATCT AGA GC
CTGCCATTTAGATGACGGGG CGTTT CGGG GTAGA TCT TG
CTTTTGC T GCA TTTACCG TAT -----
GAM2906 15952 GCCCAGGTTCCAAGGAGCTC CA AG -- A CACCCCT ATCAA
ACTACACCCCTGGTCAATCA GCC GGTTCCA GAGC TC CTA GGTCA
ATGGCCCTCACTGGGAACGC CGG CCGGGGT TTCG AG GGT CCGGT
TTAATGGGGCCGAGGC AG AA CA - CACTC-- -----
GAM2907 18414 GTGGGGGCGCTCAATAACTT G T AAC ATAC TC G ACAACACCC
GGATACCGGTCGGCATGGTC GTGGGG CGC CAAT TTGG CGG GGCAT GTC
ACAACACCCGACAGTGCTCT CATCCC GCG GTTG GACC GCT TCGTG CAG
TCGCCAGAAGTTGGCGGCCC G - AA- ---- TC A ---------
TAC
GAM2909 19650 GGTTTTGTTGCTACAATTCC CAATTCC ACCA- C AAAG
ATGACCAAAAATCTCTGAAA GGTTTTGTTGCTA ATG AAAATCT TGA
AGTTAAAGATTTTCCTAGCA TCAAAACAACGGT TAC TTTTAGA ATT
TTTTGGCAACAAAACT TT----- GATCC A ----
GAM2910 20293 GTTGGTTAGCAAAAGTGCAG A-- AA- G CA GG GA GCAA
CCTCAAGATGGCTGATGGCA GTTGGTT GCAA GT CAGCCT AGAT CT TG
ACGAGGATCTGCGGGCTGAC CGACCGG CGTT CA GTCGGG TCTA GG GC
GACTTGCCTGGGCCAGC GTC CAG - CG -- A- ----
GAM2912 59 CTTCTAAAAGACTTTCTTCG - A C ---- CC - AACCT
AAACCTCAAAGAACCTCTTC CTTCTA AAAG CTTT TT CGAAA TCA AAG
TGACCTTTCGCCTTAACAGA GAAGGT TTTC GAGA AA GCTTT AGT TTC
GCCTTTATGGAAG A C C TTCC CC C -----
GAM2914 12112 TATGTCCAGATTCTGTGACC T CT ACCACT--- TACT A ACTCA
ACTAGTTACTGTATCAGAAC TATG CCAGATT GTG AGT GTATC GA
TCATCAGGTACCCACTTATA ATGT GGTCTAG CAC TCA CATGG CT
AATAGCACTGATCTGGCTGT C T- GATAAATAT CC-- A -----
A
GAM2915 9283 TCGTGGCCTCGGTGATGCTT G - AT- AAC - TGCAG
AACGTCCGCCTGCAGGTGCG TCGT GCC TCGGTG GCTT GTCCGC C
GATCGAGTGAGCGCCGGCGG GGCG CGG GGCCGC TGAG TAGGCG G
CGGCGG G C GAG C-- T -----
GAM2917 20332 GCCCTGGGATGAAAACATGG CTG AACA ---- G GTATAACTGGG
ACCTCTTGGAAGGTATAACT GCC GGATGAA TGGACC TCTT GAAG
GGGCTTTGAAGACTCTGGTC CGG TCTATTT GCCTGG AGAA TTTC
CGAAAGTTTATCTGGC --- GAAA TCTC G ----------
GAM2918 11611 GCGGCTGGGACCCTGTACAC -- A ACAC TC AAACTG-- TTCAA
GTATCCTGAAAACTGGAGGG GCGG CTGGG CCCTGT GTA CTGA GAGGGCC
CCTTCAAGGCTCTCATCGCT CGCC GACTC GGGGCG CAT GACT CTCTCGG
GCTCAGTACAGCGGGGCTCA TG - A--- -- CGTCGCTA -----
GGTCCGC
GAM2919 20950 TGAGTGTGGGCAGTGCGGCC AGT C T- - T C---- C CCTTCTT
CCTGCGGAGTGAGGCGCGGC TGAGTGTGGGC G GGCCCC GC GGAG GAGG GCGGCG GC

GCGCCCTTCTTGCCTGTTGC GCTCGCGCCCG C CCGGGG TG CCTC CTCC CGTTGT CG

CTCTTCCTCCTCCTGTCCGG --- - CC T - TTCTC C -------
GGCCCGCCCGCGCTCG

GAM2921 3857 GTCCGGGACTCAGGGACTTG G T ACT TG CG G ATAG
GTGGCCACGCAGCTGTCCAT GTCCGG AC CAGGG TGG GCCA CAGCT TCC
AGGGAGGTTGAATGGTTGCT TAGGCC TG GTTTC GTC TGGT GTTGG AGG
GCACTTTGGTCCGGAT - - AC- GT AA - ----

GAM2922 18800 AGAGGACAGACTTATCTTCA ACAGA --- GA--- -- - CCTCAA
GAACATTTCAGTCATTCCTC AGAGG CTTATCT TCA ACA TTTC AGTCATT
AAAGTGGCTAGAAACTTGTC TCTCC GAGTAGA AGT TGT AAAG TCGGTGA
AGCATGAATCAGATGAGCAG GAC-- CTA ACGAC TC A ------
CCTCT

GAM2923 19855 GAGGCAACACAGCAGTTAAG A C CA AT- A TGCCAG CCAGT
AATTGAGATAAAGTGCCAGT GAGGCA CA AG GTTAAGA TGAGATA AG TCTG
CTGCCAGTTAGAATCCTGTG CTCCGT GT TC CAATTTT ACTCTGT TC AGAT
TCTCACTATTTTAACACTCT - C A- ATC G CTA--- -----
GTGCCTC

GAM2924 10484 TGGGTTCTGTGGCCACTGCT C - G - A- AC CCTCCCCTAGTCA
GGACCAAGGACGTGGATGAG TGGGTT TGTGGCCA CT CTGGA CCA GG GTGGATGAG
CCTCCCCTAGTCACTCATCC ACCCAG ACACTGGT GA GACCT GGT CC TACCTACTC
ATCCCACTGGCTCCAGAGAT T A - C CA C- ----------
GGTCACATGACCCA

GAM2926 8956 TTCTTGGGCTAACAGTAGAG A AGAG- TTTTCCATATCAT
CTGAACTTTTCCATATCATG TTCTTGGGCTA CAGT CTGAAC
TTTAGAGACCACTGGTAGCC AAGAATCCGAT GTCA GATTTG
TAAGAA G CCAGA ----------

GAM2929 21599 ATAAACTGCTGTCCAGATTG AA TG TG TTGTTAA CA TT TTAAT
TTAATTTCATTTATATTTAT ATA C C TCCAGA TTT TTTATATTTAT TAA
TTTAATTAATTTGTCATGAA TGT G G GGGTCT AAA AGGTATAAGTA GTT
TATGGACAAAACCTTTTCTG GG GT TG TTTCC-- AC CT -----
GGGTGTGGGGTGT

GAM2930 5495 ATGGGAATGGCCTACAATTA GAAT AC-- T AATAAACAATTAATTCA
CAATAAACAATTAATTCAGT ATGG GGCCT AAT AC
TATTTTAGGGGCCTTACCAT TACC CCGGG TTA TG
ATT- GATT T ----------

GAM2932 14265 GTGGCACCTTCAGGGCCAGG ACC - - AG A -- - GAGGGG
AGAGGCACTGGGGAGGGGTC GTGGC TTC AGG GCC GAG GGCA CTG GG
ACAGGATGCTACTCGGGCAC CACCG AAG TCC CGG CTC TCGT GAC CT
CTAGAAGCCAC --- A A G- A AG A ------

GAM2933 22453 GCCTCTCCTGGGGCCACTGT CT G A TGGG AGTGAG
TGGGGGTGGGAGTGAGCCCA GCCT CCTG GGCC CTGT GGTGGG
CCACAGAGGCCACAGGCAGG CGGA GGAC CCGG GACA CCACCC
C C- A A ---- ------

GAM2936 20367 GGTCTATTTCATTATTGGTG C CA TG G- CGCA AA A-- TAAAT
GGTAGCGCATTTAACAGTTA GGT TATTT TTAT GTG GTAG TTT CAGTTA ATACATT
AATACATTTAAATAATGTAT CCA ATAGA AATG TAC CGTC AGG GTCAGT TATGTAA
AGGTGACTGCAGGACTGCAG - TC GT GA ---- AC GGA -----
CATTGGTAACTAGATAACC

GAM2938 5116 CTTTTCGACTGCAGGATCAT T CT GG- ATC T ATG TCATGT

CAGGTTCGGATGAGTCTCAT CT TTCGA GCA ATC AGGT CGG AGTC
GTGGCTGCTGCACCTCCAGA GA AAGCT CGT TAG TCCA GTC TCGG
TATATGCTCTCGAACAG C CT ATA ACC C G-- ------
GAM2939 4656 GAGCCGGGGCTTCCTCAAGA -- A-- C CCAA CCCACA CGAGATCC
GCGTGGCCCAAGGGCCCCAC GAGC CGGGGCTTCCTCA GAG GTGGC GGGC GCC
AGCCCGAGATCCGGCAGCCC CTCG GCCCCGGAGGAGT CTT CACCG CCCG CGG
CAGCCACCTTCACATGAGGA AA ACA C AC-- A----- --------
GGCCCCGAAGCTC
GAM2940 15802 AGGCAGGGCACCTGGGGGAT A A A ----- ATC
GCTGGGGCCATCGGCTCTCA AGGC GGGC CCTGGGGG TGCT GGGGCC
GATGGCAACTCCCAGGGCCC TCTG CCCG GGACCCTC ACGG TCTCGG
AGTCT A - A TAGAC ---
GAM2941 4601 GGATTAGCTTGGTGGGACAA GTG ACAA G - ACGACCA TTTT
CCTGTGAATTGGACGACCAT GGATTAGCTTG GG CCT TGAAT TGG TC
CTTTTGACAAGACACCACGT TTTGGTCGAAC CC GGG ATTTG ACC AG
TTAGGGGGACCAAACAAGCT AAA AG-- G C ACAGAAC ----
GGTTT
GAM2942 4173 GCTGTGTTGCCCAGGCCGGT G GGC TC---- A GCTTTATCTAATG
CACAAAAAGAGGGGCTTTAT GCT TGTTGCCCA CGG ACAAA AGAGGG
CTAATGTCCTCTGTTTGTAT CGA ATAGCGGGT GTT TGTTT TCTCCT
GTATTTGAAGTGGGCGATAA A GAA TATGTA G ----------
AGC
GAM2945 22042 CTTAAACTTCCTCCAACTTT AAACT AAC T - AG AGACCAG
CTTCTGCTACAAGAATAGAC CTT TCCTCC TTTCTTC GCTA CA AAT
CAGATTATGTTAGTGAAGAA GAA AGGAGG GAAGAAG TGAT GT TTA
GAGGAGGATGATGAAG GTAGT A-- - T A- -------
GAM2946 20708 CGGGAGCTGGAAGAATGGGG -------- A AAAAACCCCAG
GCAAAAACCCCAGGCCCCCA CGGGAGCT GGA GAATGGGGGC
TTCTCCAACCCCCAAGCTCT GTTCTCGA CCT CTTACCCCCG
TG ACCCCCAA - ----------
GAM2947 20991 GAAGTATTTGGAACAGTAAA TAT GA AGGAAGA- ATTACATG
GGAAGATGTATCATTACATG GAAG TTG ACAGTAA TGTATC
GATATAAAAAATACTTGCTG CTTC AAC TGTCGTT ATATAG
TCACAATCTTC T-- AC CATAAAAA --------
GAM2948 10270 ACTGTAGAGGGAATTGCCGG GAAT GTGTGC A - G ACAAG
GTGTGCCCCATGGATTGGAG ACTGTAGAGG TGCCGG CCC TG GATTG AGG
GACAAGTTTGCGATCACAAG TGACGTCTTC ACGGCC GGG AC CTAGC TTT
GGCCGGCACTTCTGCAGT ---- ------ A A G -----
GAM2949 5930 GTGTTGCCAAAGATTCACCG G A- - ACACTACCC
AAGATAAACACTACCCTTGT GTGTT CCAAAG TTCACCGAAG ATAA
ACTTTGGTGGGGACTTTGGA CACAA GGTTTC GGGTGGTTTC TGTT
ACAC - AG A ---------
GAM2951 20102 GCCGATGTGTCTACTCGAAG - CTACTCGAAGA T TCTCAC
ATTCTGTGATCTCACTCTCA GCCGATG TGT TTCTG GA
GGAGACCATTGCATCATTGG CGGTTAC ACG AGGAC CT
C T TTACCAG---- T ------
GAM2952 2559 TTACAAGCTGTGTGGCTGTG ---- C GG AA ATG TT A- TTAT
GACAAATTTAATGTCTTTGT TTACAAG CTGTGTGG TGT ACA TTTA TCT GTG CTCGGTTT
GACTCGGTTTTTATAAATCG AGTGTTC GACACATC ACG TGT AGAT AGA TAC GGGCTAAA

GGAGCATTCAGAGTAGATGT TTTA - AA -- G-- CT GA ----
AAGCACTACACAGATTTCTT
GTGA
GAM2953 3278 AGTGTCGTGGACTCTTCTGT C ---- - A-- AGGC AGCGCACA
GGCAGGACTTGGAGGCTGTC AGTGT GTGGAC TCTTCTGTGGC AGG CTTGG TGTCCCT

CCTAGCGCACAGGGGGCATC TCGTA CATCTG AGAAGACACCG TTC GGACT ACGGGGG

AGGAAACTTGGCCACAGAAG - GTCC G AAA ---- --------
ACCTGGTCTACATGCT
GAM2954 18795 TGGTGGTGCTGTAGGGTGTG - AG TG- CT CTTCCGAATCAAT
GTCTGGTACTTCCGAATCAA TGGT GGTGCTGT GG TGGT GGTA
TTACCGCCAATTCTTCACAG ACCG CCACGACA TC ACCG CCAT
CACCTGCCA T CT TTA -- ----------
GAM2957 3825 GGAAGCTGGGAGGACGCAGA G A ACGCAG TT A GG G TTT GCTGTGA
TCCTTCGGACCGGGGGGCGA GGAA CTGGG GG ATCC CGG CC GGGGC ACCCTT AG
CCCTTTTTAGGCTGTGACTC CCTT GACCC CC TAGG GCC GG CCCCG TGGGGG TC
GGGGGTGGCCCCAGGCCCGG A - GA---- -- C A- G C-- -------
GATAGCCCCCAGATTCC
GAM2958 2963 TCAGGCCATCTGGGCGTATA A G TAC G CA GAATG
CGTGCAAGTCACAGGGAATG TCAGGCC TCTGGGC TA GT CAAGTCA GG
CCGATGGCTTGGCTTGGGCT AGTCCGG AGACTCG GT CG GTTCGGT CC
CAGAGGCCTGA - G T-- - AG -----
GAM2962 172 GGTGTGCAGATCTAGATCGC TG AGA GATC - A GTCTCATTCTAAAACA
AGAGTAGTAAGTCTCATTCT GGTG C TCTA GCAG AGT GTAA
AAAACATTGCAACTACTGTT CCAC G AGAT TGTC TCA CGTT
AGAGTCCACC CT --- ---- A A ----------
GAM2964 16898 CGGAGGGCTGCCGGGACGAA GC CC AAGA ACA AGGGCG
GAGGCTACATCTACACAGGG CGGAGG TG GGGACG GGCT TCTACAC
CGGTGTAGGGGAAGCCCGTC GCCTCC GC CTCTGC CCGA GGATGTG
TCTTCGACCTCCG A- TT ---- AGG ------
GAM2967 17352 GTCCCCTTAACTAATCCTGA C AA ATC C AAC ATACCA
CCTTAACCTATATACCAATG GTCCC TT CTA CTGA CTT CTAT
GAAGTTCAGTTGTGGAGAAT CAGGG AA GGT GACT GAA GGTA
GGGAC T GA GTT T --- ------
GAM2968 18829 TGGTAACTAAGTAATATCAG AC A- - AAGAAGAA GCAAGATGACAAACAAA
GAAAGAAGAAATAAGGATGC TGGTA TAAGT AT ATCAGGA ATAAGGAT
AAGATGACAAACAAAATCTT ATCGT ATTCA TA TAGTTTT TATTTCTA
TATGAAATACTTTTGATCAT CT AG C CATAAAG- ----------
GAACTTATCTGCTA
GAM2969 9348 GGTCACTCATACTACAGACA - - TACTA CACT T CTGTCA
CTTGGCCTATGACTGTCATC GGTCA CT CA CAGA TGGCCTA GA
TAGGTCATCTGGATCCTGAA CTAGT GA GT GTCT ACTGGAT CT
GTTGATC T A CCTAG ---- - ------
GAM2970 11754 CGGCCCGGCCCTCGCGTGCC G CTC TGCCTCCCA C C ATGCTG
TCCCAGGCTCCGCACCCCTG CG CCCGGCC GCG GGCTC GCACCC TG
ATGCTGCGCGGGTGCTGAGC GC GGGCCGG CGC CCGAG CGTGGG GC
CCGCTTCGGCCGGGACG A CTT --------- T C ------
GAM2972 17442 AGAGGAAGCGGGAGGAGCTG A- C A G CAACGTAC - CATGAGGAAAGCT
AGCAACGTACTGGCCGCCAT AGAGG AG GGGAGG GCT AG TGGC CGC

GAGGAAAGCTGCGTGCCAAG TCTCC TC CCCTCC CGA TC ACCG GCG
AAAGACTGAGCCCCTCCCCT CG - C G AGAAAGA- T ----------
GCCCTCT
GAM2973 22926 CTGGAGACCTCGGCTCAAGT CCTCG TC TGCTGCC ATT
CTTTGCCCTGCTGCCGACGC CTGGAGA GC AAGTCTTTGCCC GACGC
ATTGTGTCACCTTGGGCAAG GACCTCT CG TTCAGGAACGGG CTGTG
GACTTCGCATCTCCAG A---- C- TTCCA-- ---
GAM2974 9954 TTCAAGTAAAAACCCTTTCT A TAAAA CT T CTCG
CCTTCCTGGGGCCTCGGCTC TTCA G ACCCTTT CCTTCC GGGGC
CTGGAGGGCTGGAGGGTCTC GAGT C TGGGAGG GGGAGG CCTCG
GTCTGAG - TGCTC TC T ----
GAM2975 366 CGAATCGCCAAAAACTTGGA -- AA-- G AC A AGTGAC
ACTGGAACAAGTGACTGTCC CGA ATCGCCA AACTT GA TGG ACA
CAATTGGAGTTCTGCTGGTG GTT TAGTGGT TTGAG TT ACC TGT
ATCTTTG TC CGTC G A- C ------
GAM2976 7858 CGTAACATTTTCCAAATGTT AACA ATGT CTT T - CACTGA
CCTTATCAGTTGGTCCACTG CGT TTTTCCAA TC ATCAGT GG TC
AGAGCCACTGATCTGATTGG GCA AAAAGGTT AG TAGTCA CC AG
AAAACAAGACG GAAC ---- TC- - G ------
GAM2977 17043 CAGGGACAACCATCCTCTCC AC-- C CC TCCCCTGCCCCC
CTGTGTCCCCTGCCCCCCAC CAGGGACA CAT CTCTC TGTG
ACTGAGGGAATGTCTGTGTC GTTCCTGT GTA GGGAG ACAC
CTTG GTCT A TC ----------
GAM2979 22955 GGATGTTTCACAGCCAGGCA - AGCCA C TGATATTAACAGAC
GTTTATGATATTAACAGACT GGATGTTT CAC GG AGTTTA
AGACTCCACAGGTGTAAACG CCTGCAAA GTG CC TCAGAT
TCC T GACA- - ----------
GAM2980 11368 GACTTTTGTTGAAAAATTTG - AA TT ACCTTT - GAACGAAAGAA
ACCTTTACCTCTTATGAACG GACTTT TGTTG AAA TG ACCTCT TAT
AAAGAAATATAGAGGTTTCA CTGAGA ACGAC TTT AC TGGAGA ATA
AGCATTTTTGCCAGCACAGA C CG TT GAACTT T ----------
GTC
GAM2981 16980 GAACTTGAAGAATTGAAACA A AGAA - AAATTG CA-- TCCCTCGTTTAC
AATTGTTCCCAAAGAATCCC GA CTTGA TTG AAAC TTCC AAGAA
TCGTTTACTTCTTAATAGGA CT GGATT AAC TTTG AAGG TTCTT
AAGGTTTACAAGAAGTTAGG - GAAG A GA---- ATAA ----------
TC
GAM2982 8384 TGGAAGTGATGACTCTAAAC AA A AC AA G ATGA A A TGTACTAT
AGTGCAATGAACAATTTATT TGG GTG TG TCT ACA TGCA ACA TTT TTTA
TATGTACTATTAAAAGAACT ACC CAC AC AGA TGT ACGT TGT AAG AAAT
GTAAATGCAATGTAAAGACA GA - -- AA A AAA- C A --------
CACAGCCA
GAM2983 6527 TCCTCACTGAATGAGGCGTT CTGAATG T GT-- A GCCAG
TGAGTTTTACTGGTAGCCAG TCCTCA AGGCGTT GA TTT CTGGTA
TGCCAGCAAACAAATCAACG AGGAGT TCCGCAA CT AAA GACCGT
CCTTGAGGA ------- - AAAC C -----
GAM2984 21970 GCCATGGCGGCCATGAGTTG T-- - T--- TG G GTTTCGGTTA
TTGCGGCGGGTTTCGGTTAC GCCA GGC GGCCA GAGTTGT C GCGG
TGCGGTGGCAGCTCTGTCTG CGGT CCG CCGGT CTCGACG G CGTC
GCCGGCCCCTTGGC TCC G CTGT GT G ----------

GAM2985 2999 CTTAAGGAGAGAGATTGTGT GA - - T CT GATAACTCAGGAA
TCTTCCTCTCTCAGGGGTGA CTTAAG GAGAGA TTG TG TCTTCCT CTCAGGGGT
TAACTCAGGAAGCCTCTGGG GGATTC TTTTCT GAC AC AGAAGGG GGGTCTCCG
TTGGGAAGACCATCAGTTCT TG T T C TT ----------
TTTGTCTTAGG
GAM2987 15459 AAGCCAATGTTATCCCTAGA TATC-- A AAAACATT - TGCT
AAAACATTTTTGTCACTGCT AAGCCAATGT CCT GA TTTGTCA C
GTTGATAAACAAGAAAATCA TTCGGTTGTA GGA CT AAATAGT G
AGGAAACTCATGTTGGCTT CTCAAA A AAAAGAAC T ----
GAM2988 10160 CATCCGCAGCCAGGCCTCCC C CAG CC- C ACAACCCAG ATC
TGACAACCCAGCAGGCCATC CAT CG CCAGG TC CTG CAGGCC
GGCCTGAAGCATTACAGTGA GTA GC GGTCC AG GAC GTCCGG
CTTCCTGGAACGTATG T AA- TTC T ATTACGAA- ---
GAM2989 14297 GTTCCACGCACCGCCTTTGA A A- CCTT AG ACA T CAAC
GTTGGACACAGATGGCAACC GTTCC CGC CCG TG TTGG CAGA GG
CCTTTGACCAGGACATCTAC CGAGG GCG GGC AC GACC GTTT CC
GGGCGCGAGGAGC A CG ATCT AG A-- C ----
GAM2990 21891 GAGGTTCTATTGTATCCTTG ATT CTTGG C GG AAAAGAATAAG
GCCAGAAACTGGGTGAAAAG GAGGTTCT GTATC CCAGAAA TG TG
AATAAGCAGACAATTTTTGG CTTTAAGG CATAG GGTTTTT AC AC
AGATACTGAGGAATTTC AGT A---- A AG ----------
GAM2991 14857 AAGAAGAAAACCAAACAAGA A- -------- T GG - T AAT---- - AAGA
TGTCTGGACTCTTTTAAATG AAGAAG AAACCAA ACAAGATG CT AC TCT TTA GGAAG CA
GAAGCAAAGATGACTTCCTC TTTTTC TTTGGTT TGTTCTGC GG TG AGA AGT CCTTC GT

ATATATGATAGATGTGGCCG CG CTACTATA C -- T T ATATACT A ----
TCTTGTATATCATCTTGGTT
TGCCTTTTT

GAM2992 16656 TCCTGCAGAGCCGCTGGTGA AGA GGT- CT G ACT
CCTGGGTGAAAACTTTTGGC TCCTGC GCCGCT GAC GGGT AAA
CCGTTTGGAAGCGGCACGCA AGGACG CGGCGA TTG CCCG TTT
GGA CA- AGGT -- G ---
GAM2993 16936 TAGTACTGCATTCTGTGTAT CT TT TA-- TG TG TTTG
GTATGTGCATGTATATTTGT TAGTA GCA CTGTG TGTATG CA TATA
GTGTGTGTGTATGCAAGCTC GTCGT TGT GACAC ACGTAT GT GTGT
ACAGCTGTCTGCTG C- C- TCGA GT GT ----
GAM2994 2040 GAGGAGCAACCTCTGGAGCC C-- CT GCGAT- ATTCCTCC
ATCGCGATTGATTCCTCCCA GAGGAG AACCT GGAGCCATC TG
TCCCAAGATGGCTTCTGGGT TTCCTC TTGGG CTTCGGTAG AC
TCCACTCCTT ACC T- AACCCT --------
GAM2995 19871 CCATCTCTCAGATTACTTCA CTC TACTTCA CC CCG T AAGAAAAGTATCCCAAA

TTGCTCACCGGCCGGCTCTG CCAT TCAGAT TTGCTCA GG GC CTGA
AAAGAAAAGTATCCCAAATC GGTA AGTTTG AGCGGGT CC CG GGCT
GGCGCACCTTGGGCGAATTG AAC TTA---- T- A-- C ----------
TTTGACAAATGG
GAM2996 14087 TGGGTTGCGCGCGCGTCGAC T C - T ACGACAGCAA CCGG
GACAGCAAGCGCCCCGGGGC TGGG TGCG GC GCG CG GCGCC

GTGTAGAAACAACGCGCAGC ACCC ACGC CG CGC GC TGCGG
ACGCATCCCA T A A - AACAAAGATG ----
GAM2997 8640 CTGGAGGGCCTGAATTTCAA G- --- AATTTCAACCTC A-- - G - GATCCA
CCTCACGGAGATTCCGGAGG CTGGA GGC CTG ACGGAG TTCC GGAG CT CA
CTCAGATCCATGAAGGCTCC GACCT CCG GAC TGCCTC AAGG CCTC GA GT
AGGAACTCCTCCGTACCTCA GA ACA GACAACTCCA-- CTC A G A ------
ACAGCAGACAGCCAGTCCAG
GAM2998 7008 CACCATGCGGGCCTCAGGTG A - C CA GCAGAGA - - TCACA
GCAGAGAGGCCCAGCCTCAC CACC TGC GGG CT GGTG GGCC CAG CC
AGGCCTGTGGCCCCACACAC GTGG ACG CCC GA CCAC CCGG GTC GG
CAGTCCCAGCAAGGTG A A T -- ACACC-- T C -----
GAM2999 3046 AGCCCAGGTGACCTTCTCTG ACCTTC A CTG TGAGA
AGGAGTCTGCAGTTCCTGAG AGCCCAGGTG TCTGAGG GT CAGTTCC
AGGAGCTGGCGCCTCAGGCC TCGGGTCCAT GGACTCC CG GTCGAGG
ATACCTGGGCT ACC--- G --- -----
GAM3000 14747 TGTCTTCTCAGGTAGCAGGG T C T CA C TTTCC- TG
TCACGCACCTCATTCTCCC
CGCGTTTCCACTTAAGGTGT TG CTTCT AGG AG GGG GCG ACTTAAGG TGTCTG
GTCTGTCACGCACCTCATTC AC GAAGG TCC TC CCC TGT TGAGTTTC ACAGAC

TCCCCAGACAGTCTTTGAGT - T T TA T CTACAA TG ----------
AACATCTGTTCCCATCTTCC
TTGGAAGCA

GAM3002 3186 TATGCAGAGATGAGTTAGTG G ------- T GGACGT
TTTCTGGACGTGGAGACCTT TATGCA AGATGAGTT AG GTTTCT
TTAAATGGCTCATCTGTGTG ATGTGT TCTACTCGG TC CAGAGG
TA G TAAATTT - ------
GAM3003 19826 TTTGATCGAGGAGCGCGGTT C GGTTA A - TG TA TCGCT
ACCGGACGGGCTGGGTCTAT TTTGAT GAGGAGCGC CCGG CGG GC GGTC TGG
GGTCGCTCCGCGGGCCGCTC GGACTA TTTTTCGTG GGCC GCC CG CCGG GCC
CGCCGGCTGGTGCTTTTTTA T GTC-- - T -- GC -----
TCAGG
GAM3005 16408 GGTAGAGACGGGGTTTCACC A A GTT- CATGTT TAGTCTCAATC
ATGTTGGTCAGGATAGTCTC GGT GAG CGGG TCAC GGTCAGGA
AATCTCTTGACCTTGTGATC CCG CTC GTCC AGTG CCAGTTCT
CACCTGCCTCAGCC A C ACCT TT---- ----------
GAM3006 6660 GACATGAGGACTTTGGGCTC TGA C G C - AG TAA GCAA
TGAGGCAAAGGTGATAATGG GACA GGA TTT GGCT TGAGG CAA GTGA TG
CAACGCTCACATTGATCTCA CTGT CCT GAA TCGA ACTCT GTT CACT GC
AAGCTGAAGATCCTGTC --- A G A A A- C-- ----
GAM3007 5575 CGGGGGCAATGGCATCGTGG G TGGC GT- G GG AAGGACGAG
GAGCGCAGGTAGTCAAGGAC CGGGG CAA ATC GG AGCGCA TAGTC
GAGGATTGTGTGCTGCTTTA GTCCC GTT TAG TC TCGTGT GTTAG
GATTTGGCCCTG G ---- ATT G -- ---------
GAM3008 3954 ACTCCTGCCTCTGGGATCTC T C TG A CAGATAT C G AATG
TCCAGATATGGTCGCTGCTC AC CCTGC TC GG TCTCTC GGT GCT CTC
AATGGAGAGCTACCGGGAGA TG GGGCG AG CC AGAGGG CCA CGA GAG
ACCTGGAGCGGGTGT T - GT A ------- T - ----

GAM3010 4238 AGTGAGAAATGGGACCCTGC GA T - C -- AC C CTA T GAGG
CTTACTGCCAACCTACTGTT AGT GAAA GG GACC TGC CTT TG CAAC CTG TT
TGAGGAGCCAGAAGTTGACA TCG CTTT CC CTGG ACG GAA AC GTTG GAC GA
TGAAGTTGCAAGGTCACCTT AA T A A TT GT A AA- C ----
TTCAAGCT
GAM3011 21400 TTGAGTGTGCAGCTCACAAC T G C CA--- A T GTCCAGG
AGACATCAGGATCACTGTCC TTGAG GT CAGCT ACAA GAC TCAGGA CACT
AGGAGTGTCCTGGGTTAACC GACTC CG GTCGG TGTT TTG GGTCCT GTGA
TTTGTTGGCTGGGCCTCAG - G T TCCAA - - -------
GAM3012 14508 GTCTGCTGCCTTTTGTTTAG TGTT - A - CCCA
CTAAGCCCTGCCCACAGAGG GTCTGCTGCCTTT TAG CT AGCC CTG
TTGAGTCTATAGAGGCAGTA CGGATGACGGAGA ATC GA TTGG GAC
GGC T--- T G A ----
GAM3014 19156 TCCTCAAGTTCCTCCAGCTT ---- C C TATG - TAT CAAAGCCT
TTTATGTCTGATATGCCAAA TCCT CAAGTTC TCCAG TTTT TC TGA GC
GCCTGCCTTCATGAAGCAGA AGGA GTTCGAG AGGTC AAGA AG ACT CG
ACCTGGATGAGCTTGGAATA TAAG T C CGA- T TC- --------
GGA
GAM3015 9836 CTGTACGCTCCCACGGTGGC A - G TG AT- ACT TTCCACTCCTTCCT
ACATGAACGACTTCTTCCAC CTGT CGCTC CCAC G GCAC GAACG TC
TCCTTCCTGATTGTGTTCCG GATA GTGAG GGTG T CGTG CTTGT AG
CGTGCTGTGTGGAGAGTGGA G A - GT CGC GTT ----------
TAG
GAM3017 2514 TGCTTTACTGCTGTGGTCCA T-- GC T- ATGT-- AACTAA
TGTAGTGACAACTAAGTTAC TGCTT ACT TGTGG CC AGTGAC
TTTGAAAGGCTCTACAAAGT ACGAA TGA ACATC GG TCATTG
TCCAAGCA CCT A- TC AAAGTT ------
GAM3018 5396 GAATGTTTCTTGAAATTGGC T TTGA- - AAACTGTCT- TATTT
GTCAAACTGTCTTGTATTTC GAA GTTTC AATT GGCGTC TG
ATTTCTTTTGCGATGCCTAA CTT CAAAG TTAA CCGTAG AC
TTGAATCGAAACTTC - CTAAG T CGTTTTCTTT -----
GAM3019 18936 ATGGTGACAACATGCTGGAG T AA-- G - GCTACATG
CCAAGTGCTACATGGCTTGG ATGG GAC CAT CTG GAGCCAAGT
TTCACAGGATGGCAAGTCCC TGCC CTG GTA GAC CTTGGTTCG
CGT C AACG G A --------
GAM3020 20440 AGTCCTCAGAGCAAGAGATG -- - AGAGATG ----- ACAG T AAA- AGCAAAACAGA
ACCTTATCACAGACCTACTA AGTCC TCAG AGCA ACCT TATC ACC ACT TGA
AATGAAGCAAAACAGAGACT TCAGG GGTC TCGT TGGA ATAG TGG TGG ACT

CAGCAAGGTGGTAAAAGATA TA G GAACCA- CCAAC AAAA - AACG ----------
CAACCAGGTACCAAGTGCTG GAC
CTGGATGGACT

GAM3024 5314 TCCCTGCAGGGCAGAGCTCC AG----- A -- CT G - T C GCTCCATG
CGGCTTTGGTGCGTCCTTCC TCCCTGC GGCAG GCT CCCGG TTG TGC GTCC TCCCAG GC

CAGCGCGCTCCATGGTCTGG AGGGACG TCGTC CGG GGGCC GGC GTG CGGG AGGGTC TG

GATGGGCGGTGGCGGCCCGG GAGTTCA - CC C- G G T - --------

GCCGGCCTGCTACTTGAGGC
AGGGA
GAM3025 2156 CCAGCATGATCCTGAAATCT A ------ AATC CCGCC TTTGTAT
GCATCCGCCGTGGTTTGTAT CCAGC TGA TCCTGA TGCAT GTGG
TCATTGTGCATATCAGGGAT GGTCG ACT GGGACT ACGTG TACT
ACCCTCAAGCTGG A CCCATA AT-- T---- -------
GAM3029 2563 GGCGATCGGCATCGACCTGG C CA G ---------- A TCCTGC
GCACCACCTACTCCTGCGTG GGCGAT GG TC ACCT GGGCACC CCTAC
GGGGTGTTCCAACACGGCAA CCGCTA CT AG TGGA CTTGTGG GGGTG
GGTGGAGATCATCGCC - AG G ACGGCACAAC - ------
GAM3031 20450 GCCCCTCTCCTTCCTCTCCT CC T T - TCCCC CCA ---- TGCTG
CCCCGGGCCAGCGGGCAGTG GCC TC CCT CCT CTCC GGG GCGGGCAGT GC
CTGCTGGCCGAAGCTGCCCG CGG AG GGG GGA GAGG CCC CGCCCGTCG CG
CACCCTGGAGAAGGTGGGCG CC C T A T---- A-- AAGC -----
ACCGGC
GAM3032 11930 AGAGAATCATACATTTGTTA ATC T ----- - ATCTGCC TCT
TATTGTCACATCTGCCTTGA AGAGA ATACATT GTTA TA TTGTCAC TTGAG
GTCTTTCAACTATAAGTGAC TTTCT TGTGTAA TAAT AT GACAGTG AACTT
AGCTATTTCCTAATCAATGT --- C CCTTT C AATATC- ---
GTTCTTT
GAM3033 13985 GGTTTACTGTGTACCTATCC A T C C - TAATTCT CT TCTCCAAC
TGCCTTAATTCTAGAATCAG GGTTT CTG GTAC TATC TGC CT AGAATCAG CTT
CTCTTTCTCCAACAAGCTTT CCAGA GAT TATG ATAG ACG GG TCTTGGTT GAA
GGTTCTTCTTAGTGGCGCAT - - T T C TGATTCT TC --------
GATATGTATTAGAGACC
GAM3034 6436 CATAAAAATCCCTGTGTCCT AAAA- TGTCCTAA CATG - TTCATGGTCATTT
AAAGTCATGGCGTGCTCTAT CATA TCCCTG AGT GC GTGCTCTAT
TTCATGGTCATTTGTAGAGC GTGT AGGGAC TCA CG CACGAGATG
ACAGCAGCACTGTGCCTGTC GGAAA TGTCCGTG CGA- A ----------
AGGGAAAAGGTGTG
GAM3035 13456 TAGGAAAGGCAAGAGAAATG AA--- GAGAA T TTATATATCCAGCTTTTT
CTTGTTTCTTTTATATATCC TAGGA GGCAA ATGC TGTTTCTT
AGCTTTTTAAGAAATACGTG ATCCT CCGTT TGTG ATAAAGAA
TTTGCCAGTCATCCTA ACTGA ----- C ----------
GAM3036 9829 GCAGGTGCCAGCACGGTGGT T G TGGTTA GAAG
TAAAGGGGAGAAGTCCTCTT GCAGG GCCA CACGG AAGGGGA
CCTGTTTTGTGGTGGCCCCT TGTCC CGGT GTGTT TTCTCCT
GT C G TTGTCC ----
GAM3037 18455 CTTCTGCCAGCCCCTGGCCT T --- TC CTT CTA C AACAAAATGTGAAA
TTACTTTCTTCCTTGCCTAT CTTC GCCAGCCCCT GGCCTTTACTT TTC GC TG AGGGCA
GCAGGGCAAACAAAATGTGA GAGG CGGTTGGGGG TCGGGAATGAG GAG CG AC TCCCGT

AATTCTGCCCTCAGCTGAGC T TCC TC T-- --- - ----------
TGAGTAAGGGCTCCTGGGGG TTC
TTGGCTGGAG

GAM3038 3263 GTAGAGGTGGGGTTTCATCA A GTTTC GC T CTCA
TGGGGGCCAGGATGGTCTCA GT GAGGTGGG ATCATGGGG CAGGA GGT
ATCTCTTGACCTCGTGATCC CG CTCCACCC TAGTGCTCC GTTCT CTA

GCCCACCTCGGC G GCC-- A- - ----
GAM3039 3957 CTGCGGTGCAGGTCGACCAG GG TCGAC C G CT TCCC AGCT
GGCCTGGGAGCGCTGCTGGT CTGC TGCAGG CAGGGC TGG AGCG GCTGG GG
CCCGGAGCTCCTCCAGCCGC GACG ACGTCC GTCCCG ACC TCGC CGACC CC
TGCCAGCCCTGCTCCTGCAG -- TC--- - G -- T--- ----
CAG
GAM3040 18383 CTCCCCATTGAAGTTCACAA CCA- A TCA C-- CCATT
GACGGGAGGCCATTTCTCCT CTCC TTGA GT CAAGA GGGAGG
CATTCTTGGTGCATCAAATC GAGG AACT CG GTTCT TCCTCT
CGGAG CCTA A TG- TAC -----
GAM3041 22597 CCAAGGGAGTGCAATTTTTC A GG T A ATCTT A CG-- ACCT
ATCTTCCAATGGCGGCCTCA CC AG AG GCA TTTTTC CCA TGG GCCTCA
ACCTTGAGGCGAATCCACTG GG TC TC CGT AGAAAG GGT ACC CGGAGT
GCGAAAGATGCCTTTCTAGG A TT - - C---- C TAAG ----
GAM3043 7368 TTGCTTGAACCCAGGAGGCG GAA-- AGGC AT - CCAAGATCA
GAGATTGCAGTGAGCCAAGA TTGCTT CCCAGG GGAG TGCAGTG AG
TCACTCCACTGCACTCCAGC AACGAG GGGTCC CCTC ACGTCAC TC
CTGGGCAACAGAGCAA ACAAC GA-- -- C ---------
GAM3044 18475 CAAGCGGAGGTGACCCTGAG A G CT AG--- CT ATGGGCGGC
AGTGTGGCTGGGGAGTATGG CA GC GAGGTGACC GAG TGTGG GGGGAGT
GCGGCACTCCCTCTACAAAA GT CG CTTCATTGG TTC ACATC TCCCTCA
TGCTTGGTTACTTCAGCCTG C A -- GTAAA -- ---------
GAM3045 16530 TCACCTCCGGGAACACCTGG A - - CCTG - A TGCAG
TTCCCCATCACTCTGTGCAG TC CCTCC GGG AACA GTTCC CCATC CTCTG
CAGAGGGTGGCGGGACATGT AG GGAGG CTC TTGT CAGGG GGTGG GAGAC
TGCTCAGGAGGGA - A G A--- C - -----
GAM3046 21994 CAGGCGCGTACCATAGCTTT C CCAT CTT ACAA CTTCC
CCTTCTTGAACAAGCCTTCC CAGGCG GTA AG TCCTTCTTGA GC
GCATCAAGGAGGACATCTCT GTCCGT CGT TC AGGAGGAACT CG
GCTTGCCTG T C--- TAC A--- -----
GAM3047 16804 CACTCCCGCGGCTCACTCTG - G TCAC CCCTC C T ACT
CCCTCGTCACGGTGCCACTG CAC TCCCGC GC TCTG GTCA GG GCC
GCTCCCTGGCACAGACATTG GTG AGGGCG CG AGAC CGGT CC CGG
CGGCGGGATGTG T G TTAC A---- C T ---
GAM3048 20458 TGAACAACACACACGCTGCT AA AC- T - TGT
GTATCTCCCTGTGGGCAGAT TGAAC CACAC GCTGCTG ATCT CCC
TTGGTAGCCTCGTGTGGGTT ATTTG GTGTG CGATGGT TAGA GGG
TA G- CTC T C ---
GAM3049 11231 AATAATATTGCACTGGGTAT CA- - TAAC CCACCACCTAT
ATAACTGGTTGCCACCACCT AATAATATTG CTGGGT ATA TGGTTG
ATTAGCCATGTCACTCAGAG TTATTATAAC GACTCA TGT ACCGAT
ACAATATTATT AGA C ---- ----------
GAM3051 8693 GCGCCTGGGCGTGCTCAAGA ----- AAGAAC CTG
ACGTGCTGGCTGCCAGCGCC GCGCC TGGGCGTGCTC GTGCTGG
GGGGGCATGCTCACCTACGG TGCGG ACTCGTACGGG CGCGACC
CGT CATCC GGC--- ---
GAM3052 11661 GGCTGTTTGAGGAATCTTGA TG GAATCT-- A C TCCTAGTCATTAT
GCCAAGTCCTAGTCATTATT GGCTGTT AG TG GC AAG
TTTGCCATCCTCGAACTTGA CTGACAA TC AC CG TTT
ACAGTC GT AAGCTCCT - T ----------

GAM3053 9092 GGGCGGAAGGTACACTATAG GGA- TA T- CG G AATGGG
GCTCGGGGAGGTAGAATGGG GGGC AGG CACTA AGGCT GG AGGTAG
CTATTTGCTGAAGCTTCTTG CCCG TCC GTGGT TTCGA TC TTTATC
GTGGCCCTGCTAGCCC ATCG CG TC AG G ------
GAM3054 997 CGGGCCTTCGGGAGCTGGGA C- - AGC AGA ACCCT TG G CCAGGAGCAC
AGAGCACCCTGCTGAAGAGG CGGG CTTCG GG TGGGA GC GC AAGA GCTGCT
CTGCTCCAGGAGCACAGCGG GCCC GGAGC CC ACCCT CG CG TTCT CGGCGA
CATCTTTGGCTTCAGCGTGT AA A AT- GTG ACTT- GT A ----------
CCCATACCACGAGGAACCCG
GAM3055 20433 AATGCAGCCATGGCGTCTAG ---- A --- AGTTC GAT AAGG
TTCTGGAGATCTCATAAGGG AATGCAG CC TGG CGTCT TGGA CTCAT
TGGGTCCAAAGACGATTCCA TTACGTC GG ACC GCAGA ACCT GGGTG
AGGTTCTCTGCATT TCTT A TTA A---- --- ----
GAM3056 3722 GGAGAGCAGTGTCCCAGGCC GA TGT- CCT T- - A CATTCCTAA
TGATGCCCACTCCTCATTCC GGA GCAG CCCAGG GA GC CC CTCCT
TAAGGGAGGGTGCTTTCTCC CCT TGTC GGGTCC CT CG GG GAGGG
TGGGTCTCCTGTGTCC G- CTCT T-- TT T - ---------
GAM3058 13033 GCAGTGGAGGGGGCAGGACC GA A ACCT G TG - ACCA
TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GG CCTGCT G C AGC
CTCGTGTGAGCAGGTCCACC CGTTAC TCCCCG CC GGACGA T G TCG
GGCCCCTACATTGC A- G ACCT G GT C ----
GAM3060 3247 TTGAGTTCATAATCTGGTCA TC- TCAT---- G TG TATCTTT
TGTGGGAATTGCTATCTTTG TTGAGT ATAATCTGG GT GGAAT C
TGATTTTGATTATTTCTTCC AACTTA TATTAGACC TA TTTTA G
AGATTATTTTATTCAA TTT TTCTTTAT G GT -------
GAM3062 22765 CTCTATGCCATGGTGGTGGT TA-- A T G GA CTCAAGA
TCTCTCGAGGGGCTCAAGAT CTC TGCC TGG GGTG TTCTCTC GGGG
CCTGAGGGAGGGGCACCCCA GAG ACGG ACC CCAC GGGAGGG TCCT
AGGCAGCATGAG TACG A - G AG -------
GAM3063 21699 GTGAAGGAGGAACTGAAGGG GG GAA CA T AC TT GACATA
TTCAACTGCGGGTACCACTT GTGAA AGGAACT GGGTT AC GCGGGT CAC AGGA
AGGAGACATATTCTGTGACC CATTT TCTTTGA CCTAA TG TGCCCA GTG TCTT
CGTGTAATCCATAAGTTTCT GA ATA -- - -- -- ------
AGTTTAC
GAM3066 12325 GGGGTTATAATGAGAAGAAA GG--- T AA-- AA G AATATTCA
ATAACAGACAATATTCAGTG GG TTATAA GAG GAAAAT CA AC
TGAGATTTTTCAAGTTCTTT CC AGTATT CTT TTTTTA GT TG
ATGAAGAAGCC GAAGA T GAAC GA G --------
GAM3067 21291 AAGAGAAAATGGTACAGCAG - C TTACAA T GACATGGAAGA
TTACAAGAGGATGTGGACAT AAGAGAAAATGGT ACAG AG GAGGA GTG
GGAAGATGCTCCTTAAAAAT TTTTCTTTTACCA TGTC TC TTCCT CGT
CTCTGTAACCATTTTCTTTT A - TAAAAA - ----------
GAM3068 11321 GCTGGAGCCTGCAGCCGCAG A T ----- - A C- G TCGATTCC
CTGGTAGTCCATCTGTGCGT GCTGG GCC GCAGC CGCAGCT GGT GT CATCT TGCG
CGATTCCTGCAGAGATGCAG CGACC TGG TGTCG GTGTCGG CCG CG GTAGA ACGT
CGCCGGGCTGTGTGGGTGCT A - TGGGT G - AC G --------
GTGGTACCAGC
GAM3070 16178 CGAGGGAACTTATTCCGCAC - CTT GC--- CCTACT GACCAT
GGGCCTACTGTAGGACCATC CGAG GGAA ATTCC ACGGG GTAG
TGCTCCCGTAATTAGGAATT GTTT CCTT TAAGG TGCCC CGTC

TTCCATTTG A T-- ATTAA T----- ------
GAM3073 18736 TGAGCCTCTCCTGGCTCTGT - - ------ TG TG CTAG
CTGCTGGTCTAGGCCAGGGT TGAGC CTCT CCT GGCTC TC CTGGT
GGGGCTGATCAAGGGCAGAG ACTCG GAGA GGG TCGGG GG GACCG
AGCTCA A C AACTAG GT -- ----
GAM3074 4830 ACAGTGATTCGGCACATAAA T TC CACA G AACTG
ACAGGTGCTGAACTGTAGCA ACAG GAT GG TAAAACAG TGCTG
GTTGTTTTACTCCATCCTGT TGTC CTA CC ATTTTGTT ACGAT
- -- TC-- G -----
GAM3075 20380 TAGTGGTTCTTCTTATCTCC - -- T C-- C CTTTA
ATCCCCATCGGCTTCCTCTT TAGTGGTT CTTCTTATCTC CA CCC ATCGGCTT CT
TAAGAAAGCCGGTCCTGGGC GTCGCCGA GAGGGGTAGAG GT GGG TGGCCGAA GA
TGAAGAGATGGGGAGCAGCC C AA C TCC A -----
GCTG
GAM3076 7240 GGGCCACTCAGGCCATGTGC ACTCA T CCCCTG - CCCTTAAA
ACCCCTGGGCAGAGCCCCTT GGGCC GGCCATG GCA GGCAG AGC
AAAGCTGCTGTCACTAGATG TCCGG CTGGTAC CGT CTGTC TCG
CCCATGGTCCAGGCCT AC--- C AGATCA G --------
GAM3078 2190 CCTGTGGCATTTTCCTTATT TTTTC -- AA AACATA
GAATATTAACATAAGTACAC CCTGTGGCA CTTAT TG TATT
ACTGTGAGACTCTGCTACAG GGACATCGT GAGTG AC ATGA
G CTCA- TC AC ------
GAM3079 14318 GCTAGCATAAGTTTGAGGGT A ATAAG TG --- GC GGCTCACA
GATGCACAGGGGCTCACACC GCT GC TT AGGGT GAT ACAGG
TGTAATCCCAACCTTTGAGA CGA CG GA TTCCA CTA TGTCC
TAGCAGC - ATA-- GT ACC A- --------
GAM3080 13685 GTGTCAAGCCAGAGATTCGG T AG CG - G A TGTTCAT
GGCAGTAGATAAATGTTCAT GTG CA CCAGAGATT GG GCA TAG TAAA
TTTACTGATGCACTTTAGTT CAT GT GGTTTTTGA TC CGT GTC ATTT
TTTGGTCTGTTAC T CT TT A A - -------
GAM3082 16933 TCCTGAACGCAGCCTGCTGA AA- G G--- --- GAGA
GGTCGACTTGAGAAAGTTCA TCCTG CGCAGCCT CT AGGTC GACTT
GGGCCTGGAGAGAAGGCTGT AGGAC GTGTCGGA GA TCCGG TTGAA
GAGGCAGGA GGA A GAGG GAC ----
GAM3083 11012 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A ATTGTGGCA
CACTTTGACAGACATTATTG CTGG TGTT ATGG AAGTCA GAC GACATT
TGGCAAATGTCGTCTGACTT GACC ACAA TGTC TTCAGT CTG CTGTAA
ACTGTTTCAACAAACCAG AA CTT A ---- - ---------
GAM3084 19563 AGCTGCGCTCCCCTGCTAGA GC C TAGAA C CAA CTCAA
ACCTCCAAACAAGCTCTCAA AGCT GCT CCCTGC CCT CAAA GCT
GGTCCATTTGTAGGAGAACG TCGA TGA GGGATG GGA GTTT TGG
TAGGGTAGTCAAGCT AC T CAAGA T ACC -----
GAM3085 18555 AGGGACATTGCCTTATTTCT TG TA GCTAG AG A C TCCTCT
GCTAGATCAAAGTAGAAGTC AGGGACAT CCT TTTCT ATCAA TAGA GTC AGT
CAGTTCCTCTACTTGGCATC TCCTTGTG GGG AAAGG TAGTT GTCT CGG TCA
TGTTGATATCTGGAAAGGGT GT -- TCTA- -- A T ------
GGTGTTCCT
GAM3086 13892 TGAGGTGGGAGAATTGCTTG AGAA GAA-- AG C - A T GACCCAAG
AACCCAGGAGGCGGAGGCAG TGAGGTGGG TTGCTT CCCAGG G GGAG GCAG GGC GCAGT

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        AGGCTGCAGTGACCCAAGAT ACTCTACCC   AACGAG    GGGTCC  C CCTC CGTC CCG TGTTA

        TGTGCCACTGCACTCCACCC       CAG-    ACAAC    -- A   A   A  -   --------
        TGGGCAACAGAGCAAGACCC
        CATCTCA
GAM3087 9368  AAAAGTTATTTTATAAATAA   G  TTTT        AACTTC      C  T   AAGA
        AGGGAACTTCCAGGCTTTCA AAAA TTA   ATAAATAAAGGG    CAGGCTTT AG CTTT
        GTCTTTAAGAAAAGCTAAGG TTTT GAT   TATTTGTTTTTC    GTTCGGAA TC GAAA
        CTTGTTTGGCTTTTTGTTTA   G  TTT-        GGTTT-     -  -   ----
        TTTTTAGGTTTT
GAM3088 10566 AGCATGACTGACACGTCTGA   ATGA-- --    TC   C  GA--    TG TCT
        CCCCTGAGAAGGTGGTCTCT AGC    CT  GACACG  TGAC CCT   GAAGG  G
        GCCTTCCTAAAGGTGTCATC TCG    GA  TTGTGT  ACTG GGA   CTTCC  C
        TGTGTTCAAGGACGAAGCT   AAGCAG  AC    CT   T  AATC    GT ---
GAM3090 7135  AGTCAGTCCTGCTGTGGGAA       T--  ---   AA-- -  -  TCAG
        GCCCACACATCAGTGTGTTG AGTCAGTCC  GCT  GTGGG   GC CCA CACA
        GAGCAAAGTTCACGAAGGCC TCAGTCGGG  CGG  CACTT   CG GGT GTGT
        ATGGGCTGACT            TAC  AAG   GAAA  A  T   ----
GAM3092 15575 GCTGCCTCTCTGCAAAGTTG  TG      A---    GAGG    AGAA
        AGGCGGTGGAGAACTACTGA GC  CCTCTCTGC   AAGTT   CGGTGG
        GGACTTCTGAGCAGAGAGGT TG  GGAGAGACG   TTCAG   GTCATC
        GGT            GT      AGTC   GA--    ----
GAM3093 21054 CCCCAGGCATGGGCTGCGAG    G    CT  GA    -  G  AGAGGAG
        CAGCTGGTGGCAGAGGAGGC CCCCAG CATGGG  GC  GCAGCT GGT GC
        GGCTGAGCTGTGGCCATCCA GGGGTC GTACCT  CG  TGTCGA TCG CG
        TGCTGGGG            -   AC  G-    G  G -------
GAM3094 15610 CAGGATCGAGGGCGTGCTGT   ATC   C ------  --     -- GTGAAGCAGCTGAA
        GCGGGGCCGTGAAGCAGCTG CAGG  GAGGG GT    GCT  GTGCGGG  GCC
        AAGGTCACCCGCGCCAAGCC GTCC  CTCCC CG    CGA  CGCGCCC  TGG
        TGACAGCACCCTCTACCTG    AT-   A  ACAGTC  AC     AC  --------------
GAM3095 10086 CAGCGGTCTTCGTGCTGGCA   GG     C    CCTA-  CAGA  GA     AACG
        CCCTACAGCAGATGGAGCCT CAGC  TCTTCGTG TGGCAC   CAG   TG  GCCTGTC
        GTCAACGGACAGGTGACGGT GTCG  GGGAGCAC ACCGTG   GTC   GC  TGGACAG
        CCTGGTCATGTGCCACACGA   A-     -    TACTG  CTG-  AG     ----
        GGGAGCTG
GAM3097 5807  GCACAATTGAACCAACTTCC   A  TGA   CT  C   GAATCTTTATA
        ATCGTGAATCTTTATAATGA GCAC AT  ACCAA  TC ATCGT
        TTGACTTTGGTGTATAGTGC CGTG TA  TGGTT  AG TAGTA
                  A  TG-    TC  T   ----------
GAM3100 1486  TGGTGTGGAGGCCTATGTTC   TG      A    GC    -- C--  CACA
        TGCCCCATACACCCCACAGG TGG  TGGAGGCCT TGTTCT  CCCATA  CA   CC
        CCCTGCTTATGGGAAGGAAC ACC  ACCTCCGGA ACAAGG  GGGTAT  GT   GG
        ACAGGCCTCCAGCCCA      CG      C    AA    TC  CCC  ----
GAM3102 11065 GTGGATGGACTGGAAGGGGA   T    GA   A  TTCAT   AG   G   TGTAGCT
        TGTTCATGGTCAGCTGCGTG GTGGA GGACTG  AGGGG TG    GGTC  CTGC TGG
        GTGTAGCTCCGGTAGAAGGC CACCT CCTGGC  TCCCC AC    CCGG  GATG GCC
        CCCCAACCCCTCGGTCCTCC    -    --   A  CC---   AA   -  -------
        AC
GAM3103 20998 TCTTGCCCGCCCCTCAGCAC    CCG   TCAG-   TG            GAAGCTCTGTG
        CCTGCCTTGTCTCCAGGAGG TCTTGC  CCCC    CACCC  CCTTGTCTCCAGGAGGTCC
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        TCCGAAGCTCTGTGGGACCT GGGATG  GGGG   GTGGG GGAACGGGGGTTCTCCAGG

        CTTGGGGGCAAGGTGGGGTG    A--  CCGGA   GT           ----------
        AGGCCGGGGAGTAGGG
GAM3104 10256 ACCAGTGGATCGAGCAGGAC      ATCGAG    TG  AAGTA    GAGAG
        ATGGAGAAGTACATCCTGAG ACCAGTGG    CAGGACA GAG   CATCCT
        AGGGGATGAGACGTTTGCTG TGGTCGCC    GTCCTGT TTT   GTAGGG
        TCCTGAGCCGCTGGT          GA----     CG  GCAGA    -----
GAM3105 20195 CGGGCTGCGCGCACAGCTCA  GC C  CACA T  CC  TAAC  AC GCCCC
        GACCTCGTAACGCGACGGGC CGG TG GCG   GC CAGA TCG   GCG GG
        CCCCCACTGCCGACATCTGC GCC GC CGC   CG GTCT AGC   CGT CC
        GCCCCGCCGACCG        A- -  CC-- C   AC  ----  CA -----
GAM3106 35   CCTCGGGACACATGGTTATC     GA-----  TG-     -  GATACCTTGAAGAA
        TCAGTGATACCTTGAAGAAG CCTCGG     CACA  GTTATCT CAGT
        CTGAAGATAACAGCTGTGGA GGAGTC     GTGT  CAATAGA GTCG
        CAAGACTGAGG          AGAACAG   CGA     A  ----------
GAM3107 11869 AGTCTGTTGTTAGTCTTAAA    G GTTAG--   AAAAA    --   AATGAAAA
        AATGAGGAGGAAAATGAAAA AGTCT TT     TCTT    TGAGGA GGAA
        TTCCATTTCTCAGTACAAAG TCAGA AA     AGAA    ACTCTT CCTT
        AATCCGTGAAGAGACT       G GTGCCTA   ACATG    TA  --------
GAM3108 20159 TGAGTCAGCTGCTTCCACAT  G      T  CATAAA       ACG--  G  GAAA
        AAAAGTCATATATACGCAAG TGA TCAGCTGCT CCA    AGTCATATAT    CAA GTA
        GTAGAAATATGTTGAGACAA ACT AGTCGACGG GGT    TTAGTATATA    GTT TAT
        TATATGATTATGGTGGCAGC  -      T  A-----       ACAGA  G  ----
        TGATCA
GAM3109 19323 GGGTCTTTGGAGGGGAGTTT       G - G T-   C    CAAC
        GCCTCTCCCAACGGAGAGCA GGGTCTTTG AG GG AG  TTGC TCTCC
        GTTCTACCACTACAAGGATC TCTAGGAAC TC CC TC  GACG AGAGG
        T                  A  A  A  TT   -    ----
GAM3110 5826  ATCATCTGTACCATTGGCCC      G  CA TG  CCATG   C  GATC
        ATGCTTCCCTGATCAGTGGA ATCATCT TAC  T  GC    CTTC CT
        GACTGTTGAATGTGAGATGA TAGTAGA GTG  A  TG    GAGG GA
        T                -  TA GT  TCA--   T  ----
GAM3111 20744 GGCCGCTGGGAGCCTTGAGA   -    AGCC      C  - CAA  A    ATC
        GCCATGTGCAAAGAGGACAG GGCC GCTGGG   TTGAGAGC ATG TG  AG GGACAG
        ATCCTGTTCCTGTCACCATT TCGG CGACTC   AGCTCTCG TAC AC  TC CTTGTC
        GCTCTCGATTCACTCAGCTG   T    ACTT     T  C  TG- -    ---
        GCT
GAM3112 10949 CTGGGTATCACCAGCGGAGG     AT ----  C    T   A     TGA
        CTGCAGAGCAGCAATGATTG CTGGGT  CA   CCAG GGAGGC GCAG GCAGCAA
        CTGCCTGTTGTTTCCTCTGG GACCCA  GT   GGTC CCTTTG TGTC CGTCGTT
        AAGCTGCGACCCAG         GC  CGAA   T    T  -     ---
GAM3113 9296  AGTCCTAGCCCTGCTGAGTG        TGCT  G    C  GCAAA  TCGACCCAC
        TGACATGCAAAGCTTCGACC AGTCCTAGCCC   GA TGTGA AT    GCT
        CACAGCAGGAAGTCTCACAG TCAGGATCGGG   TT ACACT TG    CGA
        TTCTGGGCTAGGACT            TC-- G    C  AAGGA  ---------
GAM3114 2082  TGTGTACCGGCACGCCCACC  T AC   AC   A   -   T  ---      - TACATTT
        GAGGCTCTGGCGTCCTTTTG TG GT  CGGC  GCCC CCGA GGCTC GGC  GTCCTTTTG AC
        ACTACATTTGTCCGGGAGGG AC CG  GCCG  TGGG GGTT CCGAG CTG  CGGGAGGGC TG
```

CAAGGTCGAGCCGTTGGAGG - GT -- A G - GAA C -------
GTGCCGTGGCCA
GAM3115 8219 CCCCATTTTCTTGGGAGAAA T - GAA------- AAGT --- AGAAATTC
TTCAAGTTTGCTGCAGAAAT CCCCATT TCTTGG GA ATTC TTGCT GC
TCGCATAAGTAATGAGGAGT GGGGTAA AGAACC CT TGAG AATGA CG
GAAATGTTAATCACCAAGAC C A AATTGTAAAG GAGT ATA --------
AATGGGG
GAM3116 2283 GGGTGGCATGGGGAGCAGCT CA G T C TGCA CATCCAT
AGAACAGTGCAGATTCATCC GGGTGG TGG GAGCAGC AGAA AG GATT
ATAATCCCTTTCTGCTGTTC CCCACC ACC CTTGTCG TCTT TC CTAA
ACCACCACCC -- A - - C--- -------
GAM3117 8583 GTACCGCTCTGTCATCTAGG G GTC--- G A-- - ATACT
TTGGTGTGCAGTGGAGTGGC GTACC CTCT ATCTAGGTTG TGTGC GTGGAGT GGC
ATACTGTTAATTTCACAGAG CATGG GAGA TGGATTTAAT ATATG CACTTTA TTG
TATATAATTTAGGTTTCCAA - AACCTT - AGA A -----
AGAGGGTAC
GAM3118 22064 AATTCGAGGTTGCCTGAAAA GTTGC --- CCTT - TTTTCCT
GCTGGGTGTCCTTGCTCCTT AATTCGAG CTGA AAAGCTGGGTGT GCT CC
TTCCTGGAAGCCAATATACC TTAAGTTT GACT TTTTGACCCATA CGA GG
CAGTTTTTACTCAGTTTGAA ----- CAT TAAC A -------
TT
GAM3120 13677 TCGGCAGGTCTGCAGTGGGA C T-- T ACCT AGA- - TGACTT
ACCTGTGGAGACAAAAGTGA TCGG AGGTC GCAG GGGA GTGG CAA AAG
CTTCTTCTTGGATGCCACTC AGCT TTCAG TGTC CCCT CACC GTT TTC
CCCTGTGTTGACTTTCGA - TTG - ---- GTAG C ------
GAM3121 733 GAGGCGGAGCTTGCAGTGAG - AG A- G ATCCCGCACT ACTCCA
CCGAGATCCCGCACTGCACT GAGGCGGAG CTTGC TG GCC AG GC
CCAGCCTGGGCGACAGAGCG CTCTGCCTC GAGCG AC CGG TC CG
AGACTCCGTCTC A AG AG G ---------- ------
GAM3122 497 CCATTAAGATATTGTAGAGC A TGT AT--- T AAATT AGCT
TTATTCCTTCCTCAAATTCC CC TTAAGATAT AGAGCTT TCCT CCTC CC
AGCTGGTTTGGAGGTGGGAT GG GATTCTGTG TCTCGGA AGGG GGAG GG
GCAGAGGCTCTGTGTCTTAG A --- GACGT T GTTT- ----
AGG
GAM3124 19128 AGCCTTCATCGTCTGGCTGG G G - C AC-- CCTCC
CCAACGGGGACACCCTCCGT AGCCTTCATC TCT GCT GG CA GGGGACAC
GTCTTCAAGATGACCAAGCG TCGGGGGTAG AGG CGA CC GT CTTCTGTG
GGAGGATGGGGGCT G G A A AGAA -----
GAM3125 4791 GGAAAGTACTCACCAGGAGT AG C GA--- CT -- AG CA TCG
CTTGTTCGTCTGAGAGGTTT GGAA TACTCAC AG GT TGTTC GTCTG AGGTTT GAGT
CAGAGTTCGATTCCAGAATT CCTT ATGAGTG TC CA GCAAG CAGAC TTTAAG CTTA
TACAGACATGAACGCAACCG CT - AAGGC AC TA A- AC ---
GAACTGTGAGTATCTTCC
GAM3127 13339 GCTATCTGGGGCCGAGAGCT - - C TGCCCCCT T C GGTGG
GCCCCCTGAGCTAGAACTCC GCTATC TGG GGC GAGAGC GAGC AGAACTCC ATT
CATTGGTGGAATTGGAGTTC TGATAG ACC CTG CTCTCG CTCG TCTTGAGG TAA
TGCTCGCTCTCAGTCTCCAT T T A -------- - T -----
GATAGT
GAM3128 23013 CTGCCTAGGATACTGATGGT - A T GAT --- A T TGGA
CGTGAAGATGTTCAATGATG CTG CCT GGA ACT GGTCG TGAAG TGTTCAA GA

GATCTTTGAACAGCTTCAGC GAC GGA TCT TGA CCGGT ACTTC ACAAGTT CT
GTGGCCTTAAGTTTCTAAGG A A T ATT GCG G T ----
ACAG
GAM3129 12497 GGCAAGAAGGTGCTGACTTC GA TGACTT GATG TAAAGCACC
CTTGGGAGATGCCATAAAGC GGCAA AGGTGC CCTTGGGA CCA
ACCTGGATGATCTCAAGGGC CCGTT TCCACG GGAACTCT GGT
ACCTTTGCC -- ------ AGTA ---------
GAM3130 6296 ATATATGCATTGGTGAATAT - A AATATA G C C ACTT
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ATACTTATATGGGTATCTGT TATAT ATG GATTAT ATA ATATGT TATGGGT TA
ATAGATAATCTGTATTAGAG T A GTCTA- G C A ----
TATTATAT
GAM3131 6730 TTTCTCTATGAATCTCATCA GAATCT CAGAC C GACT-- AATTCATAAC
GACTCTGGCGAGACTTTTGA TTTCTCTAT CAT TCTGG GA TTTG
ATTCATAACCAAGCCAACAT AAAGGGATA GTA AGACC CT GAAC
CTCCAGACATGTAAAAATAG AAAAT- C---- T ACAACC ----------
GGAAA
GAM3133 18321 CATTATGTAGAATGGAATGT A - ----- AAA TC CGCTTAAAAC
GAAACATCATCCTCGCTTAA CATTATGTAG ATG GAA TGTG CA ATCCT
AACAGGATTTTGCCACAATT GTGATGTATT TAC CTT ACAC GT TAGGA
ATTTCACATATTATGTAGTG A A TATTA C-- TT ----------
GAM3134 15644 CGGGCCAGACTACTCAGCTT ACTACTCA G C - A GCC
CACGGTCATGTGGAACCGCC CGGGCCAG GCTTCAC GT ATGT GGA CC
GGTCCGGCATCACAGTGGAG GCCCGGTC CGAGGTG CA TACG CCT GG
CCCCTGGCCCG CC------ A C G - ---
GAM3135 17854 AACATACAGAAGAAGCAAGG A - AGAA- A ACAGT-- CAC- CCCGAAGC
AAATTACAGTTAGAGGTCAC AACAT CA GA GCA GGAAATT TAGAGGT AACTG
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AAATTTTTATGAAGCCAATT G A GTAAA C CCGAAGT AATC --------
TCCCTGCAAATGTCATGGAT
GTT
GAM3136 10396 CAATGTGTTGCTCCAAGCAT - --- --- A C AGAT ATGTCCCTTC
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CCCTTCGCGGTAAGGCTGTG GTTAC ACA ACGGG GTTCGTG GTGT CG GGCG
GTGCTTGATAGGGCAAGAAC C AGA ATA - - GAAT ----------
ACCATTG
GAM3137 1810 GAAGTACTTCACCCTGGGGC TA CCT----- --- -- GGG CCC C TG GCTACAAG
TCCCCACTGGGAGTACCCCA GAAG CTTCAC GGGGC TCCCCA CT AGTA CA T GCT
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GATTGAATACTATAAGAATG CA TATAAATT TCC AA ATA AA- T GT --------
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GTGAAGACCTTC

-

GAM3142 18057 GCTTCCCCAAACAGCTAGGA CCCCAAA AGGA CAACATATT C ATTT
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CAGGTCATTTGATCTTGAGG CGAA GTCGG ACTTCC GGAGT TCTAG
TCCTTCAAGGCTGACTCCAA CCTCA-- A--- T-------- - ----
GC

GAM3145 13872 TGTCGACTCCTCATGCTGGA C TCCTC C ---- - TC CTTTGT
CTTGTCTTTCGGGTTCTTTG TGT GAC ATG TGGACT TG TCTT GGGTT
TAGCCCAGGGGAGCATCAAA ACA CTG TGC ACCTGA AC AGGG CCCGA
GTCCACGTTCATGTCACA - TACT- - AACT G GA ------
GAM3146 15597 AGTGCAGGATGTGCGGGTTT GGA C T A AAAC- GTCCCAT GTTTGCTG
GTTACATAGGTAAACGTGTC AGTGCA TGTG GGGTTTG TAC TAGGT GT GGTG
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TATCAACCTATCACCTAGGT --- - T G CTATC ACTAT-- --------
ATTAAGCCCCACATGCATT
GAM3147 21807 GCATCGACCGCGGGCGCTAC GA- G A G ACTCCCC
GGGCTTGACTCCCCCAAGGC GCATC CCGCGGGC CT CGG CTTG
CGAGGTCCGCGGCCAGGTGC CGTGG GGCGCCTG GA GCC GAAC
ACC - - G -------
GAM3148 18136 GTGGTGTTGTTTTGGTCCTG - TTTT CCT- GA TGAA
ATAGGAAGCTGAAGCTGTCT GTGGT GTTG GGT GATAG AGC
ATCCTCTACCCAGCTACCAC CACCA CGAC CCA CTATC TCG
T ---- TCTC TG ----
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TGCAGTTTGTCTTTCCATCC CCTGGGGT CTGA TTCTGTTTG ACG
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GAM3150 13161 GTGTGTCATCGATATCCTCA ATC--- AT TT TA ACCTTCA
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TACGAGTTTGGGGCAGTCTC CACACAG CTG GGGGT GAG ATCG
CTCAGACACAC ACTCCT AC TT C- -------
GAM3153 15297 GGCTGCTGTAGGACGGTTGC T A A T-- C---------- TTGC
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CATGTGAGTGCCATTCCTTG CCGACG CA CC GTC ACGGGGTTC CAGCC
GGGCATTTCTGCCACTGCAG T - - TTT CTTACCGTGAGTGTA ----
CC
GAM3154 13991 GAGGAGGCGATAGACTTTCT G G AG T TCG-- CAATCC
TCGTTGCAATCCCAAAATCT GAGGA GC AT AC TTCT TTG
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G A CT T TCTAA ------
GAM3156 9493 CCAAATCCAGCAGTTCTGTC AATC G C- TCAGC GAGC
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ATCAATAACTGGTGCTGTGG GGT GT GTCAA AC TTTTCT
GTC- G TA TAT-- ----
GAM3158 5990 TCTACACTGTGGAGTACGCC A - C - AG-- TGAAGAACC
TGCAGCGCCGTGAAGAACCT TCTAC CTGTGGA GTA GC CTGC CGCCG
GGTGGACAGCAGCGTCTACT AGGTG GACGCCT CAT TG GACG GTGGT
TCCGCAGCGTGGA C T C C ACAG ---------
GAM3159 17096 CCCGCGGGGCCCGTGACTGG - GT CT- - ---- - GCCA
TGCTGGGCTTCAGCCATGAA CC CGCGGGGCCC GA GGTG CT GGG CTTCA
GACCCTCATAGCCGCCTACT GG GCGTCCTGGG CT CCGC GA CCC GAAGT
CCGGGGTCCTGCGCGG C GC CAT C TACT A ----
GAM3162 6198 CGGATATCTGTGTCTTTCTA -- --- TT A A CAAAAACA
CCACGTCAAAAACAACGGGA CGGATATCT GTG TC TCT CC CGT
AGATTGAACTCATCAAGATG GCTTGTAGA TAC AG AGA GG GCA
TTCG AC TCA TT A - --------

GAM3164 657 GGGTGCTGGTGCTGAGCTGG G T G T - AAAAG GCAC
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GGGAGCCCCGCTGGGCCCAG TCCA GACC CGG TCG CCC AGG AGA
ACCT - - G C G GA--- ----
GAM3165 764 AGAGTCTCACTCTGTCACCT TC C TC --- CT A - - G ATCT
AGGCTGAAGTGCAGTGGCGT AGAG TCACT TG ACCT AGG GA G TGCAGTG GC TG
GATCTCAGCTCACTGCAGCC TCTC AGTGA AC TGGG TCC CT C ACGTCAC CG AC
TCCACCTCCCGGGTTCAAGT TT - T- CCC AC C G T - ----
GATTCTCT
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GGCCTTGAGGATAACCTGCA CAG GAAGCAGGA GTA GGCC TG AGG
CTGGTCTACCTTCTGCTTCC GTC CTTCGTCTT CAT CTGG AC TCC
CTG C C --- TC G ----
GAM3167 12714 GTTGTCACTTAACCCCCAGG TG TTA CAG- TA--- T TCTTTT
AGTTATTTATTATCTTTTTG GT TCAC ACCCC GAGT TTTA TA
TTAAAGTCAGGCTCATTTGG CA AGTG TGGGG CTCG AAAT GT
GGTAATGTGATGAC GT TAA TTTA GACTG T ------
GAM3168 21666 TGTCCCAAGCAAGGATAGGG A ATAG A AA AGCC-- TGGA
AAGGGGAATGGTTGAGCCTC TGTCCCAAGCA GG GG AGGGG TGGTTG TC
TGGAGATCATTGTAACCAAC ACGGGGTTTGT CC CC TCCTC ACCAAT AG
TCCTGCCAGACCTGTTTGGG - AGA- G A- GTTACT ----
GCA
GAM3169 8445 GTCCTTCATGGGCCTGCTGG T GC---- AT--- CACC
CCATGTACACCTACTTCCAG GTCCTTCA GGGCCT TGGCC GTA
GCCAAGATAAGGGCCCTGAA CGGGAAGT CCCGGG ACCGG CAT
GGGC - AATAGA ACCTT ----
GAM3170 19899 GCCCCAGCCACCATATACCC CACCATA CCTG TGCACTTT
CTGCAGTTTGCACTTTAATT GCCCCAGC TACC CAGTT
GATGGTAGTTCAGTTGGGGT TGGGGTTG ATGG GTTAA
ACTTG-- TA-- --------
GAM3171 21213 GCGGCCACCGTCAACAGGAG - A- AGCACTC GGAGAACATGGTAGA
CACTCGGTGCCGGAGAACAT GCGGCCACC GTC ACAGG GGTGCC
GGTAGAGGCACCTCTGTCGG TGCCGGTGG CGG TGTCT CCACGG
GCAGGTGGCCGT A GC ------- ----------
GAM3172 19418 CCAGCCAATGAAGTCTGTAC CA AAGTC - T TG T GGAAAA- C T TG G -- T
TCTGGTGGCTTCCAGTGGAA CCAGC ATG TGTA C CTGG GCT CCAGT GG AT T GAG CAG
CC
AAGGCATTTTGGAGGCAGCC GGTCG TGC ACAT G GACC CGA GGTCA CC TA G CTC GTC
GG

TGCAGGTCCTGGCTCTGGCA AG ----- T T CA - GAGAGAG - C GT G CT -
TCCGAGAGAGACTGGAGCAC GCA
CCAGTGTTACACGTGAGCTG
G

GAM3176 22030 CGGAGGCTGCGGCTGCAGAA GA TG AAGT - CT -- A GCAA
GTACCGCCTGCGGAGTAACT CG GGC CGGCTGCAG AC CGC GCGGA GTA CT
GCAAAGATGCTGTCCGTGCG GC CTG GCCGGCGTC TG GCG TGCCT CGT GA
CGTTGCTGCGGCCGTGGTCC GC GT GT-- C -- GT A ----
GCG

GAM3177 7318 GCGGAGTCTCGGCGTGCCCT GG- T- T TGGG G G AGGG
GGGGCGGCGCGGGCGCAGGG GC AGTC CGGCG GCCC GC GCGCG GCGC
GCGCGTGCGCGGCGGGCTGT CG TCGG GCTGT CGGG CG CGCGT CGCG
CGTTGGCTGGAGC AGG TT - ---- G G ----
GAM3178 9634 GTACACCAGAGACTCCGGGT - GAG- TC- - TC C CAGA TTCT
CACTCACTGTCAGAATATTC GTACAC CA AC CG GG ACTCA TGT ATA
TTATACATACAATGAGTCTC CATGTG GT TG GC CC TGAGT ACA TAT
CACGCCTGTACAATGAGTGT A AACA TCC A TC A TACA ----
AC
GAM3179 2102 GAGTGGCCGGCAGAGCAGTG G A -- TG AACC AGGG
GGCATCAACCTGGCAGGGGC GAGTGGCC GCAG GC AG GGCATC TGGC
CACCCAGATGCCTGCTCAGT TTTACCGG TGTT TG TC CCGTAG ACCG
GTTGTGGGCCATTT G G AC GT ACCC ----
GAM3180 16207 TCCCACTGAACTTTTTCTCC - - C ------- - C ACTA
AATTCGCGTACTAGCCGGAC TCC CA CTGAA TTTTTC TCCAA TTCG GT
TTGGATTTTCTGGAAAGATT AGG GT GACTT AGAAAG AGGTT AGGC CG
TCAGTTGAGGA A T T GTCTTTT C - ----
GAM3181 18554 CCAGCGCCCAAGGAAGGCCA ---- CC-- G---- C C GG AACTT
CTTCTCAACTGGCAGAACTT CCA GCGC AAGGAAG CCA TTCT AACT CAG
CTGAAGTTTAGAATTGGAAT GGT TGTG TTCCTTC GGT AAGA TTGA GTC
TACTTCCTTACTAGTGTCTT TTTC ATCA ATTAA T T A- -----
TTGG
GAM3182 17155 CAGGAGAAGTCTAATCCACA GTCT CA TTACA TT- TAT TATAAGT
GGTTACACCTATGTTTGATA CAGGAGAA AATCCA GG CCTATGT GA GA
TGATATAAGTTCTCTTTGCG GTCCTCTT TTGGGT CC GGATGCG CT CT
TAGGCCACTGGGTTTTCTCC ---- CA ----- TTT --- -------
TG
GAM3184 19859 ACAGTTGTTCCTAGCTTAGT TG TA- TAGTGTTTT- TTC- GCAT
GTTTTGTTTTCCTGTTGCAT ACAGT TTCC GCT GTT CTGTT
GACAGATTTAACTATTCTTT TGTCG GAGG CGA CAA GACAG
CCAGCAGTGGAGGTGCTGT TG TGA CCTTTCTTAT TTTA ----
GAM3185 3386 TCAGCACTGTGGTGAGCTCC A--- GTG C AG-- TCAGAT
AAGGAAGTGAATAAGTTTCA TCAGC CTGTG AGCTC AAGGA TGAATAAGTT
GATGGCTTATTCAAACCTCC AGTCG GGTAC TCGAG TTCCT ACTTATTCGG
TTAGAGCTAACATGGATGGG GGTA AA- A CCAA ------
CTGA
GAM3186 1499 GCCTGAGCGAGCAGAAGGCC CG AGAA - - A---- A ACTCGGC
CGCGAGACGCTCAAGAACTC GCCTGAG AGC GGCC CGCG AG CGCTCA GA
GGCTCTGAGCGCGCAGCTGC CGGACTC TCG CCGG GCGC TC GCGAGT CT
GCGAGGCCGCTACTCAGGC A- ---- A G GACGC - -------
GAM3187 6882 TGGTGAGGAGACACCGGGCT G - C ATACTGA CTAT
GTTTATACTGATTGTTCTAT TGGTGAGGA ACACCG GG TGTTT TTGTT
AACAGGTGAAGAAACAACCT ATCACTCTT TGTGGT CC ACAAA GACAA
TGGTGTGTTCTCACTA G T A GAAGTG- ----
GAM3188 14965 AGTTAGCAGTGGGGATGGCA TT ATGG - AG- A CACT
GCAGTAGAAGGAATCACTGT AG AGCAGTGGGG CAG C TAG AGGAAT
TTCTCCTAGGAGTCTGAAGG TC TCGTCGCTCC GTC G ATC TCTTTG
CCTCGCTGCTTTCT TT GGAA T AGG C ----
GAM3189 3167 TTGGCTCTGTTGTTCCTTTT TG CT CCTTTTTTA C - AGCATCTCAG
TTAATTCCCCAGGGTCTAGC T GCT GTTGTT ATTCC CAGG GTCT

ATCTCAGAGACACTTGTGGA A CGG CAGCAA TAAGG GTTC CAGA
ATGAATTCATTAACGACTGG GT T- TTACTTAAG T A ----------
CTGA
GAM3191 6095 GAGAGGTTTAGTCAAGAATA TT----- C TACCAAAG CAT-- ATCATCA
CCAAAGCCCATGTCATCATC GAGAGGT AGT AAGAA CC GTC
AGACTCCTCGGATTCTTCTT CTCTTCG TCG TTCTT GG CAG
TCTTTGCTTCCACTTGCTTC TTCACCT T TCTTCTTA CTCCT -------
TC
GAM3192 18850 TGAAGGGAGGCACTGAGGTC CAC GT -- A GGGG
TTCTGATCTGGGGAGAACAG TGAAGGGAGG TGAG CT TCTG TCT
ACTGGGACTCATCTTCCTTT ACTTTCCTTC ACTC GG AGAC AGA
CA T-- AG TC A ----
GAM3193 20190 ATGAGGGCAGCACCTGCCTC CA CTGCC A GAAATCATGCAA
TGAATGGGAAATCATGCAAC ATGAGGG GCAC TCTGA TGG
TACTCAGAATGTGTCCTCCT TACTCCT TGTG AGACT ATC
CAT CC TA--- C ----------
GAM3196 18497 GCCAATAAGCGCCGGTATGC AA - A C GTAT GATGG
CCCTGTATTGGGATGGCCAC GCCAAT GCG CCGGT TG CCCT TGG
AAGGGTCACATTGGATGCGA TGGTTG CGT GGTTA AC GGGA ACC
GTTGGT AG A C T AC-- -----
GAM3199 10570 GTGCCTTTAACTCTTTTGGC CTT CTTT C ATT-- AACCCCAATACAAATGCCA
CCTTGGGAGTCATTGCAACC GTGC TAACT TGGCC TTGGGAGTC GC
CCAATACAAATGCCAGCCCA CACG ATTGA ACCGG GACCTTTAG CG
GGGATTTCCAGTGGCCACAA TT- AC-- T GGACC ----------
GTTATTGCAC
GAM3200 7340 GGCGGCGAAAGGACCGGCTT - - - A G- TA G AG - G GGTG
AATGCCAGACCGGGAGTTGG GGC GGC GA AAGG CC GCT AT CC AC CGGGA TTGGA
AGGTGTCCGATCTCGAGTGG CTG CCG CT TTCC GG CGA TA GG TG GCTCT AGCCT
GGATCCAGCAAGGCCTTCTC A A C - AA CC G G- A - ----
AGCCAGTC
GAM3201 9402 GCCAAGGAAACAGGATGCTG -- AAC T GA C-- --- G GGACTGT
ATAGTCTCCAGCGGGCCTGG GCCA AGGA AGGA GCT TAGT TCCA GC GGCCT
ACTGTGGGCTGGTGTGTGGA CGGT TCCT TCTT CGA GTCG AGGT TG TCGGG
ACTGCTGCAAGCTTTCTTCC GG --- T AC TCA GTG G -------
TGGTGGC
GAM3202 6554 GCTTCCCTGGGAGAAAGTCC T- AGAA - ---- CC T CCA
TTCCCTCCCCATGGCCCAGC GC TCCCTGGG AGTC CT TC TCCCCA GGC
CCTGGGGAAAGAAAGCAGAG CG AGGGACTC TCAG GA AG AGGGGT CCG
ACTAACTCAGGGACTGC TC AA-- A CGAA AA C ---
GAM3203 10670 CTCCTGCTTTATATAACTTC TTAT T TGAATCCA A- G AAACTAATGGC
TTGAATCCAGCTAAGAGATT CTCCTGCT ATAACT CT GCT AGA ATTTAT
TATAAACTAATGGCATAAAT GAGGACGA TATTGA GG CGA TCT TAAATA
GTCTGGAGCCAACCTTGGCA ---- C TTCCAAC- GG G ----------
GTTATAGCAGGAG
GAM3204 15179 CAGGACCCAGTGAGGCACGA AC G CAC C G- TA G TTTC
CGTGGTTTACTAGAAGTGGC CAGG CCA TGAGG GA GT GTTTAC GAAGT GCCGG
CGGTTTCCTGGCAGCTTTGT GTCT GGT ACTCC CT CA TAAATG TTTCG CGGTC
AAATGGACTCTAACCTCAGT AA G AAT - GG -- A ----
GGAATCTG
GAM3205 2710 TCCGGATTGGCAGGTAGCGG TT G G ---- - --- CT ATTG

GTCAGGGGTCGTGCCTGGGA TCCGGA GGCAG TAGC GGTC AGG GGTC GTGC GGGAAA

AAATTGTTTCTCCCGCATCT GGGCCT CCGTC GTCG CCAG TCC CCAG TACG CTCTTT
TGACCTCCTTCTCGACCAGC -- - A CTCT T TTC CC ----
TGCTGCCTCCGGG

GAM3207 240 GGCCAAGCCCAGCTTGAATA C CCC- T -- - C------ CG- CTCTA
CCTGGGTCTGCAGGCGTCTC GGC AAG AGCT GA ATA CCTGGGTCTG AGG TCT
TCTAAGAAATCCTCTATCTT CCG TTC TCGA CT TGT GGACCCGGAC TCC AGA
CAGGCCCAGGATGTAATCCA - TACT C AA A TTCTATC TAA -----
GCTTCATCTTGCC

GAM3208 2437 CGCTGCCCGCGACTCCTGAG - A - - A - ATGGC
CACACTCCCATGGCGGGTGG CGCTGCC CGCG CT CCT GAGCAC CT CCC
CGTGCTCTGGGTGGGTGTGC GTGACGG GTGT GG GGG CTCGTG GG GGG
GGCAGTG C G T T C T -----

GAM3209 20221 TTTCTGGGTACTTACGGTCC G TT CCTGA - TTCGT
TGAGTCTCAAGTTCGTCTTC TTTCTGG TAC ACGGT GTCTC AAG
GAGATGCTGTTGTGCCAGAA GAAGACC GTG TGTCG TAGAG TTC
G - T- ----- C -----

GAM3210 17423 TGAATGTCAATTTTGAAATG AT A TGAA- AG A T AGTA A GAAAGCAAG
GAGGGAGACAGTGAAGTAAT TGA GTCA TTT ATGG GG GACAG GA ATT TG
TATGGAAAGCAAGCAAAATC ACT CAGT AAG TACC CC CTGTC CT TAA AC
CAGTCTCTGTCCCACCATAA AT A TAAAA A- - T GACC A ---------
AATGAAATGACTATCA

GAM3212 14594 GCTGAGATGTCCTCTATTCT G ATG C TAT- TTGA C T TTGGAGCT
TGAAGAGCGTATTCTTGGAG GCT AG TC TC TC AGAG GTAT C
CTGATACCTCTGTTGATCTT CGG TC AG AG AG TCTC CATA G
GAAGAAACTGGGC G AA- A TTCT TTG- - - --------

GAM3213 1474 TCCTCCTGTCTTGGTCTAAA CC G A CAT GAGATTA T A CACCAT
CATGTTGAGATTACAGGCTT TCCT TGTCTTG TCT AA GTT CAGGCT G GC
GAGCCACCATGCCCAGCCTG AGGA ACAGAAC AGA TT CAA GTCCGA C CG
AAAAACTTTTAAGACAAGAC TT - A TT- AAA---- - C ------
ATTAGGA

GAM3214 9835 TGTCTTTTGCCGAAATGCTA GCCG-- CT ---- GAAA ACTA
ATGATTTCTGTGAAAACTCA TGTCTTTT AAATG AATGAT TTCTGT ACTC
CTAGGGTACAGGAGACAATC ACGGAAGA TTTGT TTACTA AGGACA TGGG
ATTTATGTTTAAGAAAAGAA AAAGAA AT ACAG ---- ----
GGCA

GAM3215 18021 ACACTGGTATAAAACACAGT ----- ACA---- AAACAATTAGAAAAATGA
TTAAACAATTAGAAAAATGA ACACT GGTATAAA CAGTTT
AAACTGATACCACTTTATGC TGTGA CCGTATTT GTCAAA
CTCTATAGTGT TATCT CACCATA ----------

GAM3216 15637 CTTTTCTCACCGAAGTGATC T TC GAAG GG- G - A GTATATGCAA
TGGAATGTGCTACCGTATAT CT T TCACC TGATCT AAT TG CT CC
GCAAGGAAGACAGGTTACAA GA G AGTGG ACTAGA TTG AC GA GG
GATCAAGGTGAAGGCAG C GA A--- ACA G A A ----------

GAM3217 11570 TCTGGGATGTGGCGGATTAT GA C-- GATAC GCTC- AAAACTC
GTGATACCAGCTCAGGAGGA TCTGG TGTGG GGATTATGT CA AGGAGG
AAACTCCCTCTTCGTCATGA AGACC GTACC CCTAGTGCA GT TTCTCC
CCAACGTGATCCTCACCATG AA ACT ACCA- ACTGC -------
AACCAGA

GAM3218 16955 GGCCCCAGGACGCCAGGGTG - A AC G T C T T - G TGTCC
GCCGGCTGCTGGGCCACGTG GGC CCC GG GCCA GG GGC GGC GC GGGC CAC TGC
CTGTCCGTGGTGAGCCCTGC CCG GGG CC CGGT CC CTG TCG CG CCCG GTG GTG
CGCTGTCCCATGGCCCAGGG A A -- A - - C T A - -----
AGCC
GAM3219 21228 GCCTGGCTCCAGCAGCCTGG - TG T A-- ATGGC G C AAAACACCCCAGC
GCATGGCGGCGACTCCCCCA GC C GC CCAGC GCCTGGGC GGC ACTC CCCA
AAAACACCCCAGCTGGGTGG CG G TG GGTCG TGGATCCG CCG TGGG GGGT
GTGCCTGGGGGCCTAGGTGA A GT T GAG GGGGT - T ----------
GGCTGGTGTTGGAGC
GAM3222 8990 GTGTAAAATTTCTCCCGGGC AAATTTC --- AC TC CCGCGT
ACTGGAGTCTTGCTCCGCGT GTGTA TCCC GGGC TGGAG TTGCT
AGTAACTCTCCAAGCCTTCT CACGT AGGG TCCG ACCTC AATGA
GGGATGCAC ------- TCT A- TC ------
GAM3223 11138 CTTCCTATAAAAGTTTGCTC AAAAG C TT- GGAAA G CAAACAACATT
TCTCTTTTTGAAGGAAATTT CTTCCTAT TTTGCT TCTC TTTGAA TTTCT GG
CTGGGCAAACAACATTTTGA GAGGGGTA AAATGA AGGG AGACTT AAAGA TT
GAAAGAAATTCAGATATGGG CTAG- A TAT AAAG- G ----------
AAAGTAAAGATCATGGGGAG
GAM3224 5839 AAGGCTTATTTTTCCAGGCA TATTT GC A A-- T TG C- CT TG C AATT
GGAGGAGAGGCTGGTGGTCT AAGGCT TTCCAG AGG GG GAGGC GG GT TTGAG TT G CTGG

TGAGCTTTTGGCCTGGAATT TTCTGA AGGGTT TCC CC CTCCG CC TA AACTT AA C GACC
CCAGTCTGAATTTTCAAATA TCCT- -- - AAC T CT TA TT GT T ----
TTCCCTGCCTCCAACCCCTT
TGGGATCCTAGTCTT
GAM3225 19753 AGAGGAAGCGGGAGGAGCTG A- C A G CAACG C C CATGAGGAAAGCT
AGCAACGTACTGGCCGCCAT AGAGG AG GGGAGG GCT AG TA TGGC GC
GAGGAAAGCTGCTGCCAATG TCTCC TC CCCTCC CGA TC GT ACCG CG
AAAGACTGAGCCCCTCCCCT CG - C G AGAAA A T ----------
GCCCTCT
GAM3227 18117 GGAGAATGGGCCTGAACCCG AATGG - AA- AGGC C T A- CGAGATT
GGAGGCGGACGTTGCAGTGA GGAG GC CTG CCCGGG GGA GT GCAGTG GC
GCCGAGATTGCACCACTGCA CCTC CG GAC GGGTCC CCT CA CGTCAC CG
CTCCAGCCTGGGCAACAGAG AGAG- A AAC GA-- - - CA -------
CGAGACTCC
GAM3228 21117 TCGCTGCAGCAGCATGCACT -- -- CAT G---- C A-- ATGAACCA
TCTTGGTAGCAGAATGGAAT TCGCTG CAG CAG GCACTTCTT GTAG AG ATGGA
GAACCATCCATCAACTTCTA AGTGAC GTC GTC CGTGGAGAA TATC TC TACCT
TAAAAGAAGAGGTGCTTCTG CT TA TT- GAAAA T AAC --------
ATCTGTCCAGTGA
GAM3230 15137 CCTCCCTCCCTTGGTGCCAG C T C AGG- CT- - AAGTGCAAA
CCTCTGAGGTCTTCTTCCTC CCTCCCT CCTTGG GCCAG CTCTG TCTT TC CTC
AAGTGCAAAGAGTGGTCTGA GGGGGGA GGAACC TGGTC GAGGT AGAG GG GAG
GAGTGGTGGAGCCTGGTTCC A T C GGTG TCT T ---------
AAGGAAGGGGGG
GAM3231 6811 CTCATCGATTTTCTGGTACA GA TA AAAAGA AT C AGTGA
GAAAAAGATCAATCCTCAAG CTCATC TTTTCTGG CAGA TCA C TCA
TGATGAAGGCTGGGAGACTC GAGTAG AAAGGACC GTCT GGT G AGT
TGCCAGGAAAAGATGAG A- -- CAGAG- CG A -----

GAM3232 18323 CAGCATGATCAAGAATGACA G AGAAT---- C CT - ACAAGAAG
CCTCTGGCGAGTACAAGAAG CAGCAT ATCA GACA CT GGC GAGT
ACTCTGCTGAAGCTGTCTGG GTCGTA TAGT CTGT GA TCG CTCA
GGGAGATGATGATGCTG G AGAGGGGGT C AG T --------
GAM3234 10297 GACACAAAGATGAAAAGCTT ACA- AAAAG G- AAA A TGACG
GGCCACAAAGGAGCTGACGG GAC AAGATG CTT GCCAC GG GC
TGCCGTGGCGAGAGAGATCC CTG TTCTAC GAG CGGTG CC TG
ATCTTGACGGTC GCAG CTAGA AG --- G -----
GAM3235 8174 GGAGCTGGCCCTGGGCAGCA T G ACAA GG G TGGG
ACAAGCTGGGTGATGTGGGC GGAGC GGCCCTGGGCA CA GCT GT ATG
ATGGCGGAGCTGTGCCCAGG CCTCG TCGGGACCCGT GT CGA CG TAC
GCTGCTCC - - ---- GG G ----
GAM3237 2097 GAGAGGCGTGGAGTATAACC -- TAT CTATA GTGGTATAAA
TATATATAAGTGTGGTATAA GAGAGGCG TGGAG AAC TATAAGT
AACTTATAGAGTTCTCCGAG CTTTTCGT GCCTC TTG ATATTCA
TGCTTTTC GA --- AG--- ----------
GAM3238 11757 GCCACCTGCTGGGCCCGCTC CCT CC TCCACCACCT CCT ACCC
CACCACCTGCACCTGCACCC GCCA GCTGGGC GC GCA GC
GCTGCTCCTCAATCTGCTGC CGGT TGATTCG CG CGT CG
TTAGTCTTGGC TC- T- TCTAACTCCT --- ----
GAM3239 22017 TCTTGTGTGAGACTTCGTGG GAGA- GT--- C AAAGGAAGAAGAAG
TGGTGCTAAGAAAAGGAAGA TCTTGTGT CTTC GGTGGTG TAAGA
AGAAGTCTTACACCACTCCC AGAACACG GAAG TCACCAC ATTCT
AAGAAGAATAAGCACAAGA AATAA AACCC - ----------
GAM3240 9990 GTGTCCCCCAGGCTGGAATG TC C-- T A-- - A ATCT
CAGTGGCACGATCTCGGCTC GTG CCC AGGC GGA TGCAGTG GC CG
ACTGCAAGCTCCGCCTCCTG TAC GGG TCCG CCT ACGTCAC CG GC
GGTTCAT TT TCC - CGA T - ----
GAM3241 9871 TGATGTCAGTTCCTTTGCGC G AGT - - C----- A CATC
CCTGACTGCATCATCATGCG TGAT TC TCC TTTG CGC CTG CTGCAT
GCGGCGAACAGTGTCAAATG ACTG AG AGG AAAC GTG GGC GGCGTA
GATAGGAAGTCA A GAT T T ACAAGC - ----
GAM3242 11981 GCGGGGCCGGTCGTAACCGC TC C - C ----- CGGACGAT
GCCGCGGGCCGGACGATGCC GCGGGGCCGG GTAAC GC GC GC GGGC
CAAGAAGCTGCTGCTGTTGC CGCTCCGGCC CGTTG CG CG CG CCCG
CCCCGGCCTCGC CC T T T AAGAA --------
GAM3244 20960 GCGGGGCGGAGGCACTCGCG G G CAC G T T--- G TCTGGTGCCT
CGGGGGGTCATTCGGGGTCT GC GGGC GAGG TCGCGCGG GGGTCAT CGGGG CTG GT

GGGTTCTGGTGCCTGCGCAG CG CTTG TTCC AGTGCGTC CCCGGTA GCCCC GAC CG
CTTTCCCCGATGGCCCACTG A G --- A - TTTC G ----------
CGTGACCTTGGTTCAGC
GAM3245 10030 GCCTGGGCCGGGAGTGGGCC C G --- - -- - --- CTACT AGCTGA
ACGTGGGGACTACTGTGTGG GC TGG CC GGGAG TGG GCCA CG TGGGGA GTGTGG
AGCTGACCGCACTCCCCAGC CG ACC GG CCCTC ACC CGGT GT ACCCCT CACGCC
ATGCTGGCATCCAGCTCCCC - G AAC G TA C ACG ----- ------
AAGGGCCAGC
GAM3247 17706 AGTGCGCAGCCTAGATCCCT C - CC CAT CA TC AGTAGG
CACATGCACAGTTCACAGTA AGTG GCAGCCT AGAT CTCA GCA GT AC
GGGTTTGCGCTGCTATGAGA TCAC CGTCGGA TCTA GAGT CGT CG TG

ATCTAAGGCTGCCACT - A A- AT- CG TT ------
GAM3248 1116 GGCCCATGACTGCCCCTGCC ATGAC CC -- --- CC A C A GGCT
CCAGTGCCATTGGCCGCCCC GGCCC TGC CTGCCCCA GTGCC ATTGGCCG CC CCCG ACC
CT
ACCCGCACCACTGGCTGGGG CCGGG ACG GACGGGGT CACGG TGACCGGC GG GGGC TGG
GG
GTCCGGGGGTCCGGCCAGTG ----- AT CC ACG CT - C G ----
CAGGCACCCTGGGGCAGTAG
CAGGGCC
GAM3249 19118 CGCCTGGGCTTCCTATCCCA GG- TA ATCGGGA ATGG
TCGGGACCCAGATGGCTGGG CGCCT GCTTCC TCCC CCCAG
GGGCAGGGGGAATGGGAGTA GTGGA TGAGGG AGGG GGGTC
TAAGGTG ATA TA GGACGGG ----
GAM3250 22130 GTCCTACAAGGCTTCTGGCT ACA-- T G A TCACA ATGATATA
ACATCTTCACAAGTTATGAT GTCCT AGGC TCTG CT CATCT AGTT
ATAGACTGGGTGAGGCAGAC CAGGG TCCG AGAC GA GTGGG TCAG
GCCTGAACAGGGAC ACAAG C G - ----- --------
GAM3251 10518 GTCCAAAGCCACACTGAAAA - CC AA - ------ ACATGTA
CAGAGGCAGAGACATGTACT GTCCA AAG ACACTGA ACA GAGG CAGAG
CTGGTGTGATCTCTTGTCCT CGGGT TTC TGTGACT TGT CTCT GTCTC
CAGTGTCTCTTCTGGGC C TC CC T AGTGTG -------
GAM3253 17136 GAGGCCCAGAGGGTTGGACA C- TT ACATACT AT T CCCCA
TACTAGGAATTCTGTCATCC GAGGCC AGAGGG GG AGGA TC GTCAT
CCAGTGGCTGATCCTTTAAC CTCTGG TCTTCC CC TCCT AG CGGTG
CCCTTCTCAGGTCTC AC -- AATT--- -- T -----
GAM3254 21508 ATGCAAACACTGATTAACTC -- ATTAA ATATCTT TT TCATAC
AAATATCTTGTAAGTTCATT ATGCAA ACACTG CTCAA GTAAG CAT
CATACATGGCCTTATTTGAG TATGTT TGTGAC GAGTT TATTC GTA
GCAGTGTATTTGTAT TA G---- ------- CG ------
GAM3255 13547 TTGGTCATTATCTTGAGCAG TATC AG - - C AT TTAAA A GCTGTTACTG
TGACCATTACTAGATCATGT TTGGTCAT TTG CAGT GAC CATTA TAG CATG TTAGCG AT
TAAATTAGCGAATGCTGTTA AACCAGTG AAC GTCA CTG GTAGT GTT GTAC AATCGC TA

CTGAATACGCTAACCCATGT TT-- A- A A C GT CC--- A ----------
GTTGCTGATGAGTCAACTGA A
CAATTGTGACCAA

-
GAM3256 9817 ATTGATGCCACTAGGAGTCA A AA- TATA
ATATTGGTGTATATATTAAT ATTGATGCC CTAGGAGTC TATTGGTG
GATAGGCTCTTGGGGCATCG TAGCTACGG GGTTCTCGG GTAATTAT
AT - ATA ----
GAM3257 17129 CTGGGGTGTTTATGGCAAGT GG TAT---- C CTTT A ATTGTGGCA
CACTTTGACAGACATTATTG CTGG TGTT GG AAGTCA GACAG CATT
TGGCAAATGTTGTCCTGACT GACC ACAA CC TTCAGT CTGTT GTAA
TACCTGTTTCCAACAAACCA AA CCTTTGT A C--- - ---------
G
GAM3258 8405 TTGCGCTTTCCTTTCTGTCA C CC AAGAAG G A CTT
AGAAGCAGTTTGAAGAATTA TTG GCTTT TTTCTGTC CAGTTT AAGAATT ACC
ACCCTTGGTGAATTTTTGAA AAC CGAGA AGAGACAG GTCAAA TTTTTAA TGG

ACTGGACAGAGAAAGAGCCA - A- ------ G G ---
A
GAM3259 12563 TTGATTTTCATTAATCCAGA T TTA-- A-- - G C TAATTTCAATCAAC
GCTGCAGCACCAGAGATAAT TTGAT TTCA ATCC GAGCTG CA CAC AGAGA
TTCAATCAACTCTTTTGTGA AACTG AAGT TGGG TTCGAC GT GTG TTTCT
TGACAGCTTGGCGGGTACGG T TGGCA CGG A A T ----------
TTGAATGTCAA
GAM3260 22361 GGACTTAGAAGTAGTATGTT A G A TAT T T GGCA
ATTCCTGGTTAAGCAGGCAT GG CTTAGAA TAGT TGT TCC GG TAAGCA
GCTTGCCCTGGAGCAGCTAT CC GAATTTT ATCG ACG AGG CC GTTCGT
TTTAAGCC - - - --- T C ----
GAM3261 13076 GCCAATGTCCACAAAGAATT AA ACAAAGAA - CAGCA GATGTCCAAA
CCTGGTCAGCACCACCGATG GCC TGTCC TTCCT GGT CCACC
TCCAAAGGTGGCAATATCAA CGG ACGGG AAGGA CTA GGTGG
GGAAGGGCAGGC -- -------- A TAAC- ----------
GAM3264 20504 CAGGCTCGTGGGACTGTACG - A-- TA GA GCAAGGCCGGA
TGGACCCGCAAGGCCGGAGG CAGGCT CGTGGG CTG CGTG CCC
GCACGCGCGCAGGAGCTCAT GTCCGG GTACTC GAC GCGC GGG
GTGGCCTG T GAG GC AC ----------
GAM3265 18651 GGGGGTTACTGCAGTGATGG ACTGC T AT CCCCTACT
AGATGCAAGCCCCTACTCTT GGGGGTT AG GATGGAG GCAAG
GCCCTCTATCCCTTCTACAG CCCCCGA TC CTATCTC CGTTC
CCCCC CATCT C C- --------
GAM3267 6219 TTTATAAAACTTTCATTGTC AAA T T -- AACCA AAGCCCACA
AGGTGAACCAGTGTGCAAGC TTTAT ACTT CATTG CAG GTG GTGTGC
CCACAGTACGCAGCACAACT GAGTA TGGA GTAAC GTC CAC CGCATG
GTCAATGCAGGTCAATGAG AC- C T AA GA--- ---------
GAM3268 19600 GGCTTCATGATATACACCAA - ATGATA AATT AAATAAAACAATCAAA
TTCCAAAATAAAACAATCAA GGC TTC TACACC CCA
ATGGTCCAGGTGTAGAATGC CCG AAG ATGTGG GGT
C T ------ ACCT ----------
GAM3269 3903 AGCGGAGGAAGAGGTCCTGG A GA TCCT TA G --- -- A CCTCCT
GTAAAGGAGCAGGTGTGTTC AGCGG GGAA GG GGG AA GAGCAGGT GTGTTCT TAG AGGC

TTAGAAGGCCCTCCTGTCTG TCGCC CTTT CC CCT TT TTTGTCCA CACAAGG GTC TCTG
CTGCTGGAACACATCACCTG - A- T--- GC A CTA TC G ------
TTTATTCGTCCTCCATTTCC
CGCT
GAM3270 7631 TCCAGAGACTTTGGAGACTT CTTT TTC------ T TTTCTCAT
TTCGTTTTTTAGATTTCTCA TCCAGAGA GGAGACTT GT TTTTAGA
TTTTAAAACACACATAATAC AGGTCTTT CTTTTGAA CA AAAATTT
AAGTTTTCTTTCTGGA ---- CATAATACA C --------
GAM3273 20757 CCAAGGCGCCTTTGTTGGGG AA T GGGGG TCC TGT AGGTCGGAAAA
GTCCGGGAATCCGCGGTGTG CC GGCGCCTT GTT TCCGGGAA GCGG GCC
CCAGGTCGGAAAAGGCGTCC GG CCGTGGAA CGG AGGTCCTT CGCC CGG
GCTTTCCTGGAGAGGAGGCT G- T AGGAG T-- TG- ----------
AAGGTGCCGGG
GAM3274 5589 GGGCGGTAAGTTGGATTTCG - A - TTTC CC---- T --- TTGTG
ATGAACCGGTCCCTGAAGTT GGGC GGT AG TTGGA GATGAA GGTCCC GA AG
GTGCTCCCTCTGGGACTCCA TCCG CCA TC AACCT CTACTT TCAGGG CT TC

TCCTTCATCTCTCCAATCTC A C T CT-- CCTACC T CCC -----
ACCAGCCT
GAM3275 18615 CACGCCATGACCTTCACTGC G CC A TG G T GA---- - G CAGG
TGTCTCAGAGAAGGATGATC CAC CCATGA TTC C CT TC CA GAAGG AT AT
AGGATGGTGCTTTCACAAAA GTG GGTACT AAG G GA AG GT CTTTC TG TA
TGGAGAGTGGAGAATTCATG G T- A GT G - AAAACA G G ----
GGGTG
GAM3276 8623 CGTGTTAGGCGCCGATGCGA TAGG A- GACG C - - AGAAA
CGCTCATCAGACCCAGAAAG CGTGT CGCCG TGC CT ATCAG AC CC
GTGTGTTGATAAGACAGCAG GTACG GTGGC ACG GA TAGTT TG GG
ACGGTGGCATG ---- AG ACA- A G T -----
GAM3277 1836 CTCCAGTCCCAAGCAAGCCT G AAGCAA CA C- G TT GATGCCTGA
CCAGGCCCTGAGTGTTCTGA CTCCA TCCC GCCTC GGCC TGA TG CT
TGCCTGAAGGGTAGTCATAG GAGGT GGGG TGGAG CTGG ACT AT GA
GTCCCGAGGTGGAGTCGGGG G CTGAGG CC AT G GG ---------
GTGGAG
GAM3279 17767 TGGCATCACAGTCACATTTG C- C G G C- GAAAAGGA
AAGCGGTTCCCTCAGGAAAA TGG ATCACAGTCA ATTT AAGC GTTC CTCAG
GGACTGGGTTGAACAGTTTG ACC TGGTGTCGGT TAAG TTTG CAAG GGGTC
AATTGGCTGTGGTATCCA TA - - A TT --------
GAM3280 16677 TCTCCCCATCACCCAGATGC ACCCAGAT GAGCCC CGCTC
CTTCCCCAGCCTCCGAGCCC TCTCCCCATC GCCTTCCCCAGCCTCC TCATAGC
TCATAGCCGCTCGCTATGGG GGAGGGGTAG TGGGAGGGGTCGGAGG GGTATCG
GAGGCTGGGGAGGGTCCCGG GCCC---- ------ -----
ATGGGGAGG
GAM3281 12569 TCTTCCTCCTCTGTGCCTGG -- CT-- CC-- CTTCTC TCAG
TGCTTCTCAGGCCCTCAGGG TCTTC CTCCT GTG TGGTG AGGCCC
GCCTCCCTTCACCGCCACCA AGAAG GAGGG CAC GCCAC TCCGGG
CCCCCGGGAGATGAAGA TA CCCC CACC TTCCC- ----
GAM3282 17326 TCCAGGACCTCAATGACCGC CAATGACC TCG TTCA A GCGT
TTCGCCAGCTTCATCGAGCG TCCAGGACCT GCT CCAGC TCG GC
CGTGCACGAGCTGGAGCAGC AGGTCCTGGA CGA GGTCG AGC CG
AGAACAAGGTCCTGGA ACAAGA-- CGA ---- A ----
GAM3283 11655 GGGGTGAAAATTAAATTCTA ATTAAATTC- ACAGAT TGAAGCCAAATT
GTTACAGATTCATGAAACTT GGGGTGAAA TAGTT TCATGAAACT
GAAGCCAAATTAGTTTTATG TCCTACTTT ATCAG AGTATTTTGA
AGACTATCAACTCCCCTTTC CCCCTCAACT ------ ----------
ATCCT
GAM3284 19057 TGCCAGGCATAATCAACATT GG TCAACATT- T TTCT ACATCC- G G G--
CCTCATTACTTCTTCAACAT TGCCA CATAA CCTCAT AC TCA TCTT AAA CTGT CTCAT
CCTCTTGAAAGCTGTGCTCA ACGGT GTATT GGAGTA TG AGT AGAG TTT GACA GAGTA
TTTTACAAATGAGAAAACAG GA CGATACACT - TTC- AATATAA A A AAA
ATTTAGAGAAATATAATGAC TAC
TTGTATGAGGTCACATAGCT TT
TATGAGTGGCA AA

GAM3285 938 TATGCTATGTTGGCTAAACT A TG C ACTG CACTACA
GGTGTCATCACTACAGTGGC TATGCT TGT G TAA GTGTCAT
ATAATATTGACTGGCACAGC GTACGA ACG C GTT TACGGTG
ATG C GT A ATAA -------

GAM3286 2136 AATGGGCAACGTGAGGTGGA - G G C-- GAAA GG AACAATAG
GGGAGGCGGGAGATGAAATT AATGGG CAAC TGAGGTG AGGGAGG GGGAGAT TTCTT TTGA

CTTGGTTGAAACAATAGTCA TTACTT GTTG ATTTCAC TCCTTTT TCTTCTA AAGAA GACT
GAAGAAAATAATCTTCTCAT A - - TAC ATAA -- --------
TTTTCCTCACTTTAGTTGAT
TCATT
GAM3288 12337 GGAGGTCTTGTGTATCTGTG --- T GTAT- TG C TCCCTTAATC
GCAAACAGGGAGTTCCCTTA GGAGGT CT GT CTG GCAAA AGGGAGT
ATCACTCTTTATTTGCTGCG CCTCCA GG CG GGC CGTTT TTTCTCA
GTTAAAGCTGGCCAACCTCC ACC T AAATT GT A ----------
GAM3289 22879 ACAGATACATTTTTTACAGG A --- T A--- TCA TTATT TCCA
TTATTTTCATTGTGTTATTG ACAG TACAT TT TTAC GGTTATTT TTGTG GACA
ACATCCATGTCTCTCGTAAA TGTC GTGTA AG AATG CCGGTAGA AATGC CTGT
ACAGATGGCCCAAAGTAATG G CTA T AAAC CAA TCT-- ----
AATCATGTGGCTGT
GAM3290 15721 CATGCCCAGGGCCGCGTGTG G - G-- GTG- AGA TG GGAG
CCCCCAGAGGTGCTCTTGGA CAT CC CAGGGCC CGT CCCCC GG CTCTT
GGAGGGTGCCAGGGGGAAGA GTG GG GTCCTGG GCG GGGGG CC GGGAG
GCGATGGGTCCTGTGGGTG - T GTA AGAA A-- GT ----
GAM3292 8974 CCATTGAAAAATTTGAGAAG TTGAAA TG AGG -- - T AAAGGGC
GAGGCTGCTGAGATGGGAAA CCA AATT AGA AGGC TGCT GAGA GGG
GGGCTCCTTTCAAGTATTGC GGT TTAG TCT TCCG ATGA CTTT CCT
CTGGGTCTTGGATTAAACTG CAAA-- GT GGG TT A - -------
G
GAM3294 21865 TCTGAGTCACTAGATGAGGA TG ACT A T TGATGATTTATGCCTTT
GGAGGAAGATGATGATGATT TC AGTC AG TGAGGAGGAGGAAGA GA
TATGCCTTTTCTTTTCTTCT GG TTAG TC ATTCTTTCTTCTTTT CT
TTCTTAACTTTAGATTTGGG GT ATT A - ----------
GAM3295 2760 ACAGGGCAAACAACCAGGTC AACAA GG CCCCC T CCTAAGTCT
GGCCTGGCCCCCGTGGCTTA ACAGGGCA CCAGGTC CCTGG GTGGCT AAG
AGCCTAAGTCTCTTCAGCCA TGTCCTGT GGTCTAG GGACC CACCGA TTC
CCTCCCAGGAAGATCTGGCC CTCC- AA CTC-- C ---------
TCTGTCCTGT
GAM3296 2208 GCGGCCTCATTTGCTGTCAA AT - TCAA- AAAG CAGAAA TGCCAAC
GCTTTTCAAAGCATGGATGG GCGGCCTC TTG CTG GCTTTTC CATGGATGG ACAGA
CAGAAAACAGATGCCAACTC CGTCGGAG AAC GAT CGAAAAG GTATCTGCT TGTCT
TGTCACTCGTCTATGAGAAA -- A TCAAC A--- CAC--- -------
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TGC
GAM3297 7066 GCACCACTATGTGACTGAAT C ATGTGA AA-- TGA-- C GGAACAAGAAATTA
TTCAGGGTAATGATGCACCT GCAC ACT CTG TTTCAGGGTAA TGCAC TGT
GTGGAACAAGAAATTAACAG CGTG TGA GAC AAAGTTTCATT ACGTG ACA
TGCAGAAACTTACTTTGAAA - GATGA- GTGA CAAAG - ----------
AGTGCAGAGTAGAGTGTGC
GAM3299 19522 GGTCTTACAGACGTCCAGGG GA - G C - C GCGGCGAG
GGGTCGGTGGCGGCCGCGGC GGTCTTACA CGTC CAGG GGGT GGT GG GGCC
GAGGGCCCCGGCCAGCCCGC TCAGGGTGT GTAG GTCC CCCG CCG CC CCGG
CTGAGATGATGTGGGACT A- A G A G - --------
GAM3301 12462 CAGGGCCTGGAGTCCTGGGG - TG A GG - TC CCAG

GAGCTCAGCCAGCTCTGCCT CAGGGC C G GTCCTGGG AG C AG
TTCTCAGGGCCTGGAGTCCT GTCCTG G C CGGGACTC TC G TC
G A GT - TT C TC ----
GAM3302 9336 GAGAGACTACTTGATATAAT G CT TA TTT- T- ATTTA
TTTGATTTTCTTAAATTTAT GA AGACTA TGATA AT GAT TTCTTAA
TAAGAGTTGTTTTGTGTCCT CT TCTGGT ACTAT TG TTG GAGAATT
ATCATATGGTCTATC A AT CC TGTT TT -----
GAM3303 9958 CAATTACAGTCCTACAAGTA T CCTACAA T TT CTCC TGACCT
CCTGGGTTGCCTCCCTCCTG CAAT ACAGT GTACC GGG GC CTCC
ACCTGGAGAACAGTCCCCTG GTTA TGTCA CATGG CCC TG GAGG
GTACACTGTCATTG C ------- T C- ACAA ------
GAM3304 2899 TGTTCTCCTCATCTGGAAAA C T AAATAATTTG G TAA G GTATT
TAATTTGGCTGTATAATCGT TGTTCT C CATCTGGA GCT TA TC TG
GGTATTCAGGAAGTTAGGGC ACGAGA G GTGGATTT CGG AT AG AC
AGGTGTTTAGGTGGAAGAGC A - GTGGA----- G TGA G -----
A
GAM3305 12596 AGCCCGCTGCCGGCGCGCGG C -- - C T- C- TT- --- CAGC
CGCATGGTGGCGGCTCCTTT AGCC GCTGCC GGCGCGC GG GCA GGTGGCGG TCC TCGGAG
CG
CGGAGCGCAGCCGAACCTCT TCGG CGGCGG CCGCGCG CC CGT CCATTGCC AGG AGTCTC
GC
GACCCGGACTCCGTTACCCC C CC G - CC TC CCC CAA ----
TGCCCGGCGCGCCCCGGCGG
CCGGCT
GAM3306 19775 CGTTTTTAAAATGAACATCT TG - ATCT-- ---- A CCTAG
CTGTGTGCCACAGTTCCTAG CGTTTTTAAAA A AC CTGTGT GCC CAGTT
GACTGGGGCAAGGACACAGT GTAGGAGTTTT T TG GACACA CGG GTCAG
GTCAAGTCTTGTTTTGAGGA GT C AACTGT GGAA G -----
TG
GAM3307 11484 CATTAGAGCCCTGTAGAATG - AGCCCT A A CTTTTCA
ACAGCCCTTTTCAGGTTGGC CAT TAG GTAGA TG CAGCC
AGTCTACTAATTCCTGTATG GTA GTC CATCT AC GTTGG
T CTTAAT G G -------
GAM3308 4802 TGGAATAAAGTCACATGAAA TAAA C AAACA C ATATATATTTTC
ACAAAACACAACTATATATA TGGAA GTCA ATGA AAACA AACT
TTTTCAGTTTGTTTGCCTTA ACCTT TAGT TATT TTTGT TTGA
TTGATGTTTTTCCA TTTG - CCG-- - ----------
GAM3310 6372 TCACAGGTTAAAAAAAAGTC CA AAAAAAA T AAA--- AAGA
CTTCATGAAAAAGAAAGATC TCA GGTT AGTCC TCATG AAGA
TTAAGCAGCATGATGGATTC AGT TCGA TTAGG AGTAC TTCT
AGAAGCTCATGA AC AGAC--- T GACGAA ----
GAM3314 17543 CACTTCCTAAAATACCTGTA CTAAA GTA- ----- AC GAAG
TCACAGATGACCTTGAAGAA CACTTC ATACCT TC ACAGATG CTT
GACCATTTGTCCAATGAACC GTGAAG TATGGA AG TGTTTAC GAA
AAGGTATGCCTGAAGTG TCCG- ACCA TAACC CA ----
GAM3315 109 CCCCCGTTTGAGGGAGTCCA G AGT - T A AA TCCA
ACTTGCCGGGTTGTTAAAAG CCCCC TTTGAGGG CCAACTT GCCGGGT GTT AAAG CC
AACCTCCAGGCCTTTAAGCA GGGGG AAATTCCC GGTTGGG CGGCTTA CGA TTTC GG
TTCGGCTGGGTTGGCCCTTA G --- T - A C- ----
AAGGGGGG

GAM3316 2560 CTGTGAAGCATGTGCTGGTG A A T -- T GTA TCATGT
GTCATTGGTAACAGTCATGT CTGTG AGC TG GCTGG TGG CATTG ACAG
TTGTCAACAATGTCAGTCCA GACAC TCG AC CGACC ACT GTAAC TGTT
GCCAGCTGCACAG G - - TG - AAC ------
GAM3317 22383 GGTCGAAGTGGTCTGGAACT - TGGAA G GTGGAGGG
TGCGGGGCGTGGAGGGGTCC GGTCG AAGTGGTC CTTGC GGGC
GGCGGGAATGACCACTTCCG CCGGC TTCACCAG GGGCG CCTG
GCC C TAA-- G --------
GAM3318 16811 AATGTGAACATTTATTCATA TG TTTA T TG A C G TACT
TTGTTTTGATTACCCTCGTG AATG AACA TTCATA TGTTT ATT CC TC TGT
TTACTACAAGATGGCAATAA TTAT TTGT GGGTAT ATAAA TAA GG AG ACA
ATACTATGGGATTGTTTGTA GT TA-- C -- C T A ----
TT
GAM3319 9473 GAGACAAGGTTTCACCATGT A- T------ CA TT --- ATCT
TGCCCGGGTTGATCTCAAAC GAG CAAGGT TCAC TG GCCCGGG TTG
TCCTGGGCTCAAGTGATCTA CTC GTTCCA AGTG AC CGGGTCC AAC
CCCACCTTGGCCTC CG CCCATCT A- T- TCA ----
GAM3320 12243 GTATCTCTTCCGTCTGTTTG CCGTC TT TT A A - CTTTGGCTTCACT
TCCATTCTTTTAACACTGGG GTATCTCTT TGT GTCCA CTTTTA C CTG GG
CTTTGGCTTCACTTCACAGG CATAGGGAA ACA CGGGT GAGGAT G GAC CT
TAGGAGGCTGGGCACAAAAG A---- -- CG - - A ----------
GGATAC
GAM3322 17775 CTGCCTTTCTGTGTCTGGTT TTC C ------ TTCCTTCT
CAGAGCTCTTCCTTCTGGGC CTGCCT TGTGT TGGTTCAGA GCTC
ATGTTTTCTGGACTACATGC GACGGG ACGTA ATCAGGTCT CGGG
ACATGGGCAG TAC C TTTGTA --------
GAM3325 871 GAGCCAGACTCACAGAGTCC C ACTCA TC GCC CCATGGCT
CCTGGCCCTGGCCATGGCTC GAGC AG CAGAG CCCTG CTGG
CAGTACAGGGTTCTCTGAAT CTCG TC GTCTC GGGAC GACC
TGCTGCTC - GTTAA TT AT- --------
GAM3326 15244 TGTGCAAGGTGAGGACAGGC ---- A ACA AT T--- T ACA
CCCGAATGCTTATGATGCTT TGTGCAAG GTG GG GGCCCCGA GC TATGATGC TTC
TCACAGAATGTGTCATACCG ACACGTTC TAC CC TTGGGGCT CG ATACTGTG AAG
TGCCTCGGGGTTGACCACAT GTGA A AG- C- TGCC T ---
AGTGCTTGCACA
GAM3327 7829 TTGAGATTACTACACTACGG - A A A ATTG A- CTGA
ATTGATGTCACCACTGATGG TTG AGATT CTAC CT CGG ATGTC CCA
AAGACATGCTGAGGTAGAAT AAC TTTAA GATG GA GTC TACAG GGT
TTACAA A - - - G--- AA ----
GAM3328 18329 GGGGACGGTCTCAATGCGTG -- CAATGCGT A AAT -- CTTG
ATCAGAGAATCTTCACCTTG GGGGACG GTCT GATC GAG CT TCAC
GTGAAAAGTGGCTCAGATCC CCTCTGT CAGA CTAG CTC GA AGTG
AGACAATGTCTCC AA C------- A GGT AA ----
GAM3329 9332 TCTGGATTATCTACAAGTGT ATCT -- CTA ATGT TG AAGTGCCG
TTGCTATTTACAATGTGAAG TCTGGATT ACA AGTGTTTG TTTACA GAAGTT CG
TTTGCGAAGTGCCGCGTGGA GGACTTGG TGT TTACGAAC AAGTGT TTTTAG GC
TTTTTATGTGAAACAAGCAT CAT- CT A-- AT-- GT --------
TTCTGTTACGGTTCAGG
GAM3331 10615 CAAAACTCCCGCCTTACCTG C TTA GCG CTGACA
CGGTGGCAGCACTGACATGC CAAAA TCCCGCC CCT GTGGCAGCA

TGCCACGGGCCCGGCGGGAT GTTTT AGGGCGG GGG CACCGTCGT
TTTTG T CCC --- ------
GAM3332 15368 TCTGATGCTGTCAGTTTGAC C-- T T -- TGGTTTT
CGAGCTGGTTTTGCTTATGG TCTGATG TG CAGT TGACC GAGC
TCATGCTGCAATTTGTTAGA AGATTGT AC GTCG ACTGG TTCG
TTA - T TA -------
GAM3333 9204 TGAAGGAACCAAGGCAACAG AA AAC---- --- ATCCTATTTAC
GGGGGTTCCTGGATCCTATT TGAAGG CCAAGGC AGGGGGGT TCCTGG
TACTCGGGAAAAACCTTCCT ATTTTC GGTTCCG TCCTTCCA AGGGCT
AAACCTGGCCTTGGCCCTTT CC GTCCAAA AAA ----------
TA
GAM3334 13324 TGTTTAACTTTGTAAGATGC AC- GTAA C- A TT ATCA TAAAT
AAAGAGGTTGGATCAAGTTT TGTTTA TTT GATG AAAG GG GG AGTT
AAATGACTGTGCTGCCCCTT ACAGGT AAG CTAC TTTC CC TC TCAG
TCACATCAAAGAATACTGGA CAT AAA- AC - CG GTG- -----
CA
GAM3335 64 CACTGCCACCACTTGGCCTG TG C G G G CA TTCTTACTCATC
GCGTGGCCACGTTCTTACTC CAC CCA CACTT GCCT GC TGGC CG
ATCTGGAGCCAGGCAAGGCA GTG GGT GTGAA CGGA CG ACCG GT
AAGTGATGGTGGTG GT A A A G AG ----------
GAM3337 14917 AAACAGACTGGGCCAATGTC C -- CACAAAGAA - CA- ACCGATGTCCAAA
CACAAAGAATTCCTGGTCAG AAACAGA TGGGCCA ATGTC TTCCT GGT GCACC
CACCACCGATGTCCAAAGGT TTTGTTT ATTCGGT TGCGG AAGGA CTA CGTGG
GCAATATCAAGGAAGGGCAG - AG ACGGG---- A TAA ----------
GCGTGATGGCTTATTTGTTT
GAM3338 19891 ATTCATTTGATCCTTCAGAA CC-- AAATCACAA A G GTTATA
ATCACAAGGAAGAAGAAGTG ATTCATTTGAT TTCAG GGA GAA AAGT
TTATAACTTATTCTCCAACA TGAGTAAACTG AGGTC CCT CTT TTCA
ACTGGAACTTGTCAAATGAG TTCA AACAA---- - A ------
T
GAM3339 1789 TAGGCACCACTTGACCCTAT AC --------- A TATTC GCAA
TCGCGCAAGTAGTCTGGGCA TAGGC CACT TG CCC GC
AATTTAGCTAGTGTCGCCTA ATCCG GTGA AC GGG TG
CT TCGATTTAA - TCTGA ----
GAM3340 15770 TTATGGTAAGCAAAATAAAT A- ATAAATTG- ATCCTTG
TGTATTTTTCCATCCTTGGG TTATGGTA GCAAA TATTTTTCC
GAGGATAAAGGAACTCTTTG AATATCGT CGTTT ATAGGAGGG
CACTGCTATAA CA CTCAAGGAA -------
GAM3341 3469 AGCAGAACAGTAAGCTTCCA TAA --- AACCTACACTTCTA
GAGGAAACCTACACTTCTAT AGCAGAACAG GCT TCCAGAGGA
CCTTTGGGCCTGGCCTGTTC TTGTCTTGTC CGG GGGTTTCCT
TGTT --- TCC ----------
GAM3342 3673 GATGAATCCTTCAAATAGGA TCCTT TAG-- T ATC - - TTTG
GCCGATGGATCTGTGGTCCT GATGAA CAAA GAGCCGA GG TG TG GTCC
TTGGGACTCATCAAAGCCTT CTATTT GTTT TTTGGTT CC AC AC CAGG
GGTTTAGCATTTTGTCAGTT TGACT TACGA - GAA T T ----
TTATC
GAM3343 399 CAGAGTCCCCTTTCTCAGAA - T-- A- TACA CC CACAGA
GTACAGCCCTTCCACAGAGA CAGAG TCCCCT TCTCAG AG GC TTC
AATGCCTGGCTGAGATTCAG GTTTC AGGGGA AGAGTC TC CG AAG

GGGATCTTTG T CTT GG ---- TA ------
GAM3344 18341 GCTGCGGCGGGAGCTCGACG GC GGG ACGAATCCC A - GAGA
AATCCCTCCAGGTCGCTGAG GCT GGC AGCTCG TCC GGTCG CT
AGGTTGACCAGGAAATACAA TGA TCG TCGAGC AGG CCAGT GG
CGAGCTGCTAAAGT AA --- AACATAA-- A T ----
GAM3345 14687 CGATCTTCCCAGGTGGGCGG TC T G-- TGGAAGA GTTGG
AAGCGGTGGAAGAAACCCTT CGA TTCCCAGG GG CGGAAGCGG AACCCTTCG
CGGTTGGTGGAGGGTTCCGT GTT AAGGGTCC CC GCTTTTGCC TTGGGAGGT
TTTCGAAACCCCTGGGAAAG GA - AAA ------- -----
TTG
GAM3346 13690 CATTACTGCAGCGGGCATGA --- AGCGG -- AG ---------- TCATG
AAACCGGCAGGGTGTTAGGC CATTAC TGC GCATGAAAAC CGGC GGTG TTAGGC
TCATGGCCTGAAGAGAAGTC GTAGTG ACG CGTACTTTTG GCCG CCAC AGTCCG
ACATCACCAGCCGATGTTTT CTA GAAAA TA A- TACACTGAAGAGA -----
CATGCAAAAGGCAATCGTGA
TG
GAM3347 15647 TGTGAATGGGAAGTGGTTAA A AG- TAAA - CACAGAAA
AGCCTGAACACAGAAATTCA TGTGA TGGGA TGGT GC CTGAA
GTGCCTTGCCAGGATCCCAT ACACT ACCCT ACCG CG GACTT
CACA - AGG TTC- T --------
GAM3348 22866 TAGTTCTCCCCATACATACC TT CCCAT C --- - CCCTTCTCTT CT TCAAG
CCAAGTCACCCTTCTCTTTC TAG CTC ACATAC CCA AGT CA TC CGAAGGC
CTCGAAGGCTCAAGGTTTTC GTC GAG TGTATG GGT TCA GT AG GCTTTTG
GTGATCTTTTCAGCTGTACT TT TTCT- A ATT T CGACTTTTCT T- -----
TTATGGAGTATGTTCTTGAG
TTCTG
GAM3349 11002 TCCTCTTCACTCTGCTCTCA TCA CTCAGGAGA G GCC
GGAGATCTGGCTGTGAGGCC TCCTCT CTCTGCT TCTGGCT TGAG
CTCAGGCCAGGGATACAAAG GGGAGA GGGGCGA GGACCGG ACTC
CGGGGAGAGGG --- AACATAG-- - ---
GAM3351 8865 CCGCGGGTGGAGGTCGATGG T GAT-- A T AA-- GGC ATC
CAGCATCATGGAAGGGGGCG CCGCGGG GGAGGTC GGCAGC TCA GG GGGGGC CAG

GCCAGATCCTGAGAGTCTCT GGCGTTC CCTCCGG CTGTCG AGT CC TCTCTG GTC
ACGGCCTTGAGCTGTCTCCT C ATCCT - T GGCA AGA ---
AGGCCTCCCCTTGCGG
GAM3353 19929 GGTGCACTGCGAGCGCGCGC ACTG A C GA C- A CGGA GGTATG
GGACCGCGCACAGGCGGCGG GGTGC CG GCGCG GCG CCG GC CAGGCGG GCC
AGCCGGTATGGGCCCGCCTG CCACG GC CGCGC CGC GGT CG GTCCGCC CGG
GCCCTGGGCGCCGCGCCGAC AGCA - - G- CC - ---- ------
GAGCACC
GAM3354 8295 CCTTTATGTACTATCTCTAG ---------- - CTAGAAGTAAA AAAA
AAGTAAAATAGTAAAAACTA CCTT TATGTA CTATCT ATAGT
TATAAGATAGATATATATGA GGAA ATATAT GATAGA TATCA
GTAGAACAAGG CAAGATGAGT A ATA-------- ----
GAM3357 15386 CTCAGCCAGGTTTCCGATTG CC TC T TTC AA AAAA
TCGATTCAAGGAAGCAAAAG CTCAG AGGTT CGA TGTCGA AAGG GC
TAATTTTTCTTGACATTTGA GAGTC TCCAG GTT ACAGTT TTTT TG
GGACCTTCCTGAG CT GA T CT- AA ----
GAM3358 17683 GGTTTCCCCATACTGTCTCT CC AC- CTTGT - TGACATTT

TGTTTTTGGAGGTGACATTT GGTTTCC AT TGTCT TTTTGGA GG
CCATCCAGAAGGATAACGAT TCAAAGG TA ATAGG AAGACCT CC
CAGGAAACT AC GCA ----- A --------
GAM3360 13769 AAAGTCTTGTGATTTCCTCT TT GATT T ------ A CCTGCCAA
CATCTTTTAGAGATTCCTGC AAAGTC GT TCCTC CATCTTT TAGAG TT
CAAAAATTCTACCAAGCAGA TTTCAG CG AGGAG GTAGAGA ATCTT AA
GATGGAGGAGCTTGACTTT TT ---- - CGAACC A --------
GAM3361 9801 CTGGTACCTTTGTGCATGTT CCTTT - CCTTCA CAGGTATCATC
GCCTTCATTCCTGAGCAGGT CTGGTA GTGC ATGTTG TTCCTGAG
ATCATCCTCAGGGAACCAGC GACCAT CACG TACGAC AGGGACTC
ATGGCACCTACCAG C---- G CA---- ----------
GAM3362 9338 TGTTTTGCACTGACTAGTAC TT CTA AC-- - CACTCTTATTTAAT
TGAATAATACAACCACTCTT TGTT GCACTGA GT TGAATAATAC AAC
ATTTAATGTTAGTATTATTT ACAA TGTGACT CA ATTTATTATG TTG
ATTTGACAACTCAGTGTCTA TC CAA GTTT A ----------
ACA
GAM3363 22910 AGCTTACTGCCAGCACCAAC - A AA G CT A G- - GTGA
TGCCTCTCACAGGCTGGGGT AGCTT ACTGCC GCACC CT CCT C CAG CTG GG
GATCATGGGACTGGGAAGGA TCGAG TGGCGG TGTGG GA GGA G GTC GGT CT
GGGGTGTGGGCGGTAGAGCT A G G- - AG - AG A ----
GAM3364 6627 GCCCGCCAGCTCTGGCTGGG CCG-- T CT ACTT- GTC AGCCT
AGGACTTGCTCTTGGGTCTG GC CCAGC CTGG GGGAGG GCTCTTGG TGC
CAGCCTGCATCAGGAGCCTC CG GGTCG GACC CCTTTC CGAGGACT ACG
CACTTTCCCCAGTGCTGGAT TATTA T -- ACCTC --- -----
TATGC
GAM3366 14942 TAGTGATTGTTTCTCTTCAC TT TCACCC ATTT GTTTACCAA
CCCCAACATTTCCGTTTACC TAGTGA GTTTCTCT CCAAC CC
AAGGTCGAGTTGGAGAGAAA GTTACT TAAAGAGA GGTTG GG
TTCATTG -- ------ AGCT ---------
GAM3369 20144 TGGCCTGGGTAAGGTGCCTG GG - G- A A AAGACAAG
GCAGGAAGCAAGACAAGGCC TGGCCTG TAAGGTGC CT GC GGA GC
TCTGGCAGAGAGCACCTTAG ACCGGAC ATTCCACG GA CG TCT CG
CAGGCCA G- A GA G C --------
GAM3370 15403 GCTCCTGGCTCCTAGGGCAG T CCT CA A - CAGTGTGAT
CGCCTAGAGCACAGTGTGAT GC CCTGGCT AGGG GCGCCT GA GCA
TGCATCAGGCGCCCTTTGAG CG GGACCGG TTCC CGCGGA CT CGT
GCCAGGGC - AGT -- - A ---------
GAM3372 13083 GCTTTCCTTTCCAAGAGGAA T CCA A-- T GCAGATAAA
TCCTCGGCAGATAAACGTGG GCTT CCTTT AGAGGA TCC CG
ACTGTCCTCTACAGAAGGAA CGAA GGAAG TCTCCT AGG GC
GC - ACA GTC T ---------
GAM3373 19397 GGGTGCAGTGAGTGGCCTCA - AG CTCAA T AGA C CGAGCCA
AAGTTGTGCAGATGCTTCCG GGGTGCAG TG TGGC AGTTG GC TG TTC
AGCCAGAAACAAAGCCAGCT CTCACGTC AC GCCG TCGAC CG AC AAG
GCCGCCGTCCATCTGCACTC T CT CCG-- - AA- A -------
GAM3374 16602 GAAGGTTCTGGTCTTGGCCC G TG - ----- AAGA TCTTCATAATT
TAAGAGGTCTCTTCATAATT GAA GTTC GT CTTGG CCCT GGTC
GACCCCAGGGAGTCATCAAG CTT CGAG TA GAACT GGGA CCAG
CATTGGAGCGTTC G GT C ACTGA CC-- ----------
GAM3375 12976 GCGGCTGCAGGAGTACCGCC G TAC C -- A GCAA

TGCGGAGTAACTGCAAAGAT GCGGCTGCAG AG CGC TGCGGA GTA CT
GCTGTCCGTGCGCGTTGCTG TGCCGGCGTC TT GCG GTGCCT CGT GA
CGGCCGT G --- C GT A ----
GAM3376 13706 GCGGCTGTCCCCTGCCGGGG CCCT C C---- ACTCT
CCGCCCTACTCTGGGGCTTC GCGGCTGTC GC GGGGC GCCCT
CTGCTCCAGCTGACAGCCGC CGCCGACAG CG CCTCG CGGGG
T--- A TCCTT -----
GAM3378 4976 TTTATGGTTTTTTCCACATT T ATC CCAAC
GTCCACAATCATGCCAACCA TTTA GGTTTTTTCCACATTGTCCACA ATG
TTAATGTGGACAATGTGGAA AAAT CCAAAAAAGGTGTAACAGGTGT TAC
AAAACCCTAAA C AAT -----
GAM3379 659 CTCTGTCTCCTATAGATGCA C ----- CA GTGA AGACTGGG
GACAGTGAGGATGGAGACTG CTCTGT TCCTA TAGATG GACA GGATGG
GGTCATCTGGATGTCACATC GAGACA AGGGT GTCTAC CTGT TCTACT
TGGCACCTGGGAAACAGAG A CCACG A- AGG- --------
GAM3380 15047 GGTGATGACCCCACAAGGAA T T A A A- A-- -- C G - -- - CCA
GAGGTACTGTTGCAGCCGCT GG GA GACCCC CA GG AG GGTACT GTTG AGCC CTG CA GCTG
CTG
GCAGCTGCTGCCACAGCCAG CC CT CTGGGG GT CC TC CCATGA CAAC TCGG GGC GT TGAC
GAC
TATTGCCGGGGCTCCAACCC - C - G GG CAC CC C - C TA C ---
AGTACCCACCTGGCCGTGGG
GGTCCTCCC
GAM3381 12522 GAGGAACACGGCCACTGCCA A - CACT ATCA A AT- A TTGA
TCATGAGCAGGGCATTGAGG GAGGA CA CGGC GCC TGAGC GGGC TG GG
TTGACCACACGGGCCCAGCT CTCCT GT GTCG TGG GCTCG CCCG AC CC
CGGGTCCTCGCTGATGTCCT - A CTCC ---- A GGC A ----
C
GAM3382 8224 GTGGAGTGAGGCTGGAGAGG T- ------- GG - A TTCAGGAATT
GGCTTGGCAATCTTCAGGAA GTGGAG GAG GCTGGAGAG GCT TGGCA TC
TTGATGCTGTAGCAGCTCTT CACCTC CTC CGATTTCTC CGA GTCGT AG
TAGCTGAACCTCTCTTCTCC TT TCCAAGT GA T - ----------
AC
GAM3383 9750 GTCGGTGGGGCGGGGACGCG -- G - AGGTG A ---- GCCTT
AGGTGTGGATGGGGGGTCGC GT CGGTGGGGC GGGAC GCG TGG TGGGG GGTC
CTTGACCTCTGCCTCAGCCA CA GCCGCTCCG CTCTG CGC ACC ACTCC CCAG
GTAGCGCAGTCTCGGCCTCG TT G A GATG- G GTCT -----
CCGTTAC
GAM3385 49 CTGGTTAACTTCTTGAGCTA TTA TTGA ATTTC AAC- GAACA
TTTCGTGGAACTTGGAACAC CTGG ACTTC GCT GTGG TTG
AGCCTGCCACCCAGTGAAGT GACC TGAAG TGA CACC GAC
GTCCAG TG- ---- CC--- GTCC -----
GAM3386 3239 GAAGCTAGGCACCTGCCCAT - - TC GGGAGTA
TTCCTTGGGAGTAAAGCTGA GAAGCTAGGC ACCTGC CCATT CTT
TGGTGTAGGTGGTCTGGCTT TTTCGGTCTG TGGATG GGTAG GAA
T G T TC -------
GAM3387 7810 GGTACTACGGTCTATTTCTC C CG TATTTCTC- TTA AATAGACATCACAA
AACCTTAGGCAGTAATAGAC GGTA TA GTC AACC GGCAGT
ATCACAAACTGCCATGGTTT CCAT AT TAG TTGG CCGTCA
TGCACTATGATTATAATACC A AT TATCACGTT TA- ----------

GAM3388 3223 ACCTTGGTGGTAAGAACTTT - AAC CTC GG ACT A AG CCT G TGTGTT
AGCTCCAGGGAACTTGAGGC ACCTTGGTGGT AAG TTTAG CA GA TG GGCAG GC GTTGT GTC

AGAGGCCCTGTTGTGGTCTG TGGAACCACCA TTC AAGTC GT CT AC CTGTC CG CAACG CAG

TGTTGACAGCAACCGCACCT G --- CTC A- GC- - CA C-- A ------
GTCCACGTCATGCTCCTGAA
CTTGACCACCAAGGT

GAM3389 10296 AATTTATGTTGTTTAGTGTT TT AGT CCA T ACCAAA
ATATTCCAGACGTGATACCA AAT ATGTTGTTT GTTATATT GACG GAT
AAATTTTGTTGCAAATATAA TTA TATAACAGG TAATATAA TTGT TTA
TGGACAATATTTATT TT --- ACG T ------
GAM3390 15490 CCTGAAATTTTCCACTTGCT AAAT TG- - TGA------ AGAAA
GCTTCTTGGTGTGAGGCGAG CCTG TTTCCACT CTGCTTCT TGGTG GGCG
AAATGCCACCACGTGGCACT GGAC GAAGGTGG GATGAGGA GTCAC CCGT
GCAGGAGTAGACTGGTGGAA ACC- TCA C GGTGCACCA -----
GCCACAGG
GAM3391 20978 ATCCAACTCACACCTCGCAC A T GCA - CA--- CAGG
TCCTGCCACTCACAGGTGAG ATCCA C CACACCTC CTCC TGC CTCA
ACGGAGCATGGGGAGGGGTG TGGGT G GTGTGGGG GGGG ACG GAGT
TGGTGGGT - - A-- T AGGCA ----
GAM3392 3205 GCTGCTGCTGCTCCCCAGCC --- - C A-- TGCCT-- CAGCCT
CACCAGTGCCTGGCCAGCCT GCTGCT GCTG CTCC CAGCCC CCAG GGC
GCCCCCTTCCCTGGACAGGG CGGCGG CGGT GAGG GTCGGG GGTC CCG
CTGTGGAGATGGCTCCGGCG CCT A T ACA CCTTCCC ------
GC
GAM3393 11050 GAGAAATACAGGTAGATATG A T - G CCT TTGT TCAATTC
CTGGTTTACCTATTTGTATA GAGA ATACAGG AGATA TGCTG TTTA AT ATAG
GTCAATTCCTGTTTATTATG TTCT TGTGTTT TCTAT GCGAC AAGT TA TGTC
AAACAGCGTTATCTCTTTGT A C T A AT- TT-- -------
GTATCTT
GAM3395 713 ACCGGGGGCCCCCTTATTGT CCCTTA T CAAA------ CAGG
TTGGGGCAAAGGGCCAGGGC ACCGGGGGCC TTGT TGGGG GGGC
CCCGGAAACGCTCCCCATAT TGGCCCCCGG AATA ACCCC CCCG
AAAATGGCCCCCGGT TAA--- T TCGCAAAGGC ----
GAM3396 14378 AGGCCAGGCACGGTGGCTCA C CAC A A CACT
CGTCTGTAATCATAGCACTT AGGCCAGGCA GGTGGCT GTCTGTA TC TAG
TGGGACTACAGGCATAAGCC TTCGGTCCGT CTACCGA CGGACAT AG GTT
ATCATGCCTGGCTT A ATA C G ----
GAM3397 14009 GCCTCAGTCTCCTGAGTAGC G- - ---------- G ACA CCTGC
TGGGGTTACAGGTGCCTGCC GCCTCA TCT CCTGAG TAGCTGGG TT GGTG
ACCAAGTCCAGCTAATTTTT TGGGGT AGA GGATTT ATCGACCT AA CCAC
GTATTTTTAGGTAGAGATGG AG T TTATGTTTTTA G --- -----
GGT
GAM3398 994 GTGTGCCAGACTTCCGTTGA - A-- TC TT A AGACAGGACCAAAAC
GTCACATATAGACAGGACCA GTGT GCCAG CT CG GAGTCAC TAT
AAACATACGTGACTCTTGTT TACA CGGTC GA GT CTCAGTG ATA
AGCCACTGGCAACAT A ACC TT T- C ----------

GAM3399 21515 GTTACGGAACTCTCACTTCT ----- - T GA TTTC
GTGTTATGGACATTTTCATG GTTACGGAAC TCTC ACTTCTGTGT ATG CAT
ACATGCACAGAAGTGGAGAG CAGTGTCTTG AGAG TGAAGACACG TAC GTA
GATGGTTCTGTGAC GTAGG G - A- ----
GAM3400 15107 TCGGCTCCAAGTCTGACCCA T A T A AC TG TTTAC
CTCTGCGTCCTTTTACAGGA TCGGC CCA G CTG CCC TC CGTCCT
TGTGGGAGGGGGCAGCTGGG AGTCG GGT C GAC GGG GG GTAGGA
CTGA - - - G GA GT -----
GAM3401 15745 GCGGTCAGGACGCCGCCGTA A- A CCG AG--- G GTAGCCC - AGGAGGA
GCCGCCGGCGTAGCCCCCCG GCGGTC GG CG CCGT CCGCC GC CC CG
AGGAGGACGAGGACACAAAG CGCCGG CC GC GGCA GGCGG CG GG GC
CGGGCGGAGGACACGGATAC CG - ATA CAGGA G AAACACA A -------
GCCGCGGCCGC
GAM3402 21507 TTCTCAACCAGCAATGCGAC A A GACT A- G TGG T --- TGG
TAGACAAGATGGTGGCCACG TTCTC ACC GCAATGC AG CAA ATGG CCACG CAT GTGC
TCATGTGCTGGGCGCTGTGT AGGAG TGG TGTTGCG TC GTT TACC GGTGT GTG CGCG

GTGTGGACCCATGTTGACCT G C AGT- CA G CA- - TGT ---
TGAGCGTTGTCGGTGGAGGA
GAM3403 22 GAGGGGAAAGGAGCCCCAAA AA- -- CAA AA AC A- AAAAATCATGCA
GAGAAGGGACGCAGGGCAAA GAGGGGA GG AGCCC AGAG GGG GC GGGC
AATCATGCAGCCCCAGCACC CTCCCCT CC TCGGG TCTC CCC CG CCCG
CCACCTCTGCGGGCTGGCCA CCA GG CG- CA CA AC ----------
CCTCCCCTC
GAM3404 801 TCTTGTGTTGCGACTTCGTG GCGA GT--- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AGAACACGA GAAG TCACCAC ATTCT
CAAGAAGAATAAGCACAAGA ATAA AACCC - ----------
GAM3405 7626 CTGTGCTGGGTCCTGTACCC GC TCCT AA T ATCGGG
AAGAGGTCCAGGATCGGGTC CTGT TGGG GTACCC GAGG CCAGG
TGGTCCTCGGGTGCCTTTCC GACA ACCT CGTGGG CTCC GGTCT
AAAACAG AA TTC- -- T ------
GAM3407 6832 CTGGATGAGAGACCTTGATT TG T A CT G A TT ---- GAC- -- GCCTG
TCCTGTTCACTATTGGCTGG C GA GAG GAC TGATTTCCT TTC CTA GG CTGGTCTG CTT GGT

TCTGGACCTTGGTGCCTGAC G CT CTC CTG ACTGAGGGA AAG GGT CC GACTAGAC GAA
CCA

CCAAAGCACACAGATCAGAA GT - C -- - - T- TCAA ACAC AC -----
CTCCTTGGGAAAGGGAGTCA
GTCCCTCTCTGG

GAM3408 2990 TGGTCACTGTTAGCCCATGA T AGCC AA ---- C CGTG TGAA
ACACGTGTGGGCCTCGGTCA TGG CACTGTT CATG CACGTGTGG GCCT GGTCA GCTT
CGTGGCTTTGAAGGGCAGTC ACC GTGGCGG GTGC GTGCACACC CGGA CCAGT CGGG

TGACCAGGCTAGACCACACG - ACA- C- AGAT - CTGA ----
TGCCGTGACAGGCGGTGCCA
GAM3410 13179 TTGATCTTAACCAGTTTCAC AA----- A A CC-- ACCAAACTTTCTTAC

TTGTACCAAGACCAAACTTT TTGATCTT CC GTTTC CTTGTA AAG
CTTACCTTTCCATGCAGGGA AACTAGAA GG CAAAG GGACGT TTC
AACAGGCACCATCAAGATCA CTACCAC A - ACCT ----------
A
GAM3411 14596 TGGTCTCGCCTCTCTCCTCT CGCCT C------ CCCCA
CCTCCCCCCCAGGAGGAACTT TGGTCT CTCTCCT TCCTCC
GAAAGGAGGGTAAAAAGACT ATCAGA GGGAGGA AGGAGG
A AAAAT AAGTTCA -----
GAM3412 6784 CTCAGCCTTCCGAGTAGCTG A C----- AG- ATTACA ATGC
GGATTACAGGCATGCGCCAC CTC GC TTCCG TAGCTGGG GGC
CAGGCCCAGCTAATACGGAA GAG TG AAGGC ATCGACCC CCG
TATAAAGTAGAG A AAATAT ATA GGACCA ----
GAM3413 213 AGCTGAGCTCACAGCCGAAT - A CA---- C TAA CCA TGTGTCTC
AAGCCACCATGAGGCTGTCA AGC TG GCT CAGC GAA GCCA TGAGGCTGTCAG
GTGTGTCTCCTGATGGTCTC TCG AC CGG GTCG TTT CGGT GCTCTGGTAGTC
GCTGGCCCTTTGCTGCTACC T C ACCATC - CC- C-- --------
AGGCCCATGCT
GAM3415 8635 GGATAGCGGATCTGCATCGT --- C TC TC - - - AT AACACTGTCA
AGCGATCTCCAATTCCAATA GGAT AG GGA TGCA GTAGC GAT CT CCA TCCAATAGGG
GGGAACACTGTCACTCTGTT CCTA TC CCT ACGT CGTCG CTA GG GGT AGGTTGTCTC
GGACCTGGCGGCATCAGCTG AAG A -- -- A C C CC ----------
CTGCATCCACTGAAATCC
GAM3416 8190 TTTAGCAGTACAAAATCTTT C-- AA - TG CA-- GG C ATGA
GACTATGACCATGGGACACA TTTAG AGTACA ATCTTT GACTA AC T GACA AGAC
GACATGAGTTTATGTTTTGG AAATC TCATGT TAGGGG CTGGT TG G TTGT TTTG
TTTGTTGTGGTCTGGGGATC TTT AC T GT TTTG TT A ----
ATGTACTTTTCTAAA
GAM3417 17519 GCAGGGTTCTCAGCAGTGAT TC AG--- GG GGGA ATGTAAAGG
GGGAGGGCAGGGGAAGAGAT GCAGGGT TC CAGTGATGGGAG CAG AGAG
GTAAAGGCTTTGAGACTGGG TGTCTCG AG GTCGCTACCCTT GTC TTTC
TTCCCATCGCTGGAAAAGAA GA AAAAG GG AGAG ---------
GGCTCTGT
GAM3419 355 GCTACCGGACCTGCCTGGGA C- CT C G AGTGA A CAGGGC
GCCAGTGAAGGGCGAGTCAG GCTAC GGAC GC TGG AGCC AGGGCG GT
GGCACGCGTCCTGGAGGCTG CGATG CCTG CG ACC TCGG TCCTGC CA
CCAGCGTCCTTGTAGC TT -- - G AGG-- G ------
GAM3420 14481 AGATATGATTAGACTTCGTT TT -- - --- CAACTTTTCACAA TGAAGT
AGTAATGTTCAACTTTTCAC AGATATGA AGACT TC GTTAGTAA TGTT AAGATGGC
AAAAGATGGCTGAAGTGCCA TTTATATT TTTGG AG CGGTCATT ACAA TTCTACCG
TCTTAACAAACTTACTGGCA -- TT A CAA ---------- ------
GATTGGTTTTTATATTT
GAM3421 9544 TCTGAGTGCTAAATTTGGAA A TAAA AGAC G CCTGGT
GACAGCTTGTACCTGGTTGG TCTG GTGC TTTGGA AGCTT TA
AAGCTTTGTCCAAAATGCAC AGAC CACG AAACCT TCGAA GT
ACAGA A TA-- GTT- G ------
GAM3423 9496 CCCGGGGACTGAGAGTTAAG ACTGA TA AG GA TACTA
GAGAGTTGGAGGCTTTACTA CCCGGGG GAGT AGGAG TTG GGCTT
GGGCCACAGGGTTCCTACTC GGGTCCC CTCA TCCTT GAC CCGGG
GCCCCTGGG CG--- -- GG A- -----
GAM3424 21015 GGCCCTGTGGCTCTGATGTT --- T T ATGT-- CCT- CACC

CCCCCCTGGGAGGCTCCACC GGC CCTG GGC CTG TCCCC GGGAGGCTC
GGGTCTCTTTTTTGGGGATG CCG GGAC CCG GAC AGGGG TTCTCTGGG
AGAGCAGTGCCCCAGGCCCG CCC C T GAGAGT TTTT ----
CC
GAM3428 12950 GGGCCAGGGAGGCACAAACC CA C ACCTAA- AC----- TACAG
TAACTGTACCCCTGCTACAG GGGC GGGAGG ACAA CTGT CCCTGC
GCAGGGTGGATAGACAGAGA CCTG CCTTCC TGTT GACA GGGACG
CCCATTGTCCCTTCCATGTC TA C ACCCAGA GATAGGT -----
C
GAM3429 139 AGCCTCCAGGGTCCTGCCCG C - - CC - GA GCAGCCAG
CCGAGCTCCAGCAGCCAGTG AG CTC CAG GGT TGCC CGCC GCTCCA
GGGCGGGCGCGGCACAGCCT TC GAG GTC CCG ACGG GCGG CGGGGT
CTGTGAGACT A T T AC C G- --------
GAM3430 21304 AGGCCAAATTTCCACTTTCA CCA CAC A-- A- TGTTA
GCAGTTTTATTTCAGCTGTT AGG AATTTC TTTCAGCAGTTTT TTTC GC
AGCCCGAAGAAAGAAGCTGC TCC TTGAAG AAAGTCGTCGAAG GAAG CG
TGAAAACAGAAGTTCACCT AC- ACA AAA CC -----
GAM3432 4297 GGGAAGTATGTGCCGCCGAG AA T - A- C- C GACGCG
CCCTGCGCCGACGCGGGCCA GGG GTATG GC CGCCG GC CTG GCC
GCCGCCGCGGCGAGCCCATG CCC CGTAC CG GCGGC CG GAC CGG
CCCCCC CC C A GC CC - ------
GAM3434 20151 CCTGGCAGACAGGCGGGCAA AC C AAA G GCCCACCCAGACCG
ACAGTGAGCGCCCACCCAGA CCTGGCAG AGG GGGC CAGT AGC
CCGGCTGCTGCGCCCCCTCC GGACCGTC TCC CCCG GTCG TCG
TGCCAGG C- - C-- - ----------
GAM3435 17710 GGTTTCACCATAGTAAAATC ACC AAA- TT TT ATTTAGTCAATA
TTTCTTTGGCATTTAGTCAA GGTTTC ATAGT ATCT CT GGC
TAGCCTAGGGAGATAAGCAC CCAAAG TATCA TAGA GA CCG
TATTTAGAAACC ATT CGAA GG T- ----------
GAM3436 5771 GGGTGTGTGCCCACAACACT T G A- A- AGA CCTG
CTAGGTGCAGAGCCCCTGGG GGGTG GT CCCAC ACACTCT GGTGC GCC
CAAAGTATTACAGGGTGTGA CCCAT TA GGGTG TGTGGGA TTATG CGG
GTGGGGATTACCC - G AG CA AAA ----
GAM3437 8170 ACGGATCCCAGGAGCCCACA TC A CC ACA - CTGCA
CATGACATCCTGCAGATGCT ACGGA CC GGAG CAC TGA CATC
CAGTGACCTCCAGGAGTCTG TGTCT GG CCTC GTG ACT GTAG
T GA A CA --- C -----
GAM3438 10510 GGGCAGGGGGCCCCTGGAAT ------- TGGAATT G C-- AAACGC
TAGGGCTTCTCCCAAACGCG GGGCA GGGGGCCCC A GGCTT TCCC
GGACACGGGCTGTGGGGCCC CCCGT CCCCCGGGG T TCGGG AGGG
CCGGGCGGTTGCCC TGGCGGG ------- G CAC ------
GAM3439 12713 TCTAGATTAATAGCTTTAAA TAATA TTTAA GACCTT TTGTCC
CAGGCATGACCTTGCTTTTG TCTAGAT GC ACAGGCAT GCTT
TCCAAGCTCAAATGTCTGTG AGATCTG CG TGTCTGTA CGAA
TGCATGTCTAGA TA--- TG--- AACT-- ------
GAM3441 7301 GGGTCTGTGTCACAGTGACC CAC ACCT- A CCCAA
TCCCAGAGCCCCAAGCTCGG GGGTCTGTGT AGTG CCC GAGC
GCCTCCCACTTAAACACAGG CCCGGACACA TCAC GGG CTCG
CCC AAT CCTCC - -----
GAM3442 16188 GCAGGCCGGCCAGCTGGCCC -- G - CG C CTCT G CTCCC

GGCGCCTCTGGGAGGCCTCC GCAGGC CGGCCA CT GGCC G GC GGGA GC
CGTATCCCCCTGCTCTAGGC CGTCTG GCCGGT GA CCGG C CG CCCT TG
CAAGGTGGCCGCAGTCTGC AC G A AT T TCC- A -----
GAM3443 6357 CGCTGGGTCTCCTTTCTCAC TTTCT CT AAC TTTGCA CGCTT
TGCCCCAACGCGTTTGCAGG CGCTGGGTCTCC CA GCCCC GCG GGGG
GGCGCTTTCCCCGCTGGGGG GCGGCCCGGGGG GT CGGGG CGC CCCT
CTGTTGGGGGCCCGGCG TT--- -- GT- ------ -----
GAM3444 2575 GGAAGGGGTAAACCCAGGTT A TA- G TC T TCAAT
CCTCTTCTTGAGTCAATCTC GGA GGGG AACCCA GTTCC TTCT GAG
CAGAATGGGACATGGGTTCA CCT CCTC TTGGGT CAGGG AAGA CTC
TCTCCATCC A TAC A T- C -----
GAM3445 8473 TGGCGGTGGGTCAGTGGCAG T TCAG GA- T TTC AAGGAAGCG
AGGGCCATGGTTTCCATGTT TGGCGG GGG TGGCA GGGCCA GGT CATGTT
AAGGAAGCGGACGTGCATCT ACCGTC CCC GCTGT TCTGGT CTA GTGCAG
TGGTCTCAATGTCGATCCCC - TA-- AAC T C-- ---------
TGCCA
GAM3446 21127 GTTAGGCTTCTGAGGGGTCA A --- G AG A- TGTCCATATCTT
GGCAGAATATGGTGTCCATA GTT GGCT TCT AGGGGTC GCAGA TATGG
TCTTCCATAGCTCTGCAGAT CGA CTGA AGG TTCTTAG CGTCT ATACC
TCTTGGGATGAAGTCAAGC A AGT G A- CG ----------
GAM3447 20007 TTAACACGCCTGCATTGGGC C G T GCACCAA A AA TGAACT
ACCAAGTATCCAACAGATGA TTAA AC CCTGCA TGG GT TCC CAGA
ACTTCTGGGGGACACATTCA AATT TG GGGCGT GCT CA AGG GTCT
AATCGTTGCGGGGTATTAA A - T AAACTTA C GG ------
GAM3448 12409 TTCTTCTTTCTTCAAATATC T TCAAATA - TT --- GA TTA
ACCATTGATTTCTGTGGATA TTCT CTTTCT TCA CCA GATTTCT GTG TATCC
TCCTTAGGGTGACACTCTGG AAGA GAAGGA AGT GGT CTAAAGG CAC GTGGG
AAATCTTGGATGAAAGTTAG T TTGAA-- A T- TCT A- ---
GAAGTAGAA
GAM3449 17901 GGCTAATTTTTTGTGTTTTT ATTTTTT TTTT A C -- AACAC
AGTAGAGACGGGGGTCAAAC GGCTA GTG TAGT GAGA GG GGGTCA
ACTGATCCTGCCTTTCCACT CCGAT CAC GTCA CTTT CC CCTAGT
GTACCACTAAGTAGCC GAAT--- CAT- C - GT -----
GAM3450 16310 GTTCCATTTTAAGTTAGAAA ATT TAGAAAAAT T- GAG ATTTC
AATGTATCTGTGTGGGAGTA GTTCC TTAAGT GTATCTG GTGG TAAAAAG
AAAAGATTTCCTTTTTAAAA CAAGG AGTTCA TATAGAC TACT ATTTTTC
TCATTTCAGATATCACCATA GT- TACCAC--- TT AAA -----
CTTGATGGGAAC
GAM3454 4938 ATGACTGGGTCAGCGTGTGC C -- T GCCTA TA GGCA
CTAACCTACGCCGGCAGGCG ATGA TGGG TCAGCG GT ACC CGCC
CGGGTAAACCGTTGAAACCC TGCT ACCC AGTTGC CA TGG GCGG
ATTCGT T AA - AA--- GC ----
GAM3455 19354 GTGGCCCTTGGAAACACTGT --- A- A--- - AAC CACG
ATGAACTGAAGCACGCTTCA GTG GCCCTTGG AAC CTG TATG TGAAG
CATATCAGGCAAGTTACCCA CAC CGGGAACC TTG GAC ATAC ACTTC
AGGGCAAGCAC GAA CA AACG T --- ----
GAM3456 11476 AAGGGTTTGCCACTTAACCT G ACTTAACC GACAC GG AATAAAGAA
TCGACACGGGAGGGAAAATA AA GGTTTGCC TTC G AGGGAA
AAGAATTCCCTTTCACTAAG TT TCAAACGG AAG C TCCCTT
AACACACGGCAAACTGTT G CACAC--- AATCA TT ---------

GAM3457 5552 GAAGGCGTCTTTCAGAGTCA CG CA--- TC - A G GCCA
TCTATCCTCTTGGCATGCCA GAAGG TCTTT GAG AT CT TCCTCTTG CAT
ATGCAAGAGGAAAGCATTCC CTTCT AGAAA CTC TA GA AGGAGAAC GTA
TCAAACCAAAGAAATCTTC AA CCAAA CT C A - ----
GAM3458 16981 CCGCGATGTGGATCATGTCC - AT GA T TATCAA TAGA-- A TCTGA
TTATCAATGTAGAAGTCAAC CC GCG GTG TCA GTCCT TG AGTCA CC
CTCTGAGGCTGACTGAAATT GG CGC CAT AGT CGGGA AC TCAGT GG
CACCATCCAGGGCTGAGATA T -- AG - CCTACC TTAAAG C -----
CCGCTGG
GAM3459 7599 GAAGGTGCTGACTTCCTTGG GACTT G- G TAAAGCACC
GAGATGCCATAAAGCACCTG GAAGGTGCT CCTTGGGA AT CCA
GGATGATCTCAAGGGGCACC TTTCCACGG GGAACTCT TA GGT
TTT ----- AG G ---------
GAM3460 6515 GCTGCGCGCCGGCGCCGTGG -- C ---------- CCGTCC
TGGCCGTCCCCACCGATACG GCTGCGC GCCGG GCCGT GGTGG
CTGTACGGCCTGGCCTGCGC CGGCGCG CGGTC CGGCA CCACC
GGC TC - TGTCGCATAG ------
GAM3462 22470 AGTCGGCTTCGGTAAAGGCC CT AAG- AAGAAAAA CGTACAAAAAAATTCCT

AAGAAAAAGCGGCGTACAAA AGTCGG TCGGTA GCC GCGG
AAAATTCCTCCGCCCACCGG TCAGCT AGCCAT CGG CGCC
CAAAGTACCGACATCGACT AC GAAA CCACC--- ----------
GAM3465 6402 ATTATCTGCCAGTTAAGATT C T T CTTA C-- T CATG
ATTCTTAAAACTCTGGATGC ATTAT TGCCAGT AAGA TATT AAACT TGGA GC
CATGGCTTTTAATAAGTTTA TGATA ACGGTCA TTCT GTAA TTTGA ATTT CG
ATGTTCTTCACTGGCACATA C C T ---- ATA T ----
GT
GAM3466 2656 GGGCCGGCATCCGGGGCCAG - CC-- ----- -- AACAGAA
GCTAGAAACAGAATCTAATG GGGCC GGCAT GGGGC CAGGC TAGA
CCTGGTAGAGCCCCACACAT CCCGG CCGTA CCCCG GTCCG ATCT
GCCAGGCCC A CACA AGATG TA -------
GAM3467 21001 GGAAGTCTGATTAGTTGCTG AAG- AGT TG - TC AAGCACTGGACA
GGATGGTCCCATCCATGAAG GG TCTGATT TGC GGATGGT CCCA CATG
CACTGGACACATGCTGGGAA CC AGACTAA ACG TCTACCA GGGT GTAC
CCATCTGTGCATAAATCAGA GAGA AT- TG A C- ----------
AGAGCC
GAM3469 15027 CGTCAGACTTGGAAGAAATA C- AGA T- TCTTCT CT ATAAA
TTCTGTTCTAAAATCTTCTC CGTCAGA TTGGA AATATTCTG TCTAAAA CA TTT
ACTTTTATAAAAAATATGCT GTAGTCT AATCT TTGTAGGAT AGGTTTT GT AAA
TTTCTTTTGGATTTAGGATG TT A-- TT CTTTTC AT -----
TTATCTAATTTCTGATG
GAM3470 5527 CAGACCCCAGACACCCATTG CCA CC---- -- TT GGGCAGAG
TCCATAGCCTTCTCAGGGCA CAGACC GACAC ATTGTC CATAGCC CTCA
GAGTGGGCTGGTTGTGTTGA GTTTGG TTGTG TAACAG GTGTTGG GGGT
CAATAAAACAGTGTTGGTTT --- ACAAAA TT TC --------
G
GAM3471 4727 GTGGCAAGAGGAACACAAGG G AACACAA AC-- AAACCGGGGCAAGC
ACTGCCCAGAAAAACCGGGG GTGGCAA AGG GG TGCCCAGAA
CAAGCTTCTGGGCAAAGGCC CGCCGTT TCC CC ACGGGTCTT
CCTGTTGCCGC G ------- GGAA ----------

GAM3472 15906 AGCTCCATCTTTTGTAGGGG CCA - TGAGTT - GACATATCTAA
AGTGAGTTTCCATCTCTGGA AGCT TCTTTTGTAGG GGAG TCCA TCTCTG
CATATCTAACAGAGGCTGGA TCGA AGAAAACATCC CCTT AGGT GGAGAC
TTCCACCTACAAAAGAAGCT --- A ------ C ----------
GAM3473 13088 AACACCCCATGCCATCTGAC AC TGCCA A T AA TAGG
AGATGGGAACCTAGGGGACC AAC CCCA TCTGAC GA GGG CC
CCTTCGTCAGAGAATCTGGG TTG GGGT AGACTG CT CCC GG
AGGTT GA CTAAG - T CA ----
GAM3475 9714 AGGAAGAAAGAGCTTGAGGT A T---- G C - -- AA ATGGG
GGGAGCGGCGCTGGGAGGAA AGGAAGA AGAGCT GAGGT GGAG GGC GCT GGGAGG GGG

GGGATGGGCCCCGCCTTCCT TCCTTCT TCTCGG CTCCG CCTT CCG CGG CCTTCC CCC

GGGCAGCCTTTCCAGCCTCC C TCGTC A T A GT GC -----
TGCTGGCTCTCTCTTCCT
GAM3476 13921 TAGGTCCCAACAGTTTGTGT - TTT - AC CCA-- TA CATTATTCTTA
TTTCCTTACTGTCCCAGTTT TAGGTCC CAACAG GTGTT TTCCTT TGTC GTTT TAT
TATATCATTATTCTTAGTAC ATCCAGG GTTGTT TACAG GAGGGA ACAG CAAA ATG
TAAACAGAGTGACAACAGGG A --- T CA TGAGA TC ----------
AGTGACATTTGTTGAGGACC
TA
GAM3477 4477 CTCGCTATATGGGGAACGGG C TA AA CTCAAAGGC GCACA
TGTCTCAAAGGCTGTTGAGC CT GCTA TGGGG CGGGTGT TGTTGA
ACATCAATAAACACTATTGC GA CGAT GTCCC GTCCGCG ATAACT
GCCTGCCCTGGTTAGCAAG A TG -- TTATCACAA -----
GAM3478 14591 CTTGGTGGGGCTGGTTAGCG -- T G A GA A G TA GAGTAAA A CAGG
AGTCATTGTATGTAGAGGTG CTT GG GGGGCT GTT GC GTC TT TATG GAGGTG GGC GCA

GAGTAAAGGCAGCACAGGTG GAG CC CCTCGA TAA CG TGG AA ATAC CTTCGT CTG CGT

CAGTCGTGAACATGCTTCCG TC T A A G- - G GC ACAAGTG A ----
CATAGAAGGTGGCAAATAAG
CTCCTCCCTGAG
GAM3480 4852 GAGCAGCTACGAGGAGCAGC - G G GACC CGCTTCCAA
CGACCGTGCGCTTCCAACAC GAGCAG CTACGAG AGCA CC GTG
CAGGTGCTGCTCGTGGCCTG CTCGTC GGTGCTC TCGT GG CAC
CTC C G - AC-- ---------
GAM3481 21548 GGAAGAGATATGCAACTGGC A AA CT TC T GTCCTTGCAATGTACAA
TAGTCCTCGCGTCCTTGCAA GGAAGAGAT TGC CTGG AG C CGC
TGTACAAGTGGAGCTTCAGA CCTTCTCTA ACG GACT TC G GTG
AGCAATCTCTTCC - AA -- GA - ----------
GAM3482 10361 CCCATGGCATATGTCTTGCA AT TA- TG - T T GAAAGTAACTTATGG
GCCCTCTTTGTGTGGAAAGT CCC GGCA TGTCT CAGC CC CTT GTGTG
AACTTATGGCACGCCAAGTG GGG CCGT ATAGA GTTG GG GAA CGCAC
GCGTTGTGAGATAACCTGCC -- CCA GT C T C ----------
GGG
GAM3483 6931 TGGAGTACCTTCTACTGCCT C A- - TC- CAAATCCAAAAC
CAGTGGGCAAATCCAAAACC TGGAGTAC TTCT CT GCC AGTGGG
CCATTAGTGGCAAGGAAGAA GCCTTGTG AAGA GA CGG TTACCC
AGTGTTCCG A AG A TGA ----------

GAM3484 22166 GAGCACGCTTCCCAAGCTTG A CT- GCTT GG A- AAG GATC
GGGTGGGCAATGTAGGCAAG GAGC CG TCCCAA GGGGTG CA TGTAGGC TC
TCGATCGAGCTTGCGGCTGA TTCG GT AGGGTT TCCCAC GT GCGTTCG AG
CACCCTTTGGGATCTTGGGC G TCT ---- A- CG --- ----
TT
GAM3485 447 TCTTGTTCCTGGCCGTGGAG GG G G AG TG- T TCCG
AGGGGCCTGGGGCACTGGTT TCTTGTTCCT CC TG AG GGGCC GGGCAC GGT
CCGGCTGTGTCTGGTGGTCT AGAACGGGGA GG GC TC TCTGG TCTGTG TCG
GGCTGCGGGGAAGGGGCAAG A- G G GG TGG - ----
A
GAM3488 12116 TATTGGCTAGCTTGTGCCCT TG - TG - CT-- GT-- ATGTA
CAAGTGTTTGGAATGTATCT TAT GCTAGC T TG CC CAAGT TTGGA
AGTAAAGCTTGCTGTGGCCA GTG CGGTCG G AC GG GTTCG GATCT
TGGTGCTGGCTGGTG GT T GT C TGTC AAAT -----
GAM3489 9323 CTGGATTGCAGTGGCCCAAT TT T- GC AT--- - T AACC
CTGGGCTCATGAAACCTCTG CTGGA GCAG G CCA CTGGG CTCA GA
GGTCCCGGTCAAGTGGTTCT GACTT CGTC C GGT GGCCC GGGT CT
TCTGCCTTCAG C- TT TT GAACT T - ----
GAM3490 10425 CATCTTTCACTGGAATTGCA AC AT CAA AT CATATGAAACA
AAGGGATAGCCATATGAAAC CATCTTTC TGGA TG AGGG AGC
AGCTCCTCCTCATCCAAGAG GTAGAGAG ACCT AC TCCT TCG
AGATG A- -- --- CC ----------
GAM3491 16082 AATCTTTAAAATGTGTTGTT TTAAAAT CA-- AT TAGCATTATTAT
TTTCACAAGTAATTTAAGTA AATCT GTGTTGTTTTT CAAGTA TTAAGTA
TAGCATTATTATTATTTGGT TTAGA TACAGCAGAAA GTTCAT GGTTTAT
ACTTGAGTCAAAGACGACAT TT----- CTGA -- ----------
TTAGATT
GAM3492 20439 TTTACTGAGCGTCTACTTTG GA CTACT GG GA- CT AGGTACA
GGCCCGACACTTTTCTAGGT TTTACT GCGT TTG CCC CA TTTCT
ACAGGAGATATGGCAGGGAA AAGTGA CGTA AAC GGG GT AGAGG
CAAATGCCAAGTGAA AC ----- AA ACG AT -------
GAM3493 12056 CTTTATAAAATGATCTAACT AAA TC CT TTATATT C ATC
ACTTATATTTGTGCTGCATC CTTTATA TGA TAA AC TGTG TGC
GCGTTACATCTGTTTTTATT GAAGTAT ACT ATT TG ACAT GCG
TCACTATGAAG C-- TT TT TCT---- T ---
GAM3495 10661 GGATGACCAGCTCGTCTTCG C- TC ------- T TAC
GTCGTGTGATTACATCTCAT GGATGAC AGC GTCTTC GGTCGTG GAT
GGCCCGTGTGTGGGGACTTG TTTACTG TCG CAGGGG CCGGTAC CTA
CTTTGTCATTT TT TT TGTGTGC T ---
GAM3496 3687 TTCAGCATAACGTTTATGGA AACGT- - C T CTT
CAAAATGTATATAGTATATC TTCAGCAT TTATG GA AAAATGTATATAG ATAT
TTATATTCTATATGTATTTT GAGTCGTA GATAC CT TTTTATGTATATC TATA
ATCACATAGTAAGGAATGCT AGGAAT A A T ---
GAG
GAM3497 17759 AAAGGGGAGACTTAAAATTT G AAA CCAA CA TACAGAT
GCTCCAATGTCAGTTCTCTA AAAGG GAGACTT ATTTGCT TGT GTTCTC
CAGATGAGAACCAATACTAC TTTCC TTCTGAA TGAACGA ATA CAAGAG
AGCAAGTAAGTCTTGCCTTT G --- CATC AC -------
GAM3498 4824 GGCCGCCCGGAACACCTTCA --- AACAC-- A TGCTG C ATGCTTC
CCTTCTGCTGCACGAAATGC GGCC GCCCGG CTTC CCTTC CA GAA

TTCTTCTTGGTCTTGGAGGC CCGG CGGGTC GAAG GGAGG GT CTT
GAAGCCGAAACCTGGGCCGG GGC CAAAGCC C TTCTG T -------
GGCC
GAM3500 17169 GGCTGACATGGCTTTAGATC --- TG --------- - TGTTTATGATTT
CTGTTTATGATTTGGTATCT GGCTGAC A GCTTT AGAT CC
TATTGTCACAAAGTTGTTCC CTGACTG T TGAAA TCTA GG
GTCAGTC CCT GT CACTGTTAT T ----------
GAM3501 3787 GTGGGGTAAAACCCCAGACG G A AC C A CTG TGT- AGAAAAAGCTGAA
CCATGAAAGCTGCCATGTGC GTG GGTA AACCCCAG GC ATGAA G CCA GCCTGG
CTGGAGAAAAAGCTGAACCA CAC CCGT TTGGGGTC CG TACTT C GGT CGGACC
GGCCCTTTGGATCTTCATGC G C C- - - TA- TTCC ----------
CCTGGGGTTCTGCCGCAC
GAM3502 18410 GTGGCCCTCATCCTTCAGAA CCT----- TCCTT- TG CGAA AA- GC ATTT
TGTGGATCTGCCGAATTGAA GTGGC CA CAGAATG GATCTGC TTG GAG CTG
GAGGCCTGATTTCAGCTCCA CACTG GT GTTTTGT TTAGACG GAC CTC GAC
CCAGATGCAGATTTGTGTTT TCACTATT TCTTTT GT TA-- CAC -- ----
TGTTTTCTTGTTATCACTGT
CAC
GAM3503 9633 GGCTCCGCCCCCACCCTGCC G - AC C CCC- GCTG
TGCCCCCTCGCTGGAGCAAC GGCTCC CCC CC CCTGC TGC CTC
GCAAGCAGGAGGCGGGGGAG CTGAGG GGG GG GGACG ACG GAG
TC - C A- A CAAC ----
GAM3504 13899 CGAGGGTACAGCTTCACCAA AG A AACACGGC A G AAAAT
CACGGCCGAGCGGGAAAATC CG GGTACAGCTTC CC CG GCG G
GTGCGCGAACATCAAGGAGA GC TCGTGTCGAAG GG GC CGT C
AGCTGTGCTAACG AA A AACTACAA G G -----
GAM3505 6873 TCAGGATGTTGTTTGATCTT - G TG T- CAAA T TCCCT
CTCAAACATCTAGTTCCCTG TCAGG AT T TT GATCTTCT CATC AGT
CTTGATGGGAGGATCCTAAT AGTCC TA A AA CTAGGAGG GTAG TCG
GAAATACCTGA A A GT TC ---- T -----
GAM3506 12850 GGACACCCGGGCCTCCGGCC A CC CC--- AG- AT GCTC
CTGGCAGTCAGATGTGCTCA GGAC CCCGGG TCCGGC TGGC TCAG GT
CCCTGGTCGGCCAACACCGC CCTG GGGCCC AGGCCG ACCG GGTC CA
CGGACCCGGGCGTCC C -- CCACA GCT C- ----
GAM3507 16010 CTTGGAGGGCGAGGGGCCCT TG A A- GC TAGG -- C A TG ACTGAGCC
TAGGGGAGTCACGGCTGGAC CT G GGGCG GGG CCT GGAGTCAC GG TGG CCC GG
CCTGGGACTGAGCCCCTGGG GA C CCCGT CCC GGG TCTCGGTG CC ATC GGG CC
GACTACCAAGTGGCTCTGGG GT - CA TA ---- AA - A GT --------
ATCCCACTGCCCCTGAG
GAM3508 15477 GGGGTTTTTTTCTCTGAGAA TTTCT AA G T---- GTG GGAAA
AAGGGGGGTTCTATTGTGTG GGGGTTTT CTGAGA AGG GGGT CTATT TGGT
GTGGAAAGCCAAGAAGTGGT TCTCAAAA GATTCT TCC CTCG GGTGA ACCG
TGGTGCTCGCCTGATCTTAG CTCAT AG G TGGTT AGA -----
TACTCAAAACTCT
GAM3510 16089 CTTGGCTCTGGGGTGTGCTG CT-- T TG T TCACCAGGTCCCTTT
GGAGGGTCACCAGGTCCCTT CTTGGCT GGGG G C GGGAGGG
TTCCTTCCTGTGCCCTCTGA GAATCGA CTCC C G CCTTCCT
AAGCTAAG AAGT - GT T ----------
GAM3511 830 GGAGCAGGGCCTGACTGCGC - CC CT -- - C TTAATC
AGGATTCACAGATTAATCTC GGAGC AGGG TGA GCG CAGGAT TCA AGA

TTGAGGTCCTGGATGCCTCA CTTTG TTCC ACT CGT GTCCTG AGT TCT
TCCCTTAGTTTC A CT C- AG G - ------
GAM3514 11125 GACATCCAATTTTGTTCAGG T AA T CC TT GCACTTAATAAATATA
TCCCTTTTAATGGCACTTAA GACA CC TTTTGT CAGGTC TT AATG
TAAATATACATTCTGAGACC CTGT GG AAGACG GTCCAG AG TTAC
TGGCAGAACAGGCTGTC C AC - -- TC ----------
GAM3515 11581 CATTCCCCTGTCTGTCTGCA TC - ATT----- CTCAGA
TTTGTCTCAGAACATTTCCT CAT CCCTGTCTGTCT GC TGT
TGGCTGGACAGATGGGGTTA GTA GGGGTAGACAGG CG ACA
TG TT T GTTCCTTT ------
GAM3516 13536 GTTGCGGCCCGGGTTTAGAA C G GGA A GG - CGGT
GGGATTCATGGGGGCCGGGC GTTG GGCCCG GTTTAGAAG TTC TGG GCC GGGCTGC

TGCCGGTGCGGCCCGGGCGG CAAC CCGGGT CGGGTCTTC GGG GCC CGG CCCGGCG

CCGGGGCTTCTGGGCGTGGG C G --- - GG G ----
CCCCAAC
GAM3517 7967 GACCTGTTCTGTTTTATCTT G G TA GTC C- T GCCT
CTGTCAGCTCCTCTGGTGCT GACCT TTCT TTT TCTTCT AGCTC TC GGTGCTAT
ATGCCTGTGGTACTGATTGA TTGGA GAGA AAA AGAAGA TCGAG AG TCATGGTG
GCTAAAGAAGAAAAGAGAGG G G -- AA- TT - ----
AGGTT
GAM3518 17128 AAGACCTGAGAGAATGTAAG - CT TAA- TA------- T - AGACA
AACATATAGAACATCCAAAA AAG AC GAGAGAATG GAACA TAGAACA CCAAA ATA
TAAGACATATCTTTGGTTGT TTC TG TTCTTTTAC TTTGT ATTTTGT GGTTT TAT
TTTAAAACCTTTTTGTTTGC G TC TCCG TTTTCCAAA T C -----
CTCATTTTCTTCTGTGCTT
GAM3519 20843 CCTCATTTCTTCTATTTAAA -- C TTAAAAAAAA TTTCAGTGCAAGT
AAAAAGCCTCTTTCAGTGCA CCTC ATTT TTCTAT GCCTC
AGTGGGGTGCCAAGGATGTA GGAG TAAA AAGATG TGGGG
GAATAAATAAGAGG AA T TAGGAACCG- ----------
GAM3520 11881 GGGGCGGGCGGGAGGGAGGG - C GA - T CA - TGCTGC
TGCCTCAGCGGGGGCTGCTG GGGG CGGG GG GGG AGGG GCCT GCGGG GGC
CGCTGCCTGCAGGCCCCTGC CCCC GCCC CC CCC TCCC CGGA CGTCC TCG
CCCACCTCCCGACCCC A T AC G - -- G ------
GAM3521 17810 CCCAGGAGGAGCGCAGCGGG --- G GC---- G G TTGTTGGT
ATGGCGTGGACCTTGTTGGT CCCAGGA GGAGC CA GGGATGGC TG ACC
GGTGTAGCTGTCCCAGATGA GGGTCCT CTTCG GT CCCTGTCG AT TGG
TGAGCTTCCCATCCTGGG ACC A AGTAGA - G --------
GAM3522 5353 CCAGGACCCTCATCTTCCAG AC--- A T A GA G GGAT AGGAT
GGCTGAGTGTGGGTGGATCC CCAGG CCTC TC TCC GGGCT GT TGGGT CCC
CAGGATGGGGCCCAGGCAGC GGTCC GGAG GG AGG CCCGA CG ACCCG GGG
CCAGGATGGGAGGAGACACC ACAGA - T A -- G ---- -----
TGG
GAM3523 4310 TAGGTACTAGATTTGCGTCC ACT-- CC- CA A-- G CTCACAA
TGATGGACATCGAGCAGGTC TAGGT AGATTTGCGT TGATGGA TCG GCAGGTCTCT GA

TCTGGACTCACAATCGAGGG ATCTA TCTGAACGCG GCTGTCT AGC CGTCTAGGGA CT

ATCTGCCACCGAGATCTGTC CAAGT TGC AG CAC G -------

GCGTGCGCAAGTCTTGAACA
TCTA
GAM3524 4379 TTACAGATTCAAGTGGATGA AG A --- AAA AA T - TAAAACATTT
AAAGGGGAAGATTGTGGATG TTAC ATTCA GTGG ATGA GGGG GATTGTGGA GCTA GGTT

CTAGGTTTAAAACATTTGGC AGTG TAAGT CACC TACT CCTC TTAACGCCT TGGT TCGG
TGTGGTTCCGCAATTGCCTC GG - GAT CGA CG - G ----------
CAGCTCATTAGCCACTGAAT
GGGTGA
GAM3525 5242 GGACTTTTCCTTTCCTGCTT CT ----- -- ACTT AA CCCTGTGC
TTCACTTGAAGGTTCCCTGT GGA TTTCC TTTCCTG CTTTTC G GGTT
GCAACCGACGGAAAGATCGG CTT GAAGG AAGGGGC GAAAGG C CCAA
GGAAACTCCGGAAGTATTC AT CCTCA TA ---- AG --------
GAM3526 10386 TTGTTGGATTCTTATTGGCA GGA TA---- C C - GAGAAGGAAAAA
TCACTCACCAGAGAAGGAAA TTGTT TTCT TTGG ATCA TCA CCA
AATGGATGATGATTCAAGAC GACAG AAGG AACT TAGT AGT GGT
AGTGGAAGAGACAG AG- TGACAG - - A ------------
GAM3527 9012 TCAGCTTCAGCTTCAGCTTG TCA TT - T T---- GAAAATA
GCCTCATTCATTTGAAAATA TCAGCT GC CAG C TGGCCTCAT CATTT
AAATGTTTACATGAGGCCGC AGTCGA TG GTC G GCCGGAGTA GTAAA
GCCTGTGTCCAGCTGA CC- T- C C CATTT -------
GAM3528 13863 TCACCCGCTTTGTGAAATGG TGT -- C----- A TCAGGT
CCCCGCTATATCAGGTTGCA TCACCCGCTT GA AATGGC CCGCT TA
GCGGCAGAGAGCCATTCCTC AGTGGGCGAA CT TTACCG GGCGA GT
TATAAGCGGGTGA TAT CC AGAGAC C ------
GAM3529 16353 AATCACCATGTAGTGTGTCT A AT G C GA- G CAATGTT
TCTTGAGTAGGCCAATGTTG AATC CC GTAGT TGT TTCTT GTA GC
CGTATAGAGAGAAAATGACT TTAG GG TATCA GTA AAGAG TAT CG
ATCAGGAGATT A AC - A AGA G -------
GAM3530 16291 TTTGTTTCACTGCGTTCAAT C--- CA--- GTTT AACATCCATTCTAC
TTTGAGTTTCCTAACATCCA TTTGTTTCA TGCGTT ATTTTGA CCT
TTCTACAGGTCAATCAAAAT GAACAAAGT GTGCGG TAAAACT GGA
ACAAAGGCGTGCAAATGAAA AAAC AAACA AACT ----------
CAAG
GAM3531 2390 GAACCATCCCATCCATTCAC C- CT C- T ACT TTTAGTTT
TGTTCAGCTGTACTGTGATT GAACCAT CCATCCATTCA GTT AGC GT GTGA
TAGTTTTTACACCGTTAAAA TTTGGTG GGTAGGTGAGT CAA TTG CA CATT
CCCTGAGTGGATGGCTGTGG TC CC AA C --- --------
TTT
GAM3532 20831 GCACTGCGAGACCTGCATAT - AGAC - A GG TAC ATCC
CTGGCTTCTACGGTGATCCC GCACT GCG CTG CAT TCT CTTC GGTG
ACCAATGGAGGGAAATGTCA CGTGA CGT GAC GTA AGG GAGG CCAC
GCCATGCAAGTGC A ACC- T A -- TAA ----
GAM3534 18079 GAAGCTGTCCCCTCCTCCCT AG - C--- - A C C - TCATTAGT
GCCACCCTCCCAGGCTCATT GA CTG TCCCCTC TCC CTGCC CC TCC AGG C
AGTGTCCTTGGAAGGGGCAG CT GAC AGGGGAG AGG GACGG GG AGG TCC G
AGGACTCAGAGGGGATCAGT CT T ACTC A - A T T --------
CTC
GAM3536 16764 GTCTCCGGGGTAGCAGGGGC CT TAGCA T G GCTGGG
TGCTCTGTGCTGGGCTGGGC GT CCGGGG GGGGC GCTCT TGCTGG

CAGTAGGGGGCGCCCTCCCT CG GGTCCC TCCCG CGGGG ATGACC
GGGAGC AG ----- - G ------
GAM3539 16560 CTCTGGGCTGTGGAGTGGGT TG CT T CAACGG AGCTGG
GGGCAACGGGCCTGGGTAGC CTC GG GTGGAG GGGTGGG GCCTGGGT
TGGGCCCAGGCAACCCACCC GAG TC CACCTC CCCACCC CGGACCCG
CTCCACCTCTTGGAG GT TC - AA---- ------
GAM3540 20401 GGATCTCTTGAGGCTGGGAA --------- G AAA GTT A GCCGAGA
ACAGAGGTTGCAGTGAGCCG GGATCTC TT AGGCTGGG CAGAG GC GTGA
AGATCACGCCACTCTGCTCC CCTAGAG GG TCCGACCT GTCTC CG CACT
AGCCTGGGTGACAAAGTGAG TGAAACAGT G C-- AC- - -------
ATCC
GAM3541 2350 GGGATGGGCCAGTTTGCTGA -- CCA ATGACACATTA - CTCT-- GACCCT
GAATGACACATTACTGTTGC GGGA TGGG GTTTGCTGAGA CTGTT GCCC AACTT
CCCTCTAACTTGACCCTGGG CCTT ACCC TAAACGACTTT GACGA TGGG TTGGG
TTTCCTGTGGGTAAGCAGCT AG --- GTC-------- A TGTCCT ------
GTTTCAGCAAATCCCAGATT
CC
GAM3542 12657 CGTCCCAAAGGCCGGCAAGA G AGAT-- TCCT ATGAT
TGGTGTCCTGGATGATCTGT CGTCCCAAA GCCGGCA GGTG GG
CGCCTGGTGGTGCTGGTGTT GTAGGGTTT TGGTCGT CCGC TC
TGGGATG G GGTGGT TG-- -----
GAM3543 20721 TTTCCCGCGTCACTCCTGGA G CTCC AAGCAAG- G -- TAATTTAT
AGCAAGGCGGCTCTAGCTAA TTTCCC CGTCA TGG GCG CTCTA GC
TTTATGTATTGGAGATGTAA AAAGGG GTAGT ACC TGT GAGGT TG
TCACAGCCATTGATGGGGAA - T--- GACACTAA A TA --------
A
GAM3544 9025 TCTTCAAACATTTAAATCAA A- ATTTAAA- - TG CTAATTAT AATTT GTTCTGA
GCTTTGGACTAATTATGCTA TCTTCA AC TCAA GCTT GA GCT GTGA
ATTTGTGAGTTCTGATCACT AGAGGT TG AGTT CGAA CT CGA CACT
TTTGAGCTCTGAAGCTTTGA GG ACTTACTA T GT -------- GTTTT -------
ATCATTCAGTGGTGGAGA
GAM3545 22971 GTTCACCTCAACTGGATTCG AA - C- TT CA- GACT
GAATGTGCTGATTTCCATTG GTTCACCTC CTGG ATTCGGAATGTG TGA TC TTG
GACTCAAGTTGATCTCACTT TAAGTGGAG GGCC TGAGTCTTATAT ACT AG AAC
ATATTCTGAGTGCCGGGAGG -- G TC CT TTG ----
TGAAT
GAM3546 6313 ACCGCGAGGTTTTTCCTAGG C TTTTCCT T T C GT TACG
GCTGTCTGGGCTGGTCTACG ACCG GAGGT AGGGC G CTGGG TG C
GGTCGTCCCGGCTGCCTTTC TGGC CTCCG TTCCG C GGCCC GC G
ATGCCTCCGGT - TACT--- T - T TG ----
GAM3547 21317 AGGCAGAACGGAGGGTGGCG AGA GGG C GG CA GC - ACAATTTTCTC
GGGGACAAACGCGCGGGACA AGGC ACGGA TGG G GGA AAC GC GGG
ATTTTCTCTCCAGCTGGTTA TCCG TGTTT ACC C TTT TTG CG CCT
ATTTTTCTCCAATATTTGTA A-- ATA T TT AA GT A ----------
GCCT
GAM3548 15904 GGCCAATACAATCTACATCT ATACA-- ACA- GACAC G AATT
AGACACAATATTGTAAAATT GGCCA ATCT TCTA AATATT TAA
TTGGAATATTAAGGATAGAA CCGGT TAGA AGAT TTATAA GTT
GGAAGATATTAAAGTGGCC GAAATTA AGGA AGGAA G ----
GAM3549 10141 GTAACTATAAAAGGGAACCT TAAAAG ACC AA CA C CAATT

ATAAATGTAGTTTCATCTGT GTAACTA GGA TAT ATGTAGTTT TCTGT GT
CGTCAATTACTGCAGAAAAT TATTGAT CCT ATG TGTATTAAA AGACG CA
TATGTGTATCCACAACCTAG CCAACA --- -- -- T -----
TTAT
GAM3550 3014 TGAGTCCAAGTGTATGGTGC - AAG G TG TG ---- T TTCT
TCTGGAGCAAGAGTGCTTCT TGAG TCC TGTAT G CTC GAGCA AGAG GC
GTCTTTTTTATGTTTTGGAG ACTT AGG ACGTG C GAG TTTGT TTTC TG
TGCAGTGCAGGATTTCA T --- A GT GT ATTT - ----
GAM3551 6987 CCGAAAGCTGAGTGCCGCCG G GA---- --- - TTGGG
GGGTCCCTTGGGGGGGCCTC CC AAAGCT GTGCC GCCGG GGTCCC
TGGTTTAGGCGCCCGAAAGG GG TTTCGG CGCGG TGGTC CCGGGG
CTTTGGG G AAAGCC ATT T -----
GAM3552 20704 AGGGTCATGGCTAAGTCATT T - C CATTTGA - GAAAAGAGATTATAAA
TGATTCAGTAGAAAAGAGAT AGGG CATG G TAAGT TTCA GTA
TATAAATACATGAAGGGCTA TCCC GTAC C ATTCA AAGT CAT
CTTAACTCATGTCCCT T T A TCGGG-- A ----------
GAM3553 15471 GGGGGCACGGATGCGGATGA GGA AG GAG ------ TAAG
GGGCGAGTGGCCTGGCAGGT GGGGGCAC TGCGGATG GGC TGGCCTG GCAGG
AAGCCTGCATGCTCTGGGCC CCTTCGTG GCGTCTAC CCG ACCGGGT CGTCC
AGGCCACATCTGCGGTGCTT --- A- G-- CTCGTA ----
CC
GAM3554 10675 GATCAAAGACTGAGCCTAGG AAAGAC AGGAA GTT C-- ATATACTCAAG
AAGTGGGTTTTTTGAGGCTG GATC TGAGCCT GTGG TTTTGAGG TGC
CATATACTCAAGGCAATTCT CTAG ACTCGGG CACC AAGACTTC ACG
TCAGAACCACAGAGGGCTCA GTT--- AGA-- --- TTA ----------
TTGGATC
GAM3556 11066 GGGGCTTCTGAGCTGTGGGT TC CT T - - G T CG GATA
CAGGAAACAGCTCTAACGAA GGGGCT TGAG GTGGG CAG G AAACA C CTAA AA
GATATTTATTGGGTGTTTAC CCTCGA ATTC TACCC GTC C TTTGT G GGTT TT
TCTGCCCCATTCCTTAAGCT -- CT C T A - - AT ----
CC
GAM3557 19694 CCTATGCGATAGTGATTCAA A C G ATTC A T CT TCTC
ATCAACATCCTCTGCATCTC CCT TG GATA TG AAATCA CA CCT GCA
TGTCCAGGTTGATGGTTTCC GGA AC CTGT AC TTTGGT GT GGA TGT
ATGTCCACAGG C - - C--- A T CC ----
GAM3558 22277 TGCGTAGCATTTGCTGCATG C A CAT T GAGAATAGA
GGTTAATTGAGAATAGAAAT TG GT GCATTTGCTG GGGT AATT
TTGCCCCTGGCAAATGCACA AC CA CGTAAACGGT CCCG TTAA
CA A - C-- T ---------
GAM3559 1058 CGGGCCACCCGGGTCAAGCG G A- - CA- --- T C AAAC
CGCTCCGCCGGGAAACTTCT CGG CC CCCGG GT AGC GCGC CCGC GGG
GCGGGCGCCGGGCTGAAGCT GTC GG GGGCC CG TCG CGCG GGCG CTT
CCGGGCAGGGCTG G AC T AAG GGC - T ----
GAM3560 4073 GTGGCAGGGTCATAGGATAA C - AATA GG A GT C AAACACGTGAACAAAG
TAGTGGAGAGAAGGTCAGCA GTGG AGGGTCATAGG AT GT AG GAAG CAG AGAT
GATAAACACGTGAACAAAGG CGCC TTCCGGTGTCC TG CG TC CTTT GTC TCTG
TCTCTGGTTTTCCTAGGCAG - C GAGA GA - TG - ----------
AGGTCCCTGTGGCCTTCCGC
GAM3561 19570 TTTTCCTTATCCAATGTACT T A-- CA ATTATGTTTATG
CACGGGATTATGTTTATGTT TTTTCCT ATCCA TGTACT CGGG

CGGCGGTATAGTGTGGATCA AAAAGGA TAGGT ATATGG GCTT
GGAAAA C GTG CG ----------
GAM3562 17968 GGATGGGGCAGAGCTGAGAA GG - AGC- AA AA G TT GGCTGA
GCCAAGGGGGGAAGAGTTGG GGAT GG CAG TGAG GCC GGGG GAAGAG GG
GGCTGACCTCTTCTTCACCT CCTG CC GTC ATTC CGG CTCC CTTCTT CC
CGGGCCTTAATCACTGACCA AA A ACTA -- G- A CT ------
AGTCC
GAM3563 13637 GTTGCCTGACGGGGATTAGA ---- AC GG CT CACT - GATAAATG
CTGGAGTCACTATAGCGATA GTTG CCTG GG ATTAGA GGAGT ATAG C
AATGGCCTGTCATACTTTCC CAAC GGAC CC TAGTTT TTTCA TGTC G
TTTGATTTCCCAGGGTTTCA TTTG -- TT CC TAC- C --------
AC
GAM3565 16197 GGCAGGGTGTACACCTGTGG T CC -- - C--- G T GG TTG TGGTTT
CTCTCGGGGCTGCCCTTTGG GGCAGGG GTACA TGT GG CTCT GGGGCT CCC TT CT GAGA

CTTTGGAGATGGTTTTCTCG CCGTTCC CATGT ACG CC GAGG TTCCGG GGG AG GG CTCT

ATGGAGGACGGGAGGCCTTT T TC TT A TTGT A C GA TAG ------
GTTGGAGACCTTGCACTTGT
ACTCCTTGCC
GAM3566 16087 ATTATTAGAGACAAGAGTAC G AA GTA G G TG TG TTTTT
CAAAGCGGTGTGTGTTTTTT ATTATTA AGAC GA CCAAA C G TG T
GTGTGTGTGGTTTGGCTGTC TAGTGGT TTTG CT GGTTT G T GT G
GTTTGTGGTGAT G -- GTC - G GT GT -----
GAM3567 20583 TTTCTATAGAGAGGCTTTCA ----- - - CTTTT -- AGTT
CTTTTGAGTTCTTTGAGTTT TTTCTATA GAGAG GC TTTCA GAGT TCTTTG
AAAGATTGCTTTTCTTGAAA AAAGATGT TTTTC CG AAAGT TTCG AGAAAT
TGCTCTTTTTTTAATGTAGA AATTT T T TCTT- TT ----
AA
GAM3568 9479 CTCCTGAAAGTCATCCTCGC GA- - T CGCCAG CAA- T TCAA
CAGTCCCGGCGTTCAATGTC CTCCT AA GTCA CCT TCCCGGCGTT TG CCA
CATCAATGGCGGTCTAATGC GAGGA TT CGGT GGA GGGGTCGTAA GC GGT
TGGGGAAAAAAGGTGGCATT ACG A - AAAAA- TCTG - ----
GCAAGGAG
GAM3569 11994 CTCTCATATTGGCACATCTG ATAT TCT--- CAT TTCTCAGTTTCCT
CTGTCCATTGGGGGTTCTCA CTCTC TGGCACA GCTGTC TGGGGG
GTTTCCTCCCCCAGACAGCC GAGAG ACCGTGT CGACAG ACCCCC
CTACCTGTGCCAGAGAG ---- CCATCC --- ----------
GAM3570 16641 CCTGCTGGGTGGGGCCAGGC T - - AGG-- AACC-- AGCT
ATAACCTGGGGATAGCTGTC CC GCT GGGTGGG GCC CAT TGGGGAT
CCTAACCTCAATGACAAGGG GG CGG CCCACCC CGG GTA ATCCCTG
CACCCACCCTGGCTGG T T A GAACA ACTCCA ----
GAM3572 19605 GGAGCGCGGCTTGAGGAGGG C T G--- G GCCCCGCA
CGGGGCCGCCCCGCAGGCCC GGAG GCGGCT GAGGA GGCGGG CC
GCCAGTGTCCTCAGCTGCCT CCTC CGTCGA CTCCT CCGCCC GG
CC - - GTGA - --------
GAM3573 2384 GCTCGGAACTGCCGACCCGA AA - AG- T AGAGGGCTGGTG
GTGCTTCCCGCAGAGGGCTG GCTCGG CTGCC GACCCG TGCT CCCGC
GTGGTGGGAGCGGAGTGGGT CGAGCC GGCGG CTGGGT GCGA GGGTG
CGGGCGGGGCCGAGC GG G GAG - ----------

GAM3574 10796 TCATGTACAAGAGTTCACAC - C-- --- CC AGACACATTCCTAGAGA
CTGATGAATGTAGACACATT TCA TGTA AAGAG TTCACA TGATGAATGT
CCTAGAGAACATTTATCAAT AGT ACAT TTCTT AAGTGT ACTATTTACA
GTGAAAATTTCTTTAATACA C AAT TAA A- ----------
CTGA
GAM3575 11427 CTAGAATCTCGTGTGTTAGT - T- - T AC TTGAAAAT
TTTAACTGTTTTGAAAATAA CTAGA ATC CGT GTGTTAGT TTA TGTT
TAAGTAACATTAACACAATG GGTTT TAG GTA CACAATTA AAT ATAA
TTGATATTTGG A TT A C GA --------
GAM3578 14064 GGGTCTAATGCTATTCCAAA AT- A AAAG - AAAT AA-- GGAATTTGAAGCG
AGGTTACTTCTCAAATTAGG GGGTCTA GCT TTCCA GTTACTT CTC TAGGG ACCTG
GAAACCTGGGAATTTGAAGC CCCGGAT TGG AAGGT CAATGAA GGG GTCCC TGGAC

GATACAGGTCCAGCCCTGGG ATT G ---- C ---- GACC ----------
GCAAGTAACTGGAAGGGTTT ATA
ATAGGCCC

GAM3580 20709 GGAATAAACCTGAGAAAGGA ATAAAC A T CT AACA AATA
TAGTGGCTCTAGAGAAACAG GGA CTGAGAAAGG TAG GG CTAGAGA GT
TAATAGCACCTTTCTAGCAC CCT GACTCTTTTT GTT CC GATCTTT CG
CTTTGATTTTTCTCAGTCC ------ A T AC CCA- ----
GAM3581 9447 GAAGGACTCTGGAACCTCGT GA TCG--- - TT A GA ACTGTAGC
GTTTTCTTTAGGATACAGAG GAAGGACTCTG ACC TGTTT TCT AGG TACAGA GTA
AGTAACTGTAGCTATAATTT TTTCCTGAGAC TGG ACGAA AGA TTC ATGTTT TAT
GTACTTCAGACAAGCAATCA -- TTACTA C C- - AA --------
TTGGTCAGAGTCCTTT
GAM3582 10464 CACAGGGATACTCCATTGTC TAC TT C - TCT CTGTC
CCCTCCTCTGGCTGTCCCTT CACAGGGA TCCA GT CC CTCC GG
GGAGAGGCACTTTGGATCCT GTGTTCCT AGGT CA GG GAGG CC
TGTG --- TT C A TT- -----
GAM3583 7770 TCATCTTTGTCCTTAAATTA - ---- AAA- AA --- TTGA
ACCTTTGCTCTTGAGAGCAA TCAT CTTTG TCCTT TT CCTT TGCTC
AAGAGGGAAAGACAGGGGAA AGTA GAAAC AGGGG AA GGAG ACGAG
CATCAAAGCATGA C TACA ACAG AG AAA ----
GAM3584 7633 TGGGTAGCAGGGTGATCTAA GT ---- GA- AA T TCCTGGAAGT
CATTATACATCCTGGAAGTT TGG AGCA GGGT TCT CATTA ACA
GTTTGATGCAAGAAAGGCCT ACC TCGT TCCG AGA GTAGT TGT
CTCTTGCTGTCCA TG TCTC GAA AC T ----------
GAM3585 14250 GCCCACTGTGACGATGTCAC - TGT- G ACCG- GACG AAG
CGATCTGGACGTCCCTGAAG GC CCAC GAC ATGTC ATCTG TCCCTG
CAGGGGGACAGGTGTACAGA CG GGTG TTG TACAG TGGAC GGGGAC
CATGTTTCTTGTGGCGC C TTCT - ACATG AG-- ---
GAM3587 14896 GGAGGCCGGTGGCCGTGTGG CG CCG G - C TG TG AAGACG
TCCCAGACAGCTGCTGCAAG GGAGGC GTGG TGT GTCC CAGA AGC C C
ACGGTGGTGGCTCTTTGTGG CCTCCG TACC GCG CAGG GTTT TCG G G
ACAGCGAGACCATGCCTCC -- AGA A T C GT GT ------
GAM3588 8622 CAGAGCTCAGAGCAGCTCCT AG --------- TG A -- T AGCG
GCATGTTATCTACCAGCGGG CAG CTCAGAGCAGCT CC C TGT TATC ACC
TCGATAAGGCAGTGGGTTTG GTT GGGTCTCGTCGA GG G ACG ATAG TGG

GCTGAAGCTGCTCTGGGTCT CT AGTCGGTTT GT - GA C ----
TG
GAM3589 22200 ATGGGTTCCTCACCCCCTCC CTCACCCCCT - AA - ACAGT
CTCCAGAACAGCTTGAGACA ATGGGTTC CCC TCCAG CAGCTTG AG
GTCTCCAAGCTGAGCTGGAT TGCCCAAG GGG AGGTC GTCGAAC TC
GGGCTACCTTAGAACCCGT ATTCCATC-- T GA C -----
GAM3590 22308 GATTTAGTACAGTTATGCTC AGTAC C - A AACACTG ATGTGGCA
AGATGAACACTGGACCCATG GATTT AGTTATG TC AG TG GACCC
TGGCAGGGTCAAGCAACTAG CTAAA TTAGTAC AG TC AC CTGGG
AACATGATTCAGAAATC GAC-- A A A GAA---- --------
GAM3591 20847 TCATATAATGATTTAGGGAG ATGATTT TCCT TT - AATAGTG
GATTTCCTCTTTATCCTGTG TCATATA AGGGAGGATT CT ATCCTGT GG
GAATAGTGCCAATAGGATTG AGTGTGT TTCCTCTTAA GG TAGGATA CC
GTATCAATTCTCCTTTGAAT AAGT--- CTAT T- A -------
GTGTGA
GAM3592 10260 GGGGTCACCACCTGCCTGCG GT C--- CT TGC - CCCA TCAATT
CTTCCCAGGCCCAGGCTCAA GGG CA CAC GCC GCTTCC CAGG GGC
TTGCTGACCTGCGGAAGCTG CCC GT GTG CGG CGAAGG GTCC TCG
GCTGTGAACATGGTCCC TG ACAA T- T-- C AG-- ------
GAM3594 14408 TCTGTGCACTTGATAATAAC - ATAAC --- G GTTCT
CCTGCAGGCGTTCTGCGTGA TCTG TGCACTTGATA CCTG CA GC
ACCAGGCTGTTAAGTGCACC AGAC ACGTGAATTGT GGAC GT CG
AGA C C---- CAA G -----
GAM3596 13772 GAGCAAGCACGCAAGAAATC A ACGCA A C T T TGTTTT
CTCGTTGTGGTTTCATGTTT GAGCA GC AGAA TCCT GTTG GGTT CA
TTGAGCTTTAGCAGGATTCT CTCGT CG TCTT AGGA CGAT TCGA GT
AAAGAGCTGCTC - AGAAA - - T - ------
GAM3597 2860 CTCCTTGTTCCAGGGAACAC TT- - A C AG C GTGAT
TCAGTTTCCCTACAGGTGAT CTCC GTT CC GGGAACA TC TTTCCCTA AG
CTTGGGGAGAGACTGTTCCC GAGG CAA GG CCCTTGT AG AGAGGGGT TC
AGGCAACCCTGGAG TCC C A C -- - -----
GAM3598 17076 CTCCTGGGAGGTTGCGGGGT A G GAAA CCCAAT TCTAATCCTGCCTT
GGGGATGAAAAGTCCCAATC CTCCTGGG GGTT CGGGGTGGGGAT AGT CC
CTCTAATCCTGCCTTGGTCT GGGGATCC TCGA GTCCTACCCCTG TCG GG
TTTGCTGCCAGTCCCCATCC A A ACCG TTTTCT ----------
TGAAGCTACCTAGGGG
GAM3599 6480 GTTGTTCTTTCCCTCGTGTC TG CT- CGT- A- - T CATTA
CATGACTTTTCTCTGCCATT GT TT TTCCCT GTCC TG AC TTTCTCTGC
AGCAGGGAAGTGTGCGGAGG CA GA AAGGGA CGGG GC TG GAAGGGACG
GCTTCCAGGGAATCAAGTGA GT ACT CCTT AG G T -----
C
GAM3600 7362 GCAATAGGCGGGTGGGTGCG AT T G TGCTT C T C CTTCT
TGCTTCCTCCCTGCCCCAGG GCA AGGCGGG GGGT CG CCT CC GCC CAGGG
GCTTCTCCCTGAGGCTGGTA CGT TTCGCTC CCCG GT GGA GG CGG GTCCC
GGTGGGCCCCTCGCTTTCTG CT - G ----- T T A -----
C
GAM3601 18277 GGGTAGACTATTTCAGTGGA TA TCA ---- - ACT AGGGC
AAAATCTGGAACTCAAGGGC GGG GACTATT GTGG AAA AATCTGGA CA
TGTTGTTCAGATTCTTTTGT CCC CTGGTGG CACC TTT TTAGACTT GT
ACCACGTTGGTGGTCCCC -- TTG ATGT C GTT -----

GAM3602 9078 GAAGGATTGGAGAGCCACTT --- T-- - C ATGTTAA A TAAAA
GAGGTCATATGTTAAGGTAT GAAGGA TTGGAGAGCCAC TG AGGT AT GGT TG
GTAAAACACACTGTTCTGAT CTTCCT GACCTCTCGGTG AC TTCA TA TCA AC
CACTTACATCTGTGGCTCTC TTT TCT A C GTCTTG- C -----
CAGTTTTCCTTC
GAM3603 7457 GGCTAAGTGCCAGCTCCTCT AAGT C CCC- AG CTC
TTGCCCTCAAGGTGCTCCAC GGCT GCCAGCT CTCTTTG TCA GTG
ATGATGCCCGAGGAGAAGCT CCGG TGGTCGA GAGGAGC AGT CAC
GGTTGAGGGCC GAGT A CCGT A- ---
GAM3604 19162 GGTGGTACAGGATGGCATAG GTA ATG TA A C- A- G GAAC
TGAAGGCCCTGAATGTGGAA GGTG CAGG GCA GTGA GGCC TG AT TG
CCAGATGGCACAGGCCTCAC CCAC GTCC CGT CACT CCGG AC TA AC
CTGCAGCCTGGCACC G-- GA- C- - AC GG G ----
GAM3606 19079 AAGGTACCCAGAGTTCTCAC TAC AGTT - AG- GTACTT
ACGCAAGAGCTGTACTTGGT AAGG CCAG CTCA CACGCA AGCT
TGTATGTGTGTTGAGCTGGC TTCC GGTC GAGT GTGTGT TTGG
CCTT C-- ---- T ATG ------
GAM3607 17301 ACAAGGTGTTTTTATTGAGG GT - --- AG TGCA
TCTTAGGAATTGCAATTTGG ACAAG GTTTTTA TTGAG GTCTT GAAT
GAGACAGATTCAGCTAGAAG TGTTC CGAAGAT GACTT CAGAG TTTA
CCACTTGT AC C AGA GG ----
GAM3608 18937 CTTCACCATGCAGGGGTGAC A T AGG-- GA--------- A - CC AT G
TTTTATTTGAAGGCAGAAAA CTTC CCA GC GGT CTTTT TTTGAAGGCAGA AAACA CT TTG
G
CACCCTATTTGGGGGTTCAC GAAG GGT CG CCG GAGAA AAATTTTTGTTT TTTGT GA AAC
T
TCATAATCTGCAACAGTTTG - C GGAAA AAGACTAAAAA A G TT C- G
TTTGTTTGTTTTTAAAAAAG CACTCAT
AGAAAAATCAGAAGCCAAAG GGTT
GGCCTGGGAAG CTAA

GAM3609 13487 GGAGAATCACTTGAACCCAG AA GAA-- AGGCAG GT A TGAGATGGT
GAGGCAGAGGTTGCAGTGAG GGAG TCACTT CCCAGG AG TGCAGTG GC
CTGAGATGGTGCCACTGCAC CCTC AGTGAG GGGTCC TC ACGTCAC CG
TACAGCCTGGGCAACAGAGT AG ACAAC GACA-- -- - ---------
GAGACTCC
GAM3610 1262 TGAGTGTGTTTCTGGACACA TGGACACAAACTT AG - CTAACAT
AACTTCTGCAGTAGAATGAC TGAGTGTGTTTC CTGCAGT AAT GAC
CTAACATGTCGGTTTCATTG ACTTGCATAAAG GACGTTA TTG CTG
CAGTCATTATAGGATTGAAA TTAGGATATTACT CT G -------
TACGTTCA
GAM3611 6997 GAAGCAAATTCAGATCACTC CAA - CA TCTT GTT
AGCTCTTCGGGGTTCCCGTC GAAG ATTCAGA TCACT GC CGGG
GTGGTGGCTCTGAATGTCTT CTTC TAAGTCT GGTGG TG GCCC
C TG- C -- CT-- ---
GAM3612 695 GCCAGAAACTCATAATCCAG AAC AA ----- - AGCAAGC
AGGAACTGTGTCCAGCAAGC GCCAGA TCAT TCCAGA GG AACTGTGTCC
GGGCGTAGTTGCCATTGATC TGGTCT AGTA GGGTCT CC TTGATGCGGG
TGGGCGATGATCTGGT --- GC AGTTA G -------
GAM3613 12018 CAGGAATGTTTTTTTGTCTC A TT GT-- CT- C ----- TAACATAGCATAT

TGCCGTGACTTCTAACATAG CAGGA TGTTT TT CT GC GTG ACTTC
CATATGAGGTTAAAACACTG GTTCT ATAAG AA GA CG CAC TGGAG
CTTTAGTAAAAATGGAATAC C GT AAAT TTT T AAAAT ----------
TCTTG
GAM3614 2907 GAGGAGCGGAGCGGCACAGC A G C C ACTC C TGGTGTTAGT
CTCCCACTCTCCCGGCTGGT GAGG GCGGAGCG CA AGCCT CC TCC GGC
GTTAGTGCCCGGACGGCGGG CTCC CGCCTCGC GT TCGGG GG AGG CCG
CTCTGCGCTCCGCCCCTC C - C C C--- C ----------
GAM3615 310 GTTTGGAGGGTTTGGTGGTC TT TCTC CT CCTTGA
TCCACTCCCGCCTTGACGGG GTTTGGAGGGT GGTGG CA CCCG
GCTGCCATCTGCCTTCCAGG CGGACCTTCCG CTACC GT GGGC
C T- ---- CG ------
GAM3616 8090 TAGACAAATTCCGTCTCCAA A ATT G CCAAG GAG AAAGGAA
GTTTCCGAGCAAAGCCAAAG TAG CAA CC TCT TTTCC CAAAGCC
GAAGGCTTTGGGAAGAAAAG ATC GTT GG AGA GAAGG GTTTCGG
AGGTTGTTGCTA - GTT - AAA-- --- -------
GAM3617 16792 GCTCATTGCTCAAAGGTATT C - TATTACAGTATCAGGAGCC
TATTACAGTATCAGGAGCCA GCT ATTGCTCA AAGGTATT
ATACCTTGTGAGCAGTTGGT TGG TGACGAGT TTCCATAA
T G ----------
GAM3619 16024 GTGGTGGCAGATGCCCCTGT TG- GA C G-- GGGA
GTGCCTGGGGACGGGATAGC GTGG GCA TGCCC TGTGT CCTG
ATATGGGCAGGTGCAATCCA CACC CGT ACGGG ATACG GGGC
C TAA GG T ATA ----
GAM3620 10408 TGACTGCAGTGCACATGATC CT --- TGATCC-- TCC AACTCTC
CGGAAGGTCCCTGAACTCTC TGA GCAGT GCACA GGAAGG CTG
CAGTGTCTTCCTCCCACCCT ACT CGTCA CGTGT CCTTCT GAC
GTGCCCAACTGCTTCA T- ACC CCCACCCT GT- -------
GAM3623 1179 ACGGCCGAGGGGGTAGCTTT G GTAG AA GACG G- CCAG
AACTGTGACGGGTGTCGCCC ACGGCC AGGGG CTTT CTGT GGT TCGC
AGGTGAAGATCATGACGGAG TGCCGG TCCTC GGAA GGCA CTA AGTG
AAGGAACTCCTGGCCGT - AA-- GA GTA- GA ----
GAM3625 8638 GCTAAATGGCCGGACCATGG AAT C --- - TTGAGTCTACC
AGATTGAGTCTACCTTTCAC GCTA GGC GGAC CATG GAGA
ATGTATGTCCAGCCTGTAGT TGAT CCG CCTG GTAC CTTT
GT- A TAT A ----------
GAM3626 4605 GCTGGTAACTGATAAGGGGG --- ATA-- A GAGG
CACCGCTGAGGGGCGGGCCC GCTGGTAACT G AGGGGGC CCGCT
CCTCAAGGCGGGAGTTGCCG CGGCCGTTGA C TCCCCCG GGCGG
GC GGG GGAAC - ----
GAM3627 4965 GCGGAGGGCGAGGCGGCGTG - AG -- ACA CCC ACCCAGC
GACAGCGGCCCCGGCACCCA GCGGA GGGCG GCGGC GTGG GCGGC GGC
GCGCCCCGCCGCCCGCAAGC CGCCT CCCGC CGCCG CGCC CGCCG CCG
CGCGCGCCCGTCCGC G G- AA --- CC- -------
GAM3628 13337 GAGGCGCGATATTTGGCATT A ---- TTT TTGTTTT
TTTAATTTAGGTTTGTTTTA GAGGCGCG TAT TTGGCATT AATTTAGGT
TTTAAGTTTAATGTTAATTC CTTTGTGT GTA AATTGTAA TTGAATTTA
CATGCTGTGTTTC C CCTT T-- -------
GAM3631 20972 GCTGGGTGCCAGGGGCAGGG T CA- TC TATAG - AACCCTGA
GATCCTCAGTATAGCCGGTG GCTGGG GCCAGGGG GGGGA CTCAG CC GGTG

AACCCTGATACCAGGAGCCT CGACCT CGGTCCCC TCCCT GGGTC GG CCAT
GGGCCTCCCTGAACCCCTGG T AAG CC CGA-- A --------
CTTCCAGC
GAM3632 21273 AACCTGGGGACGCATAGCCA CGCATA - AA GACTCACAACG
AGGGGAAGCGCGACTCACAA AACCTGGGGA GC CAAGGGG GCGC
CGGCGCGACTTCTTGAGTTC TTGGACCTCT TG GTTCTTC CGCG
TCCAGGTT ------ A AG ----------
GAM3633 16233 GTCTGAACCTGGGGGATCAG T A- ---- G C T GGGA
GGGAGTAGGGGACTCTCCCC GTC GA CCT GG GGAT AGGGGAG AG
TTGTCCACTGATGGGGGGTC CGG CT GGG TC CCTG TCCCCTC TC
TGGC T GG GTAG A T - ----
GAM3634 4274 CCATCTATAGACTTATTTTG A TAT ----- TCAA TTCTGAAT
CTCAATGGTTTCTGAATGCC CC TC AGACTTATTTT GC TGGT
AAACTGCTCACAAAAATAAG GG AG TCTGAATAAAA CG ACCG
TCTTCTGAAGG A TCT ACACT TCAA --------
GAM3636 21905 TGCAATCCTTGGTTCCAGAA ATC TTCC ACCC- CCTATCATCAC
CCCAGCAATTCCTATCATCA TGCA CTTGG AGA AGCAATT
CAATTGTTTCAAGTCTTATC ATGT GAACC TCT TTGTTAA
CAAGCCCTGTA CCC TAT- GAACT ----------
GAM3637 9277 GCTCAGCTACACAGGGCGTG GCTA AGG G CC---- A T TACC
ATGACCGGCACTTTGTACCC GCTCA CAC GC TGATGA GGC CT TG
ATGGGCCTCTACATCGTCAG CGAGT GTG CG ACTGCT CCG GG AC
GCAGTGATATGAGC ATA- A-- G ACATCT - T ----
GAM3638 5424 GCTAGCCACAGGGAAGTTGA A A AA GAGAAAAGA AA G- ACAGAAGCTAAAAA

GAAAAGAGGGAAACGGGGAT GCT GCC CAGGG GTT GGG AC GGGATA
AACAGAAGCTAAAAATGTCC CGG TGG GTCCC CAG TCC TG TCCTGT
TGAGTGGCCTGGAAGAAGAC G A -- AAGAAGG-- GG AG ----------
CCCTGAGGTGGGC
GAM3639 10655 TGGCTGGTCCTACTTCTCTG G - -------- C CCAAT GGGA
CCCCACCAATGGGGGACTTG TGGCTG TCCT ACT TCTCTGCC CA GG
AATGTGGCAGAGAATACAGT ACCGAC GGGA TGA AGAGACGG GT TC
CAGTCAGGGCAGCCA - C CTGACATA T AAGT- ----
GAM3641 9597 CCCAATTAACATCGAGGTCT ATTAA GGTC -- ACC A ATATATGGA
CAGCAAACAATTACCACATT CCCA CATCGA TCAGCAAA CAATT AC TTTAAC
TAACATATATGGAGTTAAAG GGGT GTGGCT AGTCGTTT GTTAG TG AAATTG
TAGATTGGATTTGCTGAAAA C---- AAA- AG A-- - ---------
TCGGTGCTGGG
GAM3642 19516 GGATGGGGAGGTTGGGGGGG T -------- - AGCT
CAGGAGCTTCTGTCCCCCAC GGA GGGGAGGT TG GGGGGGCAGG
ATTCCATGCACCTCCCCTCT TCT CCCCTCCA AC CCCCCTGTCT
- CGTACCTT A ----
GAM3644 8844 GGTGGACGGGCTCCTGCGGC -- C---- T -- AAGG- C TTCGG
AAGGGGACATGCTTCGGGCA GGTG GACGGG TCC GC GGC GGA ATGC
TTCCATGCAGCCTTGCGGAA CCAC CTGCCC AGG CG CCG CCT TACG
CTCTCCCGTCAACACC AA TCTCA - TT ACGTA - -----
GAM3645 8127 GGAAACCCCACGTGTCCTTT AA CAC AACC AGCCCG
CCTAACCAGGAAGCCCGTCC GG ACCC GTGTCCTTTCCT AGGA
TCTAAGGAGGGGGCATGGGT CC TGGG TACGGGGGAGGA TCCT
CCC C- --- ATC- ------

GAM3647 4313 GGCACGCGTCTCTGTGCAAC G G- CA A AACACG CAA TTCT
ACCAACACGGGCAAGTGCTT GGCAC CGTCTCT TG AC CC GG GTGC
CTGCACCACCAAGGGCGTCA CCGTG GCAGGGG AC TG GG CC CACG
AGGGGGACGAGTGCC A GA -- C GAA--- AC- ----
GAM3648 13737 TGGCTGACTGGGGCTGGGGT GA -- TGG- GA GACCTACA
GAGAGAGGAAAGACCTACAT TGGCT CT GGGGC GGT GAGAGGAAA
TTCCTCTCCTGCCAGATGCC ACCGA GG TCCCG CCG CTCTCCTTT
CTTTGGAAAGCCA AA TT TAGA TC --------
GAM3649 3387 GCATCCTGCAGCTTCGAGCC C TTC--- CAAT T --- TTCT
AATGGTGAGCTCCTTCTGGA GCATCCTG AGC GAGC GG GAGC TCC
TCAGCTCCTTCAGCTCCTTC TGTGGGAC TCG CTCG TC CTCG AGG
TTGCTCAGGGTGT - TTCTTC ACT- - ACT ----
GAM3652 17965 GGGAAAGGCCATCACCCTCC AG CA CCCTC C G C ACATCCACCTTCTGAA

GTGGACGGGGTCTCGGCCAC GGGAA GC TCA CGTGGA GG GTCT GGCCACC
CACATCCACCTTCTGAAGGT CCCTT CG AGT GCACCT CC CAGA CCGGTGG
GGCCCAGACACCTCCACGCT CA TC CGTC- - A C ----------
GCTGACTGCACTTCCC
GAM3653 11265 TGTGTGTGATGAGAACATGT T TG-- A -- - CCAATTAAGATATTATACT
TTGGGCCAATTAAGATATTA TG GTGTGA AGA CA TGTTTG GG
TACTTCACAAATACTTGCTT AC CACATT TTT GT ATAAAC CT
TATATTTACACCA - TATA C TC A ----------
GAM3654 3058 GAGCTTATCATTTAACCAGT ATCA AA TC A CATAA GTCGCCTA
CCCAACCCCATAAGTGTCGC GAGCTT TTT CCAG CC ACCC GT
CTAGCCCAGAGGGTCGGCCT CTCGAG AAG GGTC GG TGGG CG
GGGGGAACCGAGCTC CC-- GG C- C AGACC --------
GAM3655 6339 ACTTGGAAATAAATATGAAT G AATAAATAT G - TTAA AAGT
TGGTAGGTTACCTATTAAAC ACTT GA GAATTG TAGGTTAC CTA AC
AAGTGTGTTAGAGTAGCCTA TGAA CT TTTGAC ATCCGATG GAT TG
GCAGTTTTCAAAGT A --------- G A TG-- ----
GAM3656 3076 CTACAAGTCCCAGCAGGCCC AG C CCC GG A TG- TCGTCTTTCCT
CGCGGCCAAGGTGCCTCGTC CTACA TCCCAG AGGC GC CCA GG CC
TTTCCTGGACTCCTGGAGCA GATGT AGGGTT TCCG CG GGT CC GG
GAGCCTCTTGGGAAATGTAG AA C AGA A- - TCA ----------
GAM3657 3961 GGGCTTTGGCCTGAATTCAG GC TGA AGGAA G AT AACACAGGC
GAAGTGGTCCCCTGATTCCA GG TTTGGCC ATTC GT GTCCCCTG TCCA
AACACAGGCTGGGTCCGGGG CC AGACCGG TAGG TA CAGGGGGC GGGT
GACGATTGGGATGGCCAGAA TA --- GT--- G CT ---------
TCC
GAM3658 17654 TCAAAGCTGAGGCTTGGAGC AGCT- C T A------ TG T- TTGAT
AGGTGTGAGTTGCCTTCCAT TCAA GAGG TTGGAGCAGG GTG GT CCT CCA
TGATTGGTTAGGTGACCTCC AGTT CTTC AACCTCGTCC CAC CA GGA GGT
GCCCACCCCTGCTCCAACTT GATAC - C CCGCCTC GT TT -----
CCATAGTTGA
GAM3659 9799 GCAGGCCCAACCGCCGCCAG CC ACCGC- C AT C A A------ GCCTACAA
CACCATGGCCAGCACCATTT GCAGG CA CG CAGCACC GGC AGC CC TTTCC
CCGCCTACAAGGAGAAGATG CGTCC GT GC GTCGTGG CTG TCG GG AGAGG
AAGGAGCTGTCGGTGCTGTC TC CTACTC T -- - A AAGTAGA --------
GCTCATCTGCTCCTGC
GAM3660 3041 TAGGCATGTGATTTCAGGTT GG T --- T ACATTGAGA

TTTCGTACTGAGAACATTGA TA CATG GATTTCAGG TTTTTCG ACTGAGA
GATTTCAGTTGGAAGACACC AT GTAT CTAAAGTCC AGAAGGT TGACTTT
CTGAAATCTTATGAGTA GA T CAC - ---------
GAM3661 549 GAATATTTCCACAATGTCTG CACA T AAC G TTCAACTTC
TGAACTGGACCTGGTGTTCA GAATATTTC ATG CTGTG TGGACCT GTG
ACTTCTACAAGGTTTACACG CTTGTAGAG TGC GGCAC ATTTGGA CAT
GTCGTGGACGAGATGTTC CAGG T --- A ---------
GAM3662 8917 TTTTTTGATATAGATGATCT ATAT A T C-- TC A TTCTTCAAAAT
TACTTTCTTGAAAGCTTCTT TTTTTTG AG TGA CTTA TT TTG AAGC
CAAAATGCTTATGACTAACC AGAAAAC TC ACT GAGT AA AGT TTCG
TTGAGTTCACCTTAGCAAAA GAT- C T TCC TC A ----------
GA
GAM3663 12178 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AGAACGCGA GAAG TCACCAC ATTCT
CAAGAAGAATAAGCGCAAGA ATAA AACCC - ----------
GAM3664 20522 GAGACAGGGTCTCACTCTGT CA TG C - - CCTTGGC
TGCCCAGGCTGGAGGCGTGA GAGACAGGGTCT CTCTGT CC AGGCTGGAG GC GTGA

CCTTGGCTCACTGCACTCTA CTCTGTCTCAGA GAGACA GG TCCGATCTC CG CACT
GCCTAGGTGACAGAGCAAGA AC GT A A T -------
CTCTGTCTC
GAM3665 11477 ATCTTGGCCAGGCTGGTCTT A - CTTAAA C A - CCC - CACCTCCTAA
AAACTCCTGACCTTGTGATC ATCTTGGCC GGC TGGT CTC TG CCTTGTGATC CA GC CT
CACCCGCCTCACCTCCTAAA TAGAACCGG CCG ACCA GAG AC GGGACATTAG GT CG GA

GTGCTGAGATTACAGGGCAT C T CCG--- T - A --- T ----------
GAGGCCACCATGCCCGGCCA
AGAT
GAM3667 7771 GTTTAGAAGTTTCTGGCCCC G-------- -- T TAGAGGCT
ACAGTTCTAGAGGCTGACTG GTTTAGAAGTTTCT GCCCCA CAGT C
ACTGGGGCAGGTTGTAGAGA CAGGTCTTCAAAGA CGGGGT GTCA G
AACTTCTGGAC GATGTTGGA CA - --------
GAM3668 1696 GGATGTTTGGAAGATAAGCT A - AAAGGAGAA A GATCTG
TAAAGGAGAAATGATGGATC GG TGTTTGGA AGATAAGCTT ATG TG
TGCAGCATGGGAGCTTATTT CC ACAGACTT TTTATTCGAG TAC AC
CTTCAGACACC - C GG------- G ------
GAM3669 18008 TGCCATTTATGCCCCCGGAA ATT CCC- AACCA- A ----- GACTACA
CCAAGACCCGCGACTACAGC TGCC TATGC CGG AG CCC GC
TACCTGGGCTCCGATACCGT ACGG GTACG GCC TC GGG CG
GCTGCATGTAGGCA AT- TCGT ATAGCC - TCCAT -------
GAM3670 21456 GCAGGTCCCGCTGGTGCTGT CC C GA- CCGGGACT G CCGTGC
GGTCGAGTGACCGGGACTTG GCAGGTC GCTGGTG TGTGGTC GTGA TGT GGCT
TGGGCTCCGTGCGGCCGACA CGTTCAG CGACCAC ACACCGG TACT ACA CCGG
CTCATGAAGGCCACATCACC -- T AAG C------- G ------
AGCGACTTGC
GAM3671 7243 GGAGCTGGAGTTCAGGAGGA G TCAGGAGG AGAA TT GGTCG
GTCAGAAGAGGCTTTCAGCC GGAGCT GAGT AGTC GAGGCT CAGCCT
TGGTCGGGGCTGGGCCTCAA CCTCGG TTCA TCGG CTCCGG GTCGGG
GGCTAAAGTTTTACTTAGGC A TTTTGAAA AA-- -- -----

TCC
GAM3672 7895 GTAGAGATGGGGTTTTGCCA A A GTT- CA TT CT CTCAA
TGTTGCCTAGGCTGATCTCA GT GAG TGGG TTGC TG GCCTAGG GAT
AATCCCTGGGCTCAAGCAAT CG CTC ACCC AACG AC CGGGTCC CTA
CCACCCACCTCAGC A C ACCT A- T- -- -----
GAM3674 19270 GGTGTGGTGGCTCATGCCTG TG TG GTAA- GACT
TAATCCCAGGACTTTGGGAG GGTG G GCTCATGCCT TCCCAG
GCCAAGGCGTGAGCACCTGC CCGC C CGAGTGCGGA AGGGTT
GCC GT CA ACCGG ----
GAM3675 11162 TTTGATTAGTTGTGTGTCTG T G TCTGCCT TTA CACTTTAA
CCTGAAACCATTTAGTAGAG TTTGAT AGTT TGTG GAAACCAT GTAGAG
CACTTTAATTCTGCATGGTT AAATTA TCAA ACAT TTTTGGTA CGTCTT
TTTACAAAACTCATTAAA C A ------- --- --------
GAM3676 5525 TCTGGAGGAGCAGTTGTCTG - A GT TC GAGAAG - GTATA
ATGAAGAGAAGGTGCGTATA TCT GGAGG GCA TG TGATGAA G TGC
GCAGCAAAATTCATCATTCA AGG CCTCC CGT AC ACTACTT C ACG
TGCCCCTCCTGGA T C -- TT AAAA-- G -----
GAM3677 16900 GCCACCCTATTTGCAGTTTT CC ------ A TTTCTAAGTA T GAAA- CCAAG
TCTAAGTAACTTGGTAGGTT GCCAC TATT TGC GTT ACT GGTAGGTT GAT
GAAAGATCCAAGGTCAAAAG CGGTG ATAG ATG CAA TGA CTATTCAA CTG
AACTTATCCAGTGTAGCAAA AA AATAAA A TAAACGATG- C GAAAA -----
TAACAGTAAAATAAGATAAA
GTGGC
GAM3678 21969 CTGTACTGTATTTATGTTGC - TTTATG- TG ATG-- A AGATCCA
TATGGGGCAAAAGAGATCCA CTGTA CTGTA T CT GGGCAA AG
CTGTTGCCCAGTTGGGTGAA GACGT GACAT A GG CCCGTT TC
GAGACTTACAGATGCAG A TCAGAGA GT GTTGA G -------
GAM3681 14568 AGCGAGATCGTGGCTGGACT GA C GG AC AG- AT- CCCGC
GGAGAAGATGCCTGCCCGCC AGC GAT GT CTGG TGG AAG GCCTG
GGGCTTCCTTATCCCACCCC TCG CTA CA GACC ACC TTC CGGGC
AGAGACATCGGCT G- - GA CC CTA CTT -----
GAM3683 1928 GTGTCTTTATAGTAGAATGA TCTTT GAA TTATA TT ATATAT G GCTGAGTC
TTTATATTCCTTTGGGTATA GTG ATAGTA TGAT TTCCT GGGT CCAGGAATG TATT
TATCCAGGAATGGTATTGCT CAC TGTCAT ACTA AGGGG CCTA GGTCTTTAT GTAA

GAGTCAAATGGTATTTCTGG CTTC- ACC ----- TT GATCTT G --------
TTCTAGATCCTTGGGGAATC A
ACCATACTGTCTTCCAC

-
GAM3684 21455 TCCCCGAAAGCAGATACTGA C - AGA G G AGAA G GAAG CATAG
GGTGGAGAATGGCGTGCAGG TCCC GA AAGC TACT AG TGG TGGC TGCAG GTT
AAGGTTCATAGGACAGTGCT AGGG CT TTCG ATGG TC GCC GTCG GTGTC CAG
GTGGGCTGAGCCGGCTGGGT A G GAC G G GA-- G GTGA -----
ACAGGCTTGTCAGGGA
GAM3685 1729 GGCTTCCTGCTCCACTGACT GC----- T A T-- G TGCCAAGTACTTC
GGTTCGAGGGTGCCAAGTAC GGCTTCCT TCCAC G CTGG TC AGGG
TTCTCCTGGATGCCCAGCGT CTGAAGGA AGGTG C GACC AG TCCT
GGAAGAAAAAAGGAAGTC AAAAAGA - - CGT G ----------
GAM3686 7036 GCCCTGCTGGCTGATGAGCT - G G TG CA CT CA TGCCT

CATCACTGTCTACAGCCTGC GCC CT CT GC ATGAGCT TCA GTCTA GCC
CTGGCATGGACCCTGACTGG CGG GA GA CG TACTCGG AGT CAGGT CGG
CTCATTGGCGAGAGAGGC A - G GT TC CC A- -----
GAM3688 16899 CGGGCACATGGGGAAAGAAT TGGGGAAAGA GA T- G- AAGTC
CACCTGAGTTGGCCTGGGTA CGGGCACA ATCACCT GT GGCCT GGT
AGTCACTGAAGGCTTCATGG GTCCGTGT TAGTGGA TA TCGGA TCA
AGGTGATTGTGCCTG ---------- GG CT AG -----
GAM3689 11593 ATGGTCGTTCTACTGGGCTG CTAC ATT GA AGCCACTCATA
ATTTTGGACAGTGGAGCCAC ATGGTCGTT TGGGCTG TTG CAGTGG
TCATACCACTGCAATTCCAG TATCGGTAG ACCTGAC AAC GTCACC
TCCACGATGGCTAT C--- CTT -- ----------
GAM3690 14457 AGTCGGAATGGTACATTGGT G AT A -- TTTT TGA GACTG
TTTCCTTTATGACGGACTGC AGTC GA GGT CA TTGG CCTTTA CG
GGTTTAAAGGCCCAACTTGA TTAG TT TCA GT AACC GGAAAT GC
ACTGCTTGGATT G CG A TC C--- TTG -----
GAM3692 9210 GCAGGTTCACAAGGCAGGCG ACA -- - C-- A---- AAGT
GTCTGCGTGGCACTGAAGTC GCAGGTTC AGG CAGGCGGT CTG GTGGC CTG
AGGGACAGTCACCAACAGCA CGTCCAGG TCC GTCTGTCA GAC CACTG GAC
CTGTCTGGTCCTCAGGACCT AC- TG C AAC ACAGG ----
GC
GAM3693 7998 ACCCCCAAAATTCCTGTGTG - AAAAT T GAAATCT CCCAA
GAAATCTTTACCCCCAAGGT ACC CCC TCCTG GTG TTACC
GATAACACTAGGAGGGTGGT TGG GGG AGGAT CAC AGTGG
T ----- - AAT---- -----
GAM3694 6005 ACTCTTGGTTCTCTATTCAA ----- TCTCTAT A- ----- CTTT
AGTGTTTGGAATCTTTATTC ACTC TTGGT TCA AGTGTTT GGAAT
TGTTTAAAACACTGATGACA TGAG AACCG AGT TCACAAA TCTTA
TTTGCCAATTTTTGAGT TTTTT TTTAC-- AG ATTTG ----
GAM3695 7778 TCAGTGCGGGAACCAATGCA -- GA- AT A C TGGA
GACTGGCATTAAGCTGTGGA TCAGT GCGG ACCA GC GA TGGCATTAAGCTG
TAGCTTGGTGCCAATTGGTC AGTCA TGCC TGGT TG TT ACCGTGGTTCGAT
GTGGTCAGCCGTGAACTGA AG GAC GC G A ----
GAM3696 6763 GCCAAATTGAGACAATTTCA C CA GCAAA TG- GTTTGTA
GCAAATCTGTAAGCAGTTTG GC AAATTGAGA ATTTCA TC TAAGCA
TATGTTTAGTTGGGGTAATG TG TTTGACTTT TGAAGT GG ATTTGT
AAGTATTTCAGTTTTGT T A- AATGG TTG -------
GAM3697 4876 GAATTCAGAATATTGTATTG AA GATGATG C AT CAA
ATGATGGTTATTCTTTTATA GAATTCAG TATTGTATT GTTATT TTTT ATAATTA
TAATTACAATAATTATCCAG CTTAAGTC GTGACGTAG CGATAA AGGA TATTAAT
GAAAATAGCAAACAGATGCA -- ACAAA-- A CC ---
GTGCTGAATTC
GAM3698 9036 TGGAAATTCAATACACTGAG GA A C-- - AAA AACCAAAATTACTG
AAGTGTTAAAATCATTAACC TG AATTCA TACA TGAGA AGTGTT ATCATT
AAAATTACTGAATGGTAGAA AC TTAAGT ATGT GCTCT TCATAA TGGTAA
TACTGTCTCGAAATGTACTG AC C AAA G GA- ----------
AATTCACA
GAM3699 22331 GGTTCCTGTTGTTATCTGTA TAA- - GTTC
CCTAAGTTACTCAGTTCTGA GGTTCCTGTTGTTATCTGTACC GT TACTCA
GTGCATGTCTGGTACAGATA CCGAGGACAACAATAGACATGG TA GTGAGT
ACAACAGGAGCC TCTG C ----

GAM3700 22079 CAAGGTTGTGGTTTCCTGAG - TTTCCTG - ATT AGACAAAA CAAT CCCT
CAGGATGGATTGGGCAGACA CAAGG TTGTGG AGCAGG ATGG GGGC TCAG GC
AAATCAGCAATGCCCCTGCT GTTCT AATACC TTGTCC TACC TCCG AGTC CG
CCTGAGAGAGGCCTCGCCAT G ------- C GC- GAGAG--- CT-- ----
CCCTGTTCCATAAGTCTTG
GAM3701 17564 GGGGGCGAGAAGGGGGCCTC C A GG AAAC-- AG - G TTTTG
AAAACGGAGTGGGGCGCTAT GGGGG GAGA G GGCCTCA GG TGG GGC CTAT
TTTTGGTGGGCCACCAACCA TCCCC CTCT C TCGGGGT CC ACC CCG GGTG
CAGTGTGGGGCTTTCTCTCT T - TT GTGACA A- A - -----
CCCCT
GAM3702 1827 GGTGCCACGCTCAACACCGG C- TCAAC CCA CG TC- CATCGATCACA
GTTCCAGCCGTGTCCGGGCC GGTGCCA GC ACCGGGTT GC TG CGGGC
ATCGATCACAGTCCGCACCA CCACGGT CG TGGCTTAA TG AC GCCTG
AAGTACTAATTCGGTATCAC CA CACTA TCA AA CAC ----------
GCACTGGCACC
GAM3703 4851 GCCCCGGGGTCTGGCGGATG -- - GATGA AAGA CCCT
ATGAAGATTGAGAGCCCTCT GCCCCGGGG TCTGG CG TG TTGAGAG
CTTAGAGCAGAGGATGATCG TGGGGCCCC GGGCT GT AC GATTCTC
GGTTCCCCGGGGT TT A AGGAG GA-- ----
GAM3704 13918 GAATTCTACAAGAGCCTCAC A- A CCTCA AA GG ACCA
TAATGACTGGGAAGACCACT GA TTCTACA GAG CT TGACTG AAG
TGGCAGTCAAGCACTTTTCT CT AAGATGT CTT GA ACTGAC TTC
GTAGAAGGTC GG - TTCAC -- GG ----
GAM3705 17278 GGAGAACCGCTTGAACCCAG GAAC GAA-- AGACAGA GT T G CGAAATAGT

GAGACAGAGGTTGCTGTGAG GGA CGCTT CCCAGG G TGC GT AGC
CCGAAATAGTGCTACTGCAG CCT GTGAG GGGTTC C ACG CA TCG
TCGAGCTTGGGCGACAGAGT AAGA ACAGC GAG---- TG T - ---------
GAGAATCC
GAM3706 14909 CCTGCCCCATCCCTTCCCCA C- TCC TG CTG- TA TAGT
GTGCACTCTGACCTAGCTAG CCTGC CCA CTTCCCCAG CACT ACC GC
TGCCTGGTGCCCAGTGACCT GGACG GGT GAGGGGGTC GTGA TGG CG
GGGGGAGCCTGGCTGCAGG TC CC- CA CCCG TC ----
GAM3707 3460 TTATGATGAAGTATCGGGAG --------- - G- GA- GT AAGAA
ACGGGTTTTCAAGAAGAAAG TTATGATGA AG TATC GGA CGG TTTC
TCCGGTATTCAGGATATCTC AATATTACT TC ATAG CTT GCC AAAG
TAAAGTTATCATTATAA ATTGAAATC T GA ATG TG -----
GAM3708 15037 GTGCACAGCCCCACAACCAG C CCCACAA --------- A A A G TCCCCCGAACC
GTCAGCGATGAAGGTATCTT GTGCA AGC CCAGGTCA GCG TGA GGT TCTTCA TC
CAGTCTCCCCCGAACCGATG CACGT TCG GGTCCGGT CGC GTT CCA AGAAGT AG

AAGACACCATTGACGCCCCA - ACG---- TACCAACCC A A C - ----------
ACCATTGGCCTGGGCAGCTT
GCAC

GAM3709 18779 CTATAAAACCATCCAGACCT AA AT- GA-- CTC G ---- -- AAA- A GAA
CTCGATGGCCACTTCTGAAA CTATAA CC CCA CCT GATG CC ACTT CTG AC TCCACGGT
G
ACATCCACGGTGAAGGGCAG GGTATT GG GGT GGA CTGC GG TGAG GAC TG AGGTGTCG
T

GGCAGGCCTGGCTGTGGAGT AG GTT AAAG ACA G TCCA TC CGGG - G--
GGGCCAGCTGAGTACCTGGG AGGGCAG
CGTCACAAGGGAAATGGTTG GGC
GGGATTATGG CCG

GAM3710 5964 GGGAGAGGTGATTGATGTAC A A-- A C AACC AA GTGA
ACAACCGTGTCCGAATGGTG GGGAG GGTG TTG TGTA AC GTGTCCG TG
ACAGTGGGCATCGTCTGCAC CCCTC CTAC GAC ACGT TG TACGGGT AC
CAGCCCCATCCTCCC - CCC C C C--- G- ----
GAM3711 16418 TCCCACAGCACATCCTACCC - C TCCTAC- - AGCCTCAGAG
GGAAGACCAGCCTCAGAGGG TC CCACAG ACA CCGGAAG ACC
TCCTTCTGGAACCAGCTGTC AG GGTGTC TGT GGTCTTC TGG
TGTGGAGA A - CGACCAA C ----------
GAM3713 2600 GTGGAATTCTTCATCGAGTC TTCTT T TTGA CG T T-- TGGGT
GTTGACTTCTCGACGGAATG GTGGAA CATCGAG CG CTTCT ACGGAA GC GACAGGTTC

CTGACAGGTTCTGGGTGAAC TACCTT GTAGCTC GC GAAGA TGCTTT TG CTGTCCAAG
CTGTCTCTGTTTTTCGTAAG CC--- - TTTA A- T TCT -----
AAGATTTCGCTCGATGCCTT
CCAT
GAM3714 21302 GTGTATATATTTACGGGGTC A A GG---- G TGT
TATGAGATGTTTTGATAGAC GTGT TAT TTTACG GTCTAT AGA
ATGCAACGTGAAATAAGCAC CACG ATA AAGTGC CAGATA TTT
A - AACGTA G ---
GAM3715 11867 ATATCCCAAATGCTGCTTGC CAAAT--- T AACA---- CTC
TTCAAACAGGCACCCTCGGT ATATCC GCTGCT GCTTCA GGCACC
GCTGCCTCCTCTGAGGCTGG TATAGG TGACGG CGGAGT TCGTGG
CAGTTCCTTCCTGGATAT TCCTTCCT T CTCCTCCG ---
GAM3716 15404 TCTGAATTATCCTGGCTGTC TAT TCT---- T --- GTCC
TTTAGTTGCTATCGGTCCTG TCTGAAT CCTGGCTG TTAGT GCT ATCG
GTCTTGGCTACTAACATCAT AGACTTG GGACCGAC AATCA CGG TGGT
CCAGCCAGGTGTTCAGA T-- CTACTAC T TTC ----
GAM3717 450 GAGGGCAAACGTCGAGGACC AAACGTCGA - - G T- CAGGTCCT
TGCGCTGCGCCATGCCCAGG GAGGGC GG ACCTGCGCT GC CCA GCC
TCCTGGCTTTGGAGCGAGTG CTCTCG CC TGGACGTGA CG GGT CGG
CAGGTACCGCCAGGCTCTC GACCG---- A G A TT --------
GAM3718 4326 GCAAAGGAAGTGGCTTAATG A G ATGATC- --- CTTC G TTTTT
ATCCTGAAGGGATTTCTTCT GC AAGGAA TGGCTTA CTGAA GGGATTT TGATGGTA C
GATGGTAGCTTTTTGTATTA TG TTTTTT ACCGAAT GACTT TCTTAGA ACTATTAT G
TCACGTAAGATTCTATTTTC A G GTGTGTT TTA ATGC - -----
AGTTGTGTGTAAGCCAGTTT
TTTAGT
GAM3721 2938 GTGCCAATACAGGACTAATT CA A- A CCTAGAA TGC TG AAGAACTGAG
GTCAGCCTAGAAAAGGAACT GTGC ATAC GGACTA TTGTCAG AAGGAACT TCCAT TTTG
TGCTCCATTGTTTGAAGAAC CATG TGTG TTTGGT GACAGTC TTCTTTGA AGGTG GAAC

TGAGACAAGTTGTGGAAGTT -- AC - TAA---- --- TT ----------
TCTTAATCTGACAGTGGTTT A
CAGTGTGTAC

-

GAM3722 8617 AACAGTCCCCCAAAGTCTTA TCCCCCAAA T A CATT CAAAAGTCCACAGTCCAA

TTTCAGCATTAACTCAAAAG AACAG G CTT TTTCAG AACT
TCCACAGTCCAAAGTTTCAT TTGTC C GAA AGAGTC TTGA
CTGAGACAAGCAAGTCTCTT TTCTCTGAA - C TACT ----------
CTGTT

GAM3723 2826 TTCACTTTCCCGTGGAAGGT TTTC T - AG - ACC
TCAGGAAGCGACACCGTTGT TTCAC CCG GGAAGG TTC GA AGCGAC
TATCAGGGGCCCTTCCTCGG AGGTG GGC CCTTCC GGG CT TTGTTG
ATGTGGA TA-- T C GA A ---

GAM3724 4970 TGCAGCCGGTGGTATCATGT T TGTACTCAA G - GAGATA
ACTCAAGACCTGGCTTGGAG TGCAGCCGG GGTATCA GACCTG CT TG
ATACACGGCAGGTCTGATGC ATGTTGGCC CCGTAGT CTGGAC GG AC
CCCGGTTGTA - --------- - C ------

GAM3725 12416 GTGAGTCCATGGCTAAATCA GT GGCTA- AA GCCCC AAGAGA
AAGCTGCCCCTGAGAAGAGA GTGA CCAT AATCA GCT TGAG
CTTAATCCAAGCCTGATTGT CACT GGTG TTAGT CGA ATTC
ACTAGTGGCATCAC AC ATCATG C- ACCTA ------

GAM3726 19427 GCGGGCTCTCTCACGCCGCG TC-- A G--- AC- G -- TTCG
GCCTCACCCGGCGGTGCTTC GCGGGCTC TC CGCCGC GCCTC CCGGC GT GC
GGCAGGCGGCCGGCGCGGGG CGCTCGGG GG GCGGCG CGGGG GGCCG CG CG
CGCAGGCGGCGCGGCCATGG TACC C GACG CGC G GA ----
GCTCGC

GAM3727 11272 TTGATACGGAGTCTTGCTCT TG C A TG TG G- TGGAGT
GTTGCCCGGGCTGGAGTGCA T ATA GG GTCT CTCTGT CCCG GC
GTGGGTGACAGAGTGAGACC A TGT CC CAGA GAGACA GGGT CG
CTGTTGA GT - - GT GT GA ------

GAM3728 18168 GGAAGGATTGGAGAGCCACT --- T-- - C ATGTTAA A TAAAA
TGAGGTCATATGTTAAGGTA GGAAGGA TTGGAGAGCCAC TG AGGT AT GGT TG
TGTAAAACACACTGTTCTGA TCTTCCT GACCTCTCGGTG AC TTCA TA TCA AC
TCACTTACATCTGTGGCTCT TTT TCT A C GTCTTG- C -----
CCAGTTTTCCTTCT

GAM3729 7387 CCTGGGTCCAGTCCCTCACC TC TC CA CCTTT - CCTTCA CAGGTATCAT
TGGTACCTTTGTGCATGTTG CCTGGG CAG CCT CCTGGTA GTGC ATGTTG TTCCTGAG
CCTTCATTCCTGAGCAGGTA GGATTC GTC GGA GGACCAT CACG TACGAC AGGGACTC

TCATCCTCAGGGAACCAGCA TT TC CC C---- G CA---- ----------
TGGCACCTACCAGGCCAGGC C
TCTGTTCTTAGG

-

GAM3730 7146 ACCCGTCCCTGATCCTGGCC CTGA T C CA A CG - GAG
GCAGCACAGATGCCCGCTTA ACCCGTCC TCC GGCCG AG CAG TGCC CTT ACCAG
CCAGGAGCTGGTGGAGGAGG TGGGCGGG AGG CCGGT TC GTT GCGG GAG TGGTC
CGATTGCCTATGGCCGGAAG TCGA - A C- A AG G ---
CTGGGCGGGT

GAM3731 2636 GGGGATGAATGAAGGTGCTG ATGA-- TG --- - C GT A CTCCC
GGTTGCAGGGTTGAAAAAGT GGGG A AAGGT GCTGGG TTG AGG TG AAAAGT
CTCCCGCTTTTCCGTTCCTA CCCC T TTCCG TGGCCC GAC TCC GC TTTTCG

CAGTCCCGGTTCTGCCTTTG GTGGTG GT TCT T A TT C -----
TGTGGTGCCCC
GAM3732 2500 CAGGGGGTCTGGCTGGGGGC GT- GC--- - -- -- TTGTG
TGGTCCATGCTTGTGGTTAG CAGGGG CTG TGGG GGCTG GTCCAT GC
TGGACAGCAGCCACCCATTT GTCTCC GAC ACCC CCGAC CAGGTG TG
GACAGCTACCTCTG ATC AGTTT A GA AT -----
GAM3733 11034 TCAAGTCATAGGCTTCTTTC - T- - TCTTTAT A TCA
AGTCTTTATGTCACCTCAGG TCAAGT CA AGGCTTC TTTCAG GTC CC
AGACTTATTTGAGAGGAAGC AGTTCA GT TCCGAAG AGAGTT CAG GG
CTTCTGTACTTGA T CT G TATT--- A ---
GAM3734 8581 GCCAGTCTCACCTGCACCTT CT - C CT GC GCATCAA
ACGCAGCGGCATCAATGTTA GCCAGT CA CCTG AC TAC AGCG
GTATGTACAGGATGTACTGG TGGTCA GT GGAC TG ATG TTGT
T T- A A T- A- -------
GAM3736 20839 ACAATTTTGTATGGAATGCT TTTT- T AA TAGA - -- CTCA
AGATGGCCAAGCCTCAGCCT ACAA GTA GG TGC TGG CCAA GC
TTGGTCCAGTGCAACCCTTG TGTT CGT CC ACG ACC GGTT CG
CCTCGCTTGT CGCTC T CA TG-- T TC ----
GAM3737 7568 GCAGAATGCCCAGAGTCTTC C A CTTCCCTG GA TTCCATAGCGACGTTCT

CCTGGTAGATGCAGGTTCCA GCAGAATGCC AG GT GTA TGCAGG
TAGCGACGTTCTCCTGCAAT CGTCTTATGG TC CA CGT ACGTCC
GCACGCTGGTATTCTGC - G -------- A- ----------
GAM3738 19450 AGTTTAGTGGCAAGTTCTTT A AA TCTTTA TTT CTTTTCGA
AGCCTTTGCCTTTTCGAGCT AGTTT GTGGC GT GCC GC
TGGCGATACGAGCCACAAAC TCAAA CACCG CA CGG CG
T - AG TAG--- TT- --------
GAM3739 18715 CTGCAAGTCCAGCCAGAGTG AA - A - ATATCGCGTCAACAATA
TTTTATATCGCGTCAACAAT CTGC GT CCAGCC GAGT GTTTT
AAGAACTACTTAGGTTGGTA GACG CA GGTTGG TTCA CAAGA
CCAGCAG AC T A T ----------
GAM3740 3327 GCATTGATCTTATCCTCCGT TGAT AT TC GA T CTCATCGTC
GACTGTCACCTCATCGTCGT GCAT CTT CC CGT CTG CAC
GCAGAATGAGGGCCGAGTAT CGTA GAG GG GTA GAC GTG
ATGC TAT- CC GA A- - ---------
GAM3741 19497 CTCTAACACTCATCTTCAAA CACTCA-- AAGACT TGCTGAGAT
AGACTGGGACTGCTGAGATG CTCTAA TCTTCAA GGGAC
TCCTCTATTCTTGAAGAGCG GAGGTT AGAAGTT TCCTG
TATTCTTGGAG CTTATGCG CTTATC ---------
GAM3742 19214 GGGAAGACGTTTTCTTTATC G C CTTTA G AGAAGATCTACCC
GCCCTGAGAAGATCTACCCC GG AAGA GTTTT TC CCCTG
AGGGAGAATCTGAGACATCT CC TTCT CAGAG AG GGGAC
TGCC G A TCTA- A ----------
GAM3743 3270 GGGGTTCTTGTAGTTGAAAA TT A A ---- GGACA
ACTTGAGCCCATGGGGACAC GGGGTTC GTAGTTG AAAACTTG GCCC ATGG
TATACAAGGGCACAAGTTTT CCTCAAG TATCAAC TTTTGAAC CGGG TATC
CCAACTATGAACTCC -- C A AACA -----
GAM3744 200 GGGCCGGTGTGAGGGCAGGT GTGT - TAC GGG G CTATG
ACAGCCGGGTCTGGGCTATG GGGCCG GAGGGCA GG AGCC TCTG G
TGCAGAGGTTCCTCCTTGTC TCCGGT TTCCTGT CC TTGG AGAC T

CTTGATGGCCT AG-- T TCC --- G -----
GAM3745 2520 GCCTGACCTTGACTCTTGTG TGA AC T----- C GAAAGACACCAGAA
CTGGTCTTTGAAAGACACCA GCC CCTTG TCT GTG TGGTCTTT
GAAGAAGGCCAACACCAACA CGG GGAGT AGG CAC ACCGGAAG
CGGACCTGAGGCTGGC TC- CC CACAAC A ----------
GAM3746 981 GGGCGTTCTGTGGCTTTCAT TGT TTTCATTA TT T TTTCC
TAATATAGTTCTTAGTTTTC GGGCGTTC GGC ATATAG CT AGT
CACTGGTCTGTATCCCATTC TCCGCAGG CCG TATGTC GG TCA
TGCCTTGGACGCCT TT- TCTTACCC T- - -----
GAM3748 19021 CTCATCCTGCTCCTCCAGGC ------ CCTCCA CATCACCACCATAAGCACA
CTTCATCACCACCATAAGCA CTC ATCCTGCT GGCCTT
CAAGGGTCAGCATAGGCAGG GAG TGGGACGG CTGGGA
GTCACCCAGAG ACCCAC ATACGA ----------
GAM3749 20463 GGAGCAGAGTGAAGGCAAGA CA A- - AT-- GA TGTGGAAT
TGACTGACATGTGGAATTGA GGAG GAGTGA GGCA AG GACT CA
GGTCCTAGCTCTGCTACTTA CCTC CTCATT TCGT TC CTGG GT
CTCACTCC A- CA C GATC A- --------
GAM3750 11249 ACCAGCTGGATAAGGACATC -- T - C AA - - GCGT
AATACCTTCTCTATGCGTGT ACCAGCT GGA AAG GA ATC TACC TTCTCT AT
CAGGGAGTGGTACGGGTATC TGGTCGA CCT TTC CT TGG ATGG GAGGGA TG
ACTTTCCGGAGCTGGT GG - A A GC T C ----
GAM3751 12049 GGGTTTCTGCGGGTGAACCA CT -- ACC T TTTCTTCT
GTTAAGGGTTTTCTTCTGCT GGGTTT GC GGGTGA AGT AAGGGT
TTTACTTCTCGCCTATGCTC TCCGAA CG TCCGCT TCA TTTTCG
AAGCCT CT TA CT- - --------
GAM3752 4612 GGAGGCCAAGGTGGATCACC CAA T A- - A- A-- CGA
TGAGGTCAGGAGTTCGAGAC GGAGGC GG GG TCACC TG GGTCAGG GTT
CAGCCTGACCAACATGGTGA TCTCTG CC CC AGTGG AC CCAGTCC CAG
AACCCCGTCTCT --- - AA T AA GAC ---
GAM3753 2346 GGGGCCTGGGCTGGCATCAG - TG CA G CAA AG C A ATGAGGAGC
CCGGCCAATGAGCCACTGCA GGGGC C GGCTGG TCA CCGGC TG CCA TGC CA
CAATGAGGAGCTGGCATGGA CCCCG G CCGACC GGT GGCCG AC GGT ACG GT
GCAGTGCCGGGTGGCCCAGC T GT C- G TG- GA - - ---------
CTGGTGCCCC
GAM3754 11080 GACAATCTCATAACAGGAAG CTCATAACA ---- ACA GCTGCTTACCATTTCA
ATTTGAACATAGCAGCTGCT GACAAT GGAAG ATTTGA TAGCA
TACCATTTCATGCTAATTAA CTGTTA CCTTT TAAATT ATCGT
ATGTGATTTCCATCATTGTC CTA------ AGTG A-- ----------
GAM3755 1325 GGAGGAGACAAGCAAGCTGT A- AAG AG GTC AGCA TTGA
CATGTTATAAGCAGCCCTTT GG GGAGAC CA CT ATGTTATA GCCCT
GAGGGGTCCATGTGATGTCA CC TCTCTG GT GG TGTAGTGT TGGGG
AGGAATGAAGTCTCTAGCC GA AA- AA AAC ACC- ----
GAM3756 8726 GGGGTAGTGGATGGCAACTG A AT AACTGA C GA CAGC
ATGGAACAGGAGAATGCTCA GGGGT GTGG GGC TGGAA AG GAATGCT
GCAGCATTTGCTCTTCCAGC CTCCG CACT CCG ACCTT TC TTTACGA
CTGTCACGCCTC - GT ------ C G- ----
GAM3757 19783 GAATTTTTTATACAGTTACT TTTTTAT AG GT - A TATTGTT
AGTTTAATGGGTGAAAAATA GAAT AC TTACTA TTAATGG GTGAAAA TAG
GTATTGTTTTAATTTTCATG CTTA TG AGTGAT AATTACT TACTTTT ATT
TCATTAATAGTGAAGTTAAT TAAT--- A- -- G A -------

ATTC
GAM3758 157 TTGACTAGTTTTCTTTCTTT TG ---- - TT C- ACACCAAACAATA
TGCTACCTCAACACCAAACA T ACTAGTT TTC TTTCTT GCTA CTCA
ATATGGGATTAGTGAGAAAT A TGGTCAA AAG AAAGAG TGAT GGGT
GAACTTCAACTGGTTGA GT CTTC T -- TA ----------
GAM3759 8483 GGGAAGGTGGGGAGGGTCCG A- A TCC - AA- CCCAGCT
AGGGGAAGGGGACCCAGCTT GGGA GGTGGGG GGG GAG GGG GGGGA
CCCTGTGCCCGCTCACCCCA CCCT CCACCTC CCC CTC CCC TCCCT
CTCCACCAGTCCC GA A CA- G GTG -------
GAM3760 11256 CTGGTACTCCTCATGGGGCT GTA ---- ACCATTATCACACA G TTGGAGCT
TGACCATTATCACACAGGTG CTG CTCCTC ATGGGGCTTG GGTG GGCGC
GGGCGCTTGGAGCTGCGCTG GAT GGGGAG TGCCCTGGAC CCAC TCGCG
CACCCAGGTCCCGTCTTAGA ATA ATTC ---------- G --------
GGGGATATAG
GAM3761 16284 CGACGGTTACTCTGGTTACT AC GG TG G-- G C- C GAGA
GGGCCCGCGCCGCGCTGGCG CGACGGTT TCT TTAC G CCC CGC GCG TGGC
AGAGCCGCCGCCCGCGAGGG GCTGCCGA AGG AGTG C GGG GCG CGC GCCG
ATGCTGGTGAGGAAGCCGTC -- -- GT GTA A CC C ----
G
GAM3762 2169 GCCGCCGCCGCCCGGCTCCG CCC TC TC - CCCTCT
CTCGCGGCCCCTCTGTCTGC GCCGCCGCCG GGC CGC GCGG C
AGGCGTGCCCCGGCGGCGGC CGGCGGCGGC CCG GCG CGTC G
C-- T- GA T ------
GAM3764 7911 GGAGAATCACTTGAACCAGG AA A GAA--- GAGG GT A- TGAGATT
GAGGTGGAGGTTGCAGTGAG GGAG TC CTT CCAGG TGGAG TGCAGTG GC
CTGAGATTGCACCATTGCAC CCTC AG GAA GGTCC ACCTC ACGTTAC CG
TCCAGCCTGGGTGAAAAAGC AG C AAAGTG G--- -- CA -------
GAGACTCC
GAM3765 19560 ATCCAGCAAGATGCAAGCCT --- A CAAGC- A--------- GATGTTAA
TCAGAATCTGGGATGTTAAC ATCCAGCA AG TG CTTCAGA TCTGG
CAGAAGACCTTCTATCTGAG TAGGTCGT TC AC GGAGTCT AGACC
GAACAACCAACTAGTTGCTG TGA A CAACAA ATCTTCCAGA --------
GAT
GAM3766 2943 TCTCCAAGCTGGAGAATGGG A- AGAA- - CCT AAGA
GGCTTCCCTATGAGAAAGAT TCTCCA GCTGG TGGG GGCTTC ATGAGA
CTCATTGAGGCCATCCGAAG AGAGGT TGACC GCCT CCGGAG TACTCT
AGCCAGTAATGGAGA AA GAGAA A T-- ----
GAM3767 15827 CTACTAGTAAGTAGATTTCT A A - TTC AATAAAACAT A AATA
CAAATAAAACATAATAATAG CT CT GTA AGTAGAT TCA AATA TAGCTA
CTAAATATAGCTAATATTTA GA GA CGT TCATTTA AGT TTAT ATCGAT
CTGACCATTTACTATGCAGC C - A CC- CAT------- A ----
AG
GAM3769 783 GCCCCCAAACCATGTTCAGC CCAAA CC CCTACCAGTTCACCTAC
CACACGCCTACCAGTTCACC GCCC CCATGTTCAG ACACG
TACCGTGTTACTGAATGTGG CGGG GGTGTAAGTC TGTGC
CATCAGGGC ACTAC AT ----------
GAM3771 12878 GTCGTGCGTGCCCCAACGAA C T CA--- GAAG AAACAA AGAC
GGGGGGAAACAACCCAGACG GT GTGCG GCCC AC GGGGG CCC
GGAAGACCCCCAATAGTGGA CA TACGC CGGG TG CCCCC GGG
GAGGGCCGCATCAC C - AGAGG ATAA AGAA-- ----

GAM3772 11115 TCATTGCTGCAAGGAACTTC TT G ACTTCC CTCTAACACTCA AAGACT
TGCTGAGAT
CATGCCTCTAACACTCATCT TCA GCT CAAGGA ATGC TCTTCAA GGGAC
TCAAAAGACTGGGACTGCTG AGT CGA GTTCTT TGCG AGAAGTT TCCTG
AGATGTCCTCTATTCTTGAA -- G A----- ---------- CTTATC ---------
GAGCGTATTCTTGGAGCTGA
GAM3773 17883 GAGGAGGTGGCGGCGCTGGA T C T ------- - G ACCAGCGA
GCTCCTCCCGGGGACCAGCG GAGGAGG GGCGG GC GGAGC TC CTCCC GGG
ACCCGGGGAGCGAGCACGTC CTCCTTC TCGCC CG CCTCG AG GAGGG CCC
GCTCCGCACCGCTCTTCCTC - A - CTGCACG C G --------
GAM3774 12007 GAGCTAACAAACTGCTACAA AACAAAC ACAAACT A TCAAAAAAGCAAACT

ACTGAAGGACCTTTTCAAAA GAGCT TGCT GAAGG CCTTT
AAGCAAACTGAAGGACCTTT CTCGA ACGA TTTCC GGAAG
TCAAAAAAGCAAGCTC ------- AAAAACT A ----------
GAM3775 1701 TGCCATTTCACACATGGACT CATT A - CG GTTT
CCACCGTTAGTTTTAGAAGT TGC TCACACATGG CTCCA C TTA
TGGAGACTGTGTGTGGTTCC ACG GGTGTGTGTC GAGGT G GAT
GCA CCTT A T AA ----
GAM3776 11883 TGCAGTATGATGTCTATCAG GTAT T A TTT G G AA ACCT
TATTTTCTGCCTGAGAATGA TGCA GATG CT TCAGTA TCT CCT AG TG
CCTCACTGAGGAGATGTTGC ACGT CTAC GA AGTCGT AGA GGA TC AC
TGAAGCATCTGCA ---- - - TGT - G -- ----
GAM3777 21554 GAACAACACATCAAAGATGC ACA ACATCA A - A AACACTA
ATTTGTATGTTCATATAACA GA AC AAGATGC TTTGTAT GTTC TAT
CTAATAGGACAATACAAAGT CT TG TTCTATG AAACATA CAGG ATA
ATCTTCACGGTCTC C-- GCAC-- - A - -------
GAM3778 12685 AGTTTCTCTGGAGTATTTGC TCT- ATT C- G TT CAAAACC
GCTGGAAGTTTCTAATCAAA AGTTTC GGAGT TG GCT GAAG TCTAAT
ACCATTAGACTTTGAGTTTC TCGAAG CCTCA AC TGA TTTC AGATTA
ACAAACTCCTCTTGAAGCT TTCT AAC TT G -- -------
GAM3779 15879 GCGTTTGGAGAACATCTTCT A ACAT CT C TTT- - GAAA
TGCTCCTTTTCCGGAAACGA GCGTTTGG GA CTT TG TCC TC CG
GATAATGGACACAGAGTCCC TGCAGACC CT GAG AC AGG AG GC
AGACGT - ---- AC - TAAT A ----
GAM3782 9693 GCATGTCTTATCCCGCTGAT TTATCC AT TAT CTG C CTTATGA
GATTATGAGTCTGAGGCGGC GCATGTC CGCTG GAT GAGT AGG GG
TTATGACCCCTACGCTTATC CGTATAG GCGAC CTA TTCG TCC CC
CCAGCGACTATGATATGC TATCA- C- --- CA- - -------
GAM3783 536 AGGCAGGGGTATCCGTGCGT G GTAT TG AGGGAAGG- GAAACAG
AATTCAGGGAAGGAGGAAAC AG CAGGG CCG CGTAATTC AG
AGCTATGGGGTGGGGATTAT TC GTCCC GGT GTATTAGG TC
GTGTGGCCCTGGCT G ---- GT GGTGGGGTA -------
GAM3784 2313 GCTGCTGGAGCAGCTGCCTT G T TC - T C- T- GAGTCCA
CAGGCCCTGCGCCGCCTCCG GCT CTGGAGCAGC GCCT AG GCCC GCGC GCC CCG
GAGTCCATGGCCGGCACGCG CGG GGCCTCGTCG CGGG TC TGGG CGCG CGG GGT

CTGGGTACTCGGGGCGCTGC - - GC A T CA CC -------
TCCGGGGC
GAM3786 16713 GAACTTGCGAGCTGCAGTGC T G CA- - G AACCCCT C GAC C-- CCCAA-

CAGGTCAACCCCTAGCTCTG GAACT GC AGCTG GTG CCA GTC AG TCT TGCC GTGGTGGC

ACTGCCCGTGGTGGCCCCAA TTTGG CG TCGGT TAC GGT CAG TC AGG ACGG CACTATCG

GGACACCCAGCCCAGCTATC T - CCC A G CAACAT- C TA- TAC ACCCGA
ACCATGGCAATGGACCTTAC ACAC
AACGACGTGGACATCCCTGG GG
CTGCTGGTTT CC

GAM3787 10619 GGTGTGGGTTTTTGGCATGT - GGC CA TATGGT
AGCAGTTTTTATGGTAAGAT GGTGTGGG TTTTT ATGTAG GTTTT
CTATATATAAAAAGTCCCAC CCACACCC GAAAA TATATC TAGAA
ACC T ATA -- ------

GAM3789 13047 GATGGCTGTCTCCTTCACCT G TTCA TACCGACA GCAC TCAC
ACCGACACCTGGCACTCTTC GATG CTGTCTCC CC CCTG TCT
ACAGACACAGGCTACATCTG CTAC GACAGGGG GG GGAC AGA
GATGGGGACAGCATC - TA-- TCTACATC AC-- ----

GAM3790 2277 TCCAGTGGATGTCTCTTTTC - - TCTCT T AC- GTCAA
AGTGCACTGGGTGGTCAATG TC CAGT GGATG TTTCAG GC TGGGTG
CCCACTCGCTCTGAAATCAT AG GTCA TCTAC AAAGTC CG ACCCGT
CTGACTGTGA T G T---- T CTC -----

GAM3791 12595 AGGCCTGCCGTCATGTCTAA C C -- CT-- CA G TA-- -- GAACAGCTAA
GTCAGAGTCTCCTAAAGAGC AGGC TG CGTCA TGT AAGT GA TCTCC AAGAGC CC
CCGAACAGCTAAGGAAGCTC TCCG AC GTAGT ACA TTCG TT GGAGG TTCTCG GG
TTCATTGGAGGGTTGAGCTT - A CA AAGT AG G TTAC AA ----------
TGAAACAACTGATGACAGCC
T

GAM3792 16726 GGCCTACAGGCAGCTGTGGC A C T -- G ACAC
CCAGCAGGACACTCTGATGG GGCCT CAGG AGCTG GGC CCA CAGG
AAGCCCGGTTCCCTGAGGGC CCGGG GTCC TTGGC CCG GGT GTCT
C A C - AA A ----

GAM3793 14622 TTAGCTGGGGCCTTGAAGAT -- - TGAA G AAGATA A- TACAA
GATGAAGATATGACACTTAC TTAGCT GG GGCCT GAT ATG TG CACT
AAGGTGGACAGGCATGATTA GGTCGG CC CCGGG TTA TAC AC GTGG
TTGGGCCACCAAGGCTGG AA A TTA- G GG---- AG -----

GAM3794 18163 CCCGGGGACTGAGAGTTAAG ACTGA TA AG GA TACT
GAGAGTTGGAGGCTTTACTG CCCGGGG GAGT AGGAG TTG GGCTT
GGCCACAGGGTTCCTACTCG GGGTCCC CTCA TCCTT GAC CCGGG
CCCCTGGG CG--- -- GG A- ----

GAM3795 10189 GCAGTCAAGGCTCCAAGAAA - A CAA AA A AGCACTTTTTCACTCCTGA
GTGAGACTTCAGCACTTTTT GCA GTCA GGCTC GA GTG GACTTC
CACTCCTGAGAAGTCCACAG CGT CGGT CCGAG CT CAC CTGAAG
TCATGAGCCTGGCTTGC T - TA- GA - ----------

GAM3796 20257 GGACTCTATAGAGGGGCACG ---- CACG- CT AG- TATCA
CCGGGGCTATTTAGGACTAT GGACTCTA TAGAGGGG CCGGGG ATTT GAC
CAGTTGGCGAATTTTCCTGG CCTGAGGT ATTTTCCC GGTCCT TAAG TTG
GGACTCCCTTTTAGTACTGG CATG TCAGG TT CGG -----
AGTCC

GAM3797 11281 GAGATGCAGCAGAAGTTGGT A AG GAA G G- GCTGAGAA
GGAGCTGTCGGCTGAGAACG GAG TGC CA GTTGGTG AGCT TCG

AGAAGCTGCACCAGCGCGTG CTC ACG GT CGACCAC TCGA AGC
GAGCAGCTC G AG GCG G AG --------
GAM3798 4176 CCAGGTCTATCTGTCCAATA - ATCTG TACTT -- AG GTCC
CTTTGTGTCTAGGGTAGAGG CCAGGT CT TCCAA TGTGT CTAGGGT AG
TCCCTAACCCTGGCTGCACA GGTCCA GA AGGTT ACACG GGTCCCA TC
TTGGAAGCACCTGG C ----- ----- TC A- ----
GAM3799 13361 TGCTTTCTTTAGGATCCCAA - CAA AT CGCCTCC
ACATCGCTGCCGCCTCCGCA TGCTTTCTTTAGG ATCC AC CGCTGC
GCGCCGTCGGATCCCTGGGG ACGAGAGGGGTCC TAGG TG GCGACG
AGAGCA C C-- CC -------
GAM3800 16116 TGTCTTAACCAATTTGGGGG ACCA -- T--- CTCAA
CAGGGTGGGGTCTCAAGCCT TGTCTTA ATTTGGGG GCAGGG GGGGT
TTGGCCCCTGTGACTCCAAG ACGGAAT TGAACCTC TGTCCC TTCCG
TATAAGGCA A--- AG CGGT -----
GAM3801 17345 CTGCCGCAGGTGCCGGAGAA AG---- -- A CCT - AGAAGC
CCTCCTGGGACAGCGAGAAG CTGCCGC GT GCCGG GAACCT GG GACAGCG
CTGCTGTCATCTGCAGGTTC GACGGCG CG TGGTC CTTGGA CT CTGTCGT
CTGGTAGGCAATGAGGCGGC GAGTAA GA - CGT A ------
AG
GAM3802 107 ACATAGATGGTACCTTACTT AT- TA----- T - --- ATAGGTGTC
TTCCTCATTCTTAATAGGTG ACATAG GG CC TACTTTT CCT CATTCTTA
TCTAAGAATGTCAGGGCAAA TGTATC CT GG ATGAAAA GGG GTAAGAAT
AGTATGGGCATTTTTCTTGC GTT TTTTACG T C ACT ---------
TATGT
GAM3803 21230 GGCTAGTTCCTTGATAGCAT A GATAG TT TCT CTTCTTT
CTTACTCTCACCTTCTTTGT GGCT GTTCCTT CATC AC CAC
GTCTGTGATGAAAGGAACAG CTGA CAAGGAA GTAG TG GTG
TC - A---- -- TCT -------
GAM3804 14121 CCTTCGAGATGTGCCCTTCT AGA T TTC--- C G TG ACTA
CAGCCCTGTACTGGTTCAAC CCTTCG TG GCCC TCAGC CT TAC GTTCA
TATGAGCTGGTGAAGAGCTG GGAAGC AC CGGG GGTCG GA GTG CGAGT
GCTCAATGGGCTCAGGCCGA CGG T TAACTC A A GT ----
AGG
GAM3805 20136 GAATGTGTCCCAGAGATTCT TGTCC TCT T TGTA TT- CGTT
GGTATGTTGTATCTTTGTTC GAATG CAGAGAT GG ATGT TCTTTG CT
TCGTTGGTTTCAAAGAACAT TTTAC GTCTTTA TC TACA AGAAAC GG
CTTTATTTCTGCCTTCATTT TTCC- TT- - ---- TTT ----
GAM3807 7056 ACCGTGGGTGGTTCAATGAC G ------- C AAAATCAC
ATGAAAATCACCGTATCATT ACC TGGGTGGT TCAATGA ATG
GGAGATTGTGCCACCCAAGG TGG ACCCACCG GGTTACT TGC
T A TGTTAGA A --------
GAM3808 18344 GTGGCTGCGTGGACAAGTGG G - GACAA G ---- T TT C AAAG
CGTCGCGGTAGCCCCTTACC GT GCTGC GTG GTG CGTC GCGG AGCCCC ACC GGC
CGGCAAAGGCCCGGTTGGGG CA CGGCG CAC CAC GCGG TGTC TCGGGG TGG CCG
CTCTGTTGCGGGCGCACGAC G G GCAG- - GCGT - T- C ----
GCACGGCGGCGAC
GAM3809 4320 AGCCGTACATTCCCACGCAG ATTCCCAC TTTC T A- AGTTGGC
TTTCATCTCAGGGAGGCCAG AGCCGTAC GCAG ATC CAGGG GGCC
TTGGCGGCCGGTCCTGGATT TCGGCATG TGTT TAG GTCCT CCGG
TGTTTTAAGGTACGGCT GAATTT-- ---- - GG -------

GAM3811 8177 CGCTCCAGTTGGTTGGGTAT --- G TGG ATA A - G TGTGT
ACCGATGACTTTGGGCCGTG CGC TCCA T TTGGGT CCG TGACTTTGGG CC TGAG
AGTGTGTTTCGGGTTTCAAG GCG AGGT G AGCCCG GGT GCTGGAACTT GG GCTT
GTCGCTGGGCCCGAGGTGGA TCC G --- --- C T - -----
CCTGCG
GAM3812 808 AGTGAAAGTATATTGAATTA AAGTAT AGTTCACCTTGCCATTCG
AGAGCCTATATAGTTCACCT AGTGA ATTGAATTAAGAGCCTATAT
TGCCATTCGATATAGGCTCT TCACT TAACTTAATTCTCGGATATA
TAATTCAATCTCACT C----- ----------
GAM3813 21486 TGCTTTAGATTAGACTGTCA AGA TC TC TCTATCTGTACTATAT
TGTCTCAGTGTCTATCTGTA TGCTTTAGATT CTG ATGTC AGTG
CTATATTACTTTGATATTCA ACGAAATCTAA GAC TATAG TCAT
GAGAATCTAAAGCA GA- T- TT ----------
GAM3815 1734 ACAAGCTGCTGTCTTTGCAC A -- -- - GTC GC AGCC -- T ACGGG
CTTGGTCCTTGGCCAAGCCT AC AGCT GCTGT CTT TGCACCTTG CTTG CA TC CCC TGCC

CCCCTTGCCACGGGGGCATG TG TCGA CGACA GAG ACGTGGGAC GAGC GT AG GGG ACGG

GGATGACCTGTGAACGAGAC G TA CT G A-- AA GTCC TA T -----
AGGGTGCAGGAGTCACAGCA
TAGCTGGT
GAM3816 6008 AAGAGTAGTTTGGACCCACA TT GACCCACA TA ATTTATTCACTACCTTAG
ATATTGCATTACTGATTTAT AAGAGTAG TG ATATTGCAT CTG
TCACTACCTTAGCAGCATGT TTCTCGTC AC TATGATGTA GAC
AGTATACAGACATTCTGCTC TT AGACA--- C- ----------
TT
GAM3817 13854 CACATTGATTTTCAGTATGA A ATT ACTCTG - -- ACTGCCTTTGAAC
CTCTGATGGCTCTCACGACT CAC TTG TTCAGTATG ATGGCTC TCA CG
GCCTTTGAACCGCCTGACGA GTG AAC AAGTCATAC TATCGAG AGT GC
GCTATGCATACTGAACAAGT - --- G----- C CC ----------
G
GAM3818 22593 ACGATATTAGGAGAGAAAGA AT-- G GAC AGTATTGG
CCCCGAGAGTATTGGTTTGG ACGAT TA GAGAGAAA CCCGAG
GAATTTCTTTTGTACAAGAT TGTTA AT TTTTCTTT GGGTTT
TGT GAAC G AA- --------
GAM3819 7924 AAGAAAGGACGGGGTTTCTA ACGGG - G AAGATTTT AACA
GTTGCTAAGATTTTGCCAAA AAGAAAGG GTTT CTAGTT CT GCCA
CATGGCTACAGAACTGGTAA TTCTTTCC CAAA GGTCAA GA CGGT
ACAAACCTTTCTT AAA-- T - CAT----- ----
GAM3820 5361 GGACTTCCAGAGTTCAGTTC - --- T GT TTC GA TATCTT
CTTCTGGCAGAGAGGTATCT GGACTTC CA GAGT CA TCC TGGCA GAGG
TTCTCCATGCCATATGGATG CCTGGGG GT CTCA GT AGG ACCGT CTCT
TGACTCAAATGAGGGGTCC A AAA - GT TAT AC ------
GAM3821 2947 CAGCGCTGCCCAGATAGCAG CG-- ATA AGC CAACTCAACATCCATC
CACGGTATGAGCAACTCAAC CAG CTGCCCAG GC ACGGTATGAG
ATCCATCTTCGTATCGTTCC GTC GGCGGGTC CG TGCTATGCTT
GCCTGGGCGGGATTCTG TTAG --- CCT ----------
GAM3822 14838 GGAAATGGGAGAAACTCCCA AAT ACTCC C CA-- TGAT CGTCATGA
GGCAGGAACACCTTTTGCTG GGA GGGAGAA CAGG AGGAA CCTTTTGCTG GGCCG
TGATGGCCGCGTCATGATGG CCT TCCTTTT GTCC TCTTT GGAAAACGGC CCGGT

CCCGGCAAAAGGGCATTTTC AC- CCCA- A TACG ---- --------
TACCTGACCCTTTTCCTCAT
CC
GAM3823 17640 GGGTCAGCAGGAAGTTGCGG AGTT A- CCC - T C GCC
CTGATGAGCAGCTCCCGGAG GGGTCAGCAGGA GCGGCTGATGAGC GCT GGAGC GG GGGG
GGG
CGGTGGGGCGGGGCCTCCTC TTTAGTCGTCCT TGCTGACTACTCG TGA CCTTG CC CTTC CCT

TTCTCCAGTTCCAGTACGCT CC-- CA --- A T T ---
CATCAGTCGTCCTCCTGCTG
ATTT
GAM3824 15463 GCCGGTTTGGCACCATTTGC C -- CCAT T- TCCACCTCCTTC
TCTTTATCCACCTCCTTCTG GC GGTT TGGCA TTGC CTTTA
AAGTTGTAATGCCAATAACC TG CCAA ACCGT AATG GAAGT
TGT T TA ---- TT ----------
GAM3826 18984 TATGTTTCTAAAAAAGTTTA --- AAAAAAG TAAAGA GA A - T ACAAAGC
GTTCTAAAGATCAGAGAAAA TATGT TTCT TTTAGTTC TCA GAAA AG CA GAC
AGCATGACACAAAGCGTTTT ATACA AAGA AAGTTAAG AGT TTTT TC GT TTG
GACTATTTTATGAATATGTG TGT GA----- TGTATA A- A A T -------
AATTGAAAGAGAATGTACAT
A
GAM3827 17267 TCTGCGGAGGCTGCCGTGAC GGCT - G G ATG AAAT
GTAGGGTATGGGCCTAAATA TCTGCGGA GC CGTGAC TA GGT GGCCT
GGCCATTGTGAGTCATGAGC AGATGTCT CG GTACTG GT TTA CCGGA
TTGGTCTGTAGA GGTT A A G --- ----
GAM3828 18316 AAGTTGATGGGTGCAGCAAA GAT --- AAC G CA-- A CTAT
CCAACATGGCACATGTATAC AAGTT GGGTGCA GCA CAACATG CA TGT TAC
CTATGTAACAAATCTGCATG TTCAA CCCATGT CGT GTTGTAC GT ACA ATG
TTGTGCACGTGTACCCTAGA GAT GCA --- - CTAA - ----
ACTT
GAM3829 8046 TGGGGCAGAGGGCAGGAAAA G AGGG-- G AA C C A- - CAAACTTC
GGGCGGCCACATTCTCACAA TGGG CAG CA GA AGGG GGC AC TTC TCA
ACTTCTGGCGAAGGGTAGCT ACCC GTC GT CT TCCC TCG TG AAG GGT
CCCTCCTCGTGAAGGACCTG G CAGGAA G CC - A GG C --------
GCCCA
GAM3830 11323 CTCGGGTGGTGGCGCATGCC GGT CATG- AATCC ACTCAGGA
TGTAATCCCAGCTACTCAGG CTCGGGT GGCG CCTGT CAGCT
AGGCTGAGGCAGGAGAATCG GGGCCCA TCGC GGACG GTCGG
CTTAAACCCGGG AAT TAAGA GA--- --------
GAM3831 16866 GGGTGGCGGCGAGGACGAGT T C A A CT TC TCAGC
CTGTGCTCCATCAGCTGCCG GGG GGCGG GAGG CG GT GTGC CA
CACCCGCCGCCTCCCGCCCC CCC CCGCC CTCC GC CG CACG GT
C - - - - CC CC -----
GAM3832 14721 TTCAAGAATGTTAGAAGTTC AA TT - TT - A- TTTC
AAGCCAGAAGTTTCTTTCAG TTC GAATG AGA AG CAAG CC GAAG
GGTTTTGGTCTATCTCATTT AAG TTTAC TCT TC GTTT GG CTTT
GGGAA GG -- A TG T GA ----
GAM3833 9937 GAGAGTCTGGTATTACACTG - TGG T CT C AAACT
GAGGATCACAAACTGTATTT GAG AGTC TAT ACA GGAGGAT AC
TCTTGTTATAAATGGCTCCT CTC TCGG ATA TGT TCTTTTA TG

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        C               C   TAA  T  --     - -----
GAM3834 11926 GTCAGGCCAGGGGGTTGCAA    GC   GG  ------- AAA     A  TCCGT
        ATGTGGGTACTTTCCGTGAG GTCAG  CAGG  GTT     GC  TGTGGGT CTT
        AACTCATAAGGGTAGTTGGG TAGTC  GTCC  TAG     TG  ATACTCA GAG
        GATTTCCTGATCTGAT       TA   TT  GGGTTGA  GGA     A  -----
GAM3835 13694 GGAAGCTGTGATGGGAAAGG  GA   G-     ------ G  -  G  T  C   ACCTCAAGCC
        AGGCCTGCACTTGGACCTTG G  AGCT  TGATGGGA     AA GAGG CCT CACT GGA CTTGA
        AACCTCAAGCCTCAAGCTCC C  TCGA  ACTGTCCT     TT TTCC GGG GTGA CCT GAACT
        AGTGGGGACCTTGTTAAATG  TC   GA      CGTAAA  G   A  -  -  C   ----------
        CTCCTGTCAAGAGCTCTC
GAM3836 5962  TGCATGGGGTTCTTTTGTGA   ATG   TCTTT   -    CAG    TAAAGGT
        TGATGACAGTTTGGATAAAG TGC   GGGT    TGTGA TGATGA   TTTGGA
        GTTCCAAGGTTCATTATTCA ATG   CCCG    ACACT ATTACT   GAACCT
        CAGCCCGGGTA          GG-   -----    T     TG-     -------
GAM3837 16996 CGGGCCTTGATAGTGTCTCC     TT   AG   T   AT  CTT   CTG  AAAA
        TCATGGCTTCCACTGGCAAA CGGGCC  GAT  TGTC CCTC  GG   CCA   GC
        AGCATGGTTACCCGAGGTGA GTCTGG  CTA  GTAG GGAG  CC   GGT   CG
        TGATCTTGGTCTG          TT  --   T   C-  ATT   A--  ----
GAM3838 10384 GGAATGGGTATTGTGGGAAT  -        T   AATTG   GA  A  ATGT
        TGGGAGAATATGATGTCAAG GG AATGGGTATTG GGG    GGA  AT TG
        TATCCAGCCTTGATACCCAT CC TTACCCATAGT TCC    CCT  TG AC
        TACC             A        -  GA---  A-  A  ----
GAM3839 17567 GGGTGTGGGATGCTTCGCCA     GGG   TT  CCAGGTCAT      TTGTCTCATTTT
        GGTCATGTGCTATATTGTCT GGGTGT   ATGC  CG       GTGCTATA
        CATTTTTGTAGTACTTTTAC CCCACA   TATG  GC       CATGATGT
        ACGTTGTATGACACCC        G--   TT  ACATTTT--      ------------
GAM3840 19294 TGAGACTCTGGCCTACTTCC  A   C    AC    AA--  A    GGAAGT
        TAACAATGTCTTGGAAGTGG TG GACT TGGCCT  TTCCT   CA TGTCTT
        GATGATGGTAAAGGAGAAAG AC CTGA ACCGGA  GAGGA   GT GTAGGG
        GCCACAGTCCA        -  C    AA    AATG  A    ------
GAM3841 6958  GAAAGTCTACAGTCTGTGAA  A  CT-   CT  AA        CCTTTACAACTG-   AGA  T  GAA
        TATACCAATTCCCCTTTACA GA AGT   ACAGT  GTG  TATACCAATTCC          ATGC  TCA TAT
        ACTGATGCAGATCATTATGA CT TCG   TGTCA  CGT  GTGTGGTTAAGG          TACG  GGT ATA
        AATACTGGAAGGCATAACCT  C  CAT   C-  CG        ATTTAACATCCAA   GAA  C  ---
        ACAATTTAGGAATTGGTGTG
        GCTGCCACTGTTACGCTCTC
GAM3842 9697  GGGCGGACGCGTGGGCCAGC      C  TG  CCAGC      GG  CTGGTT
        AGCTGGTGGGGACTGGTTTC GGGCGGA GCG  GG    AGCTGGTG  GA
        AACGCCAGCTTTCTGTGCTT TCCGTCT CGT  CT    TCGACCGC  CT
        CTGCCT               T  GT  T----      AA ------
GAM3844 18157 TTGTGCGCCTCTTATCAAGT   TG-   T  TAT    A  C  ACCTTT  CAAG
        CAGCACACACCTTTTCCAAG TTG   CGCC CT   CAAGTC GCA AC     TC
        GATTTTACGTTGCGGCTTGT AGC   GTGG GA   GTTCGG CGT TG     AG
        TAGGGTGATTCGA        TTA   -  TT-    -  -  CATTTT  ----
GAM3846 1535  TCCTTTTCCTCTTTTCCTTC      -----    T  T        GAATTTTC  GGACCTA
        CTCCTCTTTGGAATTTTCCT TCCTTTT    CCTCTT TCC TCCTCCTCTTTG      CTG
        GGGACCTACAGAATAAAGGG AGGAAAA    GGGGGA AGG AGGGGGGGAAAT      GAC
        GGGGATGGACAGGGGGTTTT      CTTTT    C  T        AA------  -------
        CAAAAGGA
GAM3847 15739 GGGGCAGAAAGTGTGTAAGT   C   AG    G   TATTTTTCAAA       TTATC
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GAAGTATTTTTCAAAGAATG GGGG AGAA TGTGTAA TGAAG GAATGCAGTTA
CAGTTATTATCTGATTGCAT CCCC TCTT ATACATT GTTTC TTTACGTTAGT
TTGACCTTTTGACCTTTGTT A A- - CAGTTTTCCAG -----
ACATAATTCTACCCC
GAM3848 13481 AAGTTGTGAATTTGATGTAA AAT A-- GG GAATTAA
GCTTAGGAAATTGAATTAAA AAGTTGTG TTGATGTA GCTTA AAATT
ATTTATAGGCATCTGTATTA TTTAACAT AATTATGT CGGAT TTTAA
ATTGTACAATTT GTT CTA A- -------
GAM3849 11288 GAGGGAAAGGATGAATTATT G ATGAATT AATATA TAACT
TAATATATTCTAAGTTAACT GAGG AAAGG ATTT TTCTAAGT
ATTTGGAAAAAATGGGATTA CTCC TTTCC TAGG AAGGTTTA
GAGCCTTTCCTC - GAGAT-- GTAAAA -----
GAM3850 8807 ACCACATTAGCTTGGCTCTC TA-- T CT C GGTAT
TGTCTCAGAGGGTATCTCTA ACCACAT GCT GGCTCT GTCT AGAG
AGACTAGGGGCTTGGTATAT TGGTGTA TGG TCGGGG CAGA TCTC
ATGTGGT TATA T AT A -----
GAM3852 6462 TGACAAGTTTTTGTTTGTAT A TT T - TACA TC AGAC
CCAATTACAGAGTTCCATAA TG CAAGTTT GTT GTATC CAAT GAGT CATA
GACTATGATTTGAATATTGT AC GTTTAAA CAA CATGG GTTA TTTA GTAT
GGTACAACTTAAATTTGGCA G TT - T TAAG -- ----
GAM3853 8299 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A ATTGTGGC
CACTTTGACAGACATTATTG CTGG TGTT ATGG AAGTCA GACAG CATT
TGGCAATGTTGTCTGACTTA GACC ACAA TGTC TTCAGT CTGTT GTAA
CTGTTTCAACAAACCAG AA CTT A ---- - --------
GAM3854 6247 TGGACACAGACTTGCCAGGC A AC- TG CA C - A A AGAA CCGT
AGCCTGGGGCAGAGTGAAGA TGG CACAG T CCAGG GC TGGG GCAG GTG AG GC
GAAGCCCGTGCCTGCTGCGC ACC GTGTC G GGTCC CG ACCC TGTC CGC TC CG
CTGTGCCCAGCCCTGGTGGA C CCA GT -- - G - G GTC- ----
CCCTGTGCCCA
GAM3855 21268 TAGAAAGGAATCTCCTAAAC A - TAAAC- AAAAA A TT CTACT
CTCAAAAAGAACATTTATGT TAG AAGGAATC TCC CTC GA CAT ATGTTAGC
TAGCCTACTGCTAACATCAT ATC TTCCTTGG AGG GAG TT GTA TACAATCG
GCTTAATGGGAGAAAACTGG C T TCAAAA GGTAA C C- -----
ATGGTTCCTTCCTA
GAM3856 6998 CCTTCTCGAGGAGGACGGGG --- TG TCCCTGTTGT
ATGGCCTCCCTGTTGTGGTG CCTTCTCGAGGAGG ACGGGGA GCC
CTCCTTGTGGCCTTCCTTGA GGAGGAGTTCCTTC TGTTCCT TGG
GGAGG CGG CG ----------
GAM3857 22671 TCTTTATAGCAGTATGAGAA GAGAA AA AACA AATTGG
TGAACTAACACAGTAAATTG TCTTTATAGCAGTAT TG CT CAGTA
GTACTGCGGAGAGTAGAGTA AGAAATATCGTTATG AT GA GTCAT
TTGCTATAAAGA AG--- GA GGC- ------
GAM3858 21598 GCAGGATGATTGAGGATGCA A- T-- A CA AAGTCACAG
ATTCGAAGTCACAGCGAATC GCAGG TGA TGAGG TG ATTCG
AGCCTCACCTTCAGCCCTGT TGTCC ACT ACTCC AC TAAGC
CG TCC G -- ---------
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TACCCATATAGGCCCTAAAT CAGCC CTC TTCC TACCCAT AGGC ATT GGAA
TTGGGAAAAATCACTATTAA GTCGG GAG AAGG ATGGGTG TCCG TAA CTTT

TTTCTGAATCCTTTGCCTGT TAA ---- - -- TTTCC GT ----------
GGGTAGGAAGAGAATGGCTG
GAM3860 7881 GGGGAAACTGAGGTGCGGGT AAA --- CGC TG GGCC
GCGCGGGCCTGGGGACGGCC GGGG CTGAGGTG CGGGTG GGGCC GGGAC
GTCCCATGGCTTCCATCTGA CCCC GGCTCCAC GTCTAC TTCGG CCCTG
GCCACCTCGGGACCCC AG- CGA C-- TA ----
GAM3861 10116 GGTTTACATCAACATCTGCA ACA AA- ACTC C A C C- GCAGA
CTCGCACCTCTATCCCTCCT GGTTT TC CATCTGC GCA CTCT TCC TC TCACC
CACCGCAGAGGTGACCGAAG CCAGG AG GTAGACG CGT GAGG AGG AG AGTGG
GAGGAGCTGCGCAGATGCTA AGG ATC ---- C - A CC -----
GAGGAGGACC
GAM3862 640 GCAGCCGGGCCTGAGGCTGA AG G G GAGA T A AGA AGTA
GAGCATGTACCAGATCAAGT GC CC GGCCT AGGCT GCA GT CC TCA
ATGAGGAGCTGCAGAGCCTG CG GG TCGGG TCCGA CGT CG GG AGT
GGCTGGGAAGC AA G - GA-- - A --- ----
GAM3863 5553 CCAGGAGGGGAAACAGGCAC - GAAAC A - TT G- AACACACAACGC
GCTCATTTCGGCAACACACA CCA GGAGGG AGGC CGCTC AT C GC
ACGCGCAAGGGATAGAGCGG GGT TCTCCC TTCG GCGAG TA G CG
GCTTATAAACCCTCTGTGG G AAATA G A GG AA ----------
GAM3864 1945 GGCGTGTCACAACCACTGCA C AA AA CAAAA T CA T GCTTGTTTTATAA
ACACAAAAAATCTTGCAATC GGCGTGT AC CCACTGC CA AATC TG ATC CAT
TCATGCTTGTTTTATAAATG TCGTACA TG GGTGATG GT TTGG AC TAG GTA
TGATCCCATGGTTTGAAGTA T -- AA ----- T CC T ----------
GTGGGTTACATGCT
GAM3865 8957 CCAGCCTGGTGATGCAGCAG G GA C TGTCA AA- CCT
GTGTCACAGAAGGACCCTGT CCA CCTGGT TG AGCAGG CAG GGAC
CCCAGCTGGTCCTGCTCCAC GGT GGATCG AC TCGTCC GTC CCTG
TGCTAGGATGG A TC C TG--- GAC ---
GAM3866 11094 AAAACCAAAAAACATATATA CAA ATA A T CTC GCT
TAATGGCTTCTCTGTCACCG AAAAC AAAAC TAT TAA GGCTT TGTCACC
CTGGTGACAATAGGTCTTAA TTTTG TTTTG GTA ATT CTGGA ACAGTGG
TGCAAGTTTTCATGTTTT TAC AAC - - TA- ---
GAM3867 12848 GTCCTCCCTCACCAGATGAT CA- AGA TT A A ATG CAACA
TCCTAGGACTCATGGTGCAA GTCCTCCCT CC TGA CCT GG CTC GTG
CATACAGGAGCCAGGCTTTA CAGGAGGGG GG ATT GGA CC GAG CAT
GGGACGGGGAGGAC CAG --- TC - - GA- -----
GAM3868 8504 GTGGTGCCTGGTGGAGACCT G T G A - AA CAGAGA - CA TGA
GGCCAAGGTACAGAGAGCTG GTGGT CC GGTG AG CCT GGCC GGTA GCTGTG TG TGC

TGTGCATGCTGAGCAACACC CACCA GG CCGC TC GGG CCGG TCGT CGACAC AC ACG
ACAGCCATTGCTGAGGCCTG - T - - T AG TAC--- C A- ---
GGCTCGCCTGGACCAC
GAM3870 7244 GTGGGAACGGGTGGCCCGGC - GG-- CG - GT TAACCCC
TGTGTGACTTTAACCCCAAG GTGGGA ACG TGGCC GCT GT GACTT
TCTAGCAAGCAGGCCAAAGA CGCCCT TGT ACCGG CGA CG CTGAA
TGTCTCCCGC C AGAA A- A AT -------
GAM3871 6379 TCCCCCCCCAGTCTCGGAGA C A CTC A-- ------- AAAAAGC
GCAACAGAAAAAAGCTCTGT TCCC CCCC GT GG GAGCA ACAGA
AATTCAGTGTTCCAACCACC AGGG GGGG CG CC CTTGT TGTCT
GCCGGGGAGGGA A C CCA AAC GACTTAA -------

GAM3872 17104 GAGCTGCCCAACATCCAGAA C-- ACATCCAGAA AA A C---- AACTG
GGTCGAAGTGTACCCAGTAG GAG TGCCCA GGTCG GTGT CC AGTAG
AACTGCTGCTTGTCCGGACA CTC ACGGGT CTAGT CACA GG TCGTC
CGATGATCTGGGCAAATCTC TAA ---------- AG - CCTGT -----
GAM3873 4673 GAGAGCCTCTGTCGTGGGGA --- G GGGA - AAACT
GGGTGTCAAACTGACAACCC GAGAGCCTCT GTC TG GGGT GTC
GTTAGGACAGAAGAGGCTTT TTTTCGGAGA CAG AT CCCA CAG
T AGA G TG-- A -----
GAM3874 10449 GTAGTGTCAGAGATACCGGG CAG AT - C TACT C- ATCC
GCTGTTGGTACTGTTTTTCC GTAGTGT AG AC CGGGG TGTTGG GTTTTT CT
TATCCAGACAAAGACCCCGA CGTCATA TC TG GCTCC ATAGCC CAGAAA GA
TACCTCGTGTTCCTAAAATA AAA CT T - C--- CA ----
CTGC
GAM3876 4893 ACTGCTCTATGAGAACATTT T A ----- - - GGAAAA
CTACCTCTGGAAAAGGAGGC AC GCTCT TGAGA ACATTT CTA CCTCT
TGGTGAATGTCCCTATCTCA TG TGGGA ACTCT TGTAAG GGT GGAGG
AAGGGTTGT T A ATCCC T C ------
GAM3877 3595 AACAAAATTATAGAATTTCC AT TT --- TT- CC A TTTG
AGATTTCTTGCCAGGTATTT AACAAA TATAGAA TCCA GA TCTTG AGGT TT
TTGAAAACCTATCAAGGTGC TTGTTT ATGTCTT AGGT CT GGAAC TCCA AA
TCCATTGGATTTCTGTATTT -- T- TAC CGT TA A ----
GTT
GAM3878 4298 GACTCCGGCCCATTTAAACA ATTTAAACACAAA AGAT
CAAAAGAGACCCAGATGGGT GACTCCGGCCC AGAGACCC
CTCTGAAAGACCACAGGGCC CTGGGGCCGGG TCTCTGGG
GGGGTC ACACCAGAAAG-- ----
GAM3880 2936 TCTCACATCCATCAAAGGAT - AT A--- ACACTGGAAA
CTCACACTGGAAAGAGGTCC TCTCACAT CC CA AGGATCTC
TATAATGTAGGAATGTGAGA AGAGTGTA GG GT TCCTGGAG
A AT AATA ----------
GAM3881 7073 GCAGAGCTTGTGTAGGAAGA T AGGAA A- AAT TTA TGTCGTT
ATGAAATCTGCAATTTGACT GCAGAGCT GTGT GAATG AATCTGC TTGACTT GGAG
TTTAGGAGTGTCGTTTTCCG CGTCTCGG CGCG CTTAT TTAGACG GACTGGG CCTT
GGTCAGGCAGATTGGTATTC T A---- GG --- --- -------
AGCGCTGGCTCTGC
GAM3882 13450 GGAAGAGTTGCTAAATGAAT - AAA A T GTT- AGTA AGGAATTTG
TCAGTGAAGGTTGGAGTACA GGAAGAG TTGCT TGA TTCAG GAAG GG CAGTGGC
GTGGCAGGAATTTGGTCACT CCTTTTC AGCGA ACT GGGTC CTTC CC GTCACTG
GCAGCCTTGACTTCCTGGGC T --- C - AGTT GAC- ---------
TCAAGCGATCTTTTCC
GAM3883 14854 GCTGAATTTGAGCCAGATCT T CA TCTAT TCCATCAT TCTC GAAAAGAG
ATATGCTCCATCATCACTCT GC GAATTTGAGC GA ATGC CAC CTGGG
CCTGGGGAAAAGAGCCTAGA CG CTTAGATTCG CT TACG GTG GATCC
TGTGTTCTATCTGCATTCCT T TC ----- TCTATCTT TA-- --------
GCTTAGATTCTGC
GAM3884 22819 GGTTGGGGTCATGGCGCCCC TG T C - - CTCCTCCTGCT
GAAGCCTCCTCCTGCTGCTC GGT GGGTCA GG GCCCC GA AGC
TCAGGGGCCCTGGCCCTGAC CCA CCCGGT CC CGGGG CT TCG
C GT - - A C ----------
GAM3885 15771 TTGGTGCCCAGGGAGAACCC G AGAACCC -- - GA TCCT TATC

CTTGGATATCGCCAGGATGA TT GTGCCCAGGG CTTGG ATATC GCCAG TGA AGC
TCCTAGCTATCGTTCTTTTC AG TATGGGTTCC GGACC TATAG TGGTC ACT TTG
ACTCTGGTGGATATGGCCAG G GTA---- GG G TC TTTC ----
GATGCCTTGGGTATGGA
GAM3886 9121 CTTTGGAAAAACAGTTAGTC TT AC A CT ---- T CC CCCT
TGGAGCCTGTGGCCCAGGCC CT GGAAAA AGTT GT GGA GCCTG GG CAGG
CTTCTGTCCCCAGGCATCAT GA CCTTTT TCGA CA CCT CGGAC CC GTCT
CCCAACAGCTCATTTTCCCT TC AC - AC ACTA - CT ----
AG
GAM3887 2658 ATGGTGACAAACATGCTGGA AAA G G- A T TAAAT
GCCAAGTGCTAAATGCCTGG ATGGTGAC CAT CT GAGCCA G GC
TTCAAGGGATGGAAGTCACC TGCCACTG GTA GG CTTGGT C CG
GT AAG G AA - - -----
GAM3889 14946 CAGCGTCCAAGGCTTCCTGA T CTTCC AA - TTGCTCTC
AAAGCAGTCTTGCTCTCGAT CAGCG CCAAGG TGA AGCAG TC
CTGCTTCACCATCTTGGCTG GTCGT GGTTCT ACT TCGTC AG
CTG C ACC-- -- T --------
GAM3894 1987 TTTTTTCATGCATTACTGCG TT A ATTACTGCG TCTCTAAAACCTTAT
TTTATTTCTCTCTAAAACCT TTTT C TGC TTTATTTC
TATGAAGTAAAAACTAACTA AAAG G ACG AAATGAAG
GCAAGGGGAAA GG A ATCAATCAA ----------
GAM3895 18581 TTTGACCCTTTTGAGATGGA CCTT TG AAC TA- C- C TTTAT
ACTTTCATAAAGTTTCTTGG TTTGAC TTGAGA G TTTCA AAGTTT TTGG AGTAG
CAGTAGTTTATTTGCTTCAA AAACTG AACTCT T AAAGT TTCAAA AACT TCGTT
ATAAACTTATTTGAAAAGTT ---- GT GA- TTA TA - -----
GTCTCAAGTCAAA
GAM3896 4010 GGCTCGGTGCTAAATATGGA - GCTA-- AT A A- CAAC
GATATAGCAGTGTCAACACA GGC TCGGT AATATGGAG AT GC GTGT
CAAGTGGTCCCTCCATGTTG CTG AGTCG TTGTACCTC TG TG CACA
TCACAGCTGATGTC T ACACTG CC G AA ----
GAM3897 5939 TCCGATGCTACTATTTTATT GA-- ACTA T AGGA GG- TATG
GCAGGAGGTGGGGGTGTATG TCC TGCT TTTTAT GC GGTG GGTG
CACCGCACACCGGGGCTATG AGG ACGA AGAGTA CG CCAC CCAC
AGAAGCAAGAAGGA AAGA ---- T GGG- ACG ----
GAM3898 4040 GGGATTCTGTGTCTGGCTCC TCT T CT TT-- - A TAA TTAAG
TTTCACTTAGCATAATGTCT GGGAT GTG CTGG CCT CA CTT GCA TGTCT
TTAAGGGACATGCAGGTTGT CCTTA CAT GACT GGA GT GGA CGT ACAGG
AGCAGGTATCAGTACTCCAT CCT - AT CGAT T - --- -----
TCC
GAM3899 2106 GCTGGCCAAGGGAGTTAGGG G GA TA - TA- --- TA A-- ATCCATCC
GTGCTATGTGAACCTAGTCC GCT GCCAAGG GT GGGGT GC TGTGA ACC GTCC GTCAAG

AGTCAAGATCCATCCCTTGG CGG CGGTTTC CA CCCTA TG GCACT TGG CAGG CGGTTC

CACCGGACACGGTGGCTCAC A AC -- A TCC CGG CA CCA --------
GCCTGTAATCCCACCACTTT
GGCAGGC
GAM3900 11172 TCGCGGAGATGTCAGTGCCT GGAGA T CCTGA - C-- GGGT
GATGGAGTGGCCGGGGCGGG TCGC TG CAGTG TGGAG TGGC GGGGC
TGCCTTCACGTCAGCTCCAG AGCG AC GTCAC ACCTC ACTG TTCCG

AATCACTGTCAGGGCGA GG--- T TAAG- G CAC ----
GAM3901 5909 TCTTATACCCCAAAAGTCAT C- AAA---- A- G AACAAAGG
ACAGTGTCAGAACAAAGGCT TCTTATA CCCA GTCATAC GT TCAG
GGGATGGGTATGATGTAACA AGAATGT GGGT TAGTATG TA GGTC
GTGGGAATGTAAGA AA GACAATG GG G --------
GAM3902 7033 GCTCCGAAACCTTACGTTCG GAAA- A- G ---- GTAAAGACCCTA
CTGTCCCTTGTAAAGACCCT GCTCC CCTT CGTTC CTGTC CCTT
AGAGGCAGTGATGGGGAACG CGGGG GGAA GCAAG GGTAG GGAG
CCAAGGAGAAAGGGGC AAAGA CC G TGAC ----------
GAM3903 22830 GTCTGATTAACAAGGTGTGA GATTAA AG T CA - AGT C CTATTTTAAGAA
CACATTCACAGTATGCGGGC GTCT CA G GTGA CA TTCAC ATG GGG
TATTTTAAGAACCCTCATTT CAGA GT C TACT GT GGGTG TAC CCC
GGTGGGCTGATTCATCTCTG AATGAG CT - TA C GTT T ----------
GAGTAAAGAC
GAM3904 5135 TCCATCGGGCAGCCAGAGGC G A---- AG - C TCCGAT
CAGCGTCTCCGATGACACTG TCCATC GGC GCCAG GC CAG GTC
AGCACCTGGTGAATGGCCGG AGGTAG CCG TGGTC CG GTC CAG
ATGGA G GTAAG CA A A ------
GAM3905 17720 GTTTAATGGCCAATACGATA GG- ATA ----- AATGCAAAGAAG
TCATCCAATGCAAAGAAGGG GTTTAAT CCA CGATA TCATCC
GTGGGCTGCTATCGAGTGGA CAAGTTA GGT GCTAT GGTGGG
TAATTGAAC ATA GA- CGTCG ----------
GAM3907 1448 AACAGCTACTCAGCTGCTTA CTA A --------- AAG- GCCACAAGTACAGA
AGCTGGGCCACAAGTACAGA AACAG CTC GCT GCTT CTGG
CCAGAGACAAGCAAGAGAAG TTGTC GAG CGA CGAA GACC
AAGCAGAGACTGTT A-- A AGAAGAGAA CAGA ----------
GAM3908 21546 CCTGTGAAGCAGACCTCTCC AAGCA --- - ----- GG GAGTTAA
AGGGGGAGGTGAGTTAAGCC CCTGTG GAC CTC TCCAG GG AGGT
TTTCCAGCCACTGGACGAGT GGGTAC CTG GAG AGGTC CC TCCG
AAGTCAATGCATGGG GTAA- AAT C ACCGA TT -------
GAM3909 13181 GTGGGCCCACTGTTCCAGCT - CA -- CTGCTTAA A - GA ATGTGTGG
GCTTAAACGAGGGTCTGACT GTGGG CC CTGT TCCAG ACG GGGT CT CTT
TATGTGTGGAGGCTGGCACC CACCC GG GACG AGGTC TGC CCCA GG GGA
CCGTCTGGAGGGCAGGAGGT T AG GG -------- - C TC --------
CCCAC
GAM3910 11801 TCCCGAGTTAGCGTGGGATA - ------ ATACAC CACG
CACGGGTGCACGCACCCCCC TCC CGAGTTA GCGTGGG GGGTG
ACGCCCAGCTTAATTTGCGG AGG GTTTAAT CGCACCC CCCAC
A C TCGACC ------ ----
GAM3911 5731 GGTGAGACAGGGAGTCCCGG TG A AG- C G T -- - TCTGTT
CTGCCCTGTGGCCCCATTCT GG AG CAGGG TC CGGCT CCC GTG GCC CCAT
GTTGTGGAGGCTTCGCTGGG CC TC GTCCC AG GTCGA GGG CGC CGG GGTG
AGCTGAGAACACCCTGCTGT TG - ACA A - T TT A ------
CC
GAM3912 857 GCCATTCCCACCCTCCTAGG TC A T T TT-- TCCAGGGC
TTCACATCCAGGGCTGTGTC GCCAT CC CCC CC AGG CACA
TTCCTTGGGGGAGGAGATGG TGGTA GG GGG GG TCC GTGT
T GA A - T TTCT --------
GAM3913 19657 GTGTGGCTTCGGCAGGGTCA T- AG---- G TT GG CTTG
GCCTTGCGGGTGCTTGTGGA GTG GGCTTCGGC GGTCA CC GCG TG

CGTGGGTGGCTATGGCAGCC CAT CCGAGGCCG TCGGT GG TGC GT
GGAGCCTCTAC CT ACGGTA G -- AG ----
GAM3914 17660 GCTGAAGGTACCTTAACATG G ACCTTAA GG T CTTA
GGGAATCTTCTTAAAGTTTT GCT AAGGT CATG GAA CTT
GACATGCACAGACCTTGAGC CGA TTCCA GTAC TTT GAA
G GACAC-- AG T ----
GAM3915 8833 TACGGGCTCTGAAATTGCCA - A- G CAA C-- TGACCTCT
GACAAAACCCTCATTGACCT TACGG GCTCTG AATT CCAGA AACC TCAT
CTATGAACAGGTTGTTCTGG GTGCC CGAGAT TTAA GGTCT TTGG AGTA
AATTGATAGAGCTCCGTG T AG - TG- ACA --------
GAM3916 13018 GTGTCTGGAAAAATTCACCG AAA AC A C AA CAAGC
TGAGCCTGAACCACAAGCTG GTGTCTGGAA TTC CGTG GC TG CCA
GACAGCCATGCGGAGCTTCT CGTAGATCTT GAG GTAC CG AC GGT
AGATGC C-- GC - - A- -----
GAM3917 9425 AGGGCTGCTAAGGAAGCAAA - A---- AA AAAAAA TA AA-- - AAAA
AAAGGCTAAGCAAGCATCTA AGG GCTGCT AGG GC GGC AGC GCA TCT
AAAAGACTGCAATGGCTGCT TCC CGACGG TCC CG TCG TCG CGT AGA
GCTAAGGCACCTACAAAGGC A AAACA A- GAATCG -- GTAA C ----
AGCACCT
GAM3918 2880 CCCTCTCCCGGCCAGGGAGA TCCC AGAC A CCAC GT- CTA ATGT
CGGAGCCCATCCACAGTGTC CCCTC GGCCAGGG GG GCCCAT AGT CAG TGGCC
AGCTATGGCCATGTGGCCGC GGGAG CCGGTCCC CC CGGGTA TCG GTC GCCGG
CTGCCAGCTAATGGGCCCCC TT-- ACAC C A--- ACC C-- ----
ACACCCTGGCCTTGAGGG
GAM3919 19179 TGGGTTGCTGTTCAGGTCAG CT AG TC AACAAC GGAAAGGAAGTAA
CTTTGCTCCTAACAACACTG TGGGTTG GTTC GTCAGCTTTGC CT ACTGG
GGGAAAGGAAGTAACCAGTT ACCCGAC TAGG TAGTTGGAACG GA TGACC
GAGTGCAAGGTTGATGGGAT C- G- T- GT---- ----------
CCAGCCCA
GAM3920 15863 TCCAGGGTTAGTTTTTGTAG - --- TT A- TC- CCCG
CCTCGGCTGGCCCGTCGGCC TCCA GGGTT AGTTT GT GCC GGCTGG
TCTGGCACGCTCGAACTTCC AGGT CCCGG TCAAG CG CGG CCGGCT
GGCCCTTGGA T CCT CT CA TCT ----
GAM3921 18481 GGAAGACGAGTGCTCCGGGA GA CCGGG TG A ACTCATG G TCTCTGTCT

CTGCATACACTCATGGTGCC GGAA CGAGTGCT AC C TAC GTGCC ATG
GATGTCTCTGTCTCGTGGCA CCTT GTTTACGG TG G ATG CACGG TGC
CGTAGTGGTAAGCGGCATTT G- CGAA- GT - ------- - ---------
GGTTCC
GAM3922 3323 CGGCGTGCCCTGGTGGCTGG G T GG GGA A GTGTG ATG - GGAC
AAGGAGGCGTGTGGCGTGAT CGGC TGCCC GGT CT AGG GGC GCGTG CGG CCGT
GCGGCCGTGGACGCGGACTG GCCG ACGGG CCG GA TCC CCG CGCGT GTC GGCG
AGTGCGCGGGAGCCCCTGTG - - AG GTG - AGGG- GA- A ----
AGGAGCCGGGCAGCCG
GAM3923 4345 TTATTCAAAATCAACATCTT AAAAT A - - --- T CTTC
GGGTCCGAATTTGAACTTCT TTATTC CAAC TCTTGG GT CCGA ATT GAA
TCCAATCTCTTGGCACTTCA GATAAG GTTG GGAACT CA GGTT TAA CTT
AGGGTTGTTAAGAATAG AATT- - T C CTC C ----
GAM3924 12123 AGTGAGGGGCAGGATGAAAT --------- - A AAA A- GTAGGTA
CATCTAGGGTAGGTATTTAG AGTGAGGG GCA GG TG TC TCTAGG

AGGGAGGGCGCCGTGCAAAA TCACTCCT CGT CC GC AG AGATTT
TAAAATCCTCACT AAAATAAAA G - GGG GG -------
GAM3926 10094 GCACAGTCTCAGATGGGCAG C AT--- G AG TTACTTTCT
TTAGTCATTACTTTCTTGGT GCACAGTCT AG GGGCA TT TCA
CAATGCCTTGTGACTAGACT CGTGTCAGA TC TCCGT AA GGT
GTGC - AGTGT - CT ---------
GAM3927 18802 AGTTTGTCCCACCCCTCCCC G C---- - C AG TG ATACCCCTGCG
AAAGTGCTGTAAGATACCCC AGTTT TC CAC CCCT CCCAA TGC TAAG
TGCGCTTGTGGCAATTGGGA TCGAA AG GTG GGGA GGGTT ACG GTTC
AGGGTGTGTCAGTGAGAAGC G TGACT T A A- GT ----------
T
GAM3928 12071 GAGGGGAAGGGGCTAGCAGG AGG AG-- AAACA T- AG TGGG
TGTGTAAACAGAGGGTTCCA GAGGGGA GGCT CAGGTGTGT GAGGGT CCATC GC
TCAGGCTGGGGCAGGGTGGC CTCCCCT CCGA GTTCACACG CTTCCG GGTGG CG
CGCCTTCCGCACACTTGAGG --- AGGA C---- CC GA ----
AAGCCTCCCCTC
GAM3929 22126 CTCAGTGCCTTTACTGTCGT T TT CG T AGA GAGA
CTCAAGAGAGGAGACTTGTG CTCAG GCCT ACTGT TC CA GAG
TGGAACAGTTCAGGTCTGAG GAGTC TGGA TGACA AG GT TTC
- CT -- - GTG ----
GAM3930 5628 CAGCTGTGGACTTACCGGCA ---- TACC A CTAC TCAG
AGGCTACGATGTCAGCATTC CAGCT GTGGACT GGCA GG GATG
CTGTCTATAGTCCACTGTCA GTCGA CACCTGA CTGT CC TTAC
GCTG CTGT TAT- - ---- ----
GAM3932 494 TTGCCTCTGCTTGTCATGCC TG TCT-- A CCATTAAG C AAATAA
ATTAAGCTCCCAAATAAGGA T CC GCTTGTC TG CT CC
AGAAACTCACAGATAAGTCC G GG TGAATAG AC GA GG
ATTGGTGG GT TTACC - ACTCAAA- A ------
GAM3933 17949 CAGGTGGCGGTGGCGCGGCG - G G G G-- G TG- GGCC
GCAGGGCCTGGCTCTGGCCA CAGGTG GC GT GC CGGC GCAGG CC GCTCT
GGGCGATGGGCTTGTAGGGC GTTCGC CG CG CG GCCG TGTTC GG CGGGA
CGGCGGCAGCACGCTTG A A G - GGA G TAG ----
GAM3934 400 CCTGTGGGCTTTCTACAGTA GT- T- A - C T C TATGTG
TCCCACTGTGTCTGGTATGT CCT GGGC TTCT CAGTA TCCCA TG GT TGG
GTCAATTTATGGGATTACTG GGA TCCG AAGA GTCAT AGGGT AT TA ACT
AGAATTGCCTCTAAGG ATC TT - T - T - ------
GAM3935 11547 GCGCGTGGGTTCCCTCGTGG TG ---- -- A- A TTTCT
AGCCCACAGGTTTCTCCTGG GCGCG G GTTCCCTCGT GG GCCC CAGG
GGCCACCAAGCGGGGGGACA CGCGC C CAGGGGGGCG CC CGGG GTCC
AAACTCCGCGC CT AAAA AA AC - -----
GAM3936 4607 GCTGCTCATCGCCAGTGGCG GC - ---- C CAATC G CAAC
CCAATCTCCTGGCGGTCAAC GCT TCATCGC CAG TGG GC TCCTG CGGT
ACCGACGGGAACATGCCCTA CGA AGTAGTG GTC ATC CG AGGGC GCCA
TGACCTGTGTGATGATGAGC GT T CAGT C TACA- A ----
GAM3937 8641 AATGCCCCACTTTTTGGAAC G - AACAAC- G ---- GGTTCTCG
AACGCGATCCTTGGTTCTCG AAT CCCCA CTTTTTGG GC A TCCTT
GAGGAAGAATGGCTTATACC TTA GGGGT GGAGAACC CG T AGGAG
CCAAGAGGATGGGGAATT A A CCATATT G AAGA --------
GAM3938 20471 GACAAGGGTGCCTCTAAAAG T CTCTAAA ------ GGCCTTGA
CTTGACAGGGCCTTGACTGC GACAAGGG GC AGCTTGA CAG

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        ACAATTCGAGCTGAATTTGC CTGTTCCC CG      TCGAGCT     GTC
        CCCTTGTC              - TTTAAG-      TAACAC  --------
GAM3939 1733  CATGTGATGATAATGGTCTT    TG T   A    T TCTC    T  AAGAT
        CTCGCCATCCCAAGATGGGT CATG  A GAT ATGG CT    GCCA CCC
        TGGCAGCCATGATCTTTGCA GTAC  T CTA TACC GA    CGGT GGG
        TG               GT T   G    - ----    T  -----
GAM3940 20291 GGTGACAACATGCTGGAGCC      AA--     G--       T  TAACAT
        AAGTGCTAACATGCCTTGGT GGTGAC    CATGCT   GAGCCAAG GC
        TCAAGGGCATGGAAAGTCAC CCACTG    GTACGG   CTTGGTTC CG
        C                 AAAG     GAA      - ------
GAM3941 10197 ACATGAGGGTGCACATGTCA         G-----    T  AAG     AGCTAAAATCAACA
        AGTACTTAGCTAAAATCAAC ACATGAGGGT     CACA GTC   TACTT
        AAAGTGAGGACTGTGAAGAT TGTACTTTCA     GTGT CAG   GTGAA
        AACTTTCATGT              ATAGAA   -  GA-    --------------
GAM3942 8231  TCCTCAGGCCCTTTAACCCT      ---     TAA   TGC   T  GA-  - AAAG
        TGCAGATCGGATGGAGAAAG TCCTCAG   GCCCTT   CCCT   AGA CG   TGG AG
        CTGCCAGCACGTTCTAGGGA AGGAGTT   CGGGGG   GGGA   TCT GC   ACC TC
        TGGGGGCAGATTGAGGA         AGA     TA-   ---  T  ACG   G  ----
GAM3943 7969  TCGCTGTAGGGCAGGCTGAA   G   T         AAGG   AG    G  TGTAACGT
        GGGGTAGAGGGGTCTGTAAC TC CTG AGGGCAGGCTG    GGT  AGGG TC
        GTGAGTCCTGCCAGAGCAGC AG GAC TCCTGTTCGAC    CCG  TCCT AG
        TTGTCCTCCAGGA        -  C         GAGA  --   G  --------
GAM3944 2315  GCGAAGAAGGGACCCCAGGT       A--  A  -     A-- - - -   CCATTA
        CAGAGACTGGAGCCATTACT GCGAAGA   GGG CCC CAGGTC   GA GA CT GGAG
        TCAAGATCATCGAGGACCTG CGCTTCT   CTC GGG GTCCAG   CT CT GA CTTC
        AGGGCTCAGATCTTCGC         AGA  -  A     GAG  A  A  A   ------
GAM3945 18804 GCGCCCTCCGGGCCCAGCCT           CCA  --  C  AGC       -   GCCGTCCCA
        CCCGAGCCTTCGGAGCGGGC GCGCCCTCCGGGC   GC  CTC CG   CTTCGGAGC GGGC
        GCCGTCCCAGCCCAGCTCCG CGTGGGGGGTCCG   CG  GAG GC   GGGGCCTCG CCCG

        GGGAAACGCGAGCCGCGATG           TAG  CC   C  AAA       A   ---------
        CCTGGGGGGTGC
GAM3948 11632 GGGAGCTCTTTGCTCAGGCA  GG   T  T      GC    GTAGAACAAT    T  T     T   - A    GACAGA
        CCAGTAGAACAATATCCTGG G  AGC CT TGCTCAG  ACCA         ATCC GG ATTGC GTGG AG CGGT

        TATTGCTGTGGAGACGGTGA C  TCG GA GCGGGTC  TGGT         TAGG CC TAATG TATC TC GCCG

        CAGATTCTAGCCGCTACTAT  TT   T  C      A-    AGGACC----   -  -     -    A  -   ------
        GTAATCCGGATCCAGGATGG TTCTA
        TACTGGGCGCAGTGCTTTC

                  -----
GAM3949 11480 GGCAAGACAGGGACTAGCAG   C       GA  AG   CCA      TAATGCCTTC
        CCAGAGCCAGTAATGCCTTC GG AAGACAGG  CT  CAG   GAGCCAG
        CTGGTTTGCTCTGAGGGGTC CC TTCTGTCC  GG  GTC   TTTGGTC
        CTGTCTTCC           -      TG  GA   TCG      ----------
GAM3950 14223 TGGGATGGCAAAGTTTGTTG     -------   ---       TT   -   ----    GCT
        GCTCAGACTGTTGCTAACAG TGGGA      TGGC   AAAGTTTG  GGCT CAGA   CTGTT
        GAACTCTGAAGCCCGGGCTT ACTCT      ACCG   TTTCGGGC  CCGA GTCT   GACAA
        TCAAGCCAGAAACAATCTCA     AACAAAG   AAC      --   A   CAAG    ---
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GAM3951 8719 CTCTGCGGCTTTCCTTGACC C TC- - C- A- C A A CTTGATCC
TCTGACCCGCCGACCACGCT CTCTG GGCTT CTT GAC TCTG CCCGC G CC CG
TGATCCCGGGCCGCGGGGCC GAGGC CCGAG GAG CTG GGAC GGGCG C GG GC
AGGAAGTCGGAGTTTGAGCC C TTT G AA CG - C - --------
CCGGAG
GAM3952 15497 ACTGCAGCACTTATATCCCT - A- ATAT- CCCC TTTCTTT
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ATTAGCACTCAGGGCTTCCA TGA CG TGTGGA GGGA ACGATTAT
GGTGTGAGCAAGT A AG CCTTC CTC- -------
GAM3953 18083 CCCATCTCTTGTGACTTCCT -- TGACTTCCTGG - AGATG
GGAGACTCACTTCCTAGATG CCCATC TCTTG AGACT CACTTCCT
AGGAAGTGAAGTTTATCAAG GGGTAG AGAAC TTTGA GTGAAGGA
AACGATGGG CA TA--------- A -----
GAM3954 11063 CTCTGTTGTTCACCTTTTGC T T - GC T TTT ---- TATCT
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TTATCTGGATTTTGAGCTTA GGGATA CA GT GGAGAG AGGA CGTGAT CGAG AGG
GTGCTAGGACTGAGAGGCTG C C C TC T T-- TTTT -----
CACCATAGGG
GAM3955 4756 GGGCTCCAGGTTACAGGTAG CT AC- AA TG C GTTGA
ATTTAAAATTGACTGGTTGA GGG CCAGGTT AGGTAGATTTA AT A TG
CAATTGGTTAAGTTTATCTA CTC GGTCTAG TCTATTTGAAT TG T AC
AAGATCTGGGACTC AG AAA -- GT A -----
GAM3958 1835 TGTCACCATCCTTCAAGCTG ACCATC- TG A T G CTT CCACCATGAAAACCA
AGACTCCTGGTGAGCCTTTG TGTC CTTCAAGC AG C CCTGGT AGC TG
CCACCATGAAAACCACATAG ACAG GGAGTTCG TC G GGACCA TCG AC
CTGACCAGGGCTGTGCTTGA GAGACAT TG - - G AT- ----------
GGTACAGAGGACA
GAM3959 21882 TTTTCAGGTGAAGAGTGAGG C T A G TT T CTCA
TTGTCATGGCCTCAGCTATG TTTT AGG GA GAGT AGG G CATGGC
CTTCCTGGCTCTCCCTCAAG AGAA TCC CT CTCG TCC C GTATCG
A C - - G TT - ----
GAM3960 6131 GCATTTGCTGAGTGGAAAGC GCT T AA A--- CCCTCCCAG TCATT
CAGCCCCCTCCCAGGCACCT GCATTT GAG GGA GCC GCC GCACCT
TCATTAGGTGCACGTGGCCC CGTAGA CTC CCT CGG CGG CGTGGA
CAGGCCTCCCTCCGAAGATG AGC - C- ACCC TGCA----- -----
C
GAM3961 377 CTCATCATGAAAACTGGGAG TC AAAA GGC TGGC
GCCGGGCATGGTGGCTCATG CTCA ATG CTGGGA CGGGCATGG
CCTGTAATCCCAGCATTTTG GAGT TAC GACCCT GTCCGTACT
AG TT ---- AAT ----
GAM3962 6529 TTATGGGGACATGAGAATTA TG G GA A GAAA TA AATGT
CTGCGAAAATAAATAGAATG TTA GG ACATGA ATT CTGC ATAAA G
TCCTTTTGTAAAAGCAGCAA AAT TC TGTACT TAA GACG TGTTT C
TATCATGTCTTGTAA GT - A- C AAAA TC -----
GAM3963 9195 GGGACTACGGGTGTGCACTC ACTAC T C-- C - TTTCAATTT
CTCGCCTGGCTAATTTCAAT GGG GGGTG GCA TCCT GCCTG GCTAA
TTTTGGTACAGGCAGGATCT CCC TCCAC CGT AGGA CGGAC TGGTT
TGCCACCTTGCCC GT--- - TCT - A ---------
GAM3965 13927 GCTGGAGTGCACTCGCGCGG G CAC G AAT T--- G TCTGGTGCCT
GGGGTAATTCGGGGTCTGGG GCTGGA TG TCGCGCGG GGGT TCGGGG CTG GT

TTCTGGTGCCTGCGCAGCTT CGACTT GT AGTGCGTC CCCG AGCCCC GAC CG
TCCCCGATGGCCCACTGCGT G TCC A GT- TTTC G ----------
GACCTTGGTTCAGC

GAM3966 4165 CCGGGGCGGCCTCGCGGGTG - CC - T CTCC-- C T CTGT
ACTCCGGGCTCCGTGGCTGT CCGG GGCGG TCG CGGG GA GGG TCCG GG
CCCGGACCCCACCTCTTCCC GGCC CCGCC AGC GTCC CT CCC AGGC CC
TGCCGACCGCCACCGG A -- C - TCTCCA C - ----

GAM3967 7834 GGAGAGCCTGGTGGTGGACA GA G ---- -- A A AGTAACACCAG
TAGGCCTGACAGTAGTAACA GGA GCCTG TGGT GG ACAT GGCCTG CAGT
CCAGGCTGACAGGTCGATGT CCT TGGGC ACCA TC TGTA CTGGAC GTCG
AGCTGAGGACCAACGGGTGT G- A GGAG GA G A ----------
CC

GAM3968 9218 TGGCGACGCCAGTGTGCCTG AC G TG- T G TC--- AAGCG
TGTGGAGTGGTCGTGAAGCG TGGCG GCCA TG CC GT TGGAGTGG GTG
CGCAGTGTTCACTCCAGGCT ACCGT CGGT AC GG CG ACCTCACT CGC
GGACCCAATGGCACTGCCA CA A CCA T G TGTGA -----

GAM3969 14837 AGAGGACCTCACCCTAAGAG - T--- CT- CC--- CCCC TACTGATCTC
CCGCCCCCTGTGCTACTGAT AGAGG ACC CACC AAGAG GC TGTGC
CTCGCATACTACGCTCACAC TCTCC TGG GTGG TTCTC CG ATACG
TCTTCTTGGTGCTCTGGTAC A TCTC TTC ACACT CATC ----------
CTCT

GAM3970 5879 GCCTAGTTCTTACCTATGTA A -- CTAT- AC- C AAAGTGAGA
GCACGGCCGGAAAGTGAGAC GCCT GTTCT TAC GTAGC GGC GG
CGCCTTAGCTGCTGATTGTA CGGA CGAGA ATG CGTCG CCG CC
CTAGAGCAGGC - TC TTAGT ATT - ---------

GAM3971 16093 CTCGGCCCTGAGCTCCAGGC C TG CA C- A G- AC CCCA
CGTGCGCATGTTTGCTGACT CTCGG CC AGCTC GGCCGTG GC TGTTT CTGACT CTCG
ACCTCGCCCACGAGAGTCGG GAGCC GG TCGAG CCGGTGC CG ACAGG GGCTGA GAGC

AGGGACAGCATCGTGGCCGA A -- -- TA - GA -- ----
GCTGGACCGAG

GAM3972 18424 GTTACCCTGGCTGGAGTGCA CT --------- -- GATC
GTGACGTGATCACGGCTCAC GTTACC GGCTGGAG TGCAGTGA CGT
TGCGGCCACAACCTTCCAGC TAGTGG TCGACCTT GCGTCACT GCA
TTAGGTGAT AT CCAACACCG CG ----

GAM3974 13783 GTGGATTGGATATGGTTGGA A- - T GT CA CT C- GGAAAA
GTGGCACAGACTGGATCTGG GTGG TTGGATA TGGT GGA GGCA GA GGAT TG
GAAAACATTGTCTTATTTGC CACT AACCTGT ACCG CCT TCGT TT TCTG AC
TTCCTGCCATTGTCCAACAT AC T T -- -- AT TT ------
CAC

GAM3975 5417 AGACTTGATGTTTTTGAAAG T- GTTTTT TC CA-- - TCACCTTC
TTGTCACCAGTTTATTGTCA AGAC TGAT GAAAGTTG AC GTTTA TTG
CCTTCCAACTGAACCACTGT TCTG ACTG CTTTCAGT TG CAAGT AAC
CTTGACTTTCTCCCCTGTCA TT TCCCCT TC TCAC C --------
TTGTCT

GAM3976 15150 CCCAGAGGAGTCGATTCCGA GAGGA GA - AA C ACAC - TCAA
AGCCCGTCACACTCGCTTCA CCCA GTC TTC CG GCC GTC TCG CT
AGGACGACGACGGCGACGAG GGGT CAG AGG GC CGG CAG AGC GG
GAGGACGAAAATGGG AAAAG G- A AG - C--- A ----

GAM3977 21013 GAAATGCAATGGTAAAGAAC TG- AA- AA C CA-- - CTTG

AAGGCAGCATGTAGTGCTTG GAAATGCAA GT AGAAC GG AG TGTA GTG
CACTTACAAATACTACCAGT TTTTACGTT CA TTTTG CC TC ACAT CAC
TTTGTAACAATTTGCATTTT TAA ATG A- A ATAA T ----
GAM3979 2449 CCCCAGCCAAAGATGACAGC - C- CA- AACAACATAATTTACA
AGAACAACATAATTTACACT CCC CAGC AAAGATGA GCAG
GTGATTTATCTTTTTGCTGA GGG GTCG TTTCTATT TGTC
GGG A TT TAG ----------
GAM3980 22586 AGTCCCGAGGCTACGTGAAG - A- TAC AACAGT TG CT CATTTC - ACCAAT
GAACAGTTTGCCTGGAGACA AGTC CCG GGC GTGAAGG T C GGAGA TACTGG TACCTT
TTTCTACTGGTACCTTACCA TTAG GGC CCG TACTTCC A G CCTCT ATGACC ATGGGA

ATGAGGGTATCCAGTATCTC A CC TC- ATT--- GT -- ------ T ------
CGTGATTACCTTCATCTGCC G
CCCGGAGATT

-

GAM3981 6205 CCATGGGCCTGGGCAGGCCA -- AG-- CAA A TG- GA AT ACTGA
ACCAGGAGATGCTGCGATGA CCATG GGCCTGGGC GC CCAGG GA CTGC TG GAC
TGACACTGAGTTGCCAAGCA GGTGC CCGGACCCG CG GGTCC CT GACG AC TTG
GACCTCCCTGGACGCAGTGG TG GTGA CA- - CCA A- CG -----
CCCAGGCCGTCGTGG
GAM3983 13411 CCTCTAGAGGGATATGAAGC ------ GG A- A TC T TTAAGCTGT
ACCGCCAGGGTCCTTTGAGT CCTC TAGA GATATGA GC CCGCCAGGG CT TGAGTT
TTTAAGCTGTGGCTCGTAGT GGAG ATTT TTGTATT CG GGCGGTCTT GA GCTCGG
GTTCTGGCGGGCAGTTATGT TTGTCA AG GA - GT T ---------
TGATTTAACTGTTGAGG
GAM3984 8321 GGGACCCCTCCCCAGGGCCT A C C CTT-- C G CTACTGAA
TTTCCTCCTCTGCGTCTTCC GGG CCC TC CCAGGGC TTCCTC TCTGC TCTTCCAT
ATCTACTGAAATGGGAGAGC CCC GGG AG GGTCTTG GAGGGG GGGCG AGAGGGTA
GGGTGGGGAGCTTCTGTTCT A A T TCTTC T - --------
GGTGAAGGGACCC
GAM3985 22515 AGATGTAGCTTTTGTAATAC G CTT ATACT T TCTTCTGCTCTCATTT
TATTTTGACCTCTTCTGCTC AGAT TAG TTGTA AT TTGACC
TCATTTGGTTAATATTTGCA TCTA ATC AACGT TA AATTGG
TGCAATGTCTAAATCT A TGT ACGTT T ----------
GAM3986 1707 GGTGGAGGATCACTTTTGCC GA T-- C AG AAGAC
CAGGAGTTGAAGACCAGCCT GGTGGAG TCACT TTGC CAGG TTG
GAGCAACACAGTGAGACTCC CTACCTC AGTGA AACG GTCC GAC
ATC AG CAC A -- -----
GAM3987 6729 CCCATTGCGGGCCTGGGCTA TGC G-- ACC ACTCACC
GGGGGACCAGGCACTCACCG CCCAT GGGCCTG GCTAGGGGG AGGC
CCTCCTCCCTGGTACACAGG GGGTG TTCGGAC TGGTCCCTC TCCG
CTTCTGTGGG TC- ACA C-- -------
GAM3989 8348 GGGTATGATGTCAGCTTGAA AT- TG- CTT---- TCA CCTCTTCTTCTGTTT
CAGTCATGGCCTCTTCTTCT GGGT GA TCAG GAACAG TGG
GTTTCCAATTCTGTTTCTTG CCCA CT AGTT TTTGTC ACC
ATTTTGAACTTCCTCACCC CTC TCA TTAGTTC TTA ----------
GAM3992 11782 CTGCATCTGCCTCCTGCGGG TG TCT CTGC G ----- - - AGACCACAGC
GCCTGGACAGGGAGGGGGCC C CA GCCTC GGGGCCTG ACAG GGAGG GGG CC
AGACCACAGCGGACCCTCCT G GT CGGAG CTCCGGGC TGTT CCTCC CCC GG

CCGGTCATTGTGCGGGCCTC GT --- T--- G ACTGG T A ----------
TGAGGCTGTGG
GAM3993 2496 CTGAACCTTGAGATCCTTTC CT CCTT AGAATA AA AGAAAAAG
ACTAGAATACACAGGGAAAA CTGAAC TGAGAT TCACT CACAGGG AAG
GAGAAAAAGCTTGCCCTTGT GATTTG ACTTTG AGTGG GTGTTCC TTC
GAAAGGTGAGTTTCATTGTT TT ---- AAA--- CG --------
TAG
GAM3994 9746 GAAGTTGATCTACTTCCAGC G- ACTT ---- G C GC T GATGA
TGCACCGGGCCCTCAAGATG GAAGTT ATCT CCA GCT CAC GG CC CAA
ATTGTGGATCCCGTGGAGCC CTTTAA TAGA GGT CGA GTG CC GG GTT
ACATGGCGAGATGAAATTTC AG GC-- ACAC G C TA T -----
GAM3995 18378 GGCTTAGTTTTCTGCCCAGT TA T T ------- T TG TAGAGACAGAT
GGAGGCTGAAGTAGAGACAG GGCT GT TTC GC CCAG GGAGGC AAG
ATCTTTGGCCTCTTCTGGAA CCGA CA AAG TG GGTC TCTCCG TTC
GTGCTGTTGAATACACAGCC CA T T TCGTGAA T GT ----------
GAM3996 16994 TGGGCTTAACTCAGGGAGAC G AA C - ACAT -- AATTAC
TTTGTACATTTCAGGCAATT TG GCTT CT AGG GAGACTTTGT TTCA GGC
ACGCTTTTGGACGCAAGGTT AC CGAA GA TCT TTTTGGAACG AGGT TCG
TTATCTCAGGCAAGCGCA G CG C A C--- TT ------
GAM3997 11342 GCCCTGCAGTTCTACGAGGC AGT GA CCA G - ATCAGA GACAG
GTTCCCAAGGGCCAGGCTAT GCCCTGC TCTAC GGCGTTC AGG CCAG GCT GC
CAGAGCGACAGGCACGGGCA TGGGGCG AGGTG CCGCGAG TCC GGTC CGG CG
CTGGGCCTGCTGAGCGCCGT --- -- TCG G A GCA--- -----
GGAGCGGGGT
GAM3998 19703 GCCACAGCCCTTAGGGGAGT A GC G TCCA CAGCT GAAAGTGAG
CCAGGGCCAGCTGGTCGAAA GCC CA CCTTAGGG AG GGGC GGTC
GTGAGGATCTTGCCCCCTGC CGG GT GGAGTCCC TC CCCG CTAG
CCTGAGGATGCGGC C A- G C--- TT--- ---------
GAM3999 11135 CTCAGGATGGCGCTGGGCTG T CGC TCC G C GCCA
TCCCCTCGCCTCTGTCCTTG CTCAGGA GG TGGGCTG CCTC CCTCTGTC TT
CCAGAAGATGGAGGAGAGGC GAGTCTT TC ACCCGGC GGAG GGAGGTAG AG
GGCCCAACTCTTCTGAG C A-- --- A A ----
GAM4000 12098 TGTCTACCCCATGTTTGGTC - TGTTTGGT AG T- TT T - AGATGTA
TTTCAAGAGTGCATTGCGTG TGTCTA CCCCA CTTTCA AG GCA GCGTG GGC ATG
TGGCATGAGATGTACATAGC ATAGGT GGGGT GGAAGT TC TGT TGTAC TCG TAC
TTCATGTTTGTTTCTAATGA A -------- AA TT T- T A -------
AGGTGGGGATGGATA
GAM4001 3536 GTACAGATAAGGAATTGAGC C T-- ATT AAG C CTC C-- AAA
GCAGAAAAGTTGTGACTTGC GTA AGA AAGGA GAGCGCAGAA TTGTGA TTG AAGTTTT
AGGGTTAG
TCAAGTTTTCAGGGTTAGAA CAT TCT TTTCT CTCGTGTTTT GACATT AAT TTCGGAA
TCTTAATC

AGTGGCAAAGACCTAATTCT A TAT ATT A-- - AT- AAA ---
AAAAAGGCTTTATAATTACA GTGGCAAAGAC
GATTTTGTGCTCTTATCTTT
TATTCTATAC

GAM4002 11113 CTTCCTCGAGGAGGACGGGG --- G CCTGTT
ATGGCCTCCCTGTTGGGGTG CTTCCTCGAGGAGG ACGGGGAT GCCTC

GTCCTTGTGGCCTTCCTTGA GGAGGAGTTCCTTC TGTTCCTG TGGGG
GGAGG CGG G ------
GAM4003 19485 GGAGAATCCCCAAAATTTTC A C A TTT A - C-- AAA
AGATAGTGGCCTAAAAAAAT GG GAAT CCCA AAT CAG TAGTG GC TAAAA
TTTATTTGCTCACTGGTTGT CC CTTA GGGT TTA GTT GTCAC CG ATTTT
CATTCTGGGTATTCCCC C T C CT- G T TTT ---
GAM4004 19503 GGGACCTCAATGCCTGGACC ----- AT GACCAAG A - G AGATTG
AAGAGTGCCGAGGCCTTTGG GGGACC TCA GCCTG AGTGCCG GGC CTTTG CA
CAAGATTGTGGCAGAGCGTC CCCTGG AGT CGGAC TCACGGT CTG GAGAC GT
CTGGCACTAACTCAACAGGC TACCC CC AACTCAA C C G ------
CCTGACCCATGGTCCC
GAM4005 8326 CCCCAATGTGCTCAAGTTCA - AA CATT GT- GTACAAGGATAAGA
TTGGTGTGCTGTACAAGGAT CCC CAATGTGCTC GTT GGT GCT
AAGAAGCTGAACCTCCTGAC GGG GTTACATGAG CAG CCA CGA
AGAGTACATTGAGGG A A- TCCT AGT ----------
GAM4006 16633 CGGACACTTCGGCCCCCTGA - TC CCCCT TCAC CG CAAATA
GACCAGTTCACGGACGGTGG CGGACA CT GGC GAGACCAGT GGA GTGG
CAAATATCACATCTGCTGGT GTCTGT GA CTG CTCTGGTCG TCT CACT
CTCTGAGTCCTAGCTGTCTG C TC AGT-- ---- A- ------
GAM4007 54 CGGCTCCCAATGTTGACGTT CTCCC CG---- AG CT CAAA
GGCCAGGGCCTTTGCAAACA CGG AATGTTGA TTGGCC GGC TTG
AGCCAGGCCAAAAAGGCTCA GCC TTACAACT AACCGG CCG AAC
ACATTTACACCG ACAT- CGGAAA A- -- ----
GAM4010 19383 GAGTCTAAAGGTTGGAGTGT AAAGGT G G GGT- GATC
GGGGGTGGTGGGGGATCCCC GAGTCT TG AGT TGGG GGTGGGG
CACCTGGGTCTGGACTGCAT CTCAGA AC TCA GTCT CCACCCC
GAGGAAGACTC AGGAGT G G GGGT ----
GAM4012 17406 AATCACACTCCCTACAAGTT ACAC CAA C - CCAG CAC
CAGTGTGCCCCCAGTGGCAC AATC TCCCTA GTT AG TGTGCCC TGG
CCGTGGGCACATCTTGACAA TTGG AGGGGT CAG TC ACACGGG GCC
TGGGGAAGGGTT GA-- AA- T T T--- ---
GAM4013 19120 TATGATTTGATTTTATATAC A ----- -- T TAAA
ACATATGTATACATATTATA TATG TTTGATTT TATATACACATA TGTATACATAT ATATA
TATAAATATATATGTGTATA ATAC AAACTAAG ATATGTGTGTAT ACATATGTGTA TATAT
CATATATGTGTGTATATCTA - TATCT AT - ----
TGAATCAAACATA
GAM4014 9111 GTCAGTGCCAATTTTGCCGG ----- C TCACACT TCCCCAA-- AG A TAATCAT
TCACACTGGGGTCCCCAAAG GTCAGTGCCA ATTTTGC GG GGGG AGA TCA GG
AAGTCAAGGTAATCATCCTG CGGTTACGGT TAGGACG CC CCCC TCT AGT CC
AATCTGAAAGAACTCCCCCA TCTTC A TCTAC-- TCAAGAAAG A- - -------
TCTCCAGCAGGATCTTCTTG
GCATTGGC
GAM4015 12252 CGTGTCTGTGCAGGGTATGA G- GGTA A C-- CCGCCTAC
TCATCTACCGAGCCGCCTAC CGT TCTGTGCAG TG TCAT TACCGAG
TTCGGTATCTATGACACTGC GTA GGACACGTC AC AGTA ATGGCTT
ACAGGGAATG AG ---- - TCT --------
GAM4016 2893 GGCCAGCGCGAGGGCATCGT CGAGG AT A T- A - TGTCCC
GGCGACCGATGCAGGAGAAG GGCCAGCG GC CGTGGCG CCGA GC GGA GAAGG
GTGTCCCCCTTCTTCCAGTC CTGGTCGT CG GCACCGT GGCT TG CCT CTTCC
CTCGGCTGCCACGCGCAGTA ATGA- C- C CC A T ------

TGCTGGTC
GAM4017 18512 AGCTGGCTACCGACTCCACC GCTACCGACTC C C CCAGCCC - CCT
TGACCCT
TTCTCCCTGGACCAGCCCGG AGCTG CA CTTCTCC TGGA GGTGG CAC GGATC
TGGCACCCTGGATCTGACCC TCGAC GT GAAGAGG ACCT CCGCC GTG CCTAG
TGATCCGTGCCCGCCTCCAG ATCCCTCCACT T - ------- C --- -------
GAGAAGTTGTCACCTCCCTA
CAGCT
GAM4018 4112 GGCAGGGCCCCTTTGAGGTA A C ------ A AC T A CCT TCA
CCAGTTGACACCTGTCGTCA GGC GGGCC CTT TG GGT CAG TG CA GTCG
CGACTGCACCTGAAGCCCAG CCG CCCGG GAG AC CCG GTC AC GT CAGC
CCAATGAGCGGCCCGCC - C TAACCG - AA C - --- ---
GAM4021 3078 GCCAGTCTGCCCAGCTGCAG - CCAG G G CTCAC - TG GG TCTTGGTCTGTT
TACTCACGCCCCATGGGGGA GCCA GTCTGC CT CA TA GC CCCA GG A
TCTTGGTCTGTTTTTCTTGT CGGT CAGACG GA GT AT CG GGGT TC T
GGGAGCCTAGTGGAGAGCAG G A--- G G C---- A GT TT ----------
ACGTGGC
GAM4022 13736 ACAATATAATATATTCTAAA A - A- CA AAAT GA- AAT
CACAATGAAATAGGGAATAT ACAATATA TATATT CT AA CAATG AGG ATAT
AATGTATGAACTTTTTGCAT TGTTATAT ATATAA GA TT GTTAC TTC TATG
TGGCTTGAAGCAATATAATA A C AG CG GTTT AAG ---
TATTGT
GAM4024 4974 ATGTTCAAGAAATCCTCTAG AT CT C TCTA --- G GGGAAA
CAGGTCTAGCATCTGGTCAT ATGTTCAAGAA CCT AG AGG GCATC TG TCATCT
CTGGGAAAAGATGAGTACAC TACGAGTTCTT GGA TC TCC CGTAG AT AGTAGA
GATGCCCACCCTCCTTAAGG -- AT C CACC CAC G ------
TTCTTGAGCAT
GAM4025 16800 GGGGAAGGGGCTAGCAGGTG A GCTAG AAACA T- AG TGGG
TGTAAACAGAGGGTTCCATC GGGGA GGG CAGGTGTGT GAGGGT CCATC GC
AGGCTGGGGCAGGTGGCCGC CCCCT CCC GTTCACACG CTTCCG GGTGG CG
CTTCCGCACACTTGAGGAAC - AAGGA C---- CC A- ----
CCTCCCC
GAM4026 50 CACTGGTGCTTTCATCATCA CTT CAT ----- T ATT ATAACTATTC
GAGGTCAAATTATTATGATA CACTGGTG TCAT CAGA GG CAAATT ATG
ACTATTCCATTAAGTTTGCC GTGACCAT GGTG GTTT CC GTTTGA TAC
AAACATTTGTCGTGGTTACC T-- CT- ACAAA - AT- ----------
AGTG
GAM4028 661 AGGAATCTAGTGGCCAAGAG A T- CC T G AACAACCCA
TTGTAGTTTAGAAACAACCC AGG ATC AGTGG AAGAGT GTA TTTAGA
ATCTGAATACTGCTTTTACC TCC TAG TCACC TTTTCG CAT AAGTCT
ACTTTGATACCT A TT A- T - ---------
GAM4029 14117 GTGCGGCTCAGTGAGACTCT T T A CT-- C TCCGCT
TGGTGGGGCGGGTCCGCTTC GTGCGGC CAG GAG CT TGGTGGGG GGG
CTCTTCACCATCACAGGCTT CGCGTCG GTC TTC GA ACCACTTC CCT
CTGGCTGCGC - - G CACT T ------
GAM4030 22463 GAGGTTATCTTGTGGTTTAT ATCTT TT TTA AACTTTAACATTTCTGC
TTTATATTCTACTTAACTTT GAGGTT GTGG TATT TATTCTACTT
AACATTTCTGCAGGTAGAAT TTTCGA TATC ATAA ATAAGATGGA
AAATATCCTATTTAAAGCTT AATT- CT --- ----------
T

GAM4031 17455 TGGCCAGGTGGTGGCTCCTG - - T CT CCT A- ATGTG
CAGCCTGGAGCTGATGTGCA TGGC CAGG TGG GGCTC GCAG GG GCTG
GTGGCCTCTGTGAGCCCCAG ACCG GTCC ACC CCGAG TGTC CC TGAC
CCTGAGCCA A G - -- T-- GG -----
GAM4032 188 CATGGAATATGAGAAAATAG AA - AGAAAC- AGAAG
CAGAAACAGATTTTGAGAAG CATGG TATG AGAAAATAGC AGATTTTG
CGAGATTTTCGGAAGGTTGT GTGCC GTAC TCTTTTGTTG TTTAGAGC
TTTCTGCATGGACCGTG AG G GAAGGCT -----
GAM4033 11129 ACAGGCTGCTATAAATGCGC CTATAA GCT A CCTC- T CCTTGTCA
TTGATGGCCTCGGCTTCTTC ACAGGCTG ATGC TG TGG GGC TCTT
CTTGTCAAGGATGCCTTTCT TGTTCGAC TACG AC ACC CCG AGGA
CCACATAAGCATCAGCTTGT ------ AAT - TCTTT T --------
GAM4034 6315 CTCCCCCCATGGCCAGGCCT - T T- T TGTTCT TGATGTTCCCT
TGCTCCTGTTCTGCCTGATG CTCC CCCCA GGCCAGGCCT GC CC GCC
TTCCCTGGTTGTGGGCCTGG GGGG GGGGT TCGGTTCGGG CG GG TGG
GCTTGGCTCTGGGGAGGGG A C TC - TGT--- ----------
GAM4035 9896 ATGGGAAGAATTACTGTGGC G AATTA -- - A ATA TGGAAATGATAAAATT
CTACCAGGTGAATATTGGCT AT GGAAG CTGTGG CCTA CC GGTGA TTGGCT
TGGAAATGATAAAATTAGCC TA TTTTC GACACC GGGT GG CCATT GACCGA
AGCTTACCAGGATGGGACCC G AA--- CA A A C-- ----------
ACAGAACTTTTGAT
GAM4036 17047 TAAAGCTGATGATCCAACAA GA ACAA------- AGG CAGACAA
TGGGGGAGGGCCCAGACAAG TAAAGCT TGATCCA TGGGGG GCC
GCACGCTCCCAGCTCCTGAT GTTTCGG GCTAGGT ACCCTC CGG
CCTGGATCGAGGCTTTG A- CCTAGTCCTCG GCA -------
GAM4037 3422 GCTGTTGGCAAGAAACGGCT - A AACG CT AAA CTCTTTACCT
TTACTTACAAAACAGACTCT GC TGTTGGC AGA GCTTTA TACA CAGA
TTACCTTCTGCTGTGTTTGA CG ACGACTG TTT TGAAGT GTGT GTCT
AGTATGTTTAGTCAGCATGC T A GTA- TT C-- ----------
GAM4038 18924 GCTGCACTGGTGCATGAAGG AC G GGTGAAGTAA- C CTA
TGAAGTAAGGAGGCAGCTAC GCTGC TG TGCATGAA GGAGG AG
TCCCTCCACAAATAAGAATT TGACG AC ACGTGCTT CCTCC TC
CGTGCAGCAGCAGT -- G AAGAATAAACA C ---
GAM4039 3113 GGGCTGTGGTGTCTGTCCGC - TC TC TT GAAGACA AATAT
TTTCAGGAAGACATTATTTC GGGCTGTGGT G TG CGCT CAG TTATTTC
AATATGGAATAAGACTGCCA CCCGACACCA C AC GTGA GTC AATAAGG
GTGACCAAGCAACCACAGCC A GA CA CC AG----- -----
C
GAM4040 14998 CACCGATGAACTCTTAAGTC ATG CTTA A GT-- TTATTTACTT GCTG
ATATCACAGTTTACTTATTT CACCG AACT AGTCAT TCACA TTAC ATGGT
ACTTATGGTGCTGACTATGT GTGGT TTGA TCGGTA AGTGT GGTG TATCA
GGCCGATGTGAAATGGCTAG GA- TCGA A AGCC ---------- ----
CTAGTTAGTGGTG
GAM4041 5253 CGGGGGCTCTGCCAGTGGCC --- CA - -- GA G GATGCG
TGGCTTGAACGGACGATGCG CGGGGG CTCTGC GTGG CCT GGCTT AC GAC
GTCAGTAGGGCTGGAGGTCT GCCCTC GAGACG CATC GGA TCGGG TG CTG
ACACGCAGAGTTTCTCCCG TTT CA T GG A- A ------
GAM4042 15083 CATCACCCAAAGCAGTGGCC - AA G-- AT GC- CCT TG TGTCACAGAT
AACATCGCGGACCCCTGTGC CATC ACCCA GCAGTG CCAAC C GGACC G CCT
CTTGTCACAGATGGGTGCTG GTAG TGGGT CGTCAC GGTTG G CCTGG C GGG

GTCCTCAGGCGTTGGGGACA C -- AGG CG ACT T-- GT ----------
CTGCTGGGTCGATG
GAM4043 11130 TGTGTCCTTGACTAAAACCA CC -- AAAC T CTATGGAAA
TACGTGGCTATGGAAACCAT TGTGT TT GACTA CA ACGTGG
GTTTGTAGTTCTGAATACAC ACACA AG TTGAT GT TGTACC
A TA TC ---- T ---------
GAM4044 8350 TGCTCCAGGCTGGGCATTCA TCC - GA CCGGGTAGAC
GATGTGGTCCGGGTAGACAC TGC AGGCTGGGCA TTCA TGTGGT
TATGGATGAGCTGCCCAGCC ACG TCCGACCCGT GAGT GTATCA
TTGCA T-- C AG ----------
GAM4045 15685 AGCTTAGATACCATGTAGTG C CCATGT-- TG T CT G - CTGGTT
GTCTGTGGCTACAGGAAGCT AG TTAGATA AG G CTGTGG ACA GA AG
GGTTCTGTCGTGTTCCACAG TC AGTCTGT TC C GACACC TGT CT TC
TCTGCTTAAAAAACTGTCTG - CAAAAAAT GT T T- G G ------
ACT
GAM4047 18913 ATCCGCCTCACAGACAGTTG ACAGA G T A C- GAAATC GAAG
CGTCCAGAGGCTTTTGGAAA ATCCGCCTC CA TTGCG CC GAGG TTTTG ACC
TCACCGAAGGGTCAGAATTC TAGGTGGAG GT AACGT GG CTCC AAGAC TGG
CTCAGGCTGCAAGTGGAGGG GGAG- G C A TT ------ ----
AGGTGGAT
GAM4049 4682 TACACCCAGCTCTCTTTTTC CC- CT ---- TT T TAAA TGTA
TAATGTAAATGTTGTGTACA TACA CAG CT CTT TC AATG TGTTG
ATAGTTTTATTTGATTAAGC ATGT GTC GA GAA AG TTAT ATAAC
TTCAGGACTGTTTTGTA TTT AG CTTC TT T TTTG ----
GAM4050 8733 GCTCTGGATTACCTTGCACC GAT TT ACC G TATAAAG
TTATGCCAAGTATAAAGTTT GCTCTG TACC GC TTAT CCAAG
GGATAAAGCCTGGTGCAGAG CGAGAC GTGG CG AATA GGTTT
C --- TC A-- - -------
GAM4051 10881 GTAGCTGCTAGAGGCCTTTG TA CT CTTT T - T - AGGTCC
CTAGCTGCTACAGGTAGGTC G GCTG AGAGGC GC AGC TGC ACAG GT
CACACTGTCGCAGGCTGCTC C CGAT TCTCTG CG TCG ACG TGTC CA
TGTCTCTTAGCCCC CC -- TCT- - G C A ------
GAM4053 4408 GGGGCCAGCAGCCTGATTTA - C ------- C AATGAAGCC
GCAGCTAATGAAGCCAGCTT GGGGC CAGCAGC TGA TTTAG AGCT
CTGAGGGAAAATTCAGTTGT CTCCG GTTGTTG ACT GAGTC TCGA
TGTGCCTC T - TAAAAGG T ---------
GAM4054 15681 ACACATATTTCATGTCACCT TT C- G- - AACG------ TGTT
AAGATTGCCAAACGTACGTG ACACATA TCATGTCA CTAA ATT GCCA TACG
TTCGTGAAAAGGCTAATGGC TGTGTGT GGTGCAGT GGTT TAG CGGT GTGC
TGATGATTGGATTGACGTGG C- TA AG T AATCGGAAAA ----
CTGTGTGT
GAM4055 15694 CCTGTTCAGTGCTCTGCTCA TCA C--- T TCAA T G AAGGAGG
TCAAGTGTCTGGAGAAGGAG CCTGT GTG TCTGC CA GTG CTG AG
GTTGCAGCATTGTGCAGATA GGACG CAC AGACG GT TAC GAC TT
CACACCCCGCAGG CCC ACAT T ---- - G -------
GAM4056 2088 TAGCTTTGACCAACACTCTG T ACC----- ------ -- --- TCT-- C
TGTAAACCAAGGTCTGTAAC TAGC TTG AACAC TCTGT GTAA ACCAAGG GTAACAT
ACAT
ATCACATTTCTCCATCAATG GTCG AAC TTGTG AGACA CGTT TGGTTCT CGTTGTA TGTA
TTATGTTGCCTGTTTCTTGG T ATCCTCCT TTCTCT AA AGC TTGTC T

TCGATTGCAAACAGATCTCT TCTCCATC
TGTGTTTCCTCCTACAATGC T
TG A

GAM4058 13471 GGTGGGAGGGAAAGTGTTCG G A GTT--- A AAACC
GCAGGGCAGAAACCCTGCCT GGTGGGAG GA AGT CGGC GGGCAG
GGCTGTATCCAACTGTCACT TCACCCTC CT TCA GTCG TCCGTC
CCCACT A G ACCTAT G -----

GAM4059 1264 CTGCTGGTGGGAGAACCTAG - T GA AGAG GACA TGTCTC
AGTTGGGAAGACATCACTGA CTGCT GG GG GAACCT TTGGGAA TCACTGATTA
TTATGTCTCTGGTCAGTGAA GACGG CC CC CTTGGA GACCTTT AGTGACTGGT
GAATTTCCAGAAGAGGTTCC G - TC GAA- AAGA ------
TCCCCGGGCAG

GAM4060 19892 GAGGAAGCGGACCGAGCCCG AGC C C CT G ATGAGC
TCGCCTTGGAGCATGAGCGC GAGGA GGAC GAGCCCGT GC TG AGC
TGCGCCGCCGCGGGCTCGTC CTCCT CCTG CTCGGGCG CG GC TCG
CTCCTC --- - C CC G ------

GAM4062 11051 GTGGCCCACGTGGGCGGGAC C GG GA C G GGG
GGCCGCAGGCATGGGGTGGC GTGGCCCA GTG CGG CGGC GCAG CAT
TGTGCTGGTCCGACACCTGG CATCGGGT CAC GCC GTCG TGTC GTG
GCTAC C A- TG - G ---

GAM4063 2408 GAAGAAAGGACCCCAGGTCA AAG - - A-- - - - CCATTA
GAGACTGGAGCCATTACTTC GAAGA GA CCC CAGGTC GA GA CT GGAG
AAGATCATCGAGGACCTGAG CTTCT CT GGG GTCCAG CT CT GA CTTC
GGCTCAGATCTTC AGA C A GAG A A A ------

GAM4065 7286 ATTGTGCGAAACGCTTCGCC - AAC --- AG- AT CCTA
AGACATGCAGGGCCTACCTT ATTG TGCGA GCTTC GCC AC GCAGGG
GTTAGTACGGGTCTAGAAGC TAAC ACGTT CGAAG TGG TG TGTTCC
CAGTTGCATCAAT T GAC ATC GCA AT ----

GAM4066 14168 GTAGAGAGGGTGTTTCACCA ------- TT CA TT C TTGGTCTCGAATT
TGTTGGCCAGGTTGGTCTCG GTAGAGAGG GTG TCAC TG GG CAGG
AATTCCTGACCTCAAGTGAT CATCTCTCC CGC AGTG AC CC GTCC
CCGCTCGCTCGCCTCTCTAC GCTCGCT CT A- T- A ----------

GAM4067 6702 CTGGAGGAGGGACGGGTCTG GA CTG ---- AATG
CAGGTTCCAATGGGTGACAG CTG GGAGGGACGGGT CAGGTT CC
CCTGACATCTGTCCCTTCAA GGC CTTCCCTGTCTA GTCCGA GG
CGG AA CA- CAGT ----

GAM4068 5786 CTGGGGGGCTTCGGCAGAAC A- CGGAGAC- CA- CATTT
CCGGAGACCACCATGGCCTC CTGGGGGGCTTCGGC GAACC CAC TGGCCT
ATTTGGGCCACAAGTGAAAA GGCCTTCCGAGGTCG CTTGG GTG ACCGGG
ACATGGTTCAGGCTGGAGCC GA TACAAAAA AAC -----
TTCCGG

GAM4069 20619 GATGAAGTCTTGCTCTGTCG A CG C -- A - G ATCT
CCCAGGCTGGAGTGCAATGG GATG AGTCTTGCTCTGT CC AGGCTGGAGT GCA TG GC CG

CGCGATCTCGGCTCACTGCA CTAC TCAGAGCGAGACA GG TTCGGCCTCG CGT AC CG GC

AGCTCCGGCTTGGTAACAGA C AT - AA C T - ----
GCGAGACTCCATC

GAM4070 7021 ACTTGTACAACATTGCCATC GTA GCCA --- AAT AG -- TGA

TGCTGTTGAGAATGGTAGGT ACTT CAACATT TCTGCT GTTGAG GGT GTACT GTTC
ACTGTTCTGAGAACCTGGTG TGAA GTTGTAA AGACGG CGATTC CTA CGTGG CAAG
CAGATCCTTAGCATAGGCAG AGA ---- ATA --- GA TC ---
AAATGTTGAGAAAGT
GAM4071 10314 GTGGAACGGCTCACCAACAT ACG- AC A- T A G CCAGAACACT
CCTTGATGGAGGTGCCCAGA GTGGA GCTC CAAC TCCT G TGGAG TGC
ACACTGCACTCCGCAGGAAA CACCT CGAG GTTG AGGA C GCCTC ACG
GTTGAGAGCATCATCCAC ACTA A- AA - - - ----------
GAM4073 8601 TAACAGCAGAAGATAGAAGA GA --------- G GTACAA
GTTGGTACAACAAATCTTCA TAACAGCA AGATA GAAGA TTG
CTTAGATGTGTCTGATGCTG ATTGTCGT TCTGT CTTCT AAC
TTA AG GTAGATTCA A ------
GAM4076 9377 GGCATCATTGAGGCCAGGAG TCAT CCA CTCTGCC-- ACCTGTATCC
CTCTGCCCGTGACCTGTATC GGCA TGAGG GGAG CGTG
CCACGTACTCTATCTTCCAT CCGT GCTCC CCTT GCAC
TCCTCGCCCTGCC CCC- TTA CTATCTCAT ----------
GAM4077 7317 TAGTATTTCCTGAAATAACA CCT CAA TG- C-- GCTA
AGTTTAGTGCTTTAACTATG TAGTATTT GAAATAA GTTTAG CTTTAA TATG
GCTACATGTGCTTAAGGAAT GTCGTAGA TTTTATT CGAGTT GGAATT GTAC
TTGAGCCACTTATTTTTGAA AGT CAC TAA CGT ----
GATGCTG
GAM4078 11472 TCTTGTGTTTGAGACTTCGT AGA GT--- C AAAGGAAGAAGAAG
GGTGGTGCTAAGAAAAGGAA TCTTGTGTTTG CTTC GGTGGTG TAAGA
GAAGAAGTCTTACACCACTC AGAACACGAAT GAAG TCACCAC ATTCT
CCAAGAAGAATAAGCACAAG AA- AACCC - ----------
A
GAM4081 3324 TCTCGTGTGCCTTTCCCATA - CT A ATC- G- GTTTCGA
GTATCGTAAGGACGTTTCGA TCTCG TGTGC TTCCC TAGT GTAAG AC
GTAATTTACAACAACTAAGG AGGGC ATATG GAGGG ATCA CATTT TG
GAGTGTATATCGGGA T T- A ACAA AA -------
GAM4083 9717 CAGAAGTCATTTGTGGAAAC GAAG GAAA GG G AGAA T C AGTTACA
GGGCATTGTGAGAAGGCGTT CA TCATTTGTG CG CATT TG GGCG TA CATT
ACCATTAGTTACAAATGTTA GT AGTGGACAC GC GTGA GC TCGT AT GTAA
CTGCTAGAACGGAGTGAACG AAA- G--- AA G AAGA C T -------
GCACAGGTGAAAATG
GAM4086 12223 AGCTGTACAGGCCCGGGATG TAC ------- T A TCA CGAAGAT
TATGGGATCACCGCCCGAAG AGCTG AGGCCCGG GA GT TGGGA CCGCC
ATGGCGGCTCTCAAACTCCT TCGGC TTCGGGCC CT CA ACTCT GGCGG
CTCCTCCGGGCTTCGGCT --- TCCTCTC - A C-- -------
GAM4087 6957 TGTCACAGTGGGATTTGGTG A GG TTG------- AAA- GCAG
GAAAACTATTTGGCAGCAGA TGTC CAGT GAT GTGGA CTATTTG
TGGAAAATCTACAACATGGA ACAG GTCA CTG CATCT GGTAGAC
GTGTCAGACTGGGACA G GA TGAGGTACAA AAAA ----
GAM4088 16434 AGAAGGTGCTGACTTCCTTG GACTT AG G TTAAAGCACC
GGGAGATGCCATTAAAGCAC AGAAGGTGCT CCTTGGGG AT CCA
CTGGGATGATCTCAAGGGGC TTTTCCACGG GGAACTCT TA GGT
ACCTTTT ----- AG G ----------
GAM4089 6459 TTGTCACATATGCCACTGTG A A AC GA AGG G GCTA
GAGGAGGTGGATGCAGCTAT TTGTC CAT TGCC TGTG GG TG ATGCA
GCATGCAAGGCCACACAAGG GACAG GTA GTGG ACAC CC AC TACGT

TGGATGGACAG - G A- A- GGA G ----
GAM4091 19254 GGCGGAGTTTCTCCATGTAG GTTTCT A T - GGTCTCGA
GTCAGGTTGGTCTCGAAATC GGCGGA CC TG AGGTCAGG TT
CTGACCTCAGGTTATCTGCC CCGTCT GG AC TCCAGTCC AA
ATT--- - - T --------
GAM4092 20801 TGTGAAAGTAGATTTTTATT AAAG GAT-- AC --- TTTCTATC
ACAGAGCAAATTTTTCTATC TGTG TA TTTTATT AGAGCA AATT
AATTCAATGCTTTAAATAAA ATAC AT AAAATAA TTTCGT TTAA
ACAACATAATACCATA CATA ACAAC A- AAC --------
GAM4093 18843 GGTGACAACATGCTGGAGCC AA--- G G- T TAACAT
AAGTGCTAACATGCCTTGGT GGTGAC CAT CT GAGCCAAG GC
TCAAGGGATGGAAAAGTCAC CCACTG GTA GG CTTGGTTC CG
C AAAAG G AA - ------
GAM4094 10852 GCCCACTGCCATGGAGTCCT CACTGC AG CTGTGGA - CG ATAGC
GCTGTGGATGGGCACGGGCA GCC CATGG TCCTG TGGG CA GGCA
ATAGCTGCCATGACCCACAG CGG GTACC AGGAC ACCC GT CCGT
GAACCCATGAAACGGC CAAA-- CA ------- A A- -----
GAM4095 14560 CCTTGGGAACCCCAGGTCAA AA CAAAAAGGG ATGACAAC
AAAGGGCCCGAATGACAACT CCTTGGG CCCCAGGT CCCGA
TGGGAAAAACTTGGGGGCCC GGGACCC GGGGTTCA GGGTT
AGGG G- AAAA----- --------
GAM4096 15630 TGATCTGTCTTTATAAAGGA G TTA GATGGA G T AA TGAG
GATGGAAGTGAATTCAAGAT TGATCT TCT TAAAGGA AGT AA TC GATAT
ATTGAGATGTTAGATTTGAC ACTAGA AGA GTTTCCT TCA TT AG TTGTA
TGGGTTGTCCTTTGGCTAGA - TCG GTTGGG G T A- ----
AGATCA
GAM4097 11008 GCCGCTGGGAGCCTTGAGAG - AGCC C - CA A ATC
CCATGTGCAAGAGGACAGAT GCC GCTGGG TTGAGAGC ATG TG AG GGACAG
CCTGTTCCTGTCACCATTGC CGG CGACTC AGCTCTCG TAC AC TC CTTGTC
TCTCGATTCACTCAGCTGGC T ACTT T C TG - ---
GAM4099 20932 GTGGGGCCCGTGGGCAGCTG G - GG G C GGA C GATTTCCAGCG
GGCAACTGGATGTCCCCAGC GTG GGCCC GT GCAGCT GG AACT TGTCC CAGCT
TGATTTCCAGCGAGCTGTGG CAC CCGGG CG CGTCGG CC TTGG GTAGG GTCGA
ATGAGAGGTTTCCAGGCTGC G A TA A T AGA T ----------
ATGCAGGGCCGCAC
GAM4101 16338 TCCCCCGACCTATGGGCATA - ACCTA GCA TTTAA TT AAAG
CCTTTAAGAATTAGAAAAGT TCCCC CG TGG TACC GAA AGA
CTTTTCCGTGGTAGATCAAA AGGGG GC ACT ATGG CTT TCT
CGCGAGGGGA A GCAA- AG- TGC-- T- ----
GAM4103 20604 GGGCTGTAGTGCACTTTGAG G TA- ACTT G G-- G GGACCG
CGAGGGCGGCCTGGGGACCG G GCTG GTGC TGA CGA GGC GCCTGG
CCGGGTGGCTGTGTCGTCAT C CGGT TACG ACT GCT TCG TGGGCC
TAGCATCATTGGCGC G TAC ATT- - GTG G ------
GAM4104 5908 TGTTATGGCTGAGGGAAGCA ATG- -- CAGT T G-- ACCACA
GTGATGGGGGTAGGCACCAC TGTT GCTGAG GGAAG GA GGGG TAGGC
AGTCTGTAACCCCTCCCCTT ACAA TGATTC TCTTC CT CCCC GTCTG
CTATCTTAGTACCCAACA CCCA TA CC-- - AAT ------
GAM4105 5642 TTCGGTGCTTTTACCTACCT T--- - TAC-- AC-- - AGAACC
ACAACGAGCGCGAGAACCTG TTCGG GCTTT TACC CTACA GAGCG CG
CCGCTCATCGTGTGGCTGCT GAGCC CGAAA GTGG GGTGT CTCGC GT

GGTGAAAAGCTTCTCCGAG TCTT A TCGTC GCTA C ------
GAM4106 19051 CAAGAGCTGCCCAAGCGGCT A CCAAGC TC-- ACATCACC
GGTATCTGCTACATCACCAG CAAG GCTGC GGCTGGTA TGCT
CACATTTGCCAGCTGTAGCC GTTC CGATG TCGACCGT ACGA
TTG - ------ TTAC --------
GAM4109 19607 GGCAGTGAAAACCCTGTGTC AA TCTGA CT AGACAAA
TGATAAGTCTCAGAGACAAA GGCAGTGAA CCCTGTG TAAGT CAG
CTGCTACTTAGAATTACAGG TTGTCACTT GGGACAT ATTCA GTC
GGTTCACTGTT G- TAAG- TC -------
GAM4110 3402 GTGTGCATAAACTTCTATCT TA-- - ATC- - TT G TATAC
CCATGTTGGTGGCCTATACG GTGTGCA AAC TTCT TC CATG GGTG CC
GGCACCCATGTGACCAAGGA CACACGT TTG AAGG AG GTAC CCAC GG
ACGTTGCCTTGCACAC TCCG C AACC T -- G -----
GAM4111 22013 CTTCTCCCTGGACCAGCCCG C CCAGCCC - CCT TGACCCT
GTGGCACCCTGGATCTGACC CTTCTCC TGGA GGTGG CAC GGATC
CTGATCCGTGCCCGCCTCCA GAAGAGG ACCT CCGCC GTG CCTAG
GGAGAAG - ------- C --- -------
GAM4112 19652 GGCAGGCTTTGGTGACTCTA - TGAC-- A T C-- ATTGCA
GATTACCTCGGGCCGATTGC GGCAGGC TTTGG TCTAG TTACC CGGG CG
ACGCCCCCCGTGGTGACTAG CCGTCTG AAACT GGATC AGTGG GCCC GC
GACCCCTTCAAACGTCTGCC C TCCCCA - T CCC ------
GAM4113 20297 CTGTAAGGAAGAACCTGCTG G A - G GCCAGAGA A CCATCTCA
TCTGCCAGAGAGGATAAGCT CT TAAGGA GA ACCTGCT TCT GGATA GCTGC
GCCCATCTCAGCAGCTGTCT GA ATTTCT CT TGGACGG AGA TCTGT CGACG
AAAAGAAGGCAGGTGTCTCT A - G A AAA----- - --------
TTAAAG
GAM4114 7141 GGGAGCCTGGCAGGCCTGGC A AGG C------ G A --- TGTT
CCAGCGGCCAGGGTGAGTGT GGG GCCTGGC CCTGG CCAGC GCC GGG TGAG
TCTCAGACCCCGGGCAGCTG CCC TGGACCG GGACC GGTCG CGG CCC ACTC
GTGGTTCTCCAGGGCCAGGT A --- TCTTGGT A G CAG ----
ACCC
GAM4115 1824 GTTTGAGGTGTTTGTGGTAT TG - - TT GT G TAGT
AATTTTTTTGCGTTTAGTAT GTT AGGTG TTTGTG GTATAATTTTT GC TTAGTATG TGTG
GGTGTGTAGTTATATATATT TAG TTTAT AGATAT TGTGTTGGGAA TG AGTTATAT ATAT
GAGTTTAAGGGTTGTGTGTA GT G G TT -- - ----
TAGAGTATTTTGGAT
GAM4116 13708 GGCTGCGGCTGCAGAAGTAC TG AAGT - CT -- A GCAA
CGCCTGCGGAGTAACTGCAA GGC CGGCTGCAG AC CGC GCGGA GTA CT
AGATGCTGTCCGTGCGCGTT CTG GCCGGCGTC TG GCG TGCCT CGT GA
GCTGCGGCCGTGGTC GT GT-- C -- GT A ----
GAM4117 4861 AACCCAGACGCCATGAAAGC AC C AG- GCAT- AGAAAAAGCTGAA
TGCATGGCCTGGAGAAAAAG AACCCAG GC ATGAA CT GGCCTGG
CTGAACCAGGCCCTTTTGGA TTGGGTC CG TACTT GG CCGGACC
TCTTCATGCCCTGGGTT C- - CTA TTTTC ----------
GAM4119 19017 GGCATGGAGGCAAAAACATC AAAACATC-- T CACTC
TGTGGTTCACTCAGCCTCAA GGCATGGAGGCA TG GGTT
TTTCCAATGTGTCTCTGTGC CCGTGTCTCTGT AC CCGA
C GTAACCTTTA T -----
GAM4120 8411 GGATATGGAGAATGATACCA A -- TAC-- A C C CCAA - TTTTAAT
GGTATCAAGCTCATAGCGGC GGAT TGGAGAA TGA CAGGT TCAAG TCATAG GG AAGCAAT TG

CAAAAGCAATTGTTTTAATC CCTA ACCTCTT ATT GTTCA GGTTT AGTGTC CC TTCGTTG AC

ATGTTGCTTCCCTCTGTGAT A CA CCGAC - - T C--- T -------
TTGGACTTGCAGCCTTAACT
TCTCCAAATCC

GAM4121 16032 GGCTAGGCTGGTCTTGAACT C- CTTGAA C A C ACC C CCTC
CCTGACCTCGTGATCCACCC GGCTAGG TGGT CTC TG CCT GTGATCC CGC TTGG
GCCTTGGCCTCCCAAAGTGC CCGGTCC GCCA GAG AC GGA CATTAGG GTG AACC
TGGGATTACAGGCATGAGCC AC CC---- T - - GTC A ----
ACCGCACCTGGCC

GAM4122 12567 CCCATCTCTGTGACTTCCTG - TGACTTCCTG AC AGATGA
GAGACTCACTTCTAGATGAG CCCATCT CTG GAG TCACTTCT
GAAGTGAAGCTTATCAGAAG GGGTAGA GAC TTC AGTGAAGG
ATGGG A TA-------- GA ------

GAM4123 9028 TTGACCAGCCGGAAAGCATT A AG CA GA G G G AGGGT
GGGGATGACGGCCGACAGCA TTG CC CCGGAAAG TTGGG TGACG CC ACA C
GGGTGGTGTGGATGTCACCC AAC GG GGCCTTTC GACCC ACTGT GG TGT G
AGGACTTTCCGGAAGGCAA - AA AG -- A - G -----

GAM4124 10756 TATATGCCTGATTCATAGTA C- AT A TCT AA TTTTA AAAAC
AAATACCTCTAATAAACATT TATATG CTG TCAT GTAAAATACC AATA CATTG TAG
GTTTTATAGAAAACCTGACT ATATAT GAC GGTG CATTTTATGG TTAT GTGAC GTC
TCAGTGAATATTTTGGTATT TT CG A TT- AA TTCA- -----
TTACAGTGGGCCAGTTTATA
TA

GAM4125 20759 GTGTCTCTATGAGTCCTCTC - T GTCCTCT - CTAC- - GGTCCG
TAGGAGGAGCCTACAAGCAG GT GTC CTATGA CTAGGAG GAGC AAGC AGTT
TTGGTCCGAGCTCGCTTCAC CG CAG GATACT GGTCCTT CTCG TTCG TCGA
CCGCTCTTTCCTGGCCCAAA T - AAACCC- T CCCAC C ------
TCATAGGACTGC

GAM4126 5573 CCCACAGGGCTGGGGGCTTC A GGCTT CCT AAAGTCCTTCC
CCCTGGGAGAAAGTCCTTCC CCC CAGGGCTGGG CC GGGAG
CTCCCCATGGCCCAGCCCTG GGG GTCCCGACCC GG CCCTC
GGG - ----- TAC ----------

GAM4128 16473 GTCTTCTAGAACGCTTGGCG A ------ G T- CTTTAAGT
TGGACCTCTTTAAGTGGGTC GTCTTCT GA ACGCTTG CG GGACCT
CCTTGCAAGCGTATTTCCTT CAGAAGA TT TGCGAAC GT CCTGGG
AAGAAGAC A CCTTTA - TC --------

GAM4129 22404 GTTTGCAGACTCTGTGGGAA T CT--- AATTGTTT C TTTCTATGGTTGT
TTGTTTTTCATCTGTTTCTA GTT GCAGACT GTGGG TTCAT TG
TGGTTGTCAAATGAATTCTT CAA CGTTTGA CACCC AAGTA AC
CACCCACCCTACAGTTTGCT T CATCC ACTTCTT- A ----------
AAC

GAM4131 21333 GGCTGAGTTCTGTAGTTTCC -- TT CAG TT GGCTAG
AGAGTTGGCTGGCTAGAGCC GGCTG AGTTCTGTAG TC AG GGCT
TTCTAAGAGGTTACAGAACT TCGAT TCAAGACATT AG TC CCGA
ATTAGCT TA GG AA- TT ------

GAM4134 21590 GGCCCAGAGTTACCACGCTG CC -- -- C----- - ACATCCA
CCAGGCCACATCCAGGCCGT GGC AGAGTT ACCACG CTG CA GGCC
GTATGTTCAGAACGTGGTCA CCG TTTCGA TGGTGC GAC GT CCGG
AGCTTTACGCC CA AC AA TTGTAT G -------

GAM4137 6982 TTGCAGAATTTACCTCAAGA C ATTT AGAAC--- C TT CCAACTACC
ACTCTTTGCTGTTGACCCAA TTG AGA ACCTCA TCTTTG TG GAC
CTACCGTTTCACAAGGATTG AAC TCT TGGAGT AGGAAC AC TTG
AAAGATGAGGTTCTCTACAA A CT-- AGAAAGTT - T- ---------
GAM4138 18444 GACGGCAAATATTCTGGGGT C ATATT G A CATAAT CACTTTTT
GAAGGAGGTCATAATGGGGA GA GGCAA CT GGGTG AGGAGGT GGGGAAA
AACACTTTTTTTTCCCCTTT CT CCGTT GA CCCGT TCCTTCA CCCCTTT
TTAACTTCCTGTGCCCAAGC T C---- A G ATTTTT --------
TTGCCTTC
GAM4139 10303 GGCCTTCTATCCTGGGCTGC --- T GC - CCT G TGAATATTCCTT
AACATCCTTCGAGTTGAATA GGCCTTCT ATCC GG TGC AACAT TC AGT
TTCCTTACTGATCTATGTTA CTGGAAGA TAGG CC GCG TTGTA AG TCA
GCGTTCCTGGATCCAAGAAG ACC T TT A TCT - ----------
GTC
GAM4140 9939 TTAATGGTTGATATTGCTAG G A- G -------- TT AATTA
GGTGGCGCTTCCAATTAGGT TTAAT GTTGATATTGCT GGGT GC GC CC
GCATGAATAGGTGGCCTGCA GATTG CGATTGTAATGA TCCG TG CG GG
GTAATGTTAGCGGTTAG G CG G GATAAGTA T- -----
GAM4141 4795 AATAACATATATATCCATGA TA A CAT - CAA AAGTCTAC CT TTG
AGCTAGCAACTGAAAGTCTA AATAACA TAT TC GAA GCTAG CTGA GA ACATT
CGACTACATTTTGAATGTTC TTGTTGT ATA AG CTT CGATC GACT CT TGTAA
TCTCCAAATCAGAACTAGCG TG - AT- G AA- AAACCT-- CT ---
TTCTAGAATAGTTGTTGTT
GAM4143 5732 GAGTTGCTGCAGAGGACATG T AGA C CCCCA A CCGTA
ACCCCCAGCAGATGTCCCGT GAG TGCTGC GGA ATGAC GC GATGTC
AGGCATCAGTCCAGTTATAT CTC ATGACG CCT TATTG TG CTACGG
CCGCAGTATCTC T --- A ACC-- A -----
GAM4144 12408 ATGGCGGCAGGCAACCAATG -- AA- --- A TTA ATTC
AGGCAGTTTAGACCATTCGG ATGGCG GCAGGC CCAAT GAGGC GT GACC
TTGCGCTTTTGGATTGGGGA TACCGT TGTCTG GGTTA TTTCG CG TTGG
GTCTGTGATGCCAT AG AGG GGT - --- ----
GAM4146 1772 GCTGAAGCCATTGGTGTCTG AA G TGC- T A ----- GATGCCCG
CTCCGCTGATCGTCCTGATG GCTG GCCATTG TGTC TCCGC G TC GTCCT
CCCGAGGACCTGTGGACCGT CGAC TGGTAGT ACAG AGGTG C AG CAGGA
GGAAAATGACATGATGGTCA -- - TAAA - C GTGTC --------
GC
GAM4148 3012 TCTTTGCCCGTCTCCTGGGG TT C T C C ACGAAA
ACCCCCCAACGAAATGTGGA TC TGC CG CTCCTGGGGAC CC CA
GTCCTCGGGGGCCGTGCACT AG ACG GC GGGGGCTCCTG GG GT
GA TC T C A T ------
GAM4149 9165 CTCTTTGAAACACTGCCATG TTTGAAA C CC C C - C TAAA ATTCG
CCTACGTCCATCAGCTACTA CTC CACTGC ATG TA GT CA TCAG TAC TG
AATGATTCGCAAATGTACTG GAG GTGACG TAT AT CA GT AGTC ATG AC
ACTGCACTTATATATGCAGT CCATCCG - AT T C C - TAA- -----
GGCCTACCGAG
GAM4150 22468 CACAGGCCCCGTTGCCCATG C CCC CCA CA C GCTC
GCTGTCAGCCGGGGGCTCCC CA AGGC GTTGC TGGCTGT GC GGGG
CCCGCAGCAGCCACAGCAGC GT TTCG CGACG ACCGACG CG CCCC
CGCTTCTG C C-- AC- A- C ----
GAM4151 1390 AGCACATGGTATTCCTGGGT TAT GGG-- AGT AG- A- A ACAAAGACAA

GGTGCAGTTCTAGCGGATAT AGCACATGG TCCT TGGTGC TCT CGG TATC TGAAAG
CATGAAAGACAAAGACAACT TCGTGTGCC GGGA ACCATG AGA GCC GTAG GTTTTC
TTTGGATGACCCGACAAGAG TGT AAAGA --- ACA CA - ----------
TACCAAGAAAAGGGTGTCCG
TGTGCT
GAM4153 7531 GGTGCTCAGCTTCTCGTGCG TG - -- TC- TGC- CT TTCTG
CATCTCGCTGCTTCTGGTAG GG CT C AGCT TCG GCAT CGCTGC
TGGTGTGCTTCTCGATTTGG TC GA G TCGG AGC CGTG GTGATG
CTTCGAAGTGCT GT A CT TTT TCTT TG -----
GAM4154 17966 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A AATGTGGCA
CACTTTGACAGACATTAATG CTGG TGTT ATGG AAGTCA GACAG CATT
TGGCAGATGTTGTCTGACTT GACC ACAA TGTC TTCAGT CTGTT GTAG
ACTGTTTCAACAACCAG A- CTT A ---- - ---------
GAM4155 5171 CCACTTGCAATTATTTGAGG T AT - ACTCC G - TACCA ACCCCACAGAAGC
AACTCCGCCGCCTGGCGCCC CCACT GCA TATTTGA GGA GCC CC TGGCGCCCAT GCG

ATTACCAGCGACCCCACAGA GGTGA CGT GTGAACT CCT CGG GG GCCGTGGGTG CGC

AGCCACCGCCGTGGGTGCCG - C- T C---- A T C---- ----------
TGGAGGCCTCCTTCAAGTGC CAC
TGCAGTGG

GAM4156 7000 TCTCCCCGCAGTCCTACCCA CA C --- - TAA GCTAA
GCCTTTTAACCTGCTAAAGG TCTCCCCG GT CT ACC CAGCCTTT CCT
AGAGGCTGTGGTTTTAGCAC AGAGGGGT CA GA TGG GTCGGAGA GGA
CTTGGGGAGA TC C TTT T --- -----
GAM4157 199 GTCAGCACTTACATTAAGAA G CTTA A A CCCCG ACA
AATTGGTACAACCCCGACAC GTCA CA CATTA GAAA TTGGTACAA AC
AGTAGCATTTGTGCCAATTT CAGT GT GTGGT CTTT AACCGTGTT TG
CTGGTGGAATGGTGAC G AAG- - - TACGA ---
GAM4158 2413 TTGAGAAGGAGTCTCGCTCT A- TC C TC C-- -- A - A ATCT
GTCACCCAGGCTGGAGTGCA TTGAG AGGAG TCGCT TG ACCCAGG TGGAG TGCA TG GC CG

ATGGCACGATCTCGGCTCAC GACTC TTCTC AGCGA AC TGGGTCC GTCTC ACGT AC CG GC

TGCAACCTCTGCCTCCTGGG CG TT - T- TCC CA C T - ----
TTCAAGCGATTCTCTTGCCT
CAG
GAM4159 18698 CCTCTCCCATGGCTAGGGAA T GCT AAAA--- CAG TCCTAT
AATGGCACAGTTGGGTCCTA CCTC CCCATG AGGG TGGCA TTGGG
TTTCAGATGCTAAAGAAAAC GGAG GGGTAT TCCC ATCGT GACTT
CCTTATGGGCGAGG C --- AAAAGAA A-- ------
GAM4160 10999 TGTTCTTGCTACCAAGGCTC A AAG -- A A T AGCAC CTC GATA
TCAACCACCATGATTGCGCT TGTTCTTGCT CC GCTC TCA CC CCATGAT GCGCT AGC GC

AGCACAGCCTCGCGATAGTC ACAGGAGCGG GG CGAG AGT GG GGTGCTA CGCGG TCG TG

ACGCTTCACGGCGCATCGTG A CA- TC A - - CACT- CAC ----
GGGATGACTGAGCACGGAGG

CGAGGACA
GAM4161 15480 GAGAGAAAAGGGGAGGATGC AAA C--- C TCATCCT
CACTGGAGTCATCCTCTTCA GAGAGA GGGGAGGATG CA TGGAG
ATGCCACTATCCTTCCCATC CTCTCT CCCTTCCTAT GT ACTTC
TCTC A-- CACC A -------
GAM4162 17789 ACTATTGCCAGACCCACTAC -- ---------- TG TTGTGGTC
CAGTGCTTGTGGTCGTGCTG ACTATTGCCAG ACCC ACTACCAG C
GTAGTTGCAGAACTCTGGGT TGGTGGCGGTC TGGG TGATGGTC G
AGCTGGCGGTGGT GA TCTCAAGACGT GT --------
GAM4163 16352 GGCACTGCAGGTCAGGCCAG C TCA CA- TGCT T T GTG
TTAGGAGGTGCTGCTCCTCC GGCACTG AGG GGC GTTAGGAGG GC CCTCC CC
TCCGTGGGTGGAGGGCTTTC CTGTGAC TCC CTG CGGTCCTCC CG GGAGG GG
CTCCTGGCGATGTCCTCCTC - TC- TAG TTT- - T ---
AGTGTC
GAM4164 11703 GTGCACAACCAAAAAATGGA C AAAAAATG ACT C AA GAATTAA
GGGAAACTGAAGCAAGAATT GTGCA AACC GAGGGAA GAAG AAG TTC
CGAATTAAGAGACTTTTTCC CACGT TTGG CTCCCTT CTTT TTC GAG
ATTCCCTCACGGTTTGCAC - CA------ AC- - A- -------
GAM4165 11508 TCGGCCATGACTGTGTATGC C TGTG----- G- TGTCTTACTTCC
TCTGGTGGTGGTGTCTTACT TCGGC ATGAC TAT CTCTGGTGGTGG
TCCTCATCACCGGAGGAATA AGTTG TATTG ATA GAGGCCACTACT
ATTTATGATGTTATTGTTGA T TAGTATTTA AG ----------
GAM4166 7488 GAGGATTTTATTTCAAGATA TTTATTTCA AT AAC C ATACTATTGATTCCAAA
AAACATAACTTCTACCCATA GAGGAT AG AAAACAT TTCTA CC
CTATTGATTCCAAAGGTTAG TTCCTA TC TTTTGTG AAGAT GG
AAAAAGTGTTTTTCCTCATC TTCTAC--- CT AAA T ----------
TTATCCTT
GAM4167 14880 GCAGCTCCAGTATCCCAAAC CT - -- AAAC- G -- ATCCTCC
TTTCTAGTCCTGCTGATCCT GCAG CCAG TAT CCC TTTCTA TCC TGCTG
CCCAGCAACGGGGTGGAAAC TGTC GGTC GTG GGG AAAGGT GGG ACGAC
TGGAGGGCAGTGTCTGGTCT T- T AC AGGTC G CA -------
GT
GAM4168 16785 TTTTAAGAAGAGCTGTGTGC A G CC---- T T A CC---- TATAGCC
TCCCTTTGGTTCCGGGGACC TTTTAAGA GAGCTGTGT CT CT TGGT CCGGGG CC GCT
CCGCTTATAGCCAGCAAAAA AAGATTTT CTTGATACA GA GA ACCA GGTTCC GG CGA
TGGCCTTGGACCACAGCCTT C - CCTTCC C - - TAAAAA -------
CCAGACATAGTTCCTTTTAG
AA
GAM4169 19248 AAAAGAAAACCAAAGTGGTC AAACCAA CC AA CT---- CCTTCT
CACAAAACATTCTCCTTTCC AAAAGA AGTGGT ACAA CATT CCTTT
TTCTGAAGGTTTTACGATGC TTTTCT TTACTA TGTT GTAG GGAAG
ATTGTTATCATTAACCAGTC GACCAA- T- AC CATTTT ------
TTTT
GAM4170 14705 TGATAAATGTACCCCTCTCA A T-- CAGTC - T G TTAAAGTATATGT
GTCTGTAGTATGAGTGTTTA TGATA ATG ACCCCTCT TGTA GTA GA TGT
AAGTATATGTGCAGTCTTGC ACTAT TAC TGGGGAGG ACAT CGT CT ACG
TTACAAGGAGGGGTTACCAT G CAT A---- T T G ----------
GTATCA
GAM4171 16669 TCTCCTGGGCTTCTCAGTGT T- TCTCA TCG G- TTCGG
CTCGCCGGCGGGGTTCGGCC TCTCC GGGCT GTGTC CCGGC GGG

TGAGCTGGATTGACATAGCC AGGGG CCCGA TACAG GGTCG TCC
CTTGGGGA TT ----- TTA AG -----
GAM4172 13003 GGTTGAACAATGCTCTCACA AA T- CT- AC AATTTAGGG
TTACAGGAATTTAGGGCCTA GGTTG CAA GCT CACATT AGG
GAATGTGTAAGGCTCTTGCC CCGAC GTT CGG GTGTAA TCC
AGCC C- CT AAT GA ---------
GAM4173 4522 TGGTGATTTCTGAGACTGAG - CTGAGACTG A G CAAA
ATGAAGATACGTTTCCAAAG TGGT GATTT AGATG AGATAC TTTC
AGAGTATTTACATTTGAATC ACCG CTAAG TTTAC TTTATG AGAG
TGCCA T --------- A - ----
GAM4174 18960 CCACCGGCCTGGCCTTGCCT CG CCTTGC ATAAA--- AACC
GCAGACTATAAACTATAACC CCAC GCCTGG CTGCAGACT CTAT
ATAGCTCGACACAGTCTGCA GGTG CGGACC GACGTCTGA GATA
GTCCAGGCGTGTGG TG T----- CACAGCTC ----
GAM4175 16466 GGAGAATCACTTGAGCCCAG AA GA--- AGGC GT GAGCCAAGATAACG
GAGGCGGAGGTTGCAGTGGG GGAG TCACTT GCCCAGG GGAG TGCAGTGG
AGCCAAGATAACGCCATTGC TCTC AGTGAG CGGGTCC CCTC ACGTTACC
ACTCCAGCCTGGGCGACAAG AG AACAG GA-- -- ----------
AGTGAGACTCT
GAM4177 62 GTGGAGCGAGGGAAGGAGTT A -- TTAA-- AACT- GCAC
AATGAAACTGTATTGCACAA GTGG GC GAGGGAAGGAG TGA GTATT
TGCTCTGATCAATCCTTCTT CACC CG TTCTCTTTTTC ACT CGTAA
TTTCTCTTTTGCCCAC - TT TTCCTA AGTCT ----
GAM4178 17041 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAAGGAAGAAGAAA
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG TAAGA
AAGAAATCTTACACCACTCC AGAACACGA GAAG TCACCAC ATTCT
CAAGAAGAATAAGCACAAGA ATAA AACCC - ----------
GAM4179 5150 ATCGTGCCTTAGCAAACATC G CTT A ACTTCGTG
TTCGTGTGAGCTACTTCGTG ATCGT CCTTAGCAAACAT CGTGTG GCT
AGCCCACATGTATGTGTTTG TAGCG GGAGTTGTTTGTG GTACAC CGA
TTGAGGGGCGAT G TAT C --------
GAM4181 2877 GCCATCCCGGGCAGTGGGCA GGG CAAA ATACC CCAACAA
CCGTCAAAGTATACCTGCCC GCCATCCCGGGCAGT CACCGT GT TGC
AACAAGCAACGCACGGTGGT CGGTAGGGCCTGTCA GTGGCA CA ACG
GACTGTCCGGGATGGC GTG CG-- ----- -------
GAM4182 11419 AGCGAGAAGTACATCCTGAC AAG C -- C TG ACGGTGCA CTTC
CCTGCAGACGGTGCACTTCA AGCGAG TA ATCCTG AC C CAG CTTCA
CTTCTGAAGCTGTGGAGTTG TCGTTC GT TAGGAC TG G GTC GAAGT
CAGGATATGAGCTTGCT GA- A GT A GT -------- ----
GAM4184 6126 TTTAGATTTCTGGTGGTAAA TG GG AATAT C TTTAA
TATAAATGAGTTTCATTTTA TTTAGATTTC GT TA AAATGAGTTT AT
AGTAAACTCATTTTGTGGGA AAATTTAGAG TA GT TTTACTCAAA TG
TTTGAGATTTAAA TT GG GT--- - -----
GAM4185 6166 TTACTGTTCCATTTTGCAAC CA AACATCC A A- G CAA ATTACCGA
ATCCTGCAACACCATCCTGG TTACTGTTC TTTTGC TGCAAC CC TCCTG GAGA GAGC
GAGACAAGAGCATTACCGAG AATGATAAG AAAATG ATGTTG GG GGGGC CTTT TTCG
CTTGGCTTTCACGGGGGAGG AA ACTT--- - AG A CGG --------
GTTGTATTCAGTAAAAAAGA
ATAGTAA
GAM4186 17700 GGGAAACTCCGAGGACAGAG AAA A--- - GA AA GAAGTT

GGCTAAATCCATGAAGTTGT GGG CTCCG GGA CA GGGCT ATCCAT
GGATGGCCTGATGATCCACA CCC GAGGC CCT GT TCCGG TAGGTG
GCGGAGACCC A-- GACA A AG -- ------
GAM4187 21178 TGCACTGGCACCTAGACATG CTG CTAGA A A C- ATACATCCC
TACAACAGGAACCGTGTGGA TGCA GCAC CATGT CA CAGGAAC GTGTGG
TACATCCCCCACACCTGTTT ACGT TGTG GTACG GT GTCTTTG CACACC
CTGTGGCATGGTCATGTGTA A-- TACTG - - TC ---------
TGCA
GAM4190 5184 TAGGCATGTGATTTCAGGTT GG T --- T ACATTGAAA
TTTCGTACTGAAAACATTGA TA CATG GATTTCA GGTTTTTCG ACTGAAA
AATTTCAGTTGGAAAACCCC AT GTAT TTAAAGT CCAAAAGGT TGACTTT
CTGAAATTTTATGAGTA GA T CCC - ---------
GAM4191 21301 CCGCAAAGTGGGTCTCATTG G AAGTG AT C - -------- A- CCGTC
CTGCCGGCGGACCTGGACCG CC CA GGTCTC TG TG CCGGC GG CCTGGA
TCTCCGGGCACCAAGACTGT GG GT TCAGAG AC AC GGCCG CC GGGCCT
GCCGGACACAGAGACTAGTG A GTGA- -- - A TGTCAGAA AC -----
TGAGG
GAM4192 2492 AGCGTTAGGTATGAGCCTCG T GTAT G A -- GT G CGTG
GTGTTAATCGGCGAGGGTTG AGCGT AG GAGCCTCG TGTTA TCGGCGA GG TGG CAA
GGCAACGTGTTGCTAGTCTG TCGCG TC TTCGGAGT ACAGT GGTTGCT TC ATC GTT
GTCGTTGGTGACAGTGAGGC - ---- G - GG TG - ----
TTCTGCGCT
GAM4193 20425 GGGAATGATAGCATTGAAGG GA CAT GAC--- GATATCTAACAGCAATA
ACTCGGGGATATCTAACAGC GGGAAT TAG TGAAG TCGGG
AATACCTGATCACTACTTCG CTCTTG ATC GCTTC AGTCC
CACTAAGTTCTC A- AC- ATCACT ----------
GAM4194 11143 CAGTGTGGAGCAGGGGCTGG -- TG CT G CCCCT
GTCTGAGGCCCCTCCTGAGG CAG TG GAGCAGGGG GGGTCT AGG
CTTCATCCTTGCTCTGCAGC GTC AC CTCGTTCCT TTCGGA TCC
CTG CG GT AC G -----
GAM4195 5405 TTTTTTTTCAGCTACATAAA TT CAT ATTTTTCTCA- TTAC
CATTTTTCTCATGTTTTGTT TTTTTT CAGCTA AAAC TGTTTTG
ACTAAAACAACTTGTTTAGG AAAAGG GTTGGT TTTG ACAAAAT
GTTTTATGGTTGGGGGAAAA GG AT- GGATTTGTTCA ----
GAM4196 5372 TCATCAGGCCATGGTGGCAG AG AT - C ------ C- G GCAGTACA
CTGTTGCCTCCGCGTGCGCA TCATC GCC GGT GG AGCTGTT GCCT CGC TGC
GTACAGCAGGTGCCAGGCTT AGTGG TGG CCA CC TCGACAA CGGA GTG ACG
CCCAAACAGCTCCAACCCGG -- GC A - ACCCTT CC G --------
GTGGTGA
GAM4197 21123 ACCTTCGGGTCCACTGGTTT C CACTG--- A CACCCA ACTGTC
GATGACACCCACCGCAACTG ACCTT GGGTC GTTTG TGA CCGCA
TCTGTGGCATATCACGAACA TGGAA CCCAG CAAGC ACT GGTGT
GCAAAGCGACCCAAAGGT A CGAAACGA - ATAC-- ------
GAM4198 4175 AATTTGCAACAGTTCTTTCC C CA TT---- - CCAC TCTTG
CCAGGCCACTCGCAGTCTTG AATTTG AA GTTC TCCC CAGG TCGCAG
CTGTGACTCTCCTGTGGGGT TTGAAC TT CAAG GGGG GTCC AGTGTC
CCCATGAACCCTTCCAAGTT C CC TACCCT T TCTC -----
GAM4200 8949 GGAAGAGTGCCTCAGGGCAG GCCTCA A--- AA CT TG AATG
CGGAACCGGCTCATTGCAAT GGAAGAGT GGGC GCGG CCGG CAT C
GGTGATGGACTGGCCGTCAG TCTTCTCA CTCG TGCC GGTC GTA G

AGCTCGTAACTCTTCT ATG--- AGAC -- AG GT ----
GAM4201 9585 GTGTATTTCGAGTGGCATCA GAG G CA ATC - TG CCCG
GTCTCACTCATCTGTGGTGC GTGTATTTC TGGCATCA TCT CTC TGTG G C
CCCGGTGTTTACAAGAGCCA CGCATGAGG ACTGTGGT AGA GAG ACAT T G
GATGGTGTCAGAGGAGTACG AG- - CC A-- T GT ----
C
GAM4203 7891 TCCTCCGAACCAGCATCCCC GA A CCAC TCAA- AAGACCACGTG
ACCATCAACATGGAGAACAA TCCTCC ACCAGC TCC CA CATGGAGAAC
GACCACGTGGTTCTCTGTGG AGGAGG TGGTCG AGG GT GTGTCTCTTG
ACATTGACTCGGAGCTGGTG -- - CTCA TACAG ----------
GAGGA
GAM4204 18885 GAAGCTTCATGCACTTAAAG TT- C A---- T T AA TG ATACTTACCTA
AAGTATTTTTAGAATAAGAA GAAGC CATG ACTTA AGAAGTA TTTTAGAA AAG TT C
TTTGCATACTTACCTAGTGA CTTTG GTAC TGAAT TTTTTAT AAGATCTT TTC AA G
AACTTTTCTAGAATTATTTT TAT - CTCAC T - A- GT ----------
TCACTCTAAGTCATGTATGT
TTC
GAM4206 1755 GTGGCTCCGATCGAGCGGGA CCGA- A - AA - - - GGTCCA
TCAAGCTGCTGCTGCAGGTC GTGGCT TCG GCGG GATC GCT GCTG C TGCA
CATGCACGCCAGCAAGCAGG CATTGA AGC CGCC CTAG CGA CGAC G ACGT
ATCGCCGCCGACAAGCAGTT CGAAC - G GA A C C ------
AC
GAM4207 19034 GCTTTGGTCTCTGCTGGACA T--- T AGC GGGGAG
GCCCTTGGGGGAGCAGGGAG GC TTGGTC CTGCTGGAC CCTTG
TCCAGCAGGGCCAGTCCTGC CG GACCGG GACGACCTG GGGAC
TCCT - A-- ------
GAM4208 3998 GCGGCCGGAGGACCAGCAGG AGGACCA G G GA --- - - CCGCGTACC
AGGAGGAGGCGGCGGCCGCC GCGGCCGG GCAG AG AG GGC GGCGGC CG CCG
GCCGCGTACCTGGACGAGCT CGCCGGTC CGTC TC TC CCG CCGTCG GC GGT
GCCCGAGCCGCTGCTGCTGC GTGCG-- G G G- AGC A A ---------
GCGTGCTGGCCGC
GAM4209 546 TGGTGACTGATTCCAAATCT GA TT A C AACACATCCAC CA-- CGGG
ACCAGCTAACACATCCACCA TGGT CTGA CCAA TCTAC AGCT CAC CTG
CCACTGCGGGCAGGCAAGTG ACCA GACT GGTT AGGTG TTGA GTG GAC
ACTAGAAGGCAAGTTGTGGA GG CC C - ACGGAAGATCA AACG ----
CTTGGCCTCAGGGACCA
GAM4210 6169 GAGGGACGCTGCTTCTCCCC GG C C C----- --- C TCCAA
TGCCCACGTCTCCAAGGCCT GAG A GCTG TTCT CCCTGCC CA GTC
GAAAGGCAGGGTTCTGTGGA CTC T CGAC AAGG GGGACGG GT CGG
ACAGCATTTCTC TT A - TGTCTT AAA C -----
GAM4211 3131 GTGCCACCATGAACCCAGGT CA AACCC T AATA A TGT CATCACAA
GAAATAACACAAGCATGTGG GTGC CCATG AGG GA AC CAAGCA GGCT
CTCATCACAAAGCCTGTTTG CGCG GGTAC TTC CT TG GTTTGT CCGA
GTGGTCTCTTCACATGGACG CA AC--- T GG-- - --- --------
CGC
GAM4212 16838 GACACGGATGGACAATACGG - CAATACGGAAC AC - AGAC
AACCGTCAGACCTCTGGTTA GACACG GATGGA CGTCAG CTCTG GTT
GACGACACAGAGCTGACGCT CTGTGC CTACTT GCAGTC GAGAC CAG
TCATCACGTGTC A C---------- -- A ----
GAM4214 2791 GTGGACTTAACCATTGCAAA --- T AA -- T TCT CGTTCT

GCACACTGTCTTTCTCAGCG GTGGACT TAACCAT GC AGCAC ACTG CTT CAG
TTCTCTGCAAGTCAGTAGGT CACTTGA GTTGGTA TG TTGTG TGAC GAA GTC
GTTAGTATGGTTGCAAAGTT AAC - A- GA T C-- ------
CAC

GAM4215 15810 TGCCCGCGTACATGGGCTGA GCGTACAT G TG AAG GAAGAAA
GGAATGTTCAAGCAGAAGAA TGCCC GG CTGAGGAA TTC CA
ATGGTAGAGTTTTCTTCAGG ATGGG TC GACTTCTT GAG GT
CTTAAAGGGTA AAAT---- G TT ATG -------

GAM4216 813 CCGGCCTTGCCAGACGGAAG GG - - G ----- CCT CGACT A GCC
CTCCTTGTCCCCGACTGCAG CC CCTTG CCAG AC GAA GCT TGTCCC GCAGC CAG
CACAGGCCCTGGCTGTGGGA GG GGAGT GGTC TG TTT CGA ACAGGG TGTCG GTC
CATAAGCAAAGATTTGGTGC AA A G G AGAAA AT- ----- - ---
TGGATGAGGAAGG

GAM4217 17506 TCTTTTCAGTAATTTCATCC CA A CCT ATCT TTTTGCGTTTTT
TCTTTATCTACCTGTTCTAT TCTTTT GT ATTTCAT CTTT ACCTGTTCTA
TTTGCGTTTTTTAGAACAGG AGGAAG CA TGAGGTG GAAG TGGACAAGAT
TTGGAAGTGTGGAGTCACCA AC C T-- GT-- ----------
GAAGGA

GAM4219 10758 AGAGAATCTGCCTAAGTGGG T C - AATT GCTAAA CCTCAATTATT
AATTAAAATGGCTAAAGTTT AGAGAATC G CTA AGTGGG AAAATG GTTTTAA
TAACCTCAATTATTTTGAAA TCTTTTAG C GAT TCACCC TTTTAC CAAAGTT
CCAGAACATTTTCCCCACTA - A A C--- AAGAC- ----------
TAGACGATTTTCT

GAM4220 19016 CTGGGATAGAAGCCTTTGAC A A CTT --- AGGCT
CAGGCAGGTCAGGCTGACCT CTGGGAT GA GC TGACCAGG CAGGTC
GGTTCTTGGTCAGCTCATCC GGCCCTA CT CG ACTGGTTC GTCCAG
CGG - - --- TTG -----

GAM4221 13100 TGGCAAGTTACACCTAACCC TACAC C G CCAT TACAG ACACA
CTGGCTCCATGGAGGTTACA TGGCAAGT CTAA CCCT GCT GGAGGT TGC
GTGCACACAGCAACTACCTC ATTGTTTA GATT GGGG TGA CCTCCA ACG
CTAGTGGGGGTTTAGTACAT TACAT T G T--- TCA-- -----
ATTTGTTA

GAM4222 18609 AGCCCCTGTGTCCAGCTGCC TGT T T CCA GTTCC C G CCACACA
TCCAGAAGGTTCCCAGCACC AGCCCC G CCAGC GCCT GAAG CAGCA CG GGT
GGGGTCCACACAGCCGTGTT TTGGGG C GGTCG TGGA CTTC GTCGT GT CCG
GCTGCCACTTCCAGGTGCTG TT- - - C-- ACC-- T G -------
GCTTGGGGTT

GAM4223 10390 TTGGATATAAGCCAGAAGTA AA C GTAGAAT- TTA- GGGTTTA
GAATTGCTGATTAATAGGGT TTGGATAT GC AGAA TGCTGA ATA
TTATGTGTGTTCAGCATTAG AACCTGTA CG TCTT ACGACT TGT
TAGATTCTGCCCATGTCCAA CC - AGATGATT TGTG -------

GAM4224 21416 GGGCGCTTTTTGCGGGGGGC T GC--------- - GATA AAAAGCAGC
GAAAAGATATGAAAAGCAGC GGGCGC TTTT GGGGGGCG AAAA TG
CAGTTATTTTCCGCCCCCCT CCCGCG AAAA CCCCCCGC TTTT AC
TTTAAAGAGAAAAACGCGCC C AGAGAAATTTT C ATTG ---------
C

GAM4225 10786 AGGTGTCTGTCCCTAAAGAA CTG - TAAAGA TG TATG
CTGGTGGCACTTATGAGTGC AGGTGT TC CC AC GTGGCACT
TATTCGTGATGGAGAAACAC TCCACA AG GG TG TATCGTGA
CT A-- A TAG--- CT ----

GAM4226 12686 TGTGGCCCAGAGGTGCAAGG A ------ CA A T GTATCA
AGCTGGGTATCACCGCCCTA TGTGGCCC GAG GTG AGG GC GG
CACATCAAACTCCGGGCCAC ACACCGGG CTC CAC TCC CG CC
A C AAACTA A- - - ------
GAM4227 6863 CCATTGCCACGTAGACATTG T CAC C - AGA------- GTGG
CCCAGAGTGAAGTGGTTCAC CCAT GC GTAGA ATTGC CC GTGAA
AGCAAAGTGTGGTGCGATCT GGTA CG CATCT TAGCG GG CACTT
CTACTGCCATGG C T-- C T TGTGAAACGA ----
GAM4228 21724 TTGTTAACCTTGTAAGATGG A-- CT- A A T G AGAA
ATAATGTGTATAAGAATGTA TTGTT AC TGT AGATGG TAA GT TATA
GGCCTTAACTATTTCACATG AACAA TG ACA TTTATC ATT CG ATGT
AGTCAAAACAA AAC AGT C A C G ----
GAM4229 2886 GCCAAGGCAACACTTGCTGA AG AAC T ------ C- TAA TAA
TGAGCAACTTTAAGGCTAAG GCCA GC ACT GCTGA TGAG AACTT GGC
CCAAGTTTTCTCAAAATAAT CGGT CG TGA CGACT ACTC TTGAA CCG
CAGCAGTAAGCTGGC -- AA- - AATAAA TT --- ---
GAM4230 15550 CGGAGATGCCTACATAGAAG A ACATA G- GA C TAAAT
AGTGACAGCAGCTAGACTAA CGG GATGCCT GAA AGT CAGCAG TAGAC
ATGTTTAACTGCTGAACTAG GTC CTATGGA CTT TCA GTCGTC ATTTG
TTCCTCAGGTATCCTG - CTC-- GA A- A -----
GAM4231 2558 GCTGAGGTTCTGGAGTGGCA AG GAG - A- GAGGAGCAAATGACA
CAGGAACAGGAGGAGCAAAT GCTG GTTCTG TGGCACAG GA CAG
GACACTGGGTCTTTGTGCTG CGAC CAGGAC GTCGTGTT CT GTC
AGGCAGGACACAGC A- GGA T GG ----------
GAM4232 421 AGTGGAAAACGGCGATGGGG A C CGAT CAA- CGGATC
AACAACATACGGATCTGTGA AGTGGA AA GG GGGGAA CATA
AAATTCCCCCTTTTCTCCAT TTACCT TT TC CCCCTT GTGT
T C T ---- AAAA ------
GAM4233 5202 TCCATTCTTAAAATCAAGCA T- TTAAAATCAA AA ACA AAA
CAAAATCTGACAATGAAACA TCCA TC GCACAA TCTG ATG
TATCCAGGGGTTGTGTGTCC AGGT AG TGTGTT GGAC TAC
CCATCTGATCTGGA CT TCTACCCCTG GG CTA ---
GAM4234 17333 TTGCTGTAGAGGAAGAAGGA G AG AGAAGGA C CCAGCAT C TG TT
TTCTC
GCCGTCGGAGTCCAGCATGG TTGCT TAG GA GCCGT GGAGT GGGAGG G GTG GTAGTTG

GAGGCGTGGTGTTGTAGTTG GATGG GTC CT CGGCA CCTCA CCCTCT C CGC CGTCGGC

TTCTCCGGCTGCCCGCTGCT G G- GTAG--- - ------- - GT C- -----
CTCCCACTCCACGGCGATGT
CGCTGGGGTAG

GAM4235 19183 TGGGACTTCCAGAACTTGGA ACTTC ACTT AA - - C- T T TTGG
GTAACTTGGAGTTGATTCCC TGGG CAGA GGAGT CTTGGAG TTG ATT CCA TT CCT
ATTTTCCTTTGGAGGTGACT ACCC GTCT CCTCG GGATTTC AAC TAA GGT AG GGA
GGCAAATGCAATCTTTAGGA A---- ---- AA T G AC C T ----
AGCTCCTCTGACCCA
GAM4236 11438 GCTGAGATCTGTATCTGTGG ATC ----- G C T T TCCC
ACCTGAATGTTGATCCCTCG GCTGAG TGTATC TGT GA CTGAA GT GA

CTTCAGATTGACATACCTGA TGACTC GCGTAG ACA TT GACTT CG CT
TGCGCTCAGT --- TCCAT G A - - ----
GAM4237 22584 TTCCTGTTGGACCTTCGAAC GGA TCGA G T ---- G AA AAGCAAAAGGA
ATGTCTTCTCCACGAGGTGG TTCCTGTT CCT ACAT TCTTC CC AC AGGTGG TG
AATGAAGCAAAAGGACAACC GAGGACAA GGG TGTA AGAGG GG TG TTTACC AC
CATTTGGTAAAAGGTGGAGA --- ---- - T AAAA G CA ----------
ATGTGGGAACAGGAG
GAM4239 9876 AATTGATAAAGCCAGAGTGG A G GA AACCACT - - A A AGACAATGA
AGACACAGAACCACTGGTTC AATTG TAAAGCCAGA TGGA CACAG GGTT CAC CT CA TG
ACCTACAATGAGACAATGAC TTGAC GTTTCGGTCT ACCT GTGTC CCAG GTG GA GT AC
AGTGGAGAGTGTGACCCAAG - A -- GAAC--- T A G G ---------
CTGTGTCCAATCTGGCTTTG
CAGTT
GAM4240 5874 TGGCAAGAAAGTGCTCGGTG AAGTGCTC - TGA G TG CTCA
CCTTTAGTGATGGCCTGGGC TGGCAAGA GGTGCCTTT AG TG CC GG
TCACCTGGGACAACCTCAAG ACCGTTTT CCACGGGAA TC AC GG CC
GGCACCTTTTGCCA -------- C CA- A GT ----
GAM4241 1761 GTTTCAGACATCAAGGAGTA AC A- G G TTCCTC T A TG GCAG
TCACTGTGCTTTCCTCCTCT GTTTCAG ATCA GGA TATCACT TGCT CTCT TATA C T
TTATAACTGTGCAGGTGGGT CGAAGTC TAGT CTT GTAGTGA ACGA GAGA GTGT G G
GTGCAGAGAAATAGCAGAGT A- AG G G TAAA-- C G GT ----
GATGGTTCGATGATACTGAA
GC
GAM4242 11436 TCGCGCGGGGGGTAATTCGG G AAT T--- --- TCTGGT
GGTCTGGGTTCTGGTGCCGC TCGCGCGG GGGT TCGGGG CTG GGT
GCAGCTTTCCCCGATGGCCC AGTGCGTC CCCG AGCCCC GAC CCG
ACTGCGTGA A GT- TTTC GCG ------
GAM4244 9419 GGTGCCAAGGTAGGGGACAG G T G G G TG TGAGGGC
GGCCTGGGGGTGGTTTTGAG GGT CCAAGG AGGGGACAG GCCT GG G GTTT
GGCAGGCTGCCTGGGGTGTT CTA GGTTCT TCTCCTGTT TGGG TC C CGGA
GTCCTCTTCTTGGGATC G - G G - GT -------
GAM4245 15411 AATTATTTCACTGATGTTTT TTTCAC CTTCTCTCTT TTC TTCT
CTTCTCTCTTCATTTCTTTC AATTA TGATGTTTT CAT TTTCT
TTTCTAGAAATCCATGTTCT TTAAT ATTACGGAG GTA AAAGA
AATTCAGAGGCATTAATTCA TACTTA ACTTAATCTT CCT ----
TTAATT
GAM4246 5685 GCAGGGGCTCACGGAGGAAG G G - T T---------- CTGG
TGCTGCCTGGGCCAGGGGGA GCA GG CTC ACGGAGGAAG GC GC
CCAGCTTTCCTCCGTAGAGA TGT CC GAG TGCCTCCTTT CG CG
CCATGT A A A - ACCAGGGGGAC ----
GAM4247 20934 GAGAAGGTCCCCTTCACCAA AA C C AA C - C C-- AAACT
GGTCCAGGAGCCATTCTAGA GAG GGT CCCTT ACC GGTC AGGAG C ATT TAG
AACTCTGATAAGTCGTCTTC CTC TCG GGGAA TGG CCAG TCTTC G TGA GTC
TGACCGGTCAAGGGCGCTCC C- C C -- - T C ATA -----
TC
GAM4248 1455 CCTCTTGAATAAGCTCTCTG - AA CTC-- TCCTCCC T TTGT
CCTCCTCCTCCCTTTCTCCC CCTC TTGAAT GCT TGCCTCC TTTC CCC
TTGTGGGGAAATGTTTGGAG GGGG AGCTTA CGG ACGGAGG AAAG GGG
GCATCACTGGCATTCGATGG T -- TCACT TTTGT-- - ----
GG

GAM4249 16887 CACTGTCATCTGAGCCTCCC T CA CCTCCC CATA - CACCATCAATACTTCA
CCAGCACCATAGCCCGCCAC CAC GT TCTGAG CCAGCAC GCCCG C
CATCAATACTTCAGTCGGGC GTG CG AGGCTC GGTCGTG CGGGC G
GTGCTGGACACCCCTCGGAG C -- CCCACA ---- T ----------
CCGTG
GAM4250 15797 TGGGGCCAATTTTGTAACTC GG CAA - C C G AGAC
AGATCTTGCTGAGACCAGGA TG GC TTTTGT AA TCAGAT TT CTG
GCATCTGATTTAACAGGAAG AC TG AGGACA TT AGTCTA GA GAC
TTTCA TT A-- A T C G ----
GAM4251 135 CTGCCTCTGGAGTCCTAGAG -- - AG- G-- C AG AGGAG
ACCCGGATTTACTCAGCTAG CTGCCTCTGGA GTC CT AGACCC GATTTA TC CT
GAGAGAGGATGGATCACAGG GATGGAGACTT CGG GG TCTGGG CTAGGT AG GA
GTCTAAGGGTGGCCATTCAG AC T GAA ACA - GA -----
AGGTAG
GAM4252 140 TGGAAAAGGTGTTCATCTGT AAG - A--- --- G GA--- ATGCGGA
ACTATGTTGGTGGAGAGGTG TGGAA GT GTTC TCTGTAC TATGTTG TG GAGGTGT
TATGCGGAATGCCTCAGTGA ACTTT CG CAAG AGACATG ATACGAC AC CTCCGTA
CAGCAGCATATTTGTACAGA CAA T GATG TTT G AGTGA -------
GTAGGAACTGCAACTTTCA
GAM4253 18542 TGTTTAGTGGCATCAGCCCT -- G CA TAA-- TCTG TTTCATTATT
AATCCATCTGATGCTTTTTC TGTT TAGT GCAT GCCC TCCA ATGCTT
ATTATTAGGCATGTTGGAGA ACAG GTCA TGTA CGGG AGGT TACGGA
CTTGGGCAATGTGACTGCTG TC G A- TTCAG TG-- ----------
ACA
GAM4254 1423 TCCTGTTTTATTGGCTGTTT T- TG C CAAG TC - AAGT
AGCAAGACCTTCTTAGGGCA TCCTGTT TAT G TGTTTAG ACCT TTAG GGC
AGTGCTGCTGAAGAGGTATT AGGACGG ATG T ATAAATT TGGA AGTC TCG
TAAATATTTTGTATTGGCAG TT TT T TA-- GA G ----
GA
GAM4255 10759 GTGTCGTTGCATGTAACAAG CGTTG AAGTC T ATTTTATTCTATGC
TCTTTTTTACAATTTTATTC GTGT CATGTAAC TTTT TACA
TATGCTGTATGAAATTCAGT CATA GTATATTG AAAG ATGT
TATATGAGTATAC TGA-- ACTT- T ----------
GAM4256 14990 GGAGATGGACCTGTGATCTG ACCTGTG-- T CC- TT -- GTTTCAA
GGATTACCATGTTGTTTTGC GGAGATGG ATC GGGATTA ATG GTTTTG CTTCAT
TTCATGTTTCAAGTGGAGGA CCTTTACC TAG CTCTAGT TAC CAAGAC GAGGTG
CAGAACTTCATTTATGATCT GTTCTGTCA - ATT TT AG -------
CGATACTGTCTTGCCATTTC
C
GAM4257 1915 ACTTTGATTTACTTAGATAT ATT A --------- A- AACA
GTATGTAACAACAGTGAATG ACTTTG TACTT GAT ATGTATGT AC
TACATTAAGATGAAGTCAAG TGAAAC GTGAA CTG TACATGTA TG
TGTTGCAAAGT GTT - AAGTAGAAT AG ----
GAM4258 15678 CATGCGGGATGCCCAGGGAC G A GGGAC G C GTGG
GGCTGGACAGCACGCGTGGG CATGC GG TGCCCA GGCTG ACAGCA GC
CTGCTGTGCGGCCTGGGCGC GTGCG TC GCGGGT CCGGC TGTCGT CG
TGGCGTG G - ----- G - ----
GAM4259 13380 GGTTAAGTTTCCCTGGGGGG AAG TT -- ACCCAAA--- GAAC
CCACCCAAATCGGGGGAACC GGTT T CCCT GGGGGGCC TCGGGG
CCCGGCAAAATAAAGGGCCC CCAA A GGGG TCCCCCGG GGCCCC

CCTTGGGGGGGAAAAACC AA- GG GT GAAATAAAAC ----
GAM4260 2070 GCAGGACCTTCACAGGGAGG GA T C - - T TC T TTTCT
TTATTTTGTCTCTCTGTCTC GCAG CCT CA AG GGA GGTTATTT GTCTC TG CTCGG
GGTTTCTCTGAGCCACTGAG CGTC GGA GT TC CCT TCGGTAGA CAGAG AC GAGTC
ACAGATGGCTGTCCGCTTTG TC - T G G - TC C -----
AGGCTCTGC
GAM4261 22026 CCAGAAAGGACATCACAGGT A A A- TAA ACCCTGCGAA
AAACTGAAGGACCCTGCGAA CCAGAA GGAC TC CAGG ACTGAAGG
CTTTCAGTATCCTGCCGAGT GGTCTT TCTG AG GTCC TGACTTTC
CTGTTCTGG G - CC TA- ----------
GAM4263 14786 AGCGATCATGTCGCACAAAC AT- CACAAA A AT GACAAATACGA
AAATTTACTATTCGGACAAA AGCG CATGTCG CAAATTT CT TCG
TACGACGACGAGGAGTTTGA TCGT GTACAGC GTTTGAG GA AGC
GTATCGACATGTCATGCT ACT TATGA- - GC ----------
GAM4265 11686 AGAGATCGAGCAATCAAAGC A C - A-- TATCT CAAA T- CTCCTA
GTTATCTGTCAAAGCAATTC AG GAT GAGC AATC AAGCGT GT GCAA TCGG
GGCTCCTACTGATTTTGCCA TC TTA CTTG TTAG TTCGCA CA CGTT AGTC
AAACCACGCTTGTAGATTAG A A A ATG C---- AAAC TT ------
TTCAATTACT
GAM4266 17360 CAGTAGAGCAGTTATTAAAC GA GTTATTAAACCT- CCAAAATGATCTCCTTC

CTTAAAGTTCCAAAATGATC CAGTA GCA TAAAGTT
TCCTTCGACTTTATGTCTCA GTCGT TGT ATTTCAG
CATTCATGTCATGCTG AC ACTTACACTCTGT ----------
GAM4267 9547 CTGGGACCGTGCCTTCAAGC C TG CA CCTAACAACTTCTT CC G CTCCCC
CCTAACAACTTCTTGGCCCA CTGGGA CG CCTT AGC GG CACG TGTC
CGGTGTCCTCCCCGACAGCG GACCCT GC GGAA TCG CC GTGC ACAG
TGCACCTTCACCCGCTGCTC C CT C- TCGCCCACTT---- AC G ------
AAGGTCCGCTCCCAG
GAM4268 10904 AGGCTGAGAGACTGCTCCCC CT CTC GCA GCGTA
ATTGCAGATTAGCGTATAGT AGG GAGAGACTG CCCATT GATTA
CAGATGGGCTACAGTTTTTC TCC CTTTTTGAC GGGTAG CTGAT
TCCT T- ATC A-- -----
GAM4269 11694 TTCAATTTCCTATTCCTTTC T- --- - ----- AGAAG
ACCTGCCCCTAGAAGGGGCA TTCAAT TCCTAT TCCT TTCACCTGCC CCT
AGAGGCGGGTGAGCAGGAGA AAGTTA GGGGTA AGGA GAGTGGGCGG GGG
GATGGGGCTATTGAA TC GAG C AGAAC -----
GAM4270 17686 AGTGCGTAACTGGCATGAGG C AC- G -- G A TTT GAAA
ACTATTGGTCTTTGAGAAAT AGTG GTA TG CA TGA GACT TTGGTC GA
TCTGGCCAACAGTTATCAAA TCAC CAT AT GT ACT TTGA AACCGG TT
TGGTATTGTACACACT A GTT G AA A C TC- ----
GAM4271 563 GATCACAAGGGCAACCCACC A AA------ -- A AGCGTACTACC
AAACTAGCGTACTACCAGTA GATCACA GGGC CCCA CCA ACT
TGGCCTGGGCAATCTTGGCC CTAGTGT CCCG GGGT GGT TGA
CTGTGATC - GTTCTAAC CC A ----------
GAM4272 21171 CCGTCAGCCCTTGGCAGGGG T GGCA GA AGAGG TCAGG
GTCTTGGAAGCCAGAGGTTT CCG CAGCCCTT GGGGGTCTTG AGCC TTTTTGC
TTGCTCAGGGCAGGGAAAGG GGC GTCGGGGG CCCCTAGGAC TCGG AGGGACG
GCTGCAGGATCCCCGGGGGC C ---- G- GAA-- -----
TGCCGG

GAM4273 5503 GCACTTTGTGCCGCACCAGC TTGT A TCC--- C CCTT TCA C- GCCA
TCCAGCCGGTCCTTGTCCTC GCACT GCCGC CCAGC AGC GGT GTCC GC GCC
AGCCGCCGCCAGGTATGCGC CGTGA CGGCG GGTCG TCG CCG CAGG CG TGG
TGGACGCCCGCTTCTCCTGC CCTC - TCCTCT C ---- TCG TA ----
TGGGCGGCCTCCAGTGC
GAM4274 9478 TGGAAGGCGCCTGTGGTCGT A ---- T TCGT AT A TCCCTTCCTTCTT
GGAATTGTTTATGTTTCCCT TGGA GGC GCCTG GG GGA TGTTT TGTT
TCCTTCTTGGCAAAACGTCC ACCT CTG CGGAC CC CCT GCAAA ACGG
TCCTCAGGCAGTTGTCATCC A TTGA T T--- -- - ----------
A
GAM4275 3538 CTTGACCAGGCTCGGAGGTC AGGCT A T A--- AAACAGTGAC
GCCCCGATCGAAACAGTGAC CTTGACC CGG GG CGCCCCG TCG
CGGGACATGGGGTGCCCCGT GGACTGG GCC CC GTGGGGT GGC
TTAAGGTCAGG AATTT - - ACAG ----------
GAM4276 6022 TGGTCTGAGGCAGAGTGTGG CAGA C CAG GTTGGAA G T CAGGATTA
TTCAGTCAGGGATGTTGGAA TGGTCTGAGG GTGTGGTT AGT GGAT GCT GAG AGA
GCTGGAGTAGACAGGATTAT ACCGGACTTC TACACCAA TCA CCTA TGG CTC TTT
TTCTCAGGTGGTGGATCCAA ---- T AAA GGTGG-- A - --------
AACTTAACCACATCTTCAGG
CCA
GAM4278 6510 AAGTATACGAAGTTCCACAT TAC -- C ------- AAGTGG
TGGTTGGCATAAGTGGATGT AAGTA GA AGTTCCA ATTG GTTGGCAT
TAACAAGAAAGCAGTTTGGG TTCAT CT TCGGGGT TGAC CAATTGTA
GCTCTTCAGTTACTT TGA TC T GAAAGAA ------
GAM4279 11576 AGTCTCGAACTCCTGAGCTC A- CCT- C CA CCGCCC
AAGCAGTCCGCCCACCTTGA AGTCTCG ACT GAG TCAAG GT
CCTCCCAAAGTGCTGGGATT TTAGGGT TGA CTC AGTTC CA
CG AACC C -- ------
GAM4280 1097 GGCCGGGCCCACTCGCCGCG - CA- G GC-- CCA TGAACC
CGCCCAGCCATGAACCTGGC GGCCGG GCC CTC CCGC GC GCCA
GAGCCAGAGCGGGGAGGCCG CTGGCC CGG GAG GGCG CG CGGT
GCACCGGTC A CCG G AGAC AG- ------
GAM4281 8744 AGGCATGAAGTTTGATCGAG GAAG ATC GC CCAT ATTAATACATCAA
GCTATATTTCTCCATACTTT AGGCAT TTTG GAG TATATTTCT ACTTT
ATTAATACATCAAAAGGTCA TCCGTA GGAC CTT GTGTAAAGA TGGAA
GAAATGTGAATTCCAGGATG ---- --- AA C--- ----------
CCT
GAM4282 9291 GCTGTGCGGCTCAAGGAGAA - A AGAA A- T AGGAGG
GAAGCTGGTGAAGGAGGTCA GCTGTGC GGCTCA GG GA GC GGTGA
TCGCCGTCAGCTGTGGGCCT TGACACG CCGGGT TC CT CG CTACT
GCACAGT T G GA-- GC - ------
GAM4285 22618 GGCTCTCCATTCCCAGGCTC - - G TCA ATCCAGG
AGTGCAGGATCCAGGCCTGC GGCT CTCCATTC CCA GC GTGCAGG
ATGTGTGGCGGGTGGAGAAG TCGA GAGGTGGG GGT TG TACGTCC
CT A C G --- -------
GAM4286 9429 TGGAGGGAACATTCTGCTTT AACAT C GCACCA GAAGAAGAAACCA
TCAGGCACCAGCTGTGAAGA TGGAGGG TCTGCTTTT AG GCTGT
AGAAACCAACAGTAACTAAA ATCTTCT AGACGGAAA TC TGACA
GGCAGATCTTCTA ----- - AA---- ----------
GAM4287 3592 GCTGAGCGACTTCGAGGGGA GC C G AA--- - TAACTCAGCTGA

AGAAGCCCGGGTAACTCAGC GCTGA GA TTC AGGGG GAAGCC CGGG
TGATCCGTGGCTTTGGTAGT TGACT CT AAG TCCTT TTTCGG GCCT
TCCTGGAAATCATCAGT A- A G GATGG T ----------
GAM4288 5996 GGCCTTGAGTGCTGCTTGCT A- - T T A GAGGGTGGGACA
TGGGCACCGGAGGGTGGGAC GGCCTTG GTGCT GCT GCT GGGC CCG
ATGGGCCCCGGTAGCAAGCA CCGGGAC TACGA CGA TGG CCCG GGT
TGGCAGGGCC GG A - C - ----------
GAM4289 21964 TAGGAGTGTCGGTTGTTAAG C TT-- AA C AGCTTATTC
AACTAGAGCTTATTCCTATT TAGGAGTGT GG GTT GAA TAG
CCAAATCTATCTTGCGCTCC GTCCTCGCG TC TAA CTT ATC
TG T TATC AC - ---------
GAM4291 14039 AAAGGATTATAGTGATGCAT - ATA T-- GTT ACC TTGGACT
TGTCTGAAGTTAGCACCTCT AAAG GATT GTGATGCAT GTCTGAA AGC TC
TGGACTGAATCGTTTGTTTA TTTC CTGA CATTATGTA CAGATTT TTG AG
GACTACATGTATTACAAAGT T AA- CAT GT- CTA -------
CTCTTT
GAM4292 1546 GGTCTATGTCATGAATGAAC GT TCA- ATGA- C T AGGCT
TCGGAGGTGAGGCTCTCCTC G CTATG TGA ACT GGAGG G
TAGTCAAGGTCAAATTCATG C GGTAC ACT TGA TCTCC C
GGTC TG TTAA GGAAC - T -----
GAM4293 12819 GGATCCGCTGCCAGTCCCCA - G CA AC------- A AAACC
CTGAGGAAGGAAACCCCCTC GG ATCC CTGC GTCCCC TGAGGA GG
CTCAAACACTATCGGGGGCC CC TAGG GACG CGGGGG ACTCCT CC
CGCAGGGGATGCC G G CC CTATCACAA C -----
GAM4295 15113 GATGAGGCAGATAGGATGAT G GA----- GA -- G- TTGA
TGACATGGGCTTGAGCCAGA GAT AGGCA TAGGAT TT GACAT GGC
TGTCCAGAAGATCCTGGAGC CTG TCCGT GTCCTA AG CTGTA CCG
ACATGCCTGTC - ACACGAG GA AC GA ----
GAM4296 18354 GCCACCCGGGCAGCGCCCTG C-- CA AGC A TC - TGTC
AGCCTGAGTCCTCGCGTGTC GCCAC CGGG GCGCCCTG CTG G CTC GCG
CGCTGAGCCAGAGCAGGGCG TGGTG GCCC CGCGGGAC GAC C GAG CGC
CCCCCGAGCGTGGT CGA C- GA- - -- T ----
GAM4297 18662 GATGGGAATGAGCCACCTCA T AT--- A-- AG GGGCCCTGAAGAA
GATGTGGAGGGCCCTGAAGA GA GGGA GAGCC CCTC ATGTGGA
ATCCATATAGGAGGGCAGGC CT CCCT CTCGG GGAG TATACCT
TCTTCACTCCCTC - CACTT ACG GA ----------
GAM4300 17357 AACTTGCGTAATGGACCCAC T C AAT CCT C ATTTCA
CCTTGAGCGAATTTCATCCT AACT G GT GGACCCAC TGAG GA
CGCGTGGGTCTTAACACAGT TTGA C CA TCTGGGTG GCTC CT
T - A AT- C-- - ------
GAM4301 1530 TCGCTGACAGGTCCTCTGAT GA G CTGA - -- C ATTCCAG
TGTCCAAGTGTACTCTTCAA TCGCT CAG TCCT TTGT CCAAG TGTACT TTCAAG
GATTCCAGTTTGGACAGTGC AGTGG GTC AGGA AACA GGTTC ACGTGA AGGTTT
AGCCTTGGAACAAATTAGGA GG - TTA- A CG C -------
CTGGGGGTGA
GAM4302 20659 GTAGTGGGTGTTGAGATTGA T T T- G TCTTAAT - GCTTTTA
ACGCTTTCTTAATTGGTGGC GTAG GGG GT GAGATT AACGCTT TGGT GGCT
TGCTTTTAGGCCTACTATGG CATC CTC CA TTTTAA TTGTGGG ATCA CCGG
GTGTTGAATTTTTTACTCTC T T TT G T------ T -------
TCTAC

GAM4303 12599 TCACAGGGCCTAAAGGAAGA - AAA A - ---- C TG A A- GAAG
GTGCTGGGCCCCTGGAGGAC TCACAGG GCCT GGA GAGT GCTGG GCC C G GGACTG GG

TGAGGGAAGCCGGCAGTCCC AGTGTCC CGGA CCT CTCG CGGCC CGG G C CCTGAC CC

TGGAGGCGGTGCCGGCTGCT G --- - T GTGG A GT - GG ----
CTCCAGGCGCCTGTGA
GAM4304 6614 TGGGCATGTGGTGTACAGGT GCA G CAGG CAAGTA G AATC
GGGGGCAAGTATATGTCAGA TGG TGT GTGTA TGGGGG TAT TCAG
ATCCTGAGATGGGAGTCCCT ACC ACG CACAT ACTCCC GTA AGTC
CAAATACACAGCAGACCA AG- A AA-- TGAGG- G ----
GAM4305 10867 AGGTCTGGTTCAGGTGTCCA TCT A TCCA ----- - GCCCAG
GAGTCTCAAGGGGCTGGGGC AGG GGTTC GGTG GAGTCTCA AGGG GCTGGG
CCAGCCCAGCTCTCTTCGGC TCC CCAAG CCGC CTCAGAGT TCTC CGACCC
TGAGACTCCCGCCAGAACCC --- A C--- CGGCT T ------
CT
GAM4306 10801 CTGGAGTGATGTTAGCAGAC - A TT A CCC TA T TTCTTA CCTTT
CCAGCTTAGAGTTCTTCTTT CTG GAGTG TG AGC GA AGCT GAG TCTTCTTTCT AGC
CTTTCTTAAGCCCTTTGCTC GAC CTCAC AC TCG CT TCGA CTC AGAAGGAGGG TCG
TGGGAGGAAGATCTCCAGCT A - -- A --- C- T TC---- -----
TCAGCTCACACTCACAG
GAM4307 853 ATGAATCAGTCACTTGCACA ATCA C ACAATT TC- GCATCATA
ATTAATCCTCTTGGCATCAT ATGA GTCA TTGC AATCC TTG
ACAAACTGGGTTTTAATGGC TACT TAGT AACG TTGGG AAC
AAATGATGACATCAT ACAG A GTAATT TCA --------
GAM4308 15453 CGAGGATGATCAGTACAGCC AG TC A-- CCTT CC C-- AAC
TTGTGGCCAGCCTTGACAAC CG GATGA AGT CAG GTGG AG CTTGAC
GTTAGGAATCTCTCCACTAT GC TTACT TCG GTT CACC TC GGATTG
CTTGAAAGCTATTCATTTCC CT TA AAA CTAT TC TAA ---
G
GAM4309 2570 GCCGGGTGGAGGCGATGCGC -- - A A - CTAG CG TG CCA
CTAGGGCCGGGCTGGAGCCA GCC GGGT GG GGCG TGC GC GGC GGC GAG
CTCGTGCCACGCCATGCTGT CGG CCCA CC CCGC ATG CG CCG CCG CTC
ACGCCGCCAACCCTGGGC GT A G - T TA-- CA TG ---
GAM4310 5730 GTGGAGTGCACCTGGGGTTG -------- CCT ACTGT
GGGGCACTGTGCCCCCAGCC GTGGAGT GCA GGGGTTGGGGGC
CCCTGCTCCTTTGGACTCTA CATCTCA CGT CCCCGACCCCCG
C GGTTTCCT C-- -----
GAM4311 1857 TCTTGGCGCGCGGCACTGGG G A- - A C-- CGA
AGCCGCGGGCCGAGCCTGTC TCTTGGCGCGC GC CTG GG GC GCGGGC
AAGCCCCGCAGCAGCAGCGC AGGACTGCGCG CG GAC CC CG TGTCCG
GTCAGGA A AC G C AAC ---
GAM4313 11392 GGACCAAGCAAGTCAGGAGT CAAGCA CA CCAT A AGGCT
GTGGCCATGTTTTCTGAGCA GGAC AGT GGAGTGTGG GTTTTCTG GC
GGCTGCCCAGAGGGCCCACA CCTG TCA TCTCACACC CGGGAGAC CG
CTCTACTGTCC ------ -- ---- C -----
GAM4314 17467 CACCAAGAAGTTGACAGCCA CAA T CCA A-- TATAC
GGTGAATGTTATACACAAGC CAC GAAG TGACAG GGTGA TGT
TCATCGTCTGTCATCTTCAC GTG CTTC ACTGTC CTACT ACA
GTG CA- T TG- CGA -----

GAM4316 5626 GCACGGCGAGGCATGGACGC ACG GA A A-- AT G-- T GCGACA
TTTCATGGGTGGTTACGCGA GC GC GGC TGG CGCTTTC GG TGGT AC
CAGTTGCCAGGACCGAGGGC CG CG TCG GCC GCGGGAG CC ACCG TG
GAAACCGGCTGCAAGGC GAA -- - AAA -- AGG T ------
GAM4317 8015 GTGGGTCTGACTTGGGGGCC G GACTT CAT AAAC TC - GTTTTTAA
ATTTTAGAAACTGACTCTGA GTGG TCT GGGGGC TTTAG TGAC TGA AGAA
AGAAGTTTTTAATTCTCTCA CACC AGG TCCCCG AAGTC GTTG ACT TCTT
TTGTTGCTGAATGCCCCTCG G GACGC T-- ---- TT C --------
CAGGGAGCCAC
GAM4319 21371 GCAATGCCGTAGCTATGGAA AT GTA - TG T AG- TTTGT
TAGAAGCATTTGTTGAACTC GCA GCC GCT A GAA AGA CA
TTTTTGTGAGCCAGGCCCTG TGT CGG CGA T TTT TCT GT
T CC AC- G GT - CAA -----
GAM4320 3191 GTCCCTCCGAACAAGTGAAA --- A AGTGA G T TATGT
AGAGGTCCTTGTATGTCAGG GTCCC TCCGA CA AAA AGG CCTTG
GCCCTGTTTGATTATGATCG CAGGG AGGCT GT TTT TCC GGGAC
GACTCGGGAC CTC A ATTAG G C -----
GAM4321 7900 TCCCCGACAGGTGTCCTCTC -- -- -- AT---- CTGA
CCGGAATCGGGGTCTGAACC TCCCCGAC AGGTGT CCTCTCC CGGA CGGGGT
CCGCCAAGCTCTGCAGGGGA AGGGGCTG TCCACG GGAGGGG GTCT GCCCCA
GGAAGCACCTGGGTCGGGGA GG AA AC CGAACC ----
GAM4322 1335 AGGTGCTGAGGAGTTCCGGA - G T - A C AG- TCCT
ACCCCAAGGCATCCTTGCGT AGGTG CT AGGAG TC CGGA CC CA GCA
GTGCGGCTCTGTGACCTCCT TCCAC GA TCCTC AG GTCT GG GT CGT
GAGCCACCT C G C T C C GTG ----
GAM4323 14677 CCAGGCTTTCTGGTTTTTGG TT TT G - AG- T CACG
CCGTGTAGAGCTACCACGGT CCAGGCT CTGG TTT GCCG TGT AGC AC
GCTATAACGCCGGTGAAGCT GGTTTGG GACT GAA TGGC GCA TCG TG
TCAGGGGGTTTGG GG TC G C ATA - ----
GAM4324 20334 GGCCTTTCAGCTAACATTCA CT TA A- G AACCACTAC
TGGATGCAAACCACTACTGG GGC TTCAGC AC TTCATGGAT CA
TCTGTGGACGGTCTGCTGAA CCG AAGTCG TG AGGTGTCTG GT
TGCC T- TC GC - ---------
GAM4325 7517 GCTGTAAAACACTCTACACA AAAA- - TA- AA A---- GACGCA
ATTTCACAAGACGCATTGCA GCTGT CA CTC CAC TTTC CAA
GGGGAAAAAGTGACTGAGAT TGACA GT GAG GTG AAAG GTT
GGATCAACAGT ACTAG A TCA AA GGGAC ------
GAM4326 16451 CTGTCCGGTTGAAACACAAC - GAAA CAAC GA -- TGGC
GCGAGGATCGGGCGTGGTGG CTGTC CGGTT CA GC GGAT CGGGCGTGG
CTCACGCCTGTAATCCCAGC GACGG GCCGG GT CG CCTA GTCCGCACT
ACTTTGGGAGGCCGAGGCAG A AGG- TTCA AC AT ----
GAM4327 12823 CCTGCAGTATCTCTGAGTGT G GT - GTG-- GTACAT TATAAAAAAT
GCCTGTACATATACATATAA CCT CA ATCTC TGAGT CCT ATACA
AAAATTGTATCATAAGGAAT GGA GT TAGAG ACTCA GGA TATGT
TAACTCATGAGATTATGGAG G AT T ATTAA ATAC-- ----------
G
GAM4328 203 ACCCTAGAAAAGATCACCAA A T CCAA-- CC CCC - CCT
CAGCCGTCCTCCCTGCGTCA ACCCTAGAA AGA CA CAG GTCCT TGC GTCAT
TCCTGTGACTGCACAGGACT TGGGGTCTT TCT GT GTC CAGGA ACG CAGTG
CTGGGTTCCTGCTCTGTTCT G C CCTTGG T- C-- T ---

GGGGT
GAM4329 7117 GGGTGCCCCTCGAGGACTGC G - G GA ------- A ACTGCA
TCTGAGATCAACTGCATGAT GG TGCCC CTC AG CTGCT CTG GATCA
CCGGGTGAAGAAGCAGGTCT CC ACGGG GGG TC GACGA GGC CTAGT
GGGTGGGCAGCC G T - TG AGAAGTG - ------
GAM4330 13976 GATGAGGGGGGATGCGAGTA GG--- TCCA AGAAAAATCACAC
CCTCCAAGAAGAAAAATCAC GATGAG GGGATGCGAGTACC AGA
ACTCTGAATGGTGCTTGCAT TTACTT TTTTACGTTCGTGG TCT
TTTAGGGTTTCATT TGGGA TAAG ----------
GAM4332 15534 CCGGGCGAGCTGCTGCTGCG GA -- C T- G G TCTTGCCGC
TCTGCTGCGGATGATCATCT CCGGGC GC TGCTGCTG GTC GCTGCG AT ATCA
TGCCGCTGGTGGTGTGCAGC GGTCCG CG GCGGCGGC TAG CGACGT TG TGGT
TTGATCGGCGGCGCCGCCAG AC CC - TT G G ---------
CCTGG
GAM4333 13877 GTCAGATGCCTGATAACAGG AG - TAACA T TT TTAT
GTGCAGTGTTGTTTATACTT GTC ATG CCTGA GGG GCAGTG GT
CATTGCTCCTTCAGGACATG CAG TAC GGACT TCC CGTTAC CA
GAC G- A ----- T TT ----
GAM4335 22028 TGCTGGGGGCCCGAGTGGTG - C - T TG--- AAA- C ACAA
CTGGTGGAAAAGCGCACAAG TGCTGG GGGCC GAG TGG GC GTGG AG GC
TTCTCTCGCCACAACGTGCT ACGACT CCCGG CTC ACC CG CACC TC TG
CCACCTCTGGCCCTTCAGCA T T C T TGCAA GCTC T ----
GAM4336 18400 GCAGTCTGGATTCGTGTTTA --- TT G A AAG AGT- TT ACAT
TTGAAGCCAGTAATTAGAGA GCAGTC TGGA C TGTTT TTG CC AA AGAG
CATCTTTTTTTCCCAGGACT CGTCAG ACCT G ACGAA GAT GG TT TTTC
AGAAAGCAAGGTTCCACATG TAC TG A A CA- ACCC TT ----
ACTGC
GAM4337 11817 CTGGGTAAACTAATGGTTTG AAA A TGCG- ACAA - CTACAATC
CGTATCACACAATTACACTA CTGGGT CTA TGGTT TATCAC TTA CA
CAATCTGATAGGAGTGGTAA GACCTA GGT ACCGA ATGGTG GAT GT
AACCAGCCAATGGAATCCAG A-- A CCAAA AG-- A --------
GAM4338 19556 GCCCAAGCACGGAGTCCCCA - CACG- - CA-- CA CACGCCCACCACAA
GAGGAACACACACGCCCACC GCCC AAG GAGTC CC GAGGAA CA
ACAATGCATTTCTCAGGAGG CGGG TTC CTTAG GG CTCTTT GT
TGATTCAGGAACTTAGGGC A AAGGA T AGGA AC ----------
GAM4339 12463 AGCCTGGAGCTCCTCCCTGC --- G CT CA ---- TG TCG
CAGCCCCAGGGGCTGGTCGC AGCCTG GA CTC CCCTGC GC CCCAGGGGC G
TGGTCCCTGGGCACAGTGAG TTGGGC CT GAG GGGACG TG GGGTCCCTG C
CAGGGCTGAGGTCAGACGGG AGA G TC AG ACAC GT ---
TT
GAM4340 14665 TCCAGGCATGGACAGAGGGA ACAGA GCGA G CC---- TCCA
TGCGAGGCTGGCCTTCCCTG TCCAGGCATGG GGGAT GGCTG CCTT CTG
TCCACGGTCCTCTGAGGCAG AGGTCTGTACC CTCTG TCGAC GGAG GGC
CTGAAGTCTCCCATGTCTGG ----- AAG- - TCTCCT ----
A
GAM4341 8223 CATTGACAAGACAGGGTTCC ACAAGACA CCAC - A- ACAATTTACCA
CACTGACAAGACCACAATTT CATTG GGGTTC TGA CA GACC
ACCAGGTTGCTGCTCAAACG GTAAC CCCAAG ACT GT TTGG
AACCCCCAATG C------- CAA- C CG ----------
GAM4343 14930 CCAAGATCACTCAATTTATC GATC TC ----- - T TACTTCATC

AGTAATGGAGCTTACTTCAT CCAA AC AATTTAT CAG TAA GGAGCT
CAGCTTCCTTGCCTGCTTTT GGTT TG TTAAATA GTC GTT CTTCGA
ATAAATTAGGTTCTATTGG ATCT GA TTTTC C C ---------
GAM4344 11366 GAGGCACAAGGAACAGCTGC A A AACA T CT C CC C CAA GGACA
TGGCTGCGGAGCCCGTGCGC GAGGC CA GG GC G GGCTG GGAG CGTG GCGC GCT
GCCAAGCTGGACAGGCAGCG CTCCG GT CC CG C CCGAC CTTC GCGC CGCG CGG
CCGCGTCTTCCAGCCCTCGC - C ---- - TC - T- - A-- -----
CCCTGGCCTC
GAM4345 13523 TCACTGCTGCCCACTGCAGG CCC - AG C- A- AAGTAAA
GTCCCTGAGGTGAAGTAAAC TCACTGCTG ACTG C GGTCC TG GGTG
GCCGGCGCTGGGCTTGGCCA AGTGACGGC TGAC G TCGGG GC CCGC
GTCGGCAGTGA --- C GT TC GG -------
GAM4346 19736 TAGAGCAAGTGCAGCCATAA TGCAG AAGTG A GA G TGT ATTACAATTAT
GTGGTAAGAAATGAATGAGT TAGAGCAAG CCAT GTA GAAAT ATGAGTATG CTG TCCA
ATGGCTGTGTTCCAATTACA GTCTCGTTC GGTA TAT CTTTA TGCTCATAT GGT AGGT

ATTATTATGGATGGATATAC TAA-- GACTG C -- A --- ----------
TCGTATTTCCTATGTCAGAT TA
GGAATCTTGCTCTG

--
GAM4347 14598 CGGAACCGCTGTCTTTCACG A T TT C TCTC CCACACG CGACCCCA
CCTGTCTCACTCCACACGGG CGGA CCGC GTCT CA GCCTG ACT GGGGCCC
GGCCCCGACCCCAGGGTCCC GTCT GGTG CAGG GT CGGAC TGA CCCTGGG
GAAAGTCCCAGGCTGTTGGA - - TT - CC-- AAG---- --------
CGTGGTCTG
GAM4349 8339 GTCCCTGTCATTGGTGGCCA C TG A T CCA A CCA TCCCCC
TGCTGGGAAGACCATCATCC GT CC TC TTGG GG TGCTGGGA GA TCA
CCCTGATCTCTCAGCGCACC CA GG GG AACC CC GCGACTCT CT AGT
CCCAAGGTGGGAAC A GT - - CAC - --- ------
GAM4350 7777 TCTGTTATAACATCTCAACT ATAAC TCA- A - AA- TATCGATACAT
TACCTGTTGCCACTTGGAAT TCTGTT ATC ACTT CC TGTTGCCACTTGG TATA
ATATATCGATACATTATGGT AGACAA TAG TGAG GG ACAATGGTGAGCC GTAT
GCCGAGTGGTAACATGGGAG CC--- TTTG - T GTG ----------
TGTTTGATCCAACAGA
GAM4351 12217 AGGTGGGTGGATCACCTGAG TGGA - A- AGCTCGAGACCAG
GTCAGGAGCTCGAGACCAGC AGGTGGG TCACC TG GGTCAGG
CTGGCCAACATGGTGAAACC TCTACCC AGTGG AC CCGGTCC
CCATCT CAA- T AA ----------
GAM4352 6744 TGATTGCCTGCCAGAAAACT CCA- AA - ----- T TCCAAT
GCACATGACTCCAATGTCCT TGATTGCCTG GAA CTG CA CA GAC
GCACATTGCCAGACTTCCAA ATTGACGGAC CTT GAC GT GT CTG
ACAGGCAGTTA AAAC CA C TACAC C ------
GAM4353 3127 CAGAGGTCTGTCTATCCTGC TCT A - C- ---- CCACCCC
CCTGGTCTCCTCCACCCCAG CAGAGG GTCT TC CTGCC TGG TCTCCT
GAGAGTTTTCAAAGGTAGAG GTTTCC CAGG AG GATGG ACT AGAGGA
AGGACCCTTTG --- - A AA TTTG -------
GAM4354 18343 CTTCTGTCCACCTGTCCTGC G- -------- CAGA - TTTCCAGCC
AGAGGAGTCGTTTCCAGCCC CTTCT TC CACCTGTCCTG GG AGTCG
GGCTGCCCCAGGATGGGTGA GAAGA AG GTGGGTAGGAC CC TCGGC

GTTCAACGAGAAGAAG AG CAACTTGA C--- G ---------
GAM4355 10313 GGGCTGCAAAGCGAGAAGAG C GAGA GC - A GTA CCT
AGCCGGTGGAGTGTACTTGT GGGCTG AAAGC AGAGA C GGTGG GT CTTGTC
CCCTGACAGGCTGACCTACC CCTGAC TTTCG TCTCT G CCATC CA GGACAG
TGAGTCTCTGAGCTTTTCAG T AG-- GA T - GTC ---
TCC
GAM4356 1569 GGCCCCGTTCGTTGGGGGGC CCC T -- - AA G GTCA CCATGTC
TCATCAAGCTGTCGTCATGC GGC GT CGTT GGGGGGCTC ATC GCT TC TGCGC
GCCCATGTCGCGCGAAGAAG CCG CA GCAG TCCCCTGAG TAG CGA AG GCGCG
CCCGATCGAGTCCCCTGAGA TGT T AG C CC - AA-- -------
CGTACTGTGCC
GAM4357 20714 TGTGATCCCAAAGTTAACCT GAT TTAACCTTG TATAATTTGT
TGGCTATCTATAATTTGTGA TGT CCCAAAG GCTATC
TGGCAGCTATTCTTTGGGTA ACA GGGTTTC CGGTAG
AACA AAT TTATCGA-- ----------
GAM4358 22834 AGGGCCATGCAGCTGGAGAC GC G GGAG A GG--- - TT TGA
CCATGGGGGAGCTGATGTTG AGG CAT CAGCT ACCC TGGG AGCTG ATG GTTT
TTTTGAGAGCCGTGCAGCTG TCC GTA GTCGA TGGG GCCT TCGAC TGC CGAG
GAGATCCGGGGGTGAGCTGA TT - G--- G AGAGG G -- ---
TGTTCCT
GAM4359 17859 AGTGTGATATCAAGAAAGGG GATA-- AG --- GGA ATCAATG
CTTCACCAGGATGATCAATG AGTGT TCAAGAA GGCTTCA CCA TG
CAAATGGATATGGAGCTTTC TTACA GGTTCTT TCGAGGT GGT AC
TTGGAATGAAACATT AAGTAA -- ATA AA- -------
GAM4360 28 ATTTCACAGTCTTGGCCCTT - CT C ATCC CCCCTGA
CACATCCTGCCCCCTGAGCA ATTTCACA GT TGGC CTTCAC TGC
GTGGAGAGCCACACGTGTGA TAAAGTGT CA ACCG GAGGTG ACG
AAT G C- A ---- -------
GAM4362 6712 CATCATTAGAGCCCTGGTAG - TA GCCCT T A A TTTTC
AATGACAGCCTTTTTCAGGT CAT CAT GA GG AGA TG CAGCCT
TGCCAGTCTCCTCATCCATG GTA GTA CT CC TCT AC GTTGGA
TATG T C- ACT-- - G C -----
GAM4363 14515 GCCCCATCAGGGATGGTCAC - A- ACA CCAC - CT TCTGCCCAATCAT
AGTCCACGCCACAGGGGCTG GCCCCA TCAGGG TGGTC GT GCCAC AGGGG GAC
ACTCTGCCCAATCATGTCCC CGGGGT GGTCCT ACCAG CG CGGTG TCCCC CTG
CCTGGTGGCAGCGACCAGAT C AG --- A--- G -- ----------
CCTGGCTGGGGC
GAM4365 9433 CCTGGGCCTGCCACTCCCAC CTGC C- C CCT AT ----- C TGCT
GCCCTTCACCAATGCCGTCC CCTGGGC CACT CCA GC TCACCA GC CGTC AGC
AGCTGCTGCTGACGCTGAAG GGACCTG GTGA GGT CG AGTGGT CG GCAG TCG
CTGGTGAGCCTGGCCAGTGA AA-- CC C --- -- AAGTC - ----
AGTCCAGG
GAM4366 17784 ACAGGAACTTTGGAGATAAA AACTT TAAA CTCT-- ATTGGCAA
CAGGGCTCTCGACATTGGCA ACAGG TGGAGA CAGGG CGAC
AGTTGCACCATCCCTGGTTT TGTCT ACCTCT GTCCC GTTG
CTCCATCTGT ----- TTG- TACCAC --------
GAM4367 13362 CTATGGCATTTGCAGATGTT - GCA CA AGC ACGT
CAGCCCCATGTAGCTGACGT CTATGG CATTT GATGTTCAGCCC TGT TG
CATGGACAGGGCTGGATGTT GATGTC GTGAG TTGTAGGTCGGG ACA AC
GAGTGACTGTAG A --- -- GGT ----

GAM4368 2679 TGGAGGGTCTCTAGTTAATT TC TTAA - G G AAG -- GGGT
GGCATTCCGGTGCTTAAGGC TGGAGGGTC TAG TTGG CATTCCG T CTT GCC ACTTTT
CACTTTTGGGTAGAGGTTTG ATCTCCTAG ATC GACC GTGAGGT A GAA CGG TGGAGA
GCAAGGATGGAGTGTCCAGA T- CA-- T - G --- TT ----
CCTATGATCCTCTA
GAM4369 10418 TCATGATATCAAGTGCCTCA T AT CT- TAA- CTT
TTAAATTTGTCCTTGACAGA TCA GAT CAAGTGC CAT ATTTGTC
TGGATGTGCCAGCACTTGGT AGT CTG GTTCACG GTG TAGACAG
CTGA - -- ACC TAGG ---
GAM4370 16777 GGCTTTTTCTTCTGGGGACA TTCT G--- ATCAC C AACAAC
GCATCACCCCAGGAAACAAC GGCTTT TCTG GGACAGC CC AGGA
TCCTTGGAGCTGTCCATTGC CCGGGA AGAC CCTGTCG GG TCCT
AGACCACAGGGCC CACC GTTA A---- T ------
GAM4371 4586 GGGGATCATGAAACAGCCCA G GAAACA - -- TAAGCTGC
ATTAGCATTAAGCTGCATGT GGG ATCAT GCC CAAT TAGCAT
TAAAATTGTGGTAATGATGC TCC TAGTA TGG GTTA ATTGTA
CT G A----- T AA --------
GAM4372 20864 TGTTTTTGGCATTATTCCAA TT TA AA T- GTTTTAA
CATGCTTTGTTTTAAGAAGC TG TTTGGCAT TTCC CA GCTTT
CTTGAAGGGAATGTCAGATT AC AGACTGTA AGGG GT CGAAG
CA TT -- AA TC -------
GAM4373 15197 AATGACACCGTTGATTGAGC - - AG- G AGA
TTGTCAGCAGAGCTGAAAGA AATG ACA CCGTTGATTG CTT TCAGC
GACAGTCGACGGATGTGCAT TTAC TGT GGCAGCTGAC GAA AGTCG
T G A AGA - ---
GAM4374 3044 GGGCGCCTCCTCCGCGGGTA C-- --- C - ACC -- TACGAC
TGACCAGTCCGCCTACGACG GGGCGC TCCTC CG GGGT ATG AGTCC GCC
GCAAGGATTACATCGCCCTT CTCGCG AGGAG GT CCCG TAC TTAGG CGG
GAACGAGGACCTGCGCTC TCC CAA T C A-- AA ------
GAM4375 16289 ACTGTATTTTTACTATACTG TT ------- T- TATG TACCAC
TTGCTATGTTTGGATACATA ACTGTAT TTACT ATACTGT GC TTTGGATACA
CCACTGTGTTTAAGTTGCCT TGACATA AATGA TATGACA CG GAATTTGTGT
ACAGTATTCAGCCCAGTAAC C- CCCGACT TC TT-- ------
ATACAGT
GAM4378 20005 CCCTGCCTGCTAGCTGGGGA TGCCT - CCG CT CA GTC
CCGCTCCTTGGCAGATGTCA CCC GCTAGCTG GGGA CTC TGG GAT
TCATCCATGAGATCTCCCAC GGG TGGTTGAC CCCT GAG ACC CTA
AGTTGGTTTGGG TT--- A CTA T- TA ---
GAM4379 5496 GATCCAGCAGGAAGTGCTGG CA- AG- AGT GT CC -- CAACGC
TGACCCCGGGCCGCAACGCC GATC GC GA GCTG GAC CGGGC CG
GACGCCCGTGTCGTCAGTTC CTAG TG CT TGAC CTG GCCCG GC
GTCAAGGTGAAGATC AAG GAA GCT TG T- CA ------
GAM4380 5285 GCTAGAGCTGCCAACAGGGC -- T A AGG CCAG C ---- G AAGTT
TCCAGGGAGCTTGGCTTCTG GCTAG AGC GCC AC GCT GGAG TTG GCTTCT TAG
TAGAAGTTCTAAGGAAGCGG CGATC TCG CGG TG CGG CCTC AGC CGAAGG ATC
TACGAACTCCACGGCGGGTG AA - G GG- CA-- A ATGG A -----
GGCGCTAACTAGC
GAM4381 9003 GAAAGCTAGTAACAGGTACA TA C- T AT A- GTATATAGCTTA
TAGGTAACCAAAGTATATAG GAAAGC GTAA AGG AC AGGT ACCAAA
CTTATTTGGTGAATCTTCGT CTTTTG CATT TCC TG TCTA TGGTTT

CCTCATTACGTTTTC -- AC - CT AG ----------
GAM4383 13198 TCTCGTTCATCCATTCATGC GTTCAT--- TTC G- - AATT
GCGTCACTAATTAGATGACG TCTC CCA ATGC CGTCA CT
AGGCATTTGGCTACCTTAAG AGAG GGT TACG GCAGT GA
AGA AATTCCATC T-- GA A ----
GAM4384 1919 TCCGGATGTCTATAAGACTT A CTAT C TG TT TTTATTTGTT
TGTATCTTCCTTTATTTGTT TCCGG TGT AAGA TT TATC CC
GGTTGGTATGAATTTTGCAG AGGCC ACG TTTT AA ATGG GG
CCGGA G ---- - GT TT ----------
GAM4385 8667 CTTTGAAGCAGGTATCTTGC AG-- TATCTT CCACC TCGAAG
ATGGCCCACCGGGGTCGAAG CTTTGA CAGG GCATGGC GGGG
TCCCTGCCATGCTACCTCTG GAAACT GTCT CGTACCG CCCT
AAAGTCAAAG GAAA CCAT-- T---- ------
GAM4386 11708 GGATTCTGCATACGCCATCT T A - ---- CTG A GGA CACCCC
CTGAGAGCCATGGAGGGAGC GGAT CTGC TA CG CCATCT AG GCCATGGAG GCCA
CACACCCCTGGTGACTTCAT CCTA GGCG AT GC GGTAGG TC TGGTACTTC TGGT
GGTGCTGGATGGGAGACGCT C - C AGAG --- G AG- ------
AGCGGCATCC
GAM4387 187 TTTTGGGAAGGGGGACCTGC GG GA TG -- AATTTATCCTACA
TGTTTGGCCAATTTATCCTA TTTT GAAGGGG CC CTGTTT GGCC
CAGGTCTTGGACGGTGGGAC AAGA CTTCTCC GG GGCAGG CTGG
CTCTTCAGAGAA GA A- GT TT ----------
GAM4389 14362 AGGAGCTGGCTGTGAGCGCC A T T C C - ATTGCTAC
CTGGGAGCCATTGCTACGGC AGG GC GGC GTGAG GCC TGGG AGCC
TGCCCAGGCCTCGCTGCTGC TCC CG TCG CGCTC CGG ACCC TCGG
CCT - - T - - G --------
GAM4390 6487 GGCCCCCGCTGGCTTGCCAA C----- T AAG G AAT
GCTTGGGGAATTCCAGAGAG GGCCCC GCTGGCT GCC CTT GGG
GGGCAGTTAGTATTAGTGGG CCGGGG TGATTGA CGG GAG CCT
GCC TGATTA - GGA A ---
GAM4391 9790 GGACTCGGCCCCCTGCCAGC A TC C--- CA- AA AT GCCAGGAG
CCCCGAAGCATTGCAGCCAG GG C GGCC CCTGC GCCCCCG GC TGCA
GAGTGCAGCGTGGGGGCCCT CC G CCGG GGACG CGGGGGT CG ACGT
GCAGGCCATGGCCAGGCC - GA TACC TCC G- -- --------
GAM4392 19306 TCCTACGAGATGATGATGCA AT- G GTCCC-- T CCCACCC
GTGTGTGTCCCGCATGTTGG TCCTACGAG GAT ATGCAGTGTGT GCATGT GG
CCCACCCCCTGCATGTCATC AGGGTGTTT CTG TACGTCGCGTA TGTACG CC
TCAATGCGCTGCATGGTCCA GAC G ACTCTAC T -------
GTTTGTGGGA
GAM4393 9689 TCTGGTATGTTTCTTATAGC - ATG TT AT AAC- TCAT
AAACTGTTGTTCATGCAACA TCTG GT T CTT AGCA TGTTGT
CTTGTGCTCAAAGGGGAAGG GGAC CG G GAA TCGT ACAACG
CACAGG A GAA GG AC GTTC ----
GAM4394 7993 GATGTTTCACAGCCAGGCAG - AGCCA C TGATATTAACAGAC
TTTATGATATTAACAGACTA GATGTTT CAC GG AGTTTA
GACTCCACAGGTGTAAACGT CTGCAAA GTG CC TCAGAT
C T GACA- - ----------
GAM4396 15001 GTACAGGCTGAGGCCTTTGA T - -- TTT CATCTACTTCA
CAGTGTTACCATCTACTTCA G ACAG GCT GAGGCC GACAGTGTTAC
GTGACATTGTTGGCTTCACA C TGTT CGA CTTCGG TTGTTACAGTG

GCATTGTC - A CA --- ----------
GAM4397 9245 GGAATGGTATTAGTCAAACA AT-- TA AA G G- C TAC
TGGTGCCAGTGTCTTTTACA GGA GGTAT GTC ACAT GTGCCA TGT TTT
AAAACAGATGGCATAGTGTC TCT CCATG TAG TGTG TACGGT ACA AAA
AGATGTACCTTACTCT CATT -- AC A AG A ---
GAM4399 10508 GTCTCAGCTAGAACGAGCGG CT AGAA- - A GGAAGG
CCCTAGGTTTTCGGAAGGGA GT CAGCT CGAGCG GCCCT GGTTTTC
GGATCAGGGTATGTTTGCGA CA GTCGG GTTTGT TGGGA CTAGGAG
GCGGCTGGAAC AG CGAGC A - ------
GAM4400 3418 ATAGGTATTACTGTATCTCA ATT ATCT G - --- GC- TATTA
GGGAGGTGTCTGCAGTATTA ATAGGT ACTGT CAG GAG GTG TCT AGTAT
TTAGTATTTAAGGAAATCAT TGTCCA TGACA GTC TTC TAC AGG TTATG
ACTTGCTGTTGACAGTACCT --- GTT- G A TAA AAT -----
GT
GAM4401 3845 GATAAGGACCTGTTTGGGGC TA- C GGCAGC CAAAAT
AGCAGGGAGCAAAATCTCCT GA AGGA CTGTTTGG AGGGAG
TTAACAACCAAGCAGTTCCT CT TCCT GACGAACC TTCCTC
CATTC TAC T AACAAT ------
GAM4402 2959 GTACCCCTCTCAGTCTGCAG - CA CT T AGT- TTAAAGT
TATTGAGTTGTTTAAAGTAT GTA CCCCTCT GT GCAG ATTG TGT
ATGTGCAGTCTTGCTTACAA CAT GGGGAGG CA CGTT TGAC ATA
GGAGGGGTTAC T AA TT C GTGT -------
GAM4403 430 TCAGTGGCTACGGGATGAAC -- GA AA G CAACAC CAGAAA
TGGCCAACACGCAGCAGAAA TCAGT GGCTACGG TG CT GC GCAG
CTGCAGAAGAGTGAGCAGTC GGTCA TCGGTGTC AC GA TG CGTC
TGTGGCTCAACTGG AC TG -- G AGAAGA ------
GAM4404 17649 GAGAGAGAAGAAAGAGAAGT A G AGAAG AAC A --- GGTGGGATAGG
GAAACGACAGTTGGTGGCTT GAG GAGAA AAAG TGA GAC GTTGGT GGCTT
GGTGGGATAGGAAGCTGAAA TTC CTTTT TTTT ACT TTG TAACCA TCGAA
CCAATGGTTAAGTCAAAGTT - G GAA-- GAA G AAG ----------
TTGTTTTCCTT
GAM4405 18113 TTAGACCTGCTAGCCAGTAT AC -- A--- C G AATGAG
GTTCCCTGGTGAGAATGAGC TTAG CTGCT AGCCAGT TGTTC CTG TGAG
TCATAGTGAATGACCAGCTG AGTC GACGA TCGGTCG GTAAG GAT ACTC
GCTGTAGCAGAACTGA AA TG ACCA T - ------
GAM4406 2430 CCAGCTTCCCTACTCCTACC GCT - ----- A CT- C-- TTTATACT
CTGGCCCTTTTATACTAGGA CCA TC CCT ACTCCT CC GG CCT
CTCCTTAGGAGGAGTGAGAC GGT AG GGA TGAGGA GG CC GGA
AGGTGATAATGG AAT T CAGAG - ATT TCA --------
GAM4409 21093 ATATAAACCTGGTTGCTAGC T TT CATTCT -- AAGAG - GTTC
ATTCTGTGAAATCAGTGAAG ATA AAACCTGG GCTAG GTGAA ATCAGTG ACTG GA
AGACTGGAGTTCTCTCAGTG TGT TTTGGATC TGATT CACTT TAGTCAC TGAC CT
CACACACTGATTTTTCACTT C CC ------ TT ACACG T ----
AGTCCCTAGGTTTCTGT
GAM4410 12715 CTATGTATGAGAGAATAAAG - G - AT- - AAAACAAAC TAAT
TATTTTGGAAAAACAAACGG CTATG TAT AGA GA AAAGTA TTTTGGA GGA
ATAATTCTTTAAATCCAGAA GATAC ATA TCT CT TTTCAT AAGACCT TCT
CTACTTTTTATCTTCTGATA T G T ATT C AAATT---- ----
TCATAG
GAM4411 10625 GTTCCACACCTTGCTCATCT A TG C - C GATCTGAGAGTTGA

CCTTGTGCCCTTGGATCTGA GTTCC CACCT CTCAT TCCTT GTGCC TTG
GAGTTGACGAAGGCGCGGAG CGGGG GTGGA GGGTG AGGAG CGCGG AGC
GATGTGGGAGGTGAGGGGC A -- T G A ----------
GAM4412 11075 GCCCAGAGGACTCCCAACCC A A C C G T - CAAGAA
TGGCTTGGTGTCAAGAAACA GCCC GAGG CTCC AAC CT GCT GG TGT
GCCAGCAAGAGTTAGGGGCC CGGG TTCC GGGG TTG GA CGA CC ACA
TTAGGGC A - A A A - G ------
GAM4413 11785 GTTTTGAATGTAAAGAAAAA - A AAAGAAAAA- AAT TCAG
TTGTGGAAATGCTGTCAGCA GTTT TG ATGT TTGTGGA GCTG
GCTATTCACAGACCAAACCA CAGA AC TACA GACACTT CGAC
GACATCCATAGAC T C GACCAAACCA AT- ----
GAM4414 14858 TTCCAACCAGCTGTATTTAC ------- GTATTTA TG TAT T TTGTG
TCCTTGGAATATGGTGCTTG TTCCAAC CAGCT CTCCT GAA GG GC
TGGCCTTTCTGAGGAGAAAG GGGGTTG GTCGA GAGGA CTT TC CG
CTGTGGAGAAGTTGGGG AAGAGGT AA----- GT --- - -----
GAM4415 16609 GTGGCCCAGAGTCCGAGTCG G G -- AGT G T-- G CCT
TGCAGGTGCTGTGGGCCCTG GT GCCCA AGT CCG CGT CAGG GCTGT GGC
CTGGCAGTGCTCCTGGCGTC TA CGGGT TCG GGT GCG GTCC TGACG TCG
GTGGAGGCTGTGGGCGAT G G GA GCT - TCG G ---
GAM4416 4417 GGTGTGCCCGGAACCGGCCC T - ---- TG AAATAATGC
TTGGTGGGGAAATAATGCCT GGTG GCCCGGAA CCGG CCCTTGG GGG
TTGCTAAGGGGGCCCCGGAT CCGC TGGGCCTT GGCC GGGAATC TTC
TCCGGGTCGCC - A CCGG GT ---------
GAM4417 17119 CTGGGGCGTTTATGGCAAGT GGC T-- C CTTT A ATTGTGGCA
CACTTTGACAGACATTATTG CTGG GTT ATGG AAGTCA GACAG CATT
TGGCAAATGTTGTCTGACTT GACC CAA TGTC TTCAGT CTGTT GTAA
ACTGTTTCAACAAACCAG AAA CTT A ---- - ---------
GAM4418 22259 GGCGGCGGTGGCGGCGGCGA GG G G GA G GAAGGAGGAGGAGGA
CTGCTGCGGTGAAGGAGGAG GGC CGGTG CGGCG C CTGCT CGGT
GAGGAGCCGAGCGGGCGCTG CCG GCCAC GTCGC G GGCGA GCCG
GCACCGAGGCC GA G - -- - ----------
GAM4419 11219 CTGTGGTGGGACGGCCAAAA G A-- AAAGA---- GG- CCTACA
GACAGGCGGGGGGCCTACAC CT TGGTGGG CGGCCA CAGGC GGGG
TCCAAAGCTTGAGAAGGAAA GA GCCATTT GCCGGT GTTCG CCTC
TGGCCGCAATTTACCGAAG A AAC AAAGGAAGA AAA ------
GAM4420 14476 CACCAACACAGTTTTTGATG A C TTT- TG CCAAAC T - - TGAT
CCAAACGTCTGATTGGACGC CACCA CA AG T ATG GTC GATTGGAC GCAG ATT
AGATTTGATGATGCTGTAGT GTGGT GT TT G TAC TAG CTGACCTG TGTC TAG
CCAGTCTGATATGAAACATT G A TCCC GT AAAGTA T A G ----
GGCCCTTTATGGTGGTG
GAM4421 10202 TCACAGACAACAGCCTGGTG C AC- - T- - GGCCA
GCAGCGGGCCACGACTGCTT TCA AG AACAGC CTGG GGCAG CG
CCCGGTGCTGTTCACCTATG AGT TC TTGTCG GGCC TCGTC GC
A A CAC T CT A -----
GAM4422 16430 TTATGTTATTAGGTGTAAAG - AG GTA AG A T TGTTTT
AAAGTGTATGCTGTGCCTGT TTATGT TATT GT AAGAA TGT TGC GTGCC
TTTGGTACTGCGAGCAGTTC AATATA GTAG TA TTCTT ACG GCG CATGG
TTCCAATTCGATGAATATAA A CT ACC G- A T ------
GAM4424 13195 ACCCCTTGTCAAGCATTGCC CTT AG TG - GATTGC -- C TTCA
TGTGATTGCCCAGCCCAGAT ACCC GTCA CAT CC TGT CCA GC CAGA

TCATCTGTGCCTTGGACATG TGGG TAGT GTA GG ACA GGT CG GTCT
GTGATGGTGATGGGT --- G- GT T ------ TC T ----
GAM4425 1797 GTGGTACTTCAGGAACTCTT ACT A----- TTT A ACATCA TACAT
TTTCAAACTCACATCACAGT GTGGT TCAGGA CTCTT CAA CTC CAG
ACATCTGGAGATTGTCTAAG CACCA AGTCCT GAGAA GTT GAG GTC
AGGCAGCCTCCTGACACCAC C-- CCGACG TCT A ------ -----
GAM4427 18723 CCAGAACAACCTGCAGCAGA CAA G AC CACTCCACT -- ATCAC
CTCCACTCCACTTGGCTGTG CCAGAA CCT CAGCAG TC TGGCTG TG
ATCACCAACCAGCCAGAAAT GGTCTT GGA GTCGTT AG ACCGAC AC
TGCTGAGGCACTTCTGG CAC - AA --------- CA -----
GAM4428 9742 CTGAGGATGGGCAACCCCCA A - A C------- T AGCT ACATATCACGCGCACA
GGTCTGCAGCTCCAGGTACA CTG GGA TGGGC ACC CCAGG CTGC CCAGGT
TATCACGCGCACAGCCTGGG GAC CCT ACCCG TGG GGTCC GACG GGTCCG
CAGCCTGGCCCTCACCGGTC - C C CCACTCCC - ---- ----------
GCCCACTCCCAG
GAM4430 1521 TGGTCACTCGTGACTTACTA T G A A G GCTCTCA
GTTTGATAGGCTCTCACTGT TGG CACTC TG CTT CTAGTTT ATAG
GGAGCTAGAAGCAGGGTGTC ACC GTGGG AC GAA GATCGAG TGTC
CA T - - - G -------
GAM4433 17273 GCTGTTGGGTCGTGTAGTTG G TG GT TGTA TG C- TAAT TTGA AAGGG
ATGCCCTTGGTAATGCTATT GCT T G CG GT ATGC CTTGG GCTA TGGA
GATGGAAAGGGTCCAATTGG CGA A C GT CG TGCG GAACC TGGT ACCT
TTCCAAGACGCGTAGGCGAG A GT TG TGAG GA CA T--- TA-- -----
TTGGTCTGAAAGC
GAM4434 22564 CACAGAATCAGACCATGACT AATC - GACTA TGGAA A ACGCCC
ACCTTCACCTGGAACATCAA CACAG AGAC CAT CCTTCACC CATCA CC
CCACGCCCGGCTGATGGTGG GTGTC TTTG GTA GGAGGTGG GTAGT GG
TGGAGGAACCGATGTGTTTA A--- T GCCAA TG--- C ------
CTGTG
GAM4435 4193 GTGTGTAGTAGTATCTCATT A A C TTT TTTTA TAT-- GATGATTAAA
TTGGTTTTAATTTATATATT GTGTGT GT GTAT TCAT GG ATTTATA TTCCCT
TCCCTGATGATTAAAAGGGG CACACG TA CATA AGTG TC TAAATGT AGGGGA
ATGTCCTGTAAATGTTTTCT A C A TTT TTTTG CCTGT ----------
TTTGTGAAATACCATAGCAC
AC
GAM4436 22867 GCCCACACTACAGGCCAGGG ACACTACA A CTGC CGCAATC
CTGCGGGGCTGGCGCAATCC GCCC GGCC GGG GGGGCTGG
CAGCCCCCTTCCCCGGGCCA CGGG CCGG CCC CCCCGACC
CGGGGC GCA----- G CTTC -------
GAM4437 13806 GATAATGTGGACTTAGATAA T T ACTTAG ACAG AAT CA- TTTGGACT
TTACAGGTTTAATTGGGAAC GA AA GTGG ATAATT GTTT TGGGAA AGGTG
AAGGTGTTTGGACTTATTTC CT TT CACC TATTAA CGAG GCCCTT TTTAT
TCTTCCCGTGGAGCAGAATT T C CAAAA- GA-- GT- CTC --------
ATAAAACCCACCTTTTC
GAM4438 18049 GGAGCCGGGAAGATGCCAAG A -- A ATG AAG GCTA GATGAGGGCGAAATGA

GCTGGGCTATGGGATGAGGG GG GCC GGGA G CC GCTGG TGG
CGAAATGACCGGGACCAGCA CC CGG CCCT C GG CGACC GCC
AGGAGCTCCCAGGGCACC A GA - GA- AA- AGG- ----------
GAM4439 7291 CCCAGGATGAGTTCTACCGC AG A T ACC G- - GAACATGA

AGCGGCTGGGCCCTGAACAT CCC GATG GT CT GCAGCGGCT GGC CCT
GAAGGAGCTGAAGCTGCTGC GGG CTAC CA GA CGTCGTCGA TCG GGA
AGACCATCGGG -- - - --- AG A --------
GAM4440 17200 GTCCAGATAATTCCAGGCCA C T TCC C CAC A A CACT
GGCACGGTGGCTCACGTCTG GTC AGA AAT AGGCCAGGCA GGTGGCT GTCTGTA TC TAG

TAATCATAGCACTTTGGGAC CAG TCT TTA TTCGGTCCGT CTACCGA CGGACAT AG GTT
TACAGGCATAAGCCATCATG A - --- A ATA C G ----
CCTGGCTTATTTCTAGAC
GAM4441 17841 AGATTGTCGGACACGCGGTA T ACGC TAATT G - G- GAGC
ATTGATGAACGGCAGGTGAG AGAT GTCGGAC GG GATGAACG CAGG TGA GGA
GGAGAGCTCTGATCAGCCTG TTTG CGGCCTG CC TTACTTGT GTCC ACT TCT
GTGTTCATTGTCCAGAGTCC T AGA- TG--- G G AG ----
GGCTGTTT
GAM4442 6840 CAGAGAGGGAGACGCAGAGC A - --------- - A TGACG
CAGACCTGACGGGCTGTGCT CAG GAGGGAGAC GCA GAGC CAG CC
TTCAAAACTGTGCAGTCTCC GTC CTTCCTCTG CGT TTCG GTC GG
TTCCTG - A GTCAAAACT T - -----
GAM4443 17638 CTGGGGTGTTTATGGCAAGT GG T-- C CTTTGACA T GTGGCA
CACTTTGACAGACATTATTG CTGG TGTT ATGG AAGTCA GACAT ATT
TGGCAAATGTGTCTGACTTA GACC ACAA TGTC TTCAGT CTGTG TAA
CTGTTTCAACAAACCAG AA CTT A -------- - ------
GAM4444 1630 GAGTGGTCGGCTGGGCAGAG T T - AG A- GCTT
TGCACGCTGCTTGGCGCCGC GAGTGG CGGC GGG CAG TGC CGCT
AGGCTGATCCCGCCGTCCAC CTCACC GCCG CCT GTC ACG GCGG
TC T C A GG CC ----
GAM4445 12212 GGCAACTTCAGGATGACAAA A CA CAA CAAA CTTC AAAT
AACCAAAGTCTCTTCTGCTG GGCA CTT GGATGA AAAC GTCT TGCTGGG
GGAAATCCCAGTACAGATCG CCGT GAA TCTACT TTTG TAGA ATGACCC
TTTCTCATCTCTAAGTGCC - TC C-- C--- C--- ----
GAM4447 5399 GTCAACAGCGACTTCTACCG AA CGA ACC AG CA ACA T TGCG
GAGGATGCAGAACAGCGATT GTC CAG CTTCT GG GATG GA GCGA TTCT
TCTTGCGGGAGCTCGTGATC CAG GTT GGAGG CC CTAC CT TGCT GAGG
ACCATCGCCAGGGAGGGCCT GA CCG GA- G- CA AG- C ----
TGAGGAC
GAM4449 13284 GTTAGTGTGTCTAAAACAAG TAA AA --- AAGGCAATATG
GAGGTTTAAGGCAATATGGA GTTAGTGTGTC AAC GGA GGTTT
ACTGTATCCCGTTGATGCAC CAATCACGTAG TTG CCT TCAAG
TAAC --- C- ATG ----------
GAM4450 6652 CAATTATAAAAATAGCGCGT T AA TGTCACTCCC - CGCA
GTCACTCCCGCGGCGCGCAC CAAT ATA AATAGCGCG GCGG CG
GACCGCCGCGCTATTATATA GTTA TAT TTATCGCGC CGCC GC
TTG - A- ---------- A ----
GAM4451 18982 GGGGATGAATTCTTCAAATA TTCTT AG- T ATC - - TTTG
GGAGCCGATGGATCTGTGGT GGGGATGAA CAAAT GAGCCGA GG TG TG GTCC
CCTTTGGGACTCATCAAAGC CTTCTATTT GTTTA TTTGGTT CC AC AC CAGG
CTTGGTTTAGCATTTGTCAG TGACT CGA - GAA T T ----
TTTTATCTTC
GAM4452 20524 TTGGACAGGGACGACATTCA GA A- - AG AAACAG-- ---- AAGA
GGAGCCAAACAGGCCGCAAG TTG CAGGGACG CATTCA GG CC GCC GC

AGCAACTGGCAGATCCAAGG AAC GTTTCTGT GTAGGT CC GG CGG CG
TCCCGTGGATGACTGTCTTT AA CA G CT AACCTAGA TCAA ----
GAACAA

GAM4453 21521 GGCTTGATTTTGCTTGGTGA G - GAATTAC CTAGT
CCGAATTACTAGTGACTAGT GGCTTGATTTT CTTGG TGACC TAGTGA
TTACTAACTAGGTCATTCAA TTGAACTGAAG GAACT ACTGG ATCATT
GGGAAGTCAAGTT G T ATCA--- -----

GAM4454 14170 TTGTGTTCTGAAAGCCTCCG T- GAAA- C CT T GGGGGAAATA
TGCTGCTGGATCTTTGGGGG TTGTG TCT GCCTC GTGCTG GGATCTT G
GAAATACAGGATCCTTCAGC AACGT AGA TGGAG CACGAC CCTAGGA C
ACTGAGGTGTTTAAGATTTG TT ATTTG T TT - ----------
CAA

GAM4455 13091 TCGGAAGCACATCATGGGCC GG--- ---- ATGGG GAAT -- GAATACA
AGAATGTTGCAGAATACATG TC AAGCA CATC CCA GT TGCA
CGCTACTTAATGGAAGAAGA AG TTCGT GTAG GGT CA GCGT
TGAAGATGCTTACAAAGA AAACA AGAA AAGAA AATT TC -------

GAM4456 4788 AGGTCAGAAAGACCTCCTGA A CC T CCA-- ACAGTA
CTCCATGTTACAGTAGACAA AGGTC GAAAGA TCC GACT TGTT
AACAAGTTGGACTCTTTTGG TCCAG TTTTCT AGG TTGA ACAG
ACCT G C- - ACAAA ------

GAM4458 7097 GGTTTCGGCAGTGGCATTCG AG A GG--- GGGTCG
GGGCCGGGGTCGCGGCGTGG GGTTTCGGC TGGC TTCG GCCG
ACGGGGCCGGGGCCGAGGCC CCGGAGCCG GCCG GGGC CGGC
GG - AGGTG ------

GAM4461 12403 GGATAGTTGGAACTAATGTA GT AATG CTAAATT A TTTATTTGCT
CAGAACTAAATTTTTTAAAC GGATA TGGAACT TACAGAA TTTTAA C
TTTATTTGCTGTTAAAATTC TCTAT ACTTTGA GTGTCTT AAAATT G
TGTGAAGTTTCAGTTATCT TG A--- ------- - ----------

GAM4462 13540 GTAGCAGGCTTCCTGCAGAC AG GC ACT ACTGCACAACAAATTTCTC
TGTATAGACTGCACAACAAA GT CAGGCTTCCT AG GTATAG
TTTCTCCTGTACCTATGGGA CA GTCCGAAGGG TC CATGTC
AGCCTGTCAC CT TA --- ----------

GAM4463 14556 CGGAGGGCGAGGCGGCGTGG - AG -- ACA CCC ACCCAGC
ACAGCGGCCCCGGCACCCAG CGGA GGGCG GCGGC GTGG GCGGC GGC
CGCCCCGCCGCCCGCAAGCC GCCT CCCGC CGCCG CGCC CGCCG CCG
GCGCGCCCGTCCG G G- AA --- CC- -------

GAM4467 22519 TGAAATATATATGATGAAAA ATA TGAAAAG A T AAATTA
GAATTGAGAAGTTCTAAATT TGAAAT TATGA AATTGAGA GT CT
AAGACATTTCAGTTAAGCTC ACTTTA ATACT TTGACTTT CA GA
ATAAAATTTCA AA- CGAA--- A - ------

GAM4468 307 CCGTGGAAGACCCTGGGCCC T -- TG- CC C-- AGCA
CTCACCGCAGGCAGCAGTTT CCG GGAA GACCC GGCC TCA CGCAGGC
GCGTTTTGAAAGGTTATTGG GGC CCTT CTGGG TTGG AGT GCGTTTG
GTCCCTTCCTCGG T CC TTA AA TTT ----

GAM4469 7787 TTTTTTGATTCAGCTTATAC AT- GTTC
CCGGGCTGAAAACCTCAATT TTTTTTGATTCAGCTTATACCCGGGCTGAAAACCTCA TTAT

TATGTTCATGACAGTGGGGT AAAAAACTAAGTCGAATATGGGCCCGACTTTTGGGGT AGTA

TTTCAGCCCGGGTATAAGCT GAC ----

GAATCAAAAAA
GAM4470 21198 GCTACGAGGCTGGGAATCCT ACGAG AA ---------- - CCA AACCAAGCGC
GGAGAACCCCCAAGAACCAA GCT GCTGGG TCCTGG AGA ACCC AG
GCGCCTCCAGGGTCTCTACA CGA CGACCC AGGACC TCT TGGG TC
CGAAAGACCAGGACCCAGCA AAA-- -- AGAAAGCACA C ACC ----------
AAAGC
GAM4473 15729 GGGCTCGGGGGCGCTCAGCG C G CA--- GAGT- AGATT GCCTT
GCGAGTGGGCAAGATTGGGG GGGCT GGGG CGCT GCGGC GGGCA GGG
CCTTTCCTGTCCTCGAAGCT CCCGA CCCC GTGG CGTCG CCTGT CCT
GCACAAAGGTGGCCCCAGCC - G AAACA AAGCT ----- -----
C
GAM4474 6378 GGCACCCTCGGTGCTGCCTC C GG G A---- G- GT TTCCT
CTCTGAGGCTGGCAGTTCCT GGCAC CTC TGCT CCTCCTCTG GGCT GCA TCC
TCCTGGATATGCAAGGTCAA CCGTG GAG ACGA GGGGGAGGC CTGG CGT AGG
GAGCGGAGGGGGAAGCAGAG A AG A GAGAA AA AT -----
AGAGTGCC
GAM4475 5694 GGCTGACTGGGCCCGAAAGT A G C AAA AC GAGAA C--- ATGACAC
GGAGGGGGACCGTGGAGAAG GGCTG CT GGCC G GTGGAGGGGG CGTG GGGCC CCAGT

GGCCCCCAGTATGACACACT TCGGC GA TCGG C CACTTTTTCC GTAC TCCGG GGTCA
GGAGAAGGCCTGGCATGCCT - G - GG- -- GG--- AAGA -------
TTTTCACGGCGGCTGAGCGG
CT
GAM4477 3692 GGCCCGCCTGCGCCGCGAGT - - GCGAGTA TA GCAA
ACCTGTACCGCAAGGCCCGG GGCC CGC CTGCGCC CCTG CC
GAGGAGGCGCAGCGCGTGGC CCGG GCG GACGCGG GGGC GG
C T C AGGA--- CC ----
GAM4478 7163 AGCACCAGCTCTTGCCCCTA - CT- - TATG T A TT TCCTAGCTGT
TGCTGGGTACCAAGGGAGTT AGCAC CAG CTTGC CCC CTGGG ACC AGGGAG C
CTCCTAGCTGTGGCTTCTCT TTGTG GTC GAACG GGG GATCT TGG TCTCTT G
AGGTTCTAGGGGTGCAAGCC T TCC T ---- - A CG ----------
TCTGTGTGTT
GAM4479 6613 GCAATGAGGACTCTCTACAG TCTCTA C--- G C C TGGATCTATT
GACCCGATATGGCTATCCCG GCAATGAGGAC CAGGA CC ATATGG TATC CG
TGGATCTATTTGTGATGACT TGTTACTCCTG GTTCT GG TATATC GTAG GT
ATATGGCAACTCTTGGCTGT TCG--- CAAC - A T ----------
CCTCATTGT
GAM4480 20891 GCTTAAAATGCCAGATGTTG TA-- GC -- C GG CAACTTGTA
TTCGGGGGACAACTTGTATC GCT AAAT CAGA TGTTGTT G GGA
TTTCTAGCAGCAGATCTGTA CGA TTTG GTCT ACGACGA C TCT
GTTTGTATAGC TATG AT AG T TT ---------
GAM4481 6994 GAATGTGGCTTCATCCTCCG TG CT A -- CC T - T- T --- GAATGA
GCCCCATGCGCTGGTGGCAG GAA TGG TC TCC TCCGG CCA GC GC GG GGCAG TCACA

TCACAGAATGATGTGAACCC CTT ACC AG AGG AGGTC GGT CG CG TC CTGTC AGTGT
TGTCTCTCTGCAGCTGGACC CG TT - AC CA - A TC T CCA ------
TGGACAGGAGATTCCAGCTT
C
GAM4482 20535 AGACTAAGGCCAACACAGCA ---- AACA GCAGAA AAAG GGAAAGA
GAAAGGGCAAAGGGCTGGAA AGACT AAGGCC CA AGGGC GGCT

AGAAGCTAAGTCCTGATGGA TCTGA TTTCGG GT TCCTG TCGA
GGCTTTCTGAAGTCT AGTC AG-- AG---- AA-- -------
GAM4483 9688 GCGGGAGCTGGGGGTGTGCC G- - G -- A A GA GCTGA
TCCAGGAGCTGCTGATGGCT GCGG AGCTGGG GGT TGCC TCC GG GCTGCT TG
GACGGGCGGCCCGGGACTGG TGCC TCGGCCC CTA GTGG AGG CC CGGCGG GC
TGGATCTCCCGGCTGACCGT AG T G TC G - -- -----
GAM4485 21715 CCAGTGAATTTCCCAGCTAT GTG TT GCTA A C TTAT
TCTAAAGCTGCTTTATAGTA CCA AAT CCCA TTCTA AG TGCT
ATTCTGGGAGGATGGGTTAT GGT TTA GGGT AGGGT TT ATGA
TATATGG ATA TT AGG- C A ----
GAM4487 1034 ACATAGTTCCTGTCAAAATC A -- AAAA A - A T ATACAGACAAGA
CCAGTAAGATATTTGAATAG AC TAGTTCCT GTC TCCC GTA AGAT TT GAATAG
ATACAGACAAGATTATTCCA TG ATCAAGGA CAG AGGG CAT TTTG AA CTTATT
AAGTTTATACGGGAAGACAA A AA A--- - A A C ----------
AGGAACTAAGT
GAM4488 16643 GGCGGCGGCGGTTAGGGCTG C C- TT CTGT --- CCTCCCCCTTCCT
TGTAGGGCGAGGCCTCCCCC GG GG GGCGG AGGG GTAGG GCGAGG
TTCCTCCTCGCCATCCTACT CC CC CTGCT TCCC CATCC CGCTCC
CCTCCCTCCTCGTCATCCTC T TA CC TCCT TAC ----------
C
GAM4489 19924 TGGTCACCATCATCCATCCC ACC AT- A GAAG AAGGA
GGGAAGGGCTCCAAGGAGGG TGGTC ATC CC TCCCGG GGCTCC
GCTGCACCGGGAGGGCCGGA ACCAG TAG GG AGGGCC TCGGGG
TCGAGACCA AGC GCC G ACG- -----
GAM4490 17830 GGCAGAGGGCTCTCAGGGTC -- - A - CC- CA TCC CGTCACC
CACGTCAAGGGTCCAGCAGT GGCA GAGG GCTCTC GG GT ACGT AGGG AGCAGT
CGTCACCATTGCTCCCTACG CCGT CTCT TGGGAG CC CA TGCA TCCC TCGTTA
TCACACTCCGGAGGGTGTCT AA G G T CAC -- --- -------
CAATGCC
GAM4491 6955 TGTTATTATTTATTTCTTTT - TC TTAA - - GCATTA - GAGAAA
AATACAAAGCTTTGGCATTA TGT TATTATTTATT TT TACA AAGC TTTG GCA GTTTTAT
GCAGTTTTATGAGAAAATAA ACA GTAGTAAATGG AG GTGT TTCG AAAT CGT TAAAATA
AATGTGCGAAAAATAAATGC C TT TACG G T AAAAAG G ------
TTGTGTGGCATGATTGGTAA
ATGATGCACA
GAM4492 3791 GCTTACCAGGAAGCATTTGA T- AGCAT AAATTA AGAA- GAAA
AATTAGTAAGAACAGAAATG GCT ACCAGGA TTG GTA CA
CAGCCTACACACCCAATTCG CGG TGGTTCT AAC CAT GT
TCTTGGTCTGGC TC GCTT- CCACA- CCGAC ----
GAM4493 3980 GTCAGGCCGGTTTAATCGGC - TTTAAT- GA- --- - CAGA
CGAGGGTTCAGTCAGAGCTA GTCAG GCCGG CGGCC GG GTTC AGT
GAACATTCCAGAGGTCGCCC CAGTC CGGCC GCTGG CC CAAG TCG
AGCTCCGGCGCTGAC G TCGACCC AGA TTA A ----
GAM4494 1176 CTGGATTCAGCCTGGGCCTG TT A GGCAG CA - TGTGC
GGCAGTGGGCAGGGGCTGTG CTGGA C GCCTGGGCCTG TGGG GG GGC
CGCCACCCCCGGTAACAGGC GACCT G CGGACCCGGAC GCCC CC CCG
CCAGGCGGTTCCAG TG - AATG- -- A -----
GAM4495 12809 CCCGGTATTGCCAGGCGGCT G A- CG A AT CTCTGACATC
GAGAATGTTACGCTCTGACA CCCGGTATT CC GG GCTG GA GTTACG
TCTGTAACCTCACAGCAACT GGGCTATAA GG TC CGAC CT CAATGT

GGGGGAATATCGGG G GG AA A C- ----------
GAM4496 2946 GTTGCCTATCACAGATGAAC T AC-- A ACAAA AGA AAAT
AAATCCAGGAGATGAAATCA GTTGCC ATC AG TGA TCCAGG TG
AACCTGGAGAACATCGACTT CGACGG TAG TC GCT AGGTCC AC
CAAGATGGCAGC - AACT A ACAAG AA- ----
GAM4497 3457 CGTGGTGTGCTCTGTGGGGC TGT ------- TG - TGCCAAATCTG TCTT
AGGAGTAGGTGCCAAATCTG CGTGG GCT CTG GGGCAGGA GTAGG GAC
GACTCTTGTCACTTCTTGCT GTACT CGA GAC TTCGTCCT CGTTC CTG
TCCTGCTTTGCAGCTTTCTT T-- TTCTTTC GT T TTCA------- ----
AGCTTCATG
GAM4498 5343 GCATGCTGGTGGTCATCCTG CT - A CTGGC - TG CTGGTAT
GCAGCTGGTGGGTGGCCTGG GCATG GGTG GTC TC AGCTG GTGGG GC
TATGCTGCCCACTCAGCTTG CGTAC CCAC CAG AG TCGAC CACCC CG
AGACTCACCCTCATGC TC T - T---- T GT -------
GAM4499 14088 GAGTCCTCAGGTTGATGCTG C T- - CA CT G CAG G TG--- AGCTG
CAGAGCCTGCGGGTGAACAG GAGTCCT AGG TG ATGCTG GAGC GCGG TGAA AGTTGG CC
AGG
AGTTGGGCCTGAGGAGCTGC CTCAGGA TCC AC TACGAC TTCG CGTC GCTT TCGACC GG
TCC
CTGTTGTGGGCCAGCTGCTT C CC G -- T- A CG- G TGTTG -----
CGACTGCTGCTTCAGCATGC
ACCCCTCAGGACTC
GAM4500 7096 CTCCAACGATGCCTTTGTTC CAACGA T--- GAAAA - T CCGCCTAC
TGAAAACCCCCTCAGCCGCC CTC TGCCTT GTTCT CC CCC CAG
TACCTGTGGGTGGGTACAGG GAG ACGGAG CGAGG GG GGG GTC
AGCCAGCGAGGCAGAG ------ CGAC ACATG T T --------
GAM4501 3956 CCATTAAGTCAGTTTCGATC AGT C TC AAACT GC TTAA
TTCAAACTGTGCCTTGTTTT CCATTAAGTC TT GA TTC GT CTTGTTTT
TTAAAAGATAAGATGCTAGA GGTGGTTTAG AA CT AAG CG GAATAGAA
AATTCAATGGGATTTGGTGG GGT - TA AT--- TA ----
GAM4502 1725 TAAGCTATATATATAATATA C ATATAAT A GTATATATA
ATTACATATATATGCACATG TAAG TATATATATA TACATATAT TGCACAT
TATATATAGTGTGTACATAT ATTC ATATATATAT GTGTATATA ATGTGTG
ATGTGTGTATATATATACTT - GT----- C ---------
A
GAM4504 12791 GGCAGCCACAGGTTTCAACT CCAC AACTC- TT ATAA AT - TTACAAAACCATC

CCCATTTGTGAATAAATTAA GGCAG AGGTTTC CCA TGTGA ATTAA GACT CT
ATGACTCTTTACAAAACCAT CTGTT TTCAAAG GGT ACACT TGGTT CTGA GA
CAGCAGTCTTGGTGTATCAC ---- ATTTAT TT ATG- -- C ----------
ATTTGGTATTTAGAAACTTT
TGTC
GAM4505 12677 GAGCCCAGCCAATCAGCGCC C CCA- C CCCGGA -- GAGCCA
CCGGACTGCACCAGAGCCAT GAGCC AG ATCAG GC CTGC ACCA
GGTCGGCAGAAGAGCACTGA CTCGG TC TAGTC CG GACG TGGT
TCGTACTGGCTC - ATGC A AGAA-- GC ------
GAM4506 12441 TGCAGGCTGCCGGTCTTGGT AG T GG GTA A A ACTT
CGTATGAAACCAAACACACT TGC GC GCCGGTCTT TC TGAA CCAA CAC
TGTGCTTGGATTTAAGAAGG ACG CG TGGTTAGGA AG ATTT GGTT GTG
ATTGGTTGCAAGCA AA T -- A-- A C ----

GAM4507 1587 TGCTAAATGTTTTCTTCAAG TAA C- AG CCA A TCTTT
GGAACCAGATTTAGTTCTTT TGC ATGTTTT TTCA GGAA GATTT GT
ACAGAATTTTCCAGTGAAAT ATG TACAAAA AAGT CCTT TTAAG CA
AAAACATGTTGTA TTG TA GA --- A -----
GAM4508 15860 CCGCATCTTCTTGTCTTCCT - TGTCTT TCAGATGCC ACTATAGACCTTA
TTTCATCAGATGCCACATCT CCGCAT CTTCT CCTTTTCA ACATCTCTTT
CTTTACTATAGACCTTAAAG GGTGTA GAGGG GGAAAGGT TGTAGAGGAA
GAGATGTCTACCAGTTGGAA T ------ TGACCATC- ----------
AGGGGGAGTATGTGG
GAM4509 7037 TTACAGGTGGTTGCTTTGAA AG - GC - - GAGAAAAACAGA
CTTTATTTGAGAAAAACAGA TTAC GTG GTT TTTGA AC TTTATTT
AGATAAATGTATCAAAAGAA GGTG CAC CAA AAACT TG AAATAGA
CACACAGGTGG GA A GA A T ----------
GAM4510 772 GCTGAGTATCAGTGAACTCA TAT- A CAT C ---- TCCATTCAC
TGAGCGGGACAGGTCCATTC GCTGAG CAGTGA CT GAG GGGA CAGG
ACCCTGAAATTCCTCCTTGG CGACTC GTCACT GG TTC TCCT GTCC
TCACTGCCTTCTCAGC TTCC - --- C TAAA ---------
GAM4511 2681 GGTGTAGAAGCATTTCTTTA AGAAG ACT - AC AG ATCCA
CTGAACCTTACCAGGGAGCC GGTGT CATTTCTTT GAAC CTT CAGGG CC
ATCCAGGATCCTGAAGAGTT TCACG GTAAGGAAG TTTG GAA GTCCT GG
TGTGGAAGGAATGGCACT ----- GTG A -- A- -----
GAM4512 16859 GCTTAGATAAGTCTGGGTTC T GTC CTA CAA--- TCTA
TACTCCCAAAGCCTCTAGGC GCT AGATAA TGGGTT CTCC AGCC
TAGGCATGGAGCAGCCCAAT CGA TCTATT ACCCGA GAGG TCGG
TATCTAGC - A-- C-- TACGGA ----
GAM4513 3521 GCTGCCACACAGAGGGCTTG -- A - TG TC GC--- CATG
CTTCCAGTTGCCACATGTGA GC TGCC CAC AGAGGGCT CT CAGTT CA
GAAAGGCTGAGAGAGCTTTC CG ACGG GTG TCTTTCGA GA GTCGG GT
TCGTGGGCACCGC CC - C -- GA AAAGA ----
GAM4514 14543 CGGGGACTACAATGGCCACG TACA CCACGTC T TTAAGT A - CCA
TCGGTCTGGGTGTTAAGTGC CGGGGAC ATGG GGTC GGGTG GCTCCA GGA GGTGG
TCCAAGGAGGTGGCCACCGC GCCCCTG TACC CCGG CCTAC CGGGGT CCT CCGCC
CATCCGTGGGGCCATCATCC C--- TCTCGAA T TAC--- G A ---
TGGCCAAGCTCTCCATCGTC
CCCG
GAM4515 12207 CTGTTCACCTTGTCACAGGG ACC CACA- AT---- TCTTG
CTATGTCTTGGCTCTTGGCT CTGTTC TTGT GGGCT GTCTTGGC
AAGACTTTAAGGGCCCACAC GACAAG GACG CCCGG CAGAATCG
AGCAGAGAACAG A-- ACACA GAATTT -----
GAM4517 11797 TCATCTCATCAGCGACAGGT A A- GACAGG- C- CA ACCCCA
CTCCCTCCCAGAACCCCATC TCATCTC TC GC TCTCC TCC GA
AGGACAGGAGAAAAGGCAGC GGTGGAG AG CG AGAGG AGG CT
AAGAGAGGTGG - AA ACGGAAA AC A- ------
GAM4519 18695 ATGAGATTTGGGAGGGGCCA A C G GCA GATATG
GGGGCAGAATGATATGGTTT ATGAGATTTGGG GGGG CA GG GAAT
GACTGTGTCCTCACCCAAAT TACTCTAAACCC CTCC GT TC TTTG
CTCAT A T G AG- ------
GAM4520 4077 GCCCCGTGGCCCGGGGAAGG C---- TG C GAAG- GATTGCG
GGGCTGGGATTGCGCCAGCC GCCC G G CCGGG GGGGCTGG
CCGGATACCTGGACTGCTTA CGGG C C GGTCC CCCCGACC

GTGGGC TGATT GT A ATAGG -------
GAM4521 10381 GGTCCCTGAGCTCCCTAGAG G C CC -- GCCA C ATTCAGA
TCGGCCACCACAGATTCAGA GGTCCCT AG TC TAGA GTCG CCA AG
CTTGGACTATGATTATCTAC CCAGGGG TC AG ATCT TAGT GGT TC
AGAACTGGGGACC - A AC AT ATCA - -------
GAM4522 81 AGCACGCTACAACGGGCATC A ACGG A T----- C ACTTGTCC
GCTGGACTAGCAACTTGTCC AGCACGCT CA GC TCGC GGA TAGCA
TGCTATCCCTCAATGTGACG TCGTGCGA GT CG AGTG CCT ATCGT
CAGTGAGCGTGCT - GA-- C TAACTC - --------
GAM4523 4711 GCCAGGCCCCTGCGCGCCAA CA - C - AAG TGGCA
GCCCTGGTTGGCAGCCGGGG GC GGCC CCTG GCG CC CCCTGGT
AGGACGTCAGGAGGCCCTGC CG CCGG GGAC TGC GG GGGGCCG
TC A - A A-- -----
GAM4524 12019 GGAATAGGCTAAATTTGCTA ATA - T-- GTGCT TG ATTA
GAGATGTGCTGTGGAATTAT GGA GGCTAA ATT GCTAGAGAT G GA
CTGTATTTCTAGCTATGATC CCT TCGATT TAG CGATCTTTA T CT
TTAGCTTCC --- C TAT ----- GT ----
GAM4525 9618 CTGCCGATGTTCTGGCATGG GTT G A A GG A CTTTATTGATC
ATGGTGGTCCTGTAGTCCTT CTGCCGAT CT GC TGG TGGT TCCTGT GTC
TATTGATCGATAGCAGGGAA GACGGTTG GA CG GCC GTCA GGGACG TAG
CTGACCGAGCGAGGTTGGCA --- G A A A- A ----------
G
GAM4526 15799 CTGCGCCGGCTGCCCGTTGC - G -- G GGCAA
TAGCTATGGCAAATGGTGGC CTGC GCCG CTGCC CGTTGCTA CTAT
GGCGGCGGCGGCGGCAGCAG GACG CGGC GGCGG GCGGCGGT GGTA
A - CG - -----
GAM4527 19273 GCCGTGGGACTGTCCCGGGA - AC - GAG- --- - ACTA
GCGGGCCCTGGACTACTACG GC CGTGGG TGTCC CGG CG GGCCC TGG
GGCTGTACGACGACCGTGGG CG GTATCC GCGGG GCC GC TCGGG ATC
CGCCCCTATGTGC T CC T AGCA ATG C ----
GAM4528 371 TAGTTCTATTTATATTTTTG T T TTT AA-- - ATCT TCTTTTTT
CAAATGTCAGGATCTCATTC TAGT CTAT TATAT TGCA TGT CAGG CAT
TTTTTTATGCCTGAACAGTA ATCA GGTA ATGTG ACGT ACA GTCC GTA
CTGCATTGTGTATATGGACT - T TT- CATG A ---- --------
A
GAM4529 18185 TGATTCTGGAGAAGGAGAGG AGAA GATG AG AGCAA
ATGATGCGGAGGTTCAGCAA TGATTCTGG GGAGAG ATGCGG GTTC
GAATGCCTGCATAAATTTTC ATTAGGGCC CCTTTT TACGTC TAAG
CACCCGGGATTA CA-- AAA- CG -----
GAM4530 18728 TTCCTGCGCTCTACGGTTTT ---- AC-- TCCAT TCCAGTTT
CCATGCCCCCTCCAGTTTGG TTCCTGCGCT CT GGTTT GCCCCC
GGGTCTAAACCAAACAGGAA GGGGACGTGG GA CCAAA TGGGGG
AGGTGCAGGGG AAAG CAAA TC--- --------
GAM4531 219 GTTGATTTGTTTCCATGAAC T TTCCA AC A------ T AAAAA
CTGAGTTGCTTTGATTTAAA GT GATTTGT TGA CTG GTTGC TTGATTT
AAAAATTAATGCAACAAAAA CA CTAAACA ACT GAC CAACG AATTAAA
TACAGCATCAGTATACAAAT C TATG- AC ATAAAAA T -----
CCAC
GAM4533 9321 TGTTTAGTAGCAGATCTCCT TT- C TCCTTT TTC-- TACTG
TTCTTGATAGTTTCTTGGTA TG TAGTAG AGATC CTTGATAGT TTGG

CTGCCAGTTCTTGCTATCAG AC ATCATC TTTGG GGACTATCG GACC
GTCTGTTGGTTTCTACTATT TTT - TTGTCT TTCTT -----
TCA
GAM4535 18261 TTTCCCACGACACGATGTTC CA- CA AT- CCC ACAG- - GGACTGG TA CT
CCTTTCTACAGCTGCTGGAG TTTCC CGA CG GTT TTTCT CTGCT GGA ACTGCTAC CTA
GACTGGACTGCTACTACTAC AGAGG GTT GC CAA AAAGA GACGG CCT TGACGGTG GGT

TCCTGGCTGTGGCAGTGAGA ATG CA GTT A-- AGACA T AAGAGAG TC --
GAATCCTGGCAGACAGAAGA CC
AAAAACTTGCGACTTGGTAG
GAGA
--
GAM4536 6341 GCCGCTCGCCTCCTCCTGCC T --- C C CT C CC CT TGGC
GTCCGCTCGGCTCAGGCGCG GCCGC CGCCTCCT CCTGCCGTC GCT GG CAGG GCGGG CTGG
ATC
GGCCCTGGCTATCTGGCGGT CGGCG GCGGAGGG GGACGGCGG CGG CC GTCC CGCCT GGCT
TGG
CCTCGGTCTCCGCCCTGCCC - AAT C C CC - CT CC ----
CCGGCCGGCGGCAGGTAAGG
GAGGCGGCGGC
GAM4537 16270 GCTAAGTGGGGCTGAAATCA GG T A AAA- ---- T CT GGCTCAGA
ACAAAAGGTCTTGGACTGTT GCTAAGT GGC GA ATCAACA GG TCT GGA GTT
GGCTCAGAAATCATCCTAGA CGATTCG CTG CT TAGTTGT CC AGA CCT TAA
AAGCCCGCCCTGTTGATATC TA T A CCCG CGAA T AC --------
TGTCATGCTTAGC
GAM4539 15966 TGCCTAGTGGACCAGAGCCT C AG AC A C--- - -------- CGCCATGAGAATACCA
TCGTCTGGACTGCCGCCATG TG CT TGG CAG GC TTCGT CTGGA CTGC
AGAATACCAGCAGTTCACCC AC GA GCC GTC CG GAGCA GACCT GACG
ATCCAGTACGAGTTCAGCCT A GT CA - ACTT T ACCCACTT ----------
GACCCGTGAGACA
GAM4540 16655 GTCATCTACAACAACAGTGT - ACAAC-- TAA C C CCCT
AAGTGAACCTGCTGTTGCCC GTCAT CTACA AGTG GTGAAC TG TGTTG
TCAGCAACAAGTTCACCATC CAGTA GATGT TTAC CACTTG AC ACGAC
ATTAGAGCCCTGTAGAATGA A CCCGAGA TAC A A ----
C
GAM4542 16874 GCTGGTTTCCTGGCCGAGGC TTT G - CTGAA TGA
GGAGCTGCTGAACCTGAGGA GCTGG CCTG CCGAGG CGGAGCTG CC
AGATCAGCTCCGACTTTGGA TGGCC GGGC GGTTTC GCCTCGAC GG
CGGGCACCCGGT CAC A A TAGAA ---
GAM4545 903 CCCAGAGGATGTCAGTCCCA AG-- CCCA---- - TA CCAT
AGGACCAGTAGCTGCCATCA CCCAG GATGTCAGT AGGA CCAG GCTG
GTTTGGATTCTGAAAACTAA GGGTC CTACGGTCA TCTT GGTT TGAC
CTGGCATCAACACTGGG ACAA ATCAAAAG A -- ----
GAM4547 21873 CTAATAAACTCTGCAATGAA - C - AA T -------- CAT
ATCATGTTGACTGCATCAGT CT AATAAACT TGC AATGA TCA GTT GACTG
CTGTACCATGACCTGACCTC GA TTATTTGA ACG TTACT AGT CAG CTGAC
ATTAGCAAGTTTATTCAG C - A CC C TACCATGT ---
GAM4548 11079 TGCCCCTTCCATGACCAGCC CTT TGAC- CAC- A GAA ATTCT
ACATCTGAAAAGGAAAGCAT TGCCC CCA CAGC ATCTG AAAG AGC
TCTGCTCTTTCCAGATCTAC ACGGG GGT GTCG TAGAC TTTC TCG

GCTGTGCCTTGGCAGGGCA AC- TCCGT CATC C --- -----
GAM4549 22533 GGGGCGGCTGGTGGCCTGAG CG TG - --- A - A TCATCAACC
CGGGAGGCCATCATCAACCT GGGG GC GTGG CCT G GC GGG GGCCA
GGCCACCCAGCCCAAGAGGC CCCC CG TACC GGA C CG CCC CCGGT
CCATGTGCATCCCC TA TG C GAA C A A ---------
GAM4550 5634 GATGCTGGCAAAGATCTCAC T AAGATC A CAA A- ACTGAGGG
TGATCCCAATGAGCAGGTAC GATGC GGCA TCACTG TCC TG GCAGGT
TGAGGGATCTGCACCAGATG TTGCG CCGT GGTGAC AGG AC CGTCTA
GACAGTGGTGCCGCGTT - ------ - TAG CA --------
GAM4551 12885 CCTTTTTAATGGGTCCCAAA ---- T TC AAT T AAATTTTG
ATCTGTGACAAATTTTGGTC CC TTTTTAA GGG CCAA CTG GAC
CAGTTGGTTCCCTTTAAAAG GG GAAAATT CCC GGTT GAC CTG
TTCTGG TCTT T TT --- - --------
GAM4553 13143 GCTGCGGCTGCAGAAGTACC TG AAGT - CT -- A GCAA
GCCTGCGGAGTAACTGCAAA GC CGGCTGCAG AC CGC GCGGA GTA CT
GATGCTGTCCGTGCGCGTTG TG GCCGGCGTC TG GCG TGCCT CGT GA
CTGCGGCCGTGGT GT GT-- C -- GT A ----
GAM4555 5959 TGTACCATTGTTGTTTTAGA - TT- - G - A C CACA TCAT
CATAATGCTACTGCACACTT TGTAC CA GTTGT TTTA AC ATA TG TACTG CT
CATAGACTACAGTACAGTAT ACGTG GT CAACA AAAT TG TAT AC ATGAC GA
AGTATAAATACAACTTTTGT T TTT T A A G - ATCA ----
GTGCA
GAM4556 8094 GGGATTCTCCACCAGGACAC CACCA C C--- - GTCCCCACCGTCCTCA
CGCCAGCGTCCCCACCGTCC GGGATTCTC GGA AC GCCA GC
TCAGCTTGGCAAACGTTTCC CCTTAGGAG CCT TG CGGT CG
CGAAGAGGATTCC AAGC- T CAAA T ----------
GAM4558 12287 TATCTTGGTTAATTGCTACT TG AA ACT TG AAAGGAA TTGATATTT
GAAAGGTTGAGAAAGGAATG TATCT GTT TTGCT GAAAGGT AG TGGT
GTTTGATATTTACCACAGCG ATGGG CAA GATGA CTTTCCG TC ACCA
CTGTGCCTTTCTACAGTAGA GT -- CAT TG GCGAC-- ---------
ACTGGGGTA
GAM4559 22629 CCTTACAGTGAGGGCTATAC TA - G AT-- -- --- GTTGAATTTA
ATGGTAGCCAGTTGAATTTA CCT CAG T AGGGCT ACA TGGTAG CCA
TGGAATCTACCAACTGTTTA GGG GTT A TCCCGG TGT ACCATC GGT
GGGCCCTGATTTGCTGGG TC T G GATT CA TAA ----------
GAM4560 19983 AGGGGATGAGGGGGAAGAGG T A ------ CTTT GCCCC
AGCTGCCTTTTGGAGGCCCC AGGGGA GAGGGGGAAG GG AGCTGC TGGAG
CTTCACCTGCAGCTATGATG TCCCCT CTTCCCCTTC CC TCGACG ACTTC
CCCTTCCCCTTCTCCCCT - - GTAGTA TCC- -----
GAM4562 19110 GAGTCTCTGTTGCCTAGGCT T GTT CT AG- TGTGATCTTGGT
GGAGTGCAGTGGTGTGATCT GAGTC CT GCCTAGG GG TGCAGTGG
TGGTTCACTGCAACACCTCC CTTAG GA TGGGTCC CC ACGTCACT
TGGGTTCAAGTGATTC T ACT T- ACA ------------
GAM4563 16306 TGCTATGAACACTATGGGAT ---- AA - GA---- G AAGAAG
CAGGCTGCCCAAGAAGGGGA TGCT ATG CACT ATGG TCAGGCT CCC
AGCCTGAGCCAAACCATGAG ACGG TAC GTGA TACC AGTCCGA GGG
TGGACATTATTGGCA TTAT AG G AAACCG A ------
GAM4564 16055 GCGCGCGGGTCTTGCGAACG - GT T GAA CG TCCCTGA TCCCACCCCGCCC

ACCGCCGGCTCCCTGACATC GC GCGCGG CT GC CGACCGC GC CATCTCCG

TCCGTCCCACCCCGCCCCGG CG CGCGCC GA CG GCTGGCG TG GTAGAGGC
AGATGATTGTGTGTGCGGTC T -- T --- TG TGTTA-- ----------
GGCTAGCCGCGCTGC
GAM4565 19130 CTGGACCTTTTGTCCTATGT CCTTTT - AT T TT AA--- AGCATC
GTGTGGATTCCAGGGCAACT CTGGA GTC CT GTGTG GGA CCAGGGC CTCT
CTAGCATCAGAGCAAAAGCC GACCT CGG GA TACGC CTT GGTTCCG GAGA
TTGGGTTTCTCGCATTCAGT CTATC- T CT T TG AAAAC ------
GGCCTATCTCCAG
GAM4567 7004 TATCCTGGGCTACTGTATGG ----- ATGGAGAA G G-- AGGCAAAA
AGAATATGTTGTAGAGACAG TATCCTGG GCTACTGT TATGTT TA AGAC
GCAAAAGTCTAGGTAGGACA ATAGGATC CGATGGTA ATACAG AT TCTG
TAATGGTAGCTTAGACTAGG AGATT -------- G GGA --------
ATA
GAM4568 6200 CTGGCCACATATGCCCCTGT - CATAT- CCCT C - CTACCATGAACA
CATCTCTGCTGAGAAAGCCT CTGGC CA GC GT ATCTCTGCTG AGAAAGC
ACCATGAACAGCTTTCTGTA GACCG GT CG CA TAGAGACGAT TCTTTCG
GCAGAGATTACCAATGCTTG A TTCGTT TAAC T G ----------
CTTTGAGCCAG
GAM4570 20240 GCCCTCGCCCGGCCTGTCAG C- C -- GTC C C CC CA-- TTCA
CGCTGCTCTCCGCCGCAGCT GCCCT GC CGGC CT AGCG TG TCT GCCG GC
TCAGCACCTCGGCCCAGAAC CGGGG CG GTCG GA TCGT AC AGA CGGC CG
AATGCTAAAGTAGCTGTGCT AT T AT AA- A A CC TCCA ----
AGGGGC
GAM4572 9929 CAAAGATCATCCTGTGAGGT GAT T-- AA G AA GAATTGA
AATTCCAGTACATTAAAAGG CAAA CATCCTG GAGGT TTCCA TACATT AAG
AATTGACTTGAGTGTAGTGG GTTT GTGGGAC TTCCG AGGGT ATGTGA TTC
GAAGCCTTCCTCAGGGTGCT ATC TCC A- G G- -------
ATTTG
GAM4573 16221 TTGCCGTCTGCCACAGCTGG TCT --- TG- C T AGA GTC
TGCCGTCTGAGAAGGGGGTC TTGCCG GCCA CAGC GTGC G CTG AGGGG
CCCCTGTAGCAGCACATCGC AACGGC CGGT GTCG CACG C GAT TCCCC
TGACTTGGCTCGGCAA T-- TCA CTA A - G-- ---
GAM4574 20806 GTATTGGGCGCAGGGGCAGA T - A-- - ---- TTTGTACT
AGTCAGGAGCTTTGTACTGT GTA TGGG CGCAGGGGCAG AG TCA GGAGC
TTTTATATGATCTCAACTGT CAT ATTC GTGTTTTTGTC TC AGT TTTTG
TTTTGTGACTTATTAC T A AAC T ATAT --------
GAM4575 19073 GGATGTGGTTGATGAAGGTT TTGA ------- CATA CAGGGCC
TCCCATATGGTTTCAGGGCC GGATGTGG TGAAGGTT TCC TGGTTT
AAACCAAGGAAGAATCTAAC CCTGTACT ACTTTCAA AGG ACCAAA
TTTCAGCCTCATGTCC CCG- TCTAAGA A--- -------
GAM4576 1353 AGATACACCCTTTCCGTTTG C----- - G TGAGTTCCTAAGT
GATGGTGAGTTCCTAAGTTT AGATACAC CTTT CC TTTGGATGG
ATCCAGAGGTAAAGCCCATT TCTGTGTG GAAA GG AGACCTATT
GTGTGTCT TTACCC T - ----------
GAM4577 17284 GCAGTCCGTCTTCAAGGTCC TTCAAG A- A--- ATGAAGC
AGATAACATGAGAAATGAAG GCAGTCCGTC GTCC GATAAC TGAGAA
CTTCTCACATCGTTGTTGGG TGTCAGGCAG TAGG TTGTTG ACTCTT
GATGACGGACTGT ------ GG CTAC -------
GAM4578 1504 GTTCTGTATAAACTGGTGGA ATAAAC- T ACA TTCCTTTGTT
CAGTAAGTTAGTTCCTTTGT GTTCTGT TGG GG GTAAGTTAG

TTTAACTTATAAGCCCCCAC TAAGACG ACC CC TATTCAATT
TTCACCGCAGAAT CCACTTC C GAA ----------
GAM4579 8913 AGATGCCAGGCATGTATGCA AGG A CA A AAAA AGC G AAACC
ACAGAGAAAATCCAGCTGCA AGATGCC CATGT TG AC GAG TCC T CACAG
CAGAAACCCTGTGGAGGAGC TCTGCGG GTGCG AC TG CTC AGG A GTGTC
AGCTCAGTCCAGCGTGAAGG AA- - C- A GACG --- G -----
CGTCT
GAM4580 4190 CCCCTCATTAGGATGCATCA C----- A TCA CCTCGT ACCG
CTGGCCTCGTGCACCGGCTT CCCCT ATTAGG TGCA CTGG GC
CACCAGCACTGCACCCTAAT GGGGA TAATCC ACGT GACC CG
CAAAACAGGGG CAAAAC C CAC ACTT-- ----
GAM4581 3750 GAGCTGTAAATTGCTTAAAT -- --- T- GCTTAA GAT
CGCTTAAACTGGAGATTTCA GAGCT GTAA ATTGCT AAATC ACTGGA
GTGAGATTTTTAGCAGTAGA CTCGA CATT TGACGA TTTAG TGACTT
TTACTAAGCTC AT AGA TT AG---- ---
GAM4582 5632 TTATGGGGACATGAGAATTA TG G GA A GAAA TA AATGT
CTGCGAAAATAAATAGAATG TTA GG ACATGA ATT CTGC ATAAA G
TCCTTTTGTGAAAGCAGCAA AAT TC TGTACT TAA GACG TGTTT C
TATCATGTCTTGTAA GT - A- C AAAG TC -----
GAM4583 6732 ACTCAATAAGAATCTTTTAT AATA ATC AAA GAAAG ATAGAA
ATCAAGTAAAATGAAAGTTG ACTC AGA TTTTATATCAAGT AT TTGATG
ATGATAGAATATCAAATAGT TGAG TCT AAAGTATAGTTTA TG AACTAT
GAATTTGATATGAAATCTAA AA-- --- AG- ATA-- ------
GAGT
GAM4584 17829 TCCTTAACCTAGTCCAACCC - TAG-- AC- ATTTTA - GAAA
TTTTATTTTACAGTTAGGGA TCCT TAACC TCCA CCTTTT CAGTT AGG
AACCTAAGCTGAGAGAGGAG AGGA GTTGG AGGT GGAGAG GTCGA TCC
ATGGAAACCTGGTTGTAGGA T TCCAA AGA A----- A ----
GAM4585 2901 GCCAGCCCCTGGGGTTTCCA CA C TCCA - G C CCCT
CCTCCTGCCTCCGGCCCTCC GC GCCC TGGGGTT CCTC CT CCTC GG
AGAGGGGTGAGGCCCCAACC CG CGGG ACCCCAA GGAG GG GGAG CC
CCAGGGCAGC A- - CCCC T - A ----
GAM4586 9394 GCGTGGTGGGAGGCTGGGGC G T G --- GT C CAGC AGAT
TGGTGCCTGCGGACAGCTCC GC TGG GGGA GCTGGG GCTG GCCTG GGA TCC
AGATGGAATCCCAGGCCACG CG ACC CCCT TGATCT TGGC CGGAC CCT AGG
GTGCTTCTAGTATCCCCCCA - C A TCG AC - A--- ----
GC
GAM4587 10532 GTTCTTAAGGTTGAAGTGTG AA- -- G G- CCAGTGCAATA
GTTCAGGGCCAGTGCAATAT GTTCTT GGTTG AAGTGT GTTCA GG
TAGTGGACAGCACTTAGTAG CAGGAG TCGAT TTCACG CAGGT TT
CTGTGGAGGAC GTG GA A GA ----------
GAM4588 2193 GGACGAATCCTTAGTACTGT - TTAGT - AAA AGACAGAAATATAACCA
GGAAAAGAGCAGACAGAAAT GGACGAAT CC ACTGTG GA GAGC
ATAACCAGCTTCTCTCACAG CCTGCTTA GG TGACAC CT TTCG
TGGAATTCGTCC A ----- T C-- ----------
GAM4589 807 GTTCAATCAGGGGTTTCTCA - C TTT A --- TTCA
CTCTCTTCCTTCAGGGAGAG GTTCA AT AGGGG CTC CT CTCTTCC
CCCAGCGAGTTTCCTTCGTA CGAGT TG TTCCT GAG GA GAGAGGG
TGAGC A C TT- C CCC ----
GAM4590 10278 GTTTTCATGGGAAGCCACTT A ------ CACTTTGA T GTGGCA

TGACAGGCATTACTGTGGCA GTTTTC TGG GAAGC CAGGCA TACT
AGTGTTGTCTGACTTACTGC CAGAAG ACC CTTCG GTCTGT GTGA
TTCAACAAACCAGAAGAC - AAACAA TCATTCA- T ------
GAM4591 18859 GCAAAGCAAAAGGCCACAGA CAAAA-- CA - C G AATCCAGTACA
GGGCTCCCTGAGAATCCAGT GCAAAG GGCCA GAGGGC TC CT AG
ACACTAAGCGAGGCCTTCAC CGTTTC CTGGT CTTCCG AG GA TC
TGGTCAAGACAACTTTGC AACAGAA CA G C A ----------
GAM4592 12578 TTTTAGGAAACAAAAGGTTT AA TT ATTGAAATG A T A C TAAAAC
ATTGAAATGCATGTAGATAA TTTTAGGA CAAAAGG T CATGT GA AAATT TCAT AGCA
ATTATCATCAGCATAAAACT AAAATTCT GTTTTCT G GTACA CT TTTGA GGTA TTGT
GTTATGGAGTTTTCAACATG C- GG --------- A - - - ------
GGGTCTTTTGCTCTTAAAA
GAM4593 14652 TGGCTTTTCAAGCTATGTCA - TT TGTCATA --- CCA
TACCTGCCTCCCAGAGGTAC TG GCT TCAAGCTA CC TGCCTC
TTGGAAAATATTGGCTTGAC AC CGA AGTTCGGT GG ATGGAG
AGCACA A C- TATAAAA TTC ---
GAM4594 20703 TTTTTTGGAGACGGAGTCTC G ACG A T GCCC
GCTCTGTCACTCCAGCCCTG TTTTTT GAG GAGTCTCGCTCTGTC C CCA
GGCGATAGAGTGAGACTCAG AAAAAA CTC CTCAGAGTGAGATAG G GGT
GCTCAAAAAAA A GGA C - ----
GAM4595 2798 GGCCCAGCTTGGGGCTGGCG T TGGC --- TGT
GGGGAGGCTGTGTCTTCAAA GGCCCAGCT GGGGC GGG GGAGGC
CCTTTGCCCCCAGTTGGGTC CTGGGTTGA CCCCG TCC CTTCTG
C TT-- AAA ---
GAM4597 18868 GCGTCCGGCTGCGGCTGCAG TCC TG AAGT - CT -- A GCAA
AAGTACCGCCTGCGGAGTAA GCG GGC CGGCTGCAG AC CGC GCGGA GTA CT
CTGCAAAGATGCTGTCCGTG CGC CTG GCCGGCGTC TG GCG TGCCT CGT GA
CGCGTTGCTGCGGCCGTGGT --- GT GT-- C -- GT A ----
CCGC
GAM4598 6814 CAAGTCCCCTACAATTGTCT CC - A TG A G ATGTCCA
TACAAGTGTCTTATGTCCAG CAAGTC CTA CA T TCTTACA GT TCTT
AGAACATGTAAGATGAGTGC GTTCAG GAT GT A AGAATGT CA AGAG
TAGAGACTTG A- C G GT A - -------
GAM4599 17898 GTTTTGCAATTCTTCTGCAC TG TTC- C T --- AAGCTG
TTTCCCACCAAGCTGGGATC GTTT CAA TTCTG ACTT CCCA CC
TGGGTGAGTCTAGAGATATT TAAA GTT GAGAT TGAG GGGT GG
TGTGAAAT GT TATA C T CTA ------
GAM4600 7160 TGCATGGGAATGAGGCTGTT AA- A TT- C AACTG
GGACGAGAACTGCTCATTTT TGCATGGG TG GGCTG GGA GAG
CTTGGCCCAGTACCTATGCA ACGTATCC AC CCGGT TTT CTC
ATG - TCT A -----
GAM4601 21375 TGAGGTTTTCCAGCTAGGGT TTTTCC CT ---- G- - C ACCCT
GGTGGGAACAGGCCCTACCC TGAGG AG AGG GTGGTG GA ACAGG CCT
TAGGTCCTGTGTCAGCACCA ACTCT TC TCC CACCAC CT TGTCC GGA
CTGTTCCTTCTAATCTTCTC TCTAA- T- TTGT GA G T -----
A
GAM4602 22134 GCCCCACTTTTAAAAACCTG CAC CCTGG C A CTGGGTC
GCTCCTTACTCTGGCTGGGT GCCC TTTTAAAAA CTC TT CTCTGG
CCCGGGGAAGAGATATTTTT CGGG AAAATTTTT GAG AA GGGGCC
AAAACAAGGGC AAC ATA-- - - -------

GAM4604 19644 GCCATCCAGCACCCAGACTC CA CA ACC-- AC A - CGA ACCC
CAGCACCGGCGAGGACCCCC GC TC GC CAG TCC GCA CCGG GG
ACTCCGGCTGCAGGACCCTG CG AG CG GTC AGG CGT GGCC CC
TCCCAGCGAGACCGC CC AG ACCCT CC A C TCA ----
GAM4605 12321 GAGGACTGAACCAGGCAGGC AC AC ------- CT T T GTCC
TGGGGTGCAGTGAGTCCTCC GAGG TGA CAGG CAGG GGGG GCAG GA
TGCCTCTTCTCTGAAATGCC CTCC ACT GTCC GTCT TCTC CGTC CT
CCTGTGTCACCCTC C- GT CCGTAAA CT - - ----
GAM4606 16544 GGACTGTTCTACTCAGCCTC A T CT- T - AAAA
TGTGGAAGAAAACTTCCCAC GG CTGT CTA CAGCC CTGTGG AAG
AGGGCTGCACTAGCACAGCC CC GACA GAT GTCGG GACACC TTC
- C CAC - C ----
GAM4607 2145 CTTCATCTCCACTCTGCACG A- A CAC CG GA TTACTCT
GCGGCTGAGGGCCCTTACTC CTTC TCTCC CTCTG GG GCT GGGCCC
TGGGCCTGGGCACCCTTAGA GAAG AGAGG GAGAT CC CGG TCCGGG
GGGGAGAACGAAG CA G T-- CA G- -------
GAM4608 11100 GCCAATGTCCACAAAGAATT AA ACAAAGAA - CA- ACCGATGTCCAAA
CCTGGTCAGCACCACCGATG GCC TGTCC TTCCT GGT GCACC
TCCAAAGGTGCAATATCAAG CGG ACGGG AAGGA CTA CGTGG
GAAGGGCAGGC -- -------- A TAA ----------
GAM4610 166 CGCGCTCGCGTCCCTCGTGC C T C T - CTCC C CTTA
GGGCTCCAGCCGCAGCCTTA CG GC CGCGTC CTCG GC GGG AGCCG AGC
GCTTCGGCTCCCGGCTTGGG GC CG GCGCGG GGGT CG CCC TCGGC TCG
TGGCGCGGCCG - - T T G ---- T ----
GAM4612 11637 GTTCTGCACATGTGTATGTT -- -- -- G A --- G AAAGGAGG
CTGCCATTTCCAGGACGAAA GTTCT GC ACATGTGTAT GTTCT CC TTTCC AG ACGA
AGGAGGTTGTGCTAAAGGGA CAAGA CG TGTACACGTA TAGGA GG AAGGG TC TGTT
AAGGAGGATCGATGCACATG AC TA GC - A AAA G --------
TATGCCAAGAAC
GAM4613 6032 GCTTAATTGCTGATACATAT TTA - - AAA TT CTGGTATTA
GAATGAAACCTTGGCTGGTA GC ATTGCTGATA CATA TGAATG CC GG
TTACCTGGCATTCACTGTGC CG TAACGGCTAT GTGT ACTTAC GG CC
TATCGGCAATGATGC TAG C C --- T- ---------
GAM4615 17676 GCTGATGTGGACTTCTCTTT GACTTCT T C - CTTACTCT
TCTTGGGCAATGGAGTCTTA GCTGATGTG CT TTCTTGGG AATGGA GT
CTCTGCTTTTATTCTCAAGA CGACTGCAC GG AAGAACTC TTATTT CG
ATGGTATGCACGTCAGC GTAT--- T - T --------
GAM4616 2392 GGTGACAAACCATTGCTGTG AAA -- T CT TAACAT
AGCCAAGCTGCTAACATGCC GGTGAC CCATTGC TG GAGCCAAG GC
TTGGTTCCAACGCGATGGCA CCACTG GGTAGCG AC CTTGGTTC CG
AGTCACC AAC CA - -- ------
GAM4617 2991 GCATGGCCAGGGAGGGCAAA GC- - AAAT AA ACCACTCTC
TGGAAAGGCAACCACTCTCT GCATG CAGGGA GGGC GGA GGCA
GCCGGTCCTGGGCTTATCCC CGTGT GTCCCT TTCG CCT CCGT
TGCAATGTGC AAC A GGT- GG ---------
GAM4618 6848 CTGGTCTCCTGTGAAGAACA TGAAGAACATGT C CGAA
TGTGGATCTCTTCCCGAAGG CTGGTCTCCTG GGATCT TTCC
AAAAGGTCCCAGGAGACCAG GACCAGAGGAC CCTGGA AAGG
---------- A ----
GAM4619 20242 GGACATTTGGTGGCTGAGGA -- GC GA GCG CTGCTAT

GAGCGCGTCACTGCTATTGA GGACAT TTGGTG TGAG GAGC TCA
ATAGCTCCATTTAACACCAG TCTGTA GACCAC ATTT CTCG AGT
CCATGTCT CC A- AC ATA -------
GAM4620 6875 GCGGGGGTTAGGCGCTGAGA G GG - AGA A --- AGAT
CGGATTTGGCGGTGAGATCG GCGGGG TTA C GCTG CGG TTTGGC GGTG
CTGTGGCCAGGCTGCAGCTG TGCTCC GGT G CGAC GTC GGACCG TCGC
AATGGGCCTCGT G AA T --- - GTG ----
GAM4621 14294 GCTCAGCCTGTAATTCTGGA C TAAT GGGAG - C GAAGA
ATTTCGGGAGGCCGAGGCAG GCTCAG CTG TCTGGAATTTC GC CGAGG AG
GAAGATTCCTTGAGCACAGG CGGGTC GAC AGACCTTGAGG CG GTTCC TT
AGTTCCAGACCAGCCTGGGC C C--- ACA-- A - -----
GAM4622 2121 CGGTGTGTTAAGGTGATTGT TA T AC GCTGTG
GAAACAGTTGCTGTGAACTT CGGTGTGT AGGTGAT GTGAA AGTT
TCATGTCACCTACATATGCT GTCGTATA TCCACTG TACTT TCAA
G CA - -- ------
GAM4623 3006 TGGGGCTGAGAGGCGAGACA G T A - AC A CT T TTCT
CTGATGGCACTCTTACTTCT TG GGC GAG GG CGAGAC TG TGGCA CT AC
GTCAGCTGCCGCAAAGTCTC AC TCG TTC CC GCTCTG AC GCCGT GA TG
GTCCACTTGCTGCA G - A T AA - C- C ----
GAM4624 11400 ATGGTGACACATGCTGGAGC A--- G - T TAACAT
CAGTGCTAACATGCCTGGTT ATGGTGAC CAT CTG GAGCCAG GC
CACGGATGGCAAGTCACCGT TGCCACTG GTA GGC CTTGGTC CG
AACG - A - ------
GAM4626 10930 TCACCTCAACTGGATTCGGA AA - C- TT CA- GACT
ATGTGCTGATTTCCATTGGA TCACCTC CTGG ATTCGGAATGTG TGA TC TTG
CTCAAGTTGATCTCACTTAT AGTGGAG GGCC TGAGTCTTATAT ACT AG AAC
ATTCTGAGTGCCGGGAGGTG -- G TC CT TTG ----
A
GAM4627 17825 CCATATATGCAACTATATTT --- ATA--- G- ATACAAAGGATTAAAC
CATGTTGTAATACAAAGGAT CCATATATGCA ACT TTTCAT TTGTA
TAAACTACAAAAGTGAAAAT GGTGTATACGT TGA AAAGTG AACAT
TAAAAGTCATTGCATATGTG TAC AAATTA AA ----------
G
GAM4628 3236 GACTATTCAGGCGCAGTACA ATTC -- CAAGT CACTG TTTGT
AGTTGGGGCACTGCATCCTT GACT AGG CGCAGTA TGGGG CATCC
TGTGGATGGATTTCCGTTGC CTGA TCC GTGTCGT GCCTT GTAGG
TGTGTTCCTCACAAGTC ACAC TT T---- TAG-- -----
GAM4629 7856 AGGACCTCAAAGAGGGAGTC CCTCAAA - TCA TGG CCAGGTCT
ACAGCCTGGGCTCGGGGAGC AGGA GAGG GAG CAGCC GCTCGGGGAGCTC
TCCCAGGTCTGGGCTCCCTG TCCT CTCT CTC GTCGG TGAGTCCCTCGGG
AGTGGCTGCATCTCTTCTCT ------- T TAC --- --------
CCT
GAM4630 3034 CTAGAGACAGACATAGTCAA ACA C-- AA- TTCCAAT
AATGAAAACATAAATTCCAA CTAGAG GACATAGT AAAATGA ACATAAA
TTTTGTGTCAATTATTTTCA GGTCTC TTGTATCA TTTTATT TGTGTTT
AACTATGTTCCCTCTGG CC- AAC AAC -------
GAM4631 1206 TACACAGCACAGAGGCACGG AGCACA A CA- ATGGG CACTC
GCACCATGGGAGAGGGCAGC TACAC GAGGC CGGG CC AGAGGGCAG
ACTCCTGCCTTCTGAGGGGA ATGTG CTCCG GTTC GG TCTTCCGTC
TCTTGGCCTCACGGTGTA GCA--- - TAG GAG-- -----

GAM4632 22446 TGAAGATCCTCACTGAGCGA A TCAC G A T A ACCA-- - - GCGGGAAA
GGCTACAGCTTCACCACCAC TGAAG TCC TGA CG GGC ACAGCTTC CC CG GC CGA
GGCCGAGCGGGAAATCGTGC GCTTC AGG GCT GC TCG TGTCGAAG GG GC CG GCT
GCGACATCAGGAGAAGCTGT - TCCC - A - A ACTACA G T --------
GCTACGTCGCCCTGGACTTC
G
GAM4634 19630 CCTCAACCCTGGCATGTGGG AACC CAT - GTA- - TATA - -- GGCGA
GCCCAGCAGTGTACCTGTGC CCTC CTGG GTGG GGCCCAGCAGT CCT GTGC AG GTG
GGCCT
TATAAGGTGGGCCTGGCGAA GGAG GGCC CATC CCGGGTCGTCG GGA CATG TC CAC
CCGGA

GGCCAACACGCTGGTGTACG GA-- --- G AGAC G TGG- G AA -----
AGGCAGAGCTGCTGGGCCGC
TACCCGGAGGAGG

GAM4635 9006 GCCGGCTTTTTCGCGGGGGG TT GC------ AGAAACAAAGGCCTGCA
AAAGAAACAAAGGCCTGCAT GCCGGCTTT C GGGGGGAA
TCCCCCCTTCTAAAAGGGAA CGGCCGAAA G CCCCCCTT
AGCCGGC GG AAAATCTT ----------
GAM4637 1443 GTCTTGTGCCCACACTGAGC G A CT ---------- AAGTCC
CAGCAAAGTCCTGCTGTCAC GTCTTGT CCC CA GAGC CAGCA
ACCCACAAGCTCCTTGGGGG CAGGACA GGG GT CTCG GTCGT
ACAGGAC G - TC AACACCCACACT ------
GAM4638 14792 TCCTGGACAGATTTCCACCC ACA TTCCA - TTCGT -- CAGG
GACAGCTTCGTGCACATGTG TCCTGG GAT CCCGA CAGC GCACATGT GT
TCAGGACCTGCGTGTGCTCA AGGGCT CTA GGGCT GTCG CGTGTGCG CA
ATGCTGTTCGGGACTATCAC ACA TCA-- T TAACT TC ----
ATCGGGA
GAM4639 17544 CCCTGGAGGAGATCTATCTC T T--- TCTC GCCTATTA
TTCTCCCTGCCTATTAAGGA CCC GGAGGAGATC ATCTCT CCT
ATCAGAGATCATTGATTTCT GGG CCTTCTTTAG TAGAGA GGA
TCCTGGG T TTAC CTAA --------
GAM4640 21579 GAAGTCCCGTGTTGCCATCC G CGT GC CAA T CT--- GCAA
TCAAGGCTAACCTGCGCAAG GAA TCC GTT CATCCT GGC AAC GC
TCCCCAGTTGCCAAGGATGT CTT AGG CAG GTAGGA CCG TTG TG
GGACTTGGAGTTC G TT- GT A-- - ACCCC ----
GAM4641 10416 GGCAGCGTGGCGGGAACGGC T- C AA CT CTCT C CCCTG
TGCTTCTCCTCTGCCCAGGG GGCAGCG GG GGG CGGCTG TCTC GCC AGGG
CCCTGTTCTTGGTGGGACTC CCGTCGT CC CCC GTCGGC AGGG TGG TCTT
GGCTGCCCCTCCTCTGCTGC CT T C- TC ---- T -----
C
GAM4642 12364 CAGGAGGCTGAAATGGGAGG GA G A GGA C - G AGG
ATCACTTGAGCCTGGGAGGT CAG GGCT AA TGGGA TCA TTG AGCCT GG
CGAGGCTGCAATGAGTCCTA GTC CCGA TT ATCCT AGT AAC TCGGA CT
ATTGAGCCACTG A- G A G-- - G G ---
GAM4643 7493 GTCTGTCATTCCTGTGCCAC C GTG- ACGA C- CATCCTAT
GACCTCAGCTTGCATCCTAT GTCTGT ATTCCT CC CCTCAG TTG
CAGTCTTGGGGAAGGAAAAG CAGACA TGAGGG GG GGGGTT GAC

GGAGTACAGAC - AAAA AA-- CT --------
GAM4644 7212 GTAGCAGAATATGTTACAAC GAATATG A C AAGGAAATGCTAAAC
TGCGGCAAAGGAAATGCTAA GTAGCA TTACA CTG GGCA
ACTGTCACAGCTGTAGATCA CGTCGT GATGT GAC CTGT
TGCTGC ACTA--- C A ----------
GAM4645 16114 GCCTGGGCTGCCCCCACTTC - CT ACT CATAA - - C A CAGCAC
TCCCATAATTCCCTGCCCTA GCCT GGG GCCCCC TCTCC TTC CCT GC CT GAG
GAGCAGCACCTCCAGAGCTA CGGA CCC CGGGGG AGAGG AAG GGA CG GA CTC
GGAGAAGGAGAGGGGGCCAC A AC --- ----- A T A C ------
CCAAGGC
GAM4646 10511 GCAGCCCGAACAAGATCACT CCC A-- C AA ATAATCTACTAATA
CAAGGTGAAGGATAATCTAC GCAG GAACAAG TCA TCAAGGTG GG
TAATACCAGCACTTTGAATG CGTC TTTGTTT AGT AGTTTCAC CC
AAAATTTGTTTCTCTGC TC- AAA A GA ----------
GAM4647 9008 GCTTATCCCCTGTGTCCCCG A CC- TG - G TG CCCTC- ACCCCCGCC
CTCCTGGCCCCTCCAGACCC GCTT TC CTG TC CCC CTCC GC CAG
CCGCCTTGCCTCGCGCTGGG CGGA AG GAC AG GGG GAGG CG GTT
AGGGGAGATCCAGAATGAAA A TAA CT A - GT CGCTCC ---------
GGC
GAM4648 9665 GGTGTACAGATTTTTCACAA ACA T ACA A T A TTTA
GACTTGGACAGATTTATCAG GGTGT GATTT TC AG CT GGAC GA
TCCTGGCTAGACAAGTCCAC CCACA CTGAA AG TC GG CCTG CT
ACC C-- C A-- - T A ----
GAM4649 22874 GATGAGATGCACCAAAGCTC AGA AG GAAG A GAGGGAAGGTGG
AGGGAAGGCATGAGGAGGGA GATG TGCACCAA CTCAGG GC TGAG
AGGTGGCTCAGTAGCCTGGG CTGC ACGTGGTT GGGTCC TG ACTC
GTTGGTGCAGAGCGTC GAG G- GA-- - ----------
GAM4651 15153 AGAGACTGTCCTTTGCAAAG A GT GCAA AT --- CATTTCAA
GAAATGACCAGCATTTCAAC AGAG CT CCTTT AGGAA GAC CAG
TGTATGTCTTCCTGGAAGGG TCTT GA GGAAG TCCTT CTG GTC
TAGATTCT A TG G--- -- TAT --------
GAM4653 3623 GGCTCGCCGCGCTAGCCCTG CGCG- A - A T AGCCT
CTGACCTGCAGCCTGTGGCC GGCTCGC CT GCCC TGCTG CC GC
GGCACGGGCAGACAACGCGA CCGAGCG GA CGGG ACGGC GG TG
GCC CAACA - C C - -----
GAM4654 16446 TTTTCCCATTCTTGGCCACT ATTC- A TT- TCA GTT
TTAATTCAGAAGAAGGTTTT TTTTCCC TTGGCC CT AAT GAAGAAG
TTTTCCTTATTTTCAGGGCC AGGAGGG AACCGG GA TTA CTTTTTT
AAACCCGGGGAGGA GCCCA - CTT TTC ---
GAM4655 4055 GCCTGGGAGTCTCCCTGCCT GGA- CCCT C AGGC
CACTCCTCTAGGCAGGGGAG GCCTG GTCT GC TCACTCCTCT
TGATGCTTCAGGACGTGACA CGGAC CAGG CG AGTGAGGGGA
GGC AGTG ACTT T ----
GAM4657 13602 GGGGTGAGGGCCGTGCCAAT AG CC- - AATC A CCACT CAAGA
CCCATCCCCACTGTCCTCAA GGGGTG GG GT GCC CC TCC GTCCT
GAGGGACCAGGAAGGACTAG CCCCAC CT CA CGG GG AGG CAGGG
GCTACAGATCAGCACCCC GA AGA T ATCA A AC--- -----
GAM4658 18269 GCGGAGGCTCGTAACTGTCG G TG ------ TCTTT - G TTAG
GTTCTTTCCCCTTCGGTCTT GCGGAGGCTC TAAC T CGGT CCC CTTCG TC
AGGATGAGGTGGGCGCACCG TGTCTTTGAG GTTG G GCCA GGG GGAGT AG

GGCATAGTGGTTGGAGTTTC - GT ATACGG CGC-- T - ----
TGT
GAM4660 22300 GGGGCTGTGATGTCAGCCAC --- - T GC CT GG--- T ACGTTCGA
TGAGGGTGTTGTGCTCACGT GGG GC TG GATGTCA CA GA GTGTTG GCTC
TCGAGGGCCCAGCACAAAAA CCC CG AC CTACAGT GT CT CACGAC CGGG
TCCTTGTATGACATCTCATG AGT T T AT TC AAAAA C --------
CTGACCC
GAM4661 19070 TGGCCTTTGGGACTCAAAAC G GACT A G GACTG A-- TACCATC
ACAGGATCTGACTGGTGGGC TG CCTTTGG CAAAAC CAG ATCT GTGGGC CAA
ACAATACCATCTTGAACGCC AC GGAAACC GTTTTG GTT TGGA CACCCG GTT
CACAAAAAGGTTTGGTTTTG G GTT- - - AAAA- CAA -------
TTGCCAAAGGGCA
GAM4662 2370 GCATGCCGACTACAGCTGGT C---------- AC T A A- AGT
ACCAGGCGGGCAGTGCCCGC GCATGC GACT AGC GGT CC GGCGGGC
TCAGGGCCTGTTACAGTCTA CGTACG CTGA TTG CCG GG TCGCCCG
CCCCTACATGCATGC TACATCCCCAT CA T - AC ---
GAM4663 2933 GAAGTCGGTCGTGTCCGGCG T C G - T- TG T TCCT
TGATGGGCTTGCTGTCCTCC GAAG CGGT GT TCCGG CG GATGGGCT CTG CC
TGGTCAGAGCCCATCCCTGT TTTC GCCG CA GGGCC GT CTACCCGA GAC GG
CCGGGGACTGCCGCTTT - T G T CC -- T ----
GAM4664 12603 GCTGGTGGGGCCAGGAGTGG G- GG A TG AA - ACACCC
AACTGCTCTTGACACCCCGA GCTG TGG CCAGG G G CTG CTCTTG
GAGCCAGCCCTGCCCTTGGA CGAC ACC GGTTC C C GAC GAGAGC
ACCAGACAGC AG AA C GT CC C ------
GAM4665 8107 TTTCTGATGGCTGCTATGTG T CTATG GACA GC GA--- GTAGG
TCTGACACTGTGCCATGATC TTTCTGA GGCTG TGTCT CTGT CAT TCT
TGTAGGAGAAACAAGTGAAC AAGGATT CCGAC ACAGG GACA GTG AGA
AGGGGACAATCTCAGCCTTT T TCTA- G--- A- AACAA -----
AGGAA
GAM4666 759 GCTGTCGCCCCCAAGCTCGC - CCCA - CC ACACG TTCCTCCCTGCCTCAC
CCCTGGACACGCCCTTCCTC GCTGTC GCC AGCT CGCC TGG CCC
CCTGCCTCACGGGACTCGCC CGACAG CGG TCGA GCGG GCC GGG
GCTGGCGCAGCTGGCGGACA G ---- C TC GCTCA ----------
GC
GAM4667 16205 GCAGGCTTTTCCATTCAAAC CT CATTCAAAC ATTTG TAAGTTC
TTTGTCATTTGTTTCTTTAA GCAGG TTTC TTTGTC TTTCTT
GTTCAAGAAAGACAAAATCT TGTTC AAAG AAACAG AAAGAA
ACACTGAAATCCTTGT CT TCACATCTA ----- -------
GAM4669 3027 GAAGATCAATCTGATGGCTA AATCT-- CTAA CA AT GTAAG
AAGATCAGTATGACTGCGTA GAAGATC GATGG AGAT GT GACTGC
AGGCAGTTTGACATCTACCC CTTTTAG CTACC TCTA CA TTGACG
ATCCCTAACAGATTTTC ACAATCC CA-- -- GT -----
GAM4670 11512 TTGGAAGTGGGAAGTTGAGT T ---------- G TC A GCT
CGAATTAGGGCTCCTAATCA TTGGAAG GGGA AGTT AG GA TTAGG
TCTGAGCTATCTAATTTTTA GACTTTC CCCT TCGA TC CT AATCC
TCCCCCTTTCAG C ATTTTTAATCTA G TA - ---
GAM4672 9343 CTCGGAGTGGGGTTGGGACG T-- ----- A TCCCA
TTTTCACTCCCAGTGGAAAC CTCGGAG GGGGTTG GG CGTTTTCAC
GCCAACTATAACCCCTCCCT GAGCCTC CCCCAAT CC GCAAAGGTG
CCGAG CCT ATCAA - -----

GAM4673 22410 TCCAGCAGCCTTCTTGTCCA A- - TCT CCACT-- GAT AC- -------- AAC T
CTGCTTTGATGACACCCACC TCC GC AGCCT TGT GCTTT GAC CCACC GC TG CTGT
GCAACTGTCTGTCTCATATC AGG CG TCGGG ACA CGAAG CTG GGTGG CG AC GACA
ACGAACAGCAAAGCGACCCA AC T TAC CAACTCT AGT ATA AAACCCAG AA- -
AAGGTGGATAGTCTGAGAAG C ATATCAC
CTCTCAACACACATGGGCTT TC
GCCAGGA AG
- -------
GAM4674 8946 GCATTAAAGGATAATTTTCT A - AT--- TGAAT G AAAAT
CTGTGAATAAGAGCAAAATG GC TTAAA GGATA TTTCTCTG AAGA C
GTCTTCAGAGAAACAGACTG CG AGTTT CTTGT AAAGAGAC TTCT G
TTCATTTGAAGC A A CAGAC ----- G -----
GAM4676 17229 CAGGATGCTACACAATGGGG A AA GG AA--------- CTGG
TTGGGAAAGGCCCTGGGGCC CAGG TGCTACAC TGG TTGGGA GGCC
GAGGAGAAGGGTTCCAAACC GTCC ATGGTGTG GCC AACCTT CCGG
GGTGTGGTACCTG - -- A- GGGAAGAGGAG ----
GAM4679 2194 AGTAATGACTTCCAGAAGTA - TTCCAGAAGT CAA A TTCTATT
TTTTGGCAATCCCATCTTCT AGTAAT GAC ATTTTGG TCCC TC
ATTGAGGGACCAAGATGTCT TCATTA CTG TAGAACC AGGG AG
ATTACT T ---------- --- - -------
GAM4680 17300 GGGAGAGGGGATTCACAAGG --- TTCACA T AA AACC
TGAAGAACTGGAACCCCAGC GGGA GAGGGGA AGG GAAG CTGG
TTCCCTCCAGCCTCTCCTCC CCCT CTCCTCT TCC CTTC GACC
ATTCCC TAC CCGACC - -- ----
GAM4681 8566 CACTGTGCTGTCAGATGTCC - C CACC-- TATACCCC
ACCTCTATACCCCGAACCAT CA CTGTGCTGT AGATGTC TC
AGACATCTCATGGTACGGCT GT GGCATGGTA TCTACAG AG
G C C ATACCA --------
GAM4682 9845 CAGCCCCGCAGGTTTTTGGC - C TT G ATGATG ----- A- A AACTGGA
GATGATGACGTCCGTCACAG CAGCCC CG AGG TTTG CG ACGTC CGTCAC GCATCAA GACA

CATCAAAGACAAACTGGATG GTCGGG GT TCT AGAT GT TGCAG GCGGTG TGTGGTT TTGT

TTGTTGGTGTCCGTGGCGCA T T CT - GGG--- TGGAC CC G -------
GGTGACGTGGGTGTAGATCT
CTTTGTGGGCTG

GAM4683 13457 GAAGCCTTTGACCAGGCAGG - TTGA C GTC C TGGTTCTT
GTCAGGCTGACCTGGTTCTT GA AGCCT CCAGG AGG AGG TGACC
GGTCATCTCCTCCTGGGATT CT TCGGG GGTCC TCC TCT ACTGG
GGGCTATC A TTAG - --- - --------
GAM4684 1847 GTCTGTCCAGATCTTCCATC T AT C A- G-- -- CAG
TTATGCGCCAGCTTGCAGCA GTC GTCCAG CTTC ATCTT TGC CC AGCTTG
GGTTAAGGACAGCAGCAGGA CAG TAGGTC GAAG TAGGA ACG GG TTGGAC
TGAAGCTGGATGAC - -- - CG ACA AA ---
GAM4686 18629 CAGTATATTTGAGTGAATGA TTT A ATTAT AAA ACA -- TTTTT
TTATATGTTTAAAAAGTTAC CAGTATA GAGTGA TG ATGTTT AAGTT TGGGG GCT
ATGGGGGCTTTTTTGGTTGT GTCATGT CTTACT AC TACAAA TTCAA ATCCT TGG
CCTAAACTTACAAAACATTC TGT C CT--- ACA --- GT -----

CACTCATTCTGTTGTACTG
GAM4688 3537 GGAAACAGGGAAAGGTTTTT A A TG AGGG AACCCTAA
TTGCGTGTAGGGGTTGTGCA GG AACAGGG AAGGTTTTTT CGTGT GTTGTGCA
AACCCTAATGCATAACGGAG CC TTGTCCC TTTCAGAAAA GTACG CAATACGT
CATGAAAAGACTTTCCCCTG G C -- AGG- --------
TTGCC
GAM4689 1419 TTTTAATAGCTTAAGATTTT AT AAG AAGAGAAAA AAG AGAA
AAGAGAAAATATGAAGACTT TTTTA AGCTT ATTTT TATG ACTT
AGAAGAGTAGCATGAGGAAG AAAAT TTGGA TAGAA GTAC TGAG
GAAAAGATAAAAGGTTTCTA CT AAA AAGGAAGGA GA- ----
AAA
GAM4691 19738 TCAGTCTTTGACCAACTGGG - TGAC--- A G-- ATAC ACAAAAGC
ATCATACAGAGGGACAAAAG TCAGT CTT CA CTG GATC AGAGGG
CTCCTCTAGAGGATTATACA AGTCA GAA GT GAC TTAG TCTCCT
GATGATGATTTAAGCACTGA C TTTAGTA A ATA GAGA --------
GAM4692 12510 TGTACTATTTGTTTAATGAA A TG A A GT ATTCCAACAA
TGCATATGAGGTGTTTTTAT TGT CTATT TTTAATGA TGC TATGAG GTTTTT
TCCAACAAGAAAATTATTCG ACA GATAA AAGTTATT GCG ATGCTT TAAAAG
TACGCGATTATTGAATGAAT - GT A C AT ----------
AGACA
GAM4693 15171 CAAGCTACCAATGACTTTCT ACCAA- CT TCACA GG AAACTAC
TCACAGAATTGGAAAAAACT CAAGCT TGA TTCT GAATT AAA
ACTTTAAAGTTCATATAGAA GTTCGA ACT AAGA CTTGA TTT
TCAAAAAAGAGCTTG GAAAAA -- TATA- AA -------
GAM4694 1871 ATGATTGGAGACAAAGTTTA A G ATG -- AGGAAAA
TGTCCATTACAAAGGAAAAT ATGATTGGAG CAAA TTT TCCATT ACAA
TGTCAAATGGAAAGAAGTTT TACTGACCTT GTTT AAG AGGTAA TGTT
GATTCCAGTCAT A G AA- AC -------
GAM4695 12291 TGCTTAGTCTAACTCAAAAG AAC A AT- TTTT GTTACCAA
ATCCTTTTTCATTTGTTACC TGCTTAGTCT TCAA AG CCT CATTT
AAAAATGTATTAGGTCCCTG ACGGATCGGA AGTT TC GGA GTAAA
TTGAAGGCTAGGCA --- G CCT TTAT --------
GAM4696 8960 CCCACAGCGGAGTCTGTGTC CGGA TGT T T G AGGTT
TTTTAGCTACAGAGGAGGTT CCCACAG GTC GTCTTT AGC ACA AGG
CCTTGTTGCTAAAGATGACC GGGTGTC CAG TAGAAA TCG TGT TCC
TGTGGG ---- --- - T - -----
GAM4697 4023 TCTTTTTCTGAGGTTTCATT GAG- TTC TC T T AC TT TTGT
CCAATGAGAGTTGCACACTG TCTTTTTCT GT AT CAA GAGAGT GC ACTGTCAGC GGTT
TCAGCTTGGTTTTGTGGCTG AGAAAAAGA CA TA GTT CTTTCA TG TGATAGTCG TCGG
CTGATAGTCGTACTTTCTTG ACAA CT- TC - - C- -- ----
CTATTCACAACAAGAAAAAG
A
GAM4698 16614 GCCGTTGAGCTGGTACACCG G GA A C -- AA A- CCATAC
TCCGGAAGGCATTGGCCATA GCC TT GCTGGT CA CGTC CGG GGC TTGG
CCCGACAGCCGGCCGCTGAT CGG AG CGACCG GT GTAG GCC CCG AGCC
GTTGGCCAGCGAGAGGGC G AG - T TC GG AC ------
GAM4699 18450 TGCGCGAGAGAGGGGGCTCG GC G - T AG G -- ATAT
AGGTGCTTTTCCTATATGGG TGC GAGAGA GG GGC CG GT CTTT TCCT
GCCGAGGGACAATGGTCACC ACG TTCTCT CC CTG GT CA GGAG GGGG
GTCTCTTCAGCA AC G A - AA G CC ----

GAM4701 21131 TTTTTTGAGATGGAGTCTCA - G GTC A A- AGAGATC
CTCTGTCGCCCAGGCTGGAA TTTTTTGA GATG AGTCTCACTCT GCCCAGGCTGGA TGCAGTG GC

TGCAGTGAGCAGAGATCGCA GGAAAACT CTGT TCAGAGTGAGA CGGGTCCGACCT ACGTCAC CG

CCACTGCACTCCAGCCTGGG G G A-- C CA -------
CAAGAGTGAGACTGTGTCGT
CAAAAGG
GAM4702 18408 GGAAGGAGCCAGAATGGAGG - AATG-- CCA G G -- GTGCT
CCCAGGCTGGGAGGTGTCCG GGAAGG AGCCAG GAGGC GGCT GGAG TG TCC
TGCTGGAGCCAGTTTTGAGC TCTTCC TCGGTC CTCCG CCGA TTTT AC AGG
CAAGCCTCAGGAAGCTGGCT G GAAGGA AA- G G CG -----
GCCTTCT
GAM4703 22066 GTGTCTTCGGCCGCCGGAAG T CG TGCGTCCGGATC
GGGGGTGCGTCCGGATCTTC GTGTCT CGGCCGC GAAGGGGGG
TTCTTTTTGTGGCTGTGGAC CACAGG GTCGGTG TTTCTTCTT
AC T TT ----------
GAM4704 3283 AGTTGAGGACTTTGAATCTG G- GAA CA AC CAT
GGACAGAACTGCATCACCTC AGTTGA GACTTT TCTGGGA GA TG
ACTCCCAGAGAAAGTTGGTC TCGACT TTGAAA AGACCCT CT AC
AGCT GG G-- CA CC ---
GAM4705 7712 AGATGGTCTGATGCTACAGG G C C - A-- TT C- G ATTT
ACTTGGTTTCAGCTAAGCTG AGAT GT TGATG TA CAGG CTTGGT CAG TAA CTG
ATTTCAGATTACACTGTTAC TCTA TA ATTAC AT GTCC GAGCCA GTC ATT GAC
CGAGATCCCTGATACCATTA G - C A CTA TT AC A ----
ATGATCT
GAM4706 4864 GGAGTCTCACTCTGTTGCCC - G A G C GATCTCA
AGGCTGGAATGGAGTGGCGC GGAGTCTCACTCTGT T CCCAGGCTGGA TG AGTGG GC

GATCTCAGCTCACTGCACTC CTTCAGAGTGAGACA G GGGTCCGACCT AC TCACT CG
CAGCCTGGGGGAACAGAGTG A G C G - -------
AGACTTC
GAM4710 15663 ACGTAGACTCGGCGTGGAGG -- CGTG T G AC T ACCG
GTGTCGTGGACGCCGCCTGG ACGTAGACTC GG GAGGG GTC TGG GCCGCCTGG CCG

TCCGACCGCGGCCGGGTGGC TGTGTCTGAG CC CTCCT CGG ACT CGGTGGGCC GGC

CTCAGGGCTCCTCATCCAGG GA TA-- - G C- - ----
AGTCTGTGT
GAM4711 15984 GGGTTTGAGCCCACAGGACC T CC A CACACAAACT --- TCTT
TGCACACAAACTTCCCCACC GGGTT GAG CACAGG CCTG TCCCCA CC
TCTTGGACTTGGGGACAGGA CCCAA CTC GTGTCT GGAC AGGGGT GG
TCTGTGCCTCAACCC - C- A ---------- TCA ----
GAM4712 19888 GTGGCCCAAACCCAGCTGGG CA TG C CT GCAG
TCCCTTCCTCCTAGGCAGCT GTGGCC AACCCAGC GGTCC TTCCTC AG
GAGGGAAGGACTGCTGGGTT CACCGG TTGGGTCG TCAGG AGGGAG TC
GGCCAC -- -- A -- ----
GAM4713 6033 TGGGCTTGAGTGGAGGAAGG C A- AG AA A ATTT---- CCT
CAGAATATTTCCCCCTGGGT TGGG TTG GTGG G GGC GAAT CCC
CCTTCAGATTCGCCAGCTCC ACCC AGT CACC C CCG CTTA GGG

CACCCTGAACCCA A CC CT GA - GACTTCCT ---
GAM4714 257 GGGGGAGGCACAGCAGGTGT AGGCACA AA A CACGT A GCC
GAAGGCGACAGGACCACGTG GGGGG GCAGGTGTG GGCG CAGGAC GGC CGGG
GCACGGGGCCCCTGGCCTAA CCCCC CGTCCACAC CCGC GTCCTG CCG GTCC
AGTCCTGGCGCCGCCACACC ------- CG G AAAT- - ---
TGCCCCCC
GAM4715 7250 GGCATGCAGTAACTGTTCAA ATGC TA T TAAT T - A TTTAA
ATAATGTTTGTTTAATTGAC GGC AG ACTGT CAAA GTTTG TTAA TTG CGGGT
GGGTTTTAAGCTCGATAACT CCG TC TGACA GTTT CGAAT GATT AAT GCTCG
TAGCTAAGCCCTTTGCACAG AA-- -- C CC-- C C A -----
TCTAAGCC
GAM4716 8922 TGCGCATTCCCAAGTCACGA - CCAA-- - CA GTACA GATC
TGTCACTGTACATCCGATCG TGCG CATTC GTCACG ATGT CT TCC
GAGATGAGGATACATGTGTG ACGT GTAGG TAGTGT TACA GG AGG
ATGCCACTGGATGATGCA A TCACCG G TA AGTAG ----
GAM4717 6028 GGGCGTTGGCAGAGGTGGCG - - A- TG G C TGGG
GCGGCGGCATGGGTGCCCCG GGGC GTT GGCAG GG GCG CGG GGCA
ACGTTGCCCCCTGCCTGGCA CCCG CGG CCGTC CC TGC GCC CCGT
GCCC A T CC GT A - ----
GAM4718 11178 GTTTGGCCGTAAGGTGCCGT TAA GCCG GAATT TG -- TCCACAC
GCGTGAATTGTGCTTGTGCC GTTTGGCCG GGT TGCGT GTGCT T GCCC
CTCCACACGGGTTCGTGGGC CAGACCGGC CCA GTGCA CACGG G TGGG
ACTCCGGACGTGATTAACCA CGA ATTA GGCCT GT CT -------
GCCGGCCAGAC
GAM4719 4429 ATTCATGGCTAGCACCTGGA T --- --- C A- G T CG- ATATA
AATGCAGTATCTCGTGTATA ATTCA GG CTAG CA CTGGA AT CAG ATCT TGT
TAGCAAAAAGATCCTGGGTA TAAGT CC GGTC GT GGCTT TG GTC TAGA ACG
GTTCGGATGATACTGGAATC - TAA ATA A GA G C AAA -----
CTGAAT
GAM4721 3164 GGCGTTGGGGGCGCCCGATA TT--- G TATCCTGT A- TTT
TCCTGTGGGGGGAAGGGTTT GGCG GGGGGC CCCGA GGGGGGA GGG
CCCGGTTCCCTTTTGGGGGC CCGT TCCCCG GGGTT TTCCCTT CCC
CCCTTTATTTGCC TTATT G -------- GG ---
GAM4722 9390 CACTGGTGAGGTGGATTGAT T GA- GA G GA - ACAC-- CAA
GATGAATCTTCTGACACACC CAC GGT GGTGGATT T AT ATCTTC TGAC CTGGAG
TGGAGCAACTCCAGAACACA GTG CCA CCATTTAA G TA TAGGAG ACTG GACCTC
GTCACGAGGATAATGGGAAT C AAG GG - A- C ACACAA ---
TTACCGAAACCCGTG
GAM4724 1699 GTTCACAGAGGAACTTAAGA AGA A AAGAA G ---- TGGTT
AGTATGGAGTGACGACTTGT GTTCAC GGA CTT GTATG AGTG ACGACTTG
GGTTCGAGTTGTGTGATGCT CAGGTG CCT GAA TATAC TCGT TGTTGAGC
ACATATGATAAAGCTCCAGT A-- C ATAG- A AGTG -----
GGAC
GAM4725 12202 TCATCTATAAGTAGCATCTG - T T- - AA-- GGAGA
GGAAGAGGAGATCGAGGCCA TCAT CTA AAGTAGCA CTG GG GA
CAGTTTGCTATTTTAGTATG AGTA GAT TTTATCGT GAC CC CT
A T - TT A GGAG -----
GAM4726 7940 GTGGCGAGTATGGTGCGGAG C ----- C- A CCCT G ATGTT
GCCCTGGAGAGGATGTTCCT GTGG GAGTA TGGTG GG GG GGA AGG
GTCCTTCCCCACCACCAAGA CGCC TTCAT ACCAC CC CC CCT TCC

CCTACTTCCCGC C CCAGA CA - TT-- G -----
GAM4727 5089 GGGAACTTCTGGATACAAGT AACTTC A G- CC T T C ACTC
GGGGCCATGCTCCCTGGCCC GGG TGGATACA GT GGG ATGC CCC GGCC TG
TGACTCCAGGCTGGGGTATC CCC ACCTATGT CA TCC TATG GGG TCGG AC
CTGAACTGTATCCAACCC A----- - AG -- - - - ----
GAM4728 8968 GTCCCGGCGAAGAGAAGAGA C A AGACA T- GAAGG
CACATTGTTGGAAGGCAGCC GTCCCGG GAAG GAAG CAT GTTG
CATGACAGCTTCCCTTCCTG CAGGGTC CTTC CTTC GTA CGAC
GGAC - C GACA- CC -----
GAM4729 7350 GCTCTGCAGACACAAAGATG GCA ACA- AAAAG G- AAA A TGACG
AAAAGCTTGGCCACAAAGGA GCTCT GAC AAGATG CTT GCCAC GG GC
GCTGACGGTGCCGTGGCGAG CGAGG CTG TTCTAC GAG CGGTG CC TG
AGAGATCCATCTTGACGGTC A-- GCAG CTAGA AG --- G -----
AGGAGC
GAM4731 18135 AAATCTAGCCAGAGCCCTTC C CC ----- TG CAT- - GGCTTCA
ACTGCCATGATAGCTGGGGC AAAT TAGCCAGAG CT TCAC C GATAG CTGG
TTCACCAGTCTGTCTACTGT TTTA GTTGGTCTT GA AGTG G CTGTC GACC
GGTGATCTGTAGACTTCTGG T CA TGTCT GT TCAT T -------
TTGTATTT
GAM4732 15658 GAAGGTATTTGTTTTTCGGT ATTT T- GT T A ACCACACCG
CTTTGAGGAAGAACCACACC GAAGGT GTT TTCG C TTG GGAAGA
GTTTTCCACAACGGTTGAAC CTTTCA TAA AAGT G AAC CCTTTT
TAATTTCCACTTTC CCTT TC TG C A ---------
GAM4735 2475 TGTGTTCCGTGACTGGCTCC T TC GC - AGC --- CAGAT
CCAGCAATCTCACCAGATGT TG GT CGTGACTG TCC CC AATCT CAC
GCTTAGATTTGGGTGGACTC AC CG GCACTGAC AGG GG TTAGA GTG
AGTCACGCTGCCCA C TC TC T GT- TTC -----
GAM4737 13973 CTTTTTTCTGTTCTCGTCCG TTT CG-- - - CCCG TCCTG
GGGATCCCGAGCTGTCCTGC CTTT CTGTTCT TC CGGGG AT AGCTG
AGCTGTACCCTGAGAACTCA GAGG GACGAGA AG GTCCC TG TCGAC
GAGCAGTTGGAG TT- CTCA A A ---- -----
GAM4739 6437 GCGGTGGGAGCAGCAGCCAA T A -- - A- CCG- GAAA
GTCCGCGGGAAACCGAGCTG GCGG GGG GCA GCAG CC AGT CGG
CTCGGGCCTGCCCTGCACCC CGCC CCC CGT CGTC GG TCG GCC
CCCGC C A CC C GC TCGA ----
GAM4740 20929 TCATGATGGGGGGAGATGTG G G GA TGCTACG - - TG CAGG
GGGTTGCTACGCTATGTTTG TCAT AT GGGGGA TGTGGGGT CT ATG TT GC
GCCAGGGCTGGATCATCAGA AGTG TA TCTTCT GTACCTCA GA TAC AG CG
TACTCCATGAATCTTCTAAT G A AA TA----- C T GT ----
GGTGA
GAM4741 12851 CCTGCTGTGTGGCAGCTGAA GCAG AAC GCCAA TG ACCAATGTGA
CTCTGCCAAGGTGATGGTGA CCTGCTGTGTG CTG TCT GG ATGGTG
CCAATGTGACATCATTGCTT GGACGGCATAC GAT AGA TC TACTAC
AAGACAGTAGAACACATACG ACAA GAC AT--- GT ----------
GCAGG
GAM4742 22657 TGTTGCTATTTCCTAACCTG G TT TAA---- C G -- GAAA
CAGGCAGAACCTGAAAGGGC TGTT CTA TCC CCTG AG CAGAA CCT
ATTTTGGCTCCGGGGCATCC ACAA GAT AGG GGGC TC GTTTT GGG
TGGATTTAGAACA - TT TCCTACG C G AC ----
GAM4743 6935 GGCGGCAAGCGGGCTGGGAC AGC G A G CCTCCTGCC

TGCTCGGCCGCCTCCTGCCC GGCGGCA GG CTGGG CTGCTCG CCG
GGCGAGCAGCTCAGACCATG CCGCTGT CC GACTC GACGAGC GGC
TCGCC A-- A - - ---------
GAM4744 14177 GAAGCGTAATATTTTGGTAA TAAT AAAATTCG TTT TAAATCAGCT
AATTCGGGTTAAATTTTTGT GAAGCG ATTTTGGT GGTTAAA TTG
AAATCAGCTCAATTTTTAAC CTTCGC TAAAGCCG CCAATTT AAC
CAATAGGCCGAAATCGCTTC ---- GATAA--- TT- ----------
GAM4745 17408 AGAGGCTGTGTGGCCAACCA TGT AA- G CCAAG C ATTCC
GGACCCAAGGTGCCCTTCCC AGAGGCTG GGCC CCAG AC GTG CCTTCCCAG
AGATTCCTTGGGAAGGACAC TCTCCGAT TTGG GGTT TG CAC GGAAGGGTT
AGCAGTATTGGACCGGTTCT C-- CCA A ACGA- A -----
AGCCTCT
GAM4747 17488 GTCCAGGGAAAGAGCAGTAA C- A A TAA T AA AGAGCCTGGTG
GGGTCAGAAGAGAAAGAGCC GTC AGGGAA G GCAG GGG CAG GAGAA
TGGTGTTCTCACTGCCTCCT CAG TTCCTT C CGTC TCC GTC CTCTT
GCCTTCCTTATGAC TA - - C-- - A- ----------
GAM4748 5114 TTGAGATGGAGTTTTGCTCT A T TC AAG C CTTG
TGTTCCCCAGGCTGGAGTGC TTGAGATGG GTTTTGCTCT GT CCCAGGCTGGAGTGCA GTG GGT

AAAGGTGCGGTCTTGGCTCA AACTCTGTC CAGAGCGAGA CA GGGTCCGACCTCACGT CAC TCG

CTGCACTCCAGCCTGGGATA C - TA --- - ----
CAGAGCGAGACCCTGTCTCA
A
GAM4749 23 AAAAGCTGGATTGCTGATTT ATTGCT ATAAACAAG TAAAGAAT
TTGCTAATAAACAAGATGTT AAAAGCTGG GATTTTTGCTA ATGT
AAAGAATGCATGACTGTAGC TTTTTGACC CTAAAGACGAT TACG
AGAAATCTCCCAGTTTTT CT---- GTCAG---- --------
GAM4750 3137 CTGCAAGACTGTGCCCTTCC TG C T CT- C-- C- A-- A GCAACAGATAAA
CCTCCTGAAAGATGTCATCG C CAAGA TG GCC TCCC TC TGAA GATGTC TC
CAACAGATAAAGAAGACGTT G GTTCT AC CGG AGGG AG ACTT TTGCAG AG
GCCTTCAAAGACCTGGGATG GT T - TGT TCC AA CCG A ----------
TGGCCATTCTTGTGG
GAM4751 9096 GTTTTCATCCTCTAGTACTG A - G TGA -- AAGG
AAGTGCCCTCAAGGGGGTAG GTTTTC TCCT CTA TAC AGTGCC CTC
GCACTGTATAGCAGGAGAAA CAAAAG AGGA GAT ATG TCACGG GGG
AC - C - --- AT ----
GAM4752 464 AGAGGAGATCCAGGCTAAAT A T ---- AA CCCT
TTTCTGGCCCTTCAGGAAGG AG GGAGA CCAG GCTA TTTTCTGG
CTGGCACCTCTGGCTCTCCC TC CCTCT GGTC CGGT GAAGGACT
T - C TCCA CG ----
GAM4753 8278 GCACTCTCCGAGTCGCTGAA CC T - -- T T T GACACTG
GCCGCTGCTGTCGCTGACAC GCACTCT GAG CGC TGAA GCCGC GC G CGCT
TGGGCGCTGCTGCGGCCTTT CGTGGGA CTC GCG ACTT CGGCG CG C GCGG
CATGCGCTCCAGGGTGC C- - T TC T T - -------
GAM4754 22635 CTGCCCTAGCCAGGGGCACT CC CA--- ----- ----- GTTC
GGCCAGCCTGGTTCCAGGCC CTG CTAGC GGGGCACT GGCCA GCCTG
CACATGGCCTAGTCAGTGCC GAC GGTCG CTCCGTGA CCGGT CGGAC
TCGAGGAGCTGGTTCAG TT AGGAG CTGAT ACACC ----
GAM4756 19207 TCTGAATCTTCTGGGAGGCA AAT GA A- A C A GAATCCAGG

GCGGAATCTGAGACGAATCC TCTG CTTCTGG GGC GCGG AT TG GAC
AGGGTCCAAATCCCGCAAGC AGAC GAAGACC TCG CGCC TA AC CTG
TCCAGAAGCACAGA AC- -- AA C A - ---------
GAM4757 9518 ATTTCTTCCATCAGCCTGTC ------- TCC CTAAA CA TGTTATTC
CCTAGGACTAAAATGCCTCA ATTTCTTCCAT CAGCCTG CTAGGA ATGCCT TTAG
TTAGTGTTATTCTTAGGAAG TGAAGGAGGTA GTCGGAC GATCCT TACGGA GATT
GCATCTTCCTAGATCAGGCT AAGGAAC TA- TC--- AG --------
GCAAGGAAATGGAGGAAGT
GAM4758 20054 TGGCTGGGTTGAATCCGGTG - GAATC-- GTCG A GGTCCTTA
CTTGTCGGTACAGGTCCTTA TGGCTGG GTT CGGTGCTT GT CA
TGACACAAAAGCACCGTAAA ATCGACC CGG GCCACGAA CA GT
AGAGGCTCCAGCTA T AGAAAAT AACA - --------
GAM4759 2915 GAAGGCTGAGTACTGGGCAC CT A - C TCTCACT
TCTCATCTCTCACTGGTGAG GAAGG GAGT CT GGGCA TCTCATC
AATGTCCGAGAATTCTTCTT CTTCT CTTA GA CCTGT AGAGTGG
C T- A G A -------
GAM4760 4400 GAGTGGATTGGATATGGTTG AT - T GT CA CT C- GGAAAA
GAGTGGCACAGACTGGATCT GAGTGG TGGATA TGGT GGA GGCA GA GGAT TG
GGGAAAACATTGTCTTATTT CTCACT ACCTGT ACCG CCT TCGT TT TCTG AC
GCTTCCTGCCATTGTCCACA AC T T -- -- AT TT ------
TCACTC
GAM4761 5963 AGATGCTTTTGGTGTGTCTC -- TG T CATA G G TCCAATCTGT
ATACTGTGTTTGGCAGAGAG AGATG CTTTTGG TG CT CTGT TTT GCAGAGAGG
GTCCAATCTGTCCTCTCTGT TCTAC GGAGACC GC GA GACA GAG TGTCTCTCC
GGAGACAGGAAGTCGTCCCA CT CT T AG-- - G ----------
GAGGTCCATCT
GAM4762 18335 GTCTGGGGCCCTGCGCCTGA G - -- ---- T - T GAAA
TGAGCTGCCATGAAAGTGGC GTCTGGG CC CTGC GCC TGA GAG C GCCAT
CGCCTCTCACACTGGCAGGC TAGACTC GG GGCG CGG ACT CTC G CGGTG
GGTGGCTCAGAT - T GA TCAC - C C ----
GAM4765 1527 CTTCAAACTGGTTTCTTCAC - CTTCAC CA TTCCCCTT
TCTGAAGCAGGTTCCCCTTC CTTCAAACT GGTTT TCTGAAG GG
CCCTTCAGGATATCTGGACC GAAGTTTGA CCAGG GGACTTC CC
AAGTTTGAAG A TCTATA C- --------
GAM4766 4610 GATGGGCTGGGTAGAGAGCA C---- - A -- - CTTCC
GGACTGGAGCTTCCCTCACA GATGGG TGGGT AGAG GCAGGACT G GAG
GGGTTCTGCCTCTGGCCCGA CTACCC GCCCG TCTC CGTCTTGG C CTC
TCTCCCCATC CTCTA G - GA A -----
GAM4767 6409 GCATGTAGGGGGTCCGGCAT GTA ---- - TCCT- ACTTGAC
GGGCGTCCTGGCACTTGACG GCAT GGGGGTCC GGC ATGGGCG GGC
CTTACCTCGTCCGTAGTCTG CGTG TCTCCGGG CTG TGCCTGC TCG
GTGGGCCTCTGTAGTGC ATG TGGT A TCCAT -------
GAM4768 18062 TGGAGAGTTTAAATAATTTG TTTAAATAATTT T TC - CCAAAATC
CTGAATGTCTCATGGCCAAA TGGAGAG GC GAATG TCA TGG
ATCCTATTGAAGTATTTGCT ACCTCTC CG TTTAT AGT ATC
GGGATCTTCTCTCCA TTCTAGGGT--- - GA T --------
GAM4770 5977 GGTGGCCCAAGCGTTGCCTG ------- T CT GATGG GC CAAG
CAGGTTGATGGCAGGGGCAC GGTGGCCCA AGCG TGC GCAGGTT CAGGG ACGT
GTCAAGGCGTAACCCTGGAT TCACCGGGT TCGT ACG CGTCTAG GTCCC TGCG
CTGCGCATTGCTGGACCTAT ATCCAGG T -- ----- AA ----

GGGCCACT
GAM4771 15504 AGGCTGGACTGAGCTGCTCT CT T GC CTCCCACA TTC T TTTTC
CCCACAGGGTTTCTGTGCAG AGG GGAC GA TGCT GGGT TGTGCAGC GGA
CTGGATTTTCTCTGTTGCAT TCC TCTG CT ACGG TCCG ATACGTTG TCT
ACATGCCTGGCATCTGTCTC CC T -- -------- TAC - -----
CCCT
GAM4772 21074 CAGCGAGCGCGGTCGTCCTT AG TC T TT T AACCAT ACTGGCA
GGTGGAAGGAACCATGAACT CAGCG CGCGG G CC GG GGAAGG GA
GGCATCTCCCCCTCTTCCTC GTCGC GTGTC C GG TC CCTTCT CT
TTGGCCTCTGTGACGCTG A- TC - T- T CCCCCT -------
GAM4773 17998 TGACCCACACAGCTGGCCAC ACACAGC CTT - T AACTTTGCA
TTGCTGGTCATGCTCTGAAA TGACCC TGGCCA GCTGGT CA GCTCTGA
CTTTGCATCAGGGCTGTACC ACTGGG ACTGGT CGACCA GT CGGGACT
AGCTGGTCAGGGTCA ------- --- T - ---------
GAM4774 19976 GCGAGGACCTGCGGGCACGC A C- A C- - GTC
TCCCAGGGGTCCCCTGAGGA GCGAGG CCTG GGGC CG TCC CAGGG
CTCGGCCCCCCAGGCCTCGC CGCTCC GGAC CCCG GC AGG GTCCC
- CC - TC A ---
GAM4775 11180 CTTGGGGCTTCACTGTGGCT G C AC-- - - A -------- TTAT
GACAAGAGTATTATTACTAC CTT GGG TTC TGTG GCTG AC AG AGTA
CTACACCTCGTACAGCACAC GAG TCC AAG ACAC CGAC TG TC TCAT
AACCAGAACCTAGAG A - ACCA A A C CACATCCA ----
GAM4776 13166 TTGGCCAGTTGGCGTAATAC --- TTG ACC-- CTGAACCGATC
CGAAGAGGCCTGAACCGATC TTGGC CAG GCGTAAT GAAGAGGC
GCCTTTTCCAACAGTTGCGC AACCG GTC CGCGTTG CTTTTCCG
AACCTGATAGCCAA ATA CAA ACAAC ----------
GAM4777 20146 GCGCTCCAAATTGAATTTAC C ATTG C G AATACCACAA
TTTTAAAATGGGCAAAATAC GCG TCCAA AATTTA TTTTAAAATGG CAA
CACAATTGACCATTTTAGAG CGT AGGTT TTGAAT GAGATTTTACC GTT
CTAAGTTAAATTGGACTGC C AAA- C A ----------
GAM4778 976 CAGTTCATGGAGGGGATACA TC G ATACAAGA - AT-- GTAGA
AGACGGAATATTTGGTAGAC CAGT AT GAGGGG CG GAAT TTG
AATAAAGTTCACGCAAGAAG GTCA TG TTTCCC GC CTTG AAC
ACCCTTTGGTATACTG TA G AGAAGAAC A AAAT -----
GAM4779 20641 CCAGATGAAGAAGATCTAGA AG AGAA C - TT G TCTCA
ACGACTTCTCTTTCTGTTCC CC ATGAAGAAGATCT CGA TTC TC TCT TTCC
TCTCAGGAGAAGATGATGAA GG TGCTTTTTCTAGA GTT AAG AG AGA GAGG
CTTGAATAAGATCTTTTTCG GG ATAA C T T- A -----
TGGGG
GAM4780 11384 CAAACACAAAGCAGGTTTGG A C TTTGGTT A AA ACCAC
TTGAGGACAGACACTCAGGG CA ACA AAAGCAGG GAGGACAGAC CTCAGGG TTTTTG
AATTTTTGACCACCAAAAAA GT TGT TTTTGTCC TTTTTGTTTG GGGTTTT AAAAAC
GTTTTGGGGGTTTGTTTTTC A T ------- G GA -----
CTGTTTTTTGTATG
GAM4781 14845 GTACCACACTGGACGTGGGG - --- CGT C ---- GCTA
GTCCTCCCCCAGCTATGGGC GTACCA CA CTGGA GGGGGT CTCC CCCA
CGAGGAGCACCCCCTCCAGG CGTGGT GT GACCT CCCCCA GAGG GGGT
CATGATGGTGC A ACG --- C AGCC ----
GAM4782 6646 TCCCCACAGCCGCCCCACAG C - C CCCA A CC G A CTTG
CCAGTCCCGGGGCAGGTCCT TC CCACA GC GC CAGCC GTC GG GC GGTC

TGGGCCGCGCCGACCGGCTG AG GGTGT CG CG GTCGG CAG CC CG CCGG
CAGCCGCATGTGGAGA A A C AC-- C -- G - ----
GAM4783 11623 CCTGAAAGACCGACCATTCT GAA- A-- T- T- CTG AAGTA
TCCCTGGGCTGGTGAAGTAC CCT AGACCG CCAT CT CCCTGGG GTG
ATGAACTCAGGGCCGGTTGT GGG TCTGGT GGTG GG GGGACTC TAC
GGCCATGGTCTGGGAGGG AGGG ACC TT CC AAG -----
GAM4785 1996 GTGATCCTGTGATCATGATC GAT- - TGATC A GC A GGTAAAG
GGGAAGGCTTAACATGGTAA GT CCTGTG ATCA GGGA G TT ACAT
AGATGTCAAATCTCCCCAAA CA GGATAT TAGT CCCT C AA TGTA
TTGATGTATAGGTATAAC ATAT G TAAAC - TA C -------
GAM4786 408 CCTCTGGCCCTTCCTGGGCA T CCT T - A-- C - C CTGGT
TCGTGGCTGAGGTGCTGGTG CCTC GGC TCC GG GC TCGTGG TGA GGTG TGGTG
CTGGTCACCATCATCTTCAT GGAG CCG AGG CC CG AGCATC ACT CTAC ACCAC
CTACGAGAAGCGCCGGAGCC - --- - G AAG T T T -----
GAGG
GAM4787 8361 GCTCACTGGGCACATGCACC CT A AC G GC GG - G ACAGAGGCTA
AGGTACATGCACTGGGTACC GCTCA GGGCAC TGC CAG TACAT ACT GTA CCC TGAG
CGTGAGACAGAGGCTACTTG CGGGT TCCGTG ATG GTC GTGTA TGG CAT GGG GTTC
GGGGATACAGGGTCAATGTG T- - A- G AC GA A G ----------
GCTGAGTAGTGCCTTTGGGC
GAM4788 7193 GGTGCCCTCTCCAAGCACTT - - ---- TTT---- - ACAC
TAGGCTGGACACTCAGACCT GGTGC CCTCT C CAAGCAC AGG CTGG
TGTCACTGTGCTTGCCCAGA CTACG GGAGA G GTTCGTG TCC GACT
AGAGGCGCATC C A ACCC TCACTGT A ----
GAM4790 6836 TTATTTTTGACAGGAACTGT TT AG AA - TA G CT GCAA
TTTTAATCCATGTGGTTAGT TTAT TTGAC G CT GTTTT ATCCAT TGGTTAGT TTG
CTTTGGCAACAAGCTGACTG AGTG GATTG T GA CAAGA TAGGTG GTCAGTCG AAC
GTGGATATAGAACGAGGGTT GC GT GG G TA - -- ----
GGTTAGCGGTGA
GAM4791 3148 GTGGCGGCTCCAGACCCGGG C-- CA-- C T CCTTTG CCCT
TAGTGCCTTTGTCCCCTGAA GTGG GGCTC GACC GGG AGTG TC
TACTCACTCCCCCGGTCCAG CACC CCGGG CTGG CCC TCAC AG
AGGGCCTTCCCAC CTT AGAC C C TCATA- ----
GAM4792 11146 GTGTCTGGGAGGAGTCCCCT G G C---- - TCCCTGGT- AT TCTGCTTCTCC
ACGCCTCCCTGGTGGCCACC GTGTCTG GAG AGTC CCTAC GCC GGCCACC CC
ATCCTCTGCTTCTCCGGGGT CACGGAC CTC TCGG GGGTG CGG CCGGTGG GG
GGCCTTATTCTGCGGCTGTG G - TGTAC T CGTCTTATT -- ----------
GGCATGTGGCTCTCGCAGGC
AC
GAM4793 19000 GTATACTTGATGGGACAGGC AT- AG- ATT- TG CACC
ATTGCCCGGTGTCACCATGT GTATACTTG GGGAC GC GCCCGG T
TGGGCTTGAGCAGGGTCCCC CATATGGAC CCCTG CG CGGGTT A
TCCAGGTATAC CTC GGA AGTT GT ----
GAM4795 11247 GCACGCTCGGGGCGGCCGGC CG G AG A - A--- G ACAAG
CAGCCAGGCGCGCAGCGGCA GCACGCT GGGCG CCGGCC CC GGCGC GC GC GC
CAAGGCGGCAGTCGCAGCGC CGTGTGG CCCGC GGTTGG GG CCGCG CG CG CG
CAGGGGTTGGCGCCCAGGTG A- - -- A A CTGA G -----
TGC
GAM4797 13606 GCGGCCTCCTTCCCAGGCTC C- --- GGG- AGC
TGGGGCAGCGCAGGAGGGGT GCGGC TCCTTCCCAG GCTCT GC

AGGCTGGGAGGGGCTGCCGC CGCCG GGGGAGGGTC TGGGG CG
TC GGA AGGA ---
GAM4798 2649 TCAGGTGTCACATTCCAAGC G AC-- CAA G CC ATCCCTCA
AGATTGGCCCTCATCCCTCA TCAGGT TC ATTC GCAGATT GC TC
GAATGTGGATCTGCCGAATT AGTCCG AG TAAG CGTCTAG TG AG
GAAGAGGCCTGA G AAGT C-- G TA --------
GAM4799 2801 GGGAAGACCTGCAGTGCACG AAGA CAC TT ---- CTGAGGTA
GTTTCTTCCAGGCTGAGGTA GGG CCTGCAGTG GG TCT TCCAGG
CCTGGATCTTGGGTTCTTCA CCC GGACGTCAC TC GGG AGGTCC
CTGCAGGGACCC AG-- T-- TT TTCT --------
GAM4801 5789 CTTCAGATGAGCTCCTCTCT TGAG --- AAA AG TAAC
TTCCAAAGGCAGGTTAACAC CTTCAGA CTCC TCTCTTTCC GGC GT
GGGTTAGGAAGGAGATTAGG GAAGTCT GAGG AGAGGAAGG TTG CA
AGACTCTGAAG CA-- ATT A-- GG ----
GAM4802 6426 CCTGGGTCTTTGCGTCCCGC - C TC TCA G C C TTGGAAGC
TCAGGGTGATCGGCCACATT CCTGGGTCTT TG G CCGC GGGT AT GG CACA
GGAAGCTGTGACCATGCCCG GGGCCCAGAA AC C GGTG CCCG TA CC GTGT
TGGTGCCACAAGACCCGGG C - GT --- - - A --------
GAM4805 3852 GAGTGCCTCGCTCGGTAACT T C AACTGCTTGG - ATTCTCTC
GCTTGGTCCTGAACATTCTC GAG GCCTCG TCGGT TCCTGAA C
TCGTTTCAGGAACTGATGAG CTC TGGAGT AGTCA AGGACTT G
GTTCTC T - ---------- T --------
GAM4806 12149 CAGAAAAGAGGGTTTGATGA AAA - A- AAGGAT ATA - GAGAA
TAAGGATGGCTATACCTTGG CAGA GAGGG TTTG TGAT GGCT CC TTGGG
GGAGAACTTAGTGGAGTTGA GTCT CTCCC AGAC ACTA TTGA GG GATTC
AGATCAGCCAGATCCCTCTC --- T CG GAAG-- --- T -----
TG
GAM4807 152 CTGGAAGCCGCCTCCGTGTC A CCTC C CC TACCC
GTCCAAGGGCTTACCCAGCC CTGGA GCCG CGTGT GT AAGGGCT
CTTACAACATGTCTTCGGCT GGCCT CGGC GTACA CA TTCCCGA
CCGG - TTCT A -- -----
GAM4808 4340 GTTCTGTTACACAATGTTTG AC-- T T A CACA TTTCG
CACAGGCACAGTGGTTTCGC GTTCTGTT ACAA GT TGCAC GG GTGG
CACGAACCGGTGTACACTTG CGAGACGG TGTT CA ATGTG CC CACC
TCAGGGGCAGAGC GGAC - C G AAG- -----
GAM4809 22558 TCCAAGGCCCTGGTGAGAAG GC GGTGA G ------- CC- GTGTAA
ATGTTGCTTTGGGAGTCCCA TCCAAG CCT GAAGAT TTGCTTT GGGAGTC AGTT
GTTGTGTAAGACTCCTGACT AGGTTC GGA TTTTTG AACGAGG CTCTCAG TCAG
CTCTTGTAAAGGAGCAAGGT -- ----- G AAATGTT TCC ------
TTTTAGGCTTGGA
GAM4810 1338 CAAACTAGTAGACTGATGAG AC- AC ATG G TAGAT TAACAT
CTGGATTGCTTAGATTGATA CAA TAGTAG TG AGCTGGATT CT TGA
ACATTTACAAATAGGAGTCC GTT ATTATC AC TTGACCTGA GA ATT
AGTTGACATGCTATTAATGT GTA GT AG- G TAAAC ------
TG
GAM4811 8287 TTTGAGGTGGATGGGTCTTC G T CTTCTCTTT GT CTCA
TCTTTTTTGGGGTTTCCAGC TTTGAG TGGA GGGT TTTGGG TTCCAG
TCACTGGGACTCTCAGACCT AAACTC ACCT TCCA AGACTC AGGGTC
TACCTTTCCAGCTCAAA G T TTCC----- TC ----
GAM4815 300 GCCGTGTGGACAGGGGACAA G TG C GG CAA- - -- - - TT GATCTCTA

CACTGCCGAGTGGGACCATT GCC TG GA AGG A CACT GCC GAG TGGGAC CAT GAA
TGAAGATCTCTATTCCTATG CGG GT CT TCC T GTGG CGG TTC ACTCTG GTA CTT
TGTCTCAGCTTGGGGCTGGT G GT - TT CAGG T GG G T TC --------
GGGACTTTCCTTCTGTGGGG
C

GAM4816 1457 GTGAAGACACGGGAGAAAAT CACG CACCA TAA CATTCAATTTTCAACT
CCACCATAATAAAACTGACA GTGAAGA GGAGAAAATC TAA AACTGA
TTCAATTTTCAACTTTAGTT TATTTCT TTTCTTTTAG ATT TTGATT
ATTTAACACAGATTTTCTTT CTTA ACACA TA- ----------
ATTCTCTTTAT

GAM4817 12609 GAGTTTCATCCTTGTGATAA CCTT ATAA T C- AACAAG
GAAATGTGTACTTGGAACAA GAGTTTCAT GTG GAAATG GTA TTGG
GCTAACCTGCTATTTCCCAC CTCAAAGTA CAC CTTTAT CGT AATC
CTTTATGAAACTC TTTC C--- - CC ------

GAM4818 1270 CCAGCTGTGTGTGAGGAGGA CTGTGT- ACC AT-- A- ATGA
CCTGATGCCCGAGGATGACC CCAG GTGAGGAGG TG GCCCG GG
AGCGGGCCACGCGCAACCTC GGTC TACTTCTCC GC CGGGC CC
TTCATTGGTAACCTGG CAATGGT AAC GCAC GA ----

GAM4819 13309 TGCATTAATCTTCTCATTTT TT TT C-- TAT T ACGTTGTC
CTACTATTCTCTCAACGTTG TGCA AATC CTCATTTT TAC TCTC CA
TCTGTGAGACCGTACTCAGA ACGT TTAG GAGTGAGA ATG AGAG GT
GTGAGGATTTCTGCA CT -- CTC CC- T --------

GAM4822 11244 CCCGCGGCGGGTTGGCTCGC GGG- CG TTGTCAGATC
GCTTCGTTGTCAGATCTGAG CCCGCGGC TTGGCT CGCTTCG
GCGAGGCTAGGTGAGCCGTG GGGTGCCG GATCGG GCGGAGT
GG AGTG A- ----------

GAM4823 8327 GCGGTCTCCCGCCTGGCCCA - AC CA GCGCATCCACCCCT
CGCCCACCATGCGCATCCAC GCGGTCTCCCG CCTGGCCC GCC CCAT
CCCTGTGGCGGCCGGGCCGG TGTCGGGGGGT GGGCCGGG CGG GGTG
GTTGGGGGGCTGT T C- C- ----------

GAM4824 15371 GATGAGAAAAGTCCCAGGCT AAA C CTA- TG G TT TTTGAACAT
AATGGCAGAAATTTGCACTT GATGAG AGTC CAGG A GCA AAA TGCAC
TGAACATGTGTGTTTTTGTG TTATTC TTAG GTCC T TGT TTT GTGTG
TTGTGGAACCTGAGATTCCT C-- A AAGG GT G TT ---------
TATT

GAM4825 10554 TGATCCTGTTCTCTTCCACT --- C TCCACT --- TCCTTTTGT
CTGCCAGCAGTTCCTTTTGT TGATCCT GTT TCT CTGCCA GCAGT
ACTGCTTCTGGTAGTTCATA ACTAGGA CAA AGA GATGGT CGTCA
GAAAACTTGAGGATCA GTT A TACTT- CTT ---------

GAM4826 17487 ATCTATGAAGGCCAAGTGGA AA CAA GA - GA A AGAAA
GGTGACTGGTGATGAATACA ATCTATG GGC GTGGAGGT CTGG TGAT AT CAATGT
ATGTAGAAAGCATTGATGGT TAGGTAT TCG CACTTCCG GACC ACTG TA GTTACG
CAGCCAGGTGCCTTCACCTG A- TC- TG G G- - -----
CTATATGGAT

GAM4827 7499 CTGCCTCTGAAATAGCTGCT -- AATA GC------ CG TCCTCCCT
GCTTCGAGATCCTCCCTTTT CTGCC TCTGA GCT TGCTT AGA
TAAAGCACTTTCTAAAGCCC GGCGG GGACT CGA ACGAA TTT
TCAGGATGGCGG TA CC-- AATCTTTC AT --------

GAM4828 5975 GTGACACCACCCATCTCCAA C CC- A--- AGATGCCCA
CATTCAGATGCCCAGGATGG GTGACAC AC ATCTCCA CATTC

TAATGGAGGTAAAGTGTGTC TACTGTG TG TGGAGGT GTAGG
AT - AAA AATG ---------
GAM4829 21363 GCCCAGAGTCAGCATGTGCG C A A AT GC- CC- - ACAA
GCGGGCCAGGACCACAAGGC GCC AG GTC GC GTGCG GGG AGGA CC
TCCTAATCCCAGATGTACCG CGG TC CAG CG CATGT CCC TCCT GG
CGACCCTAGGC A C - C- AGA TAA C ----
GAM4831 651 GCTGGCCGAGGTGTGTTTGG GAGGTG G G - GAGGTG
TGGCCGGGGCCGAGGTGGGA GCTGGCC TGTTTG TG CCGGGG CC
TCCCGGGCACAGGCAGAGGC CGACCGG ACGGAC AC GGCCCT GG
CAGC AG---- - G A ------
GAM4832 11495 GAGCCTTATTTTACATCAGA CTTAT A C-- TG GA A TTGCA
TGGGAAAAGACCTTGCAGGT GAGC TTT CAT AGA G AA GACC
CATTCATTGTCTTACATGCA CTCG AGA GTA TCT T TT CTGG
GAGCTC ----- C CAT GT AC A -----
GAM4833 13503 GGCCAGCTGGGGGCTGGCGG A-- - --- G TGT
GGGAGGCTGTGTCTGTCAAA GGCC GCTGGGGGC TGGCGG GG AGGC
CCGTTGTGCCCCCAGTGTGG CTGG TGACCCCCG GTTGCC CT TCTG
GTC GTG T AAA G ---
GAM4834 16105 GGGCACATTGGTGGTATTTT CATT TATTT A--- ---- ACT
GGTATGTGGCCACTGGCCCT GGGCA GGTGG TGGT TGT GGCC
AAACAACTGACCATTTCTAC TCCGT CCATC ACCA ACA CCGG
CCTGCCT C--- TTT-- GTCA AATC ---
GAM4835 17484 GGCCCACGTGCCGGTCATGC - T GT CCATTCC - - CT TTCCAC
CCATTCCGCGGTGGGTGCGC GGCCCA CG GCCG CATGC GC GGTGG GTGCG CC
TCCTTCCACGGCCCGCACAC CCGGGT GT CGGC GTACG CG CCACC CACGC GG
CACCTGCTGCATGCGGCTGT T - -- T------ T A CC ------
TGGGCC
GAM4836 2755 GTCAAGGATTTGGGTTGGGG A T TG TT GG GA TGAG
CACCCAGGAAGCCTGAGGGT GTC AGGA T GG GG CACCCAG AGCC
TAGCTGGGTGGACCTCCTGG CGG TCCT G CC CC GTGGGTC TTGG
CTCCTCGGC C C GT T- AG GA ----
GAM4837 20560 TCCTTGAACTTGGAACCTGA GA- TGGAA- GACAAT G GTTTGGAA
CAATGTTGGTGTTGTCGTGT TCCTT ACT CCT GTTGGT TTGTCGT
TTGGAAATGATAAACTAATT AGGAG TGA GGA TAATCA AATAGTA
AAGGAAGGAGATATAGTGAA AAG TATAGA AGGAAT - --------
GAGGA
GAM4838 14800 GCTAGAGCTGAGCGAAGCGA --- - C TG- AAATCAA
TGCCTAAATCAAAGGAACTT GCT AGAGCT GAG GAAGCGA CCT
GTTTCTTCAAGCTCTTCTGG CGG TCTCGA CTT CTTTGTT GGA
C TCT A - CAA -------
GAM4839 960 GGGGTATAATCATGTGTCAC ATAATC A- G T TTT AACAGTG
ATAGCATTGTTTTGGTCAAC GGGGT ATGTGTC CATA CAT GT GGTC
AGTGGACCACATGTATGAGG CCCTA TACACAG GTAT GTA CA CCAG
ACACATATAATCCC ATA--- GA - - --- -------
GAM4840 18099 TCTTTTTTAGTAACAGAGTA TAA -- ACTC TTATCACT
CTCGTATACTTATCACTGTA TCTTTTTTAG CA GAGT GTATAC
TGCACTCATTGGGTCTAAGG AGAGGGAATC GT CTCA CGTATG
GAGA TGG TA ---- --------
GAM4841 1607 CCTGGTTATTCTAATCCCAA A AA CA CA-- AGCA
TTACATGTACTTTAGCAAAG CCTGGTT TTCT TCC ATTA TGTACTTT

GTGTAATACTGATCTGGAGG GGACCAA AAGG AGG TAGT ATGTGGAA
GAAAAACCAGG A G- TC CATA ----
GAM4842 19335 CCAAGACCAACAGGATGCCA ---- -- AA CC CC TATTTCCTGCCAAT
CGCTGGGCCGAGCGACTATT CCA AGA CC CAGGATG ACGCTGGG GAGCGAC
TCCTGCCAATGTTGCTCACT GGT TCT GG GTCCTGC TGTGGCTC CTCGTTG
CGGTGTACGTCCTGGAGGAC GTTA CA AG A- A- ----------
TCTATTGTGG
GAM4843 22355 GCTCGTCGGGCCGAATCGCC CGG C A C AAT
AAGACGCCGGCAATGTCGGC GCTCGT GCCGAATCG CA GA GCCGGC
TCGTGCCGATTCGGCACGAG CGAGCA CGGCTTAGC GT CT CGGCTG
C --- C G - ---
GAM4845 16817 TCACCGCTAATGAAAGCTGG CG- --- G - GCAAATG CTATGCTC
GCACTGCAAATGTTCTGCTA TCAC CTA ATGAAAGCTGG CA CT TTCTG
TGCTCCAGAAATCAGAAGTT AGTG GAT TATTTTCGACC GT GA AAGAC
GCCAGCTTTTATATCTAGAC TCA CTA - T AGACTA- --------
TGTGA
GAM4846 11544 CCCGGTTTCCTTGGGGGCCA TTTCC CC G AATA CCAC
CCTCCGTTGTGAATAACGCC CCCGG TTGGGGGCCA TCCGTT TG ACG
ACTGTCTCCAAGATGGATGG GGGCT GACCCTCGGT AGGTAG AC TGT
CTCCCAGTCGGG ----- -- A CTC- ----
GAM4847 17546 TGCTGCTGACAAACCAAGAG - ACAA GAGG GC- A CTTG
GATTTGCCAGAGGTCTTGAT TGCTG CTG ACCAA ATTT CAG GGT
CCTGAAAGAATAATTGGTGC ACGAC GAC TGGTT TAAG GTC CTA
CACAGACAGCA A ACCG AA-- AAA - ----
GAM4848 22214 CTGGCGGCCGGCGGGCACAG GG G --- A A----- TCTGCACT
CCGGCTCATTGTTCTGCACT CTGGC CC GCG GGC CAGCCGGCTC TTGT
ACAACCACTCGGGCCGGCTG GGCCG GG CGC CCG GTCGGCCGGG AACA
GCCGGGCGCGGGGGGCCGG GG G GGG - CTCACC --------
GAM4849 1834 CGGCCGCGGCCAATCGGAGC G AATCGGAG - T GACGCA
CGCTCTTGCTGCGACGCAGC CGGCC CGGCC CCGCT CT GCTGC
GGTCGGAAGCGGAGCAAGGT GCCGG GCTGG GGCGA GG TGGCG
CGAGGCCG A AACGA--- A C ------
GAM4850 10186 GGCTGAACTGAGTCAGGCTC AAC A -- CT AG - GATT
CTGCTGAGGGGCCCGATTGG GGCTG TG GTCAG GCTC GCTG GGGC CC
TGCCCGCAGCCTGGGCAGCT CCGAC AC CAGTC CGGG CGAC CCCG GG
GACCACAGCC --- - GA TC G- T ----
GAM4851 17911 TAGGAAGTAATGTAGAAGAG TAATGTA A---- G ATA TCCT
ATAGTGATTAATAATACACG TAGGAAG GAAGAGAT GT ATTAATA CACGTT
TTTCCTAATGTGGGATATTG GTCCTTC CTTCTCTA CG TGGTTAT GTGTAA
GTGGCCAAGAATCTCTTCGT TTG---- AGAAC G AGG ----
TCTTCCTG
GAM4852 14307 GAGCTCCGGTAGCCCGCCGC A C TAG ---- G CT CC CGGG
TGGAGGAGCTGTTCGCCCGG G GCT CGG CCCGCC GCT GAGGAG GTTCGC GGGG
GGCGGGCCCTTGCGGACCTT C CGA GTC GGGCGG CGA CTCCTT CAGGCG TCCC
CCTCGAGCGCCAGGCGGGGT C A TG- ACCG G C- T- ----
CTGAAGCCC
GAM4853 797 AAAGGCCACTTCTATGACTT CACTTC- A ATT- TT TGGGCT
ATTTTTCTGTTTGGTTGGGC AAAGGC TATG CTT TTTCTG TGGT
TGCCATGGAAACCGGAAGCA TTTCCG GTAC GAA AAAGGT ACCG
TGTATTCAAGCCTTT AACTTAT - GGCC -- ------

GAM4854 10437 AGGATGAATCATATATTAGA ATCA GAAT TG ATTCT GAAC
ATGTGAATTCTATCTGTTAG AGGATGA TATATTA G A ATCTGTTA
AACTAATGGATTGTTGCTTG TCCTACT ATGTGAT C T TAGGTAAT
ATAGTGTATCATCCT ---- AGTT GT GT--- ----
GAM4855 17795 GTAGGCTTGATGACAGAGCC TG A G C A A G ----- AG ATCGAC
TGGACAAGAACAGCGACCAG GTAGGCT ATG CA AGC TGG CA GAACA CGA CC GAG
GAGATCGACCTCAAGGAGTA CATCCGG TAC GT TCG ACC GT CTTGT GCT GG CTC
CTCGGTGTTCCTGACCATGC -- - G T A C G CATGA AA ------
TGTGCATGGCCTAC
GAM4856 2841 AGTCTTACTATGTTGCCCAG - ------- CCC T CCT A GCCT
GCTGGTCCTGAACTCTTGGC AGTCTTA CTAT GTTG AGGC GGT GA CTCTTG
CTCGAGAGATCCTGCTGCCT TTAGAAT GATG CAAC TCCG TCG CT GAGAGC
CAACCTCCCAAGTAGCTAAG C AACCCTC --- - TC- A ----
ATT
GAM4857 13744 TCTTATCAAATGCCCTAAAA A A CCTAAAA- AC CCC G GGAAAAAGGTTACA
TTATTACCACCCAAGAGAAA TCTT TCA ATGC TTATT CA AA AGAAACA
CAGGAAAAAGGTTACATGTT AGAA GGT TACG AATGA GT TT TTTTTGT
TTTGTTTACTGAGAGTAAGA - C TCCACTAG GA CAT G ----------
TCACCTGCATCTGGAAGA
GAM4858 2235 CCACTGCTTCATGAGCTCAA A CATGA AAATCT CTA AAGAGACCACA
ATCTGTTTTTTCTAGCTAAG CC CTGCTT GCTC GTTTTTT GCT
AGACCACAGGCCAAAGAACT GG GACGAA CGGG CAAGAAA CGG
AAAGGGCAAGCAGGG - ----- AAAT-- C-- ----------
GAM4859 20953 CTCTTGTTGACCAGGCTGGA TT ---- T -- A - G ATCT
GTGCAATGGCGCGATCTCGG CTCTTG GACC AGGC GGAG TGCA TG GC CG
CTCACTGTAACCTCTGCCTC GAGAAC TTGG TCCG TCTC ATGT AC CG GC
CCGGGTTCAAGAG -- GCCC - CA C T - ----
GAM4860 6121 TCTTGTCTCAGCAACTTTCC AGCAA TCC TAA
CATCTCGTCTCTTCTCTTGT TCTTGTCTC CTT CATCTCGTCTCTTCTCTTG
AACAAGAGAAGAGACGAGAT AGAGCAGAG GAA GTAGAGCAGAGAAGAGAAC
GTACAAGAGAAGAGACGAGA AAGA- CAT ---
GAM4861 5885 GGCCACGTGCTGCCCCTCCT AC- -- -- GA ATA GCAA
GGACAATAATTTAGCAATAA GGCC GTGCT GCCCCT CCTG CA ATTTA
ATACTGCGCAGGGCAGGGGT CCGG CACGG TGGGGA GGAC GT TAAAT
AGGGCACCAAGGCC AAC GA CG GC CA- ----
GAM4862 22139 TGTCTGGTGATTAGTTCTGT TA- A---- T TACCT
GACTGTGTTTTACCTGGGCC TGTCTGGTGAT GTTCTGTG CTG GTTT
AGCATGCCATGGAATGCCAT ATAGGCCACTA TAAGGTAC GAC CGGG
CACCGGATA CCG CGTAC - -----
GAM4863 1780 TGAAGAAGGTGTAGCTCTCG AGA T CT A A CTTGGCCA
GCGGGGATGTTACCCTTGGC TGA AGG GTAGCT CGGCGGGG TGTT CC
CAGGAACACTTTGTTGTAGC ACT TCC CGTCGA GTTGTTTC ACAA GG
TGCCCTCCATCA ACC - T- - - --------
GAM4864 6927 GGGGTGGGAAGAGGCGGGAC - - T- CT T- A T CCTCTCCCCTC
ATGGCTGTGTCTTGGAGTCA GGGGTGGGA AGAGGC GGGACA GG GTG CTTGG G CAC

CCCTCTCCCCTCGTGCCCCA CCCCGCCCT TCTCTG CCCTGT CC CGT GGACC C GTG
GGTTTGCTTCCTCTGTCCCT C T CT TT TT C - ----------
GTCTCTCTCCCGCCCC
GAM4865 11513 CGGTAGCAGTGCCCAGTCGA AG-- - GA-- - AGCG

GCCCGGGGCAGCGGCTGCCG CGGT CAGTGC CCAGTC GCCCGG GGC
GGCCAGGGACTGGTGCGCTG GTCG GTCGCG GGTCAG CGGGCC TCG
AGGGGCTG GGGA T GGAC G ----
GAM4866 16524 TGTCGACATCCGTGGAGGAT - T ----- AGATCCCCGA
GGCCAGATCCCCGAGGTCAT TGTCG ACA CC GTGGAGGATGGCC
CTTCTACACCTAGGCTGTCC ACAGC TGT GG CATCTTCTACTGG
GACA C C ATCCA ----------
GAM4867 5420 GTACATAAGTGTCATGCAGC G TCAT AC---- C TT A AAGT
AGGACGTCACTGTTGGAAGA GTACATAA TG GCAGCAGG GTCA TG GGA G
AGTCTCCTCATGACCATATC TATGTGTT AC TGTTGTCC CAGT AC CCT C
CCTGTTGTCCATTGTGTAT - C--- CTATAC - T- - ----
GAM4868 15410 CCCCACGCTCAGTCCTGGTC C AG TCAAA T - CCTT
AAAGGCTGCCAGACCTTTCT CCCCA GCTC TCCTGG GGC GC CAGA
GAGTGCCCCCAGGAGGGGCT GGGGT CGGG AGGACC CCG TG GTCT
GGGG - G- C---- - A ----
GAM4869 7938 GACCTGGGTTCTCCCCGAGC G CT-- G GAAG AG GATG
CCTGAAGTGGAGTAAAGATG GACCTGG TT CCCC AGCCCT TGG TAAA
TTTGGCCCAAGAAGGGCTGG CTGGACC AA GGGG TCGGGA ACC GTTT
GGTGCAAAGCCAGGTC G ACGT - AGA- CG ----
GAM4870 4195 TAGCATGAAGTCCCTCTGGA T AG C--- CT CTG - TCAATC
TCTTGAGCTGGTTTATGGAC TAGCA GA TC CTCTGGAT TGAG GTTTATG GAC
TCAATCGTCTCATGGATCTT GTCGT CT AG GAGACCTG ATTC TAGGTAC CTG
ACTGTCCAGAGCACTGATCT C CT TCAC TC --- T ------
CCTGCTG
GAM4871 8193 TGCCGGGAGCTGGGCATGAA GGGAGCT C AATT
AGCCCTGGACATGAATTCAT TGCC GGGCATGAAAGC CTGGACATG
GTCCAGAGCTTTCATGCCTT ATGG TCCGTACTTTCG GACCTGTAC
AAAGGTA AAAT--- A ----
GAM4872 176 TCGCCAATGATTCTCTTATA T TT TATA CA CATAGTCACTCCA
TGCAACTGTCTCATAGTCAC TCGCCAA GA CTCT TG ACTGTCT
TCCAAGATAGTCTCAGAATA AGTGGTT CT GAGA AC TGATAGA
GAGGTTCTTGGTGA - TG TAAG TC ----------
GAM4873 18364 GGGCGCTCCAGGACCGGCCC CCA ACC A--- CAAACCCCCCGCATTCACC

CAGCGGGCAAACCCCCCGCA GGGCGCT GG GGCCCC GCGGG
TTCACCCCCGCACCCGGGGC CCCGCGA CC TCGGGG CGCCC
TCCACCCAAGCGCCC AC- ACC CCCA ----------
GAM4874 14187 CCTCCTGCGCAGCCTTCAGG GC- CA -- ----- -- -- CAGGGCA
TTCTCCTTCTTCCCGCCCCA CCTCCTGC AGCCTT GGTTCT CCTTCTTC CC GCCC CAGGCCTT

GGCCTTCAGGGCAAAGGCCT GGGGGACG TCGGGA CCGGGA GGAAGAGG GG CGGG
GTCCGGAA

GCAGGGCTCGGCCGTAGGAG ACT C- CT ATGCC CT AC -------
AAGGTCAGGGCCCAGGGCTT
CAGCAGGGGG

GAM4875 14493 GCTCATCGCCAGGGACCAAT TC CA AAT CATCCT AGCGACTTC
TGGCCATCCTAGGCAGCGAC GCTCA GC GGGACC TGGC AGGC

TTCGCCTTCAGCCAGGTCCT CGAGT CG TCCTGG ACCG TCCG
CCGCCTTGAGC TC CC --- ACT--- ---------
GAM4876 1277 GGTGAGGCTAGGACCTGGCC - --- CC CCC - --- CTCCTCA
CAGGGCAACTGTCTCCTCAA GGTG AGGCTA GGA TGG AGG GCAA CTGT
CAGCATTTGCGCCTCCATTC CCAC TTTGAT CCT ACC TCC CGTT GACA
CATTTAGTTTCCACC C TTA T- --- G TAC -------
GAM4878 775 TTTCTTTATTGGCACTAGTA TTTA G A- AA A C AT AACT
TAAAACAGAGCAGATCAACT TTTC TT GCACT GTATA AC GAG AG C
GGCCTCTCGGTCTGTACAAA AAAG GG TGTGA CATGT TG CTC TC G
GTGTGGGGCGTGAAA TGCG G AA C- G - CG ----
GAM4879 2516 TCATGTGATAGTGCAACAGT TGA- - C - CT CG- AAAT
TTGGCTTTGCGGAAAAATTT TCATG TAG TGCAA AGTT TGG TTG GAA
TAAACAGTCCACAACTTTGC GGTAT ATC ACGTT TCAA ACC GAC TTT
ATCTAAACTTATGG TCAA T - C T- AAA ----
GAM4880 21091 CCTGAGAAACTGGTGGCTTT GAAA TGGCTTTG T- GTGG
GAACACTTGGTGTGGACTAC CCTGA CTGG AACAC TGGT
TGTGTTATCCGGGATATCAG GGACT GGCC TTGTG ATCA
G ATAG TA------ TC ----
GAM4881 8752 GAAGTTGTTAGGGCGGCCTT AG TG GG- - GAGG GGG C AGTGGC
CGAGGGTAGGGGGATTCTCA GA T TTA GC GGCCTTC GTA GGATTCTCA TGG
CTGGAGTGGCTCAATGAGGA CT A AGT CG CCGGAGG CGT TCTAGGAGT ACT
TCTTGCAGGAGGCCGGCAGG AG GT GGA G A--- --- A ------
TGATGAGATC
GAM4882 20335 AGGACAGAGCCAAACAGGAA - A- ACA GCTGCCCAA
CAGAGGCTGCCCAACTCCCT AGGACAGAGC CA ACAGGA GAG
TCTGTACTGAGCTCTGTTTT TTTTGTCTCG GT TGTCTT CTC
A CA CC- ---------
GAM4883 6085 GAAGGGACTTCCTGGGACAC GACT TG A-- AT - GA TT TCCGC
ATCAGATCCATTTCTGGAGT GAAGG TCC GGAC CATCAG CCAT TTCTG G CT
TCTTCCGCAGGGTGATGGGA CTTCC GGG TCTG GTGGTC GGTA AGGGT T GA
CATGGGCCTGGTGGTCGTCT ---- GT CTG CG C AG GG -----
TGGGGCCTTC
GAM4884 3249 GTCAAATCCACACATGTATA AA -- --- CTA- AGG ATCT
TTCTCTCTATGCCCAGGCCC GTCA TCCACACA TGTATAT TCTCT TGCCC CCC
ATCTGGGGGAGGGCAGCCCA CAGT GGGTGTGT ACGTGTG AGAGA ACGGG GGG
GAGACACGTGTGCACCTGTG C- CC CAC CCCG AGG ----
TGGGCTGAC
GAM4885 21184 CCCCGGCAGCGGTTGGCGAG - TTGGCGA - AACCCC
TGGGGACCGAACCCCCGGTT CCCCGGC AGCGG GTGG GGACCG
CTCCATGATCCCGCTGGCCG GGGGCCG TCGCC TACC CTTGGC
GGG G CTAG--- T ------
GAM4886 2293 GCCTAACTCAGCTTCTAGTC A C- A CCT AATTAAGCA A AAAT
CTTGGAAATTAAGCAGCTCA GCCTA CT AGCTTCT GT TGGA GCTC TTGA
TTGAAAATTCAAGAGTTCCA CGGAT GA TCGAAGA CG ACCT TGAG AACT
GCCAGAAGCTACAGCTAGGC C CA C --- --------- - ----
GAM4887 7753 AACGAGAGCAGAAGGCAGAA C AA AAG AG C CT C CCAAAC
GCCAGTGCCATCCTTACGCT AACGAGAG AG GGCAG CC TGC ATC TA GCT
CCAAACAGCTAGATGCAGGA TTGCTCTC TT CCGTT GG ACG TAG AT CGA
CTTGCCCGTTCCTCTCGTT C GC CA- -- - -- - ------
GAM4888 21065 GCCCCATCCCTTGTCCAGTG C CC TG A--- CTC GCAGA

TCCTCTCTAAGGCAGATTTA GCC CAT CT TCC GTGTCCT TAAG
AAGGACACAAAAGGAAGCTG CGG GTG GA AGG CACAGGA ATTT
TGTGGC T TC -- AAAA A-- -----
GAM4889 22105 TCCCAGTTGCTACCCTGCAT T G- A- G T TTCCCAGGCTCT
AGCGGCCTCCTTCCCAGGCT TCCCAGT GCTACCCT CAT GC GCC CC
CTGGTGGCAGCGCATGGAGG AGGGTCG TGATGGGG GTA CG CGG GG
GGTAGTGCTGGGA - AG CG A T ----------
GAM4890 3735 GGGTGGCGTCATGGAATGGG T T T- T TGT CT - AG- TCCA
TGTGGTCTAAGCCAGGTCTC GGG GGCG CA GGAA GGG GGT AA GCC GTC
CAGATAAGGGCATTCTGCCT CTC CCGC GT TCTT CCT CCG TT CGG TAG
CTTCCTTCTCTTGTCGCCTC T T TC - TCT TC A GAA ----
TC
GAM4891 14704 GGGTACATGTGCACAATGTG A T AATGT G TAGTTA TATA
CAGGTTAGTTACATATGTAT GGGT CA GTGCAC GCA GT CATATG
ACATGTGACATGCTGGTGCA CCCA GT CACGTG CGT CA GTGTAC
CTGCACCC C - GT--- A ------ ----
GAM4893 20460 GGGTGTATGGTTCTGTAAAA ATGG GT AG TTCTATTT
ACCAGTGAATTCTATTTTTC GGGTGT TTCT AAAAACC TGAA
AAGGTTTTTGGAAAGCACAT CCTACA AAGG TTTTTGG ACTT
CC CGA- -- A- --------
GAM4894 14394 TAGAAAGCAGACCTGTTTCA A CA GT GGGT GAAGGTTG
GGGTTCGGGGAAGGTTGTTC TAGA AG GACCT TTCA TCGGG
GATATGAACTGGGTCCTCTC ATCT TC CTGGG AAGT AGCTT
TA C -- TC AT-- --------
GAM4896 12191 CCTTTGAACAACCTGTCGGT ACAA TCGG ACCATTTTATA
TTTTATCACCATTTTATAGG CCTTTGA CCTG TTTTTATC
TAAGAAAATTGGGTCAGAGG GGAGACT GGGT AAGAATGG
---- TAA- ----------
GAM4897 8662 TTATCTGTAAGCTCTCAGCA G CTCA TGA GGCCT
CTGATCATGGCCTGTGGGTG TTATCT TAAGCT GCAC TCAT
TGCAACAAGTTTGGGGATAA AATAGG GTTTGA CGTG GGTG
G ACAA TG- -----
GAM4898 13902 GAACTCCAGGCCTCAAGTGA C C T-- T AC CC TTGCC AGTG
ACCTCCCGCCTTTGCCTCCC GAA TC AGGCC CAAG GA CTC GCCT TCCCAA
AAAGTGTTGGGATTATAGGT CTT AG TCCGG GTTC CT GAG TGGA AGGGTT
ATGAGTCTCCTTGCCTGGCC - A TCC - CT TA TATT- ----
TAGATTC
GAM4900 19039 TGAAGGCAGTCACAGAACAG A GTC ACAG T A-- CAACGAA
GGGCATGAACTCTCCAACGA TG AGGCA ACAGA GGGCA GA CTCTC
AGAGAGAAATCTGCTCTCTG AC TCCGT TGTCT CTCGT CT GAGAG
TTGCCTACA A --- ---- - AAA -------
GAM4901 22000 GGTCCTTGCCACCGTTCCAC T ACCGT AC T GT TTCATGGC
ACTGCAATTGGTACATTCAT GGTCCT GCC TCC ACTGCAAT G ACA
GGCTGTCACATTGTAGTAGG TCAGGG TGG AGG TGATGTTA C TGT
GAGGTTGGGACT T ----- GA - AC --------
GAM4902 21980 GAGGCTGGCTGTACAAACGG G G A GA G GC TCGACGA AGATC
AGCGCTGCTGATCGACGAAC GAG CTGGCT TACAA CG GC CT TGA ACAG
AGAGATCCTGTACAACACTC CTC GACCGA ATGTT GC TG GG ACT TGTC
AAGGGGTCGTTGTAAAGCCA A A - -- G A- CACAACA -----
GACTC

GAM4905 8729 GCTTGTGGAGAACCTTCAGG G G C AG A GA GTT TAAC
CAGAGGGAGAGTTGGCTCCT GCTT TGGA AAC TTC GC GAGG GA GGCTCCT
TAACAGGGGCTTGTTGACCT TGAA ACCT TTG AAG TG CTCC TT TCGGGGA
CAGTGGAATGTTGTCCAAAG - G T G- A AG GT- ----
T
GAM4906 3847 TTGCAATTATTTGAGGAACT AT ACTCC G - TACACA GACCCCACAGAA
CCGCCGCCTGGCGCCCATTA TTGCA TATTTGAGGA GCC CC TGGCGCCCAT GC
CACAGCGACCCCACAGAAGC GACGT GTGAACTTCT CGG GG GCCGTGGGTG CG
CACCGCGTGGGTGCCGTGGA C- C---- A T CGCCAC ----------
GGCCTCTTCAAGTGCTGCAG
GAM4907 22508 TCTGTCCGAACCGAGATACG AA GAGA T G GCCGCTGA
TCTACTCAGAGCGCCGCTGA TCTGTCCG CC TACGTCTAC CAGA C
GTCTGTGTAGGCGTGGGAAT GGACAGGT GG GTGCGGATG GTCT G
GGACAGG AA ---- T - --------
GAM4908 3090 GAGTCGCTTGAACCTGGGAG -- GAA-- TG AGG GGT G - AGAT
GGGGAGGTTGCAGTGAGCTG GAGTC GCTT CC GG GGGA TGCAGT AGC TG
AGATCGTGCTACTGCATTCC CTCAG CGAG GG CC CCTT ACGTCA TCG GC
AGCCTGGGCAACAGAGCAAG AA ACAAC GT GA- --- - T ----
ACTC
GAM4909 18970 GTGGGAGCTCGAAGATTGCT GG - C- TTGC A T -- AG AACAAA
GCACTGTGCATTTCAAGCAA GTG A GCT GAAGA TGC CTG GCAT TTCA C
CAAAGTCTGAAAAGTGCCAG CAC T TGA CTTCT ACG GAC CGTG AAGT G
GGCAATTTCTTCACAGTATT TT A CA TTA- G - AA CT ------
TCAC
GAM4910 12654 CTGCTTCTTCGGGCCTGCAG C GCA- - T GCACGG
GTCCTTTGGGCACGGCCGTA CTG TTCTTCGGGCCT GGTC CT TGG
GAGACCAGAAGGGCCTGGAG GAT AAGAGGTCCGGG CCAG GA GCC
AACTAG C AAGA A T ------
GAM4911 14956 GTATCTTGTGCTGACCTCCT TCT T- CCT ---- - -- T C AATGC
ATCTCATCCGGTGACTTAGA GTA TG GCTGA CCTAT CT CAT CCGG GA TTAG
ATGCCTAACTCTTTGGGAAT CAT AT CGACT GGATG GA GTA GGTT CT AATC
GCAGCCTAGTAGGTCTCAGC TTT TC CT- ATCC C AG T C -----
CTTATTTTAC
GAM4912 18066 CTTTACTGAAGCTCACTGGG A T TG-- G T ----- AAGT GTATGCA
TGTCCATCAATCACAAAGTG CTTTACTGA GC CAC GGT TCCA CAA TCACA GGC
GCGTATGCAGCCTGTGAAGG GAGATGACT TG GTG CCG GGGT GTT AGTGT CCG
GTTTGCTGGGGGCCAAGCGT G - CGAA G C TGGGA ---- -------
GGTGTCAGTAGAG
GAM4914 14425 TGGGCTCATCATTCCCTTGG TCA- T -- AAGG
AGCCTGGAAGGCCGGGTGCT TGGGC TCAT CCCTTGGAGC CTGG
CCAGGGGCGTGACAACGTCC ACCTG AGTG GGGGACCTCG GGCC
A CAAC C TG ----
GAM4915 17020 GGATCGTGGCGCGCATGGCC - CGCA C- TG G A CTGGA
CTGGTGCCGCGCACCCTGGA GGATC GTGGCG TGGC C GT CCGCGC CC
GGCGCGCGGACTGGACGCCA CCTAG CGCCGC ACCG G CA GGCGCG GG
CGCCGCTGATCC T ---- CA GT - C -----
GAM4916 1418 GTGACCCTCAACTACCTCAG CTC TA A AAGG AA AAC ATTAC
GTTTGAAGGCCCTAAATGAA GTGACC AAC CCTC GGTTTG CCCTA TGA TG
ACTGATTACCACTCATAGGG CATTGG TTG GGAG CCAAAC GGGAT ACT AC
ACAAACCGAGGGGGTTCGGT C-- GG - A--- -- C-- -----

TAC
GAM4917 11538 TGCGGTGCTCCCCAGAAAAG CT AAA -- C T T A- GTC
GGGAAGGGGCAGTGGGGTGA TGCGGTG CCCCAG AGGGGAAGG GG AG GGGG GAG AG

GAAGGTCCTGGCTCCCCTTC ACGTCAC GGGGTC TCTCCTTCC CC TC TCCC CTC TC
TCCCGGCCTTCCTCTGCCTG CC CG- GG C T - GG ---
GGGCCCACTGCA
GAM4920 18567 CTTCCCAGCTGTTGAGGGCC T TG G C TT TT A GGCC
GTTCCTTGGGCAGGCGGCCG CT CCCAGC TT AGGG CG CC GGGC GGC
CCCGCCTTGGCCCGTCTCTG GA GGGTCG AG TCTC GC GG TCCG CCG
GAGTGCTGGGCAG C TG G T CC T- C ----
GAM4921 3158 GACTCATGTTTATTAGGGAG AT- TA- TG- A CAA AGGTC
TGAGGGAGCACAAAGGGAGG GACTC GTT TTAGGGAG AGGG GCA AGGG
TCTCCTTGCCCTTGTTCTCC CTGAG CGA AATTCCTC TTCC CGT TCCT
TTAACACAGCTCAGAGTC ACT CAC TTG - --- -----
GAM4922 19001 GCTGCTGCTGCTGCTGGCCG T T T CCG C TGTCAGCC
GGGCCGGGCTGTCAGCCGCC GC GC GC GCTGCTGG GGGC GGGC
TCGCCCCCAGCAGCGCCGCG CG CG CG CGACGACC CCCG TCCG
C - C - --- C --------
GAM4923 10208 TCCGATTCTTCTCAAAGTGC C TCAAAGTGCAC AA AGTGTA
ACTGTGTTAAGCCTAGTGTA TC GATTCTTC TGTGTT GCCT
AGGTAGCATAATAGAAAAGT AG TTAAGAGG ATACGA TGGA
GGAGAATTCGA C TGAAAAGATA- -- ------
GAM4925 17589 CATTTTTCACTCTTTAAAAT A TAAAATCA AAAAATC AAAGAAAC
CACATTCAAAAATCGGCAAA CATTTTTC CTCTT CATTC GGC
GAAACGCCCCGGGGAATGAG GTGGGAGG GAGGG GTAAG CCG
TAGACGGGAGGGGAGGGTG G CAGATGA- GGGCC-- --------
GAM4927 20887 CGTGGCCGCCTTCGGTTTGA G TT- T GGC AGCAC
GGTGGGCTTGGAGCACCCGA CGTGGCC CC CGGT TGAGGTG TTGG
ACGCCTCGCGCCGCCTGGGG GCACCGG GG GCCG GCTCCGC AGCC
CCACG - TCC C A-- -----
GAM4928 20584 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT G GTTGGGAA
ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT TTGTCGT
TTGGGAAATGATAAACTAAT CAGGAG TGA GGA TAATCA AATAGTA
TAAGGAAGGAGATATAGTGA AAG TATAGA AGGAAT - --------
AGAGGAC
GAM4929 19298 GTAACTGAATAGTGGAACTC - - ---- ----- GAA C ATTCAGA
AGAAAGACATCCTATTCAGA GTA ACTG AATAGTGGA AC TCA AGA ATCCT
AGGATCTCTCATGATAATAG CAT TGAT TTATCACTT TG AGT TCT TAGGA
TTTCCTTCACTATTGTAGTA A G CCTT ATAAT AC- C -------
TAC
GAM4930 3855 GCCAACAAAAAAGACTTGGA ACAAAAAA C GGA C GG- TTG- TCCTCT
GGAGGCAGAGGGGAGACTTG GCCA GA TTGGA GG AGAGG AGAC CAGC
CAGCTCCTCTGCTGAAACGT CGGT TT AACCT CC TCTCC TTTG GTCG
TTAAGCCTCTCCACATCCAA CCGACAAG A ACA - GAA CAAA ------
ATTGAACAGCCTGGC
GAM4931 21379 TGGAATTCTTCATTGAGTCG TTCTT T TTGA CG T T-- TGGGT
TTGACTTCTCGACGGAATGC TGGAA CATTGAG CG CTTCT ACGGAA GC GACAGGTTC
TGACAGGTTCTGGGTGAACC ACCTT GTAGCTC GC GAAGA TGCTTT TG CTGTCCAAG
TGTCTCTGTTTTTCGTAAGA CC--- - TTTA A- T TCT -----

AGATTTCGCTCGATGCCTTC
CA
GAM4933 8695 TGAGACCTACTCTCCACTGC A - TG-------- GGAT
TCTGCAGCTGGATGGCTGAT TGAGACCT CT CTCCACTGCTC CAGCT
GGCAGGCTGAGCAGTGGGGA ATTTTGGA GA GGGGTGACGAG GTCGG
AGCAGGTTTTA C A TCGGACGGTA ----
GAM4934 10003 CTGAAGTTTCCTGTTTAAAA TC TTTAAAAA AATAC GAT
ACTGGTAATACCTTTAAGAA CTGAAGTT CTG CTGGT CTTTAAGAA
GATTTTTTAAAGACTAGAAA GACTTTAG GGC GATCA GAAATTTTT
AAGTTCGGCTGATTTCAG TC TTGAAAAA ----- ---
GAM4935 12751 GTTGAATTCAAAAATTGGAT ---- AAAA---- - CT AGG AAG A- C TCT
CTCACTTAGGCTTTGAAGGT GTTGAAT TC ATTGG AT CACTT CTTTG GTG CAGC ATC
GACAGCCATCTCTGATAGCT CGACTTA AG TAGCC TG GTGGA GAAAT TAC GTCG TAG
GAGCATAAGTAAAGAAAGGT TAAA GAAAGACG G AG AA- GAA GA A ---
GGAGTGCCGATGCAGAAAGG
AAAATATTCAGC
GAM4936 17367 GCTCGCTGGGAAAGTCCTTG TCG-- -- G-- G AAAT
CTGTGAAATCGAAGATTGAG GC CTGGGAA AGTCCTT CT TG
GACTACTTTCCAGAATTTGC CG GACCTTT TCAGGAG GA GC
TTTAA CA TTA A ----
GAM4937 1199 CGGGCCACGGCCCGGAACCG C AACCG CCC CCAAAAACC
GCCCCAGGCGGGTCTCCAAA CGGGCCA GGCCCGG GC AGGCGGGTCT
AACCGGGCCCGCTTGCACCC GCCCGGT CTGGGCC CG TTCGCCCGGG
GGGTCTGGCCCG - CA--- --- ---------
GAM4938 14254 GCGAGTCGCGCGAGAGGGTG T AGAGG - - - GAGGCAAA
GCCGACAGCGGAGGCAAACG GCGAG CGCGCG GTG GC CG ACAGCG
TTGTGCGCGCGCACATGAGC TGCTC GTGCGC CAC CG GC TGTTGC
GCGTGCTCGT - GAGTA G C G --------
GAM4939 4578 GTGCAATAAAGAAAACATTA AATA AAAACA TTTAG - AATAT
AATATTTAGTTTGGACTTGA GTGC AAG TTAAATA TTTG GACTTG
ATATCAAGTCGTAGAAATTT CACG TTC GGTTTAT AGAT CTGAAC
ATTTGGAATACTTGCTGGCA GTCG ATAA-- TTAA- G -----
C
GAM4941 19033 TTTTGGCCCGGCTCAAGACC TG C TCAA CCG -- TTCTAT
CGTCTGGTGCAGCCCTTCTA TTT GCC GGC GAC TCTGG TGCAGCCC
TGGGTTGCAGTCCGGAACTG AAA CGG TCG TTG AGGCC ACGTTGGG
TTGCTGGCTGAAA GT - ---- TCA TG ------
GAM4942 16660 CGCTGGGCTGTGCGGTGCGG CT--- GG T TGA A ---- GACA
AGGGTGATGAGGATGTCTGG CGCTGGG GTGC TGCGGAGGG GA GG TGTCT GGT
TGACAGCCGTGCGGACACCA GCGACCC CACG ACGTCTCTC CT CC ACAGG CCG
CTCCTCTCTGCAGCACTGCC TCCGT -- - CA- - CGTG ----
TCCCAGCG
GAM4944 3352 TTTCAGGAGTTGGAGAACGG AGG -- C GT TTTTTAAAATTTTT
AGTACATTTTTAAAATTTTT TTTC AGTTGG AGAA GGA ACA
TGTTCCATTCTGATCAACTA AAAG TCAACT TCTT CCT TGT
AAGAAA AAA AG A -- ----------
GAM4945 8437 GATGGGCTGAAGAAGGAGTC C---- A A- - C G ATCGGGCAATG
AGAGCGGGATCGGGCAATGC GATGGG TGA GA GGA GT AGAGC GG
TGGCTCTCACATCCACTCTC CTACTC ACT CT CCT CA TCTCG TC
AACAAACTCATC AAACA - CA A C G ----------

GAM4947 20314 CACGCCTTTGGTTACTTGGG C TT TGGG GA TT AAACCA
GTGGAACAAGTTAACAAACC CA GCCTTTGG ACT GTG ACAAG AAC
AGTTTTTTTGTGACATGGTT GT CGGAAACT TGG TAC TGTTT TTG
TCAAAGGCCTG C T- ---- AG TT ------
GAM4948 20230 CAGCCTGTTGGTCCCGCTTG TGTTG TG T T CCAGGGCC
CAGGGGTGTCCTTCCCCAGG CAGCC GTCCCGCT CAGGGG GTCCT CC
GCCGGTGGGGCTTTCTTGAT GTCGG CGGGGCGG GTTCTT CGGGG GG
GGCGGGGCAGGTGGCTG TGGA- TA T T --------
GAM4950 17458 GCGGAGGTGACCCTGAGAGT G CT AG--- CT ATGGGCGGC
GTGGCTGGGGAGTATGGGCG GC GAGGTGACC GAG TGTGG GGGGAGT
GCACTCCCTCTACAAAATGC CG CTTCATTGG TTC ACATC TCCCTCA
TTGGTTACTTCAGC A -- GTAAA -- ---------
GAM4952 22271 AAGGGAACTCAGAGTCCGGC AA - GG---- CCTCCAT
AGCATCCTCCATATGCTGAA AAGGG CTCAGAGT CC CAGCAT
CGCAGGTACTCTGGGCCCCC TTCCC GGGTCTCA GG GTCGTA
TT CC T ACGCAA -------
GAM4954 6643 ATTAGGCTGAAACATATGAA CT A CATTG TAAA
ATTGCTGCATTGTAGTTTAA ATTAGG GAA CATATGAAATTGCTG TAGTT
AAACTGTCAGCAGTTTCATA TAATCC CTT GTATACTTTGACGAC GTCAA
TGGTTCCACCTAAT AC G T---- ----
GAM4956 160 AGGCCTGGGCCGCTTCCTGC - --- T C A AACAAGCAGC
AAGAAAACAAGCAGCTTCTG AGG CCTGGGCC GC TC TGCA GAA
CACGACGCACTGGCCCAGGA TCC GGACCCGG CG AG ACGT CTT
CCT A TCA C C - ----------
GAM4957 13825 GCCGCCCTCAGTGTCTGGGG - T C ---- G A- GTCACCA
CCCCAGGGCAGAGAGTCACC GCC GCCC CAGTGT TGGGGC CCCAG GCAG GA
ATCCCCTGCACTGGGAGCAG TGG CGGG GTTACA ACCTCG GGGTC CGTC CT
CTCCAACATTGGGGCAGGT A - - ACGA A CC -------
GAM4958 3739 GTGATGCTTGGAAGCATTTT -- AA-- TT G- T CT G GACACA
CTGTGCTTTGATCACTATGC GTGATGCT TGG GCAT TCTGT CT TGATCA AT CTAG
TAGGACACATTAGGATTGGT TACTACGA ACC CGTA AGATA GG ACTGGT TA GATT
CATGGAAATAGAATGCACCA GT ACCA -- AA T -- G ------
CCATGAGCATCAT
GAM4959 9631 GGCTGCGTTAGGTGGAAGCA CG AGGT A AG- A AAGGGA
GCGGAGGAAGGAGACGAAAG GGCTG TT GGAAGC GCGG GAAGG GACGA
GGATTGTCATTTTCATGTCG CCGAC AA TTTTCG TGCT CTTTT CTGTT
TGGCTTTTTAGAAGACAGCC AG GAT- G GTA A ------
GAM4960 306 CGATAACCTGAAGCTGTTCT AC A G-- A- TC C CCTCTCCTATTTATACA
GTTACCTCTGGGCTCTCATC CGATA CTGA GCT TTCTGTT CC TGGGCT TCAT
CTCTCCTATTTATACAGTGA GCTAT GACT CGA AGGATAA GG ACCCGA AGTG
AGCCCATGGCAAATAGGAAG -- - AGA AC T- - ----------
AAGCTCAGTATCG
GAM4961 12964 GGCACTGTCTTTGCCCGCAT CC G CTGA AAGACA GG CGAGC
GGCCCCTGAGCAGAAGACAG GGCACTGTCTTTGC GCATG CCC GCAG GAGCT TGTG
AGCTGGTGTGCGAGCTACAG CCGTGGCAGAGGCG TGTAC GGG CGTC TTCGA ACAT
AAGCTTCAGTACTGCGTGGG -- - TG-- ATGAC- AG -----
CATGTGCGGAGACGGTGCC
GAM4962 5871 TATGGCAAAAGGGATCGTTA - AAG------ ATCG - AA TCAG T GA GTA
GGATCAAATGCCATCAGAGT T ATGGCAA GG TTAG GATCA TGCCA AGTT TG GATTGC
GC

TTTGGAGATTGCGTAGCTCT G TACCGTT CC AATC CTGGT ATGGT TCGA GC TTAACG TG
TCATGGTCATTGGGGGGTGC G GGGGATGGA GA-- G -- ---- C AG ---
AATTGACGCAGCTTGGTATG TGGTCAT
GTCGCTAAAGCCAGGTAGGG TCTTCA
GTTGCCATGG GGGGGT

GAM4963 19076 GTGGGGGCGGTTGTGATCAT - GTGA GA- A- CAAG
GAGGTCAGGAGTTCAAGAGC GTGGGGGC GGTT TCAT GGTCAGG GTT
AGCCTGGCCAAAATGGAGAA CATCTCTG CCGA GGTA CCGGTCC CGA
AGCCTGTCTCTAC T AAGA AAA GA ----

GAM4964 1081 GGGAAAAGAACAATATATCC AACAATA TC AAA AA CAGTAA
AAATAAAAGACCTAGAAGGA GGGAAAAG TA CAAAT AGACCTAG GGAGA
GACAGTAATCTTCCCTAGGT CCCTTTTT AT GTTTA TTTGGATC CTTCT
TTGCATTTGTTTACTCTATT ATCTC-- TT CG- C- ------
TTTCCC

GAM4965 4772 GGCATCAGCAGTCCTTAAAG A- -- TAAAG CTTGCAACA
GCCTGAGCTTGCAACACTCA GGC TCAGC AGTCCT GCCTGAG
GGCAGGACTCGGCTGAGGGC CCG AGTCG TCAGGA CGGACTC
C GG GC ----- ---------

GAM4966 18750 GATCACTCAGGAGCATGTTA - ---- ATGTTA TTTTC ATTT
TTCAATTTTCATGTATTTAC GATCA CTC AGGAGC TTCAA ATGT
ATTGTTTTGAAGGTTCCTTT TTAGT GAG TCCTTG AAGTT TACA
TGGAGTTGATT T GTTT G----- TTGT- ----

GAM4967 14789 TGGGGCTTGCACTGCCTTCT CTT-- GC - ------ - TACCC
CAGGCCAGCTATACCCTAGC TGGGG GCACT CTTCT CAG GC CAGCTA
TGAGCAAAGAACTGAAGAAG ACCCC TGTGA GAAGA GTC CG GTCGAT
CAAGTGTCCACTCCCCA TCACC AC A AAGAAA A -----

GAM4970 6143 ATAAAACTCTGTCAAAAATC A GT AAAT-- A T A TTCACAT
AAATGACATTTCTATTCATC ATAAA CTCT CAA CAAATG CATT CT TTCATCAT
ATTTCACATGTGATGAAGAG TATTT GGGA GTT GTTTAT GTAA GA AAGTAGTG
AATGTATTTGCTGCAGTTGG G AG GACGTC - - G -------
AAGGGGTTTAT

GAM4972 5409 GTGATTCTCTCAGCCCTGAG GAT-- CT C-- TACAGAATCATT
GTATACAGAATCATTTGCCT GT TCT CAGC CTGAGGTA
CAGACTGCTGTTGGATTTTA CA AGG GTCG GACTCCGT
AC ATTTT TT TCA ----------

GAM4973 17534 GGCCTGCCTCCGGGCACACC -- G ACA TCC A CCT
CGGCTCCCCGGACGCCTCGC GGCCT GCCTCCGG C CCCGGC CCGG CG
CGGCCGCTGGGGCTGGAGGC CCGGG CGGAGGTC G GGGTCG GGCC GC
ACGGGCC CA - --- CC- - ---

GAM4974 15828 GGTCATGCCCTGGAAGCCAA A-- GAA- AATGA - CCTCTCTCTTCAA
TGATGCAACTTCCCTCTCTC GGTC TGCCCTG GCC TGCA ACTTC
TTCAAGAAGTATGCACTGGG TCAG ATGGGGC TGG ACGT TGAAG
TGGGACGGGGTACTGGACT GTC AGGG GTC-- A ----------

GAM4976 3585 GAGATAGGCTGTAGCCCAGG CTGT CTG-- A-- - CGATTGT
CTGGAGAGCAGTGGCTCGAT GAGATAGG AGCCCAGG GAG GCAGTG GCT
TGTAGCTCACTGCACCCTCA CTCTGTCC TCGGGTCC CTC CGTCAC CGA
AACTCCTGGGCTCCTGTCTC ---- TCAAA CCA T -------

GAM4978 16626 GGCCGGCGGAGAGGCCAGCA G A C- CA C CG ACA TGCCTTCTTC
GCCCCCGGGACACCAGTGCC GGCCG CGG GAGG CAG GC CC GG CCAG

TTCTTCCTGGAGACCAAGGA CCGGC GTC CTCC GTC CG GG CC GGTC
GCGCCTGTACCTCCTGGCGG G - AT CG A AA AGA ----------
CC
GAM4979 1965 AGGTGTTTGTATTTCCTAGA - TT TTCCT ATCTGTTACT - AA TC CGCT A
GAATCTGTTACTGATCATGT AGG TGT GTAT AGAGA GATCA TGTA CTTGA ACAC GG GA
AAACTTGATCACACCGCTGG TCC ACA CGTG TCTCT CTAGT ATAT GAGCT TGTG CC TT
AGAAGCCTCTACAGAACTTT G TC C---- ---------- G CC TT TT-- A
ACCTTGTGTTTTCGAGCCTA CC TACA
TAGTGATCTCTCTCGTGCCT AG TC
ACAGCCT TC AG
A- ----
GAM4980 16311 GGGTCCACTCTCCTGCCTGC A - G G ACCTAT A CCTGGCCA
TGGGACCTATGGAAGGGGCT GGGTCC CT CTCCT CCT CTGGG GGA GGGGCTT
TCCTGGCCAAGGCCCCCTCT TCTAGG GA GAGGA GGA GACCT TCT CCCCGGA
TCCAGAGGAGGAGCAGGGAT - C - - ------ C --------
CT
GAM4981 114 AGTATTTGACTGCTAAATTC A AAATTCT A TT CCTGATTAA
TCCACATTATGTAACCTGAT AGTATTTG CTGCT CC CA ATGTAA
TAATTACATTTGGGTGTAAA TCGTAAAT GACGA GG GT TACATT
GCAGTAAATGCT - AATGT-- - T- ---------
GAM4982 19873 CGGGTCACCCGCTGCGATGC C CGA ---------- C TCTCT
TGGCGGTCACTCTCTGTACC CGGGTCACC GCTG TGCTGGC GGT AC
TTGCCGTGTAGCCGAAGCCA GTCCGGTGG TGGC GCGACCG CCA TG
GCGGGCCGGTTGGTGGCCTG T CGG AAGCCGATGTGCCGTT - -----
GAM4983 18250 CTCAGTGGAAGTGCTGATGG T TGAT G T GAAG A TC AGAC
AGCCTCTGTGAAGCACAGTC CTCAGTGGAAG GC GGA CCTC GT CAC G CTG
CTGAGACCAGTGCAGTGAAG GAGTCACCTTC CG TCT GGAG CA GTG C GAC
ACTGAGGTCTGCCCTTCCAC C ---- - T GAA- A GT ----
TGAG
GAM4984 15396 TTGGGATTTAACTTTTTTAA TAAC TCTGAA CTG AAATTTTTG
TGGGTCTGAAAATTCTGTGA TTGGGATT TTTTTTAATGGG AATT TGAC
CAAATTTTTGGTCAAGTTGT AATTTTAG GAAAAATTACCT TTGA ACTG
TTCCATTAAAAAGTACTGAT TCAT TTG--- --- ---------
TTTAA
GAM4985 2668 CCAACTCATTACACAGCTGA CATTACAC TCAGAACC CTTC--- AGGACAGAG

ATCAGAACCACACACTTCTC CCAACT AGCTGAA ACACA TCAGACCTA
AGACCTAAGGACAGAGTAGG GGTTGA TCGACTT TGTGT AGTCTGGAT
TCTGATTCATGATGTGTTTC -------- -------- AGTACTT ---------
AGCTAGTTGG
GAM4987 8940 CCAAATAAATTAAAAATGTT AAATAAAT- G CTG CATA
TTAAAGCCCTGAGTTCATAG CC TAAAAAT TTTTAAAGCC AGTT
ACTGGTTTTAGGAGATTTTT GG ATTTTTA AGGATTTTGG TCAG
ATGACACACGGG GCACACAGT G --- ----
GAM4988 21597 TCCCGTTCCCCCAGTCAGCC TTC- - GTCA TG T C TCC
TGGCCCTGCTGGTGCCTCCG TCCCG CC CCA GCC GCCC G TGGTGCC
GCGCTACGGGCTGGGCAAGA AGGGC GG GGT CGG CGGG C ATCGCGG
TGGCGGCCTTCGGGA TTCC C AGAA GT - - ---
GAM4989 21271 GGTGCAGGGTGGGGTGGGAG ------ T G T CA C ACA A AGTAAGA
TGGGCAGCTGCCGCTACACC GGTG CAGGG GG GTGGGAG GGG GCTGC GCT CC GCAG

AGCAGAGTAAGACTGCAGGG CCAC GTCTT CC TACCCTC CCT CGACG TGG GG CGTC
GTGCAGCCCTCCCTCCCATG AGACTT C G - CC - --- A -------
CCCTTCTGTTCAGACACC
GAM4990 11082 GGTAGCCAGGGAACCGGCTG GGAA -- GAG C GAGGTG
TGAGGGTCTGGGAGGTGCTA GGTAGCCAG CC GGCTGT GGT TGG
AACCAAACGGCCATGGAAGC CCGTCGGTC GG CCGGCA CCA ATC
TGGCTGCC GAA- TA AA- A ------
GAM4991 17770 GTGGATGGACTGGAAGGGGA T --- AA ATG CA- TC GTGGT
TGTTCATGGTCAGCTGCGTG GTGGA GGACT GG GGGG TT TGG AGCTGC
GTGTAGCTCCGGTAGAAGGC CACCT CCTGG CC CCCC AG GCC TCGATG
CCCAACCCTCGGTCCTCCAC - CTC AA GGA ATG -- -----
GAM4992 5009 GCTTTTCTTGATCACTGTGG TTT --- A TG CC---- TAGC
CTGGGGACCCGCTAGCGCGT GCT CT TG TCACTGTGGC GGGA CGC
TATCATCCTGTGTCGCAGTG CGG GA AC GGTGACGCTG TCCT GCG
GCATTTAGTCTGGC TCT TTT - TG ACTATT ----
GAM4993 5239 ATTGTTGGCTGGCTGATTCT ---- CT- - AA- CA TAA- AGTCA
TGCAAAGAGATGCATAAGTA ATTGT TGGCTGGCTGATT TG CA GAGATG TAAG ACT
AACTAGTCAAGTACATCTTA TGACA ACTGACTGACTGA AC GT TTTTAC ATTC TGA
ACCATTTTGGGTGTCATTTA AAGT TTT T GGG CA TACA -----
GTCAGTCAGTCATGAAACAG
T
GAM4994 2968 GGCCGTGGCTCCCATCCTCC GTG- -- A - GAA-- CAAAATGGCTACTTCTT
GGAATCTGCAAAATGGCTAC GGCC GC TCCC TC CTCCG TCTG
TTCTTCAGACATAATGGGGA CCGG CG AGGG AG GGGGT AGAC
GAGGGATGGCAAGAGGCC AGAA GT - A AATAC ----------
GAM4995 20207 GAGACTGGATGGCTTTTCAT CT TC GA - A GAG AATGGA
TGACATGGTAGAGAGGAAAT GAGA GGATGGCTTT ATT CAT GGT GA GA
GGATCAAATCCACCAATGAA TTCT CCTGTCGAAA TAA GTA CCA CT CT
ATCAAAGCTGTCCTCTT -- C- A- A C AAA ------
GAM4997 8099 CAAACTTGCTGTAGGTCTGC TT TA- TCT T ----- CAGTCC
TTGAGGATCTGCCCAGTCCG CAAAC GCTG GG GCT GAGGAT CTGCC
GCGGCTGCCGTCTTCCAGCC GTTTG CGAC CC CGA CTTCTG GGCGG
TCCCCATCAGCGTTTG -- TAC CTC C CCGTC ------
GAM4998 8155 GGCGACCATCTTGTATTCAA CC GTATTC C- ACCGTGA
GTGCTGACAACCGTGATGTC GGCGA ATCTT AAGTG TGACA
ATTTACTTCAGAGATTTTGC CCGTT TAGAG TTCAT ACTGT
C T- AC---- TT -------
GAM5002 21853 CTCTGTCACTCATGCCTTGC - CT--- C-- G TA- TTCA
CTAATTGTTCACAATGGTGG CTCTG TCA CATG CTT CC ATTG
AAAGCTTCATGTAATATGAT GGGAC AGT GTAC GAA GG TAAC
CAGGG T ATAAT TTC A TGG ----
GAM5003 6232 ACATCATTGTCTATCATGAA ATTG-- A AA-- G G TCAGGTAAAAAT
CTTGTACAGCCATCAGGTAA ACATC TCT TCATG CTT TACA CCA
AAATTGGTGTGAAGAAGACA TGTAG AGA GGTAC GAA GTGT GGT
TGGAGAATGGAGGATGT GAGGTA - AGAA - - ----------
GAM5004 11854 GGCAGCTCTTCGGCCGCATC T C- CC -- TCTC
CCCATGCGCTTCTCGGTGCT GGCAGCTC TCGG CGCATC CAT GCGCT
GATGCAGATGCGTTTCGACG TCGTCGGG AGCT GCGTAG GTA CGTGG
GGCTGCT C TT AC GT ----
GAM5005 3017 TCATGAATCCTTCTGTCTGA A C- C- GA A AATAACT-- AAAAGCCA

CTAACTCAATAACTTTCTAT TCATG AT CTT TGTCT CTA CTC TTCTAT
AAAAGCCAATGGAATTCAAA AGTAT TA GAA ACAGA GAT GAG AAGGTA
TAGGAGCTAGGAGACAACAA A TT CA G- C GATAAACTT --------
GTTATATATGA
GAM5006 19647 GGGAAACTCCGAGGACAGAG AAA A---- - GA AA TG AGT
GGCTAAATCCATGAAGTTTG GGG CTCCG GGA CA GGGCT ATCCA A
TGGATGGCCTGATGATCCAC CCC GAGGT CCT GT TCCGG TAGGT T
AGCTGGAGACCC A-- CGACA A AG -- GT ---
GAM5007 21494 GGTGCTCAGCAGCGAGAGGA G A---- A- AC CGTTCT
CGCGTCACTCTGCCGTTCTG GGT CTCAGC GCG GAGG GCGTCACTCTGC
CAGGGTGACGCCCTCCCCGT CCG GAGTCG TGC CTCC CGCAGTGGGACG
ACCTCGCTGAGAGCC A CTCCA CC -- ------
GAM5009 13950 CGCAGCTCCTGGCGCTCGGC CT CTC AACT A G AGATC
GGGGCTAACTGCAGCGCGGA CGCAGCTC GGCG GGCGGGGCT GC GC CGG
GATCTCGGCCGCCAAGCTCC GTGTCGGG CCGC CCGCCTCGA CG CG GCT
GCCTCCCGCCCCGGGCTGTG CC CCT AC-- C - -----
GAM5010 17945 GAGCAGTTGAGTGGCACAGC -- G C GC A GA GTCC
CTGGCACCATGATGCAGGTC GAGC AGTTGA TGG ACA CTGGC CCAT TGCAG
CTTGTAATGGAGTTAGTGTC CTCG TCGACT ACC TGT GATTG GGTA ATGTT
CAGTCAGCTGAGCTC AG G - -- A -- ----
GAM5012 10908 GGGGGGTGGTTGCTCCCCGG TG GCT CCGC C CCTG
CCGCAGGCCGCGCCCTGGTC GGGGGG GTT CCCCGG AGGCCG GC
TGGCCTCTGGGGTGAAGCTG TTCTCC CGA GGGGTC TCCGGT TG
CCTCTT GT AGT ---- C ----
GAM5013 4037 GGGCACTGCGGGGTGCTTGC CTGC T - TCT G CT C-- C C CTGC
TGTCTCGCTTGAGGGCCTCA GGGCA GGGG GCTTG CTG CGCTT AGGGC CA GATG GTC ATCA

CGATGCGTCCATCACTGCTG CCCGT TTTC CGAAC GAC GCGGG TCCTG GT TTGC CAG TAGT

ATGACCCGTTACCTGGAGTC ---- - C --- G AG CCA C - ----
CTGGGGCGCAGCCAAGCCTT
TTGCCC
GAM5014 22052 CATCTTTGGGTATTTGAATA TG A AAT A - TTTT
GCAAGCGCTCTTTTTTGAGT CATCTT GGT TTTG AGCA GCGCT CTT
GGCGCTGCTTAAAAACCGAG GTAGAG CCA AAAT TCGT CGCGG GAG
ATG -- A --- - T ----
GAM5018 18975 TCAGATGATGGGAAAACTCG ATGA AAA AAAG GC GA GACACCAAA
AGTAAAGCTGCTGTTTCAGA TCAG TGGG ACTCGAGT CT TGTTTCA ATCTG
ATCTGGACACCAAACAGATT AGTC ACCT TGAGCTCA GG GTAGAGT TAGAC
GAGATGAAGGAACTCGAGTT CAGG --- A--- AA -- ---------
CCAGGACCTGA
GAM5019 22179 GTATATAGGCTGAGCAAGAG AT - G A T GAT GGGTGG
GTGGTGAGGTTGATCGGGGG GTAT AGGC T AGCA GAGG GGTGAGGTT CGG
TGGCTGGATCTCACTTCCTC CGTG TCCG G TCGT CTCC TCACTCTAG GTC
TGCTGGGGCCTCGGTGC GC G G - T --- ------
GAM5020 12667 TCCGCCGGCCGTGGTCGCCG - C TG CGC A TC- CTT
AGTCGGTGTCGTCCTTGACC TC CGCCGGC G GT CG GTCGGTG GTC
ATCGCCGACGCGTTCATTGC AG GCGGCCG C TA GC CAGCCGC CAG
AGCCGGCGAGA A A GT CTT G TAC ---
GAM5021 1255 TTTTTTTCAGAAGTCACACT T GA C T TT CTCCAA

CAGAATTTAATTTCTCCAAA TTTTTT CA AGTCA AC CAGAA TAATTT
AGTTGTTTCTGTGTTTGATT AAAAGA GT TTAGT TG GTCTT GTTGAA
CATGTAGAAAA T AC T T T- ------
GAM5022 5956 GTGATGGGCTAGCACTTATA GA AGCAC- - - TTCGAT
TCGGGTGATTCGATTTACAC GT TGGGCT TTATAT CGG GTGA
CGCGTATAACTTTCCAGCCC CA ACCCGA AATATG GCC CATT
AGAAC AG CCTTTC C A ------
GAM5023 4289 GCTGCTTCCGGAGCACCTGT TTCC CA TCTT TGC C TGCAGCCT
CTTCATTGCCTCTCCCTTCT GCTGC GGAG CCTG CAT CTCTCC TTC
GCAGCCTGAAAGGAGGGATG CGACG TCTC GGAC GTA GGGAGG AAG
TTCAGGACTCTGCAGC ---- A- TT-- --- A --------
GAM5024 7558 CTTGCTGCTGCTGGTCGGGC G GG - AAGTG T G TTCA
ACCCAAGTGCGTGAGGGGCT CTTGCT CTGCT TCGGGCA CCC CG GA GGGC
TCAGCCTGTCCCGGGGTTGC GAACGA GACGG AGTCCGT GGG GC CT TCCG
CTGAGGCAGAGCAAG - -- T ----- C G ----
GAM5027 15019 GAGCTGATCGCCAGCAGTGT T CGCCAG- TATT T TCTT
ATTCTTAATTGTCTTCATTT GAGC GAT CAGTG CTTAA TG
GAGCACTGGTAAACAATCTG TTCG CTA GTCAC GAGTT AC
CTT T ACAAATG ---- T ----
GAM5028 1830 TGTCTTGGAAAGGCCAAAGA ---- AGA--- C TATACTGC
GAATGCACTGTATACTGCCA TGTCTTGGAAAGG CCAAAG ATGCA TG
TTGTATCAAATGTTTTGGGC ACGGGACTTTTTC GGTTTT TATGT AC
ACCTTTTTCAGGGCA CACG GTAAAC T --------
GAM5029 15865 GGACCCTTGTGGCTCCACTT C - C CT-- CAC G AC AGCT
GTCCTCACCAGTCGGGACTT GGACC TTGTG G TCCA TGTCCT CA TCGGG TTC
CAGCTGAACCTCTGAGTGCC TCTGG AACAC C AGGT ACAGGA GT AGTCT AAG
AAGGACACCACTGGAACTCA A T A CACC ACC G CC ----
CAAAGGTCT
GAM5030 10275 CCGGACTCTCCGTCATGGGC GGAC CA- G CT ATTC GACTGGCTA
GTGTGCTTGTGATTCCAGGA CC TCTCCGT TGGGC TGTG TGTG CAG
CTGGCTACTGCGTACATCCA GG GGGGGCA ACTTG ACAC ACAT GTC
CAGGTTCACTAACGGGGGCA AAC- ATC G CT GC-- ---------
AGG
GAM5032 2292 GCCCACCTGGCACGGGCCAG A- TG - A- C- ATCGT
CTCGGATATCGTGTCCCTGG GCCC CC GCAC GGGCC GCT GGAT
CAGGGCCCAGTGCTGGGCCG CGGG GG CGTG CCCGG CGG CCTG
GGC CC GT A GA TC -----
GAM5033 20754 CTGCCGCCTCTCCGAGCTCT CT- C G A GGACCTCA
TGTGACGCGGACCTCAGTGC CTGCCGC CTCCGAGCT TT TG CGC
CAGGATGGCTCGGGGCGAGC GGCGGCG GGGGCTCGG AG AC GTG
GGCGG AGC T G C --------
GAM5034 10423 GGGTGACTCGCGTACCGTGC GA T G- TGCTGA A GCGGCG
GGCTTGCTGACAGGAGCTGC GGGT C CGC TACCGTGCGGCT CAGG GCT
GGCGGGCCCTGGGCCGCATG TCCA G GCG GTGGTACGCCGG GTCC CGG
GTGGAGCGGAACCT A- - AG ------ - ------
GAM5036 3268 CCTGCTCGCCTCCTGGAGAG CGCCT AGA- AAGA CA CACCC
CGCAAGACACACAGGGCACC CCTGCT CCTGG GCGC CACA GGG
CCCCGCTGTGAATAGTGCAA GGACGA GGGCC CGTG GTGT CCC
CGCCGGGTAAAGCAGG AAT-- GCAA ATAA CG -----
GAM5037 6084 GGGATCATTGATTGTGTGGT TC-- T TG - G A-- ---- C GCTT

GAGAATCCCTAAGGAGCAGG GGGA AT GAT TGT GGT AG ATCCCT AAGGAG AGG
GCTTCCTCTCCTTCTGGAGG CCCT TG CTA GCA CCG TC TGGGGA TTCCTC TCC
GGTAACCTGGCCAACGTGAT TCAT C GT A G CAA GGTC - ----
CCGTTACTTCCC
GAM5038 18746 GGCCCAGGATCGGCAGGGCT - - G- - GC- GA AGCT
GCTGGCAGAGGAATCCCAGC GGCCCAG GA TC GCAGG GCT TGGCA GGAATCCC
TGGGGTTCCCATGCCACCAG CCGGGTC TT AG CGTCC CGG ACCGT CCTTGGGG
GCTCCTGCAGGACTTGCTGG G C GA T ACC AC ----
GCC
GAM5040 9267 CCCACTGATGGAGCCCAGCA G AGCC AGCAT AA-- GTAGA
GCATTGAGAAAATTGTAGAG CCCACT ATGG CAGC TGAG AATT
ATTGATGCTCACATAGGTTG GGGTGA TACC GTTG ACTC TTAG
TGCCATGAGTGGG G GT-- GATAC GTAG -----
GAM5041 18084 TGCTGCCCAGGCTGGGATGC --- --- T- A - G ATCT
AGTGGCGTGATCTCGGCTCA TGCT GCCCA GGC GGG TGCAGTG GC TG
CTGCAACCTCTGCCTCCTGG ACGA CGGGT CCG TCC ACGTCAC CG GC
GCTCAAGCA ACT CCT TC A T - ----
GAM5042 6939 ACAGCCTGGCTCCTAACAGG - CT G -- T C AC C G ATCT
AGGGAAGATGAAGCAGACTG ACAGC CTGG CCTAACA GA GGGAAGA GAAG AG TGC GG AG

CCGGGAGATCTCTGCCAGCA TGTTG GACC GGATTGT CT CCCTTCT CTTC TC ACG CC TC

AACTCTTCTCTTCCCACTCA T C- A CA - - AA A G ----
TGTTAGGCCCAGTGTTGT
GAM5043 22785 GCTTACTTAAACTGCATCAT A AAACTGCA CTCATT A CCAT
TCTCATTTATATTATACAGA GCTT CTT TCATT TATATTAT CAGA
CCATTTTGGATAATATGCTC CGAA GGA GGTAA GTATAATA GTTT
AAAAATGGAGGAAAGC A -------- AAACTC G ----
GAM5045 16911 GAGCTTCATCTCCATGGAAG T C TGGAA C GGTA AAATG
TGCCTGTCATGGTAGTAAAT GAGCT CATCT CA GTGC TGTCAT GT
GGCAAGGATGATATGCATGA TTCGA GTAGA GT TACG ATAGTA CG
TGTTGAAGATGAGCTT - A TGTAG T GGAA -----
GAM5046 17371 TGAAGACTCTCTGCCTCCGC C C G AAA- TAAATGC
CAAAATTTAATTAAATGCAT TGAAGACTCT TG CTCC CCA TTTAAT
TGAGAATCTGGAGGAGCTAC GCTTCTGAGA AT GAGG GGT GAGTTA
AGAGTCTTCG C C A CTAA -------
GAM5047 17311 GGCTCAGGACCCTGTGGATC T A TG AT - G TGGCAT
TGGGAGTGTGGCATCACTGC GGC CAGG CCCTG G CT GG AGTG
CAAGGGCTGCGGGGATCTGT CCG GTCT GGGGC C GA CC TCAC
GCC T A GT GG A G ------
GAM5049 20554 GTTTGGCCCAGGCGGAAGTG - A C A TG - ---- T CAAG
CAGGGTTGTGATCAAGGTCC GTTTGG CCC GG GGA G C AGGGT TG GAT
AGGGAACCCTCGTGCCTCTC CGAACT GGG CC TCT C G TCCCA AC CTG
CGGGGTTCAAGC T G - C GT C AGGG - ----
GAM5050 3656 GTGGTTAGTGTCTATGCTCA G --- AT T ATCCAATGC - AGT
GAATCCAATGCGGAGAGAGT GTGGTTA T GTCT GC CAGA GGA GAG
CTCGTCCTCTGGTTCAGACT CACCAAT A CAGA TG GTCT CCT CTC
GTAGTAACCAC G TGT CT - --------- G ---
GAM5051 7545 GCCCTGCTGGCTGCAGAGCG CC G GC AGATAC GTCATCCA
GCTTCAGATACGGCTGTCAT GC TGCTGGCT CAGA GGCTTC GGCT

CCAAGCCAGGGGAGCCTTTG CG GTGACCGA GTTT CCGAGG CCGA
AGCCAGTGCTGC TC - -- GGA--- --------
GAM5054 9629 TGGCTCAAGCTATCCTCCCG A ATCC- C GCCTCACTA
CCTCTGCCTCACTAAGAGCT TGGCTCA GCT TCCCG CTCT
GGGATTACAGGCCTGAGCCA ACCGAGT CGG AGGGT GAGA
C ACATT C ---------
GAM5056 6058 TGTTACAAGGTTAGTGGTCC T AA -- CCTA C A GA TTCATCGC
TAAGCCCCGCAGTGACTGTT TGT AC GGTTA GTGGT AGCCC GC GT CTG
CATCGCCAGAACAGCGGGTT ACA TG CCGAT TACCA TTGGG CG CA GAC
GTACCATTGTAGCCGGGTTA T GG GT TG-- - A A- --------
CA
GAM5057 15184 ATAGAAAAACACACTAATTA CACAC T GCG- A T ATGTGCTCTG
TGTGCGGGGTATATGGCATG ATAGAAAAA TAAT ATGT GGGT TA GGC
TGCTCTGGCCTTAATCCATG TATTTTTTT ATTA TACA CCTA AT CCG
AACATCATTATATCATTTTT ACTAT C AGTA - T ----------
TTAT
GAM5059 19369 TGCTGCTGCCCATCCTGGCC C CCCAT- CAT GA C GTGT
ATGTTGATGGCACTGTGTGT TGCTG TG CCTGGC GTT TGGCA TGT
GCACTGCCACAGACTGCCAG ACGAC GC GGACCG CAG ACCGT ACG
GCTCCTACGACAGCA A ATCCTC T-- AC C ----
GAM5060 13015 GGAAAGGCTTCGTTCTGCCA CG G AAACA---- C- GTG
AACAGAGACTCCAAGTGTTG GGAAAGGCTT TTCT CC GAGACT CAA
CCAGTCTCCAAAAATTCGGA CCTTTCCGAG AAGA GG CTCTGA GTT
GAAAAGAGCCTTTCC AA - CTTAAAAAC CC ---
GAM5062 19658 TGCTTATTTGTTTTACAACC --- T TT AA--- ATCA-- AA--- T AAACT T
TGTATCATCAAACTCTCTCT T GC TATTTG TTAC CCTGT TC AC CTCTCTCT TTAAAA
CTAAACTTTAAAATGCTGTA G CG ATGAAC GATG GGGCA AG TG GAGAGAGG AGTTTT
TAAATATGATACTTTTGAGG AAT T CG GTTTA GATTCA ACTCG T ----- -
AGAGAGTGTGCTCAGAACTT GCT AAATATG
AGACGGGATTTGGTAGGCCA GTAT
AGTATGCTAAG CATA
--- -------
GAM5064 7444 GGAGATTGATGTCAGGTCAG A TG-- G TAT GTTATACA
AATATTGGAGTTATACATCT GGAG TTGA TCAG TCAGAA TGGA
ATTTCTGAGTTGAATACTCA CCTC GACT AGTT AGTCTT ATCT
GCTCC - CATA G T-- --------
GAM5065 4643 TGCTGAGCTCGGCTTATATT T G TT TTC-- ACATGAA GCACA
TCGGACCACATGAAGGTGCA TGC GAGCTCG C ATAT GGACC GGT
CAGCCAGGGTCCTCACCATG ACG CTCGAGT G TGTA CCTGG CCG
TCTGTGAGCTCTGCA T - TC CCACT GA----- -----
GAM5066 17540 CGGCCTGGGGAGCCGTCTTG G A -- - CC- GC TCTT C G TTCG
GCCTGGGGAGCCGTCTTGGC CG CCTGGGG GCCGT CT TGG TGGGGA CG GGCCTG GCGG
TGC
CTGCGCGGGTGCTTCGGCGC GC GGACTCC CGGCG GA ACC GCCCCT GT TCGGAC CGCC
GCG
CGCCAGGCTCCTGTATCCCC G - CC G TTT AT CC-- - - ----
GTTTCCAGAGCCGCGGCCCT
CAGGGCG
GAM5067 10263 CCTGGCCGGCCTCCGGCAGT - CT-- T TCAAGCA - A CC CTTCCTGCC
TCTTCAAGCAGCTGCCCAGC CCTGGCCG GC CCGGCAGT CT GCTG CCC GC GCC

CCGCCCTTCCTGCCGGCCGC GGGCCGGC CG GGCCGTCA GA CGAC GGG CG CGG
CGGGACAGCAGACTGCCGGT G CAAT - ------- A C C- ---------
AACGCGCGGCCGGG
GAM5068 8229 TTTATTTTGGCCACATAGAT TTT TA ---- C TCTT
CAAAGTTAGTTTCAGTCTTT TTTA TGGCCACA GATCAAAGTT AGTTT AG
TCAAGCTCTAAAATTTTGGT AAAT ATTGGTGT TTGGTTTTAA TCGAA TT
TCTGTGGTTATTTAAA TT- C- AATC C ----
GAM5070 21690 AGTTCTTCAGCAGACTCAAC TCAGC CAAC A ACA AG CCCG
TATCATGGACATTCAGGTCC AGTTCT AGACT TATC TGG TTC GT
CGACACGAGCCCCAGATGCA TCAAGA TCTGA GTAG ACC GAG CA
GTCTACACAGAACT CACA- C--- - CC- CA ----
GAM5071 19301 CTCTATCTGCCGAGCTTCTT - AG T - C--- GCCAA
CACCTACGCCAAGTACATCG CTCTATCT GCCG CT CTT CAC TAC
TGCAAGTGGATGGTAAGATA GGGATAGA TGGT GG GAA GTG ATG
GGG A A- T C CTAC -----
GAM5072 6509 GATTGACACACAGGGGGATG --- A - - T T TCCTTGT
GAGTTGGTCCTTGTCCATTC GAT TG CACA CAGGGG GA GGAGT GG
TCTCACCCTTGCTGTGCATG CTA AC GTGT GTTCCC CT TCTTA CC
TATC TGT - C A C - -------
GAM5076 2762 TACAAGATGATGGACTTGAA A-- A- AA TC CC CTCAGA
CTTCCTGCCATGCTCAGACA TACAAG TGATGG CTTG CT CTG ATG
TTCCAGACAGGACAAGGACC GTGTTC ATTACC GAAC GA GAC TAC
ATTAGGACTTGTG AGG AG AG CA CT ------
GAM5078 21067 GTCTTAAGCTGATTTCAGAA TAAG - TT AAAC----- - TGTCA
AACAATGCATCTGTCAGATG GTCT CTG AT CAGA AATG CATC
TCATTAAGCAACAATCTGGG CAGA GAC TA GTCT TTAC GTAG
ATACAGACCTAGAC TCCA A GG AACAACGAA T -----
GAM5080 21130 GAAATGCTACGAGGTGTTCA AT T TT GCTT A CCA CAAAG
GCTTGTCACAGTCCAGTCAA GAA GC ACGAGGTG CA GTC CAGT GT
AGGCCCAACTGCGATTGTCC CTT TG TGTTCCAC GT TAG GTCA CG
ACCTTGTGTCTTC C- - CT ---- C ACC -----
GAM5081 12263 GCTCATCCTTAGTGGAGTTG T C TT - CGA GCAA-- T- A TTAT
TTTGACGATTTGGAGAAGAG GC CATC TTAGTGGAG GTTT GA TTTGGAGAAGA GAT TG TC

CAAGATTTGATCTTATGAAC CG GTAG AATTACTTT CAAG CT AGACCTTTTCT CTA AC AG
ATTATCACGGAATCTTTTCC - T -- T TG- AAGGCA TT A ----
AGAGTTCTGAACTTTCATTA
ATGATGGC
GAM5084 14166 CCTCTGGCCTTCTGGGCATC T C - A-- C - C CTGGGT
GTGGCTGAGGTGCTGGTGCT CCTC GGC TTCTGG GC TCGTGG TGA GGTG TGGTG
GGGTCACCATCATCTTCATC GGAG CCG AAGGCC CG AGCATC ACT CTAC ACCAC
TACGAGAAGCGCCGGAAGCC - - G AAG T T T ------
GAGG
GAM5087 3928 AGGTCAAATTGTGTCCTCCA ATTGTGTC- CTG CCCT
TCACTGCTTCCCTGAGATTT AGGTCAA CTCCATCA CTT
GATGGAGCCCTGAATGTTGA TCCAGTT GAGGTAGT GAG
CCT GTAAGTCCC TTA ----
GAM5088 21311 GATTTTCAGTACTGTAGTTG T T G TT CC C GTA TT CT CTGTTTTTA
CCCTGGACATTGAGTACAGT GATT TCAG ACT TAG GC TGGA ATTGA CAG CAGC TACT
TCAGCCTTACTCTGTTTTTA CTAG AGTC TGA ATT CG ACTT TAACT GTT GTTG ATGA

AGTAGTTGTGTTGTCAATTT T C - TT T- - --- GT -- ---------
CATGCTTTTAAGTCCTGATG
ATC
GAM5091 18522 GCCGACAAGGAGCGCCTGGC ----- AA - CGC - C C - ACAAT
CATCCTGGGCATCCACAATG GCC GAC GG AG CTGG C ATC TGGGCATC C
AGGTGTCCAAGATTGTCCAG CGG CTG CC TC GACC G TAG ACCTGTGG G
ACCTACCACGTCAATATGGC TATAA CA A CA- T T A A -----
GAM5092 7413 GCCTTGCACACTCATTACAT - - ATTAC TG A- TTTCTCT
TTGTAAGGTTTCTCTCCAGT GCCTTGCAC AC TC ATT TA GG
ATGAATTTTCCGATGTCGTG TGGAACGTG TG AG TAA AT CC
CAAGGT C T CCTTT GT GA -------
GAM5093 9329 GAGGCAGGAGAATCTCTTGA A AAT-- AA- AGGCA GT A CGAGATCAT
ACCCGGGAGGCAGAGGTTGC GAGGC GGAG CTCTTG CCCGGG GAG TGCAGTG GC
AGTGAGCCGAGATCATGCCA CTCTG CCTC GAGAAC GGGTCC CTC ACGTTAC CG
TTGCACTCCAGCCTGGGCAA - AGAGC AAC GAC-- -- - ---------
CAAGAGCGAGACTCCGTCTC
GAM5095 7706 GCACCAGTAAGAAAGACTGT -- TA CTGTC A T ATTTCATCATCAACAAC
CGCTAGCATTTTTATTTCAT GCAC CAG AGAAAGA GCT GCAT TTT
CATCAACAACAAACATGCAG CGTG GTC TCTTTCT TGA CGTA AAA
TTTCTTTCTCTGATGTGC TA -- T---- - C -----------------
GAM5096 6429 GAAGATGGATGTGGCTGACT -- G T CTTC TG ATGTGGTA
TCGAGTGGGTGATGTGGTAC GAAGATG GATGT GC GA GAG GGTG
ACCTCCTTTCGCAACGTCAT TTTCTAC CTGCA CG CT TTC CCAC
CATCTTT TA A - ---- CT --------
GAM5097 4735 CGTTCCCCAACTCAAGGCCG AACTC- --- CA-- CG- GTTCAGA
CTCAACTGTCGCCGTTCAGA CGTTCCCC AAGGC CGCT ACTGT CC
GGACTACAGTACACAGCGAG GCGGGGGG TTCTG GCGA TGACA GG
AGTCTTACCTAGGGGGGGCG GATCCA AGA CACA TCA -------
GAM5098 2765 TCCCAACCATAGGCTTCAAT A-- A TCAAT A - GAATATAAGAA
GTAGAAACAGTGGAATATAA TCCCA CC TAGGCT GT GAAACAG TG
GAACATCTGTTTCACAGTCT AGGGT GG GTCTGA CA CTTTGTC AC
GGGACGTGGGA GCA - ----- - T -----------
GAM5099 7169 GTCTAATACACAGATATCCC ACACA- T A- TAAAGTA- ATTCCTG
AATGACTAAAGTAAGAATTC GTCTAAT GA ATCCCA TGAC AGA
CTGTCTGAAGCGTCGTCGGC CAGATTG CT TAGGGT GCTG TCT
TGGGATCTCGCACTGGTTAG GTCACG C CG CTGCGAAG -------
AC
GAM5100 22733 AGTGGGCCTAATCCTTATGC T AA G CGT CGT CCTTT CA CTATA
GCGTACCCGTTCTCCCTTTG AG GGGCCT TCCTTAT CG ACC TCTC GGT GGG
GTCAGGGCTATACCCAACCT TC CTCGGG AGGAATA GC TGG AGAG CCA CCC
GAGACCTGGTTATCGATAAG T -- - TAT TCC T---- A- -----
GAGGGCTCTCT
GAM5101 11999 GGGATCGTGAGACACATACA A - AGACACATA GA GA GTTATTG
GATCGAGACCGGGATCGTGG GGG TCG TG CAGATCGA CCGG TCGTGGT
TGTTATTGACTATGACCGGG CCC AGC GC GTTTAGCT GGCC AGTATCA
ATCGATTTGACAGAGCAACG C C AACGAGACA AG -- -------
CCGACCCC
GAM5102 12472 CCATCCTGTCTTCCTCCCAG T - - C------ CT-- TGGCG
GGTCTGGTTGGCGGCTTTTT CCATCC GTCT TCC TCC AGGGT GGT
ACTCTCAATAAAGGATGGAT GGTAGG TAGG AGG AGG TCTCA TCG

GGATGGATGG - T T AAATAAC TTTT -----
GAM5104 4194 GCGGGAGAGTCTGTGTGTAT - TC - A TC CCCG
GTGTCTTCCCCGGAATCCAC GCGGGAG AG TG TGTGT TGTG TTC
AACACAGCACCCTCCTCCTG TGTCCTC TC AC ACACA ACAC AAG
T C CC G - CT ----
GAM5105 19009 CAAGAAGGTTATCTCCTCAG GAA TC GA GTGGTT
CCATCAGAGCTGTGGTTGGT CAA GGTTATCTCC AGCCATCA GCT
GTGGTGGCTGGAGGTGGCCG GTT CCGGTGGAGG TCGGTGGT TGG
AATTG AAG -- G- ------
GAM5106 16959 GGGTGCCCGCCGACCTGGGC T C C ACCT GC TGCAGC
GCCGAGGCCGGCTTGCAGCA GGG GC CGC G GGGCGCCGAG CGGCT
GCTGCTCGGCGCCCTGCGCG CCC CG GCG C CCCGCGGCTC GTCGA
AGCTCCC T A - GT-- -- ------
GAM5107 19677 AGGAGGCGGAGGCAGCTGGG - C CTG TCC - ACCAGGC
GAGGTCCTGAGCGATGTGAC AGGAGGCGG AGG AG GGGAGG TGAGCGATG TG
CAGGCCGCCATCGCTCGTCT TCCTCCGCC TCC TC TCCTTC GCTCGCTAC GC
CTTCCTACTCTCCTGCCGCC G - TCA TCT C -------
TCCT
GAM5108 962 TTTATGGCTTAGAGTCCTCC T TA--- CTGT - -- CC - - CCTCCGTC
TGTCTTCCCTTTTCACCCCT TTTA GGCT GAGTCCTC CTTC CCTTT TCAC CTC TAGT CCCT
CTAGTCCCTCCTCCGTCCAT AAGT CCGG CTTAGGGG GAGG GGAAG AGTG GAG ATCA GGGA

TTCTTGAAGGGAACTATGAG - TGTCC T--- T AT T- T A --------
TGTGATAGAAGGTGGAGTGG CATTTCTTGA
GGATTCCCTGTGGCCTGAA

GAM5109 10243 CCTACTCTCCATTATGATTA - T- A ---- TA T CT C- CTAGGAAAA
CTTTTTCTCTATTTCTCTGT CCTA CTC CC TTAT GAT CTTTTTC CTATTTCT GT CATCTA
CCATCTACTAGGAAAATGGG GGAT GGG GG AATG CTA GGAAAAG GGTAAAGG CG GTGGGT

TGTTGCTAGGAAATGGGAAA A CT - ACAC GG - AT TT ---------
AGGGGATCCACAGTAAGGTC
GGGATAGG
GAM5110 20468 TCCCCCTACCCCACTTTTGC CCT CACTT CTA T CCA
CTTCTAACTTTGGTGCCCAG TCCC ACCC TTGCCTT ACTTTGG GC
CTCAGGGTGAGGCAGTTAAG AGGG TGGG GACGGAG TGGGACT CG
GGTCCAGGGA ACC AATT- --- - ---
GAM5111 3310 GATCCTCATGTTCACTACCC T ATG AC CA- ATGAAA AA CTCAGACACC
TTCATGCATGAAAGACAAAG GA CCTC TTC TACCCTT TGC GACA GCTA
CTACTCAGACACCTAGCTGT CT GGAG AAG GTGGGAG ACG TTGT CGAT
TGGGCAGAAGAGGGTGCAGA - AA- AC AAG GG---- -- ----------
AAAGAGGTC
GAM5112 1674 AAATGCAGGTTTACAAAGAT C A-- G AG GG ATAAA-- ATAAATAC
GAGCAGGTGGTGGTGATAAA AAATG AGGTTTAC AAGAT AGC GTGGT TG GG
GGATAAATACCCAAAGGCCC TTTAC TCCAGGTG TTCTG TCG TACCA GC CC
GTTACCATTGGCTGGTCTTA C CCA G GT TT CCGGAAA --------
CCGTGGACCTCCATTT
GAM5113 2836 TGCGTAGAGGTGTTTGTAGT C --- TG G T TGAT TTGT
ATTCTCTGATGGAAGTTTGT TG GTAGAGG TGTT TA TA TCTC GGAAGT

ATTTCCTGTGGGATTGGTGG AC TATTTCC ATAG GT GT AGGG CCTTTA
TGATATCCCCTTTATCA - CCT TG G T TGT- ----
GAM5114 8387 GGGGACCGGTCTCACCGAAT A- -------- GAATGCA --- ATCAT
GCATCCTGTCGGGCATCATG GGGG CCGGTCT CACC TCCTGT CGGGC
TCTGTGAACGGGAAGAAGGT CCCC GGCCAGG GTGG AGGGCA GTCTG
GCTGCACATGGACCGGAACC AA TACACGTC AAGA--- AGT -----
CC
GAM5115 10562 TTTGGATTGAGGCTGCTGTG -- --- C T CAC-- T-- TATT
CACAGGAATATGGGTATTTC TTTGG ATTGA GG TGC GTG AGGAATA GGG
CTCTTATTCCTTACTCCACT GAACC TAACT CC ACG CAC TCCTTAT CCT
GCACCTAATCAATAACCAAG AA AAT - T CTCAT TCT ----
GAM5116 22072 GGAGTCTGGCCTCACCTGTG - ---- --- - - T- TGCA
CCTGGTCTCCTGCAGGGGCT GGAG TCTGGC CTCACC TGT GC CTGG CTCC
TCAGCGTGACGTCTGGTGGG CTTC AGGCCG GGGTGG GCA TG GACT GGGG
CAAAGCCGGATCTTC T AAAC TCT G C TC ----
GAM5117 3009 GGGGAAAGATGTCCTCATCT AA- CT T C-- ACTCATCCATGCCCC
GCTCAGGCACTCATCCATGC GGGGA GATGTC CA CTGCT AGGC
CCCGCCTCCAAGCAGTGTGA TCCCT CTGTAG GT GACGA TCCG
TGTCGACTCCCT CAG T- - ACC ----------
GAM5119 1554 CAGAAACAGATCCACCTCCA CAGATCCAC C ACG GA AA AG TGGCT
GGTACGTGGTGGACGAATGG CAGAAA CTC AGGT TGGTG CG TGGG CAGC
GAGCAGCTGGCTGCTGGCCC GTTTTT GAG TCCA ACCAT GC ACCC GTCG
CACGCTTACCAACCTTGAGT ACACCT--- T --- TC -- CG -----
CCACATTTTTG
GAM5120 2266 ACAGCTATGCTGATTGGTTG CT-- T T G- AA TGGTCT
AAGTGTGAATTCTTGGTCTG ACAGCTATG GA TGGT GAAGT TG TTCT
GAAAGCAAAACTTTCGCTAT TGTTGGTGT CT ATCG TTTCA AC AAGG
TCTATTTGTGGTTGT TTAT T C AA GA ------
GAM5122 21529 TCTGGCTGGGGATGTTCATA - GAT TA--- TG GA GAGA
TTGTGAGAGGAGACTTCGAT TCTGG CTGGG GTTCA T T GAG
GAGAATCTGAATTATCCAGA AGACC GACCT TAAGT A A TTC
CCAGA A AT- CTAAG GT GC ----
GAM5123 13910 CAGAGTTCAGTGCCCTGCTT AG GC - G AGAGACCAA
CAGGGCAGAGACCAAGTTGT CAG TTCAGT CCTG CTTCA GGC
GGAGTCAGGAACTGAAAGCT GTC AAGTCA GGAC GAGGT TTG
G GA A- T G ---------
GAM5124 13300 TCTTAAATCAGTTTGTGTAC AA-- TG TACT- CA- A AATTC
TGACAGCCAAAAATGAATTC TCTTA TCAGTT TG GA GCCAAAA TG
CATTTTGGTGATTCCACCTC AGGGT AGTCAG AC CT TGGTTTT AC
ATGGACTGAGTTCTGGGA CTTG GT TCCAC TAG - -----
GAM5125 8770 TCTCAAGGGCACTTTGGCCA -- TTTG GA G TGCACT
GCTGAGTGAACTGCACTGTT TCTCAAGGG CAC GCCAGCT GT AAC
GACAAGCTGGCATGTGGATC AGAGTTCCT GTG CGGTCGA CA TTG
CTTGAGA AG TA-- A- G ------
GAM5126 19143 TGGAGAAAAAGGTCATAGTC AA- TCA TCCC--- C CT TTCCCT
CCGACAATCTGGTTTCCCTG TGGAGAA AGG TAG GA AAT GGT
CCTATTATCAAGCCACCTAA ACCTTTT TCC ATC CT TTA CCG
CTCCTCACTTTTCCA CAC TCA CACCGAA A T- ------
GAM5128 16587 GGCCTAAAGCAAGGTGTGTA TAAAGCAA --- ATTC - TTGT
TTTGTTATTCTGAAATTGTT GGCC GGTGT GTATTTGTT TG AAA

TTGCATCTGGACAAATACTA CCGG CTATA CATAAACAG AC TTT
AATATCCCAGTGGCC TGACC--- AAT GTCT G ----
GAM5129 20833 GTCAGAACCCTTTTCCACGT AA TTCC-- TG - T- CTT TGCGT
GCAGAATGGCTTTGATGGCT GTCAG CCCTT ACG CAG AATGGCTT GATGG GTG
TGTGTGCGTCATCCGTTCTA CGGTC GGGGG TGC GTC TTACCGAA TTGCC TAC
AGCCATTGCTGACCGTTCCC GG TCCCCT CA G TC --- -----
CTGGGGGGGCTGGC
GAM5132 15496 GCCCAGAGCCTGTGTGGCCC AGCCTGT CCC A TGTTCCTGACTCCCT
CGAGCACAGTGCTGTTCCTG GCCCAG GTGGC GAGC CAGTGC
ACTCCCTGCGCTGGCTCTGC CGGGTC CACCG CTCG GTCGCG
CACCCCCTGGGC CCC---- T-- - ----------
GAM5133 21717 GCCTTAAGAAAATAGCTTCC - AG- A TGTCT TT GAAGTCACAAA
TGTCTCAGGCTTTCTAGGAA GC CTTA AAAAT GCTTCC CAGGC TCTAG
GTCACAAACTAGGTGTCTGG CG GAAT TTTTG CGGAGG GTCTG GGATC
GAGGCAGTTTTAGGTAAGTG T GGA A ----- T- ----------
C
GAM5134 11559 GAGGCCACTCCCTTTAAAAA A CTTTAA C AAG GA TACTGT
TGCTCAAAGTGTTGGAGCTA GAGGCC CTCC AAATG TCA TGTTG GC
CTGTGTGACAACAGCTGACA TTTCGG GAGG TTTAC AGT ACAAC TG
TTTAGGAGGGCTTT - A----- - CG- AG ------
GAM5135 7185 GGTCACAATCTGATGCTGTC ACAA---- C-- T T -- TGGTTTT
AGTTTGACCGAGCTGGTTTT GGTC TCTGATG TG CAGT TGACC GAGC
GCTTATGGTCATGCTGCAAT CTAG AGATTGT AC GTCG ACTGG TTCG
TTGTTAGAATAATAGGGATC GGATAATA TTA - T TA -------
GAM5136 12146 GCAGCACAAAGGCGGCGCGG CAAA C - C C TGTAGT
TGCACGTCGGAGTTGTAGTA GCAGCA GG GGCGCGG TGCA GT GGAGT
CTTCAGCTGCATCTGCGCCA CGTCGT CC CCGCGTC ACGT CG CTTCA
CCTGCTGC ---- A T - A ------
GAM5137 7680 ACTGTGATCGTCGTGACTGT TCGTC CT - TGAG T GAGTTAT
GGTCCTATTGAGGCCAGTGT ACTGTGA GTGA GTGG TCCTAT GCCAG GTCT
CTGAGTTATGGGCTTGGCAC TGACACT TATT CACC AGGATA CGGTT CGGG
GTATAGGATCCACTATTATT ----- AT T TGCA - -------
CACAGT
GAM5138 11610 TGGGGGAGCGGGGGAAGGAG G C GG TTAA AACT- GCAC
TTAATGAAACTGTATTGCAC TGGG GAG GGG AAGGAG TGA GTATT
AATGCTCTGATCAATCCTTC ACCC TTT CTC TTTCTT ACT CGTAA
TTTTTCTCTTTTGCCCA G T TT CCTA AGTCT ----
GAM5139 5382 GTGACTGCCTGGTTAAGATC GACT - TA AT ACA GATG
TACAAATCTGATGGGATTAA GT GCCT GGT AG CT AATCT
GGGCCTGTACCAAGGCTTTA CA CGGA CCA TC GG TTAGG
AC ATTT A TG CG AA- ----
GAM5140 17168 ATTCCAAGTGCTCCAAGGGT AGT CA-- AACTCATAAAG AG AATCGGC
AACTCATAAAGTCAAGGGGC ATTCCA GCTC AGGGT TCA GGGCC
CAATCGGCGGCCCAATGGGC TAAGGT TGAG TCCCG GGT CCCGG
CCTCCAAGAGTTGGAAT --- AACC ---------- AA -------
GAM5141 22605 TCCTGGAAGATGGCTTTGGC ATG- --- - A A GCGG
GTACTGATGCAAGAGGCGGC TCCTGGAAG GCTT TGGC GTACTG TGCA GAG
TCATGTACCAGTGCTGCCAC AGGACCTTC CGAG ACCG CGTGAC ATGT CTC
GGGAGCAGCCCTTCCAGGA CCGA GGC T C A ----
GAM5143 7643 CTCCTCACCTGCTCCTTGAA ---- - GAATGA --- ACAGAGGTCACAG

TGACAGCGCCACAGAGGTCA CTCCT CACC TGCTCCTT CAGC GCC
CAGGGCACCGCTGGCTGAAG GAGGA GTGG GCGGGGGG GTCG CGG
GGGGGCGTGGTGCTGAAGGA AGTC T AAGTCG CCA ----------
G
GAM5144 14761 GTGGCAAGTGGATTATTCGG -- - A- T A GCTTGG
CTGCGGAAGGGCTTGGCCTC GTGGC AAGTG GATT TTCGGC GCGG AGG
CCGTTGCTGGGAGAATCTCA TACCG TTTAC CTAA GGGTCG TGCC TCC
TTTTGGCCAT GT T GA T C ------
GAM5145 12369 TTTGTGTGTGAAGCTTAAGG G G GCT GGG T T TT TTTT
GTCATATGTTTGCTTGTATT TTTGT TGT AA TAA TCATA GTT GC GTA
TTTACTGCTAATCTGTGAAC AAGCG ACA TT ATT AGTGT TAA CG CAT
ATTATTGACAGGCGAA G G --- ACA C T T- ----
GAM5146 22001 GTGGAGAAGGGGTCCAGTTT A - AGT CTTC- T-- AGCC
CAATCTTCTGCATATAGCTA GTGG GAAGGGGT CC TTCAAT TGCA ATAGCT
GCCAGTTGTCCTTGCACCAT TACC CTTTCCTA GG AAGTTG ACGT TGTTGA
TGTTGAACAGGGAATCCTTT C A GAC TTACC TCC ----
CCCCAT
GAM5147 2012 CAGTTCGGCTTCCGCGAAAA C C AAAACGACT T CCAC
CGACTCTTGCTGTCCACATA CAGTT GGCTTC GCG CT GCTGT
GCCAGCCGTGAAGCCAAACT GTCAA CCGAAG TGC GA CGATA
G A - C-------- C ----
GAM5148 2773 GCCCTCCCTGAGCCTCAGTC T- AGCC-- TCTCT--- ATG
TCTCATCCTCCATGGGAGGA GCCC CCCTG TCAG CATCCTCC
TGTAATTTTCCTGAAAAAGA CGGG GGGAC AGTC GTAGGAGG
CAGGGCCGGGC CC AGAAAA CTTTTAAT ---
GAM5149 6263 TCTCGGTGTGATTGATGCCC T - GA ---- TCTC
CTCAAAACTCTCGTTGCAGT TC CGGTGT GATT TGCCCCTCAA AAC
TGGGGGGTAGAGGTTGACAC AG GTCACA TTGG ATGGGGGGTT TTG
TGTGA T G AG GACG ----
GAM5150 21804 TACATCTGACTTTATTCCCA TC TTTATTCCCA A - AAGGCTGGTA
GTCCTCTTATCCTGTGAAGG TACA TGAC GTCCTCTT TCCT GTG
CTGGTACACTAGGGAAAGGG GTGT ACTG TAGGGGAA GGGA CAC
GATATTTAAAAATGTCAAGT GA TAAAAATTTA A T ----------
GTG
GAM5151 7452 GACTCTTCAGGGAAAAGGTC TCAG AA GT A AACAA
AGTGAAGTTTAACAAGGGCT GACTCT GG AAG CAGTG AGTTT
ATACTGCTCTTAGCCAGAGT CTGAGA CC TTC GTCAT TCGGG
C ---- GA TC A -----
GAM5152 21561 GTAGCATGTACATATTGCCG T C TTGCC----- TTCATTTATTCCT
ATCTGGGTTCATTTATTCCT GTAGCA GTA ATA GATCTGGG
TCCAGATTATTTATTATCTA CGTCGT CAT TAT TTAGACCT
TTTACTGCTGC - T CTATTATTTA ----------
GAM5153 15704 CAAGGTAGAGCCGAGAGACA T G A--- G GCTC
AGGTAGAGCCGCTCGGGTCT CAAGG AGA CCG GAGACAAGGTAGA CC
ACCTTGTTTCCCAACGGGTT GTTCC TTT GGC CTTTGTTCCATCT GG
TCCTTG - G AACC G ----
GAM5154 6511 TCACAGCACTACTTCTTCAA AGCA CT AT AAA TG CATTTTACA
TGTAAATTTTTTGTCCATTT TCAC CTA TCTTCA GT TTTTT TC
TACAGATGAAAAAACTGAGG AGTG GAT AGGAGT CA AAAAA AG
ATTAGAGAAGTGA AAGA T- -- --- GT ---------

GAM5155 4960 TGCAGTGCTCTGGGAACTCA C CTC-- AC TG CAA AAGAT
TTACTGGGTCAAGACAAGAT TG AGTG TGGGA TCATTAC GGT GAC
GTCACCTGGTGATGAAATCC AC TCAT ACCCT AGTAGTG CCA CTG
CATCATATACTCA - ATACT AA GT --- -----
GAM5156 8337 TATCTCAACGAGAAGGGACA AACGAGAA ACC C CAGC
CCTCACGTCGCTGACAGCTC TATCTC GGGAC TCACGT GCTGA
GGCACGTGGCTGGTCCCAGG ATAGAG CCCTG GGTGCA CGGCT
CCCCAGAGATA ACCCCGGA GTC - ----
GAM5157 15075 CCACCAAGCTCTGGGGACTG - AG----- - GAAT C-- G AGCCCCAGA
GAATGCAGGCAGTGGAAGCC CC ACCA CTCTGGGGA CTG GCAGG AGT GA
CCAGATTGACTTAACCTGTT GG TGGT GAGACTTCT GAC TGTCC TCA TT
GACAGATCTTCAGAGAAACT A CGTCAAA A AGT- AAT G ---------
GCTGGTAGG
GAM5158 21669 TGACCTCATGGAGAAGAGGT A AT AA CAAG -- AG TGAGCC
TGGCAAGCATGGTGGAGAGG TG CCTC GGAG GAGGTTGG CATGGT GGAG GCCT
CCTTGAGCCAGGCAGCTCTG AC GGAG TCTC CTTCAACC GTATCG TCTC CGGA
GGCTATGAAGCCCAACTTCA - CG AA CGAA GG GA ------
ACTCTGCGAGGCA
GAM5159 13888 AGGAAGTGGATGAGCTGTAC A GA ---- CA- AGCA TA GATAA
AGAGAAGCACCTATTGATAA AGGA GTG TGAGCT GTA GAGA CC TT
AACGGGGAATCTCACTTACA TCCT CGC ACTTGA CAT CTCT GG AA
TCGAGTTCACACGCATCCT A AC GCTA TCA AAG- GC -----
GAM5160 1489 GAGGGTCCGCATTAACAGTG CCG TAA GAG AG TG GGGA
AGAGGATAGGGTTTTTGGCT GAGGGT CAT CAGTGA GAT GGTTTT GCTG
GGGGACAGTAAGACCATCAT CTTCCA GTG GTCACT CTA CCAGAA TGAC
CACTGCGTGAAAACCTTC AAA C-- A-- -- -- ----
GAM5162 4343 GGTGACAACATGCTGGAGCC AA-- G G-- T TAACAT
AAGTGCTAACATGCCTTGGT GGTGAC CAT CT GAGCCAAG GC
TCAAAGGGATGGAAAGTCAC CCACTG GTA GG CTTGGTTC CG
C AAAG G AAA - ------
GAM5163 12508 CTCAAGTGGCTAATGACACA AA A G C TTA AAACG CA - GGTC
ATCATTACAGAAACGTTCAT CTC GTGGCTA T ACA AATCA CAG TT TG ATG
GATGGGTCCGTGCAAAGAAG GAG CGCTGAT G TGT TTAGT GTC AG AC TGC
AAGCTGGCCTGATTATGTGG AA - G A CCG GAAGA AA G ----
TAGTCGCAAGAG
GAM5165 9974 ATATCATCAAAGTCATGACA C TC GA TT TTGC T ACAGTCATTA
TTGGAAATATTGCAGCTTTT ATAT ATCAAAG AT CA GGAAATA AGC TTTC
CACAGTCATTAGAAATGCTT TATG TAGTTTC TG GT CCTTTAT TCG AAAG
ATTTCCTGAAGTTCCTTTGA T CT AA -- ---- T ----------
TTGTAT
GAM5166 14176 TTTGAACTTGTCCCCTGAAT --- C CTGAAT ACA T AG A A- TTAT
AGCTACAGGTTTTGGAAGCT TTTGAAC TTGT CC AGCT GGTTT GGA CTGA TCA TG
GAATCAATGTTATCAGATGA AGACTTG GACA GG TCGA CCAAA CCT GATT AGT AC
GTTAGAATCCAAACCAGAGC TTT T TCC--- GA- - AA G AG ----
TCCTGGTACAGTTTGTTCAG
A
GAM5167 16582 AGGTCTCGTAATCTTGGCTT T TAATCT-- CT --- G AAACCTTCTATC
TTGAAGTGTTTAAACCTTCT AGG CTCG TGG TTTGA A TGTTT
ATCAAACAGTTTCTTAAATA TCC GGGC ACT AAATT T ACAAA
TCATTTCTTCCCGGGTCCT T CCTTCTTT AT CTT G ----------

GAM5169 16671 GAGTTGCGAGGGAGGCTGCG GA G G - - C AC TTGAGACCC
GGGGCGGGCGGACGTATGTT GAGTTGC GGGAG CT CGGG G GCGGG GG GTATG
GAGACCCTATGCAGCCTCCT CTCGGCG TCCTC GG GCCC C CGTCC CC CGTAT
GCTCTCCCGAGGGCTCCTGC -- G A T T T GA ---------
GGCTC
GAM5170 17571 TCTCTGTCTAGGGGTCACAA -- G - ATTGAAAT TC CAC
ATTGAAATGGCTCCTGTATC TCTCTGT CTA GGGT CACAA GGC CTGTAT
ACATACGGAGGTCTTGTGTA AGGGACA GGT TCTA GTGTT CTG GGCATA
TCTGTGGCAACAGGGA AC G T -------- GA ---
GAM5171 13256 GCTGGGGTGCTAGGACTTGG - ACT T- - TT-- TTCT
TGCATGTGTTCTTTCTAGTC GCTGGGGTG CTAGG TGG GCAT GTG CT
CTTACGATGTTCCCACCTGG CGACCCCGT GGTCC ACC TGTA CAT GA
ATGCCCCAGC A --- CT G TCCT ----
GAM5172 16073 CTTTTACTTTTTAAAAAATC AAAT AAAACG CT GAGA
ATAAAACGGTCTGTATCTGA CTTTTACTTTTTAAA CAT GT GTATCT
GAAGATACTAATATCAATGC GAGAGTGAAAAATTT GTA TA CATAGA
TTTAAAAAGTGAGAG C--- ACTA-- AT ----
GAM5173 16230 TTTCTGTGACAGTCACTGCC TT AC T-- CTCAG TG CCTG
CTCAGGCTTGGCCTGTCCTG T CTGTG AG CACTGCC GCT GCCTGT
ATAGGCTGGGTGGTAGTGCA G GATAC TC GTGATGG TGG CGGATA
TCTTCCATAGGGG GG CT TAC ----- GT ----
GAM5174 12704 CACAGGATGTTCCCTTTGTT GGA - T CAAAA--- GA- AACTT
GGCAAAAACATGGACGGAAC CACA TGTTCC CTTTGT GG ACATG CGG
TTCTGAAACATGTGAGAGAA GTGT ATAAGG GAAATA CC TGTAC GTC
ACCATAAAGAGGAATACTAT ATC A - AAAGAGAG AAA -----
GTG
GAM5175 21378 GAGTGAGGAATGTTTGGGTG - A AT CAAG GTAAG
GCGTCAAGGTTGGTAAGCGG GA GTG GGA GTTTGGGTGGCGT GTTG
CGCGCGCCGCTCGAGCTCTC CT CGC CCT CGAGCTCGCCGCG CGGC
CCGCATC A - CT CG-- -----
GAM5176 17190 AGCAAGAGTAGGGTGCATGG ------ C TGAATAAGAGGAAAC
CTTGAATAAGAGGAAACAGC AGCAAGAGTA GGGTG ATGGCT
CGTTCACCCAACATTTGCTT TCGTTTTCGT CCCAC TGCCGA
TTGCT TTACAA T ----------
GAM5177 10146 ACATATTTTCCTTCCACAAT - C TC T G GTG TTTAAAC
ATGGATTTGTGTCATTTAAA ACATATTT TC T CACAA AT GATTT TCA
CTGAAGAAGTTGATCTTGTG TGTATGGA AG A GTGTT TA TTGAA AGT
TGATGACAGGTATGT C T GT C G GA- -------
GAM5178 9638 CGGGGCCCGTCTGGGGCGCC - TGGG--- - -- GCGTTTGA
GGCGGGTGCGTTTGAATCTG CGGGG CCCGTC GCGC CGG CGGGT
GTCCGAGCGCGGGAAACGGC GCCCC GGGCGG CGCG GCC GTCTA
GGGTCCCCG T CAAAGGG A TG --------
GAM5179 19583 TGGTATTTGTGCGCAATCTG A TG C C- TGCTAG CC TCTTTCT
CTGCTAGCCCCCTGCCTCTT TGGT TT TGCG AAT TGC CCC TGCC
TCTGGTACTGGGATTTTTGT ATCG AG GCGT TTA ATG GGG ATGG
ATTATTCTGCGTGGAAGCTA A GT C TT TTTTTA TC -------
GAM5181 5125 CCTTAGATGTTCTGACAGCA TAG- GA - C- TTTGGCTT
CTGCACCTTTGGCTTGGTTT CCT ATGTTCT CAGC ACTG ACC
CAGTGGTTGGTGGAACATGA GGA TACAAGG GTTG TGAC TGG
ATAGG TAAG TG G TT --------

GAM5183 2298 GAATCCTTCACTCCAGTTAA TC TC TAA-- CT TCACTTCCTGCCTCT
TGGCACTGCTCACTTCCTGC GAA CTTCAC CAGT TGGCA GC
CTCTGCTGCCACCATCACTG CTT GAAGTG GTCA ACCGT CG
TGTGAAGCTTTC TC T- CTACC -- ----------
GAM5184 14617 AACATCCAATTCAACTGTGG ATTCA- T AA-------- AGCT
GAAAGGAGCTCCTTCAACTG AACATCCA ACTG GGG AGG
ATGCCCCAGTACTTTGTGGG TTGTGGGT TGAC CCC TCC
TGTT GTTTCA - GTAGTCAACT ----
GAM5185 4834 TATGAAAGGTGTGAACTTGC G- ACTT A CTC GTCTTAAACCCA
AATGTCCTCCTGTCTTAAAC TATGAAAGGT TGA GCA TGTC CT
CCAAGTTGACAGTGCCCTCT ATACTTTTCA ACT CGT ACAG GA
CAAAACTTTTCATA AA CTCC G TT- ----------
GAM5186 2186 CCTTTTGACAAGTGGGATGG AA-- - G- A A TGGA
CAAGGACCTGGAGGACCTGC CCTTTTGAC GTG GGAT GCA GG CC
AGATCCTCATCAAGGTCAAA GGGAAACTG TAC CCTA CGT CC GG
GGG GAAC T GA - A ----
GAM5187 15286 GTAGCCTGGAAGAGGGGCTC CT- GG--- CCTGC TCGTACACTTCATTT
CTGCAGGTAATCGTACACTT GTAGC GGAAGA GGCT AGGTAA
CATTTTTGCCTAGCCGATCA CGTCG CCTTCT CCGA TCCGTT
TCTTCCTGAGCTGC AGT ACTAG ----- ----------
GAM5188 21237 GCCCCTTGACCCCAGCTAGG TTG- C-- CCTC C C CCTTT
GCCTCAGGGACTTTCGGGCC GCCCC ACCCCAG TAGGG AGGGA TTT GGG
TTTTCCAAAATTTCCTCCCT TGGGG TGGGGTT GTCCC TCCTT AAA CCT
GATCTTGGGGTAGTCGGGGT CTGA CTA ---- T A -----
GAM5189 16209 GTTTTGGTCTCGCGGGCTAG G - GG AGG A T GGGAGG
TAGGGCGCACTTGGCGGGGA GTTTTG TCT CGCG CTAGT GCGC CT GGCG
GGCGCTTGGGCGCGAGACTA CGAGAC AGA GTGC GATCA CGCG GG TCGC
GGCGTGAAGAGCAGAGC G A G- GAG - T ------
GAM5190 21824 AGAAGCCAAGAAACATACGA CAA- CA C AC-- CC TTTT
AATACAACCCTCTTTTTAGA AGAAGC GAAA TA GAAAT AAC TCT
CGTTTCCAATTTCTAAATTT TTTTCG TTTT AT CTTTA TTG AGA
TAAAAGCTTTT AAAA AA - ACCT C- ----
GAM5191 7790 CACAGGTCGGGGGCCTAGAG AG- - C --- AA- - CA- C AATCCC
ACCACCAATGCCCTTGGACA CAC GT CGGGGGC TAGAGA CCACC TGCC CTTGGA CA AG

CACAGAATCCCCTTGATTTC GTG CA GTTTCCG GTCTCT GGTGG ATGG GGACCT GT TC
CAGGAGGTAGTGGGTGGCAT GTA C A TAC GTG A TTA - ------
TCTCTGAGCCTTTGCACATG
GTG
GAM5192 10997 TCACGTCCTAGGAGCCGCAT G --- A C A A- -- A C AAGCTTTTG
GTTCATGATTGAGATCGCAG TCAC TCC TAGG GCCG ATGTTC TG TTGAGA TCGC GG GTG

GCGTGAAGCTTTTGTACACT AGTG AGG ATTC CGGT TGCAAG AC AACTCT AGTG TC CAT
GGTGATTTCTCAAGACAAGA G TTA A - A AG TT G A ---------
ACGTTGGCACTTAATTGGAG
GTGA
GAM5193 15420 GTTCAGGGGTCCCATGAGCC - A - ATT GGG
TTGATTTAATGGGGGCCGTT GTTCAGGG GTCCC TGAG CCTTG TAATGG
GCCATAGGGATTCAGGGGGC CGGGTCCC CGGGG ACTT GGGAT GTTGCC
TCCCTGGGC T G A ACC ---

GAM5194 13081 TTAGGCTGAAACATATGAAA CT A - - GTAGTTTAA
TTGCTGCATTTGTAGTTTAA TTAGG GAA CATATGAAATTGCTG CA TTT
AAACTGTCAGCAGTTTCATA AATCC CTT GTATACTTTGACGAC GT AAA
TGGTTCCACCTAA AC G T C ---------
GAM5195 12768 GGGAGCGGCTAGGCCGGGAC ----- GGGAC CAC GA T TTGGAGACTC
GCCCGTGGTCCTCACCCCTT GGGAGCG GCTAGGCC GCCCGTGGTCCT CCCTT GC GCT

GAGCTGCTTTGGAGACTCGG CCCTTGC CGGTCCGG CGGGTACCGGGA GGGAG CG CGG

CTGCCAGAGGGAGGGCCATG ACTTA AGC-- --- AC T ----------
GGCCGAGGCCTGGCATTCAC
GTTCCC
GAM5196 7468 TAGTTATCGAAGCTTTCACC ---- AA-- - ACTACCATAC
AGACTACCATACCTGTGTGA TAGTTAT CG GCTTTCAC CAG
AGGCGACATGTATAATGACT ATCAGTA GT CGGAAGTG GTC
A ATAT ACAG T ----------
GAM5197 21821 CCAACGTCTGTTCATGGCTG A TTCAT TG-- - - CC CAAC
TGGTTTTAAAAGAGTCCCTC CCA CGTCTG GGC TGGTT TTAAA AGAGT CT
AACAGATGCTCTATTTAATA GGT GTAGAC TTG ACCAA AATTT TCTCG GA
ACCAGTTTGTTCCTCAGATG - TCC-- TTTG T A TA ----
TGG
GAM5198 12955 GCGGCTGCAGAAGTACCGCC AAGT - CT -- A GCAA
TGCGGAGTAACTGCAAAGAT GCGGCTGCAG AC CGC GCGGA GTA CT
GCTGTCCGTGCGCGTTGCTG TGCCGGCGTC TG GCG TGCCT CGT GA
CGGCCGT GT-- C -- GT A ----
GAM5200 17293 AGAGAATCCAGCATCCACTG TCC C CTGTTCT C TAT TCCAT
TTCTGCCCAGTATTTATCCA AGAGAA AG ATCCA GC CAG TTA
TTGACCTGTGCTCTGTCTGG TCTCTT TC TAGGT CG GTC AGT
ATCCTATCTTCTCT CTA C CTGTCT- T C-- -----
GAM5201 5709 AACGGGAGTGGGCACAGAAA AG AGAA-- C- GCAA
GCCTTCTCCTGGCAACAGGA AACGGG TGGGCAC AGCCTT TCCTG
CAAGGGCTGCCCGCGTGTCC TTGTCC ACCTGTG TCGGGA AGGAC
AGCCCTGTT CG CGCCCG AC ----
GAM5203 14093 TTCGGGTTCTAGCCAGAAGC GT-- ---- GAA-- CT CC T CTCTTCTTGTA
CCTGGGGCCTGTCTCTTGCC TTCGG TCT AGCCA GCC GGGG TGTCTC TGC
TCTTCTTGTAGCATGAGACA AAGCT AGA TCGGT CGG TCCC ACAGAG ACG
CCCTTGGCAGGTGTGGCTGT ATGT AGTG GTGGA T- -- T ----------
GAAGATGTATCGAA
GAM5204 10221 ACGGGGGAACAACACAGGAG GA AGAGAA-- ATATA CA TGCT
AGAAATAGTATATACAGCCA ACGGGG ACAACACAGG ATAGT CAGC CGAC
CGACTGCTGTTGCCGCTGAC TGTCTC TGTTGTGTCC TATCA GTCG GTTG
TATAAAACAAACCTGTGTTG -- AAACAAAA ----- CC ----
TCTCTGT
GAM5205 8660 AAGGCACCACGGCCAGCCCT A CGG- -- CA CC TTTAAA- A GTTTTTTGCAAAA
CATACCTCCTTTAAAAGCCA AAGGC CCA CCA GCCCT TA TCC AGCCA CCT
ACCTGTTTTTTGCAAAAAGG TTCCG GGT GGT TGGGG AT AGG TCGGT GGA
CTGGCTGTTTTTTGGACCTA - TTAA TT A- CC TTTTTTG C ----------
AGGGGTTTTGGAATTTGGGC
CTT
GAM5206 3230 TTCACTTCTGATCCAGCACT AC-- G--- TTC TCA T TAT

TCTGTCATTTGCTGAATATT TTC TTCTGATCCA CAC TG TTTGC GAA
TCTGCAAGCCAACTGTGAAC AAG AAGACTGGGT GTG AC GAACG CTT
ATGGGTCAGAAACAGGAA GACA ACAA TCA C-- T ---
GAM5207 10663 GGAGCTGTGTGAGGTAGACG C T T ACG--- T CTCCTG - A TAAC
AGGATGGTGACTCCTGGCTG GGAG TG GTGAGG AG AGGATGG GA GC TGC GG
CAGGTAACCCGCAGGCTCCC TCTC AC CACTCC TC TCCTACC CT CG ACG CC
CATCCTACACACCTCCTCAC - - - CACACA C ------ G - ----
CACTCT
GAM5208 12845 GGGCACATTGGTGGTATTTT CACATT ATT GTAT G ACT
GGTATGTGGCCACTGGCACT GGG GGTGGT TTG GTG CC
AAACAACTGACCATTTCTAC CCC TTACCA AAC CAC GG
CC ATCT-- GTC AAAT - ---
GAM5213 17254 TCTGCGGGGTCCTGGCCGGG G CT C - ACA ---- GGAC
CAGGGACAGGGCAGAGGACT TCTGC GGGTC GGC GGGCA GGG GGGC AGA
CTGAGCGCCCCACCCATGCC AGATG TCCGG CCG TCCGT CCC CCCG TCT
TGCCTGGCCTGGTAGA G T- - A AC- CGAG ----
GAM5214 1164 GGCCTCCATGCCTATGTGGT C T TG - CAA-- ACT
GGTACAATGTCACTGACGGA GGCCTCCATGC TA G G TGGTA TGTC
TCCTGCCAGCTGTTTGTGTA TCGGGGGTATG GT T C ACCGT GCAG
TGGGGGCT T T GT G CCTAG ---
GAM5215 1590 TCAACTCCCTGCCAAGAAAA --- CAAGAAAAA A- - TGGAG
ATGTAGATGCAATTCTGGAG TCAAC TCCCTGC TGTAG TGCA ATTC
GAGTATGCAAATTGCAAGAA AGTTG AGGGACG ACGTT ACGT TGAG
ATCGCAGGGAAATGTTGA TAA CTAAAGA-- AA A -----
GAM5216 18279 CCCGGACCAGTGAAGCTGGA C A GAAGC GGGTGTAA AGGAGG
GCCAGGGTGTAAGGCAAGGA CC GG CCAGT TGGAGCCA GGCA
GGTGCTGAGTGGCTCCAAAA GG CC GGTCG ACCTCGGT TCGT
GAGCTGGCCAGG A - AGAAA GAG----- ------
GAM5219 9136 CACGTTGCCTAACGTCAGAT G ---- T - A - ----- T C AACGAC
ATGTACAGAAAAATAAGAGT CACGTT CCTA ACG CAGATAT GT CA GAAA AATAAGAGT GTA TA

TGTACTAAACGACTATATTG GTGCGA GGAT TGC GTTTATG CA GT CTTT TTGTTCTCG TAT AT

CTCTTGTTGATCCTTTCTTG - TCTG - T A T CCTAG T - ------
AACTGTATTTGCGTGTCTTA
GGAGCGTG
GAM5220 16851 CAGTCACTACTTATTTGCAT T ATT- T -------- G AGT
TATTCCTGCATATTCAGTGA CAG CACTACTT TGCA TATT CCT CATATTC
ATGTGAGGTCATATTTGGTA GTT GTGATGAA ATGT ATGG GGA GTGTAAG
TTGTATTAGAAGTAGTGTTG - GATT T TTTATACT - ---
GAM5221 9973 GCCTACTGAGCAGAGAGTGG ACTGA - A - ---- - ATGGAC
TCCAGGTATTGAATGGACTC GCCT GC AGAG GTG GTCC AGG TATTGA
AATATCCTAGAAGGACTCAC CGGA CG TCTT CAC CAGG TCC ATAACT
ATTCTAGCAGGC ----- A A T AAGA T ------
GAM5223 6454 GGGGCGGGCTTCTGGGGGCC C T CATGTT ------ AA TCCCC
ATGTTTGGGGGAAGGGAAGG GGGG GGGCTTC GGGGGC TGGGGG AAGGG GGT
TTCCCCACCCACCCTTGGAA CCCC CCCGAAG CCCCTG ACCCCC TTCCC CCA
AACCCCCAGTCCCCTGAAGC - T ------ AAAAGG AC -----
CCCCCC
GAM5224 8232 CCAAGTTTAATTTATAGGCT GTTTAA AG T G G TG AACT

TTCGTGGACTTCTGGAAGTC CCAA TTTAT GCT TC TG ACTTC GAAGTC
AACTGACTTCGAAGTTAGGA GGTT GGGTA CGA AG AT TGAAG CTTCAG
CAGCATGGGGGGATTGG AGGG-- -- C G - -- ----
GAM5225 5559 ACCTTGGCATAATTGGTGAT - TAATTG TC G ---- A T CTCTCCTA
CCTGAAGAAAGAGGTCTCTC ACC TTGGCA GTGA CT AA GA AGAGG CT
TCCTAAGTCTCTGTCAGAAT TGG AATCGT CACT GA TT CT TCTCT GA
TGAGCTTCACAATTGCTAAT T TAA--- TC G AAGA G - --------
GGT
GAM5226 19285 CAGAACTGGAGAATGAACTG G A---- AAC C AAAGAAAATGAGGAGAA
AACACAAAGTGAAAGAAAAT CA AACTGGAGA TG TGAA ACAAAGTG
GAGGAGAACACTTTGTATTT GT TTGACTTTT AC ATTT TGTTTCAC
ACCCCAAAATCTTTTCAGTT G CTAAA CCC A ----------
GTG
GAM5228 22249 AGTGAGGGGCAGGATGAAAT --------- - A AAA A AG TAGGTAT
CACCTAGGGTAGGTATTTAG AGTGAGGG GCA GG TG TC CCT GG
AGGGAGGGCGCCGTGCAAAA TCACTCCT CGT CC GC AG GGA TT
TAAAATCCTCACT AAAATAAAA G - GGG - GA -------
GAM5229 5793 GGAAAATGGGAGATGATTAA AAA --- T AGAG CTA
GAGTTGGTGTGGCCTAGTCA GGA TGGGA GATGA TA TTGGTGTGGC
CACCAAAATGTATTTATTAC CCT GTCCT TTATT AT AACCACACTG
ATCCTGCTCC C-- ACA T GTAA ---
GAM5230 16469 GTGCAATGGGAAGGACGACT TGG AG --- G A T-- GACGA
GTGGGGACGGGTCCGACGAG GTGCAA GA GACG ACT TGGGG CGGG CC
GCCTCCTGCCCCAAGGTGAA CATGTT CT CTGC TGG ACCCC GTCC GG
CGTCGTCACTTGTAC CA- G- AAG A - TCC -----
GAM5231 4348 GTTATAGCTGTCGGCTGTCT GT CT A AC TTAGCTAC
GAGAGCACCTTTAGCTACAG GTTATAGCT CGG GTCTG GAGC CT
AGGCTCATGGATTCGCAGGT CAATATTGG GCT TAGGT CTCG GA
TATAAC AC -- A GA --------
GAM5232 7044 AGGGGGCACACCACATCAAA CAC TCAAA GG GTG---- TGTT
ATGAGGGGTGTGTTGCTGTT AGGGGGCA CACA ATGA GGT TTGC
GCGAAATTAAAACCAATCGT TCCCCTGT GTGT TGCT CCA AGCG
TGTGTTTGTCCCCT TT- ----- AA AAATTAA ----
GAM5233 4777 CCGGGGAGGGATGCGCCGGC G GGA CG- G C -- GAGTCA
ACCCGCGGCGAGTCAGCCCA CCGG GAG TG CC GCA CCGC GGC
GCGGCTGCGGGAAACACAAC GGCC CTC AC GG CGT GGCG CCG
TCGCCGG G AAC AAA G C AC ------
GAM5234 22425 GGCCTGGTGCGGCTTCGGGG T TG GG GGAGGA - AACTCTATCA
CAAGGAGGATCCCTGGAACT GGCC GG CGGCTTCGG CAA TCC CTGG
CTATCACCAGTGGAGCATTG TCGG TC GTCGGGGCC GTT AGG GACC
ACCGGGGCTGTGCTGGCT - GT A- ACG--- T ----------
GAM5235 8503 CCACTTGATGTTCAGTGAAG - ATG AG--- A A AAAA - TAGAG
AGAACCAGAAAAAGTCTGTA CCAC TTG TTC TGA GAGA CCAGA GT CTG
GAGCAGTACCATCTGGGTCT GGTG AAT GAG ACT CTCT GGTCT CA GAC
CATCAAAAAGGAGAAATAAC C AAA GAAAA A G AC-- T -----
GTGG
GAM5237 6092 TCAGCACTGTGGTGAGCTCC A--- GTG C AG-- TCAGAT
AAGGAAGTGAATAAGTTTCA TCAGC CTGTG AGCTC AAGGA TGAATAAGTT
GATGGCTTATTCAAACCTCC AGTTG GGTAC TCGAG TTCCT ACTTATTCGG
TTAGAGCTAACATGGATGGG GGTA AA- A CCAA ------

TTGA
GAM5238 16733 GCCTTGGGACGTGCCCATTT TT GG G CCATTT T- AAA ATTC
TTACTGTAAATTATGATTCC GCC G AC TGC TTAC GT TTATG
GTAACTGACTTGTAGTAAGC CGG C TG ACG GATG CA AATGC
AGGTTTCTGGC T- TT G AAT--- TT GTC ----
GAM5239 16823 GTATACGGGGACCGCTGAAA CG GC AA- ATAGGATAGGG
GCTGTGGCTTTATAGGATAG GTATA GGGACC TGA GCTGTGGCTTT
GGAGAGTCATAGCATATCAG CGTAT CTCTGG ACT CGATACTGAGA
GTCTCATTATGC TA -- ATA ----------
GAM5240 3139 GGTCACCCCGCCGGCCCCGA AC- --- --- GA CCTG
CGGGCGCCCTGGCGCCCGGG GGTC CCCGCC GG CCCC CGGGCGC
GGTACCCAGAGGCGGGAAAG CCAG GGGCGG CC GGGG GCCCGCG
ACC AAA AGA CAT -- ----
GAM5241 18974 CGGACACATCACAGGTATTG CATCAC ACTGG- T A C CGCATT
ACTGGGCTCCCAAGAGCGAC CGGACA AGGTATTG GC CCCA GAG GAC
CGCATTGTCACTTGTGGGGC GTCTGT TCCGTAAC CG GGGT TTC CTG
AGACCGCAATGCCTATGTCT A----- GCCAGA - G A ------
G
GAM5242 8704 TGTATTTTGACATCATTATG TT C TG GAT AA CTCAGT
AGATTTAAACAAATTCCTCA TGTA TTGACAT ATTA A TTAAACA TTC
GTGAATGTTTGGTTGTGATA ACGT AATTGTA TAGT T GGTTTGT AAG
TGTTAACCTGCA CC - GT --- -- ------
GAM5244 12928 CAGGAGGCCATGAGCCAAGG GAGG - CA- A CA GC C AA AAAA
AATGCAAGCAGCCTCTGGAA CAG CCATG AGC AGGA TG AGCA CT TGG GTTG
GTTGAAAACGACCCAAGTGC GTC GGTAC TCG TCCT AC TCGT GA ACC CAGC
TCAGTCCTACAGCTGCATGG AA-- G ACA G -- -- - -- ----
AACTG
GAM5245 11614 TGGATGCAGCTATGAATGCA T ATGAA CAAGG AAGGTGGATGGAAGA
AGGCCACACAAGGTGGATGG TGGA GCAGCT TG CCACAC
AAGAGTGTGGAACCAAAGAG ACCT TGTCGA AC GGTGTG
AGCTGTCTCCA C GAGAA CAA-- ----------
GAM5246 17016 GGGCCTTTATTTGGTTTTGG CT TTTTG T ATGTTTTAGTGA
CTTTAGCTGATAATGTTTTA GGGC TTATTTGG GC TTAGCTGATA
GTGATGTCAGCTAGTGCAGT TCCG GGTAAACT CG GATCGACTGT
TCTCAAATGGCTGCCT TC CTTGA T ----------
GAM5247 7961 CGTTTTGGAAGCAAGTGGGT ------- TG A TCA GAAG TTGC
TCAGTGAAGTGTGTTGCCAC CGTT T GAAGCA GTGGGT GT TGTG
GAATAGCACCCGCTGCTTTT GCAA G TTTCGT CGCCCA CG GCAC
GGCTTTATTAACG TTATTTC GT - --- ATAA ----
GAM5248 16904 TGAGGCTAGCTTCATCCAGG CT TTCATCC AAACA-- TC AA GCCCA
ATAAACAGCTCCTTCAACTC TGAGG AGC AGGAT GC CTTC CTC
GCCCAGAGAGAAGTGGCGCT ACTCC TCG TCCTA CG GAAG GAG
CTACATCCTGCTCCTCA -- ------- CATCTCG GT A- -----
GAM5249 18262 CCGTTGGACCCAGAGAGCCT G CC A GCC - A ACTTT CCAA
GAGTTGGAGATGAACTTTGG CC TTGGAC AG GA TGAGT TGG GATGA GG
CCAACTTTCCTCATCACCAT GG AACCTG TC CT ATTCA ACC CTACT TC
ACTTAAAATCCTGTCCAAGG - -- - AAA T A CCTT- ----
GAM5250 5153 TTCACAGTTCCGGCTTCCCG TCC-- T ---- G CA- GTCTTTGTCATCACA
GCTGCTGTCATATTTGCCGT TTCACAGT GGC TCCC GGCT CTGT TATTTGCC
CTTTGTCATCACAGGCAAAT AAGTGTCA CCG GGGG CCGG GACG GTAAACGG

GCCAGCAGAGGCCTTTTGGG CCGCA T TTTT A ACC ----------
GTGCCACGCCACTGTGAA
GAM5251 22799 GCTCTGTTTCCCAGGTGCCA -- C - CATCC- GACCCA
GATGTGACATCCAGATGACC GCTCTGTTTCC CAGGTGC AGAT GTGA AGAT
CAGTCTCCATCCTCACTGTC TGAGACAGAGG GTCTACG TCTG CACT TCTG
TGCATCTGTAGGAGACAGAG AT - T CCTACC ------
T
GAM5252 14559 GCGCGTTCCCCGGTTTTCTT CC------- TT TCCA GGGC
TGTTCCAAGGGGGGCCCCTA GCGCGTT CCGGTT CTTTGT AGGG
TATATAGGGGGGGCCGGATT CGCGCGA GGCCGG GGGATA TCCC
TTTATTAGCGCGC TTATTTTTA GG TATA ----
GAM5253 7438 CAGCGACAGTGTAAGCCTGA - AAG- TCTCT CTTTTCAT
ATCTCTTGCTTTTCATCATC CAGCG ACAGTGT CCTGAA TG
ATTTTAGGATCAACACTGTA GTTGT TGTCACA GGATTT AC
TGTTG A ACTA TACT- --------
GAM5255 6579 AAGGCGCCAGAGCTGAAGAC G A - A --- CC C- CACCCC
CAGCCCCTAGAAGCCACACC AAGGC CC GAGCT GA GACC AGC CTAGAAG CA
CCTGCCCTTCTAGCAGCTAC TTCCG GG CTCGG CT CTGG TCG GATCTTC GT
GGGTCCTCTGGCTCCGGGCC - C T C GCA AC CC ------
TT
GAM5256 12786 TGAGACGGGGTTTGGCTCTG G G AGATCG- CACT
TCGCGCAGAGATCGTGCCAC TGAGACGGGGTTT GCTCTGTCGC CAG TGC
TGCAATCCAGCCTGGGCGAC ACTCTGTCTCAGA CGAGACAGCG GTC ACG
AGAGCGAGACTCTGTCTCA G G CGACCTA ----
GAM5258 3121 GGCCCGGGGCCTACCTCAAA - ACCTCAAA C GAA AGCT
GGAGCGGGGTCGCGAAGCTA GGCCCGGGG CCT GGAG GGGGTCGC GCT
GCTAGCAGCGGCCCCCCTCC CCGGGCCCC GGA CCTC CCCCGGCG CGA
AGGTCCCCGGGCC T -------- C A-- ----
GAM5259 4098 GGCAGCAGAGCTTTGTGCAG AG--- TTGT --- A - TCCCCATC
GTCAGAGTGTCCCCATCCGT GGCAGC AGCT GCAGG TC GAG TG
CTCCGAGTTCCTGCTCCAGT CCGTCG TTGA CGTCC AG CTC GC
TAGACAGCTGCC ACAGA CCT- TTG C T --------
GAM5260 19765 GTTAAGGGTGGTGTAGGAGA AA T A TAAA CC AACATCC
TCAAATAAATTATCCTTTAA GTT GGGTGG GTAGGAG TCAAA TTAT TTT
CATCCAGACTATAAGATTTT CGA CCCATC CATCTTC AGTTT AATA AGA
GACTTCTACCTACCCAAAGC AA - - TAG- TC -------
GAM5261 15117 CTCATTTTAATCCTGCAGGG AATC CT CT CAG TCTA
CTGCCTGCCAGTGGATCTAT CTCATTTT CTGCAGGG GC GC TGGA
CCAGCTGCTTCCTTGTAGCC GAGTAAGA GATGTTCC CG CG ACCT
AAGAATGAG ACC- TT T- --- ----
GAM5262 15502 GGAGCTGGAGGACCTGGAGC - A CCT A CTGCAGC T -- C TGCCCACCCT
ACCTGCAGCTGGACTTCTGG GGA GCTGG GGA GG GCAC TGGAC TC TGG GGGGGCC

CGGGGGCCTGCCCACCCTGG CCT CGACC CCT CC CGTG GCCTG AG ACC CCCTCGG
CTCCCCCATCGACGTCCGAG A - T-- - A------ C CT - ----------
TGCCCTTCCCCAGCATCC
GAM5263 4525 GGTGCAGCAGTCAGCAGCAA C T C CAA AAGC T A--- ATTTT
AGTGAAAGCTGTTCAGAACT GGTGCAG AG CAG AG AGTGA TGT CAGA CTACTGG
ACTGGATTTTCCAGTGGAAG CTACGTC TC GTC TC TTACT ACA GTTT GGTGACC
CTTTGACATCATTAACTCTG - T - AA- ---- - CGAA -----

TCTCTGCATC
GAM5264 999 GCCTGATGACATGCTCACGT G- G CTCACGT- T TTATG
GACATGGTTATGCCCTGTTT GCCT AT ACATG GACA GG
GGCTTTATATGTGATAAAGG CGGA TA TGTAT TTGT CC
C AA G ATTTCGGT C -----
GAM5265 2440 AGTTGCTGCAGAGGGAGAAG -- GAGAAG CA TCGT CTGGA
GACAGGCAGTGTCGTGGCCT AGTT GCTGCAGAGG GA GGCAGTG GGC
GGAGCTCATTGCCTCAGAGA TCGA CGACGTCTTC CT CCGTTAC TCG
ACTTCTGCAGCCGAGCT GC AAGAGA -- ---- -----
GAM5267 1909 GGCATGGGGTTGGCTTCTGT A GG T -------- - CT C CTTGTT
CCACTTGCTGAGCAACTTGT GGC TG GTTGGC TCT GTCCACT TG GAG AA
TTTCCTTTTCACAGTGGATA CCG AC CAGCCG AGG TAGGTGA AC TTC TT
TGACCTTGGATGCCGACACA - A- T TTCCAGTA C TT C ------
GCC
GAM5269 11418 TCCTGTGGTTTGTTGGTTTC G TTT TT TC CACCAACC
TGCTTCCTCACCAACCAGTG TCCT TGG GTTGGT CTGCT CT
GGCAGTCACCAACCCGAAGG AGGA GCC CAACCA GACGG GA
A A --- CT GT --------
GAM5271 22758 TGGGAAGGTGACATTTGGCT GG ATTT - A- GG GAGTTGGTTA
TCCTGATTACGGGAGGGAGT TGGGAA TGAC GGCTT CCTG TTAC GAGG
TGGTTATCTCAGGTGGAGCA ACTCTT GTTG CCGAA GGAC GGTG CTCT
GGAAAGCCTGGTTGATTCTC A- GT-- A GA GA ----------
A
GAM5273 20300 ACGTGCACAAGAGTGTGACG CACAAGA-- ACGACTTA T--------- AGACC ---
ACTTAGGGAGTGGAGTGGCA ACGTG GTGTG GGGAG GGAGTGGCAC TATGG
CAGACCTATGGGCTTGGCTT TGTAC CGTAC CCCTC CTTCACTGTG GTACC
GCCAAGTGGGGACCATGACG AACCAAGTG GGTCAAG- CGGTGTCTAT GCA-- AGG
GTGTCACTTCTATCTGTGGC -- CTTG
CTCCCGAACTGGCATGCGTG GCTTGG
AACCAACATGT TGAACC
GG ----
GAM5274 18922 GTTGTTCAAGGTGTTGTGTT A- T CAG - C AATTGAG
CAGGGCCCTTCCAGGTAATT GTTGTTC AGGTGTTG GTT GGCC CTTC AGGT
GAGGCTTTGGGGCGGCCACA CAACAAG TCTACAGC CAG CCGG GGGG TTCG
GACTCGACATCTAGGAACAA GA T ACA C T -------
C
GAM5275 20037 AGATGTGTTAGGAATGTCAA A CAA-- AG AAGGAGAAAAAAGGCA
CAGAGCAAGGAGAAAAAAGG AG TGTGTTAGGAATGT CAG C
CAGTCCTGGAATCACATTCT TC ACACGATTCTTACA GTC G
TAGCACACCT C CTAAG CT ----------
GAM5276 2646 AAGCCTGACAAGTTGATGCC AC TTG- --- -- T A- CCTCC
ACTGCTGTCTGAGGGCTCCT AAGCCTG AAG ATGC CACT GCTG CTG GGGCT
CCGGCTCAACAGTCAGCTCA TTCGGGC TTC TGTG GTGA CGAC GAC CTCGG
GTGCTTGTGTAATTCTTCCG C- TTAA TTC CT T AA -----
GGCTT
GAM5277 19191 CGCTCACATTCCAGGCCCTT TCA A- C G GCA - - CGGG
GTCCTGCAGGCTGCCGCGGG CGC CATTCC GGCC TT TCCT GGC TG CCG
CGGACACGCCAGAGGAGGAG GCG GTAAGG CCGG AG AGGA CCG AC GGC
GCCGGGGAATGGCCGCG CCG GG - G GA- C A ----
GAM5279 8810 GGACATGTAGAGTGCTTTTG - AG TG CTA T CTA- GACTAA

TAGTGAGCTAACCTTGATCT GGACA TGT AGTGCTTT TAGTGAG ACCT GATCT AG
CTAAGGACTAACTACCCAGG TTTGT ACA TCATGGGG ATCACTT TGGA CTGGA TC
TCCAGGTCTTCACTAGGGGT G G- -- C-- C CCCA ------
ACTGACAGTGTTT
GAM5281 19959 GCCCCGGAGACAGAAGCATG AGACAGAAG- A CAAAAGAACCAAGTGAAT

AACGTGTCAAAAGAACCAAG GCCCCGG CATG ACGTGT
TGAATGCGCGTGCGTGGAAG CGGGGCC GTGC TGCGCG
AATACACCGGGGC ACATAAGAAG G ----------
GAM5283 12485 GATTGGCTGCGTTGTTGTAG GG GTT TAG ACAT GTGG
GCCAACATGATGGTGGCATC GATT CTGC GTTG GCCA GATG
TGGCAATCAACTTAGTAGAA CTGA GATG CAAC CGGT CTAC
GTC A- ATT TAA ---- ----
GAM5284 10004 CAGGTTTGTTACACGTGTAT ACACG C-- CA GGTGTG
ACATGTGCCATGTTGGTGTG CAGGTTTGTT TGTATA ATGTGC TGTT
GACAGAGCACATTTTTGTAT GTCCAAACAA ATATGT TACACG ACAG
AAACAAACCTG ----- TTT AG ------
GAM5286 9928 GTCTGTGACCAAACAGCCCA G AA AGC- GA GT -- A-- AGCCT
GAACGTCCGGCCAAGCAGCC GTCTGT ACC AC CCA AC CC GGCCA GC
TGCATATGGCCTTGGGAGTC CAGACG TGG TG GGT TG GG CCGGT CG
ATGGCACAGTACGGTGGCAG G CA ACAC AC AG TT ATA -----
AC
GAM5287 22637 GGATGTAGGCATCTTGGTGG A A T TG-------- GGCA
TGCTTGGCAAAGTACAGCAT GGATGT GGC TCT GG GTGCTT
GTTGTCCAGAGCCAACATCC CCTACA CCG AGA CC CATGAA
A - - TGTTGTACGA ----
GAM5288 5476 TCAAGGTGTGCTCTGCGCAA -- TCT- AGACACTCTCT CTT
AGACACTCTCTGCTCTAGCT TCAAGGTGT GC GCGCAA GCTCTAG
TCTGGAGCTCACGTTCATGT AGTTCTACG TG CGTGTT CGAGGTC
TGTGCCTCTGTTTGCATCTT TT TCTC GTACTTGCACT ---
GA
GAM5289 11305 ACTGGAGTAAAAGGACTAAC GA -- GCA--- AACAATGCAGGG
TGCAGTCAGCAACAATGCAG ACTGGAGTAAAAG CT AACT GTCAGC
GGGTTGACAATTTTGGTTTA TGGCTTCGTTTTC GG TTGG CAGTTG
GGGGCTTTTGCTTCGGT GG AT TTTTAA ----------
GAM5290 21803 AGCCAAAGCTTGTTTCCTTT AAAGC -- TTT C TC AGTT
TTCTTCCCATCCTGAGTTCA AGCC TTGTT TCCTT CTTC CA CTG
GTGTGAAGTATAGGGAAGAA TCGG AACAA AGGGA GAAG GT GAC
CAACACCAGGCT ACCAC GA TAT T -- ----
GAM5291 7983 GCAGAAGAACATAGACAAAT - AACATAGACAA - - GGACA
ATGTCGCTCTTGGGACACAA GCAG AAG ATATGTC GC TCTTG
GGTGCTGACATGTATACTTG CGTC TTC TGTACAG CG GGAAC
CTGC G ATA-------- T T -----
GAM5293 14710 CCGCTCACCTATAGCCAATA - CTAT AATATA T ATCCA
TAAGCAGTCACCATCCAGGT CCGCT CAC AGCC AGCAG CACC
GCTGCTGGACAGGCTCGTGT GGCGA GTG TCGG TCGTC GTGG
AGCGG T C--- ACAGG- - -----
GAM5295 10799 TCCTAGTGGTGCGGGCACAC AGT G- ACA CACGCCACACACCACCTA
ACACCCTGCACGCCACACAC TCCT GGTGCGG CAC CACCCTG
CACCTACAGGGTGGCCGTGA AGGA CCACGCC GTG GTGGGAC

GCCGCACCCAGGA C-- GA CCG ----------
GAM5296 11535 TGGGTCATCTTGCTTCTCAA TCT T AA A C- TGG A ATCG
ATTACCTGTTGCCACTTGGA TGGGTCA TGCTTC CA TT CCTGTTG CACT AAT TAT
ATATATATCGATACATTATG ACCTAGT GTGAGG GT AA GGGCAGC GTGG TTA ATA
GTGCCCGACGGGAACATGGG TT- - AC - CC TA- C ----
AGTGTTTGATCCA
GAM5297 4799 GTCCTTGAACTTGGAACCTG GA- TGGAAC GACAAT G GTTTGGAA
ACAATGTTGGTGTTGTCGTG GTCCTT ACT CT GTTGGT TTGTCGT
TTTGGAAATGATAAACTAAT CAGGAG TGA GA TAATCA AATAGTA
TAAGGAAGAGATATAGTGAA AAG TATAGA AGGAAT - --------
GAGGAC
GAM5298 4312 GTCAGTGTTCCAGGTGTATC TGTT-- G CTTA --- GAGAATGCCCTAACTTAGA
TTAGCTAAAACTAGAGAATG GTCAG CCAG TGTAT GCT AAAACTA
CCCTAACTTAGATGGTTTTT CAGTT GGTT ACATA CGA TTTTGGT
GAAGCCTATACAATTGGTAT TGTTAT A TC-- AGT ----------
TGTTTGAC
GAM5299 15829 CCAGCATCATCGCAGAGATC A C-- AGAT AG ACCAGAAGTGCAA
CTGAGTGTCTACCAGAAGTG CCAGC TCAT GCAG CCTG TGTCT
CAAGGACAAGCAGGCTGCTG GGTCG AGTG CGTC GGAC ACAGG
CTAAGTGAGCTGG - AAT GTC- GA ----------
GAM5300 19732 GCTGGGAGCCTTGAGAGCCA AGCC C - CA A ATC
TGTGCAAGAGGACAGATCCT GCTGGG TTGAGAGC ATG TG AG GGACAG
GTTCCTGTCACCATTGCTCT CGACTC AGCTCTCG TAC AC TC CTTGTC
CGATTCACTCAGC ACTT T C TG - ---
GAM5301 7157 GGCAGGCCCCCACCACCCCA AG AC CA GAC AGAA ATCT
TGCTGACTTGGAGAACCCCA GGC GCCCCC CACCC TGCT TTGG CCCCAG
GATCTCTGGGGCCCAGCCAA TCG CGGGGG GTGGG ACGA GACC GGGGTC
GCAAGGGTGTGGGGGGCAGC A- GT A- ACC C--- ----
T
GAM5302 15615 AGACCCAGTGCCTGTGACTT C ------- TGAGTA - AATG
TGAGTAGTTTGTTCTAAATG AGACCCAGTG CT GTGACTT GTTTGTT CTA
TGGTGACAAACAAGTCATTT TCTGGGTTAC GA TACTGAA CAAACAG GGT
CTGTAAGACATTGGGTCT A ATGTCTT ------ T ----
GAM5303 2245 CCTCTGGCCCTTCCTGGGCA T CC T - A-- C - C CTGGGT
TCGTGGCTGAGGTGCTGGTG CCTC GGC TTCC GG GC TCGTGG TGA GGTG TGGTG
CTGGGTCACCATCATCTTCA GGAG CCG AAGG CC CG AGCATC ACT CTAC ACCAC
TCTACGAGAAGCGCCGGAAG C -- - G AAG T T T ------
CCCGAGG
GAM5305 12278 TTATAGTACACCACTACAGA ACACCACTAC C AA TT CTTATCTAATTAAAACATT

CACATAAAAAGTTGACTTAT TTATAGT AGA ACATA AAG GA
CTAATTAAAACATTTTCCCT AATATCA TCT TGTAT TTC TT
TCCTATGTTTCTAATTCTGA AAAGTCTTAA T CC CC ----------
AAACTATAA
GAM5306 7205 GGTGGCGTAGACGAGTTAAG GT G- T A - - GTCGACGA
TCCTGGTCTGCGTGGAGGTC GGTGGC AGAC AG TA GTCC TGGTCTGCG TGGAG
GACGACTCCGTCGCAGACTA CCGCCG TCTG TC GT CAGG ATCAGACGC GCCTC
CGGACCTGTCTGGGTCTCAG AC GG T C C T --------
CCGCC
GAM5307 9606 GTGTTGGGCTGTGACTGGCC TG GAC CT CA T CTCCCTCT

TGCCAGGTGTTTGCCTCCCT G TTGGGCTGT TGGC GC GGTGTT GC
CTGCAACACCAGCCTGTTAC C GATCCGACA ATTG CG CCACAA CG
TAACAGCCTAGTGC GT ATC TC A- - --------
GAM5308 20958 TGTCATCCATCTTCCCTGGA C TCTT- - ------ ACCG
AGTCTCCCACCGGGGAGTGA TGT ATCCA CCCTGG AAGT CTCCC
GGTGCTTGTCAGGGTTCACT ACA TGGGT GGGACT TTCG GAGGG
GGGTAACA A CACTT G TGGAGT ----
GAM5309 17707 AGCTTCCTGCAGGCCCAGCT TG A C-- GTG AC G A CCAG
GTGCCAGGACGTGCTGAGCA AGCTTCC C GG CCAGCT CCAGG GT CTG GCAGCTT
GCTTCCAGGAGCTGTGTGGG TCGGGGG G CC GGTCGG GGTCC CG GGT TGTCGAG
GCCCTGGGGCTGGAACCCGG GT G CAA --- -- G G ----
TGGGGGGCT
GAM5310 16740 GCCTGGCCTCCTGCATGCCC T CC GCATG CTG- C---- GCCTGCTA
AACAAGCCTGCTCCCGTGGG GCC GG TCCT CCCAACAAGC CTCC GTGGG
GCCTGCTATCCACCTGTTGG TGG CC AGGA GGGTTGTTCG GGGG CACCT
GGACCTGCTTGTTGGGAGGA C -- ----- TCCA TTGTC --------
CCCGGT
GAM5311 7390 AGTGAACCAGAATGCAGTTT A AGAA TT CC T GTTTTAAA
TCCTTGAGATACCTGTTTTA AGTG ACC TGCAG TT TTGAGA ACCT
AAAGGTTTTTCAGACAATTT TTAC TGG ACGTT AA GACTTT TGGA
TGCAGAAAGGTGCATT G AAAG TT CA T --------
GAM5312 10493 GCTTGAAGTCAGCGTCTTCC T GT GTC TC GAAAG TTCTTCCTT
ATTCCAGAAAGACCCCCATT GCT GAA CAGC TTCCAT CA ACCCCCA
CTTCCTTTGGGGGTATGATG CGA CTT GTCG AAGGTG GT TGGGGGT
TGGAAGCTGGTTTCAGC - TG --- TA A---- ---------
GAM5313 14038 GGAAATTACACTGAGGCGGT AATTA A GGT G AGAACG
GAGACGATGGGAGAACGTCC GGA CACTG GGC GAGAC ATGGG
GTGTCTCTAGCCCGGTGGGT CCT GTGGC CCG CTCTG TGCCT
CC GG--- - AT- - ------
GAM5314 10098 AGATCGATGGAATTTCTGGG A AATT - A C-- TCTA
GTATAGCACATTCTAATGTC AGATCG TGG TCTGGG GT TAG ACAT
ACCTGAGCTTCCAGGTCCTC TCTAGT ACT GGACCT CG GTC TGTA
AATGATCT A CCT- T A CAC ----
GAM5315 3660 GGGGCACGTGGCAGGAAGGG ACG C- AA--- A AA AA CA ATTC
GAGGCAAGGCCAAGGCAGGG GGGGC TGG AGG GGGG GGC GGCC GG GGGG
GATTCCCCCACCGGCCGCCC CCCCG ACC TCC CCCC CCG CCGG CC CCCC
CCCAAACCCCTACCCAAGGC GA- CA CCAAA - -- -- A- ----
CCC
GAM5316 12139 GAGTTTTATTGGGTTTGTTG T-- - TTGAA-- AC AGAA
AAGTATGACTTGAGAATAAT GAGTTTTA TG GGTTTG GTATG TTG
GCATACCTGGGTTCAAACCA CTCGAAGT AC CCAAAC CATAC AAT
CATGCTGAAGCTC CGT A TTGGGTC GT ----
GAM5317 15219 GCCACTCTTCCAAGCCTCTT C CA C-- TT- GCA CCTA
GGTGCACAGTAACCTATTGC GCCACT TTC AGC TC GGT CAGTAA
TGAAAGCTTTTGAACAGCTG CGGTGA AAG TCG AG TCG GTCGTT
AGAAAGTGGC - AG ACA TTT AAA ----
GAM5318 20124 TCTGCAAGTGTGAAAGGAAG AA- GAAA CACTA AAA-- ACCT
GCACTAAGGAAAGACCACCT TCTGC GTGT GGAAGG AGG GACC
GGTCCTGGGCCTGCCTCTTC AGATG CACG CCTTCT TCC CTGG
CCCTAGCACCCAGTAGA ACC ATCC CCG-- GGGTC ----

GAM5319 11731 AGCAGTCAATAGCATCCTTC CAA T ACAA CATGAGTA
TCTACAACAGGAGGTCATGA AGCAGT TAGCATCCTTC CT CAGGAGGT
GTAGCTTTCTGCCAGAGGGA TCGTCG ATTGTGGGAGG GA GTCTTTCG
GGGTGTTACGAGCTGCT AGC - GACC --------
GAM5320 5834 GGTGCCAGGAGAAGCAGCAT GC AA - TGA GT CTTG
CTGCTGAAAGTCAGCTTGCT GGT CAGGAG GCAGC ATCTGC AA CAG
GGTTTGCAGATGGCTGTCTT TCG GTCCTT TGTCG TAGACG TT GTC
CCTGTTGCT TT C- G --- TG ----
GAM5321 5068 TCTGGTATAATGATCTATGA ATAA----- C ---- AC- - ---- GTACCA
TGCCAACATTACTCAAAGCA TCTGGT TGAT TATGA TGCCA ATTAC TCAAAG CAG
GGTACCACTGTTTACTTTGG GGACCA ACTA ATATT ACGGT TGATG GGTTTC GTC
TGTAGTCAATGGCAGACCTT ACAACATAA A CCAG AAC T ATTT ------
ATAAATCAAATACAACAACC
AGG
GAM5322 1962 AGCAGCAAGGCCCTGGTTTC GC- C G TT G- ATCCT A TGGGA
TAAGCTGTATCCTTTTATTC AGCA AAGGC CT GT CTAA CTGT TTT TTCATG
ATGTGGGACATGAGCAAATG TCGT TTTCG GA CG GATT GACG AAA GAGTAC
GCAGAATTAGGGGCGAGTGC AAC T G GG AA GT--- C -----
TTTCAATGCT
GAM5323 16923 GAAGACTCTCTGCCTCCGCC C C G AAA- TAAATGC
AAAATTTAATTAAATGCATT GAAGACTCT TG CTCC CCA TTTAAT
GAGAATCTGGAGGAGCTACA CTTCTGAGA AT GAGG GGT GAGTTA
GAGTCTTC C C A CTAA -------
GAM5325 17698 GGTGCTGGGGGCTCTGCTGG TGG T --- C GG ACCA
GCCTGGCCTCAACCATGGGG GGTGC GGGC CT GCTGGG CT CCTCA
AGCCCCAGCTCCAGTGCCTA CCACG TCCG GA CGACCC GA GGGGT
CTGCACC TCA T CCT C -- ----
GAM5326 6075 TGGAGGGGCCGGACTCGTCA GG C A GT TAC -- A A- TGCTG
TACTCCTGCTTGCTGATCCA TGGA GGC GG CTC CA TCCTG CTTGCTG TCCAC TC
CATCTGCTGGAAGGTGGACA ACCT CCG CC GAG GT AGGAC GAGCGAC AGGTG AG
GCGAGGCCAGGATGGAGCCG AG - - -- --- CG - GA -----
CCGATCCA
GAM5327 18074 TTCTCAGATGGGCGGGTGTC TG- -- TCT TGC AA G AAGGA
TGTCTCTGCTCGAATTGACA TTCTCAGA GGC GGGTG GTCTC TCG TT ACAGAA
GAAAAGGATTCTGTGAAGGT AAGAGTTT TCG CCTAC TAGAG AGT AA TGTCTT
GATGAGATTTCCATCCATGC CAG TA CTT T-- GG G -----
TGACTTTGAGAA
GAM5328 15449 CTTTCCCTCTCCTTTATAAA CT TTTA--- T C-- TTTTAAC
TTGCATATATTTTTAACATA CTTTCC CTCC TAAA TG ATATAT
TATTAACACTTTAAAACCGT GAAAGG GGGG ATTT AC TATATA
GGGGTGGAAAG T- TGCCAAA C AAT -------
GAM5330 15554 CAGAACTGTGGAGAATGAAC G TG A-- AAC C AAAGAAAATGAGGAGAA
TGAACACAAAGTGAAAGAAA CA AACTG GAGA TG TGAA ACAAAGTG
ATGAGGAGAACACTTTGTAT GT TTGAC TTCT AC ATTT TGTTTCAC
TTACCCCAAAATCTTTTCAG G TT AAA CCC A ----------
TTGTG
GAM5331 15811 GCTTTGGGCGGGACAAGGTA GG A-------- AA TTT G GCCGTCG
ACCTTTTCCTTTGAGGCAGG GCTTTG CGGG CAAGGT CCTTTTCC GA GCAG
CCGTCGCTGCGTCTCTGGAG CGGAAC GCCC GTTTCA GGGAGAGG CT CGTC
AGGGCAACTTTGAGTTCGAA G- AAAGCTTGA AC TCT G -------

ACCCGGCAAGGC
GAM5332 12406 GGATCATTTACTGGATCCCT - TTA GATCC TCT- A G T G TCCCA
TCTTCTTTCACTGGGTCCGT GGAT CAT CTG CTTCT TTC CTG G CC TGC
GCTCCCAGCAGGTGCAGAGA CCTA GTG GAC GAAGA AAG GAC T GG ACG
ATCTTAGAAGACGCAGGTGT T --- GCA-- TTCT A G - - -----
ATCC
GAM5333 12246 CAGAAGACTGCTGGTTTTGA ACT- - TT G AAT AACGAGCA
GATAATGCCAAACGAGCATG CAGAAG GC TGG TT AGAT GCCA
GCCTCGTCTGATCCTACGTT GTCTTC TG ATC AG TCTG CGGT
CTACTTCTG ATCT C CT - CTC --------
GAM5334 13108 GTACCAGGAAGACTTCATGA AGGA-- TGAAA AG - AAAGTGGTGA
AAGCAGTCAGAAAAAGTGGT GTACC AGACTTCA GC TC AGAA
GATTCTAGAAGGCTGGAGTC CATGG TCTGAGGT CG AG TCTT
TAAATTGGGTAC GTTAAA ----- GA A ----------
GAM5335 11126 GGAAGGACTTTCTGTTATTG A CT ---- TTGC AG AATAAAGA
CAAAGTTGGTAAATAAAGAT GGA GGA TTC TGTTA AA TTGGTA
GCCAAGGTTACTAACATCAC CCT CCT AAG ACAAT TT AACCGT
GAATTTCCTCC - TT CACT CA-- GG --------
GAM5336 21264 GGGGGTCCGGGCGGGGTGTA C G T TG- TG CGCG
AACTGGTGCCGCGGTGTGTT GGGGGTC GG CGGGG GTAAAC G C
GTTTGCCCCCCGGCTGATCT CCTCTAG TC GCCCC CGTTTG T G
CC - G C TTG GT ----
GAM5337 20341 GGTGTAAATGTTGAGCCTTT GTA-- ----- TTTTT G- TTGTTT
TTGGCCTGGCTTGTTTGCAA GGT AATGTTGA GCC GGCCT GC
AGGCCCTGGCAAACGTCAAC CCG TTACAACT CGG CCGGA CG
ATTGGGAAGCC AAGGG GCAAA TC--- AA ------
GAM5338 16104 GCGCGCTCGCGTCCCCTCGT CT - TC G CTCC C CTTA
GCGGGCTCCAGCCGCAGCCT GCGCG CGCGTC CCC GT CGGG AGCCG AGC
TAGCTTCGGCTCCCGGCTTG CGTGC GCGCGG GGG CG GCCC TCGGC TCG
GGTGGCGCGGCCGTGC CG T TT - ---- T ----
GAM5339 15652 GGTACATCTGCATAAACAAT CATCT T- AT--- TCT- ATTAACC
ATGGCACATCTACTTATTAA GGTA GCA AAACAAT GGCACA ACTT
CCAAGTTTCCTGTGCTTTCA CCAT CGT TTTGTTA TCGTGT TGAA
CATTGTTTTTTGCTACC ----- TT CACTT CCTT -------
GAM5341 5205 ATGTACATGCTCAGGGTTGT T A TT CC- - GA T T TTTGA
CCCCCAGTAGAAGTGATGGG ATG AC TGCTCAGGG GTC CCAG TA AGTGA GGGC GC
CTGCTTTGAGCCGTTCTTAC TAC TG GTGGGTCCC TAG GGTC GT TCATT CTTG CG
TGATGTCTGGTCTGATCCCT - - -- TCT T AG - C -----
GGGTGGTCAT
GAM5343 18285 GCTGGAGTACAGGAGTTCTG TA TTCT C CACAA
GGCTGTAGTGCGCTATGGCA GCTGGAG CAGGAG GGGCTGTAGTG GCTATGG
CAATCATAGCTCACTGCAGC CGACCTC GTCCTC TCCGACGTCAC CGATACT
CTCTACCTCCTGGGCTCCAG GG CATC T -----
C
GAM5344 10317 CTGTAGCTGGTTCTGTAAAG C TCTGTAA T GAGA TCCA
GTTGGTGGAGAGGCAGGTCC CTGTAG TGGT AGG TGGTG GGCAGG
ATCTGTCACACTACCCTGCC GACATC ACCG TCC ATCAC CTGTCT
ACTACAG - ------- C A--- ----
GAM5347 10604 ATCAGAAATTTTGGAAATCA AAA CAA A A GGAAGAACAAGTGAA
AAGGACAGAACTGGGAAGAA ATCAG TTTTGGAAAT AGG CAGA CTG

CAAGTGAATAGTCTGCCTGA TGGTC AAGACTTTTG TCC GTCT GAT
AGTTTTCAGAAAAGCTGGT GAA AAG - - ----------
GAM5348 5479 ACTCCAAGGATCTGGGGGTT T A- A GG AAGAA AAT TC AAATA
ACCAAGAATGGTGTTAAATG AC CCA GG TCT GGGTTACC TGGTGTTA GG AGGTA
GTCAGGTAAAATATACTTTC TG GGT TC GGA TTCGATGG ACCGCAGT TC TTCAT
TTGACGCCAAGGTAGCTTAA - GG - AA A---- --- T- -----
AGGCTGGTGGGT
GAM5349 14592 AGATAGATCTTAAAGGGCAA T TAAAG AA AG TAGTTG
AGCAGTATATTGGTAGTTGT AGATAGA CT GGCA GC TATATTGG
CAATATAGCAGTGCTAGCTC TCTGTCT GA TCGT CG ATATAACT
TGTCT C ----- GA -- ------
GAM5350 11698 GTAAAGCCGTCGGACATCCT A TC A C AG A TTCC
TGGAGAGAGGATAGATTCCT GT AAGCCG GG CAT CTTGG AGAGGAT GA
TAATTCTTTTGCCAAGTATG CG TTCGGC CC GTA GAACC TTTCTTA TT
CCTCGGCTTGGC G T- - T GT A ----
GAM5351 3576 GGGTGGAAGGAAATCTGAGG TG AATCT AGT AA TC- GCTT C CTTCTA
ACAGTTCTAAGGAGTCTTGT GGG GAAGGA GAGGAC TCT GGAG TTGTCT TCAGTG GAT

CTGCTTTCAGTGCGATCTTC CTC CTTCTT TTTCTG AGA TCTC AACAGA AGTCAT CTG
TAGTCATACTGAAGACAATA CT CCCC- GTT CC CAT ---- A ------
CCTCTCCAGATTGGTCTTTC
CCCTTCTTCTCCTC
GAM5352 18332 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAGGAAGAAGAA
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG TAAGAA
AAGAATTCTTACACCACTCC AGAACACGA GAAG TCACCAC ATTCTT
CAAGAAGAATAAGCACAAGA ATAA AACCC - ------------
GAM5353 1812 AGTGGACAATGTCATGTTTG CAAT CA ---- A ATA ACACAAATAA
GAGAAAGATAACAACACAAA AGTGGA GT TGTTT GG GAAAG ACA
TAATGTAACCTTTCCTTAAA TTACCT CA ACGGA TC CTTTC TGT
AGGCAGAACTCAATCCATT AACT AG AAAT - CAA ----------
GAM5356 6499 GGCCGGCGAGCAGTTCGGAC G AGC TT G-- - GGAGCTG
AGCTGGGCCGGGAGCTGCGC GGCCG CG AG CGGACA CTGGGC CG
GCCCAGGAGTGTCTGCCCTA CCGGC GC TC GTCTGT GACCCG GC
CGCGGCC - A-- CC GAG C -------
GAM5358 1710 ACCAACTGCTTAGCACCCCT C AC TA CCC CCA GACAAC A ---- AA-
GGCCAAGGTCATCCATGACA A CA TGCT GCA CTGG AGGTCATCCAT TTTGGT TC GTGG
GGA
ACTTTGGTATCGTGGAAGGA T GT GCGG TGT GGCC TCCGGTAGGTG AGACCA AG TACC
CCT
CTCATGACCACAGTCCATGC A -- -- CAA C-- TCAGA- C TCAC GTA
CATCACTGACACCAGAAGAC CATGACCAC
TGTGGATGGCCTCCCGGAAC CT
TGTGGCGTGAT GA

GAM5359 22205 GCCTCACAGAAGACTTCGTG A AAGA G AC---------- TG AGACCGAG
TCCCACCTGGAGACCGAGCT GCCTC CAG CTTCGT TCCC C G
GGAGCAGTCGAGGCTGCGGG CGGGG GTC GAGGCA AGGG G C
AGACGGAGACACTGGGGGC - ACA- G CGTCGGAGCTGACGA GT --------
GAM5360 21689 GACGGTCACACGGAAGCTCA G ACACG A - ACACG A ACA CTCACA
CACGGACAGTCACACGCTCA GAC GTC GA GC TC GAC GTC CG

CACGGACGGTCACAGGGATG CTG CAG CT CG AG CTG CAG GC
CTCACACGGACGGTC G GCACA - T GGACA G --- ------
GAM5361 6945 TGGGAATACACCCTGCTTTT ACA T AAA A- AGGAAGAAAGTGAC
AAAGGCTCCCAGAGCCTGAG TGGGAAT CCCTGCT TT GGCTCCC GAGCCTG
GAAGAAAGTGACCAGGCTTA GCCTTTA GGGACGG GA CCGAGGG TTCGGAC
GGGGAGCCGGAGCGGCAGGG --- C GG- GA ----------
ATTTCCG
GAM5362 16907 GGCGACGTGCCCTGTCCAGG A T C C- CTCACTTC G CAAAA
CCTCACTTCCCGCGTCGCAA GGCG CG GC CTGTC AGGC CCGC TCG
AACGGGGTGGACAACGCAGC CCGC GC CG GACGG TCCG GGTG GGC
CTAAGGCAGAGCCGCGCC - - A AA ACGCAACA G -----
GAM5363 10654 GGCTTGTGGACCAGTAACTG CCAGTAACT A AAAA ACCGAATA
TCAATGGCTAAAACCACCGA GGCTTGTGGA GTCA TGGCT CC
ATAGGAGCCAATGACTCCAC CTGAACACCT CAGT ACCGA GG
AAGTC --------- A ---- --------
GAM5364 18059 ATGGTGACAACATGCTGGAG AA-- G GGA T TAACAT
CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GCCAAG GC
GTCAAGGGATGGAAAGTCAC TGCCACTG GTA GG TGGTTC CG
CGT AAAG G AAC - ------
GAM5365 12725 ACCTTATCTCTGTGCTTCGT T- G TGAA C- AATCCCA
GAAGCTAATCAAGCAATTAA ACCT ATCTCTGT CTTCG GCTAAT AAGCAATT
TCCCAAGTTGCTTCAGTTGG TGGA TGGAGACA GAAGC TGGTTG TTCGTTGA
TCGAAGACAGAGGTTCAGGT CT - ---- AC -------
GAM5367 11386 GCGGGCTGCCATCTAGTTGG - C AGTT GC A- TG CCACAATTTC
ACGCGGATTCTCTGGCCCAC GCG GG TGCCATCT GGAC GG TTCTC GC
AATTTCGCTGGGGAAGACCA CGT CT ACGGTAGG CCTG CC AAGGG CG
AGTCCTCAAGGATGGCATCG G - AACT AA AG GT ----------
TGC
GAM5368 3125 GTAAGCTATGTGAGTTTTAC CT -- TTACAA TTA TGTCATATTTCCT
AATGCTTTTAAACTGTCATA GTAAG ATGTG AGTT TGCTT AAC
TTTCCTGTTGAGCACTTTAA TATTC TACAC TCAA ACGAG TTG
CTGGCACATTCTTAT T- GG TTTC-- --- ----------
GAM5369 15140 GGTGGAAAAGCATGTACAGG T AAA GTA - TCCAGTT TACTAG
TCATCTCAGTGCTCCAGTTG GG GGA GCAT CAGGTCA TCTCAGTGC GGG
GGTACTAGTCCTTCCTTGTA CT CCT CGTG GTCCGGT AGGGTCATG CCT
CTGGGAGTGGCCTGCAGTGC - AC- AC- G TTCCTT- ------
CATCCTC
GAM5372 13668 GTTCCTACTTGCAAAAGAAA C---- A GAC ---- GATCA
AGTGACGTGGAGGATCACTC GTTCCTA TTGCA AAGAAAAGT GTG GAG
GGTGCACCTGCTTTTTTTCT CAAGGGT AACGT TTTTTTTCG CAC CTC
GCAAATCGCTGGGAAC CGCTA C TC- GTGG -----
GAM5373 19795 GCGGCCGGGGCGGGAGAGAC G AGAGA A AA AC ATACCTCAGACCCGAC

TCAGCAACGACCCATACCTC GCG CCGGGGCGGG CTC GC CG CC
AGACCCGACGGCCCGGAGCG CGC GGTCCCGTCC GAG CG GC GG
GAGCGCGCCCTGCCCTGGCG - CGCGC G AG CC ----------
C
GAM5375 10424 CCTTAAAATATGGGTATGCA T TG CAA TACA AGTAA
ATTGTTACAAAGCCATAGTA CC TAAAATA GGTATG TTGT AAGCCAT
AATGGTTTATAAAATGTACT GG ATTTTAT TCATGT AATA TTTGGTA

TTTATTTTATGG T TT AA- ---- -----
GAM5376 17798 GGATCATGAACACGTATAGT CA ACAC ATA A T C C AA TCAGA
AGTGGTGCCTTCGCCCAAAG GGAT TGA GT GT GTGG GC TTCGCC A GTG
TGTCAGACACAGTGGTGGAG CCTG ACT CA CA CATC CG AGGTGG T CAC
CCCTACAACGCCACCCTCTC -- CTCC CCG A C - - GA -----
AGTCC
GAM5377 4271 CGGCTGGGAGCTTGAACTTG GC G ACTT TT- TCCACTATACCGAT
CCTGGGTTGGCTTCCACTAT CG TGGGA CTTGA GCCTGGG GGCT
ACCGATGGTCTCTTCCAGGT GC ACCCT GAGCT TGGACCT CTGG
CCTCGAGGTCCCACTCG TC G CC-- TCT ----------
GAM5378 14233 AGAGCTTCCTCATCAGGTTA TCCT - - CA A- TCCCA
CCCAGAAGTGGGTCCCATCC AGAGCT CATC AGGT TACC GA GTGGG
ACCATCCAGGTGTGCTTGGA TCTTGA GTAG TTCG GTGG CT CACCT
TGTTAGTTCT TT-- G T AC AC -----
GAM5379 12583 GCCTCGGCACGTGCACTCAT TC-- T CTCAT T- T- TGGCCT
GGCCTTGGAATTGTTGGCCT GCC GGCACG GCA GGCCT GGAA TGT
GCATCTTCTTTAGGCCCTTT CGG TCGTGT TGT CCGGA TCTT ACG
TTGTTGTGCTTCTTGGC TTCT - TTTTC TT CT ------
GAM5380 4484 TCGGCTCCAAGTCTGACCCA T A T A AC TG TTTAC
CTCTGCATCCTTTTACAGGA TCGGC CCA G CTG CCC TC CATCCT
TGTGGGAGGGGGCAGCTGGG AGTCG GGT C GAC GGG GG GTAGGA
CTGA - - - G GA GT -----
GAM5381 19715 CTCAGGGAACTTTGGAAAAT AC G ATA CAG----- - - AAATC
AAAATTTGGCAGCCTATCTA CTCAGGGA TTTG AAA AAATTTGG CCT ATCTA AAATT
AAATTAAATCAATTTGTGGG GAGTCCCT AAAT TTT TTTAGGCC GGA TGGGT TTTAA
TGAGGAACAAAAACCGGATT CT G C-- AAAAACAA G G -----
TCTTTGTAAATCTCCCTGAG
GAM5382 6389 TTCAGCAAGGTTCTGGCGCA A - T --- -- --- ACCCCCT
GGTGCAGCACCCCCTGCTGC TTC GCA AGGT CTG GCGC AGGT GCAGC
ATTACCTCAGCGTTCACAGG AAG CGT TCCG GAC TGCG TCCA CGTCG
CCTGTGCAGAA A G - ACT AC TTA -------
GAM5383 7991 CCACGCCTGGCTAATTTTTG C TT------- AAT
TATTTTTAATAAAGATGCAG CCA GCCTGGCTAAT TTGTATTTTT
TGTCACCATATTGGCCAGGC GGT CGGACCGGTTA GACGTAGAAA
TGG - TACCACTGT ---
GAM5384 3075 GAGACCTTGTATCAATCAGC CCT CAGCTG CT T CAATGAT
TGACTGTTCTGATGCCAATG GAGA TGTATCAAT ACTGTT GA GC
ATGCCTTGATAGTGTTGATA CTCT ACATAGTTG TGATAG TT CG
CATCTTCTC TCT ------ -- C -------
GAM5387 21086 GAGCGGACATTTAGGAACTG GC A - G C A A CTT GTTA
GATGAACTCCTTGGGTGTTA GA GG CATT TA GAA TGG TGA CTC GGGT
ACCCTCGAGTCAATCATTTG CT TC GTGA AT TTT ACT ACT GAG CCCA
TACAGTGACTTATC AT A C G - A - CT- ----
GAM5388 11704 GCAAAATTCAAACTTATAGT AA TTAT GG A ACAGG TT GCTG
GGTAAAGAAACAGGTTGTTC GCAA TTCAAAC AGT TAA GAA TTG CACTT
ACTTGCTGAGGTGCAAAAAT CGTT AAGTTTG TCA ATT CTT AAC GTGGA
TCTTAAGACTTCTGTTTGAA A- TCT- GA - AAA-- -- ----
ATTGC
GAM5389 11887 GGTGTTAAGTGCTCCAAGGA TTA T --- A - A CATCC
GGTGGCCACCGCCATCCGTG GGTG AG GCT CCA GGA GGTGGCC CCGC

GGGCCATCATCCTGGCCAAG CTAC TC CGA GGT CCT CTACCGG GGTG
CTCTCCATC C-- T ACC - A - -----
GAM5390 20269 CCTCCTGCGCAGCCTTAAGG GC- AA -- ----- -- -- CAGGGCA
TTCTCCTTCTTCCCGCCCCA CCTCCTGC AGCCTT GGTTCT CCTTCTTC CC GCCC CAGGCCTT

GGCCTTCAGGGCAAAGGCCT GGGGGACG TCGGAA CCGGGA GGAAGAGG GG CGGG
GTCCGGAA

GCAGGGCTCGGCCGTAGGAG ACT C- CT ATGCC CT AC -------
AAGGTCAGGGCCCAAGGCTT
CAGCAGGGGG

GAM5391 4198 CCCCGTCGTAAACGCTGAGG GTCG G A GA GGCC GCCTGAT
AATGATGTGGCCAAGAATGC CCCC TAAAC CTG GGAAT TGT AAGAAT
CTGATGTTCTTTAAACAAAT GGGG ATTTG GGT CCTTA ACA TTCTTG
TCCATGGAGTTTAAGGGG A--- A A A- AAT- -------
GAM5392 17068 AACTGAGGCGCAGACAGGTT G C AGA - AC ATAGAA
CGGTTACCTGCAATAGAATG AACT AGG GC CAGGTTCGG TT CTGCA
CAGCCAACCCGAATTTGAGC TTGA TCC CG GTTTAAGCC AA GACGT
CCCTGAGTT G C A-- C CC ------
GAM5393 15536 GCCAGTGGCGCCCAGCCGGA - CCA GAATG TG -- - CCCCA
ATGGCATGGTCTGTGAAGCC GCCA GTGGCGC GCCG GCA GTCT GTG AAG
CCACTTCCACAAGGACTGCA TGGT CACCGTG CGGC CGT CAGG CAC TTC
GCGGCGCGTGCCACGTGGT G CG- GA--- -- AA C -----
GAM5394 19484 CAGCCAAAGAGTCTACTTCA AAA--- - TAC G G GA A G GGTTTG
GAAGCGGAGGCACTGGGAGT CAGCC GAG TC TTCA AA CG GGC CTGG AGTCC
CCGGTTTGGGATTGCCAGGC GTCGG TTC AG GAGT TT GT TCG GACC TTAGG
TGTGGTTGTGAGTCTGAGCT CGAGTG G TCT G G G- - G ------
TGTGAGCGGCTG
GAM5395 6457 GGCACCCCGGGGTGTGGCCA A - - ------- CCA CTTC G G TCCCCG
GAGGACTTCGGCGACGCTTC GGC CCC CGGGGT GT GG GAGGA GGC AC CT
CCCGAGAGTAGCCCCCCTCC TCG GGG GCCCCA CA CC CTCCT CCG TG GA
TCAACCCAGAAAAGACAACC - C A GAAAAGA CAA CCCC A A ------
CCGCGGGGCT
GAM5396 12552 AGTGGTTCTTCTTATCTCCA - -- T C-- C CTTTA
TCCCCATCGGCTTCCTCTTT AGTGGTT CTTCTTATCTC CA CCC ATCGGCTT CT
AAGAAAGCCGGTCCTGGGCT TCGCCGA GAGGGGTAGAG GT GGG TGGCCGAA GA
GAAGAGATGGGGAGCAGCCG C AA C TCC A -----
CT
GAM5397 1436 TACAGGCCTGCTTACTTGGG C A GG---- TA AAA- TTCT
ATGTAGGGTTAGTAAATGGG TACAGG CTGCTT CTT GATG GGGTTAGT TGGGGT
GTTTCTGCTTTAAAGGACTG ATGTTC GACGGA GAA CTAT TTCAGTCA ATTTCG
ACTTGCTATCACACAAAAGA A - AACACA CG GGAA ----
GGCAGACTTGTA
GAM5398 18305 TAGGCCCCAGAACATTACTT - - C T- AT CCT G ----- GTGCA
ATGCCCTTCAGTTACCATAA TAGGC CC CAGAA AT ACTT GC TCA TTACCA TAAGATTT
GATTTGTGCAAGGTTTTGTA GTTTG GG GTCTT TG TGAA CG AGT AATGGT GTTTTGGA
CCCTGGTAAATGATGCCAAA T T T TT AC T-- A CCCAT -----
GTTTGTTTTCTGTGGTGTTT

G
GAM5399 19530 GACAATTAAGGACGTGGGAT AA- ACG-------- GAGG G A GCG
GAGGCTCCGAGACAGGACGC GAC TTAAGG TGGGAT CTCC AG CAGGAC
GGTTCTGCCTGGGGATCCTG CTG AGTTTC GTCCTA GGGG TC GTCTTG
AAGATAAAAAGCTTTGAAAA AAA GAAAAATAGAA ---- - C ---
GTC
GAM5400 21683 AAAGCATTACTCTTAAAAAA A C TTAAAAAA- AATACT TAAAATTCC
GCAATACTGAGAATAAAATT AAAGC TTA TC GC GAGAA
CCTTCTCTTCACGCAATCAA TTTCG AAT AG CG CTCTT
AATGACTAAGCTTT - C TAAAACTAA CACTT- ---------
GAM5401 5437 TGCTATGTTGCCAAGGCTGG T T AA T CTC ATCGCCTG
TCTTGACTCCTGGGCGATCG TGC ATGT GCC GGCTGGTCT GA CTGGGCG
CCTGCGCTCAGAATTCAGAC ATG TACG CGG TCGACCAGA CT GACTCGC
CAGCTGGGCGCATGTA - - G- - TAA --------
GAM5402 3326 TTTGTTTGTTTTGTTTTGTT G TTTT G ---- AAATG
TTGTTTTCTCAAAAATGTTG TTTGTTT TTTTG GTTTT TTTTC TCAA
AATTTGGAAAGAGAACTATC AGATAGA AAGAC CAAGA AAAGG AGTT
CAGAAAGATAGA - CTAT G TTTA -----
GAM5403 13227 CCTGGCTGACCTGGTGTTTG --- --- TT CTCT TTCT
TCTGCACTCTGCCCTTCTGG CCTGGCTG ACCTG GTG TGTCTGCA GCCC
GCCTATGCAGGCATCCATGA GGACCGGT TGGGT TAC ACGGACGT CGGG
ATGGGTGTTTGGCCAGG TTG AAG CT ATC- ----
GAM5405 18372 GTTCAGACCAAGAATTCACT -- A A A GCAACA A- CT TTACGAAGTAGAAAATC
GCAACAAGATATCAGCTGAT GTTC AGACCA GA TTC CT AGAT TCAG GATGG
GGTTACGAAGTAGAAAATCT CAGG TTTGGT CT AAG GA TCTA AGTC CTACT
CATCTCTGAAGATCTCACAA AC A G A AACAC- GA T- ----------
AGAGAAGTCATGGTTTCAGG
AC
GAM5406 17950 CTGCTTGAATGGATGTATTT - TG G T CT A G ACTACG
TGTCTGTATGTAAAGATTTA CTGCTTGA A GAT TATTT GT GTATGT AA ATTTA
ACTACGTAAATGTTGACATA GACGAACT T TTG GTAGA TA TATACA TT TAAAT
TTAATTAGATGGTTTGTTTC T GT - T AT G G ------
AAGCAG
GAM5407 17989 TGCTGAAACCTTTCAGAAAT TG AC- - AG A TTT TA ATACAA
AGCCATAATTTTGTATTACA TGC AA CTTTCA GAAAT CC TAA TG TTAC
TACAAGTAAGCCATTTTAAG ACG TT GAAAGT CTTTG GG ATT AC AATG
GAGTTTCATGAAAGACGTTT GT GCA A A- A TT- CG ------
GGCA
GAM5408 5890 GAGGCGGAGGTTTGCAGTGA G AG- A- G A ---- CATT
GCCGAGAGCGTGCCATTGCA GAGGCGGAG TTTGC TG GCC AG GC GTGC
TTCCAGCCTGGGCAACAAGA CTCTGCCTC AAACG AC CGG TC CG TACG
GCAAAACTCCGTCTC A AGA AA G - ACCT ----
GAM5409 1252 CGGCCAGAGGGCACAGGCTG AGA- - CA - CT -- TCCCCAT
CTTGGGGGGTGAGGGTCCCC CGGCC GGG CA GG CTG TGGGGGGTG AGGG
ATTCCTGCCACCTCTCACAG GTCGG CCC GT CC GAC ACTCTCCAC TCCT
ACCATGACCCACAGGGCTG GACA A A- A -- CG -------
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CTTACGGTCCTGAGTCTCAA TGCTCCGCC TTTCTGG TAC ACGGT GTCTC AAG
GTTCGTCTTCGAGATGCTGT ACGAGGCGG GAAGACC GTG TGTCG TAGAG TTC
TTGTGCCAGAAGCTGGCGGA TC - TT ----- C -----

GCA
GAM5411 13275 GACATCTTTTTCTGACCTGT TCT ---------- ATGATG
ATGATGACAGTCCGGGCAAC GACATCTTTT GAC CTGT
CTAAGTCCATGAGGGATGTC CTGTAGGGAG CTG GACA
TAC AATCCAACGGGCCT ------
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ACATGGGAACTGTGAAGGAG CCTCT CCA TACTGCTGC CA GGG CT
GCACCCTGGCAAGCAGCAGT GGAGG GGT GTGACGACG GT CCC GG
GATGGGGGAGG G A AACG - AC --------
GAM5413 8657 CCAGTTATTGTGTAAATGTC A AAA CCCCAC ATTTCAGGTTA
CCCACTATGGTGGATTTCAG CCAGTT TTGTGT TGT TATGGTGG
GTTACCACTATGATATCACA GGTTAA GACGTA ACA GTATCACC
GAATGCAGAATTGG - AG- CTATA- ----------
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TCCTTGGGAAAAGGGGTAGC GT GCTGGGTTTAG GAT CTTGGG GGG GCAAAG
AAAGTAACTTTGTCCTGAAG CG CGACCCGAGTC CTA GAACCC TCC TGTTTC
AAGCCCCAAGTATCCTGAGC A --- T- CGAAGAAG --- ---
CCAGCAGC
GAM5416 14115 TACAGTGAAACCCCATGTCT - AA- - - AATTACAAAAAA
GCTAAAATTACAAAAAATTA TACAG TG ACC CCATGTCT GCTAA
GCTGGGCGTGGTGGTGCACG ATGTC GC TGG GGTGCGGG CGATT
CCTGTA C ACG T T ----------
GAM5417 5868 GAGTAATGGGATATCCAATA AT---- ATCC CT A TTCTTC
AACTGAGAATGTTTCTTCAC GAGTA GGGAT AATAAA GAGA TGT
AATCTCCTTTATTCTTCGTT CTCAT CCTTG TTATTT CTCT ACA
CCTCCAAGTACTC GAACCT CTTC C- A ------
GAM5418 12330 TTCTTATAGTCTCCTAACAT T TAACATT CTAGCCTT CTTT
TTGTCTCTAGCCTTTGCCTT TTCTTA AGTCTCC TGTCT TGC
TGTACAATCACAGATATCCT AGGAAT TTAGAGG ATAGA ATG
ATGGAGATTTAAGGA - TATCCT- CACTAAC- ----
GAM5419 17409 GGGAGGCCAGGGAAGCCCGA CC A - AC T GCT
CGTGGTGGGGCGCTGCCTCC GGGAGG AGGGA GCC CG GTGG GGGGC
CGCTCCGTGGCCTCCTTCCT CCCTCC TTCCT CGG GC CGCC CTCCG
CCC -- C T CT - ---
GAM5420 16975 GATGTAAACACAAAAGAAAG A AAA -- T T AGG
TGTCTCAGCAGGGCTGAGCC GATGTA ACAC AGAA AG G CTCAGC
CTCCTTCTCGTGTCTGCATT TTACGT TGTG TCTT TC C GAGTCG
C C-- CC C - ---
GAM5421 2752 GGTCCTCCTCCTGGACGTTG - GAC- AAATCA ACCCCA
TAAATCAGGACCCCACCATA GGTCC TCCTCCTG GTTGT GG
ACTTAACAGGAGGACGGATC CTAGG AGGAGGAC CAATA CC
C AATT ------ ------
GAM5423 20023 GCGGGACGGACGGTGGACGC - A AC - C TT TA TCCG
TGGGACGCGTTTGTAGCTCC GCGG GACGG CGGTGG GCT GGGACG GT G GC
GGCCCCGCCGTTCCGAGCCC CGCC CTGCC GCCGCC CGA CCTTGC CG C CG
CCGCCGCCGTCGCCGC G - CC G - -- CC ----
GAM5424 1874 GCCCTCTGCCTGCCCCTAAC GC AA ---- CC- T-- C CCT
GCCCAACTCCATGCCTGCCT GCCCTCT CTGCCCCT C GC AAC CCATG CTG
CAGTCATGGTTTGTTTTTGC TGGGAGG GATGGGGA G CG TTG GGTAC GAC
TTCTGGAAGGGGTAGATGGA TA AG TCTT TTT TTT T ---

GGGT
GAM5425 4394 CCAGTTGCACACTGGCATTT - C----- T TG AA --- AATTTC
TCTTGCTGCAAGCTTTTTTA CCAGTTG CA ACTGGCATTTTCT GC C GCTTT TTTA
AATTTCTGAACTCAAGGCAG GGTCAAT GT TGACTGTAGAAGA CG G CGGAA AAGT
TGGCAGAAGATGTCAGTCAC A CTCCAC - GT A- CTC ------
CTCTGATAACTGG
GAM5426 2329 TGTGCAATCCCTAATATAAT - CCCT --------- TA CGTT
GTAAATGCTATGTAATCGTT TGTG CAAT AATATAATGTAA ATGC TGTAAT
GTTATACTGTATTGTTTTTA ATAC GTTA TTGTATTATGTT TATG ATATTG
TTTGTATTATGTTTTATTGT T TT-- TATTTTTGT TC ----
CATA
GAM5427 21539 TTGGGGGAGAACTGCCATCC A CCATCCT A CTTTTCAAAATATCAAC
TAAAAATATTAAATCTTTTC TTGGGGGAGA CTG AAA ATATTAAAT
AAAATATCAACATTTAATGT AATTTCCTTT GAT TTT TGTAATTTA
CTTTCCATTTAGTTTCCTTT - TTACC-- C ----------
AA
GAM5429 11312 TGAATGCCGTGCAGCACGCT - G CA-- - G AAATG GCGGTTAA
GTTGTGAAAATGGATGCGGT TG AATGCC TGCAG CG CTGTT TGA GAT
TAAATCTCAAACAGACGGAC AC TTACGG ACGTC GC GACAA ACT CTA
TCTGCAAGGCATTGCA G A TCAG A - ----- --------
GAM5430 18939 TCCAAAGCACTTTTGTTGAG AA A G AC- GATTAGCAA
TGACAACCCGATTAGCAAGG TCCA GC CTTTTGTT AGTGACA CC
CCCTGTTACTGAACAAAGGG AGGT CG GGAAACAA TCATTGT GG
CAGTGGA GA - G CCC ---------
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GCCTCGCCGTTGGATCCTCT TACC GG CCCCT AGGC CTC CC GTTGG TC CTCTTA
TACACGAATAAGGGTGAGCC GTGG CC GGGGG TTCG GAG GG CAGCC AG GGGAAT
CCCGACTGGAGAGAGCTTTG A CCACA GT A A T CCCG T ------
GGGGGACACCCCAGGTG
GAM5433 11029 TTTCTAACCATCACAATTCA AA CAC---- AAGTACAAAA
GTGAAGTACAAAACACTGAG TTTCT CCAT AATTCAGTG
TTACAGGCTGTGGGAAGAGA AGAGA GGTG TTGAGTCAC
AG TCGGACA ----------
GAM5434 911 CTTAGTGGCATGTACTGGTG TG----- TG G AGA GTTCCCAGATCTAA
GGAGAGGGAGTTCCCAGATC CTTAG GCA TACTG TGGG GGGA
TAATCCCCCCAGCAGTATGC GAGTC CGT ATGAC ACCC CCCT
ATCTGATCTGAG TAGTCTA -- G --- --------------
GAM5435 19005 TGAGCAGAGGGATGGAACAG - T-- ACA G A - AGTG
AGGGTGAGAGAGGCAGTGGC TGA GCAGAGGGA GGA GAGG TG GAGA GGC
CGTCTCCACCTCAGCTCCTG ACT CGTCTCCCT CCT CTCC AC CTCT CCG
CTCCCTCTGCATCA A CGT CGA - - G ----
GAM5436 6749 CGTCCACTTTCATCTCTTTG CTTT- - GCTCG A ACTGC
CTCGGGAGGTTCAACTGCTG CGTCCA CA TCTCTTT GG GGTTCA
GACCCCAAAGAGACTGCATC GCAGGT GT AGAGAAA CC CCAGGT
ATGGACG ACTAC C ----- - -----
GAM5437 12164 TGAAAAGTGCTCCCCATCAT G CCCC A GAA AGCA GTAA
CTGAAGAAGCAGCACCTGGT TGAAAA TGCT ATC TCTGAA GC CCTG
AACAGGCATGGCCATTCAGA ACTTTT ACGA TGG AGACTT CG GGAC
GGGTACTTAGCATTTTCA - TTCA G AC- GTAC ----
GAM5438 7550 CCTTCGTTTTCAGGCCTTGT TCG CCTT A CAAATTTTTAAATCA

CAAGAAGACAAATTTTTAAA CCT TTTTCAGG GTCA GAAGA
TCATTTTCCTGACCCCTGAG GGA AAGAGTCC CAGT CTTTT
AAAGCAGG CGA C--- C ----------
GAM5439 6424 GCGGCGGGAGAGCGGCGGGG C G ---- - TA CGTGA
CCTAGAGCGTGACTCGGCCG GCGG GGGA AGCGGCG G GGCC GAG
CTACGCGCTGCTTCCCCCGC CGCC CCCT TCGTCGC C CCGG CTC
- - GCAT G -- -----
GAM5440 11222 GCGGAGTGGCCGGGCCCGAG - C-- G TG AC--- T AGGA ACTGA
TGCACGTGTCTGAGGAGGGC GCGGAGT GGC GGGCCC AG C GTGTC G GGGC
ACTGAGCCCGAGGCGATGCT CGTCTCG CCG CCCGGG TC G CGTAG C CCCG
CCAGGTGCTGGGCCCCAAGC G AAC - GT GACCT - GGAG -----
CGGCTCTGC
GAM5441 9730 GTGATTTTACCTTTATTTCC -- CTTTA AC AA AA T TCACAGT
TTCACTTTAAGCCAATCATG GTGATTTT AC TTTCCTTC TTT GCC TCA GAAATT
AAATTTCACAGTGATTTCTG TACTAAGA TG GAAGGAAG GAG TGG GGT CTTTAG
GGGTGGGAGCAGAAGGAAGG AT TGTCG AC GG -- - -------
CTGTGTTAAGAATCAT
GAM5442 9848 GAAGGAACAGTTTGCCTGGA AACAGT TG CT CATTTC - ACCAATG
GACATTTCTACTGGTACCTT GAAGG T C GGAGA TACTGG TACCTT
ACCAATGAGGGTATCCAGTA CTTCC A G CCTCT ATGACC ATGGGA
TCTCCGTGATTACCTTC ATT--- GT -- ------ T -------
GAM5443 18648 GGGCCTTGAGGATGATGTTC CTT ATGA - - TCCCCT A TCGAT
CGGGTGTGCATCCCCTGGAA GGGC GAGG TGTT CCGGGTG TGCA GGA GTAG
GTAGTCGATCTGCTCCTGCG CCCG TTCC GCGA GGCCTAC GCGT CCT CGTC
TCATCCGGAAGCGGACCTTC TTC AG-- A T ------ - -----
TTGCCC
GAM5445 16107 CCTACTTCAGAGTGTCCCTG A AGA - -- - GA CT ACTC
AGCCATGACTGCTTGACTCC CCT CTTC G TGTC CCTGA GCCAT CTG TG
ACAGATGGCTTCAGGAAGAC GGG GAAG C ACAG GGACT CGGTA GAC AC
AGCACAGAAGAGGG A ACA G AA T -- -- ----
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AGGGCGGCCCACTGCTCTGC CCGGG TCC CCTTC AGCA AG AGGGCGG
TGGTGCTGGAAGGAGGACCC GGCCC AGG GGAAG TCGT TC TCTCGTC
CGG C A G GG G ----
GAM5448 14 ATCCAATAAACCAAATTACA T AAATT ATC C CT CTCATTTTCAAATACTATA
ATCTGCTGCTTCTTCTCATT ATCCAA AAACC ACA TG TG TCTT
TTCAAATACTATAAAGATTC TGGGTT TTTGG TGT AC AC AGAA
ACACTGTTAAAGGGTTTTTT T GAAAT C-- - TT ----------
GGGT
GAM5449 14336 GGCCCTACCCTGGGAGGGCC TAC- - AG CAT TACCT
CATCCAGCTACCTGCTGGTA GGCCC CCTGG G GGCC CCAGC
GGCCACCTCCAGGAGATGGG CCGGG GGACC C CCGG GGTCG
CC TAGA T CA AT- -----
GAM5450 6060 GGGTTGGCTGGTTTCATGGT T TTTCATG TTG TCA C CTGTTCTAT
GGGTTGGTTCATGAGCAGCC GGGT GGCTGG GTGGG GT TGAG AGCCTC
TCCTGTTCTATGAGGCTTTT CCCG TCGACC CACTT CA ACTT TCGGAG
CAACAGTTTCACATCCAGCT - TA----- TGA --- T ---------
GCCC
GAM5451 9201 GGCGGGGGGCAGAGAAGAAT - GG A- TT AC- - ATTCCCATGCC
TTTAACTTGGATGATTCCCA GGC GGG GCAG GAAGAA TTA TTGGA TG

TGCCCACTCCAGCTGTAACT CCG CCC TGTC TTTCTT AAT GACCT AC
TTCTTTGACTGTGACCCAGC A AG AG TC GTC C ----------
C
GAM5452 18531 GATTAATGCAGGTGTTATAG - A------- AAGCCAGAAGAGAAA
AAGCCAGAAGAGAAACTGTG GATTA ATGC GGTGTTATAG
GCACCCTAAAGAAGCATATA CTAAT TACG CCACGGTGTC
ATC A AAGAAATC ----------
GAM5453 20534 GACCGACCGCGGCTGCCCCA AC- --- A TGATGA- - CCCCTCT
GTTGATGAGCGGCGTGTCCC GACCG CGCGGCT GCCCC GT GCGGCG TGT
CTCTGCAGCGCTGCACCCCG CTGGC GTGTCGG CGGGG CG CGTCGC ACG
TGCGGGGCTTTGGCTGTGAC GCA TTT - TGCCCCA G -------
GCGGTC
GAM5455 12877 GTGCAGGCTGCGACAACGTG CGA AC TCA GGAA- GGGC
GTACTCATCTGGAATGTGGG GTGCAGGCTG CA GTGGTAC TCT TGT
CACAGCGGAGGAGCTGTACC CACGTCCGAC GT CGCCATG AGG ACA
GCCTGGACAGCCTGCAC AG- C- TCG AGGCG ----
GAM5456 4247 GCAAAATATATTTATTTCTA ATA TC ATAATGA GACTA
GGATATAATGATTTAGTGAC GCAAAAT TTTATT TAGGAT TTTAGT
TAGCTAAAAGTGGTTTTAAA CGTTTTG AGGTAA ATTTTG AAATCG
TGGACGTTTTGC C-- -- GTGA--- -----
GAM5457 2809 CAGCAAGTGGTCAAGTCACC A- T CACCAAT TACATA- GCTAAATCA
AATGATGTACATATGTTGCT CAGC AG GGTCAAGT GATG TGTT
AAATCAAACAGATTTCCCAT GTCG TC CCAGTTCA CTAC ACAA
CTTACTTGACCTCTCAGCTG AC T TT----- CCTTTAG ---------
GAM5458 1687 TTGAGGCAGAGTCTCACTCT - TCTCA GTC C-- C-- - TGATCTC
GTCACCCAGGCTGGAGCGCA TTGAGGCA GAG CTCT ACCCAGG TGGAG GCAGTGA CA

GTGACATGATCTCTGCTCAC GACTCCGT CTC GAGA TGGGTCC ACCTC CGTCACT GT
TGCAACCTCCACCTCCTGGG G TTA-- ACT TCC CAA C -------
TTCAAGAGATTCTCGTGCCT
CAG
GAM5459 16150 CTTATTGTAACTGACAACTG - AC TTTTC - G CTAAA
TTTTCAACTCCAAGAGCTAA CTTATTGTAACT GACA TG AACT CCAA AG
ACTATTGGCAGTTCATGTTA GAGTGACATTGA TTGT AC TTGA GGTT TC
AGTTACAGTGAG A -- ----- C A -----
GAM5460 5465 ATCATAGGTTCCAGTAATGG - C-- TAAT- TTT AAA AAGCTG
GCAGTTTGGGTAAATGTAAG ATCATAGGTT C AG GGGCAG GGGT TGT
CTGGCAAACCTTCTGTCTTA TAGTGTTCAA G TC TCTGTC TCCA ACG
ATTCTCCAGAAACTTGTGAT A ACC TTAAT T-- A-- ------
GAM5461 20369 GGCTTTACAGGAGGTGACTT TT GA-- A--- A G TA CTAATCCA
AAGTTCAAAGGAGGCCTGTT GGC TACAG GGTG CTTA GTTCAAAGGA GCCTGT GT
AGTCTAATCCAACATGGGTG CCG GTGTC CCAT GAAT CAGGTTTCCT TGGGTA CA
TCCTTTGGACATAAGAAGAT T- ACGA AGAA A G -- --------
ACCAGCACTGTGTGCC
GAM5462 22423 GGTGCAGTGGCACACACCTG GG CA- C A C AC GAA G CAGGAGGATCA
TAATCCCAGCTACTCCGAAG GGTGCAGT CA CAC TGTA TC CAGCT TCC GGCT AGG
GCTGAGGCAGGAGGATCACC CCACGTTA GT GTG ACGT AG GTTGA AGG CCGA TCC
TGAGCCCAGGAAGTTGAGAC GA CGA - C A -- AC- G ----------
TGCAGTGAGCTGAGATTGCA
CC

GAM5464 19906 GGCAGTGTTCGGGTATCAGA T- - GAAA AAACTA AATTG
AATCACTTAAACTAGCAATT GGCAG GTTCGG GTATCA TCACTT GC
GGCCTTATAAAGTGATGATA CCGTT CGGGTC CATAGT AGTGAA CG
CACTGGGCTTTTGCC TT A ---- ATATTC -----
GAM5465 11385 TAGAGTACAGTGTCTTAAAA --------- AAA- T TTTTA
TATTCATGTTTTACTTGGAT TAGAGTACAG TGTCTT ATATTCA G
ATCTAGAAGATAAAAGGCAT ATTTTATGTC ATAGAA TATAGGT C
TCTGTATTTTA TTACGGAAA GATC T -----
GAM5466 19812 ATAGCCTCCTTGGGTGTCAT C G T-- -- CCAGACC
GGATCCCAGACCGATTATCA ATAG CTCCTT GGTG CATG GATC
TGTAGTACCGGAGGAGACTA TATC GAGGAG CCAT GTAC TTAG
T A G GAT TA -------
GAM5467 18578 TGCCCCTTTCTTTTCAGCCT CCCTTT T T-- ---- GA C TCGTG
TTCTGCGGAAGCTGTCTCGT TGC CT TTCAGCCTT CTG CG AG TGTC
GGACATCTCTCGTCAACAGC ACG GG AGGTCGGAA GAC GC TC ACAG
ACAAGGCTGGATGGTTCAAC CAACTT T CAC AACT TC T -----
GCA
GAM5468 17958 GAAAAATGAGTAAAATAATT TAA T A-- CATATT C TAAT
AATGAAACATATTTAGAGCA GAAAAATGAG AA AATTA TGAAA TAGAG ACT
CTTAATGGTCTCTGTTTTCA CTTTTTACTT TT TTAAT ACTTT GTCTC TGG
ATATAATTCTTGATTTCATT TAG C ATA T----- - ----
TTTC
GAM5470 2354 CCCCAGGAGGCGGCGGGGGC - AGGA GGG AG GCGGGG
GCAGGGGCGCGCGGGGGCGC CC CC GGCGGC GGCGC GGGCGC
CCGTGCCGGAGCCGCCCAAG GG GG CCGCCG CCGTG CCCGCG
GAGG A AAC- AGG -- ------
GAM5471 2025 GTTAAAGCCTAGGCTAGCAA AAAG A - ATTT GCAACTA AGATA
TTTTTTTTAGTTGCAACTAA GTT CCT GG CTAGCA TTTTTAGTT AGTA
GTAAGATATACTACAAACTA CAA GGA TC GATCGT AGGAATCAA TCAT
AGGATGCTGCTAGACTAAGG ATAA A A CGT- ACA---- -----
AATAAAC
GAM5473 14765 GCTCTGTTACCCAGGCTGGA C TT --- C A-- - ACAATCTCG
ATGCAGTGGCACAATCTCGG GCT TG ACCC AGG TGGA TGCAGTG GC
CTCACTGCAACCTCCACCTC CGA AC TGGG TCC ACCT ACGTCAC CG
CCGGGTTCAAGC - T- CCC - CCA T ---------
GAM5474 19716 CCCTGCCGGGGGGTTGGCCG G GTTGG AGG G AGGGG
AGGCCCTGGGAAAGGGGTTG CCCTGCC GGGG CCG CCCTGG AA
CCGGGGGTGTGGGCCCCGGG GGGACGG CCCC GGT GGGGCC TT
CAGGG G G---- GTG G -----
GAM5475 21894 CCCTGAGCGCAAGAGCCAAG A A CA C C CT GATGTGG
CCGCCAGCGCTGCGATGTGG CCCTG GCGCA GAGC AGC GC AGCG GC
GCCACGCTGCCGCTGCTCTG GGGGC CGCGT CTCG TCG CG TCGC CG
CGCCGGGG - - -- C - AC -------
GAM5476 12620 GGTGGTGCCAAGTGTATCCC G AAG ATC C AAAGAG TCACA
TCGCGTTTAAAGAGGGGATG GGTGGT CC TGT CCTCG GTTT GGGATGG
GTCACACTATTCCAAGAAAC CCACCA GG ACG GGGGT CAAA CCTTATC
TGGGGCAGGCAGGGAACCAC A G-- GAC - GAA--- -----
C
GAM5477 15103 CACAGCTCTGTTTAGTCTCT TTTAGTCTC C AATAC-- TCTTCCTTCTCC
TGCTCTTAATACGTATAGCA CACAGCTCTG TTG TCTT GTATAGCA

TCTTCCTTCTCCTGTTGTGC GTGTCGAGGC AGC AGAA CGTGTTGT
TAATCTAAAGAACGAATCAA TTAACTA-- A ATCTAAT ----------
TTCGGAGCTGTG

GAM5478 4113 TGCCATTTTTTGACTCTTCT AT TT CT GCC CC TT CATATCCACTCA
GCCACTAACCAACATTCTCA TGCC TTT GACT TCT ACTAA AACA CT
TATCCACTCAAGTCTGTTTT ACGG AAA TTGA AGG TGATT TTGT GA
TAGTTAGGATCAGTTTTAAA AC TT CT AT- T- CT ----------
CAGGCA

GAM5479 11165 AAGTGGAGGGGGCTGAGCGC T - GAG ---- - GCTG
AGGGCCAGGATGCTGGTCAC AAG GGAGGGG GCT CGCAGGGCCA G GAT
TGGGTGGCCCTGTGAGCTCC TTC CCTCCCC CGA GTGTCCCGGT C CTG
CCTCCCTT - T --- GGGT A ----

GAM5480 16617 TCTTGTAAACGATTGGGCTC A GATT CCA ATCG - ACCA
CAGCTATCGAGCCTTACCAA TCTTGTA AC GGGCT GCT AGC CTT
AGAGTTACCAGCAGCCCCAG AGGACAT TG CCCGA CGA TTG GAA
TGTACAGGA G AC-- --- CCA- A ----

GAM5482 5356 ATGTGCAGAGGAGAAGATCC T - G- A- C - AGCACAC
CACCGAGCACACTGGTTGAG ATG GCAG AG AGA GATC CA CCG
ATCCATCTGACTGCTGCCAT TAC CGTC TC TCT CTAG GT GGT
- G AG AC A T -------

GAM5483 6365 ATCCACAGTTGGTTGAATTT ----- TGAA GA AAC
GTGGATGTGGAACCCATGGA ATCC ACAGTTGGT TTTGTG TGTGG
TACAGAGGGCCAACTGTATT TAGG TGTCAACCG AGACAT GTACC
TAGGAT ATTTA GG-- AG ---

GAM5484 4235 AATGGAAACCATGCAATTAC AA C AATT T TT TCTT CATAAAA
CTGCCTTAGTTCTTTTGTCA AATGG AC ATGC ACC GCC AGT TTGT
TAAAAACAATCACTTGGTTG TTATC TG TATG TGG TGG TCA AACA
GTCGTATTGTAGCTATT GA T C--- T T- CT-- -------

GAM5485 10635 GATGCTTTGGAAGACTCATT T A A A - C-------- C GA CCT
ATTCAGAGCTGCAGCTGGAC GATGCTT GGA G CTC TTATT CAGAG TGCAG TG CTG
TGCCTTAGACATCTGCATTT CTACGAG CCT C GGG AATAA GTCTC ACGTC AC GAT
CTCTATCTCTGAAATAAGGG - - A - A TATCTCTTT T A- ---
ACTCCGAGCATC

GAM5487 2887 GGAACATACTTGCCTGGAGA A T -- AGCC--- TG - TTAA
TAGCCTTTGCGATATTTAAA GGA CA ACTTGCCTG GAGAT TT CG ATAT
TGTCCGTGGATACAGAAATC CCT GT TGAACGGAC CTCTA AG GC TGTA
TCTGCAGGCAAGTTGCTCC C - GT AAGACAT GT C ----

GAM5488 3051 CTGGCCAGGCGGTGGGTTCT ---- G CT - - - TTCTA
CTCTAGCTTTAGTTCTACTG CTGGCC AGGC GTGGGTT CTCT AGC TT TAG
CAACGTTCAGAGCAGGCCCA GACCGG TCTG TACCCGG GAGA TTG AA GTC
TAGTCTTACAGGCCAG ACAT A AC C C C -----

GAM5489 7048 GGCAGACCCCGATCCTGCTG C T - G C TTCAA GGGA
CGCCGCCTTCAAGGGGGACC GGCAGA CCCGA CCTG CT CGC GCC GG
GCCGGCCGCGAGCCAGGTTG TCGTTT GGGTT GGAC GA GCG CGG CC
GGATTTGCT A - C - C CCG-- ----

GAM5490 6054 GGAGGGCCAGTGACCCAGCC A CCAGT C GC - GTCCT CAGGCTA
CAGGCTGCTGACCGTCCTGC GG GGG GAC CAGCCCAGGCT TGA CC GCTC
TCCAGGCTAGAGTCCAGAGG CC CCC CTG GTCGGGTCCGA ACT GG TGAG
TTCAAGAGCCTGGGCTGTGT A CATAC T GA T AGACC -------
CCATACCCCACC

GAM5491 13965 AGAAATTCCTTCACAAAATT C T------- AAAA
TGGGGTAAAAACCCTTACAA AGAAATTC TTCACAAAATT GGGGT
GGCAATTTTGTGGGCGAGTT TCTTTGAG GGGTGTTTTAA TCCCA
TCT C CGGAACAT ----
GAM5492 3828 TTTGGGACATATGCATGCGG GACATA- C AA- A TT- C AACTG
AATGAGGCTGTTGGACGAGA TTTGG TGCATG GG TG GGCTG GGA GAG
ACTGCTCATTTTCTTGGCCC AGACC ACGTAT CC AC CCGGT TTT CTC
AGTACCTATGCAACGAATAC ATAAGCA - ATG - TCT A -----
CAGA
GAM5493 21035 TTTCAATAAAAGTTATGCAC AT TTATGC T CACCT GAGCTGAA
AAATGTGAACACCTGAGATG TTTCA AAAAG ACAAA GTGAA GAGATG
GAGCTGAACATTTCTTCACT GAAGT TTTTC TGTTT CACTT CTTTAC
TTGTTCTTTTTCTGAAG CT T----- - ----- --------
GAM5494 4118 GCTTGGAGCCTCCCCCAGAG T A CCCC A TG C TG - C- CCC ACCCCCGC
GTGTGGCAGGTGCTGAAGAC GC TGG GCCTC AG GG TGG AGGTGC A AGAC CAC GGAG

CCACCCCGGAGACCCCCGCT TG ACC CGGAG TC CC ATC TCTACG T TCTG GTG CCTT
TCCAGTGCAGTCTCTTGGCA C A TA-- - CT - GT C AC A-- --------
TCTCTATCCCCTATGAGGCA
CCACGT
GAM5495 19568 GCTTGGAGGTGAAACTTGTG - G AA T- T ATCC CACGAAGA
CTTGTATCCCCAGCCACGAA GCT TGGA GTG ACTTG GCT GT CCAGC
GAGCTGGACCAGCTTCAAGT CGA ACCT TAC TGAAC CGA CA GGTCG
ACATGTCCACAGC C G A- TT C ---- --------
GAM5497 22801 GTGTGACATGGCTTATGTGT GA- T TAA C - TTTGG - A GAAGAT
ATAATCCAGCCCTTTTGGAG GTGT CATGGCTTA GTGTA TC AGC CCT AGGT CAGG TG
GTCAGGATGGAAGATCGCTT TACG GTACTGAGT CACGT AG TTG GGG TCCA GTTC GC
GAACCTGGGAGTTTGAGGTT GTA - TGG T A ----- A - ------
GCACTGAGTCATGATGGCAT
GAM5499 20884 CGGATCTAGATGCCAGTTCC - AGAT TCCGT A TTGATG ATGTATTG
GTTCTGGCTACTTTGATGAG CGGAT CT GCCAGT TCTGGCT CT AGAGGT
AGGTATGTATTGGCCTCTAG GCCTA GA CGGTCA AGACTGA GA TCTCCG
AGTCAGAACTGGCCGAAGCA C AGC- ----- - ------ --------
TCCG
GAM5500 13397 CCCCGGACTCTTACCACCCC ACTC ---- AT TAGG AAACC
ATTCTAGGCCCCTGAAACCC CCCCGG TTACCAC CCC TC CCCCTG
AGGGGAGCGAGGGCAACGTG GGGGTC AATGGTG GGG AG GGGGAC
GTAAACTGGGG A--- CAAC -- CGA- -----
GAM5501 19634 GGTGCCATGACCGGAATGTT C-- AA TTC A GA A CCAAACTAT
CGTAACGATTTCAGTGCTCC GGTGCCATGA CGG TG GT AC TTTC GTGCT
AAACTATAGTATCGAAGGGT CCACGGTACT GTC AC CA TG GAAG TATGA
AACCAAGCTGCAATCATGGC AAC GA --- A G- C ---------
ACC
GAM5502 521 TCTTCCGCCGTATCAGGACG G TATC C GAAA AAC C-- AGCACCCAGAG
CTGAAAGGGAAACTGGCCAG TCTTCC CCG AGGA GCT GGGA TGGC AGGC
GCAGCACCCAGAGGCCTTCA AGAAGG GGT TCCT CGG CCCT ACCG TCCG
GCCATATCCCAGAGGCATCC A CCT- A AGA- AT- ACT ----------
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GAM5504 11005 TGGCTGCATGATAGTAAGAG T T AA-- T C - - - ATCATCCAGTAC
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AGATCATCCAGTACCTGTAC ACCGATGT CT TCA CTC TGTC AC TCGGAC GGA ATGTC
AGGCCAGGCTACACTGTTCT - C CGAC T - A C C ----------
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GAM5505 2276 CTGAATTCTTACTGGGTTGG A-- C---- TG A T- A TACCAAATTTTT
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TTTTTTGAGGTTATCCTCAT GACT GAGAAT ACCTA TACT CTA GG GT
TGATCCATTCCATAAGAGCT ATC ACCTT GT C TT A ----------
ATCAG
GAM5507 21567 GGAGGGACTTCCAGCTCCTA -- CTAGTCGTG TT CCGT
GTCGTGTGGGTTGCAGGCCG GGAGGGA CTTCCAGCTC TGGG GCAGG
TCCTGTCCCAGGGCTGGGGG CTTCCTT GGGGGTCGGG ACCC TGTCC
ACTTCCTTC CA --------- -- ----
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GTGGTGGTGCGGGCCTGTGG ATACAAAAA GC GG GTGG GG GC GG GCCTGTGGTCTCAGC CT

TCTCAGCCTCCTGGGCTGCT TATGTTTTT CG TC CACC CC CG CC CGGACATCAGGGTCG GG

GGGACTACAGGCACCTGCCC AAT- G TA - - T A TC ----
CCACATCTGGCTAATTTTTG
TAT
GAM5509 1900 CCCCAGGGCTGGGCCATGGG - ----- ATG AAGGACT
GAGGGAAGGACTTTCTCCCA CCC CAGGGCTGGG CC GGGAGGG
GGGGAAGCCCCCAGCCCTGT GGG GTCCCGACCC GG CCCTCTT
GGG T CCGAA GGA -------
GAM5510 21413 GCCAGAACAGACTGTTCTCT A GAC T T G GAGCCTTCA
GCAGTGAATCTGAGCCTTCA GCCAGA CA TGT C CTGCA TGAATCT
AGATTCATGTAGGACATGAT CGGTTT GT ACA G GATGT ACTTAGA
TTGGC A --- - - - ---------
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TGATGGCGCCCTGCATGGAG CAGGC GA TGCC AT GG GCCCTGC
CGCGGGGCCTCTGAGTAGGC GTCCG CT ACGG TG CT CGGGGCG
AAACTCCAGGCCTG GAC- CAA A AGT C -------
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GCCCACGAACCCCTGTGGGC GGAGTCCCC CCT TGCCCACG
GGAGGAGAGAGGCGGGGACT CCTCAGGGG GGA GCGGGTGT
CC CGGAGAGA G ------
GAM5519 12317 TCAGCAGGAAAGAGTTTAAA CAGG TA------ GA GGAAATCAGAA
AGACTTGAATGGAAATCAGA TCAG AAAGAGTT AAA CTTGAAT
AATTTAGGGATTTGAGAAAA AGTC TTTTTCAA TTT GGATTTA
TAACTTTTTGGTACTGA ATGG TAAAAGAG AG ----------
GAM5520 14672 TGGAATTTTCTGAGAGATCT AATTTT GA - TTATTC
TTATTCTTTATTCAGGATGT TGG CTGA GATCTT TATTCT
GGGATCGATCAGCACTGCCA ACC GACT CTAGGG GTAGGA
GTCAC- AG T ------
GAM5521 9023 CTGCTGGCAGAGATGCATTC C A - CA A CACTC
CAGAGATGCACTCCGCTCTG CTG TGGC GAGA TG TTCCAGAG TG
GAACTCACTCTCAGCCACAG GAC ACCG CTCT AC AAGGTCTC GC
- A C TC - -----
GAM5522 8826 GTGGAAACTGCTCTCTCACG ------- CTC-- T ACTC AAG---- TTTT
ACTCTCAAAGATGAAGACTT GTGGA AACTG TC CACG TCAAAGATG AC

TTGTAAACGTGTATCTTTGG TACCT TTGAC AG GTGT GGTTTCTAT TG
CTACTGTGGATAAAACAGTT CAAAAGT AAAAT - CATC GTGCAAA ----
TGAAAACTCCAT
GAM5523 21386 CAGTCGTACAGGGTACAGAA CGTA TAC TA - - T CACTAAC
TAATTCTTCGTTGTGTGGCA CAGT CAGGG AGAA AT TCTT CG TGTGTGG
CTAACCCACACACTGCAGGA GTCG GTCCC TCTT TA AGGA GT ACACACC
CATCGTTCTCCCTGGCTG ---- --- GC C C C -------
GAM5524 1601 GGCGTCTGGTACTCAGATGT C TC CAG TCA A GGACTAA
CACGAAGCACGCCATTGGAC GG G TGGTACT ATG CGAAGC CGCCATT
TAAGATGGTGGTTTCGCATA CC C ACCGTGA TAC GCTTTG GTGGTAG
GTGCCAAGCACC A GA --- --- - -------
GAM5525 17198 GGGACCCTCAAGAGAGCATG C -- A G TGT G CCTGGA
GAGAGTGTGGGGTGTGCCTG GGGAC CTCAAGAGA GC TG AGAG GGGGT TG
GATAGGCCCCCTTTGCAGGC CTCTG GAGTTTTCT CG AC TTTC CCCCG AT
AGTCTTTTGAGAGTCTC A GA G G --- G ------
GAM5527 10347 CAGCGGGGCGGCGGCGGCGG GG - G G -- C C GTG C T GTC
CGGCGGCGGCTGTGGAGGCC CAGCGG CGGCG GCG CG C GG GG GGCT GAGGCCG AG CCGG

GCAGTCCGGGTCCTGGCTTC GTCGTC GTCGT CGC GT G CC CC CCGA CTCCGGC TC GGTC

GGCCTCAGCCCCACCATGGT AA T A G TA A - --- T - ---
GACGCTTGCTGAACTGCTG
GAM5528 21651 TGGATGCAGTGACACACCAG AG ACACA A-- CTAGCT CCCTT
TAGGGAGCTAGCTGGCTGCC TGGATGC TG CCAGT GGGAG GGCTGC
CCTTGCAGCCCACTCCCCAA ACCTACG AC GGTCA CCCTC CCGACG
ACTGGCTACCCAGGCATCCA G- CCATC AAC AC---- -----
GAM5529 961 TCTGTGTCCAGCCCTTGCAG T CCC C -- - CCT-- ACAT
AGAGCTTTGTCCTCTGACAT TCTGTG CCAG TTG AGA GAGCTT TGT CTG
CAGCTACCACACAGGCTCAT AGACAC GGTC AAC TCT CTCGGA ACA GAC
TCTCAACTGGCACAGA - --- - TA C CCATC ----
GAM5530 4632 AGCTGTCAGGGCCTCACTGT TG --------- AGGAAGG
GGAAGGAAGGTCCACAGAAA AGC TCAGGGCCTCA CTGTGGA
ACATCCTGGGGTCCTGAGCT TCG AGTCCTGGGGT GACACCT
-- CCTACAAAA -------
GAM5531 17415 GGGGAAGCGAGCAGGCGAGT AAGCGA AGGAGG CGGG
CCAGGAGGGGCCGGGGCCGG GGGG GCAGGCGAGTCC GGC
GGTGGGGCTCGCCTGCCCTC CCTC CGTCCGCTCGGG CCG
ACTCC ACTCC- GTGGGG ----
GAM5532 2335 GCTCAGCCTTTGCCAGCAGC G - - G - CAT GGAAAGAA
AACTCATTGTGGGGGAAAGA GCTCA CCT TTG CCA CAG CAACT TGTGGG
ATCTACAGGTTGCCTGATGG TGGGT GGA GAC GGT GTC GTTGG ACATCT
ACAGCAGGTGGGT - C A A C --- --------
GAM5533 3790 TGCCTGTGTGGGACTGAGAT G TG CT A T- ----- CCTCTCCTT
GCAGGATTTCTTCACACCTC TGCCT TG GGA GAGATGC GGA TTCT TCACA
TCCTTTGTGACTTCAAGAGC ACGGA AC CTT CTCTGCG TCT GAGA AGTGT
CTCTGGCGTCTCTTTCTGCA A GT T- G CC ACTTC ---------
AAGGCA
GAM5534 4311 CCCAGCCTGGACCCCCGAGG C GA GG---- G-- T TT AAAG
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GTGGGAGGGGGCAGGGCCTG GGGTC GAC GGGGGTT TCCG CGG GGGA GT

```
        AAGTGTTGGGGGCAGCCTGG    C  --     GTGAAG   GGA  -   GG ----
        G
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        CCTCATCAGTGGCTGGCTCT CCC CGG    GC CCCA   AGCCCCT    TCA GTGGC GG
        TCTTCCGCTACATGGCAATC GGG GCC    CG GGGT   TCGGGGG    GGT CATCG CC
        GGGGGCTATGTGGGTGCAGC   T  ACCGA  T   GTA     CTAAC   A    - --------
        CACCGTGGG
GAM5536 15085 CCTAAAAAATCTTTGCCCAA      AATC---    CCAAAC   T TC   T  CATTT
        ACCAATGTCCTGTAGCATTT CCTAAAA      TTTGC     CAA G  CTG AG
        CTTCAGTGTTTTGTTCTAGC GGATTTT      AGACG     GTT T  GAC TC
        AGATTCATAGTTTTAGG         GATACTT    ATCTT-   T GT   T -----
GAM5537 10115 CAGGAGGTCCGGCCCGGGGC    GG  C   C-    GGA   CCGAGGCA
        TGGAGGGGCCGAGGCACCCC CAGGA  TC GGCC  GGGGCT   GGGG
        GCAGGCTCCAAGGTCCGAGG GTCCT  AG CTGG  CCTCGG   CCCC
        TCCTG              GG  C   AA     ACG   --------
GAM5538 15809 TGGCTAAATTCGTGATCCGC     AA  G-    C  -  CC   C   CGACTGCA
        CCAGCCATGCCGCCGACTGC TGGCTA  TTC  TGATC GCC CAG  ATG CGC
        AGTGACATACTGCGGCTGAT ATCGGT  AGG  ACTAG CGG GTC  TAC GTG
        CAAAGGAGCTGGCTA         CG  AA    T  C  A-  A  --------
GAM5539 13716 GACATTAATAATGAGGCAAA    T  T  G   A-     TTAAAATTG       A    - A  AA-------
        TGGCATTAAAATTGGCCCTC GACA TAA AAT AGGC  AATGGCA       GCCCTCAGC TGCTG CT CC

        AGCATGCTGCTACCAATGCA CTGT ATT TTG TCTG  TTGTCGT       CGGGGGTCG ACGAC GG GG

        ACACATGCAGGCAATCAGGG    C  T  -  AG     CGG------       G    A  A  GACTAACGG
        AGGACAGCAGGCTGGGGGCG    ACACA
        GCTGCTGTTGAGTCTGTTTT TGCA
        TACTGTC          ACGT
                    -----
GAM5540 3634  ATTGACATACATCCGAGAAC     AT  T   GAAC  C   -  -  CCAG   AAAAGAAAA     TTT
        ATTCTGTGGTGGATCCAGTG ATTGAC  ACA CCGA    ATT TGTG GTG GAT    TGG        TGGAAC
        GAAAAGAAAATGGAACTTTG TAATTG  TGT GGTT    TAA ACAC CAC CTA    ACC        ATCTTG
        TTCTACCAATATCACACTCA      AC  -   ----  -   T  A  TA--  ---------     ---
        CAAATTTGGTGTCAGTTAAT
GAM5541 12760 TCAGGTGGCGGTGCAGAAGG     T  CG---  C       AAC   G         TC     TCTCCT
        TCAACGCCGCAGGCACAGAT TCAGG GG    GTG AGAAGGTC   GCC CAGGCACAGA  CCAGC

        CCCAGCTCTCCTGTTGGCTT GGTCC CC    CAC TCTTCTAG   TGG GTTCGTGTTT  GGTTG
        TGTGCTTGGGGTAGATCTTC     C  TTATA   T       A--   G         C-     ------
        TTCACATATTCCCCCTGG
GAM5542 17079 TCAGTTATTCAGGAGTTTCT    GTTA     --    -   AT---     ACAAATTA
        GTATGGGGCACAAATTAGCT TCA    TTCAGG  AGTTT CTGT    GGGGC
        CTTCTTAGCAGCAGACTAAT AGT    AAGTCT  TCAGA GACG    TCTCG
        CTGAAGAAATGA          AAAG     AA    C   ATTCT    --------
GAM5543 14337 TAGGCCCCACTCCAGACCCA     CC   CCAG  C     A--     AACTGC     AAC
        CAGAATCTGAAACTGCATCT TAGGC  CACT    AC CACAGA   TCTGA     ATCTT
        TAACAAGATCCTCAGAAGAT ATTTG  GTGA    TG GTGTCT   AGACT     TAGAA
        CTGTGTGTACAGTGATGTTT     TA   CA-- T     AGA    CC----    ---
        A
GAM5544 17310 TGAACTTTTTTCCTAGTACC   A      C--    ACCCA   T    TAACAC  A-    CCGAC   TGATC
```

CATTCTAGCTGTAACACGAA TG ACTTTTTT CTAGT TTC AGCTG GA GGGCT TGG
GGGCTCCGACTGGTGATCCC AC TGAGAAGG GATCA AAG TTGAT CT CCCGA ACC
AAAGCCCCCTCTAGTTCGAA C CAT GTCAA C ------ CC A---- -----
AACTGACTAGTACGGAAGAG
TCCA
GAM5545 20893 GACTATTTGAAAAGCCAGGA ATT AA--- GG AATT A- AA GCCATGTCT
GTAAATTACAAGTCTTGACA GACT TGAA GCCA AGTA ACA GTCTTGAC TGGT
ATGGTGCCATGTCTGCCAGT CTGA ACTT CGGT TCGT TGT CGGGACTG ACCG
CAGGGCAGTGTTCTGCTGAT CT- AGTCA AG CT-- GA -- ---------
GGCACTGATTCATCAGTC
GAM5546 15059 TGATCTTACTGGACATTTTA T GA TAT TTCA AACTAGCTTATTA
TGGTTCAAGTATTCAACTAG TGATCT ACTG CATTT GG AGTATTC
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ATGCAGTAGATTA - -- TC- ---- ----------
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CAGACCCCACCTCTTCGTTG CTG GCTCCCTG GC CAGA CC CAC CGT GTCAT
TCATAGAGTGTGACCATGCG GAC CGAGGGAC CG GTCT GG GTG GTA CAGTG
CACGTGAGGCTCTGTGGCCA - - GT--- C A CACGC C -----
GGGAGCCAG
GAM5548 2763 GGGGTGCAGGGGGTCTCTGT AGG - -- T T GTGGTG
GCTGCTGCTGCAGGTGGTGC GGGGTGC GGGTCTC TGT GCTGC GC GCAG
TGCTGCTGCGGTGAGCGTGA CCCCACG CCCAGAG GCG TGGCG CG CGTC
GACCCGCACCCC --- T AG T T ------
GAM5549 18429 TCATCATCATCATCGTCATC CATC- C TC-- TCTTCA TTCTTTTC
ATCATCATCTTCACGTTTTC TCATCAT AT GTCA ATCATCA CGTT
TTTTCAATGCATTTGATGAT AGTAGTG TG CGGT TAGTAGT GTAA
TCATTGGCAGTATTTTGTGA TTTTA A TACT TTAC-- --------
TGA
GAM5550 19538 CCGCTCCAGACTTTAGTCAC AG CACT GAGTGAG
TAGGTTCTAGGAGTGAGCTG CCGCTCC ACTTTAGT AGGTTCTAG
GGGCCTGCTGAGGTGGGGGT GGTGGGG TGGAGTCG TCCGGGGTC
GG G- ---- -------
GAM5551 19291 CTGGTTCTCGCCGCCTCACG TT GC- A - C ACAAA A AGAAAGCGG
CGAACTCTACAAATGCATCA CTGG CTC CGCCTC CGC GAA TCT TGC TCA
AGAAAGCGGTGAAGCAGAAG GACT GAG GTGGGG GCG CTT AGA ACG AGT
CAGATTCGGCGCGGGGTGAA TG AAA C G - CGAAG A ---------
AGAGGTTCAG
GAM5552 14566 GGGGCCTTTGAATTTGAGGT TT AATT CT GAGGACCAG
CTATGGGCGGGTCGAGGACC GGGGCC TG TGAGGT ATGGGCGGGTC
AGGATCTGCTCGTGCTTCGC CCCCGG GC GCTTCG TGCTCGTCTAG
CGTGGCCCC T- C--- -- ---------
GAM5553 2203 AGGAGGCGGAGCTCGGGTGG C A-- T ---------- - C CGGGGAGT A AATAC
TAACGCCAGCGACGGGGAGT AGGAGG GG GC C GGGT GGTAA GCCAGCGA GGCT TA

GGCTATAAATACAGATGAAG TCCTTC CC CG G CCCG CCGTT CGGTCGCT TCGA GT

CTTCGCTGGCTTGCCGGCCC A CCA T TCGTCCAATC G - -------- A -----
CTAACCTGCTGTGCACCCCA AGA
CTTCCT

GAM5554 16156 ACCAGGTGGCCTTAGTTCTC GG- A TCC-- ATC- TCCC
CAGCATCACATCCCTGTATA ACCA TGGCCTT GTTC AGC ACA
AGCTCCTCTGAGCAGGGTCG TGGT GCTGGGA CGAG TCG TGT
ACATGGT ACA - TCTCC AATA ----

GAM5555 15245 GAAGGTGCTGACTTCCTTGG TGACTT G- G TAAAGCACC
GAGATGCCATAAAGCACCTG GAAGGTGC CCTTGGGA AT CCA
GGATGATCTCAAGGGCACCT TTTCCACG GGAACTCT TA GGT
TT ------ AG G ---------

GAM5556 10578 GGAGTGCAGTGGCGTGGTCT T AGT TCTC C CTGCCTCCC
CGGCTCGCTGCAACCTCTGC GGAG GC GGCGTGG GGCTCGCTG AACCT
CTCCCAGGTTCTAGCGGGTC CCTC CG CCGTACT CTGGGCGAT TTGGA
TCATGCCTCGGCCTCC - GCT ---- C ---------

GAM5557 10460 AAGAGGGTGGAACCAGTGTA ACC T TGT GC- AT ACTTT
AGGAAATGTGGAGGAGGCAG AAGAGGGTGGA AGTG AAGGAAA GGAGGAG AGA TTC

AATTTCACTTTGGACTCTTC TTCTTCTATTT TTAC TTCTTTT CCTCCTC TCT AGG
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TTTATCTTCTT

GAM5558 12862 GCTCTCCTTTCTGATCTAAA CTT AAA- ---- - GTAAAGAGTTAAGTG
AACTCATCTTTGGGGTAAAG GCTCTC TCTGATCT AACT CA TCTTTGGG
AGTTAAGTGTCCAAAGGTTG CGAGGG AGACTGGA TTGA GT GGAAACCT
TCACAGTTCATGAGGTCAGA --- GTAC CACT T ----------
GGGAGC

GAM5561 27 GCCAGTAACTGGGAACACAC TAACT--- AACA T G GTCCTA
TTGGGAGCAGTCCTATGTCT GCCAG GGG CACT GGGA CA
CAGTGCCCCTTTAATTTCTG CGGTC CCC GTGA CTCT GT
GC TTTAATTT C--- - - ------

GAM5562 13666 GGGTTGTGTCTCCAGTCCTC TG T CTC A TAT GG GGGGCCA
TCTGGAGGGTATGTTCTGGG GGGT TG CTCCAGTCCT TGG GGG GTTCT GCGGA
CGGAGGGGCCATCTGCATGG TCCG AC GAGGTCGGGA ACC CTC CAAGG CGTCT
AACTTCTCACCAAACAGGGC TG - CAA A TT- TA -------
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GCTATGAGGCCCTCGGGGCA CTC GCT CTC GGA GACCT GCTA TG CCCT
GGGATACAAAGTTAGTGAGG GAG CGA GAG CCT CTGGA TGAT AC GGGA
TCTATGTCCAGAGAAGCTGA T A A GTAT G TGAA ATA ------
G

GAM5564 20357 CTGGAGCAAACGCCTTCATC AA- - - GGAT-- TGGA
CGGATGCCTGGAGGCCATGA CTGGAGC ACGC CTTCAT CC GCC
AGGAATGGAGTGCGTAACGC GACCTCG TGCG GAGGTA GG CGG
TCCAG CAA T A AAGTAC ----

GAM5565 14279 ATAGTATCCAGTCACAGTGA ATCC C- TTGAA CT AGT CTCTT
ATTTGAAAGCTGGAATAGTT ATAGT AGT ACAGTGAAT AG GGAAT TTGT
TGTCTCTTACAATGGGTTCT TATTA TCG TGTCACTTG TC TCTTG AACA
CTGTTCACTGTCAGCTTATC CTAT AC ----- -- GGT -----
ATTAT

GAM5566 18914 AACATCTACCTACTCATGAC A TA- CT CA- AATA TT-- AATAACAATACA
ATGGCAAATAGTCATTTTAC AAC TC CCTA CATGA TGGCA GTCAT TAC
AATAACAATACAGTACAATA TTG AG GGAT GTACT ATCGT TAGTA ATG

TGATCGTGCTACTTTCATGG A TAA CG TTC GC-- TAAC ----------
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TTCAGCAGGGAAGCCAGGT C A T------ - GT A ------
GAM5569 18183 GTCTGGGTGCAGTTTATTCT - A TATT A-- TGAGGT
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GAAATCAGGACCGCAGCTCG CGGGCTC ACG CAG GACTAAA GAG
GGC G C ---- GTC ------
GAM5570 14719 CCACGGCGGGGCCAAGCTGG A GG AA AAAG A--- GGGA ACTCA
CCTGAAAGGCACCTGGGAAG CC CGGC GGCC GCTGGCCTG GC CCT AG
ACTCACTGGAAGGAAAGGCA GG GCCG TCGG TGGCCGGGC CG GGA TC
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CCGGG
GAM5571 12247 AAAAGTAATGTGAGTCTGTC G A C A ATTT- A CAAC
TAACCATATTTTCCTAACTC AAAAGTAAT TG GT TGTCT ACCAT TCCTA CT
AACAGTAGGATCATGATGGT TTTTTATTG AC TA ACGGA TGGTA AGGAT GA
AAGGCAAATGCAAGTTATTT A G A A GTACT - ----
TT
GAM5572 16109 TCTCTTGCAACGTGTGAGCT CA T CT ---------- AGAGTGAG
GCCTCTTGCCAAGAGTGAGT TCTCTTG ACGTG GAGCTGC C TTGCCA
GGCAAAAGAAACTAACCCCG AGAGAAC TGCAT CTTGACG G AACGGT
GAGCAGTTCTACGTCACAAG AC - AG CCCCAATCAAAGAA --------
AGA
GAM5575 3256 GAGGACCAGGGTGCAGTTAG AGG AGTTAG - GA---- AAAGATG
TTCCTCGTGTTTGAGTTCAA GAGGACC GTGC TTCC TCGTGTTT GTTC
AGATGGAGCGAGGGTGGATA CTCTTGG CACG AGGG GGTATAGG CGAG
TGGTGGGAAGGGGCACACGG GCA GGGA-- T TGGGAG -------
GTTCTC
GAM5576 13389 GTTCCAGGTTTATTTAATTC AG TTTAATTC - GT T GATG
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CCTTTGTGCACAGTTGAATG G- TGACACGT A AT - ----
GGAAC
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ACCGTCCGGTACTCGCTGGA GGTTC GGTTC CCC TCG GTC GGTC CATGGC
GCTGACTGCTGCCCGCTTGG --- G G TCA GA GCT ------
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TAATGAGGGCTTCACTGGTA TCAGTTA GTCT TCG AAAT GTCACTT GG
AAATGCTTCTGAATTGACT A ------- TA G C -----------
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TCTCTGGCTGGTAACCGCTA GCGG CAC CC CGGGAGGC TGG CTGGT CCG
CTCCCGGACACCAGACCACC CGCC GTG GG GCCTTCCG ACC GACCA GGC
GCCTTCCGTACACAGGGTGC C - ACACAT CC---- A CA -------
CCGC
GAM5581 21176 GCTGTGGTTGCTGTAAGGGG TG AAGG T CC GCCACA CG CATG

TCCTCCCTGCGCCACACGGC GCTGTGGT CTGT GG CCTC TGC CGGC TCGC
CGTCGCCATGGTGAAGCTGA CGACATCA GACG CC GGAG ACG GTCG AGTG
GCAAAGAGGCCAAGCAGAGA GA AA-- - AA A----- A- ----
CTACAGC
GAM5582 15851 TAGGGGTTTGCAAACAATAC TTTGCAA A T CC TAAAA
GTAGCCAATTTCCTTAAAAG TAGGGG ACA TACG AG AATTTCCT
GGAAATTCTTGTGTGTCTCC ATCCTC TGT GTGT TC TTAAAGGG
TA ------- - - -- -----
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GCACCTCCTCAGCTGGTGCC TCT TGGTC ACCG GGTCG CT CACGG
AGGATCTGGTCTCT C TAGG T ACTC C- ----
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GACTTTGGGAAACAAATACT GGTCTT ATCAT AGG TTTCAGG
ATTTGTTCTGG GTTT- AAACAA- G -----
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GAGGCCCTAGGAA C GA AAACTAC AA -----
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TCTGGTCTAGGACAAGACAA GGGG GCAGA GGA TTCTGG AGGA AGA AA TGC
GTGCCAGCCAGCGTTCTCTA TCCC CGTCT CCT AAGGCC TTCT TCT TT GCG
TCTTTATCCGGAATCCTCTG ACT --- - TAT A- C - ------
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GAM5587 21904 TGTACATACTTTCGCCTAAA ATACT G AGTTCTG T ACGGGG
ACAGTTCTGTATATTCTTTT TGTAC TTC CCTAAAAC TATAT CTTTTGTTA
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TTGGCCGCAC T TT-- CAG- T ------
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CGGCC - A C -- - ----
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AAAGTACTTGCCGCTCTACC CCAT TCGCCGTT TG AAACCC
C CA A-- ----------
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GGCCATGGTGTCCACCGATG CGTACA GTGTAG TGG AC CGG
TGCACACACATGC CACAC CCACCTG T ---- ------
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TATCCTTTAGTTTTATCGCT C TT T TA TC -- ---------
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AGCTTTTCCTCAGGGTGTCC GGAGG TCAG CTCCAG CTT CCTCAGG
TGAGGTCCAAGATTCTGGAG CTTCC AGTC GAGGTC GAA GGAGTCC
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TGGTCTCTGCGCATCAGTGG CAGGG GGTA G GACTA GC CTC TGG
TCATGGCTCTGGGAC TCTC-- CT GT C GT - ------
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GCTGTGGGCCCTCAGGGGGA TCA GGG CTCCCG TCGCCCCC TC
CT GG A GGTG -- -----
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TGAATCAGGTCTAGGAAAAT CA
CCGAC

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        AATTGGGATCTTGGGTTTTT AATT    GGTTCTA GGTT  AC GGGAA
        AA                TTTG     G   AA -    -----
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        CAAGGGGGCCTTGGCCGGGC     -  AGG   --     ----     ---  ---   --------
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GAM5611 8816  GATACAGCCTTGCTCTGTTG    C  C              T- A---    ACTG
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        CGCAATCTCCCGTCTGGGCG CTGT TC GAACGAGACAGCGGGTCTG  CT    CGCG
        ACAGAGCAAGACTCTGTC      C  A             CC  CTAA    ----
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        ATCATATTTGTGTTTTGCAT TTACGT     TACG TTTTG       TGTT AT
        AAAACATGCATT           ACAAAA   -    ---------   T ------
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        CCCGGGTTATCCTCGCTGGC    GT   -   A-          AC-  G  GG ------
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        CACAGACCCCAAAACAGCTG CATGT     TCG  GACA       ACAC   CATGTA
        CTTTAAATGTAC           AAATT   TC   AAACCCCAG    TCT     -----
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        CTGTTTGAAACCATCTCCCA CGCA CTTA   GGACCCTC     TACC   GTTTG
        GGCCATTCAACGC          A   CC-      ------    AAA    -----
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        GACCCAGAGGGCGCTACGGT GCTGA GGGT GCGTTGGCA     TCGCGGGAG
        TGCGTGGGCAGTCG          C   -       ------       ------------
GAM5620 1714  CGTGCTCGCGCTGCTCTCCC   T     G--   CT   CCACC       CT  AGCAGAAGA
        ACCGCCGGGCTCTGAAGCAG CG GCTCGC   CTG  CTC    GCCGGGCT   GA
        AAGATCTGGCCTGGCATCCC GT TGAGCG   GAC  GAG    CGGTCCGG   CT
        GAGCCCAGAGAGCGAGTTTG   T     AGA   CC   CCCTA      T-  ---------
GAM5621 19627 GGGGTCAAGTACATTCCCAG     CA       ----   -----     T    -  GGACAAGT
        TCGTGGCCTCTGGACAAGTG GGGGT  AGTACATT    CCC     AGTCG GGCCT CT
        GCGGGCCCTGACTCATGAGG CCCCG  TCGTGTAA    GGG     TCAGT CCGGG GG
        GTTCCAATGTGCTGCCCC       --       CCTT   AGTAC    C    C --------
GAM5622 20828 ACCTTGTGGGGCTCTTGGGA     G    CTCTT    TG   --    ACCCAA
        TGGGCGGGCACCCAAGCCCT ACCTT TGGGG    GGGA  GGC  GGGC
        GGCTTGTCCTTCCCAGAAGG TGGAA ACCCT    TCCT  TCG  CCCG
        T                 G    -----   GT   GT    ------
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        CCGGTTCCCTTTCCACATGA ATGCA CGA TTTATGGCTT     CCG TTC     CCTT  CA CATG CTCCA
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GCTATGATGCAAGGACTTTA A GGGA
GAGGCGGAAAAGAAGCCGTA GTC CG
AATCGATGCAT TAG GC
G ----

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GAATTTTTGAATGGTAGAGA ACA CGAC AGAGA GGT GTTTT GG
AGAAACAGCACA - AAAGA- T AA TAA- ----
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CCTAAGCACTCATCTTAACC TGGGAAAGTTC AG GAAG CTAAG
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TGGACTTTTCTA TCAAT T T ----------
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TAAATTTTGGCGGAGGCAGA CTTCTGAGA GAGG GGTTT TTA
GAGTCTTC GACG C TAAA- -------
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ATTGTGGACAAAGTTATTAT AACGT AAA-- A ---- --------
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GGATCGGAGTCTCCTCTGCT CA GTCGT CT CCTCTG GGGCCGG
GGGAC GG -- - AGGCTA ------
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CTCATCAAAGATCCTTCTGG GTC TCGG AACTCTG TC TCCT AGA
TCTCAAGGGCTCTG - G-- G T - ----------
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GAGAACTGGGGGTTTTGAGG CTTG GTTGGGG ACATG GT AC GGGGGTT
AGTAACCCTTGTGAACACAT GGAC CGACCTC TGTAC CA TG TTCCCAA
GTACTCCAGCAGCCAGG CGA A A AG-- - ---------
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GACATTGTA

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GACAAAGCACAGAAAAACCA CGT TCTTAG CCA AGT
GATTCTAATGC AA A AAAAGACACGAAAC --------
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CCAAAGCCAGTGCCTTGGGT GATCTT TTGTTG TC CCCAA GC
GAGCAGCAAGTCCCAAGATC CTAGAA AACGAC AG GGGTT CG
CCCTG G- T C ----
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TGGGAGAGCTTCCAGAATT GAGAGGGTA AA ---
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TGGAAGAAGGGG -------- G C ATAAAAC ----------
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TACAGGTTAGGGCAATTTGG -- G T-- G ----- AC ------
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CACTAATTCAATCAACAATA A C A AA A - C C - ----
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GCTGGG ATGAC G G - --------
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TTG A- AATTATGACCATTT ATT - ----
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TGCGGCCGTGGT GT G-- T C GT A ----
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TGGTGAGATCTGCG

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TCCGACT T G AGTAT C GC ------
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T AC C CTA -----
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GCTGGGCCTGACGGAGCGCC GTGG GT TGTG TCGGCAG TGGGCCTG CG
GGGTCCACATCAGCCATCTG CATC CG ACAC GGTCGTC ACCTGGGC GC
CTGGCCCACACGCGCTAC G C CC TACCGACTAC C ---
GAM5684 12145 TCTCTTAAGTTGTTTTATTA A----- A---- ATTT TTACT
AGTTAATTTGTCTTACTGAC TCTCTT AGTTGTTTT TTAAGTTA GTC
CATATAATTTAGAACAAAAA GGAGAA TCGACGAAA GATTTAAT CAG
GCAGCTGTACTAAAGAGG ATCATG AACAA ATAC -----
GAM5685 13223 ATGGTCACCCCAGGCCATGC A CCA G GCA GA TTTT
TTGCACTCAGAAGTTTTCTC ATGGTC CC GGCCAT CTT CTCA AG
ATGAGGAGATGGCCATGGCG TGCCAG GG CCGGTA GAG GAGT TC
ACCGT C TA- - --- AC ----
GAM5686 22581 AGTCAGAGAGAAACTTGAAT AGAAAC AA T CCTA- AAAA
GGTGAATTCCTAGAAAAATC AGTCAGAG TTG TGG GAATT GA
AAACAAATTCTCAAGCAAAT TCAGTCTT AAC ACT CTTAA CT
TAAGTTCTGACT GAATTA GA - ACAAA ----
GAM5687 9044 TTAACTACTAAAAACTTAGA C AAA -- GAAAG-- TT AATG
ATTATGAAAGGCATTTGGTT TTAA TACTAA CTTAGAAT TAT GCAT GGTT
AATGAATTCTATGTAATGAG AGTT ATGATT GAGTCTTG ATG TGTA TTAA
AGTAATGTTCTGAGATTAGT A A-- TA AGAGTAA TC ----
AATTGA
GAM5689 13898 GCCGCAGGAGGGCTCGGCCG C G C T C AAATG
TGCTGCGGGAAATGCTCTCG GC GCAGGAGG CT GGCCG GCTG GGG
GTCGGCCTAGGCTTTCTGCT CG CGTCTTTC GA CCGGC TGGC CTC
GC T G T - T -----
GAM5690 16457 CCGCACTTCCAGGGCCTATG A AGG A AGGATG T --- CCGCCGA
CAGGATGTGCAGGTGGCGTT CCGC CTTCC GCCT TGC TGCAGG GGCG TTCGCGCT
CGCGCTCCGCCGAGGTGCGA GGCG GAAGG CGGG ATG ACGTTT CCGT AAGCGTGG

AACTTGCCTTTGCAGTAGGG - CAA G ------ - TCA -------
GCAACGGAAGGCGG
GAM5692 4574 GCGTTCTGACGCTTTGTACG C T ACG ----- CATGGGCCA
CTCTGCGTTCCCATGGGCCA GCGTTCTGA GCT TGT CTCT GCGTTCC
GGAACGCGGATGGGAGACAA CGTAGGGCT CGA ACA GAGG CGCAAGG
CACAGCCTCGGGATGC C C ACA GTAGG ---------
GAM5693 19856 CTCTCCCTTGCAATTGTTCG C - ATT T- C C GCCAAA
CCCCTCTGGGCCAAACCAAA CTCT CCT TGCA GT CG CCCT TGG
GGGACGCTGCTCTGTACAGG GAGA GGA ATGT CG GC GGGA ACC
TAGAG T C CT- TC A A ------
GAM5694 220 CTTGAGAGAAGAAAAATTTC G A AAAAA A AA CC AT CTAGAATA
AGATTAATTGCCTCAATTTG CTT AG GAAG TTTCAG TT TTG TCA TTGA
ACTAGAATATCAATGAACCA GAA TC CTTC GAAGTC AA GAC AGT AACT
GGAAAACTGAAGCACCTTCC A C CAC-- A AG CA -- --------
CTAAAG
GAM5695 21022 TTGGATGGGTCCTGTGGGAG -- TC GTG- AG C CT AACCGAATA
GAGCACCTCAAACCGAATAT TTGGA TGGG CT GG GAG AC CA
GGAGTTTTCAGCCAAAAAGA AACTT ACCC GA CC CTT TG GT
GCCCACTTTCAA TC GA AAAA GA T AG ---------

GAM5696 22648 GCCATATGAGCCACTTCTCA T G CCACC TCTTTAAA CATTGAAC
GCCACCATGTCTTTAAATTC GCCA ATGA CCACTTCTCAG ATG TTCATCGA
ATCGACATTGAACTTGGTGA CGGT TGCT GGTGAAGAGTT TAC AAGTGGTT
AGCCCCATTTCTTTGAGAAG C A TCTT- CCCG---- --------
TGGATCGTCTGGC
GAM5699 6502 TGGCTTTCGCCAGTAGCTGA - -- CAG - GGA C CCA T GGTAGA
GGACGCCCTTGTCCATCATA TGG CTTTC GC TAGC TGA CGCC TTGT TCA AC
CGGTAGAGTTGAACACAGAG ACC GAAGG CG GTCG ACT GTGG GACA AGT TG
GTGGATCAGGCTGAGTGCCA A AC TGA G AG- A CA- - ------
GGAAGACCA
GAM5700 18030 GGTGCAGTACCGCGGCGAGG GTA GA--- A-- ATGCTC
TGCAGGCCATGCTCGGCCAG GGTGCA CCGCGGC GGTGC GGCC
AGCACCGAGGAGCTGCGGGT CCGCGT GGCGTCG CCACG CCGG
GCGCC G-- AGGAG AGA ------
GAM5701 15604 TGTGTCGCGCGGGTCAACCT T C CA TG A ---- CCCTA
GGCCACGTGCTCCCTAGGTC TG GTCG GCGGGT ACC GCC CGT GCT
CATGCGCGGTTGGGTGCGCC AC CGGC CGTCCG TGG TGG GCG TGG
TGCCGGCCCA C - CG GT C TACC -----
GAM5702 7283 AGGAAAGGAGGAAGAAATGT A- G - TT-- G AAT
TTTCTTAGGGGAATTCGCTA AGGA AGGAGGAA AAAT GTT CTTAG GG
GGTTTTAACGATTTGTTTCT TCCT TCCTCTTT TTTA CAA GGATC CT
CCTGCTCCT CG G G TTTT G ---
GAM5704 8032 GCAGTGCTTGTCTAACAGCT G GT AACAGCTT TTTTCTTCGGCATCCT
TCTGGGTGCAGATTTTCTTC GCA TGCTT CT CTGGGTGCAGA
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TTATTACAGGTAGGTAGTGC G TG CATTATTC ----------
GAM5706 17886 TCCGAGTTCCCAAACAAAAC AACAAAACAC TA A CTTCA
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TCTGTAGGCCTTGGGAACTT AGGTTCAAGGGT TCC GGAT TCT
GGA ---------- -- G -----
GAM5707 9355 TCTTCCGGCAGACCGATTGC T - - CT-- T TCAA
CTTCATGAAGGCTTCAAAGT TCT CCGGCA G ACCGATTGC TCA GAAGGCT
TTTCCTGGCTCTGCAGTTGG AGA GGCCGT C TGGTTGACG GGT CTTTTGA
TACTTGCCGGAGA - T A TCTC C ----
GAM5708 15976 GTCTGGTGGCCGCTCATCTT G GCT CTT G G GGTCCAGGA
GTGCACGGTTGTGCTGGTCC GTCT GTGGCC CAT GTGCACG TTGT CT
AGGAGGGATAGATGTGCGCT CAGA TACTGG GTG CGCGTGT GATA GG
TGTGTGGGTCATGAGAC G GT- TT- A G ---------
GAM5709 19434 GGCTCAGGCAGTGGGTGGGG AG AG GG ----- A AAAG GGGTT
AAGGGGACAAAAGCCGGGTT GGCTC GC TGGGT GG AAGGGG CA CC
GGAGCTGCTTCTTTTAAGCC CCGGG CG ACCCA CC TTCTTC GT GG
AAACCCAAGCAGGGGCC GA A- AA GAATT - CGA- -----
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AGCACTCCTGAAGCAGATGG GGGCCAGG TCC GA GC CTCCTG
GCAGGAGGTGATCGAGGAGC TCCGGTCC AGG CT TG GAGGAC
CTGGCCT G AG---- AG - ----------
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ATGAGGATGCTCAGTTTAGC TGAGAA CCA GCAAT TGAG TGCTCAG TAG
ATCTCCTATTTGAGTAGATT ATTCTT GGT TGTTG ATTT ATGAGTT ATC
TACAGTTGTGTGGAATTCTT AA- G AC- AG T- ------

A
GAM5712 8252 CGTGGAGGCGGTGAAGGAGG TGAAGGAGGAGG CT C C GCAGGAGA
AGGCAGCGGCTGTGGCAGCC CGTGGAGGCGG CAGCGG GTGG AG CCG
CGGCAGGAGACGGACTCTAT GCACCTTCGCC GTCGCC TATC TC GGC
CCCGCTGGTGGACGACATCC TACAGCAGGTG- C- - A --------
GCTTCCACG
GAM5713 3383 TCTTCCATCGGCCTCGGTCT ---- CC T TT ATTCCCTGC
TTTAGATTCCCTGCCTTCGA TCTTCCA TCGG TCGG CTT AG
GCCGAACCGAGATTTGGAAG GGAAGGT AGCC AGCC GAG TC
G TTAG A- - CT ---------
GAM5714 1659 GATTTTTCTCCAGGCTGTAG CCA C AA-- AG TAGTA
AACCTGCCAGACTGTAGTAC GATTTTTCT GG TGTAG CCTGCC ACTG
AGTGGCAGGCAACTTACATC TTGAAAAGG CC ACATT GGACGG TGAC
CCTTGGAAAAGTT TTC T CAAC -- -----
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AAGTATTGATATGTTTGTTT GAGACTATT ACCCTAC TTTT TTTG TATAG
TCTCATCCCAAAATTATCAG AAA-- TC G - ---------
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GAM5717 7773 CTCCCCCAGCTCTGCTGGTC C G - --- G - ACAGCGTCA
CCGGGGCCACAGCGTCAGGC CTC CCCA CTC TGCT G TCCCG GGGCC
CTGTGGGGGTGGAGGTATGA GAG GGGT GAG ATGG T GGGGT TCCGG
GGTGGGAGAG A G T AGG G G ---------
GAM5718 6138 GTGGTTACGTTTTCCACAGG G A-- CCA G T TT - CATCA TCTTCCTCT
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GGCTCTCTTTGATGGATGCA G ACA TA- A T GG A CTCGG ---------
TTTCCATGATGAAATGACAA
GGCAC
GAM5719 8769 TCTTATGGTTTATTCCTCAG A A----- AG TA A G A G TTA
GTATCATTCTGATCATTGTT TCTT TGGTTT TTCCTC G TC TTCT ATC TT TTG
GTTACAGGAGAGATGAGAGG AGAG ACCAAG GGGGAG T AG GAGA TAG GA GAC
AAGTTAGAGGGGCTAGAAGA G AAGATC AT GA - G A G ---
ACCAGGAGA
GAM5720 8225 GTAGTTCTTGAGCAGTGCGT - TG T - TGGTTGT TGT
CATGGTTGTGCGAGTTTGTG GTAG TTCT AGCAG GCGT CA GCGAGTTTG
TCAAACTTGCTGTACGTCTG CGTC AGGA TCGTC TGCA GT CGTTCAAAC
CTTGAGGATCTGC T GT - T ------- ---
GAM5721 5548 TGTATCATCATTGTTATTTC --------- -- C - AATCATAATGC
ATTAGATTCTCAAATCATAA TGTATC ATCATTG TTATTT ATTAGATT CTCA
TGCTGAGTGGTTTAATAAAA ACATGG TGGTGAC AATAAA TAATTTGG GAGT
TAATCCAGTGGTACGAATTA AATTAAGCA CT A T ----------
AGGTACA
GAM5722 8912 TGTCAAATTTGTAAGCTTCA A A-- TT G T A C ATCT
TAGGGATGGACATCATATCT TGTCA ATTTGT AGC CATA GGA GG CAT AT

ATAATGCCCTTCTATATGTG ACAGT TAGATA TCG GTAT TCT CC GTA TA
CTACCATAGATGTGACA G CCA T- A T C A ----
GAM5724 8111 GTCCGCTCTGACTCGGCTGG - - CTC T G TT CTCG
CGTCTTTCGCTCGCGTTGGA GT CCGCT CTGA GGC GGC TCT CG
GGCCGCCTTTTCAGAAGCGG CG GGCGA GACT CCG CCG AGG GC
TGC T A TTT - G TT ----
GAM5725 3493 GACTGCGGGACGGACGGTGG T--- A-- - AC AC GTTTGTA
ACGCTGGGACGCGTTTGTAG GAC GCGGG CGGA CGGTGG GCTGGG GC
CTCCGGCCCCGCCGTTCCGA CTG CGCCC GCCT GCCGCC CGGCCT CG
CCCCCGCCGCCGTC CCGC CCA T C- -- -------
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GTAAAAGTCTTAAACTAACT AAATGTG AATACTG GC TG AG TTAAA
TTAAAGCTAACAAATCAAAG TTTACAC TTATGAC CG AC TC AATTT
GCACAGTATTAACACATTT AA A GAA TAAACAA GA -----
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GAAGGTGCGAGACCTCAAAG GGGG TGGCTGT AGGTGC GA TC
AAACCGATATCAAGCACTTG CCCC GTCGACA TTCACG CT AG
CGACAGCTGAAGCACCCC ACGAA- GCG-- AA AT ---------
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ACTATCTTTTAAGATGTCCC CCT ATCGC AAG ACAC TG AG TTTC
ACATGGAAGACGCTATTCC T AG GT- CC T AAT ----------
GAM5730 22552 CCACCTGCCCCTGAGGGAGA A GC -- AA-- TGAAGTATT
GGAAAGGTGAAGTATTCCTG CC CCT CCCT GAGGGAGAGG AGG
CCACCTCTCCCTCCAAGGGA GG GGA GGGA CTCCCTCTCC TCC
AGGGG - A- AC ACCG ---------
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CTGAACCGGGTGACAGCTGA CAC GCT CTA CCAGGT GCTG GGGTGAC GC TGA GGA
GAGGAACCTGTTTGATCGTG GTG CGA GAT GGTCCG CGGC CCCACTG TG GCT TTT
TGGTCACCCTACGGCTGCCT - GA CC T AT-- G T AG -----
GGCCTAGAGAGCGTG
GAM5732 2400 GCCCCTATGGGGCCCACATG - CCACATG TA AGCA CACCTTT
GGTGGTAACAGCAGCAGGAC GCCCCTA TGGGGC GGTGG ACAGC GGA
ACCTTTTCCAAAGCTGTCCA CGGGGAT ACCCCG CCACC TGTCG CCT
CCAGCCCCACTAGGGGC C A------ -- AAA- -------
GAM5733 4733 TTTTGTTTACAAGATTGATT T A A A A T CAAA TCAT
TAATATGAGAGGATACAAAA TTTTG TTACA G TTG TTTA TA GAGAGGATA ATG
TGTCATCGTTATCCTCTCTT AAAAC GATGT C AAC AAGT AT CTCTCCTAT TGC
ATGAACAACTGTAGTCAAAA T - - - - T ---- ----
GAM5734 4741 TGGGGCACTGAGGCCCGGGA T G C A AG ACTGGACA
TGTAGGCACTGGACAGCAGC TGGGGCAC GA GCC GGG TGT GC
AACCCAGGCATCTGTGCCCC ACCCCGTG CT CGG CCC ACG CG
A T A A A A- --------
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CGCAACAGGGGATCCCTTCC TTCCGCCG CCTGT CGC GGGG
CAGCGAATTACAGGCGGCGG AAGGCGGC GGACA GCG CCCT
AA - TTAA-- A--- ------
GAM5736 5298 CCTCTCTCTGTGTGGGACCA TCT T C G AAG----- - - C AGAATCAA
GGACAGTGGCTTAAGTCTCC CCTCTC GTG GGGA CAGGACAGT GCTT TCTC CA CTC AGGAA

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        TTTCTAGAGTTGTGAGAAAA     TGT  T   A      G   AGACCAAA   T T  A   --------
        CCAGAGAGTGGCTGTCCTGA AG
        TTCTTCACTGTGAGGGG

                  --
GAM5739 4698  GGTTGAAAAACCAGGGCCTT   TGA       ---   - --------  A   TACAGCAT
        CATCTAGGAAATACAGCATT GGT  AAAACCAGGG  CCTT CA      TCT GGAAA
        TTCCAGAAGCTTCTTTGAAA CCG  TTTTGGTCCT  GGAA GT      AGA CCTTT
        GGGAATCCTGGTTTTGTTGC   TTG       AAG   A  TTCTTCGA  -   --------
        C
GAM5740 9932  CCTCCTGGCCCTTTGGGGTG     GG-   T   -  CCCCCAATGTAA
        GTACCCCCAATGTAATGCTA CCTCCT  CCCTT GGGGT GGTA
        ATCCCTAAGGGAAAAGGAGG GGAGGA  GGGAA CCCTA TCGT
                        AAA   T   A  ------------
GAM5741 17090 GGGGTTGCCGCTCTGGGAAC      -      GGAA  GA-  TTT  G-- A  TCTGTC
        CCGACCGTTTGGAGCCAGGG GGGGTTG CCGCTCTG   CCC  CCG  GGA  CC GGG
        TCTGTCCCCCGGAGGTCCCG CCCCAAC GGCGGGGC   GGG  GGC  CCT  GG CCC
        GAAAGGGCGGGGCGGCCAAC      C      ----  AAA  ---  GGA  C  ------
        CCC
GAM5742 19084 TTCAGCATTTAGGGGGTTCC       TT   - TC   GA-       AGAGA
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        TCTGGGCCCAGAGCCAGCCA GAGTTGTG  TCCTC CA  GACCG  CCCGGGTCT
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GAM5743 7267  CTGTGCCCTGACCCTACAAG       GACCCTACAAGAT   -  -   ATGCTCA
        ATGCCAAGAGAAGATGCTCA CTGTGCCCT          GCCA AGA GAAG
        CTTCATCTATGGTTACCCCA GGCACGGGG          TGGT TCT CTTC
        AGAAGGGGCACGG            AAGAACCCCAT--   A  A   -------
GAM5746 18969 CAGGGAGAGGAAAGGAGGGG    AGA  AAA  A    AAAGA  GA        ACAATGGCTT
        CAAAGAGGTGAGGGACAGGG CAGGG  GG  GG GGGGC    GGT  GGGACAGGGGGGG
        GGGACAATGGCTTTCCCTCT GTCCC  TC  CC CCTCG    CCG  CCCTGTCTCCCT
        GTCCCCTGCCAGCTCCCCCA    ACG  GAC  -   A----  TC        ----------
        GCTGCACCCTG
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        AGGAGCACGTGGACAGTCTG CTTT  CACTG    GCTTCAAGG         GTCTGAA GCC CCA
        AAAGCCCCAATATGGATGCT GAAG  GTGGT    CGGAGTTCC         CAGACTT CGG GGT
        GGAGGCTTCAGACCCCTTGA   TT   AGATA      C----------     -  A  ----------
        GGCATAGATGGTGTTGAAG
GAM5750 1170  CACCAGCCTTCCTGTATAGA     CCTTCCT  ATA     AAA  TTAG
        CACTAAATTGTTAGCAAGAG CACCAG     GT  GACACT  TTG
        TGTTGAGCTAGTTCCTGGTG GTGGTC     CG  TTGTGA  AAC
                        CTTGAT-  AG-    G--  ----
GAM5751 8209  GATGCACTTGTCCGTTCCCA  GCACTTG   T  ATAGCC  T  A  ATCCCCTGC
        TAGCCTGCTGCTATGATCCC GAT     TCCGT CCC     TGC GCT TG
        CTGCCACAGCTGCACAGAGG CTA     AGGCA GGG     ACG CGA AC
        GGCACGGAACTCCAAATC    AACCTCA   C  GAGAC-  T  C  ---------
GAM5752 6795  GCTGCCTGCTGGGTCCCTGG    CT- T    C-    T  --   C  ATT  TGCCGTTTCCCC
        GGTTCGCTGGGCCCTGATTG GCTGC  GC GGGTCC  TGGGGT CGC  TGGGC CTG  GC
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AGCTCGCCGTGCGCCCCGAC TAG C CA C CC A GT- ----------
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GAM5755 1039 AGAACCTTCCCCTTGCTTAG C -- G CCAACTCTATTTCCCCTCC
CCAACTCTATTTCCCCTCCT AGAA CTTCCC CTT CTTAG
TGAGGAAGACGGGAGGATTC TCTT GGAGGG GAA GAGTT
T A CA G ----------
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TCGGTTACTGCGGTGGCAGC CCG TCA CGGT CCG CCGGT CTCGA CG G CGTC
TCTGTCTGGCCGGCCCCTTG C - TCC G CTGT - GT G ----------
GCACTCGCC
GAM5757 2395 GCGGCGAACTTCTGCACACA CT C - TC T TG T TCTC TGACTT
GCTCCAGTGTTTGCTCTGGA GCGGCGAA TCTG ACA CAGC CAGTG T C CTGGA GA
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GTGGCCACTGCGTTGATGTT TC - A C- C GT C ---- ------
GGGCTTTTGCTGC
GAM5758 22378 GTCCTGCAGCTGCAGCTGAG A G GAGA - --- GAGACTG
ACTGCGGCGGAGACTGCGCG GTCCTGC GCT CAGCT CT GCG GCG
AGCGTGAGGAGAAGCTGGGG CAGGACG CGG GTCGA GA TGC CGC
CCGCAGGAC C G AGAG G GAG -------
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AAGAAGCCAGTCAGCCTGCC GAGTTT CGTCCG GACCGAA GA ATGG
CATTTGAG ACC ACT- --- - ----
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AAGTTCAAAAACTATATGGG GCAGAATA TT TGGCC GTTCA
CACGGTTATGAAATATTTTG TGTTTTAT AA ATTGG CGGGT
T A GT CA-- ---------
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TGCCACTTACTAGCTGTGTG CGTTTT GAA AA TCTAG TGTCG TTCA
ATCTTGAACAAGGAATTTTG AAG C--- GT TG ATCA -----
C
GAM5763 14097 GAGGGTTGAAGTGTGCTTTT TGAAGTG T --- - TTTA
CCAAGGTTAGAGGTTTTTAA GAGGGT TGC TTTCCA AGGTTA GAGGTT
ACCTTGTGGCTTTAATGGGA CTCCCG ATG AAGGGT TTCGGT TTCCAA
ACGTAGTTTGCCCTC TTTG--- C AAT G ----
GAM5765 10289 CAAATGTAGTTGTATTTCAA - AG G CA ----- CAAA
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GAATCCCTAAGTAGGAAGAC GTTT ACA AG ATGAA TCC AGACCAG
AGTTTG G GA G -- CTAAG ----
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AAAATAGCAATGTACGGAGT GT GG TGTTG GTGTG CAAAAT
TTTGCACACCACAACAGCCA CA CC ACAAC CACAC GTTTTG
GAC GA G AC - ----------
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TATTTATGCTGCCAAACTCA GGAT TGAA ACTAGACATTAT GCTGC AAC
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TGTCTAGTGGGGCTTCATCA CT CGGGG TTTGT -- ------
TCC

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CTCTGATGTCCTGGTTTATG CACAG ACC TTG TGGT TGTAGT CC
TTACCAGCAATGACAC TAACG A TATT CC CT --------
GAM5769 2320 AAGATTGTTTCAGGGTGTCT TTGTTTC- T -- CTC -- CTGCT
CAGGGTCCCTCTGTACCATC AAGA AGGGTGTC CA GGGTCC TGTA CCAT
TGCTGTGGAATGCAGGACCC TTCT TCTTACAG GT CCCAGG ACGT GGTG
TCTGTGACATTCTTTATCCC TCCCTATT T CT --- AA -----
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CAGGTAAATGTGCTCCAGGA CTGCT CTGA CCG GGAC TCGTGT TGG
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GAM5771 4991 TAGTTGCTCCCCTACCTTCT - ---- TC--- C-- GGAT
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TATTGCTCCATTTAGGGTCT CGGCCG GG GTGA GG CGG TCT CTGG GA TACC
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GTGGCCGATTGAAAGGTATA TTTTGA GG GAATTAA TATGGA TT GCCGG
TTAAAATTAAGGGCAGTTTT C - AATTA AAG--- A ---
GAM5775 17872 GACCTTTGTTCCTTAAAGCA - C AAA AT- A TTCT
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GTTCTCTGTGGGGAGTAACA CT GGGAACAA GAG TGT TTGAT GTT
AGGGCTC C T GGG CTC - ----
GAM5776 14860 CTCTTACTCCCTTTTCCCCT TTACT CCCC - GT- ATG
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GAAACTGTAGTTTTGCCTTT GAG GGGAAAG GGTTTCC TTTTGA CAAA
GGATGAAAGGGCATTTGAG TTTAC TA-- G TGT ---
GAM5777 21418 TGAAAATGAGTTCACAATAG TCA----- TGT-- TTTGTTTCTTGGTTC
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GTTCTCTATTCTATTTTATT ATTTTTATTCG GTTATTT TATCT
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GTGGTGGCTGGAGGTGGCCG GTT CCGGTGGAGG TCGGT GT TGG
AATTG AAG -- G G- ------
GAM5779 9770 GTTAGTTAACGCTGTTCACG TT GC- TT TTTC CCTTTT
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ACTTAGAGCTGTGTGTGTAC CAGTC TTG AT GTGTGTCGAGA AC

CAGTTTCCTGAC CT ACC GT TTC- ------
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CCAAATATTCTCCAGGCGTT TTTA ---- CC - --- AA- ---------
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TGA
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CGTGGCCCACCGCTCCTTCG GCTG CG CTCGCAC TG CGC G CTGGCG CTTCC CGCC
CGGTCCCTGCCGCCACCGTA - A A CCAC C TCC --- T-- ----
CACGCTCAGCGTCG
GAM5782 2026 GAAGCCAAACTGCAGGCCTC CAAACT-- C-- GC CTAAAT---- TCCTA
TGCCCTCCCCTAAATGTCCT GAAGC GCAGGC TCT CCTCCC GTCC
CCTAGGATGCAGTCACTCGG CTTCG TGTCCG AGA GGAGGG TAGG
GAGGAAGATGTGCCTGTTAC TGAACCAT TGT A- CTCACTGACG -----
CAAGTGCTTC
GAM5783 15971 TTAGAGATGTTGGAAGTTGT TGG G TTTTTC GT TCTTGTATAT
TGTTTTTCCTGTCTAATGTC TTAGAGATGT AAGTT TTG CT CTAATG
TTGTATATCATTAGGAAGTT AGTCTCTGCG TTCAA GAC GA GATTAC
GTCCAGAAACTTGCGTCTCT --- A CTGTT- AG ----------
GA
GAM5785 6216 GGTTTTCAAGCATGCAAAAC TTTCA CAAA- T AACTTACTGAAAAATATTA
AGTTTATTGTAACTTACTGA GGT AGCATG ACAGTT ATTGT
AAAATATTAACAATTAATTG CCA TCGTAC TGTTAA TAACA
TGAATACATGCTGTTACC TTG-- ATAAG T ----------
GAM5787 22348 TGGGCCACAGAGGCATAAGG GC --- AAG - TAAGAAAT
TCTGGGTTAAGAAATATCTA TGG CACAGA GGCAT GTCT GGGT
AGACGTGCTCAATCTGTGTT ACC GTGTCT TCGTG CAGA TCTA
CCA TT AAC --- A --------
GAM5788 10499 CAGGTGTGCATGGGGAGGCC G GGG GC T G-- A G A TG GAC
TGTTGGCTGCTCACTGGCAT CAGGTGT CAT GAG CTG TG CTGCTC CT GC TT G
TTGGGACCTGGAGGCGGGGA GTCCACA GTG CTC GAC AC GACGAG GG CG AG C
GCAGACACATCAGCACTCGA A AG- AC T ACA - G G GT ---
GTGAACACCTG
GAM5789 13941 GAAGCAAGATTTACTAGGGA A A TA--- CA-- GATAG CAATGAC
CATCTGGATAGCCCAGGACA G AGCA GATT CTAGGGA TCTG CCCAGGA
ATGACTTCTGGGAACAGGAA C TCGT CTAG GATCCCT GGAC GGGTCTT
GCTCCCTAGGGCCAGATCGT G G ACCGG CGAA AA--- -------
GCTGC
GAM5790 18891 GATATCGAAGAGCTGGAGAC A A--- G CCAA ---- AATG
CAAGGCCGTGGGAATGTCTA GAT TCGA GAGCT GAGA GGCCGT GGG
ACGATGGCCGCTTTCTCAAG CTA AGCT TTTGA CTCT CCGGTA TCT
TTTGACATCGAAATC A ACAG A TTCG GCAA ----
GAM5791 12811 TGCAGACCTGGCTTAGAGGA A T ------- - AAGGCTG
CCCCTAAGGCTGAGGGGTCA TGC GACC GGCTTAG AG GACCCCT
CTTCCAGAACTGAGTCCGGT ACG CTGG CTGAGTC TC CTGGGGA
CCGCA C C AAGACCT A -------
GAM5793 22424 GTTTTTCATCTGCACTGCCA CA T AC G A G GATGG

AGACTGAGTGGTTGGATGGC GTTTTT TC GC TGCCAA ACTG GTG TTG
AAGCATGTGGTGTTGGCAAA CGGAAG AG TG ACGGTT TGGT TAC AAC
GTGAAAGAAGGC AA - AA G G G -----
GAM5794 8896 GTCATTCAAGAGTTGCTTGT A AG -- GA ACTA AAAGA
GGACTACTATGTGAAAGATA GTC TTCA AGTTGC TTGTG CT TGTG
CAAGACACAAATGTAACTTC CAG GAGT TCAATG AACAC GA ACAT
TGAGGAC - CT TA A- ---- -----
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CTTTTATTATCTTCATTTAC TTTTTTCACTGG GTTG CT TATTA TTC TTTACA
AAATGAAACTGTGGAACAGA AAAGAGGTGATT TAAC GG ATAAT AAG AGGTGT
AAGTAATATGGCCAATTATT AT-- C T- GA ACA --------
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GAM5796 17394 GAGCTGGCTCCTGGGCCCAC T GG C-- GCTGT AATAG
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CAGGCTGTGCCTGCAGAGGA CTCG TCGAGGA CG GTGT CGGACCT
GCTGCTC - GA TCC ----- -----
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TTGAATTGACTGGCCAGATG TTACCTGTT AGC GA TTGACT CC
GGGTCAATCGTTTGACAGGT AATGGACAG TTG CT AACTGG GG
AA T --------- - -- ----
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TACCAGCAAAGACCGCCCAG CCTC TG TCCCCATG GT GC GAC
TGTCCCAGCCTAGCCTTGTG GGAG AC AGGGGTGT CG CG CTG
GGGAGCAAAGAGG AA- G TC ATC- ACC --------
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TTTACATCTGCTCATGTAGG CATG AGG AA CTATAT TA TTATAA ATT TGG ATGTA
TTTTACAATATTCCATGTAT GT TGT C G CC C T ------ ------
ATCCAATGTGGATGGTAC
GAM5802 22351 CGGGCCACTTTCTCAGCCTC CT-- -- TCC CCCGTAATTTTCCTT
CTTCTGCCCGTAATTTTCCT CGGGCCACTTT CAG CC TTCTG
TCAGGATCTGGTACTGTTCT GCCCGGTGAGG GTC GG AGGAC
GGAGTGGCCCG TCTT AT TCT ----------
GAM5804 4359 GGACCTGCAGCTGTCGCGCG C-- -- C C-- G - CCA--- GATC
AGGGGTCTGGGAGATGGGGC GGACCTG AGCT GT GCG GAGGGGTCT GGAG ATGGGG CTG

CACTGGATCCAGCATCCTCT CCTGGAT TCGG CA TGT TTCTCCAGG CCTC TGCCTC GAC

CCGTACTCCAGGACCTCTTC AAC TC C CTC A A TCCTAC ----
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GTCC
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GGCAAGCCATCCCCTTTGCT AGTGTG TTTCGTTT TACCGA GGC
TTTACAATACAGTGTGA ACATAACAT CCCC AC- ------
GAM5807 15585 GCTCACCAACTATAAGTAGG C C- AGTA A G - TGGTA
AATACTGGCTGATCTTGGTA GCTCA CAA TATA GGA TACT GCTGA TCT
GGACTCAGCGGGTATCCAGT CGAGT GTT ATGT CCT ATGG CGACT AGG
GTAAATTGTTGAGC T AA GA-- - G C -----
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TGGGCCTCACACAGTACCGG TG TCAA ACTG G GCCTCAC
TGAGGCACGGTAGTCTTCAC AC AGTT TGAT C CGGAGTG
TTTGAAACA AA TCACTTC GG A ---------
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TAGTAACCTTCCTGGTGCTC GAAC CT TACG TGG ACTGTGA GC TCCA GT TCGT GG
TGGCAACCTCGCAGTGTCAT - TTC G- T C - ACG- C - -----
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GAM5811 4999 GAGAATGGGGGAGGTGTGTG A- G GTG G A GGACTCAGA
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AGCAGGTGTCATAAACTGCC TTCT ACCCC TC ATACTGT GG ACGA
CCAGCTCTT CG G AA- - - ---------
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ATCCCTTACCCTCTGTCTCT T- CT TC TGTC A A- -- -------
CCTCCCTGTAT
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ACAAACCCAATTTTTAAGAA AG AACG TTCACA GGAC ACC AAGA GTTT
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CCAGGGCGGAACTCTATCCA GA TGGGGAG GACACAG GGGCGGA C
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TTAGGCCAAGCATGGTGGCT CT CGG GGT CGAACCG GATTT TC
C - T A ------ G ------
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TG A TA GT - ----------
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ATGCTGTACAGGTACAGGCT CACT GA GTCGGAC GGAC TG CGTAG CGG
GGAGATTTTCAC TTTA G AT A T T ----
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CTAAATCCAGCCATTAAGCT TCTGC GGC CCTTTAT AC CCAGC AGCTT
TCAAATGAGTTACCTGCTGG AGACG CCG GGGAATG TG GGTCG TTGAG
CATTGTGTAAGGGCAGCCAG A AC - TTAC- TCCA- -----
CAGA
GAM5820 5680 GGCGGGCACGGGGCGTAGGA - - A- TGGCG
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GCATGTTCTTGTTGCCTGTC CTGTCCGT GTTCT GTA TCTCGGCCG
T T CG -----
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CCCCGGGCTGCTCTGCGTCG CTCG GC CCTGGCTGCG GTCGGGCCC

GTCCCGCGCGCTC C GC- TCTC ----------
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CGTCAGGCCGGTGGGGGTGG GAT AGG GGGGG GG CGG GCGAC CCGG
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AGGCTTGCGGGCCCACAGTG TGGT GAC CCCGGG TT GG GTTAT
GT - A CG C AA ------
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CTCAGTGTCCGCCCCACTTG CCCCCC CC GGG GT GTTC CCCCG GTG
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GGCCTAATGTGGTGGCCTGC C-- ---- TAA AGCGTC ------
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TCCCTCCTCCCAGCATTCGG AGGTGG CTG GTGATGGGCTT CT CTC
GTAGTGGTCACGGTGGA CA - ACGACC C ----------
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TTTTGGAAGCATTCACCATC CTCATGGA GC CGAT TTGGAAG AT
TTCCAGTTCAAAGTCGTGTC GAGTACTT TG GCTG GACCTTC TA
TTTCATGAG TC T- AAACTT - -----
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TGTAGGGCTGGCGCTGCCGG GAGGCCCT C CCGGCG GCTGGCGCTGC
ACGCGGTGCTAGTCGCCGGA CTCCGGGA G GGCCGC TGATCGTGGCG
TGAAGTGAGGGCCTC GT AAGTA -------- -----
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CCCTTAAAAGTGCCACTTTG AAGTTTGTT AGTTT AC TGAAA TTC
AATGGTTGTTTGAA GGTA C CG- A ----------
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TAAAGAAGTAGACCTGTCTG GTC CG TC GTC GTCCAGA AAATCG
AGCTGCCACTG AC - GA T TGAAG ------
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ATAGAGCTAGCATAATAGTA ATGT TACAC AAG TTTATG ATCGAGAT

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GTA
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CCATGAGATTACAGCTTTGC CTGG GAGGACAG TCG AGAG
ACACTGACAGGAGGGTC - TCACACGTT ACATT ----------
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CTGGAGACCAGAGCAACACA GGCC TG GG GC CC TGCTG CCAG GCA
TGCCTGGACACGGCGACGGA CCGG GC CC CG GG GCGGC GGTC CGT
ACGCACCACGAGGCC A A A CAA CA ACA- - -----
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TTCCCGTTAAAAGCCAGCAG T- CCGA A AAAA - - TA - ---
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TGGCAAATGTTGTCTGACTT GACC CCA TGTC TTCAGT CTGTT GTAA
ACTGTTTCAACCAACCAG AA ACTT A ---- - ---------
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CTTATAAGCCTCTAAAGTGA CGTG AGTGA TCTCCG TAT
TCAGTGC ACT AA AA ----------
GAM5845 5729 CATGCAAGCATATTTTTCAG --- A - CAA- AAT
CAAGTACAGAATCTGTGCAA CATGCA AGC TATTTTT CAG GTACAG
CTCTGCAGAAATGGCTAAGT GTACGT TCG GTAAAGA GTC CGTGTC
GCATG GAA - C TCAA ---
GAM5846 6762 CCTAGAGGCCTTTCTCTCTG - TT --- TGC GAA AGGTA
CACGAAAAACAGGTAGTTTG CCTAGAGGC CT C TCTC AC AAAC
CAGTCTGAGATATGGGAGAG GGATTTTCG GA G AGAG TG TTTG
CTTTTAGG A GG TAT TC- ACG -----
GAM5847 20820 TCAGTTGTTGGTCCGACCCA --- GACC---- GCTTCA
GAACGCTTCAGTTCTGCTCT TCAGTTGTTG GTCC CAGAAC
GCAAGGATATATAATAACTG AGTCAATAAT TAGG GTCTTG
A ATA AACGTCTC ------
GAM5848 1410 GCGAGGAGCTGAGGAGGGGC AGGA A- -- AT CCACCAC
ACAGTTCTATTGCCACCACC GCG GCTG GG AGGGGCACAGTTCT TG
ACCAGGGCTGTGCCCCTGGC CGT TGAC CC TCCCCGTGTCGGGA AC
CGCCAGTGGGTGC GGG- CG GG CC -------
GAM5849 2956 TTGAATTGATAATTAGAATA A A GAAT AT TCCTATGATCCACTAAT
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TCCACTAATTTGTTTTATCA AACT AATTAT AAT TGACT TTTGTT
GTTAATAATATTAATCAA - - AAT- AT ----------
GAM5850 2047 TCATATCAGTGAATATTTGC A- TTT- A-- C A GAAG
TAAGAACAGGAAAGAGAAGT TCAT TCAGTGAATA GCTA GAA AGGAA GA
CTTCCTTTCAAATAGCTTAT AGTA GGTTACTTGT CGAT CTT TCCTT CT
TGTTCATTGGGAATGA AG TATT AAA - - ----
GAM5851 11363 TCACAGGGAGTTAATGAGGG AG-- G GAGG A---- A GA- GCAA- - AGAAGG
GTGAGGAAGGCCGACCAGGC TCAC GGA TTAAT GGTG GGA GGCC CCAG GAAGCT CA

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GATCCAACAGTGA

GAM5852 13135 CACAGGGTGGCTTGACAAAT C --- AAATATTA TG CCCCAGCAATA
ATTAACTTGGTTCCCCAGCA CA AGGGT GGCTTGAC ACT GTT
ATAAACTGAGTCTTCCAGGG GT TTCCG CTGAACTG TGA CAA
TCAAGTCATTGCCTTCTG C TTA GGACCTTC GT ----------
GAM5853 21203 ATCATGAGGGAGGTTGTGTA - - - GA AA- TC- GGA
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TTAGTTGGGAGCTTCTCTAC TGGTATTCC C TTCGACAC ATC TTC GGT TTC
CACAGCTTACTCCTTATGGT T A C TC GAG TGA ---
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TCTGA
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TAAGAGGGTTTGCCTT -- AATTTC GAA GG -------
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GGAGGGCTCAGGGTGTGCGT CTT C G C GA A C AAG-- ------
TCCCC
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TCCCCGACATGCTTGTGAGG GACAT TCGTGACG GATG AGTGT GTACAG
TAGGCAGTGCTATACAG A-- - G TC ----------
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        TGAATTTAATGTTGAATACT CTTA   ACT  CATAAG   TTGTAATT
        TTCAGGCATTC          CGG   TT    ---      ----------------
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        AGTAAGAATGCTGTGTTCCT TCAA  AGGT GC    TGT  TCGTA GAAT GAG
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        GCTTTGTAACAGGCCAAAAT AACGT     TCTTAA AC CGG     TGTTTCG
        TCTATTTCCTGCAA          CCTTTA     A  -  ACAA--      ----
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        AGACATTTTAATCTTGTCAA     -----    C-         AATTTTA    CAC    ----------
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        ACCCTGGCCGGGGTAGGATC    TA  A   GGC     CA---  G GT   G   -----------
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        CTTTAAGATTGCGTACCCAC ACTTC TG   TTACTCC TCTTTA     TTGCG
        TGCAGAGTGCTGAAGACGGG TGGAG AC   GATGGGG AGAAGT     GACGT
        GTAGCCACGAGGT          C  C--      C     CGTGA    -------
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        CAGATCGTTGTCTATTTCTT AGTGTTGC  TTACTT  AGGCA A      CTATT CTTCTG  AA TC
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        CTCATTGCCTCAGAGAACTT CGACGTCTTC     CT  CCGTTAC    TCG
        CTGCAGC                AAGAGA  --      ----  -----
GAM5878 7625  CGGGGCCGCACCCGAGCTAC   G  - A  -    A-    T   CA  GGTT
        GCCGTGCCGCACCGGTTGGG CGG GCC GC CCC GAGCT  CGCCG GCCG  CC
        CCGGTCGGTGGGAGCTCTGG GTC CGG CG GGG CTCGA  GTGGC TGGC  GG
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GCCTGAAACTGCAGAAGAT G GTCAAA GTT TT---- A ---------
GAM5881 8759 TACTACCAGGCCATCAAGGT T A CGAA GAACAAGA
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ACAAGAAGAGTATGTATTCC ATGATGGTCCGGTAGTTCCACG CCTT TGTA GA
CGCACCTTGATGGCCTGGTA C A TGA- --------
GTA
GAM5882 21062 TCATGGCCCACTGGTCGCAC TG CACT AT- - - AAAGCA
ATCACTCTGTAAAGCAGCAA TCA GCC GGTCGCAC CA CTCT GT
GAGATGCAGGTGTGACTGGT AGT TGG TCAGTGTG GT GAGA CG
TCTGA CT ---- GAC A A ------
GAM5883 18267 TGCCAACGCAGAGCCAGCTG AGAGCCA - A GT -- GAGAAA
TTCAGCGTACTCTTTTAGAG TGCCAACGC GCTGTT C GC AC TCTTTTA
AAATAGAAGATTGTCGGCAG ACGGTTGCG CGACAA G CG TG AGAAGAT
AAACAGCCCAGGCGTTGGCA GACC--- A A GC TT ------
GAM5885 15438 TGCTCCTTCATCAGCTTTGC CT CA CCAA T GAGCT
CAACTCTCGGAGCTCGGAGG TGCTC TCAT GCTTTG CTC CG
ACACGAAGCAAATGATGAGT ATGAG AGTA CGAAGC GAG GC
A T- AA ACAG - -----
GAM5888 16943 TATAGAACCCAGCTCAGATG CCA CAGAT TTC- - TCCAGGCATTCAAAC
TGACTTCCAGAGAGGGTCCA TATAGAAC GCT GTGAC CAGAGAG GG
GGCATTCAAACCCACTCTCT GTGTCTTG TGA CACTG GTCTCTC CC
GCCATGTCACTTAGTGTTCT --- TT--- TACC A ----------
GTG
GAM5889 22741 GACTCCCAGCCAAATCCATC AG TC- ------ TCTT TCTTCCAC
CTGCTCTTCCATTTCTTCCA GACTCCC CCAAA CATC CTGC CCATT
CGATGGTGCAGTGTAACGAT TTGAGGG GGTTT GTAG GACG GGTAG
GCACTTTGGAAGGGAGTT AA CAC CAATGT T--- --------
GAM5890 9236 AGACACGCCTGCCCCATGAC AC- - --- - --- ACCAAGTG
AAGACCAAGTGCTTCAAGTT AGAC GC CTGCCCC ATGA C AAG
CATCTAGGGGCAGCGCACGG TCTG CG GACGGGG TACT G TTC
TCT GCA C ATC T AAC --------
GAM5892 4728 GGCTGCATCAAAGGCTGCCA CATCAAA A A-- C---- A CCAGTGCCC
GGAAGCCCCGTGCCACTCCA GGCTG GGCTGCC GG AGCCC GTGCC CT
GTGCCCAGGGTACCAGAAGG CTGAC CTGACGG CC TCGGG CATGG GA
GCTCCACCAGGCAGTCCCCC CACCCC- A ACC AAGAC - ---------
ACCAGTC
GAM5893 7534 ATCAACTTCCAATACCTGCT - ATACC - C CTC ---- TGAATC
GCCTGTCTCCCTGACCCATG ATCAACT TCCA TG CTG CTGT CCTGAC CCA
AATCTGGCAACGTTAGGCAC TAGTTGA AGGT AC GAC GACA GGATTG GGT
AGTCAGACATGGACAGTTGA C ----- A T C-- CAAC ------
T
GAM5894 2620 GCCGGCGGGGCGCGGGCGCG - G GC G -- CGGA

GCGGCCCCGGAGGATGCTGC GCC GGCGG GC GGGC CGGCGGC CC
TGAGCCCCGGCACTGCCTGG CGG CCGTC CG CCCG GTCGTCG GG
C T A GC A TA ----
GAM5895 20445 GACATGGAGGTCAGCGCCAC GAG C A A T GAA T - ATA- T GACGCG
AGAACTCATGAACATTCTCA GACATG GTCAG GCC CAGA C CAT CA TCT CA AGG TGT
ATAAGGTTGTGACGCGACAC CTGTAC CAGTT CGG GTTT G GTA GT AGA GT TCC ACA
CCTGATCTGAAGACTGATGG A-- A - - - --- C A CTAG C ------
TTTGGGCATTGACACATGTC
GAM5896 12727 GCGGCGCAGCGAAAATGGCG - GAAAAT TC GT --- A CGTG
GGTTCCAGGTGGGCGCGCAA GCGGC GCAGC GGCGGGT CAG GGGCGC GCA GGC
GGCCGTGGTCCTGCTTTGTG CGTCG CGTCG TCGTCCA GTC TCCGTG CGT CTG
CCTCTGACCTGCTGCTGCTG T ------ -- -- TTT C ----
CTGC
GAM5897 7057 CAGATCATTAAATCAGATTT A AATC TT A TC A-- A - ATCTAGCC
AAAGAACTCCAACAGGACTG CAGATC TTA AGA TAA GAAC CA CAGG CTG GGA
GGAATCTAGCCTCCTCAGAC GTCTAG AGT TCT GTT CTTG GT GTCC GAC CCT
CTGCGATGATGTTCCTTGCT - ---- C- C TA AGC A T --------
CTTGAGATCTG
GAM5898 12938 TGCCAATTTTATAACCTGCC CA TA - AGAGCTGTACCATGAG
CCCCAGAGCTGTACCATGAG TGC ATTT TAACCTGC CCCCC
GGGGGAGCAGGTTGGAATAT ACG TAAG GTTGGACG GGGGG
GCA TA -- A ----------
GAM5899 17395 CTTATGGCTCTGAGGCCATC T ---- --- CT GCA TGGCT
GGCTGTCTCTGCATTTCACT CTTATGGCTC GA GGCCATC GG GTCTCT TTTCAC
GGCTGTGGAGGAGAGACTCC GAGTACCGAG CT TCGGTAG CC CAGAGA GAGGTG
TAGGATGGCTGCTGTCTGAG T GTCG GAT T- G-- -----
CCATGAG
GAM5900 10595 TACCTCAAGCAGAGAGAGGG CAA - A---- TC CCACCCCA
CTTCAGGCCACCCCACTTCT TACCT GC AG GAGAGGGCT AGG
GGCTCTTTCCAGTCCTAGCA ATGGA CG TC CTTTCTCGG TTC
GGTA --- A CTGAC TC --------
GAM5901 19344 TTGTTGCCCAGGCTGGAGTG --- --- T -- A - ACGATCTTA
CAATGGCACGATCTTAGCTC TTGTT GCCCA GGC GGAG TGCA TG GC
ACTGCAACCTCTGCCTCATG AACGA TGGGT CCG TCTC ACGT AC CG
GGTTGAAGCAA AGT ACT - CA C T ---------
GAM5902 11602 CACTGGCTTCCAAGTGCAGC TCCAAG C CCA CAT TTGCC
AACCCAGCCCATGGAGATTG CACTGGCT TG AGCAAC GCC GGAGA
CCTCTTCTAGGCAGTTGCTC GTGACCGA AC TCGTTG CGG CTTCT
AAGCCAGTG ------ - A-- AT- -----
GAM5903 11729 CCTTTGTTTCTAATCTCCTC TG TT TCT TCTC - ACTACTACTACTACACTA
TCAGTCTGTACTACTACTAC CCTT T CTAA CC AGTC TGT
TACACTAACATGACTTTGGT GGAA A GGTT GG TCAG ACA
TTTGGGGAAAGG -- GG TT- TT-- T ----------
GAM5904 7617 GGTCTAGTTGTCTTAGAGTT A-- -- TTGG AACAGA A TCCA
GGGCTGAACAGAAGCACTCT GGTCT GTTGTCTTA GAG GCTG AGC CTCT
TCCAAGGGCGCTGCAGCAAT TCAGA CGACAGAGT CTT CGAC TCG GGGA
TTTCAGTGAGACAGCAGAAG AGA GA TTAA G----- C ----
ACT
GAM5905 11499 GGGCGGCCTAGACCCCCTGC T A CCT CC GTTG C ACTGG
TGCCCAGGCCGTTGAGGCAA GGGCGGCC AG CCC GCTG CAGGCC AGG AAC

CACTGGGTTCCTGGCTTGAC CCCGTCGG TC GGG CGAC GTTCGG TCC TTG
AGCTGTGGGCTGGCTGCCC - - TGT A- ---- - -----
GAM5906 21163 GTCTTGAATCTCTATAGTAT AAT TAT CTCAA---- T AAACAA
TCTCAAATAAGGTCCTGAAA GTCTTG CTC AGTATT ATAAGG CCTG
CAACAGGCTTTTATGTTAAA CGGAAC GAG TCATAA TATTTT GGAC
TTCAATACTTCTGAGCAAGG --- TCT CTTAAATTG C ------
C
GAM5907 7535 CCGGGTGCGATGGTGCATGC ---- GGTGCA GTAA- AGCTACTC
CTGTAATCCCAGCTACTCGG CCGGGT GCGAT TGCCT TCCC
GAGGCTGAGGCAGGAGAATC GGTCCA CGCTA ACGGA AGGG
GCTTGAACCTGG AGTT AGAGG- GTCGG --------
GAM5909 3975 CAAAAACAGTTAGCTGTTTA --- - A T- TCCC AATCCC
CATGCTTCCCCTTTAATCCC CAAAAACAG TTA GCTGTTT CA GCT CTTT
AGAGTTAGTTTTGCAAACGG GTTTTTGTC AGT CGGCAAA GT TGA GAGA
CATGATTCCTGTTTTTG CTT A C TT TT-- ------
GAM5911 15622 TTGTGGAACATGGGCCTTAT AA T CCTTATG AA CATGACC
GTTGTCACAAGTAACATGAC TTGTGG CA GGG TTGTCAC GTAA
CTTGCGTGACAGAGACTTCC AACACC GT CCC GACAGTG CGTT
CCTGGACCACAA AG C TTCAGA- -- -------
GAM5912 15038 TTTGTACAGTTTAAACAACA A AAACAA GA A AAGAAGCAATG
GCTGAAAGAACTAAAGAAGC TTTGT CAGTTT CAGCT AAGA CTA
AATGTGGTCTTCAAGCTGAC AGGCA GTCGAA GTCGA TTCT GGT
AGAGAAGCTGACGGA - GAGACA AC - -----------
GAM5914 16714 TTGGAAAAGGTTCTAGGGCA TTCT C-- A CACC
GGGAAAATGCACCCATTTCC TTGGAAAAGG AGGG AGGG AAATG
CCTTTTCCCTTTTTTTCCAA AACCTTTTTT TCCC TCCC TTTAC
---- TTT C ----
GAM5915 7420 AGGCAAAAGAGAAATCCTCA AAAAG A T A - AAGGATC
GACACATTCTGAAGGATCCG AGGC AGAA TCC CAGAC CAT TCTG
GACATGGTCTGGGACTTCTG TCCG TCTT AGG GTCTG GTA AGGC
GAGCCT AGG-- C - - C -------
GAM5917 1961 TGGAGGCTGACATCTCCATG - GACATC A A ------ CTC- A A GTGGAA
TATGGCAAAGAGGAGCTCCT TGG AGGCT TCC TGT TGG CAAAGAGGAG CT CA GGTT
ACAAGGTTGTGGAAAGCCAT ACC TTCGA AGG ACA ACC GTTTTTCCTC GA GT CCGA
GAAGAAACCTCCTTTTTGAA A AAA--- - - AGGAAA CAAA A A ------
AGGACCAACAGGAAAAAGCT
TACCA
GAM5918 17447 AGCAGCCGAGCGGCCATGGA A G C A TGTGCG CTG
GCTGTGCGGGCTGGGGCTGC AGC GCC AGCGGC ATGG GC GGCTGGGG
CCCGGCCGCCCATGCTGCTG TCG CGG TCGTCG TACC CG CCGGCCCC
GCGCT - - - - ------ ---
GAM5919 13156 CAGGTGTTTGTGAAATTTTC G T- AA -- C AAATTATA
CATTGCACAAATTATAGTCA CAG TGTT GTGA TTTTCC ATTG AC
GTACGGAGAAAATCATTCAG GTC ACGA TACT AAGAGG TGAC TG
CAGCTG G CT AA CA - --------
GAM5920 14077 TCTCACTCTCCTACTAGACT A T A C AAA A G AA- AAGGAA
TTTCATTGAAAAGTTAGGCA TCTC CTC CCTACT GA TTTTCATTG AGTT GGCAG AAA GGA
GGAAAAAGGAAAGGAATCCC AGAG GGG GGGTGG CT GAGAGTAGT TCGA CCGTC TTT CCT

AATTTGCTGCCAGCTCTGAT A - A A C-- - G AAC ------

GAGAGATCAGGTGGGGGGAG
AGA
GAM5921 5328 GGCTTGGTGAGGGCCACCAC T- T ----- CACTGT GG GCTAAC
CCCACTGTGGGGGGCTAACT GGC TGG GAGGGC CACCACCC GG G
TTCCGGGTGGTGAAAAAGCC CCG ACT CTCCCG GTGGTGGG CC T
CTCCTCATTGCC TT C AAAAA ------ TT ------
GAM5924 9372 TCTTGGGAACTGGAGTAAAG TG AACT A - --- - CGCTT
GTCACTCTTGCTACGCTTTA TCT GG GG GTAAAG GTCAC TCT TGCTA
GCAGAGACTGGTGGCATTTT AGA CC CC CGTTTT CGGTG AGA ACGAT
GCCCCTGCCCTGAGA GT CGT- C A GTC G -----
GAM5926 21060 TTCTCTGCTGCTGGGCTACC T C G C CAA- A GCA-- T T GCCA
ACACAATGAGATTGCAGCTC TTCTC GCTG TGG CTAC ACA TG GATT GC CAGATC GTC
AGATCTGTCGCCAGGCTGGT AGGAG TGAC ATC GATG TGT AC CTAA TG GTTTGG CGG
TTGGTAAAGAAATCCAAAGA - - A A AGAA - AGAAA - T ----
TGTAGTAGACTACAGTGAGG
A
GAM5927 14461 GAGCTATCTGAGTCACTAGA A--- TG ACT A T TGATGATTTATGCCTTT
TGAGGAGGAGGAAGATGATG GAGCT TC AGTC AG TGAGGAGGAGGAAGA GA
ATGATTTATGCCTTTTCTTT CTCGA GG TTAG TC ATTCTTTCTTCTTTT CT
TCTTCTTTCTTAACTTTAGA CTAA GT ATT A - ----------
TTTGGGAATCAGCTC
GAM5928 15854 CACAGCAGGCTTTTACGGTG - A- T --- T ATT A TCTCTT
ATTGCTGATTGGGAAGATCT CACAG C GGCTTT ACG GTGAT GCTG GGGA GA
CTTTCTCCCTTACGGCGTCA GTGTC G CCGGAA TGT TACTG CGGC CCCT CT
TTCATGTCAAGGCCCGGTCT T GC C ACT - ATT - ------
GTG
GAM5930 11511 CTGTGCATCAGCCTGTAGGT TG- -- G-- - -- CCT-- CGAA
TCTTCCTCTACCCTTCCGAA CTG CATCAG CCTGTAG TTCTT CCTC TAC TC
GATGCCAGTATTGAGGAAAG GAC GTAGTC GGACGTC AAGAA GGAG ATG AG
AAAAACTGCAGGATCTGATG TCA TA AAA A TT ACCGT ----
ACTCAG
GAM5931 11739 GCTTTTGGGAAGTGATGAGT T TG GAG --- ACC A G GAAAA
CATTTTGCACCAGGTAATAG GCT T GGAAGTGAT TCAT TTTGC AGGT ATA GG
GGGAAAATTGTGTGACCTCC CGA G CCTTTATTG AGTA AAACG TCCA TGT TT
AGCAAACACATGAATGGTTA - GT GTA CAC ACC G G -----
TTTCCTGGAGC
GAM5932 10929 GGAGGTGGCTCCTGGGAGCT ---- TT CCTGCC
TGGCTCCTGCCAGCCCTGTT GGAGGT GGCTCCTGGGAGC GGCT
CCCAGGAGCCCTCAGCTTCC CCTTCG CCGAGGACCCTTG CCGA
ACTC TC ------
GAM5933 18813 GCATACTGGCTACCCAGGTG A CTA - T A CA AACA
GATTTAGACAAGTAACAGCT GC TACTGG CC CAGGTGGA TT GA AGT
GCTCAGCTTCACCTGAGGGA CG GTGACC GG GTCCACTT GA CT TCG
TCCAGTGGC - TAG A C - CG ----
GAM5934 17734 TTTGGAAGGCTGAAGCGGGT A CTGAA TAGA - A- AGTTCGAAACCAG
AGATCACCTGAGGCCAGGAG TTTGG AGG GCGGG TCACC TG GGCCAGG
TTCGAAACCAGCCTGGCCAA AAATC TCC TGCCC AGTGG AC CCGGTCC
CATGGTGAAACCCCGTCCCT A C---- CAA- T AA ----------
ACTAAA
GAM5935 4459 AGTTAATATAGAGAATTACT A GAATTACT -- A - GGAATAATGAG

GGCTTTAACAGTGAACTGGA AGTTAAT TAGA GGC TTTA CAGTGAA CT
ATAATGAGGGCTTCACTGGT TCAGTTA GTCT TCG AAAT GTCACTT GG
AAAATGCTTCTGAATTGACT A -------- TA G C ----------
GAM5936 15839 GCGTCGGACACCTGGGGTGG T - CA G GCACAC - AAAATGTCAC
CACACACACGCAAAATGTCA GCG CG GA CCT GGGTG ACACG C
CGCCGTGTAAGACACACCCG CGC GT CT GGA CCCAC TGTGC G
AGGGATCATGTCGC T A AG G ACAGAA C ----------
GAM5939 9114 CTGGGACTATAGGTGTGTGC ACTATA TGT ATGCTGG TTTTTTGT
CACGATGCTGGCTAATTTTT CTGGG GGTG GCCACG CTAAT
TTGTATTAGAGATGTGGTTT GACCC CCAC TGGTGT GATTA
CACCACGTTGCCCAG GTTGCA TT- AGA---- --------
GAM5940 1935 ACACACAGCACACAGAGTGT CAC- ---- GA AGAG
GGGAGGAGAGCCACCACAAC ACACACAGCA AGAG TGTGG GG
TCCTCTCTATTGCTGTGTGT TGTGTGTCGT TCTC ACACC CC
TATC CTCA A- ----
GAM5942 10905 GTTTGAGCAGATGAGAGCCA GA GAT AG AC G A G A --- GACA
ACGTGGGCAAGTTGCTCAAG GTTT GCA GAG CCA GTGG CA GTT CTCA GG GTATC
GGTATCGACAGGTACAATCC CAGA TGT CTC GGT CACC GT CAA GAGT CC CATGG
TGAGAACCTGGCCACCCTGG GA AT- GA CC G C - - TAA ----
AGCTCTATGTAGAGAC
GAM5943 21915 AGAGCAAGATGAACAGAATC - A A- T TCTCAAAGA ACATA
TGTATTCTCAAAGAGCACAT AGAG CAAGATGA CAG ATC GTAT GC
AGCCAAACCCTGTGCCGATG TCTC GTTTTACT GTC TAG CGTG CG
CCTGTCATTTTGTCTCT T - CG C TCCCAAAC- -----
GAM5945 4743 GATGACCTTTCAGATGCTTT TG TTCAG ---------- AACTGAA
CTCTGGAACTGAACCAGAGG GA ACCT ATGCTT TCTCTGG
TTCACAAAACAAGTGTAGTA TT TGGA TGTGAA GGAGACC
GGTTGTT GT TGA-- CAAAACACTT -------
GAM5946 3543 GTAGAGACGGGGTCTTGTTA AC - TC A T A CT CTTGA
TGTTCCACAGGCTGGTCTTG GTAGAG GGG G TTGTT TG TCC CAGG GGT
AACTCCTGGGACCAAGCAAT CGTCTC CCC C AACGA AC AGG GTCC TCA
CCTCCCACCTCTGC CA T CT - C - -- -----
GAM5947 4674 GAGGCAGCCCTGGCCACCTT CA- CCA C ACTT ----- GACCA
CGGAACTTTCCCGTCGACCA GAGG GCCCTGG CCTT GGA TCCC GTC
GGCCCCCCGGGACTCCCAGG CTCC CGGGACC GGGA CCT AGGG CGG
GCTCCAGGGCCCTCCTC TCC TC- C C--- CCCCC -----
GAM5948 18447 TTGCAGTGGTTTTAGTGGGT AGTG T--- - TCCCA- ACCAGTACACAG
GAAAATGTCCCATCTGCACC TTGC GTTT AGTGGGTGAA AATG TCTGC
AGTACACAGGCAGGCATTAT AACG TAAA TCATCCACTT TTAC GGACG
CATTCTTCACCTACTTTTTA GTGA TTTT C TATTAC ----------
AATAGTGGCAA
GAM5949 14380 TGTAGGCCAGGCTGGTCTCG T- - T CTC A CC ACCT
AACATCCTGACCTCAAGTGA TG AGGCCA GGC GGT GA CAT TG
TCCACCTGCCTTGGCCTTTC AC TCCGGT CCG CCA CT GTG AC
A TT T T C-- A A- ----
GAM5950 10617 CAGAGCCCATGCAGGGCTTT CA-- C T A CACAA G AACTTCCTC
AGATTTGGACACACAAGAGT CAGAGCCCATG GGG TTTAGATT GG CA GAGTT AT
TGATAACTTCCTCATGAACT GTCTTGGGTAT CTC AAATCTAG CC GT CTCAA TA
CCTTGCCTGATCTAAACTCA TATA - T - TC--- G ---------
TATTATGGGTTCTG

GAM5951 9098 GCAGGACATCATCTATGAAA A - -- A AA T ---- AA AGCAT
ATTATCTGTGAGTACGAAAA GCAGG CAT CAT CT TGAA TTATCTG GAGTAC GA ACG
CGAGCATCGTGGTTTAAGGT CGTCC GTA GTA GA ACTT AGTAGAC CTTGTG TT TGC
GTTCCAGATGACTTCAAAGG - A TG A C- - GAAT GG -----
TATGAATGCCTGC
GAM5952 7788 CTTTGTAAGATGCAAAGAGG TAAGA C A TT ATCA TAAAT
TTGGATCAAGTTTAAATGAC CTTTG TG AAAG GG GG AGTT
TGTGCTGCCCCTTTCACATC GAAAC AC TTTC CC TC TCAG
AAAG TAC-- - - CG GTG- -----
GAM5953 7919 GCTTCATTACTGAAGTAGCT ATTA AA ACAT GAA TGTTATTT
ACATTAGCGAAAACAGTGTT GCTTC CTG GTAGCT TAGC AACAG
ATTTTTGTTGCAGTTACAAA CGAAG GAC CATCGA ATTG TTGTT
GCTACCAGGAAGC ---- -- AAC- ACG --------
GAM5954 3870 TTCCAGGGCCCGGGGCCGGT ---- C CC- - - TTCG T GCGGCAAGGA
GGGGCTTTCGGCTCGATGGG TTCCAGG GC CGGGG GGTG G GGCT GCTCGA GG
CGGCAAGGACTTCGAGCAGC AAGGTCC TG GCCCT CCGC C CCGA CGAGCT TC
CTCTCGCCATTTCCCGCGTC TCAC C TTA T T ---- - ----------
ACTCCTGGAA
GAM5955 18762 GAGCTGGAGGAGCTCACGGT T A - GG CA G GGTCTATAA
GCAGGTGGCCCGGGTCTATA GAGC GGAGG GCT CAC TG GGT GCCCG
ATGGGCGGCTCAAGGTGCAG CTCG TCTCC CGA GTG AC TCG CGGGT
CGCCTCTGCTC - G C GA -- G ---------
GAM5956 3393 GGGAACCATAGGAGAATTTA A- A- TTTCT TAAATAAT
TTTCTAGATGTAAATAATTA GGG ACCATAGG GAATTTA AGATG
TTTTAAGTTTGCCCTATGGT CCC TGGTATCC TTTGAAT TTTAT
GGCCC GG CG ----- --------
GAM5960 16585 CCTCTAGGTAAAGGTTCCAA A AAAG CCA C - AG CACCTCCTCCTCACC
GGCATGCCCCAAGAGCACCT CCTCT GGT GTT AGG ATG CCCCA AG
CCTCCTCACCCTTCTGGGGA GGAGA CCA CGA TCC TAC GGGGT TC
CATTCCTGTAGCAACCAGAG - A--- TG- T A CT ----------
G
GAM5961 14992 TCTGCACCTCCCAGCCTGGA TG --- GGA TGT- TTGCCCT
GAGGAGCCTGTGACTTGCCC TC CACCT CCCAGCCT GAGGAGCC GAC
TGTTCCTTGGCTCCTCAGGC GG GTGGA GGGTCGGA CTCCTCGG TTG
TGGGGTAAGGTGTGGG GT ATG --- TTCC -------
GAM5962 13515 GCCTTGGCGCTGCCGGTCCC CG CC C A GA - GAGC
AACTTGATCCAAGGAGCCTT GCCTTGG CTG GGTC CA CTT TC CAAG
GAGAAGGAGATGAGATTCAG CGGGACC GAC TTAG GT GAG AG GTTC
TACCAGGGC AT -- A A GA A ----
GAM5964 18251 CGGCGCTTCCGCAAGTTCCT - C T C T TGTGG AACTTCGA
GGTGTTTGTGGCAAACTTCG CGGCGCTTC CG AAG TC TGG GTT CA
ATGAGAATGACCCCAAGACC GTTGCGGGG GT TTC AG ACC CAG GT
TTTGAGGGGCGTTG A - C A C TAAGA --------
GAM5965 3022 GGTTGCACAACGAGCACAGC TG GAGCA C- ATGA TG ATCTAAA
CCGGACTATGAGTTGGAGAT GGT CACAAC CAG CCGGACT GT GAG
CTAAATTCTGATCTGAGTCT CCA GTGTTG GTC GGTCTGA TA CTT
GGAACTGACAAGTTGTGTGA GT AACA- AA GTC- GT -------
CC
GAM5966 12777 GATACCCTCTTGGCCATCCG T T CCATCC C AT ACCA
GGCCCCATCAGGCACCAGCC GA ACCCTCT GG GGGC CC CAGGC

TGGAGGTGCCCATCCCAGAG CT TGGGAGA CC CCCG GG GTCCG
GGTCTC C C TA---- T AG ----
GAM5967 13792 CAGCTCTGTCTCGATCTGCT T C TGCTCC TCTCGA-- - CCGCAT
CCTCGAGGTCTCGAACCTCC CAGCTC GTCT GATC TCGAGG ACC TC
CGCATGATGGTGCCTGTGTC GTCGAG TAGG CTGG AGCTCC TGG AG
CTCGATGGTCTGGATGAGCT - T T----- TGTGTCCG T ------
G
GAM5968 11410 CTCGGCCCCTGAGCTCCAGG C CTG CA C- A G- AC CCCA
CCGTGCGCATGTTTGCTGAC CTCGG CC AGCTC GGCCGTG GC TGTTT CTGACT CTCG
TACCTCGCCCACGAGAAGTC GAGCC GG TCGAG CCGGTGC CG ACAGG GGCTGA GAGC

GGAGGGACAGCATCGTGGCC A --- -- TA - GA A- ----
GAGCTGGACCGAG
GAM5969 304 CATCTCTACAGTCTTCACAT --- TCT T CCCACTCC C GGTA
GCCCCACTCCAGCCGTGTGG CATCTCTA CAG TCACA GC AG CGTGT
TAGCACGCCTTGCTTGTGAC GTAGAGAT GTC AGTGT CG TC GCACG
CCTGGGATAGAGATG AGG CC- T T------- C ----
GAM5970 10259 CTGGGAGGGAGAGAACTTTC AG G CTTTC AGG C----- C AAACAGGC
TGGGGGTAGGGTGCCCTCCA CTGGG GGA AGAA TGGGGGT GTGC CTC ATCTG
TCTGAAACAGGCCAGGTGAG GACTC CCT TCTT ACCTCCG TACG GAG TGGAC
CATCATGCATAAGGCCTCCA G- G ----- GAA TACTAC - --------
TTCTGTCCGCTCAG
GAM5974 4510 GGGTGGTCGGATGGCAGCGT C- CA-- ----- CGCCAGTA
GACGCCAGTATCATTTCCAG GGGTGGT GGATGG GC GTGA
CATTTCCATCTTTACCACTC CTCACCA TCTACC CG TACT
TT TTTA ACCTT --------
GAM5977 7051 GCAGCACAAAGGCGGCGCGG CAA C - C C TGTAGT
TGCACGTCGGAGTTGTAGTA GCAGCA AGG GGCGCGG TGCA GT GGAGT
CTTCAGCTGCATCTGCGCCA TGTCGT TCC CCGCGTC ACGT CG CTTCA
CCTGCTGCTGT CG- A T - A ------
GAM5978 11885 GGCTTCACCAGCGCTTCTCT TC- C T T-- -- CTC-- CCTG
GTTTGTCTCGTCCCTGGATT GGCT ACCAG GC TCTC GT TTGT GTC
TCTAACAGTTGCCTCGAGAT CTGG TGGTC CG AGAG CG GACA TAG
GCTCTGGTTCTGGTC TCT T T CTC TT ATCTT ----
GAM5979 16589 TGAGGCAGGAGAATCACTTG CA AA GAA--- AGG CT A - AGAT
AACCCGGGAGGTGGAGCTTG TGAGG GGAG TCACTT CCCGGG TGGAG TGCGGTG GC CG

CGGTGAGCCGAGATCGCGCC ACTCT CCTC AGTGAG GGGTCC ACCTC ACGTTAC CG GC

ATTGCACTCCAGGCCTGGGC A- AA AACAAC GG- -- - C ----
AACAAGAGTGAAACTCCATC
TCA
GAM5980 4497 GGGGCTGTTATGGGGATAAG TATG AA TG GA CCCAAATATT
CTGGTGAGGTCCCCAAATAT GGGGCTGT GGGAT GC GT GGTC
TGACCAACTGGCATCCCACA CTCCGACA CCCTA CG CA CCAG
GCCTC ---- -- GT A- ----------
GAM5981 17080 TGAGTGGTGTCACAAAGCAC G CAA ----- -- ATA TGA
AGGTCATAGACCCTGAGGGT TGAGT GTGTCA AG CACAG GTC GACCC
TGAGGCTACTGTGAGGAACT ACTCA CACAGT TC GTGTC CGG TTGGG
GCTTGACACGACTCA G TCG AAGGA AT AG- ---

GAM5982 8116 AGCACAGGAAGCGGATGACA A G G -- A-- TCCCCT
GAGGAATCCCCTTTCCTCCA AGC CAG AAGC GA TGAC GAGGAA
GGTCACCTTGGCTTGCTGAG TTG GTC TTCG TT ACTG CTCCTT
TT A G G CC GAC ------
GAM5983 13851 GTTTGTGCCTTCACCCTGAG TG CTT C- C ATTTAAACAA
CAAAGTATTTAAACAAATTT GTTTG C CACC TGAG AAAGT
TCTCGAAGGTGTGTGTAAAT TAAAT G GTGG GCTC TTTTA
GT T-- AA - ----------
GAM5984 19468 CGTCGAGATGTTTTTAACCA A AA A- G TTTC A CTTCT TTTCACTGTT
GCGCGTTTCTCACCGGCTTC CGTCG GATGTTTTT CC GC CG TC CCGG CA
TCATTTCACTGTTTGTACTC GCGGT CTACAGAAG GG CG GC AG GGCC GT
CGGGATCGGGCACGGAGAAG C A- CA G T--- - TCAT- ----------
ACATCCTGGCG
GAM5985 2441 GACTGATACAGTCTGTAAGA ACAG T TCTCTTCGAG G CCAATT
TCTCTTCGAGAGAGCTGTCC GACTGAT TCTG AAGA AGA CTGT
AATTACAGATCTATATACTT CTGACTG AGAC TTCT TCT GACA
TTCTTCAGAAGGTCAGTC GA-- - TTTCATATA- A ------
GAM5986 850 CCAGTCTATGTGACAGTTTC T T A C- TAA AAA AGGATCAAC
ATTTCCCTTTAATGTGGAAA CCAG CTA GTGAC GTTT ATTTCCCTT TGTGG TCTGT
TCTGTAGGATCAACATAGAC GGTC GGT CACTG CAAG TGGAGGGGG ACACT AGATA
CTCACAGCTGGGGGAGGTCA C - - AC TCG CC- ---------
GAACGTCACTGGCCTGG
GAM5987 11328 GACTTGTGTTTGAATCCCAG T- - AAT TTCCA TTCCTGCT
TTCCATCACTTCCTGCTGTG GACT GTG TTTG CCCAG TCAC
AGATCTTGGGCAAATCACTT CTGA CAC AAAC GGGTT AGTG
AGTC TT T --- CTAG- --------
GAM5988 18526 GCGAGCGGGAAATCGTGCGC A GGAA G- G CA A- --- TGT
GACATCCAGAGAAGCTGTGC GCG GCG ATC TGC CGA TCCAG GA AGC
TACGTCGCCTGGAATTCGAG CGC CGC TAG ACG GCT AGGTC CT TCG
CAGAGATGGCACGCCGC - ACGG AG A TA CG GCA ---
GAM5989 11425 GGTACTTCTACTCACAGCGG - ACTCACA CGATTC ACTCCAGCAA
CGATTCCGAGGCCAACTCCA GGTACTT CT GCGG CGAGGCCA
GCAATGGCTTTGCAAATCTG TCGTGAA GG CGTC GTTTCGGT
CGGAAAGTGCT A ------- TAAAC- ----------
GAM5991 4731 GGGGATGAATTCTTCAAATA TTCTT TAG-- T ATC - - TTTG
GGAGCCGATGGATCTGTGGT GGGGATGAA CAAA GAGCCGA GG TG TG GTCC
CCTTTGGGACTCATCAAAGC CTTCTATTT GTTT TTTGGTT CC AC AC CAGG
CTTGGTTTAGCATTTTGTCA TGACT TACGA - GAA T T ----
GTTTTATCTTC
GAM5992 19844 CAAATTGGGAGCCCTGGTTT TT T -- T GGGTCA
GGGCATAATGGGTCAGTTTG CAAA GGGAGCCC GGT TTGGGCA AAT
TTCAACCGCCGGGTTCCCTT GTTT CCCTTGGG CCG AACTTGT TTG
TTG T- - CC - ------
GAM5993 5277 GCCTTCCTCCAGCAGCAGGG CT- CA AGG-- -- CTGTC
AGGGGAGGACTGGCTGTCTC GC TCCTC GCAGCAGGG GGAGGA CTGG
AGAATCTTTTAAAAGCCCTG CG AGGAG TGTCGTCCC TTTTCT GACT
CTGTCTGAGGACCTGC TCC TC GAAAA AA -----
GAM5994 7561 TTGCTAAAGTTGAACAATCC AAG- AA ATCCC T TACCATAT
CGGTACTGTACCATATCAGT TTGCTA TTG CA GG ACTG
CCTTTGTGGGTAGTAGGTAG AACGAT GAT GT CC TGAC

CAA GGAT GG GTTT- - --------
GAM5995 5822 GTGTACTTTTCAATCCTGTG TTCAA T- ---- CTT A AATCAAAA
TAATGTTTAATTCTTGCAAC GTGTACTT TCC GTGTAATGTT TAATT GCA CTG
TGAATCAAAACAGTGTTAAA TACATGAG GGG CACGTTATAA ATTAA TGT GAC
TTATGGCAATATTGCACTTG TAAG- TT CGGT AT- - --------
GGGAATGAGTACAT
GAM5996 9351 TCAGCGCACGCCACAGGGCC C A ACA A GGAGAG CTGAA
AGTTTTGGCTGGAGAGGCCT TCAG GC CGCC GGGCC GTTTTGGCT GC
GAAGCAGAGCCAGAGCAGGT AGTC TG GTGG CCTGG CGAGACCGA CG
CCAGGTGAGTTCTGA T A A-- A GA---- -----
GAM5997 11429 CAGTACTCATCGGGATCGTG CTC T A- - CATC
TGGATTATGAGCCATCGCAT CAGTA ATCGGGATCGTG GGATT TGA GC
TAGGAATCCCTACGATCTCG GTCAT TAGCTCTAGCAT CCTAA ATT CG
ATATACTG A-- C GG A ----
GAM5999 21919 CTCATTGAGCCTGACTGTTC GCC- GTTC- T ATAAAATA
TGCTCCATAAAATAGGGTAA CTCATTGA TGACT TGC CC
TAAAGGTCAAACATCAGTGA GAGTGACT ACTGG ATG GG
G ACAA AAATA - --------
GAM6000 9322 GGCTCATTGCTTAGGTGCCC T T AG CCCA TT - GCAATTAAA
AGGTTTTTCAGGTGCAATTA GGC CA TGCTT GTG GGT TTC AGGT
AAATTTAGAACTACCACACA TCG GT ACGGA CAC CCA AAG TTTA
AAGGCATTGGCT - T AA A--- TC A ---------
GAM6001 8709 CCAATTCCTGAATTCAGTAA A - AA - AAT -- AAGAAGAGTAAAAA
GCAAGTTACAATTCAAAAAG CCA TTCCT GAATTCAGT GCAA GTTAC TCAA AAAGG
GAAGAAGAGTAAAAACCTTT GGT AGGGA CTTAAGTCA CGTT CAGTG AGTT TTTCC
TATTGACAGTGACTTTGCCA A A C- T AC- AT ----------
CTGAATTCAAGGGAATGG
GAM6002 8256 GTATCTGCCAGCAGAATGGC T C AGAAT- - G T CCTGAGATC
ATGGTGCCCATCGTGGAGCC GTA CTG CAGC GG CATGGT CCCATCG GGAG
TGAGATCCTCCCTGATGGGG TAT GAC GTCG TC GTACCA GGGTAGT CCTC
ACCATGACTTGAAGCGCTGC - C CGAAGT A G C ---------
CAGTAT
GAM6003 17557 CGGAAGTGCCTCCTCCCCGT A - TCCT - CCC TTTC- T GCCC
CCCCTTCCTTTCCAGCCTCA CGG AG TGCC CC CCGTC TTCC CAGCC CAC
CGCCCGTGGGCTGCAGTTGG GCC TC ACGG GG GGTAG AAGG GTCGG GTG
AACGATGGCGGCTGGCAGCT G G TC-- C C-- TTGAC - ----
GCCG
GAM6004 1209 AGGCCTGCATCACCGGCCGT CT A C T - C- T TTCACTC - CGCGAACC
GATTTCTCCGCTTGCAGCTT AGGC GC TCAC GGCCGTGAT TC TC GCT GCAGC CGG AGCC

CACTCCGGAGCCCGCGAACC TCTG TG AGTG CTGGCGCTG AG AG CGA CGTCG GCC TCGG

GGCTACCGCCCCGCTGCAGC TT - T T T CA - CCCC--- A --------
ACGATGATGTCGCGGTCTGT
GAGTTTGTCT
GAM6006 16730 ATACAGCTTTTGGCTTTTTG TTT CT --- ---- TACGATCTTGGAAATACT
AGCACACCTACGATCTTGGA ATACAGCT GG TTTTGAG CACA CC
AATACTGGAAAATGTGATAC TGTGTCGG TC AAGATTC GTGT GG
TTAGAATACTTTGGCTGTGT TT- AT ATA AAAA ----------
GAM6007 15980 GAAGTCCTGGTGTACAATAA A ---- TA ATAATA ATTGTTCA

TACATCCATTGTTCAGGATG GA GTCCT GGTG CA CATCC
AGATCTGCTCACCGTCTGGG CT CGGGG CCAC GT GTAGG
GCTC - TCTG TC CTAGA- --------
GAM6008 9502 CCGTGACCGCCACCGCCACT C ACCGCCAC TA CCA CTCCAGCC
TCCCAGGTAGCCCAGCAGCC CCGTGAC GCC TTCCCAGG GC GCAGC
TCCAGCCGCTGCCGCCCCTG GGCGCTG CGG AGGGGTCC CG CGTCG
GGGAACAGGCCGTCGCGG C ACA----- C- C-- --------
GAM6009 5332 GGTCTACAAGAATTGGTGGC ACAAGA- TG G G - TGTTACCT
TATTCGGGTACTGTTACCTG GGTCT AT GT GCTATTCGG TA C
TTGGCCGAGTGGCGACTGAT CCAGA TA CA CGGTGAGCC GT G
GTTCCTCAGACC CTCCTTG GT G G T --------
GAM6010 22434 GTGGAGCTGTCGGAGGCCAG CT- C CCA T GA TGCA
GCTCCGGGACGTGCTGCAGC GTGGAG GT GGAGG GGC CCGG CGTGC
GCGCCGGGCCCTCTCTCCCA TACCTT CA CCTCT CCG GGCC GCGCG
CTTTTTCCAT TTT C CTC - -- ----
GAM6011 13675 CTGAGCTGGATGGAAAGACA -- GG AAGA AA- T ACA - TTGGACT
GCAAAGATGTACAGGGGTGG CTG AGCT ATGGA CAGC AGA GT GGGGTG GCT
CTTTGGACTAGCTCATCTCA GAC TCGG TACCT GTCG TCT CG CTCTAC CGA
TGGCTCTGGGGCTGGGTCCA GG -- GG-- GGG - GTA T -------
TGGCTGGCAG
GAM6013 17097 TGTGTGGGGAGAGCTCTCCC T TCTCCCACCAC GTGCCTGTGAA
ACCACACAGAGTGTGCCTGT TGTG GGGGAGAGC ACAGAGT
GAAACTCTGTCTCTTCTCTG ACAC CCCCTCTTG TGTCTCA
TTCTCCCCCCACA C TCTCTTCTC-- ----------
GAM6015 396 CAGAAATGAACAAAACTAAT AA AC ACTA AGC T A CAAAATGTTTAAAA
GCTAGCAGGTTAAAATCAAT CAGA TGA AAA ATGCT AGG TA AATCAAT
CAAAATGTTTAAAAATTGAT GTCT ACT TTT TACGA TCC GT TTAGTTA
TCTGTCCTCAGCATGTTATT CG CC ATTG C-- T C ----------
TCCTCAGCTCTG
GAM6016 17274 TGCAATATTTATCCACAATT --- T TCCAC TCTA A TTTT
CTAGACATTTTCCATTTTTG TGCA ATA TTA AAT GAC TTTTCCAT
TGGAAGAGTTGCTGTTACCT ACGT TAT AAT TTG TTG AGAAGGTG
TAATTATAAATGCA AAA T TCCA- TCG- - ----
GAM6017 17942 GTTGAAGGCACAACAGTTAA CAA T CT-- TTGT
TGGCTGTATTGTTGCTATTC GTTGAAGGCA CAGT AATGG GTA
CGTTGCTGACATGTTTTTAA TAATTTTTGT GTCG TTGCC CGT
T ACA - TTAT ----
GAM6018 22141 GGAAGGTGCAACGTAAGAGC GCAACG - A- CT --- GAGATTTAGGAGAACAG
AGACACAACCTGAGATGCCC GGAAGGT TAAGAG CAG CACAAC GAGA TGCCCTT
TTGAGATTTAGGAGAACAGG TCTTCTA ATTCTC GTC GTGTTG CTTT GCGGGAG
AGGGCGCCCTTTCTGTTGTG AAGAAA A CA T- CCC ----------
ACCTGACTCTTAAAAGAAAT
CTTCT
GAM6019 7947 GCAGGAACCCGGAAAAGATG AA AA ------ TT CCCTCCA
CTGTTGGCACCCTCCATGCC GCAGG CCCGG AAGA TGCTG GGCA
CAGTAGTGAGTTCTTGTCGG CGTCC GGGCT TTCT ATGAC CCGT
GGGCCTGC GG G- TGAGTG -- -------
GAM6020 6879 GGCAGCCCTGGGCCTTGGTT - CCTTGG CC- CTGG
TGATTACCTCCCCTGGGGGA GGCAGCC CTGGG TTTGATTA TCCC
TGCTGGTCAGACCCAGAGGT CTGTTGG GACCC AGACTGGT AGGG

TGTC A ------ CGT ----
GAM6021 17414 TGCCCGCGTACATGGGCTGA GCGTACAT G TG AAG GAAGAAA
GGAATGTTCAAGCAGAAGAA TGCCC GG CTGAGGAA TTC CA
ATGGTAGAGTTTTCTTTAGG ATGGG TC GATTTCTT GAG GT
CTTAAAGGGTA AAAT---- G TT ATG -------
GAM6022 21019 GAAGATGGTAACTGGGATCT T ---- GTT--- TAACACCCCCAT
CGTTGGAAATAACACCCCCA GAAGATGG AAC TGGGATCTC GGAAA
TTTTCTTCATCAGGGATCCC TTTCTACC TTG ACCCTAGGG TCTTT
ATATTGTTTCCATCTTT T TTAT ACTACT ----------
GAM6023 18544 GGTTCAAATGTAAGTCCCTC AAAT---- CCCTCCGAT - TT--- TCCCCGC
CGATGCCTTCTTTCTGCTCC GGTTC GTAAGT GCCTT CT CTGC
CCGCGCAGTGCATAGTGAGG CCAAG CATTCG CGGAG GA GACG
CCACTGCTGCTTACCCTTCC GCCCTTCC TCGTCAC-- T TACGT -------
CGGAACC
GAM6025 3572 CCGCAGGGCCTGCCTGGTTC G C- CCT T TCCC
CTGGAAGTCTTCCCAGTCTT CC CAGGGCCTG CTGGTT GGAAG CT
CCCAGCCAGCCCGGGCCCTG GG GTCCCGGGC GACCGA CCTTC GA
GGG G CC C-- T ----
GAM6026 6256 GCATCTGCAGGGGAAGCCAG G ---- AG T- TTTT
TTTGTTCTTTTGATCCAGAA GCATCTGCAG GGAA GCC TTTG TC
GGGTTAATTTTCGCTGCAGG TGTGGACGTC CTTT TGG AGAC AG
TGT G TAAT GA CT ----
GAM6027 19537 TTGACCCCATCAACGCACTG A A AACGCA A G GG CCTATGAGTGACCA
CAGGGCTGCCATGGAAGGGC TTG CCCC TC CTGC GGGCT CCAT AAGGG
CTATGAGTGACCACCCTTGG AAC GGGG AG GACG TCCGG GGTA TTCCC
ATGGAGGCCTGGCAGGAGGG - - ------ G A GG ----------
GCAA
GAM6028 1453 TGAGTTCGGTCACAGACTTG C TCAC T- GTTTTT TC CA-- - TCACCTTC
ATGTTTTTGAAAGTTGTCAC TGAGTT GG AGAC TGAT GAAAGTTG AC GTTTA TTG
CAGTTTATTGTCACCTTCCA ACTCGA CC TCTG ACTG CTTTCAGT TG CAAGT AAC
ACTGAACCACTGTCTTGACT - ---- TT TCCCCT TC TCAC C --------
TTCTCCCCTGTCATTGTCTC
CAGCTCA
GAM6029 21017 CTGCAGCAGATCTGCAAGAT A------- CAA TCAA CACATGGACTCAC
CCTCAATGCGCACATGGACT CTGCAGCAG TCTG GATCC TGCG
CACTGCAGTGGATCGACCAG GACGTCGTC AGAC CTAGG ACGT
AACTCGGCCCTGCTGCAG CCGGCTCA CAG TG-- ----------
GAM6030 14483 GGACTCGGTCCCCGAGCTGC G GCTGCGC - - - T - CGACTTGGACT
GCTGGCTGCCCGTGCTGCGG GGACTC GTCCCCGA TGGCT GC CCGT GC GCG GCACTA

CACTACGACTTGGACTTGGT CCTGAG CAGGGGCT ACTGA CG GGTA CG CGC CGTGGT

GCGCGCCGCGATGGCGCAAG A ------- A C G C G ----------
TCATCGGGGACAGAGTCC
GAM6031 8456 GAGCCCTCTGAGAGGCCCAG TGA - GT A CTT
GTCCTAGAGCAGCTTCTGCC GAGCCCTC GAGGCC CAG CCTAG GCAG
TGGGCTGAGGTCTTGGGGGC TTCGGGGG TTCTGG GTC GGGTC CGTC
TT --- A -- - ---
GAM6032 120 TTCTCTGTGTAATTGGCAAG G T C- - C ATGTTGTGC
GCTGTACCAATGTTGTGCTG TTCTCT TG AATTGG AAGGCT GTA CA

ATGCAAGCCTTTTTCAGTTC AAGAGA AC TTGACT TTCCGA CGT GT
AAGAGAA - - TT A A ---------
GAM6033 8836 GGAGGGGAAGGGGCTAGCAG A GCTAG AAACA T- AG TGGG
GTGTGTAAACAGAGGGTTCC GGAGGGGA GGG CAGGTGTGT GAGGGT CCATC GC
ATCAGGCTGGGGCAGGTGGC TCTCCCCT CCC GTTCACACG CTTCCG GGTGG CG
CGCCTTCCGCACACTTGAGG - AAGGA C---- CC A- ----
AACCCTCCCCTCT
GAM6036 22391 CTTTGGGAGGCCAAGGCAGG GGAG A A --- G AGCT
TGGATTGCCTGAGCTCAGGA CTTTG GCC AGGC GGT GGATT CCTG
GTTCGATACTAGCCTGGGCA GAGAC CGG TCCG TCA CTTGA GGAC
ACAGAG AA-- G A TAG - ----
GAM6037 4775 TCCCTTGTGGATGCAATGAA ---- ATGC ATGGAA G GTTGTGGA
TGGAAAGGAAGGTGTTGTGG TCC CTTGTGG AATGA AGGAA GT
AATGTTCCTTCGTTAAGTCA AGG GGACACT TTGCT TCCTT TA
CAGGAAACGGA CAAA GAA- ------ G --------
GAM6039 11919 CAAAGGAAATACTGTGTTAG AAA GTTA T A GAC CCT
AATTTTCTAGTAGGACTCTT CAAAGG TACTGT GAATT TCT GTAG TCTTTAAA
TAAACCTTTTGGGGAAAGCT GTTTCC ATGACG CTTAA AGA TATC AGGGGTTT
ATCAGATAATTCGCAGTACC --- ---- T C GAA ---
TTTG
GAM6040 18437 GTCATCATCATCATCATCGT T TC C C TC-- TCTTCA TTCTTTTC
CATCATCATCATCTTCACGT GTCATCA CA AT AT GTCA ATCATCA CGTT
TTTCTTTTCAATGCATTTGA CAGTAGT GT TA TG CGGT TAGTAGT GTAA
TGATTCATTGGCAGTATTTT - TT - A TACT TTAC-- --------
GTGATGAC
GAM6041 21332 GAAGTGGGTCAGATTGCAGT ---- A- TGTGTAGTTTTGGAGAAT
GTGTAGTTTTGGAGAATCTG GAAGTGGGT CAG TTGCAG
TAAAGCTGTTACACCCATTT CTTTACCCA GTC AATGTC
C CATT GA ----------
GAM6042 260 GCTCAACCTCTTTGTTCAGT AACC TT- T GTA TTGAAGCTAATT
ATGTGTAACCTTGAAGCTAA GCTC TC TGTTCAGTA GT ACC
TTGGTACTACTGGATATCTG CGAG AG ATAGGTCAT CA TGG
ACTGGAGC GTC- TCT - --- ----------
GAM6043 11140 GAGGGGTGGCCAACAGGTCG T CAACA G GGTGAGGG ACAAGGCG
GTGTCAGGGTGAGGGGTGGC GAGGGG GGC GGTCGGT TCAG GTGGCC
CACAAGGCGGGCCATGGCTG CTCCTC TCG CCGGCCA GGTC TACCGG
GGACCGGCCGCTCTCCTC - ----- G GG------ --------
GAM6046 5173 TGGACTAAGAACGATGGCTG A -- T TG T CAAAA AACATAA
GTTTCATGCAAAAAGGAAAC TGGACTA GA ACGA GGC GT TCATG AGGA
ATAATCTTGTTTATGATACT ACCTGGT CT TGTT TCG CA AGTAT TTCT
GGCTTTTGTAATCCTGGTCC C AA T GT T TTG-- -------
A
GAM6047 4375 TGTTGCTATCTATCACTTTC -- ATCT - T AC-- TTAGT
ATGTAACAATGGACTTAGTG TGTT GCT ATCACT TTCA GTA AATGGAC
TCCATTAAACTGCCTGAGAA ACAG CGA TGGTGA GAGT CGT TTACCTG
GTGGTTTGAGCCTGACA TC GTT- A C CAAA -----
GAM6048 8168 TGATGAGGACTGGGACAGGT T - C G C -------- CCT
ACGTGCACCCTGTGCTTCAC TGA GAG GA TGG ACAGGTA GT GCAC
CTAACTGCCTGTGCCGATCT ACT CTC CT GCC TGTCCGT CA CGTG
CTCTCA - T A G - ATCCACTT ---

GAM6049 19263 TGCTGTGGTCTGTTCAAGTG -- - AAG -------- CTTATT
ATCTTTTCACTTATTTGAAA TGCTGTGG TCT GTTC TGATCT TTTCA
AAGAGCATGGATCAAGAGCT ATGACACC AGA CGAG ACTAGG AAAGT
AGATACCACAGTA AT T A-- TACGAGAA ------
GAM6050 10339 GCGGCTGCTCCGGCTTCTGG TGCTC CCCTG TTCTT
CCCCTGGCGGGCTTCTTGTC GCGGC CGGCTTCTGGC GCGGGC
CGCGCGCCGGGAGCCGGCCG CGCCG GCCGAGGGCCG CGCCTG
C ----- CG--- -----
GAM6052 5243 CAGGTTCAGCCTATGACCCA TC- - A C GT AA CC CTTC CCACCTC
GGTCCAAAAGTTCCAGCCTT CAGGT AGC CT TGACC AG CC AAGTT AGC TCTG
CTCTGCCACCTCCAGAGCTA GTCCA TCG GA ACTGG TC GG TTCGA TCG AGAC
GCTTCAGGTTCTGGTCAAAG CAC A A - TT AC -- ---- -------
AGCTCACACCTG
GAM6053 19636 GTCCGGAAATGACTAGCTCT AAA ACTA - GAAA TCTT G GAAG
CTGGAAAAGCTCCTCTTGCC GTCCGG TG GCTC TCTG AGCTCC GCC ATGAG
GATGAGGAAGCTCATGGTGG CAGGTC AC CGAG AGAT TCGAGG TGG TACTC
AGCTGGTAGATGAGCCCACG GC- C--- T GG-- ---- - ----
CTGGAC
GAM6054 6018 ACATCTGACATCACCTGCAG T ACA- A AG -- ATAACA ACT
CTTCCTTATAACATGCCCAC ACA CTG TC CCTGC CT TCCTT TGCCC
TGGGCAGAGAGGATGAGAGG TGT GAC AG GGACG GA AGGAG ACGGG
CAGGAGAGCACCAGTGT - CACG A GA GT AG---- ---
GAM6056 11818 AGGCAGGAGAATGGTGTTAA A AA - TAA- AGGC CT A - AGAT
CCCAGGAGGCGGAGCTTGCA AGGC GGAG TGG TGT CCCAGG GGAG TGCAGTG GC CG

GTGAGCCGAGATCGCGCCAC TCTG CCTC ACC ACA GGGTCC CCTC ACGTCAC CG GC
TGCACTCCAGCCTGGGAGAC - AG G CAGA GA-- -- - C ----
ACAGCCAGACTCCGTCT
GAM6058 16011 AGAGGTGGTCTGCTGACCTG - T T G G CTCA - CGTTCC
TGGTATCTCAGAGGGGACGT AG AGG GGTC GCT ACCTGTG TAT GAGG GGA
TCCTCCTCCTCCCTGTGCAC TC TCC CCAG CGG TGGACAC GTG CTCC CCT
AGGTGGGCTGACCTCCTGCT G T T G - TCC- T ------
GAM6059 16090 CCCAAGCAAGCCTCCAGGCC AA AA- CA C- G TT GATGCCTGA
CTGAGTGTTCTGATGCCTGA CCC GC GCCTC GGCC TGA TG CT
AGGGTAGTCATAGGTCCCGA GGG TG TGGAG CTGG ACT AT GA
GGTGGAGTCGGGG GC AGG CC AT G GG ---------
GAM6060 9584 CCTCATAACTGGAGTAGAGT T TG T T - G TTTTCATA GG AGTTA
TCCTGGTTGCTTTTCATAAG CCTCA AAC GAG AGAG TC CTG TTGC AGAG AG
AGGGAGAGTTACTTTCTTTG GGAGT TTG TTC TCTT AG GAC AACG TTTC TC
TATCTCTGCAAGCAGAGATT - GT - T A G TCTCTATG TT -----
TCTCTTTGGTTTGAGG
GAM6061 7308 GGCAAATACTTTTGACCTCT - GACCTCT T - C GAACT
TGTGATGAGGTCAGGAACTA GGCAA ATACTTTT TGTGA GAGGTCAG GAA TAG
GGAACTTTAATTCTTTGACT TCGTT TGTGGAAA ACACT TTTCAGTT CTT ATT
TTTCACATTTTTTAAAAGGT A ATTTTTT - T A -----
GTATTGCT
GAM6063 10969 GTGTATATGTGTGTGTGTGT TG A- TGAAGT
GTGTGTGTAGCTTGAAGTGG GTGTATATGTGTGTGTGTGTGTG TGT GCT
TCCATATGTACACACACATA TATATATACATATACACACACAT ATA TGG
TACATATATAT GT CC ------

GAM6064 18719 AGGCTGGAGCAGTGGTGCGC A TG T GCT C C - - CTCT
TCTCGGCACTGCAACCTCTG AGGCTGG GCAG G GC CT GG ACTG CA AC
TCTGCCAGTTTCAAGTAGTT TCCGACC CGTC C TG GA CT TGAC GT TG
CTCCTGCCCAGCCT - CT T AT- A T C C ----
GAM6065 9341 GCAGGTAGGGATCTCTGGCT T GATCTCT TT T T - G - A - TGAAGCT
TTGGTAATTCTTTATGAGAG GCAGG AGG GGC TGG AATTCTTTA GA GA GA TCCT GC CTT
GATCCTAGCCTTTGAAGCTG CGTCC TCC TCG ACC TTAAGAAAT CT CT CT AGGA CG GGG

GGAGCAGGAGTCATCATCTA - AC----- TT - - A A G - A -------
AAGAATTCCATTGCTCACCT
CCTGC
GAM6066 17747 CGGCACTGCCACCCTTTTGG AC - TT ----- TG TTGAC
CATTGTTGCCACCATTGACT CGGC TGCCA CCC TTGGCA T TTGCCACCA
GGTGGCGATGGAGAGCTGCC GCCG GCGGT GGG AACCGT G AGCGGTGGT
AATTGGGCTGGCGGCCG -- C TT CGAGA GT -----
GAM6067 255 TGTATGCATTTCCTCTGGTT TTTCCTCT - TTCAAA-- AAAATA
TTATTATTCAAATTAAGAAA TGTATGCA GGTT TTATTA TTAAG
ATACTTAAAAATTTTTTGGT ACGTACGT TCGA AATGGT AATTC
AACAGCTTGCATGCA -------- C TTTTTAAA ------
GAM6068 4395 GTAGGCATGACTAAGGGGTA TGACTAA ---- TTGACTAT
AGGGTTGACTATTCTTGAGC GTAGGCA GGGGTA AGGG
TACCTCACCAACTTGCCTAT TATCCGT CTCCAT TTCT
TCAACCA CGAG --------
GAM6069 17768 GGGGGGGACTTTGGCGACCC - CT G A - A C CCT
GGGTCAGCCGGCCGCCCCCT GGGGG GGA TTG CG CCCGG GTC GCCGGC GCCC
GGGCTGCTGGTGGGCGTCGG CCCCC CCT GGC GC GGGCT CGG TGGTCG CGGG
GCGGCGGCTCCTCCCCC T C- G - G G T ---
GAM6070 19228 TGCAGTACTCTAATTTAGCC G A CC GTAAT G AAATCCAAATC
AAGTAATTGCTGCTGTAAAA TGCA TACTCTA TTTAG AA TGCT CTGTA
TCCAAATCTACAGAGCGCAC ACGT GTGAGGT AAATT TT GCGA GACAT
AATTTTTTAAATGGAGTGTG - - TT AACAC - ----------
CA
GAM6071 21390 ATCCCCGTTCCCGATTCCTG C TT AT CT A-- - TATTG
TAGTAGCGGCTGTATTGCAG ATCC CG CCCG TC GT GTAG CGGCTG
CCGCCTGCCGAACTGACCCG TAGG GT GGGC AG CA CGTC GCCGAC
GGTCTGTGGAT T CT CC T- AGC C -----
GAM6073 15880 GCTGCGGTATCCCAAGGTGG ATCC- - A-- ATG
TCCATGCATGGCACACGGAT GCTGCGGT CAAGGTGG TCC TGC
TCACCTTGCTCACACTGCAG TGACGTCA GTTCCACT AGG ACG
T CACTC T CAC ---
GAM6075 18271 TCCACACTTCCTGGGAGGTC CT C A---------- AACT
AGAGACAACTGTTTCAGAAG TCCACA TC TGGGAGGTC GAGAC
AGTCAGATGGGCTTCCCAAG AGGTGT AG ACCCTTCGG CTTTG
ACTTGTGGA TC A GTAGACTGAGAAGA ----
GAM6076 6586 AGTTCTGAGGCTAGTCTTTC A TA TT-- T - T CCAA
TGGGTTAACTGATGGTCCCA AGTTCTG GGC GTC TC GGGTTAA CTGA GGTC
AGACCTCGGTTTGACCTGAC TCAGGAC CCG TAG AG TCCAGTT GGCT CCAG
CATGATGCCCAGGACT - -- TACC - T - ----
GAM6077 3697 GTGGTTAAACGTGAGACCCT AAAC GAGA CCAAAAGG- GGA
GGGGGCCAAAAGGTGTGGGG GTGGTT GT CCCTGGGGG TGTGG

ACCACAAGGAGAAGACTCTC CACCGA CA GGGGCTCTC ACACC
GGGGGAACAATGAGCCAC GTAA AG-- AGAAGAGGA ---
GAM6078 20977 AGACAGAAGCTGAGCTAGCA GAAG- G C CAACC GA A TATGA
ACCCCAGAAGGCATCTATGA AGACA CT AG TAG CCA AGGC TC
GAGGCCTGTGGACTACCTGC TTTGT GA TC GTC GGT TCCG AG
CTGAGAGGGATGTTT AGGGA G C CATCA G- G -----
GAM6080 36 GTAGGGGCCCTCGTCCTTCT --- T TCTTCT - CACCA
TCTCGGCCGCCACCAGCAGG GTAGGGGCCC TCG CCT CGGCC GC
CTGTGCTCCAGGTCGGCCTG CGTCCCCGGG GGC GGA GTCGG CG
GGCCCCTGC TCC T CCTCGT A -----
GAM6081 14645 AGCGTGGATGCCGGTGTGGA CG ATGCC T C-- TGT T CTGG
CGCTGTGAATCGTGGCTGGC AG TGG GGTG GGA GC GAATCG GG
CCGGTTCTCCGCTTCTCCCC TC ACC CTAC CCT CG CTTGGC CC
ATCCCCATACT AT C---- C CTT CCT - ----
GAM6082 9839 TGAACCTTACCTAAATAATG CT- TAAATAATG CC T -- CACATGGTTTC
AAAGCCAGCCAGATTCATTT TGAAC TACC AAAGCCAG AGAT CATTT TCCACGG
TCCACGGCACATGGTTTCCT ACTTG ATGG TTTTGGTT TTTG GTAGA GGGTGTC
GTGGGTAAGATGTGTTTATT AAC --------- TA T AT ----------
TGGTTTTGGTACAAGTTCA
GAM6084 13771 CAGGCTGTAATCTGTCTCTG - A---------- G- GGGTGAAGGGA
CTGGGGTGAAGGGACGGAGG CAGG CTGT ATCTGTCTCT CTG
GAGACAGATGAGAAATGAGA GTCC GACA TAGACAGAGG GGC
ACACAGACCTG A CAAGAGTAAAGAG GA ----------
GAM6085 12543 CTACTGCTGGAATTCTTGTC ----- T TG TTG AAT ATGT
ATTGCAGAAAATCAATGTTG CTACT GCTGGAAT CT TCA CAGAA CA
TGTTCTGATTTGGGGCATTC GATGA CGATCTTA GG GGT GTCTT GT
TAGCTTGCAAGTAG ACGTT C -- TTA GT- ----
GAM6086 401 TTGGGGACTTTTGGTAGTTT GG TTTTGG AA TTT CTTTTCCTCGCC
AAACTCTTTAACCTTTTCCT TTG GAC TAGTTT ACTC AAC
CGCCGTTTATGAGTAAAGCT AAC TTG ATCGAA TGAG TTG
AAAGCTGTTATCAA TA TCGAA- A- TAT ----------
GAM6087 8389 TTACTGACAAAACTGGGCAG CAAAACT C ATAAA A A - TCCACT
CTGAAAATAAAAGAGAATAA TTACTGA GGG AGCTGAAA AGAGA TAA TTCT AT
ATTCTATTCCACTGTAAGAA AATGACT TCT TCGACTTT TCTTT GTT AAGA TG
GTTGATTTCTTTTCAGCTTT ATATGTT T ----- A G A ------
CTTTGTATATCAGTAA
GAM6088 11843 GGGCCAGCAGACTATCTAGG --- CTATCTA AA - A ATGACTTTAAA
AAGCAGGAGTAGCATGACTT GGGCCA GCAGA GG GCAG GAGT GC
TAAAGTGATTCTCTGTGCCA CTTGGT CGTCT CC TGTC CTTA TG
ATCTCTGCAACTGGTTC CAA CTAA--- G- T G ----------
GAM6089 7999 CGCTGTAAAGAAGTTCTTGA GTAA AA C -- CG AAATACAGCAAA
GTGGCGTGTAAAATACAGCA CGCT AG GTT TTGA GTGG TGTA
AATACAAACCATTATCAAAA GTGA TC CAA AACT TACC ACAT
CCTAAAAAGTG AAAA -- - AT AA ----------
GAM6090 20856 ATTTATGTAGCATGCCACTA GT-- T C- TAAAA --- TTCCTTTAACTT
AAAGAGGCAGAAAATTTTTC ATTTAT AGCA GC AC GAGGCAGA AAATTT
CTTTAACTTAAATTTGAATT TGGATG TCGT TG TG TTCTGTTT TTTAAA
TGTCTTGATGTTTGTTTGCT TTTT T TT TAG-- AAG ----------
TTTTGTAGGT
GAM6091 2436 TCACGGAACAATGCTTCAAC C CAA CAC T - T GAAA

ACGTTAGAACGATCAGAAAT TCA GGAA TGCTTCAA GT AGAA CGA CA
GTTGCTTCTACTTTTGAGGC AGT CCTT GCGGAGTT CA TCTT GTT GT
GCTTCCCTGA C C-- TT- - C - ----
GAM6092 8447 CGCTGGTTCCTGCGGCTTCT ------ GCTT CTC A A G - C GAT
GCTCAGACACCAACGCCAGA CGCT GGTTCCTGCG CTG AG CACCA C CC AGA GGC
CGGCGATGCCTCTCGGGTGG GCGA TCAAGGACGC GAC TC GTGGT G GG TCT CCG
TGACTCCAGCGCAGGAACTT AGAAGT ---- C-- A - - C - ---
GAAGAAGCG
GAM6093 824 CCCCCCAGGTCGCAGGTGTC - G AG - - CCAGTCAA
TGAGGCCAGTCAACCTGCAG CCC CCCA GTCGC GTG TCTG AGG
AGCACTCGCGGCGTGGGTGG GGG GGGT CGGCG CAC AGAC TCC
G T G CT G G --------
GAM6094 12459 CCCCTGCTGTATCCTGCATC C-- ATC CATCA AA AAA ATT
ATTAGAAAAATCAAAGCCAT CCCCTG TGT CTG TTAGAA ATC GCC
TGGTGGGATCATTCTGACAG GGGGAC ACA GAC AGTCTT TAG TGG
CCAGTCACAACCCAGGGG CCA CT- CGAC- AC GG- ---
GAM6095 3665 GCTGCTGTGATCCCGACTGC ---- TCC C CC TG ATTT TGTCTTTT
AGCTCCGTGGATTTCAGTGT GCTG CTGTGA CGACTG AGCT G G CAG
CTTTTCTGCCTGCTCAGTTC CGAC GGCACT GTTGAC TTGA C C GTC
CAGTTGTCACGGGCGACAGC AGCG --- C CT GT C--- --------
GAM6096 19849 TAGAAGGAAATATATAAAAA AG A ATAA G AAA TAAAAAGTAAAAAAT
TGTTTACAAATATTTTAAAA TAGA GAA TAT AAAT TTTAC TATTT
AGTAAAAAATGAATAAAAGT GTCT CTT GTG TTTA AAATG ATAAG
AAAAATTTGAGTGGTTCTCT CT G AG-- A AAA ----------
CTG
GAM6097 10678 TACTTAGAGTAGTATGAGCA G TA GCA C CGCCCCAAACT
AGCATGGGCGCCCCAAACTT TACTTAGA TAG TGA AG ATGGG
CCATACTTCACGCTATCTAA GTGAATCT ATC ACT TC TACCT
GTG - GC --- A ----------
GAM6098 18430 GCCACTTCTTCTTATTGGAG - TC- TAT G T - TAGG G TTTCCAT
TGTGAGCACTAGGAGCAGGG GCC ACT TTCT TG AG GTG AGCAC AGCAGG ACC
ACCTTTCCATGGTGCTTGCT CGG TGA AAGA AC TC CAT TTGTG TCGTTC TGG
GTGTTATACCCTGCACCCAG A TTC CCC G C A ---- G -------
AACTTAGTAGGC
GAM6099 6237 CCCGGACCCGCAGGGCTGCC A- GCA C TTC-- AAGTCTTC
TGGTTCCTGGAAGTCTTCCC CCCGG CCC GGGCTG CTGG CTGG
AGTCTTCCCAGCCAGCCCGG GGGTC GGG CCCGAC GACC GACC
GCCCTGGG CC --- C CTTCT --------
GAM6101 1939 GCGCAGCGAGCGCCGGAAGC - C G - A - ACCG
GGAGGAGTACCGACTCTTCC GC GCAG GAGC CCG GA GC GGAGGAGT
AGCGTCTCGGGCTCCTTGCA CG CGTT CTCG GGC CT CG CCTTCTCA
GC A C - T G A ----
GAM6103 11953 TCTTGTGTTGAGACTTCGGG GAGA --- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGGGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AGAACACGA GAAG CCTCACCAC ATTCT
CAAGAAGAATAAGCACAAGA ATAA AAC - --------------
GAM6104 19718 GCCATCCAGTGCCATCCTCG CC TGC -- - --- T A CACACGCTC
TCGCTGCAGCGACACACGCT GCCAT AG CATC CTC GTC GC GC GCGA
CTCGCCGCCGCCATGACTGA CGGTG TC GTAG GAG CAG CG CG CGCT
GCAGATGACCCTTCGTGGC CT CCA AC T TAC C C ---------

GAM6106 1004 TGTTGTCATTGCTCCCTTGT - T-- TC- - ACTAATC
GTTGTACTAATCACGAATAC TGTTG TCA TGC CCTTGTGTT GT
AAGGTTCGCACTTTGACCAA ACAAC AGT ACG GGAACATAA CA
CA C TTC CTT G -------
GAM6107 16371 CCAAGCTGGTTTGGAACTCC A GAA - CAAGCAAT CCCGCCC
TGGCCTCAAGCAATCTGCCC CCA GCTGGTTTG CTCCTGGC CT CTG
GCCCCAGCCTCCCAAAGTGC GGT CGACCGAAT GAGGATCG GA GAC
TAGGAGCATAAGCCAGCATG A AC- T AACCCTCC -------
G
GAM6108 20407 TTTGAAAAGAACACTTTTTG AA-- ACT- C TCAAAAA TCATACAT
GGGCAGCCTTCAAAAAGGTT TTTGA AGAAC TTTTGGGG AGCCT GGT
CATACATACCAACGGGCTTT AAATT TCTTG AAAATTCT TCGGG CCA
CTTAAAATTGGGTTCTAATG GTAA GGTT T CAA---- --------
TTAAA
GAM6109 11493 GTGAGGGGTTGTTAACAAAG A AAA TATA GTCATTCTTA
AATATATATTGGTCATTCTT GTGAGGGGTTGTT AC GAATA TTG
ACAACTACTATTTAAAGTCA CACTTTTCAACGA TG TTTAT AAC
GCAACTTTTCAC C AAA CATC ----------
GAM6110 11166 CTCCAGCAGTGTACTGGGAT C A TAC A G AGCCTGA
CATTAGGACAGCCTGAGTCA CT CAGC GTG TGGG TCATTA GAC
TGATGACCTCATTTTGCAGT GA GTTG CGT ACTC AGTAGT CTG
TGAAG A A TTT C A -------
GAM6111 8270 GTCTCACTGAGCCTTAGTCG - - A - A T T AGG-- - G AGTTTC
TCGGCAGGTCCCAGGCGCGA GTCT CA CTG GC CTT G CG CGGC TC CCAGGC CGA
AGTTTCTCGGCCTGGAGGAG CGGA GT GAC CG GAA C GC GCTG GG GGTCCG GCT
GGGGTCGCGCGAAGTGCCAG C A - T G - - GGGGA A - ------
ATGCAGGC
GAM6112 5928 TCCCCATTCGTCCAACCAGG ATTC GCATTCATCCCG - GTTA
CATTCATCCCGGTCACTTTT TCCCC GTCCAACCAG GTCAC TTTTG
GGTTACAGGACGTGGCAGCT AGGGG CAGGTTGGTC CGGTG AGGAC
GGTTGGACTAGGGGA AT-- GA---------- C ----
GAM6116 5742 GGTTATAGTACTACCAATGT T CA TG TG G TAAGATTATAT
TGGTGACTTGGTAAGATTAT GGTTATAGTAC AC A T GT ACTTGG
ATCCAGGTGATTGGTGTGTG TCGGTATTATG TG T G TA TGGACC
TGTATTATGGCT - TG GT GT G ----------
GAM6117 3285 CTCCTCGCTCCGTGCTCGCA T - C AGG - TCCT
GGTGCCTCCTCCTGGACGGC CTCCTCGC CCGT GCT GC TGCC TCC
GGCAGCGGCGGCGCGAGGAG GAGGAGCG GGCG CGA CG GCGG AGG
C G - --- C ----
GAM6118 22336 TCAGTGCGGGAACCAATGCA -- GGA AT A C G TGGA
GACTGGCATTAAGGCTGTGG TCAGT GCG ACCA GC GA TGGCATTAAG CTG
ATAGCTTGGTGCCAATTGGT AGTCA TGC TGGT TG TT ACCGTGGTTC GAT
CGTGGTCAACGTGAACTGA AG AAC GC G A - ----
GAM6119 10271 GCCATCAATGTCAATGACTC A TCAAT - T - - CA TGAC
CGTCACCAAGAGCAGTTTGA GCCATC ATG GACTCC G CA CCA AGAG GTT
CAACCTCTATGGCTGCCGGG CGGTAG TAC CTGAGG C GT GGT TCTC CAA
AGTCCCTCATAGATGGC A TCC-- G C C A -- ----
GAM6120 16597 GTCCCCGGCAGCGGTTGGCG T - TTGGCGA - AACCCC
AGTGGGGACCGAACCCCCGG G CCCCGGC AGCGG GTGG GGACCG
TTCTCCATGATCCCGCTGGC C GGGGCCG TCGCC TACC CTTGGC

CGGGGC - G CTAG--- T ------
GAM6123 14440 GCTTGGAAAAGATCAGGAAT TG AAA CA A CGC T C TGTGGTT
GTCCCGCAGGGCTTTGCGGA GCT GA GAT GGA TGTCC AGGGCTT G GGA
TGTGGTTTCCCGAGCCCTGG CGA CT CTG CCT GCGGG TCCCGAG C CCT
GCGTCCGTCTCTGAGC GT --- -- - --- - - -------
GAM6124 10002 ATGGGAACAGCAAGATGGCA AC A A AA- AGT- - A G AGCCT
AAAGCTTGCTGAGTGGTACA ATGGGA AGC AG TGGCA AGCTTGCTG GGT AC GC CC
GCGCCAGCCTGGGTAGTGGC TGTCCT TCG TC ACTGT TTGAACGAC CCG TG TG GG
CTCCCCAGCAAGTTGCATGT -- A - ACG CCCT G A - -----
CACTAGCTTCCTGT
GAM6125 14742 GCTCTGTCACCCAGGCTGAG CAC ------- - G GCAT A- C ACTCCACC
TGCAGGGGCATGATCATGGC GCTCTGT CCAG GCT GAGT CAGGG GATC TGGCTCA TGA

TCACTGAACTCCACCTCATG CGGGACA GGTC CGA CTCA GTCCT CTAG ACTGGGT ACT
GGTCAGCGATCTCCTGACTC TTA ATGAACT A - ---- CG - --------
AAGCTCAAGTACTGGATTAC
AGGGC
GAM6126 5069 GCTGACTAGCATTCAAGAGC C CAA-- GC TAAAA
TTTTGGTTTAAAAGATCAAA GCTGA TAGCATT GA TTTTGGTT
ACATCCCAGCAGTGTTGATC TGACT GTTGTGA CT AAAACTAG
AGT A CGACC AC -----
GAM6127 8474 GTGAGTTTTGTTTCCACCTG G TG CA- - TGTCA CGGCCCT
GACTGTCACCTGCCGGCCCT GT AGTTT TTTC CCTGG AC CCTGC
GCAGGATGTACCAGGGGAGG CG TCGAG GAGG GGACC TG GGACG
AGTGGAGCTGC - GT AGG A TA--- -------
GAM6128 17894 GACCTTTGTGAGTTCCAGTG A GTGG TGG T A- --- AGCT
GTGTCCTTGGCACTCAGAGG GACCTTTGTG GTTCCA TGTCCT CAC CAG GG TTC
TTCAGCTGAAGTCCCGACTG CTGGGAACAC CGAGGT ACAGGA GTG GTC CC AAG
GTGAGGACAAGTGGAGCCAC - GA-- --- - AG CTG ----
AAGGGTC
GAM6129 2254 TTGGTCACTTTTTACGTGAG GG A GAGCG CCAAG GT A C AGAAG
CGTATAATCCCAAGATCAGT TT TCACTTTTT CGT TATAATC ATCA GTTAT TTTTA TGG
GTTATATTTTACTGGAGAAG AA AGTGGAAGA GTA GTATTAG TAGT TAGTA GAAGT ATC
CTATTGAAGATGATGATGAT GA A ----- ----- AG - T -----
GATTATGATGAAGAAGGTGA
AGAA
GAM6130 1280 TGAGTAATGTGGTGCAGAGT T G- AGAG - AGTGAA
GTTTCAGCAGTGAAGCTGAC TGAG AATGT GTGC TGTT TCAGC
AGCAAAGGCACAGACATTCT ACTC TTACA CACG ACGA AGTCG
CA - GA GAA- C ------
GAM6131 12807 AAGAAGGCAAAGACTGGGGC A GA-- CAGC A T AA ATAAATGTG
AGCAGGGAAGTTTAAAAGGG AAGA GGCAAA CTGGGG AGGGA GT TAA GGGGAAA
GAAAATAAATGTGTTTCCCC TTCT CCGTTT GACCCC TTCCT CA ATT CCCCTTT
ATTATACCTCCTTCACCCCA G ATAA AC-- C T A- ---------
GAATATTTGCCGTCTT
GAM6132 3749 GTACCATGAATGCGCTAAAG GA GCTAAA - CA A ACCGGAG
CTGGACTCCATGACTGTACC GTACCAT ATGC GCTGG ACTC TG CTGT
GGAGGCGGCACAGGGTACCA CGTGGTA TATG CGACC TGGG AC GGCG
GCGACTAGTATGATGGTGC G- ATCAG- A AC - -------
GAM6133 15679 GATTTCATAGGTGTCTGTTT ATAG - G- - TG - CAGATT

TCTTGTACTGTTAGCAGATT GATTTC GTGT CT TTTTC T TA CTGTTAG
CTGACAGATGTGATGAGAAG CTAGAG CGTA GA AAGAG A GT GACAGTC
AAGAATGCATTGGAGATC GTTA A AG T GT A ------
GAM6134 16485 CCCCCCTTGAGTATCAGGCC A A A--- ATTAGG C AGGGACAGTATAG
ATTAGGACCCGAGGAGGGAC CCCCCCTTG GT TC GGCC AC CGAGG
AGTATAGCCTTGAGTATCAG GGGGGGAGC CA AG CCGG TG GTTCC
GCCATTAGAACCCGAGGGGG C - ATTA ACTA-- A ----------
G
GAM6135 15000 GGGCCCATGCTCTTAGTGGG A CT GGAAAACTC TG - TTTACTT
GAAAACTCTTGGAGCCGTTT GGGCCC TGCT TAGTGG T GAGC CG
ACTTTGAGCTTTGAACACTG CTTGGG ACGG GTTACC A TTCG GT
AAACCATTGTTGGCAGGGTT - TT AAAGTCACA GT A -------
C
GAM6136 14429 GCAAGTTCCTTTATTTTTGA A ------- GA- AA- TT- GAA--- AGAAAC
ATGGGAATGCCTTACAGAAT GCA GT TCCTTTATTTTT ATGGG TGCC ACA TTTAAA
TTAAAAGAAACTTTAAACGT CGT CA AGGAAATGGAAA TATTC ATGG TGT AAATTT
GGATGTTTTGGTACAACTTA A ACCCCAA AGA AAC TTT AGGTGC ------
TAGAAAAGGTAAAGGAAACC
CCAACATGC
GAM6137 15656 TCTTCGCGGACCCCAACGCC - C A - C- AA AG -- AGCCGA
AAGCAGCGAGCCCTGAGCCG TCT TCG GG CC CCAA GCC GCAGCG CC CTG
ACAGCCGGATGCTGCCGGGC AGG AGC CC GG GGTT CGG CGTCGT GG GAC
ACTTGGCGGGCCTCGACGGA C T G C CA GC A- CC ------
GAM6138 9793 GCCCGGCTCCTCAGGAAGAA GG GGAAGAAAA G - C- AGTGTGC
AACCGCTGGCCCTTCCCGAG GCCC CTCCTCA CC CT GGCCCTT CCG
TGTGCCGGCCGAGGGCCGAG CGGG GAGGGGT GG GA CCGGGAG GGC
GGGCCGTGCAAATGGGGAGA A- AAACGTGCC G G CC -------
GGGC
GAM6139 2509 TTTTCGAATGAATGACAACT A - CAAC-- TT CACTTT
TTATTTTTCTTACACTTTTA TTTTCGA TGAA TGA TTTATT TCTTA
AGGCTGATGAAAAACCTTCA AAAAGTT ACTT ACT AAGTAG GGAAT
TTTCAATTGAAAA A T TCCAAA TC ------
GAM6140 13436 AGTCCAACGTCTCTGATGCG - AC ------ TG TCAGA
GTGGCTCAGAGCACCCGTAT AGTC CA GTCTCT GATGCGG GC
CATTTATGGAGGCTCTGTGA TCAG GT CGGAGG CTATGCC CG
CT T CT TATTTA CA -----
GAM6141 17302 ATGGCACCCCACGGGGTTTC ---------- TTTCCACAC T GTA AT TTGACTCTT
CACACGTTGGTGCGTATGAG ATGGCAC CCCACGGGG GT GGTGC TGAGC CT
CATCTTTGACTCTTAGTCGC TGCCGTG GGGTGTCCC CG CCACG GCTCG GA

TCGGCACCGCATAACACCCC TTAGTCTGCAC CACAATA-- - --- CT ---------
TGTGGGCACGTCTGATTGTG
CCGT

GAM6142 9197 CTTGTTTCGGACTATAGAGT A AG G G- CA ---- TG TAAA
GCTGATGGCAGAGATTGGTG CTTGTTTCGG CTAT AGT CT ATGG GAGATTGGTGAGGA T GA

AGGATTGGATAAATCTGATG GAACGGAGCC GGTA TTA GA TACT TTTTAATTACTCCT A CT

TGTCCTCATTAATTTTCCTC G CA G AG CC GTGT GT ----
ATGAAGGATTACATGGGCCG
AGGCAAG

GAM6143 7563 GGTGGGGCACACAGCGGGGG T-- CA- - CC TTTT
GCGCCAGGTTTTCCTTGTCC GG GGGGCA CAGC GGGGGGCG AGG
CCCAGCTGCTCTGCCCCTTT CC CCCCGT GTCG CCCCCTGT TCC
CC TTT CTC A -- ----

GAM6144 20782 GGAGGCTGGGAGGCCGCCCC A G AG CCA TGCTA A AG GGGCT
CAGCCGCTGCTACCCACGCA GG GGCT GG GCCGCCC GCCGC CCC CGC AGCC
GAGCCGGGCTGGCTTCGCGG CC CCGA CC CGGCGGG CGGCG GGG GCG TCGG
GGGCGGCGGGCGGCCCGAGC - G -- --- ----- - CT -----
CCC

GAM6145 2742 GCCCTCGAGGCCCCCGCAGT - ---- - AGT--- ATCATTCAGTTCCGTA
CCCATCATTCAGTTCCGTAG GCCCT CGAGGCC CC CGC CCC
GGTCACCGGCGCGGCAGTGG CGGGA GCTCCGG GG GCG GGG
CCTCGCAGGGC C TGAC C GCCACT ----------

GAM6146 22744 TGTTGAAAACAAATACTGTT TG AACAA A CAT - ACTGTGTC
TCATTTGTTGAAAACAAATA TGT AA AT CTGTTT TTGT TGAAAACAAAT
CTGTGTCATTTGTTTTCAGA ACA TT TA GACAAA GACA ACTTTTGTTTA
CAGCAAACAGAATGATTCTT GT CTTAG A C-- G --------
TGACA

GAM6147 8154 CTCTTTATTCTGACAACATT - T CAA T C ----- GAGGTA
ATGACATTAAATAAAATCCA CT CTTTAT CTGA CATTA GA ATTAAATAA AATCCAA
AGAGGTATTGGATTAGTCCT GA GGAATA GATT GTGGT CT TGGTTTGTT TTAGGTT
TGTTTGGTCTCTGGTGATTT C - TA- - C CCTGA ------
AGATAAGGCAG

GAM6148 13371 GGAGTGGGGTGCAGTGAGTG TG--- - AG CTCAA T AGA C CGAGCCA
GCCTCAAAGTTGTGCAGATG GGAG GGGTGCAG TG TGGC AGTTG GC TG TTC
CTTCCGAGCCAGAAACAAAG CCTC CTCACGTC AC GCCG TCGAC CG AC AAG
CCAGCTGCCGCCGTCCATCT CTGTA T CT CCG-- - AA- A -------
GCACTCATGTCCTCC

GAM6149 4866 TCTTGTGGCTGGGTGGAACT T T T T TTTTTG AAATGTA
GAGTCTTTTTTGGTGAAATG TC TGTGGCTGGG GGAAC GAG CT GTG
TACACAGTAGTTCTGTTCCC AG ACATTGACCC CCTTG CTT GA CAC
CCAGTTACATGA T - T - TGA--- -------

GAM6150 22726 GCGGGGAACACCAATGGCGG G ACA C-- TA A TGTGTGTTTCCTT
GGTACTTGAAGCTGGTGTGT GCGG GA CCAATGG GGGG CTTGA GCTGG
GTTTCCTTTCAGCGTCAAGG CGTC CT GGTTGTC CCTT GAACT CGACT
GTTCCACACTGTTGGGAGTC G GAG ACA GG G ----------
GCTGC

GAM6151 15388 CTAGCTTGTTTGTATAGGTA TTGTT TAT AAT ---- C ------ ATGG
GAATGATTCATCTCTCCATT CTAGC TG AGGTAG GATTC ATCT TCCAT TTTAG
TTAGATGGCTAGATGTTTTG GGTCG AC TCCGTC TTAAG TAGA AGGTG AGATC
TGGAAGATCTTAGAATTGCC TTT-- --- CG- ATTC - TTTTGT ----
TGCCTCATTTGCTGG

GAM6152 19727 GTCACAGACTGTTGAAACAT C C TG ACAT AG TGT --- CCATC
GACCAGAAGCGTGTAGCTCC GTCA AGA TGT AA GACC AAGCG AGCTC CAT
ATCCATCGTGCTAGAGCTCG CGGT TCT ACA TT CTGG TTCGC TCGAG GTG
CTTGGGTCCCTTTGACATCT T - GT CC-- G- --- ATC -----
TTGGC

GAM6155 16581 CATTGTCCCCACTGCATTGC C-- CT TT A GAAGAT CACTC
CATCTTGAAGATTTGTCACA CATTGTC CCA GCA GCC TCTT TTGTCA
CTCTGACAGGAGAAGGCTTG GTAACAG GGT TGT CGG AGAG GACAGT
TTTGGCATGACAATG TAC T- T- A ------ -----
GAM6156 127 AGGACTTCGTCACCATGACA - C CAC GA G- T CTATGACCCAAC
GCTTCTCGGATGCTATGACC AGG ACTT GT CAT CA CTTC CGGATG
CAACCATCTGTGGAGAGTGG TCC TGGA CA GTG GT GAGG GTCTAC
AGTGCACCAGGTACCT A C C-- AG GA T ----------
GAM6157 16029 CCGCCCAGTCCCGGGGACCG AG A-- C A---- GCGA
TCCCTACCGCGAGGGTCTGA CCGCCC TCCCGGGG CCGT CCT CC
GGCGCGGCTGCCCCGGGGAG GGTGGG GGGGCCCC GGCG GGA GG
GGTGG A- GTC C GTCTG ----
GAM6158 14062 CTATCTACAAACAGAATATA - CAGAATAT AA AAA T A AGTGA
ACAAAAGGAAAATGTGACTT CT ATCTACAAA AAC AAGG ATG GACTT AGA
AAGAAGTGATCTCAGGTCCA GA TAGATGTTT TTG TTCT TAC CTGGA TCT
TAGCTCTTCGGTTCTTCCAA C AAACCTTC GC CGA - C -----
ATTTGTAGATCAG
GAM6159 20411 CTGCCCTCCATCTAAAGGCG CT AAAGGCGC - G GAGGATA
CTGCTTGATTTTGAGGATAA CTGCC CCATCT TG CTT ATTTT
AGATGGAGACAAGGTGGTGG GACGG GGTGGA AC GAG TAGAA
CAG T- -------- A G -------
GAM6160 12274 ATGTGGAATTTTCAGAAAAA T T AAAA --- G TG TTAAACTTCCTT
GATTGTCTGCTCTGGTTAAA ATG GGAA TTTCAG AGATTG TCT CTC G
CTTCCTTCTGGAGAGGATTA TAC TCTT AAGGTC TTTAAC AGG GAG C
CAATTTGAAACTGGAACTTC T C AAAG ATT A GT ----------
TTCAT
GAM6162 17118 CTGGGGTGTTTATGGCAAGT GG T-- C CTTT A ATCGTGGCA
CACTTTGACAGACATTATCG CTGG TGTT ATGG AAGTCA GACAG CATT
TGGCAAATGTTGTCTGACTT GACC ACAA TGTC TTCAGT CTGTT GTAA
ACTGTTTCAACAAACCAG AA CTT A ---- - ---------
GAM6166 21943 GGGAAACACGTATTCAGGCC GAAACA T -- G - GGTACA A GCATA
GGCGCGGGTTGGTACATCCT GG CGTAT CAG GCCGGC CGG GTT TCCT GG
AGGGCATACCAGGGGACTCT CC GCATA GTC TGGCTG GTC CAG GGGA CC
GGTCGGTTACTGATACGGCA ACG--- - AT - T ------ - -----
CC
GAM6167 8237 GTGTTCTTGTTTGATCTTCA TC T--- - CGT- T- ATTG
CGTTAAGATGCTATTGAGCT GTGT TTGTT GATC TTCA TAAGA GCT
TTTTTATCCATGGATGGTCT TACG AACAA CTGG AGGT ATTTT CGA
TCCAACAACTGCAT TC CCTT T ACCT TT ----
GAM6168 10605 TGGCCCTCCCTGCCTGCTTA CC CTTA AT TAT -- - - TC TCCGA
TGTATGGACAGAGTATGTTG TGGCCCT CTGCCTG TGT GGACAGAG GTTG TC TCAG CT C

TCTCAGCTTCCTCCGAGAGA ATCGGGA GACGGAC ACA TCTGTCTT CGAT GG GGTC GA G

GACTGGTGGTTTAGCTTCTG A- ---- -- --- TT T A GA -----
TCTACACAGGCAGAAGGGCT
A
GAM6169 4277 GACTGACAACTGTGAGACAT G AC - ---- CTT TAC CAGAAA
GCACTTGCTACGAAACAGAA GACT ACA TGT GAGACA TGCA GC GAAA
ATTTCATGTTGCACCCTTGT TTGG TGT ACA CTTTGT ACGT TG CTTT

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        TTCTACACCTGTGGGTT      G  CC  T    TCCC   --- TA-   ------
GAM6170 20819  GCCATCCCACAGTTGTTACT    T  CACA     C----      CAAGC
        GGTTTGTCAAGCATAAGCCA GCCA CC    GTTGTTA    TGGTTTGT
        TGCCCTAACGACAGGCTGGC CGGT GG    CAGCAAT    ACCGAATA
                        C  A---      CCCGT      -----
GAM6171 12166  GGGGAACACAGGAGCGTACC   G      - CGT   A  ACA   GG  T-    TTTGT
        ACTACACTTGGGCTGATTTT GGG AACACAGG AG   ACC CT   CTT  GC  GATTT
        TTGTAAATTTTGTAGGAGAC CCC TTGTGTCC TC   TGG GA   GAG  TG  TTAAA
        AGGGTCTCCCTGTGTTGCCC   G      C  ---   - CA-   GA  TT    -----
GAM6173 13172  ATCACTTGAACCCGGGAGGT   A   AA     AGG    GT     A  -  AGAT
        GGAGGTTGCAGTGAGCTGAG ATC CTTG  CCCGGG   TGGAG  TGCAGTG GC TG
        ATCATGCCACTGCACTCCAG TAG GAAC  GGGTCC   ACCTC  ACGTCAC CG AC
        CCTGGGCAAGAGAT        A   --     G--    --      - T ----
GAM6174 5402   GCAACCCAGCTCTTTTATCA  A   AGC      -----      GAGA   GCCA
        TGAGGAGAGGTAGCCATGCT GC ACCC   TCTTTTA    TCATGAG    GGTA
        GACTCATGAACAGGTGGAGG CG TGGG   AGGAGGT    AGTACTC    TCGT
        AAAGGGGTAGC          A   GAA      GGACA      AG--   ----
GAM6175 8926   GGTAGGAATGAGGCTAGACC       ATGA      --------   TAACTTCCCT
        TTTAACTTCCCTAAGGCATA GGTAGGA    GGCTAGA       CCTT
        CTTTTCTAGCTACCTTCTGC CCGTCTT    TCGATCT       GGAA
        C                   CCA-      TTTCATAC   ----------
GAM6176 16058  GCTCCAAAGAACCAAGAGTG    C---   AA  AA   T     -      ----------      CAC    GA
        CAAATCAGTCCATTTCACTT GCTC    AAAG  CC  GAG GCAAATC AGTCCAT        TTCACTTT   TGTCT

        TCACTGTCTGAGATAGGGTC CGAG    TTTC  GG  CTT CGTTTAG TCAGGTA        AGGTGGGA
ATAGG
        TCTAAGACCCAGGATACAAG    ACCT   CA  C-  -     C      TATCGATGTA      AC-    A-
        GGTGGAATGTAGCTATATGG GATA    TCTAA
        ACTCGATTTGCTTCCGGACC    GGGTC
        TTTTCCAGAGC           CCCAG
                    ----     -----
GAM6177 21468  GGCATGCTATTTTAATCATT   ATGC     AA-  A  AAAT        ACGAT
        AAATTCTTGATGATGACGAT GGC    TATTTT   TC TT    TCTTGATGATG
        CATCATCAAGATGAGAAAGA CCG    ATAAAG   AG AA    AGAACTACTAC
        AAAGAAATATGAGCC       AGT-     AAA  A  GAGT        -----
GAM6178 22822  GACAAGAAGCTCTCTCTCAG    A   CTCTCT-     CAACCA   CA    CCCCAT
        ACAACCATCTCATGGGCCCC GACA GAAG      CTCAGA     TCT  TGGG
        ATTCCAGGACACTTCTGAGT CTGT CTTT      GAGTCT     AGG  ACCT
        ACATCATTTCATGTC        A   ACTACAT     TCAC--  --    ------
GAM6179 21175  ATCCTTAAACACTGTGCTGA    TTAAACACT   C   A    C---   -  C    TCCTTTT
        AGACTACTGTGACTCTGTCC ATCC        GTG TGA GACTA    TGT GA TCTG
        TTTTTAGACTCAACATACAT TAGG        TAC ACT CTGGT    ACA CT AGAT
        GGTCTCATCATCCCTATAAT    TAATATCCC   T  -    ACAT   A  C    -------
        GGAT
GAM6180 4694   ACATACCAACTTCCAATCTG    A   ACTT    TC    AAAT    CA   --   GCCCA
        CCTAAATGTGACAGCCTCTG ACAT CCA    CCAA  TGCCT    GTGA  GCC  TCT
        CCCAAGACTGGCTCACTGAG TGTA GGT    GGTT  GCGGA    CACT  CGG  AGA
        GCGTCTTGGCTACTGGATGT    -  CATC    CT    GT--    --   TC   -----
GAM6181 10847  CTGGGGTGTATATGGCAAGT    GG   AT--   C     CTTT    A   ATAGTGGCA
        CACTTTGACAGACATTATAG CTGG  TGT    ATGG AAGTCA    GACAG CATT
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TGGCAAATGTTGTCTGACTT GACC ACA TGTC TTCAGT CTGTT GTAA
ACTGTTTCAACAAACCAG AA ACTT A ---- - ---------
GAM6182 19388 TATGTTGAATAGAAATGGGG ATAGAA AA- --- AT TTCCATGTCT
AAAGTAGGCATTCCTATCTT TATGTTGA ATGGGG AGT AGGCATTCCT CTTG
GTTCCATGTCTTAGGGGGAA GTATAACT TACCCT TCA TTCGTAAGGG GGAT
TGCTTTTAACTCTGTCCCAT ------ GTC ATT -- ----------
TCAATATG
GAM6183 5305 GCTTTTCTAGTTTGCAACTT TT TTT ACTTCTAA- A CAGGAAA
CTAATCTGCTGTGAGTCAGG GCTT CTAG GCA TCTGCTGTG GT
AAAACATATGGCAGAGTTAA TGGA GGTT CGT AGACGGTAT CA
ATTGTGCTTTTGGTTAGGT TT TT- GTTAAATTG A -------
GAM6184 21648 GGACCTGTCACCCCACCATG CT CCCACC GA GT TTTT
GAGAAAAGAGTCTTTTGGTT GGAC GTCAC ATG GAAAAGA C
CTTTTTAACATAAGTGATTA TTTG TAGTG TAC TTTTTCT G
GTTT AT AA---- AA TG ----
GAM6185 694 CTGGACACCAGTAGGTAGTG CACCAG TGT AG CG - G A TGTTCAT
TCAAGCCAGAGATTCGGGGC CTGGA TAGGTAG CA CCAGAGATT GG GCA TAG TAAA
AGTAGATAAATGTTCATTTT GACCT GTCCATT GT GGTTTTTGA TC CGT GTC ATTT
ACTGATGCACTTTAGTTTTT TTT--- --- CT TT A A - -------
GGTCTGTTACCTGTTTTCCA
G
GAM6186 8475 CACCAGTAGTTTTGGTCAGG G GT A- - -- TTAT
GGTTAATAATATTATTATTA CACCA TA TTTGGTC GG GGTTA ATAATA
TTTTAGCCACCAGGGCCAGG GTGGT GT GGACCGG CC CCGAT TATTAT
TGGTGGTG G -- GA A TT ----
GAM6187 8655 GATGGAAAAATCAGCTCAGA - AAAATCAGC CA ACTTCTTTAATA
AAGGCCAATTACTTCTTTAA GATG GA TCAGAAAGGC ATT
TAGATCAGTTTTTTTGACAT CTAC CT AGTTTTTTTG TAG
AATAACTCACATC A CAATAATAC AC ----------
GAM6188 20931 GCATGAGATCTTTGCGCGTT A GATCT - CG G CATATGCCC
CGAGGTGTTACCATATGCCC GC TGA TTGCGCG TT AGGT TTAC
GTAAGATTTTAGACCGTGCA CG ATT AACGTGC AG TTTA AATG
ATTATTAAGC A ATT-- C AT G ---------
GAM6189 22905 AGGGTCCAGTTTATGTTGCA CA --- C--- TTCCTATTTCATT
TGTCAGTTTCCTATTTCATT AGGGTC GTTTATG TTGCATGT AGT
ACTTCAAGCATGCAGTGGTA TCCTAG TAAGTAT GACGTACG TCA
TGAATGATCCT -- GGT AACT ----------
GAM6191 21448 AGAGTCCCACTTTGTTGCCC CCAC TT C-- -- - G TGATCT
AGGCTGGAGTGCAGTAGGCA AGAGTC TTTG GCCCAGG TGGAG TGCAGT AG CA
TGATCTTGGCTCACTGCAAC TCTTAG GAAC TGGGTCC ACCTC ACGTCA TC GT
CTCCACCTCCTGGGTTCAAG C--- T- TCC CA C G ------
CGATTCT
GAM6192 15985 GGTGCTTGCTGTCCGATGGG - CGAT C--- CAACATTA
TCTGTATTCAACATTAAATA GGT GCTTGCTGTC GGGT TGTATT
CAAATTGCCTGACGGCAGGT CCA TGGACGGCAG TCCG ACATAA
AACC A ---- TTAA --------
GAM6193 4658 CCACGGGCTTGGTTCTTAAT G T- - AA A A TTCAAATTTTT
AAAGTTATTCAACTTCAAAT CCAC GGCT GGTT CTTAAT AGTT TTCA C
TTTTGTGGGAGACTGATTAA GGTG CCGG TCAA GAATTA TCAG GGGT G
GTAACTTCGGCCAGTGG A CT T G- A - ----------

GAM6194 22933 CTAGTCCAGGTTCGAACCCA AG TC--- - CC TC GATT TTTAGT
GGATCACAGATTGCATTTAG CT TCCAGGT GA AC AGGA ACA GCA
TTGTTATGTCTCTTTAGTCT GA AGGTCTA CT TG TTCT TGT TGT
CATTTTATCTGGAACAG CA TTTTA C AT C- AT-- ------
GAM6196 12118 TGGCCTTTAACTGACCTAAA CC A CCT TG TGT TTTAATTT
GAGGTGTGTGTGATTTAATT TGG TTTA CTGA AAAGAGG TG GA
TTTTCCCGTTCCTTTTTCTT ACC AAAT GACT TTTTTCC GC TT
CAGTAAACCCA C- - TC- TT CCT --------
GAM6197 22489 GAGAGGCACCACTCACAGGC CA CTCA C CC CAAGT T-- TGCT
AGGCCCGGCTGCACAAGTCC GAGAGG CCA CAGG AGG CGGCTGCA CC CCC
TCCCTGCTGGGCCTGGTCAC CTCTCC GGT GTCC TCC GTCGACGT GG GGG
TGCAGCTGCCCCTCCCTGGC TC CG-- C CC CACT- TCC ----
TGGCTCCTCTC
GAM6199 12527 CAGTCCAAACCGGAAGGGCA AACC GCAGA A TG GAAA
GAATTTATTTTTGGGAAACT CAGTCCA GGAAGG ATTT TTTT G
GAAGGAAGTCCCGACCTTCC GTTAGGT CCTTCC TGAA GGAA C
TGGATTG ---- AGCCC - GT ----
GAM6200 14599 CTCTTCTTCCCCCTCAAGGT CTT C----- A AACAT AT GGCTGATTA
AACATTGGATGTGGCTGATT CTCTT CCC CTCA GGT TGG GT
AACTCCCACAAGAACCTGAG GAGAA GGG GAGT CCA ACC CA
CATTAAGGGTCAAGAG CT- AATTAC - AGAAC CT ---------
GAM6201 21778 CATCTTTGCCCGTCTCCTGG TT C T C C AGAAA
GGACCCCCCAAGAAATGTGG CATC TGC CG CTCCTGGGGAC CC CA
AGTCCTCGGGGGCCGTGCAC GTAG ACG GC GGGGGCTCCTG GG GT
TGATG TC T C A T -----
GAM6202 16945 CCTATAAATACTTACTTCAG ATAAAT ACT CCA -- AA CCAAA
TTACCAGGTAAACCAAGTGA CCT ACTT TCAGTTA GGTAAA CC GTGAGAA
GAACCAAATTTTCACAGGCA GGA TGAA AGTCGGT TCATTT GG CACTTTT
TTTACTCATGGCTGAAAGTT GACCT- --- AC- AC A- -----
CCAGAGG
GAM6204 13828 TAAGTACTTTCCCTTCTCTC AC TT CA CCTG CGT CTTG
ACACCTGTGGTTGCGTGGGC TAAGT TTTCCC CTCT CA TGGTTG GGG
TTGCCTTATGACCAACTGAA GTTCG AAAGGG GAGA GT ACCAGT TCC
AGAGTGGGAAAAAGCTTG AA T- AA CA-- AT- ----
GAM6205 6272 CTAGGAATATCAGGCTCTCA TATC TCAGA CT G- A AGAT
GAAGCTGCCTGTGAGGATGA CTAGGAA AGGCTC AG GCCT TGAGG TGA
AGATTCAGCCTCAGAAGGTC GGTCCTT TTCGAG TC TGGA ACTCC ACT
TAGGTGAGCTTTTCCTGG ---- TGGA- -- AG G ----
GAM6206 8060 GCCACCAGGCGGTGGTCTGT - CG-- G GAA- A---- - GCAGGG
GATGAAGGTCAGGGCCACGC GCC ACCAGG GT GTCTGTGAT GGTC GGGCC AC
AGGGGTAGGTTCACAGAGGC CGG TGGTCT CG CAGACGCTG CCGG CTTGG TG
CAGGAGTCGCAGACGGCAAC G TCAA G AGGA AGACA A ------
TTCTGGTGGGC
GAM6207 8919 TGCAGTTAGTGGGTGATTTG TA G - TG -- TAGTAGTTAAAAAAT
CTATTTTTCTTAGTAGTTAA TGCAGT GTG GTG ATT CTATTT TTCT
AAAATGGAACTAAATAGTGA ACGTCA CAT CAT TAA GATAAA AAGG
ATATACATACACTGCA -- A A GT TC ----------
GAM6208 2766 ACTTCAGTGGAGAACAGGAT ----- AACAGGATGC T GTCCGG
GCTCTGTCTCTTGCTGTCCG ACTTCAG TGGAG TCTGTC CTTGCT
GGGCAAGGATGGACTCCATT TGAAGTC ACCTC AGGTAG GAACGG

TGCCTGAAGT CGTTT ---------- - ------
GAM6209 8358 ACCCTAGCTAACATCCTACA A AACA CAGAAT T TGAGT
GAATGGTGAAAGACTGAGTG ACCCT GCT TCCTA GG GAAAGAC
TTTTTCCCCTATAATAGGAA TGGGA CGA AGGAT CC CTTTTTG
ACAAGCAAGGGT A ACAA AATAT- C -----
GAM6210 10149 CTGACGAAGCCATTGAAACA GA GAAA A------- TG TTAAGC
GATGATCTGACCATTAAGCT CTGAC AGCCATT CAG TGATC ACCA
GGTGATCAAGGCACTCCTGG GACTG TTGGTGA GTC ACTAG TGGT
AAGTGGTTCAGTCAG AC AG-- CTCACGGA -- ------
GAM6211 18691 GGCTCCTCCTGTCCGGGGCG - TC- TC GCGGA T- C C- - AGGCC
GAGCCCTGCGTCGCGGGCCT GGCT CC CTG CGGG GCCC GCGTCG GGG CTGG GG
GGGGAGGCCCCGCCAGCACC CCGA GG GAC GCCC TGGG TGCAGT CCC GACC CC
CTTGACGTCTGGGTCCCGAG C CGT GA ----- TC T AC G -----
CAGTGCGGCAGCC
GAM6212 5521 TGAGAATACACATTGTATGT A C TT TTC G GTGTG
TTCTGTGCACATGACAGTGT TGAGA TA ACA GTATGT TGTGCACAT ACA
GTGTGTGTGCACGTACATAC ATTCT AT TGT CATACA GCACGTGTG TGT
TGTATAGTCTTA G A -- T-- - -----
GAM6215 16753 TTTCCGGGTCTGTTCCTCCT C -- TCC- TT TTT AA -- T TGC-- CT
TGAGCCGTTTCAAAACAGCT TTTC GGGT CTGT TCC GAGCCG CA ACA GC TTG TCACT
TTGGG
TTGTGCTCACTCTTTGGGGT AAAG CCTA GACG AGG TTTGGT GT TGT CG AAT AGTGG
GACCT
AGTCTCCAGCAGGTGATTTC T TG TTTT -- CT- CA TT T TCTTT AC
TTAATGCTTTGTACTGTCTG TAGT
GTTTGGATTTTGCAGGTATC G
CTGAAA C

GAM6216 6185 GCTAGGAGCTGCCAAGGCCT G GC- A TGAG ACAT
CTTGAGTGTGACATCACAGG GCTAG AGCT CA GGCCTCT TGTG
TTAGAGGCCCTGCTGAGCTG CGATC TCGA GT CCGGAGA ACAC
CTAGC G GTC C TTGG ----
GAM6218 5966 AAAGAAAACCAAAGTGGTCC AAACCAA CC AA CT---- CCTTCT
ACAAAACATTCTCCTTTCCT AAAGA AGTGGT ACAA CATT CCTTT
TCTGAAGGTTTTACGATGCA TTTCT TTACTA TGTT GTAG GGAAG
TTGTTATCATTAACCCAGTC GACCCAA T- AC CATTTT ------
TTT
GAM6219 19920 AGGTCTAGTGCATCTTTTAA CT TCTTTTAACC A- - CCTTTACAA
CCAGCCGAATGGAGTCCTTT AGGT AGTGCA AGCCGA TGG AGT
ACAAACTGCCGACTTGGCTC TCCA TTACGT TCGGTT GCC TCA
AACAAACTGCATTACCT -- CAAACAAC-- CA G ---------
GAM6220 3770 AGTCTCATGTGGCTGCTGCA C GT TG T ACCTCC TATATGC
CCTCCAGATATATGCTCTCA AGT TCAT GGC C GC AGA
AACAGTGTGGCCTGATGAAA TCA AGTA CCG G TG TCT
CT A GT GT - ACAAAC -------
GAM6221 13764 GGCGGGCCGGTTAGCGGCGA CG G G T TCGTGGT
CGGGGAGGGTGGGCTCGTGG GGCGGGC GTTAGC GCGACGGG AGGG GGGC
TGCCCCCCCTTTTGTTGTGG CCGCTCG CAATTG TGTTGTTT TCCC CCCG
TTAACGCTCGCC -- G - C -------
GAM6222 19272 GCTCAGCGCATGGCTCAGCG - A CT- TG AC-- C AACA

GATGGGGCACGACAGCTAGC GCTCA GCGC TGG CAGCGGA GGGC GACAG TAGC
AACAGTTATTGTCTCCAGTC TGAGT CGCG ATC GTCGTCT TCTG CTGTT ATTG
TTGTCTGCTGTTTCTAGGCG T G TTT GT ACCT - ----
CTTGAGT

GAM6223 10868 GCATATAGAAAGGCAGTCCT A AGAAAG CCT CC- TTCA
GGGACCTCCTGTTCTTCAGA GC TAT GCAGT GGGACCT TGTTC
ATATACAGGTCTTTAAACTG CG ATG TGTCA TTCTGGA ATAAG
TAATCAGGTAGC - GACTAA AAT CAT ----

GAM6224 14050 GGCCGCGCTCGGGCGCCCCT C C C CCCT C TC GCCC
CGCGCAGCGCTCCATGCCCG GGCCG GCT GGG GC CG GCAGCGC CAT
TGTGGTGCTGCCGCTGCTCC CTGGC CGG CCC CG GC CGTCGTG GTG
CTGGCCGGTC - T T TC-- - GT ----

GAM6225 19792 GATGCTATGTCAGAACACCG -- G ACACC- C C CTGTCCAT
GAGGCATTTTCCCAACTGTC GATGCT AT TCAGA GGAGG ATTTTCC AA
CATTTTGGAAAATTCTCTAG TTACGA TG AGTCT TCTCT TAAAAGG TT
AAACTCTGAGGTTTAGCATT TT G CAAAGA - T --------

GAM6226 16576 GGCTATTTGCACTGGGCTTC AT CA CTTCTT TGCC- ACTCTA
TTTTCATGCCGCTACTCTAA GGCT TTG CTGGG TTCA GCT
GCCTCCCTGAATTTTCCCCC CCGA AAC GGCCC AAGT CGA
GGGACAATCAGCC CT AG CCTTTT CCCTC ------

GAM6227 11044 GCGACCACAACTACCAAGAG A A TA AGA TA-- TT-- C GCAG
CTACATCCTTAGAGCGCTCG GCG CCAC AC CCA GC CATCC AGAGCG TCGG
GGCAGCTGATGCTCTTTGTG CGC GGTG TG GGT CG GTAGG TCTCGT AGTC
GATGGAATGCTGGGGGTGGT - G GG --- TAAG TGTT - ----
GGCGC

GAM6228 21762 TCAGTTTCTGGCCCCGATAT TT- TG C- T- -- AG AGAGTACG
GAGTAGGGGGAGCGCAGAGT TCAGT C GCCC GATA GAGTAG GGGG CGC
ACGGTGACCCCAACTGCTTT GGTTA G TGGG CTGT TTCGTC CCCC GTG
TTGTCCTGGGTTGGTACATT CAT GT TC TT AA A- --------
GG

GAM6229 2483 ACACAAAACTATGAGAGTGA --- T --- TG AAA- AC GGGACCTA
CAAAATGGTGACAGGTAGCT ACACAAA AC ATGAG AG AC ATGGTG AGGTAGCT
GGGACCTAGGCTATCTTACC TGTGTTT TG TATTC TT TG TACCAT TCTATCGG
ATGAAGGTTGTTTTGCTTAT ATA T GTT GT GAAG -- --------
TGTATATTTGTGT

GAM6231 8402 GCTTTCCCTCTCCTTTATAA CT TTTA--- T C-- TTTTAAC
ATTGCATATATTTTTAACAT GCTTTCC CTCC TAAA TG ATATAT
ATATTAACACTTTAAAACCG TGAAAGG GGGG ATTT AC TATATA
TGGGGTGGAAAGT T- TGCCAAA C AAT -------

GAM6232 22150 CCTTCCTTCTGGGTGTGGGG T C-- G GG -- C AGAA
CAGGCCTTCTCAAGAATGGG CCT CCTT TGG TGTGG CA GG CTTCTCA
GAGTCTTATGAACTACAGTC GGA GGAA ACT ACATC GT TC GAGGGGT
AAACAAGGTAGG T CAA G AA AT T ----

GAM6233 10860 CCTCCAAGGCCCAGGGAGTG T A CC A G T G A GA A ACTT
CTATTGCGTCATGAAGAGCA CC CC AGGC AGGG GT CTAT GC TC TGAA GC TTGTCAGG
TTGTCAGGACTTCCTGGCAG GG GG TCCG TCCC CG GGTA CG GG ACTT CG GACGGTCC

GCCATTCACGGGCTATGGAG T C -- - A T - C AC - ----
CCCCTGCCTCGGTGG

GAM6236 17689 ACAGCCAGCGCTCTCAGCTC CGCT TCAT - - AC - TC GCCCAG

ATGATGCGCACCCGGATCGC ACAGCCAG CTCAGC GATG C GC CCG GA GCC
CGCCCAGGGTTTCACGGTCG TGTCGGTC GGGTCG CTAC G CG GGC CT TGG
CAGCCATCTTGCTGGGTCTG T--- TT-- C A CT A T- ------
GCTGT
GAM6237 16075 CTGAGTAGCAGTGAACTCAG TA- A C C A-- TCCATTCAC
GAGCGGGACAGGTCCATTCA CTGAG GCAGTGA CT AGGAG GGG CAGG
CCCTGAAATTCCTCCTTGGT GACTC CGTCACT GG TCCTC CTT GTCC
CACTGCCTTCTCAG TTC - T - AAA ---------
GAM6238 3637 CCAGGTGAGGAAGTGATCCC G AGGA T CAAAAGATGA AAAAATA
AAAAGATGAAAATGGAAAAA CCA GTG AG GATCC AAATGG
TACTATTTGACACAGTGGAT GGT CAC TC CTAGG TTTATC
CTCTGTGCCACGTGG G CGTG T TGACACAG-- -------
GAM6239 14065 TATGTTCGATGCCTGTCAAG G T CAA TCTAGCTGTCAATT
TTCATGTCTAGCTGTCAATT TAT TTCGATGCC GT GTTCATG
TGTGAATACGGCATCGAGGA ATA GAGCTACGG CA TAAGTGT
TA G - --- ----------
GAM6240 22704 GCAGGATCTCCAACTATAAT A T- ATAA- C TCCT
GCTTCTGTCCTTAAAAGCAG GCAGG TC CCAACT TGCTT TG
GTGGAGTTGGTTGAATCTGT TGTCT AG GGTTGA ACGAA AT
A TT GGTGG A ----
GAM6241 20683 AGCTTCTGAAAGCCTCAAAC AAGC AA CTGT C - GATCCTTA
ATCTGTGAGTGTGCTAAGAG AGCTTCTGA CTCA CAT GAGTGTG TAAGA GCC
CCGATCCTTAGGTATTTTAT TTGAGGATT GAGT GTA CTCACAT ATTTT TGG
ACACTCTATGCTGAGTCAGT GACT C- T--- - A --------
TAGGAGTT
GAM6242 48 CTGGGGTGTTTATGGCAAGT GG TA-- C CTTT A ATCGTGGCA
CACTTTGACAGACATTATCG CTGG TGTT TGG AAGTCA GACAG CATT
TGGCAAATGCTGTCTGACTT GACC ACAA GTC TTCAGT CTGTC GTAA
ACTGGTTCAACAAACCAG AA CTTG A ---- - ---------
GAM6243 624 TCCCAACCTCCCCTTCCTGT AAC- TC- TG TG - GAGCCTG
GGCTGCCCCAGAGCCTGTGA TCCC CTCCCCT CTG GC CCC CA
GGGATGCTGCAGTACAGGGG AGGG GAGGGGA GAC CG GGG GT
AGCATAGGGA ATAC CAT GT TA A -------
GAM6244 1703 CCCTGGAGGAGATCTATCTC T T--- TCTG GCCCATTA
TTCTGCCTGCCCATTAAGGA CCC GGAGGAGATC ATCTCT CCT
ATCAGAGATCATTGATTTCT GGG CCTTCTTTAG TAGAGA GGA
TCCTGGG T TTAC CTAA --------
GAM6245 2344 GTAGTGCTCCTGGAGAAGCT G GG- C GCC T GCTACATA
AGAGCCTGATGTAGGCTACA GTAGT CTCCT AGAAG TAGA TGATG AG
TACTCATCATTTACTTCTAC CATCA GAGGG TCTTC ATTT ACTAC TC
AGGGAGACTAC - ACA - --- - --------
GAM6246 8353 GCTTTGCCTGCATGGATGGA TGC ACAA-- TT TTC ACA
CAAGAGTTCCGCTTCGCACA GCTT CTGCATGGATGG GAG CCGC GC
GCTGTGTGGTCTTCACATCG CGAG GACGTACTTACT CTT GGTG CG
TCATTCATGCAGATGAGC TA- GCTACA CT TGT ---
GAM6247 15727 CATGACCACAGTCCATGCCA A CCATG ATCACT- - - AAGA
TCACTGCCACCCAGAAGACT CATG CCACAGT CC GCCA CC CAG
GTGGATGGCCCCTCCGGGAA GTGC GGTGTCA GG CGGT GG GTC
AACTGTGGCCGTG C AAA-- GCCTCCC A T ----
GAM6248 6968 GGTGGCCACAGCTCATCAGG ACA A GGA G C--- A GA ACT

AACAGCTTCTTCTAAGGGAT GGTGGCC GCTC TCA ACA CTT TTCT AGG TCC
CCACTGGACCTAGGAAAACC CCACCGG CGAG AGT TGT GAG AAGG TCC AGG
GAGGTGTTGAGAGCAGGCCA A-- - --- G CCAA A -- ---
CC
GAM6249 1433 GGGCGCTGGCGGATGTCTTG G C T ---- C AGA AGCG
CTGGCTACAGAGGAGCGCCG GG CGCTGG GGA GTCTTGC TGG TAC GG
TGGTACTAGAGCGCAAGGCT CC GCGGCC CCT CGGAACG ATC ATG CC
CCTCCGGCGGCC G T - CGAG - GTG ----
GAM6251 17876 GGGCTCGGGCTCTGGGCTCA T--- CACCA ATCGATCA
CCACCTCATCGATCAGAGGG GGGCTCGGGC CTGGGCT CCTC
AGGCCCAGTTCTGTCCGGGC CCCGGGCCTG GACCCGG GGAG
CC TCTT AG--- --------
GAM6252 16613 TCTGAAGATAGATCGCCATC A CA-- A GACA---- TAACTATC
ATGAACGACACCGTAACTAT TCTGAAGATAG TCGC TCATG AC CCG
CCGGACTAGAAAGTACATGA AGACTTCTATC AGCG AGTAC TG GGC
CCAAGCGACTATCTTCAGA - AACC A AAAGATCA --------
GAM6254 21026 GTCAAAAAGCAGTCATCTAT A CAG TC A ATTTTACAGCAAACCCACC
TCATTGAATTTTACAGCAAA GTCAA AAG TCA TATTC TTGA
CCCACCTCAAAGAGTATTTG CAGTT TTC AGT ATGAG AACT
AACTTGTTGAC G A-- TT A ----------
GAM6255 16801 GGCTCATTCGATATCTCCTC T TCT - ---- TGTCT
ACTCACCTGTCTGGTGCCTC GGCTCAT CGATA CC TCACT CACC
GGTGATGGCTGTTGTGTGAG CCGAGTG GTTGT GG AGTGG GTGG
CC T C-- T CTCC -----
GAM6256 10471 GGCCTTGGTGTGGAGGGGCT - T AGG-------- T TGAGCCCAAGT
GTACTCTGAGCCCAAGTGAG GGC CT GGTGTGG GGCTG ACTC
TCAGCTATAGGAAGAGGCCA CCG GA CCATACC TCGAC TGAG
TACCTAGAGCC A T GGAGAAGGATA - ----------
GAM6257 15803 GTAGAAGCATTTTGAGAACA AGCA AAC TT ATCATCACATAA
GGTTGGCATCATCACATAAG GTAGA TTTTGAG AGG GGC
CCCTTATATTCAAGAACTCT CGTCT AGAACTT TTC CCG
GC CA-- ATA -- ----------
GAM6258 11317 GCAGGCAGATCTGGGAGCTG ATC G T -- TTTCT A AAA TACTCCCATTTAC
TTTGATTTCTTTCTGCTTTG GCAGGCAG TGGGAGCT TT GAT TTC GCTTTGC TC TTC
CATCAAATTCTACTCCCATT CGTCTGTT ACCTTTGA AA CTA AAG CGAGACG AG AAG

TACTGCTGAAGAGAAGCAGA GTT A C TC TCTTT A AG- ----------
GCTTTCTGAACTATCCAAAA TGCT
GTTTCCATTGTTGTCTGC

GAM6260 2442 CCCTGTACATAAAATGTATT - ATA AGACT
TGGTTTTGTTGGAGAGTGTC CC CTGTAC AAATGTATTTGGTTTTGTTGGAGAGTGTC
AGACTGATACTCTCCAACAA GG GGTATG TTTACATAAACCAAAACAACCTCTCATAG
AACCAAATACATTTCGTATG A C-- -----
GAGG
GAM6261 19632 GGAGGAGGGGGTCGGGCCTC - GG GG --- GG A C TGCT
CGAGGAAGGCCTAGCCGCTG GG AGGAGG GTCG CCTCCGA GGAA CCT GC GC
CTGCTGCCAGGAATTCCAGG CC TCCTCC CGGC GGAGGTT CCTT GGA CG CG
TTGGAGGGGCGGCAACCTCC G AA GG GGA AA C T ----

TGCC
GAM6262 4120 TATCTTAGTGTTATTTCACA TCT ATTT GC A CAT CATTT
GCTAACATTCATTTAATACA TA TAGTGTT CACA TA CATT TTAATA
TTTTATTGACAATGATGATG AT GTCGCAG GTGT GT GTAA AGTTAT
TGTCAGACGCTGTTCTA CTT ACT- A- A C-- -----
GAM6263 2481 AACTGAACAAGAGGAGTATG G A GG ATTC- GT TG CAGA
TATTCCCGTGTGCCAGAGTG AACT AACA GA AGTATGT CC G C
CCAGGTCACCACATACTATT TTGG TTGT TT TCATACA GG C G
ATGTTGGGTT G A A- CCACT AC GT ----
GAM6264 14368 GAAGGGGTCAGGGGGCTCCT G - ----- T C TAGT
TGCTTCTAGTGAACAAGGGC GAAGGG TC AG GGGGC CCTTG TTC
CCTGAGTTCTAGAGCCCTTT TTTCCC AG TC TCCCG GGAAC AAG
G A TTGAG - - ----
GAM6266 13999 GCTGGAGGACGGCCTGAACC -- A A GAACC T CTG CTGG
GGGTGCTGGGCCTGGGCCTG GCT GG GG CGGCCT GGGTGC GGGC GGC
GGCTGCCTGCGCCTCACCGA CGA CC TC GCCGGA TCCGCG TCCG TCG
GGCCGACTACCTGAGC GT A A GCCAC - --- ----
GAM6267 2594 AGGTCTCCTTACCTTCTGCT TC TA CT T -- G - AATGGG
TCCCTTTCTGCCTGTGACTG AGG TCCT CCTTCTG TCCCTT CT GCCT TGAC TG
AATGGGCATGTCAAGGTCTA TCC AGGA GGAGGAC AGGGGA GA TGGA ACTG AC
GTAGGGGATCCAGGAGGAGG GA -- CT T TC - T ------
AAGCCT
GAM6268 1137 CGGACCGCTGGATCGTGCCG G GT G GG------ ATGGA
GGCGGGGGCATGGAGCCCGA CGGACCGCTG ATC GCC GGC GGGC
GGAGGAGCCGGGCGGTGCGG GCCTGGCGGC TGG CGG CCG CCCG
CGGTCCG G -- G AGGAGGAG -----
GAM6269 289 TCTTTTTCGGCGCTTGCACT TT - TG CAG TAA-- ACAC
CAGGCATTTAACAACACTGG TCTT TCGGC GCT CACT GCATT CA
ACACGGTGCAAGGTGACAGC AGGG GGCTG CGA GTGG CGTGG GT
AGTCGGTTGGGA TT A CA AA- CACAG ----
GAM6270 4358 CTCCAGCAGTGTGACGGGGT - T- TG TA TGCTCTGAGACCATT
ACCGGGTGCTCTGAGACCAT CTC CAGCAG G ACGGGG CCGGG
TTCCGGGTTCCCGTTGCCTT GGG GTCGTT C TGCCCT GGCCT
TGCTGAGGG A TC GT TG ----------
GAM6272 16835 TCTGGCTGCAGATCTGGAGG G--- - T A TACCCTGGACTCTATT
TGGAGGCAGTACCCTGGACT TCTGGCT CAGATC TGGAGG GG GGCAG
CTATTCTGCTGCCCCTTCAG AGGCCGA GTTTGG ACTTCC CC TCGTC
GGTTTGGAGGAGCCGGA GGAG G - G ----------
GAM6273 6073 AGGTGTGTCTCAGGAAGGTG GT T GAAGGTG T A- - T- TA- CGT AGAA
GTTCTGTGCATGCCTGGGTG AG GTG CTCAG GTTCTG GC TGCCTGGG TG GGT AGG GGCC

TGGTTAAGGCGTGGCCAGAA TC CAC GAGTC CGAGAC CG ACGGACCT AC TCG TCC TCGG

GGCTTCCCTGGTGCTCTCAG TG - TA----- C AA G TC TGG CT- ----
TCCAGGCAAAGCCCAGAGCA
TCTGAGCACGTCT
GAM6274 16344 ATTCTGAATCTGTTGACTGG ATCT -- GGAG ATTCA CACAAT
AGTGAATTCAGTGGTCACAA ATTCTGA GTTGA CT TGA GTGGT
TACCACCATCAAATAAGAAT TGAGACT CAACT GA ACT CACCA
CAACTTCCTCAGAGT CCTT AA ATAA AC--- ------

GAM6275 14032 TGACCCCAACCCATCCTGCC CA- T ---------- - CCTATCT
AGGGCAGGGCCTATCTTCCT TGACCC ACCCA CCTGC CAG GGCAGGG
GCCTCTGGAAGACTTGTTGC ACTGGG TGGGT GGACG GTC CCGTCCT
AGGTGGGTAGTGGGTCA TGA - TTGTTCAGAAG T -------
GAM6276 22929 TCGCTGTGGGGCGGCACGTG CT G - CG GG GG G CATC
CTCCGGCATGGGCACGTTGC TCG GTG GG CGGCA TGCTCC CAT GCAC TTGCT
TCATCAGCAAGGTGCGTGAG AGT TAC CC GCCGT ATGAGG GTG CGTG AACGA
GAGTATGCCGACCGCATCAT AC G A -- A- -- G ----
GA
GAM6277 18449 GGAGCGCCCTTTGGGGTTGG A TTTG- GAAG-- - G AGTCG
AAGCACCCCCCGACAGTCGG GG GCGCCC GGGTTG CACCC CCC AC
TGGGAGGGTGATATGGCGAC CC CGCGGG TCCAGC GTGGG GGG TG
CTATTTTGGGCGCCC - TTTTA GGTATA A - -----
GAM6278 22696 CCTTGAGAGTTTGATAGCTT G TG AGCT - ATGA AATATCTG
GCTTGATCCATTGATGAACA CCTTGAGA TT AT TGCTTGATCCA TTG ACAA
AAATATCTGTTGTGGCCCAA GGAACTCT GA TG ACGGACTAGGT AAC TGTT
CTGGATCAGGCAGTTGAGAT A GT ---- C CCGG --------
CTCAAGG
GAM6279 12294 ATGTGTGTGTGTGTATATAC CAC A-- TAGA
ACACACATATATAAATTAGA ATGTGTGTGTGTGTATATACACA ATAT TAAAT
ATTTGCAGATATTATGTGTA TATACACACATATATATATGTGT TATA GTTTA
TATATATACACACATAT AT- GAC ----
GAM6280 3632 CTTTGGTTATAAATTATGAT GG A AT A - - - CTATATT
CTACCTACCAATCGTGCTAT CTTT TT TAAATT GATCT CCTA CCAAT C GTG
ATTCACAGAATTGGCTAGGG GAAA AG GTTTAG CTGGG GGAT GGTTA G CAC
GGTCGATTTGGGAGGAAAG GG G -- - C A A -------
GAM6281 4406 CTGGAGAGAGTGCCTCAGGG - GCCTCA T A-- TGC TG ACT
CTTTTTGAACCTGCTCATTG CTGGAGA GAGT GGGCT TTTGA CC TCAT CC
CCACTGGTGATGACCTGGCC GACCTCT CTCG CTCGA GGACT GG AGTA GG
GTCAGGCAGCTCGTAGCTCT T ATG--- C GCC TCC GT ---
TCTCCAG
GAM6282 7742 TCCCTCTGCTGGACCTGAAT --- CT T A A GATGCTGTTG
GGTACTGATGCTGTTGAGAG TCCC TCTG GGACC GA TGGT CT
CCATCTGGTCCTCAGACATG AGGG AGAC CCTGG CT ACCG GA
GGA TAC T- T - A ----------
GAM6284 288 AGCCTCCCTAGTAGTTGGGA CTCCCTAG ATTACA ATGC
TTACAGGCATGCGCTACCAA AGC TAGTTGGG GGC
GCCCAGCTAATTTTTGTGTT TTG ATCGACCC TCG
TGTTTTTA GAACCA ----
GAM6285 18709 GGAACTCAGATAATCATCCC AAC AGATAATCA TT AA----- --- AG GC- AG
TTTCCAGAAAGTTCTGAGCA GG TC TCCCT CCAG AGTTCT GAGC CCTGGGA AGC G
GCCTGGGAGCAGCAGGGAAG CC AG AGGGA GGTT TCAAGA CTCG GGACCTT TCG C
GAGAAGTCAGCTCTATTCCA GAT AAAATTCGA GG GGAGTAA CAC G- ATC A-
GGGGCTCCACAGAACTAATG AAGGAGAAG
AGGTTGGGGAGGGAAGCTTA G
AAAGATAGCC T

GAM6286 5961 GCGTCTCGCGACCCAGGCGC GT --- C- GTTTC A A CAACAAGCGAT
GGGTTTCCGGAGGACAGCCA GC CTCGCGACC CAGG GCGG CGG GG CAGC
ACAAGCGATGCTGCCGCCGC CG GGGTGTTGG GTCC TGCC GCC CC GTCG

CGTTTCCTGATTGGTTGTGG GT TTA TT ----- G - ----------
GTGGC
GAM6288 5776 GCGCGGCGAGGATGCCAACT - G CCAAC - C T CTTG
GATGGCTCGTACGGACTTGT GC GCGGCGAG ATG TGA TGG TCG ACGGA
TCGTTGATCACTCACATCGT CG CGTCGCTC TGC ACT ACT AGT TGCTT
GCTCGCTGCAGC A G TAC-- C - - ----
GAM6289 18003 AGTGTTTTCATCCTTCTTCA - A CT TGG CC- CACAAATATCA
TGGCCTCCTTCCCACAAATA AGTGTT TTC TCCTT TCA CCT TTCC
TCAGGAAAATGGGAACTGAT TTACAA GAG AGGAG AGT GGG AAGG
GAGGAGAGTAACATT T - T- CAA TAA ----------
GAM6290 15456 GGCGTCGTCGGGCCGCCGCA TC --- CC- A- CGAAGGC
GCCCGCCGAAGGCGCGGGTG GGCG GTC GGG GCCGC GCCCGC
AGTGGCAGACCCTTGGGCCC CCGC CGG CCC CGGTG TGGGCG
CGCC CC GTT AGA AG -------
GAM6291 10793 GCTACAGAGCTGTCTGATGC - -- T GA- AATA AA ATAC
AATACTTGAAGGATACCCCA GCT ACA GAGCTG CT TGC CTTG GG
AGAGCAAGAAGCAGTTCTTT TGA TGT CTTGAC GA ACG GAAC CC
GTAAGT A TT - AGA A--- -- ----
GAM6292 3794 GGAATGAGGTCTGAACTCCA A TCT ---- AAT AC T ATTTGGGG
CTGAATTAAACCACTGGCAT GGA TGAGG GAACTC CACTG TAA CAC GGC
TTGGGGGCTGTGTATTATAG CCT ATTTC CTTGAG GTGAC ATT GTG TCG
CAGTGCAAAGAGTTCCTTTA - --- AAAC GAT AT - --------
TCC
GAM6294 12709 TCCTGGCCCTGTTGGTGGCA - TT T AG----- AGCCCA
GGCCTAGCCCAAGGCATCAG TCCTGG CCCTG GG GGC GCCT
AGGCCCCCTTAGGGCCCAGG AGGACC GGGAT CC CCG CGGA
A C TC - GAGACTA ------
GAM6295 7794 GTTCGTTTTTGTAGAGGTAG T T G TA TG A GTG
TTTGGGAGCATGGGGGGTGC GT CGT TTT TAGAGG GTT GGAGC TGGGGG
CCCTGAGCTCCAGCCTCTTC CG GCA GGA GTCTTC CGA CCTCG GTCCCC
TGGAGGTACGTGC T T G TC -- A ---
GAM6297 9251 GGAAGGGCAGCTTGGCAGAG G AG G A- T GA GA CCTT
CCTCAGGATGGACCCCCTTG GGAAGG C CTTG CAG GCC CAG TG CCC
GGGACACGCTGCGGCGACTG CCTTCC G GGGC GTC CGG GTC AC GGG
CGGGAGGCCTTCC - GA - AG C GC AG ----
GAM6298 6878 AGCTGAAGTCACACATGAAA AG C ATG A C TC TT TTCCACTT
GAAGCCATGATCAAGCTTGG AGCTGA TCA AC AAAGA GC ATGA AAGC GGT
TTTCCACTTGCTCTGCTTCT TCGATT AGT TG TTTCT TG TACT TTCG TCG
TCATGTATCTTTATAGTATG CT A ATA A - TC TC --------
ATCTTAGCT
GAM6299 14271 CCTACAAGGAGGCCTTTCGG A - T-- AA- ACATGA G GGGG
AAGGACATGATCCGCTGGGG CCT CAAG GAGGCCT TCGG GG TCC CT
AGAGGAGAAACGCCAGGCTG GGA GTTT CTTCGGA AGTC CC AGG GA
ACCCAGGCTTCTTTTGCAGG C T CCC GGA GCAAAG A ----
GAM6300 20588 GGAGAATCGCTTGAACCAGG AA GA---- AGG GT A CAAGATCAA
AGGTGGAGGTTGCAGTGAGC GGAG TCGCTT ACCAGG TGGAG TGCAGTG GC
CAAGATCAAGCCATTGCACT CCTC AGCGGG TGGTCC ACCTC ACGTTAC CG
CCAGCCTGGTCAACAAGGGC AA AACAAC G-- -- - ---------
GAAACTCC
GAM6301 13584 CATCGTCACCAAGGCACGGG CCAAGG- C GG GAC

GGAAGAGTGGACCACTCTTC CATCGTCA CA GG GAAGAGTG
AACTTTGATGTTCATGACGA GTAGCAGT GT TC CTTCTCAC
TG ACTTGTA T AA ---
GAM6302 11236 GGGGACCTCCTTCCAGCTCT ACC-- AG--- CT G- ATTCA
ACGCGCCTCTCATTCAGAGA GGGG TCCTTCC CT AC CGCCTCTC
GGTGAGGTCAGGAAAGGGGA CCCC AGGAAGG GG TG GTGGAGAG
AGGACGAAGCCCC GAAGC GGAAA AC GA -----
GAM6304 4516 CCCTGTTCTCAGTAAAGATC TGT-- - AAGA AA TT GTTT- ATATGA
GCAACTTTCATGTTTTCCTG CCC TCTC AGTA TCGC CT CAT TCCTGG
GATATGATCAGGATCTAAGT GGG AGAG TCAT GGCG GA GTG AGGACT
GTTAGGCGGAAAATACTAGA TTTGT A AAAA -- TT AATCT ------
GATGTTTGGG
GAM6305 12111 TGAGGTGGGAGGCTCCCTTG AGG C GA-- AGGA CAA A - TGAT
AGCCAGGAGGTCAAGGCTGC TGAGGTGGG CTC CTT GCC GGT GGCTGCAGTG GC TG

AGTGAGCTGTGATCATGCCA ACTCTACCC GAG GAG CGG CCG CTGACGTCAC CG AC
CTGCAGTCCAGCCCGGGCGA CA- T ACAG GC-- AC- - T ----
CAGAGTGAGACCCCATCTCA
GAM6308 9919 GGGACTCAGCAATGTCAGCC --- AT- - CC- T - CTCC TCAT
CGTTCCTCGGCCTCCTCCAG GGGAC TCAGCA GTC AGC GTTCC CG GCCTC AGC
CTCATGCTGAGGCTTGCGGA CCTTG GGTTGT TAG TCG TAAGG GT CGGAG TCG
ATTTAGCTAGATTGGTGTTG TTA GGT A ATT C T ---- ----
GATTGTTCC
GAM6310 20073 GGCGACCTGATCAGGGGAGG - TG TC GG -- A CAA GT GGCTA
TGGGGGTACACATCAATTTG GGCGA CC A AGG AGGT GGGGGT CACAT TTTGGA TGTTTCAG

GAGTTGTTTCAGGGCTACTG CTGTT GG T TCC TTCA CCCTTA GTGTA AAATTT ACAAAGTC

AAACATTTAAAATGTGAATT C GT T- TT AA A --- -- -----
CCCAAACTTTTCCTTTTGGG
CTTGTC
GAM6312 12743 TGGCATCCCAGATGTTGCAG - AGA AG GAAG T CA A AGCA
TTGAAGTCGTCGTAGCCAGC TGGCATC CC TGTTGC TT TCG CGTAGC GCG GC
GAGCAGCAGCCGTCCGCTGC ACCGTAG GG ACAACG AG AGC GCGTCG TGC CG
GCGAGAAGGCAACAGAGGTG T AG- GA ---- - CC - ----
ATGCCA
GAM6313 5351 GAGGTGATAGTGTGGTTTAT A -------- - T - AG- AAA AA AGTT
GGACTGAGGTCAAAATCTAA GAGGTGAT GT GTGGT TTA GG ACTG GTCA TCT GA
GAAGTTTCGCAGACCTGACA CTCCACTA CA CATCG AGT CC TGAC CAGT AGA CT
TCCAGTACCCTGATGCTACA - GGAGCAGA T C A CTA CC- CG ----
GACGAGGACATCACCTC
GAM6314 9886 TGAGACAGGGTCTCGCTCTG A TC- T TCA C--- T -- A - ACGATCTCA
TCACCCAGGCTGGAGTGCAG TGAG CAGGG TCGC CTG CC AGGC GGA GTGC GTG GC
TGGCACGATCTCAGCGCACC ACTC GTCCC AGCG GAC GG TCCG CCT CACG CAC CG
GCACCCTCCGCCTCCCAGGC C CTT - TC- ACCC - CC C G ---------
TCAGGCGATTCCCCTGCCTC
A
GAM6315 15850 TTGAGATGGAGTCTCGCTCT AT TCTC C TT --- T -- T GATCTCA
GTTGCCCAGGCTGGAGTGCA TTGAG GGAG GCT TG GCCC AGGC GGAG TGCAGTGG GC

GTGGTGCGATCTCAGCTCAC GACTC TCTC CGA AC TGGG TCCG TCTC ACGTCACT CG
TGCATCCTCTGCCTCCCGGG CG TTAA - T- CCC - CT - -------
TTCAAGCAATTCTCTGCCTC
AG

GAM6316 4917 GCCTCTATACAAAATTGAGA ATACAAAA ATG- G GGGGCTCA
TGGGGGTTGGGGGCAGGGGC GCCTCT TTGAG GGGGTTG GGGCA
TCATGCCTGCAATCCCAGCA CGGAGG GATTC CCCTAAC TCCGT
CTTAGGGAGGC -------- ACGA G --------

GAM6317 317 TCTGCCCTGCATGTACCTGG T- C TGTACC TGTT TC T TG --- AACT
TGGTGTTTGTCTGTGGTCTG TC GC CTGCA TGGTGG TG TGTGG C GT GGGG
GTGGGGAACTCTCTGGTGCT AG CG GACGT ACCATC AC ATACT G CG TCTC
GGTCATATCCATCTTCTACC TC A TGAAT- TTCT CT - GT TGG ----
ATAAGTTGCAGAGCCTGA

GAM6318 2914 TTAACCATGGACATGGATCT TA C AT TTTATAATTCTAATTT
TCTTTATAATTCTAATTTGA T ACCATGGA ATGG CTTC
AGTGCTGTCTCCATGGTCGG G TGGTACCT TGTC GAAG
GC C GT ----------

GAM6319 3638 CAGTACGGATGTGCGGGCAG ACGG- TG C--- A A AT CTGG
GCGTCATAGATAGGGATGCC CAGT ATG CGGGCAGG GTCAT GAT GGG GC
TGGGTGGCCTGGTCATGGCT GTCA TAT GTTCGTCC CGGTA CTG TCC TG
GATCCTGCTTGTGTATGACA GACAG GT TAGT - G GG ----
GACTG

GAM6321 2637 GCGGCCGCGGGCCAGGCTGT G - C A- T -- T C CAAG- CAGG
CACTCAGGTTCCTGTCAAGG GC GC CG GGGCC GGC GTC AC CAGGTTC TGT GT
TCAGGACATTCAGCAGAACC CG CG GC CCCGG TCG CGG TG GTCCAAG ACG CA
TGTGTCAGGCCGCTGAGGCC A C - AG C AC T - ACTTA ----
CCGCGCAGC

GAM6322 19129 CTGAAAGACCAACCACATTG AAGA CC --- CACAG TA - C TT- - CTCC
GCCACACAGGCTATCTGAAC CTGA CCAA ACAT TGGCCA GC TCT GAA CACGG GA CTGTCT

CACGGTTGACTGTCTCTCCA GACT GGTT TGTA ACCGGT CG AGG CTT GTGTC CT GGTAGA

GATGGATCCCTCTGTGCTTC CTAG AT CGG AGGAA GC T C TCC A ----
TGGACGGCAAGGATGGCCAG
GCATGTTATTGGGATCTCAG

GAM6324 19103 CTACCTGAGGCGTCTCCAGA T -- - A- CAG T G CCAA
ACAGCTCAGCGCCCCAAGGA CTACC GAGGC GTCT CC GAA C CAGC CC
GCTGGAATTCGAGGTAGGCC GGTGG CTCCG CGGA GG CTT G GTCG GG
GGCCTCGGTGG - GC T AG AA- - A ----

GAM6325 6023 GGGGCTGAGCAATGATAGAA CT CAA TCT T AGC- AACC
TTTCTAGGGCTGGGAAGCAG GGGG GAG TGATAGAATT AGGGC GGGA AG
AACCCTTAAGTCTCTGCCCT TCCC CTC ATTATCTTAA TCCCG CTCT TC
CCCAATTCTATTACTCTCCC T- --- CCC T GAAT ----
T

GAM6326 14420 GAGAACATAAGGTCTTGTGC AT-- T---- AA CCTC TCTTCT
AAGAGGAGGCCTCGCTCTTC GAGAAC AAGGTCT GTGC GAGGAGG GC
TGTTCCTTCTCGGCACCACC CTCTTG TTCTAGG CACG CTCTTCC TG
TGGATCTTTGGGGTTCTC GGGT TCCAC G- T--- ------

GAM6327 20119 CGGATGGAGCTTGAGCAACG A - -- ---- C CCC CCTTT AGATTCCC
CCCCGCCCTTTGTTGAGATT CGG TGGAG CTT GAG CAA GC GC GTTG
CCCCAACCCTGCTAGCCTTG GCC ACTTC GAG CTC GTT CG CG CAAC
TAAACTCCTGAGCCTTCACC - C TC AAAT C AT- TCC-- --------
G
GAM6328 8433 GTCCTTTGTCATACATGGCA T ACAT--- ------- TA AAGCAAACTCTTCTATGA
GCGTAAGTGTAAGCAAACTC GTCCTT GTCAT GGC AGCG AGTGT
TTCTATGAACACTCGCTCAA CAGGGA CGGTA CCG TCGC TCACA
ACCAGCCTTTCAGAATGGCA - AGACTTT ACCAAAC -- ----------
GGGAC
GAM6331 1402 GGTTCTCCACATGGAATCCC C CAT CC ACTGGAGTCAA
TGGGCCACTGGAGTCAAGGC GGTTCT CA GGAATC TGGGCC
TTGAAGATTTCTATGCAGGA CCAGGA GT CTTTAG GTTCGG
CC C AT- AA ----------
GAM6332 5345 CTCTTGTTGCCCAGGCTGGA TT --- T -- A T GATCTTG
GTGCAATGGTGCGATCTTGG CTCTTG GCCC AGGC GGAG TGCA TGG GC
CTCACTGCAACCTCCGCCTC GAGAAC TGGG TCCG CCTC ACGT ACT CG
CCGGGTTCAAGAG T- CCC - CA C - -------
GAM6333 11120 CTGATTTAAAAATATGGTCT TT -- GTTTTAT T --- G TTTC
TGTTTTATATGATTAAATGG CTGA TAAAAATA TGGTCTT ATGA TAA AT GTTTGT
TTTGTTTTCATAGATGATAT GACT ATTTTTAT ACCAGAA TACT ATT TA TAGATA
GTTACTCATTGTAAAGACCA T- AC ATGT--- C GTA G ----
CATATTTTTATTCAG
GAM6334 18826 AGAAATAACCTGTGGGGCTG A GGG TT T GCTC
TGTTGATAAAAAGCTCTTTT AGAAAT ACCTGT GCTGTG GA AAAAA
TTTCCCCACAGCGCAGGTGG TCTTTG TGGACG CGACAC CT TTTTT
TTTCT G --- CC T ----
GAM6335 5131 GTAAGGGAGAATGTAAAACA - - AA TCAACTC C GC TTC CAATAATAAAGGG
TCAACTCAGCCAGGCTTTTG GTAA GGGAGAA TGTA ACA AG CAG TTTTGTT TGCAG
TTTTCTGCAGCAATAATAAA CATT CCTTCTT ACGT TGT TC GTC AAAACGA ACGTC

GGGCCTCCTGCACTTAGCAA A T GA TTCAAT- T TA TTC ----------
AAATCTGTCTTAACTTTGTA CCTC
GTGCATTTCTTCCATTAC

GAM6336 841 TTGTTCATAATCCCAAACAA ATAA- AAACAAG TG - GCAGCAACAGGA
GGGCCCTGCTGGCAGCAACA TTGTTC TCCC GGCCC C TG
GGACAGGTGGGGCCAGGACA GACGAG AGGG CCGGG G AC
GGGAAGCTGGAGCAG GTCGA ACAGGA- GT G ----------
GAM6337 5818 AGGACTAGAGCTCATGCTGA AG TCAT - CA GGGT
TCATGTCGGTCAGGGGTTTG AGGACT AGC GCTG AT TGTCGGTCAG
ACTGGCAGAGTACGGCTGCT TTTTGA TTG CGGC TG ACGGTCAGTT
GTTGGAGTTTT GG TCGT A AG ----
GAM6338 9020 AGAAGTGATCGTTCCAGCAT A GA C - T ----- - A TTATT
TCTTGGCCTAGGCTTATTGC AGA GT TCGTTC AG CAT CTTG GC CT GGC
CAGCGCAAATATAAGATGAC TCT CA AGTAAG TC GTA GAAT CG GA CCG
TGAATGAAACTCT - A- - A - ATAAA C - -----
GAM6339 11924 GAAGACTGGTTTGTGAATAT -------- - ATGA - TGTGTAT
GACAATGAAATCTGTGTGTA GAAGACTGGTT TG TGAAT CAATGAAA TCTG

TCAGATTTTTATTGAAGCAT CTTTTGACCAA AC ACTTA GTTATTTT AGAC
TCATCAGCAGCCTCAACCAG CTCCGACG T CGAA T -------
TTTTC
GAM6340 9678 GCTTCTTGCTGATCAGAGCT TCTT - --- TT C C T TCGCCCTC
TGGTTGGCACAGCCGGGGTC GCT GCTG ATCAGAGC TTGG GG ACAGC GGGG CC
CTCGCCCTCGGCCCTGCTGT CGA CGAC TAGTCTCG GGCC CT TGTCG TCCC GG
TCTCCCGGATCGCTCTGATC CC-- C CTA CT - - - --------
CAGCCCAGC
GAM6341 5658 GCCAAAATGGGAAAGGAAAA AAATG AAA AAAGA AT A AT GTCATTG
GACTCATATCAACATTGTCG GCCA GG GGA CTC ATC AC TGTC
TCATTGGACACGTAGATTCG CGGT CC CCT GGG TAG TG ACAG
GGCAAGTCCACCACTACTGG CATCA A-- GAAC- CT A C- -------
C
GAM6342 19587 GCAGCAAGATGCAAGGGGGT A A GG AGA TTTGTTT
CAAAGAGCCTTTTGTTTGGG GCAGCA GATGCA GG GTCAA GCCT
CATTGATATCTGCATCATGC CGTCGT CTACGT CT TAGTT CGGG
TGC A - A- A-- -------
GAM6343 941 GGTTCGGGCCAAGCGGGGCA C G- A CACA--- AGG ATG
CAGCCCAGGGCTTCGGGATG GGTT GG CCA GCGGGG GCCC GCTTCGGG
CCCGAGGTGGGCCATCACAC CCAA CC GGT CGTCTC CGGG TGGAGCCC
TCTGCTGGAGCCAACC - GA - ACACTAC --- ---
GAM6344 18510 GTCTAATCCTTTTTGTAGTC TA - C A-- AGACTTAG
ACTCATAGGCCAGACTTAGG GTC ATCCTTTTTGT AGTCA TCAT GGCC
GCTAGGATGATGATTAATAA CAG TAGGGAGAATA TTAGT AGTA TCGG
GAGGGATGAC -- A - GGA --------
GAM6345 22521 GGCGGGGCGCGTTGTGCTGA GCG- T A TCTC -- TCGCG
AAGGTCTCGGCTCCTGGGTC GGCGGG CGT GTGCTGA AGG GGCTCCT GGG
GCGCCCATAGGAGCCTCTTC CTGCCT GCG CGCGGCT TTC CCGAGGA CCC
TCGGCGCTGCGGGGATCCGT AGGG T C T--- TA -----
C
GAM6346 14600 GGGTTCAAAGCCTTTATTGG AAA TTA G A- GCTCCA
GTCAGGGCTTGCTCCAGAGC GGGTTC GCCT TTGG TC GGGCTT
TCAGGGGCCAGGTAGGTCAG TCCGAG TGGA GACC GG CTCGAG
GAGCCT GAC TG- G GA ------
GAM6347 1228 CCTGCCCCAGCCTGGCTCCC --- -- C- - TG G TTCG
TCGTTGCTGGGCTTTCGGGG CCTGCC CCAG CCTGGCT CCTCGTTG C G CT
CTGGCCAGTGGGGACAGTCA GGACGG GGTC GGACTGA GGGGTGAC G C GG
GGGACTGGAGAGGCAGG AGA AG CA C GT G ----
GAM6348 21949 CATTTCCAGATTTATTTCCA - - T----- TCC TT AAACAAAC
ATTTCAGTTTCAAAACAAAC CATT TC CAGAT TATT AATTTCAG TCA
TGACCTGAAATTTTTAGTAT GTAA AG GTCTA ATGA TTAAAGTC AGT
TTACTATCTGTGACAATG C T TCATTT TTT C- --------
GAM6349 16342 GGGGAGTGGCTATAAATACA CTATAAA ATGAAGCTTC CTTG
GATGAAGCTTCGCTGGCTTG GGGGAGTGG TACAG GCTGG
CCGGCCCCTAACCTGCTGTG TCCTTCACC GTGTC CGGCC
CACCCCACTTCCT CCAC--- GTCCAATCCC ----
GAM6350 6154 TAAAAGAAAACCAAAGTGGT AAACCAA CC AA CT---- CCTTCT
CCACAAAACATTCTCCTTTC TAAAAGA AGTGGT ACAA CATT CCTTT
CTTCTGAAGGTTTTACGATG ATTTTCT TTACTA TGTT GTAG GGAAG
CATTGTTATCATTAACCAGT GACCAA- T- AC CATTTT ------

CTTTTA
GAM6353 5248 ACCCCATGCCTCACTTGTGA GCC T A TT TACCATGTTTTCT
GATTAGAGTACCATGTTTTC ACCCCAT TCAC TGTG GA AGAG
TTTCTTTCCACATGTGGAAG TGGGGTG GGTG ACAC CT TCTT
TGGGGT AA- T - T- ----------
GAM6354 9966 CGGGTCCCTGGTCTGGGCCA CC - TC GG A G T A ---- G AGACTGT
TGTCTGGCTGTGATGCTTGG CGGGT CT GG TG CC TGTCT GC GTG TGC TTGGGAG G
GAGGGAGACTGTTGTTCCCG GTCCA GA CC AC GG ACAGG CG CGC GCG GGCCCTT T
GAGATGCGGCGCGCAGGACA TA A T- GA A A - G TAGA G -------
AGGAGCATCCAAGATACCTG
GAM6355 6192 GGCAATGGACGCTACCCCAG AT C ACC---- G A --- AG GCCCA
ATGGGTCAGCTTCGGAGGCC GGCA GGA GCT CCAGATGG TC GCT TCGG GCCT
TGCCCAAGGCTCCTGATCAG CCGT TCT CGA GGTCTGCC GG CGG AGTC CGGA
GCGGCCGTCTGGTCCAATCA -- A CTAACCT - - ACT CT -----
GCATCTTGCC
GAM6356 11569 CTCATGCAGACGCTCCGATT G GACGC - TT GA TACA
TCTTGGACTCTACAGAGATG CTCAT CA TCC GAT CTTG CTC
AGCATCAGGATTTTATGGAT GAGTA GT AGG CTA GAGT GAG
GAG G ATTTT A C- A- ----
GAM6357 19377 GTTTATATCTTCACCCTGTA TA TC CT A TG-- CC CCAATC
ATGGTTGGGACCAGGCCAAT GTTTA TCT ACC GT ATGGT GGA AGG
CCCTTCTCCACTTACTATAA CAAAT AGG TGG TA TATCA CCT TCC
TGGTTGGAACTAAAC CA T- -- A TTCA CT ------
GAM6359 1078 AGGGCCGCGATGGCTTGCGC - - TT GC GT CCAGGTCC
CCAGTCGGGCACCCCAGGTC AGGGC CG CGATGGC GC CCA CGGGCACC
CGGTGTTTGTGGAGCTGCCG TTTCG GC GTTGCCG CG GGT GTTTGTGG
TTGACGTGCTTT T A T- A- -- --------
GAM6360 4301 CATCGTCATGAACATCAAAG G CAT AAGTT GTGGTCCA
TTGAAGAGTGGTCCATCTTC CATCGTCAT AA CA GAAGA
CCCCGTGCCTTGGTGACGAT GTAGCAGTG TT GT CTTCT
G G CC- GCCCC --------
GAM6362 11904 CCGCCTCAATGATGTTTGCA C ATGA T AAA- AGCTGAA - CCCGG
AAGGAGCTGAAGCTGGTGTC CCGC TCA TGTT GC GG GCTGG TGT
CCGGGCGCCCAGCGAATGAA GGTG AGT ACAG TG CC CGACC GCG
CCGATGGTCGACATGAAGTG A ---- C GTAG AAGTAAG C -----
G
GAM6364 5760 CTGCTGCGCCCTGTCCTCCG - - CC- TC CTGCG
TCGGCTCTGCGGGCTCCCGG CTGCTGC GCC CTGT TCCG GGCT
GCCTACAGCGGCTGCGGCAG GACGGCG CGG GACA GGGC TCGG
T C TCC CC -----
GAM6365 7053 CCCAGCTACGGCGCCCGGCG A--- C G G A --- GGCA
GTCAGCAGCGCGGCAGCGTC CCC GCTA GGC CCCGGCG TC GCA GCGC
TATGCAGGCGCTGGGGGCCT GGG CGGT CCG GGGTCGC GG CGT TGCG
GGCCACCGGG CCAC - G - A ATC ----
GAM6367 6664 AGGACTAGCCAGGACCGGAG CCA -- TCACTCCAAT
CGCTCGTCACTCCAATTGGG AGGACTAG GGACC GGAGCGCTCG
TGCTCCTGGGTCCCACTGGT TCTTGGTC CCTGG CCTCGTGGGT
TCT AC- GT ----------
GAM6369 11561 GCCTCACTGGCTGGGTTCAA ACTG--- TTCAAAAA AG- GGCACAG
AAAGGGAGGGGCCAGGCACA GCCTC GCTGGG GGG GGGCCA

GTGGCTCACGCCTGTAATCC CGGAG CGGCCC TCC CTCGGT
CGGCACTTTGGGAGGC GGTTTCA TAATG--- GCA -------
GAM6370 6382 TGACTTGCTGAGATGTCCGT CT G T A G --- TAT-- TTGGAGCT
CTATTCTTGAAGAGCGGTAT TGACTTG GA ATGTCCG CT TTCTT AAGA GCGG TC
TCTTGGAGCTGATACCTCTG ATTGAAT CT TGCGGGT GA AAGAA TTCT TGTC AG
TTGATCTTGAAGAAAGTTGG AT G T - G AGT TCCAT --------
GCGTGTCTATAAGTTA
GAM6371 5866 GATTCGATTCAGCAAATGGG --- ATG CA -- CCTGA
ATCAATATTTCACCTGATGA GATTCGAT TCAGCAA GGAT ATATT TCA
TAAGTATATCTATGTTGCTG CTAGGTTA AGTCGTT TCTA TATGA AGT
ACATATTGGATC TAC GTA -- AT -----
GAM6373 2584 CTTCTTCAGTGAGACGGGCG - GAC- CG ----- T CCG
CTGGCAAGCACGTGCCCCGG CTTCT TCAGTGA GGG CTG GCAAGCACG GCC
GCTGTGTTTGTAGACTTGGA GAAGA AGTTACT CCC GGT TGTTTGTGT CGG
ACCCACAGTCATTGATAGAA T GACA AA TCAGA - ---
G
GAM6374 15237 GAAACAGACTGGGCCAATGT C -- CACAAAGAA - CA- ACCGATGTCCTAA
CCACAAAGAATTCCTGGTCA GAAACAGA TGGGCCA ATGTC TTCCT GGT GCACC
GCACCACCGATGTCCTAAGG CTTTGTTT ATTCGGT TGCGG AAGGA CTA CGTGG
TGCAATATCAAGGAAGGGCA - AG ACGGG---- A TAA ----------
GGCGTGATGGCTTATTTGTT
TC
GAM6375 15385 GTAGAGATGGGATCTCACTT AT T- T TT T TCT CTCA
TGTTGTCCAATCTGTTCTCA GTAGAG GGGA CTCACTT G G CCAA GTT
AACTCTTGGCTTCAAGTGAG CGTCTC TCCT GAGTGAA C C GGTT CAA
CCTCCTGCCTCTGC CG CC - TT - CT- ----
GAM6376 13550 GGCTGAAGGCTAAGTTCCCT T A A- TCCCTT- A ATTTCTG
TCCAACTTTGAGATTTCTGC GGC GA GGCTA GT CCA CTTTGAG
TCAAAGATGGTAAACATACA CCG CT CTGAT CA GGT GAAACTC
GTAGTCTCTGCC T - GA TACAAAT A -------
GAM6377 1638 ACTTACTGAACCTCTTTGGC T GA - T CA- T- A AT GACA
AAACATTTATCAAGACAATT ACT ACT ACCT CTT GGCAAA TTTA CAAG CA TTTG
TTGGACACAAATGCTTGTTT TGA TGA TGGA GGA TCGTTT AGAT GTTC GT AAAC
AGAAATTTTGCTCAGGAAGG C G- A C TAA TT - -- ----
TGAGTCAGT
GAM6378 12889 GCCCCGCCCCTGCCGCCGGA --- CC AT TGAA AA TCTGC
ATCCTGAAGCCCAAGGTCTG GCCCC GCC TGCCGCCGGA CC GCCC GG
CCCGGGGGCGGTCCGGCGGC CGGGG CGG GCGGCGGCCT GG CGGG CC
GCCGGCGATGGGGC TAG CC -- ---- GG -----
GAM6379 15768 GCTGGTGATGACCTTGAAGC - C-------- AG --- AATTTC
TGTAGCCAAATTTCTGGACT GC TGGTGATGA CTTGA CTGTAG CCA
CTACAGGCTCAAGATTAGAT CG ATCGCTGCT GAACT GACATC GGT
TATCGTCGCTATGC T ATTAGATTA CG TCA ------
GAM6380 13271 GTCAGAAAACGCTCTTGTTA T GCTC TTACCACTC T TT TTATTC
CCACTCATGTTCTTCATTTC G CAGAAAAC TTG ATG TC CATTTCT
TTTATTCAGAAATGCTGACT C GTCTTTTG AAC TAT AG GTAAAGA
ATATCATCAACCAGTTTTCT - ACC- TACTA---- C TC ------
GC
GAM6381 20549 GCCCCCCAGAGCTAATTACA C A AA- CA CAC CCCCTGAA
TCCACACCCATCCCCTGAAG GC CCCCAG GCT TTA TCCA CCAT

TGGTGGACATAAGGGAGCCC CG GGGGTC CGA AAT AGGT GGTG
TGGGGAGC A C GGG AC --- --------
GAM6382 2399 CTGAGGGAAGTATACCTGTC AG TAT GT CCTTGGTCT
CTGCCAGCCTTGGTCTCTGG CTG GGAAG ACCT CCTGCCAG
CAGGGAAGGTCCTTCCAACA GAC CCTTC TGGA GGACGGTC
G AA C-- AG ---------
GAM6383 19864 GCTGGGGCACCATGCAGAGT - CA---- CAGAGAAGGGATTAC
CAGAGAAGGGATTACACTCT GCTG GGGCAC TGCAGAGT
GCAAATTTTGTGCTCACAGC CGAC CTCGTG ACGTCTCA
A TTTTAA ----------
GAM6384 20746 CGGCGCGGCTACCTGCCCCG C A --------- TTTC T TGACCT
TTTTCCCTGTGAGTTGACCT CGG GCGGCT CCTGCC CCGT CCTG GAGT
GCTCCGGGCCGCGGGCCGCC GCC CGCCGG GGACGG GGCG GGGC CTCG
AATGGCAGGGGCCGCTCCG T - TAACCGCCG CC-- - ------
GAM6385 5827 GTCCTATAGTGTTGATGCAT ATA- A ATT - G T T GAAATGGA
TTTCACTTCTGTGGTCCTAG GTCCT GTGTTG TGC TTCACT TCT TGG CC AG
GAAATGGACTGGTCTAAAGA CGGGA CACAAC ACG GAGTGA AGA ATC GG TC
GAGTGAGGCACAACACAAGC CGAA - --- G A T - --------
AGGGC
GAM6386 10022 CGTCATGTCTAAGTCAGAGT TG---- CA G -- -- GAACAGCTGA
CTCCTAAAGAGCCCGAACAG CGTCA TCTAAGT GA TCTCCTA AAGAGC CC
CTGAGGAAGCTCTTCATGGG GTAGT AGGTTCG TT GGAGGGT TTCTCG GG
AGGGTTGAGCTTGGAAACAA CAACAA AG G AC AA ----------
CTGATG
GAM6387 3069 GTGGGCAAGGTCATCCCTGA - --- C-- GAACGGAA
GCTGAACGGAAAGCTCACCT GTGGG CA AGGTCATCC TGAGCT
GGATGGCTTTCGTGTCCCAT TACCC GT TTCGGTAGG ACTCGA
T GCT TCC --------
GAM6389 11218 GTCAGGTTAAAAGGCTTTGC TTAAA C CAC --- TCACATTT
ACAGCTATTGTTCACATTTA GTCAGG AGG TTTG AGCTA TTGT
CAGCCTTGGCTCAAACCCTG CAGTCT TCC AAAC TCGGT GACA
GTCTCTGAC CTGG- C --- TCC --------
GAM6390 10891 GTCGTGTCCTACCCATGCGC G A---- AT G A GG A CCAC
GTCCCGGCGGAGCGGGCATG GTC TGTCCT CCC GCGCGTCCCG CGG GC GC TGCG
CGCCACCGCGGCGCCTGGCG CAG ATAGGA GGG TGTGCAGGGC GTC CG CG GCGC

GGACGTGTGGGCCGTGAGGA G GTGCC -- G - -- - ----
TAGGAC
GAM6392 602 ACTTTACTGGTCCCTTTACT TT TCC AC CC ATAAA ATATACA
CTTCCACATAAATGGTATAT ACT ACTGG CTTT TCTT AC TGGT
ACAACCACTCAGGTCCAAGG TGA TGGCC GAAA GGAA TG ACCA
AAAAAGCCGGTTAGT T- --- AA CC GACTC -------
GAM6393 13455 GTCGCCTGTTGAGTAGACAT - A -- TGGGCTT AACGGG
GGTGGGCTTTTTACAACGGG GT CGCCTGTTG GT AGACATGG TTTAC
GTGAATGAATCCATGTCTTA CA GTGGACGAC CA TCTGTACC AAGTG
ACCAGCAGGTGTAC T - AT TAAGT-- ------
GAM6394 17868 GACTGGTTTGTCTACAGGTA - T C AA CC AGTAC
ACATGCCCAAGTACTGCACG GACTG GTT GTCTA AGGT CATG CA
TGGAACTTCTGGACCAGCTC CTGAC CGA CAGGT TTCA GTGC GT
AGTC T C C AG AC -----

GAM6395 17087 CAGATGGCTAATGAGCAGGC GAT- - ----- TTT - TTTTTCTT
GTTTCTTCATTTTTCTTTGC CA GGCTA ATGAGCA GGCG CTT CA
AAGTTTGTTCTATATGCTCG GT CCGGT TGCTCGT TTGT GAA GT
TATGGCCTGAATG AAGT A ATATC TT- C --------
GAM6396 15433 CATCCTCTCAGGCAGAGCAG CTC A- C GT GCCACA
GGTGGTCCGGGCCACACTGG CATCCT AGGC GAG AGG GGTCCGG
GCCTACCTCTCCAGCCTCAG GTAGGA TCCG CTC TCC CCGGGTC
GATG C-- AC - AT ------
GAM6397 14186 GCCGACCCTCCAAGTTAGCT GAC A - G TCT AACAACAACGAGA
GACTTCTGGGGGAACAACAA GCC CCTCCA GTT AGCT ACT GGGGG
CGAGATCCTCAGTGGGCTGG CGG GGAGGT CAG TCGG TGA CTCCT
ACATGGAGGAAGGC AA- A G G --- ----------
GAM6398 16948 GGAGGGCGGGGGAGAGACGA -- - - GCTCT CTTAATTGTACTTC
GCGGCTCTGGCCCCTTAATT GGAGG GCGGG GGAGAGACGA GCG GGCCC
GTACTTCGGGCTCGTATTGT CCTCC CGCTT CCTCTCTGTT TGC TCGGG
CTCTCCTTTCGCCACCTCC AC T A ----- ----------
GAM6399 686 GGAAAAAAACTTTAATTGGC A - TG C G AAAT TTG
GCCAAAAAACAGAATGAAAT GGAA AAAACTTTA AT GCGC AAAAAACA AATG GGGC
GGGCTTGGCCTTATATTGTG TCTT TTTTGGGGT TG TGCG TTTTTTGT TTAT TCCG
TTTTTTGCGTTGGTCTGGGG C C GT - G AT-- ---
TTTTCTTCT
GAM6400 10545 CCACACCACTATGCAACCTT C--- TA- AACCT GA T TCCTGTT
TCTGATATTCCTCCTGTTGG CCA ACCAC TGC TTCT TAT CC
CATAAAGAGCAAAGCAGTTG GGT TGGTG ACG GAGA ATA GG
TGGTTCCATGG ACCT TTG AAAC- A- C -------
GAM6401 7137 CTAGAGAAGGATCGGGACGG - TC- C C GATT TCCC
CTTGTGATTTCTCTCCCGAG CTAGAGA AGGA GGGA GG TTGT TCTC
ACAGCGATCTCTCTCTTCTC GATCTCT TCCT CTCT TC AGCG AGAG
CTATCTCTAG A CTT C T AC-- ----
GAM6402 7951 GTGGGAGGATTTTGAGATAC --- AG T TA TTTATTT
TTATTCTTTATTTGAGCCAG GTGGGAGG ATTTTG A ACT TTC
TCTTGCAAGGTTAACTTCTC CACTCTTC TGGAAC T TGA GAG
AC AAT GT C CC -------
GAM6403 9040 CTGCTCTGGCATAGGAATAC - - ATA TTAAATG A CAGGAGAT
TTGAATAGCTTGGTTAAATG CTG CTCTGGCATA GGA CTTGAATAGCTTGG AAGGG TGGC

AAGGGATGGCCAGGAGATGT GAC GAGACTGTAT CCT GGACTTATCGAACC TTTTC ATTG

TACTTTTCCAAGCTATTCAG A T CAC ------- - --------
GCACTCCTTATGTCAGAGAC
AG
GAM6404 656 GTGGCTAGGAAAGAACAGCA T AAGAA --- GA AA- ATAG
TAACTTCAGAGTAAGGGTAT GTGGC AGGA CAGCATAACT TCA GT GGGT
AGACTTGGGATGTGAGGCAG CACTG TCTT GTCGTATTGA AGT TA TTCA
TTATGCTGAAAGGTTCTGTC - GGAAA CGG G- GGG ----
AC
GAM6405 21255 CTACACAGACTTCTATTCCT A GA AT T CG CTA AACGTC
CTCGGAGCATGCTACCAACG CTAC CA CTTCT TCC CT GAGCATG CC
TCGGAATCATGTTCAGGGAC GGTG GT GAGGA AGG GA CTTGTAC GG
AAGGAGAATGCGTGG C AA AC - -- TAA ------

GAM6406 17382 GGCTTTTTAGCTTGAGACTC ------ AGA T G TGATGTGGT
TATCCTGAGATTTTGATGTG GGCTTTTTA GCTTG CTC ATCCT AGATTT
GTAGGTCTAGGGTGAGGCAT TCGAAAAAT CGGAT GAG TGGGA TCTGGA
AGGCATTTTTTAAAAAGCT TTTTTA ACG - - ---------
GAM6407 4996 GCTGGTGGGGGATAATCTGC --- GG ATAAT CA TACTT AGAAACACCAATA
AGTCTTACTTTTAAGTTAGA GCTG GTG GG CTG GTCT TTAAGTT
AACACCAATAAATTTAGTAT CGAC CAC TC GAC CAGA GATTTAA
ACAGACGACAGTGAACTTTC ATT TT AAGT- AG CATAT ----------
ACTTACAGC
GAM6408 6897 GCACAACTGCTAGTGCCCCC CA GCC C T GGTCATGA
TTCTGTGGCTGGTCATGAGG GCA ACTGCTAGT CC TTCTG GGCT
CCCAGAGTGGTAACTGGCAG TGT TGACGGTCA GG GAGAC CCGG
TCTTGT TC AT- T - --------
GAM6409 20815 GCCTCAGATTTCTGCTCATG TC TTC T-- TAC TTT CTGT
ATCTACATAGATTTGGAAAC GCC AGAT TGCTCA GATC ATAGA GGAAA
TGTTTTCCTCTGTTTTGGTC CGG TTTA ACGGGT CTGG TGTCT CCTTT
TCTTGGGCAACATTTTTGGC TT CA- TCT TTT --- ----
GAM6410 10606 CTTCCCCAGTTGTCCCCTGG AG TCCCCT - -- ACAT
AGTTTGGCGGGGACATCCCC CTTCCCC TTG GGA GTTT GGCGGGG
GCCTCAGGCATCCTTCTCAA GAAGGGG AAC CCT CGGA CCGCCCC
GGGGAAG -- TCTT-- A CT ----
GAM6411 16190 TTGATTGGCATCTGGGAACT TG CA CT- - CAGGG
TGGAGTTCAGGGGGCTTCCA TTGAT G TCTGGGAA TGGA GTT
CCATTCCCAGAACTGATCAA AACTA C AGACCCTT ACCT CGG
GT A- ACC T -----
GAM6412 15232 GCGATGGCTGCGACGCGTGC A GCGA C TG A G T G C ATCTTCAC
AGGGCCTTGCGCCCGCGAGA GCG TGGCT CG G C GG CC TGC CC GCGAG
TCTTCACCTCGCTGGAGTAC CGC ACCGA GC C G CC GG ATG GG CGCTC
GGACCGGTGCCGGAGAGCCA - GAG- - GT G A C A T --------
CGC
GAM6413 17028 GACCCGGGGTGGGGTGCACT -- G -- ---- GCCA - C G CAGC
CGCCATTTCCTCACGTGCAG GACCC GGG TGG GGT GCACTC TTTC CTCA GT CAGGA
GACAGCTCTTGATTTGGGTG CTGGG TCC ACC CCG CGTGGG AAGG GGGT TA GTTCT
GAAAACAGGGTGCTAAAGCC TT G AA AAAT ACAA T T - ----
AACCAGCCTTTGGGTC
GAM6415 1765 TAGGGCCAGCTTCATGCACT CA AT- C TAC- CAGTCA
GTACCTTGTACAGTCATACA TAGGGC GCTTC GCA TG CTTGTA
AGATTTCATGCTCAGAAGTG GTCCCG TGAAG CGT AC GAACAT
CCCTG -- ACT - TTTA ------
GAM6416 3271 CCATGCTCGGCTAATTTTTA T TAATTTTTAA TT G GGG
AAATATTTGTAGAGATGGGG CCA GCTCGGC AATAT GTA AGAT
TCTTGCTATGTTGCCGGGCT GGT CGGGCCG TTGTA CGT TCTG
GG - ---------- T- - ---
GAM6419 13149 GTCCATTCCATCCGAGGCAA CCA- - AG--- AAC TGAACT
GTCTTCTGAAAACCTGTGAA GTCCATT TC CGAGGCA TCTTCTGAA CTG
CTCAGTTCGGAGGAAATCCT CAGGTGA AG GCTCTGT AGGAGGCTT GAC
GTCTCGTGAACGAAGTGGAC AGCA T CCTAA --- ------
GAM6420 20003 GCCTCAAAGCTGCATGTTGA GC TTGAG T CTTTC CCGT TTATCTC
GTGCCGTCTGCTTTCGGTCC GCCTCAAA TGCATG TGCCG CTG GGTC CA
CGTCATTATCTCTGTATAGA CGGGGTTT ACGTAC ACGGT GAC CCAG GT

CCCAGTTGGCAATCATGCAT -- TA--- T ----- ATAT -------
TTGGGGC
GAM6421 22324 GTTGGATGAGAAGAGGTGGT TG TG AA - TG AA CT GTAAAG
GGTTAAAGGCTGTCGTAAAG GT GA AG GAGGTG G GTT AGG GTC
GACCCCTGGCTGCTTGCTTC CG TT TC CTTCGT C CGG TCC CAG
AACTTGTTTCGC CT GT AA T GT -- C- ------
GAM6422 22380 GGCGTCGGAGGGGCCCCTCA C ------- AG-- CCTG
AGGCCTCCTGGGGTACACTG GG GTCGGAGGGGCCCC TCA GCCT
AGCACCACGGGGTTCCTCTG CT CAGTCTCCTTGGGG AGT TGGG
ACTTC T CACCACG CACA ----
GAM6424 20247 GCCATCACTGCCACCAGAAG T C AAGA G TGGCCCC
ACTGTGGATGGCCCCTCCGG GCCATCAC GCCAC AG CT TGGA
GGAAAACTGTGGCGTGATGG CGGTAGTG CGGTG TC GG GCCT
C - - AAAA G -------
GAM6425 11683 GTTCAATTGTACAAAACCTA AA AACCT-- CAAAAGTATCAA
ATTTGTTGTCAAAAGTATCA GTTC TTGTACAA AATTTGTTGT
AGCAATAAATTTTAACTATT TAAG GACATGTT TTAAATAACG
GTACAGGGAAT G- ATCAATT ----------
GAM6426 21839 AGATTCAAAGCAACACCACC CA GCA C- ---- - AA-- T ATATAA
ACCACTGAAGTATTTTTAGT AGATT AA ACAC ACCA CCAC TG GTA TTTTAGTT
TATATAAGATTGGAACTACC TCTAA TT TGTG TGGT GGTG AC CAT AAGGTTAG
AAGCATGTGGCTCCTGGTCA TC AA- AC CCTC T GAAC C ------
GTGTAATTCTAATCT
GAM6427 10145 CTCGGAGTAATCGCCTGCAT TAAT GCA TG G GAA ATGAAAGGGAAG
TGGGGAGAAGCTAGATGAAA CTCGGAG CGCCT T G GA GCTAG
GGGAAGCTGGCATCACTGAG GAGCTTT GTGGA A C CT CGGTC
AAGGTGTTTTCGAG T--- AG- GT A A-- ----------
GAM6429 22165 TAGCAAGTTCATAAGTTTCC - TT AA---------- AAAAA
AAAAAGGAAGCCCATACATA TAG CAAG CAT GTTTCC
ACAGTGGAGGTGTTTTGTCT ATC GTTT GTG CGAAGG
A T T- GAGGTGACAATACATACC -----
GAM6430 14209 TCTTGACACTACTAGTGTCA --- C TTT -- T TCAAA
TTTAGGAGCTTAGCTCAAAG TCTTGA CACTA TAGTGTCA AGG AGCT AGC
TTCAGCTAACCTTTGACACT AGAACT GTGAT GTCACAGT TCC TCGA TTG
GCTAGTGCGTTCAAGA TGC C T-- AA C -----
GAM6432 16789 AATCCTGATCTGGTCCATTA GA A AA TG-- CGCGGA
AAGAGTGTGCGCGGACAAAG AATCCT TCTGGTCC TT AGAG TG
TTTCTGAAAGGATTAGAGAA TTAGGA AGATTAGG AA TCTT AC
GGATT AG - AG TGAA ------
GAM6434 1662 GCGCTCGCCTTGCAGCGGTT T- CC G T ------ GA AT GAGA
GCGCCGAGACCATTTCCGAG GCGC CG TTGCA CGGT GCG CCGA CC TTCC
AGGAAGGCTTCGGACTCTTT CGCG GT AACGT GCCA TGT GGCT GG AAGG
GTCACCGTGCAAAATGTTGC TT AA - C TTCTCA TC -- ----
GC
GAM6435 13619 GGGGCTTGCACTGCCTTCTC CTT-- GC - ------ - TACCC
AGGCCAGCTATACCCTAGCT GGGG GCACT CTTCT CAG GC CAGCTA
GAGCAAAGAACTGAAGAAGC CCCC TGTGA GAAGA GTC CG GTCGAT
AAGTGTCCACTCCCC TCACC AC A AAGAAA A -----
GAM6437 7796 GGATAGCAGAAGGTTGATGT T CA G GTTT G CC-- GGCC
TTTTAGTGGGACCCAAGGCC GGA AG GAAG TTGAT TTA TGGGA CAA

TTGAATTTCCCAGTAATAAA CCT TC CTTT GATTA AAT ACCCT GTT
ATTAGGTTTCCTTTCC T -- G AAAT G TTAA ----
GAM6438 8212 ATCTCGTGGGTGGCTGTGGC T --- C- GG GA AGG-- G C GGAA
TTGACTAGGTGTAGAACACG ATCTCG GG GTGG TGT CTT CT TGTA AA ACG
GGAACGTATTGTACAAAAGG TGGAGC CT TACC GCA GGA GA ACAT TT TGC
AGGGAGGAACGAACCATTGA T AGT AA A- GG GGAAA G A ----
TCTCGAGGT
GAM6439 21259 GCTGGAGGAAGAGGAGTCGC GA - AG AG C CTCT
AGAGAAACCCAGTCCTCTGA GCTG GGA AGAGG TCGC AGAAACC AGTC
CTGGTTTCTGGTGAGGTCTC TGAC CTT TCTCT AGTG TCTTTGG TCAG
TATTCATCAGT TA A GG G- - ----
GAM6441 18907 CCTTGTACACTCGCTGCGAA ACACT A TC-- GTCTTA
CACCCTCGTGGTCTTACGCA CCTTGT CGCTGCGA CACCC GTG
TCTGGGTGTCGCGGCGCCCA GGAACA GCGGCGCT GTGGG CGC
CAAGG CCC-- - TCTA ------
GAM6442 4573 GCTTTCCCAACCTTCTTGGT T - TT TAA TAAACAAT
ATAAAGGTAAACAATTCTAT GCT TCCC AACC CTTGGTA AGG
TACCAGGGGTTCGGGACAGC CGA AGGG TTGG GGACCAT TCT
C C -- TA- --------
GAM6443 98 TAGTGTCCTGTAGAAACTGT T GAAA TC G AGGGAAAGGG
TCCAGCTCAGGGAAAGGGGA TAG GTCCTGTA CTGT CA CTC
GATGCTGCGGATATACAGGA GTC TAGGACAT GGCG GT GAG
TCTG - ATA- TC A ----------
GAM6444 1758 CGCCCTTGCAATCTCTAGGT AAT G A- CC- AGATTTTGCGC
CACTTTCTCCGCTTGTAGAT CGCCCTTGC CTCTAG TC CTTTCT GCTTGT
TTTGCGCGCAAGCCCCAGAA GTGGGGACG GGGGTC GG GAAAGA CGAACG
AGACGGCTGGGGGCAGGGGT --- - CA CCC ----------
G
GAM6446 21605 CCCGGCAGGGTGGGAGGCAG CA - CA-- -- A---- AACCTCTCCCAAC
CAGGGGTCAGCCTGGGCAGG CCCGG GGGTGGG AGG GC AGGGGTC GCCTGGGCAGG

AACCTCTCCCAACTCTGTCC GGGCC CCCACTC TCC CG TCTCCAG TGGACCTGTCT
AGGTGTTCAGACCTCTTGGC AC G AACC GT ACTTG ----------
CCAACCTGCTCACCCCACCG
GG
GAM6447 7045 TCCCTACAGTTGTGCCATGC TACA G G TA -- T GCAGGA
ATTTAAGCGAGTGGTATTGC TCCC GTTGT CCAT CATT AGC GAGTGG ATT
AGGAAGTCCATTCTGGCTCT AGGG CGACA GGTA GTGG TCG CTTACC TGA
GGTGGATGGACAGCCTTGGG TTC- - G TC GT - ------
A
GAM6448 14782 ACAAGGGTCATTCGCAGGAA G TC- AGGAATA AGAGG AA AAG
TAACGGTAGAGGGGAACTGA ACAAGG TCAT GC ACGGT GG CTG
AGCAGGGCCGCCGTGGCATT TGTTCC AGTA CG TGCCG CC GAC
ATGAGCCTTGT G TTA G------ ----- GG ---
GAM6449 362 GGAAACAGACCTCAAGCAGC AGA TCCCTGGG GACC
ACTCCCTGGGGGCAGGACCC GGAAAC CCTCAAGCAGCAC GGCAG
TGCCATTCTGTGCTGTTTGG TCTTTG GGGGTTTGTCGTG CCGTC
GGGCAGTTTCT ACG TCTTA--- ----
GAM6451 1850 TGTTTAGGTCGGGGGAAAGG TA GA GGG AC GCAGACA A AGCAA
AAGGGGCTGACAACCGCAGA TGTT GGTCGGGG AAGGAAG CTG AACC TCTGGAC CC

CATCTGGACACCAGCAAGGG ACAA TCGGTTCC TTTCTTC GAC TTGG GGACCTG GG
TCCAGGGGAGGTTTGCAGAA -- TG AA- GT AGG---- - -----
CTTCTTTGTCCTTGGCTAAC
A
GAM6452 20493 GAGGCATCTGCTAGAAAACA CATC----- -- TCTATTG TAA CCGA
TTCTATTGTATAAAACCCGA GAGG TGCT AGAAAACAT TA AAC
GTTCTTAAAAACATGTTTTC CTCC ACGG TCTTTTGTA AT TTG
TTTGGCACTTTCATTCCCTC CTTACTTTC TT CAAAA-- TC- ----
GAM6453 21522 GCAAGGAAATTACAGTTAGA A ACAGT-- CAC- CCCGAAGC
GGTCACAACTGCCCGAAGCC GCA GGAAATT TAGAGGT AACTG
AGTTCTAAATTTTTATGAAG CGT CCTTTAA ATTTTTA TTGAC
CCAATTTCCCTGC C CCGAAGT AATC --------
GAM6455 1657 TGGGGCACTGAGGCCCGGGA TGAG C A A ACTGGACA
TGTATGCACTGGACAGCAGC TGGGGCAC GCC GGG TGT TGC
AACCCAGGCATTTGTGCCCC ACCCCGTG CGG CCC ACG ACG
A TTTA A A - --------
GAM6456 19241 GCTTCCTTGTCTTTTGCCTC TCC TCTTT C T C ---- T T TCGGTTC
ATATCGTCAGGTAGCTAGTT GCT TTG TGC TCA AT GTC AGG AGC AGTT
TCGGTTCAGCTGCTCCTCCC CGA AAC ACG AGT TG CAG TCC TCG TCGA
AGACAGTTTGATGCATCTCA CTT TCT-- T T A ACCC - - -------
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GAM6457 2721 CGTTCCTTCCCAGCCTCAGC TCCC T C GG TGCAGCCCCATC
CCACGGCAGGGGTGCAGCCC CGTTCCT AGCC CAGCC ACGGCAG G
CATCTTTCTGCTGTAGGCTG GCAGGGA TCGG GTCGG TGTCGTC T
GGCTACAGGGACG CA-- - A TT ----------
GAM6460 10492 GGCATGGAGGACGCCTTCAA A A C - AC GG CCA AG- ATG
CAAGGGACGGGCCAATTTCT GGC TGG GGA GC CTTCA AAG ACGGG ATTTCTC GG
CAGGGATGTCGGAGAGGAAT CCG ACC CCT TG GAAGT TTC TGTCC TAAGGAG CT
GACCTGTTTCTTTCTGAAGT A A - T CT TT AG- AGG ---
GTTCCACCAAGCC
GAM6461 20319 ATGGTGACAACATGCTGGAG AA-- G -- T TAACAT
CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GGAGCCAAG GC
GTTCCACGGGATGGAAAGTC TGCCACTG GTA GG CCTTGGTTC CG
ACCGT AAAG G CA - ------
GAM6462 14172 CGGGAGCCGCATGGAGCCCC G GA C C ACGG
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CTGGGCGACGTGGGTTTCTG GTCTTTGG GTGC CGGG CCC TCGTC
- AG T - ----
GAM6463 18243 CTGGGTATAGGACCGTCGTG TA- - -- TG G - TAACCCCT
AGACATGGTCAGTTAACCCC CTGGGTA GG ACCGT CG A ACATG GTCAGT
TACTGATGCATGTGTTGTGC GACTCGT TC TGGTA GT T TGTAC TAGTCA
CATGGTACTCCCTGCTCAG CCC A CC GT G G --------
GAM6464 18910 AGACTGAGGACCAAGACTGA CT-- AGACT -- CT C TTTCCCTTATCTCCTTTC
CACAGACTCTCTTCTGTTTC AGA GAGGACCA GA CACAGACT CTT TG
CCTTATCTCCTTTCCAAAGT TCT TTCCTGGT CT GTGTCTGA GAA AC
AAGTCTGTGAATCTACCCTG TCCT CCCAT AA AT - ----------
GTCCTTTCCTTCT
GAM6468 1658 TGCTCAGACTGGGTGTGCTG T A GTG TG T- GGACTG
GGGCTCATGGTGGACTGATC TGC CAG CTGGGT C GGGC CATGGT
ATGCTGCCCTGGGACCCAGC ATG GTC GACCCA G CCCG GTACTA

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        TGGTA            -  -    G-- GT   TC    ------
GAM6469 17116 AAGGATACCAGGATGGTTAC   A  -  - A   T --- G    TACC
        CAGGATGACTACCGTCATCA AAGG TA CCA GG TGGT AC  CA GATGAC
        TGAGAGTTATCACCATGGAT TTCC AT GGT CC ACTA TG  GT CTACTG
        ACCCTT             C A  A -  T AGA  A    ----
GAM6470 13767 CAAGATTCTTGATACTGCAC   A    AT-- T- A---     AGAT
        TCTCTAAGATTGGAGAGAAA CAAG TTCTTG   AC  GC   CTCTCTA
        AGCCTGTTTACCAAGGAGCT GTTC AGGAAC   TG  CG   GAGAGGT
        TG               G    CATT  TC  AAAA     ----
GAM6471 16870 GGCTCTTGGCTCTGCTCTCT   CTT   T  TCTCCT  C     TGCCC   TCTGCTATGT
        CCTCCCTCTCATCTTCTGCC GGCT  GGCTC GCTC    CCCT TCATCTTC    TCCCC
        CTCCCCTCTGCTATGTGGGG TCGG  CTGAG TGAG    GGGA AGTAGAAG    AGGGG
        AACATGAAGATGAAGGGCCT   C--   -  TCCTCC  -     TACA-    ----------
        CCTGAGTGAGTCCGGCT
GAM6472 13209 GGGCTGGTGGAAGCCACGAT   -   ---- A   CGA   CCT-  -  AGCT
        GCCACCTGGCGTGCAGCTGC GGG CTGGT   GGA GCCA  TGCCA   GGC GTGC
        ACTGCCTCTATGGCACTGGC CTC GACCA   CCT CGGT  ACGGT   CCG CACG
        GTCCCCACACCAGACTC    A   CACC  G   C--   ATCT  T   ----
GAM6473 15816 CTCGAGCGGCTCGAGGTGGT  ---    TCGA   T  GG       CGTGCGAA
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        CGAAGGTGCTTTCGGGGTCC GAG  CTCGTCG   TCGCC TGG  GGCTTTCGTGG
        GCTGCTGCTGCTCTGTGAG   TGT    TCG-   -  --       --------
GAM6474 11515 TGCGTTGTCAGTGGCCCGGG   T  AGT G    GC  A    ACAGGC
        TGCGGACCCAGGACAGGCCT TGCG TGTC  G CCCGGGT  GG CCCAGG
        TGGGCCACCCGGGGCGGCAT GCGC ACGG  C GGGCCCA  CC GGGTTC
        CGCG               T   --- G    -- -    ------
GAM6475 14933 TCTTCAGTCAAGTGATTTCA   T   ---   GA  TC    AGCAATGG
        TTGGCAGCAATGGGCCAGTA TCT CAGT  CAAGT  TT  ATTGGC
        TGAGAACTTGAAAGCTGCAG AGA GTCG  GTTCA  AG  TGACCG
        A              C   AAA    AG  TA    --------
GAM6476 18328 GTGCAGCTGGAATTCTTTCT   A- T  A-   TTCTA  T    AATA     GAACCAGA
        AACCTCACTTGCAATAATTA GTGC  GC GGA  TTCT    ACC CACTTGC   ATTATTA
        TTAGAACCAGATGATGGTCT CATG  TG TCT  GAGA    TGG GTGAACG   TGGTAGT
        GGCAAGTGGGTGGTATAGAG   CG  T  CG   TATGG  -    GTC-     --------
        GCTCTTGTGCGTAC
GAM6477 13789 CGCAGTGAGCACTAATTGTA      AGC  AAT  A-       TGATGGC
        GCCTTTCCACTGATGGCGTG CGCAGTG   ACT  TGT  GCCTTTCCAC
        GAGGGGCCGATACCCAGTCG GCGTCAC   TGA  ATA  CGGGGAGGTG
        CACTGCG              GC-  CCC  GC       -------
GAM6478 7147  CTCTGAGCCTTATAGATTAC   GAG  TA    A TATCCT   TAAAAACT
        ATATCCTTAGCTAAAAACTG CTCT  CCT  TAGATT CA    TAGC
        CTGCATTTGGAGTCTAAGGA GAGG  GGA  ATCTGA GT    GTCG
        AAGGAG             AAA  --    G  TTAC--   --------
GAM6479 4889  CCTTGTGAAAGTTATAATGT   -  A  ATA-   G  GG    GGTAAACAA
        AGTAGGAGATGGGGTAAACA CCTT GTGA AGTT   ATGTA TA  AGATGG
        ACTATCTGATGTACATATTC GGAG CACT TCAA   TACAT GT  TCTATC
        AACTGTCACTGAGG        T  G   CTTA   - AG    ---------
GAM6480 21707 TCTCCCAAAGTGTTGGGATT   CCCAA  G  -    ---    GAGGCACT
        ACAGGTGTGAGGCACTGCAC TCT    AGT TTG GGATTA   CAGGTGT
        CTGGCCTAATCCACAAACTG AGA    TCA AAC CCTAAT   GTCCACG
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TCTAGA TCTG- - A CCG --------
GAM6481 3071 GGATGGGCTTCCCAAGATGC --- C- T CTT- T CAGAAAC
CTTGCACTGTCCCAGAAACG GGATG GGCTTCC AAGA GC GCAC GTCC
GATGTGCCCCAGCTCTTCCG CCTAC CCGAGGG TTCT CG CGTG TAGG
GGAGCCTTACATCC ATT CC - ACCC - -------
GAM6482 1671 GCCCCTCACCCAAGTGGCGG CAC - GCA- AAC- A TG GGAA
CATCTTAACGGCATTGGTGG GCCCCT CCAAGTGG CG TCTT GGC T GT
AAGCTGGGGTCAGAAAAGAG CGGGGA GGTTTACC GT AGAA CTG G CG
AAATGACCATTTGGAGGGGC --- A AAAG AAGA G GT ----
GAM6483 18100 CTTCTTCAGTGAGACGGGCG T GAC- CG ----- T CCG
CTGGCAAGCACGTGCCCCGG CTTC TCAGTGA GGG CTG GCAAGCACG GCC
GCTGTGTTTGTAGACTTGGA GAAG AGTTACT CCC GGT TGTTTGTGT CGG
ACCCACAGTCATTGATGAAG T GACA AA TCAGA - ---
GAM6484 7393 TGTGAGCATGTGTGTGTGCA AG ------ G - - G ATGAA AACATA
TGTACCGGGGAATGAAGGTG TGTG CAT GTGTGT TGCA TGTAC CG GGA GGTG
AACATACACCTCTGTGTGTG ACAC GTG CGCACA ACGT ACGTG GT TCT CCAC
CACTGCAGACACGCCCCAGT CT TGACCC G C T G ----- ------
GTGTCCACA
GAM6485 915 TAGCTGGGACTACAGGCGCA ACT CGCAT CC TG---- TTTTTATAT
TGTGCCACCCCTGGCTAAGT TAGCTGGG ACAGG GTG ACCCC GCTAAG
TTTTATATTTTAGTAGAGAT GTCGACCC TGTTC CAC TGGGG TGATTT
GGGGTTTCACCTTGTTACCC AT- ----- TT TAGAGA ---------
AGCTG
GAM6486 5317 GGCGGCGGCTGAACCGGGGC G GAA GG--- - --- GAAG CTCCC
CTGCGGCGGAAGCAGCACTC GGCGGCG CT CC GGCCT GC GGCG CAGCA
CCTGCTGAAGCGCCTGCGCA CCGCCGC GA GG CCGGA CG CCGC GTCGT
AGGCCAAGAAGGAGGCGCCG G --- AAGAA A CGT GAA- -----
CC
GAM6487 11658 AGACCTTGTCACATTCATGA GTCACAT TG TGT GC TCTCCAGTAT
CATTTGTAAGGCTTCTCTCC AGACCTT TCA ACATT AAG TTC
AGTATGAATTCTTTGATGTT TTTGGAA AGT TGTAG TTC AAG
GTGAAAGGTTT ------- GT T-- TT ----------
GAM6488 2444 GTTTTATTAAAGTTATTTAC ATT ----- TT GCAATATTTACAGAGAAA
ATTTAATGGCAATATTTACA GTTTT AAAGTT ATTTACAT AATG
GAGAAACATTGTGTAAATCT CAAAA TTTTAA TAAATGTG TTAC
TAAAATTTTTTAAAAAC ATT AATTC -- ----------
GAM6490 9024 GGGGCCTGTGGCAAAAGAAC - CAAA AACT C- GCC ACCCTCTG
TGAGCGGACTGCCATCTGGA GGGGCCTG TGG AG GAG GGACT ATCTGG
CCCTCTGCCGGATCAGGTCC CCCCGGAC ACC TC CTC CCTGG TAGGCC
TCCTCCCCCTCCACCAGGCC C ---- CCC- CT AC- --------
CC
GAM6491 4752 GAACGACCTGAACCTCTGTC A GAAC - ACCAAC AAC TG ATTAATTG
TTCGACCAACTGAAGCAACT GA CGACCT CTCTGT CTTCG TGAAGC T GG
TGGGATTAATTGCTTGATTA CT GCTGGA GAGACA GAAGC ACTTCG A TC
GCTTCACGAAGCACAGAGAT C ATA- C ------ ATT GT --------
AAGGTCGCTC
GAM6492 3398 GCTTATTTAAGTGTCCACTT AT --- A C- C TCCTATTCTT
TCTTTATCCCATCCTATTCT GCTT TTAAGT GTCC CTTT TTTATC CA
TTGTGATAAACCAGAGGGAT TGAA AATTCG TAGG GAGA AAATAG GT
CAGGCTTAACCAAGT CC GAC - CC T ----------

GAM6493 14276 GCCTCTTGTGGTCGGAAGCA C GG- AC G G -- T A GG ACCTTG
CCGAGTGTGCTACTTCTATC GCCT TTGT TCGGAAGC CGA TGT CTA CT CT TCCGT TCGT
CGTGGTCGTACCTTGATGGA CGGA AACA GGCCTTCG GCT ACA GAT GA GG AGGCG GGTA

GCGGAAGGCAGATTAGACAT - AAA GA - - TA C A A- ------
CGAGGCTTCCGGAAAACAAA
GGC
GAM6496 17083 GGCCCAGCGGCCTCTTTCCT A -- CTTT - C-- ACGGGG
ACGTACCTCGGACTGACGGG GGCCC GCG GCCT CCTACG TAC TCGGACTG
GCGGTCTGACAAGTGCCGTG TCGGG CGC CGGG GGGTGC GTG AGTCTGGC
GGTTGGGCTTCGCCGGGCT C TT TT-- C AAC ------
GAM6498 7779 TATTACGTTGAATGAGAGTA C AGTAGT G -- --- T--- GTCA
GTGAGAGTGGGCATCCTTGT TATTA GTTGAATGAG GAGA TGG GCA TCCTTG CTT
CTTGTCAAAGTTCTCAAGGA GTAGT CGACTTACTC TTTT ACC CGT AGGAAC GAA
GAATGCTTCCAGTTTTTACT A AT---- G TT AAG TCTT ----
CATTCAGCATGATG
GAM6499 455 CTGTACGGCCCCACCAACTT CCAC AC C C TCAC
TGCCCCCGTGGTCACCCACG CTGTACGGCC CA TTTG CC CGTGG
TGGCCAGGAATGCAGCGGCC GACGTGCCGG GT GGAC GG GCACC
GTGCAG CGAC AA C T ----
GAM6500 16122 TGGCCATTTGTATCACTCAT ATTT- A T--- GCCTACAAAACAA
TCTGCCTACAAAACAAAGAA TGGCC GT TCAC CATTCT
TGCACTGTGGAATTTGAGGG ACCGG TA GGTG GTAAGA
CCA GAGTT A TCAC ----------
GAM6501 3110 GAGAATCGCTTGAACCCAGG AA GAA-- AGG GT A- CAAGATC
AGGTGGAGGTTGCAGTGAGC GAG TCGCTT CCCAGG TGGAG TGCAGTG GC
CAAGATCGCGCCACTGCACT CTT AGTGAG GGGTCC ACCTC ACGTCAC CG
CCAGCCTGGGCGACAGAGTG AG ACAGC G-- -- CG -------
AGATTC
GAM6502 1769 TCGCTATGGAATGGGAACGT - AT GG A G GAGAG CG - CCAGCA
CTGTTGAGAGAGCGGCAGCC TC GCT GGAATG A CGTCT TT AG G CAG
AGCACTGATTACTACAAGAG AG CGG CCTTAC T GCGGA AG TC T GTC
AGGCGATTTCATTCCTGGGC T GT TT A G AACA- AT A ------
TGA
GAM6503 9156 TGGTGAAGTATTTTGTTACC TT CC TCT T CTGTATTTTT
TCAGTCTTGTATCAAGTTGC TGGTGAAGTA TTGTTA TCAG TGTA CAAGTTG
TGTATTTTTCAGCTTGTTAC ATCACTTTAT AATAAT AGTT ACAT GTTCGAC
ATTGATAATAATTATTTCAC T- -- --- T ----------
TA
GAM6504 23004 GCTTCATCCTGTTCCACAAT - ----- C - TCC- TATAACAAGAACAC
CCTGAGTATAACAAGAACAC GCTT CA TC TGTTCCA CAA TGAG
CTCGAAGTTTGATGGGACAA CGAA GT AG ACAGGGT GTT GCTC
GACTCTATGAAAGC A ATCTC A A TGAA ----------
GAM6505 467 TGAGGGGTGAATTCATGATC GAATTCA A TTA CGCT
CTCGCTTACTGACTTCCTGC TGAGGGGT TG TCCTCGC CTGACTTCCTG
GCTCGGGGAGTCAGGTGCGG ACTTCCCG GC AGGGGCG GACTGAGGGGC
GGAGCGGTTAAGCCCTTCA AATTG-- G TG- ----
GAM6507 2741 CCAGAGGAAGAGCGCTTCGA AA T--- AG TC GAA
GCTTCTTCAAGGAACTTAGA CCAGAGG GAGCGC TCG CTTCT AAG
GAAGAGCGGCATTGTGCTCC GGTCTTC CTCGTG GGC GAAGA TTC

TTCTGG -- TTAC GA GA ---
GAM6510 18616 GATTACAGATGTGAGCCACT A A C C-- - A --- A GC AAA TAATACAC
GCACCCAGCCTGGATTTTGG GATT CAGATGTG GCCA TG AC CC GC CTGG TTTTG TCTT CAT

CTCTTAAACATTAATACACA CTAA GTCTATAC CGGT AC TG GG CG GACC AGGAC AGGA GTA

CATATGAAAAGGACACAGGA A - C CTT A A ACC A AC AAA --------
ACCAGCCAGCAGGAGTTTCC ACAT
ACTGGCCATATCTGAAATC

GAM6511 22428 CCAGTCAGCTCAGGCCTCTA CA GCC TAT CAAA AC - TTCTT
TGGAGCAAAGAAACTGGTGT CCAGT GCTCAG TC GGAG GAA TGGTG TCC
CCTTCTTGGAGCGCTGCCTT GGTCA CGAGTC AG CCTC CTT GTCGC AGG
CATCTCCTTGAACTGAGCCA AC A-- TT- TA-- CC G -----
ACTGG
GAM6513 20567 CCTCTCAAAGTGCTGGGATT C----- G T- GTGAGCAAGCCTA
ACAGGCGTGAGCAAGCCTAG CCTCT AAAGT CTGGGA TACAGGC
CTTGTATTTCCTAGACTTTT GGAGA TTTCA GATCCT ATGTTCG
ATATAAGAGG ATATAT - TT ----------
GAM6514 20086 ATTTCCCCCTCCTTTGGGTG CC TCCT GA- TC TTAGC
AATTCCTCTCTTGATTAGCT ATTT CCC TTGGGT ATTCC TCTTGA
CAGGAACGGAATGTGATCCA TAAA GGG AACCTA TAAGG AGGACT
ATCTGGGCAAAAT AC TCT- GTG CA -----
GAM6515 5596 GCCAGGACCAAGAGACAGGC CCAA - CT G------ ACAAA
AGCTCACCAGGGTGGACAAA GCCAGGA GAGACAGG CAG CACCA GGTGG
TCGCCAGAGATGTGGTGCAT CGGTTTT TTTTGTCC GTT GTGGT CCGCT
TGTCCTGTTTTCACTTTTGG CAC- T AC GTAGAGA -----
C
GAM6516 14806 GGGGCAGGGCTGCCTGCTGC GCCTGC TT GGGTCTTG
AGCTTGCCAGGGGTCTTGTT GGGGCAGGGCT TGCAGC GCCAG
GGCGTTGTACTTGGTCTTGC CCCCGTTCTGG ATGTTG CGGTT
CCC TTC--- -- --------
GAM6517 6753 ACTAGCAAAGTGGATTGCTG CAA - ATTG- C AA TTCA
ACAGAACGGATGTTCATATT ACTAG AGT GG CTGA AG CGGATG
CGGGTTTTCAGACCACCCAA TGGTC TCA CC GACT TT GCTTAT
CTACTCTGGT TCA A CACCA T GG ----
GAM6518 10577 TGCAGCTATGCTCTGAATGA T- CT ATT CTGA
TTTCATTCCTGAGAGTGATA TGCAGCTA GCT GAATG TCATTC
GCATTCTGGTCCTGGCTGCA ACGTCGGT TGG CTTAC AGTGAG
CC T- GAT ----
GAM6519 5438 GCCTGCCGGGGGTGGTGGCA TG GG G - A AGA GGGGAA
CTGAGAGCCTGGGGGAACAG GCC CC GGGT G TGGC CTG GCCTG
GCGCCAGGCCAGTGGCCCAA CGG GG CCCG T ACCG GAC CGGAC
GGACGGC CA AA G G - CG- ------
GAM6520 17476 GGCGTCGTTTTTCTTCTTCC C T TTCT CT TTTTT CTT
AGGGCTCGTTTTTTGGCTTC GGCGT GTT TTC TCCAGGG CG TGG
CATTTCCCGTTCCCTGGATT CTGCG CGA GAG AGGTCCC GC ACC
CGAGCAGCCGCGTC C C CTT- TT CCTTT ---
GAM6521 15104 CCCTGCCCCCAGCCGTCTTT CCA C TT -- GCG- AAAATCTACAA

CTGGGGCTTGCGCGCAAAAT CCCTGCCC GC GTC TCTGGG GCTT CGC
CTACAAGCGGAGAAAGTGAC GGGGCGGG CG TAG AGATCC TGAA GCG
CTAGAGATTGCAAGGGCGGG AA- T -- AG AGAG ----------
G
GAM6522 3679 TGTGGCGAGTTTGACAATGC - A CA G CGCCA-- TG T GGACCGAG
TGGCGCCAATGATGAGTGTG TGT GGCG GTTTGA AT CTGG A ATGAG GT
GACCGAGACCCTCATTGTGC ACA CCGC CGAACT TA GACC T TACTC CA
TCTTTCCAGATCCTCAAGCC G C CC - TTTCTCG GT C --------
CGCCGACA
GAM6523 19158 GGGAACAAACCTCTCACCTC AAACCTCTCAC GCC G ACCTC
AGGCCAGAAGGGGATGACCT GGGAAC CTCAG AGAAG GGATG
CCATTTGCTTCTCTGAGTAG CCTTTG GAGTC TCTTC TTTAC
TTTCC AT--------- --- G -----
GAM6524 10802 CCTAAACAGATGAAAAAATA TAAA A AAAT GA T - ---- CAT
GGAGGTGGGCTGGATGTGGC CC CAG TGAAA AG GG GGGCT GGA TGTGGCC
CCATGGCTACAGGTTTCCTG GG GTC ACTTT TC TC CCCGG CCT ACATCGG
GCCCCTCACTCATTTCACTG TG-- - AC-- AC - T TTGG ---
GTGG
GAM6525 16780 GAATTTTGTGAAACAGACTT T GAA C- C - C AAATGCCTCCAAA
GTATATTCTATTTTACAACT GAATTT GT ACAGA TTGTATATT TATTT TACAA TAC
ACAAATGCCTCCAAAGTATT CTTAAG CA TGTCT GACGTGTGA ATAAA ATGTT ATG
GTACAAATAAGTGTGCAGTA T AG- AT - C - ----------
TCTGTGAACTGAATTC
GAM6527 21135 GTATGAGGGAAGGGAGGTGG AT T AG TAT A CCA
AAGCTCATATCCCACCCCAG GT GAGGGAAGGGAGG GGA CTCA CCC CC
GGGGTTTTGAGGATCTTTTC CA CTCTCTTCCCTTT TCT GAGT GGG GG
CCTTCTCTCTCAC CT - AG TTT - ---
GAM6528 555 CTTCAATCCTCTGTCTCTCG ATCC TCTCTC G A C AACACGG
AGGAACTAGGCTCCAACACG CTTCA TCTG GAG AACT GG TCC
GGGATCCAGGTTTTCAATCA GAAGT AGAC CTT TTGG CC AGG
GATTGTGAAG GTT- TAA--- - A T -------
GAM6529 19519 CCAGAATGTTTTGAGCTACT AA-- GAGC GGGA TAAAG ATGGAAA
TCGGGATACTTGGTAAAGGG CCAG TGTTTT TACTTC TACTTGG GGGGCT
GGCTATGGAAAGGTTCTCCA GGTC ACGAGG ATGAAG ATGAACC TCTTGG
AGTACGAGAAGTAACAGGAG ATAA ACA- AGC- ----- -------
CAAATACTGG
GAM6530 895 TCCGAAAGAAGCTGGTGATC AAA GATC CCT-- TG AAGA
GTTGGGGATGGTGCCTGTGG TCCG GAAGCTGGT GTTGGGGATGGTG G GG
GAAGACCTGCCTCCTCATCG AGGC CTTTGACTA CGACTTCTGCTAC C CC
TCTTCAGCAAGGATCAGTTT --- GGAA TCCTC GT ----
CCGGA
GAM6533 13507 CAGACTGGGCCAATGTCCAC C -- CACAAAGAA - CA- ACCGATGTCAAAA
AAAGAATTCCTGGTCAGCAC CAGA TGGGCCA ATGTC TTCCT GGT GCACC
CACCGATGTCAAAAGGTGCA GTTT ATTCGGT TGCGG AAGGA CTA CGTGG
ATATCAAGGAAGGGCAAGGC A AG AACGGG--- A TAA ----------
GTGATGGCTTAATTTG
GAM6534 14519 GGATTATCCTTTTCTGGAGA TTAT AA TCTAGACCACG AATTG
AGTAGTCTAGACCACGGCAA GGA CCTTTTCTGGAG GTAG GC
TTGGCAGAACACATTCTATG CCT GGAGAGGACCTT TATC CG
GTTCCAGGAGAGGCCATTCC TACC GG TTACACAAGA- -----

GAM6535 8013 GTCTACTTTGGCTACTACCA CT------ ATG- C AC TATG
TGGGCTTCTGGGGGAACAGG GTCTACTTTGG ACTACC GG TTCTGGGGGA AGGGC
GCTATGGCCTTCTCTTCCAG CGGGTGAAACC TGGTGG CC AAGACCTTCT TTCCG
AAACCACTGGGTGGTCCTCA AAAACTCC GTCA A C- ----
AAACCAAAGTGGGC
GAM6536 8254 CGTGCAGTCTTTGGTGTTCA CTTT G AG C - GGCC
GAGCACAGCCGCAGGCCTGT CGTGCAGT GGT TTC AGCA AGCC GCA
GGGCTCTGCTGGGGGACCCT GTACGTCG CCA GGG TCGT TCGG TGT
GTGCTGCATG TGTC G G- C G ----
GAM6537 9733 TCTTCCATTGACATAAAAAT A CATAAA- C AG--- TGTGGGAAAAT
AGTCTCAGGCTTGTGTGGGA TCTTCC TTGA AATAGT TC GCTTG
AAATTAAGTATATAGATACT AGAGGG AACT TTATCA AG TGAAT
ATTGCATTTATCAAGGGAGA - ATTTACG T ATATA ----------
GAM6539 11773 TCTTCTCTGTAGTGGATGTA C AGTGGA - TCCCAAATAAAT
CTACAGCTCCCAAATAAATG TCTTCT TGT TGTA CTACAGC
CTGTAGATGCAAATGGCAAA AGAAGA ACG ACGT GATGTCG
GAAGA A GTAA-- A ----------
GAM6540 16313 GCGTCGCCGCGCCGCAGGGC C ------- CATCACGCT
CAGCATCACGCTCTGGCTCT GCGTCGC GCGCC GCAGGGCCAG
GCATCTCGCGGCGCCGCGAC CGCAGCG CGCGG CGTCTCGGTC
GC C CGCTCTA ---------
GAM6542 4051 GCAAGTGAATGTCTTGCTGA -- - -- T TCTAGGGGTT
ATGTGTCTAGGGGTTCATCT GCA AGTG AATGTC TTGCTGAA GTG
TCAGTAATCGACATTCCACT CGT TCAC TTACAG AATGACTT TAC
AGTGC GA C CT C ----------
GAM6543 20261 CACCCTCACCAAGGTTAAAT CT CC - ATGCC CC TTCATC
GCCTCCCTCTCGGTTCATCC CACC CA AAGG TTAA TC TCTCGG
TGAGAAAGATGAGTTAATCC GTGG GT TTCC AATT AG AGAGTC
TTTTTGGAGGTG AG TT T GAGT- AA ------
GAM6544 13894 GTGTAAAATTATTGCTTATG ATTAT TAT A C G TGCTCT
TCATTTCTTAAGCAGTTATG GTGTAAA TGCT GTC TTT TTAAGCA TTA
CTCTTAATGCTTAAAAGAAG CACGTTT ACGA CGG AGA AATTCGT AAT
GCTAGCATTGTTTGCAC GTT-- T-- A A - ------
GAM6545 2052 TCTTGTGTTGAGACTTCGTG T GAGA GT--- C AAAGGAAGAAGAAG
GTGGTGCTAAGAAAAGGAAG TC TGTGTT CTTC GGTGGTG TAAGA
AAGAAGTCTTACACCACTCC AG ACACGA GAAG TCACCAC ATTCT
CAAGAAGAATAAGCACATGA T ATAA AACCC - ----------
GAM6546 8289 ACCAGTGGATCGAGCAGGAC - ATCGAG TG AAGTA GAGAG
ATGGAGAAGTACATCCTGAG ACCAG TGG CAGGACA GAG CATCCT
AGGGGATGAGACGTTTGCTG TGGTC GCC GTCCTGT TTT GTAGGG
TCCTGAGCCGCCTGGT C GA---- CG GCAGA -----
GAM6547 19399 GGATGATGGCCCACCGATGG --- CAC A C- GCAA-- TTG
GCGGGTGGCAACTTCTTGGA GGAT GATGGCC CG TGGG GGGTG CTTC
AGCACTTACACCCCACCCGA CCTA TTACCGG GC GCCC CCCAC GAAG
CGTGGCCATTGTAATCC ATG T-- A AC ATTCAC ---
GAM6548 4291 TGGCTATTTACCAAAATTTA TA AAATTT CT A-- A- ATTTA
AGCTGAGCCAAACATGATTT TGGCTATT CCA AAG GAGCC AAC TG
ACAGGGTTCGAGGTTCCCTT ACCGGTAA GGT TTC CTTGG TTG AC
TACTGGCAATGGCCA C- CAT--- C- AGC GG -----
GAM6551 5907 GTGATGTCATGTGATGGGTG A G G A G GTGATGT

ATGTCATGTGATGGGTGATG GTGATGTCATGTG TG GTGATGTCAT TG TG GTGATGTCAT

TCATGTGATGTGTGATGTCA TACTGTAGTACGT GT TACTGTAGTG GT GT TACTGTAGTG
TGTGATGGGTGATGTCATGT A G G A G -------
GATGCATGATGTCAT
GAM6553 18459 CTTACAAAGTATATCTAAGG AA ATA TT --- AGAT
ATTATTCTGCTGAAGATTCA CTTAC AGT TCTAAGGA ATTCT GCTGA
GTTTAAGAGTTTCCTTGGGA GAATG TCA GGGTTCCT TGAGA TGACT
GAACTAAGTAAG AA AGA T- ATT ----
GAM6555 22342 CCTCTGTCTCCGAGCTCGCC CTCC GC- G TAC - CCTCATTCT
TGCATCTACTCGGCCCTCAT CCTCTGT GA TCGCCT CATC TCG GC
TCTGCACGACGATGAGGTGA GGAGGCA CT AGTGGA GTAG AGC CG
CAGTCACGGAGG ---- GAC - C-- A ---------
GAM6556 7759 GGCGTTCAGCAGAGTCAGGG ---- - - C GATG C TATATGATCC
ATGGGTCCATTATATGATCC GGCGTT CAGCA GA GT AGG GGT CAT
ATGAACCAGAACCTCACATC CCGCGG GTCGT CT CA TCC CCA GTA
TTGCTGTTCCGGCGCC CCTT T A C AAGA A ----------
GAM6557 2937 GGGAGCATGGGCACCTCCTA -- AC CT TCC CT CCATTTGTCCCCT
GGTCCGGGCTGGCTTTCCAT GGGAGCA TGGGC CTC AGG GGGCTGG TT
TTGTCCCCTAATTCCAGTCT CCCTCGT ACCCG GAG TCT TCTGACC AA
CTCTCTGAGGCCCAGCTGCT CG -- TC C-- TT ----------
CCC
GAM6558 21694 TCCAGCTATGTAACCTGCTA -- TATGTAA TACA A -- CTGCT
CAAATGTTACAACCAGCTGC TCC AGC CCTGC AATGTT CAA CCAG
TCTGGCTTTGAACATTCACT AGG TCG GGGCG TTACAA GTT GGTC
GCGGGGCTTAGGA AT ------- TCAC - TC -----
GAM6559 17740 GCCCAGCCCCTGGCAGCACC CC -- CA GATGC A T- CTCTCACCA
CACGATGCGGGACCTGCCTC GC AGCCCCT GGCAG CCCAC GGG CC GC
TCACCAGCCTGGCCCTAGTG CG TCGGGGG CCGTC GGGTG CCC GG CG
GGGTCTGCCCTGGGGGCTCT TC TC TG AT--- - TC ---------
GC
GAM6560 16081 TCCCTCTTGCGCTGTATGAC CT C ATGACATCG- -- AA ACTC
ATCGTCCTCAAACCACTCGG TCCCT TG GCTGT TCC TCA CC
CCTGATTGGAAACCCAGAAC AGGGA AC CGATA AGG AGT GG
ATAGCCACAGGGA C- - CAAGACCCAA TT CC ----
GAM6561 6508 TGCTGTGATCTGATTGGAGG - ATCT TG - - AGTTTCTG
AGGGACAGTTTCTGGTACCC TGC TGTG GAT GAGGA GGG AC
ATCCTCTGATTTATACATAT ACG ATAC TTA CTCCT CCC TG
GCA T ATAT GT A A --------
GAM6562 17792 GTAAGTTGGTTCTGTTTTGA AGT TTTGA CAC AA - TGAAGT
GCTTCACTGAGGAAGCACAG GTA TGGTTCTGT GCTT TGAGG GCACAGC TGTTGGT
CTGTTGGTTGAAGTATTAGT CAT ACCGAGACA CGAA ACTTC TGTGTCG ATGATTA
ATGCTGTGTCCTTCATAAGC GGT ----- T-- C- T ------
ACAGAGCCATGGTAC
GAM6563 22456 TTTGTTCATAATCCCAAACA ATAA- AAACAAG TG - GCAGCAACAGGA
AGGGCCCTGCTGGCAGCAAC TTTGTTC TCCC GGCCC C TG
AGGACAGGTGGGGCCAGGAC GGACGAG AGGG CCGGG G AC
AGGGAAGCTGGAGCAGG GTCGA ACAGGA- GT G ----------
GAM6565 6506 CGAGGGCCCTCCGTGCCGCC G CGT- A--- AA TG ACAC
GGCGCCATGGGCAATTGCCA CGA GGCCCTC GCCGCCGGCGCC TGGGC T CC

CACGGTGGGGCCCAACGAGG GTT TCGGGGG TGGTGGTCGCGG ACCCG G GG
CGCTGGTGGTTTCAGGGGGC G ACTT AGCA G- GT ----
TGTTG
GAM6566 14913 GAGTGGTAGCTGAGCTTCAG T GA TCA GG GCTTCATTAACAACTATA
GCTGGGACGTGCTTCATTAA GAG GGTAGCT GCT GGCT GACGT
CAACTATAACGTCAGCCCAG TTC CCGTTGA TGA CCGA CTGCA
TGGAGTTGCCCTT - GG C-- -- ----------
GAM6568 10366 GAGGCAAGGACTTGCTCTGT AA CTT GTTA CTA-- -- C AATCATA
TACCCAGGCTAAAGTGCAGT GAGGC GGA GCTCT CCCAGG AAG TGCAGTGG GC
GGCGCAATCATAGCTCACTG CTCCG CCT CGAGA GGGTCC TTC ACGTCACT CG
CAGCCTTGAACTCCTGGGCT C- TCT ACTC TCAAG CG - -------
CAAGAGCTCTTCCCGCCTC
GAM6569 14676 GGACAGGAACACTGACCCCT -- A ------ GAAGTCGAGCCT
GAAGTCGAGCCTGGGGGTCT GGACAG GA CACT GACCCCT
AACATAGTGGTCATTTGTCC CCTGTT CT GTGA CTGGGGG
TA G TACAAT ----------
GAM6570 17338 GCTTTAACCCTTCTACAGAC TTA TC GACA CC GGT
ACGGGCCCTCTCCTCGGTGA GCT ACCCT TACA CGGG CTCTCCTC
GGAGGGACCTCGGGCATGTG TGG TGGGG GTGT GCTC GGGAGGAG
TGGGGTGGTGGT TGG T- ACGG CA ---
GAM6571 3303 CCAAACTGAATAAATAGCAT GAATAAA CCC-- ACGAGAGCTA
CCCTCTCCCCACGAGAGCTA CCAAACT TAGCAT TCTCCCC
GGGGAGACTCATGTGCTGAG GGTTTGA GTCGTG AGAGGGG
TTTGG ------- TACTC ----------
GAM6572 79 AGGATGGAACAGGAAGGTAT T A A -- C CAGTATCTTAACCCTTTCA
GTCCTGTCAGTATCTTAACC AGGA GGA CAGG AGGTA TGTC TGT
CTTTCAACAAGACATTTACC TCCT TCT GTTT TCCAT ACAG ACA
TATTTGTCTTTCCT T - A TT A ----------
GAM6573 6534 GGTTGCTGCTGCCCAAGGAC TG -- GC A A GA GGACGCAGGCA
CGCGGAGTCGGACGCAGGCA GGT CT GCT CCA GG CCGCG GTC
GACCATGTGGACCCTGGTGA CCG GG CGA GGT CC GGTGT CAG
GCTGGGTGGCC GT GT GT C A AC ----------
GAM6574 17642 TGGCCGGGCGCGGTGGCTCA CGCG - ------- - A CAG GAGG
AGCCTGTAATCCCAGCACTT TGGCCGGG GTGG CTCAA GCCT GT ATCC CACTTTGG
TGGGAGGCCGAGGTGGGTGG ATCGGTCC TACC GAGTT TGGA CA TAGG GTGGAGCC

ATCACAAGGTCCGGAGATTG ---- A AGAGGCC A C TGG ----
AGACCATCCTGGCTA
GAM6575 16875 CCTGCTCTGCCTTCAGACTG TG CT AGACT CTTT CCTCT T- CTACATCTC
CCCTCTTTCTACCTCTCCCT CC CT GCCTTC GCCCT CTA CCC CTAGAA
CTAGAACTACATCTCTTCTG GG GA CGGAGG CGGGG GAT GGG GGTCTT
GCTGGGTTTATAGCTTGGGG GT CC GGGT- TTC- ATTT- TC ---------
CTGGGGGAGGCCCAGTGGG
GAM6576 6590 TGCTAGATAGATGAAAATTT ATAGAT TT AATAAC- TGCC
GAAAAATAACAGAATGCCTT TGCTAG GAAAAT GAAA AGAA
CTTCCTCCCTTTCCCATTTT ACGGTC TTTTTA CTTT TCTT
TTGACCCCTGGCA CCCAGT CC CCCTCCT ----
GAM6577 9286 TCATGTCTAAGTCAGAGTCT -- C- CA G TA- -- GAACAGCTGA
CCTAAAGAGCCCGAACAGCT TCA TGT TAAGT GA TCTCC AAGAGC CC
GAGGAAGCTCTTCATGGAGG AGT ACA GTTCG TT GGAGG TTCTCG GG

GTTGAGCTTGAAACAACTGA CA AA AG G TAC AA ----------
GAM6578 22600 CTGGGTTCAAGCCATCCTCC T A-- - - CCCAC CTCCCAAAAT
CACCTCAGCCTCCCAAAATG CTGGGT CA GC CAT CCT CTCAGC
CTGGGATTACAGGCATGAGC GACCCA GT CG GTA GGA GGGTCG
CACTGTACCCAG T CAC A C CATTA ----------
GAM6579 1477 GTTGTGACAGAATGACCTCA - AA CTCAAG GA- GGAACTA
AGCAGGGAGAGGAAGGGAAC GTTGTGA CAG TGAC CAGG GAGGAAG
TACTTTTTCACACCTGAAAT CAATATT GTC ATTG GTCC CTTTTTC
GTTACTGATTATAAC A -- TAAA-- ACA -------
GAM6580 1430 TATCTTCTTTCATTATGGAG -- T T G - ATGGAGAAC
GGAGGTTTGGCAGATGGAGA TATCTT CT TCATTA GGAG GAGGTTTGG CAG
ACCTGATCGAACTTCGCTTC GTAGAA GA AGTGGT CTTC CTTCAAGCT GTC
TTGGTGATAGCAAAGATG AC T T G A ---------
GAM6582 17772 GTGCCTATGCGGGATCCTGG A GATC - G GA CTC TCAGG
GTGTGCATGACTCCACTCGC GTGCCT TGCGG CTGG GT TGCAT CTCCA GC
TCAGGGCCATGGGGAATGTA CATGGA ATGTC GACC CA ATGTA GGGGT CG
GACGCCAGCTGTACAGGTAC C ---- G G A- AC- -----
GAM6584 11241 TTGGCTGTAACACTGGAGCC AACACT TG --- -- CTG TTTTATATTTTCCA
CTTGGCCACTTAGAAGGCCT TTGGCTGT GGAGCCCT GCCAC TTAGAA GGC AGTTT
GAGTTTTTTTATATTTTCCA AGCCGGTA TCTTGGGG TGGTG AATCTT TCG TCGAA

CCAAGCTGCTGATTCTAAAC ACTT-- -- TCA AG --- ----------
TGTGGTGGGGTTCTTTCAAT CC
GGCCGA

--
GAM6585 3359 CTTGTCCTTCTTCGTGTAGG TC TC T A GAG CATCCAGAC
AGCAGAGAGCCCCATCCAGA CTTG CTTCT GTG AGG GCA AGCCC
CGGGCTTGCCCTTCATAGAA GAAC GAAGA TAC TCC CGT TCGGG
GTCCAAG CT -- T - --- ---------
GAM6586 14455 GCTCCAACCCGGGAAAGAGG AAC AAA - AACTC GGA GTCCCA
GTAACTCCCGGCGGAGGGGT GCTCC CCGGG GA GGGT CCGGC GGG
CCCACCCGGCTGGTAAACCC CGAGG GGCCC CT CCCA GGTCG CCC
ATCAACCCGGAGGGAGC GA- AA- A AAT-- G-- ------
GAM6587 5725 GGACAAGGACCAGGACCTGA - A-- GA GATCA- A A AA AGGACG
TCACCATCATTGGAAAGGAG GGA CAAGG CCAG CCT CC TC TTGGA GG
GACGCCGTCCGAGAGGCACA CCT GTTCC GGTC GGA GG AG AGCCT CC
GAAGGAGCTGGAGGCCTTGA A GGA GA AGACAC - - G- ------
TCC
GAM6588 12649 GCCAGAGGAGCCTGCTGTTT - --- - AACTGAA
TTCAGAACTGAACTGGAAGG GCCAGAGG AGCCTG CTGTTTTTC AG
GCAGAATCAGGCTATCTCTG CGGTCTCT TCGGAC GACGGGAAG TC
GC A TAA G -------
GAM6590 21909 GCCCAGGTTCACAAGTGTGC TCACAAG- TCTTTTG TTCG
ATCTTTTGGCTTCGGCGACC GCCCAGGT TGTGCA GC
CTTTGCGCAAACACACCACC CGGGTCCA ACGCGT CG
TGGGC CCACACAA TTCCCAG ----
GAM6591 6895 GCATTGCCCGGAAGATCAAG AGATCAAG G T- AGGCGC
TCGTGCTCCTGGCAGGCGCG GCATTGCCCGGA TCGT CTCC GGC
CCCTGGAGGATGAGGCCACT CGTGACGGGTCT AGTA GAGG CCG

CTGGGCAGTGC CACCGG-- G TC ------
GAM6592 12511 AAATATTAGTTTGAGGGTTT T GAGG--- TT AA AATTAACTAA
TTTCCAATTTAAATTAACTA AAATA TAGTTT GTTTT CC TTTA
ATAAAGGGGGGAGAATGACA TTTAT GTCGAA TAAGA GG AAAT
CAAAAGCTGCTATTT C AACACAG GG GG ----------
GAM6593 3173 GGCTCGCCGCGCTCGCCCTG CGCG- C - A T AGCCT
CTGACCTGCAGCCTGTGGCC GGCTCGC CT GCCC TGCTG CC GC
GGCACGGGCAGACAACGCGA CCGAGCG GA CGGG ACGGC GG TG
GCC CAACA - C C - -----
GAM6594 22226 TTCAGACCCTCGAGGATTCG CT---- G CG - A TGCT
GTCATATGGGAATTGCTGTT TTCAGACC CGAG ATT GT CAT TGGGAAT
CCTGATGTATACAGTGCTTG AAGTTTGG GTTC TGA TA GTA GTCCTTG
TAAAACGGTTTGAA CAAAAT G CA T - ----
GAM6595 22886 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAAGGAACGAAGAAG
GTGGTGCTAAGAAAAGGAAC TCTTGTGTT CTTC GGTGGTG TAAGA
GAAGAAGTCTTACACCACTC AGAACACGA GAAG TCACCAC ATTCT
CCAAGAAGAATAAGCACAAG ATAA AACCC - ----------
A
GAM6597 1875 GCCAGCGGAACTGTACCATC AA- T --- G A TTG CACAG
GCCGTCCACATTGCTCACAG GCCAGCGG CTG AC CATCGCC TCC CA CT
GGACTGGGAAGGCGATGCCT TGGTCGTC GGC TG GTAGCGG AGG GT GG
GTCGGGAGCTGCTGGT GAG - TCC A - CA- -----
GAM6599 15786 AGACCTACTTGATCCAATAA ACT A AAAAGAA TA ATG- AGAA
AAGAACTCTATGAGGATGTC AGACCT TG TCCAAT CTC TGAGG TC
AGAAGAAAAGCCTTAATGAG TCTGGA AT AGGTTA GAG ATTCC AG
ATTGGAATATGAAGGTCT AGT A ------- TA GAAA ----
GAM6600 15583 CTTGTGGGAGAGATTATCAA T GA ATC -- T --- ---- ATTCCG
GCGTTTGAGCAGAAAGGATT CTTG GGGAGA TT AAGC GT TGAG CAGA AAGG
CCGCCTTGTGGTCTGAAATT GAAC TCTTCT AA TTCG CG ACTT GTCT TTCC
CATGCAAGCTTCCGAAGATC - AG GCC AA T AAA GGTG ------
TTCTCAAG
GAM6601 10291 GCAAGCGGCGCCGCAACCTT AA- -- CAA C AA---- GTGTG
CTGCGTAACCCGTGTGGGGA GC GCG GCGCCG CCTTCTG GT CCC
AGAGGACTTGGAAGGCTGGT CG TGC TGTGGT GGAAGGT CA GGG
GTGACGTGGAGC AGG AG C-- T GGAGAA -----
GAM6602 16273 GAGGAGCCCAGTGGCGCCTT C - GCCTTTTCAG CT ATGC
TTCAGTGGTTCTTGGGATGC GAGGAGC CAGT GGC TGGTT TGGG
TCCGCAGCCAATTAAGCCGA TTCCTTG GTCA CCG ACCGA GCCT
CTGAGTTCCTT A G AATTA----- C- ----
GAM6603 8261 GGAAGGTCACGTGCGACAAA GTCAC -- AAA T AG- TTGA
AGTTCTGGAGGCCTTTTGAA GGAAG GTGCGA CA GTTC GG GCCTT
AGGCACACCGAGCATGTGGT TCTTC CACGCT GT CGAG CC CGGAA
TCGCACCACTTCT AC--- TG GTA - ACA ----
GAM6604 1462 GGTGGGATTGGATTGGAGAT --- TT AG AATAAA - TCATT
GAGGTTCGAATAAAGTCAGT GGTGGGA TTGGA GGAGATG GTTCG GTCA GT
TCATTACTTGACACCCGAAC CCATCTT AACCT TTTCTGT CAAGC CAGT CA
AGTGTCTTTTCTCCAAAACT CAA CT GA CCA--- T -----
TCTACC
GAM6605 17671 CCTCTCCTACATTGAGCACA TCCTACA G C--- - A TC CC CCTAC
TCTTTGAGATCTCCCGCCGT CCTC TT AGCACAT TTTG AG TC CCGCCGT TGA

CCTGACCTACTCACTATGGT GGAG AA TCGTGTG AGAC TC AG GGTGGTA ACT
GGTTGACTACAGAACCCGTG TCTCTAG G CCCA A - TT TC -----
TGCTGAAGATCTCTGAGG
GAM6606 361 AGGTTGAAGTGACCAGAGAT AA - AGAGA GCCA - CAGCCT
TGCGCCATTGCACTCCAGCC AGGTTG GT GACC TTGC TTG CACTC
TGGGTGACAAGAGCAACCGG TCTAAC CA CTGG AACG AAC GTGGG
TCTACAACAATCT AA T CC--- AG-- A ------
GAM6607 11750 GAAGTCTCCTATTTGATCAG AG TAT TG A T TGGGACTT
GTTATTTCCTGGGACTTGGC GA TCTCC T ATCAGGTT TT CC
AAAAATCTGATTGGTGGGGA CT AGGGG G TAGTCTAA AA GG
TCTC CT T-- GT A C --------
GAM6608 9059 GCGGTGGCTGGTTCTGCTAC G TGG- TA AAT GG - - GGCCCT
TTAATGGCGGCAAGACTGGT GCGGT GC TTCTGC CTT GGC CA AGAC TGGTT
TGGCCCTGACTACGTCTGTG CGCCG TG AGGACG GAG CCG GT TCTG ATCAG
AAGCCCGAGATGCAGGAAGG G TGGA TA C-- AA G C ------
TGTGGCCGC
GAM6609 17708 GAAGCTTTGGGGAATTAAGT GAATTA T ATCT AGTCAATA
TCTTTTCAAATCTTGGAAGT GAAGCTTTGGG AGTTCTTT CAA TGGA
CAATATTCACTTGAAGGAAT TTTCGGGGCCT TTAAGGAA GTT ACTT
TCTATCCGGGGCTTT ATC--- - C--- --------
GAM6611 9523 ATCGGTCAAACGGGTCATAC AAAC TCA- - TGAC
GCAAGTGTTGACACATATTG ATCGGTC GGG TACGCAA GTGT
TGTACACTCCCTAGGACTGA TAGTCAG CCC ATGTGTT TACA
T GAT- TCAC A ----
GAM6612 7847 GCTGCCAGCCCAACTGCTCC CC ACT CA- T TTTCCACC
AGTGATAGTTTTCCACCACT GCTG AGCCCA GCTC GTGA AGT
TCACCGAGAGCCTGGGCTCA CGAC TCGGGT CGAG CACT TCA
GC -- C-- AGC - --------
GAM6613 13729 GGGGATAGGGGCAGTCGAAA A G TC -- CAAAAAA
GGGCTTGGGTTCAAAAAAAG GGGG TAG GGCAG GAAAGGGC TTGGGTT
CCCAGCTGCTTTTTCTCCTG CCTC GTC CCGTC CTTTTTCG GACCCGA
CCGCTGCCTCC C G CT TC -------
GAM6614 19878 GACAAGCAGAGACCAGGAAA C C CC A A GA A AAG CTCAAGTTCCAAA
AGACAAGGACATGAATTTAA GA AAG AGAGA AGGAAA GAC AG CATG ATTT GTA
GGTACTCAAGTTCCAAATAC CT TTC TCTCT TTCTTT TTG TC GTAC TAAG CAT
ACGAATCCATGGCTAGTTGT T - TT G A G- C CA- ----------
TTCTTTTTCTCTCTTTTC
GAM6615 6745 GGTTCCCCTACTTCTTGGTG CTA G GAG T - ATATACAACGA
AGGTTCACTGTGATATACAA GGTTCCC CTTCTTG T GT CA CTGTG
CGACACAGATGGCAAGCAAG TCGAGGG GAAGAAC G CG GT GACAC
AAGCGGGAGCT C-- - AA- - A ----------
GAM6616 6137 GCTTCTGTTTGTGCACAAGT TC G CA AA C CGACTGAAA
AACACGACGACTGAAATCTG GCT TGTTT TGCA AGT CA GA
CAACTACTGCAAAGACGCGG CGG GCAGA ACGT TCA GT CT
GC GC A CA AC - ---------
GAM6617 1068 CCCAGAAACTTTCAGGAGAG - GGAGAG AGC-- T - ACCCC
GCAAGCAGATTCACTGACCC CCCA GAAACTTTCA GCA AGAT CAC TG
CCACGTGTATCTTTATGTGT GGGT TTTTGGAAGT TGT TCTA GTG AC
AATGAAGGTTTTATGGG A AA---- GTATT T C -----
GAM6619 2304 GTCCAGAGATGAGGCAGAGT AG C - A-- AACAA TGA

GGAGAGAAACAACTCTGGCT GTCCAG ATGAGG AG AGTGG GAGA CTCTGGC
GAGCCAGAGTCTCCAGCCAC CGGGTC TATTCT TC TCACC CTCT GAGACCG
TACTTCTTATTCCTGGGC CT - A GAC ----- ---
GAM6620 21006 ACGTGCTATGATGGGTTGAA T ATGA --- A-- G TGAAATT
AAGAGGTTGGTCTGAAATTG ACG GCT TGGGT TGAAA GAGGTT GTC
ACGAGCCTCCCATTTCAGAG TGT TGA ACTCG ACTTT CTCCGA CAG
GCTCAGGAAGTTTGT T AGG- GAG ACC G -------
GAM6621 1579 GCAGTTGTCACAAAAACTCA GT- AAAAACTCAC AA - A GAATTTG
CTCATCAACTTCTTAGTGAA GCA TGTCAC TCATC CTT CTT GT
TTTGACAGGCAAGAAGATGA TGT ACAGTG AGTAG GAA GGA CA
CATTCACTTAGTGACATTAT ATT ATTCACTTAC AA C - -------
GT
GAM6622 8431 TGAACTGAATGAGAGAGAAA A A ----- -- AAGAGG G TAGT
AAGAGGTCCAGAGTAGTTTG TGA CTGA TG AGAGA GAAA TCCA AG
TGGAGCGATGTTTCCATCTC ACT GACT AC TCTCT CTTT AGGT TT
TAATGCCACTCAGCTCA C C CGTAA AC GTAGCG G ----
GAM6623 2374 GGCTGGGCCTGAGACATGGG GG- AGACA GG AGGT
CTGGCCTCCAGGTGGAGGGG GGCT GCCTG TGGGCT CCTCC
TCCAGCAGGCAGGTACAAGC CCGA TGGAC ACCTGG GGAGG
C ACA GGACG -- ----
GAM6624 20947 GAGGAATGCAGACTCAGTGG ---- AGACT- TG AGGA ACCAG
AGAAGGAGTTGGACCAGTCA GAGGAA TGC CAG GAGA GTTGG
ACATCTCTGTTGTCACAAGC CTCCTT ACG GTT CTCT CAACT
AGTGTTTCCTC TGTG AACACT GT A--- -----
GAM6625 15757 AGGGCCGGGCGTGCTGGAGC GG T A- G-- A CCTA
CTGGGAAATGCCTACGTGTC AGGGCC GCG GCTGG GCCT GGA ATG
CATGGGGCGCCCAGTCGCAG TCCCGG CGC TGACC CGGG CCT TGC
GCCCT A- - CG GTA G ----
GAM6626 17843 CAGAAGTACTGGCCAAAGCG A A CCAA - AAT ATTCACTG
AGGAATGGAGGAGCATTCAC CAG AGT CTGG AGCG AGG GGAGGAGC
TGGCTTCTCCCCGCCTACGT GTC TCA GACC TTGC TCC CCTCTTCG
TCCAGACTCCTG C - ---- A GCC --------
GAM6630 6448 TTCAGTTCTCGAGGAGAAAA -- ----- AAAGA---- TTA AGAT
GATCCTTATGGCAGATGCTG TTC AGTTCTCGA GGAGA TCC TGGC
ATGGAGCCACAAAGTTTCCA AAG TCAAGAGTT CCTTT AGG GTCG
GATGTTGAGAACTTAGAA AT GTAGA GAAACACCG TA- ----
GAM6631 92 CGGGGGGAGCCGAGACTGAG C ACT-- - CCT CTTTTTTCT
CTTTCCTGTCTTTCCTTTTT CGGGGGGAGC GAG GAG CTTT GTCTTTC
TCTGAGAGATTCAAAGCCTC GCCCCCTTTG CTC CTC GAAA TAGAGAG
CACGACTCTGTTTCCCCCG T AGCAC C CT- ---------
GAM6632 11589 TTAGGCATTGAACACATTCT AT A CTTA------ TG CTGTAAGAA
TAAAAACACTGGTCTGTAAG TTAGGC TGA CACATT AAAACAC GT
AAACTGGTGTTTTGAAAAAT GATCTG GCT GTGTGA TTTTGTG CA
TAAAGTGTGTCGTAGTCTAG AT - AATTAAAAAG GT ---------
GAM6634 14247 CCCTTCGAGATGTGCCCTTC AGA T TTC--- C G TG ACTA
TCAGCCCTGTACTGGTTCAA CCCTTCG TG GCCC TCAGC CT TAC GTTCA
CTATGAGCTGGTGAAGAGCT GGGAAGC AC CGGG GGTCG GA GTG CGAGT
GGCTCAATGGGCTCAGGCCG CGG T TAACTC A A GT ----
AAGGG
GAM6635 1762 ACTCTGTGCTATATTACTTG - CTATA TGAGG AGAAAAATGTA

AGGGGCTAAGAAAAATGTAT ACT CTGTG TTACT GGCTA
GGTCAGTGAAACACAGTAGT TGA GACAC AGTGA CTGGT
T AA--- ----- ----------
GAM6636 15853 TGTGCATCCCAGCAGTAAGC C--- A AA AA- G GA AGAAGGTACAGAC
AACAATGGCTGATCCAGAAG TGTGCAT CCAGC GT GCAAC TG CT TCC
GTACAGACGGGGAGGGCACG ACATGTA GGTCG CA TGTTG AC GG GGG
GGTTGTAACGGCTGGTTTTA TTTT G A- GGC G AG ----------
TGTACA
GAM6637 8791 CGTCGTCGGCGCTGGGCAGG G GGC - A A GGCGG A GGAGAAG
CACACGGCGGACACTGTCTG CGTC TC GCTGG GC GGC CAC AC CTGTCTG
GGAGAAGCGGACAGGTGTGG GTAG GG CGACC CG CCG GTG TG GACAGGC
CCAGCTCCAGCAGGGGGATG G GA- T A - ----- - -------
GAM6639 21902 GCATGCCCACTGAGAGCCTG A- AGA GA- AGGAG - A GAAGAAGAACCCGAGG

AAGGAGGAGCTGGCTACCTG GC TGCCCACTG GCCT AGG CTG GCT CCT
AAGAAGAACCCGAGGAGGAG CG GCGGGTGAC CGGA TCC GGT CGA GGA
CATGGAATGCCTGAGAGGCC AG --- GAG GTAA- A - ----------
AGTGGGCGGAGC
GAM6640 10420 AGGGAGGCTGGAGGTTGTGG ----- GT T - - AGTGTT
TGGGTCACAGTGTTGCTGAC AGGGA GGCTGGAGGTT GG GG GTCA C
ACCTCTGGCCTCCAGCCCTG TCCCT CCGACCTCCGG TC CC CAGT G
CATCCCT ACGTC -- T A C ------
GAM6641 9339 GCTTTCACCAGCTTTACCCA T G TTA AA- CTTT T CCG
AACGCCTTTTGTCTTCCGAA GCTT CACCA CT CCC ACGC TG CTT
GTCACCTGTGTGAAGGGGAC TGAA GTGGT GA GGG TGTG AC GAA
AGTGGTGCAAGT C - CAG AAG TCC- T ---
GAM6642 15695 ATTTGTGTCTATCTAATGGG - AT A T A AAATCAAA TAA ATGCAAA
TTATTGAGAAAATCAAATAA ATTTGTGT CT CTA TGGGT ATTG GA TAAAA TGC
AATAATGCATGCAAAGTACT TAAACATA GA GGT ACCTA TAAC CT ATTTT ATG
TTTAGCACAGGTCCAATATC A AT - - - GGACACG- C-- -------
CATGGTAAGAATACAAAT
GAM6644 10862 GAGCCTGCCTCCCTCTTGGC C G CTCATCCATTG TCAT
CTCTCATCCATTGGCTCATG GAGCCTGCCTC CTCTTG CCT GC
CAGGGCAGGGGTGAGGCAGG TTTGGACGGAG GGGGAC GGA CG
TTT T G ---------- ----
GAM6645 22961 CGCACATCGTGGTGAGCTGG A- G CT---- G AGACCGTGA CGTG
ATGATCGCGCAGACCGTGAC CGC CATCGTG TGAG GGAT ATCGCGC CGGC
GGCCGTGGCCGGCGTGGTGT GCG GTGGCAC GCTT CCTG TGGTGCG GCCG
CCTACCCCTTCGACACGGTG GC A CCCCAT - --------- ----
CGGCG
GAM6646 13332 CTCTCAAGCTCCTTAGATGC A CT ATG- G CAGAAG ATGAGTGG
TGGGCAGAAGTGGGATGAGT CTCTCA G CCTTAG CT GG TGGG
GGCCCAAGACCGAGATCCCT GAGAGT C GGAATC GA CC ACCC
AAGGTTCTGAGAG - TT CCTA G AGA--- --------
GAM6647 4174 ACGGAGGGGAGGAGACTCAG GG - TC CC TTCATCCCTTTACTTCCT
TTCCTCTTCATCCCTTTACT ACGGAG GAG GAGAC AGTT TC
TCCTGATAAACTTGTCTCAC TGTCTC TTC CTCTG TCAA AG
TTTACTCTGT AT A T- AT ----------
GAM6648 5218 AGGCCCTATTGGACAAATTT CTA TG CAAAT - GCATAA
GGTGGGGAGCATAATCCACC AGGCC T GA TTGGTGG GGA

ATCAATATATCTGGAGGCCT TCCGG G CT AACTACC CCT
A-- GT ATAT- A ------
GAM6649 7903 AGGCTTGGCTTTGTTACTTT TT G- ---- -- CC A AAA GTATTGCA
TGATGACCATGATCCTGTGG AGGC GGCTTT TTACTTTTG ATGACCA TGAT TGTGG TA TC

ATAAAATCGTATTGCAGAAA TCTG TCGGAA AATGAAGAC TACTGGT ACTA ATACC AT AG
TACCATACCATCAAATGGTC TT AG GTAA AA CC - AA- --------
ATAATGCAGAAGTAAGAAAG
GCTTTGTCT
GAM6650 11877 TAATTTATGTTTATTATTTA TT TG TA TT TATT TTATTT
TACGTTATATTCGGTTTATT TAAT A TTTAT TTTATACG A CGGT
TATTGTGTTGGTGTGTAAAA GTTA T GGATG AAATGTGT T GTTA
TGTAGGTGTTTATTG TT GT TA GG TGT- ------
GAM6651 9153 GATGGTCTGATGCTACAGGA G C C - A-- TT C- G ATTT
CTTGGTTTCAGCTAAGCTGA GAT GT TGATG TA CAGG CTTGGT CAG TAA CTG
TTTCAGATTACACTGTTACC CTA TA ATTAC AT GTCC GAGCCA GTC ATT GAC
GAGATCCCTGATACCATTAA G - C A CTA TT AC A ----
TGATC
GAM6653 17840 CGGTCGAGCGCAGTTACCGC G - TT C GG C CTC
GCGGGGCTCTGCTCCAAAGC CGGTC AGC GCAG AC GCGC GGCT TG
CGCGCTGTTCCTGCTGCTGG GCCGG TCG CGTC TG CGCG CCGA AC
CCG - T CT T -- A ---
GAM6654 9468 GTGAGGGGAGCTGTGCCTGG G-- G G TGGA TG A--- - ACTA
ATCCTGCCTCCAAGTCACAT GTGAG GGA CTGT CC TCC CCTCCA GTCAC ATGAGC
GAGCACTAGCTCATAGTGGC CACTC TCT GACG GG AGG GGGGGT CGGTG TACTCG
AGGGTGGGGGTGGGAGGGGC AAA G G ---- GT GGGA A ----
AGGTCTAAACTCAC
GAM6655 19893 GGCACCAGCTCTTTGGGCCT CTCT TG A ATA CC CCCAA
AGGATACTGCCGGGCCCCCC GGCACCAG T GGCCT GG CTG GGGCCCC
CAAGGGGTCCCCAGCAACCA CTGTGGTC G CCGGA CC GAC CCTGGGG
GGCCTGGCCTCCTGGTGTC CTCC GT - AAC C- -----
GAM6656 4968 GGAAGCACATACTCAGACCT AA CATAC CT TT- T GAA AAAAGCT CCAAA
GTTTTGTTAACTAGAATTCT GG GCA TCAGAC GT TGT AACTA TTCTTT GATG
TTAAAAGCTGATGCCAAACA CC TGT AGTCTG CA ACA TTGAT AAGGAG CTAC
TCTTTACAGAGGAACTGTAG CC TAC-- TC CCT C GTC ACATTT- -----
TTCACATCCACCTGTCTGAC
ATTGTCCCC
GAM6657 568 GCAGCATAAATCCCAAACCA AG AAA CA CAC T - CA GTAT
CTCCTCTGCTCTCCACACTG GC CAT TCC AAC TCCTC GC TCTCCA CT
TATGGATGGAGGTGCTGAGG CG GTG AGG TTG AGGAG CG GGAGGT GG
AAGTTGGAGAGGTGAGGC GA GAG -- A-- T T A- ----
GAM6658 22776 AAACATCATTTTAAAATGTC TTTTAAA CT C TT- GACG
TTCAGCATTTTTTGAATAGA AAACATCA ATGT TCAG AT TTTGAATA
CGTATTCAAACATATTCTGA TTTGTAGT TACA AGTC TA AAACTTAT
ACATTGATGTTT ------- -- T TAC ----
GAM6659 6665 TCTGACCTCAACTCCAAAGG ACCTC CAA TTT C GG CC- GGT
AGCTTTGGCTTCCCTGGGCC TCTG AACTC AGGAGC GGCTT CCT GCC AGTC
CCAGTCGGTGACTTCAGGCA AGAT TTGAG TCTTCG TTGAA GGA CGG TCAG
AAGGCAAGTTTTGCTTCTGA ACCC- --- TT- C AA ACT ---
GTTCCCATAGA

GAM6660 22897 GGAGTCTCGCTCTTGTTGCC TCGCT TT --- C -- AA - A ATAT
CAAGCTGGAGTGCAATGGCA GGAGTC CTTG GCCCA AG TGGAG TGC TG GC CA
CAATATTGGCTCACCGCAAC CCTCAG GAAC TGGGT TC ACCTC ACG AC CG GT
CTCCACTTCCTGGGTTCAAG C---- T- CCT - CA CC T - ----
CGACTCC
GAM6661 22123 CTGCTCTGCTTCTCTGCGGC T G -- - GACA
GCCGCCAGACATGGTCGGTT CTGCTC GCTTCTCT CGGCG CCG CCA
CGCTGGAGAGAGGCGAGCGG GGCGAG CGGAGAGA GTCGC GGC GGT
- G TT T ----
GAM6662 11192 GGTCTGGCAGGAAGGGGGCA T A AAGGG GCA -- CAAG
GCCTGCAACCCCCAAGGGCA GGTC GGC GG GGCAGCCT ACC CC
GGTGTGGGGCTGCCACAGCC CCGG TCG CC CCGTCGGG TGG GG
GCTTGGCC T - GACA- GTG AC ----
GAM6663 2210 TTCACAACTACTTTTGAACA A C - -- TCTAA ACCTAAATTTTTTAA
TCTAAATTTAAACCTAAATT TTC CAA TA CTTT TGAACA ATTTAA
TTTTAATTAAATGCCTGTTC AAG GTT AT GAAA ACTTGT TAAATT
AACAAAGCTAATTGGAA - A C CA CCG-- ----------
GAM6664 22675 GCCCTCACCTGCTTGCTCCT A GCTTGCTCCTAA T TCCT T TAACT- TTAA
AAATGTGATCCTGCTTACTG GCCCTC CCT ATG GA GC TACTG TC
TAACTTCTTAAGACACTATC CGGGAG GGA TAC CT TG GTGAC AG
AGTGCGTTGTTCCATGAAGG C AG---------- - TGT- C TATCAC ----
CGAGGGC
GAM6665 4559 ACCCTGTCTCCCATTCTGAG T TTCT ATCTGG- AGAACTGC
AATCTGGGTTAGAACTGCAA ACCC GTCTCCCA GAGA GTT
CATACAAATTTCTTTTGGGG TGGG TAGGGGGT CTTT CAA
GATGGGT - TTT- AAACATA --------
GAM6666 2918 TTATTTCAATGGGATTTATA - ATTTATAT GGTA AA- GTCAG
TACACGGTATTTTACAATGG TTATTTC AATGGG ACAC TTTTAC TG
TCAGCAGTGGTAGAAAGTGT AATAAGG TTACCT TGTG AAGATG AC
TCGTCCATTCGGAATAA C GCT----- A--- GTG -----
GAM6667 8596 GTGGTCTCCCGCGCGGGACG G CC G A GGACTGG G C TTCTC
GAGGGACTGGCCGGAGCTGG GTG TCT CGC CGGG CGGAG CCGGA CTGG GCT
CGCTTTCTCAGCACTAGATC CAT AGA GCG GCCC GCCTC GGTCT GATC CGA
TGGACTCCGACCCGGCGCCA A CC - A A------ A A -----
GAATAC
GAM6668 10769 CATGCTTCGGGCATTCCATG TC A-- AT- ------ ------- AACTCTC
CAGCCTTGCGGAACTCTCCC CATGCT GGGC TTCC GCAGC CTTG CGG
GTCAACACCAAGAATCAAGC GTGCGG CCCG GAGG TGTCG GAAC GCC
TGTGAAGGAGCGAGCCCAGG GA AGC AAG AACTAA CACAACT -------
GCGTG
GAM6669 16137 ACACCTGGAAGTATTAGATA C AAG ----- TTAAA T TT GG TATAT
CATGTTTAAAATATCTTTTA ACA CTGG TATTAGA TACATGT ATA CTT ATA TTT
TAGGTTTTATATAAAAATGT TGT GACC ATAGTCT GTGTGTA TAT GAG TGT AAA
CTGAGTATGATTATGTGTGA T --- TGAAA TTAG- - TC AA -----
AAGTTCTGATACCAGTTGT
GAM6671 17827 CAAAATCCCTTGACAAAAGC C- C AA- C---- TTC-- CAGGCATT
GCATAGGTTATTTCAAACCA CAAAATC CTTGA AA GCG ATAGGTTAT AAAC
GGCATTGTTTTTTATGTAAC GTTTTGG GGACT TT CGC TGTCCAATG TTTG
CTGTTTTACCGCATCTTCTC AC C CTA CATTT TATTT --------
AGGCAGGTTTTG

GAM6672 21442 CGGATTATCCCCATACCCCA A C ACC CCCATTC T A A G T GCC
CCCATTCCCGATACACCTTA CGG TTATC CCAT CCA CCGA AC CCTT CTTACT TG GTTG
CTTACTGTGTGTTGGCCCAG GTC GATGG GGTA GGT GGTT TG GGAA GAGTGA AC CGAC

CCAGAGTGAGGAAGGAGTTT - C GA- TACACC- - A G G - ---
GGCCACATTGGAGATGGCGG
TAGCTG
GAM6673 5289 TCCTCCGCAGAAGGTTGGTG CGCAGA -- G TC - TGATCCT
GGGGGTCCAGTCTGTGATCC TCCTC AGGTTGG TGGGG G CAGT CTG
TTGGTGCTGTGTGCCCCACT AGGGG TCCAACC ACCCC T GTCG GGT
CCAACCTGGGGA ------ TC G GT T -------
GAM6675 9894 CTGGACTTGGATGGGCCCGA - C-- T G - G CAACA
GTTGGGGGCAACACCCCGGG CTG GA TTGGA GG CCCGA GTT GGGG
CATTGGGGCTTTCCAGCTCT GAC CT GACCT TC GGGTT CGG CCCC
CACAG A CTC T G A G -----
GAM6676 13234 GCAAGAAAGAGATGCAACCC AG --- T - A CACCCAATCCGCC
ACACACCCAATCCGCCTGGG GCA AAAG AGA GCAA CCC CA
GCTTGCTCTTAACTTTTCTG TGT TTTC TCT CGTT GGG GT
T CT AAT - C - ----------
GAM6677 2233 CGCTCGCAAGACCACCAGCG A A A CAG C AGTCT
CCCAGAGCCCCAGTCTGAGG CGCTCGCA GACC CC GCGCC AGCC C
CTGGCGCCGGGGGTCTGCGG GCGGGCGT CTGG GG CGCGG TCGG G
GCG - G C --- A -----
GAM6678 12421 TGCTTGAACACAGTATTTTC T CAGTATTTTC TA---- TTCATTGCC
CCAATAGCACTTTCATTGCC TGCT GAACA CCAA GCACT
AGTGTCTTTCTTTGGTGCCT ACGA CTTGT GGTT TGTGA
TTCCTGTTCAGCA - CCTTTCCGT- TCTTTC ---------
GAM6679 6566 CACCATCTCTGAAGTAGCTT - GA GCAATCT TACAGTG
TGCAATCTGGAAGGGGTACA CACCATCT CT AGTAGCTTT GGAAGGGG
GTGTCCCTTCCCTCAAAGGC GTGGTGGG GA TCGTCGGAA CCTTCCCT
TGCTGAGCGGGTGGTG C G- ACTC--- -------
GAM6680 13133 CATATCGACGTAGAATGTCT A - GAAT CAT--- CCAT
GCATGCCCCATGGTTATCAA CAT TC GACGTA GTCTG GCC
CAGACTATGCGTCTGAAGTG GTG AG CTGCGT CAGAC TGG
A T AT-- AACTAT ----
GAM6681 22159 GCGATGACTTCTGTTTCTTC G - TTCTTCC A --- GG G T ACA
CAGATGCTCATGGGTGGGGG GC ATGACTTC TGT AG TGCT CATG TGGGG TG GTGTCGC

TGTGTGTCGCACAGTGACAC TG TACTGAAG ACG TC GCGG GTAC ACTTC AC CACAGTG

TCAACTTCAACATGCCAGGC G T TGTT--- C ACC A- A T ---
GCCTTTGTGCATGAAGTCAT
GGT
GAM6682 22312 TCCCAGCTTCCAGATGCGAC GCTTC - CC- ACCCAGTCTC
ATCCAGATGACCCAGTCTCC TCCCA CAGATGC GACAT AGATG
ATCTTCCGTGTCTGCATCTG AGGGT GTCTACG CTGTG TCTAC
TGGGA ----- T CCT ----------
GAM6683 13066 GGACGTGACGGGCGGCTACG G - GG GCT T T AG- - - AGGCAAGA
TTTCTCACAGGCTGCCAAGG GGAC TGA CG CG ACGT TC CAC GCT G CCA
CAAGATGGACGAGCAACGTG CCTG GCT GC GT TGCA AG GTG CGA C GGT

GACACGTTATGAACGATCGG G A AA AT- C - CAA G A --------
GTCC
GAM6685 13913 GTGGTGCTGAAACGACCGGA GCT A CCG A CCT- GA -- TCAGCAGCTT
GATACCTGACAGATGAGAGC GTGGT GA ACGA GAG TA GACA TGAGA GCC
CTCAGCAGCTTGGCAGTCTC CGCCG CT TGTT CTC AT CTGT ACTCT CGG
ATGTCCCCTTACCTCACTTG AT- C CA- C TCCC -- GA ----------
TCTCTAGCCGC
GAM6686 3476 GCCAGGCCTCCTCATCCAAG --- CCTCA A- CAT T- TCTTTCTCTCT
TACATCCTGGATCCTCTTTC GCCA GGCCT TCC AGTA CCTGGA CC
TCTCTGGTTTCCAGGTACTC CGGT CCGGA AGG TCAT GGACCT GG
AGGAACTAGGCCATTTGGC TTA TCA-- AC --- TT -----------
GAM6687 11260 CACACCATTCTCCTGCCTCA ACCATT- C A CTC----- ACTACA GCCC
GCCTCCGGAGTAGCTGGGAC CAC CTCCTG CTC GC CGGAGTAGCTGGG GGC
TACAGGCGCCCGCCACCACG GTG GGGGAC GAG TG GTTTTATCGGCCC CCG
CCCGGCTATTTTGTATTTTT CCACTTT A A ATTTTTAT GCACCA ----
AGTAGAGACAGGGGTTTCAC
CGTG
GAM6688 12194 GCCTCAGTCTCCCGAGTAGC A -- ----------- ACTACA CGTGC
TGGGACTACAGGTGCGTGCC GCCTC GTCTC CCGAG TAGCTGGG GGTG
ACCACACCCAGCTAATTTTT TGGGG CAGAG GGTTT ATCGACCC CCAC
GTATTTTTGGTAGAGACGGG - AT TTATGTTTTTA ACA--- -----
GT
GAM6689 22727 GGAAAAATGGAGAAATCAGG AAAA- AAA TG--- G - AAAA
AGTGAGGCACTTAAAAAAGA GG ATGGAG TCAGGAG AG CA CTT
TGGCTAAAATTTTCTGGACT CC TACTTC GGTCTTT TC GT GAA
TCATCAAAGCC GAAAC A-- TAAAA G A ----
GAM6690 18799 TGTAGCATGAATCAAATGTA C A AT- TA--- - CTTA
TTTATTAATAGCACTTATGA TGTAG ATGAATCA ATGT TTAT ATAG CA
CTATAGAATATAATTGGCAT ACATT TACTTAGT TACG AATA TATC GT
ATGATTCATATTACA A A GTT TAAGA A ----
GAM6691 11038 TTATGATTGGGAAAGAATGC ATT GAA ATGG TTT AAGA TTGGTTGT
CAAGATGGTATTTTCTTTTG TTATG GGGAAA TGCCAAG TATTTTC TGGC TGC
GCAAGATGCTTGGTTGTGCA GATAC TCTTTT ACGGTTC ATAGAAG ACTG ACG
GTCATTGAAGATAACTTGGC G-- ATC A--- TT- ---- --------
ACTATTTTCTGCATAG
GAM6692 19662 GACACTTTATGGGGGCAGAA C ---------- ACAAGC
TGGAACAAGCTCCAAGAATG GACACTTTATGGGGG AGAAT GGA
TAGATACTGATTCTTTCTCC TTGTGAAATACCTCT TCTTA CCT
ATAAAGTGTT T GTCATAGATGTAAGAA ------
GAM6694 12058 AAGGGTTGTTTTGTTGTTAG T TGTTGT AA A-- GTCCATTTCTAAAATA
GTAAATAGATATTAGGCAGT AAGGGT GTTT TAGGTA TAG TATTAGGCA
CCATTTCTAAAATATGCCTG TTCCCA CGAA ATCCAT ATC GTAGTCCGT
ATGAAGCTAGATACCTAAAG T ------ AG GAA ----------
CTACCCTT
GAM6695 1394 CAGATCAATGCCTGGGGGTA A CC - AC ---------- GTAGATA
CAGGGCAGGGGACAGTAGAT CAGATCA TG TGGGG GT AGGG CAGGGGACA
ATGTCCCCTGATAATGCATC GTCTGGT AC ACCCT CA TCCC GTCCCCTGT
ACCTTCCCTAAACATCCCAA - A- A AA TTCCACTACGTAATA -------
CATGGTCTG
GAM6696 270 TGCCGGTGACAAATTAACAG - T AATT---- - --- GAA

AGGTCCTTGAAGAGGCTAAC TGC CGG GACA AACAGAG GT CCTT
ACTCTGTTTAATGAAGTGTC ACG GCC CTGT TTGTCTC CA GGAG
CCGAGCA A - GAAGTAAT A ATC ---
GAM6697 15528 GGAGGAGTTGCGCGCGCTGT CG---- C- G - CAAG
GCCGTGTGCAAGCGCTGCGG GGAGGAGTTG CG GCT TGCCGT GTG
CAGGGCTCCGAGACCTCGGC CCTCCTCGGC GC CGG ACGGCG CGC
TCCTCC TCCAGA CT G T ----
GAM6698 16008 GTGGGAGCTCCAGGGGAGGG G - - GG AA CA GAAG CTATCA AGTCG
GAACAGCACAGGAAGCCTCT GTGGGA CTC CAGGG GA GG CAG CAG CCT GTGCC
ATCAGTGCCAGTCGGGCACA CACCTT GAG GTCCC CT CC GTC GTC GGA CACGG
GGACACTGCCTGCCAGTCAC G A A GA -- C- ACA- ------ -----
CCTGAGAGGTTCCAC
GAM6701 3257 GGTGAGAGAATTCATAAATA G--- AA TAAATA A--- TCTAAAACAAACT
TTAGTTAAGGATCTAAAACA GGT AGAG TTCA TTAGTTA GGA
AACTTCTCAAATAACTGAAA CCG TCTC AAGT AGTCAAT TCT
GCTGAAACCTCTGGAAGCC AAGG CA CGAA-- AAAC ----------
GAM6702 22534 GCGGCTCTGGGCGCTGTTGT GG T GT TA G- GG GCG
TTGGTCTTTAGGCCTGCGGA GCGGCTCTG CGCTGT GTTTG CTT GGCCT CGGA G
GGGGCGTTATCTGGAGGGCC CGCCGGGAC GTGACG CGGAC GGG CCGGG GTCT T
GCGGGTGCAGGCCGCAGTGA A- C GT CG AG AT ---
CAGGGCCGC
GAM6703 20015 TTGTTTGGAGGGTGTTGTGG GTT TCTC AT GCTTGA
TCTCCAATCCCGGCTTGACG TTGTTTGGAGGGT GTGG CA CCCG
GGGCTGCTATCTGCCTTCCA AACGGACCTTCCG TATC GT GGGC
GGCAA TC- ---- CG ------
GAM6704 181 GCCTTGTCCTGAGTTTCTCA G A- --- - T C A GG CCAGGTA
CTTGGCTTCAGGAAGGCCCC GCCTT TCCTG GTT TCT CACT GG TTC GGAA CC
AGGTAGGATTCCAGAAACCA TGGAG AGGAC CGG AGA GTGA CC AAG CCTT GG
GTGAAGATGTGGCCACAGGA G AC TGT A - A A A- -------
GGAGGT
GAM6705 10811 AGAAGGCCATGCAGAAGGCA - ATG GA A - A A ATTA
AGGACTGACTAGGCAATTAT AGAAG GCC CA AGGC AGGA CTG CT GGCA
GTCAGCAGATCCTGGCCTAA TTTTT CGG GT TCCG TCCT GAC GA CTGT
TGGGGCATTTTT A G-- AA G A - - ----
GAM6707 3829 GGCCTAAAAGCAAGGTTCTT AAAAG G TTAT AAC- GGCCT
ATTCTCCGGAACCATGGGCC GGCCT CAA GTTC TCTCCGG CATG
TCGTGTCAGTTGGAGAGAGC CCGGA GTT CGAG AGAGGTT GTGC
GTTGAGGAGGCC GGA-- G ---- GACT -----
GAM6709 725 AGTATACTTTTGGACAATCT TT- C A AAAA-- ACAC
GCAGCTATAAAAATATACAC AGTATACT TGGACAATCTG AGCT TA TAT
ATACAAAAGTACAGCTACAG TCATATGA ACCTGTTAGAC TCGA AT ATA
ATTGTCCACACAGTATACT CAC A C GAAAAC ----
GAM6712 21581 GCTTCCTTCGTCTACCACTC -- ACCACTCTG C CAACA
TGTGCCAGCTCCAACAGACC GCTTCCTTC GTCT TGCCAG TC
TGGCAACTAATAGGACTAGA CGGAGGAAG CAGG ACGGTC AG
AGGAGGC AT ATAATCA-- C -----
GAM6715 5015 ACGTAAGGGGCTGGGCTGGG TA CT G GCTTGAGG
CAGCACCAGGGGCTTGAGGC ACG AGGGGCTGGG GGGCA CACCAGGG
TCTGGTGATGCTCCTCCAGC TGC TCCTCGACCT CTCGT GTGGTCTC
TCCTCGT -- C- A --------

GAM6716 18915 GGGTGGGAGGGAGGATGGTG TG T G C TTTAACATTAAAT C TCT AGTAT
CGTCATTTAACATTAAATTG GGG GGAGGGAGGA GGT CGT A TGC TC CTAC
CCTCTCTCTACAGTATGTGG CCC TCTCCCTCCT CCA GTA T ACG AG GGTG
CTGAGCATCATGGACCTTCC CG T G C ---------- - TC- -----
TCCCTCTGCCCC
GAM6717 2468 CACAGGGGACAGCATAAGCA AG-- AA-- AA ACGAGGGGGAGAACAGAG
AAGGCACACGAGGGGGAGAA CACAGGGGAC CAT GC AGGCAC
CAGAGGTGTCTGGGTGGAGA GTGTTTCCTG GTA TG TCTGTG
TGGGGAGTCCTTTGTG AGGG GAGG GG ----------
GAM6718 13934 GTACAGAGATGAGGCAGAGT TA AG C - A-- AACAA TGA
GGAGAGAAACAACTCTGGCT G CAG ATGAGG AG AGTGG GAGA CTCTGGC
GAGCCAGAGTCTCCAGCCAC C GTC TATTCT TC TCACC CTCT GAGACCG
TACTTCTTATTCCTGGGC GG CT - A GAC ----- ---
GAM6720 10059 GCCTTAGTTCTGTTCAAATA T G CAAATAGA CAAATATTGTA
GAGACCTGAATCAAATATTG GCC TA TTCTGTT GACCTGAAT
TAGTTTAGGTTCAAACAGAG CGG AT GAGACAA TTGGATTTG
TATGGC T - AC------ ----------
GAM6721 17321 CCGGGAGGCCCCGAGGAGGC AG G G----- G- T AAGAGTG
GGCTCCTCTTCAAGAGTGGG CCGGG GCCCC AG AGGC GCTCC CTTC
AGGGGGCAGGCCTGGAGTGT GGTCC CGGGG TT TCCG CGGGG GAGG
TGGGGGCAGCCTGG GA G GTGAGG GA - -------
GAM6722 3463 CCTCCGGACTTTCAAATGCT C CTTTCAAA TT A- TCCAAAATACTTCCTCT
TGCTGAACCTTCCAAAATAC C TCCGGA TGC GCTG ACCT
TTCCTCTAGGTGGCAGCGCA G AGGTCT ACG CGAC TGGA
GGAATATCTCTGGAAG A CTATAAGG -- GG ----------
GAM6723 9239 GGATGAAAACATGGACCTCT AACA C--- G G TAAC
TGGAAGGTATAACTGGCTTT GGATGAA TGGAC TCTT GAAG TA
GAAGACTCTGTCCGAAAGTT TCTATTT GCCTG AGAA TTTC GT
TATCT GAAA TCTC G G ----
GAM6724 5811 GTACAGGGAGATCTGGAGTT AGGGA C TT- TCCTGTT
CTGTTTCCTCCTGTTGGATT GTAC GAT TGGAGTTCTG TCC
CTAGAACTCCATGTTAGTAC CATG TTG ACCTCAAGAT AGG
A---- T CTT -------
GAM6725 937 GGAATCTGGCAGGAAGCATC ATC C TCCA AGCCTCTG TGGCTT
CAGGGCCCAGCCTCTGTCAG GGA TGG AGGAAGCA GGGCCC TCAGGCC
GCCTGGCTTGGCCTGGGGGC TCT ACC TTCTTCGT CCCGGG GGTCCGG
CCCAGCTGCTTCTTCCATTG GTT - CGAC -------- ------
TCT
GAM6726 9335 AGGAACGATTCACAGGACAA G A -- CAAACAAA A TTT A ATTTG
ACAAACCCAATTTTTAAGAA AG AACG TTCACA GGA CCC ATT AAGA GTTT
GTTTATTTGAAACTCTTCCT TC TTGT AAGTGT CCT GGG TGG TTCT CAAA
GGTCGGGTCCAGTGTGAAAT A A GA -------- C TCC - -----
GTTACT
GAM6727 14734 CTGTCCCCCTACCCCAAGTC CC A C- C G CAAAGGAGGGC
CCCCAGTCCCTCAAAGGAGG CTGTCC CT CC CAAGTCCCC A TCCCT
GCAGGGAGTGGGGACTTGCA GACAGG GA GG GTTCAGGGG T AGGGA
GGAAGCAGGACAG AC A AC - G ----------
GAM6729 12621 GGGAACGGAAGGAGGAATGC - A GA- T CT ----- GGA AGAT
TGGACTGGAGGCCCCTGGAG GGGAAC GGA GGAG ATGC GGA GGAGGC CCCT GCC
CCAGATGGCAAGAGGGTGAC TCCTTG CCT TCTC TGTG CCT CCTTCG GGGA CGG

AGCTTCCTTTCCTGTGTGTA A G ATG T TT ACAGT GAA ----
CTCTGTCCAGTTCCT
GAM6730 7449 AGCAATCCTCAATATTTCGG T-- C ------- A- TATT
GGAGAAATATTTTGGCTTCC AGCAA CCT AATATTTC GGGGAG AA
CTCAGTTTGAAGTGTTAGGT TTGTT GGA TTGTGAAG CCCTTC TT
TTTTGTT TTT - TTTGACT GG ----
GAM6732 11119 TTTCTCTGACGATTAGTGAT T------ - AT --- ATTTTCAC
GCTGAGCATATTTTCACATG TTTCTC GACG ATTAGTG GCTGA GCAT
TTTGTCGGCCACTGGTACGT GAAGAG CTGC TGGTCAC CGGCT TGTA
CTTCTTTTGAGAAG TTTTCTT A -- GTT --------
GAM6734 10282 CAGGCTGGAGCGCAGTGGCG G G T- - TCAT CACTGC
ATCATGGCCCACTGCGGCCT CA GCTGGAGC CAG GG CGA GGCC
CGACCTCCTGGGCTCCAGCG GT CGACCTCG GTC CC GCT CCGG
TG G G CT A ---- ------
GAM6735 17226 GGTTGGAGTGCAGGGGCGCG TTG T --- -- T CTCACT CCT
ATCTCGGCTCACTGCAACCT GG GAG GCAGGGG CGC GA CTCGG GCAA
TTGCCTCCCGGGTTCAAGCG CC CTC CGTCCTC GCG CT GGGCC CGTT
ATTCTCCTGCCTCACCC CA- - TTA AA T CTC--- ---
GAM6736 8455 ACCACGTTTGTTTCGACGCC TTTG GA GGA C AAGA GATGAT
GGACCGCGTAAGAGACGATG ACCACG TTTC CGCC CCG GT GAC
ATGTTGGGCACGGAAGGTGG TGGTGC GGAG GTGG GGC CG TTG
AGAGGGATTCGTGGT TTAG AG AA- A GG-- ------
GAM6738 6504 GACTGACAGAGGACCTTGTT C A - T-- A T T TCACCC
GCACCTCGTGGCTGCTTTGT GACTGA AG GGA CCTTG TGC CC CG GGCTGCTTTGT
TCACCCGCAGGGCGGCCTGT CTGACT TC CCT GGGGC ACG GG GT CCGGCGGGACG

GGGCACCCCGGGGTTCCCCT - C T CCC - T - ------
TCAGTC
GAM6739 1859 AGTGACTTTATTCGACATGG A TATTCG A AG TAA
TTAGTGTCCTAGGGAATTAA AGTG CTT AC TGGTT TGTCCTAGGGAAT
GTTTTTTGGGGCAGAACTAG TCAC GAA TG ATCAA ACGGGGTTTTTTG
GTACCAAGCACT - CCA--- G G- ---
GAM6741 18222 GCCAGCCAGCCCAGCAGCGC - - CAGCA- T G ATC
TCCGTGCTCCATCGGAGAGC GCCAGC CA GCC GCGC CCGT CTCC
GGTGTGCGGAGAAGGCATGA CGGTCG GT CGG CGTG GGCG GAGG
GCTGGC A A AAGAGG T A ---
GAM6742 18033 GGGGACAGCGACCTGCAGCT A G - C A AAC A AC TAC
GGAACGCATCAACGTGTACT GGGG CA CG AC TGC GCTGG GC TCA GTG
ACAATGAGGCCACCGGCGGC CCCC GT GC TG ACG CGGCC CG AGT CAT
AAGTACGTGCCCC - - A A G AC- G AA ---
GAM6744 13346 TTTCGTTAGTTTAAATCCTT TT TTAAA -- ----- - C ACTCG
GAGGGGTACAGCATCACTCG TTTCG AGT TCCT TGAGG GG TACAG ATC
GATTCTGTGTCCAATGGCCT AAGGC TCG AGGA ATTCC CC GTGTC TAG
TAGCAGGAAGATTGCTTCGG T- TTAGA CG GGTAA T T -----
AA
GAM6746 7943 TAGGGGTCTGTACCGGGCTG CT-- C C CCTG--- C TCACCTCT
GCCTGTGCCTATCACCTCTT TAGGGGT GTAC GGG TGG TGC TA
ATGCAAACCTTCCCACCCCT GTCCCCA TATG CCC ACC ACG AT
GTATTCCCACCCCTG CCCT T C CTTCCAA T --------
GAM6747 2858 AACCCGACACAGTAGCATTT - CAG T CAATT TG TGGAA GTGA

GTGCCAATTTCTGGTTGGAA AACCC GACA TAGCATTTG GC TC GT TG
TGGTGACAACATGCTGGAGC TTGGG CTGT ATCGTGAAC CG AG CG AC
CAAGTGCTAACATGTCTGGG T ACA - ----- GT TACA- ----
TT
GAM6748 6374 GCTTATCTCTTTTGGTTCCT TA-- TTTT T- AA GATTTTGAA
TGTTGGAAAGTTGATTTTGA GCT TCTC GGTTCCT GTTGGA GTT
AGGCATCCAGCTTGGGAACC CGA AGGG CCAAGGG CGACCT CGG
CGGGACAATAGC TAAC C--- TT A- ---------
GAM6749 7932 CCAAGTCTGACCCACTCTGC TC GA CT G AGGAT
GTCCTTTTACAGGATGTGGG CCAAG T CCCA CTGC TCCTTTTAC
AGGGGGCAGCTGGGCTGAGC GGTTC G GGGT GACG GGGAGGGTG
TTGG GA TC C- G -----
GAM6750 15571 AACAGTTCTGGCCTGAGACC TTCT C T A TTGGC-- TTCTT
TGGATTGAGCCTTGGCAGAC AACAG GGCCTGAGAC TGGAT G GCC AGAC
TTCTTGTCTAAATGTTGGCC TTGTC CCGGACTCTG ACTTA C CGG TCTG
ATTCAGTCTCAGGCCCTCTG TC-- - - - TTGTAAA -----
TT
GAM6751 5371 GTTACATCTTGGAACCTGAG GGAA G CCAT GCGC
CCATGGAGGTGGCGCCACCT GTTACATCTT CCT AG GGAGGTG
CCCTGAGGAGAAAGGTGTGG CGGTGTGGAA GGA TC CCTCCAC
C AGA- G ---- ----
GAM6752 14043 GATTTCAGGTCATTTTTAGC T TTAG A GGAAAGG
CCTAGACTGGAAAGGGGTCA GA TTCAGGTCATTT CCCT GACT
GGGGACAGGTGACCTGGGCT CT GGGTCCAGTGGA GGGG CTGG
C C CA-- A -------
GAM6753 8008 CATCTTGGTCCCTCTCTAGG T CTC T GTGATGGAATCTGAAATGA
CTGTGATGGAATCTGAAATG CATC TGGTCC TC AGGCT
AAGTTTGACAAGGACCATGA GTAG ACCAGG AG TTTGA
TG T AAC - ----------
GAM6754 15847 CATGTTGTCACTTAACCCCC T TG TTA CAG- TA--- T TCTTTT
AGGAGTTATTTATTATCTTT CA GT TCAC ACCCC GAGT TTTA TA
TTGTTAAAGTCAGGCTCATT GT CA AGTG TGGGG CTCG AAAT GT
TGGGGTAATGTGATGACTG - GT TAA TTTA GACTG T ------
GAM6755 18882 GGGAGCCGGTTGAGGAAAGG G T A- -- CATCCGAC G ATAACTGGCACG
CAGACATCCGACTTCTTGCC GGGAGCC GT GAGGA AG GCAGA TTCTTGCCCT GT
CTGGTATAACTGGCACGACA CCTTTGG CA CTTCT TC CGTCT AGGAATGGGA CA
AGGGTAAGGATCTGCATCTG G C AG TA -------- A ----------
ATCTTCCACGGGTTTCC
GAM6756 5258 CCAAATTTGTCAGGTGGGGA AA- G GG TTC C -- C - TTAGATTT
TTTCACCCCAGCCTTATGAC CCA TTTGTCAG TGG AT AC CCAGCCTTA TGA TCA GTT
TCAGTTTTAGATTTAACTTG GGT AAACGGTC GTC TA TG GGTTGGAAT ACT AGT CAA
ATTCATTTAAGGTTGGAGTT ATA G TT TT- A TT T T --------
TATTTCTGGCTGGCAAAATA
TGG
GAM6758 14850 CTGCTGTGTCTTTCCAGGTG G T---- C G - AAA ACGGAA
CTGAAAGAGAAAACGGAATT CTGCT TG CTTT CAG TG CTG GAGAAA
TCTTGCATAGACAGCTGAAG GACGA AT GAGA GTC AC GAT TTCTTT
AGTCCTGTAGAGCAG G GTCCT A G A ACG ------
GAM6760 13648 TGTACAATGGCGATTATGTT GATTAT - ACC CGGCTAT
CTGTACCTGTAACGGCTATT TGTACAATGGC GT TCTGT TGTAA

TGCAAAGCAGATACTTGAGC ACGTGTTACCG CA AGACG ACGTT
CATTGTGCA AGTT-- T AA- -------
GAM6761 16525 TATTTAGGTAAAGCTCTAAG GTA AGA CAT- --- TTTTCAT
ACTCATGAGCCAACTTTTCA TATTTAG AAGCTCTA CT GAGCCA AC
TGTAACTGGCTTTCCTAGGC ATGAATC TTCGGGGT GA TTCGGT TG
TGGGGCTTGAACTAAGTA AAG CG- TCCT CAA -------
GAM6762 16417 CTGCCCCATCAGGCCCATCT --- CAGG AGA G TACA
CAAGATGTTGGATTACAGTG CTG CCCCAT CCCATCTCA TGTTG AT
CAACATGAGATGGGGTGGGG GAC GGGGTG GGGTAGAGT ACAAC TG
ACACAG ACA ---- --- G ----
GAM6763 12980 CACTGTGGGGGCGGTGAGAA GGGG AGAA GA -- AGGA GGGG
CGCTGTGGACACTGAGGACG CACTGT GCGGTG CGCTGTG CAC TG CGCTGT
CTGTGGGGGCGGTGAGGGCG GTGGCG TGTCGC GTGGCGC GTG GC GTGGCG
CTGTGGACGCGGTGAGGACG GGGG AGGA AG TC GGGA ----
CTGTGGGGGCGGTG
GAM6764 438 GCAGGACTGGAGCTTCCTCA A AGCT CA - TCTGCCT C
ATCTCCCCATCCACACAG
CCAGGGTTCTGCCTCTGGCC GC GGACTGG TCCT CCAG GGT CTGGC CCG
CCGATCTCCCCATCCACACA CG CCTGACC AGGA GGTC CCG GACCG GGC
GCGGAGCCAGGCCACTGGAA A GAC- AA A ------- A ----------
AGGACAGCCAGTCCAGC
GAM6765 18411 GTAAGCAGTCTGGATTCGTG A --- TT G A AAG AGT- TT ACAT
TTTATTGAAGCCAGTAATTA GTA GCAGTC TGGA C TGTTT TTG CC AA AGAG
GAGACATCTTTTTTTCCCAG CAT CGTCAG ACCT G ACGAA GAT GG TT TTTC
GACTAGAAAGCAAGGTTCCA A TAC TG A A CA- ACCC TT ----
CATGACTGCATAC
GAM6766 5555 GTCTGGACCTGGGACCCACT GGACC CA- G-- A T TTTCCT
GCAGATTATGTTTTTCCTGA GTCT TGGGACC CT CAG TTA GTT
CTTAACTGAGAAGGCAGGTT CAGA ACCTTGG GA GTC AAT CAG
CCATTGAAGAC AGTT- ACG AGA - T ------
GAM6769 643 GCTGCTGCTGATGGACTGCC T - GA CC-- AG- GCTATA G TCGCACAT
GGCCGCAGGAGCTATACGAG GCTGC GC TGATG CTG GGCCGC GA CGA TCG
TCGTCGCACATCGAGTCGGC CGGCG CG ACTAC GGC CCGGTG CT GCT AGC
CATCAACGTGGCCATCCCGG T T G- CCTA CAA ACCG-- G --------
GCATCATGCTGCGGC
GAM6770 13642 TGGATTTTTATGGACTCTTT TTTTT G- ATTAG A AGA- AAAA
ATTAGGGTATTAAGATATTG TGGA ATG ACTCTTT GGT TTA TATTG
AAAATAATACACGTAAACCA ACCT TAC TGAGAAA CCA AAT ATAAT
CAAAAGAGTAGCATTCCA ----- GA ACA-- - GCAC ----
GAM6771 14929 CCCAGGCGTCGAAGCAATGC A AA A CT G - A TCCCAAGTAGC
TCCGGTCTTAGCCTCCCAAG CCC GGCGTCG GCA TG CC GT CTT GCC
TAGCGGCGAGTACAGGCACA GGG CCGCAGC CGT AC GG CA GAG CGG
GTGCCACGACGCCGGG - AC G AC A T - ----------
GAM6772 13773 CCAGGTTCCACTTCTATAGC A - TCT CA AGAAAAACA ATAGGTGG
CACGTGAGAAAAACATGGAA CC GGTT CCACT ATAGC CGTG TGGA
TAGGTGGTCCACACGAAGTT GG TCAA GGTGA TATTG GCAC ACCT
ATAGTGGAAACTAGG A A --- AA --------- --------
GAM6775 8106 TTAATCCCTCCAGTGACAGC - - GAC- GG--- AG-- G T TCACA
GGTGGGGCAGCTGTTTTGTT TTAATC CC TCCAGT AGC TGGGGC CTGTTTT TTTC ATT
TCTATTTCACAGATGAGAAA GGTTAG GG AGGTTA TCG ACCTCG GGCGGAA AGAG TAG

GGCGGAGAGGCTCCAAAAGG A T GTAA GGAAA GAGA - - -----
GCTAATGATTGGATGGAGAT
TGG
GAM6776 22777 GAGGCAGAAACTGTGGAAGG AA GT A TAAA TGT TAATA
TAAATATATGTTAAGAAACT GAGGCAG ACT GGA GG TATA TAAGAAAC
AATAGTTTCTTGTTTGTAGA CTCTGTC TGG TCT CC ATGT GTTCTTTG
TTCCTCTGGTGCTGTCTC G- -- - TTAG TT- -----
GAM6777 13522 CAGTGGCCCCTGGGCAGGGG T CCT G CC TGA CTGA
CACCCAGGCTGAACCCTGAG CAG GGCC GGGCAGGG CA CAGGC ACC
GTGCTGCCTGCTTGGTCCTG GTC CCGG TCCGTCCT GT GTCCG TGG
CCTTGGCCTCTG T T-- G TC TCG ----
GAM6778 15255 CACCACCGCCACTTCGTCAT A ---- --- AT G CAG
CCGCAGAGGCCAGGTCTTGC CACC CCGCCA CTTC GTC CCGCA AGGC
GGGAGATGCTGAAGAGTATG GTGG GGCGGT GAAG TAG GGCGT TCTG
GCGGGGTG - ATGA TCG AG - ---
GAM6779 15759 CATCAGGCCGAATCAGGGTG CC T G ---------- C CCACA
TTGACCTTGGCCACATCAAT CATCAGG GAA CAGG TGT TGAC TTGG
GTCATACAGCTTCTTCACAG GTGGTCT TTT GTCC ACA ACTG AACT
CCTGTTTAATCTGGTG AA - G CTTCTTCGACAT T -----
GAM6780 3668 CCCATCTTTCTCTTATTTGA AT TA A TCT TCAGCTCCTCTT
TGTCTCTGATCAGCTCCTCT CCC CTTTCTCT TTTG TG CTGA
TTCAGCACAAACTGGAGAAA GGG GAAAGAGG AAAC AC GACT
GGGG -- TC - --- ----------
GAM6781 13027 AGGTCCGCGCTGTGTCCCGT --- G- C TT - GAGAGGAAAAG
GTTTTCTGCGTGAGAGGAAA AGGTC CGCGCTGT TCC GTG TTCT GCGT
AGATGCTAGAACCACAGGAG TCCAG GTGCGGTA AGG CAC AAGA CGTA
AATGGCGTGATTGACCT TTA AG A C- T ----------
GAM6782 12553 GGCGCACCCGGTGGCCGCCC -- -- G C CCTG A TG AAGTC
GGACCTGCTTATTGCTGTCA GGCGCAC CC GGTG CCGC CGGA CTT TTGC TC
AGTCGGTGGCAGAGGACTTC CCGCGTG GG CCGC GGCG GCTT GGA GACG GG
GAGCGGCGCCAAGGCCGTGC CC AA - A CA-- - GT -----
GCC
GAM6783 17897 TCCCTGGAGGTTCTGGATGA G - ATGA AC--- AGGCTT
AGGCTGAACACAGGCTTGTT TCCCTG AGGTTCT GG AGGCTGA AC
AATGTCAGTCTGTGCTGAGG AGGGAC TCCAGGA TC TCTGACT TG
ACCTCAGGGA - G GTG- GTAAT ------
GAM6784 4338 GTCAACAGCAGCTGGAGGAA A C GAGGAAAA AA A GAAT
AATGGCAAGAACTTGGAATC GTC ACAGCAG TG TGGC GA CTTG
AAGATTAGGTTAGAATAACA CAG TGTCGTC AC ATTG TT GAAC
CTGCTGTAGAC A - AATAAG-- GA A ----
GAM6785 2215 GAAACCCTATAAATGTCCTA A ATAA C CTGT AAAA ATTCA
TCTGTGAGAAAAGTTTCATT GAA CCCT ATGTC TAT GAG GTTTC
CAGAGATCAAACTTTAATAG CTT GGGA TACAG ATA TTC TAGAG
ACATCAGAGGGTTC - GAC- - AT-- AAAC -----
GAM6786 394 GGAATGGTGACAACATGCTT GA AA-- G T TAACAT
GGAGCCAAGTGCTAACATGC G ATGGTGAC CAT CTTGGAGCCAAG GC
CTTGGTTCCAGGGATGGCAA C TGCCACTG GTA GGACCTTGGTTC CG
GTCACCGTAAC AA AACG G - ------
GAM6787 1951 GGTGTCTTGGTTCTAGCTTC - CTA TCT C- TT TAGAATTATTT
TGGGCCTCTTGTTTTCTAGA GGTGTCT TGGTT GCT GGGC TCTTGT TC

ATTATTTGATACAAGAAAGT TCACGGA ACCAA CGG CTTG AGAACA AG
TCTGGCACAACCACAGGCAC C CA- T-- AA T- ----------
T
GAM6788 13030 CCATTTAATGACCAGCAGTC A T G ------ CGCT GAAA
ACTGAGCGCTGTGAAAATTC CC TTTAA GACCA CA GTCACTGAG GT
ACTCAGTGATACCCCGTGTG GG AAGTT CTGGT GT TAGTGACTC TA
GTCTTGAAGG - - - GCCCCA ACT- ----
GAM6789 21570 AATAGCTGGGATTATAGGTG - TG C G G - TA-----
CCCACCACCAGGCTGGGCTA AA TAGCTGGGATTATAGG C CACCACCA GCT GGCTAATTTT
GTATTTT GCTG
ATTTTGTATTTTTAGCTGAA TT ATCGACCCTGGTGTCC G GTGGTGGT TGG TCGATTAAAA
CATAGAA TGAC
ACCCAGTCTCTACTAAGATA C GT T G G G TCATCTC
CGAAAATTAGCTGGGTGTGG AAACC
TGGTGTGTGCCTGTGGTCCC
AGCTACTT

GAM6790 20062 GAGCAGCGATGGACCATGTA C - GGA --- CA C TG AC C- TCTCTCACATACC
GTGCATGGGCAGTGTGCGAC GAG AGC GAT CCA TGTAGTG TGGG AG TGCG ATC TGC
ATCCTGCTCTCTCACATACC CTC TCG CTA GGT ACATCAC ACTC TC ACGC TAG ATG

GTATCGATAGCGCAACCTTC C T GC- TAA -- T CA GA CT ----------
TCACACTACAAATTGGCGAT
CTGCTCCTC

GAM6791 2596 GGCCGCGATGTCCCCCGCCT ------ C---- G - GAA GCGT
GTCTGCGAATGCTGCGTAGC GGCC GCGATGTC CCC CC TGTCTGC TGCT
GGGTAGACATGGAGGGCTTT CCGG TGCTACGG GGG GG ACAGATG GCGA
CGGCATCGTCAGAGTGGCC TGAGAC CTTTC A T G-- ----
GAM6792 3835 GGGGATCTTGGCCTCACGGT GA - CAC TAAGAA TGGT
GTAAGAAGGGAGAGGATGGT GGG TCTT GGCCT GGTG GGGAGAGGA
TTCTCTTCTGCCCTCACTAG CCC GGGA CCGGG TCAC TCTTCTCTT
GGCCTAGGGAACCC AA T A-- TCCCG- ----
GAM6793 21094 CTTGATACTTCTCTCGTTGT TAC GAA AAAAAATATACCAGCCTC
TGAACAGAGAAAAAATATAC CTTGA TTCTCTCGTTGTT CAGAG
CAGCCTCCTCTGGAAGCAGC GAATT AAGGGAGCGACGA GTCTC
GAGGGAAAATTTAAG TAA AG- ----------
GAM6794 22551 GATGCTGGTGCTCAGTACGG C- AGTAC CA ---- G GAGGGA
GAAAGTCATAGACCGAAGAG GATGCTGGTG TC GGGAAAGT TAGAC CGAA AGT
TGAGGGAACTGTTCGTGCAG TTACGACCAC AG CCCTTTTA GTCTG GCTT TCA
TCTGAAATTTTCCCCTTGGA AA GTTC- AA ACGT G ------
AACACCAGCATT
GAM6795 12209 CTCAGGGTTGTCCCCCAGTA TT CC- - GA T T TTTGA
GAAGTGATGGGCTGCTTTGA CTCAGGG GTC CCAG TA AGTGA GGGC GC
GCCGTTCTTACTGATGTCTG GGGTCCC TAG GGTC GT TCATT CTTG CG
GTCTGATCCCCTGGG C- TCT T AG - C -----
GAM6796 21280 AGTACTTGTTTTTCTCTGAT TTGTTT TCTG- CTC CT - GTGAA
AAGACTCAGGAATTCTGAAA AGTAC TTC ATAAGA AGGAATT GA AAT
TGTGAAATTGTCTCAATTCT TTATG AAG TGTTCT TTCTTAA CT TTA

TTCTCTTGTAGCATGAATCA TAAACT TACGA CT- CT G -----
AATGTATT
GAM6798 12094 CACCTGATTTTTAAGCTTTG G TTA C - CC --- TTTAAGTTTCC
ACACCTGCACATTTTAAGTT CACCT ATTT AG TTTG ACA TGC ACAT
TCCATGTCTAGTATTTGTAC GTGGA TAAA TC AAAC TGT ATG TGTA
AAACTAAATGAGGTG G --- - A TT ATC ----------
GAM6800 3185 CCGCTTCTGACTGCCTAGGG C- CTA G CATCCTGTCATCATC
CGAGTGGGCATCCTGTCATC CCGCTT TGACTGC GGGC AGTGGG
ATCTCCACTGTCCCAAGCAG GGTGGA ACTGACG CCTG TCACCT
TCACTAGGTGG TC AAC - ----------
GAM6801 10683 GGATCCGGCTGCCAGCCTGA - CT - C A - A- - T AGAC CGACC
GGCCAAGCACGGCTGGAGAC GGATCC GG GCC AG CTG GGC CA GCA CGGC GG CCA
CCACGACCTGGCCTGCCGTT CCTAGG CC CGG TC GAC TCG GT CGT GCCG CC GGT
GCCCTGAGCTGCAGCCTCGG A C- C C G A CC T T ---- -----
CCCCAGGATCC
GAM6802 2311 GCCGCGCCATGTCCTGCTTG - A--- T- T-- C GCAG
GCCCGCTGCAGGGCGGCCTC GCCG CGCC TGTCC GCT GGCC GCT
CAGCTCGGACAACTAGGCGT CGGT GCGG ACAGG CGA CCGG CGG
TGGC T ATCA CT CCT - ----
GAM6803 3039 GAGGCCGCCACCGGCAAGGG CCG AC --- - - - GGGAG
GTGCGCGCTGGGGAGCGGAC GAGG CC CGGCA AGGGG TGC GCG CTG
GCTGCATCCCCTTTCTGCTG CTCC GG GTCGT TCCCC ACG CGC GGC
CAGGAACCTC AA- AC CTT T T A -----
GAM6804 3421 GCCAGTTTAACTGTCTAGCA - AAC-- C--- CATTT
AAATGCATTTCATTTTAAAA GCCA GTTT TGTCTAG AAAATG
TTGGATATTGGGAGACTTGG CGGT CAGA ATAGGTT TTTTAC
C T GGGTT AAAA -----
GAM6805 1007 GGTGTCTCCTCAGATGATAA T GAT TTTCATTGACG GAGGAACCCATGGAT

CAGTTTTCATTGACGGCTAC GGTGTC CCTCAGAT AACAGT GCTACTAT
TATGAGGAACCCATGGATGT CTACGG GGAGTCTG TTGTCA CGGTGGTG
GGTGGCACTGTTTGGTCTGA - GT- ---------- ----------
GGGGCATC
GAM6806 21630 TACACAGGTGCATCAGACGT AG ATCA- G A-- ACAG A CGGAGCA
GTGGACATGCAGACACAGAC TACAC GTGC GACGTGT GACATGC GAC AC CA
ACACGGAGCATGGGTACGTC GTGTG CACG CTGCACG CTGTGCG CTG TG GT
ACCGCGTGTCGGCACGTCCA CT CCGAC G CCA CA-- G -------
GCCGCACTCGTGTG
GAM6808 15323 GCCGTGGAGTGGGAGAGCAG C TG -- AG- --- C-- AACAACTACAACACCACGC
CGGGCAGCCGGAGAACAACT GC GTGGAG GGA GAGC CGGG CAGC GGAG
ACAACACCACGCCTCCCATG CG CATCTC TCT CTCG GCCT GTCG CCTC
CTGGACTCCGACGGCTCCTT A CT TC GCA CAG TAC ----------
CTTCCTCTACAGC
GAM6809 11258 GGAGAATCGCTTGAACCCGG AA GAA GGG - GT A- TGAGTTT
GGGGCAGAGGTTGCAGTGAG GGAG TCGCTT CCC GGGC AGAG TGCAGTG GC
CTGAGTTTGCGCCACTGCAC CCTC AGTGAA GGG TCCG TCTC ACGTCAC CG
TCTAGCCTGGGGGAGAAAGT AA AGA GG- A -- CG -------
GAAACTCC
GAM6810 18997 TCTTTGCCCCCTTTGGCAGT TT- TG AG -- GTCAA
GGCTGCCCAGTCAATGGGCA TCT GCCCCCTT GC TGGCT GCCCA

GAGCCAGCTGAGGGGGGCTT AGG CGGGGGGA CG ACCGA CGGGT
TGGA TTT GT -- GA -----
GAM6812 1864 GCTCCGCAAGGGGGAGCTGC - AGGGGGA G GGA CGC-- TCATC
GCTCGGCGGACCTGCCCGCG GCTCC GCA GCTGC CTCGGC CCTGCC GA
ATCATCTCAACATGGCAGGA CGAGG CGT CGACG GAGTCG GGACGG CT
GCTGAGGCAGCTGCAGGAGC A ------- - A-- TACAA -----
GAM6813 8496 TAGTTACCACCAGCTTGGCC AC AGC - AGAATC TG GCAACTTGACTA
TAGAATCTCATTGAACGCAA TAGTT CACC TTGG CCT TCAT AAC
CTTGACTAGTTATGACAGAG ATCAA GTGG GACC GGA AGTA TTG
AGGACCAGGGTGAGAACTA GA --- A GAGAC- -- ----------
GAM6815 5544 GAGGTACTAGGTTTTGACAA GTA TTT A GCATC GTGA
GCTTGCATCATGCGTGAGTA GAG CTAGG TGAC AGCTT ATGC
TAAGCTAGTCGTTCTTGGCT CTC GGTTC GCTG TCGAA TATG
C --- TT- A ----- ----
GAM6816 17727 CTCCTCACCGCCTGGCTACC C - C--- - C- GGTGTT
TGACCTTGGTGTTGAGCTTC CTCCT AC CGC TGGC TACCTGA CTT
AGGTATGCCACATAGTGTGT GAGGA TG GTG ACCG ATGGACT GAG
CAGGAG C T ATAC T TC ------
GAM6817 15956 CCCGCGTATAGCTTCTGGCC C - TCT CT--- G TGGATTGTT
TGAGCTTGGCCTGGATTGTT CCCG GTA TAGCT GGC GAGCTTG CC
GGACGAGTTCTTTATGCTTA GGGC CAT ATCGG TCG CTTGAGC GG
TGGCTATTACACGGG A T TAT TATTT A ---------
GAM6819 18925 GGTGCTGTCGGGCGGACCAC T T ACCA-- A-- GGG TTGC
CATGTATCCGGGCATTGCTG GG GC GTCGGGCGG CC TGTATCC CA
ACAGGATGCAGAAGGAGATC CC CG CGGTCCGCC GG ACGTAGG GT
ACCGCCTGGCGCCC - - ACTAGA AAG ACA ----
GAM6820 16454 GGGGGTGCAGGGCCCTGTGG C- -- T -- AC- CCTCTCAGCAC
TTGGACTTCACCTCTCAGCA GGGGGTG AGGGCC CTG GGT TGG TTCA
CTGAAAACCCAAAACCCAGC TCCTCAC TTCCGG GAC CCA ACC AAGT
TGGCCTTAACACTCCT AA TC - AA CAA ----------
GAM6821 8429 AGATACCATACACATGATGA T C A A A T GTTTGAAAGTACTGTTGA
AGTTGCTGTTTGAAAGTACT AGA ACCATA AC TG TG AGT GCT
GTTGAAGCACTGTACAAGTT TCT TGGTGT TG AC AT TCA CGA
TGTGGTTCT - T A - G - ----------
GAM6822 5301 GAGGTAGCTGTGGTTGTATT -------- GG TT CCC GAGTGG
TCACCCAGGAGAGTGGTCCT GAGGTA GCTGT TTGTAT CA AGGA
TTGGGATGCAAGGCAGTTGT CTCCAT TGACG AACGTA GT TCCT
TCTAATACCTC AATCTTGT G- GG T-- ------
GAM6823 13458 GGATTGAAACTGTCTCAGGA A A C- ACCTT T TCTTGCTAT
CCTTGATGATCTTGCTATTC GG TTGAA CTGT TCAGG GA GA
TCTACCTGGCCACAGTTCAA CC AACTT GACA GGTCC CT CT
GCC G - CC AT--- - ---------
GAM6824 2638 GAAAGGTGCTTCATGGAGAG TG CA-- G G GTAGAAAAGGATGATTA
GTGATTGTAGAAAAGGATGA GAAAGG CTT TG AGAGGT ATT
TTAAATGATCTCTGCAAACA TTTTTC GGA AC TCTCTA TAA
AGGTGCTTTTT GT ACAA G G ----------
GAM6825 15350 CCTTATGGAGACTGTATCAT TA A C TCAT A CTTA GAGAA
CCTTATCTTCATCTTACAGG CCT TGG GA TGTA CCTT TCTTCAT CAGGT
TGAGAAATCTGCAGTGAAGA GGG ACC CT ACAT GGAA AGAAGTG GTCTA
AAGGTACATCCCAAGGGG GA - - ---- - AC-- -----

GAM6826 5676 TCAGTTTCCGTAGTCTATTC TCC CTATT TTCCC-- TTTTTTTCATTTCTC
TTTCCCTCATTTTTTTCATT TCAGTT GTAGT CT TCA
TCTCTGATATTTTTAGTTTC AGTCAA TATCG GA AGT
TGCTATCTAACTGA TC- TCTTT TTTTTAT ----------
GAM6828 3539 GCCGCGCCCCCTTGGCGCCG C CT C TCCT--------- TTGC
GGTGTCCTGCCGCTGCTTGC GC GCGCCCC TGGCG CGGGTG GCCGCTGC
GCAGCGGCCCTTGTTTCTTC CG CGCGGGG ATTGT GCCCAT CGGCGACG
TTACCCGTTGTTAGGGGCGC A -- T TCTTCTTTGTTCC ----
AGC
GAM6830 7700 GACATTGTGCCTCGATAGTG TGTGC T T ------ TTTCAATT
GCAGCTTTCAATTGCAATCA GACAT CTCGA AG GGCA GC
ATGCCCTTCGAGAATGTGTC CTGTG GAGCT TC CCGT CG
TAA-- - - AACTAA --------
GAM6831 10707 AGAGAAGATTCCCGGAGAGT GAA C-- TA C CT AATCCCGA
AAATCCTCTTTCCAATCCCG AGA GATT CCGGAGAG AAT CT TTCC
AGGAACAAGCATTGTCTCTC TCT CTAG GGTCTCTC TTA GA AAGG
TGGCAAGATCCATCT AC- AAC TG C AC --------
GAM6832 3209 TAGTGCACAATGGTGGAAGG T ACA T- A-- GTTCGT - CAGG
AGGCGGTTCGTATGTCCCCA TAG GC ATGG GGAAGG GGCG ATGTC CC
GGGGCGGCATCCCAATGCCA GTC CG TACC CCTTCC CCGT TACGG GG
GACCTTCCTCCCATGGGCTC T GG- CT AGA AACCC- C ----
TG
GAM6833 3724 CCAAGTTCATTGAGGTATCT A CATT TATCTAA A- - GCGG
AAAGAGGCCCGGAAGCGGTT CCA GTT GAGG AG GGCCC GGAA
CCTGGGCCCCCTGCACCCCT GGT CAA CTCC TC CCGGG CCTT
CCTTCAACCTGG C CTTC CCACG-- CC T ----
GAM6834 5383 TCCCCGCGCCGCGAGACCAG ---- A CCA C - TCCGGTT
GCTCCCGCTCCGGTTGCGGC TCCCC GCGCCGCG GA GG TC CCGC
GACCGCCTCCGCGGCGCCCC AGGGG CGCGGCGC CT CC AG GGCG
TGGGGA TCCC - CCG - C -------
GAM6835 4183 ACATCAAGACAATGTATACT - C A TTCAAA CCATACATAATCAA
ATTTCAAATATATCCATACA ACATCAA GA AATGT TACTAT TATAT
TAATCAAATATAGCTGTAGT TGTGGTT CT TTGTA ATGATG ATATA
ACATGTTTTCATTGGTGT A T C TCG--- ----------
GAM6837 1683 CCCGCTTGGGCTGTGGAGTG C G G T A ACT-- CG TCTCTCTCTATCC
GATCGAACTTCCTCGGGGTC CC GCTT GGCT TGGAG GG TCGA TCCT GGG
TCTCTCTATCCTCTTTGGGA GG CGAG TCGG GCCTC CC AGCT AGGG TCT
TCTGCTCGAACCCTCCGAGG A G A - A CGTCT TT ----------
CTGGAGCAGG
GAM6838 11695 CATGAACACGTGTGGGCCTC AA ---- C C- G TTGA
GGTCACCTGGCTTTGAGGGC CATG CACGTGTGG GCCT GGTCA CTG CT
AGTCTGACCAGGCTAGACCA GTGC GTGCACACC CGGA CCAGT GAC GG
CACGTGCCGTG C- AGAT - CT G ----
GAM6839 9514 GGCAGGGCCCAGGGCAGCGG ----- AGG CGACCC CC G TTTATCACC
CCGACCCGGGGCCCCGGACT GGCA GGGCCC GCAGCGGC GGGGC CG AC
TTATCACCGTGCGCTGCCCC CTGT TCCGGG CGTCGTCG CCCCG GC TG
AGCTGCTGCAGGGGCCTGAC TACAG GA- A----- TC G ---------
ATTGTC
GAM6841 849 CTCCTCTGGACTTTTCGGTT G TTTT G - TTGTAAC
CCCTCCCCTGTTGTAACTAG CTCCTCTG AC CG TT CCCTCCCCTG

GGGAGGGTGAGTGTCTGTGT GAGGGGAT TG GT AG GGGAGGGGAT
AGGGGAG G TCT- G T -------
GAM6843 11199 TGTCCGGTTCTGGTGGCTCA TTC --- - A - - A CAG GAGG
TGCCTGTAATCCCAGCATTT TGTCCGG TGGT GGCT C TG CCT GT ATCC CATTTTGG
TGGGAGGCCGAGATGGGCGG ACGGGTC ACCA TTGA G AC GGA CA TAGG GTAGAGCC

ATCACGAGGTCAGGAAGTTA CT- GAA A G T G C CGG ----
AGACCATCCTGGGCA
GAM6844 409 AGCCTCAAAGCTTGGCCAGG - AAA AGG GAAGGTA CGGT
GCTGAAGGTACCACACGGTT AGCC TC GCTTGGCC GCT CCACA
GTGGGTGAGGCAGGCTAAGC TCGG AG CGAATCGG CGG GGTGT
GGGATGGCT T GG- A-- AGTG--- ----
GAM6847 9457 GGAGCATTCTTGTCCCTCTA A A TCC T AGA- GA- --- T GATC
TCCTCACAGAGAAGCAGAGG GG GC TTCTTG CTC ATCCTCACAG AGCA GGCT TCTC CCCCAA

CTTCTCTCCCCAAGATCTTG CC CG AGGAAC GAG TAGGAGTGTT TCGT CCGG GGAG
GGGGTT
GGGTGAGGCTGGGCCATGTG - G T-- - GGGG GTA GTC T ----
CTGGGGTTGTGAGGATGAGT
CAAGGAGGCCC
GAM6848 422 CTGCACAAAGACCCCTTGCT ACAAA CC TT- A- C CC CTAGCTCCTT
GCCAGGGCCAGGCACCGGCC CTGC GA CC GCTGCC GGGC AGGCA GGC
TAGCTCCTTGCCTGCCTGCC GACG CT GG CGACGG TCCG TCCGT CCG
TGAGGCAGCCGTGGAATCAG GGA-- AA TGC AG - -- ----------
GGCAG
GAM6849 17485 GCTTTCATCATCACAGGGCA TT ------ T G A----- A GAAAA
GACAATATACACGAAAAGTG GCT C ATCA CACAGG CAG CAATAT CAC
GATATTGAAGGTACTGGTCT CGG G TGGT GTGTCT GTC GTTATA GTG
GTGCTGGTAGCTTGGGGGGC GG GTTCGA C G ATGGAA G -----
GAM6851 4270 GGAGGCAGTGCTGGGGCTTG CAG G T GCC CCCCCCTTCA
CGCCCTCGGGGGACCCCCCT GGAGG TGCTGGG CT GC CTCGGGGGA
TCATCCCTCGAGCAGTCGGG CCTCC GCGGCCT GG TG GAGCTCCCT
TCCGGCGTCCTCC T-- G C AC- ----------
GAM6853 11790 TTGATTTTTAGAGCACCATC T C ATCACTTTC TT T TCTGATTTT
ACTTTCACATTCCTGATTCT TTGA TTTTAGAG ACC ACA CC GAT
GATTTTGTTTGGTTTGTTGG AATT AAAGTCTT TGG TGT GG TTG
GTTTTCTGAAACTTAA C T GT------- TT T ---------
GAM6854 12506 ACTTCGCTCCCACTCCCGCA C CCC G TGACA TA AGA
CAGCCTGACAGGGTACACAG ACTT GCT ACTCCC CACAGCC GGG CAC
AGTGGGTTCAACATGGCTGT TGGA CGA TGAGGG GTGTCGG CTT GTG
GAGGGAGTCCTAGCAGGT - TCC A TACAA GG ---
GAM6855 5832 AGCCAGCATCGTGTTTCAAA CC T TCAAACA A C- ACCTCCG
CAGTGCATGACGCACACCTC AG AGCA CGTGTT GTGC TGA GCAC
CGGTGCAATCAGGCATGACA TC TCGT GTACAG TACG ACT CGTG
TGTGCTCCCT CC - ------- G AA -------
GAM6856 3513 CCCCTCTCCAGCATAGTGAG C C A GATCA AA CTTCACATTTTA
ATCAAGAAGGAGGCTTCACA CCC TCTCCAG AT GTGA AG GGAGG
TTTTATCTTCAGCTCCATCA GGG AGAGGTC TA CACT TC CTTCT
CCATCCTGGAGAAGGG A C C ACC-- GA ----------
GAM6857 19918 GCGGAAACGTGCCGGAGATT G C-- A GT--- ACCTG

GCTGTGTACCTGGCTTTGAA GC GAAACGTGC GGAG TTGCT GT
GCAACTCCTCAGTACGTTTT CG TTTTGCATG CCTC AACGA CG
GGC G ACT - AGTTT -----
GAM6859 12151 ATTGCATTCCATCGCTGGGG AT-- G TG GT GTT
GGTCGCGCGTTGTGCGGTTT ATTGC TCCATC C GGGG CGCGC
CTTGGGGTGGGTAGAGCAAT TAACG GGGTGG G TCTT GCGTG
AGAT - GT TG ---
GAM6861 7248 AGTAGAACTATTTATTTTCC T TCCTT - TATACC GTAA
TTTGCGTATATACCCAGTAA AGTAGAACTATT ATTT TGC GTA CA
TGAGATTGCTGCATTGAATG TCGTCTTGATAG TAAG ACG CGT GT
ATAGTTCTGCT - TT--- T TAGA-- ----
GAM6863 14290 CAGGTGCACTCTATTCAAGT - C CAA---------- ATCAGAA
GCAAGGATATCAGAAGTTTT CAG GTG ACTCTATT GTGCAAGGAT
TGCATCAACAAATTTTCGAG GTC CAC TGAGGTAG TACGTTTTTG
ATGGAGTTCACTCTG T T AGCTTTTAAACAAC -------
GAM6864 1411 CACTATGTTGGCCAGGCTGG A TT- - T CTC TC ATCT
TCTCGATCTCCTGATCTCAG CACT TG GGCC AGGC GGT GATC CTG
ATGATCCACCTGCCTCGGCC GTGA AC CCGG TCCG CCA CTAG GAC
TCCCAAAGTG A CCT C T C-- TA ----
GAM6865 1934 GGCAGGCACTCAGCCCTTGG - G C TTGG G GA C - AGCCTG
AGGTGCTGGAGGCTGTGCAG GG CA GCA TCAGCCC AGGT CTG GG TG TGCAGCGC
CGCAGCCTGGTGCTGCAGCG CC GT CGT AGTCGGG TCCA GAC CC GC ACGTCGTG
ACCACAGACCTGGGCTGACT A G C ---- - A- A G ------
GCGTGACC
GAM6866 20031 GCTATTTTTGCTGTTTGGCA TT TG- AT T CTCT CTGT
GATGGTGAGGGGTCACTCTG GCTATTT GCTGTT GCAG GG GAGGGGTCA GG
GCTGTCCTCTGGCTCCTCCT CGGTGGG CGACGG CGTC TC CTCCTCGGT CC
CCTGCAGCGGCAGCTTGGGT TT CGA C- - CT-- ----
GGC
GAM6867 9564 GCAAATACTTTTGACCTCTT - GACCTCT T ACTAAAACTTAATTC
GTGATGAGTCAGAACTAAAA GCAA ATACTTTT TGTGA GAGTCAGA
CTTAATTCTTTGACTTTCAC CGTT TGTGAAAA ACACT TTCAGTTT
ATTTTTTAAAAAGTGTATTG A ATTTTTT - ----------
C
GAM6869 16054 ATCTATGAAGGCCAAGTGGA TGAA CAA GA - GA A GGAAA
GGTGACTGGTGATGAATACA ATCTA GGC GTGGAGGT CTGG TGAT AT CAATGT
ATGTGGAAAGCATTGATGGT TAGGT TCG CACTTCCG GACC ACTG TA GTTACG
CAGCCAGGTGCCTTCACCTG TTA- TC- TG G G- - -----
CTATTTGGAT
GAM6871 16558 AGGAGTCTTGCCCTGTTGCC TC CC TT --- T -- G ATCT
CAGGCTGGAGTGCAGTGGGG AGGAG TTGC TG GCCC AGGC GGAG TGCAGTGGG CG

CGATCTTGGCTCACTGCAAC TCCTC AACG AC TGGG TCCG TCTC ACGTCACTC GT
CTCTGCCTCCCGGGTTCAAG TT A- T- CCC - CA G ----
CAATTCTCCT
GAM6872 7702 GCGGCCTCGCTGCCGCATCC GCTG-- CCCA AA TGC
CAGGCTAAGCGCTGCGCGCA GCGGCCTC CCGCAT GGCT GCGC
AAGCCGTGCGGAGATTGGAG CGCCGGAG GGCGTG CCGA CGCG
GCCGC GTTAGA ---- AA ---
GAM6874 19720 CCTGTCCCTCACCTGCGGTG T CA C T TTA --- TTA

GTTTATGGTGGGTCCTTCAG CC GTCCCT CCTG GG GGT TGGTGGGTCC TTCAGTGG
TGGTTACTACTGGAGCTGGA GG CGGGGA GGAC CC CCG ACCGCCTAGG AGGTCATC

TCCGCCAGCCCCCAGGAAGG T A- - - --- TCG ---
GGCTGG

GAM6876 19545 TTTTTCTACTCCAAATCTTT CTCCAAA T TCAAACACAGTTT T TATGGCTT
CGTCAAACACAGTTTCGAGA TTTTTCTA TCTT CG CGAGATTG TGC
TTGTTGCTATGGCTTGTATT AAGAAGAT AGAA GC GTTCTAAT ATG
AATCTTGCATCAAAAATCGA CCACGA- - TAAAAACTAC--- T --------
AGAAGCACCTAGAAGAA

GAM6877 12948 GATTTTGCTCTCAGAACCCC T - ACCCC CC TCATCAT CTCTGCTTTA
TTCCCCCTTCATCATGCCCC GA TTTGCT CTCAGA TTCC CT GCCC
TCTGCTTTAGGGTTACGCTA CT AAACGA GAGTTT AAGG GA TGGG
GTGGAAAAATTTGAGCAGCA C C AAA-- T- TCGCAT- ----------
AACTC

GAM6878 21540 GCACAACCTGCCACTGCCAC CCT ACT - - A- A CAGTT GAGAAT
AGTAGCTCAACCAAGCAGTT GCACAA GCC GC CACAGTAG CTC ACCA G GTGCT
GTGCTGAGAATGGCACCTGG CGTGTT CGG CG GTGTCGTC GAG TGGT C CACGG
TGAGAGCCTGCTGTGTGCCA T-- AC- T C AG - ----- ------
GGCTTTGTGC

GAM6879 15412 CCCAGGTGGTGTTGCTGTCC A G CCTTCT-- A ----- GTTGAATG
TTCTCCAATTGTGAGTCTGT CCC GGTGGTGTT CTGT CCA TTGTGA GTCT
TGAATGGGATTATCTTCATA GGG CCACCATAA GGTA GGT GATACT TAGG
GTGGTTTTCTTCATGGAATA - - CTTCTTTT - TCTAT --------
CCACCGGG

GAM6880 7767 TGTCGGCTTTGCTGGCCCAG C - --- - -- AAG GA C TCTT
CAAGCCTGATAAGCATGAAG TGT GGCTTT GCT GGC CCAGCAA GCCTGAT CAT AGCT TTA

CTCTTATCTTTGGTGGCTGT ACA CCGAAG CGA CCG GGTCGTT TGGGCTG GTG TCGG GGT

GGTCGGGTGTTTGCTGGTGC A T CCC T TG --- -- T ----
CCCCAGCTGAAGCCAACA

GAM6881 370 TTGCACTGGTCCCTGGAGAG A - GGAGAGA G - --- - GAGC
AGGGCGTCCCCTGCAGGAGA TTGC CTG GTCCCT GGGC TCC CC TGCA GGA
GCTTCATGCGCCTGGTGGAG AACG GGC CAGGGG TCCG AGG GG GCGT CTT
GCCTGTGGGGACTCGGAGCA A T TG----- G T TCC A ----
A

GAM6882 16210 CGGGTCGGGGTTTAACGCGT TAACGC TT CCGTAAGCC
TTCTGGGCCGCCGTAAGCCC CGGGTCGGGGTT GT CTGGGCCG
GGCCTAGGGGCAGCTTTGAC GCTCAGTTTCGA CG GATCCGGC
TCG ------ GG ---------

GAM6883 6773 GTAGACAAGTCCTCCAGCAC ---- C CA-- TA GAGCT
AGCCTATATGGAGCTCACTA GTAGACA AGTCCTC AG CAGCCTA TG
GGCTGACATCTGAGGACTCT TATCTGT TCAGGAG TC GTCGGAT AC
GCTGTCTAT CGTC - TACA C- -----

GAM6884 19233 GGAGTGGTGATGCACACATT - T ACA TT- G A CAACA
TGGGGGTTATGCCAACAGCA GGAGTGG TGA GC CA TGG GGTT TGC
AAGCTGTCACACTGGAGGCT CCTCATT ACT CG GT ACT TCGA ACG
TCATTTACTCC T T GAG CAC G A -----

GAM6885 12844 CAGCTGTTATCACCTGCTAG G TTA-- T A G CC A AA-- A- A CT

TTGTGTGAGCCTGAGCAAGT CA CTG TCACC GCT GTT TGTGAG TG GC GTTACTCT CCA TCTGTGG

TACTCTACCAATCTGTGGCT GT GAC AGTGG CGA CGG ATACTC AC CG CAATGAGA GGT AGATATC

CAGTGTCCTCATCTATAGAA - TTAGA - - G C- - ATAA GG A --

TGGGGAGAGTAACAATAGCC CA TCCT

ACCTCATAGGGCAGCGGTGA GTG

AGATTCAGTG TAC

-- ----

GAM6886 18786 TGAAACAGACTGGGCCAATG C -- CACAAAGAA - CA- ACCGATGTCCAAA

TCCACAAAGAATTCCTGGTC TGAAACAGA TGGGCCA ATGTC TTCCT GGT GCACC

AGCACCACCGATGTCCAAAG GTTTTGTTT ATTCGGT TGCGG AAGGA CTA CGTGG

GTGCAATATCAAGGAAGGGC - AG ACGGG---- A TAA ----------

AGGCGTGATGGCTTATTTGT

TTTG

GAM6887 228 GTTCTGTGCCAAACACCTGT ---- CAAAC GTG ATG AA CATC

GTGGAATGCCGCAAGCCCAT GTTCT GTGC ACCT TGGA CCGC GCC

CGGTGCGGACTCCAAGGAGG CAAGA CACG TGGA ACCT GGCG TGG

TGCACTATAAGAAC ATAT ----- GGA CA- -- ----

GAM6888 3655 TCGAAAATCTGTTGATCGAC AATC- TG TC- TG TTTT GCTTAACTTCAAA

TGGTTTTTTGCAGCTTAACT TCGAA TGT A GAC G TTGCA

TCAAATGCAATCCTGGTTCT AGCTT ACA T TTG C AACGT

TTTGACACAAGATTCGA AGAAC GT TTC GT CT-- ----------

GAM6889 18585 GTCTGCAATTACCACACAGT AATTACCACA TTTG- TG GTGTCG

TTGGGTTGGATGTGTCGATC GTCTGC CAG GGT GAT

TGATCAAATTCTGAGCGGAC CAGGCG GTC CTA CTA

A--------- TTAAA GT ------

GAM6890 18025 CCAAGCACATTACAGGGGAC CATT- G ----- T CTACA

CTGATTGCTACACGTTCAGA CCAAGCA ACAG GGAC CTGA TG

ATGCGTTTGCTGTCATCCTG GGTTCGT TGTC TTTG GACT GC

CTTGG CCTAC G CGTAA T -----

GAM6891 18047 TTAAGGAATTAGTTTATTCA T TTTATTCATTCATTTT -- CTA

TTCATTTTCATTCAAAAGGC TTAAGGAAT AG CATTCAAA AGG

TACCTACTTTGAGTGTCTTC AATTCCTTA TC GTGAGTTT TCC

TCATTCCTTAA C TTCT---------- CA ---

GAM6892 11220 CTGCTCCAAGGCCTGGCCAC - T ACA - GA A -- CT GACATTA

ATGCAGACAGGAGGAAGCTG CTGCTC CAAGGCC GGCC TGCA GACAG GG AGCT GAG C

AGCTCGACATTAGGCCTCAA GACGGG GTTCCGG CCGG ATGT CTGTC CC TCGG CTC G

GGCTGCCATCTGTCTTGTAG T T G-- T TA G AA CG -------

GGCCTGGCCTTGTGGGCAG

GAM6893 12847 TGAGTTGAGTGCTCAGAATT AG CAG-- T - TAAAT C A CAGG

CTACCTATAAATGTCTAAAT TG TTGAGTGCT AA TCTA CCTA GT TAAATATTA G

ATTAAGCAGGCTAATGTTTA AC AACTCATGG TT AGAT GGGT CA ATTTGTAAT C

TACTGGGCTAGATTTAAAAA CG AAAAA T C ----- T - ----

GGTACTCAAGCCA

GAM6895 16300 CATCCACACCTAATGTCCAC A ----- AA T T CACCACC

ATGGTCAGCACCACCCTGCC CATCC CA CCT TGTCCACA GG CAG

TGTGGACAGCAGGATGATTG GTAGG GT GGA ACAGGTGT CC GTC

AGGATG A TAGTA CG - - -------
GAM6896 12945 TGTCTCCATTGAGATTAATG TCC-- - T GCCC C TCTT
TGGCCCCTGCTTAGTTCTTA TGTC ATTG AGATTAA GTG CTG TTAGT
CTAATCAGAACACTTAATTT ACAG TAAC TTTAATT CAC GAC AATCA
ACAATCAAATGACA TAAAC A - AA-- T ----
GAM6897 19869 TTGAGACAGACAGGGTCTTG AGA T TC TT --- T AA C ATCTT
CTCTGTTGCCCAGGCTGGGA TTGAGAC CAGGG CTTGC TG GCCC AGGC GGG TGCAGTGG
GCC
ATGCAGTGGCGCCATCTTGG GACTCTG GTTCT GAACG AC TGGG TCCG CTC ACGTCACT CGG

CTCACTGCAACCTCTGCCTC C-- - GA T- CCC T CA - -----
CCGGGTTCAAGGCAAGTCTT
GCGTCTCAG
GAM6899 8511 CTTAAGTGTGTTTTGTGTGT --- - T - -- AGACAA
GTGCCCACACGTAGACAAAT CTTAA GTG TGT TTGTGTGTGTGC CC ACACGT
GTGTACGGTGCACACACACA GAATT TAC ACG GACACACACACG GG TGTGTA
GTGCATCATTTTTTAAG TTT T T T CA ------
GAM6900 3545 GGCTGTGAAGTGTTCGTGGC G AA C AGAC - AAG- TGAGG
AGTAGACTCTGAAGCTAAGG GGCT TG GTGTT GTGGCAGT TCT GAAGCT GAGC
AGCTGAGGGCTTAACAAGTT CTGA AC TACAA TACCGTCG AGA CTTTGA TTCG
TCTAGAAGCTGCCATCAACA - CG C A--- T ACAA -----
TGCCAAGTC
GAM6901 12772 ACCCCAAACATTTGTCTTTA ACATT-- TAT-- AAAG
TCTTGGCAAAGGCCAAGTCA ACCCCAA TGTCTT CTTGGC
TCAAGGCATGGGACATTGGG TGGGGTT ACGGAA GAACCG
GT ACAGGGT CTACT ----
GAM6902 9600 GCTGAGCAGGACGTGCCCTC GGA CCTCC CCCATC
CACCCTGGGACCCATCTCCC GCTGAGCA CGTGC ACCCTGGGA
AGGGTCACCAGCATGAATGC CGGCTCGT GTACG TGGGACCCT
TCGGC AA- ACCAC ------
GAM6903 7299 TGGATAATTGGGTGCCATTA ATT GCCATT CAAA TCACAAT
ACACAAACAGGTCACAATCC TGGATA GGGT AACA CAGG
TGCTGTTTTCTAGCCCTGTC ACCTGT CCCG TTGT GTCC
CA --- ATCTT- C--- -------
GAM6904 15064 CCCAGAGCCATGAAAGCTGC A C AG- TG T- AGAAAAAGCTGAA
ATGGCCTGGAGAAAAAGCTG CCCAG GC ATGAA C CA GGCCTGG
AACCAGGCCTTTGTGGATCT GGGTC CG TACTT G GT CCGGACC
TCATGCCCTGGG C - CTA GT TT ----------
GAM6905 20142 GACTTTGCTTCCGGTACAAA TTT TT TACAAA TGAGCACTGGT
CAGGCCACCTGAGCACTGGT GAC GC CCGG CAGGCCACC
GGTGGCCTGCTCCGGCTGCT CTG CG GGCC GTCCGGTGG
TGTC TT- TC TC---- ----------
GAM6906 6383 GCATAGTTAAAAAAATGAAG - AAAAAA G-- AT TT GCAGTA
CGAGATGGCAGTTTGTGCAG GCAT AGTT ATGAA CGAG GGCAG TGT
TAATATCTGCCCTTCGAAGT CGTA TCAA TACTT GCTT CCGTC ATA
TCATGCAACCAACTAATGC A CCAACG GAA C- T- ------
GAM6907 12831 ATTTCTAAATTAGAGAGGTT AAA GTTA A A G TTACTATGCC
AACAAGACAGATGATTACTA ATTTCT TTAGAGAG ACA G CA ATGA
TGCCTCATGTGCTGTGTGCT TAAGGA AGTTTCTC TGT C GT TACT
CTTTGAAAGGAAT A-- GTG- - - G ----------

GAM6908 21800 TGGATTCTGGATATATTATA GA GATAT A GAG- ACTT GCGGA
ATGAGTGACACTTTGACAGC TG TTCTG ATT TAAT TGAC TGACA
GGATGTCATTGGTCGAAGAG AC GAGGT TGA GTTG GCTG ACTGT
TTGAAGTTAATGGAGAACA AA AAT-- A AGAA GTT- -----
GAM6909 10676 GAGTCTTGCTCTGTCGCCCA TC C TC --- C -- GCCATCTCAG
GGCTGAATTGCAGTGGGGCC GAG TTGCT TG GCCC AGG TGAA TTGCAGTGGG
ATCTCAGCTCACTGCAACCT CTC GACGA AC TGGG TCC ACTT AACGTCACTC
TCACCTTCCGGGTTCAAGCA TT - T- CCT - CC ----------
GTTCTC
GAM6910 5541 TTGAGACAGAGTTTCGCTCT A - TT CT TT --- C -- A T GATCTCA
TGTTGCCCAGGCTGGAGTGC TTGAG CAG AG TCGCT TG GCCC AGG TGGAGT GCA TGG GC

AATGGTGCGATCTCAGCTCA GACTC GTC TC AGCGA AC TGGG TCC ACCTCA CGT ACT CG

CTGCAAACTCCACCTCCCGG C C TT -- T- CCC - AA C - -------
GTTCAAGCGATTCTCCTGCC
TCAG
GAM6911 15795 GTGGTAGTCTCCTATGGTGG TG - T GG G GGCCT
CTGGCACGGGCCTCGTGGCA G GT AGTCTCCTA GGT CTG CACG
GAAGCCTGGGAGACTGACTG C CA TCAGAGGGT CCG GAC GTGC
C GT G - AA G -----
GAM6912 6251 CCCAATACATCATAGAGGGC AT CAT CA- ---- AATTA
AGTCAGCTCAATTAGGGCTA CCCA ACAT AGAGGG GTCA GCTC
AATGGCAAACTTTCTTCATG GGGT TGTA TCTTTC CGGT CGGG
TCCTGGG CC CT- AAA AAAT -----
GAM6913 7428 CATTTGTTTCACTGTGTTCA TTCA G TCA GTTT AACATCCATTCTAC
ATTTTGAGTTTCCTAACATC CATTTGT CT TGT ATTTTGA CCT
CATTCTACAGGTCAATCAAA GTAAACG GA ACA TAAAACT GGA
ATACAAAGGCGTGCAAATG TGCG A --- AACT ----------
GAM6914 3274 GAGACAGACTCTCACTGTGT A ACTC- G TC --- T -- C ATCTC
CGCCCAGGTTGGAGTGCAGT GAG CAG TCACT TG GCCC AGGT GGAG TGCAGTGG GTG

GGCGTGATCTCCACTTACTG CTC GTC AGTGA AC TGGG TCCG TCTC ACGTCATT CAC
CAACCTCTGCCTCCCGGGTT C CTCTT - T- CCC - CA - -----
CAAGTGATTCTCCTGCCTC
GAM6915 19693 GGAAGAGAGCGATGACACCC A- - --- AC CCT C A ACTCCAAG
CTGCGCCGGAGTCCGACTCC GGA GAGA GC GATG ACC GCGC GG GTCCG
AAGCGGACCCCAGCGTCTCG CCT CTCT CG CTAC TGG TGCG CC CAGGC
GTCCATCCCAGCGTCTCGGT GG G ACC C- CTC A C --------
CC
GAM6916 15002 GATTTTGTCCCAGTCCAGCC T GTCC TTA CTCCAC TGTAA
TTTATCATCTCCACAGTGTA GA TTTGTCCCA AGCCT TCAT AG
ACTTTTCCAGTGACTTAGGT CT AAACAGGGT TTGGA AGTG TC
TCTAATGGGACAAATTC T AATC TTC ACCTTT -----
GAM6918 4003 TCCAGACTTAAGGAAGGAAG ACTTAAG CC CC TTGTT
TCCCACCAGTGTTTGTTGCA TCCAG GAAGGAAGT CA AGTGT
TTTGAATTTCCTTTAAAAAT GGGTC TTTCCTTTA GT TTACG
GCTGGG GTAAAAA A- -- -----
GAM6919 544 GCTTCCAATTTGTTATCAGG TTCCA A - G- ---- AGTATG
TGACTCTGGAGTATGCCAGT GC ATTTGTT TC AGGT ACTC TGG

TTGAGTGAACCTAGAGACAA CG TAAACAG AG TCCA TGAG ACC
ATGCTCTGC TCTCG - A AG TTTG ------
GAM6920 19663 CCATTTGCTCAGTAGAAGTT T CA AA- AAT AATC AAAACAATCAGTCAAAAA
TAATGGAGAAATCGTTGTTT CCATT GCT GTAG GTTT GGAGA GTTGTTT
AAAACAATCAGTCAAAAAGA GGTGA CGG TATT CAAA TTTCT CGACAAG
ACAGCTCTTTTACAAACAAG - -- GAA CAT ---- ----------
TTATGGCAGTGG
GAM6921 436 GAGGGGAAGGGGCTAGCAGG A GCTAG AAACA T- AG TGGG
TGTGTAAACAGAGGGTTCCA GAGGGGA GGG CAGGTGTGT GAGGGT CCATC GC
TCAGGCTGGGGCAGGGTGGC CTCCCCT CCC GTTCACACG CTTCCG GGTGG CG
CGCCTTCCGCACACTTGAGG - AAGGA C---- CC GA ----
AACCCTCCCCTC
GAM6922 19678 TGCCAAGAAGATCCTGCTGG GAAGATCC AG G- A TC T- ATGATTAC
AGATGGGGGAGTTCTTTCAG TGCCAA TGCTGG ATG GGG GTTCTT AGA TCAGG
ATTCAGGATGATTACCTTGA ACGGTT ACGGCC TGT CCC CAGGGG TCT AGTTC
CCTCTTTGGGGACCCCAGTG AAA----- AG GA - TT CC --------
TGACCGGCAAAATTGGCA
GAM6923 19008 AAGTTTAAGAAGCAGCCTCT AAGA - - - TG CCTAGGT
TGTCACAGGTTGACTCCTAG AAGTTT AGCAGCC TCTTG TCAC AGGT ACT
GTAGTGTGCCTAGTGACCAA TTCGAA TCGTCGG AGAAC AGTG TCCG TGA
GAGGGCTGCTAAGAAAGCTT AGAA G C A TG -------
GAM6924 17133 TCATGCGAGACCTGGCTGCT -- - C GCT --- GG T ACTGATA
GTAGCTGCTGCGGGACTACC TCAT GCGAG AC TGGCT GTAGCTGCT GC GAC ACC
ACTGATAGGTCGTCAGGCTC AGTG TGTTC TG GCCGG CGTCGATGG CG CTG TGG
AGGTAGCTGCTGGCCGCGTA GT A C T-- ACT GA C -------
CTTGTTGGTGA
GAM6925 22684 GCCCAGGGAGAACCCCTTGG AGAACCC -- - GA TCCT TATC
ATATCGCCAGGATGATCCTA GCCCAGGG CTTGG ATATC GCCAG TGA AGC
GCTATCGTTCTTTTCACTCT TGGGTTCC GGACC TATAG TGGTC ACT TTG
GGTGGATATGGCCAGGATGC GTA---- GG G TC TTTC ----
CTTGGGT
GAM6926 11003 GGCTGGAGCTTGACACGGTT - T C--- - A CCT
GAGAATCCCTGATGCTCAAC GGCTGG AGCT GA ACGG TTGAG ATC
CCGTATTTTCTGGCTACCAG TTGACC TCGG CT TGCC AACTC TAG
TT A T TTTA C G ---
GAM6927 9435 CGCTACCAAGCGGTGTGGTC A GG T ATG G CC CTACATGA
CCAGCATGGGGGGTCCTACT CGCT CCAAGC TG GGTCCCAGC GGG GT TA
ACATGATATCGCGCTCGCTG GCGG GGTTTG GC CCAGGGTCG CTC CG AT
GGACCCGAGTTTGGAGGCG A A- - --- G CT --------
GAM6928 5851 GCCCAGGCTGGAGTGTAGTG CC T TGT T A T CTCACT AGCTC
GCATGATCTCGGCTCACTGC GC AGGC GGAG AG GGC TGA CTCGG GCA
AAGCTCTGCCTCCCGGGTTC CG TCCG CCTC TC CCG ACT GGGCC CGT
ACGCCCTTCTCCTGCCTCAG AC T T-- - C T CTC--- -----
C
GAM6929 5427 TCAAAGGGAATGATAGCATT AA GATA ATT GAC--- GATATCTAACAGCAATA
GAAGGACTCGGGGATATCTA TCA GGGAAT GC GAAG TCGGG
ACAGCAATACCTGATCACTA AGT TCTTTG CG CTTC AGTCC
CTTCGCATTAGTTTCTCGTG GC ATTA --- ATCACT ----------
A
GAM6930 18473 GCATTGTTTTACCCCTTTTC T-- CCC T- GGT CA G G ATGTGGCA

TCGTGGGTGTGGTGTTCAGG GCATTG TTTAC TTTTCTCG GGGTGT GTT GGTG CCG AGC

TGGCCGGAGCATGTGGCAGC TGTGGC AGGTG GAAGGAGC CCCACA TAA TTAC GGT TCG

TGTGGGCATTCAATTAAACA TCC C-- CT AAT C- G G --------
CCCTCCGAGGAAGCGTGGAC
CTCGGTGT

GAM6931 13798 GTGGTGCTTCGAGCTGGAGG TG TG CA ----- ACCCT
GCAGCAGGTGACCCTCACCA GTGG CTTCGAGC GAGGG GCA GGTG
CTCATGCCCCCTTTGGCTTG TACC GGGGTTCG TTCCC CGT CCAC
GGGGCCCAT CG GT C- ACTCA -----

GAM6933 7200 GGGACGGTTGGGGGCTGGGA C TT G CCCT TGT TGTAACTGGAAT
GCCCTGGGCGTGTAGTGTAA GGGA GG GG GGCTGGGAG GGGCG AG
CTGGAATCTTTTGCCTCTCC CCCT CC CC CCGACCCTC TCCGT TC
CAGCCACCTCCTCCC - T- A ---- TT- ----------

GAM6934 7682 CCTCCTCCCGTCACTCCACG C GT C A------- - AGAGA
CAGCTGGCAGAGAGCACAGT CCTCCTC C CACTC ACGC GCTG GC
GATCACCAGCGTGAGTGGTG GGAGGAG G GTGAG TGCG TGAC CG
GAGGAGG - TG - ACCACTAG A -----

GAM6935 21609 GGGAGGGGGCTCCTCTCAGG ----- - G G TG GGGCATTA
AGGGGTGAGGGCATTATTGC GGGAGGGGG CT CCTCTCAG AGG G A
ATTTGCTGGGGGGAAGGACA CCCTCTCCC GA GGGGGGTC TTT C T
ACCCTCTCCC AACAG A G A GT --------

GAM6936 4219 CCTTCCCTGCTTGCCTGCTC -- - TTG ---- - CT CCCTGCTCT
CCTCACGCCCCTGCTCTGCG CCT TCCCTG C CCT GC TCC CACGC
TGTTGGATGTGAAAAGGATG GGA AGGGAC G GGA TG AGG GTGCG
TCAGGGACTAGG TC T TA- AAAG T TT ---------

GAM6937 8866 GCCATTTTAAGCAATAAAAA A --- ATAAAAATT GGGT
TTGGCATGTGGGTGCATGCC GCC TTTTA AGCA GGCATGT
TGTAATCCCTGCTACTTAGG CGG AGGAT TCGT CCGTACG
AGGC - TCA CCCTAATGT ----

GAM6938 697 CTTCAAGCCTCCTGAGGAGA AAGCC TGA CTAGA T G A A TAATTTCACA -
ATCTAGATGTCTCAGGTACA CTTC TCC GGAGAAT TG CTCAG TACA AG GGTTT GCATC
AAGAGGTTTTAATTTCACAG GAAG AGG TCTTTTA AC GAGTT ATGT TT CCAGG TGTAG
CATCTCCAACAGCGCACTTT GA--- TAA AAG-- - - C A ---------- T
GGGTGATGTGGACCATTCTG C CGCA
TATTGAGCAGAAATTTTCTA TCCAA AG
ATGGAAGGAAG GGGTT TC
- ----

GAM6940 8485 GGTGGGGGGCGAACACGCCG - AACAC CGG G GT GA AAGA
CGGTCCTCGTCGTGTGAAGT GGTGG GGGGCG GCCG TCCTC TC GT AGT
AAGAACTCTGCTAGAGAGGA CTACT CTTCGT CGGT AGGAG AG CG TCA
AATGGCTGCTTCATCATC A ----- AA- - AT TC ----

GAM6941 14881 TGCCTGTTCCGTGCATGTGG TC CA G AA AAAACCATAATCAG
TCATAAATCAAAACCATAAT TGCCTGT CGTG TGTG TCAT ATC
CAGGGTCCATGAGCATAACA ACGGGCA GCAC ATAC AGTA TGG
CGCACGGGCA C- A- G CC ----------

GAM6942 13886 TGTGCTGCTGGGAAGGATCT CT- --- T-- C---- GGATGA
TTGGCCTAGGGGATGACTTA TGTGCTG GGG AAGGA CTTTGG CTAGG
GTTTATTCAAAGCTTTTCTT ACATGAC CCC TTCTT GAAACT GATTC

AAGCCCTTTCAGTACA TTT GAA TTC TATTT ------
GAM6943 929 CGGGGTCGGCACACAGGCTT C -- GG A CAA--- AGGATGC
TGAGACAACCAGGATGCGGA CGGGGT GGC ACACA CTTTG GA CC
GACAATCACAAAGAGTGTGT GCCCCG CCG TGTGT GAAAC CT GG
AGGCCAGCCCCG A GA GA A AACAGA -------
GAM6944 798 CTTCATCTCCACTCTGCACG A- A CAC - GA CTTCTCT
GGGGCTGAGGGCCCCTTCTC CTTC TCTCC CTCTG GGGG GCT GGGCCC
TGGGCCTGGGCACCCTTAGA GAAG AGAGG GAGAT TCCC CGG TCCGGG
GGGGAGAACGAAG CA G --- A G- -------
GAM6945 20078 AAATAGTGATTCCAAAGACA A TG TT - CAAG C------- AACCCA
AGGTTTCCCTGGAACCCACC AAAT G A CC AAAGA GTTTC CTGG
AGATGTACAAGAAACAAATC TTTA C T GG TTTCT CAAAG GACC
TTTAGGTTTGCCATTT C GT T- A AAA- AACATGTA ------
GAM6947 14497 CTCAGCCAGACGTGGAGGGA A A -- GCC- CCGC AAGT
GCCGGGTGCCGCAGGAAGTC CTC GCCAG CGTGGAG GGA GGGTG AGG
CTTTCCACCTCTCATCCAGC GAG TGGTC GCACTTC CCT TCCAC TCC
TTCACGCCTGGTGGAG G C GA ACTC CTT- ----
GAM6948 22388 TGTGGTGCCTGGTGGAGACC G T G A - AA CAGAGA - CA TGA
TGGCCAAGGTACAGAGAGCT TGTGGT CC GGTG AG CCT GGCC GGTA GCTGTG TG TGC

GTGTGCATGCTGAGCAACAC ACACCA GG CCGC TC GGG CCGG TCGT CGACAC AC ACG

CACAGCCATTGCTGAGGCCT - T - - T AG TAC--- C A- ---
GGGCTCGCCTGGACCACA
GAM6949 2983 GGCCAAGGTGTAGGCGTCCA - T C C C------ T CC-- T ACTT
GCCACGAGATGACCTCTTGA GGC CAAGG GTAGG GTC AGC ACGAGA GA TCT GAC
CACTTGTCCAGAACCTTCTT CCG GTTCC CGTTC TAG TCG TGTTCT CT AGA CTG
CTTGTCCGACTCGCTGATCT A - - - CTCAGCC T TCCA C ----
TGCCCTTGAGCC
GAM6951 22443 TCTTGTGTTGAGACTTCGTG GAGA GT--- C ACAAGGAAGAAGAAG
GTGGTGCTAAGAACAAGGAA TCTTGTGTT CTTC GGTGGTG TAAGA
GAAGAAGTCTTACACCACTC AGAACACGA GAAG TCACCAC ATTCT
CCAAGAAGAATAAGCACAAG ATAA AACCC - ----------
A
GAM6952 108 GGGTTGCTGATCAGACTGCG AT A G A AGGGG CA G GAG AAGCATGTAGA
AGCAGCAGGGGGGCTGCCAC GGGTTGCTG CAG CT CGAGC GC GGCTGC CTG CA CTGG

TGGCAGAGCTGGAAGCATGT TCCGACGAC GTC GG GCTCG CG TCGACG GAC GT GACT

AGATCAGAGATGGCAGCAGC CT - G - GACG- AC G AGA ----------
AGCTGCAGGCGCTCGGGGCT
GTCCAGCAGCCT
GAM6954 18827 CGAGATTGAGCAATAACAGG TT AATAACA - G CTTA GCC
TCTGTGATGCCCTTAGTTGT CGAGA GAGC GGTCTGT GAT CC GTTGTCCG
CCGGCCCGGACAACGACAGG GCTCT CTCG TTAGACA TTA GG CAACAGGC
ATTGACAGATTGATAGCTCT TT ATAG--- G - ACAG ---
TTCTCG
GAM6955 17525 TATCTTCCCTTCCAACCTGG - CCAAC TCAGCAG GC CTCTACCACC
TGTCAGCAGCCTTTCGCTCA TATCTTC CCTT CTGGTG CCTTTC TCATA
TACTCTACCACCTATGAAGA GTGGAAG GGGA GGCCAC GGAGAG AGTAT

GAGGAATATCACCGGAACCA T CCAA- TATAA-- A- ----------
GGGTGAAGGTG
GAM6957 680 CTGGGGTGAGGCGGGCAGCG GA--- CAGCG C TAGGACCA
CTACGCGTGGGGTAGGACCA CTGGGGT GGCGGG CTA GCGTGGGG
TCTTACGCTGGGACCCCGCC GACCCCG CCGCCC GGT CGCATTCT
AAGGAGCCCCAG AGGAA CAG-- - --------
GAM6958 2942 CCTGCTCTGGGACAGATTCC - CTC A- - C- AG G TCATAGAT
GAAGTGGGAGTGTCATAGAT CC TG TGGGAC GA TTC GA TGGGA TG
CAATCCCGTGTCCTGAACTT GG AC ACCCTG TT AAG CT GCCCT AC
GGGTCCCATCACACGG C ACT GG C TC GT A --------
GAM6959 14430 TCAAACCAAGGGTTGCCAAT AG- CAAT - AGT TG GTGC
AGGACTGCAGTTTATTGGAC TCAAACCA GGTTGC AGGA CTGC TTAT GAC
GTGCGTTTTGTGACCAGCAG AGTTTGGT CCGATG TCTT GACG AGTG TTG
CTTCTTACAGTAGCCAAATG AAA ACAT C ACC TT ----
GTTTGA
GAM6960 8126 GTATTTTTAGTGGAGATAGG TA--- G GTT- A TT CTGGTCTTGAATT
GTTTCACCATGTTGGCCAGG GTATTTT GT GAGATAGG TCACC TG GGCCAGG
CTGGTCTTGAATTCCTGGCC CGTGAAA CG CTCTGTCC AGTGG AC CCGGTCC
TCAGGTGATCCGCCTGTCTC CCCCC A GCCT - T- ----------
AGCCCCCCAAAGTGC
GAM6962 16339 CGAACGGCGAACCACAGACT AC - GACTA A ACGGAAAGAAGGA
AGGCTATTTACGGAAAGAAG CGA GGC GAACCACA GGCT TTT
GAAAGAAGCCGATTATGTGG GTT CCG TTTGGTGT CCGA GAA
TTTAGCCAGTTG GA A ATTAG A ----------
GAM6964 21444 TGACCAAAACTGTGCCTTGT AAAC G TT AAAT CAC
GGAAATGAACTTCACAAGTT TGACCA TGT CC GTGG GAACTT
CCTCATCTGGGACACTGCTG ACTGGT ACA GG TACT CTTGAA
GTCA CGTC G TC C--- ---
GAM6965 8268 GTGTGCACAGATGAACGAAG GTG CGA G AT CA AGCTAAAG
TTATGGCAGAGTTAGCTAAA GT CACAGATGAA A TT GG GAGTT
GAACTCCCTCAAGTTTCATT CG GTGTTTACTT T AA CC CTCAA
TGTGAAGC AA- --- G CT -- --------
GAM6966 7018 ATTGCTTTCAGTTTCTTCTT - TC- TTA TT TTTTTTTGTCTATC
TAGGTTCTTGATTTTTTTGT ATTG CTTTCAGTT TTCT GG CTTGA
CTATCTCAGGGTCCCCAGAA TGAC GAGAGTCAG AAGA CC GGACT
ATTGACTGAGAGACAGT A TTA CC- TG ----------
GAM6967 8981 TATACAGGTAGAGATGTATG AGGT GA C-- TAT TCCATATTT
CAGATGTGTCCATATATGTT TATAC AGAGATGTATGCA TGTGT CA ATGT
CCATATTTACATTTTGATAG ATGTG TCTCTACGTATGT GTACG GT TACA
CATGGATGTATGCATCTCTT GT-- AG ATA TT- ---------
GGTGTA
GAM6968 15607 CATGGTCTGTGAGAGGTGGC CT- G TG AA--- ACCCTCACC
AGGAATGGGGACCCTCACCC CATGGT GT AGAGG GCAGG TGGGG
CCCAAGCAGCCTGTGCCCTC GTGTCA CG TCTCC TGTCC ACCCC
TGGCCGCACTGTG CGC G CG GACGA ---------
GAM6969 19093 GGCTGCTGGTGAGGGCTGTG T - GAG G - - TG GAGAA
CAGCTGCTGGGAGAACTGGA GGC GC TGGT GGCT TGCAGCT G C G
CGGGCTGCAGGGCTGCCAGG CCG CG ACCG TCGG ACGTCGG C G C
CTGCC T G --- G G A GT -----
GAM6970 2230 CAGTAGGCCAGCACCGTGTC - G A A T----- AGC A - C AGTGCCTTG

GCGCAGCGCCAGGTTCTCGG CA GTA GCC GC CCG GTCGCGC GCC GGTT CT GGGC
GCAGTGCCTTGGCCCAGTAG GT CAT CGG CG GGC CAGTGCG CGG CCGA GA CCCG
CCCGGCCGCGTGACCAGGTC T G A - CTGGAC C-- C T - ---------
CGGGCAGGCGTACTTG
GAM6972 21735 GAGGCCAGAGCAGGGTGGAC AGCA-- CA - - TGGTGATGT
AGGTGTCCAGGCTGGTGATG GAGGCCAG GGGTGGA GGTGT CC AGGC
TGCTTCGGAACGCCATTCTA CTCTGGTT CCTATCT CCGCA GG TTCG
TCCCCAAACTTGGTCTC CAAACC TA A C ---------
GAM6974 9883 AGGAACAGACTTCATTCTTT -- -- A ---- TTA AAA GCAT
TTCTTAACAAAAAAGGCATC AGGAAC AGA CTTC TTCTTTT TC ACA AAG
TTCAGTGTGTGATTTCAAAA TCCTTG TCT GAAG AAGAAAA AG TGT TTC
GAAAGAAGATTCTGGGTTCC GG TA A CTTT TG- GAC ----
T
GAM6975 17570 CAGTGAAGGAAGAACCTGTA AA- A CCT ---- A C CCGG
GAAGATGACCTCGTTCCGGA CAGTG GGA GAA GTAGA AGATG CCT GTT
GCTGGGTATCTCAAATCTGC GTCAC CCT CTT CGTCT TCTAT GGG CGA
TTTCATCCAGCCACTG CGA A T-- AAAC - T ----
GAM6976 11601 CCTGAATGAGAATGTCTGCG A AAT TG TC GAAATAAGTATCCCTCAA
GTATTTCCCGAAATAAGTAT CCTGA TGAG GTC CGGTATT CC
CCCTCAAGGATGATACTGTG GGACT ACTC CAG GTCATAG GG
GACCTCACTCAGG C --- GT TA ----------
GAM6977 3814 CAGCCTGCAAGTGGAAGAGA AA AAG A--- AACC
AGAACTTGAACCCAGGTCCA CAGCCTGC GTGG AGAAG ACTTG
ACTTTTGCGCCACAGCAGGC GTCGGACG CACC TTTTC TGGAC
TG A- GCG AACC ----
GAM6979 20321 GGAGAAAGGCTGAGCTTGGA AAA C- AG- AAA G G ACCCCACTG
GAAAAGGTGCTTGAGGACCC GGAG GG TG CTTGGAG AGGT CTT AGG
CACTGCCTAAGGACCTGCTC CCTC CC AC GGATCTC TCCA GAA TCC
TAGGAAACATTCCCACTCC AC- TT AAA G-- G - ---------
GAM6980 13447 CAGCTCTTATCTGAAAACTA T A AACTACA G -- ACTGTGAAC
CACCGCTGTGGCCCAGACTG CAGC CTT TCTGAA CCGCT TGGCC CAG
TGAACCTGCTGGCCGAGTGG GTTG GGA AGACTT GGTGA GCCGG GTC
CTCATTCAGACAGGTGTTG T C ACTC--- - TC ---------
GAM6981 13826 ATGCATGTATCCTTACCCCC TCCT CCA A GTTGGT
ATGGGAAAATGTTGGTGTGT ATGCATGTA TACCC TGGGAA AT
TCTCAAGGGTATGCATGTGT TGTGTACGT ATGGG ACTCTT TG
---- A-- G ------
GAM6983 3773 CAGGCAAGGAAGATGCTGCC G AA ----- - AACTA-- CGAG
AATAACTATGCCCGAGGGCA CA GCAAGG GATG CT GCCAAT TGCC
CTACACCATTGGCAAGGAGA GT TGTTCC TTAC GA CGGTTA ACGG
TCATTGACCTTGTGTG G AG TAGAG A CCACATC ----
GAM6984 17670 TTGGTTCCCTTCCAGTCTCT C TTC TCTCTTCCCCC CCCAATCACCA
TCCCCCTTTCTATCCCAATC TTGGTT CC CAG TTTCTAT
ACCAATAGAAATGCTAACAT GACCGA GG GTC AAAGATA
CCCTGCCTGGTAGCCAG T TCC CCTACAATCGT ----------
GAM6985 6069 GTGCCCTGCCCCGCGCTGGG T--- CGC G C TGTGGC
GGCCGGAGTCCTTGAATGTG GTGCCC GCCC GCT GGGGC GGAGTCCTTGAA
GCTTCAGGGGCTCCTGTCCT CACGGG CGGG CGG TCCTG CCTCGGGGACTT
GGGCCAGGGCTGATGGGCAC TAGT AC- G T ------
GAM6986 5082 GGAGTGCAGTGGCACAATCT T AGT C TCA CACTAC CCGCCTCCC

CAGCTCACTACAACCTCCGC GGAG GC GGCA AATC GCT AACCT
CTCCCAGGTTCAAGCGATTC CCTC CG CCGT TTAG CGA TTGGA
TGCCTTAGCCTCC - ATT C --- AC---- ---------
GAM6987 14938 CAAGCAATCCCCCTGTTGGG GCAA CC GGGG AAC AA- GCGTG
GTTGGGAACGGGCAAGCGCG CAA TCCC TGTT TTGGG GGGC GC
TGGCAAAGCCCCCCAAAGAA GTT AGGG ACAA AACCC CCCG CG
CAAGGGAAAAATTG AAAA A- GA-- --- AAA -----
GAM6988 16139 CTTTTAATGGGATCGGCATG ATG CGGCA GCAAA CC AGAGTTAC
AGCAAAAGCTCCCTCAGAGT CTTTTA GGAT TGA AGCTC TC
TACGACCGAGTTAAATATCA GAAAGT CCTG ACT TTGAG AG
GAGAGTCCACGTGAAAG GCA AGAG- ATAAA CC --------
GAM6989 18828 GCTTTTCTTTCATATCTGAA TTTCTTT- T- T A TAC- CTTT
ACCTAGCTGCTTACTTGGCT GCT CA ATC GAA CCTAGCTGCT TTGG
TTTCAATTTCAGTAGTTAGG CGA GT TAG CTT GGATTGATGA AACT
ATTCTGATTTTGTCTACTCT TCTCATCT TT T A CTTT ----
AGC
GAM6990 20628 TTTCCTCAAGAGTGCATTCC TT - - --- A- GACCTGCTA
AGAAGGGGACCTGCTATTCT T CCTC AAGAGT GCA TTCC GAAGGG
TCGAGGGGACCTGCTATTCT A GGAG TTCTTA CGT GGGG CTTCTT
TCGAGGGGA GG C T CCA AG ---------
GAM6991 11019 CAGTTCGTGGTGTTGGCGGG T G - AG ATGAACG
CCTGAGGAGTATGAACGGTG CAGTTCG GGTGTT GCGGGC CTGAGG T
CCTTAGCGTTTGTGGACACT GTCAGGC TCACAG TGTTTG GATTCC G
TCGGACTG T G C GT -------
GAM6992 21566 AAGATGATTCTGACAGTGAA A A T- AAAGCA-- - A ATCACATCAA
AAGCAGCAACAAATTCATCA AAGATG TTCTG CAG GA GCA ACAA TTC
CATCAAGAACTTGTATGCCT TTTTGC AAGAC GTC CT CGT TGTT AAG
TCAACCTCTTCTGCCAGAAG G C TT CCAACTTC A C ----------
CGTTTT
GAM6993 10489 TCCAGAAGGACCTCATCTCT AGAAGGA CA- GCA A AGGAG
GCACCTCTTACTTGAGGAGC TCC CCT TCTCT CCTCTT CTTG
AAGAGGAGGGAAGGGAGAAA AGG GGA AGGGA GGAGGA GAAC
GGGATGTAGGA ATGTAG- AAG AG- - -----
GAM6998 19236 ACAGACAATTCTGATGATTA ATT - ATTA T TT AACTAAGC-- AC- -
TGATTTCATTTGGTTTAACT ACAGACA CT GATG TGATT CAT GGTTT TGT TAGT TCATTTC
AAGCTGTACTAGTTCATTTC TGTTTGT GA CTAC ACTGA GTG CCGAA ACA GTCA
AGTAAAG
ATAAGGAAATGATACTGTAG GGT A GA-- - T- ATAAATGTAA GAT T
ACAAATGTAAATAAAGCCTG ATAAG
TGAGTCAAGCATCAAGTGGT
GTTTGT

GAM6999 14817 CACCAGGCAGGCAGGTTAAG A CA- C AAG- GA --- GGAA
TTCCTTGATGCCCTCCTTTG CACC GG GG AGGTT TTCCTT TGCCCTCC TTT
GAAAGAAGTGGAGGGTGAGG GTGG CT CC TTCAG AAGGGA GTGGGAGG AGA
GAAAAAGGACTTCCATTTCA A TTA - GAAA -- TGA ----
GGTG
GAM7000 5545 CATGTTGAATGCACAAAAGC AA ACAAAA AA - --- TTAT
AACAGGTCCAGTTTATGCTA CATGTTG TGC GC CAGGT CC AGT
AAGGAATTTGAAGCACGCAG GTACGAC ACG CG GTTTA GG TCG

GCAACAGCATG A- GACGCA AA A AAA ----
GAM7001 718 TTCCAGTGTTTCAAAGAAAG AG CAA AA- C TAAAA T C TGAACAT
CACTTTTAAAAATGTATATA TTCC TGTTT AG AGCA TTT ATG ATATA ATGAA
CATGAATGAACATTTCATTA AAGG ATAGA TC TCGT AAA TAC TATAT TACTT
TATCATAAAATAAATGCTGC AA ATG GCG - TAAAA - - -------
GCTGTAAGATAAAGGAA
GAM7002 13504 CTCCTTCCTCCAGGGAGGCC -- G- - AGCA TGT TGGACG
TCAGCATCAGTGTCTGTGGA CTCCTTCCTC CAG GAGGC CTC TCAG CTG
CGTAGTCTCTGAAGAGTGCT GAGGAAGGGG GTC CTTCG GAG AGTC GAT
TCAGCTGATGGGGAAGGAG TA GA T A--- TCT ------
GAM7004 17202 CATTGTCGTCATTGGACACG GTC-- T- A ATTC CAAG
TAGATTCGGGCAAGTCCACC CATT GTCA TGG CACGTAG GGG
ACTACGTGGCCATCTGATCT GTAA TAGT ACC GTGCATC CCT
ATAAATG ATATC CT G ACCA ----
GAM7005 17914 TTCATGGTCCCTGCCCAGTC ----- CC A - G CTACAACT
CTCGTGGAACTACAACTTTC TTCAT GGTC TGCCC GTC CTCGT GAA
AATGGGTGATCGGGCATGAC AAGTA CCAG ACGGG TAG GGGTA CTT
CCCAACATGAA CAACC T- C T A --------
GAM7006 6195 GGAGTCAAAAGGCCCAGAGT CAAA A T TCCCA - GCAC
CTGAGTCCCAGCCCTGAGCA GGAGT AGGCCC GAGTC GAG GC CCTGA
CTTAGGAGCCTTCTGACTTA CCTCA TTTGGG TTCAG CTT CG GGATT
GGGTTTGTCACTCC CTG- A T C---- A ----
GAM7007 11591 TGCAAGAGAATATTGGCAAT AATA------ ------ ACTT
GGAGACTTCTCTGTGTACAG TGCAAGAG TTGGCA ATGGAG
TGCCAGCACCCACAAGTTCT ATGTTCTT GACCGT TGTCTC
TGTA GAACACCCAC GACATG ----
GAM7008 15242 CATTTGAATTGGTAGACCGA TT TA --- A ATGAA-- CAGC
GTAATGAAGAGGCAGCCCTC CA TGAATTGG GA CCG GTA GAGG
CCTAATGTGCATGGACATCA GT ACTTAACC CT GGT CGT CTCC
TCCAATTCATTG T- TA ACA A GTAATCC ----
GAM7009 13032 CATTTTATTCCTAGGGTTGC A--- AG GC GC T AA C TTTT
TTTTGCTTTAGTTTGTAAAA CATTTT TTCCT GGTT TTTT TTTAGT TGTA ACGTT TTAT
CGTTCTTATTTTTATGATAA GTAAAA AAGGA CTAA AGAA AAATCA ATAT TGTAA AGTA
TGTAGTATATACTAAATAAA GATG -- AA AT T GA T ----
GAAAAATCAGGAAGTAGAAA
ATG
GAM7010 13909 CCAAGAACTTTTTGGCCCCG A AACT C- G G-- AG-- CT TTCGTCAGT
TGTTGGATGCAGTGTCTCGG CC AG TTTTGG CCCGT TT GATGC TGT CGGGAC
GACTTCGTCAGTGTCCTGCA GG TC AAGGCC GGGCG AA CTACG ACA GTCCTG
CAGGTCGCATCAAGAAGGCG C ATTC TC G GAA CTGG C- ---------
GGCTCCGGAACTTACTCGG
GAM7011 14832 TCGTTTTGGATCACTTTGGA T----- T- TG ACC G GTGA
CCCAGCGGTGATGGTGAACT TCGTTT GGA CACTT G CA CG
TGAAGTGCTTCCCATTCTGA AGCAAG CCT GTGAA T GT GT
ACGA TCTTAC TC GT CAA G ----
GAM7012 20834 ACTGAGGCCTGTGAATCTAA GA AA AAG- A AAGGA
GAGGGTTGAGCATGAAGGAC ACT GGCCTGTG TCT AGGGTTG GCATG
ATGCGCAGCCTTAAAAGGGG TGG CCGGACAC GGG TTCCGAC CGTAC
GCACAGGCCAGGT A- GG AAAA G -----
GAM7013 5741 CCCAATCCAGACCCAGTGAC CCAGA TGACAATGTTA CATCA - CAAGGT

AATGTTACAGGGACATCAAG CCCAAT CCCAG CAGGGA AGGCGT TCAACC
GCGTTCAACCCAAGGTGGTT GGGTTA GGGTC GTTCCT TCCGCG AGTTGG
GAGGCGCCTGCTTTTCCTTG TGA-- TCCG------- TTTCG G ------
GCCTCTGGGAGTATTGGG
GAM7014 9374 TATGTATTGTACTTTTAATC - - AAT ---- AC TTCAAATTT
ACTTACTGAGAATATTTCAA TATGTATT GTA CTTTT CA CTT TGAGAATAT
ATTTATATTCTCATCAGGAA ATATATAG CAT GAAAA GT GGA ACTCTTATA
AATGTAAAAAAGATACTGAT T A AAT AAAA CT ---------
ATATA
GAM7015 21974 GCAGAGACTATGATGTGGAA -- T T AT- T----- TTTTGATGT
TGGGGCTATGCTTTTGATGT GCAGA GACTA GA GTGGA GGGGC ATGC
GCATCTCAATGCTTTTTATC CGTTT CTGGT CT CACCT TTTCG TACG
CACTCCTGGTCATTTTGC TA C - ATT TAACTC ---------
GAM7016 10911 TTTCTATTGAAGCCTAAGCT AGCC TTTGAAT- A CTGAAAATA
TTGAATGAAGACATGCTTCT TTTCTATTGA TAAGC GAAGAC TGCTT
GAAAATAAAGCAGGTTTTCT AAAGATAATT ATTCG CTTTTG ACGAA
CTAGTCTGCTTATTAATAGA ---- TCTGATCT G ---------
AA
GAM7018 19862 GATGTGTGGCCACCCTGACC CCACCC C-- TGT- C CGA CGGAA
GCTGGCATGTGCCCAGCGAC GATGTGTGG TGACCG TGGCA GC CAG CGTGGC
GTGGCCGGAAGCCATGATCT CTACGCACC ATTGGC ACCGT TG GTC GTACCG
GCGTCGATTGCCAATCCGGT TTA--- CTA TAGC C TA- -----
TAATTCCACGCATC
GAM7020 2993 GGCGAAGCTGATGCTGAGAG - AA T TG GG- C ---- TGATTTT
GTGGCCCGCTGTACTGATTT GG CG GCTGA GC AGAGGT CC GCTG TAC
TGTAAAACCAGCAGGAAAAC CC GC CGGCT CG TCTCCA GG CGAC ATG
CTCTGCTCGGCCGACC A -- - -- AAA A CAAA -------
GAM7023 13305 CAGGGGACCTGGAAGTTGGA A TG - AAC -------- G ACA
ACAATTTTGCTCCTGGGACA CAGGGG CC GAAGT TGG AATTTT GCTCCT GG
CCGAGGGGCTTACGTCGAAG GTCCTC GG TTTCA ACC TTAGAA CGGGGA CC
ATTCGCCAGACTTTTGGGCC C GT G GC- GCTGCATT G ---
TCCTG
GAM7024 3979 CTCCTTGGCAGCCGGGAGAG CC G G AA- ACGC-- TGCCC
GAGCAAGCGCACGCCACTGC CTCCTTGGCAG GGGA AG AGC GCGC CAC
CCGTGACCCAGGCGTCCGGC GAGGGGCCGTC CCCT TC TCG TGCG GTG
TGCTGTCCCCTGCCGGGGAG -- G G GCC GACCCA -----
GAM7025 21272 GTCATTTTGGGTTGCCGTGC A T - CC AAACATTTTAAA
TCCCAAAACATTTTAAATGA GTC TTTTGGGT GCCG TGCT CA
AAGTATTGGCATTCAAAAAG CAG AAAACTTA CGGT ATGA GT
AC A - T AA ----------
GAM7026 15050 GCCCCAGCAGCCCCTGCAGC AGCC A CTCCA TCTCGCC
CTCCAGGCCCTCTCGCCGGG GCCCCAGC CCTGC GC GGCCC
CCACAGCGTAGGGCTGGGGT TGGGGTCG GGATG CG CCGGG
---- - ACA-- -------
GAM7027 21143 GTGGCCAGAAGCCTCGTTCC AA CTCGT - CT TT TGCA
TCCTGACTCTTCCTGCAGGT GTGGCCAG GC TCCT CCTGA C CC
GGCTCAGGAAGGATTCAGCC CACCGGTC CG AGGA GGACT G GG
TGGCCAC -- ACTT- A CG T- ----
GAM7028 8148 GTCGACCTGTGTAAATTGTC A GTGTAAATTG GG- AAATTCATTCAAG
TCAAAAATTTGGGGGAAGGG GTCG CCT TCTCAAAAATTT GGGAAGGG

AAATTCATTCAAGCTCTTCC CGGC GGA AGGGTTTTTGAA CCCTTCTC
CAAAAAGTTTTTGGGAACCA - AAAAAAACCA AAA ----------
AAAAAAAGGCGGC

GAM7029 8645 GACTCCCCTTGGTGGTATTC TT TG A CCCTCC C GAC
GCCCTCCGGAACCCAAAGAC GACTCCCC GG GT TTCG GGAA CCAAA
TTTGGTTTCCCGGAAGCTGC CTGGGGGG CC CG AGGC CCTT GGTTT
CCGGGGGGTC C- GT A ------ T ---

GAM7030 6145 GCAAGAAACGTGTGCTAAAG AGAA CTAAAGA GGT GA TGCTGAAAATTC
ACTGAGGTTCCTTGGAAACA GCA ACGTGTG CTGA TCCTTG AACA
TGCTGAAAATTCTGTTCTCA CGT TGCATAC GACT GGGAAC TTGT
AGGGTGTCAGAACCATACGT CA-- CAA---- GT- TC ----------
ACTGC

GAM7031 11537 AACGTCATCAGCTTCCTAAC G A C CTAACC-- A AATAA
CATGTTTAAGAGGAATAACT AAC TC TCAG TTC ATGTTTA GAGG
TCATGAACATTTTGCCCTGA TTG AG AGTC AAG TACAAGT CTTC
ACTGAAGAGTT - A - TCCCGTTT A -----

GAM7032 18692 GTAGACATGGTCTTTTCCCT A-- GT-- CC---- AGA CCAGA
CTAGAGCTTACCAGATGAGT GTAG CATG CTTTTC TCT GCTTA
GTGAGATAAATAGAAAAGTA CGTT GTAC GAAAAG AGA TGAGT
AACATGCCATTGC ACC AAAT ATAAAT GTG -----

GAM7033 21497 GGGATATGAGGAGAATGAGG TA GA A A AG GAGGAACAATG A TGCTGCT

AGTTGCTGAGGAACAATGCA GGGA TGAG GA TG GG TTGCT CACC CC
CCACCTGCTGCTGGAGGTGA CCCT GTTC CT AC CC GGCGA GTGG GG
GAAGCGGACCCATCACTTGC TC A- - - A- AGA-------- A -------
TTCCC

GAM7034 22607 GCAGCCGGGGCCTTCTCAAC C C-- AA AG-- CT- GCCAT
GCCTCAGTACCTCGGCGGGA GCAGC GGGGC TTCTC CGCCTC TAC CGGCGGGACC
CCGCCATGGTTCTGCTGCAC CGTCG CCTTG GAGAG GCGGGG GTG GTCGTCTTGG
GTGAAGCGGGGCGGCGAGAG T ACC CG CGAA CAC -----
CCAGTTCCTGCTGC

GAM7035 20992 GCTATCTGGATTTTAAAGTG A GA TAA ACT G CTATAA GGAAAA
ACTGAAGGGAGCTTTGTCTA GCT TCTG TTT AGTG GAAGG AGCTTTGT GGGT
TAAGGGTGGAAAAATCTACA CGA AGAC AAG TCAC CTTCC TTGGAACA TCTA
AGGTTCCTTCCACTGAAGCA - G- --- --- - ------ ------
GAAGC

GAM7036 11959 TGGAGAGCTGGCGGGGCGAA T-- G GA-- AG CTATGTCT
GAGTAGGGTCTATGTCTGCC TGGAGAGC GGCGGG C AGAGT GGT
AACTCTAACAGCCTGCCCGT ACCTTTCG CCGTCC G TCTCA CCG
GCTTTCCA TGC - ACAA A- --------

GAM7038 6926 GGGGCCTCTATCCACGAGTT TAT CG TCT TC C AG- TACG
CTGCATCAACCTGCGGCAGC GGGGCCTC CCA AGT GCA AAC TGCGGC CTC
TCTACGGGGACAGCCGCAAG TCCCGGAG GGT TCG CGT TTG ACGCCG GGG
TTCCTGCTGCTTGGTCTGAG TCT -- T-- CC A ACA ----
GCCCT

GAM7039 12084 CTATGGCTCGGGGCTCGCTG A - T - T --- G TCCTCGT
CGCCGGTTGCTGCGGCTCCT CT TGGCT CGGGGC C GC GCGCCGGTT GCT CGGC
CGTGCTGGGGCTCTGGCTGG GG GCCGG GCCTCG G CG TGCGGTCGG CGG GTCG
CGTTGCTGCGCTCCGTGGCC G T C T T TCT G -------
GGGG

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GAM7040 566   GTGCCACTAATGAGCTCTCA   -   ATGAGC   ----------   TG CT   TAT   GA C    TCT
        CTCTGGCTTGTTATGTGAGA GTGC CACTA     TCTC          ACTC  G  TGT   GTGA  AA ACATC
        AACACATCTCTGTGGTGTTT CACG GTGAT     AGAG          TGGG  T  ACG   TACT  TT TGTGG

        TAATCATTCTGCATTTTGGG    T    ------   GACATTGTTTATC    GT TT   TCT    AA  T    ---
        GTCTATTTGTTACAGGAGAT GT
        AGTGTGCAC

                  --
GAM7041 6227  TGTCTGATAACCACACTAAT     GA-    ACAC    CAT    TCCA  TTACAGCT
        TCATCTGCTTCCAGGTTACA TGTCT   TAACC    TAATT   CTGCT    GG
        GCTCCGTCTAGCAGCAAGGT ACGGA   ATTGG    GTTGG   GACGA    CC
        TGAAAAGGTTAAAAAGGCA      AAA    AAAA    AAC    TCTG --------
GAM7042 12103 GGAAGCCGTCAGCCAAGTCG  A     CAGC      CACATTTC     AAAATGTCATA      TTAATGTA

        CCACATTTCTCTGCAAAATG GG AGCCGT    CAAGTCGC       TCTGC         GCTTATA       CAGTA
        TCATAGCTTATATTAATGTA TC TCGGCA    GTTCAGTG       AGACG         TGAATGT       GTCGT
        CAGTATTCCATGGTATGCTG  A    CA--      CCTCTCT-    A----------      TGCCTTCC
        CCTTCCGTTGTAAGTAGCAG  TCCATGGT
        ATCTCTCCGTGACTTGACAC T
        GGCTACT           A
                  --------
GAM7044 7894  GATGGGAGGCCTGGGGCCCT   ----      T     CTGC      ACAGCACTATCTCTA
        GCCCGCTGGACAGCACTATC GAT    GGGAGGCC GGGGCC    CCGCTGG
        TCTACCAGCGGTGGTTCCGG CTA    TCTTCCGG CCTTGG    GGCGACC
        CCTTCTGATAATC         ATAG      -    T---      ---------------
GAM7046 19581 GTAAGACATATGAAGAATTG  AA     T--     -  -----      A    ATGA     GGGAAAGCA
        GATCAGAGATTTCTATGACA GT  GACATA   GAAGAA TTG    GATCAGAG TTTCT    CAGTGC
        GTGCGGGAAAGCAGCACTGA CA  TTGTAT   CTTCTT AAC    TTAGTTTT AAAGA    GTCACG
        GAAACTTTTGATTGTTTTCA  C-     TTT     T  TTTTG      C     ----     ---------
        ATTTCTTCTTTTATGTTCAC
GAM7047 16749 CCCTGGGGTTGGGGCCTCAC         GGG    ACC      AGGG
        CCCTCTGGAGGGCCGGAGGC CCCTGGGGTT   GCCTC   CCTCTGG
        AGGAGGTGGAAACCCCAGGG GGGACCCCAA   TGGAG   GGAGGCC
                          AGG    GAC      ----
GAM7048 6536  GTCTGCCCCAGCCTTGTTTT    GCC        TTTACTCC    TT  ATATTCTGTTGTTCC
        ACTCCCTGCATTCCATATTC GTCT   CCAGCCTTGT       CTGCA  CC
        TGTTGTTCCGGCTTGCAGCC TAGA   GGTCGGGACA       GACGT  GG
        CACAGGGCTGGAGAAGAT      AGA        CCC-----     TC  ----------
GAM7049 5825  TGCCTTCATGAAGCTTGTGA      A   AGCT    CCAA    AG  AATAGCTA
        CCAAGTGGAGGAAATAGCTA TGCCTTC TGA    TGTGA    GTGG  GA
        TTAACCACACAATCACATAA ATGGAAG ACT    ACACT    CACC  TT
        TCAAGAAGGTA             A   AAT-     AACA    AA --------
GAM7050 4537  GCCTCTGGCTTTACCATTGA    CT  -   A--   TGAAA-      CTAGAACGAT
        AATTTAAGAACTAGAACGAT GCCT  GG CTTT   CCAT     TTTAAGAA
        TTCTTAAAGTAAGTGTGGGT CGGA  CC GGAA   GGTG     AAATTCTT
        CAAGGTCCTAAGGC         AT  T    CTG    TGAATG       ----------
GAM7051 11460 GGAGCCATTGTGGACGTTCC       TTG    G--    G TG   AGGA    TT   T   GTAGTTG
        AGTTGGTGAGGAGCTGTTGG GGAGCCA   TGGAC   TTCCA T  GTG    GCTG  GGG CGT
        GTCGTGTAGTTGATGCCCTT CCTTGGT   ACCTG   AAGGT A  TAT    TGGT  CCC GTA
```

GGTAATGTATTGATGGAAAG TA- GGA - GT GTAA T- - -------
GGTCCAATTGGTTCC
GAM7053 19804 GCGGCCGAGGGGGAGGGCCG CC - G G - GACGT
GGGGAGCGGACGTCGCCTCT GCGG GAGG GGGAGG CCGG GGAG CG
GCTGGTCTCCCACCTCCCGC CGCC CTCC CCCTCT GGTC TCTC GC
-- A - G C -----
GAM7054 13945 GAAACCAAGACTACTATGTG - AG A CACT- T TCTTCTATT
CCACTCATTTCTCTCTTCTA GAAAC CA ACT CTATGTGC CA TTCTC
TTGGGAATTGTAAATGTATA CTTTG GT TGA GATATATG GT AAGGG
TAGGAGTGTGTGTTTC T G- G TAAAT T ---------
GAM7055 13302 CCAGCATTCGCCCATCTCAA - TCGCCCA A TT G A GGTTG
GGTTGGCGTGGGACATCGGT CC AGCAT TCTCA GG GGC TGGG CATC
TGGATGCCCAGGCTTCTGGG GG TCGTG AGGGT CT TCG ACCC GTAG
AGTACTTGTGCTCGG C TTCATG- - -- G - -----
GAM7056 13570 CCTGTTGTTGGCAGCGTCAA G GC- AAGAA A TGTGG
GAATGAGAAGACTTTTGTGG CCTGTT TTGGCA GTC TGAGA GACTTT
GGGGTCCTCTTAAGGCAAAT GGACAA AGCCGT CGG ATTCT CTGGGG
GCCGAGAACAGG G AAA A---- C -----
GAM7057 9745 CTGCCCTTCGAGATGTGCCC C- AGA T TTC--- C G TG ACTA
TTCTCAGCCCTGTACTGGTT CTG CCTTCG TG GCCC TCAGC CT TAC GTTCA
CAACTATGAGCTGGTGAAGA GAC GGAAGC AC TGGG GGTCG GA GTG CGAGT
GCTGGCTCAATGGGTTCAGG CA CGG T TAACTC A A GT ----
CCGAAGGACCAG
GAM7058 8144 TTTTTGCAGTGTTTTATACC G - --- TC----- ATCT TTA
CTCGGCAATCTTGCTGCGTT TTTTT CAGT GTTTTATA CCC GGCA TGCTGCG
ACGCAGTACATGCTTTTTAA AAAGA GTCA CGAAGTGT GGG TCGT ATGACGC
TGGGACCTGTGAAGCAACTG A A CCA TAATTTT AC-- ---
AAGAAA
GAM7059 6802 ATGGAGAGGAGGAGGTGGAG GA AG--- G A- C TTTCA
ACTTTTGCCTTTCAGGCAGA ATG GAGG GAG TGG GA TTTTGCC
AATTGCCCAACTCATGTCCC TAC CTCC CTC ACC TT AAGACGG
TCATCAT TA CTGTA A CG A -----
GAM7060 9988 GCGGGCCGCTGCCATGACGA - C A AC C TCTT A GCCTGA
CCGCCATCTTGGAGCGCCTG GCG GGC GCTGCC TG GACCG CA GG GC
AGCACCCTGTCGGTCAGCGG CGC TCG CGACGG GC CTGGC GT CC CG
GCAGCAGCTGCGC G A - GA T C--- A ------
GAM7061 9357 GCTGGAGGACTGCTTCACCT T ACT CTTCCT AT---- --- ---- T TCCTCTT
TCCTGGGCAATCTTCCTGGC GC GGAGG GCTTCAC GGGCA CTTCCT GGC CA CA CC
CATCATCCTCTTCCCCTTTG CG CTTCC CGAGGTG CCCGT GAAGGA CCG GT GT GG
GGTTCATTTGCTGTTTTGCC - AC- TCAAC- AGCAGC GTT TTTT C TTACTT-
TTGAGGAAGCGACGATGCCC CTTT
CAACTGTGGAGCCACCTTCG C
C G

GAM7062 20999 TTTTCTGTCTTACTTGTTCA G -- CACC- GAAG-- A- ATT
CCTCATCATGAAGATTTAGT TTTTCT TCTTACT TGTT TCATCAT ATTT GTAGCC
AGCCATTGGCTACAAGGATG AGAGGA AGAATGA ACAG AGTGGTG TAGG CATCGG
GCATAGTGGTGATAATTGAC A CT TTAAT ATACGG AA ---
ATCAGTAAGAAAGGAGA
GAM7063 11939 CCCCTCAGCACCCTGCCTTG TCAG- TG GAAGCTCTGTG

TCTCCAGGAGGTCCGAAGCT CCCC CACCC CCTTGTCTCCAGGAGGTCC
CTGTGGGACCTCTTGGGGGC GGGG GTGGG GGAACGGGGGTTCTCCAGG
AAGGTGGGGTGAGGCCGGGG CCGGA GT ----------
GAM7065 8953 GTTGCCCGAGCCGTTGCCGT C CGTT GTCGT -- TCC AAGT
CGTAACTAGGCGTCCTGGAA GTTGC CGAGC GCC AAC TAGGCG TGG
GTCCACGTCGTTTACCGTTT CGACG GTTCG CGG TTG ATTTGC ACC
GTAAGGCGCTTGCGCAGC C ---- AATGT CC TGC ----
GAM7066 7272 CTGTGGGGACAGGATGTCTG T A- GT GG - GCTTTGA
GGTCCCCAGGCTTTGACTGT CTG GGGGAC GGAT CTG TCCC CAG
GGGGACAGGTGTCTGGGTCC GAC CCCCTG TCTG GAC GGGG GTC
CCCAG - GG TG A- T -------
GAM7068 22050 CCTGGTGTCCCTCGACTCTG G - CGA A - ----- - --- GAT
ACAGTGATGGGGAGCTGGGA CCTGGT TC CCT CTCTG CAG TGA TGG GGAG CTGG
TCCAGATACTCCTCCGGGTA GGACCA AG GGA GAGAC GTC ACT GCC CCTC GACC
TTCATCTGCAGAGCAGGTGA - T C-- - T TATGG T ATA ---
ACCAGG
GAM7069 2851 CAAAAGGTTTATTGAAATGC TT ATTGAAATG A T A C TAAAAC
ATGTAGATAAATTATCATCA CAAAAGG T CATGT GA AAATT TCAT AGCA
GCATAAAACTGTTATGGAGT GTTTTCT G GTACA CT TTTGA GGTA TTGT
TTTCAACATGGGGTCTTTTG GG --------- A - - - ------
GAM7071 5638 CTGGAACAGCCCATTTTATC GA - A TA T T TCTGCC
TTTGAATGGTCTTCTGCCAG CTG ACAGC CC TTT TCTT GAATGG CT
CCCATTTTGAGGCCAGAGGT GAC TGTCG GG AGA GGAG TTTACC GA
GCTGTCAG -- T - CC T C ------
GAM7072 10629 GGCCCAGGATCGGCAGGGCT - - G- - GCT GA AGCT
GCTGGCAGAGGAATCCCAGC GGCCCAG GA TC GCAGG GCT GGCA GGAATCCC
TGGGGTTCCCATGCCCCAGG CCGGGTC TT AG CGTCC CGG CCGT CCTTGGGG
CTCCTGCAGGACTTGCTGGG G C GA T ACC AC ----
CC
GAM7073 7047 TCTGAGAGAGGCAGGCTCGC TG AGG TC C- T AACAGGGC
TGCAGATGGGAACAGGGCTC TC AGAG CAGGC GCTG AGA GGG
CTCTCACAGTATGCCTGGGC AG TCTC GTCCG TGAC TCT CCT
TCTTGGA GT GG- TA AC - --------
GAM7074 8235 GGCCTTGGATGGCCATGGTG - T TG C TA-- TCCACTTAT
GTTTCTCTACATAGTCTTTC GGCCTT GGATGGCCA GG GTTTCT TACA GTCTT
CACTTATGAGATGCGTTGTA CCGGAA CCTACCGGT CC TAAGGA ATGT TAGAG
CAGGAATGTCCTGGCCATCC T - TG C TGCG ---------
TAAGGCC
GAM7075 18029 GCGACGCGGAGCCCAGCGGG A ----- A - G - TTGTCTACC
CGCGCGTGCGGTTGTCTACC GCG CGCGG AGCCC GC GGGC CGCGT GCGG
CCGTGACGCGGCCCAGCGGG CGC GCGCC TCGGG CG CCCG GCGCA TGCC
GCTCGGGACCGCGCGC - AGGGC G A - G ---------
GAM7076 9957 GGGGCGCGCCCTGCGGCCCC G CCT G --- AA CCTTTTCAGAA
CGGAGAAAGGCCTTTTCAGA GGGGC CGC GCG CCC CCGGAGA GG
ACCCCTCTCCGGTGTGGGGC CCCCG GCG CGC GGG GGCCTCT CC
GCCCGCGGGCCCC G CC- G TGT CC ----------
GAM7079 5311 TCATGACCACAGTCCATGCC A CCATG ATCACT- - - AAGA
ATCACTGCCACCCAGAAGAC TCATG CCACAGT CC GCCA CC CAG
TGTGGATGGCCCCTCCGGGA AGTGC GGTGTCA GG CGGT GG GTC
AACTGTGGCGTGA - AA--- GCCTCCC A T ----

GAM7082 4499 CCAACAGGATGCCACGCTGG AA CC CC TATTTCCTGCCAAT
GCCGAGCGACTATTTCCTGC CC CAGGATG ACGCTGGG GAGCGAC
CAATGTTGCTCACTCGGTGT GG GTCCTGC TGTGGCTC CTCGTTG
ACGTCCTGGAGG AG A- A- ----------
GAM7083 11269 GTAGAGGGCAATGTGGTTGT GG--- AT-- - CA AGCT
CATGGAGACAGCTGTCTTCA GTAGA GCA GTGGTT GT TGGAGAC
ACACAAACCATCCTGTGCAT CATCT CGT TACCAA CA ACTTCTG
CTATCTAC ATCTA GTCC A CA ----
GAM7084 21150 CGCCCCTGCGCTGTCCGCCC - C-- TC CCCT - TT-- TTCCG
TTCCCCTAGCGTTACTTCCG CGCC CCTG GCTG CG TCCCCT AGCG AC
GTCCCTCGCTGAGGGGGTTC GCGG GGAC CGGC GC GGGGGA TCGC TG
GTGCGGCTCCCAGGAGGCG A CCT GT TT-- G TCCC -----
GAM7085 15057 CTCCCGCTCCGGCTCCCGCT C G CT - CTCGCT TCTCGC
CGGGATCTCGCTCCGGATCT CT CC CTCCGG CCCGCT CGGGAT CCGGA
CGCTCCGGGTCCCGCAGTGG GA GG GAGGCC GGGTGA GCCCTG GGCCT
GTCCCGGAGAGGAAG A A CT C ------ ------
GAM7086 7077 TCATGTTAATACATTAGCAT A TTAG TC CCGCAT TGCT
TCTAGCCGCATGGTGTCTGC TCATGTTAAT CA CAT TAG GGTGTC
TGGCACTTTCTGAGATGATT AGTACAGTTA GT GTA GTC TCACGG
GATTGACATGA - TA-- GA TT---- ----
GAM7087 5526 CCCACAGACGAATACCTGGA A AATACCTG - A C-- -- CCGG
GGGCATGATGAGCGAGGCCC CCC CAGACG GAGGG CATG TGAG GA GGCC
CGGGGCCCATCAACTTCACC GGG GTTTGT CTCCT GTAC ACTT CT CCGG
ATGTTCCTCACCATGTTTGG - ACCA---- T C CAA AC ----
GG
GAM7088 4278 GGCTGGGTCAAATGGTATTT T TCAAAT TTTC C TA A TT CACACT
CTGGCTCTAGATCCTTGAGG GGC GGG GGTA TGG TC GATCCTTG GGAA GC
AATTGCCACACTGTCTTCCA CCG CCC CCAT ATC AG TTGGGAAC CCTT TG
CAAGGGTTGAACTAATTTAC - TC---- TTA- A -- A C- ------
CCTCCCGCC
GAM7089 7108 GTCTGATTTCTGAATGTAAA - TCT GTAAAG GTG T G GTTTG
GTTGTTGTGTTTTTTTAAAT GTC TGATT GAAT TTGTT TTTTTT AAATA TA
AGTAGTTTGTAGTATTTTAA TAG ATTAA CTTG GACAA AAGAAA TTTAT AT
AGAAAGAACAGATCGAGTTC T T-- AGCTA- GA- T G -----
TAATTATGAT
GAM7090 10640 TGAGACAGAGTTTCGCTCTT A - TT CT CC -- T -- - TGATCTT
GACCCCGAGGCTGGAGTGCA TGAG CAG AG TCGCT TGA CC GAGGC GGAG TGCAGTG GCC

GTGGCCTGATCTTGGCTCAC ACTC GTC TC AGCGA ACT GG CTCCG TCTC ACGTCAC CGG

TGCAACCTCTGCCTCCCGGA C C TT -- TA CC - CA T -------
TTCAAGCGATTCTCCTGCCT
CA
GAM7091 20919 GCCCTTTAAGCAGCTTCATA C A A-- TCATAA G T C A ACCACCAACTTTG
ACCGAAGATTGCTGTGGCAC GC CTTTA GC GCT CCGAAGATT CTG GGCA GGGTCC GG

GGGTCCAGGACCACCAACTT CG GAAGT CG CGA GGCTTCTAG GAC CTGT CCTAGG TC

TGCTGGGATCCTGTCCCAGG C C CCC TA---- G C - G ----------
GATCTTCGGATAGCCCCGCC

TGAAGCGC
GAM7092 1547 GCTGAGCCTTAATGGGGGCA T --- - A AG CATAAAGA
GAAAGGGGTCATAAAGAACC GC GAGCCTT AATG GGGGC GAA GGGT
CTCTTCAGCTCCACATTCAC CG CTCGGGG TTAC CCTCG CTT CCCA
GGGGCTCTGC T CAC A A CT --------
GAM7093 17673 TACATTTATTGAAATGGCTG T AA G ACA AGCAGGTAAC
TACATGTAAGCAGGTAACTA TACAT TATTG ATG CTGT TGTA
CACAGCAGACGTGGCAATAT GTGTG ATAAC TGC GACG ACAT
GTGTG T GG A AC- ----------
GAM7094 2722 TGTCTCAGCTCAAATGGAAT TCA- T AAT C ACCCCATGCACTGTCA
ATTGTCGCACCCCATGCACT TGTC GC CA GGAATATTGT GC
GTCAGTTGCAATATTCCTGT ACGG TG GT CCTTATAACG TG
GGTGTCTGGCA TCTG - GT- T ----------
GAM7096 8630 TTCTGCTCTGTTCTTTGTTT CT G C TTTA TTA TG TTCTAATT
TATGTTTAACTGCTGTTTCT TTCTG CT TT TTTGT TGT AC CTGT
AATTGCAGGTGTATTACAGA AAGAC GA AA AAACA ACA TG GACG
TACAAATAAGAGTACAGAA AT G T TAG- TTA TG --------
GAM7097 13835 GAGGCTGTGTGTGTGGTTTA T G T - AA TG ACCA AAGC
CAAGTGCTGCAGACCAGGGA GAGGCTG GT TG GGTT TAC GTGC CAG GGG
AGCCCCACTGGCACAGGTGT CTCCGGC CG AC CCGG GTG CACG GTC CCC
GGCCTCAGCCGGCCTC - - T T GA -- A--- ----
GAM7100 10164 GGCCACCAACACATGGCCCA A ACA CA T T T CTCTGGT
GCCAGTGCTGCTGGGCTCTG GGCC CCA CATGGCC GCCAG GC GC GGG
GTTTCTGTGTTCTGGTGAGG CCGG GGT GTACCGG TGGTC TG TG CTT
CCATGGGGTGGGGCC - GGG AG T - T -------
GAM7101 3254 GGGCCCGGGCAGGACTGGGC C AGGA --- TC TGATCGAT
CTCCCTCTGATCGATGAGGT GGGC CGGGC CTGGGC C CCTC
GGTGAGCCCAGAGCCCGAGC CCCG GCCCG GACCCG G GGAG
CC A A--- AGT GT --------
GAM7103 12045 TTATTCCACTTCGGAGACCG CAC-- A CCCCCT--- - CAGAT A AAATCA
CCCCCCTTGTCCCTCAGATG TTATTC TTCGG GACCGC TG TCCCT GC TCC
CATCCAAATCAGGAGTTAGG AATAAG AAGTC CTGGTG AC AGGGA TG AGG
GATCATACTCCACTGTGGTC ATATT - TCACCTCAT T T---- - ------
CTGAATTATAGAATAA
GAM7104 17071 TAGAAGAGAGGAGGCATGTC A A---- G G ACTTGAAATTG
AGTGACTTGAAATTGCAATG TAGA GAGAGG GGCAT TCA TG
AAATGCTACACACCTCTTGT ATCT TTCTCC TCGTA AGT AC
CTA G ACACA A A ----------
GAM7106 8781 AGTAGAGGTGGGGTTTCATC A TG GTT- ATAGT TT GCTTGAA
ATAGTGGTCAGGTTGGGCTT AGT GAGG GG TCATC GGTCAGG GG
GAACTCCTGACCTCAGGTGA TCG CTCC CC AGTGG CCAGTCC TC
TCTGCCTGCCTCGGCT G GT GTCT ACT-- -- -------
GAM7107 944 GGGTTCGGGGCGGAGGCCCG TT GC C G--- CGCG
GGGGGGTGCGCGCGCCCGGG GGG CGGG GGAGGCC GGG GGGTG
GTCCGGCCTCTCACTCGCTC CCC GCTC TCTCCGG CCT CCCGC
CC TC AC - GGGG ----
GAM7108 21776 GTCAATCACCCTGGGCTCCT C-- - - AAC-- - T TGTA
CGAACTCAGCCTCAGTGCTG GTCAATCA CCTGGGCT CCT CG TCAGCC TCAG GC
TAGCCCTGGTGGCTGACCCT TAGTTGGT GGACCTGG GGA GC AGTCGG GGTC CG
GCGCAGGCGGTCCAGGCCCT CCC C C GTCCC T C ----

GGTTGAT
GAM7109 1510 GCCTCCATCTGGGCCTCTCT CCAT T T - CCACTT
GGTCAAAACCACTTTTTTGA GCCT CTGGGCC C CTGG TCAAAA
GTCAGGGGCCCAGCCTAGGC CGGA GACCCGG G GACT AGTTTT
TCC- - - G ------
GAM7110 1730 GAAGCTGTAGAGTGCTGCCC C- A - GAAA T GAAG
GAAATCTCTAGGAAGTTGGT GAAG TGT GAGTGCTG CCC TC CTAG
GGCAAGGGACAGCACTCACA CTTC ACA CTCACGAC GGG GG GGTT
CTCTTC TC - A AAC- T ----
GAM7111 11830 GATACATCATCTGAAATCTA ---- AAA - GA- TCCT
GGACTATCCTTGGGTACTAT GATACAT CATCTG TC TAG CTA
GACTAGATGCCTTGTGTATC CTATGTG GTAGAT AG ATC GGT
TTCC C-- T ATG ----
GAM7112 9465 CCGACCTGGCCCAGCCTGGC GA CC ---- C CCAATCCAGT
CCGTCCCCAATCCAGTGGGC CC CCTGG CA GCCTGGCC GTCC
TGGCCAGGCCACCTGCACCA GG GGACC GT CGGACCGG CGGG
GGGAGG AG AC CCAC T ----------
GAM7113 1299 GGTCACCACGCCAGAGAGGA T --- G ATCC CGAA- ACACATTA
TCCGCCCTCGAATGGACACA GG CACCAC GCCA AGAGG GCCCT TGG
TTACCAGTGAAGGGGCATTT CC GTGGTG CGGT TCTTT CGGGG ACC
CTTGGCAATGTGGTGCC - TAA - A--- AAGTG --------
GAM7114 2307 AGCAGTCACTCTCCACCCTT T- CCCT - C CCT AGCTGCCCCG
CCCTTCTGCCTGCCCAGCTG AGCAGTCAC CTCCA TCC CTT TG GCCC
CCCCGGGGCCACGAGTGGAT TCGTCGGTG GGGGT AGG GAG AC CGGG
GCTGGGGCTGTGGCTGCT TC CGT- T C --- ----------
GAM7115 13307 TAGTAGACTGATGAGCTGGA AC ATG G TAGAT TAACAT
TTGCTTAGATTGATAACATT TAGTAG TG AGCTGGATT CT TGA
TACAAATAGGAGTCCAGTTG ATTATC AC TTGACCTGA GA ATT
ACATGCTATTA GT AG- G TAAAC ------
GAM7116 18575 TGTATACAGAGGTGACTCGC T G A- - GGACTTCA
TACCTGGACTTCAAGGTGGT TGTA ACAGAG TG CTC GCTACCT
GGAGGGCAGCTTTGTCTACA ACAT TGTTTC AC GAG TGGTGGA
C G GG G --------
GAM7117 9617 GGGAGTCATTGAACTTCAGC G - ---- ----- - GGAAA
TCTGGAAAGGATGTTGTTAC GG AGT CAT TGAACTT CAGC TCT
CAAGTTCAGTTTGTGAATTG CC TTA GTG ACTTGAA GTTG AGG
CC G A TTTG CCATT T -----
GAM7118 4453 TTTGTGCTATTTTATCACAG CTA T AGGCT - A T TTAATAAATACTT
GCTTACACTACAATTGTTAA TTTGTG TTTTA CAC TACA CT CAA TG
TAAATACTTCATTTGGAGAT AAACAC AAAAT GTG ATGT GA GTT AC
GTATGGTGTAAAACACACAA AC- - GT--- A G T ----------
A
GAM7119 14819 TTGGCGATGCTGTCGGGGAT GAT --- TT C CAAC---- ACCCT
TCTGCTGGGCAACTGGGCAC TTGGC GCTGTCGG GGA CTG TGGG TGGGC
CCTGCCCGCCACCATCCTCA AACTG CGACAGCC TCT GAC ACTC GCCCG
CCAGTCTCTTCACCGACAGC ATT ACT CT C CTACCACC -----
TTAGTCAA
GAM7121 13551 GCTGGCAAAATTTTGTTCTG AAA GTT ACTTTA GTCA
ACAGACTACTTTATTCTTGT GCTGGCA TTTT CTGACAGACT TTCTT
CAAGGAAAGTTTGTCAGTGG TGACTGT AAAG GACTGTTTGA AAGGA

AAACTATGTCAGT ATC GT- ------ ----
GAM7122 6147 CATGGCTTATGTGTATAATC T TAA C - TTTGG - A GAAGAT
CAGCCCTTTTGGAGGTCAGG CATGGCTTA GTGTA TC AGC CCT AGGT CAGG TG
ATGGAAGATCGCTTGAACCT GTACTGAGT CACGT AG TTG GGG TCCA GTTC GC
GGGAGTTTGAGGTTGCACTG - TGG T A ----- A - ------
AGTCATG
GAM7123 22873 TATTATCACAGTGTTATTCT A A - AT TC ---- GGCATG
TCTTCATATCTGTGGCATGA TATT TCAC GT GTT TCT TTCA TATCTGT
CAGGTGTATCTGAAAGAGAA ATAA AGTG CA CAA AGA AAGT GTGGACA
ACGACCGTGAAATA - C G -- GA CTAT ------
GAM7125 21453 GTCGGAGTCACAGGTCTTTT T G C T T T GT AGC AC C --- GTCTTCCT
GTTCGGTGGCAGCATCCACT G CGGA TCA AGG CT TTGT CG GGC ATCC TG AGAGGCT AGGCT

GCAGAGGCTAGGCTGTCTTC C GCCT AGT TCC GG AACG GC TCG TAGG AC TTTCCGA TCCGG

CTGGCCTTTCAGCCTTTCAC - G C C T - -- AC- C- - CTT --------
GGATCAGCTCGGCAATGGCC
CTCTGAGTCCGC

GAM7126 6213 GTCTCCAGTGATCCACAGAC T - AC A CGAT AGAACC
TGCGATTCAGAACCGACGTA GTCTCCAG GAT CC AG CTG TC
CAGCTAGGTATCTCTGGAGA CAGAGGTC CTA GG TC GAC AG
C T T A- - ATGC ------
GAM7127 7705 GGAAAAGCAAGCCAGGAGGT AA A-- GGA C TCTAG TT G GCCG
GCTTGCGGCCGCTTCTAGTA GGA AGC AGCCA GGTGCTTG GGCCGCT TAGT CCAG CGCT

GTTTCCAGGCGCTGCCGGGC CCT TCG TCGGT TCGCGAGT CTGGCGA ATCA GGTC GCGG

GGCTGGCACTAAGCGGTCCT CG GCA G-- C ----- C- G ----
GAGCGCTGTGGCTACGGCTG
CTCC
GAM7128 2295 TGGCATCCCAGATGTTGCAG AGA AG GAAG T CA A AGCA
TTGAAGTCGTCGTAGCCAGC TGGCATCCC TGTTGC TT TCG CGTAGC GCG GC
GAGCAGCAGCCGTCCGCTGC ACCGTAGGG ACAACG AG AGC GCGTCG TGC CG
GCGAGAAGGCAACAGAGGGA AG- GA ---- - CC - ----
TGCCA
GAM7129 7564 CTGAGCGGCGGGACCGGAGG CGGC G AT - A--- -- CTAT
GGATGAGGAGGAAGAGTGGC CTGAG GGGACC GAGGGG GAGG AGGAAG GTG GCT
TCTATGGCGGTACGAAACTT GACTC TCTTGG CTCTCT CTCT TCCTTC CAT CGG
CCTGTCTCTGTCTCTCGGGT ---- G GT G AAAG GG ----
TCTCTCAG
GAM7130 8293 AGGCCTCCTGATAGTTGGGG T-- - C C- CGGACA
CCACCTCTTCGGACAAAGAT AGGCCTCCTGA AGT TGGGG CAC TCTT
TGTGACTTCGTGCTCCTTCA TCCGGAGGACT TCG GCTTC GTG AGAA
GGAGGCCT TCC T A TT ------
GAM7131 1512 TGGAGCACATGTGCCGCCTG A C - ----- T ACAT TCACCACCC
GACATTGATTCACCACCCAT TGG GCA ATG TGCCG CC GG TGAT
CACAGCCCGGAACACTGGCA ACC TGT TAC ACGGT GG CC ACTA
TCATCTGTACCA A C T CACAA C GAC- ---------

GAM7132 17208 TGATGCACAAAATGGGACTG G --- AC TG AGT ACAGTTGGA
CTGAAGAGTGGACAGTTGGA TGAT CACAAA ATGGG TGC AAG GG
CCTTACTTTGGTGACCCCAT ACTG GTGTTT TACCC GTG TTC CC
ACATTTGTGGTCA - ACA CA GT ATT ---------
GAM7136 10026 TAGCTAGGACTACAGGGGCA A ACT GG CT A G- TAATTTTTAAAACTTTTTT
AGCTACCATGTCTGGCTAAT TAGCT GG ACA GGCAAG ACC TGTCT GC
TTTTAAAACTTTTTTGTAGA ATCGG CC TGT TCGTTC TGG ACAGA TG
GACAGGGTCTTGCTATGTTT A CTT A- -- G GA ----------
CCCAGGCTA
GAM7137 3823 GGAAAGAGGTTGTGAGCTGA GA A TT A TTGG A ACCTGGCA
TTGGATTAAAGACCTGGCAC G AAG GG GTG GCTGA ATT AAG
TTCAGTAACTCAGCACGCTT C TTC CC CGC CGACT TGA TTC
CCACTTCAC AC A TT A CAA- C --------
GAM7138 21737 ATTGCCAGACAGCTGCACCA C GC- GA GAGTCACGT
CAGACTGAGTCACGTGGATG ATTGC AGACAGCT ACCACA CT
TGGTTAAAGTTGTCTGCAAT TAACG TCTGTTGA TGGTGT GG
- AAT A- ---------
GAM7139 3149 CCAGAAGACTGTGGATGGCC A CT T CCC C - AA- GTGATG
CTCCGGGAAACTGTGGCGTG CCAG AGA G GGATGG TC GG GA CTGTGGC
ATGGCCGCGGGGCTCTCCAG GGTC TCT T CCTACT AG CC CT GGCGCCG
AACATCATCCCTGCTCTACT A CG C ACA A T CGG ------
GG
GAM7141 17597 AGGAGCCCATGAGATTTGAG CCCATG GAG T- AAAT
TCAGGTTGTAAGTGAAATCA AGGAG AGATTT TCAGG TGTAAGTG
CTTACACTTTTGGATAGAAT TCCTC TTTAAG GGTTT ACATTCAC
TTATACTCCT ATA--- ATA TC ----
GAM7144 22827 ACAGATGTCTGCTGCCAAAA GTCT GCCAAAAA TTC AGAAAATCCAAA
AGTTGTTCTGATAGAAAATC ACAGAT GCT GTTG TGAT
CAAAATCATCGACCCCAAAA TGTCTG CGA CAGC ACTA
GCCAAGTCTGT AAC- AAACCC-- T-- ----------
GAM7145 7960 AGCTGTAAATTATGTTGGAG GTAAA- G --- GG C ---- ATTAT
CAGGGACTGTGGAGTTTATT AGCT TTAT T TGGAGCAG A TGTG GAGTTT
ATGGACTCAAAACATAATTT TCGG AGTA A ACTTTGTC T ATAC CTCAGG
CTGTTTCATGGAGATGAATA AACATA G GGT TT A AAAA -----
CAAGGCT
GAM7147 13732 ACCAGGTCCAGTTCACAGAC A T- G ACA AATAT GTTTAA
ATTGTGGAAATATTCGTTTA ACC GG CCA TTCACAG TTGTGGA TC
AGACTCCACGAATTGTGAAT TGG CC GGT AAGTGTT AGCACCT AG
GGCTCCAGGT A TC - A-- C---- ------
GAM7148 17826 AGGAGACCCGTGTCATGTTT GAG T AT - - --- CGAAATA ----------
GAGAAGATAGCGAAATACAT AG ACCCG GTC GTT TG AGA AGATAG CATTGG
TGGGGAGAATCTTCAACTGC TC TGGGC CAG CAA AC TCT TTTGTC GTAGCC
TGGTGGACCGGCCCGATGGC ATG - -- C G GCC ATCCACG CGGCCAGGTGGTCGTCA
ACCTACTGTTTCCGTCTGCA - AAT
CAACGACCGGGTGTACT GGAG
CTTC
A ---
GAM7149 17527 TGCGTTGTTACAGGAAGTCC TG- - CCCT C CTAAAA A TTTCTCT AA AT
CTTGCCATCCTAAAAGCCAC TGCGT TTACA GGAAGT TGC ATC GCC CCCCT CT GGAGA
G

CCCTTTTCTCTCTAAGGAGA ATGTA AATGT CTTTCG ACG TAG TGG GGGGA GA CCTCT C
ATGGCCCAGTCCTCTCCCAA TTA G TT-- A ------ A CACACCT AC C-
GTCCACACAGGGGAGGTGAT CCA
AGCATTGCTTTCGTGTAAAT GC
TATGTA TG

GAM7150 2158 AGAATGCCAAGATGGTATTT ----- AGAT TT AAGA TTTGGTTGT
TCTTTGGCAAGATGCTTTGG AGAA TGCCA GGTATTTTC TGGC TGC
TTGTGCAGTCATTGAAGATA TCTT ACGGT TCATAGAAG ACTG ACG
CTTGGCACTATTTTCT TTATC ---- TT ---- ---------

GAM7151 18063 TAGAGAGTGAGGTAGTAGCA - AGC CCTA T AC A TTC AATT
TGCCTAAGGTACACCTCAGC TAGAGAG TGAGGTAGT ATG AGG AC CTC GCAG CAG
AGTTCCAGAATTCTGCTGCG GTCTCTC ACTTCATCA TAC TCC TG GAG CGTC GTC
AGTGGTCCTCCATCAAACTA C AAC C--- - GT - --- ----
CTTCACCTCTCTG

GAM7152 20140 TTTGTTTCATTATTTGGAAC A -- C T AG---- TA ACAA
TCAATAATAGAGACTTTAAG TTTGTTTC TTATT TGGAA TCAA AAT AGACTT AGT
TACAAATTGTGAGTCTAGGA AAATAAAG AGTAG ACCTT AGTT TTA TCTGAG TTA
GAATTTTTGATTTCCACAGA - AC T T AGAGGA TG ----
TGAGAAATAAA

GAM7153 11023 GGGAAACCTTGGCAAGCAGT A- TT- A -- CCAGTC A CCCAGACC
TCCAGTCCGAGCAGCCCCAG GGGAA CC GGCA GC AGTT CG GCAGC
ACCGCTGCCGCCCGAAGCTA CCCTT GG CCGT CG TCGA GC CGTCG
AGCCTGCCTCTGGCCTTCCC CC TCT C AA AGCCC- - --------

GAM7154 9989 CTATGTGAATGGGAAGTGGT A- A AG- TAAA - CACAGAAA
TAAAGCCTGAACACAGAAAT CT TGTGA TGGGA TGGT GC CTGAA
TCAGTGCCTTGCCAGGATCC GA ACACT ACCCT ACCG CG GACTT
CATCACAGGAG GG - AGG TTC- T --------

GAM7156 16754 CACATCCATCATGGCTTGTG ----- GG- - CTAA AAAA AAGGAA
CTTCTAACTAAAATCAAAGG CACATCC ATCAT CTT GTGCTT CT TCA
AATGAAAGCAGAAAAAGCAC GTGTGGG TGGTA GAG CACGAA GA AGT
TGAGAAAATGGTAAAACGGG CAAAA AAA T AAA- CGAA ------
TGTG

GAM7159 7198 CTTTATTTGTGCGCTGTGAG GT-- C G T CAATCTATCATCAACTTT
GGTGAAGGCAATCTATCATC CTTTATTT GCG TGT AGGG GAAGG
AACTTTTCTTTCCCTGATAT GAAATAAG CGT ATA TCCC TTTCT
GCTCCAGAATAAAG ACCT - G - ----------

GAM7160 22359 CGGTCAGGCCCCATCAGGGA CAG - A- ACA CCA A C CTGCCCATC
TGGTCACAGTCCAGCCACAG CGGT GCCCCA TCAGGG TGGTC GT GCC CAGGGG GACT

GGGCGACTCTGCCCATCAGT GCCA CGGGGT GGTCCT ACCAG CG CGG GTCCCC CTGA

CCCCCTGGGGCAGCGACCAG CGA C AG --- A-- G - ---------
ATCCTGGCTGGGGCAGCACC
G

GAM7161 16731 CGAGTGTGTGCTGGAGAAGG GT-- G GGCC T T-- TTGTTT
CCTGGCTCGCATGGAGTTGT CGAGT GTGCTG AGAA TGGC CGCA GGAG
TTCTTTTGTTGTGTGCCATT GTTTA TACGAC TTTT ACCG GTGT TTTC
TTGCAGCATTTTAATTTG ATTT G ---- T TGT ------

GAM7164 6017 GATACTGCAAAAGTGAGAAG - A-- AA TAATA ACTTT AATTTGGCATC

GAGATAATAGATACTTTGCT GATACT GCAA AGTGAG GGAGA GAT GCTCTG
CTGAATTTGGCATCCAGAGT CTGTGG CGTT TCACTC CCTCT TTA TGAGAC
TAACATTTCTCCCCTCACTC T CCC C- ----- CAAT- ----------
CCTTGCTGGTGTC
GAM7165 13535 CAGAAGTGATTTGCTCCTTA ATTT T AAAG TGTTCCTT
AAGGGGCTGTTCCTTGCCCA CAGAAGTG GC CCTT GGGC
GAAAAGGTGTCACACTTTTG GTTTTCAC TG GGAA CCCG
AC-- T AAGA --------
GAM7167 22611 ATAGAGGGCTTTCTATGTGC TTC GCC-- T GGTCCA
CAGGTGCTGGTCCAAGCCCC ATAGAGGGCT TATGT AGG GCT
TTTTCAACATAAGCTCTCTG TGTCTCTCGA ATACA TCC CGA
T --- ACTTT C ------
GAM7170 22146 ACACTGCTTCAAGGTTTCTT A TTC G A- TTCTTAGAAT CTTTT
TTGTATATAATTCTTAGAAT AC CTGC AA GTTTCTTTTGT TATAA GCTCATTT
GCTCATTTCTTTTAAATGGG TG GATG TT TAAGGGAGACG ATGTT TGGGTAAA
TTAATTTGTACAGCAGAGGG - TTA G AC TAAT------ -----
AATGTTATTGTAGGT
GAM7171 19439 GCCACGGTTCATTTCACCCT CATTTCA T- A CT G AGCG
TGACAGGCTCATTGAGGATG GCCACGGTT CCC TG CAGG CATT AGGATGGCATA
GCATAAGCGTGTGTCATTCT TGGTGCCGA GGG AC GTTC GTAG TCTTACTGTGT
GGATGTCTTGCACCGGGCAT TAC---- CC - T- G ----
AGCCGTGGT
GAM7172 12130 AGCATGGTCAGCAAGTTCTC A---------- -- - GTTC
GGGGTTCTCCAGGGAATTCT AGCATGGTC GCAAG TTCTC GGG
TGCCAGTCCCTTAAGATTAT TCGTATTAG CGTTC AAGGG CCT
GCT AATTCCCTGAC TT A ----
GAM7173 22142 TGGACTTGGCCCACATCCAG GG ACA A A GC- GC------ CTTAGCC
GCTACCCCCAGCCCGCTTCT TGGACTT CCC TCC GGCT CCCCCA CC TTCTTCCCTG
TCCCTGCTTAGCCCAGGGAG ACCTGGG GGG AGG CCGA GGGGGT GG AAGGAGGGAC

GAAACATTAAAGGTGATGGG A- --- G C AGT AAATTACA -------
GGCAGCCGGGAGGGAGGGTC
CA
GAM7174 16471 CAGATGGGCTCTTTGGGCTT T CTTT T C TCACCT
TGGGAGCTGGCTTCACCTGG CAGA GGGCT GGGCTT GGGAG TGGCT
CTACTCCCGAGTCTGGCCCT GTCT CCCGG TCTGAG CCCTC ATCGG
CTG - ---- - - ------
GAM7175 15228 GTCCTGGACATATCGGAGTA GA ATCG A GG AGACA A CTGTCAA
GGGGGTGGTCAGACATCACA GTCCTG CAT GAGT GGG TGGTC TC CAGGAG
GGAGCTGTCAACTCCTGCGG CAGGAC GTG CTCA CTC ACCGG GG GTCCTC
AATGGGCCAACTCACTCGGT G- G--- - A- GTAA- C -------
GGCAGGAC
GAM7176 20925 GCTCCGGCATGTGCAAAGCT T G - AAAG TTTG A ACGCTC G C TTTCCTTC
GGTTTTGCTGGGGACGACGC GC CCG CATG TGC CTGGT CTGGGG CG CCCGA C GTG
TCCCCGAGCCGTGTTTCCTT CG GGT GTAC GCG GACCA GACCCC GC GGGCT G TAC
CCATCGTCGGGCGCCCCAGA - G T ---- CA-- - ------ - C --------
CACCAGGCGTCATGGTGGGC
GAM7177 8409 GGATGAGGAGGGTAGGCTCG G- A- - AGTA A GAA
TAGTAGCCATGCAGGAACTG GGATGAGGAG GT GGC TCGT GCC TGCAG
CAGGTCGATGATGTTGAGCA TCTGCTCTTC CG TTG AGTA TGG ACGTC

GCTTCTCGTCT GA AG T GC-- - ---
GAM7178 16805 CTGTTGGTTCTTTCTCCTGA TCT T A -- CTA- -- T GA CATG
CTCCTGTGGTTTTGCTAATG CTGTTGGT TTC CCTG CTCCTGT GGTTTTG ATGG CACTT ACA
CTC
GCACTTTACAGACTCCATGG GACAACCG AAG GGAT GAGGACG CCGGGAT TACC GTGGA TGT
GAG
AGATGTCAGGTGGACCATCT TGT - - AC CTTC AG C A- ----
TCTAGGGCCCAGCAGGAGTA
GGGAATGTGCCAACAG
GAM7180 21436 ACCTGCGACTGAGCGATGCC TG G - C G CGG - ACTG
GTCGGGGACCAGGTACTGGC ACC C ACTG AG GAT CCGT GGACCA GGT
CGTGGTTTAACGGGTCCTGC TGG G TGGC TC CTG GGCA TTTGGT CCG
GGTGGTGGGT GT G G - - A-- G ----
GAM7181 1261 CAGACTACAAAGTGACAGTC A-- T ----- - G TAAG TATGG
ACCTGGTAAGTCCTGTATGG CAGACTACA AG GAC AGTCAC CT G TCCTG
TAGGAAGTGGGTGTGGCTCT GTCTGGTGT TC CTG TCGGTG GG T AGGAT
CGGGTCCTAAATGTGGTCTG AAA - GGCTC T G GA-- -----
GAM7182 17411 CAGACTTCACAGAGAATGCA CTTC AGAA G T A T- TCTGTCTGT
GTTGTCTTGACTTCAGGTCT CAGA ACAG TGCA TTG CTTG CT CAGG
GTCTGTTCTGTTGGCAAGTA GTCT TGTC ACGT AAT GAAC GG GTCT
AATGCAGTACTGTTCTG ---- ATG- A - - TT ---------
GAM7183 812 CTGTTCCAAAGCCAATACGA CCAAA A -- C- AAA
AGACCTCCCAAAAATTGGTT CTGTT GCCA TACGAA GACCT CCAA
GGGTTAATTTGTAATGGTCC GACAG TGGT ATGTTT TTGGG GGTT
CAGACAG ACCC- A AA TT ---
GAM7184 14390 CATGAATCACGACTGTGGAC AC CT CG A T TGTGGT
GACAATGTGCCTGTGGTGGT CATGAATC GA GTGGA ACA TG GCC
CAATGTTCCATTCCCGATTC GTACTTAG CT TACCT TGT AC TGG
ATG CC -- -- A - ------
GAM7185 325 CACAAGACAGTTAGACAACC A GT CA AGGA A GAAG
AAGGATTCATCAGGAGAAGT CAC AGACA TAGA ACCA TTC TCAGGA
TCTGGGAATGGTCATCTATG GTG TCTGT ATCT TGGT AAG GGTCTT
TCTCGTG C -- AC ---- - ----
GAM7186 12434 GGCCTCTGCTGCCCTTTCTG -- G T TGCCCC TCTAT CCCGTCACACCC
TGCCCCCCAGGTTCTATCTC GGC CTCTGCT CCCTT CTG CCAGGT CTC
CCCGTCACACCCGAGGCCTG CCG GAGGCGA GGGAG GAC GGTCCG GAG
GCTTCAGGAGGGAGCGGAGC AC - - TTC--- ----- ----------
AGCC
GAM7187 6155 GTTGAAGGAAGTGAGCACAT TG - ------- A TT- CTGTGAA
TATTTGTACTGTGAATATAA GT AAGGAAG TGA GC CA ATTTGTA
ATTTTTGGCCTTTTATTTAT CA TTCCTTC ATT CG GT TAAATAT
CTTCCTTTGAC GT T TATTTTC - TTT -------
GAM7188 21676 GTGTTGGGTGGCAAGGTCTA TT T CA-- -- GATCG GG ACGGCTTA
TGTGATCGGAGGCTTTGACG GTG GGG GG AGGTCT ATGT GA CTTTG
GCTTACAGAGAATCAACAAC CAC TCC CC TCCAGA TGCA CT GAGAC
GTGGAGACCTACGACCCCTT TT - AGCA GG ACAA- AA --------
TCAC
GAM7189 13620 TCAGGTTGAGAGTGAGCTGC T G TG CTGC G C ACAAC
TGTGAGCCAGTGACAACTAC TCAGGT GA AG AG TGT AGC AGTG
TGCTACAACTTGCTGTTACT AGTTCA TT TC TC ACA TCG TCAT

TGA - G GT A--- - - -----
GAM7190 16101 AGGCTCTGAGCAGTCAGGGT - - - T A AG TT CGGAGTTCAGGAC
GGATGGGAAGTGGGGGGCCA AGGCTCT GA GCAGTC AGGG GG TGGGA TGGGGGGCCA
GCCTTCT
TTGCCTTCTCGGAGTTCAGG TCCGAGG CT TGTCGG TCCT CC ATTCT GTCCTCCGGT TGGAAGA

ACAGAAGGTTCTGGCCTCCT T G G T G -- CT ----------
GTCTTAGCCTTCCTGGGCTG
TGTCTGGAGCCT

GAM7191 4452 ATCTTGTCCCTCCTTTCCTG CC- TT-- - AT TTGGCT
ATTGCTCTTGGCTGAGTATC ATCTTGT CTCCT CC TG TGCTC
TATGGTGGTAGGAGAGTACA TAGGACA GAGGA GG AT ATGAG
GGAT TGA TGGT T CT ------
GAM7192 18089 GTGTAGAGTGGGCCTCTGGA G TG - GA ------- CT TTCAAG
GTCCGGCTGCCTGGGTTCAA GT TAGAG G GCCTCTG GTCC GG GCCTGGG
GTCCAGGCTCCCCTACTCGG CG GTCTC C TGGGGAC CGGG CC CGGACCT
GGCACAGGGGTGCTGCTCTG G GT G A- GCTCATC CT ------
GGC
GAM7193 2163 GCCTGAAGACGTACACTGGC T AG TA- GG A - - ACT TATT
CACAAGAATGAGAAATACTG GCC GA ACG CACT CCAC AG AAT GAGAAAT GCA
CATATTTGCCAATTTCTCTG CGG CT TGT GTGA GGTG TC TTG CTCTTTA CGT
TTACTGGTGGGAAGTGGATT T G- TAG AG G A T AC- ----
GTGTCTGGC
GAM7194 5221 AGTAAGGATAGGCCCCAAAT TA ------- AC- ATCCT
GTGGACAGATCCTCTTAGTC AG AGGATAGGCCCCAA ATGTGG AG
ACATGAGCCTCTTGGGGTCT TC TTTTATCTGGGGTT TACACT TC
ATTTTCTCT TC CTCCGAG GAT -----
GAM7195 2009 ACCAGGGTGGTGGCGGAGTG GGG G G ----- - GGCGA
CGCATGCGTGGTTCCCGGGC ACCA TGGT GCG AGTGCGCAT GCGTG GTTCCCG
GACGGGAACGCGCGCTCACC TGGT GCCG CGC TCGCGCGTG CGCGC CAAGGGC
GTGCGCGCTCGCGGCCGGGT GG- G - CCACT G -----
GGT
GAM7197 11741 GTCTGGTGGAGAGACTCTGT G A-- GA AAAGAAGGGA
GGACGTAAAGAAGGGAATGA GTCTGGT GAGAG CTCTGTG CGT
ACACAGAGAAACTTTCAGCC TAGACCG CTTTC GAGACAC GTA
AGAT A AAA AA ----------
GAM7198 6371 ACCAGGTCCAGTTCACAGAC --- T G A A AATAT GTTTAA
ATTGTGGAAATATTCGTTTA ACC AGG CCA TTCACAG C TTGTGGA TC
AGACCTCCACGAAGTTGTGA TGG TCC GGT AAGTGTT G AGCACCT AG
ATGGCCTCCAGGT ACC - - - A CC--- ------
GAM7200 11987 TTATTTCTGCCGCTAAATGA C CTAA TG-- T C TCTCTTT
GTTGTAGGACCTTGGGCTGT TTATTT TGCCG ATGAGT TAGGACCT GGG TG
CTCTTTTACCCCTGGGTCTT AGTAAA ATGGT TACTCG ATTCTGGG CCC AT
AGTTTGCTCATTGGTAAAAA A ---- TTTG T C -------
TGA
GAM7202 13290 AGTGCCACGGAGAGTGAGGT CGG G GC AAAACATCCTCAGAAA
GGCCCGGGGCAAAAACATCC AGTGCCA AGA TGAGGTG CCGGGGCA
TCAGAAATGCCCTGGTATCT TCACGGT TCT ACTCTAT GGTCCCGT

CATCTAGATGGCACT AGA - -- ----------
GAM7203 13887 ACCAGGGATACCATCTGGTC TA- TCTG CC TG TAAAC
CAGTGGTTTTTAAACAAAGC ACCAGGGA CCA GT AG GTTTT
TGCTTAGCACCTGGAATTCC TGGTCCCT GGT CG TC CGAAA
CTGGT TAA CCA- AT GT -----
GAM7204 5007 TGGGACTGCTGAGATGTCCT - G ATG C TAT- TTGA C T TTGGAGCT
CTATTCTTGAAGAGCGTATT TGGGAC TGCT AG TC TC TC AGAG GTAT C
CTTGGAGCTGATACCTCTGT ATTCTG GCGG TC AG AG AG TCTC CATA G
TGATCTTGAAGAAACTGGGC T G AA- A TTCT TTG- - - --------
GTGTCTTA
GAM7205 6276 GACGCTGCTGGCCTTTGCCG C --- CCTT - G GGG GGCTGG
GGTACTCAGGGCTACTGGCT GACG TGC TGG TG CC GGTACTCA CTACT
GGGGTGGAAGTGAGTGCTGG CTGC ACG ACC AC GG TCGTGAGT GGTGG
GTCACCCCCCATCCGCAACG A CCT CCCC T G GAA ------
TC
GAM7206 22241 CCTGGCTATGGAAAAGTGAT G A A T G T TTTATAAAAT
GTGGGTAGCCAATTTTATAA CCT GCT TGGA AAG GAT TGGG AGCCAAT
AATGTTGGCTTTCTGGATTT GGA TGA GCCT TTT TTA GTCT TCGGTTG
TTATCCGGAGTGAGG G G A - G T ----------
GAM7207 11348 GGAATCCAGGGAGAACTGGA GAGA GA T- CTGG
GCCTGTTTTATGCTGGCATG GGAATCCAGG ACTG GCC GTTTTATG
GAACTTGGCCTCAGTACGTC TCTTGGGTCT TGAC CGG CAAGGTAC
TGGGTTCT GCA- TC TT ----
GAM7209 16903 AGGCTGGAATGCAGTGATAC AT T TACTAACAT C AGC TGACCTCCT
TAACATGGCTCGCAGCAGCC AGGCTGGA GCAG GA GG TCGC AGCCT
TTGACCTCCTGGGCTCAAGC TCCGACTT CGTC CT CC AGCG TCGGG
GACCCTCCTGCTTCAGCCT -- - --------- C AAC ---------
GAM7210 1295 AGCAGAACTGCAACACAATT CA C A AA G GTAAATTAGGTCACAAA
TAAATGTCTGTAAATTAGGT AG GAACTGCAA ACA TTT AT TCT
CACAAAAGGGATGCAAAATG TC TTTGACGTT TGT AAA TA GGA
TTTGCAGTTTGACT AG - A CG G ----------
GAM7211 16185 ATCTGTTGGATGCTTGCGGC T TG AT T- CT TCCAT
GGTGCTGCACTCCATGTGCC ATC GT G GCT GCGGCGGTG GCAC
ACTGTTGCTTGGCCCTGACT TAG CA C CGG CGTTGTCAC CGTG
GAT T GT C- TT -- -----
GAM7213 20974 GGAGTGTCTTGGAGGCCTTG T T- TT GA A A- AGTC
GTGACCAATGCCAGCAGAGT GGAG GTCT GGAGGCC GGT CCA TGCC GCAG
CCTGCGGGGTGTGGGCCCGG TCTC TAGG CCTCCGG CCG GGT GTGG CGTC
CCTCCCTGGATTCTCT T TC C- -- - GG ----
GAM7214 22878 GCCTTCTCTCTCCTGGTGCA TC CT ----- AATGGCAA TTAAG
AAATGGCAACTCTTAAGGAG GCCT TCT C CTGGTGCAA CTC
AAAACTCATTGCACCAGCTT CGGA AGA G GACCACGTT GAG
GCGGAAGAAGAGGC GA AG CGTTC ACTCAAAA -----
GAM7215 15088 TGAGGCCTGCTCACTGGTAG C CAC ---- A-- T AG ATGGTCA
AACTTCTTGTTAGGGCTGTT TGAGGC TGCT TGG TAG ACTTC TGTT GGCTGTTAGC
AGCATGGTCAGCTAGCAGCT ACTTCG ACGG ACC GTC TGGGG ACGG TCGACGATCG
GGCATGGGGTGAACTGTTTT - AT- TTTT AAG T -- -------
CCATAGGCAGCTTCA
GAM7217 3797 GGGCAGAGGGCATGTGAAGT A T AAGTA --- TGCT
AACCTAGGACCTGCTGGTCA GGGC GAGGGCA GTG ACCTAGG ACC

CCCTGGGTGATGTGCTGCCC CTTG CTCCCGT CGT TGGGTCC TGG
TCGTTC - - GTAG- CAC ----
GAM7218 5835 CTGCTGAGGCCTGTCCCCAC G CTGTCC A TTG G ATGGTG
CTCACCCCTTGGTTGTCGAT CTGCT AGGC CC CCTCACCCC GTT TCG
GGTGTGGAACATTGGGGTGA GACGA TCCG GG GGAGTGGGG CAA GGT
GGGGCAAAATGCCTAAGCAG A TAAAAC - TTA - ------
GAM7219 3290 CGGAGCCGTGTACAGATTCA G AC T CA-- C T C CATT-- GGGA
TCACCACGATCTGTGCCATC CGGAGCC TGT AGAT CAT CCA GATCTG GC AT GG
ATTGGGGGACCTTCAACGTC GTCTCGG ACA TCTA GTA GGT CTAGGC CG TG CC
GCCGGATCCTGGACTCATGC - CT C CTCA C - C CAACTT ----
ATCTTCACAGGCTCTG
GAM7221 7298 GAGGGCACTGGAAAGGTCGG A- GAA C- CTT GCCCA AAACCCC
TACTTAGATGCCCAGTGAAA GAGGGC CTG AGGT GGTA AGAT GTGA
ACCCCTCACCCCAATCTCTG CTCCCG GAC TCCG CCGT TCTA CACT
CCCTGCCTGCAGGAGCCCTC AG G-- TC C-- ACCC- -------
GAM7223 19026 CTGGTTCCGCCGGCCGTGGT - - C TG CGC A TC- CTT
CGCCGAGTCGGTGTCGTCCT CTG GTTC CGCCGGC G GT CG GTCGGTG GTC
TGACCATCGCCGACGCGTTC GAC CGAG GCGGCCG C TA GC CAGCCGC CAG
ATTGCAGCCGGCGAGAGCTC T A A GT CTT G TAC ---
AG
GAM7224 18268 AGATAAAGATTGTGATGTGC TTGT T GT TAT TGTATCGGAT
TGGTTGGTTATAAAGCTGTG AGATAAAGA GATG GCTG TGGT AAAGCTG
TATCGGATCAGCTTTGCCAT TCTGTTTCT CTAC CGGT ACCG TTTCGAC
GGCCATCTTTTTCTTTGTCT TTTT - -- --- ----------
GAM7225 9143 TGCTGAGGACTCCCAAGCGT CTCCCAAGC - CTC TATGT
ACTGCTCATCATCGATATGT TGCTGAGGA GTA CTG ATCATCGA
TTGGTGATCACAGCTACTTT ACGACTCTT CAT GAC TAGTGGTT
CTCAGCA T-------- C AC- -----
GAM7226 3907 CTGATGGCTGAAGCTCCTAA AT A C AATA --- GAATGA
TATGGCAGTTGTGAATGAAC CTG GGCTG AGCT CT TGGCA GTTGT
AGCAAATGCCAGAAGAAGTT GAC CCGAC TTGA GA ACCGT CGACA
CCAGCCCCAG C- C A AG-- AAA ------
GAM7227 5308 CAGGTCCCCGCAGGTCCGGG TC G A--- A ACCCCTCCCA
CACTAGCACCCCTCCCAGCA CAGG CCCGCAGGTCCG GC CT GC
GCCCCGTGCGGACCTGCGGG GTCC GGGCGTCCAGGC TG GA CG
CCCCTG CC G CCCC - ----------
GAM7229 14193 GGGATGGGCCAAATTAAAGG GA G AATTA ATAG GG- A TAACT
AATAGGTTGGGCTAGTTAAC GG TG GCCA AAGGA GTT GCT GT
TGCAGCAGGAGCATGTCCTT CT AC CGGT TTCCT CGA CGA CG
ATGGCACAGATC AG A A---- GTA- GGA - -----
GAM7230 19226 TGTGAGAGATTGGGCGAAGA A --- C AACAACGT CT TATTTTT
AACAACGTGGCTCCTATTTT TGTGAG GATT GGG GAAGA GG CC
TGGCACCCTCTTCTCCTTGT ACATTC CTAG TCC CTTCT CC GG
GATCCTTACA - TGT T C------- AC -------
GAM7231 15130 GTAAGATGGGTAAAGCATGC A -- A- CCATTTC - T TTTTTACT
CATTTCTGTTTTCTTGAGAT GT AGATGG GT AAGCATG TGT TTTCT GAGA
TTTTACTTTTTAGAAACACA CA TCTACC CA TTCGTAC ACA AAAGA TTTT
CATGCTTCCACTGCCATCTG G GT CC ------- C - --------
AC
GAM7232 5389 TATAATGTGGGGACAAAAAA GGG AAAAAATATA A AGAAATTTATAAGAG

TATACCTATAGAGGAGAAAT TATAATGTG AC CCTAT GAGG
TTATAAGAGCCTTATAGGGG ATATTATAC TG GGATA TTCC
GTAACATATTATA AA- GG-------- - ----------
GAM7233 10071 TCACAAATGGCAGAACAGTA AT A G TAAA T ACCTCG
TGTAAAGCTGGTAACACCTC TCACAA GGCAGA CA TATG GCTGG AAC
GGTTTCAGTGCACCATGTGT AGTGTT TCGTTT GT GTAC TGACT TTG
TTGCTTTGTGA -- - - CACG - ------
GAM7234 20228 CGGGGGGAGCCGAGATTAGA - C - - A CTGAGAGAA
GCATCAGCCTGAGAGAAGCG CGGGG GGAGC GAGA TTAGA GCATC GC
GTGCTTCTGGTTCTCCGCTC GCTCC CCTCG CTCT GGTCT CGTGG CG
CGCCTCG G C T T - ---------
GAM7235 8006 CATCTCTTCCTTTTGAAGAT C CTT G CGT TGATTAA- CCAGCA
CCGTCTGCTATGATTAAGAT CAT TCTTC TT AAGATC CTGCTA GAT
CCAGCAATCCACCCCTTTGG GTA AGAAG AG TTTTAG GACGGT CTA
CAGTGATTTTGGATATGAAG C TAT G T-- TTCCCCAC ------
ACATG
GAM7236 18755 TGGCATGGTGAAAGGGTGCA GAAA-------- G ATGG ATTTAAGGACTA
ATGGGCTTATTTAAGGACTA TGGCATGGT GG TGCA GCTT
GAGCAGTGTGCAGCCATAAC ACTGTACTA CC ACGT CGAG
ACAAGAAATCATGTCA AAGAACACAATA G GTGA ----------
GAM7237 7659 GAGATGGAGCGAGTCAGAAC G C GT C- TGGAGTGTTAC
CAGCATGGAGTGTTACTGCT GAGATG AG GA CAGAA CAGCA
GATTTCTGTCCCTGCATCTC CTCTAC TC CT GTCTT GTCGT
G C -- TA ----------
GAM7238 16603 GGCGGCCTCTGGGAGGACCC G - ACCCTT T CCCCTCTCCCACC
TTCCTTAGTCCCCTCTCCCA GGC GC CTCTGGGAGG CCT AGT
CCACTCAGGCTCCTGCTTCC CCG TG GAGACCCTTC GGA TCA
CAGAGAGTGGCC G A GTCCTC C ----------
GAM7239 4465 CTTCCTGGGCTTCGTGGCTG T - -- C - C CTGGT
AGGTGCTGGTGCTGGTCACC CTTCC GG GCT TCGTGG TGA GGTG TGGTG
ATCATCTTCATCTACGAGAA GAAGG CC CGA AGCATC ACT CTAC ACCAC
GCGCCGGAAG - G AG T T T -----
GAM7240 19820 CAGGCCTTCTTCTCTTAATC TC TCACA - TTTCA
ACAAGATCCTTTCAGGCATT CAGGCCT TTCTCTTAA AGAT CC
TACTCTTGAGGGAACAGGTC GTCTGGA AAGGGAGTT TTTA GG
TG C- CTCA- C -----
GAM7242 4322 TATTGGATTGCCACACTGGT TG T ACTGG GA G A GGTG
CTGATTGCCTGCAAGTTTGG TAT GAT GCCAC TCT TTGCCT CA GTTT
TGAGGCTGAGGCAAAGAATG ATG CTG CGGTG AGA AACGGA GT CGGA
GTGGCGTCTGGTA GT - GTA-- -- - - ----
GAM7243 8292 TGTGGTCTTAAACTTCTGTT AAA---------- - AAAATCCAAAAG
TTACAAAATCCAAAAGGTAA TGTGGTCTT CTTCTGT TTTAC
ATACAGAAGAAATCAATACA ATATTAGAG GAAGACA AAATG
ATAGAGATTATA ATAACATAACTAAA T ----------
GAM7244 16235 GGATGAGGGCCGCGGTGGCT T -- GG CT GTG GAGCGAGG
GCCAGCGTGGGGTTGAGCGA GGA GAGG GCCGC TGG GCCAGC GGGTT
GGGGCCTGCTGGCTCCCGGA CCT CTCC TGGCG GCC CGGTCG TCCGG
GCGGTCGCCTCTTCC T GC AG CT --- --------
GAM7245 19413 GGTCCTTGCCATCTCCTTCC CC- C------ TC CCATTAACTCTC
ATCTGCCCATTAACTCTCGC GGTCCTTG ATCTCCTT CA TGC

AAGTGCCTCCGTGAGGAGAT CCAGGAAC TAGAGGAG GT ACG
TCACAAGGACC ACT TGCCTCC GA ----------
GAM7246 3229 TCCAAAGGCTCCAACAGGGC AAA-- CA- - C - A CAA - GTGGTG
CCTCCAGACTCAATGGCAGG TCC GGCTC ACAGGG C CT CCAG CT TG GCAGG
GTGGTGTCTGCACAAGCTGG AGG CCGAG TGTTCC G GA GGTC GA AC CGTCT
AAGTGTCCTTGTGATGAGCC ACTAC TAG T T A - --- A ------
CATCAGGA
GAM7247 22366 GTAGTTTCTAGCATAACACC TC AACA A GGTGGTGAA
AGGGATGTGGTGGTGAAACG GTAGTT TAGCAT CC GGGATGT
TTCCGGAAGGTGTTGAGAAC CGTCAA GTTGTG GG CCTTGCA
TGC GA GAA- - ---------
GAM7248 17723 CTGTGGCTCATGCCTGTAAT GTG AT-- - - TAG T GATG
CCTAGCACTTTGGGATGCCT CT GCTC GC CTG TAATCC CACTT GG
AGGTGAGTGGATTGCCGGAG GA TGAG CG GGC GTTAGG GTGGA CC
CTCAGGAGTACAAG ACA GACT A C TGA T ----
GAM7249 2561 GACTACACCTGCTTTGTGTT CT- CTT TAGTGAC ACC CAAT
TAGTGACGTGGACCTCATTC GA ACACCTG TGTGTT GTGG TCATTC
CAATGAATGACCATAATGCG CT TGTGGAC GCGTAA TACC AGTAAG
TACAGGTGTTTTTC TTT AT- ------- --- ----
GAM7251 14262 CCTTCTATGCAGAAGTCGAG ATG AG AG --- GA C ATGTGGAG
ACCATGGAGGTCCTACATGT CCTTCT CAGA TCG ACCA TG GGTC TAC
GGAGGTATGATCGATAACTT GGAAGG GTCT AGC TGGT AT CTAG ATG
GGTGCGATCTGAAGGAAGG AA- -- G- TCA AG T --------
GAM7252 15525 GGGCTGGCGTCTGGGTGGGG TG C TG--- G TTGGG
TGGGCGCGGTTGGGCGGCGT GGGC GCGT TGGG GGGTGGGCGC G
CCGCCCATAGTTCCGCGCGT CCCG TGCG GCCT CCCGCCTGCG C
GCCC -- C TGATA G -----
GAM7253 20422 GGGGGGCCACCCGTTTTCCA - CGTT ----- CGTTCA
AAATTTCGTTCAAAGTTTCA GG GGGGCCACC TTCCAA AATTT
AGTTGGAATCCTGGTGGTCC CC CCCTGGTGG AAGGTT TTGAA
CACC A TCCT GAACT ------
GAM7254 4963 TGATTGTGCACCACAGGCGT G - C GGA- AAA-- GATA AAGCAA
GGACAAAAATAGATATGCAA TGATTGT CAC CACAGG GT CA ATA TGC
GCAAGCAGCGATGTGGCACT ACTAGCG GTG GTGTCC CA GT TGT ACG
GAAGAACACCTGTGAGTGGG G A A AGAA CACGG AGCG ------
CGATCA
GAM7258 11223 AAGGCTGGGGGTGGGAAGAT CT- G AG GGA---------- TGACCTAAT
GGAATACTGACCTAATGTAT AAGG GGGGGT GGA AT ATAC
AAAACTTAAAACAATTCTCC TTCC CCCCTA CCT TA TATG
AATCCCCTCTCCTT TCT A CT ACAAAATTCAAAA ---------
GAM7259 6165 GGGGCTATTGAGAAAACTTG C TG- AA T - AAG TTAATA
TCTTCACAAGACGGGTTAAT GGGG TAT AG AACT GTC TTCAC ACGGG
ATTTGTGTGAACGGCGGTTA CTTC ATA TT TTGG CGG AAGTG TGTTT
GTTACTATACTTC - TCA GA - C --- ------
GAM7261 7177 GTCTCCAGCTGCACCTCCAC TGC A ATGG ACCA AAA
CATGGCCACCATGGCAAAGC GTCTCCAGC ACCTCC CC CC TGGC
CGGAGAGGAGGGCGGAGGTC CGGAGGTCG TGGAGG GG GG GCCG
CTGCTGGAGGC TCC C GA-- AGAG ---
GAM7262 15938 CTTATTAGGCAAGTTAGGTG A - A T A AA T TTTAA
CACTGAATCTAACCTTTAAG CTT TTAGGC AAGTT GG GC CTG TC AACC

GTTGACATGGGCTCAAACTT GAA AATCCG TTCAA CT CG GGT AG TTGG
GGCCTAAAAAG A G A - - AC - -----
GAM7265 15317 TGGCTGATGGGCAAGGGGGC GA- CA CAA CGGA CTTTG
AAAGTCCGGACATCTTTGGT TGGCT TGGG AGGGGG AGTC CAT
GCAAAGACTCCCCCTGACCC ACCGG ACCC TCCCCC TCAG GTG
ACCAGGCCA ACC AG --- AAAC -----
GAM7266 15556 GAGGAAGACACCCCTTCAGA A A CTTCAGATAAT T A TATGAGCC
TAATGATAGTGGCATCTGTA GAGGA GAC CCC GATAG GGC TCTG
TGAGCCCAGAGTCCTATCTG CTCCT CTG GGG CTATC CTG AGAC
GGGTCTCCTC - - T---------- - - --------
GAM7267 12526 GTCTGATTCTGGTTTTGAGT - T - G TA TT CTGCACTTTATT
TACTCTTTGTTCAGTAACTG GTCTG AT CT GGTTTTGA T CTCTTTG CAGTAA
CACTTTATTTTATTGTCCAA CGGAC TA GA TCGAGACT A GAGAAAC GTTATT
AGAGAGTCAGAGCTAAGCAT A C A G -- CT ----------
ACAGGC
GAM7268 21814 GATCCGACATTTTTTGTATT G -- TATTCTTTA ACACCTAA
CTTTAAGATTTTACACCTAA GATCC ACATT TTTTG AGATTTT
AAAATCTCTCCTATCCCAAA CTAGG TGTAA AAAAC TCTAAAA
AATAATGTGGGATC G TA CCTATCCTC --------
GAM7269 17553 GGGAGCGGGATCTAAGGACT C -- T A --- T AC T TG A- T ACC
TACATGAACCTCGAGTTCTG GGGAG GGGA TC AAGG CTTA CA GA CTCGAGTTC GACTT GTA
AG CTG
ACTTTGGTAAAGTCTGACCC CCTTC CCCT AG TTCC GGGT GT CT GGGTTCAAG CTGAA CGT TC
GAT

TAGTCTGCTGCTGAAGTCTG - TC T G CCA - CC T GT CG T ---
AACTTGGGCCTCTGACCTGG C
GGCCTTTGACTTCCCCTTCC

-
GAM7270 17974 GGGTCAAGCCAGCACCTGAT TCA CA GAAA C TG GGCC
GAAACTTCCTTCAGTGAGGC GGG AGCCAG CCTGAT CTTC TTCAG A
CTTGCTGAAGAGGAATCAGG CCC TCGGTC GGACTA GGAG AAGTC T
ACCTGGCTCCC --- CA A--- - GT ----
GAM7271 9792 AGCTGTCAGAGTACGGCTCC - AGAG- CG CT CGC TTTTTTGTA TTTC
TGGGACGCTTTTGCTTATTT AGC TGTC TA GCTC GGGA TTTTGCTTA CGGCTT
TTTGTACGGCTTTTTCGAGT TCG ACAG AT CGAG TCCT AAGACGGAT GTTGAG
TGGCTTAGGCAGAATTCTCC T CAGAA AG TC CTT TCG------ ----
TCTGAGCGATAAAGACGACA
TGCT
GAM7273 14777 CGTGAGCTTCTTATAGACAC - C TTATA CC AA TTC CT TTC
CAGAAAAAGTTTCAACCTTG CGTGA G TTC GACA AGAA AGT AAC TGTG
TGTTCCACATTGTTCTGCTG GTATT C AAG CTGT TCTT TCG TTG ACAC
TTCTTTGTCCAAATGAACCT T C TAAAC T- G- TC- TT ---
TTATG
GAM7274 5543 GAGGCCACAAGGACTGCATG ACAAGGA GA GCA- CCTTCCAGA A-- CCAG
ATCTCGCAGCTGCCTTCCAG GAGGCC CTGCAT TCTC GCTG AACA CATT
AAACAACATTCCAGAATGCT CTCCGG GACGTG AGAG CGAC TTGT GTAA
CTGTTCCCCCCTTCCAGCCC ATAA--- TC AACC CTTCCCCCC CTC ----
AAGAGACTGTGCAGAATAGG

CCTC
GAM7277 6410 GGGCGCCCGCACTCCTCAGC C A CA TG G ATGGGAC
TCTTGGGTGGTCGATGGGAC GGGCGCC GC CTCCT GCTCT GGTG TCG
TGGGCGCCGTGGAGCAGGGG CTCGCGG TG GGGGA CGAGG CCGC GGT
GTGGCGCTC - - -- TG G -------
GAM7278 3302 CTGGCTGCTGCTGTCTTCCT TGCTGC TT---- A--- T TCCAC
AGATACACTGAATCCACTTC CTGGC TGTC CCTAG TACAC GAA
TGTGTAGCACCTGGGTCAGC GATCG ACAG GGGTC ATGTG CTT
TGACAATTAATGCTAG TAATTA TCGACT CACG T -----
GAM7279 18197 TTGCGGCATCCACGAGACCA CA- AGAC - ACTCCATCA
CCTTCAACTCCATCATGAAG TTGCGG TCCACG CAC CTTCA
TGTGACGTGGACATCCGCAA AACGCC AGGTGC GTG GAAGT
TAC A--- T ---------
GAM7280 11604 GCACAGCAGAGCTTTCCAGA C C--- AAGCCTCACCAAG
GGAAGCCTCACCAAGCCTCT GCACAG AGAGCTTT CAGAGG
GCAATGAGGTTCTTCTGTGC CGTGTC TCTTGGAG GTCTCC
T TAAC ----------
GAM7281 5016 TGGTCCAATAAGCAGCCTAA AATAA AA-- TTC CA AAGAA
GCTTTCATTCTCATCCCAAG TGGTCC GCAGCCT GCT ATTCT TCCC
AAGGGACAGGAGTCTTGGCC ACCAGG TGTCGGA CGG TGAGG AGGG
CAGAGGCTGTGGGGACCA GG--- GACC TTC AC -----
GAM7282 15888 CATATCCTGAACTGAGATAT - GAACTGAG AAAAT T AGTTA
GCAAAATACTCATTTTCAAG CATA TCCT ATATGC AC CATTTTCA
TTATGGAAATGTGTTTGTGG GTGT AGGA TATACG TG GTAAAGGT
CATATAGGACTGTG C -------- GTGTT T -----
GAM7283 10579 GGCAGGTGTTTGAGGAGGCC GT G CACAG CCAG
CTGCACAGGGTCCCAGGACT GGCAGGT TTGA GAGGCCCTG GGTC
GCACCAGGGCCTCATCAGCA TCGTCCA GACT CTCCGGGAC TCAG
ACCTGCT AC A CACG- ----
GAM7284 8045 GTCCCTCAAATAAAAGTCAC CAA - TTCACGAGGT AAGGAA
TTTCACGAGGTGGTCAAGGA GTCCCT ATAAAAGT CACT GGTC
AGGCCAGTGTGCTTTTGTAG CAGGGA TGTTTTCG GTGA CCGG
GGAC --- T ---------- ------
GAM7285 10920 AACAAGGCAAAATATCTGCC A C--------- T- TG A GTTATAAAGA
TTATACATGTCACAAGTTAT AACA GGCAAAATAT TGCCT ATACA TC CAA
AAAGATTGAGAGCTGTATTT TTGT CTGTTTTGTA ATGGA TATGT AG GTT
AGGTAAATGCGTTGTATGTT A TGTTGCGTAA TT CG A ----------
TTGTCATGTT
GAM7286 7562 GGTTCCGTCACCCCCTCCCA -- -- GAAG TC A AGC TC - TGTC
GGGAAGCAGGTCTGAGCAGC GGTTCCGT CACC CCCTCCCAGG CAGG TG GC TTG CTGGC
TG
TTGTCCTGGCTGTGTCCATG CCGAGGTA GTGG GGGGGGGTCT GTCT AC CG AAC GACTG AC

TCAGAGCAACGGCCCAAGTC CT AA GG-- GA C GC- GA T ----
TGGGTCTGGGGGGGGAAGGTG
TCATGGAGCC
GAM7287 7724 GGGCTCTGTATGGACTTTCG T TA ACT------- CATG
GCGTGTGCATGCACACGCCG GGGCTC G TGG TTCGGCGTGTG
AATAACAAACTGCCACGCCG TCCGAG C ACC AAGCCGCACAC
AGCCT C GC GTCAAACAAT ----

GAM7288 17236 TAAGGTAGCTGGAACTAGAA GT CT ATCA - TTTTC
TCACCAAGGCTTTTTCAGCC TAAG AG GGAACTAGA CCAAGG CT
CTTGGGTTCTTTGGTTCTCT ATTC TC TCTTGGTTT GGTTCC GA
CTCTCTTA TC TC CTTG C -----
GAM7290 6146 CCCTGTGCCTGTCTCTCCAG CC TCTC- T G- TGG G TGGTGCAT
GGTTCTACCACTTGGGGGGA CCCTGTG TGTC CAGGGT CTACCACTTGG GGGAT GCCG TCCG

TTGGGCCGGTCCGTGGTGCA GGGACAC GCAG GTTCCA GGTGGTGGGCC CCCTG TGGT
AGGT
TTGGATGGTGTCCCAACCGG T- CTACT - AA --- - --------
GTGGTGGACCTTGTCATCGA
CGTCACAGGG
GAM7291 11306 CTCTTGGCTGCCCTTATGAA T T TTA AG GA ------ C AAG
GGGAAGATCTCCCCAGCTAA CTC TGGC GCCC TGA GGAA TCT CC CAGCTA
AGTAGCTGAGGTCACCAAGA GAG ATCG CGGG ACT TCTT AGA GG GTCGAT
AGTTCTACTCAATGGGCTGC C T TA- CA GA ACCACT A ---
TACGAG
GAM7293 4058 TAGCTCTCCCACACCATCAA ACACCATC- TG CTCAT GGAGTAG
GTGGCCCTCATAACTGGAGT TAGCTCTCCC AAG GCC AACT
AGAGTTCCTGGTTGCTTTTC ATTGAGAGGG TTC TGG TTGA
ATAAGAGGGAGAGTTA AGAATACTT GT TCC-- -------
GAM7294 19049 TCTTGGCTTCCACGTCCATT ---------- CTCAGCTCA
GCTCAGCTCACAGTGGTACA TCTTGGCTTCCACGT CCATTG
GACCAAGTATGTGGAAGCCA GGAACCGAAGGTGTA GGTGAC
AGG TGAACCAGACAT ---------
GAM7295 2844 GGAGCCACAGCAGCAGCCGC C A A- G TTTCAGT A- TCA
CGGGGTTTCAGTGCCAGCTC GGAGCCA AGC GC GCC CCGGGG GCC GC
AGCCAGGCTCCCTGGGGTCA CTTCGGT TCG CG TGG GGTCCC CGG CG
GCCGCTCTGGCTTC C C AC - T------ AC ---
GAM7296 19491 AGGGTAATGAGTAGGTGAGA AGGTG G -------- AAG
GGGTCTGGAGGAAGCCTCCC AGGGTAATGAGT AGAGG TCT GGAGG
TACTGCTGGAGCCTCTACTT TCCCATTATTCA TCTCC AGG CCTCC
ATTACCCT ----- G TCGTCATC ---
GAM7297 10236 AGGCGTGAACAGTTATCCAG --- A - CCA- A AG -- TCC ACT
AAGAACAGCACCCTCCACCA AGGC GTG ACAG TTAT GA GAAC CA CCC ACC
CTGGTCTGGGCTTGAGGTTC TCCG CAC TGTC AATA CT CTTG GT GGG TGG
ATCATCAATAATCTGTACAC CTC A T ACTA A GA TC TC- ---
CTCGCCT
GAM7298 13493 CACAAAATGGGACTGCTGAA --- AC TG AGT ACAGTTGGA
GAGTGGACAGTTGGACCTTA CACAAA ATGGG TGC AAG GG
CTTTGGTGACCCCATACGTT GTGTTT TACCC GTG TTC CC
TGTG GCA CA GT ATT ---------
GAM7299 5493 GGAAGTCTCAACCTGGAGAA A AC-- GAAGA TACAAT A GTGAA
GATGCTATACAATGCAAGAG GGA GTCTCA CTGGA TGCTA GCA GAG
GTGAACTCTGCCTTAGTAAA CTT TAGGGT GACCT ATGAT CGT CTC
ATCCAGCTGGTGGGATATTC A GGTC AAA-- TC---- - -----
GAM7300 7165 ATGGGGATGCAGTGGACCTG - GC CCT CTC A C---- ACAT
CCTCGGATAGCAGCACACAT ATGG GGAT AGTGGA GC GGAT GCAG AC
GTCCCATCTGCCATCTCATG TACC CCTA TCACTT CG TCTA CGTC TG
CTTCACTAAATCCACCAT A AA --- TAC C TACCC ----

GAM7301 14080 TACCTCTTCAGGATTTATTG TTCA- ATTG GAAGGG
GGTCAGGGAAGGGCCTGGCC TACCTC GGATTT GGTCAGG
AGAGAATCTGTCCTGAGGTG GTGGAG TCTAAG CCGGTCC
TCCTG AGA- ------
GAM7303 11518 CCACACAGCCCTATGGTCAA - - AT--------- - AATCCTAC
ACAATCCTACGTTTGTGCCT CCA CACAGC CCT GGT CAAAC
CTGCTTTTAAAGGTGCTGTG GGT GTGTCG GGA CCG GTTTG
CTGG C T AATTTTCGTCT T --------
GAM7304 2479 CTGTGGATAATGGTACTTCA TG A A-- C CAAGC AGACA
GCCTGGGGCAAGCCCATAGA CTG G TAATGGT CTTCAGC TGGGG CCAT
CAGTGGTCCCAGCTGGGGAG GAC C ATTACCA GGGGTCG ACCCT GGTG
AACCATTACTGCAG GT - AGA - ----- -----
GAM7305 20575 GGCCAGAGGGGAGTTCCTGG -- - TTC T TCCA T C TAGGCTTTT
GTGCTCCACATGCCTGTCCT GGCCA GAGGGG AG CTGGG GC CA GC TGTCC
AGGCTTTTGGACATGCTGGC TCGGT CTCCCC TC GACCC CG GT CG ACAGG
CCCCAGATCTGCCCCTCCAT AC G TA- C ---- - T ---------
GGCT
GAM7306 18299 GACCAGACTTTTCCAGAAGT AG--- C AA CC-- GGGC
GCCGGACGTCGGGCGGCGTC GACC ACTTTT CAG GTG GGACGTC
TATATCACCTTGAAGAAGTA CTGG TGAAGA GTT CAC TCTGCGG
TGACGGTC CAGTA A C- TATA ----
GAM7307 23009 TAAGGGATCCTCCTGCTCAG TCCTC CT CTCT C C TTA T CCAC
GCTCTGGACTAGCTGGGATT TAAGGGA CTG CAGG GGA TAG TGGGA CAGG GTGTG
ACAGGTGTGTGCCACCACAC ATTCCCT GAT GTCC CTT ATC ACCCT GTTC CACAC
CTTGCTTTCCCACTAATTCT TCTTT C- TTGT A - TTC - ----
GTTCCTGCTAGTTTCTTCCC
TTA
GAM7308 4874 TGCATCTTTCATAGTTCTGT TTTCATAG TT - TACATCGCTTCTTTTT
TAACTATTTTGTACATCGCT TGCATC TTCTG AACTA TTTTG
TCTTTTTCAAAACTAGTTCT ACGTAG AGGAT TTGAT AAAAC
TAGGAACAGACTCGATGCA CTCAGACA TC C ----------
GAM7309 3340 AGTTTGTCCTCTCCTTTTAT C - TTTTATCCAAG AGATTCTATA
CCAAGCAGGAAGATTCTATA AGTTTGTC TCT CC CAGGA
TCCTGATGGTAGAGACAGAC TCAGACAG AGA GG GTCCT
T - T TA--------- ----------
GAM7310 11148 ACCCCCACCCTCCTTCCGAT CCCTCCTTCC T- GA CA GC AATTT
TTCTCTTGAAGGACAGGCCG ACCCCCA GA TTCTCTT AGGA GGCC TC
CTCAATTTGAAAGGCTTCTT TGGGGGT CT AAGAGAA TTCT TCGG AG
GAAAGAGAATTTCTTCTTCT TCTTCTTCTT TT AG -- AA -----
TCTTGGGGGT
GAM7311 18661 CTGGTGCGCACTTGGCTGGA G - CTTGG TG A T -- GGAGTCGTTGAA
GGACATGGGAGTGACGCTGG CTG TG CGCA C G GGACA GGGAGTG ACGCT
AGTCGTTGAAAGTGTGCCAT GAT AC GCGT G C CCTGT CTCTTAC TGTGA
TCTCCTGTCCCTGGACTGCG G A CA--- GT - C CG ----------
ACAGTAG
GAM7312 2175 GGCCGAGTTGTTTGGGGGCG C TGTTT CTG CAC GG GCTCCG
CTGTGCCCACGGGGCCCGGG GGC GAGT GGGGGCG TGCC G GCCCGGGG
GGCTCCGCCCCGGGTTTCAA TCG TTCA TCCCCGT GCGG C TGGGCCCC
TGGCGTTGCCCCTCTACTTT T TC--- T-- TAA TT ------
GCT

GAM7313 18258 TGGCCGGGAGGCTGGGCTGG CG ------ - G - T CTTCGAA
GGGAGGTATCTCTTCGAAGG TGGC GGAGGCT G GGCT GGGGA GG ATCT
GTCCATCCTCAAGCCACGAT ACCG TCTTCGA C CCGA CTCCT CC TGGG
AAGAGCTTCTGAGCCA AG GAATAG A A A - -------
GAM7314 10902 TCTCTCTCAGGTTTTAAATG - - TTT- T AATGTAA - - TCAA
TTGCAAATGTAATTGTGGCT TCTCTC TCA GG TAAA GTTGCA TTG TGGCT CA
CATCAATGCAGCTATCAATG AGAGGG AGT CC ATTT CAACGT AAC ATCGA GT
CAACTTTATATTCCTTGAGG G T TTAT - ------- T C ----
GGAGA
GAM7315 19107 ATTTATCAGTCTGTTTTTCC - AG CG AT ATGAGAGA
GATGATGTGTACATGAGAGA ATTTAT C TCTGTTTTTC ATG GTGTAC
GTACACCATGTGAAGAGTAG TGAGTA G AGATGAGAAG TAC CACATG
AGAGAATGAGT A AG TG -- --------
GAM7316 5695 CTGTGGGGGGCGTCTGCGCC G G - T G -- CA T GGGC
CTGGCCAATGTCCTGGGGGC CTGTG GG GC GTC GC CC CTGGC ATG CCTGG
TCAGGTATGCCAGCTGGAGC GGCAC TC TG CAG CG GG GACCG TAT GGACT
GACTGTGCTGCACGG G G T - A TC -- - ----
GAM7318 5595 GGAAAAAACGCCGGAGAAAT AAAAACGCC- AAATT TG CCCT
TTGGGGTTGGAAACCCCTGT GGA GGAG TGGGGT GAAAC
TTTTGGCCCCGCAACTCCTT CCT CCTC GCCCCG TTTTG
GACCTAAATCC AAATCCAGTT AAC-- GT ----
GAM7319 4439 TCCAATGACTCTTTCTTTAA AT - - T-- TTTGCCCCTCCT
CTTTTTTGCCCCTCCTGAAG TCCA GA CTCT TTCTT AACTTT
TTCCTGAGAGTGGAGATCTG AGGT CT GAGG GAGAG TTGAAG
GA -- A T TCC ----------
GAM7321 2137 GCGGGGATGGTCCTCTGTGG GAT --- TG ACCAAGAG T ACCTG
ACACCAAGAGCTGGCCTCCT GCGGG GGTCC TCTG GAC CTGGCC CCT
ACCTGGGGTGGCCGGACATC CGCCC CCGGG AGAC CTG GGCCGG GGG
CGCGTCTGCAGAGCGGGGCC AC- GCG GT CGCCTACA T -----
CACCCGC
GAM7322 11240 GTGGCTCGGCCATCATGCCC TCAT A- ATCT ----- CATC
AGGATCTGAGCCCACATCTG GTGGCTCGGCCA GCCC GG GAGC CCA
GCACCAGCTCTACCAAGGGC CACCGGGTTGGT CGGG CC CTCG GGT
CTGGTTGGGCCAC C--- AA AT-- ACCAC ----
GAM7323 3530 TGTACTTCAGGACCCGAAGA - C-- AAGACC T G AA AC GGGC
CCCGGACTCTCTGGCAAGGG TGTACT TCAGGAC CG CGGAC CTCT GC GGG TG
ACTGGGGCCAAGCCCAGTAA ACATGG AGTTCTG GC GTCTG GAGA TG CCC AC
GAGGTCTGACCGGCGAAAGT G AAA GGCCA- - A A- GA ----
CTTGAGGGTACA
GAM7324 15160 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT- G GTCTGGAA
ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT TTGTCGT
TCTGGAAATGATAAACTAAT CAGGAG TGA GGA TAATCA AATAGTA
TAACGGAAGGAGATATAGTG AAG TATAGA AGGCAAT - --------
AAGAGGAC
GAM7325 15662 GGAGGTGGTGGAGGCTGTGA GG G ------ T AG- CAA GGTGGTA
CCATTGTAGAGACAACAACC GGAGGT TGGAGGCT TGA CCAT GTAG ACAA CCAT
ATGGTGGTAGTGGGCATTGT CTTCCA GCCTCCGG GCT GGTG CATC TGTT GGTG
GGGCTACGTGGAAACCCTCG G- A CCCAAA - GGG ACG -------
AGGCCTCCGGACCTTC
GAM7326 20957 TGTTGCCCAGGCTGGTCTTG GCCC GGTC CTCTA------- GA AGAA

AACTCTATAGTGTTTGATCA TGTT AGGCT TTGAA TAGTGTTT TCAT
TAGAAGTGGAGATACTAACC ACAA TCCGA AACTT ATCATAGA GGTG
AAAAATCTTTTCAAATTAAG ATAA ATTA TTCTAAAAACCA -- ----
CCTAATAAACA
GAM7327 7400 CCAGCAGCCCGCTCTGGCCG C------ C- G ---------- GACT
GGGCCGACTGGCAGCTCCTA CCAGCAGCC GCT TG CCGGG GCC
GTGGAGACCTCGGGCATCAG GGTCGTCGG CGA AC GGCTC CGG
CATCTACCGGCTGCTGG CCATCTA CT G CAGAGGTGATCCTCGA ----
GAM7328 11131 GGAGGTAGAGAAGAGGAAGA AAGA A G ---- A A A-- AGAGAA
AGTTCAAGATTGATGACCAG GGAGGTAGAG GGA GAA TTCA AG TTG TG CC
AGAAGGACCCACAACTACGA CCTCTATTTC TCT CTT GAGT TC AAC AC GG
TGAGTTCATCTGCACCTTTA CACG A - AGCA - - CCA ------
TCTCC
GAM7329 11009 ATATCAAAAGGAAGTTATAA AA- AA ATAA AT---------- GAAAA
GGCCATTGAGAGAAAATCTC ATATCA AGG GTT GGCC TGAGA
AGAAGAAGTCAACAGGCCCA TATAGT TCC TAG CCGG ACTCT
AGATACCTCAGTGATAT GAC A- AAC- ACAACTGAAGAAG -----
GAM7330 12379 GGGTTCACAGCAGTAGGGGC A CA CT- CCAG GGCTCA
TGGGCTTCCAGCAGGCTCAT GGGTTC CAG GTAGGGG GGGCTT CA
GATTCAGGCCTTAACCCTTG CCCGAG GTC CGTTCCC TCCGGA GT
CCCTGGGAGCCC G C- AAT CTTA ------
GAM7332 214 TCTGTCAGCCTTACTATATA CCTTACTATAT G AC CC- CTCCCCCTGAACACT
CTGAGCTACTCCTTTCCCAC TCTGTCAG ACT AGCT TCCTTT CAC
CTCCCCCTGAACACTGTGAC AGATAGTC TGG TCGA AGGAGA GTG
AAGAGGAAGCTAGGTTGAAA ACTAAAGT--- A -- ACA ----------
TCACTGATAGA
GAM7333 3740 GGCACCAGCTCTTTGGGCCT CTCT TG A ATA CC CAA
AGGATACTGCCGGGCCCCCC GGCACCAG T GGCCT GG CTG GGGCCCCC
AAGGGGGTCCCCAGCAACCA CTGTGGTC G CCGGA CC GAC CCTGGGGG
GGCCTGGCCTCCTGGTGTC CTCC GT - AAC C- ---
GAM7334 14527 GAGGTGGTCTTATCCAGCTC T TTA G C C- - A ACCGT
AGCTTCCCCTGGGACCCACC GAGG GGTC TCCA CTCAG TTC CCT GGG CCC
GTGGGACCTGAGGCAGAACT CTCC CCGG AGGT GGGTC AAG GGA TCC GGG
GGGGTGGACTTGGCCTCCTC T TTC G - AC G A -----
GAM7336 5904 GGCAATGAGGGTTGGACAGG A G GAC GC T CACATA
CAGATAATACACATATATTC GGCAATG GG TTG AG AGA AATA
TTTAACTTTGCAAACCCATT CTGTTAC CC AAC TC TTT TTAT
GTC - A GTT AA C ------
GAM7337 20644 AGCCACACCCTGTAAAGCCC - CC GTAA C AAC A G TTTTT
TGGGGCAACTGAAGGAGTTT AGCCA CA CT AG CCTGGGGC TG AG AG
TTTTGCTGCAAGGCCCCAGG TCGGT GT GA TC GGACCCCG AC TC TT
ACTGAAGTCTGTTGGCT T CT AG-- A GA- G G -----
GAM7338 10994 AGAGAGGATAGATTGAATGT A TGA ATA G -- AGAGTGAC
GGATAATGCGAAGATAGAGT AGAGAGG TAGAT ATGTGG AT CGA AGAT
GACGTCTCATCGAATGGGTC TTTTTCC ATCTG TGCACT TA GCT TCTG
ACGTATTGTCTACCTTTTT - TTA GGG A AC --------
GAM7339 5551 GTAGCGCAGGTACGTCGTCT A A GT AG AGGAATCA
GTAGCAGGCAGGAATCAGTG GT GCGCAGGT CGTC CTGTAGC GC
GCTACGGGATGACCTGTGCA CA CGTGTCCA GTAG GGCATCG TG
AC A - -- G- --------

GAM7340 7259 CTCCCCTTTTCTGTGTTCGT TTT T TTC G A-------- GCAC
AGCAGCTGGCACAAGCCCAG CTCCCC TC GTG GTAGCA CTGGCAC AGCCCA
CACTGGGCTCTGCTCCTGGT GGGGGG AG CAT CGTCGT GACCGTG TCGGGT
GCCAGTGCTGCCTACTGATG TGT T C-- - GTCCTCGTC ----
TGGGGGG
GAM7341 8510 TTTCCTTTTTCTGTAGGCCG TT GTA CGC AGCT AATT
CCTTAAGCTTTCTAAATTTG T CCTTTTTCT GGC CTTA TTCTA
GAACATCTAAGCAAGCTGAA G GGAAAAGGG TCG GAAT AAGGT
GGGAAAAGGGGG GG AAG AAC CTAC ----
GAM7342 12688 CCTTTTGCATTTCTTGTTTC TT TT CA TATGGG ATAGAGAGAG
CACTCTATGGGTTGGAATAG CCT TGCATTTC GTTTC CTC TTGGA
AGAGAGTCCAGATTTTGAGG GGG GTGTAAAG CGAAG GAG GACCT
AGAAGCTGAAATGTGTGGGG GT T- AG TTTTA- ----------
GAM7343 2786 TACATGACATTCCAATATAC ACA CAA AT A TTTGGCCCAAGAATT
TATGCATCATCTTTTGGCCC TACATG TTC TATACT GC TCATCT
AAGAATTGGATGGGCAGTGT ATGTAT AAG ATGTGA CG GGTAGG
ACCAGAACATATGTA AC- ACC -- - ----------
GAM7344 696 ATCTTCTCAGAAAACCAAAC GAAAACCAA AAG C- AAAACC
CAAAGGCAGCCATGAAAACC ATCTTCTCA ACCA GCAG CATG
CGTGTTCTGTACGTGGTTGA TGGAAGAGT TGGT TGTC GTGC
GAAGGT --------- GCA TT ------
GAM7346 9122 AACTCGGGTATTAGGTTGGC G AG- GC - ACAA- TAGC
TAACCACAAGCTTAGCGGCG AACTCGG TATT GTTG TAA CC GCT
GCGGGGATTATTCAACACAA TTGAGTT ATGA CAAC ATT GG CGG
GTAATTGAGTT A ACA TT A GGCGG ----
GAM7348 4849 TTCTGCAATCCAGTCCTCTT GCAAT A AGAAAT - C-- AGA
AGAAATTGGTTTCTCTCTTT TTCT CC GTCCTCTT TGGTT TCTCT TTTGGG
GGGAGATTCAGACTCAGAGG GAGA GG CAGGGGAG ACCGA GGAGA AGACTT
CAGCCAGAGGGGACAGGTCA ACT-- A ------ C CTC ---
AGAG
GAM7351 20172 AATGGAATGGAATCTCCAGG AA-- AA --- AG CATG
AGTGAGGGTTTCCATGGAAG AATGG TGG TCTCCAGG AGTG GGTTTC
CCAGCACTATCCTTGGGGAC TTACC ACC AGGGGTTC TCAC CCGAAG
ACCACTGACCATT AGTC AC CTA GA ----
GAM7354 20108 CTTCCAGGTCCTCAGTACAC A T TACACAACCACCA AG CAGACCTA
AACCACCACGAGGGAAACCC CTTCC GG CCTCAG CG GGAAACC
AGACCTAGGTTTCCGGCGCC GAGGG CC GGAGTC GC CCTTTGG
GACTCTGAGGCCCGGGAG C - TCAGCC------- GG --------
GAM7355 20384 GCACCGGGTGCTCCTGCTCG - T TG TCGA AC ACGTT
AGGCCACTGTGACGTTCATG GCACCG GG GCTCC C GGCC TGTG
CAGGCCCTGTGGGAGCCCAC TGTGGC CC CGAGG G CCGG GTAC
GGTGT A - GT TC-- AC -----
GAM7356 10063 ATGGCAGCCTTTCAGCATGC - T- - - AAAATCGG
GGTTAAAATCGGAACTGATA ATGGCAG CC TTC AGCATG CGGTT
TGCTAGAATTGGACTGCCAT TACCGTC GG AAG TCGTAT GTCAA
A TT A A --------
GAM7358 11417 GGTCATTGTGCCCTGCCAAG T TTG G- A A G G C --- AGAAT
GCACAGCGTAGATCTGGAAA GG CA TGCCCT CCA GGC CAGC TA AT TGGAAAG AGC
GAGCAGAATGCTTTCCTTTT CC GT ACGGGG GGT CTG GTCG GT TA ACTTTTC TCG
CATATGTGGCTGGTCATGGA T TG- AA A - - G T CTT -----

AGGGGCAGTTGTCC
GAM7359 11221 TCTGCCGCATGGGCCATTCT G---- TTCTT - C T TTAGTGAT
TCCTCTCTTGCTCTTAGTGA TCTGCCGCAT GGCCA CCT CT TTGC C
TGGCAGCAGTAGGTGGCTAC AGGCGGTGTA TCGGT GGA GA GACG G
TTGATGTGGCGGA GTTCA ----- T C - --------
GAM7360 13407 CATCAACGAGAAGCTGTGCT AA AG C - - G TTC C G- AAC
ACGTTGCCCTGGGATTCGAG CATC CG AAGCTGTG TA CGTTG CCCT GGA GAG AGGAGAT GGC

CAGGAGATGGGCAACGCCGG GTAG GC TTCGACGC AT GCAGC GGGG TCT CTC TCCTCTA CCG

ATCTCCTCTCCTCTGGGGGA -- CG - C A G C-- - GG ---
CGACGCTACGCAGCTTGCCG
GATG
GAM7361 15760 CCGATGGGGTTTACTGGAAG A TTT--- - A T CTTTCAAA
CATCTCTTTCAAAGGTTGCA CCG TGGGG ACT GGA GCA CT
TCCAAGTCACCTTCCCCAAT GGT ACCCC TGA CCT CGT GG
GG A TTCCAC A A T --------
GAM7362 18333 TGTGTGTGTATATATGTATG G TGTG
TGTGTATGTGTGTGTATATA TGTGTGTGTATATATGTATGT TGTATGTG
TAGATGTATATATATACACA ACACACACATATATATATGTA ATATATAT
CACA G ----
GAM7365 16413 CGGAGGGTCTGGGAAGGGTG - GT GA T ---- TG CCCGTT
GCGTTGGCCCGTTCTGACAG CGGA GG CTGG AGGG GGC GT G
AGGCCTCCCTGGCCAGGTCC GCCT CC GACC TCCC CCG CA C
ATCCG A TG GG T GAGA GT ------
GAM7367 19053 GTTCTCAAAGAGGTTCTTTT CAAA T--- --- A CCTTGT
CAGAGCACGTTCCTTGTAAT GTTCT GAGGTTCTT TCA GAGC CGTT
GGCTTCAGTGACATTGAGAA CAGGA TTCCAAGAG AGT TTCG GTAA
CCTTGAAGGAC AG-- TTAC GAC - ------
GAM7368 20795 GTTGTTATTGGTGCAGGAGT TG-- TG AG AATAGG A GGTT
AATAGGTGTAGAATTGGGTT GTTGTTAT G C GAGT TGT GAATTG
CAGTTTGGCAAAGACTTGGT CGACAGTG C G TTCA ACG TTTGAC
GCAGATGTGACAGC TAGA GT G- GAA--- G ----
GAM7370 3060 TGCCCGCGTACATGGGCTGA GCGTACAT G TG AA-- AGAAGAA
GGAATGTTCAAGCAGAAGAA TGCCC GG CTGAGGAA TTC GC
GTGGTAGAGTTTTCTTCAGG ATGGG TC GACTTCTT GAG TG
CTTAAAGGGTA AAAT---- G TT ATGG -------
GAM7372 3929 CTTTCACTACATCAGAGAAC CA ACA AGAA ---- ---------- AATG
CATCAGAAGTACAGGCAATG CTTT CT TCAG CCATC AGAAG TACAGGC
GTCTGTAAGAACAATTTCAA GAAG GA AGTC GGTAG TCTTC ATGTCTG
ATATTTCTTCTAGCAGATGG AG --- ---- ACGA TTTATAAACTTTAACAAGA ----
CTGAAGGAGAAG
GAM7373 3484 GTCAGATGGAGACTGAGAAA A AC-- CAAGA TT A GAAA
GCAAGATGTTGGCTACCAGA GTC GATGGAG TGAGAAAG TG GGCT CCA
AATGGAGTTTCAAAAATTTT CAG TTATCTC ATTCTTTT AC TTGA GGT
CTTAAAAGCTCTATTGGAC G GAAA AAAA- T- - ----
GAM7375 8796 CCCCCTTCAGTAAATTGTCC - A TC GACATC CCCACTT
TGACATCCTCCCCCACTTGG CCCCCTTC AGTA ATTG CT CTCC
AGAGCCAGTCTACTAGAAGG GGGGGAAG TCAT TGAC GA GAGG
GGG A C C- ------ -------

GAM7376 177 AGACAAATTGAAGGGAGAGA A-- ------- ------ A ACCT
TGATGGACCTCCAACATGGC AGACAA TTG AAGGGAGAG ATG TGG
AGCCTTTTCCTTAGAACACC TCTGTT AAC TTCCTTTTC TAC ACC
AAAGATTGTCT AGA CACAAGA CGACGG A ----
GAM7378 1053 GTTCCTGAGTGGGAAGGGCT C AG AAG TT CTA AAAA GAGA
TGGTGATCTATCCGAAAATT GTT CTG TGGG GGC GGTGAT TCCG TTG
GGAGACAAGCTGGACATCAT CGA GAC GCCC CCG CTACTA AGGT AAC
CTGCCCCCGAGCAGAAGC A GA --- T- C-- CG-- ----
GAM7379 2427 TCCTCAAATACTACACATTT AATA---- AC A- C A- GAAAA
AAAGGAACTGTTAAACTGAA TCCTCA CTAC ATTTA AGGAA TGTTAA CT
AAAGACTTGACAATTTTTGG AGGAGT GATG TAAAT TTTTT ACAGTT GA
TAAATCCGTAGCACAGAAAT AAAGACAC CC GG A CA -----
GAGGA
GAM7381 7641 GGAAGAGGTATACCTGTCTC A A A- --- TC AAA- GCACGTCA
TAAAGGAAGCGCACGTCAGT GGA G GGT TACCT G TCT GGAAGC
TTCCAAACAGAAGCAAGAGG CCT C CCA GTGGA C AGA CCTTTG
TGGAACCCTCC - - AG GAA GA CAAA --------
GAM7382 7092 GCCCCAACGTCTGTTCATGG CCA TTCAT TG-- - - CC CAAC
CTGTGGTTTTAAAAGAGTCC GCC ACGTCTG GGC TGGTT TTAAA AGAGT CT
CTCAACAGATGCTCTATTTA CGG TGTAGAC TTG ACCAA AATTT TCTCG GA
ATAACCAGTTTGTTCCTCAG --- TCC-- TTTG T A TA ----
ATGTGGC
GAM7383 4054 GGAACACCATAGGAGTTGCC A T --- --- - CAGAGATAACACCC
ATCAGAGATAACACCCATGG GGAAC CCA AGG AGT TG CCAT
ACACAAACTCTCCCTCTGGG CCTTG GGT TCC TCA AC GGTA
GTTCC G C CTC AAC A ----------
GAM7384 773 GCAGTGGAGGGGGCAGGACC GA A ACCT G - ACCA
TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GG CCTGCTG T GCAGC
CTGCTGGTAGCAGGTCCACC CGTTAC TCCCCG CC GGACGAT G CGTCG
GGCCCCTACATTGC A- G ACCT G T ----
GAM7385 10520 ATTTGAGAATGGAAAGGACA AGAA GAAA-- AA G CAT TT GACA
ATCTTTGGGATGACATAGCT ATTTG TG GGAC TCTTT GGATGA AGC AG
TAGGACACTTGCTCATTTAT TAGAC AC CCTG AGAAA TTTATT TCG TC
TTGAAAGAGTCCGATACACA GTG- ACATAG -- G TAC T- ----
GTGCAGAT
GAM7386 3037 GTTCCTTCATTCTGACCTTC ATT A TTCAA- GAGC
AAATGTGTAGAGAGCTTTGC GTTCCTTC CTG CC ATGTGTAGA
ACGTCCCTATGGCAGGGAGG CGGGGAGG GAC GG TGCACGTTT
GGC --- - TATCCC ----
GAM7387 3757 GGAGGAATGCTGGACTGGAG GA- T CT ----- GGA AGAT
GCCCCTGGAGCCAGATGGCA GGAG ATGC GGA GGAGGC CCCT GCC
AGAGGGTGACAGCTTCCTTT TCTC TGTG CCT CCTTCG GGGA CGG
CCTGTGTGTACTCT ATG T TT ACAGT GAA ----
GAM7388 13650 GAGAGCTTCAGCTTGCATAT C ------- AT-- TTG AAAACC
CCTTGGGCAGAAAACCCTGC GAGAG TTCA GCTTGC ATCC GGCAG
TGGATTCCAGTAAGCTCTTT TTCTC AAGT CGAATG TAGG TCGTC
ATTGAACTCTT - TATTTCT ACCT --- ------
GAM7390 14855 AGGTATAATTCAGAGACTGT ATT A GT GCAA AT --- CATTTCAA
CCTTTGCAAAGGAAATGACC AGGTATA CAGAG CT CCTTT AGGAA GAC CAG
AGCATTTCAACTGTATGTCT TCTATAT GTCTT GA GGAAG TCCTT CTG GTC

TCCTGGAAGGGTAGATTCTG C-- A TG G--- -- TAT --------
CTATATCT
GAM7391 2450 TTGGCCCTGTGTCTTTGTCA CC T T ---- AAGG
TGGCACAAAGGTGTGCACTG TTGGC TG GTC TTGTCATG GCACA
CGTGACAATGACCCAAGCCA GACCG AC CAG AACAGTGC CGTGT
G A- C T GTCA ----
GAM7392 9844 GGATTGCCAAAACGGTCACC CAAA G C C A- T---- CA TTGAA
AGCACATTTCCCAGGAGCTT GGATTGC AC GT AC AGC CAT TCC GGAGC
GAAGTTCTCAGGATCCACAT CTTGACG TG CA TG TCG GTA AGG TCTTG
GCAGCTTGTCACAGTGCAGT ---- A C T AC CACCT AC -----
TC
GAM7393 10210 TCGCGTGCGGGATGTTTTGT G G GA - -- CAAG - TGGT
GAGGGCAAGGCCCGGCATGG TC CGT CGG TGT TTTGTGA GGG GCC CGGCA
TTGCTGCGGTATCCCAATCA GG GTA GCC ACA AGACACT CCC TGG GTCGT
CAGACACAGGCCGGATGGGG G G GG C AA TA-- C ----
GAM7394 10642 CTGCCCTTCGAGATGTGCCC - AGA T TTC--- C G TG ACTA
TTCTCAGCCCTGTACTGGTT CTGC CCTTCG TG GCCC TCAGC CT TAC GTTCA
CAACTATGAGCTGGTGAAGA GACG GGAAGC AC TGGG GGTCG GA GTG CGAGT
GCTGGCTCAATGGGTTCAGG A CGG T TAACTC A A GT ----
CCGAAGGAGCAG
GAM7395 22747 GAACAAACGTCCTTTTCATT AA - C TT G- GAAA
TTGGTTTAGAAATAGAAACG GAACA CGTC CTTTT AT TG TTTA
TGGTAAAAGGAGGCGACTGT TTTGT GCGG GGAAA TG GC AGAT
TT CA A A GT AA ----
GAM7396 15146 GACCTGCGGGACAAGATTCT C ----- - TG CCAC
TGGTGCCACCATTGAGAACT GA CTGCGGGACAA GA TTCT GTG
CCAGGATTGTCCTGCAGATC CT GACGTCCTGTT CT AAGA TAC
A AGGAC C GT ----
GAM7397 16517 GGAACAGGGAGGGCCTGTGT ACAG C TC -- - AGGTTC
CTGGCCAGGCTGAGGTTCCA GGA GGAGGG CTGTG TGGC CAGG CTG
GATCTGTTGCCATCATGGCC CCT CTTCCC GGTAC ACCG GTCT GAC
CCTTCAGGGTCC GGGA C T- TT A ------
GAM7398 17980 GGTCCCTTGAATTTCCATAT CCT-- A TT AAGA TG-- AAATTGTGCAAA
TAATTTTAAGAGCAGCTTGT GGTC TGAATTTCC TATTAA TT GCAGCT TC
CAAATTGTGCAAAGAATTTA CTAG ATTTAAAGG ATGATT AG TGTCGA AG
GCTGTGATTTTAGTAGGAAA ATTTT - TT ---- TTTA ----------
TTTATTTTAGATC
GAM7399 10954 GGACTTCTTTCCTAGGTTTC TT CTTT --- GGG--- GAGAAA
TTTACAGAACGGGTTGGGGT GGACTTCT CCTAGGTTT ACAG AAC TTGGGGTC
CGAGAAAGATTCCGAAGATC TTTGAGGG GGATCCAAA TGTC TTG AGCCTTAG
AGTTACGCTGTTTTAAAACC T- ATTT GCA ACTAGA ------
TAGGTGGGAGTTT
GAM7401 12270 GCAGGTATGTTACGAAGTTT CG AGGG- A TAA GG ATATG
AGGGGGAATTTGCTAAGCCG GCAGGTATGTTA AAGTTT GG ATTTGC GCC GAGC
GGAGCATATGGCTTGGCGTG CGTCCGTACAAT TTCAAA TC TGAACG CGG TTCG
CAAGTGCTGGATGAAACTTA A- GTAGG G TG- -- -----
TAACATGCCTGC
GAM7402 18631 GGTGGGTGAGTTGGCTGCCG T- -- - T G- TG GG GGAGTCGT
GTGAGTTGGGTGCCGGTGGA GGTGGG GAGT TGGCTGC CGG GA TTGGG CC T
GTCGTGTTGGTCCTCAGAAT CCATCC CTCG GCCGATG GCC CT GACTC GG G

CCCCGCGTAGCCGCTGCTCC TC TC C C AA CT TT --------
TCCTACC
GAM7403 21029 GTCACTTTAAACTGAGGAAA CTTT AG CG T GTTTTAAA
CGGCAAATGGTGTTTTAAAG GTCA AAACTG GAAA GCAAA GGT
CTCTTTGTATTTCTCCAGTT CAGT TTTGAC CTTT TGTTT TCG
TCTGAC C--- CT A- C --------
GAM7404 19307 CAACTCGACGGCGCGCAACG C A C- A- G C AAG GG GCGA
TGACCTGGAAGCTGGGCAGG CAA TCG CGGCG GC AC TGA CTGG CTG CAG
CGACTGTACGGACCCAGCTC GTT AGT GTCGC CG TG ACT GACC GGC GTC
AGTGAGCTTCGCTGATGACT C A TT AG - C CA- AT ----
TG
GAM7406 5484 GCGGCTGCAGAATACCGCCT AAT - CT -- A GCAA
GCGGAGTAACTGCAAAGATG GCGGCTGCAG AC CGC GCGGA GTA CT
CTGTCCGTGCGCGTTGCTGC TGCCGGCGTC TG GCG TGCCT CGT GA
GGCCGT GT- C -- GT A ----
GAM7407 10134 GGGCGTTTTTTTGGGGGGGGG G AAAAGGTAAGG TATG
AAAAGGTAAGGGCCGGGTAT GGGCGTTTTTTTG GGGGGG GCCGGG
GTCTGGCCCCTTTGCAGGGG CCCGCGAGGGGAC TTTCCC CGGTCT
AGCGCCC G ---------- ----
GAM7408 4206 GGGTGCACTGTGCTGGACCA TG CA--- GA C - AGCG
ACCCTGATTCTGCTGGGGCT GGG CACTGTGCTGGAC ACCCT TTCTG TGG GGCT
AGCGGGTCTCCATTAGGAGT CCT GTGACACGGCCTG TGGGG AGGAT ACC CTGG
GGGGTGCTCCGTCCGGCACA GT CCTCG TG T T ----
GTGTGTCC
GAM7409 20775 CCCATCTCAAACGTCCTTGC - T -- GTC A TG----- GT AATAT
TACTCTGTGATTGTAGAATA CCCAT C CAA AC CTTGCT CTC TGATT AG
TCTGATCAACCTTCTGGGAG GGGTA G GTT TG GAGCGA GGG ACTAG TC
CGAGAAAGTAGTTGTGAATG A T GA AAA - TCTTCCA -- -----
GG
GAM7410 10764 GGCCTTGCTGGTGGCTTTGG GC - G TG CCCT TTCCCTGTGT
GGGCCCTGGCTTCCCTGTGT GGCCTT TGG TG CTT GGGG GGC
GCCCCCCTGGAGGCATCCAA CTGGAG ACC AC GAG CCCC CCG
GAGGTC A- T G GT ---- ----------
GAM7412 17921 GGTGCCCCTCACCCTGCCTA CCCTCAC---------- TATC A AC CCGC AAC CAG
TCCGCATAGCACGCCCCGCC GGTGC CCTGCC CGC TAGC GCC CAG TACCA GC
AGAACTACCACAGGCAATAC CCACG GGACGG GCG GTCG CGG GTC GTGGT CG
AAGCACTGGTGCCCCTGACC ACACTCCCTATCCGTCC CAC- C A- CCA- CCC CA-
GGCAGCTGCGCGCACGGCAG AATACAA
GCCTGCCTATCCCTCACAGC
ACC

GAM7413 1802 TTCTGACCCATGAGAAAGGG C AGAAAG---- - GA--- TAATTT
AAAATTTACGGAGTGATAAT TTCTGACC ATG GGA AAATTTACG GTGA
TTTCACATAGGTGTGAATTT AGGACTGG TAC CCT TTTAAGTGT CACT
ATCCATTATATAGGCATGGT - GGATATATTA A GGATA ------
CAGGA
GAM7417 18911 TGATGGCCCCAACAGGTTCT AT- CCAA GG --- AG CTAC- T ATCA AGCGA
GGGCTTCAGTGGAGCCCTAC TG GGCC CA TTCT GGGCTTCAGTGG CC TGTGC GAC CC

TGTGCTGACATCACCAGCGA AC TCGG GT AAGA CCCGAAGTCATT GG ACACG CTG GG

GGAGGTCCGCACACTTGAGG GAG A--- AG ACC GA AGTTC C GA-- -----
AGTTACTGAAGCCCCCAAGA
AGATGAGGCTGAGCA

GAM7418 20956 CTGATGCTGAGGATTCCGAC A- A -- AC AGCA-- T GGAGCTA
GGCAGCATTGCCTCCTGGGA CTG TGCTG GGAT TCCG GGC TTGCC CCTG
GCTACGGGTGGCAGGGGAAC GAC ACGAC CCTA AGGT TCG GACGG GGGC
GCTCCTGGATGATCCCCAGC AA C GT CC CAAGGG T -------
AAACAG
GAM7419 5791 CATGATCCATGTCTTCACTG TCCAT CA -- C-- TCT TCAAAATAAAT
CTACAGTCTGGCTCAAAATA CATGA GTCTT CTG CTA AG GGC
AATGCCTTCTTTATAGAACA GTACT CAGGA GAC GAT TC CCG
GGAAGGACTCATG ----- AG AA ATT TT- ----------
GAM7420 6821 CTGGGGTGTTTATGGCAAGT GG T-- C CTT A ATGTGGC
CACTTGACAGACATTATGTG CTGG TGTT ATGG AAGTCA GAC GACATT
GCAATGTCGTCTGACTTACT GACC ACAA TGTC TTCAGT CTG CTGTAA
GTTTCAACAAACCAG AA CTT A --- - -------
GAM7421 6101 CCTGCCCAGTGCTGAGTTGT G- GTG TTG T A TG - -- TCCA
CTTCGAGGTTGGCGCTCCTC CCT CCCA CTGAG TCT CG GGT G CGC TCC
CAGGAAAGCGATTGGCTGCG GGA GGGT GATTT AGG GC TCG T GCG AGG
TGGAGTTTAGAATGGGAAAG AA AA- G-- T G GT A AA ----
G
GAM7423 20879 TATAAACCTGCTATCTTGAG C CT A- TCCT T TAA TTTTTT
GTCCTGGTCTTTTAAAAATT TATAAAC TG ATCTTG GG GG CTTT AAATT
TTTTTTAATTTAAAGCTTTT GTGTTTG AT TGGAGC CC TC GAAA TTTAA
CCACCGAGGTTTTAGTTTGT - TT CA TTT- - --- ------
G
GAM7425 7708 CGGTGTCCGAGGACCTGGGG C GA T -- TTTTCGGTTGT
CTGGTGCATTTTCGGTTGTT CGGTGTC GAG CCTGGGGC GGT GCA
GCTGATCTGTCTCAGGACTC GTCACAG CTC GGACTCTG CTA CGT
TGACACTG T A- T GT ----------
GAM7426 8132 ATGTGGTCCAACCTGGGCAT TCCAA TG AT G CTCCCTGTCT
TGGCCTAGCTATCTCCCTGT ATGTGG CC GGC TG CCTAGCTAT
CTGTGGTTGGGGCAGCCTGG TATATC GG CCG AC GGGTTGGTG
GGCATCTATAT TACG- GT -- G ----------
GAM7427 1841 TACTAAGTCTGAAGATGGGC AAG- AGATG- A-- A ACAGA
ATTATGCAAGAACAGATTAT TACT TCTGA GGCATT TGCA GA
GCAGAGAATGCTAACAAATT GTGA AGATT TCGTAA ACGT TT
AGAAGAAAGTG AAGA AAACAA GAG A -----
GAM7428 7115 GTTTGCCTCGAGTTAGTCAC T TTA - GA TC GA AGTCTTC
GAAGGAATCGAAGAGAGCCT GTT GCCTCGAG G TCAC AGGAA GAA GAGCCTT
TAGTCTTCGAGGCTTTTCCC CGA CGGAGTTT C AGTG TCCTT CTT TTCGGAG
TTCCTGTGAGCCCCTTTGAG C CCC G -- CC -- -------
GCCAGC
GAM7429 6240 GTGGCGAGGAGTCCGAGCCG - AG G C GGCATCCAGG
TTGGGGGCATCCAGGCCCAG GTGGC GAGG TCC AGC GTTGGG
CTGCTGGGAGACCTTGGCCA CACCG TTCC AGG TCG CGACCC
C G AG G T ----------

GAM7431 19752 TGGGTCCCGGTGATGGGAAG TCCC--- T T TATCA TG TTTCCACTC
GGTATCAGGTTGCCGGGGAG TGGG GG GA GGGAAGGG GGT CCGGGGAG
TTTCCACTCTTCTCTGGTGA ACCC CC CT CCCTTCCT TTA GGTCTCTT
TTGTTCCTTCCCTCCCTTCC TCTCCTT - - TG--- GT ---------
TCTCCCA
GAM7432 17549 AACAGACTGGGCCAATGTCC C -- CACAAAGAA - CA- ACCGATGTCCAAA
ACAAAGAATTCCTGGTCAGC AACAGA TGGGCCA ATGTC TTCCT GGT GCACC
ACCACCGATGTCCAAAGGTG TTGTTT ATTCGGT TGCGG AAGGA CTA CGTGG
CAATATCAAGGAAGGGCAGG - AG ACGGG---- A TAA ----------
CGTGATGGCTTATTTGTT
GAM7433 20755 GTACGGCGTGTCCTCCCTGC AC G - T A---- - GCCGACTA
AGCGCGGCGTGGCCGACTAC GT GGC TGT CCTCCC GC GCGCG GCGTG
ATGCGCGCGCACCTGGCGGG CG CCG GCG GGAGGG CG CGCGC CGTAC
AGGCGCGGGCCCGGC GC G C - GTCCA G --------
GAM7434 9850 CAAGGGTGTAGTATTTCATA A--- TAC- C A-- CA-- ATTG
CCGCCTGAAATGATCAGCAT CAAGGGTGT GTATTTCA CG CTGAA TGAT GC
TGGCACAAATCAAAATTCAG GTTTCCATA CGTAAAGT GC GACTT ACTA CG
CCGCCTTTGAAATGCAAAAA AAAA TTCC C AAA AACA ----
TACCTTTG
GAM7435 17216 AGTGATGGTCAGTATTTCTT G- TTC-- A ACAA
TGAAATTCTACAAGGAACTT AGTGAT GTCAGTAT TTTGAA TTCT
CAGGCACATGTGCTGATGAG TTATTG TAGTCGTG GGACTT AAGG
TTATT AG TACAC C ----
GAM7437 17535 AGCTAACATACACATAGTGA ACACATAGTG --- TTAAGACT
AGAATGCTTTCCTTTAAGAC AGCTAACAT AAGAATGCTT TCCT
TGGGAGCAAGGCATTCTTAT TCGATTGTA TTCTTACGGA AGGG
TCAACAATGTTAGCT ACAACTTA-- ACG --------
GAM7438 10083 GCTTCTGACACAGGACGGTC GACACA AC -- AT- --- AGGAG
GTGGAGAAGATGCCCTGGAG GCTTCT GG GGTC GTGGAGAAG GCCC TGG
GAGCCACTTGGGCTTGTTTT TGAAGA CC CCAG CACCTTTTT CGGG ACC
TCCACCAGACCCCGAAGAAG AG---- -- AC GTT TTC -----
T
GAM7439 458 GTTTTCCCAATACTTTAGAA TTC A - A-- - A CATTA
AAATTACTAATCATTAATAA GTT CCA TACTTT AG AAAATT ACT AT
GTCGATTTTATACTCAAAGT CAA GGT ATGAAA TC TTTTAG TGA TA
AATGGCCTAAC TCC A C ATA C A -----
GAM7442 21288 CTCAACTGGATTCGGAATGT AA - C- TT CA- GACT
GCTGATTTCCATTGGACTCA CTC CTGG ATTCGGAATGTG TGA TC TTG
AGTTGATCTCACTTATATTC GAG GGCC TGAGTCTTATAT ACT AG AAC
TGAGTGCCGGGAG -- G TC CT TTG ----
GAM7443 2324 TTGGTGAAGTATTTTGTTAC TT CC TCT TT CTGTATTTTTT
CTCAGTCTTGTATTCAAGTT TTGGTGAAGTA TTGTTA TCAG TGTA CAAGTTG
GCTGTATTTTTTCAGCTTGT AACCACTTTAT AATAAT AGTT ACAT GTTCGAC
TACATTGATAATAATTATTT T- -- --- T- ----------
CACCAA
GAM7444 10293 GGTGTCTGTTCCAGTGCTCT TT -- GAGG TT TTTTC
CGCGAGGGCCTTCTTCTTTT GGTGTCTG CCA GTGCTCTCGC GCC CTTC
CGGGGTTGGCAAGGCGAGGG TCACAGGC GGT CACGGGAGCG CGG GGGG
CACCCTGGCCGGACACT C- CC GAA- TT -----
GAM7445 16880 TCGGGATTCTCCTGTACCTC G T- G ATC---- TTTATTCTT

TTATCAGATTTATTCTTTCT TCGG ATTC CCT TACCTCTT AGA
TGCAACAAAGGGGTAGAGGC AGCC TAGG GGA ATGGGGAA TCT
TGGATGCCGA G TC G ACAACGT ---------
GAM7447 22753 AGGAAACCAAAATATTGACA CCAAAATATT- CAGCAGT - A GATAGAA
GCAGTTATCTCTGATAGATA AGGAAA GA TATC TCTG TA
GAATGACAGATGATGTTTAT TCCTTT CT GTAG AGAC GT
TTTCTTCTTACACTTTTTCC TTCACATTCTT TTTATTT T A -------
T
GAM7450 650 TGAATACACAACAAAGGAGG A ACAAAGG ACCG- AGAA AATG G AAAGGAAA

TTTACCGGAAGAACTTCTTC TGAAT CACA AGGTTT GA CTTCTTC ACTG CG
AATGACTGGCGAAAGGAAAT ACTTA GTGT TCCGAG CT GGAGAAG TGGC GT
GGCGGTGGAAGAAGAGGGAA - GAACAGG AACTA GAAG AAGG G --------
GTCATCAAGAGCCTGGACAA
GTGTGATTCA
GAM7451 9998 CAGGGCAAACAACCAGGTCG AACAA GG CCCCC T CCTAAGTCT
GCCTGGCCCCCGTGGCTTAA CAGGGCA CCAGGTC CCTGG GTGGCT AAG
GCCTAAGTCTCTTCAGCCAC GTCCTGT GGTCTAG GGACC CACCGA TTC
CTCCCAGGAAGATCTGGCCT CTCC- AA CTC-- C ---------
CTGTCCTG
GAM7453 20423 GCCAAGATCCATTAATTATT AGA - TATTT T- A TG TATTCTCATT
TGGGGTTGCAAAATGGTGGT GCCA TCCA TTAAT GGGGT GCAAA TGG G
ATTCTCATTCTGTCGTTTGC TGGT AGGT GATTA TTCCG CGTTT GCT C
TTGCCTTTATTAGCTGGAAT A-- C T---- TT - GT ----------
GGT
GAM7455 19746 GGCTTTGCTGGCCCAGCAAG - --- - -- AAG GA C TCTT
CCTGATAAGCATGAAGCTCT GGCTTT GCT GGC CCAGCAA GCCTGAT CAT AGCT TTA
TATCTTTGGTGGCTGTGGTC CCGAAG CGA CCG GGTCGTT TGGGCTG GTG TCGG GGT

GGGTGTTTGCTGGTGCCCCC T CCC T TG --- -- T ----
AGCTGAAGCC
GAM7456 6207 ACCGTGCCAGAGAGATCGTG G --- TCGTG G T TTGAGT
ATTGGTGAGTCTGGTTGAGT ACC TGCC AGAGAGA ATTGGTGA TC GG
CCTGATCACCAGTATCTTTT TGG ACGG TCTTTTT TGACCACT AG CC
TTCTGAAGGCAGGT - AAG TCTA- - T ------
GAM7457 4899 CTGGAACCCGCCCCGTCGGG ACCC CC C-- A CC TCC
GGACCCCGAGGCTCCGCCTC CTGGA GCC GT GGGGG CC GAGGC
CAGGCCCCCTCCACTCGGCC GACCT CGG CA CCCCC GG CTCCG
TTCTCCAG CTTC CT CCT - AC ---
GAM7458 7792 GGCTTCCGTGATGGTCTACG --- G A TAC--- GACA-- GTAAGAAA
ATGACACCAGTAAGAAATGG GGCT TCC TG TGGTC GAT CCA
GTACCAATCAAACCTGGCCA CCGA AGG AC ACCGG CTA GGT
GCAGGGATTCAGCC CTT G G TCCAAA ACCATG --------
GAM7459 15972 TCCATGTGACTGTCGGCGGG A CGGCGG GTC - TC C CGGG
CTTTGTCTCTGGATTCGATG TCCATGTG CTGT GCTTT TCTG GAT GATGGCT TG
GCTCTGCGGGCACAGCCATC AGGTGTAC GACG CGAGA AGAC CTA CTACCGA AC
ATCACAGAAGAGCATGCAGC C TA---- --- A -- C ----
CATGTGGA
GAM7460 622 CCCCGGTATCATTCCTCGAA ATCAT - AATT-- -- G- A AT AGAC A T
TTTCAGTGCGGGAACCAATG CCCCGGT TCC TCG TCAGT GCG GA CCA GC TGGCATTA
GCTG

CAGACTGGCATTAAGCTGTG GGGGTCA AGG AGT AGTCA TGC CT GGT TG ACCGTGGT CGAT

GATAGCTGGTGCCAATGGTC GAC-- C GGTATT AG GA - GC GTA- - -
GTGGTCAGCGTGAACTGATT GGA
ATGGTGACGGACAGACTGGG
G

GAM7461 15309 ACTATTGGCCATGTCCATCA TTG T ATC A T TAGTAAT
CGAGAGTGTTTGTAGTAATT ACTA GCCA GTCC ACGAG GTG TTG
AATTACCTTGTACAGGACCT TGAT CGGT CAGG TGTTC CAT AAT
GGCACTTAGT TCA C ACA - T -------
GAM7462 5770 GCCTGGGCTGTGGTAAGTAA T - TG A AA- ---- ------- G TGACA
TGGAGCTGTGAGTTCCTGGA GCC GG GCTG GT AGT TGGAGCTG TGAGT TCCTGGAT G

TGGTGACACGGTCCAGGATC CGG TC CGAC CG TCG ACTTTGAC GCTCA AGGACCTG C

TTGAAACTCGTGTCCAGTTT - G GT G GGG CTGT AAGTTCT G -----
CAGGGGCTGGCTGCAGCGCT
GGC
GAM7465 11915 TCCTGCGAGTTCCCCTAAGT T TT CCTAA - A CT -- GATCT
TCTTAGAGGACTGCTTTGCC TCC GCGAG CC GTTCTT AG GGA GCTTTGC CTTTT
TTTTGATCTGAGAGTTGCAA AGG TGTTC GG TAAGAA TC CCT TGAAACG GAGAG
AGTTCCCTAAAGAATGGCCC - CC ----- A - -- TT -----
TTGTGGA
GAM7466 10694 GTTAGTACCACTTAGGGCTA G A T ---- AA TG TGTCA
CAAGGACCCTGGGTTCTTCT GTTA TACC CT AGGGCT AC GGACCC GGTTCTTC
GTCAGAGGAATTGGGTTCAG CAAT GTGG GA TTTCGG TG CTTGGG TTAAGGAG
GTTTCAGGCTTTAGGGTGTA - - - ACTT GA -- -----
AC
GAM7467 8977 CTGAACATTTTCCGAAAATC AA- - AAA GCAAAA - TAAT
ATTTTGAGCAAAATATCTGT CTG CA TTTTCCG ATCATTTTGA TATCT GTT
TTAATAACAAGATAACCACA GAC GT GAAAGGT TGGTAGAACT ATAGA CAA
TCAAGATGGTTGGAAAGCTG GAA C --- ACACCA A ----
AAGCAG
GAM7468 2976 TCAAGTTTGTATTCAGTACA TAT ACAG ATTCACTTCTTA
GTTGTCATTCACTTCTTAGA TCAAGTTTG TCAGT TTGTC
CAAAGAATTGACAGGCTTGA AGTTCGGAC AGTTA AACAG
--- AGA- ----------
GAM7469 20358 CTGTTTGAATGTGCTGGTAA T AA- C AACT CTT
CTGCTTTGCTTCTTGAGTAG CTG TTG TGTG TGGT GCTTTGCTT
AGCCACCACCACCATAGCCC GAC GAC ATAC ACCA CGAGATGAG
AGCCAG C CCG C CCAC ---
GAM7470 12206 GCTCTCGGGGGCACCTTCCG T - CCTTCC TAAGCCGC
GGGTTCCTAAGCCGCGGGGC GC CTCG GGGGCA GGGGTTCC
CCCTCGCTGCCCCTCGAGGC CG GAGC CCCCGT CCCCGGGG
- T CGCT-- --------
GAM7471 3213 AGTTTATCACTCATGGTGAT T C -- A TT T GAGTAAAATA
TTGGTTTACTCTGGAGAGTA AG TTATCA TCATG GTG TTTGG TAC CTGGA
AAATATCCGGTGTGTCAGGC TC GGTGGT AGTAC TAC GGACT GTG GGCCT

ATGACATGAATGGTGGTCT T A AG - -- T ----------
GAM7472 8554 CGGTCAGCTCCCCGATGGCC T ATGGCC - G GCTGG
TGGGTGAGGGCAGGCTGGCT CGG CAGCTCCCCG TGG GT AGGGCAG
GCTCTGACACCATGGGGAGC GTC GTCGAGGGGT ACC CA TCTCGTC
TGCTG - ------ A G -----
GAM7475 21773 GGACGGAGGCAATAAATACT AGG A- AA- GAT A G GCTC
GATGGCCAAGCGGGGCTCCT GGACGG CA TA TACT GGCC AGC GG
GGCTGGGCCCAAGTGGGGTG CCTGTC GT GT GTGA CCGG TCG TC
GGTGAGGCTGTCC GGA GG GGG AC- G G ----
GAM7478 10345 TGTTCTTGGTGAGAAGGGCC GG A G GGA GG A TGCT
GGCGGATTCGGGAACTGACT TGTTCTT TG GAAGG CCGGC TTC GAACTG C
GCTGTAGTTCAGAAGAGGTT ACGGGAG AC CTTTC GGTTG AAG CTTGAT G
GGCTTTCCAGAGGGCA -- - - GAG A- - ----
GAM7479 1158 GTGGAATGGGCCTAAAGTAG GG GTA ACA T AGACTT G GAGGGTA
TGACAAGGTAGTCACAGACT GTGGAATG CCTAAA GTG AGGTAG CAC CT GAG
TCTGGAGGAGGGTACTTGGG TACCTTAC GGATTT TAC TCCATC GTG GG TTC
CTGGTGTCTACCTGGCATAT AA A-- GG- T GTC--- G -------
TTAGGAACATTCCAT
GAM7480 990 GGCCCTGCACCAGTGCTGCA - A- T- AT - G CGA
TTGATGATTTCCGAGAGATG GGCCCT GC CCAG GCTGC TG AT ATTTC
GTGCAGCAGCTCCTGGAGGC CCGGGG CG GGTC CGACG AC TG TAGAG
TGGGGCC T GA CT -- G G ---
GAM7482 11234 ACGGGAATGGAGAAAGTTTG A AAA----- --- AT G TGTTCT
CCAGACTGGATTTAGGGTGT ACGGG ATGGAG GTTTGCCA GACTGG TTA GG
TCTTCATGACCTCGGTCTTG TGCTC TACCTT TAAACGGT CTGGCT AGT CT
TGGCAAATGGTGAACGTTCC C GCAAGTGG GTT CC A ------
ATCCTCGT
GAM7483 22789 TGTAGTAACGCCCTTTTCCC T CTT CA A- - ACA TTTTT
AGTGATATGAGCACAGGTTT TG AGTAACGCC TTCC GTG TATG AGC GG
TTCCAGCTCCATGAGCACCT AC TTATTGCGG AAGG CAC GTAC TCG CC
GGAAGGCGTTATTCA - --- TC GA C A-- -----
GAM7484 5574 CAGGGTGTTGCCATGTTGCC - TG CA T C CT TCG
CAGGCTGGTTTCGAACTCTT CAGG G TTGC TG TGCC AGG GGTT
GGCATCAAGCAATCCTCCTG GTCC C AACG AC ACGG TTC TCAA
T CT A- T - -- ---
GAM7486 22921 ACATTTATAGAGGTTATAAG AGA TATAAG CTC CAAAT
GATCTTGGCTCTAGAACAAA ACATTTAT GGT GATCTTGG TAGAA
TTTTTGAAATTAGGATCATT TGTAGGTA CCA CTAGGATT GTTTT
TTACCATGGATGT --- TTTTA- AAA -----
GAM7487 10942 GCAGATGAATATTAACGAAA ------ TTA-- AA- AAACCTTTC
CCCAAACCTTTCGGGTGACC GCA GATGAATA ACG ACCC
GTGATCTTGTTCGTCTTTTT CGT CTGCTTGT TGC TGGG
TTGC TTTTTT TCTAG CAG ---------
GAM7488 20418 AAACGTGCAAATGTATTGTA G GTATT AC GA AATGG TATT
GAGACTTTATGATTAGAATG AAAC TGCAAAT GTAGAG TTTAT TTAG CATA
GCATATATTTATGAAACTTA TTTG ATGTTTA TATTTT AAGTA AATT GTAT
AAGATGAATGTTTTATTGAA G AGT-- GT GA CAAA- ----
TTTGTAGGTTT
GAM7489 2603 GTGATTCTGGCACAGGAAAT C C AAAT CCAAAATCTCAAAATATC
GGTCTCCAAAATCTCAAAAT GTGATT TGGCA AGG GGTCT

ATCAGATCTCTACCTTGTCA TACTGA ACTGT TCC CTAGA
AGTCAT - - ATCT ----------
GAM7490 6724 CGCCAGGATGATCCTAGCTA A ATC- G GTTCT C - T A- G ATGC
TCGTTCTTTTCACTCTGGTG CGCCAGG TG CTA CTATC TTTCA TC TGG GG TATG CCAGG
GATATGGCCAGGATGCCTTG GTGGTCC AC GGT GGTAG AAGGT AG ACC CC GTAT GGTTC

GGTATGGACCCCATGATGGA C CACC G AGTAC - T - AG G ----
ACATGAGATGGGTGGCCACC
ACCCTGGTG
GAM7491 1721 CCTCTGGCTCCGGCTTTGCT T -- T CT---- T- CAGC
GTAGCCTCCAGCAGCCTGGC CC CTG GC CCGGCTTTG GTAGCC CCAG
TGGCTATCGACTCCGAGGCC GG GAC CG GGCCGGAGC TATCGG GGTC
GGGCATCAGTGG T TA - CTCAGC TC ----
GAM7492 1798 CCGGACAAGCCTATCACCCA GACAA ATCA TCCAC C T GAAGAACA
GTATCCACATGCGGTGGGGA CCG GCCT CCCAGTA ATG GG GGG
AGAACACCCTCCTCATTGCT GGC CGGA GGGTCGT TAC CC CCC
GGGCTCCAGGCCGG ----- CCTC ----- T T --------
GAM7493 2386 CTATGAGGAAGTAATAGTCT T G T C- C CTGTT CAAA
CTTTTCCAAATACTGTTAGT CTA GA GAAG AATAGTCT TTTT CAAATA AGTC
CCAAAGGCTTGTTTGTAGAA GGT TT TTTC TTGTCAGA AAGA GTTTGT TCGG
TCAGACTGTTCTTTGTTTTG T G - CT T ----- ----
G
GAM7494 14084 GTTGTTTTTATAATGGGCGT - TTATA TTT -- ATAT
TTTCACATGCACATATGTGT GT TGTTT ATGGGCGT CA CATGCAC
ATGCATGTATACGCCCATAC CG ACAGA TACCCGCA GT GTATGTG
AGACATGC T CA--- TAT AC ----
GAM7495 21861 CGCGGGTTCTGGTTCCCGGG C CT TCCC CAC TT TC GCAA
CACGGCCTTCCACATTCGCT CG GGGTT GGT GGG GGCC CCACAT GCTT
TGCAAAGGCTATGTGGCGGT GC CCCGA TCA CCC TTGG GGTGTA CGGA
TCCCCCCACTTTAGCCCCCG C TT ---- CCC C- T- ----
GAM7496 97 TCCCTCTCCCACCTGTCTGC TCTCCCA C ATAGA- GAA GACA
ATAGAAAGGCAGAATTAGAC TCCC CCTGT TGC AAGGCA TTA
ATAGCATGCTTTGGAAAAGC AGGG GGATA ACG TTTCGT GAT
AAATAGGAATTGTTGGGA TTGTTAA A AAAAGG AC- ----
GAM7497 16646 GTTTGTGGCCTTCAGAAATC G T-- AA A - A CCT CTACCT
GGATCTTGGGGAGAGTCCCT GTTT TGGCC TCAG ATCGG TCTTG GGGAG GTC TC
TCCTACCTGACTGACCTCCC TAGA ACCGG AGTC TAGTC GGAAT CCCTC CAG AG
ATAAGGCTGATGCTGATTTG G TTT G- - A - TC- ------
GCCAGAGAT
GAM7498 15788 TTGGATGTTCACTGCCAGTT --- T T C T TGT ATTAAC
GTCTCATGTGAAAAATTAAC TTGGA TGT CAC GC AGTTGTC CA GAAAA
TTTTTTGTGGCAATTAGTGT AACCT ACA GTG TG TTAACGG GT TTTTT
GACAGTTTCCAA TTG - - A T --- ------
GAM7499 2071 AGCTCTGCACTCATGATTCT T CA CA TT CTCTGTCCATCT
GTGGCTCTCTGTCCATCTGG AGC CTG CT TGA CTGTGGCT
CCACAGTTCAGAAGCCAGGC TCG GAC GA ACT GACACCGG
T - C- AG T- ----------
GAM7500 1612 GAAGGGTTTACGATGCATTG G AC- GCA A TTAA- GTCT-- CTAC
TTATCATTAACCAGTCTTTT GAA GGTTT GAT TTGTT TCA CCA TTTA
ACTACTAAACTTAAATGGCC CTT CCAAA TTG AACAA AGT GGT AAAT

AATTGAAACAAACAGTTCTG G GTC ACA - TAACC AAATTC ----
AAACCGTTC
GAM7501 6640 ATGGGCTTCGACGGGGCTTA TCGAC-- TAATAG TT CACT ATG TACGC
ATAGCCCTTGCCCCACTGAA ATGGGCT GGGGCT CCC GCCC GA CTGC
TGCTGCTACGCGCAGAATCC TACCCGG CCCCGA GGG CGGG CT GACG
CGGGCTTGGGAGCCCCCAAA TAAAAAC ------ TT CC-- AA- -----
AATGGCCCAT
GAM7502 21594 CTGGCCCGACGCCGACGGCC C AC GA - -- G - - AGGAC
TCTCAGTGGCTCCCGGAGGA CTGGCC G GCC CGGC CTCT CA TGG CTC CCGG
CCCGGCGGGCCCAGTGTTGG GACCGG C TGG GTCG GAGG GT ACC GGG GGCC
AGAGCTGAAGGTCAGGCCAG A -- AA A TT G C C -----
GAM7506 11699 GGGCTCAAGTGATCTGCCCA TCA ATCT C CCT AGCC AAGTGC
CCCTGCCTGAGCCTCCCAAA GGGC AGTG GC CAC GCCTG TCCCA
GTGCTGGGATTACAGGTGTG CCCG TCAC CG GTG TGGAC AGGGT
AGCCACTGTGCCC TG- ---- A --- ATT- ------
GAM7507 10375 CATCAGGACCAGCTCTGAGA C G TGAGA GGAGAGCAGA
TCCCTTAAGGAGAGCAGATT CAT AGGACCA CTC TCCCTTAA
GAGGGAGACATGAGGTGGTT GTA TCTTGGT GAG AGGGAGTT
CTATG - G TACAG ----------
GAM7508 11161 ATTGGTGGCCTAGAATCTGA - CC A G G T TTATGCAC
TCTGTCCTGTTTATGCACAC ATTGG TGG TAGA TCT ATCT TCC GT
CGGAGGGATAGGATCTGTAC TGACC GCC GTCT AGG TAGG AGG CA
CGTCCAGT T AT - A G C --------
GAM7509 5884 GGGTGATCTACCAAAACAGT GA A AA- TT TA- CCAGTGCA
TTGAGTTTTAAATTATCCAG GGGT TCT CCA ACAG TGAGTTT AATTAT
TGCAGTGGTTCCTAGACTCA CCCG GGA GGT TGTT ACTCAGA TTGGTG
CTTTGTGCATGGAGGCAGCC AC - ACG TC TCC --------
C
GAM7510 14615 GGGCGGAGGCACTCGCGCGG G CAC G AAT T--- --- TCTGGT
GGGGTAATTCGGGGTCTGGG GGGC GAGG TCGCGCGG GGGT TCGGGG CTG GGT
TTCTGGTGCCGCGCAGCTTT CTTG TTCC AGTGCGTC CCCG AGCCCC GAC CCG
CCCCGATGGCCCACTGCGTG G --- A GT- TTTC GCG ------
ACCTTGGTTC
GAM7511 10182 AGTTGTCGAGAAAGGAGGGA G AA GA AGAAA - AC GTAATTCA
CCAGAAATCAGATGAACTGA AGTTGTC AGA GGAGG CC TCA GATGA TGA
GTAATTCATCATGTCATCTT TCAACAG TCT CCTTT GG AGT CTACT ACT
GAAGGCTTTTCCACTCTGGA G CA TC A---- T GT --------
CAACT
GAM7512 21121 TGAGCACCAGGTGGTCTCCT AC- --------- - GA - ACCAAATCC
CTGACTTCAAAGGGAACCAA TGAGC CAGGTGGTCT CC TCT CTTCAAAG GGA
ATCCTCCACTTTGAAGCTGG ACTCG GTTTACCAGA GG GGG GAAGTTTC CCT
GTGGCTTGGCTCAAGACCAT AAT ACTCGGTTC T TC A ---------
TTGTAAGCTCA
GAM7513 18104 TCTGACCAGCACCCACACTC T A ACACT CT - C TCCTGT
AGGCTCTGGCCGCAGTGTCC TC GACCAGC CCC CAGG CTGGC CG AGTG
TGTCATTCGAGTCAGGTTCT AG TTGGTCG GGG GTCT GACTG GC TTAC
GGGGGCTGGTTTGA T - ----- TG A - ------
GAM7514 20466 AGGCCTCCCCTCTATCCTTA CC TA TATC--- G A ATTCCG
TCTGTCTGGTCGAGTCATTC AGGCCTCC TC TCCT TGTCTG TCG GTC
CGGGCCGAGTGGGCACCATC TCTGGAGG GG AGGG ACGGGT AGC CGG

ATGGGACGGGCAGGAGGTCT AC GC TACTACC G - ------
GAM7516 5788 GTGTGGTCGAAGCTTCTGAA CGAA T AA---- CCTA AAGC
GCTGCCTACAAGGAAGCCTT GTGTGGT GC TCTG GCTG CAAGG
TGAAATCAGCAAAGAGCAGA CGCACCA CG AGAC CGAC GTTTC
TGCAAACCACGC AA-- T GAGAAA TAAA ----
GAM7517 16390 ACAGATGTAGGCAGAAGACC G AA CCA - AGA GAGA-
ATAAACAAAGGGGCAGG
AGGAGTAGGGAGAGCTGAGA ACAGATGTAG CAG GA GGAGTA GGG GCT CTAGGG
CTAGGGATAAACAAAGGGGC TGTCTGCGTC GTC CT CCTCGT CCC CGA GGTCCT

AGGAATCCTGGAGAGAAGCC A A- CA- G --- AGAGA ----------
CCGTGCTCCACTCACTGACT AA
GCGTCTGT

--
GAM7518 1845 AGCTCTTCCTGGATCGTCTC C ATCG CAGA- T CT- ATATGAA
AGATCTGCCATTCCTCTGGA AGCTCTT CTGG TCT TCTGCCAT CCT GG
TATGAACCTGTGGGCGTGGC TCGGGGA GACT AGA AGACGGTG GGG CC
AGAAATCCAGAAATCAGTAG T AA-- CCTAA C TGT -------
GGGCT
GAM7519 1992 CCTTATTAAAGCATCTGCAA TAT G CAA CAGGAA- TGAGCT
CAGCCAGGAATCATTGAGCT CCT TAAA CATCTG CAGC TCAT
ATGAGTAAAACGCTGCCTTA GGA GTTT GTGGAT GTCG AGTA
GGTGATTTGTCAGG CT- A TCC CAAAATG ------
GAM7523 6184 GGCAGGAGAATCGCTTAAAC A AATC TAAA--- AG TG AG T A TGAGATT
CCGGGAGGTGGAGGTTGTGG GGC GGAG GCT CCCGGG G G GT GTGG GC
AGCTGAGATTGTGCCATTGC CTG CCTC CGA GGGTCC C C CG TACC TG
ACTGCAGCCTGGGCAATAAC - AAAA CAATAAC GA GT A- T G -------
AGCAAAACTCCGTC
GAM7524 17496 TATTTGTATTTTACTATGAT TA--- T AT- CCTC
AGTTGAGAAATTTAGCCTCT TATTTG TTTTAC ATGATAGTTGAGAA TTAG
TAGTCATTTTTAGCTGTTAT ATAAAC AAGGTG TATTGTCGATTTTT GATT
TGTGGAAGACCTCAAATA TCCAG T ACT ----
GAM7525 12582 GCTCAGAACTTGTTCACGAA TCA - CA- AAC AGA- CGT
CGTGACAGAGCTTACGTTAA GC GAACTT GTT CG GTGAC GCTTA
GCAGAGGTCACCGGGCAACT CG CTTGAA CAA GC CACTG CGAAT
AAGTTCCATGC TAC T CGG --- GAGA ---
GAM7526 12255 TACTTGTATTTCCATTGCTT - TT TT - GTAAGAG A TGTT
GAATGTAAGAGTCAGATGAT TAC TTGTA TCCA GCTT GAAT TCAG TGA
GTTTTAATTGAAATAAAATT GTG AACGT AGGT CGGA CTTA AGTT ATT
CTAGGCTGGATGCAATGTG T -- -- T AAATAA- A ----
GAM7527 3696 GGAATATAAAGATCTTGTTT AA- ATC T TCATAT A CAAATAG CTACT
CTTCATATTTCAAACACCAA GGAATAT AG TTGT TCT TTC AACAC TATTAGT
ATAGTATTAGTCTACTACTA CCTTATA TC AACA AGA AAG TTGTG ATAATCA
ATAGTGTTAGAACACCAGAT AAA GA- T CCAC-- A ------- -----
ACAAAGCTAAAATATTCC
GAM7528 799 GTCAGCAGATCCCAGTGAAG C T G TTTTGTGTGTTT CTCATTTCTTT
GGTTTTGTGTGTTTAGGCCT GTCAGCAGAT CCAG GAA GG AGGC
CATTTCTTTGTCTTTTTCCT TAGTCGTTTA GGTC CTT CC TCTG
ACTCCGTTCCTGGCATTTGC C - G TCATCCTTTT-- ----------

TGAT
GAM7529 14139 GGCCGGGCATGGTGGCTCAC A ---- AC- ATA--- CAG GAAG
ACCTATAATCCCAGCACTTT GGCCGGGC TGGT GGCTC ACCT ATCC CACTTTGG
GGGAAGCCGAGGTGAGTGGA CCGGTCCG ACCA TTGAG TGGA TAGG GTGGAGCC
TCATCTGAGGTCAGGAGTTT - GAGT GAC GTCTAC TGA ----
GAGACCAGCCTGGCC
GAM7531 22112 GGGAGTCGTTTGAGGCGCGA TC TT C G C --- CAGC
CTTCCTGCGCCTGCTCAGCA GGGAG GT GAGG GC ACTT CTGCGCCT GCT
GCCTGAGGCGCGGCGAGTGC TCCTC CG CTCC CG TGAG GGCGCGGA CGA
CCTCCTGCCCTCCT C- TC - - C GTC ----
GAM7532 18592 TGTACCTATAAATATATGCT A A ATA - CTGTC- A- TAT- TACAAACT
GTCTGTCAGTGTACAGTATG TGT CCTATA AT TGCT GT AGTGT CAG GG
GTACAAACTCCTTTTCTGGC ACA GGGTAT TA ACGA CG TCACA GTC CC
ACACTTAAAATGCAAGCAAT - C --- A TAAAAT CG TTTT --------
CTATGGGACA
GAM7533 16307 CTGCTCCAGCAGCTGGTGCT G AG T T C CA TCCTGCCC
GCACCAGCAGGAGGTCCTGC CT CTCC CAGCTGG GC GCA CAG GGAGG
CCCCTCCACTGCTGCTGCTC GA GAGG GTCGACC CG CGT GTC CCTCC
CAGCTGAGGAGAAG A A- T T C A- --------
GAM7534 22798 ACTCACCATTTTACTACTTC C- T TAT TT T CAA
TATCTTTTTGACTTTCCAAG ACTCAC ATT TACTACTTC CTTT GAC TTC
AATGTCCTAGAGTTGGAGTG TGGGTG TGA ATGGTGAGG GAGA CTG AAG
GTACAGTATGTGGGT TA C TT- TC T ---
GAM7535 2751 GGGAAGCACTGTCTGTGAGG CAC TG CTCTA GTATT AA GATAA
TCTCTAACTAGCTGTATTGA GGGAAG TGTC TGAGGT ACTAGCT GA AT
AAATGATAAATGATCCTAGA CTCTTT ACAG GCTCTA TGATCGG CT TA
GGCTAGTATTATCTCGTTGA TT- TT TTA-- AGATC AG -----
CATTTTTCTC
GAM7536 7555 GACTGAGTTTTGCCCTGTTG T- TT TG CC TT C-- -- A - A ATCT
CCTAGGCTGGAGTGCAATGG GAC GAG T C TG GCCTAGG TGGAG TGCA TG GC TG
CATGATCTCGGCTCACTGCA CTG CTC A G AC TGGGTCC GTCTC ACGT AC CG GC
ACCTCTGCCTCCTGGGTTCA TC TT GT A- T- TCC CA C T - ----
AGTGATTCTCCTGTC
GAM7537 6782 GCGGCAGGGCATGGTGTGCC CA-- AT T -- TATAGAGCC
TCGGGCTCTATAGAGCCGAG GCGG GGGC GG GTGCCT CGGGCTC
CCCGCTGGGTACCCGCCCGG CGCC CCCG CC CATGGG GCCCGAG
TACCGC ATGG -- - TC ---------
GAM7538 22938 GGCCTTTGTCCCCGAGGCCG C ---- - - G CTCCCAAGCGCA
CGCCGGGAGCTCCCAAGCGC GGC TTTGTCCC CGAGG CCG C CCGGGAG
ACTCCTGGGCCGGACCTCGG CCG AAACAGGG GCTCC GGC G GGTCCTC
CGCGGGACAAAAGCC A CGCG A C - ----------
GAM7539 2447 GCGTCTATAGAGCAACTCAC TATAG C CAT GCT CATTAAAC
AGCATTGAAGCTAGCTTCAT GCGTC AG AACTCACAG TGAA AGCTT
TAAACAAGCTTTCACTGTGA CGTAG TC TTGAGTGTC ACTT TCGAA
GTTACTGATGC ----- A --- --- --------
GAM7540 11411 GTGCCCACAGTGCCCCGGAC TG ----- - GGA ATT ACCTCAGGCTC
ACATTTCACACCTCAGGCTC G CCCACAGT G CCCC CAC TCAC
GTGGTGGTGCAGGGGACAAG C GGGTGTCG C GGGG GTG GGTG
AGGCTGTGGGTGC GT GAGAA A AC- GT- ----------
GAM7541 15939 ACTGTGTTAGTAACTCTTTA T A CTT GTCTAAAAACTAAATAA

TGAATATTGTCTAAAAACTA ACTGTG TAGT ACT TATGAATATT
AATAAGATATTCATGTAAAG TGACAC ATTA TGA GTACTTATAG
TGATTATCACAGT T G AAT ----------
GAM7543 6718 GAGGAGGTTGGCTTAGTCAA G -- A- C A TC CACACT
ATGCCTCTGTCCACACTGAC GAGGAG TTG GCTT GT AA TGCC TGTC
ATGGCACTTACCCAAGCACC CTCCTC AGC CGAA CA TT ACGG ACAG
GAACTCCTC A CA CC - C T- ------
GAM7544 10668 CCCCGTCTTGCTAAGCAGTT - A C AGACT G- A- T T-- TGA
TAGTTAGACTGCAGGCCAGT CCC CGTCTTGCT AG AGTTTAGTT GCAG CC GTC CTG GGTG

CTCTGTGGTGTGACACCCCC GGG GCAGAACGG TC TCGAGTCAA CGTC GG CGG GAC CCAC

CAGTGGCAAGGAGCTGCCAA T G T AAC-- GA AA T CCC ---
AACTGAGCTTCTGGGCAAGA
CGTGGG
GAM7545 3551 ACTATTGAGACCGCAACTGC G - - TG -- TG TCATT
TTGCACTGATCATTTTGGTT ACTATT AGAC CGC AACTGCT C AC A
CGTGAGCAGTTGGTGAGTTT TGGTAG TTTG GTG TTGACGA G TG T
AGATGGT A A G GT CT GT -----
GAM7547 13730 GGCTAGAGAAGCGGCAAAGT T- C G T GC CCAA - ATC
CTATGGCCTTTCCAATGCTC GGC AGAGAAG GGCAAA TC ATG CTTT TGCT CC
CATCGGTGGCAAAAGAACAT TCG TCTCTTC TCGTTT GG TAC GAAA ACGG GG
TGGTTTGCTCTTCTCTTTGC TT - - T AA ---- T ---
T
GAM7548 19153 CCTACAGACCCTCAGGTACT C---- CCCT ----- C CT TCTGTAT
GCCCTGTGACTTCTCTGTAT CCTA AGA CAGGTACT GCC TGTGA TC
GACATCACAAGGCTGCCAAG GGAT TCT GTCCGTGA CGG ACACT AG
TGCCTGTTTTTCTAGAACTA CAAGA TTTT ACCGT A AC -------
GG
GAM7549 14670 GACCCAGAATGAGCGTTATA AATGA ATAA C TG --- CAT
AGGCTGCCATGCGGAGGGCA GACCCAG GCGTT GGCTG CA CGGA GGG
TTCCACATCCGGTTGATAGC TTGGGTC CGCGG TCGAT GT GCCT CCT
TCGGCGCCTGGGTT ----- C--- A TG ACA ---
GAM7550 16368 GGGTGCGGAGGCAGCAAATG G AG- A AATG AG C -- TGTT
TTACAGGTCCTGGTGGTGTT GG TGCGG GC GCA TTAC GTC TGG TGG
CCAGTTCAAGGCAGTAAATA CC ATGCC CG CGT AATG CGG ACT ACC
TGCAGCAGACCGTAACC A AGA A ATA- A- A TG ----
GAM7551 19046 CCTCCTTGTGGAGTAGGAAA C--- A TA AA-- AAG- GAA GAAG
ACATAAGCTTGAAGAAGGAA CCTC TTGTGG G GGAA CAT CTT GAAG
GCTTTAAAGAAAGGTGGTCG GGAG AACGCC C TCTT GTG GAA TTTC
TTCTCGCCCGCAATTTAGAG ATTT - GC GCTG GAAA A-- ----
G
GAM7552 18347 GGCTCACGCATGGGCCGGCT A- - TGG TG GGGA
GGAGGTGCTGGGGACGGTGT GGCTCACGC TGGG CCGGC AGG CTG
TTGCTGGACCCAAGGTGTGA CCGAGTGTG ACCC GGTCG TTT GGC
GCC GA A --- GT ----
GAM7556 14238 GGTGGTTAGTTTCTGCGACT G CT AC G T TG GATAGGA
TGTGTGGGACTGCTGATAGG GGTG TTAGTTT GCG TT TG GGGAC CT
AAGATGTCTTCAGGAAATGC CCAC GGTTAAA CGT AG AC TTCTG GA
TAAAATTGGGCACC G AT AA G - TA -------

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GAM7557 18241 GGTAGAAGGCAGTGGCAAGA  AGAA      AA GG  T   AG GGATGATGAGGGAACA

              GGGGTTCAGGTAGGGGGATG GGT   GGCAGTGGC GA GGT CAGGT GG
              ATGAGGGAACACCAGACTTG CCG   TCGTCACCG TT TCG GTTCA CC
              GCTAGTTGGGCCACTGCTAG  AAGA      GG GA -   GA ----------
              AAGCC
GAM7558 18216 GAGCTGCTGGGTCCCTCATC     CT  TCCC A    --------- -  TTA
              TCCCTCATCTATTATAGATT GAGCTG GGG   TC TCTCCC      TCA TCTA
              GACTTACAGCAGGGAGAGAA CTCGAT CTC   AG AGAGGG      AGT AGAT
              TCTCTTTAGCTC          TT  TA-- -    ACGACATTC  T   ---
GAM7560 15043 CAGGGGGCCTGGCCACATGA       -----   CAT     TCCACAGAAAACC
              GGGAGTCCACAGAAAACCTT CAGGGGGCCT   GGCCA  GAGGGAG
              CCCTCCTGGCCCACCCAGGT GTCCCCTGGA   CCGGT  CTCCCTT
              CCCCTG                CCCAC   C--     -------------
GAM7562 13846 GCACAGCACAGGAACCTGGG    ----------     AACC---  --      - ACCCTCA
              CAGGCAGTCCACCCTCAGGG GCACA       GCACAGG     TGG GCAGGCAG TCC
              CCTGCCTGTGACCACTGCTA CGTGT       CGTGTCC     ACC TGTCCGTC GGG
              ACCTGTGCGGAACAAACATG    ACAAACAAGG     AATCGTC AG      C -------
              TGC
GAM7563 22073 CAGGAAGACGGGCACTGGGG       GGG - TG  - C   TG    AGCGC
              GGCTGGGTGGGGCTTAGCGC CAGGAAGAC   CA C  GGG GG TGGG  GGGCTT
              AGGTCCTCCTCATCGCCCTG GTTCTTCTG   GT G  CCC CT ACTC  CCTGGA
              GATGGTCTTCTTG          --- A GT  G -   CT    -----
GAM7564 21073 CTTCCGGCCGCCGGTTCATT     G  G  - TT   AG  T   AT  G   GCC
              AGCGTGAAGATGTTGGAGCG CTTCCG CC CCG G  CATT  CG GAAG  GTT GAGC
              CCGCTTGGACTGCTTTCGGA GGAGGT GG GGT T  GTAG  GC TTTC  CAG TTCG
              TGGGTGTGGGGGTGGAGG       G  -  G GG   -- -   GT  G   ---
GAM7565 683   GCTGGGACCTGCTGAGACTC     A-    G ACTC      GC  GA  AGAA  GAGA
              CCCCTGGAGCGGGAGCAGAA GCTGGG  CCTGCT AG   CCCCTGGA  GG  GC   TG
              TGGAGACAGCCACCATTCAG CGACCC  GGGCGG TC   GGGGACTT  CC  CG   AC
              GGGACTGGCGGGGGCCCAGC     GG    - A---      A-  AC  ----  ----
GAM7566 517   AAATTTTTGGGGGAGCGGGG    TT   G  C  GG    TTAA  AACT-   GCAC
              GAAGGAGTTAATGAAACTGT AAATT  TGGG GAG GGG  AAGGAG   TGA   GTATT
              ATTGCACAATGCTCTGATCA TTTAA  ACCC TTT CTC  TTTCTT   ACT    CGTAA
              ATCCTTCTTTTTCTCTTTTG    C-   G  T  TT    CCTA  AGTCT   ----
              CCCACAATTT
GAM7567 922   GAGCTCCGGGCCAGGGCTGC    C-   CA--    CCG  G  CCGT
              CGTCGCCGCCGTCGGGGAGT GAGCT  CGGGC   GGGCTG  TC CCG
              CAGCCCGCCAGCCCGCCAGC CTCGA  GCCCG   CCCGAC  AG GGC
              TC                CC    ACCG    TG- G  ----
GAM7568 1538  TGAAAGTTTAGTTTTATTAT     TTTAGTTTT      CACTTT----------  CAAA
              GGACACTTTATGCAAACATT TGAAAG       ATTATGGA             ATG
              TCAATACTTTTGGCTACTTC ATTTTC       TAATATCT             TAC
              TATAATCTTTTA          ---------      TCATCGGTTTTCATAACTT  ----
GAM7569 7206  GCGGGCCGCCCACGGCCACG  G     C     A  CC----    GAA   AC   CTCG
              CCGCAGTGGAAGAGCACCGG GC GGCCGCC ACGGCC CG     GCAGTG  GAGC  CGG
              CTCGCCGTCGTTCACGCTGT CG CTGGCGG TGCCGG GC     TGTCGC  CTTG  GCC
              AGAACACGCGGCCGTGGCGG  G     -    C  ACAAGA    A--   CT  ----
              TCGGC
GAM7571 7180  TGCCTGATGTATTTACTCGT   C  T   TT--      TC      GC   GGGA
```

GATCTTCATTCATGCTTGGG TGC TGA GTAT ACTCGTGA TTCATTCAT TTG
GACAGAGTGAGTGGGATTTA ACG ACT CATG TGAGTATT GGGTGAGTG GAC
TGAGTTACTGTACTCAGCA - - TCAT TA A- ----
GAM7572 1586 ATATCAGATTTGAATTACAG A TG A C G TA ACTT
CTGAGTTACCCACTTGGGAG ATATCAG TT A TTA AGCTGA T CCC
TCAGTTTTAGATTGGAGCTG TATGGTC AG T GAT TTGACT A GGG
GTAT G GT A T G -- ----
GAM7573 274 GTGGAAGAAGATGATGAAAT A T AAAT--- C T ----- TGGACCT
AAATCGAGATTGGTTGGATT GTGGAAG AGA GATG AAAT GAGA TG GTTGGAT
GGACCTATTCAGCAGCTACA CATCTTC TCT CTAT TTTG CTTT AC CGACTTA
TTTTCTGTTTTTCTCAGTAT A C GACTCTT T T ATCGA -------
CCTCTACTTCTAC
GAM7574 7728 CAGGCCAGGCAGGGGCCACG - - - C- GG T ACTAC A TTGCT
TGTGGGCCAGTCAGCCACTA CAGGCC AGGCA GGGG CCA GTGT GCCAG CAGCC AAG TTT

CAAGATTTTTGCTAAGCTTT GTCCGG TCCGT CTCC GGT TACG CGGTT GTCGG TTC GAA

GGGCTGTTGGCAGCATCTTG G A A TC A- - GT--- - -----
GACCTCATGCCTGGGCCTG
GAM7575 15668 GGCCAGTGAGGTGCCCGTTG A --- TG - T T - G GC ATCAG
GTGGGTGTGAGAGTTTGTTG GGCC GTGAG G CC CGTTGG GGG GTGAGA GTTT TT CAG

CCAGATCAGCTGAGGAAGCG TTGG CACTC C GG GCGACT CCC CATTCT CGAA GA GTC

TCTTACCCCTCAGCGCGGTG - TAG GT C - - G G -- -----
CGATCTCACGGTT
GAM7576 720 GTGGCCCATGACAATCTTTT C TGACAAT AA T AAG AAGA
TCCAATGTGGCCTGGGGAAG GTGGC CA CTTTTTCC TGTGGCC GGGG CCAA
CCAAAAGATTGGACACCCCT TATCG GT GAAGAAGG ACATTGG CCCC GGTT
GGTTACAGGAAGAAGTTCCT T TCCTT-- -- T ACA ----
TGTGCTAT
GAM7577 6107 TATGGGGCTGGTCTCATCAT G CT C AAC CCAGCTTTTAC
ATCTAAAGAACTGCCCAGCT TATG GGCTGGT CATCATAT TAAAG TGC
TTTACGCATTTTGAATGTGG ATAC TCGACCA GTGGTGTA GTTTT ACG
TGGAACCAGCTGCATA G AG A --- ----------
GAM7578 8376 AGCCTTTTAACAGCAGAAAA A--- AA---- A GGTA AAATT
TTATCCGGTAGCAAATTGTC AGCCTTTT ACAGCAG AATT TCC GC
TTAGGGAAATTACTACACTG TCGGGAAA TGTTGTC TTAA GGG TG
TTGTAACAAAAGGGCT ACAA ACATCA A ATTC -----
GAM7579 8608 CTTCCCAGGCCCGTGGCCAA AGGCCC A-- A-- C AGCTGCCTAG
CCCAGCAGTCCTTCCCTCAG CTTCCC GTGGCC ACCCAGC GTCCTT CCTC
CTGCCTAGGAGGAAGGGACC GGAGGG CACCGG TGGGTCG CAGGGA GGAG
CAGCTGGGTCTGGGCCACAA AA---- GTC ACC A ----------
GGGAGG
GAM7580 1970 GCCGGCGCCCGGGCTGTGTT C C C TT---- AAC
CCCTGTGGAACCCACGGGGC GCCGG GCC GGG TGTG CCCTGTGG
CTTCTCGTACCCTGGCCCGG CGGCC CGG CCC ATGC GGGGCACC
C - T - TCTTCC ---
GAM7582 18451 CTACCTTGTTTTTGGTTGGC T - G-- -- G - C ACTTTCACCTTTA
TTTTGTTGTTGTTCCTGCTA CTACCT GT TTTTGGTT GCT TTT TTG TTGTTC TGCT

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AGTCAGGAGACAAGCATAAA T C ATA AC G T - ----------
CCAGAGCACTGGGTAG
GAM7583 2522 TCGAGATGGCATCCTCCTTG - A C-- CACA- T TCACG ACC
CCACAGGTCTTCACGTGCAC TCGA GATGGC TCCT CTTGC GG CT TGC
CGCAACTCAGCCCATTCAGC AGTT CTACCG AGGA GGACG CC GA ACG
AGGAGTAGGAGCCATCTTTG T - TGA ACTTA C CTCA- ---
A
GAM7584 17870 ACGGAGGGTCAGTGGAAATG GA CA -- GG --- - GTGACAA
GGACCTTGGTTGTGACAAAG ACG GGGT GTGGA AAT GAC CTT GGTT
CCTGAGAATGTCATGTTGAT TGC CCCA TACCT TTG CTG GAG CCGA
CCATCCACCCCTCGT TC CC AG TA TAA T -------
GAM7585 1525 GCACCCGCCTCTTCCAGGTC C CTTCC CC- GC G AGCCAC
CGCGCCAACAGCGCTGGAGC GCACC GCCT AGGT GC CAACAGC CTGG
CACCCGGGCTGTTGAGGTAT CGTGG CGGA TCCG TG GTTGTCG GGCC
TGCCTAAGGCTGGTGC T A---- TTA GA - ------
GAM7586 19010 CGCCAGTAATCCCAGCGTTT GTAAT - -- TG AAG AT A CAGATTT
TGAGAAGCCATGGCACGCAG CGCCA CCCAG C GTTT AG CC GGC CG
ATTTTGAGCCCAGGAGTTTG GCGGT GGGTC G CAGA TT GG CCG GT
AGACCAGTCTGGGCAACATG ACAAC T AC GT GA- AC A -------
GCG
GAM7587 12365 GGACCCGGGGGACTGGGGAG G- ----- G CT C TAGTCCT
GCTCTGGCCGGCGTAGTCCT GGACCC GGGGA CTG GGAGGCT GGC GGCG
TGCCGCCAGCCTTCACAGCG TCTGGG TCTCT GAC CTTCCGA CCG CCGT
GGTTCTCTGAGGGTCT AG TGGGC A -- - -------
GAM7588 16189 CTTGTATATTTTGTATTACC A TTTT C-- TC-- TAAATAGTT
TCTTTTTTTCAAGTGATTTA CTTGT TA GTATTAC TCTTTTTT AAGTGATT
AATAGTTAATCATTTAACCA GAACA AT CGTGATG AGAAGAAA TTTACTAA
AAGAAGATGTGTAGTGCCTT - TC-- TGT CCAA ---------
AACAAG
GAM7589 7740 GAACTCCATCTTGGTCATGT A TG TCA CAAAATTT A TCCCT
GGCCAAAATTTGGAATCTCC GA CTCCATCT G TGTGGC GGA TC
CTGAGTCCTCTCTCTCGTCA CT GAGGTAGA C ATACTG CCT AG
TAACCCTGAGATGGAGATC A GT CCA CTCTCTCT G -----
GAM7590 21968 GCGCGCTGCTGGCTCTGTGC C T GCGGGG C G T ------ GCCGAA
GGGGCACTGGCTGCCTGCGG GCG GCTGCTGGC CTGT CA TG CTGCC GCGGGT
GGCTCCTGGGC
GTGGCTCCTGGGCGCCGAAG CGT CGGCGGCCG GGCG GT AC GGCGG CGCCCG
CCGAGGACCCG

CCCAGGAGCCCGGGGCGCCC - C GA---- - G - CGGGGC ------
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CCGGCGGCTGC

GAM7593 6571 TTTCAATTTGACAATGTCCG T TG AATG-- C- CATA GGT
GCCCTTGAAATTTCATACCC TTTCAA T AC TCCGGCC TTGAAATTT CCC
GGTGGGAAAATTTTAAATGG AGAGTT G TG GGGCCGG AATTTTAAA GGG
CCGGGACCTTGGTTGGTTTG T GT GTTCCA TA A--- ---
AGA

GAM7594 2652 GAGGAGCGGTAGCTTTTGGG - T C AGCA ACCAG
AAGCAGGACGTTCTCACCAG GAGG AGCGG AG TTTTGGGA GGACGTTCTC
GAGAGCGTCCTCTCGAGATT CTCC TCGTC TT AGAGCTCT CCTGCGAGAG
TCTGCTCCCTC C - T ---- -----
GAM7595 21260 AAGAGAAAATGGTACAGCAG A - C TTACAA T GACATGGAAGA
TTACAAGAGGATGTGGACAT AAGAGAAA TGGT ACAG AG GAGGA GTG
GGAAGATGCTCCTTAAAAAT TTTTCTTT ACCA TGTC TC TTCCT CGT
CTCTGTAACCATTTCTTTT - A - TAAAAA - ----------
GAM7596 11875 TGACTCCCATGAAGACGTAC A - GAA-- -- - CGGACG- AA GAAA
CGTGCGGACGAGTGGAAGGA TG CTCC CAT GACGTA CC GTG AGTGG GGA
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ACACAGGAATATGTTAAGAA - A AAGAA AA A AGAAACA GG ----
GTGAGGGGCA
GAM7597 1558 GACAGCAGAGATGGTGAAGG C ------ TG C---- - GGGAG
GCCTGTGCGGGAGGCGACAG GACAG AGA GATGG AAGGG CTGT GC
TGAAACCCTTTGCCATCGAC CTGTC TTT CTACC TTCCC GACA CG
ATATTTCCTGTC C ATACAG GT AAAGT G -----
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CAACAGTTGTGCTTGGGGGC GG TTCGT A AC AA A- -------
TTTTT
GAM7600 7364 TTGAACTCATTCTGGCTGCA AC TC T AA ACTTA-- AGGTTTGC
AACTACTTAGACATCAAAGG TTGA TCAT TGGC GCA CT GACATCAA
TTTGCTTGATGTTACATGCA AACT AGTA ACCG TGT GA TTGTAGTT
AGACTGTTGCCAATATGATC -- TA T CA ACGTACA --------
AA
GAM7602 24 CGCTGCTATTAGAATGCATT ATTAGAAT T- - GGAG TGAT
GTGAAACGACTGGAGTATGA CGCTGCT GCATTG GAA ACGACT TA
TTAAAAGTTGTGTTCCCCAA GTGATGA CGTAAC CTT TGTTGA AT
TGCTTGGAGTAGTG GGTT---- CC G AA-- ----
GAM7603 14149 GACAAAGGATAATGGGGACG GATAATG GA T GA GA C - ATGGTGA
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ATGGTGACTGACATCCAGAC CTGTTTC CC GCA G GTC GAC TA AGTC
TGCTGTACGGACCAATCCAC ACCTAA- AG T TC A- C C -------
TTTGTC
GAM7604 367 TGTCCCTTGCAAGGGTGACA --- - CAG C TCTGT
GGCCGCTGCCGGCTCTGTGC TGTCCCT TGCAAGGG TGA GCCG TGCCGGC
TGGTACGGCTCATCCCTTGC ACGGGGA ACGTTCCC ACT CGGC ATGGTCG
ACCCAGGGGCA CCC T --- - -----
GAM7605 19758 TGCATCTTCATCTTGGTCAC AT CT CACCACG GA- ATCCGA
CACGCCAGAGAGGATCCGAC TGC CTTCAT TGGT CCA GAGG
CTCGAATGGACACATTACCA ACG GAAGTG ACCA GGT CTCC
GTGAAGGGGCA GG -- TTACACA AAG ------
GAM7606 11966 CTGGGGACGGGGCCTTCCGC GGGC - G ACCTCTC
GAGTCTCCCACCTCTCGGGG CTGGGGACG CTTCC GC AGTCTCCC
GACTGCAGGGAGAGGCGTCT GACCTCTGC GAGGG CG TCAGGGGG
CCAG GGA- A - -------
GAM7607 12636 TCAATGCAGAAAGACACACC CAGAA ACCAC A- TT CAAG TTGAG
ACAAGTAAGTGCTTTTAATG TCAATG AGACAC AAGT AGTGCTT AATGT TTTTTT

TCAAGTTTTTTTTGAGGGGG AGTTAC TTTGTG TTCA TTACGAA TTACA AAGGGG
AAACATTTAAGCATTGGACT A---- AACAT GG T- ---- -----
TTACAAGTGTTTACATTGA
GAM7608 16269 GCGAGCTACAGCTTCACCAC A A ACCACG---- A GAAA
CACGGCGAGCGGGAAATCGT GCG GCTACAGCTTC CC GCG GCGG
GCGCGACATCACAGGGGAAG TGC TGGTGTCGAAG GG CGC TGCT
CTGTGGTACGT A - GACACTACAG G ----
GAM7609 3101 GAGCTCAGTGCCTTACCTTT - - - - TT AG TCCCCG
GCAGGGCCAGGGTCCCCGTT GAGCT CA GTG CCTTA CC TGC GGCCAGGG
CTGGCCAGTGTTGGCTAGGG CTTGA GT CAC GGGAT GG GTG CCGGTCTT
ACACTTGCAGTTC C T A C TT A- ------
GAM7610 16634 GTCACCCGGGAGCGGAGGTT AGC --- TG GCAGGA
GCGTGAGCAGGATTGTGCGA GTCACCCGGG GGAG GTTGCG A
CTGACTCCAGCCTGGGTGAC CAGTGGGTCC CCTC CAGCGT T
GA- AGT GT ------
GAM7612 4984 TACCAGAATCTTTTATTTGC AA-- TATTT- AA AA-- A AAA- GCCAACATA
AAAGAGAAACTAGGGGAAAA TACCAG TCTTT GC AGAGA CT GGGGA TGTA
TGTAGCCAACATATACAAAG GTGGTC AGAAA CG TCTCT GA CTTCT ACAT
ATCTTCAGAAACTCTCTCGC GACC TTTCTC C- CAAA - AGAA ---------
CTCTTTAAAGACCAGCTGGT
G
GAM7613 2466 TCATGTGTTTTGCACTGACT T - TT CTA AC-- - CACTCTTATTTAAT
AGTACTGAATAATACAACCA TCA G TGTT GCACTGA GT TGAATAATAC AAC
CTCTTATTTAATGTTAGTAT AGT C ACAA TGTGACT CA ATTTATTATG TTG
TATTTATTTGACAACTCAGT T G TC CAA GTTT A ----------
GTCTAACAGCTTGA
GAM7614 14779 GAGCGCCCTGGGTCTTGTTT C GGG TG GG C T- GTAA
TGGTGTTTCGCTTTTCTGTA GAG GCCCT TCT TTTT TGTTT GCTT TCT
AGGATTAAGCAGATAGGGAG CTC CGGGG AGG AGAG ATAGA CGAA AGG
AAGGGAAAAGGGGCCTC - AAA GA GG - TT ----
GAM7616 9481 AATGAAATGTATGGTCTTTT TCTTTTG TT - TTCCCTT
GTGATTGGCATCTTTCCCTT AATGAAATGTATGG TGA GGCAT CT
AGCATGTTTTCAGTTTCATC TTACTTTATGTACC ACT TTGTA GA
CATGTATTTCATT TACTTTG T- C -------
GAM7618 15890 GCAGGCCCCGCTGGTGCACT A - G --- CT- A CCCT CCGG
GAAGAGCCACCCTGTGGCAT GC GGCC CC CTGGT GCA GAAG GCCA GTGGCATCGATAAACA

CGATAAACACCGGTGTTTAT CG TCGG GG GACCA CGT CTTC CGGT CACCGTAGCTATTTGT

CGATGCCACCCCTGGCCTTC G T G GCC TTT - CCC- ----
TTTTGCCCGACCAGGGGTGG
CTGGC
GAM7619 18439 GGTCTTGTACTACTTCCAAG T CT AAGA GCTAAT T A-- CTTTCCC
ATTGTGCTAATTAGTGACAA GGTCTTG ACTA TCC TTGT TAG GAC AACATTGGG
ACATTGGGCTTTCCCTTCAA CCGGGAC TGAT AGG AACA ATT CTG TTGTAACTT
TGTTATGGTCTTTATGAAAA T -- ACA- AAAGT- T GTA -------
CAAACAGGATAGTTCAGGGC
C
GAM7620 10560 TTTTTCATTTCCTTACCTCC AT A AAGTAACA
TTGCCATAATCTTAACAAGT TTTTTCATTTCCTTACCTCCTTGCCATA CTT AC

AACAGTAAAGTATATGGCAA AAAAAGTAAAGGAATGGAGGAACGGTAT GAA TG
GGAGGTAAGGAAATGAAAAA AT A --------
GAM7621 1885 CAGCACCGAGGCGCTGTGCC CGAG C C - A AACT
TCGCCATCTCTAGGAACTCC CAGCAC GCGCTGTG CT GCCATCT CT GG
GAGCAGATGGCCAGCCACAG GTCGTG CGCGACAC GA CGGTAGA GA CC
CGCAGTGCTG A--- C C C G ----
GAM7622 9388 TATTGTAGCATTGCTGTCTG T - C A A CCCTA
CAAGGGAGCCCCTAGCCCCT TATTG AGCA TTG TGTCTGC AGGG GC
GGCAGACATAGCTGCTTCAG GTGAC TCGT GAT ACAGACG TCCC CG
TG T C - G - -----
GAM7623 7666 GCACTAGATTGTAAAGACTG GTA TG ---- CTCTTTCTTAAT
GGGTGGACCTCTTTCTTAAT GCACTAGATT AAGAC GGG TGGAC
GTCCAATGTCCTTTGTCTTA CGTGGTTTAG TTCTG TCC ACCTG
AGATTTGGTGC AA- TT TGTA ----------
GAM7624 14647 GCTAGGCTGAGACCTATGGT C ACCTAT T T G TT CCTGAA
GGTGGCAGGGGTGGCTGTTG GCTAGG TGAG GG GG GGCAGGGGTG CTG GAG
AGCCTGAACTTCCAGTACTC CGGTCC ATTT CC TC CCGTCCTCAT GAC TTC
CTGCCCTTCCTTCTGTTTAC - GTCTT- T - - C- ------
CTGGC
GAM7625 16550 AGCCAGCACCTGATGAAACT CA GAAA C TG GGCC
TCCTTCAGTGAGGCCTTGCT AGCCAG CCTGAT CTTC TTCAG A
GAAGAGGAATCAGGACCTGG TCGGTC GGACTA GGAG AAGTC T
CT CA A--- - GT ----
GAM7626 17853 AGGTCACCAGTGACAGGGAA T AG A AA ------ AAATC
AAAGTCCTGAAATCCAGGAA AGG CACC TG CAGGGA AAG TCCTG
AATCACTTAGTCCCTGCGGG TCC GTGG GC GTCCCT TTC AGGAC
TGCCT - -- - GA ACTAAA -----
GAM7627 21538 GTCGTCCCCACAGCTCCGGA T ACAGC CTTG CGTT
AGTGCTTGGCGCCGTTGCGT GTCG CCCC TCCGGAAGTG GCGC
CACTTCCGGATCGGGGTCGA CAGC GGGG AGGCCTTCAC TGCG
C T CT--- ---- ----
GAM7628 684 GGGCTTCCCCTCGGCCTCCA TCC-- CTCC G - T CAGG
GGTGAGGCTGCCCATTGCAG GGGCT CCTCGGC AGGT AGGC TGCCCA TG
GCACTGGGCAGGCCTGACCT CCCGG GGGGTCG TCCA TCCG ACGGGT AC
TGCTGGGGCTCATGGCCC TACTC T--- G G C ----
GAM7629 1594 TTTGTGCCAGATATTGGAGA G TAT GA AA GTGAGGCA
TAAAAAGGTCAGTGAGGCAT TTT TGCCAGA TG GAT AAAGGTCA
GACCTTTGGGTTCACATTCT GAG GTGGTCT AC TTG TTTCCAGT
GGTGGGAG G T-- AC GG --------
GAM7630 883 CTCCACTTCCCCATCCCCCT CCCATCC A CCCCC-- CT CTTAGT
AAGCCCCCACTGCCTTCCTT CTCCACTTC CCCT AG ACTGC TC
AGTGATAGCAGTCATAAATC GAGGTGAGG GGGA TC TGACG AG
TCAGGGCACCGTGGAGTGGA TGCCAC- C TAAATAC AT ------
G
GAM7631 14776 CCCAGGAACTTTTGGGGAAG AACTTT GAA G C - AG CACT AGGGT
GGGCCGGCGGGGTCAGGAAT CCCAGG TGGG GGG CCGG GGGGT C GAAT TTGG
CACTTTGGAGGGTCCGGCAA GGGTTC ACCC CCC GGCC CCCCA G TTTG GGCC
GTTTTGGAACCCCCCGGGCC ------ GGA G - A GT AAC- -----
CAGGCCCACTTGGG
GAM7633 22318 GGCTACGAACGAGGCTGCGG AC TG --- T----- G G ATATG

ACCTATCGCTTGGGTTATAT GGCTACGA GAGGC C GGACC ATC CTTGG TT
GAAGTCAAGGGTTAACACGG TTGGTGCT CTCCG G CTTGG TGG GAACT AA
TTCTAGGTGGCCTCACTCGT CA GT GAT CACAAT - G -----
GGTT
GAM7634 277 GCTTTTGGAATACCTATCAG - ACC ATA - ATGAG
AGTATATACACATGAGGTAG GCTTTTGGA AT TATCAGAGT TAC AC
TAACACTCTGGTACAGATCT TGAAGACCT TA ATGGTCTCA ATG TG
CCAGAAGT C GAC CA- A -----
GAM7635 18457 CTTTGTTATAATTGATAGGA TAA A CA G GA AA- CCAC
TACATCTTGGACATGGAATT CTTTGTTA TTGAT GGATA TCTTG ACATG ATTGTT AG
GTTAAAGCCACCTCTGAGCA GAGACGGT GATTA CTTGT AGGAC TGTAT TGACGA TC
GTGTATGTCAGGACTTGTTC TG- - TC - G- GTC ----
ATTAGGTTGGCAGAG
GAM7637 17545 TCACCACCACAGAGAGCCAG A CAGAG GCA ------ A AGTC
CAAGGCCTTCAGGAAGTCTC TC CCACCA AGCCA AGG CCTTC GGA
CGGAGGTGTCACCCTCAATG AG GGTGGT TCGGT TCC GGAGG CCT
GCTTGGTGGAGA A ----- AAC CACTGT - ----
GAM7638 14246 TGCTGAGGACTCCCAAGCGT CTCCCA CGT CTC TTATGTT
ACTGCTCATCATCGTTATGT TGCTGAGGA AG ACTG ATCATCG
TTGGTGATCACAGTTACTTT ACGACTCTT TC TGAC TAGTGGT
CTCAGCA ------ AT- AC- -------
GAM7639 18445 GCAGGGGCTCGAACCAGCTC G AA - CTT -- TG AACGT C AGG
TTGAGGCGGGCCTGGAACGT GCAGG GCTCG CCA GCT GAG GCGGGCC G CGG CTGCG

CGGCCTGCGAGGCGTAGTCT CGTCC CGAGC GGT CGA CTC CGTCCGG C GTC GATGC

GCTGGGCCTGCTCCTCCAGC A -- T C-- CT GT ----- T ---
TTGGCGAGCACCTGC
GAM7640 6204 GGCCGACCCCGAGGCGCGGG AC- GA G----- - A G GAG CAGGCACA
CAGAGGCTGGTGAGCAGCCA GGCCG CCC GGC CGG GCAG GGCT GT CAGC
GGCACAGCTGAGCGGGCCCT CCGGT GGG CCG GCC CGTC CCGG CG GTCG
GCTCCGAGATCAGCCCAGGG GCC AC ACTAGA T - G A-- --------
CCGTGGCC
GAM7641 9948 CTTGTACCCTGAAATCTTCT AC AAATCT CCC ACTGCC---------- AACT
GCTGTCCCACCTTGACTGCC CTTGT CCTG TCTGCTGT ACCTTG CCA
CCAAACTTGGACTGTCTCAG GGACA GGAC GGATGATA TGGGAC GGT
CCTTGCCAGGGTTATAGTAG CT ------ T-- CGTTCCGACTCTGTCA ----
GCAGGTCACAGG
GAM7642 22680 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT G TGG
ACAATGTTGGTGTTGTCGTT GTCCTT ACT CCT GTTGGT TTGTCGTTT
TTGGAAATGATAAACTAATT CAGGAG TGA GGA TAATCA AATAGTAAA
AAGGAAGGAGATATAGTGAA AAG TATAGA AGGAAT - ---
GAGGAC
GAM7643 20517 CTTATTTTTTCACAAGCCTG TTTC C- TT ---------- TTGTAAC
GTTATTTGAGGATGTGCTTG CTTATTT ACAAGC TGGTTA TGAGGA TGTGC
TAACGTATGCTTTCTCTTCT GGATAAG TGTTCG ACCGAT ACTCTT GTATG
ATTTCTCATAGCCAATGCTT TCCA TA -- TATCTTCTCTTTC -------
GTACCTGAATAGG
GAM7644 13509 GTGACTTCATCTTTGTCCTT GA CA G AAATTAACC TTGA
AAATTAACCTTTGCTCTTGA GT CTT TCTTT TCCTT TTTGCTC

GAGCAGAAGAGGGAAAGACA CA GGG AGAAA GGGAG AGACGAG
GGGGAAC AG AC - A-------- ----
GAM7646 10976 GTATGGGGGGTGTTCTGCTT T T G CCATG-- TTTT
GGCACCATGTCTGGCTTTTT GTA GGGGGGTGTTC GCTT GCA TCTGGCT
GGCCAGAAGTCCTTTGCAGA CGT TCCCCTATAAG CGAG CGT AGACCGG
GCTGAATATCCCCTTGC - T A TTCCTGA ----
GAM7647 16696 GCACCCCGGAGCGGATGGCC A CC -------- G CA - C GCCCC
GAGGCTGGCTTCATCCACTG GC CC GGAGCGGA TGGCCGAG CTGGCTT TC CA T
CCCCACTGAGAACGAGCCAG CG GG CTTCGTCT ACCGGTTC GACCGAG AG GT A
ACTTGGCCAGTGTTTCTTCT A AA TCTTTGTG A CA A C -----
GCTTCAAGGAGC
GAM7648 11786 TTGTGTACCGCCTGCTGCGC TG C CT-- T - T CCA- TACCTGGTGAATTT
TCGCCCATGTGCGAGTACCT T TGTA CGC GC GC GC CGC TGTGCGAG
GGTGAATTTCTTGCACAAGT A ACAT GCG CG CG CG GCG ACACGTTC
TGCGGCAGCTGCCTGAGCGA GT A AGTC T A - TTGA ----------
TACATGA
GAM7650 4596 TCCTGCTACAACACCTCCCT ACAACAC CCT CA TC A- ACT
TTGCATTTCGTTGAGCATAC TCCTGCT CTC TTG TT GTTG GCAT
TGTGCAACAACTCGAGACAA GGGACGA GAG AAC AG CAAC CGTG
CAGAGACCAAAGAGCAGGG GAAACCA AC- AG CT AA ---
GAM7651 7072 CCCTAAATACCCCAGCGGGC TAAA A CTCCGG- ACC
TCCGGGGGGTTACCAACCCC CCC TACCCC GCGGG GGGGTT
AGTAAAACCCGCGGGGTGAA GGG GTGGGG CGCCC CCCCAA
CCGGG CCAA - AAAATGA ---
GAM7652 2517 ACTCCTCGCTTACGAGCTCC A AG- - CAAAGGGCATCAAAAGAC
ACAGCACAAAGGGCATCAAA ACTCCTCGCTT CG CTC CACAGCA
AGACTGTTGTGAGAGGAACG TGGGGAGCGAA GC GAG GTGTTGT
CAAGCGAGGGGT C AAG A ----------
GAM7653 3958 ACGTGGCCTGGGGGGAGCTG T- - G A T A TGGT
TGACTACCTGGTGGTGGACA ACG GG CCTG GGGG GC GTG CTACC
CTGCCCCCGTGGGACCTCCG TGC CC GGGT CCCC CG CAC GGTGG
T CT A G - T A ----
GAM7655 9556 CCCATCTCTGTGACTTCCTG - CTT GGAGAC T AGATG
GAGACTCACTTCCTAGATGA CCCATCT CTGTGA CCT TCAC TCCT
GGACGTGAAGGCTATCACAG GGGTAGA GACACT GGA AGTG AGGA
AAGATGGG A ATC ------ C -----
GAM7656 5323 ATCTTCTGGTTCAAAGAACA AAAGA A AGAT ATAATA
CATCAGATGCAAGGATAATA ATCTTCTGGTTC AC CATC GCAAGG
TCTTGTGGTGGTAGAGCCAG TAGAAGACCGAG TG GTGG TGTTCT
AAGAT A---- - ---- ------
GAM7660 4216 TTTAAAAAAATACCACTGTG AA- ACCA AGAA CGC ATACATCA
AGAATAAAGCGCTAGTAAGA TTTA AAAAT CTGTG TAAAG TAGTAAG
TACATCACTTACTGATTTTA AAAT TTTTA GACAT ATTTT GTCATTC
AAAATACAGAAAGATTTTGA GAG GAAA AAAA A-- --------
GTAAA
GAM7661 4594 ACTTATGGTCATCTCTCCCA ATG AT - ACTGAAA AG CTTTTCAA
CTGAAACCAAGGTCTTTTCA ACTT GTC CTC TCCC CCA GT
AATGTGGCTAAATGGGGATG TGGG CAG GAG AGGG GGT TA
AGGAGACACGGGT CA- AG T GTAAATC G- --------
GAM7662 19075 CTTCAGGCAGTAAACCAACA ---- AAA CA - AAAGGAGAAAG ACCA

GCTCACAAAGGAGAAAGAGC CTTCAG GCAGT CCAA GCT CAC AGCACT
ACTACCAGGTGTTAGAGTGA GGAGTT TGTCA GGTT TGA GTG TTGTGG
AGTAATTGGGAAACTGTTCA TACT AAG AA A AGA-------- ----
TTTGAGG
GAM7665 7522 TGTGAAGCAACTGAAGAAAA ACT AA- GT AA - AGAT
TGTTTGAAGCAACAAGATTG TGTGAAGCA GAAG AAT TTG GCAA CA
CTTGCAACAATTGTTATGCT ATACTTTGT TTTC TTG AAC CGTT GT
TTTGTGTTTCATA GT- GTA TT AA C ----
GAM7666 9379 TTAAGACTCCTGACCCCCAA - C-- ---- AA - CAGCCCC
GTGGCATGCAGCCCCCATGC TTAAGA CT CTGACC CCC GTGG CATG
CCACCGGGACCTGGTCAGCA AGTTCT GA GACTGG GGG CACC GTAC
CAGATCTTGA A CAC TCCA C- C -------
GAM7667 6489 CCACACACACTTTTGCCAGT C- A CTTT- -- - C - AACCATAATA
TCCCCCTGGTGAACCATAAT CCA AC CA TGCCAGT TC CCC TG GTG
ACACACGTGGGAGACAGCTG GGT TG GT ACGGTCG AG GGG GC CAC
GCATCATCTGAGTCTTGG TC A CTACT AC A T A ----------
GAM7668 15889 TAGAGGCCAGCCTTTGTCTT A- CTTTG- T ATGACTG
GTTCAGATGACTGTTGCACA TAG GGCCAGC TCTTGT CAG
GGAAAGACTGCTGGCTGACT ATC TCGGTCG AGGACA GTT
A AG TCAGAA C -------
GAM7669 21790 GAGGTCCAGTTTCATTCTTC TCC TTT -- TGCAT - CCAATTTTC
TGCATGTGGGTTAGCCAATT GAGG AG CATTCT TC GTGG GTTAG
TTCCTAACACCATTTATTGA CTCC TC GTGGGA AG TACC CAATC
TTAGGGTGTCCTTTCCTC TT- CT- TT TTATT A ---------
GAM7670 16407 GGCAAATGTCCAGGCACCTG AAATG CA G AAAA A CAGTCC
CCTGGCCCTAAAAAGAGTCA GGC TC GGCACCTGCCT GCCCT AG GTCA
CAGTCCTGACCCTCGTGGGG CCG AG CTGTGGACGGG CGGGG TC CAGT
GCAGGGCAGGTGTCCCGAGG G---- CC A GTGC C ------
CC
GAM7671 3636 GTGTAGCAGGCTTCCTGCAG TA GC ACT ACTGCACAACAAATTTCTC
ACTGTATAGACTGCACAACA GTG GCAGGCTTCCT AG GTATAG
AATTTCTCCTGTACCTATGG CAC TGTCCGAAGGG TC CATGTC
GAAGCCTGTCAC -- TA --- ----------
GAM7673 15426 GTGGGAGCGCCGGTCTCTAT CCGGTCTCTATAT CT - C- CTGT
ATGGCGGCGGCTCTGTCGGG GTGGGAGCG GGCGGCGGCT GT CGGG CTGG
CCTGGCTGTCCGGCTCTCGC TATCCTCGC CCGCCGCCGG CG GCTC GGCC
GCTCGGCCGCCGCCCGCTCC ---------- CT C TC ----
TAT
GAM7675 12509 GAGCACGGGCTCATGTGACA C --- T CCAG C CA T-- CCCTCCC
CCAGCCCCGACACCGTCTCG GAG ACGGGCT CATG GACA CC CGA CCG CTCG
CCCTCCCTGAGCCCCGGCTT CTC TGTCCGA GTAC CTGT GG GCT GGC GAGT
CGAGGACCTGTCCCATGTGC - CGT C CCA- A TC CCC -------
AGCCTGTCTC
GAM7676 4664 CAGATCCCGGAATGCCTGAA C T TGAACCAA TTGAG ACTTTG
CCAACTGTTTTGAGCCTACT CAGATCC GGAA GCC CTGTT CCT
TTGGGGATAACAGGATTATT GTTTAGG TCTT TGG GACAA GGG
TGGTCTTCTGGATTTG - C TTTATTAG TA--- ------
GAM7677 21667 CATTGGAGAAAACAGGAGGA GG A- A- G- A AAC ATCTTGCA
GATGTTAAAGTAACCCATCT CATT AGA AACAGGAGG GAT TTAA GT CC
TGCAGGACGACATTGAAGAT GTAG TCT TTGTCTTCT TTA AGTT CA GG

TGGTCTTCTGTTGATCTAAG AA AG GG GA A GCA --------
ATG
GAM7678 9905 TTAATACCAATAGAAGGGCA - A GAAGGGCAAT ATG- G ACTTAAA
ATGCTTTTAGATTAAAATGA TTAAT ACC ATA GCTTTTAGATTAAA AAG TG
AGGTGACTTAAACAGCTTAA AATTA TGG TGT TGAAAATTTGATTT TTC AC
AGTTTAGTTTAAAAGTTGTA G A ---------- GAAA G -------
GGTGATTAA
GAM7679 7343 CTGGTGCATCAGTTGTTCCC - --- T ----- A - C TTGAT
GGCGCAGGCCCCCGTTGATC CTGGT GCA TCAGT GTTCC CGGCGC GGC CC CG
GTGGCGCTGGTGCTGCTGAC GACCG CGT GGTCG CGAGG GTCGTG TCG GG GC
GGAGCTGCTGGTTCTGCTGC T CTT T CAGTC G C T -----
CAG
GAM7680 9775 GATTAATTGGATTTGAGGAT GA TGA T A A TG TTTTTAGAT
AATTATTATTATTTGGTTTT GATTAATTG TT GGA AATT TTATT TT G
TAGATTTGAAAAGTAGAATT TTAGTTAAC AG CCT TTAA GATGA AA T
TCCATTGAGACAATTGATT AG TTA - - A GT ---------
GAM7681 19216 AGTTGAGGGTATTAAGCGCA T TT C CT C- AC AGGAC GACACCGCA
TACTGTGTGACTCCACCGGG AGT GAGGGTA AAG GCATA GTGTGA TCC CGGGAA TCTGG

AAAGGACTCTGGGACACCGC TCG TTTCCGT TTC CGTGT CACACT AGG GCCTTT GGGCC

ACCGGGTTTCCGCGGGACTT - T- - AC TC GC ----- ---------
CACACCATGTGCCTTTTGCC
TTTGCT
GAM7682 2544 AGACTCTGTTATGATTTTAT T TT A TC------ TCCAATC
TTCTTCAATTGTTCCAATCA AGAC CTG ATG TTTTATTTCT AATTGT
CAGTTTCTAATACAGAAATA TCTG GAC TAT AAAATAAAGA TTGACA
AAACTATTCAGCGTCT C T- C CATAATCT -------
GAM7684 4595 TCACTCTGTTGCCCAGGCTG CT TT C-- -- - - CTATCT
GAGTGCAGTGGCACTATCTT TCACT G GCCCAGG TGGAG TGCAGTG G CA
GACTCACTGCAACCTCCACC AGTGA C TGGGTCC ACCTC ACGTCAC C GT
TCCTGGGTTCCAGTGA -- CT TCC CA T A ------
GAM7685 12242 TTCAGGGGCAGCGAAGAAGA GG- GAAG GATA T T GGTCAA
TGATACGTCATGCTTCCCGG TTCAGG CAGC AAGAT CGTCA GCT CCC
TCAAGGGCAGCTGGCGCAAT AAGTCT GTCG TTCTA GCGGT CGA GGG
CTTGCAGCTGAGATCTGAA AGA ACG- AC-- - C ------
GAM7686 1803 CACACCTCAGCCTTCCAAGT C AGCCTTCC GACTA- ATATCATC
AGTTGGGACTACAGGCATAT CACA CTC AAGTAGTTGG CAGGCAT
ATCATCATGCCTGGCTAAAT GTGT GAG TTTATCAATT GTCCGTA
TAACTATTTTATTTTAAGAG A AATTTTAT AAATCG --------
ATGTG
GAM7687 1225 GTTGCTGCTTCTTGGTTGGA TG CTT - AGAT G C TGAAA
AGATTCTGGACAGCCTGAAA GT CTGCTT GGT TGGA TCT GA AGCC
GGCTTTGAGATACTCCACAC CG GACGAG TCA ACCT AGA TT TCGG
TGAGCAGTGGC GT --- C CAT- G - -----
GAM7688 1717 TCAGAAATAGAATTGAGCCA GA GAATTGA TTTA- CAA---------- TTCA
GTTTTTATCAGCAGCAATAT TCA AATA GCCAGTT TCAGCAG TATT
TTTCAGGTAATAGGGGTTCC AGT TTGT TGGTCAA GGTTGTC ATGG
CAAATTCTGTTGGGTTTTAA AA AGG---- TTTTG TTAAACCCTTGGGGATA ----
CTGGTGGATGTTAATGA

GAM7690 14322 AAAGGACCCTGTTCACTGCT CCT A TG C- TTTTC TAAA
GCACTTTTCAATGAATTAAA AAAGGAC GTTC C CTG AC AATGAAT
ATTTATTTCTGTTCTAGTGG TTTCCTG TAAG G GAT TG TTATTTA
GAATGTGTCCTTT TG- - GT CT TCT-- ----
GAM7691 15949 GGCTCAACTCGGGGAGGCCG TCAA - C - - G TCCGAGACTCC
CCGGGCCGGCCTCCGAGACT GGC CTCGGG GAGGC GC CGG GCC GCC
CCGGCGGGCACCGAGTCGCC CCG GAGCTC CTCCG TG GCC CGG CGG
TCACTCGAGCGCC C--- A C A A G ----------
GAM7693 20333 CCAGGCTCTTCTGGACAAGT CTCT- AA --- C AA CTAAGAAT
ACAATGCTGAGAAGCCTAAG CCAGG TCTGGAC GTACAA TG TGAG GC
AATGCGATTCACACCTTTGT GGTTC AGGCCTG CGTGTT AC ACTT CG
GCAGTCCGGATCTCACTTGG ACTCT A- TCC - AG --------
GAM7694 10324 TCCTGCGTCTGGACCTGGCT G T A - C CCG - GACTAC - AGATCC
GGCCGGGACTGACCGACTAC TCCTGC TC GG CC TGG TGG GGACTG ACC CTCA TGA
CTCATGAAGATCCTCACTGA AGGGCG AG CC GG ACC ACC CTTGAC TGG GAGT ACT
GCGAGGTACAGTTCACCACC - - - C - A-- A AGC--- C ------
ACGGCCGAGCGGGA
GAM7696 3731 GGCGGCAGGGCGCTGCACCG AG G G -- CCCC- - TCT
TGCTCCCCCGGCTCTGCTCG GGCGGC GGC CT CAC CGTGCT CG GC
ACAGCAGCACGCAGTGAGAG CCGCCG CCG GA GTG GCACGA GC CG
CCTCGCCGCC CT A - AC CGACA T ---
GAM7697 6867 CTTCCAGTTTGCAAAAGATC CAAAAGAT ACCATGAGTGAGCC
TTCTGTGACCATGAGTGAGC CTTCCAGTTTG CTTCTGTG
CCGTAGAAGTGAACCAGGCT GAGGGTCGGAC GAAGATGC
GGGAG CAAGT--- ----------
GAM7698 17103 ACTCATTTACGTCTTGGCCT T A CTT T- TC - GTCCA
GTGGCTCAAGAATTTTGTCC AC CATTT CGT GGCCTG GGC AAGA ATTTT
AGAAATCTCTTAGGCCCTCA TG GTAAA GCG CCGGAC CCG TTCT TAAAG
GGCCCTTGCGAAATGGT - - TTC TC GA C -----
GAM7699 22356 GTAGTGCTTGTCACATAGTA C- C CTTT TTGT
AGCCTTTGTTGTTGTTAGCG GTAGTG TTGT ACATAGTAAGC GTTG
CTTACTGTGTAACAAATCAC CGTCAC AACA TGTGTCATTCG CGAT
TGC TA A ---- ----
GAM7701 22019 GGACCGTTATATGAGCGGGC A TATATGA - GA- - A G A C TACCACTGAC
GCGAGCTGAGGAGCTGCAAC GG CCGT GCGGGC GC GCTG AGG GCT CAAC CAGC GTG

ACAGCCGTGTACCACTGACC CC GGCA CGCCCG CG TGAT TTC CGG GTTG GTCG CAC
ACTGCTGAGTTGGGGCCTTA C ------- T GGG A - G A T ----------
TAGTGGGGCTGCCCGCACGG
CCC
GAM7702 2477 CTCCTACCAGAAAGCCATGT A G TGT C--- AGCAA TGGA
TCATATTTCTCAGCAATGCT CTCCT CCAGAAA CCA TCATATTT TC TGC
GGAGCAGAAAGGATCACAGA GAGGA GGTCTTT GGT GGTGTAGA AG ACG
TGTGGCTTTGGATTTCTGGA - A TTC CACT GAAAG ----
GGAG
GAM7703 1986 CAATTCTGTGAAGAAAGTCA TC AA G G TG T GG GCATTTAATCTATA
TGGTGGCTGATGGGGATGGC CAAT TGTGAAGA GTCATG TG C A GG ATG
ATTTAATCTATACATTACCT GTTA GCACTTTT CGGTAT AC G T CC TAC
TGGGCAGTATGGCCATTTTC TA AC G G GT - AT ----------
ACGATATTG

GAM7705 8914 GGCGGTTGAAGGCGTTGTAG - AA ------ A C - - AA CAT
GCTGACTCCAGGTCGAACAG GGCGGT TG GGCGTT GT GG TGACTC CAGGT CG CAG
CATCTGACGCACCTGTGAGT TCGCCG AC CCGCAG CG CC GCTGAG GTCCA GC GTC
CGTCCAGCTCATCTGACGCC T AG TCTACT A T T C A- ---
GACATGCCGCT
GAM7706 16381 GCCTAGTCTTTTCCATAAAA ----- --- A A AAGAA
TGAATAAGAAGTACATTTGG GCCTA GTCTT TTCCAT AAATG AT
TGGAGTTTGAGACCAGCCTG CGGGT CAGAG GAGGTG TTTAC TG
GGC CCGAC TTT G A -----
GAM7708 159 GTGTCTGCTTGTGTGCTGGC CT GGCGTTTCT - TAC GCTGT
GTTTCTTGGAGAGATACGGT GTGTCTG TGTGTGCT TGGAGA GA GGTG
GGCTGTCACCCTCTTCTCCA CACAGAC ACACACGG ACCTCT CT CCAC
GGCACACACAGACAC -- --------- T C-- -----
GAM7709 2768 GAGGTGGGTGGATCACCTGA GGA - A- T TCAAGACC
GGTCAGGTGTTCAAGACCAC GAGGTGGGT TCACC TG GGTCAGG GT
CCTGACCAACATGGTGAAAC CTCTACCCA AGTGG AC CCAGTCC CA
CCATCTC A-- T AA - --------
GAM7710 9683 TGCCTGGCTCTTTTCTTTTC TT T- TAAAGGGA GGGAA
TTTTAAAGGGAGGCTGGGAA TGCCTGGCTCTT CT TTCTTT GGCT
AGCCGGAGAGCTAGTAGGAG ACGGACCGAGGA GA GAGAGG CCGA
CCAGGCA T- TC -------- -----
GAM7711 14130 CCTTAATGGCCAGCTCTCCA T ---- CT AC-- CG- ATCT
CGCTGCTCGGCATCTGCAAT CCTTAA GGCCA GCT CC GCTGCT GC
GGCGGCTCCAGGGAAGCCCT GGAGTT CCGGT CGA GG CGGCGG CG
CTGGCCTTTGAGG T CTCC AG ACCT TAA ----
GAM7712 20171 GCGGCTGCAGAAGTACCGCC GAA - CT -- A GCAA
TGCGGAGTAACTGCAAAGAT GCGGCTGCA GTAC CGC GCGGA GTA CT
GCTGTCCGTGCGCGTGCTGC TGCCGGCGT CGTG GCG TGCCT CGT GA
GGCCGT --- C -- GT A ----
GAM7714 14562 CCGCTTCAATTTCCACTCTT G TC T ---- T T ----- C- TCAGATAAAC
CTTTCCTTTGCCTCCCCTTT CC CT AAT TC CACTCT CTT CCTT TGCCTCC CTT
CAGATAAACAAGCTGGAGGC GG GA TTG AG GTGGGA GGA GGAG ACGGAGG GAA
ACGCCTGAGGCAGGCAGGGT G GA T ACAT C C TCCGC TC ----------
GTACAGATGTTAGAGGGG
GAM7715 9147 ACCATTTTAAAACGGGCACA AAAC ACAAATATCTCT ATA
AATATCTCTAAGGCGCATAG ACCATTTTA GGGC AAGGCGC
TGCTTTTCACCAGTAGGCCT TGGTGAAGT TCCG TTTCGTG
TTGTGAAGTGGT GTT- GATGACCACT-- ---
GAM7716 8484 GAGGGAACCCTAGGTCAGAC A AGACC TTTCCTGTTGTTCTTC
CTTGGTTTCCTGTTGTTCTT GAGGGAACCCT GGTC TTGG
CCCAAGACCCAGGGTTCCCT CTCCCTTGGGA CCAG AACC
C C ----- ----------
GAM7717 4315 CTTGACCAGCCGGAAAGCAT GA AG CA GA G G G AGGGT
TGGGGATGACGGCCGACAGC CTT CC CCGGAAAG TTGGG TGACG CC ACA C
AGGGTGGTGTGGATGTCACC GAA GG GGCCTTTC GACCC ACTGT GG TGT G
CAGGACTTTCCGGAAGGCAA AC AA AG -- A - G -----
AG
GAM7719 8201 AGATTACTCTGTTTTATAAG T T TATAA TT- TCTT CT TAATAGCACTT
CCTTTTTGATCTTGAACTTC AGA TAC CTGTTT GCCTT TGA GAA TCG
GTAATAGCACTTTGATTTCC TCT ATG GACGGA CGGAA ACT CTT AGT

TCACTTAAGGCAGGCAGTGT C T ----- TTC C--- T- ----------
ACTCT
GAM7720 9172 TCTGCAAGGTGGTGGAAGTG AAGG-- T- AG AG ACGT
GGCAGCAAGATCTACGTGGA TCTGC TGG GGAAGTGGGC CA ATCT
TGATGGGCTTATTTCTCTCC AGACG ACC TCTTTATTCG GT TAGG
AGGTGAAGCAGA AAGTGG TC G- AG ----
GAM7721 15855 TTCCTGAGGATTCACTGGGT - A T ACTG C GGT CA- AAGT
TTCTGGGTCCCAAAGGGGAA TTC CTG GGA TC GGTTT TG CC AAGGGG
GTTCTCTTCAAGGTACAAAA AAG GAC CCT AG CCAAA AC GG TTCTCT
ACCACGACTCCGCAGAGAA A G C CA-- A AT- AAC ----
GAM7722 22408 ATACTGTTTTCAGTGTTGTC TTTTCA - T CAA TCC CTAACTT
ACAGCCTCTTTCAAATAATC ATACTG GTGTTGTCA CAGCC CTTT ATAA CGC
CCGCCTAACTTGCGTTATGA TGTGAC TACGACGGT GTCGG GGAG TATT GCG
TGAGGCGGCTGTTGGCAGCA TTGC-- T C TAG --- -------
TCGTTCAGTGT
GAM7723 20495 CCAACCACATGGCACATCGG AA CAT TC -- AACAC T CTGTC
GCTATTTGAACACGGTGACT CC CCA GGCACA GGG CTATTTG GG GA
GTCTCTCCCAGATGGATCCC GG GGT TCGTGT CCC GGTAGAC CC CT
TCTGTGCTTCTTGGACGG CA TCT CT TA ----- T -----
GAM7724 10507 GGAACAGGGAGGGCCTGTGT A AG C TC -- - AGGTTC
CTGGCCAGGCTGAGGTTCCA GGA C GGAGGG CTGTG TGGC CAGG CTG
GATCTGTTGCCATCATGGCC CCT G CTTCCC GGTAC ACCG GTCT GAC
CCTTCAGGTCC - GA C T- TT A ------
GAM7725 13656 TATTTTGCATCCTAGTTTGT TCC----- GAAG TCATATATATATT
ATTATGAAGTCATCATATAT TATTTTGCA TAGTTTGTATTAT TCA
ATATTTGAAATAGTATAAGC GTAAGACGT ATCGAATATGATA AGT
TAATTACTGTTGCAGAATG TGTCATTA A--- ----------
GAM7726 3894 CCTCTGGCCAACACTGCCTT TG AAC- CTTT TGCAG
TTTCCAGGGTGCAGCCCTGG CCTC GCC ACTGC TTCCAGGG
AGTGTAGTTTTGGGCTGGAG GGAG CGG TGATG GAGGTCCC
G GT GTTT T--- -----
GAM7727 15692 GAGGGCCCAGGATTTTGGAT CCCA TT CCCC GTGACA
CCCCAGCCCTGTGACAAGGG GAGGG GGA TTGGAT AGCCCT
TTCCTGTCCAGTTTCCCCCT CTCCC CCT GACCTG TTGGGA
C ---- TT TCC- ------
GAM7728 20084 CCAAAAATCCATCTCATCAC AAAA TCTCA C- G CA- ACTG
CTAGAGAGCATGTACTGGCA CCA TCCA TCAC TAGA AG TGT
GAACTGTCTAAAGTGACTAT GGT AGGT AGTG ATCT TC ACG
TTGGAACTCTGG CTCA TTATC AA G AAG ----
GAM7730 17003 CTCTAGCGTGATAGTCTCTT - GATA C - GCTGCATC C C CTCC
CTGGGTGGCTGCATCCTCAG CTCTAGC GT GT TC TTCTGGGTG CT AGG AGG
GCAGGCTCCCCTCCTAGTCC GGGATTG CA CA AG AGGACCTAC GA TCC TCC
CACATCCAGGATGACACCTT A ATTC C T ACCCT--- - - ----
AACAGTTAGGG
GAM7731 18671 CAGTTGATTATGGCAAGAAG ATTA - AAGTCCAA A CTCCATTT
TCCAAGCTGGAGTTCTCCAT CAGTTG TGG CAAG GCTGG GTT
TTAACCCAGCACCCCAGGTT GTCGAC ACC GTTT CGACC CAA
TGTCCACAGCTG ---- T GGACCCCA - --------
GAM7732 703 GGTTCACCGGCTTCATGGTA ------- C-- ATGCG TATT
TGCGCGGGTATTTCCGAAAA GGTTCA CCGGCTT ATGGT CGGG

AGCTATCTTAAGCTGGAACA TCAAGT GGTCGAA TATCG GCCT
TTTTGAACT TTTACAA TTC AAAAA ----
GAM7733 14888 AGGACACGGGGTTGGGGGAA -- G GGAA A---- - CCA GTGA
GGCAGACTGGCAGGCCAGGG AGGAC ACGGG TTGGG GGCAG CTGG CAGG GG
TGACCCTCCTGACCAGAGGT TCCTG TGCCC AGCCC CCGTC GACC GTCC CC
GCTGCCCAGACCCGAGCCCG TT G AGAC GTGGA A TC- ----
TTTGTCCT
GAM7735 4766 TCAACAGCTTAGGATGTGTC AGCTTAG G TT AA- GA TCATTTT
CCTTTCAACTCAGACTTTTC TCAAC GAT TGTCCC TC CTCA CTTT
ATTTTAGAGAATGGGGCAGA AGTTG CTA ACGGGG AG GGGT GAGA
TGGGGCAAATCGTTGA ------- A T- ACG AA -------
GAM7736 3232 TGGACTCTGAGTATGAGGCA A TAT - T- TGAGGT CGTG
GGCTGTTCTGAGGTCCCCGT TGG CTCTGAG GAGG CAGGC GTTC CCC
GGGGTGAGCCTGTCTGTCCT ACC GAGACTC CTCC GTCTG CGAG GGG
CCCTCAGAGCCCA C C-- T TC T----- ----
GAM7737 7489 GTCGACTAGGGGTTTCAGCA G A TC---------- ATTGATC
TATTGATCATGCTCGTCTTG GTC ACT GGGGTT AGCAT
AATTCCTGACCCCAGGTGAT TAG TGG CCCCAG TCGTA
- A TCCTTAAGTTCTGC -------
GAM7738 12236 TCAGAAACTGTGTTGCACAT AACT --- A TT TAC CTTTAAAT
TGGTGTACATCTCTTTAAAT TCAGA GTGT TGC CA GGTG ATCT
AGATTTCACCTTGGCATTCA GGTCT CACA ACG GT CCAC TAGA
CACTTTGTCTGG GTTT CTT - T- TT- --------
GAM7739 7538 GCTGGTTTCCTGGCCGAGGC TTT G G CTGAA TGA
GGAGCTGCTGAACCTGAGGA GCTGG CCTG CCGAG CGGAGCTG CC
AGATCAGCTCCGACTTGGAC TGGCC GGGC GGTTC GCCTCGAC GG
GGGCACCCGGT CAC A A TAGAA ---
GAM7740 12787 ACAACAGCCAGAACTGTGGA - T T A CT G GTGGGAGG
TACACACCTGGCGGCTGGTG ACAACAGCCA GAACTG GGA AC CAC GGCG CTG
GGAGGCGGATGCTGTGAGTT TGTTGTCGGT CTTGAC CCT TG GTG TCGT GGC
CCCAGTTCTTGGCTGTTGT T - - A -- A --------
GAM7741 13207 GTGAGATCACCTTGCCCCAT - A - ATAATTTC TTCCTTT
AATTTCCATGCTTCCTTTGT GTGA GATC CCTT GCCCC CATGC
GTGCAGGGGCAAAGGCGATT CACT TTAG GGAA CGGGG GTGTG
ATCAC A C A AC------ -------
GAM7742 6252 GGCACGGGTTCGCTGGTGTT C T -- TG - - C CG TGGCC
CGCGCTGCCCCACTTCACGG GGCA GGGT CG CTGG TTCGCG CTG C CCACTTCA GC
CTGGCCGCTATGAGGTGGAG CCGT CCCG GC GACT GGGCGC GGT G GGTGGAGT CG

TTGGACGCGGGTGTCAGGAC - T AG GT A T A AT -----
GTGCCCTGCC
GAM7743 2256 GGGAAACTCCGAGGACAGAG AAA A--- - GA AA TG AGT
GGCTAAATCCATGAAGTTTG GGG CTCCG GGA CA GGGCT ATCCA A
TGGATGGCCTGATGATCCAC CCC GAGGC CCT GT TCCGG TAGGT T
AGCGGAGACCC A-- GACA A AG -- GT ---
GAM7744 21978 CCTAGAGTCTGGCCTCTGAT ---- T- - - A- AA C- G GGTGTTAGAG
TCACAATCTTCCCAGCCTAC CCTA GAGTC GG CC TCTG TTCAC TCTT CCA CCTAC
GGTGTTAGAGGTGGGGTGGT GGAT TTCAG CC GG AGAC AAGTG AGAA GGT GGGTG
CAAGAAGTGAAGACAGATGG AACA TT T T AG A- CT G ----------
TCCTTGACTTACAATAGG

GAM7745 22916 TACTGAGCAAGGCCCCAGAT T A AGATC GGAGGA
CCTTCTCTCTGGAGGAAGAG TAC GAGCA GGCCCC CTTCTCTCT
GGAAGCCCAGGGGTCCTGTT ATG TTTGT CTGGGG GAAGGGAGA
TGTA - C ACCC- ------
GAM7746 20214 TGGCCGTGCCCGGAGCGCTC GT--- CC -- AA C C CAT A AGAC
AGCAAACACCCCTCTCACAT TGGCC GC GGAGC GCTCAGCA CA CCCT TCA TCCT TGGC

TCCTATGGCAGACGCTGGAG ACCGG CG TCTTG TGGGTTGT GT GGGA AGT AGGA GTCG

GATGAAGGGCTGGCTGTTGG AATCT T- TC CG C - --- G ----
GTCTGTTCTTGCTCTAAGGC
CA
GAM7747 14285 GGTGGAGCGGTTCATTTATT - CGG TTT AAACTATGACATGAAAA
TGGAAACTATGACATGAAAA GGTG GAG TTCA ATTTGG
CCAAATTTGAAAACTCACAT CTAC CTC AAGT TAAACC
C A AA- T-- ----------
GAM7748 14754 TGGGGGTCCTGCCCCTGGAG - TGCCCCTGG GGA AGCT
GGCCTTGGACCACCAGCTGG TGGGG GTCC AGGGCCTT CCACC
TGGAGGGCCCTATGGACACC ACCCC CAGG TCCCGGGA GGTGG
CCA A TA------- --- ----
GAM7749 4809 GGCGCAGCCCGGCCTCCGAC G CC A--- -- TG G TGCTT
AGCCATGGGAACTTGTGCTT GGC CAG CGGCCTCCG CAGCC A G AACTTG
CAAGTTGTTGTAGGGCTGCT CCG GTC GTCGGAGGC GTCGG T T TTGAAC
TCCGGAGGCTGTACTGGCC - AT CTTC GA GT G -----
GAM7750 8439 TGTTGATGGTGGTCCGCACA A CGCACATA -- A TTCC
TAGGAGGTGGCAGGCTTCCG TGTTG TGGTGGTC GGAGGT GGC GGC
CTGGCCGGATCTCCGCTTAA ACAGC ACCACCAG CCTCTA CCG TCG
TGACCACCACGACA - TAATTCG- GG G ----
GAM7751 9326 CTTACAGCTGAGACCTGTTC A AGAC CT CCAGCTGC
CTGCAAGCCAGCTGCCTTGT CTTAC GCTG CTGTTC GCAAG
CTGAACAGAACGTAGTGGTA GGATG TGAT GACAAG TGTTC
GG G GCAA TC --------
GAM7752 2000 GGGAGCAGGAGACCCTCATT CA GA CAT CCAGA T CCT CCCCA
TGCCACCCAGACCAATGTGA GGGAG GGA CCCT TTGCCAC CCAATG GAG GC
GCCTGCCCCCAGCCCCCTCT TCCTC CCT GGGG AACGGTG GGTTAC CTC CG
CATTGGAAGTGGCAAGGGGC -- TC --- AA--- T CCC -----
TTCCCTCCT
GAM7753 11565 GTATGGTGTCTTCACTTATT T CTTA T A G TCCTTATTTTGTC
ATGTATGTTTATCTGTATGT GTATGGTGTCT CA TTATGTA GTTT TCT TATGTATAT
ATATTCCTTATTTTGTCATA TATACTACGGA GT AGTACGT TAAA AGA ATGTATATA
TATGTAGAGAAAATTGCATG - TC-- - - G ----------
ACTTGAGGCATCATAT
GAM7754 18236 TGGGGTGAGATGAGCCGGGA A T CC T ACCCTTCTCTTAAC
CTTGAAAACCCTTCTCTTAA TGGGGTG GA GAG GGGACT GAAA
CTTTCAGTCTCAACTCCTCC ATCTCAC CT CTC CTCTGA CTTT
CACTCTA C C AA - ----------
GAM7755 5867 AAATGGCTTTAAAGCTTGGT T - AAA- ------ T TAC CTT - TATA
GTTACTTTTCTTAAGTTGTT AAA GG CTTT GC TTGG GT TTTT AAGTTGT TTAAT
TAATTATAGTTAAGGCAATT TTT CC GGGA TG AACC CG AAAA TTTAACG AATTG
TCAAAAATGCTCCAAAGAAA T A AAGG TAAAGA T TA- C-- G ----

TGTGGAAAGGGACCTTTT
GAM7756 18545 GAGATGTCCTCTATTCTTGA G T- A G G ATTCTT AGCTGATA
AGAGCGTATTCTTGGAGCTG GA ATGTCC CT TTCTT AAGA CGT GG
ATACCTCTGATGATCTTGAA CT TGCGGG GA AAGAA TTCT GTA CC
GAAAGCTGGGCGTGTC G TC - G A GTCT-- --------
GAM7757 18956 GGGAATACCTTGGCAAGCAG TA TT- A -- CCAGTC A CCCAGACC
CTCCAGTCCGAGCAGCCCCA GGGAA CC GGCA GC AGCT CG GCAGC
GACCGCTGCCGCCCGAAGCT CCCTT GG CCGT CG TCGA GC CGTCG
AAGCCTGCCTCTGGCCTTCC CC TCT C AA AGCCC- - --------
C
GAM7758 13605 TGGCTGTCTTCCCCCTCAGT T C --- A- A TCCAA
GTTTAGGAACGTCTCCAAGA TGGCTG CTTCC CCTCAG TGTTT GGA CGTC
CGTCTGAAGACAACCTTGAG ATTGAC GAGGG GGAGTT ACAGA TCT GCAG
GAGGGAGCAGTTA - A CCA AG - -----
GAM7759 21777 GCTGAGAAGCAGTGACCCGC A - C AT CTGAATGGACTGCT
AGATGCCGGCTGAATGGACT GCTGAG AGCAGTGAC CCG AG GCCGG
GCTCCGGTCTTGGAGTCACT CGACTC TCGTCACTG GGT TC TGGCC
GCTACTCAGC A A - -- ----------
GAM7760 21679 AGTGCCATCTAGATGAGATA CT - ATA-- A TT---- TGAG
CCAGGGCATTTCTGAGGATG AGTGCCAT AGA TGAG CC GGGCA TC
TTTTTGCCCCGGGCCACCTC TCACGGTG TCT ACTC GG CCCGT AG
ACTCTCCGTGGCACT CC C CACCG C TTTTGT ----
GAM7761 19845 GAAACTCTAATATTGAATCT ACT- T CTTAA -- AACAGCTTACAAA
CTTAAATTTAGTGTATGTAA GAA CTAA ATTGAATCT ATTTAGT GTATGTA
ACAGCTTACAAATACGTATT CTT GGTT TAATTTAGG TAAATCG TATGCAT
GGCTAAATGGATTTAATTTT ATTT T ----- GT ----------
GGTTTATTC
GAM7762 21565 GCTTGACTTTAGACACAGGT TT CA - TTT A T AGTTTTA
TTCAAAAGTAGAAAGTTTTA GC GACTTTAGA CA GG CA AAG AGAA
TTCTCTTATGTTTCTATGGC CG TTGAAGTTT GT TC GT TTC TCTT
TTTGAAGTTTTGC TT CG A TTT A - -------
GAM7763 2165 CTCTGGGGACTGGAATGCAG - GAAT C-- G AGCCCCAGA
GCAGTGGAAGCCCCAGATTG CTCTGGGGA CTG GCAGG AGT GA
ACTTAACCTGTTGACAGATC GAGACTTCT GAC TGTCC TCA TT
TTCAGAG A AGT- AAT G ---------
GAM7764 19695 TGACTTTTGGTTTTTGTCTT ---------- G TTT ATCA
TGTTTTTAATCATGGTCCCA TGACTT TTG TTTTTGTCTTTG TTA
AAGGCAGAAGGCAGTATTTT ACTGAA GAC GAAGACGGAAAC GGT
ATCTACTAAGTCA TCATCTATTTTAT G CCT ----
GAM7765 1993 GCAGTGGAGGGGGCAGGACC GA A ACCT GGT- ACCA
TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GG CCTGCT GCAGC
CTGCTGTGAGCAGGTCCACC CGTCAC TCCCCG CC GGACGA CGTCG
GGCCCCTACACTGC A- G ACCT GTGT ----
GAM7766 4997 TTTTAAAGAAGAAGACCATT AG- CC TATGA TC TAT
TTACTTATGATGTTCAGGAA TTTTAAAGA AAGA ATTTTACT TGT AGGAAATC
ATCTATGATTTCCTACAACC AAAATTTTT TTCT TGGAATGA ACA TCCTTTAG
AGTAAGGTTCTTACATTTTT ACA -- CCA-- -- ---
AAAA
GAM7767 19467 GCAGCTCCAGCGTCAAATTT TCC C CAAA T CACC C TCCC
GTCTCCACCAGCTCCTCCTC GCAGC AG GT TTTG CTC AGCTC TCC

CCGGAAGAGCTTCAAGAGCT CGTCG TC CA GAAT GAG TCGAG AGG
AAGAACCTGCTGC --- - A--- C AACT A ----
GAM7768 9408 TAGCTGTTGTAAAAGTTTGT --------- T CTTT A-- TATTA
CTTTATTAGCCATATGTATT TAGCTGTTGT AAAAGT TGT ATTAGCCAT TG
ACAATGGTGGTTGGTTTATA ATCGATAATA TTTTTA ACA TGGTTGGTG AC
CACATTTTTAACCTTATAAT ATATTCCAA C TATT GTA -----
AATAGCTA
GAM7770 9016 TGTCAGGCTCGGGCTCTGGG CTC C G - A GCCAGCCA
GCCTACAAGGAGCCAGCCAT TGTCAGG GGG TCT GGGCCT AC AGGA
CCTCGTGGGGCCTGAGAACC ACAGTCC TCC AGA TCCGGG TG TCCT
TCACCCTGACA CAC A G G C --------
GAM7771 22541 ACGCATCCTACAAGCAATAG A TAC- -- A T GG GA GTGCAA
TTATGGGGATCTGATGGTGC ACGC TCC AAG CA TAG TAT GGATCT TG
AACAAAGATCCAATATCTAC TGTG AGG TTC GT ATC ATA CCTAGA AC
TGATCTTCGATGGAGTGT - TAGC TA C T A- A- ------
GAM7773 17508 GTTAAAGCTTACCGGGAGAA A TTAC- GAAG AGAAG GAGA
GATTGAGAAGGAGCTGGAGA GTTAA GC CGGGA ATTG GAGCTG
CAGTTTGCAATGATGTCCTG CAGTT CG GTCCT TAAC TTTGAC
TCTCTGCTTGAC - TCTCT GTAG G---- ----
GAM7774 6298 TTCTTGGTAATTTTGCAGCA ATT --- ACGT CAA GTCATA
CGTCAGCATCAATATCGTCA TTCTTGGTA TTGCA GC CAGCAT TATC
TAGATACTCATGCTGTCAGC GGGAATTAT AACGT CG GTCGTA ATAG
ACTTGCAACGGTATTAAGGG GGC TCA ACT- CTC ------
GAM7775 5967 GGCAACTTCAGGATGACAAA A CA CAA AAA CTTC AAAT
AACAAAGTCTCTTCTGCTGG GGCA CTT GGATGA AAAC GTCT TGCTGGG
GAAATCCCAGTACAGATCGT CCGT GAA TCTACT TTTG TAGA ATGACCC
TTCTCATCTCTAAGTGCC - TC C-- C-- C--- ----
GAM7779 6455 CCAAACACCAATGGCTCTCA ATG CTCA TT TGACA GACAAG
GTTCTTCCTGACATGTGACA CCAAACACCA GCT GTTC CC TGT
AGACAGACTGGCTGGATGGC GGTTTGTGGT CGA TAGG GG ACA
AAGCATGTGGTGTTTGG GTA ACGG TC TCAG- ------
GAM7780 3694 GGTCATGTGAAGCGTACGTG AA - TG TG T GTGTGT
TGTGTGCATTGTATGTGTGT GGTCATGTG GCGTACG TG TG CA TGTAT
GTACATTGTGTGTGCATTGT CCGGTGTAC TGTGTGT AC GT GT ACATG
GTGTGCATGTGGCC G- T GT GT T ------
GAM7781 14735 GAAGAGCTCAGGAGATAGGG G A GGAA A T AGG
AAGAGGATCTGTCCAGGGGT GAAGAGCTCA GAG TAG GAGG TCTG CC
TAGACCTCAAGGTTGACTTG TTTCTTGAGT TTC GTT CTCC AGAT GG
TGAGTTCTTT G A GGAA - T ---
GAM7783 22943 GGACTGCATCCTACCACCAA CT -- -- CT------- AACT CA- CTTGC
CTCGTCCAACTGACAAGCCC GGA GCA TCC TACCACCAA CGTCC GA AGCC
TTGCGGCTGCCTCTCCAGGA CCT TGT AGG ATGGTGGTT GTAGG CT TCGG
TGTCTACGAAATTGGTGGTA -- CA TT AAAGCATCT ACCT CCG -----
TTGGAACTGTTCC
GAM7785 9252 CTGCCGGAAGTTTACCAGCT GTTTACC T GTC GC CTCC
CACTTTCGGCGTCGCGCCCG CTGCCGGAA AGC CACTTTCGGC GC CCGC
CCTCCGTGGAGCAGGCCGGA GACGGCCTT TCG GTGAAGGCCG CG GGTG
AGTGGCTTTCCGGCAG ------- - GA- A- ----
GAM7786 16327 TTCTGTACCAGGTTTAAATG A - A ---- - TGGA
TAGTCTTCTGGAGAAGTATT TTCTGT CCAG GTTTAA TGT AGT CTTC

TTTGACATTGAGCTCTGGGA AGGACA GGTC CGAGTT ACA TTA GAAG
CAGGA G T - GTTT T ----
GAM7787 11263 GGACCCTCCCTGGCCTCCAT CC -- - TC--- AAACT
TCAGGGAGAAACTCTCCTTC GGACCCTC TGGCC TC CAT AGGGAG
ACGTGTGAGACGGGCCAAGA CCTGGGAG ACCGG AG GTG TTCCTC
GGGTCC A- GC A TGCAC -----
GAM7788 21967 TGAGTGAAAGGTGTTTATGA - AA T TT G TC AC - - A- A A CA
GAAGTCGATGACTCCGGATC TG AGTGA GG GT AT AGAAG GATG TCCGG ATCTTA TC TCCA G
GGACAG
TTATCATCCAAGAGGACAGC GC TTACT CC CA TA TCTTT CTGC AGGTC TAGGAT AG AGGT C
CCTGTT

ACAGAATAGTTAATTTTGTC A AG - -- G TT -- G C GG - - --
CCTGGAGGGACTAGGATGCT CAGAATAGTTAATT
GGACGTCTTTTTCTGATACC
CGATCATTACG

GAM7789 5586 GGGTGATGCCACCTCCTGGG ATGC - - TG A T CT T A - TCTA
TGGGTGATGCCTCCTCTGGG GGGTG CACCT CCTGG G GGTG TGCC CCT GGG GGTG TACCT
CC
TGGTGATACCTCCTCTAGGT CCCGT GTGGG GGATC C CCAT GTGG GGG TCC CCGT GTGGG
GG
GGGTGATGCCTCCTCTGGGT A--- C T CT A T TC T A T ----
GGTGATACCTCCTCTAGGCG
GGTGATGCCC
GAM7790 14650 CCCAGAGAAAGCTCTGCCTG AGAAA C CT A--- AG- CATGTCAC
CAATATTTTTCAGGTCATGT CCCAG GCT TGC GCA TATTTTTC GT
CACACAAAGAAAAATAACAA GGGTC CGA ACG CGT ATAAAAAG CA
TGCTTGCACAGCCCACTGGG ACC-- C TT AACA AAA --------
GAM7791 10211 TGTGACCTCCACCAAAAGGG A TC - AAA CAA C TATCCC
CAAATACAGACTATCCCGTT TGTG CC CAC CA GGG ATA AGAC
TTATCCCCGTGTGTGTTGGC ATAC GG GTG GT CCC TAT TTTG
ATA - TT T GC- --- - ------
GAM7792 9820 GGTTAGCAGAGAAACTTGGA AG GAAACT G GT - T GCTG TTAACT
AAGTTCTGTGTTAGGATCTT GGTT CAGA TG AAA TCTGTGT TAGGA CTT GCAGAA
GCTGGCAGAATTAACTTTTT CCGA GTTT AT TTT AGACACA ATTTT GAA CGTTTT
GCAAAAGTTTTATACACAGA G- AAATT- G AT T - AA-- ------
TATTTGTATTAAATTTGGAG
CC
GAM7793 19885 AGAACTGGATGGGAATTTCC CT - CCA T--- CTCTACCTA
ACTCTTCACCCTCTACCTAG AGAA GGATGGG AATTT CTC TCACC
GTGACTTTGAGCAAGTTATT TCTT CCTATTT TTGAA GAG AGTGG
TATCCTTTCT T- A C-- TTTC ---------
GAM7794 13917 ATAGGTACTTCTCGAAATTC ATTCTT GGT ATGTA
TTAAGAGGTTAAATGTATTA ATAGGTACTTCTCGAA AAGA TAA
TGGTCTTCATTTGAGGGGTG TATTCGTGGGGAGTTT TTCT ATT
CTTAT AC---- GGT -----
GAM7795 22761 CCCAAGCTTCTCTCTGTCCC A CT - -- A C TCTCTTAAGTTATTTAAAT
CTTCCCTCCAAGCTCTGTCT CCCA G TCTCTCTGT CCCCTTCCC TCC AGCT TG
CTTAAGTTATTTAAATTATG GGGT C GGGGGGACA GGGGAGGGG GGG TCGG AT

GCTGGGGTCGGGGAGGGGTA - AC T CT G T ----------
CAGGGGGGCACTGGG
GAM7796 15288 TGGCACAGATCCTCGAACAA G A- C-- AA TTAAA TT CCGGAAA
TTCTTAAAGATTTATTGCCG TG CACAG TC TCG CAATTC GA TATTG
GAAACAATACCTCCACCTGA AC GTGTC AG AGT GTTGAG CT ATAAC
GTTGGATGATATGACACTGT G AC TAT AG TCCAC CC -------
GGCA
GAM7797 18590 TGGGTCAGACGTGCTGTCTG - ACG T-- C TTG C ATTGA
CCTCATGAAATTGGGTCCAA TG GGTCAG TGCTG CTGC TCATGAAA GGT CAA
ATTGATTGAACTACTTTCAT AC CCAGTC ACGAT GACG AGTACTTT TCA GTT
GAGCAGTTGTAGCAGGCTGA A GG- GTT - CA- A -----
CCACA
GAM7798 239 GGTTCATTCTCTGGATCAGA -- C G - C GT TCA --- TATAAT
GTCAGTGGTGTCAGAATATC GGTTCA TTCT TG ATCAGA GT AGTG G GAAT ATC
TATAATGATCAGGTTCATTG TCAAGT AAGA AT TGGTCT CA TCAC T CTTG TAG
TCACTAACATCTGGTGTACA TG C G A A TG TA- GAC ------
GAAGTTGAACT
GAM7799 7017 GCTGCAAATCTCGTGGCCGG CAA ---- -- G GA - -- CAC
CGGCGACCATGGCGCGGATC GCTG ATCT CGTGGCC GGC GC CCA TGGCG CGGAT
ACATCCGGATGCCGCTGGGC CGAC TAGA GCACCGG CCG CG GGT GCCGT GCCTA
GGCCATGGCCACGGCGAAGA TGG AGCG TA G -- C AG ---
TGGTCAGC
GAM7800 1088 GCCAGATCATCCTGTCACAC A TC CCATTAACGAG TT TTGGCCCTC
CATTAACGAGCTGTTGTGAT GCCAG TCA CTGTCACA CTG GTGA
TGGCCCTCTCACGGTAGAAC CGGTC AGT GACGGTGT GAT CACT
TGTGGCAGTGACTGGC - -- CAA-------- GG ---------
GAM7801 1652 TGCTTCTCATGTAGGGCGCC T-- -- -- C TT TC TGGGG
GACAGCATATTCTGAATCAG TGCTTC CATGTAGGGC GC CGACAG ATA CTGAA AGC
CTGGGGGTTTTCAGTTATCT ATGGGG GTACGTCTCG CG GTTGTC TAT GACTT TTG
GTTGCAGCAGGCTCTGCATG TCC GA AC - T- -- -----
CCTGGGGTA
GAM7802 1348 TCAGGCCATCTGGGCGTATA A G TAC G --- GGGAA
CGTGCAAGTCACAGGGAATG TCAGGCC TCTGGGC TA GT CAAGTCA CA
CGATGGCTTGGCTTGGGCTC AGTCCGG AGACTCG GT CG GTTCGGT GT
AGAGGCCTGA - G T-- - AGC -----
GAM7804 11858 GCCGCGCTGTTGCCGCGGCT G - ATTCTTAAAA GCC
TGTTATTCTTAAAATGGCGC GCCGCGCTGTT CCGCG GCTTGTT TGGC
CGCTAGACCTGGACAAGTAT CGGCGCGATAA GGTGT TGAACAG ATCG
GTGGAAATAGCGCGGC A A GTCCAG---- ---
GAM7805 2667 GCACATGTTGGAGGAGAGAG A T - G CCT GA C-- CCACTC
CCTTGGGAGCCACTGCCACT GCAC TGT GGAGGA GA AG TGG GC ACTG
CCAGTCCTGCCACCACCCTT CGTG ACG TCTCCT CT TT ACC CG TGAC
GTCTTCCTCTGCAAGTGC A - T G CCC AC TCC ------
GAM7806 9561 GCACAAAGGCGGCGCGGTGC CAA C - C C TGTAGT
ACGTCGGAGTTGTAGTACTT GCA AGG GGCGCGG TGCA GT GGAGT
CAGCTGCATCTGCGCCACCT CGT TCC CCGCGTC ACGT CG CTTCA
GCTGC CG- A T - A ------
GAM7807 5090 GTGACTCTGGTCCATCACAC A C A CTTA CCTCT T C CATCCAGC
TTAGGTCCTCTGGCCTGCCT GTG CT TGGTCC TCACA GGT GGCC GCCTCTG CA
CTGCCACATCCAGCTGCTAG CAC GA GCCGGG AGTGT CCG CCGG CGGGGAT GT

GGGCTGGCCTCAGCCCTGTG G C G C--- ACT-- T C --------
AGGGGCCGCAGGCAC
GAM7808 8720 AAAGACAAGCTGTCATTGCA - ------- ------ G TACA
ATAGGATGTTACAACATTAT AAAGA CAAGCT GTCAT TGCAATA GATGT
ATTGCATTAAAAATGATACC TTTCT GTTCGA TAGTA ACGTTAT TTACA
TAAAAGCTTGCTCTTT C AAATCCA AAAATT A ----
GAM7811 14668 TTGAACCCAGGAGGCGGAGC AA- AGGC TT - CGAGATT
TTGCAGTGGGCCGAGATTGC TTG CCCAGG GGAGC GCAGTGG GC
GCCACTGCGCTCCAGCCTGG GAC GGGTCC CCTCG CGTCACC CG
GCAACAG AAC GA-- -- G -------
GAM7812 20256 GCTGTGCCAGCGCCGGGCCT CCA CC AAGCCTTT TCCTGCACA
AGTCAATGTCC
TGGAAGCCTTTGACCTGGAT GCTGTG GCGCCGGG TTGG GACCTGGA GTGGGG
CCTGCACAGTGGGGAGTCAA CGACAC TGCGGTCC AACC CTGGGCCT CATCCC

TGTCCAGCCCTACTCCGGGT ATC -- GACCC--- --------- ----------
CCCCAGCCAACCTGGCGTCT AG
ACACAGC

--
GAM7813 17053 GGTGACAACATGCTGGAACC AA-- G G- T TAACAT
AAGTGCTAACATGCCTTGGT GGTGAC CAT CT GAACCAAG GC
TCAAGGGATGGAAAGTCACC CCACTG GTA GG CTTGGTTC CG
AAAG G AA - ------
GAM7814 7333 GTACTCTGCCCGTGTGGGCA T CCCG T AC-- C G --- ATTTC
CTGTCCTGGGCCAGCGATTT GTAC CTG TG GGGC TGT CT GGC CAGCG
CTGCTGCCAGCTGAGAACAA CATG GAC AC CCCG ACA GA TCG GTCGT
CAAGCCCCAAAGACAGGTAC - AGAA - AACA A G ACC -----
GAM7815 8255 ACAAAATAGACACTTTTGGA A ---- - G- TT C TCCAACACC
TTTTCCCGTCTTTTCCAACA ACAAA TA GACAC TTTT GAT TC CGTCTTT
CCAAGGATGAGATTATCAAA TGTTT AT TTGTG AGAA CTA AG GTAGGAA
AGATGTGTTAAATTAATTTG A TAAA T AA TT A ---------
T
GAM7816 16192 GGACCTTGTTGCACCTCGTG T-- A T T TCACCC
GCTGCTTTGTTCACCCGCAG GGACCTTG TGC CC CG GGCTGCTTTGT
GGCGGCCTGTGGGCACCCCG CTTGGGGC ACG GG GT CCGGCGGGACG
GGGTTC CCC - T - ------
GAM7818 12852 GACTGTAGACACAAACTGTG ----- - A - ACTTCCAT CCAT
TAACTTCCATGAGCCATTTC GACTG TAG ACACA AC TGTGTA GAG
CTTCCTGTGCACATGTATGT CTGAC ATT TGTGT TG ACACGT CTT
GTGTTATTTTTCAGTC TTTTT G A T GTCCTTC- ----
GAM7819 3784 GCTTCGAGTCGGCCACCTTC C G---- - AGGC-- A TCTGG
CTAGGCTACTTCAAGTCTGG GCTT GAGTC GCCAC CTTCCT TACTTCA G
CCTGAAGTACAAGAAAGGAG CGAA CTTAG CGGTG GGAGGA ATGAAGT C
GTGTGGCATCAGGATTCAAG - GACTA T AAGAAC C -----
C
GAM7820 3554 CTTATTTTTTCACAAGCCTG TTTTC C- TT ---------- TTGTAAC
GTTATTTGAGGATGTGCTTG CTTATT ACAAGC TGGTTA TGAGGA TGTGC
TAACGTATGCTTTCTCTTCT GGATAA TGTTCG ACCGAT ACTCTT GTATG
ATTTCTCATAGCCAATGCTT TTCCA TA -- TATCTTCTCTTTC -------

GTACCTTAATAGG
GAM7821 20707 TGAAGAAAAAATGCAAACTG - AAA ----- ACCGG A-- TCGAGT
ACCGGGCAAATAGATTCGAG TGAA GAAA TGCAAA CTG GC AATAGAT
TATTTATTAAAGCAGACAGA ACTT CTTT ACGTTT GAC CG TTATTTA
ACTTTTTGCACATTTCATTC A AC- TTCAA AGA-- AAA ------
A
GAM7822 21027 GTGAAGGGCTTGGGATTCGT G TT AT- G- - C GTCC
GGCAGCTGAGTCCTCACTGA GTGAAG GC GGG TC TGG CAG TGA
CCAAGGATTGCCCTTGTGCT CATTTC TG CCC AG ACC GTC ACT
TTAC G TT GTT GA A - ----
GAM7823 9513 TGCTATTGTGAAGGGTGCTT AT - -- TT TT A-- CTTCC
GGTTTTTTCAAAATTGGCTT TGCT TGTGAA GGGTG C GGTTTT CAAA TTGG
CCTCAGATATTTGCAAAACT ACGA ATACTT TCCAC G TCAAAA GTTT GACT
TTGTTCACCTGTTCATAAGC -- G TT TT C- ATA -----
A
GAM7824 22333 GGAGAGGTGATGAGCCCAGA AT- CAGACAA G - GGTT
CAAGGCAGGGTGTTAGGTTT GGAGAGGTG GAGCC GGCAGG T GTTA
AACTGGTTTGCCCTCATCAG TTTTTCTAC TTTGG CCGTTT G CAAT
GTTTTCGCATCTTTTT GCT ACTACTC G T ----
GAM7826 7910 GGGGATGCCGTGAAGCTGAG G C G AGCA T - GATGTCA
AGCATGCTGGGCCGAGATGT GG GATGC GT AAGCTGAG TGC GG GCCGA
CATCGGTGCCGCAGGAGCTT CT CTACG CG TTCGATTC ACG CC TGGCT
AGCTTGCTGCATCGTC G T - GAGG - G -------
GAM7827 14768 AGCAGCCAGATGGTCCAGAG CAGATGG ------ A TTGATACATGT
ACAGGGATTTTGATACATGT AGCAGC TCC AG GACAGGGATT
GGTCTCTGTCCTTCAGAAGG TCGTCG AGG TC CTGTCTCTGG
AAGTGATTGCTGCT TTAGTGA AAGACT - ----------
GAM7828 8556 GCGGTCCCAAGGGCTGGAGC TCC - T------- AACAC
TGTTTGAGAACACCTCGGCC GCGG CAAGGG CTGGAGCTG TTGAG
CCCTACCAGCTCCAGACCTT CGTC GTTTCC GACCTCGAC GGCTC
TGTCCTGC CT- A CATCCCCC -----
GAM7830 18069 GCCCTACATGGATGACTGTG CCTA ATGACTG T- ATTCAGC TCATC
GTGGCATGAGATTCAGCGGT GC CATGG TGG GGCATGAG GGT
TCATCACCCTCGTGCCCTCC CG GTACC ACC CCGTGCTC CCA
AACCTGCCCCATGAAGC AA-- CCGTCCA TC ------- -----
GAM7831 6934 GGGAGCCAGCAAGCAGGATG AGCAA AGGA A A--- G CCAA ---- AATG
ATATCGAAGAGCTGGAGACC GGGAGCC GC TGAT TCGA GAGCT GAGA GGCCGT GGG

AAGGCCGTGGGAATGTCTAA TCCTCGG CG GCTA AGCT TTTGA CTCT CCGGTA TCT
CGATGGCCGCTTTCTCAAGT AGA-- ---- A ACAG A TTCG GCAA ----
TTGACATCGAAATCGGCAGA
GGCTCCT
GAM7832 19002 CTCTTTGAAGCGTTTTCCAA -- - TTTTCCAACA AG - AATCAAATCCTC
CAGTATAGATCTCATGAATC CTCTT TGAA GCG GTAT ATCT CATG
AAATCCTCCATGCAGATGAT GAGAA ATTT TGC CGTA TAGA GTAC
GCCGTATTTACCAAGAG CC A ---------- G- C ----------
GAM7833 20093 CATCGTCACCAAGGCACGGG CCAAGG- C GG ACT
GGAAGAGTGACTCACTCTTC CATCGTCA CA GG GAAGAGTG
AACTTTGATGTTCATGACGA GTAGCAGT GT TC CTTCTCAC
TG ACTTGTA T AA ---

GAM7834 13175 GTTATATAATGTACAATATA ATGTACAATATAG CTCCAAA T TG TTCTG
GGACCCCTCCAAATAGGTTT GTTATATA GACCC TAGG TT C
TGCTTCTGGTGAATCTTGGT CAGTATAT TTGGG GTTC AA G
CATTGGGTTAGTATATGAC GA---------- TTACTG- T GT -----
GAM7835 9075 CTTGGACAGGTGCTAGACGA G GC C - - AAACAC ---- AAGCGGG
CTTTCCGCCAAACACTCCAC CTTGGACA GT TAGA GACT TTC CGCC TCCA CCTCAGCA
CTCAGCAAAGCGGGTGTTGA GAACTTGT CA GTCT CTGG AAG GTGG AGGT GGAGTTGT

GGGCCATGGAAGGGTGAGAA A -- T G A GA---- ACCG -------
GGGTCTTCTGACATGTTCAA
G
GAM7836 11214 CTGGCCGCAGGGTGATATAC GCAG ATATACAA T AAA- AAGC
AAGTATGGCAAACTGTCAAA CTGGCC GGTG GTA GGC CTGTCA
GCTGGCAGAGACGCTCTATG GACTGG CCAC TAT TCG GACGGT
ACACCACCAAGGTCAG AA-- CACAG--- C CAGA ----
GAM7838 20910 GACAGCACAGCCTCCTCTGA CA C TGA - T CA-- TC GC GCCTCA
AGGCCGGCCATACCAGAGTC GACAG CAGC TCCTC AGGCCGGC CA AC GAG CTGCCTCG
ATGG
CTGCCTCGGCATGGGCCTCA CTGTC GTCG GGGAG TCTGGTCG GT TG CTC GACGGAGT
TACC
CCATTGAGGCAGCTCCACTG C- T --- T C TCAC -- -- ------
TCTGTGCTGGTCTGAGGGTG
CTGCCTGTC
GAM7839 11201 GCTCTCTTTATCTTTCTCTC CTCTTTAT TCTCTCT CA ACATGCACAGAG
TCACTCATGTATGCATACAT GCT CTT CACT TGTATGCAT
GCACAGAGATGCATACACAG CGA GAA GTGG ACATACGTA
GTGCCTATGCAAGTACATTT ATTTACAT CGTATCC AC ----------
AAGC
GAM7840 15472 TTCCTACCACTTAAGAATAA AC TT AATAA C ATAAAAACAAATCTATAC
AAAATGCATTTTAATAAAAA TTCCT CAC AAG AAAATG ATTTTA
CAAATCTATACTGAAGTCAT AAGGA GTG TTC TTTTAC TGAAGT
TTTCCTTTGTGAGAGGAA GA T- C---- - ----------
GAM7842 20900 GGGGCCGGCTGGGGGCCTGA CC- TGG --- A - A TCATCAACC
GCGGGAGGCCATCATCAACC GGGG GGC GGGCCT G GC GGG GGCCA
TGGCCACCCAGCCCAAGAGG CCCC CTG CCCGGA C CG CCC CCGGT
CCCATGTCCATCCCC TAC TA- GAA C A A ---------
GAM7843 842 GCCGCCGCCAGGGTAGCGGT CC A A GT - AGCGTC
GTAGCTGCGCAGCGTCGCGC GCCG GCC GGGT GCGGT AGC TGCGC
GCGCTACCGCACCCAGGTTC CGGC TGG CCCA CGCCA TCG GCGCG
GGC T- A - -- C ------
GAM7844 21637 GGTGCGCGGTGCTCACAGCT TG - T ACA TC- CC TCACGG
CATCGTGGTGCCGGGTCACG GG CG CGG GCTC GCTCA GTGGTG GGG
GTCCTCGCCATAGTTGAGTG CC GC GTC CGAG TGAGT TACCGC CCT
AGCCTGACGTGCC GT A - --- TGA T- ------
GAM7846 21478 CTGGGGCTCACCGCAATCCT TG - C AAT TCCAAC CT ACA
TCCAACTCTCAGCCTCCACA C G GGCTCAC GC CCT TCTCAGC CC
GGTAGCTGGGGATAACGGGG G C CCGAGTG CG GGG GGGGTCG GG
CTGTGAGCCACTGG GT A T --- CAATA- AT ---
GAM7847 16419 CAAGAAAGCCGAGGCTGGGG GAAA C C -- G A A T A TAGA
CTGGGTCAGCAACCGAATTC CAA GC GAGG TGG GGCTG GTC GC ACCGAAT CC GTT

CAGTTTAGAGGCGGATTTGG GTT TG CTCC ACC CTGGT CAG TG TGGTTTA GG CGG
TCGTGGACGTGGTCAGCCAC AAAA A - GA G G C - - ----
CTCAGTAAAATTG
GAM7848 9969 GGACCCCAGGGAGCAAAATC CCC GA T TC TTTA AG TT G TAAGA
ATCCCTTTTTAACTTGAGAA GGA CAGG GCAAAA CA CCTT ACTTG AATC GAGGG CTTT
TCTTGAGGGGCTTTTAAGAG CCT GTCC CGTTTT GT GGAA TGAAT TTAG CTCTC GAGG
GAGACTCTCTTGATTGGTAA T-- -- C T- TTC- GG TT A -----
GTCTTAAGGTTGCTTTTGCC
CTGTTCC
GAM7849 21536 GGTTCTTCAGTTGCTTCAGG C --- TC TG GTATA CAGGT
CCATCTGGATGTATATGTGC GGTTCTT AGTT GCT AGGCCATC GAT TGTG
AGGTCACAGGGTTATGATGG CCGGGGA TCGG CGA TTCGGTAG TTG ACAC
CTTAGCTTGGGCTCAGGGGC C GTT -- TA GG--- -----
C
GAM7850 22394 AGTATCCTAAGATCAGCTGG A ATCA C-- GGCTTACA
GCATGGTGGCTTACAACTGT AGT TCCTAAG GCTGGG ATGGT
AATCCCAGCACTTGGGAGAC TCA AGGGTTC CGACCC TGTCA
T G A--- TAA --------
GAM7851 4553 GACATGTACTATACATAGTA C AGTAAG GTCC CTAC
AGGCGTCCTATGCATCTACG GA ATGTACTATACAT GC TATGCAT
TGCATAATAGCGTGTATAGT CT TACGTGATATGTG CG ATACGTG
GCATCTC C ------ ATA- ----
GAM7852 20164 GTGGCTGGTGGAGCTGTCTT G A CT-- AC- G AC- GAGCA
AAACGAAGAGAACCATGAGC GTGGCTG TGG GCTGT TAA GAA AGA CAT
AATGAAGTCTGTTTACCTTA CATCGAC ACC CGACA ATT TTT TCT GTA
TTACACAGCCCACAGCTAC - - CATT CCA G GAA -----
GAM7853 12396 TGGGGGAAGAGGAAGAGAGG G AGA A CAG AAACA
ACAGAGAGGCCAAACAGGCC TGGG GAAGAGGA G GGA AGAGGCC
TCTTCCCCTCCTCTTCACCC ACCC CTTCTCCT C CCT TCTCCGG
A A --- C --- -----
GAM7855 2948 CCGCTCAACTCTTCATCTTC AA-- CAT- - CCA AAA- AGAGAGCGA
TCGCCCCACTCCAAACGAGA CCGCTC CTCTT CT TCTCGCC CTCC CG
GAGCGACGGACCGGAGAGGC GGCGAG GAGAG GA AGAGCGG GAGG GC
GAGACAGCGGCGAGAGAAGG GGAA CGGC C A-- CCAG ---------
GAGCGG
GAM7856 7972 AGTTCATCCAGCCGCCGCTT A-- C---- ACA-- - AGGGA
GACATGGGGGCAGGGAGCCC AGTTC TCCAGCCG CGCTTG TGG GGGC
GCCAGGATGCAGGCGCACTT TCAGG GGGTTGGT GCGGAC ACC CCCG
TGGTTGGGGTAGGACT ATG TTCAC GTAGG G -----
GAM7858 13474 CGGAGGTGTCTGAGGTTGCC GT TTGCCATCA CGAGGTCA
ATCAGCCAGGGCGAGGTCAC CGGAGGT CTGAGG GCCAGGG
CCTGGCCCTCAGGAACCTCC GCCTCCA GACTCC CGGTCCC
G AG --------- --------
GAM7859 271 TGTGCGCTTCTACTTCCTCA -- G --- T ----- TGTTTACTC
CTCGTGTTTACTCCGAGTAC TGT GC CTTCT AC TCCTC ACTCG
CTTGAGGATGTTCTGGAAGA ACA CG GAAGG TG AGGAG TGAGC
GCTGACA GT A TCT T TTCCA ---------
GAM7860 18708 GTTTTCTACCTGGGCTGACG A- - GAC TG --- GGAGG
TTGCCTTGTCCGGAGGGGCT GTTTTCT CCT GGGCT GT CCTTGT CC
TGCAGGGTGGCTGAAGCCCT CAAGAGA GGG CCCGA CG GGGACG GG

GGGGCAGAGAAC CG T AGT GT TTC -----
GAM7861 14258 CCCCTGTCCTCCTGTCCCTT GT CC TGC G TCTGCT
GCCCTGGGCCTCTGCTGGCT CCCCT CCT TGTCCCT CCT GGCC
GAGGAGGGACAAGGTGAGGG GGGGA GGA ACAGGGA GGA TCGG
G GT -- --- G ------
GAM7862 18690 CCTTTCCCAAGTGTGACAAA T AAG - A A- GA TGAACT
GATCCATGAACTGAACTGTG CC TTCCC TGTGA CA AG TCCAT AC
GTGGACACTGTGCTTACAGG GG AAGGG ACATT GT TC AGGTG TG
GAACGG C --- C G AC G- ------
GAM7863 256 TCCAGGCCGTGCGCACCCAG -- GCACCCAGGA - CAAGACCCTCAACAACAA

GAGAAGGAGCAGATCAAGAC TCCAGG CCGTGC GAAGGAG CAGAT
CCTCAACAACAAGTTTGCCT AGGTCC GGCATG CTTCCTC GTTTG
CCTTCATAGACAAGGTACGG TT GAACAGATA- C ----------
TTCCTGGA
GAM7864 16014 GGCAGAAAATCGATTCAGAT - T--- ---- - C GAGG
GAAGCACGAGGATTCGAGGG GGCAGAAAA TCGA TCAGA TGA AG ACGAGGATTC
AATCTTTGTACTGTCAACTT CCGTCTTTT AGCT GGTTT ACT TC TGTTTCTAAG
TTTGGTACTTCGAGTTTTCT G TCAT TTCA G A ----
GCC
GAM7866 17547 ACCCTTCCTTGGCACCATTC CT-- CA TT TACACTTAAGGAT
TTCTACACTTAAGGATGGAG ACCCTTC TGG CCA CTTC
TTTGGGACCACATTGAAGGG TGGGAAG ACC GGT GAGG
T TTAC AG TT ----------
GAM7868 17502 GAGCAGGCTTCAGACACTGC AG- CTG A TTACAGAAAGCCAT
CTTTATCTTTACAGAAAGCC GAGC GCTTCAGACA CCTTT TCT
ATGGGAAGGGAAATGTCTGA CTCG TGGAGTCTGT GGGAA GGG
GGTAGAGCTC AGA AAA - ----------
GAM7870 10743 CAGGGACACTGAGCTGGCTA ACA A GC - C CA A- CAA
TCTCGGCGCTTCGGGCAAGA CAGGG CTG GCTG TATCT CGG GCTTCGGG AGA CTG
ACTGCAACAGGCTCTCCTGG GTCCC GGC CGAC GTGGA GTC TGGGGTCC TCT GAC
GGTCCTGCAGGTGTACAGCC CG- - AT C C -- CG ---
GGGCCCCTG
GAM7872 6805 GGGTGGCGGGTGTCTGGCTG G- GT-- A TC C GGTA
GAATCTCCCCTGGGTACATG GGGT GCGGGT CTGGCTGG ATC CC TG
GAGGGTGCCAGCCGGCTGGA CCCA CGTCCA GGCCGACC TGG GG AC
CCTGCAGACCC GA GGTC G GA T ----
GAM7873 19737 TGCCTTCTCTAGGTCCCTAT TC C------- TC CAG
TCCTGCTTGGCAGCCGAGCA TGCCT TCTAGGTCC TAT CTGCTTGG
GAGGTACCCTCTTAGGACTT ACGGA GGATTCAGG ATG GACGAGCC
AGGATAGGCA TA ATTCTCCC GA ---
GAM7874 2577 AACTTCCAAGTGGGCAAGTA AA G AAGTAA- CA TT A GACTTGGG
ATTCCAATGATTAGTTTTTT AACTTCC GTG GC TTC ATGATTAG TTTTCCCCCA GTTT
CCCCCAAGTTTGACTTGGGA TTGGGGG CAT TG AAG TATTAATT GAAGGGGGGT CGAA

AGCTGGGGGGAAGTTAATTA AC G GGGAACG -- -- - --------
TGAAGCAAGGGGTGTACCAG
GGGGTT
GAM7875 21154 GGCCATCTTTGAACTCCTGG CATCT -- CTATATT- A
ACCTCCTAAGCTGCCCAAC

ACTATATTGTGAACGAGCCA GGC TTGA ACTCCTGGA GTGAACG GCC
CCTCCTAAGCTGCCCAACGG CCG AACT TGAGGACCT CACTTGT TGG
TGTGTTCACCCCCGACTTCC TAAAT GT TCAGCCCC G ----------
AGGAGTTGTCAATAAATGCC
GAM7877 18745 GCTTGATTTGCTTGGTGACC - - GAATT----- GTGA
GAATTACTAGGTGACTAGTT GCTTGATTTGCT TGG TGACC ACTAG
TACTAACTAGGTCATTCACG TGAACTGAACGG ACT ACTGG TGATC
GCAAGTCAAGT C T ATCAATCATT ----
GAM7878 13936 ATTATACCCTTTAAACAGAG - TTTAAAC TA- ----- ATAG
AGAGTTTATATAAAGGCCTC ATTA TACCC AGAGAGAGTT TATAAAG GCCTCT
TATAGAGGGGTGACAATTTT TAAT GTGGG TTTCTTTTAA ATATTTT TGGGGA
ATAAACAATTTTCTTTAAAA T CAAAA-- CAA AACAG ----
CGGGTGTTAAT
GAM7879 7693 GCTGCCGCGTGGCGGACACG GT - A C AGA AGGAGG
CCAGAAGGAGGAGGCCTGGG GCTGCCGC G GCGG CA GCC AGG
GCATGGCCGCGTGTGTGGCA CGACGGTG T CGCC GT CGG TCC
GC TG G G A GG- ------
GAM7880 12643 TTTTGGCTCTCTGACCAGCA GA--- A A AT------ G GCAAGAA
CCATGGCGGTTGGCAAGAAC TTTTGGCTCTCT CC GC CC GGCG TTG
AAGCGCCTTACGAAAGGGCG AGAACCGAGGGA GG CG GG CCGC AAC
GCAAAAAGGGAGCCAAGA AAAAC - - AAAGCATT G -------
GAM7881 5182 GATCCATTTTCACTTATTGG T - AT AG --- --- GTGA
AGAGAGCACGATTTATTGTG GA CCATTTT CACTT TGGAG AGCACGATTT ATTG TG
GTGACAATTCAGTGTGGAGT CT GGTGAAA GTGAG ACCTC TCGTGCTGAG TGAC AC
CGTGCTGCTCCAGAGTGTAA - T -- G- GTG TTA ----
AGTGGTC
GAM7882 12153 TTGTTTCGGACTATAGAGTG A AG G G- CA --- TG TAAA
CTGATGGCAGAGATTGGTGA TTGTTTCGG CTAT AGT CT ATGG GAGATTGGTGAGGAT T GA

GGATTTGGATAAATCTGATG GACGGAGCC GGTA TTA GA TACT TTTTAATTACTCCTG A CT

TGTCCTCATTAATTTTCCTC G CA G AG CC TGT GT ----
ATGAAGGATTACATGGGCCG
AGGCAG
GAM7883 12496 GTGCCACTTTATGATGGGGA C GGGA - - ATTGTTAG
TATGAGAAATGCATTGTTAG GTGC ACTTTATGATG TATGA GAAA TGC
GCAGTTTCATCATGCAAACA CATG TGAGATACTAC GTACT CTTT ACG
TCATAGAGTGTAC - AAAC A G --------
GAM7885 9978 GGTCCTGCTGTGCCAGAAAC CT-- G CA C- AAGAAAAAGCG
CCTTAAGAAAAAGCGAAGGA GGTC GCT TGC GAAA CCTT
ATTTCGCAGAGCTGAAGATC CTAG CGA ACG CTTT GGAA
AAGT G -- AA ----------
GAM7886 6059 TCCATTTAAGCTACAGACTT AGC C - TG C AAAA
AGATGTCTAAAAATATGTGT TCCATTTA TACAGA TTAG A T TA
CCTGATCTGTACAGTGAGTG GGGTGAGT ATGTCT AGTC T G AT
GG GAC - C GT T ----
GAM7887 18848 ATGTTATGAAAAAGCAATAG ATGAAAAAGCA GG - ATGACAATCCTATAAA
TGTGGTCCTGGCTATGACAA ATGTT ATAGTGT TC CTGGCT
TCCTATAAAAGCCAGAGAAC TACAA TGTCACA AG GACCGA
ACTGTGATTAAGGGAACAT GGGAATTAG-- -- A ----------

GAM7890 18440 GAGATGGGGTCTCGCTGTGT GTCTC- G TT CT CTTGA
TGCCCAGGCTGGTCTTGAAC GAGATGGG GCT TG GCCCAGG GGT
TCCTGGGCTCAAGCAATCCA CTCTACCC CGA AC CGGGTCC TCA
CCCATCTC ACCTAA - T- -- -----
GAM7891 5705 AGCAATCAAAGGTTTTCGCA AA GG CAAT CCA GAGTAAA
ATTCTCCAGTGGGAGTAAAC AGC TCAAA TTTTCG TCT GTGG
CACAGACTACGAGGGAGTTT TCG AGTTT GGGAGC AGA CACC
GACAGCT AC GA ATC- --- -------
GAM7892 18952 TCAGGAGTTCACCATTAGAC - ACATATATTCCGGA
TCTCACATTTACATATATTC TCA GGAGTTCACCATTAGACTCTCACATTT
CGGAAGATGTGAGAGTCTAA AGT TCTCGAGTGGTAATCTGAGAGTGTAGA
TGGTGAGCTCTATGA A ----------
GAM7893 15052 TGCCCGCGTACATGGGCTGA GCGTACAT G AAG GAAGAAA
GGAATGTTCAAGCAGAAGAA TGCCC GG CTGAGGAATGTTC CA
ATGGTAGAGTATTCTTCAGG ATGGG TC GACTTCTTATGAG GT
CTTAAAGGGTA AAAT---- G ATG -------
GAM7894 15335 TCTTATACCCCAAAAGTCAT C- AAA--- A- G AACAAAGG
ACAGTGTCAGAACAAAGGCT TCTTATA CCCA GTCATAC GT TCAG
GGGATGGGTATGATGTACAG AGAATGT GGGT TAGTATG TA GGTC
TGGGAATGTAAGA AA GACATG GG G --------
GAM7895 8279 TTCTTTGGCTTCACTCTCAC TG T CTCTC ACTCCTT TTCTTCTCTTT
AAACTCCTTGAATTTCTTCT TTCTT GCT CA ACAA GAAT
CTTTATTCTTTTCCTTGTCT AAGGG TGA GT TGTT CTTA
TTTGTAGTTGGGGAA GT T TTTC- CCTTTT- ----------
GAM7896 17282 GAGATATGTAAATACGCTGT GA- AAATACG TG - G TTTAAGAAAACT
TGGGGTGAGAGATTTTAAGA GA TATGT CTGT G GGT AGAGAT
AAACTGTCTCTGCTATTGAC CT ATACA GACA T TCG TCTCTG
AGATCCTGGACATAAAATC AAA GGTCCTA GT A - ----------
GAM7897 4328 GTGCCAGGAGGTGGTGGACA A- T - C--- A CATC T A GCTGG
CGTACGGCAAGCTCCATCCT GTGCCAGG GG GGTG GACA GTACGGCA GCTC CTG CC TCCT

GTCCATCCTGCTGGAGGAGG CACGGTCT TC TCAC TTGT CGTGTTGT CGAG GAC GG AGGA

TCAGCCCTGAGCTGTTGTGC CG T G ACGA - TCCC T - -----
AGCATGTTGCACTTCTGCTC
TGGCAC
GAM7899 8296 GGGGGAGCTTGAAGGAACTA --- A GAACT ACT CCC CCCCAAAC
CTACTAAGCCCCTGGCCCCA GGGGG AGCTTG AG ACT AAGC TGG
AACCCAAGCTTCAGTCCCAC CCCCC TCGGAC TC TGA TTCG ACC
TCCAGGCTTCACCCCC ACT C ACCC- C-- A-- --------
GAM7900 10914 GTGGTCACGCCCACAATCTT GCC CA A - CTCCC
CAGCGTGGCCTCTCCCAGGT GTGGTCAC CA ATCTTC GC GTGGCCT
CACTGTAGGAGATGCTGTAG TACCAGTG GT TAGAGG TG CACTGGA
TGACCAT AT- CG A T -----
GAM7901 6632 GTTTGACCACTGTAAGTGCC G CT A C GCA G C TTAATAAAC
TGCACTCTGTATTCTATTAA GTTT ACCA GTA GTG CT CTCT TATT TA
TAAACTAAAATAAAGGGAAG CAAA TGGT CGT CGC GA GGGA ATAA AT
ACGCTGCTGGTGAAAC G -- - A A-- A A ---------
GAM7903 9257 GAGATGCAGTTAAAATTCTA --- TTAAAA- TAAAA- CACAAA
GAATAATTAAAAGCCACAAA GAGA TGCAG TTCTAGAATAAT GC

GTGAAACTGTTGTTCTGGGG CTCT ATGTT GGGGTCTTGTTG TG
CCCTATGTTGTAGATTCTC TAG GTATCCC TCAAAG ------
GAM7905 19255 GGCACAGTGAGACAGATGTG - A AGACAGAT GA A AG A AGACCATCAC
GAAGAGCAGACCCAGGAGCT GG CAC GTG GTG AG GC ACCC GGAGCTGA
GAAGACCATCACTCAGCTCC CC GTG CGC CAC TC CG TGGG CCTCGACT
AGGGTGAGCCTGCACCGCCG A C -------- G- - AG A ----------
TGACC
GAM7906 8071 GCCCATTTAATTGAAAGTAT -- ----- AAA TA- A AAAA-- TATAACGTC
ATAGTAATGAAAAGCCTTAT GCCCA TTTA ATTG GTATA GTA TG GCCT
AACGTCGGGCCTCTAGCAAT CGGGT AAAT TAAC TATAT CGT AC CGGG
GCGATTATATAGCAATGATT CG ATTAG GA- TAG A GATCTC ---------
ATAAAGCTGGGC
GAM7907 21166 GGGTCTCACCTTTAGCCTCT AC TAGCCTCT--- CAGT GTCTGACCCAA
GCCCCCAGTTCTGGTCTGAC GGGTCTC CTT GCCCC TCTG
CCAACAGAGGGGCTCTATGA CCCGGGG GAA CGGGG AGAC
TATTAAGAAGGGGCCC AA TTATAGTATCT ---- ----------
GAM7909 9071 CCCGACCCGCGCCCGGGCCT GAC- - C--- G- CGAC
GCGGGCGACTCGAGCGGGCC CCC CCGC GCC GGGCCTGC GG
CTGCTGGCTGCGGCTGAGGG GGG GGCG CGG CCCGGGCG CT
AGTC T TCGT AG ----
GAM7910 17040 AGTCTTGTATAGCAATATGC TT CA A - TG G AATA
TTGGAGAGGAGAATACTTAT AGTC GTATAG AT TGC T GAGA GAG
CTCTGGCGCACATCACTATA TCGG TATATC TA ACG G CTCT TTC
TTTGGCT TT AC C C GT A ----
GAM7912 2804 GGGTTCCAATGGGTGCACAG CCAA G CA TC A T GAC
TTCCAAAAATGTGGAGGGAC GGGTT TGGGT CA GT CAAAA TG GGAGG
CCTTCTCAGTTTTGAGGCCA CCCGA ACCTA GT CG GTTTT AC CTTCC
TGAATCCAAAGCCC A--- A AC GA G T ---
GAM7913 1250 TTGGGTAATCCACTTAGTTT TAA - TTCCA TA ACGTAAGA
CCAGGTAACATACGTAAGAA TTGGG TCCA CTTAGT GG ACAT
TGTCCACTGGGTTGGAAACC AACCC AGGT GGGTCA CC TGTA
CCAA CAA T ----- -- --------
GAM7914 5722 GTGAGCGCACATAGTGTCTC CACATA A T CT----- -- ACCTGCATGA
ACGTGACTACTAGTATGCCA GTGAGCG GTGTCTC CG GACTA AGT ATGCC
CCTGCATGAGGCATTAACTT TACTCGC TACAGGG GT CTGGT TCA TACGG
TAAACATGGTCTGCGGGACA CG---- C - ACAAATT AT ----------
TGCCGCTCAT
GAM7917 6819 GGCGAACCTGAAAAGTTAGG AACC AA -- A- T TGAA
TCAGGCGTTGACTGAAGTCT GGCG TGA AGTTA GGTC GGCGT GAC
ATGCCAAGGCCAATAGCTTC CTGC ACT TCGAT CCGG CCGTA CTG
ACCGTC C--- -- AA AA T ----
GAM7919 6905 CTGGATTCGGAATGTGCTGA - C- TT CA- GACT
TTTCCATTGGACTCAAGTTG CTGG ATTCGGAATGTG TGA TC TTG
ATCTCACTTATATTCTGAGT GGCC TGAGTCTTATAT ACT AG AAC
GCCGG G TC CT TTG ----
GAM7920 12549 GATATGTTGAAGGGTATTTG T TG - AT A - C ATA
TTAATTTTACTTTTCAAAGA GA ATGT AAGG GT TTGTTA TTTTACT TTT AAAG
TACTTTAAAACAGTAGAGCT CT TACG TTCC CA AACGAT GAGATGA AAA TTTC
AGCAATGACACCTTGCATTT T -- A GT C C A ---
C

GAM7921 10638 ACCCCTAACATTGACCTTGT TAACATT C A CC AG CAGAGAA
GCATCCCTGAGAGAGTGGGC ACCCC GAC TTGTGC TC TGAGAG TGGG
AGAGAATCCAATTCTCATGA TGGGG CTG AGCGCG AG ACTCTT ACCT
AGCGCGAAGTCGGGGT ------- A A T- A- -------
GAM7922 16385 TGTCTGTGGCAAAAGTTTAA T T A TAAT --- TTC
TCAGAGGAAATTCTTTCCCA TG CTG GGCA AAGTT CAGA GGAAA
GTCTGTCGATTTATGCCTCA AC GAC CCGT TTTAG GTCT CCTTT
GCCA C T A CT-- GAC ---
GAM7923 11464 GGGGGCGGCGCACTGATTCC - C TTCCG-- AGAGAA TATCAGT
GGGCCCCAGAGAACTGCCTA GGGGGCGGC GCA TGA GGCCCC CTGCC
TCAGTGGCAGGGGGGTCAAA CCCTCGCCG CGT ACT CTGGGG GACGG
TCCTTCACTGCTGCCGCTCC T C TCCTAAA G----- -------
C
GAM7924 9360 CGATTGGGACTGACGCTCAT GG AC TCA AG T CATG AATT
GGACAGGGTTCCCATGGATA CGATT GACTG GC TGGAC GGT CC GATA
AATTTGTCGAAGGCACCAGG GCTGA CTGGT CG ACCTG CCA GG CTGT
TCCAATGCAGTGGTCAAGTC A- GA TA- GA C AAG- ----
G
GAM7925 19744 GGCTTTCTGTTCATCCGTAC C TT CC- TCAAA TAGT
TTTCAAAGATTTAGTGATCA GG TTTCTG CAT GTACTT GATT
AGTACTATGTGTCAGGAACC CC AAGGAC GTG CATGAA CTAG
- T- TAT ----- ----
GAM7927 197 ATTCTTCAAATGTTCCCTCA AAATGTTCC - A TTAC TGTCACTTATTT
GTGATCCTTTTACTCTCCTT ATTCTTC CTCA GTG TCCTT TCTCCT
GTCACTTATTTGGGAGAAAT TAAGAAG GAGT CAC GGGGA AGAGGG
AGGGGCACATGAGATAAGAA AAGAATA-- A - TAA- ----------
GAAGAAT
GAM7929 8334 CTGGGGCTACCTCTCTACAG TG A T TACAG TT AG GAAAAA
CTGTTTCCTCAGAGGGGAAA C GGGCT CC CTC CTG TCCTC AGGG
AATCTTGGAGGACCAGATGG G CTCGA GG GGG GAC AGGAG TTCT
GTGGGAGCTCTGG GT G T TA--- C- G- ------
GAM7931 8182 GCGCTGGCCGCCGCCGCCTC C -- CC - AAGG CCGGG
CTCCAAAGGGGGCCGGGTCC GCG TGGCC GCCG GCCT CCTCCA GGG
TGGAGGTGGGCTTTGGCATG CGC ACCGG CGGT CGGG GGAGGT CCT
GCCATCGC T TA TT T ---- -----
GAM7932 5813 TGACCTGGCGGACAGGTGGG C A TG G C A CCC - TTCCC
AGCCACAGCGTACACCCCAT TGACCTGG GG CAGG G AG CAC GCGTACA CAT GA
GATTCCCTCTGTGCTGTGCG ATTGGACC TC GTTC C TC GTG TGCGTGT GTG CT
TAGTGCCTACTGCTTGCTTC T - GT A C A C-- T -----
CAGGTTA
GAM7934 10028 TTGCTGAGGACCCCCAAGGC ---------- C GCG- T CAATCA
GTACTGGCAATCACCGTAAA TTGCTGAG GA CCCCAAG TAC GG
GGTTTGGGGATCACAGTTAC AACGACTC CT GGGGTTT ATG CC
TTTCTCAGCAA TTTCATTGACA A GGAA - ------
GAM7935 3061 GGGCTCGGGCTCTGGGCTCA T--- CACCA ATCGATCA
CCACCTCATCGATCAGAGGG GGGCTCGGGC CTGGGCT CCTC
AGGCCCAGTCCTGCCCGGGC CCCGGGCCCG GACCCGG GGAG
CC TCCT AG--- --------
GAM7936 313 GCTTTCAGTGCAGTTTCAAA - A A--- AC CAACA AATA
CATTTTCACAACAGGCAATA GCT TTC GTGC GTTTCAA ATTTTCA GGC

GTCCATGAGAATTTGGAATG CGG AAG TATG TAAGGTT TAAGAGT CTG
ACAGTATAGAATGGC T A ACAG -- AC--- ----
GAM7937 1037 CAAACTGATCACCTGGGGAT T- CC- AG - TA AGC GG CGGG
GAGAGCAATGGGTAACTGAA CAAACTGA CA TGGGGATG AGCAATG GG ACTGA TTTG CT

GCTTTGGGCTCGGGGGACAG GTTTGACT GT ACCCTTAT TTGTTGC CC TGACT GGAC GG

GTCAGTGCCCACGTTGTTGT CT TTT G- A CG --- A- ----
ATTCCCATTTTGTCTCAGTT
TG
GAM7938 1067 CTGGTAGTTGGTAAAGGAGC T G - G -- C GAAC ATA
TGGCCTTGAACTCAGGGATA CTGG AGTT GTA AAG AGC TGGC TT TCAGGG
TCTTGAAAGCCACTGTTGCT GATC TCAG TAT TTC TTG ACCG AA AGTTCT
TCTATGGACTCTAG - G C G TC - ---- ---
GAM7939 20415 CCTCAGATAAAACCTCAATT TA AATTACT TA- TACATTTCCAT
ACTGGTAATTGTACATTTCC CCTCAGA AAACCTC GG ATTG
ATCAATATCCCTTTTAAAGA GGAGTCT TTTGGAG CC TAAC
GGTTTATTCTGAGG TA AAATTTT CTA ----------
GAM7942 5636 GCTTGGCCTATGACAGGTCA - CTAT TCA G- AT CCCAAT
CCGTGTGTAAATCTTTCCCA GCTTG GC GACAGG CC TGTGTAA CTTT
ATAAAGTGTTGCACAAAGGC TGGAC TG CTGTCC GG ACACGTT GAAA
ATCCTGTCCGTGCAGGT G C--- TAC AA GT ------
GAM7943 13662 TCCTTGTGAGAATTCCGACT TGAGA --------- ACC CACTT
GCACAACCCTGCACTTCAGC TCCTTG ATTCCGACT GCACA CTG
TGTGTGTAATGAAAAGGGTT AGGGAC TAGGGTTGG TGTGT GAC
GGGATGAATCAGGGA TAAG- GAAAAGTAA GTC -----
GAM7944 8186 CCTTTCCTTTTCTGGGGGGA TT C- GG G- ATTTTT A CCCGA
AAGGGAAAATTTTTGGGGGG CCT CCTTTT TGG GGAAAG GAAA GGGGGGG TTTC
GATTTCCCCGAGAAAACCCC GGG GGAAAA ACC CCTTTC CTTT TCCCCCC AAAG
CCTTTTCAACTTTCCTACCA GG AT AT AA ------ A -----
TAAAAAGGGGGGG
GAM7945 20868 TGGGATGCCCTGGACTGGAC A C TGGAC CC CA - T CGCAAC
CATGCAGGCCTATGAACGCA TGGG TG CC TGGA ATG GG CCTA GAA
ACTTCTGGGACCCATCTCCA ACCC AC GG ACCT TAC CC GGGT CTT
CAACTGGACACCCA - A TCAAC C- -- A - ------
GAM7946 2985 CCGGAACCTGCTCATCTGGA GA - - AT CAA G -- AAAAGAGC
TCAAGAAGAATTTGCTAAAA CCG AC CTG CTC CTGGAT GAA AATTT GCT
GAGCGGCCAGAGTTGTTCAT GGC TG GAC GAG GACCTA CTT TTGAG CGG
CCAGGAGACAGCGTGCGG G- C A -- --- G AC --------
GAM7947 18739 TTTGTGGATATAGTGATTTC TG- A- CA TGCA GTA
TGCCATCATGCAGGGTACCA TTTG GATAT GTGATTTCTGC TCA GG
TTGAAGCAGAGATTATAGAT AGAC TTGTA TATTAGAGACG AGT CC
GTTAATCAGA TAA GA A- TA-- ---
GAM7948 6467 GTGAGGGCCTGCCTGGGCCC CT G CC AG T-- C- GAC
GTGTCATAGTCCCTGCCCCA GTGAGGGC GCCTGG C GTGTCAT TCCC GCC CAGGCC
GGCCGACGGCCTGCAGGTCT CACTTTCG CGGATC G CGCAGTG GGGG TGG GTCCGG

CGGGGGTGACGCTCGCTAGG -- - CT -- CTC AC ---
CGCTTTCAC
GAM7949 4552 AGGACGCGGCCGCAAGCTTA - ---- TATT---- TAGT

TTCCCTTTAGTGAGGGTTAA AGGACG CGGCCG CAAGCT CCCTT
TTTTAGCTTGGCACTGGCCG TTTTGC GCCGGT GTTCGA GGGAG
TCGTTTT T CACG TTTTAATT ----
GAM7950 14674 TCAGTTGCTATGAAGCCAGC TG TA AGC T C - C- ACC GACA
TACCAGCCCCTCGACCTCGA TCAGT C TGA CAGC AC AG CCC TCG TC
CAGATGCGACAGGGACTTGT AGTTA G ACT GTCG TG TC GGG AGC AG
CGCTGATCAATGTGATTGA GT TA A-- C T A AC GT- ----
GAM7951 19470 GGATGACATCCAGAGGGCAG TG CAGAG A-- AT A - A- GGAGAG
AATGCATGCTGCAGCAGGCG GGA ACATC GGC GA GC TGCTG CAGC GGC
GAGAGGCTGGGCTGCCGGCA CCT TGTAG CCG CT TG ACGGC GTCG TCG
GTTGTCACAGCCACAGATGT GT ACA-- ACA GT - C GG ------
TGTCC
GAM7952 15987 GGCTCGTCCCGGAGTCAGAA GTCCC T A A A--- AA ACCCA
AAGGCAGGTCAACTACCCAA GGCTC GGAG CAG AA GGC GGTC CT
GGCGGCCAAAGGCCCTTCCT CCGAG CCTC GTC TT CCG CCGG GA
GTCTCCAGAGCC A---- T C C GAAA CG -----
GAM7953 10656 AGGGAGAGGTGGAGGCCCTG A TG AG---- CT ATA TTCGA
CTGGATCGATACTTCGAGGC AGGG GAGG G GCCCTG GGATCG C
TGATCCTCCAGGGCAGGTGG TCCC CTCC C CGGGAC CCTAGT G
CTGCCTCCCCT - GT GGTGGA CT CG- -----
GAM7955 17800 GCCTAAATACATTTTTGCTT TAAA TT-- CTTACTA TT AAATTCTTAA AGG
ACTAGCTATTTAAAATAAAT GCC TACA TTTG GCTA TAAAAT TCAGAGG
TCTTAATCAGAGGAGGCCTT CGG ATGT AAAC TGGT ATTTTG GGTTTCC
TGGGTTTTATTGGTCAAATC TCGA TTCT ------- T- ---------- ---
TTTGTAAGCTGGC
GAM7956 762 GTAAAACAATGGCCATACTC CAAT CATACTC G CC--- AACTA
TGTTGAGGACCACCAAGGAA GTAAAA GGC TGTTGA GACCA AAGGA
ACTATCTTTTTACTTGGTCA TATTTT CCG ACAATT CTGGT TTTCT
TTAACAAATGCCTTTTTAT T--- TAA---- A TCATT -----
GAM7959 13622 TTTTTGGGGAAAATTGTTCT TG GGAAAA GTTT AATTAAA A AAGAAGCCAAGACA

GTTTGTTTTAATTAAACCGA TTTT G TTGTTCT GTTTT CCG CTG
CTGAAGAAGCCAAGACACAG AAAG C AACAAGA CAGAG GGT GAC
ATGGAAAGAGACTAAGAACA GT AG---- AT-- AAA---- A ----------
AGACTGGAAA
GAM7960 10947 GGTTTCATTTCTTCTTGGCT T TTGGCT C ---- TG T A AACACA
TGCCTGAGGGGTTCTTGCAG GGTTTCATT CTTC TGC TGAGGGGTT CT CAGG ACA TT
GTACAATTAACACAAAATGT CTAGAGTAA GAAG ACG ACTTTTCGA GG GTCT TGT AA
TCTGAGGGTAGTAGCTTTTC - TC---- T TGAT GA - A ------
ATGCACTGAAGAATGAGATC
GAM7961 14959 GGTTCCACTCCACCATTCTA - A A- GG- AAGGCTTG
TATATGGATAAGGCTTGGTA GGTTCCACT CCACC TTCT TATAT AT
AAGTGTAAGAGAAAGGTGGC CTAGGGTGA GGTGG AAGA ATGTG TG
AGTGGGATC C A GA AAA --------
GAM7965 12684 GCTGAAGGAGAGCAGTTTGT AA---- AG G G--- A C GGAA
TGAAGAAGCCTTGGAAAAGT GCTG GGAG CA TTTGTT AAG AG CTT
CTCCTTGCCAAACAGATGTC CGAC CCTC GT AGACAA TTC TC GAA
CTCCGCAGTGCAGC GTGACG CT - ACCG C T ----
GAM7967 9552 CTGTAGTCCAACTATTCAGG - A A AT G AGTA
ATGCTGAGGTGGGAGTATCT CTGTAGTC CAACT TTC GG GCT AGGTGGG

ATTTGAGCCCAGAAAGTTGA GACATCGG GTTGA AAG CC CGA TTTATCT
GGCTACAG A - A -- G ----
GAM7969 16167 TGCAAAGATGCTGTCCGTGC C CTG TGC G C- GT C TTCCTCGGC
GCGTTGCTGCGGCCGTGGTC TG AAAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC

CGCGCCCTTCCTCGGCGGGC AC TTTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG
CGGACTGGTCTCCAGAAATG - TT- T-- A CT -- - ---------
CTTGGGTTCATCTTTCA
GAM7970 22882 ACTGGGACTGCTGAGATGTC - - G ATG C TAT- TTGA C T TTGGAGCT
CTCTATTCTTGAAGAGCGTA ACT GGGAC TGCT AG TC TC TC AGAG GTAT C
TTCTTGGAGCTGATACCTCT TGA TTCTG GCGG TC AG AG AG TCTC CATA G
GTTGATCTTGAAGAAACTGG A T G AA- A TTCT TTG- - - --------
GCGTGTCTTAAGT
GAM7971 6333 CCATCTTTCACTGGGAATTG A G TGCGAA A CCATTATGAAAA
CGAAGGGGATATGCCATTAT CCATCTTTC CT GGAAT GGGGAT TG
GAAAACAGGTCCCTCCCTCA GGTAGAGAG GA CCTTA TCCCTG AC
TTCCAAGGAGAGATGG - A CTCCC- G ----------
GAM7972 14327 GGGGCAGTCAGTAGGAACTG TCAGT A AA A CT ACCAC
TAACTATGTCTCTGATGCAC GGGGCAG AGGA CTGT CT TGTCT GATGC
CACGTGTTTAGACACAGCAC CCTTGTC TCCT GACA GA ACAGA TTGTG
AGTCCTTTTTTCTGTTCC TTTTT - C- C T- -----
GAM7973 15961 CAGCGCTGGGCATGCTGGCG G TG - T --- G- GGCCGT
GCAGGGGGTGCGGGGCTGGC CAGC C GG CA GCTGGCG GCAG GGGTGCGGGGCT

CGTGGCTCTGCATTCGGCTG GTCG G CC GT TGACCGT TGTC CTTACGTCTCGG
TGAGTGCCAGTTGACCTGGA A GT A - GAG GG ------
GCTG
GAM7974 3284 GTGACCTACTCCAATGTGTG AC- C AT- A AT- T - - CCTG
AGGATGGCTGGACTGCCTGC GTG CTA TCCA GTGTG GG GGC GG AC TG
ATGTGCCTGCCTCGCCCCAT CAC GGT AGGT CGTAC CC CCG CC TG AC
GCCTGTGGACTGGAAACAC AAA C GTC C GCT T G T ----
GAM7976 1294 GGTACTAGACTATTATGCAG T AC T AGAT CCAA ---------- CCCCA
ATGGTGCCCAAGATCTTCCT GGTAC AG TATTA GC GGTGC GATCTTCCT GGC
GGCCCCCAGCCCAGGGTCAC CCGTG TC GTAGT CG TTATG TTAGAAGGA CCG

CCTCCTTTAGGAAGATTGTG - CA - AT-- TG-- TTTCCTCCCACTGGGAC -----
TATTTAGCTGATGACCTGTG
CC

GAM7977 8708 TCCCTGGCCGAGGGGCAGGC C GA A------- T A CTC GACC
TCCTCACGGCCTCCCTGGGA TC CTGGCC GGGGC GGC CCTC CGGC CCTGG
CCCCAGGCGCGTCGGGAGGC AG GGCCGG CCCCG CTG GGAG GCTG GGACC
GTCGTCCTCCAGCCCCGAGG C AG ACCTCCTG C G CGC ----
CCGGCGA
GAM7978 301 ACAGGAAGGGTCCTAGGTAG AAG TA A-- TTCCT
GGGGAGGTTCCTCCTCCCTT ACAGG GGTCC GGT GGGGGAGG
GAAACCCTGGGCCACTCTGT TGTCT CCGGG CCA TTCCCTCC
CA- TC AAG -----
GAM7979 4255 GCAGCTGACTGGTCTTAATG CT G A--- ACTT TAGGC

CTGTACTTGCGATAGGCTCG GCAG GACT GTCTT ATGCTGT GCGA
TTAAGCAGCATGGAAAAGAT CGTT TTGG TAGAA TACGACG TGCT
GGGTTGATTGC AG G AAGG AAT- -----
GAM7981 14456 CCTGCCCATGCCAGGACTCT CCCAT A G-- A-- TCCTCCCTTT
GGAGGCTTAGCTCCTCCCTT CCTG GCCAGG CTCTGGA GCTT GC
TGTACCAGGCACGTCCAGAG GGAC CGGTCC GAGACCT CGGA TG
CCCTGGCTACCAGG CAT-- C GCA CCA ----------
GAM7982 11898 GGTGACCAACTTATACTCAA T A A ACTT ATAAA CT CGG
CTTGAATAAACATCAGCTCT GG GACCA CTTAT CTCA GA CATCAGCT GAT
GATCGGATCCAGCTGATGAA CC TTGGT GGATA GGGT CT GTAGTCGA CTA
CTCTGGGATAGGCTGGTTCC - C - ---- CAA-- C- ---
GAM7983 12051 AGTATGGATGTGTCTTGAAT AT AATGTGTT G TGGA
GTGTTGAGGCCCTTGGAAGG AGTATGG GTGTCTTG GAG CCCT
GACTCTTTCTGCAAGATACC TCATGTC CATAGAAC CTC GGGA
TGTACT -- GTCTTT-- A ----
GAM7984 1543 GCTGCCCTGTCTTGCGTTCC G-- G CAGT CA CTGC ATGACC
AGTGTTCCAGCTTCTGCGAG GCTGCCCT TCTTGC TTC GTTC GCTT GAG
ATGACCCTCAAGGCGAGCGA CGACGGGG AGAGCG GAG CGAG CGGA CTC
GGGCGAGAGTGGGGGCAGC GTG G ---- -- A--- ------
GAM7985 18149 GCGGGACGGACGGTGGACGC A-- - AC AC GTTTGTA
TGGGACGCGTTTGTAGCTCC GCGGG CGGA CGGTGG GCTGGG GC
GGCCCCGCCGTTCCGACCCC CGCCC GCCT GCCGCC CGGCCT CG
CGC CCA T C- -- -------
GAM7986 4019 GGCCTGGACCTCCCAACGTG CCCAA GG---------- ACAC
CTGGGATTACACACGTGATT GGCCTGGACCT CGTGCT GATTAC
GTCTGACAAGCAGAGGCATG CCGGACCTGGG GTACGG TTAGTG
AGCTGGGTCCAGGCC TCGA- AGACGAACAGTCTG ----
GAM7987 4636 ATGGCCACTGAGGGGTTGTC GG C GTT-- GGG AAGAATCC
TGGGTCATGGGAAGAATCCT AT CCA TGAGGG GTCT TCATGGG
TCATGAATAAGATTAATATT TA GGT ACTCTT TAGA AGTACTT
CTCATGGAAAT AA - ATAAT ATA --------
GAM7988 20019 GCGCTTTGTGGCTCCTCCTG TTG C --- C TC - TCGA
GCCAGGTCATACTTCGAAGT GCGCT TGGCTC TCCT GGC AGG ATA CT
TGTCCCCTCGCCAAAGGGAC TGCGA ACTGGG AGGG CCG TCC TGT GA
GGGTCAGTAGCGT TG- C AAA C CC T ----
GAM7989 11381 AGGCCAGAGGATCACTTGAG C GA - A- AGT AGAC
CCCAGGAGTTTGAGACCAGC AGGC AGAG TCACT TG GCCCAGG TTG
CTGGGCAACATAGTGAGACT TCTG TCTC AGTGA AC CGGGTCC GAC
CTGTCT - AG T AA --- ----
GAM7991 16991 ACAAATGTAGATACAATAAA T C AAA-- ACA AGCTATTAA
ATGTAAACAATGTAGCTATT ACAAA GTAGATA AATA TGTAA ATGT
AAATATGATTACAGAAAATG TGTTT TATTTAT TTGT ACATT TATA
TTCTATTTATTTTTGT T C AAAAG AG- ---------
GAM7993 5841 GCAGGCATGTGTTGGCAAAG - ------- G -- T T---- AAGTGTTAA
GCTGTTAATAGTAGTTAAGT GCAG GC ATGTGTTG CA AAGGC GTTAA AGTAGTT
GTTAAGACTGCTTTTCTTTA TGTC CG TACGTAAT GT TTTTG CAATT TCGTCAG
ACGTTTTCATGGTAATGCAT A AGATTTA G AC - TCTTT ---------
ATTTAGAGCACTGT
GAM7994 17117 CTGGGGTGTTTATGGCAAGT GG T-- C ACTTT A ATTGTGGCA
CACTTTGACAGACATTATTG CTGG TGTT ATGG AAGTC GACAG CATT

TGGCAAATGTTGTCCGACTT GACC ACAA TGTC TTCAG CTGTT GTAA
ACTGTTTCAACAAACCAG AA CTT A C---- - ---------
GAM7995 13538 ATGGTGCTAAGGAAATTTGC G ATT T CTTCG C - T CTGAC
TATGCTCTTCGAGCTGAGGG ATGGT CTAAGGAA TGCTA GCT AG TGA GGGTTA TGGG
TTATTGGGCTGACTTTATTG TACCA GGTTTTTT ACGGT TGG TC ACT CCCAGT ATTT
ACCCATCATCTGGTTTGGCA - --- T ----- T A T -----
TTTTTTGGACCAT
GAM7996 22690 GCCAGAGCGATATATTCATC AGA TATAT TCTG A TTTGGCC
TGGAGAACCTTTTGGCCAGG GCC GCGA TCA GAGA CCT
TCTTACTTTGATCCTCGTGA CGG TGCT AGT TTCT GGA
GGC AG- CCT-- TTCA - -------
GAM7997 7521 GTCCATGACCACTGCAATCA ATG CA TC - C G GAGC
CCTCTCGCGCCGAGCGGAGC GTCC AC CTGCAA AC CTCT GCGCC AGCG
TGCTGGCGCAGAGCGTCCTT CGGG TG GACGTT TG GAGA CGCGG TCGT
GCAGCCGTAGGGGC GA- CC CC C - - ----
GAM7998 9103 CTGTGCACCTCGTGGTAGAA G -- TAGA-- CTT - C -- G TCATATTTCAT
ACTCTTTGGGGTTCGCCAGC CTGT CA CCTCGTGG AACT TGGG GTTCG CA GCT TAGC
TGTAGCTCATATTTCATGTT GACG GT GGAGCACC TTGA ACCC CAAGC GT TGG GTTG
GGGGTCATGCCGAACACCCA G CA TTGATG AGT A C AC G ----------
TGAAGTTGTAGTTCCACGAG
GACTGGGCAG
GAM7999 5062 GTTGGTGACCTCAGATACAC -- - ACACTGTTC- A TCAAA
TGTTCAGAAGTACTCAAAGT GTT GGTGAC CTCAGAT AG AGTAC
ATTCCTTTTTTCTCACATTT CGA TCACTG GAGTTTA TC TTATG
GAGAGTCACTCTAGC TC A CACTCTTTTT C -----
GAM8000 22098 GCAGTGTTGGGAGTGCTGTT T TG GC-- T- A- CTG -- GAAGGAGATT
GGAAAGCTGAGCCTGAGAGA GCAG GT GGAGT TG TGGAAAGCTG GC AGAGACAGAT TGAG

CAGATTGAGGAAGGAGATTT TGTC TA TCTCA AC GCCTTTCGAC TG TCTTTGTTTG GCTC

ACTCGGTGTTTGTTTCTGTG - GT ATTT CT AC TG- TG ----------
TCACAGCTTTCCGTCCATTT TA
AACTCTTGATCTGT

--
GAM8001 10730 CCCCTCCATGGCGACGGCGG C A- - GG GACTGAAGCA - GGA
CCGGGGCCGCTAGGACTGAA CCCCTC ATGGCG CGGCGGCC G GCCGCTAG CCTCG CC

GCACCTCGCCGGAGGACGAG GGGGAG TGCTGT GCTGTCGG C CGGTGGTC GGAGC GG

GCTGGTGGCGACGGGCTGTC - CG G AG ---------- A ---
GGCTGTCGTGAGGGG
GAM8002 5088 ACTTTCAGGGTAATGATGCA TGA-- C TGAACAAGACATT
CCTGTTGAACAAGACATTAC ACTTTCAGGGTAA TGCAC TGT
AGTGCAGAAACTTACTTTGA TGAAAGTTTCATT ACGTG ACA
AAGT CAAAG - ----------
GAM8003 16296 GAGCCAGCTGGATGCGACAG G - T C GT C CAG-- TTGATGATGCTT
TCCGTGGCCTTCTATCAGGC GA CCAGCT GGA GCGA A CCGTGGC TTCTAT GCTATA
TATATTGATGATGCTTTATG CT GGTTGA TCT TGTT T GGTACTG AAGATG CGGTAT
GCAAATTGTAGAAGTCATGG A A T C TG - TTAAA ----------

GTTCTTGTTTCTAAGTTGGA
TC
GAM8005 19252 CTGCTTCTTTTCTCCTCCCT - CCT-- --------- TGCC
TTTACTTGCCGGTAGAACAC CTGCTTCTTTT CT CCC TTTTACT
AGTTATGGGTCGCAAGAAGA GACGAAGAAGA GA GGG AAGATGG
AGAAGCAG A ACGCT TATTGACAC ----
GAM8006 17474 TCCTGTGGCCTTCAATTGTC G TT ATTG G A AGAAAAAGA
TTCAGAGGTGGATGAGAAAA TCCTGTG CC CA TCTTCA AGGTGG TG
AGACACCATTTGTGAGGGGG AGGGCAC GG GT GGGAGT TTTACC AC
TGTGGCACGGGA - T- GG-- G - ---------
GAM8007 21159 GATGTGAGGAAAGGAAGTGC GA AAG- CCAAAAAT- -- ATGGC
CAAAAATGCCTGGACAGATG GATGT GGA GAAGTG GCCT GGACAG
GCTTGTCCCAAGGCCAGGAC TTACA CCT TTTCAC CGGA CCTGTT
ACACACTTTAAAATCCAACA A- AAAA ACACAGGAC AC -----
TT
GAM8009 16958 TTGTGGGAAGCAGGGAAACT G GCA ---------- TCTTGATAT
GGATCTTGATATTCCAGTAC TT TGGGAA GGGAA ACTGGA
AACATTATGTTCCCGAATTC AA ACCCTT CCCTT TGACCT
CCAGAA G AAG GTATTACAACA ---------
GAM8010 16595 AACATGGATTTTAACGTTGC T TTT G GTAAAT T T TTATTAC
AGGATTGTAAATTCATAAGA AACA GGAT AACGTTGCA GATT TCA AAGA AG
TAGTTATTACCTTTCTTTGA TTGT CTTA TTGTAATGT TTAA AGT TTCT TC
AATTGTGTAATGTTTATATT T TAT G ------ - T -------
CTTGTT
GAM8011 21697 ATAGTACTGAACCCTTTATC G GAA TA A AT TTTTTCA ACAACCA
AACTATGTTTTTTCAGTCTA ATA TACT CCCTT TCA CT GT GTCT
CAACCAAGGCGGCTACTAAG TAT ATGG GGGAA AGT GA CA CGGA
TGACTAAGGGGCAGGTAGTA G ACG TC - AT TCGG--- -------
T
GAM8012 4826 TTGAGGGCCTGAAGCCAGAA A AAG- AA T A GAGGA
GGAACTGACATGGAGGACAG TTG GGGCCTG CCAG GGAAC GAC TG
TCTGTTCCACCTGGATTGCA GAC CTCGGAC GGTC CCTTG CTG AC
GGCTCCAG - GTTA CA T - -----
GAM8014 2257 TGCACTGTGGCACGGGCTTG --- GG GC GCCT
GCCGGGGCTGCCTGGCTCTG TGCA CTGT CACGGGCTTG CGGGGCT
AGCAGGCTCGTGGGACGGCC ATGT GGCA GTGCTCGGAC GTCTCGG
CTGTA CCC GG GA ----
GAM8015 12487 GAGGTGCCTCAGTGGAGGCG TG TCA A- - GTCT AC A GAGGGCT
CTGTGTCTCCTACGCAACTT GAGG CC GTGG GGC GCTGT CCT GCA CTTCT
CTGAGGGCTGGAGGGTGCCA CTTC GG CGCC TCG CGACG GGA CGT GGAGG
AGGGCAGCTGCTGACCGCCT GT TC- AG T ---- AC G -------
GGTGCTTC
GAM8017 19623 TGACTTTTTACAAGTCTGAC TTTA T ACA A TTTG
ACTTGAAGCTTTTGGGCCTC TGACTT CAAG CTG CTTGA GCT
AGGGAGCAGCTTGATAAGTC ACTGAA GTTC GAC GGACT CGG
A TA-- - GAG C ----
GAM8019 11479 GTCACCATCCTCTGCATTGA CA C- AT- C TG CACT C TCCT
CTTGGGCACTGACATGGTTC GTCAC TC TCTGC TGA T GG GA ATGGT
CTGCCATCTCCCTGGCTTAT CAGTG AG GGACG ATT G CC CT TACCG
GAGCAGGCTGAGAGTGAC AG TC AGT C GT ---- C ----

GAM8021 19911 GTAACTGCAAAGATGCTGTC C C CTG TGC G C- GT C TTCCTCGGC
CGTGCGCGTTGCTGCGGCCG GTAA TG AAAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC

TGGTCCGCGCCCTTCCTCGG CGTT AC TTTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG

CGGGCCGGACTGGTCTCCAG - - TT- T-- A CT -- - ---------
AAATGCTTGGGTTCATCTTT
CATTGC
GAM8022 13925 GCATGCTGACGAGGTTTGGA T - C TTGGAGAATC G CCGT
GAATCGAAACTGGCTCCGTG GCA GCT GA GAGGT GAAACTG CT
GGCAGTTTCCTAAAATGTGC CGT TGA CT CTCCG CTTTGAC GG
CTCCTCGAGTTGC - G C TGTAAAATC- G ----
GAM8023 19431 GGAGTCTGTGTCGGGGGAGG TG--- A- T C T AGCC
GCTGCCGTCGAGCCCGCCGT GGAGTCTG TCGGGGG GGGC GC G CG
CGCCTCGCCCCTGAACTGTT CCTCAGAT AGTCCCC TCCG TG C GC
AGACTCC TGTCA GC C C - ----
GAM8024 18763 GGGTCTCTTTTCGGCGCTCT TCTTTTC AGA--- A AGGGGA
AGAGGCAGAGGGAGGGGATC GGGTC GGCGCTCT GGCAG GGG
CCTGTCGTGACAAGAGCGCC CCCAG CCGCGAGA CTGTC CCT
TGTCTGCGACCC CGTCTGT ACAGTG - ------
GAM8025 7559 CCACTGTCTGTAAGATTCCC C TC TA C-- C C -- AAA TTTAAC
AGCAGCTGCAGCCTCAAAAT CCA TG TG AGATT CCAG AGCTG AGC CTC ATT
TTTTAACAATCAGGAGTTGC GGT AC AC TCTAA GGTC TCGAC TCG GAG TAA
TCAGCTTCTGGCTCAATCTG - CA TG CTC T - TT GAC ------
TCAACCATGG
GAM8027 13196 TGTTACAGGAGGCAGAAAGA CA AAGAAA ATTTA TA GG TAAAG
AATGATTTAGGTAGACGGGG TGTTA GGAGGCAGA TG GG GAC GG
TAAAGCCAGTCCCCAGCAGA ACAAT TTTCCGTTT AC CC CTG CC
AAATTTGCCTTTTAACA -- AAAAG- GAC-- -- A- -----
GAM8028 3684 GGAAGGTTCAACACGAATTG A TCAA AA CAA - CT G AG- TGGT
TGCAAAATCTCTGGATATAT GGA GGT CACG TTGTG AAT CT GGATATATTA TTT CGATA
TAGTTTAGCGATATGGTTGT CCT CCA GTGC AACAC TTA GA TTTGTATAAT AAA GTTGT
TGAAGAAAATAATATGTTTT - ---- -- --- C AT A GAA ----
AAGCATTCACAACGTGACCT
CC
GAM8029 10612 GTCATCACAAAATACTGCCA - AA AC- C ATGA AATG TGAAAAGAAAAC
ATGAATCATCAAATGCATTG GTCATCA CA AT TG CA ATCATCA CAT
AAAAGAAAACGTGAAGATGA CAGTAGT GT TA GC GT TAGTAGT GTG
TGATGATGACGATGATGATG A AG GTA A AG-- AGAA ----------
ATGATGAC
GAM8030 17012 CAGCTCTGAGGGGCCTCAAA A G- AAA A TGAGGAT
CCAGGCCCTGAGGATGGGCC CAGCTCTG GGG CCTC CC GGCCC
GGGCAGGAGGAGCTCCGGAG GTCGAGGC CTC GGAG GG CCGGG
CTG - GA GAC G -------
GAM8032 785 GGTCCCTTCTATGTGAAAAG CTT --- ----- TGAA
AGAAGGTGGGCTGAAGCCTC GGTCC CTATGTGAAAA GAGAAGGT GGGC
TAAGATCTTCTCCAGTTTTC TCAGG GATACACTTTT CTCTTCTA TCCG
ACATAGTATGGACT TAT GAC GAATC ----
GAM8033 18873 TTTTCTGTGAACCATGCACG A A C T ------- GC CAGG
TGCTGGCACTGGCCTCAGGA TTTTCTGTG ACC TG ACG GCT GGCACTG CT

GACAGTGCCCTGCCTTGGCT AAGAGGCAC TGG AC TGT CGG CCGTGAC GA
GTCAGGTCCACGGAGAA C - - - TTCCGTC A- ----
GAM8034 17011 TTTTTCGAATGAATGACAAC A - CAAC-- TT CACTTT
TTTATTTTTCTTACACTTTT TTTTTCGA TGAA TGA TTTATT TCTTA
AAGGCTGATGAAAAACCTTC GAAAAGTT ACTT ACT AAGTAG GGAAT
ATTTCAATTGAAAAG A T TCCAAA TC ------
GAM8035 22832 GGGCACCGCAACGGGCAAAC ---- AC AAC-- CCGCT
ATGAGCCCCGCTGGCTCATA GGGCACC GCA GGGCA ATGAGCC
CATGTGCTCCTGCATCAGGT CTCGTGG CGT CTCGT TACTCGG
GCTC ACTA C- GTACA -----
GAM8036 6592 TGGACTCTGGGGGGACACCA -- G G A CCCTGTGAC
AAGATGCCCTGTGACCACTT TGGACT CT GGG GACACCAAAG TG
TTGGTGTTGCCCGAGTTAGT ACCTGA GA CCC TTGTGGTTTT AC
CCA TT G G C ---------
GAM8037 18932 GACCAGACTTTTCCAGAAGT AG--- C AA CC-- CGGGCA
GCCGGACGTCGGGCAGCGTC GACC ACTTTT CAG GTG GGACGT
TATATCACCTTGAAGAAGTA CTGG TGAAGA GTT CAC TCTGCG
TGACGGTC CAGTA A C- TATA ------
GAM8038 13830 TTTCAGGTAGGTGAAGCAGA AG GAA A CA ATACGTCA
GAAAGAAGGCAGCATACGTC TTTC GTAGGT GCAGAGAA GAAGG GC
AGCATTTTCTTCTCTGCACT AAGG TATTCA CGTCTCTT CTTTT CG
TATAAGGAA AA --- - A- --------
GAM8039 17578 GAGGCAGAGTTGGAGCTCAC C -- - T C TA C- T AATCCAAATAA
AGTAACTGCCAGTTGAATCC GAGG AGA GTT GGAGC CA AG ACTG CAG TG
AAATAACATCTGATTAGTCT CTTC TCT CGA CCTCG GT TC TGAT GTC AC
CTTGGCTCCTAGCAATCTCT - AA T - - TC TA T ----------
TC
GAM8040 1838 AGCGGTGGCCCCGAGGTTCG T - A GA ----- TCTTCAAT
AGTCTTGCTCTTCAATGCTA AGCGG GGCC CCG GGTTC GTCTT GC
CCGGGGACCGGGACCCGGCG TCGTC CCGG GGC CCAGG CAGGG CG
GCCCTGCT - C - GC GCCAT --------
GAM8041 1019 CTGGCATCACTGGCGGGCTC TG CATC - T- A GGG
GGGACCGGGCGGGGCCTGGC C G ACTGGC GGGC CGGG CCGGGC
CCGTCGCCCGGCCAGTCTGG G C TGACCG CCCG GCCC GGTCCG
GT ---- G CT - ---
GAM8044 2926 CTGGCCTCAAGTGGTCCTCC TCAA TC C T GCT AAGTGC
CATCTTGGCTTCCCAAAGTG CTGGCC GTGG CTC CATCT G TCCCA
CTGGGATTACAGATGTGAGC GGCCGG CACC GAG GTAGA C AGGGT
CACCATGGCCGG TAC- -- T - ATT ------
GAM8045 5024 GAGGCACTCACTCTAGAAAT CTCA AAATA C T TA G GTGAAA
AGCCTGTGTTAGCTGATGTG GAGGCA CTCTAG GC TG GT GCT ATGT
TGAAAGCGTAGCCGGCCAGC TTCCGT GAGATC CG AC CG CGA TGCG
CACACTAGAGATGCCTT A--- ACAC- - - GC - ------
GAM8046 237 GCCAACATCGACCAGGAGAC CATC AGACCTA T AC-- CAAG
CTACCGCTGTGAACTCATTC GCCAA GACCAGG CCGC GTGA TCATT
AAGGATGGAACATTACTGTG CGGTT CTGGTCC GGTG CATT GGTAG
GACCTGGTCATTGGC A--- A------ T ACAA ----
GAM8048 19839 GTTTTATTCCATCCCTGTAT T T CCC A-- ATTTAACACTTCAGC
CAACCTATTTAACACTTCAG GT TTA TCCAT TGTATCA CCT
CAGGACCTGGTGCATGTGGA CA AGT AGGTG ACGTGGT GGA

TTGATAC T T T-- CCA ----------
GAM8049 17075 GGGCTGTTATGGGGATAAGC TATG AA TG GA CCCAAATATT
TGGTGAGGTCCCCAAATATT GGGCTGT GGGAT GC GT GGTC
GACCAACTGGCATCCCACAG TCCGACA CCCTA CG CA CCAG
CCT ---- -- GT A- ----------
GAM8050 1750 AGCTGCCGGGTGTTGGGGAA T --- TG AA TCGC - GAC
AGAGTCGCCTGCCTCCGGAC AGC GCCGGGTG T GGG AGAG CTGC CTCCG
CGGAGTGCAGACCTCTGACC TCG CGGCTCGC G CCC TCTC GACG GAGGC
CTGGAGTCGCTCGGCCGCT C TGA GT AG CA-- T ---
GAM8051 20830 GAAGTTGCCTCAGGTTACGA T TC AC- ---- ATGT
GGTCTTGGCACAATTATATG GAAGT GCC AGGTT GAGGTCTTGG CACAATTAT
TGTAATTGTGTTATCCAGGA CTTCA TGG TTCGA TTTTAGGACC GTGTTAATG
TTTTCCAAGCTTCGGTACTT - C- ACC TATT ----
C
GAM8053 3761 GAAGAAAGACCTGCACCTGC C--- C C- GA T AAAGGTG
CTGATCCGATGGGCAAAGGT GAAGAAAGA CTG AC TGCCT TCCGA GGGC
GGCCTTTGGAAGGGGCGTTG CTTCTTTCT GAC TG GCGGG AGGTT TCCG
TCCAGTTCCTCTTTCTTC CCTT C TT GA - -------
GAM8054 14865 TTACCACATGGAGCATTTCA - -- G - A-- C - TTTTC
CAGTTTCAAAGAAGTTTTCC TTACCA CA TG AGCATTT C CAGTTT AAAG AAG
TTATTTTAAAACTGCAAGAA GATGGT GT AC TCGTAAA G GTCAAA TTTT TTC
AATGCTACACTTGATGGTAG A TC A A AAC A A -----
GAM8055 12198 GCAGTGCACACAGGTCCCCG C A CCC- A ---- G GAG
GGGACCCCACCATGTGGAGC GCAGTGCA AC GGTC GGGG CC CCACCAT TG
GGATGGTGGCTGTGGCCCCT CGTCACGT TG CCGG CCCC GG GGTGGTA GC
TGTGGCCGTCTGCACTGC C - TGTT - TGTC G ---
GAM8056 20251 TAGGGAAAGCTGGTACGCCT AAA T T C CA AC GT AATTC
GCAGGTACCGGTCCGGAATT TAGGG GC GG ACGC TG GGT CG CCGG
CCCGGGTCGACCCACGCGTC ATCCC CG CC TGCG AC CCA GC GGCC
CGCACCCTA A-- - - C -- -- TG -----
GAM8057 10933 GAAGCTCTGAGACATGTGAG T - TGTGAGA G TTC
AAGGTCTAGTATTCTACTAG GAAGCTC GAGA CA AG TCTAGTA
AACTGGAAGATTGCTCTCCG CTTTGAG CTCT GT TC AGATCAT
AGTTTC C C TAGAAGG A ---
GAM8059 7689 TGATTGGTGCCTGTTTCCTC A-- - -- CC TT- TTCAT
ATTGACTTCATGTTTTTTGA TG TTGG TGCC TGTTT TCA GAC
AAGCACTGGCAGCCAGGAAC AC GACC ACGG ACGAA AGT TTG
A AAG G TC -- TTT -----
GAM8060 5657 GGGCCATGCGCTTACATTGA T----- TACAT T CA GCAGT
TATCATTAGCTGGCAGTCGG GGGCCA GCGCT TGA AT TTAGCTG
CTGACAATTTCACAGTGCTC CCCGGT CGTGA ACT TA AGTCGGC
CCACTGGCCC CACCCT C---- T AC -----
GAM8061 380 GGCAGGTGGAGGTGCATCAA T ------- AGAG G AGCGG -- A AGGA
GAGCCCGGGGCAGCGGTGCC GGCAGG GGAGGTG CATCA CCCG GGC TGCC CAG GGCC

CAGAGGCCAGGAGGCCCCTG CCGTCC CCTCCGT GTGGT GGGC CCG ACGG GTC CCGG

AAGGCAAGGCCACGGGAGAC - CTAAGAG CAGA A GA--- AA C ----
TGGTGGAGAATCTGCCTCCC
CTGCC

GAM8063 12387 GCCATGCCATCGTCAGTGAC ----- C - AC - - G - GCT
CCCGAGGCAGGTAACGCTGT GCCAT GC ATCGT CAGTG CC CGA GGCA GT AAC
TGACGTGCCATCGAGGACTG CGGTA CG TGGCA GTCGT GG GCT CCGT CA TTG
CTGCACGGTCGCCCTTCATG CTTCC C C CA A A G G ---
GC
GAM8064 7865 CTGTGCTCACTCTGGTTTTC CTCT TTTTCT T TC AA- CTGCTGTCTCCCTCCT
TGCTCAGGGTCTGAAGCAGC CTGTGCTCA GG GC CAGGG TG GCAG
TGCTGTCTCCCTCCTCTGCC GACACGGGT CC CG GTCCC AC CGTC
CCCATCCCCTGGCTCTCCCC CC-- TCT--- - CT CCC ----------
TGGGCACAG
GAM8065 3453 CGCCCTCTGGCCCTTCCTGG C T CC T - A-- C - C CTGGT
GCATCGTGGCTGAGGTGCTG CG CCTC GGC TTCC GG GC TCGTGG TGA GGTG TGGTG

GTGCTGGTCACCATCATCTT GC GGAG CCG AAGG CC CG AGCATC ACT CTAC ACCAC
CATCTACGAGAAGCGCCGGA A C -- - G AAG T T T -----
AGCCCGAGGACG
GAM8066 19518 TGGTGAATTATCATTTATTT TG ATC T ACT TA CTGT
TGTACTGTGTTAGGCAGCTC TGG AATT ATTTATTT GT GTGT GGCAGCT
TGTAGTTGCTACATTTAACC ATC TTAA TGAATAAA CA TACA TCGTTGA
AAATAAGTCAATTTGCTA GT C-- C ATT -- ----
GAM8067 15176 GGCTAGAAAAGCCAAGGCCA AGAAAA A AA GG---- AGAGGACAG
AAGGCTGGAGGGGAGAGGAC GGCT GCC AGGCC AGGCTGGA GG
AGTCAGCATGTCCAGCCTGG TTGG TGG TCTGG TCCGACCT CT
GGTCTGGGTGTAGGGTT GATG-- G GG GTACGA ---------
GAM8069 14603 CTGGTCACATCATCTATCAT CACA A - C AGAAAGC-- GGAA
CTACGAAGAAAGCGCCGGAA CTGGT TC TCTA TCATCTA GA GCC
GGCCCGAGGACGTCCTGGAT GGCCG AG AGGT AGTAGGT CT CGG
GATTGGACGACGCCGG C--- C T C GCAGGAGCC ----
GAM8070 11669 TGACAAAATGTGTTTCATGG A- -- TG---- AAAAAATGGCA
TCAAAAAATGGCAGACAATG TGACA AATGT GTTTCA GTC
ATTGAAGCTCACGTTGATGT ACTGT TTGCA CGAAGT CAG
CA AG CT TAGTAA ----------
GAM8071 16427 GGAGTTTCTTCCAAACTTCA A C AA A TCT A GTTT T TTCCTCCTTCATT
CCATCTGGATACTGGTGTTT GG GTTTCTT CA CTTC CCA GGAT CTGGT CTT ACAGA
CTTTACAGATTCCTCCTTCA CC CGAAGGA GT GGAG GGT CCTA GGCCG GAG TGTCT
TTTCTGTTGAGTAGCCGGGA - T AC - T-- G AT-- T ----------
TCCTTGGGAGGCATGTAGGA
AGCCC
GAM8072 16944 GCTCTTTCAGATTTTTTGAT T T TTT AT - TTTA-- T ACTTTCC
GTAGGCATTTAAGGCTATGT GC CT TCAGA TTTG GTA GGCA AGGCTA GT
ACTTTCCACTTAGCTTCACC TG GA AGTTT AGAC TAT CCGT TTCGAT CA
TTTGCCATATCCCAGATGTT - T TGT CC A TTCCAC T -------
TTGATAGGT
GAM8074 12663 TAATTTCCACTGCTTTGAAG TT - AG CC CTGAATA
GCCCTGCATCTGAATAATGC TAAT CCACTGC TTTGA GC TGCAT
AAGCTCAGGCGCGGTGGTCG GTTG GGTGGCG GGACT CG ACGTA
TTG CT C -- A- -------
GAM8075 1368 GTTTTCGCTGTGAACATTCC G G AT----- - CA AGTTC
CTTGATCTCATCAAGTTCTG GTTTTC CTGT AAC TCCC TTGATCT TCA
AGCGGGTCAATGGGGCAACA CGAGAG GGCG TTG GGGG AACTGGG AGT

CGGTTAGCGGGAGAGC - A GCACAAC T CG -----
GAM8076 5061 GTCTGAATTGTCAAATAGTT G AAATA C AAGT TTCT A ATAAA
CTAAAGTGCATTCTTGCAGC GTCTGAATT TC GTT TA GCA TGC GCTA
TAATAAATAGCAGCATTTGT CAGACTTAA AG CAA AT TGT ACG CGAT
TTATAAAACCTTAAGAAATT - AATTC A ATT- TT-- A -----
CAGAC
GAM8079 5719 TCCAAATGTCTGGATTTTCC AAAT-- - TTCC -- AGC
AGCTAGAGATGGGGAGCTCT TCC GTCTGG ATT AGCTAGAGA TGGGG
TAACTTTCTGGCTCCTGGTC AGG CGGACC TGG TCGGTCTTT ATTCT
CCAGGCTCCTTAGGA ATTCCT C TCC- CA ---
GAM8080 17025 AAAAAGGTCCTGGTTCACCC TG A---- T TCAC
TGGAGAGTCACCTTTCCTGG AAAAAGGTCC GTTC CCC GGAGAG
GCCACCGGATTTGGGCCTTT TTTTTCCGGG TAGG GGG CCTTTC
TT TT CCACC T ----
GAM8081 19101 TAAGCCCAGGGTCTGGCCTT - G CT T- AAA GCAGAAA ATTC
GAAAGCTCCGCAGAAATGAT TAAG CCCA GGT GGCC TG GCTCC TG
TCCAAAACCCAGGAGCAACC ATTC GGGT CCA CCGG AC CGAGG AC
ACTGGCCCTACCGTGGGACT A G TC TC CAA ACCCAAA ----
TA
GAM8083 6091 TCCACTATCTTGAAAGCTAT AT-- GAAA CATTTC-- A CCA
TCATTTCCGAGAACATGCCA TCCACT CTT GCTATT CGAGA CATG
CGTGTTTCGCAACTAAAAAT AGGTGA GAA TGGTAA GCTTT GTGC
GGTATCAAAGTAACAGTGGA CAAT ACTA AAATCAAC - ---
GAM8084 17528 GCTAAAAAAGTGCATGATGG AAA --- T- T- T-- - - TTATCTTTCCCT
TGAGAGCCCAAGTTATCTTT GCTA AAGT GCA GA GG GAGAGC CC AAG
CCCTCTTCGGTGTTCTTCTT CGAT TTCG CGT CT TC TTCTTG GG TTC
CTCTTCTCTGCAATGCTTCT GTC TAA CT TC TTC T C ----------
GTAGC
GAM8086 16705 AGCCAGCAGGAGCAGTTGGA A A -- C-- TAC G --- AAT ACGAG
GACCGCTGTTACGAGGAGGG AGCCAGC GG GCA GTTGGAGAC GCTGT GAG AG GG GT

AATGTACGAGGCTGCCAAGC TCGGTCG CC CGT CAATCTTTG CGATA CTC TC CC CG
TGCTCTATAGCAATGTTTCT G - TT TAA T-- G GAA GT- -----
AACTTTGCCCGGCTGGCT
GAM8087 17563 GGTTCCGTCACCCCCTCCCA -- -- GAAG TC A AGC TC - TGTC
GGGAAGCAGGTCTGAGCAGC GGTTCCGT CAC CCCCTCCCAGG CAGG TG GC TTG CTGGC
TG
TTGTCCTGGCTGTGTCCATG CCGAGGTA GTG GGGGGGGGTCT GTCT AC CG AAC GACTG AC

TCAGAGCAACGGCCCAAGTC CT AA GG-- GA C GC- GA T ----
TGGGTCTGGGGGGGGAAGTG
TCATGGAGCC
GAM8088 22802 GGCACTTCTGGTTGGCCTCG C TC TT C CT CTCGGCTCTT
GGGCGCGCTGGCTCGGCTCT GG ACT TGG GGCCTCGGGG GCG GG
TCCTCCGCCCTCGAGGCCCC CC TGA GCC CCGGAGCTCC CGC CC
CGCAGTCCC C C- C- - CT ----------
GAM8089 12450 CCGGTGTAAATGTTGAGCCT AA A TTTTT G- TTGTTT
TTTTGGCCTGGCTTGTTTGC CCGGTGT ATGTTG GCC GGCCT GC
AAAGGCCCTGGCCAACGTCA GGTTACA TGCAAC CGG CCGGA CG
ACATTGG AC - TC--- AA ------

GAM8090 16251 GTGCTGCAGATGCATCCCAA T- TCCCAATAAT GGCCTCAAA
TAATCAGGGTGGCCTCAAAA GTGCTGCAGA GCA CAGGGT
CCCTGTCTGTCCTCTGTAGC CACGATGTCT TGT GTCCCA
AC CC CT-------- ---------
GAM8091 7013 TTCAGCAAGGTTCTGGCGCA A - T --- -- -- CCCCCTGC
GGTGCAGCACCCCCTGCTGC TTC GCA AGGT CTG GCGC AGGT GCAGCA
TGCTTACCTCAGCGTTCACA AAG CGT TCCG GAC TGCG TCCA CGTCGT
GGCCTGTGCAGAA A G - ACT AC TT --------
GAM8092 305 CCCATCTCTGTGACTTCCTG - -- GGAGA TCTA
GAGACTCATTTCTAGATGGG CCCATC TCT GTGACTTCCT CTCATT
AAGGGAAGTTATCAAGACGA GGGTAG AGA TATTGAAGGG GGGTAG
TGGG C AC AA--- ----
GAM8093 3973 CAGGTGCTGCTGAGCGAGCC C G AGCC A -- --- TAT
CGAGGAGGCGGCGGCTCTGT CAGGTG TGCT AGCG CG GGA GGCGGC GGCTCTG
ATCGGGGCCTTAGTCGCCAG GTCCGC GCGA TCGC GC CCT CCGCTG CCGGGGC
TCCCGCGCTGAGCGCCGCCT C G ---- - GA ATT ---
G
GAM8094 20299 CTGCCTCTTCTCCTGCTGGC - - G ---- T TT TTCAG
AGGTACACTTCTTCAGGCTG CTGCC TCTTCT CCTGCT GCA GG ACAC C
TGTCCTCTGTGCAGGTAGGT GACGG AGGGGA GGATGG CGT CC TGTG G
AGGGGATGGCAG T T A GTCT - TC -----
GAM8096 2331 TATATAGGTAAAGCTCTAAG - GTA - A CCT --- TTTTAT
ACTCCTGAGCCAACTTTTAT TATA TAG AAGCTCT AAG CT GAGCCA AC
GTAACTGGCTTCCTAGGCTT ATGT ATC TTCGAGG TTC GA TTCGGT TG
GGGAGCTTGAACTACTGTA C AAG G G TCC CAA ------
GAM8097 5528 GTGCAGACATTCAGCTGTGC ACATTCA - C CAC A TCAT
CGCGGTCACTGTGGAGTTCA GTGCAG GC TGTGC GCGGT TGTGG GT
TGCACTACATAATCGCTGCA CGCGTC CG GCACG CGCTA ACATC CG
CGTGCCCTGCGC C------ T T AT- A ----
GAM8098 1300 CCTGTGTCACAATGGGCAAG TC - CA---- GA AGTCT
GAGCTCAGAGTCTCTGGGCC CCTGTG ACA ATGGG AG GCTCAG
TCTGATTTCCCCATCTGTAT GGACAT TGT TACCC TC CGGGTC
TACAGG TA C CTTTAG TC -----
GAM8099 11398 ACCAGTTGTGATAAGATTGA GTT ATA ATTGA T- - -- TT ACCTC AA T
CAAGTTGGTGACAGAGCATG ACCA GTG AG CAAGTTGG GACA GA GCATG TTGTGA TG
CTC
TTTTGTGAACCTCTGAACTC TGGT CAC TC GTTCGGCC CTGT CT TGTAT AATACT AC GGG

TTCTGGGGGCATTTCTCATA ACT GA- CGTGG CT T TC TT CTTT- GG -
ATTTATGTCTTCTTGTCTCC TCT
CGGCTTGGGTGCCTAGCACT
CATGGT

GAM8101 1370 AGATGGATGGGACAGAAAAT AT- GAAAATAAA A- TT CGAA
AAATCTAAGTTTGGTGCGAA AGATGG GGGACA TCT AG TGGTG
CGCCATTCTGGGGGTGTCCC TCTGCC CCCTGT GGG TC ACCGC
TTGCCGTCT GTT --------- GG TT ----
GAM8102 9192 GTGTAGGGGCGAGGGGGTGG TAGG AGG - TG CA - CAGTTCAC
CGGTGCCAGGGTCCTGCAGT GTG GGCG GGGTGGC GG C GGGT CCTG
TCACCAGGTGCCCACGTGCC CAC CCGC CCCACCG CC G CCCG GGAC

TGCCACCCGAGCGCCATTCA TTA- GAG T GT CA T --------
C
GAM8103 20457 TCCTGGGTCCCAGGAAGATT - GA TTG G - AT - TCCAGTTTT
GAGGGAGGGGATGCTGCAGA TCCTGGG TCCCAG AGA AGGGAGGGGAT CTG CAG GTGG AAG

TGTGGAAGTCCAGTTTTCTT AGGACCC GGGGTC TCT TCCCTTTTTTA GAC GTT CACC TTC

ACCACCTTGTCAGAATTTTT T -- --- A T C- A ---------
TCCCTTCTCTGGGGTCCCAG
GA
GAM8105 9632 ACCATGCCCCTGCCACGTGG C TG A-- G- A GAC--- GGGCA
GCCACTTCAGACTTGGGGCA ACCATG CCC CC CGTGG CC CTTCA TTG
CAAATAACATGGAGGGAGCC TGGTAC GGG GG GTACC GG GAGGT AAC
ATGAAGGGTGGGGCCATGGT C GT GAA GA - ACAATA -----
GAM8106 17622 CAGGAACTGCGCTTCGCTTC AA C- TTCCGAG G- A- G - CCAAATA
CGAGATCCTGTGCACAGGCA CAGG CTG GCTTCGC ATCCT TGC CA GCACC TG
CCTGCCAAATACACGGTGTA GTTC GAC CGAAGTG TAGGG ACG GT TGTGG AC
TGACGCAAAGGGATATGTGA AA CC TA----- AA CA A C -------
AGCCCCAGAACTTG
GAM8107 16972 TGTAATGATTGGTGCCTGTT AATGA - -- CC TT- TTCAT
TCCTCATTGACTTCATGTTT TGT TTGG TGCC TGTTT TCA GAC
TTTGAAAGCACTGGCAGCCA ACA GACC ACGG ACGAA AGT TTG
GGAACA AG--- G TC -- TTT -----
GAM8108 19496 CTATACCGTAGTCTATTTAA G GT TAT CAATA ACATCTACAAAAAC
AGTGTGCAATAGCGTTACAT CTATACC TA C TTAAAGTGTG GCGTT
CTACAAAAACAACGTATATA GGTATGG AT G AATTTCATAT TGCAA
CTTTAATTTGGTTAAGGTAT A TG TTT A---- ----------
GG
GAM8110 9781 GCCGCTCCGCTCTGGGTGGT G TCT TG TT A AGG
TCAATCCCAACCAGGGGTTG GCC CTCCGC GGG G CA TCCCAACC
GGATGTCCTGCCTGCGGAGG CGG GAGGCG TCC C GT AGGGTTGG
GGC G --- GT CT - ---
GAM8111 1276 GCCAGCGCCTGAGCATCCCC CA C -- A- TCA G A C-- GACC
GTCATGGTGGTCACCCTGGG GC GCG CTGA GC TCCCCG TG TGGTC CC TGG
ACCCCACGCGGGACCAGTGC CG CGC GACT CG AGGGGC GT ACCAG GG ACC
TTCGGGGACCGCTTTCAGCC TC C TT CC TTC G - CGC ----
GCCTGC
GAM8112 1272 ATGGAAAACTTTTGAGGAGG GGAAAAC ---- G A- AA GGT
GGCTAGCTAAATAAGGGGTC AT TTTTGAGG AGGGGCTA CTA AT GG
CAGGTAATGGTGGCCCTTGC TA AGAATTCC TTCCCGGT GGT TG CC
AACCTTAAGACCTAGAAAT AAGATCC AACG - AA GA ---
GAM8113 7800 CCGATTCACTGCTAGTCCCA T T-- C ---- - G AG CTC
GAAGGTGTCCAGCCGAGACT CCGAT CAC GCTAGT CCA GAAG GT TCC CCGAGA
CTTTCGGGAGGAGGCTCTTC GGCTA GTG TGGTCA GGT CTTC CG AGG GGCTTT
GTGCTGGTACTGGTGTTGTG - TTG T CGTG T G AG ---
ATCGG
GAM8114 11074 CGCGGCCAGCAGTTACCTGA C A- TTAC - -- A CC A TAGT
GCCTGAGGCCCGAGCTAGTG CG GGCC GCAG CTG AGC CTG GG CG GC
CACGTCCCACAGAAGCTACA GC CTGG CGTC GAC TCG GAC CC GC CG
GCTGCCAGGTCACG A AC ---- A AA A CT A ----

GAM8116 19249 TGGGAAAGCTTTCTTTCTGA - - ---- GA-- - A GACA AAAATCCACA
GTTCATACCTTATTCGACAC TGG GAAA GCTTTCT TTCT GTTCATAC CTT TTC CCAG
CAGAAAATCCACACTGGAGA ACC CTTT CGAAAGG AAGG TAAGTATG GAG GAG GGTC
GAGAGTGTATGAATGTAAGG T G GTGT AATG T A A--- ----------
AATGTGGGAAAGCGTTTCTC
CA
GAM8119 3258 GGCCAGGACTGCGCTCAGGA A A G - GA G GGAG AGCCC
TCCCGCCCCGGAGCCCCCAG GGCC GG CT CG CTCAG TCCC CCCC CCCCC
CCCGGGGGAGAGGGGGAGGG CCGG CC GA GC GGGTT AGGG GGGG GGGGG
AAGTTGGGACGAAGCCCAGG A C A A GA A GAGA -----
CC
GAM8120 11059 AGGAGCCTCTTCATGTTTGA - CA- -- TG TG C- AGGGCC
TGTCCCAGAAGCAAGGGCCT AGGAG CCTCTT TGT T A TC CAGAAGCA
GTTTCTGTTGAGTTTGATTA TCCTC GGAGAG ATA A T AG GTCTTTGT
TAGAAGAGAGGACTCCT A AAG TT GT TG TT ------
GAM8121 16532 ACTCTGAAGATGATCAGACA A--- GA-- CA- ----- AATTGGTCATTC
GGGCAAGCGAAATTGGTCAT ACTCTG AGAT TCAGA GGGCA AGCGA
TCTCGCTAACACTGCCCAGC TGAGAT TCTA AGTTT CCCGT TCGCT
TTTGAGGAGATCTGAAATAG AAAG GAGG CGA CACAA ----------
AGT
GAM8122 4237 CCCTGGAGGAGATCTATCTC T T--- TCTC GCCCATTA
TTCTCCCTGCCCATTAAGGA CCC GGAGGAGATC ATCTCT CCT
ATCAGAGATCATTGATTTCT GGG CCTTCTTTAG TAGAGA GGA
TCCTGGG T TTAC CTAA --------
GAM8123 12664 GGAGATGGGAGAAAAAAGAT -- - AAAAA T CAG--- AATTAAA
ACCAGGGATAATTAAAATCC GGA GATG GGAGA GA AC GGAT
ACAGCAGTTTCATCAGTTTC CCT CTAC CCTTT CT TG CCTA
CTCATCCATCC AC T GACTA T ACGACA -------
GAM8124 15454 GCCCACTGTGACAATGTCAC - TGT A ACCG- GACG AAG
CGATCTGGACGTCCCTGAAG GC CCAC GACA TGTC ATCTG TCCCTG
CAGGGGGACAGGTGTACAGA CG GGTG TTGT ACAG TGGAC GGGGAC
CATGTTCTTGTGGCGC C TTC - ACATG AG-- ---
GAM8125 12977 AGTGGCGTTCAGCCACCCGA - T A C G GA--- ATA GGTC
GATTGAGCAATAACAGGTCT AGTG GCGT CAGCC CC GA ATT GCA ACA
GTGATGCCCTTAGATGTCCG TCGC CGCA GTCGG GG CT TAG CGT TGT
GGGCTGCACGCGCGCT G C - C G ATTCC AG- ----
GAM8126 15671 GGGCTGGAGGGGCCGAGGCA GAGG G A - -- - A TCCGAGGT
CCCCGCATGCTCCAAGGTCC GGGCTG GGCC AGGC CC CCGC ATGCT CC AGG
GAGGTCCTGGGTGGCATCAG CTCGAC TCGG TCCG GG GGTG TACGG GG TCC
TGGTGGCGCCTGGGCTCAGC ---- G C T AC T G --------
TC
GAM8127 20945 CAGCTGGGCCCGGGGGACCA TG CCG- A A--- AAAATGCG
CTACCACCAAAATGCGGGGA CAGC GGC GGGG CCACTACC CC
CCGGTAGTGGCCCCAAATGT GTCG CTG CCCC GGTGATGG GG
CTGGCTG GT TAAA - CCAG --------
GAM8128 7208 GTGTGCTACTGGGGGAGGCA A- GGCAT AA--- CC GACAGAA
TGGGAAAGAGCTCCGGTGAC GTGTGCT CTGGGGGA GGGA GAGCT GGT
AGAAGCCAAGGTTCAATTCT CGCACGA GACCTCTT CCCT CTTGG CCG
CCCCTAGATTCTCCAGGGAG GG AGATC CTTAA AA -------
CACGC

GAM8129 13356 CTGCCTAGACCCTCCATTGC - CCT - GA-- TC AAA
AGACAGTTCCCAAAGGAGGC CTGC CTAGAC CCATT GCA CAGT CC
TGGAAGTGCAAATGGTGTGT GACG GGTTTG GGTAA CGT GTCG GG
TTGGTGCAG T TGT A GAAG GA ---
GAM8130 20343 GCCAGTGTCTTTGGGGGGCT - TCTTT G - GCCG
GTGGCAGGGCCGCCTGCCTG GCCAG TG GGGGGGCT T GGCAGG
GGGTTCCCTTACTCATCTGG TGGTC AC TCCCTTGG G CCGTCC
T T TCAT- G T ----
GAM8131 16134 GCCCATTAACTTCTGAATTT CATTAACT -- AAAGACACAAGAAAGAG
TGGGAAAGACACAAGAAAGA GCC TCTGA ATTTTGGG
GCCCAAAGTTTTCAGATAGG CGG AGACT TGAAACCC
C AT------ TT ----------
GAM8132 1968 ACCTGACAACTGGCCCTAAT G A GG AA C GTTC - A T TCCCTCAAT
ACTTCATTCAAGTTCGCTAT ACCT ACA CT CCCT TACTT ATTCAA GC TAT GTTT GG
AGTTTTGGTCCCTCAATCCC TGGA TGT GA GGGA ATGAA TAGGTT CG ATA CAGA CC
AGACATATGCATAATTGGAT A - A- AG - AATA T - C ---------
AAGTAGAAGGGAAGTGTAAG
GT
GAM8133 2644 CATTCACCTTTTCACTCAAC TTTCA- AA - AA-- TAACTATTATTATCC
TCTTACAACTCTGTGAAGTA CATTCACCT CTC CT CTTAC CTCTGTGAAGTAG
GTAACTATTATTATCCCTAT GTAGGTGGG GAG GA GAATG GAGACATTTTATC
TTTACAGAGATAGGTAAGCA TGAATA G- C GATA ----------
GGGAGATAAGTGGGTGGATG
GAM8134 14507 GCTGGAGTGTGATCTAGCTC G TCTAGC GT TCAACGTCCAT
ACTGTAGCCTCAACGTCCAT GCTG AGTGTGA TCACT AGCC
GGCTCAGGTGATTCTCACAC CGAC TCACACT AGTGG TCGG
TCAGC - CTT--- AC ----------
GAM8135 22577 TCTTCTCATGCTGAACAGTT TC -- AACA CCACA AAGACACTCTAGACAA
CTCCATCCACAGCCAAAGAC TCT TCATG CTG GTTCTCCAT GCCA
ACTCTAGACAATGGCGATTA AGG AGTAT GAC CAAGAGGTA CGGT
TGGAGAACCAGACTATGACT TC CA ---- TTAG- ----------
GGA
GAM8137 19825 GCCAGTTCAGGGTCCACACT A TCCACACT CT T -- ACAC
GCCTCGCCGTTTTGGAGCAG GCC GTTCAGGG GC CGCCGT TTGG AGCAG
ACACCTGCTAACCAATGCGG CGG CGAGTCCT CG GTGGCG AACC TCGTC
TGGAGCTCCTGAGCCGGC C -------- AG T AA ----
GAM8138 6933 GGTGAATTTCTAGCTCTTCA CTA - GGGTCCT C ATTT
TGGGTCCTGAACATTGATTT GGTGAATTT GCT CTTCAT GAA ATTG
CAGTCTTTGCAAAGAATGAA TCGCTTAAG TGA GAAGTA TTT TGAC
GAAGTGAATTCGCT --- A AGAAACG C ----
GAM8139 10616 CTCGCTATATGGGGAAGGGT C TA AA CT A GC- GCACA
GTCTCAAAGGCTGTTGAGCA CT GCTA TGGGG GGGTGT CA AG TGTTGA
CATCAATAAAACTATGTGCG GA CGAT GTCCC TCCGCG GT TC ATAACT
CCTGCCCTGGTTAGCAAG A TG G- T- A AAA -----
GAM8140 6273 CATTCTGAGTCTTTCTGGAT -- - - GAACTT TATATCTGAAATCT
GAACTTGGCTATATCTGAAA CATTCT GAGTCTTT CT GGAT GGC
TCTGCTATCTGAGTGAGGAC GTAAGA CTCAGGAG GA TCTA TCG
TCCAAGAATG AC T G ------ ----------
GAM8143 3214 ACAGCTGTGGTTTTAGGCTT - GTG- A TTTCCTCC T CAAAA
TTTCCTCCTAGTATAAGACC AC AGCT GTTTT GGCTT TAG ATAAGAC

AAAAGTCTTATCTGTAGGCC TG TTGA CAAGA CCGGA GTC TATTCTG
AGAACATGAAGTTAGT A AGTA - T------- - -----
GAM8146 13940 TGTACAGAGTTGGAAAGTAA --- T A AA- --- ATA A AGGAAA ACAGTGTTAA
GACCATGGCATATACAGAAG TGTAC AGAGT GGA AGT GACC ATGGC TAC GA GAGC
GAAAGAGCACAGTGTTAAGG ACGTG TTTCA CCT TTA CTGG TACTG ATG CT CTCG

CTCAGGAATCAGTACAAGTC AAC C C CGA GAC AAC A AAGGA- ----------
ATCAGGGTCAGCATTCTCCC G
ACTTTCAAGTGCA

-
GAM8147 1060 GAACCAGGCCCCAGACATGC - G- -- CTG---------- ATT
TGCATAGATTTTATGGAAAG GAA CCAG CCCCA GACATG CATAG
AACTCTTCTTATGTCCATGG CTT GGTT GGGGT CTGTAT GTATT
GGGATTGGATTC A AG AC TCTTCTCAAGAAAG ---
GAM8150 3374 GGAGAATCGCTTGAACCCGG AA - AA- AGGCA - CA-- GCTGAGA
GAGGCAGAGGCAGCAGTGAG GGAG TCGC TTG CCCGGG GAG GCAG GTGA
CTGAGATCACACCACTGCAC CCTC AGTG AAC GGGTCC CTC CGTC CACT
TCCAGCCTGGGCAACAATGT AA T AAC GAC-- A ACCA -------
GAAACTCC
GAM8151 12428 GTACGCTGTGACACAGGAGA GC-- AC A- G- A C A AAAGAGTGATGAC
GCAAGATCACGTATTTGGAA GTAC TGTG AC GGAGA CA GATCA GT TTTGG
AGAGTGATGACCCAAGACTG CATG ACAC TG CCTCT GT TTAGT CA GAACC
ATTATGAATCTCCAAGTAAC AACT AA AA AA A - - ----------
ACATCAAGTAC
GAM8152 9599 TCTTCCCTTCATCTCCAGGG C CTCCAG- GG CAT C A--- G - TCAATCTC
GTCATCCCCTCACCTTATTG TCTT CCTTCAT G T CC CTCACCTT TT GGCA AAACTGCA
GGCAAAACTGCATCAATCTC AGAA GGAAGTG C G GG GAGTGGGA AG TCGT TTTGACGT

CTTTTGCAGTTTCTGCTGGA A AAATATA TT ACC T CTAC G C --------
CATCAGGGTGAGTGGCCAGT CTTT
TCATATAAAGTGAAGGAAAG
A

GAM8153 6922 TGAGGCTGAACTCAAGCAGC C T C -- T -- ACCCG GAGATG
TGGTGTCTCGACCCGATGTC TGAGG TGAAC CAAG AGCT GG GTCT CG ATGTCGTG
GTGGAGATGCACGATGTGAC ACTCC ACTTG GTTC TCGA CC CAGG GC TGTAGCAC
AGCGCAGGACCCAAAGCTCT - - - AA - AC GACAG ------
TGGTTCACCTCA
GAM8155 12418 GCGCCTACCTCACAGACGGC TACC A A C AGC-- -- CCCAGGAT
CAGGAGCCAGGGAGCCCCAG GCGCC TC CAG CGGC AGG CAG GGAGC
GATGCTCCGACTGACAACCC CGCGG AG GTC GTCG TCC GTC CCTCG
TGCTGCTGGGACCACGGCGC CACC G - - CAACA AG --------
GAM8156 10677 TGTCCCAGCAAGAGTGCCGG CAGC T-- TT G-- AAAATA
TTAGTCAGTGTTTGTTGAAA TGTCC AAGAG GCCGG AGTCAGT TTTGTTG
ATACAGTAGAAAAGCTGATT ACAGG TTCTC TGGTC TTAGTCG AGATGAC
CTGGTTATCTCTTTAAGGAC AAT- TAT -- AAA ------
A
GAM8157 20601 ACCAGCACACCAGCTGCCCG --- CA- --- - G- ACCTG
GTGGGGCAGACCTGCTGCCC AC CAGCA CCAGCT GCCC GGT GGGCAG

GAGCCTGGGTGGGAGCTGGG TG GTCGT GGTCGA TGGG CCG CCCGTC
CCTGCTGCCAGT ACC CCG GGG T AG -----
GAM8158 7987 GGGAGAAGGGGGCGAGCCTG AGAAG C CCT - C AAGCAAGGC
CGGGCGGAAGAGGAAGCAAG GGG GGGG GAG GCG GG GGAAGAGG
GCCCTCTTCCTCCACGTCTC CCC CCCC CTC TGC CC CCTTCTCC
ACCCCAGCCC GA--- A --- A T ---------
GAM8159 5925 AGACTTGGAGTCATCTGGAC - T- A - - AG- A AACT
TGCAGAGAAGGAACTCCTCT AGA CT GGAGTC TCTGGA CT GC AGA GG
GAAGCAAGCTCCGGAGACTT TCT GA CTTCAG AGGCCT GA CG TCT CC
CTTAGATCT A TT - C A AAG - ----
GAM8160 13754 GGGAAGTAGTTTCTCTTTGG TA C T - - CT- AGCA
GCATGCTGACAGCAGTTTTT GGGAAG GTTT TCT TG GGC ATG GAC
CATAGCCTCACGGATGAGCC TCTTTC CGAG AGG AC CCG TAC TTG
CTTTCT C- T C T A TTT ----
GAM8161 9438 TTTGGGCCGCCCTCGGCCCC CC TC C AA- TTCA
CAGAAAAGTTTTTCAAAACC TTTGGG GCCC GGC CCCAGAA GTTT
TCTTTTGGGCGCCGGGCCCC AGACCC CGGG CCG GGGTTTT CAAA
AGA -- -- C CTC ----
GAM8162 6680 GATCTAAAGACAAGCACCTA AA A -- A C - G -- TA TCTCCAT
GTCTCCTTGTTCTCTGTATA GATCTA GACA GCAC CT GT TCC TT TTCT CTG TA
TCTCCATTGCCCAGCTAGAA TTGGGT TTGT CGTG GA CA AGG GG AAGA GAC GT
GGGTGGAAACAGTTGTGCCT CC C TT - A T G TC CC -------
GTTCCTGGGTT
GAM8165 20173 GTTCTGAATAACTTTATTGC AA A-- --- ACAT CTTG
AAGTCACATAATCTTGGTTT GTTCTG TAACTTT TTGC AAGTC AAT
AGACTTGACGCAACGGGAGG CGAGAC ATTGGAG AACG TTCAG TTG
TTACAGAGC -- GGC CAG AT-- ----
GAM8166 21866 ACTCATTGAAAATGGAGGCT A AAA A A - GA GA TATGAT
ATGCAGACCAGACCTATGAT ACTC TTGA TGG GGCT TG CA CCA CC
GGATGGGTGACACAGCCCCA TGGG GATT ACC CCGA AC GT GGT GG
GGTTAGCGGGT C GG- - C A G- A- ------
GAM8167 879 ATGCATCCAAGAGATCAAGG - C G A CG CTATT - TATT
TCGAGCTCTATTGTTCCAGT ATGC AT CAAGA ATC AGGT AGCT GTTCC AG
ATTCTCGGGATCCAGCTGCT TGCG TA GTTCT TAG TTCG TCGA TAGGG TC
TAGATATCTTGAATAGCGT A A A A -- CC--- C ----
GAM8170 11709 GCCCTGAGCAGGAAGATGTG A-- A AT CCA TA GCAAG
CCACTTCCTAGCAGGCGCAA GCCCTG GCAGG AG GTG CTTCC GCAGGC
GGCCTGTGCGGAAGAAACGC CGGGAC CGTCC TC CGC GAAGG TGTCCG
CGCTCCCTGCCACCAGGGC CAC C GC AAA CG -----
GAM8171 9589 GTTTAGTGTATACCTGTCAC T-- TAC CTCT- - GCTCCCTGAGATAAAAA
TCTAGAATGTAGGCTCCCTG GTT AGTGTA CTGTCA AGAAT GTAG
AGATAAAAACTATAATTCTT CAA TTACAT GACGGT TCTTA TATC
TTGATGGCAGTTACATTCCC CCC T-- AGTTT A ----------
AAC
GAM8172 3526 GCCGTCCGCAAGCAGGAGAA C AA GAGAA C C GC ATCC
CGCGGCCCCGCTGGGCGATC GCCGT CGC GCAG CG GGC CC TGGGCG
CTGCCCGAAGGCGCCCGAAC CGGCG GCG CGTC GC CCG GG GCCCGT
TGCGGCGCGCGGC C G- AA--- - C AA ----
GAM8173 11982 GGGATCAAATGGTGGCTGTG TCAAAT C TAAA- C- CATTTT
TAAATCTCTGGAGTCATTTT GGGA GGTGG TGTG TCT TGGAGT

ATTCCATCAGACTCTTCACA CCCT TTATC ACAC AGA ACCTTA
ACTATTCCTATCTCCC CTATCC A TTCTC CT ------
GAM8174 21704 TCATCCCGTCGTCCTGTTCC GT GT ATGA TG GAGCG
TCATGATGTTGGGAGCGCTG TCATCCC C CCTGTTCCTC TGT G
ACACGGGGGGCAGGGTGGGG AGTGGGG G GGACGGGGGG ACA C
GTGA -- TG C--- GT -----
GAM8175 18596 CCAGACCCATTCAGCCCCTT GA- CA ---- GTCTGG
CCGCTGTCTGGGGTGGGGTT CCA CCCATT GCCCCT TCCGCT
AAGGGGCACAATGGGAAATG GGT GGGTAA CGGGGA GGGTGG
G AAA CA ATTG ------
GAM8176 3925 GATAGATCAGTTGCTATATT CAGTT A C A--- T TATTT
TTCTGGTGTAGGGTCTTTCT GATAGAT GCTAT TTTT TGGTGT GGGTCTT CT
TATTTAGTGAGATCTAGGGA CTATCTG TGGTA AAGA ACCATA TCTAGAG GA
TACCACAGAAATGGTTCAGT ACT-- - C GGGA T -----
CTATC
GAM8177 7408 TCCCAAGAGTTCTGCTGCAT AA CT CAGCCAG CAAGAGT
CAGCCAGTGAGGACAAGAGT TCCC GAGTT GCTGCAT TGAGGA
TCTTCAGTGCGGTTCAGCTC AGGG CTCGA TGGCGTG ACTTCT
AAGGGA AA CT ------- -------
GAM8178 19642 CTCTGAGGCTCATTTTGCAG -- C TTTT GTT - TCCCCG
TTGTTGAAATTGTCCCCGCA CTCTGA GG TCA GCA GTTGAAA TTG
GTTTTCAATCATGTCTGAAC GAGACT CC AGT TGT TAACTTT GAC
CAATCAGAG AA A C--- AC- T ------
GAM8179 4915 TGAGTGTGACGGATGTGACG G GAT- GAC CT A A- AGAACTTTAG
GGGCCTGGGCACCAGGGTAC TGAGT TGACG GT GGGGC GGGC CCAGGGT CAGT
AGTAGAACTTTAGGCTGGGA ACTTA ACTGC CG CCTCG TCCG GGTCTCA GTCG
CTCTGGGGCCTGCTCCCAGC G ACCT AC- -- G GG ----------
TCCACGTCAGATTCA
GAM8180 10253 GCTTTTCTTGGAATGAATGC T GAA AT TTT TC ATT
ATTTTTGAAGTCTCAGGGGG GCTTTTCT G TGA GCATT GAAGTC AGGGGG
ATTTCTTCTGACTTCTAATG CGGAGAGA C ACT CGTAA CTTCAG TCTTCT
CTGTCACAGAGAGGC - --- GT T-- -- ---
GAM8181 3991 GCGGAAGTGTCCTCGGCCGG A CTC CCG G C---------- TCCGCCC
CGCAGCCCGCGCTCCGCCCG GCGGA GTGTC GG GC CAGCC GCGC
CGCTCCGACCCCGGCCCGGC CGCCT CGCAG CC CG GTCGG CGCG
TGGCACCCCCTCGACGCCTC C CTC CCA - CCCGGCCCCAGCCT -------
CGC
GAM8182 1709 CCCCAGCCAGAATCGACGTG CCA GACG ---- ----- GCCCC
AGTGTGATGACCGCCCCGGT CCCCAG GAATC TGAGT GTG ATGACC
CGTGAAGACATACCAGCTCA GGGGTT CTTGG ACTCG TAC TGCTGG
ACAGGTTCAATTTGGGG TAA ACA- ACCA AGAAG -----
GAM8183 9387 CAGGTGATTGAGCAGGAAAC G GA TG AAACC --- CAAAATCCTCT
CCCAGTGAGTGCAAAATCCT CA GT T AGCAGG CCAGT GAGTG
CTCGCTCGCAGCTGGACTTG GT TA A TTGTTC GGTCG CTCGC
TTTGACGATGTG G GC GT A---- ACG ----------
GAM8184 11109 GGGCCGTCGGGGCCATCTCC C- ---- A CCC - -------- CCAG
CTCCCGGAGTCGCTGGCCAG GGGC GTCGG GGCC TCTCCCT GGAGT C GCTGG
TCAGCTCCCTCTTGAACTCC CCTG CAGCC CCGG AGGGGGA CCTCA G CGACT
AGGGGGAAGGCCCTCGCCGA CT GCTC A --- A TTCTCCCT ----
CTCGTCC

GAM8186 16515 GTACGAGGCTGGGTTTACAT GA - GG TGAAGAT TC C TCGCGCCCC
GAAGATCTGGTGTCGCCATG GTAC GGCT G TTTACA CTGGTG GC ATGGGC
GGCTCGCGCCCCGCCCGTTG CATG CCGA C GAATGT GGCCAT TG TGCCCG
TTACCGGTATTGTAAGAACA -- A AA TAT---- -- T ---------
AGCCGTAC
GAM8187 8915 GTGCACTCAACAGAACGGCC A AA AA GC AAAT AA TGAGG
CTTCAAATGTGAGAAATGTG GTGC CTC CAG CG CCTTC GTGAGA TG
AGGCAGCTTTCGCCACGAAG CACG GGG GTC GC GGAAG CGCTTT AC
GATCGGCTGCGGGCGCAC C C- G- TA CAC- CG -----
GAM8188 722 TCCTGAGCTTCTTCTACCTC C AG C- - A GT T- T- TTCC
TGAGAGTTTTTCATCATTTT TC TG CTTCTT TACC TCTG GA TTT CA CATT
CCAATGTTTGCTGAAGTTCA AG AC GAAGAA ATGG AGGT CT AAG GT GTAA
TGGATGGTACTAAGAAGAAC T AA TC T A TG TC TT ----
ATGA
GAM8190 11677 TCTATCCAACTACGCGTAGT CC-- C- GT TC CAA G C- A-- CAATATA
CCACAAGTCGCAGCTTCGAA TCTAT AACTA GC AG CA GTC CAG TTCGA CTCTC
CTCTCCAATATAGAGAGCTA AGATA TTGAT CG TC GT CAG GTC AAGCT GAGAG
TCGAATTCTGGACCTGAGCT CATC AC AC GA C-- - TT ATC -------
CAGCCATAGTTCTACATAGA
GAM8192 9710 CGAATCTGGAGAGCTTTGGA TC - CT ATCC TGTCT
TCCTGGGTGATGTCTTCATC CGAA TGG AGAG TTGG TGGGTGA
CGCCAGTACTTTACCGTCTT GCTT GCC TTTC GACC GCCTACT
CG CT A AT ---- -----
GAM8193 3008 TGGTGGGGTCAGTGGAAGTT T T AAGT T-- TCTGGT
CTGTCACTGGATCTGGTTTC TGGTGGGG CAG GG TCTG CACTGGA
AGTGTCTCAGACCTTGCCCC ACCACCCC GTT CC AGAC GTGACTT
ACCA - - ---- TCT ------
GAM8194 15198 CTGGTCCACGTGGGCTTGTT GTCC G- - C------- AGGAACC
AGCAGGCAGAGGAACCCTGC CTG AC TGGGCT TGTTAG AGGCAG
TTTCCAAAAACTGATATAGT GGC TG ACCTGA ATAGTC TTCGTC
CCAGAGTCACGG AC-- AG T AAAAACCT -------
GAM8195 19517 GACAGCTTCTATTTGGGTCC CA - ATTTG CACC T A GAAACA
CACCTCTCCAAGAACGAAAC GA GCTT CT GGTCC TC CCA GAAC
AGTTCATGGGATAGGATCAG CT CGAA GA CTAGG AG GGT CTTG
AAAGCTC -- A ----- AT-- - A ------
GAM8196 6140 TTGGTGTAGACTCCAGGCCT TG T - CC-- T - ACAGCATA
GTTCTTCTGGGCACAGCATA T GTG AGA CTCCAGG TGT CTTCTGGG C
GCCCCAGGAGACAATTCCTT G TAC TCT GAGGTTC ACA GAGGACCC G
GGAGCTCTCCATTGG GT C C CTTA - C --------
GAM8197 21629 TGGGCTCAAGCAGTCCTCCC CAA- C- CCA GCC AAGTGC
ACTTGGCCTCCCAAAGTGCT TGGGCT GCAGT CTC CTTG TCCCA
GGGATTACAAGAGTGAGCCA ACCCGA CGTCA GAG GAAC AGGGT
CTGCACTCAGCCCA CTCA CC TGA ATT ------
GAM8198 1861 ATCGTTCAGCAGTGGTTAGA G ------- GAA- A - A AGTAGA
ATACAGGGTGACTCAAGTAG ATC TTCAGCAGTG GTTA TAC GG GTG CTCA
ATGGGCACTCCAGTAAAAAT TAG AAGTTGTCAC CAGT ATG CC CAC GGGT
GACATCCTCACACTGTTGAA G ACTCCTA AAAA A T - ------
GGAT
GAM8199 32 GCTAGCTATCTGATGAGTCG C CT - C--- G GC CTATGTTTCT
CTGTGCCATAGCTTGATCTA GCTAG TAT GATGA GT GCT TGCCATA TTGAT

TGTTTCTATCAAATATGGTA CGGTC ATA TTACT CA TGA ATGGTAT AACTA
AGTATAAACTTCATTCATAC - C- T AATA - A- ----------
TGGC
GAM8200 12469 GTTGGAATTTTAAAGAAAAT TTTAA ---------- T A GTTGTA
ATGTTGTAATAATGCTGTTG GTTGGAAT AGAAAAT ATGTTG AATA TGCT
TAAGTAATATTTTAATGTCT CGACTTTA TCTTTTG TGTAAT TTAT ATGA
CTTTGCCTGTTTTCTATTTC ----- TCCGTTTCTC T A ------
AGC
GAM8201 17690 GGTACAAGAATCGGGCTTGT AAGAA G----- GTTA
CGGGGGAGGGTTACCTCCCT GGTAC TCGGGCTTGTC GGGGAGG
GTGAAAGGCAGGCTCGGGTG CCGTG GGCTCGGACGG TCCCTCC
CC ----- AAAGTG ----
GAM8202 8243 CGCTGTCGGGGCCGTGAGAC GGG C AGA- GG AGGA
GCTGTCGGGGCGGTGAGGAC CGCTGTC GC GTG CGCTGTC GGCGGTG
ACTGTCGGGGCGGTGAGGAC GTGGCAG TG CGC GTGGCGG CTGTCAC
GCTGTGGGGACGGTG GGG T AGGA GG ----
GAM8203 19465 AGAAGTCTGGTGGAGAGACT A G A-- GA AAAGAAGGGA
CTGTGGACGTAAAGAAGGGA AG AGTCTGGT GAGAG CTCTGTG CGT
ATGAACACAGAGAAACTTTC TC TTAGACCG CTTTC GAGACAC GTA
AGCCAGATTCCT C A AAA AA ----------
GAM8204 15514 TGAAATTTTATTGTGTAAAG TTA AAGTT -- GACTA
TTTATAGAAGTATGACTAGT TGAAATT TTGTGTA TATAGA AGTAT
ATTCCTTTGTACAAAGTACA ATTTTGG AACACAT ATGTTT TTATG
CAACGGTTTTA C-- GAAAC CC -----
GAM8207 7027 GTATGTACAATTGATAATAT - T AATATA-- G A TG AAC
AAAGGGGCTCATTGAAACTT GTA TGTACAA TGAT AA GGGCTC T A
GAGAGCCTGTTGAGTTTTGG CGT ACATGTT ATTG TT TCCGAG A T
TTACTTGTACATTGC T C GTTTTGAG G - GT ---
GAM8208 2287 CTGGTGACGGGGCCCTGGGC GA CCCT GCTG CACACT
TGGGGCTGTCCCACACTGGA CTGGT CGGGG GGGCTGGG TCC
CCCAGCTCTCCCCCTGCAGC GACCG GTCCC CTCGACCC AGG
CAG AC CCT- ---- ------
GAM8209 12533 GAGTCGGTGCTTGGTACCTG C - ---- ----- GT CTCC CAAC
GTCTCTCCAGTCTCAACAGA GAGT GGT GCTT GGT ACCTG CT AGTCT
CTCAGGTCAGGTCTCTCACC CTCA CCA CGAA CCA TGGAC GA TCAGA
CAGGAAGCAACCACTC - A GGAC CTCTC TG C--- ----
GAM8210 19163 TTGTGCATGGGAAGATTGTA - A- TT A AC T GA C- AC AAAGTGC
GTTACTCTTGAGGGAAGCGG TTGTGCATG GGA GA GT GTT TCT GAGG AG GGATTT GCC

ATTTACGCCAAAGTGCGGTA AACACGTAT CCT CT CA CGA GGA CTTC TC CTTAAA TGG
CAAATTCATCTAACTTCCAG A GA TT - AA C AA TA CA -------
GAAAGCACTTTCAGTCCATA
TGCACAA
GAM8211 22674 AGCCCAGCAGGCTCGTACCA C G GTACCAA - C GTAA
AAGTCACAGCAGTAATGCTA AGC CA CAGGCTC AGT CA AGCA
TGTACTGCAGAGTCTGATGA TCG GT GTCTGAG TCA GT TCGT
GCT A A ACG---- T A ----
GAM8212 22893 TTTTTGATGAGAATGAGCTT -- AGA TG- T A AC- ACA TGTGT
GAGCTGCTGATGTGTGGGAC TTTTTGA TG ATGAGCT AGC GCTG TGTGTGGG TGGAG TCAG

TGGAGACATCAGTGTGTCTG AGAGACT AC TACTCGG TTG TGAT ACGTACCC ACTTC AGTC

ACTTCAAAGCCCATGCAGTA TT GG- TGG T G GAA --- -----
GTTGTTGGTGGCTCATGGCA
TTTCAGAGA

GAM8214 16819 GTCGTAGACGGAATAGTAGG GTAGA TA - GA A AGACA CCGA
ACCTGAGGAAGACATCCCCG GTC CGGAA GT AG CCTG GGA TCC
AGGATCCACAGGGGCTGGCC CAG GTCTT CG TC GGAC CCT AGG
GTTCTGGGAGGAC GAGG- GC G GG A ----- ----

GAM8215 22826 TGTGGAAGAGAAATGGAAGT - A- AG----- CT TT- A CATCAT TCCA
CGGCTCCCATTGCGGCAGAC TGTGGA AGAG AATGGA TCGG CCCA GCGGC GA GGCT

ATCATGGCTTCCAAGCTTCG ACACCT TTTC TTACCT AGCC GGGT CGTCG CT TCGA
CTGCTCTTGGGCTCCGAAAC A GG ATGACAA TC TCT - ------ ----
AGTATCCATTGGCTTTATCC
ACA

GAM8216 15857 GTGGGACAAATATTAACAAA ATATTAACAAA A- TTTA GTG
GCATGATTTAAATATATATA GTGGGACAA GCATG TTTAAATATATATATA ATGT
TATTTAATGTGTGATATGTT CATCTTGTT CGTAC AAATTTATATATATGT TATA
TGTATATATATTTAAACACA AA--------- AC TTG- ---
TGCAATTGTTCTAC

GAM8217 14358 GGGAGGAGATGTAGCACGGG A- T -- - ATGG- A C- ATCTTTG
ATCATGGGGGCAGCGCGTGA GGGAGGAG TG AGC ACGGG ATC GGGC GCG GTG
TCTTTGCACTTCGCAGCCCA TCTTTCTC AC TTG TGTCC TGG CCCG CGC CAC
TCTGGGTACCTGTTGGTTCA GG - GT A GTCTA A TT -------
GGCTCTTTCT

GAM8218 11414 GTTTGGAGTTCCACAGCCTC T A CA-- --- C AAGCCTTA
TGCCAAGCGGTTTGTAAGCC GT TGG GTTCCA GCCTCTGC CAAG GGTTTGT
TTAGCGAGCTCTTGCGCGCA CA GCC CGAGGT CGGGGACG GTTC TCGAGCG
GGGGCAATATGGAGCGCCGC C G ATAA CGC - --------
AC

GAM8220 17141 CTGCCGGCACTGGGCAGCTG C A- A- -- A A GGAAG
CCCCACACAATGGGAAGCAG CTGC GGC CTGGGC GCT GCCCCAC CA TG
TGGTGGGGCTGGGCCAGTCC GACG CCG GACCTG CGG CGGGGTG GT AC
AGGAGCCGCAG - AG AC GT - G -----

GAM8222 9729 ATACTTTAATAGAACCAAAG AGAA AAAGT T GA TATGGAAG
TTGCAGATATTGGAATGTAT ATACTTTAAT CC TGCAGA ATTG ATG
GGAAGTATCTCAGTCTCTGC TATGAAATTA GG ACGTCT TGAC TAT
ATAAGAGGATTAAAGTAT ---- AGAAT C TC --------

GAM8223 16012 GAGACAGTTTCACTTTTGTT C-- A CCA- - G AGTGGC
GCCCAGGCTGGAGTGCAGTG GAGA AGTTTC CTTTTGTTGC GGCTG GA TGC
GCGCGGTCTCAGCTCACCGC CTCT TCAAAG GAGAACAACG TCGAC CT GCG
AACAAGAGCGAAACTCCATC ACC C CCAC T G ------
TC

GAM8224 11468 GGGCCGGAGCCGGCGGCAGT C CC C A - A--- TATCG
GGTGGCAGCGGTATCGCCGC GGGC GGAG GG GGC GTGGTG GC GCGG
CCTAGCTCACCGCGCCCCTT CCCG CCTT CC CCG CGCCAC CG CGCC
TTCCAGCCC A TT - - T ATCC -----

GAM8225 10012 TCTTGCTAGCTCCCATATGG CA G A GG AAA
CCAAGAGGTGGCAAAAATTG TCTTGCTAGCTCC TAT GCCA GAGGT CAA

GGCTTTATGGTGGTGCTGGA AGAACGGTTGAGG GTG TGGT TTTCG GTT
GTTGGCAAGA TC G A G- ---
GAM8226 5296 GACGCTGCCAGCTCGGGACT C- C GAC TC C T TCTG
CTGTTCCACCGTGGTGGTCT GACG TG CAGCTCGG TCTGT CAC GTGG GG
GCCCCTACAGTGCTGCAGGC CTGT AC GTCGAGTC GGACG GTG CATC CC
TGAGCTGACATTTGTC TT A --- TC A C ----
GAM8227 21355 GGCTGGTCTCGAACTTCTGA TCT C C A CAA - - T C CCT
CCTCAAGTGATCTGCTCTCT GGCTGG CGAA TT TG CCT GTGAT CT GC CT TTGGG
TGGGCCTCCCAAAGTGCTGG CCGACC GCTT AG AC GGA CATTA GG CG GA AACCC
AATTACAGGCATGATTCGCA CAC - T - --- A T T - ---
CCCAGCC
GAM8228 7410 GCCTCCTGTAACAGTCGCCT CT AAC TC CTTTT T --------- T TTT- ACA- T
TTTGTGTTCTGCTGGCATTT GCCTC GT AG GC GTGT CTG CTGGCA TTG GA CAG C
GTTTGAACACAGTCCACAGG TGGAG CG TC CG TACA GAC GACCGT GAC CT GTT G
TTCAGTGGTTGCATCTCTAA T- AA- TA TTTCT - CCTACCCCT C TAAT CTAC -
TCAGCTGCCAGTCCCCATCC AGGTTCA
CAGACATTCTTTGCATCTAA CAC
GCTGAGGT GTG

GAM8230 9619 TCTTGCCTCTTATTTACATT CC - - A CACTATC AG- TGTGTT
CTCCAAACTCACTATCCATT TCTTG TCTTAT TTACA TTCTCCA ACT CATTC CT
CAGCTTGTGTTAGAAGGAAT AGAAC AGGGTA GATGT GAGGGGT TGA GTAAG GA
GCTAAAAGTATGGGGAGTTG C- T T A AAATC-- GAA ------
TAGTATGGGACCAAGA
GAM8231 16074 GCTCCAAGGCCACCTAGTAC AA--- CACC T ------ A ATACA AACCAA
TTTGAGAAAGTTATACAGAC GCTCC GGC TAG ACT TTGAG AAGTT GAC
AACCAAGTCAGGCTTCCTCA CGAGG CCG ATC TGA AACTC TTCGG CTG
ATCTAGCAGTCTATTGCCAA AAAAA TT-- - CGATCT C A---- ------
AAAGGAGC
GAM8232 7933 GCTGAACTGTGTTTACTGGA T TGTG CTG AAT CCTA AAAATA
AAAATTCAGAGGCCTAAAGT GC GAAC TTTA GAAA TCAGAGG AAGTTT
TTAAAATAAAATTTACTTCT CG TTTG AAAT TTTT AGTCTTC TTTAAA
GATGTTTTAATTAAAATGTT - TA-- TAA GT- A--- ------
TGC
GAM8233 2538 GCAGCCTCCTGAGGTAGGTA A -- A- --------- TA TGATG
ACCTTGTTTACTGATGGGGA GC GCCT CCTGAGGT GGTAA CCTTGTT C
ACAAGGCAGTGTTCTTTACC CG TGGG GGACTCTA CCATT GGAACAA G
AAATCTCAGGGCGGGTAGC A CG AA TCTTGTGAC GG -----
GAM8234 18075 GCAGGTTGGTACTACTTCTG T CTACTTC T ---- ------ CCTTAAGT
ATTAGGCAGAAAACACCAGG GCAGGT GGTA TGAT AGGCAGAAAAC ACCA GGATT
ATTCCTTAAGTGATCCTTGA TGTCCA CCGT ACTG TCCGTCTTTTG TGGT CCTAG
AATGGTTATTGTTTTCTGCC - TTAC--- T TTAT AAAGTT --------
TTGTCACATTTGCCACCTGT
GAM8235 19549 CTGCTACGCTCCAGCCAGCC - --- - C C AACT CAGA GCGC
CCTAACTGGTCCCCAGAAGC CTGCTA CGC TC CAGC AGC CCT GGTCCC AGCG
GGCGCTGCTACAGGGACCAG GGCGGT GCG AG GTCG TCG GGA CCAGGG TCGT
GAGCTGCTGCGAACTGCGCT C TCA C - A ---- ACA- ----
GGCGG
GAM8237 6352 TGTCGGGTAGCTGGAACTAC C AGC AAC A TACCAC
ACAGGTGTGTACCACCACAT TGT GGGT TGG TAC CAGGTGTG

CTGGTACCACCACACCCACA ACA CCCA ACC ATG GTCTACAC
- C-- ACC - ------
GAM8238 791 GGGGTATGAGGCTTTATTCA G --- G TAT- A A CAAG TG - G CCTG
GGAAGAGCTCAAGATGGGAG GG GT ATGAG CTT TCAGGA G GCT A GGAG GGGA CC
GGGAGCCCCTGGGGTCCCAC TC CA TACTC GAA AGTTCT C CGG T TCTC CCCT GG
TCTTGTGGCCTCTTGATACC G GGG G CCAT - - ---- GT A G ----
AAGGCTCATGGGACGCT
GAM8240 11936 ATGAGCTATACAGTGTGAGG ATA- TG A- TA- ATA- - TTGGT
CATATTTCATAGCAACGTTG ATGAGCT CAG TG GGCA TTTC GCAA CG
GTTGATTGCCAAGGAGACTC TACTCGA GTC GC CCGT AGAG CGTT GT
TGCCACCGTTCTGGATAAGC ATAG TT CA CTC GAAC A -----
TCAT
GAM8244 16080 AGAACTTCAGCCGTGGCTCT CTTC- CTC----- T TGT TCCTT
CTAGTCTTCGTGTCAATATC AGAA AGCCGTGGCT TAGTC TCG CAATA
CTTTATTGTTTTGATGATTA TCTT TCGGTACCGA ATTAG AGT GTTAT
TTTTCTTCAGCCATGGCTCA TATAC CTTCTTTT T TTT -----
TATTTCT
GAM8245 11040 GGGATTACAGGTGTGAGCCA ATTA T - A CT CCTCCTTTTT
TATCTCCTGGCCTCCTTTTT GGG CAGG GTGAG CCAT TCTC GG
TCTGAGACATGGTCTCACTC CCC GTCT CACTC GGTA AGAG CT
TGACACCC ACA- - T C T- ----------
GAM8246 8172 CTCTTGCCTCAGTCTTCCAA T CTC C C - A A ACAT
ATAGCTGGGACTAGAGGCAC CTCT GC AGT TT CAAATAG CTGGG CTAG GGC
ATGCCACTGGGCCCAGCCTA GAGA TG TCA AA GTTTATC GACCC GGTC CCG
TTTGCAAAACTTTTGTAGAG - TTT A C C G A ----
GAM8247 2369 CCTGGTTGGGCCGACGTGGG GT C-- G C - A CCGG
GACTAGCGGTGCTCTCAAAC CCTG TGGGC GAC TGGGGACTAG GGTGCTC TCA AC
CCGGGTATGGCGGGCACCTT GGGC ACTTG CTG ACTCTTGGTT CCACGGG GGT TG
TGGTTCTCAGTCAACGTTCA AC CAA - T C A ----
CACGGG
GAM8248 13981 AAGCGAACTTTGTGCCTGTC C T GTCCTAG G ATTGT CCAAGAA
CTAGAAGTGAAAATTGTTCA AAGCGAA TTTG GCCT AAGT AAA TCAGT
GTCCAAGAAACTGATGTTAT TTTGTTT AAAT CGGA TTTA TTT AGTCA
TTGATTTATTTAAAGGCTAA A - AATTTA- G ATTGT -------
AATTTGTTT
GAM8249 18965 CGTATCGAGCGTGGTCAAGC T A G AA C CAGTGTC
TGCTGCTGCAGTGTCCAGCA CG ATCG GCGT GTC GCTG TGCTG
CAGCCAGACAACGCACGATC GC TAGC CGCA CAG CGAC ACGAC
G - A A AC - -------
GAM8252 18577 AATACGAAGACATGGATAGT TA ATA---- TG AAG- GAAAGGTCGAAGA
TGCAAGGTCTTGAAAGGTCG AA CGAAGACATGG GT C GTCTT
AAGAAAGATACCGGTGATGA TT GTTTCTGTATC TA G TAGAA
ATAACCTATGTCTTTGCGTT GC CAATAAG GT GCCA ----------
GAM8254 2132 TCATGCCTCGCAGGTATTCG A - GGT T TTG---- TG T CTGG
AGTTGCAGGTTTGCCTGACT TC TGCCT CGCA AT CGAG CAGGTT CC GA
GGTCCGGTGAGCCTGAAGAG AG ACGGA GCGT TG GCTT GTCCGA GG CT
TGTTCGCGTTGTGCGTAGGC A T GT- C GTGAGAA GT C ----
AAGA
GAM8257 8493 TGTTGAGTGCAGATGAAGGG A- AGAT GT GA CA CTGG
TTGTATGAGGCCCCATCCTG TGTTG GTGC GAAGG TGTAT GGCCC TC

GGAGGGCTGTACACCTTCTT ACGAC CACG CTTCC ACATG TCGGG AG
GGCACAGCAGCA GA GTT- -- -- -- ----
GAM8258 18930 CCGCTTCACTGGCACCATGG CT CA A A AAGA GTGA
ATGCCTTCGTGAAGATCGTG CCGCTTCA GG CC TGG TGCCTTCGTG TC
AGGCACGAGGGCACCAGGAC GGCGAGGT CC GG ACC ACGGGAGCAC GG
CCTCTGGAGCGG CT CA - - ---- ----
GAM8260 21347 GCATAAGAGAACAGTACAAT A ACAGTACAATT ---- TCATCT
TTGCAGTTAGGATCATCTTT GCATA GAGA TGCAG TTAGGA
CTAGATTTCTGTATCTTTCA CGTGT CTTT ATGTC GATCTT
AAATTTCTGTGC - AAAACTTTCT- TTTA ------
GAM8261 22363 TCTTGGGCAGTGCTGGTAGT C----- GTGTATGAATTA
AGGGTGTATGAATTATCTAT TCTTGGGCAGTG TGGTAGTAGG
TGCCAAAACAACACTGCCCG AGAGCCCGTCAC ACCGTTATCT
AGA AACAAA ----------
GAM8262 6637 GGTTGTGGGCAGAGCTCCTG G GAG CGGA ------- ---- T A AGA
GCCCGGATGCTGTCTCCTGT GGTT TGGGCA CTCCTGGCC TGCT GTCTC CTG TCT TCGAG

TCTATCGAGAGACTTGGAAG CCGA ACCCGT GAGGACTGG ACGA TAGAG GAC AGA GGTTC

ATCAGCACTGAGATTATTAT G AG- TAAG GTATTAT TCAC T A ---
GAGCAGAATGGTCAGGAGGA
TGCCCAGAGCC
GAM8264 1888 AGCATGATCAAGAAGCCCCG - AGAA C C CTC AA-- AGTGATTTTG
CCCACTCGGGCTGAAGGCAG AGCATGAT CA GC CCG CCA GGGCTG GGC
TGATTTTGGCCAATGCAGTC TCGTACTA GT CG GGT GGT CCTGAC CCG
CTGGATGGAGCCGACTGCAT C CAGC A A --- GTAA ----------
CATGCT
GAM8265 15393 TTGTTTGGTATACTTCATTT ATA TTTC GGGCTG
CCAGTGATGGGCTGGTCACT TTGTTTGGT CTTCA CAGTGAT
GATGCTGAGGAGCCAGGCAG GACGGACCG GGAGT GTCACTG
A-- CGTA ------
GAM8266 12439 CATCCTCCTGCAGTGCCTCC TCCT- A CTC- A C- CTCACA
AAGACCACAGCCCTCACAGG CATCC GC GTGC CA GACCA AGCC
CTCCTGGTCCTGCTGTGCAT GTAGG CG TACG GT CTGGT TCGG
CGCCCAGTGGATG TGACC C TGTC C CC ------
GAM8268 6752 CCGGTTGACCTCCAGTGTCA T CTC TGCA GTAGAA
TGCAGCCGCGGTAGAACGCG CCGGT GAC CAGTGTCA GCCGCG
GTGACTGGCGCTGAAGTCAC GGCCA CTG GTCGCGGT TGGCGC
CGG - AA- CAG- ------
GAM8270 21432 ACGAGGCGGGTGAAGGCTGT G - TGAA - T TG CGTCC
GGGTGTCCTGGCGTCCCTGG AC AGG CGGG GGCTG TGGGTG CC G
GCCACCTGTCAGCCCCTCGT TG TCC GCTC CCGAC GTCCAC GG C
CCTGGT G T C--- T C GT -----
GAM8271 2631 TTTTGGGGGCTCTGGGTGTG CTG-- TG G --- CGTA
GCGGTTGCCGTAGCTGAAAT TTTTGGGGGCT GGTG GC GTT GC
GGCTGCACCATGTCGGCCTT AGAGCTTCCGG CCAC CG TAA CG
CGAGA CTGTA GT G AGT ----
GAM8272 8730 ACCTGGAGCTGCACCCCCCC CTGC C ---- ATC T CCGT CCTCCTCT
AGTTATCCGTGGTCTCACCG ACCTGGAG ACCCC CC AGTT CGTGGTC CA GG
TGGCCTCCTCTCTTCCTTGG TGGACCTT TGGGG GG TCGA GCACCAG GT TC

ACCACGACCAGCTATCCGGA ---- A CCTA CCA - TCCT --------
GGGGTTTCCAGGT
GAM8274 15225 CTGGTGCTCCCGACCCCTGG -- CGACCC AG CATC - GCAG
TAGGCCCATCCTCCCCGTGC CTGG TGCTCC CTGGT GCC CTCCCC GT
AGACAGGGGAGCAGGCGCCA GACC ACGAGG GACCG CGG GAGGGG CA
GCTAAGAGGAGCAGTCCAG TG AGAATC -- AC-- A ----
GAM8277 19956 GCAGGCAGGCAAGGTGACGG CA AG---- GACG T -- - TCAGAGCCTT
GACTGGAAGCCCTTTTCAGA GCAGG GGCA GT GGAC GGA AGC CCTTT
GCCTTGGAGGAGCTGGTCCG CGTCT CCGT CG CCTG CCT TCG GGAGG
TCCACAAGCAATGAGTGCCA CA GAGTAA AACA - GG A ----------
CTCTGC
GAM8278 19967 TGCAAGTCGGCCACAGGAGC AG G A A CACGGAACC GATTT
CACGGAACCGCAGTAGGATT TGCA TC GCC CAGG GC GCAGTAG
TCTACTGTTATACAGCCCTT ACGT AG CGG GTTC CG TGTCATC
GAGGCAGAATGCA A- A A C ACATAT--- -----
GAM8279 17466 TGTATTATTCAACTTTAATC T AACT CTTT AA- T- - TG AAATC
TTTTGCGAAATGTTGTATTT TGTATTA TC TTAAT TGCG ATG TGTATTTA C CTTA
ACTGCTTAAAATCTAGGTGG ACATAAT AG AGTTA ACGT TAC ATATAGGT G GGAT
GTGGATATATTCATGTATGC T AT-- TAT- ATG TT G GT -----
ATATATTGATAGATTAATAC
A
GAM8280 3056 GAAGCTATGAGTGGAGCTGC --- CT GCCT---------- CACCTTC
CGCCTGGTCACCTTCACCCA GAAGCT ATGAGTGGAG GCC GGT
TGGAGTCCTCTCTATAGGCC CTTCGG TATTCGCCTC CGG CCA
TCTCCGCTTATATTGGCTTC TTA TC ATATCTCTCCTGAGGTAC -------
GAM8281 22911 AGGGAAAGGACTGCCCTGCT A-- - C ----- TGAG
CCTTTTGAGGAAGGAAACCT AGGGA AGGACT GCC TGC TCCTTT
GCAAGGCAAGTTCTCAATCC TCCCT TCTTGA CGG ACG AGGAAG
CT AAC A A TCCAA ----
GAM8283 7571 GGCAATACTTCCTCCTGTCA AA- CT - CAT - GTCT
TCTCAGGTGGGTCTCCATCC GGC TA TCCTC CTGT CTCAGG TGG
TGAGTACAGAGAGGACCTAG CCG AT AGGAG GACA GAGTCC ACC
AAGCC AAG CC A T-- T ----
GAM8284 8799 TCCATAATGATGGGCTTTTA ATA A GC TTA- TTT TTATGC
GGTTGTTTCTAATGTTATGC TCC ATG TGG TT GGTTG CTAATG
TATTAGCAGCTGTTTAATTC AGG TAT ACC AA TCGAC GATTAT
CAATATAAGGGA GAA A TT TTTG --- ------
GAM8286 19700 CTTTTGGAAGGTGACTTTAT - AC T AATGCATATTCC ATAGA
CACCTTAATGCATATTCCCC CTTTTGG AAGGTG TTTA CACCTT CCTCTCC
TCTCCATAGAGGAGAGGAAA GAGAGCC TTCCGT GGAT GTGGAA GGAGAGG
AGGTGTAGGCCTGCCTTACC A CC - AA---------- -----
GAGAG
GAM8287 16593 GTGGCTCATTGCTTAGGTGC TG T T AG CCCA TT - GCAATTAAA
CCAGGTTTTTCAGGTGCAAT G GC CA TGCTT GTG GGT TTC AGGT
TAAAATTTAGAACTACCACA C CG GT ACGGA CAC CCA AAG TTTA
CAAAGGCATTGGCTGC GT - T AA A--- TC A ---------
GAM8289 13155 TCCATCCCGGGTGTGCAGGG C---- GT G TT AG AAGAG
CATTCTAGCTTCAAGAGGGA TCCAT CCGGGT GCAG GCA CT CTTC
GTCAGTTGCACTGTGCCTGG AGGTG GGTCCG TGTC CGT GA GAGG
AAATAGTGGA ATAAA -- A T- CT -----

GAM8290 19288 GTCCAGAAGAAGCTACTCCT ------ A C TCC CAGGC
TCCAGCAGGCCTAATAGGAT GTCCAGA AGA GCTA TCCT AG
GGCATCTAATATTTTTGGAC CAGGTTT TCT CGGT AGGA TC
TTATAA A - TAA -----
GAM8291 12806 CTGGGTCCCCAAGTCTGGTC TG GT AG-- T---- GA AGGG
TTCTGTGAGGCAGGGGCTAA C G CCCCA TCTGG CTTCTGT GGC
GCAGGAGCTTGTCCAGGAAT G C GGGGT GGACC GAGGACG TCG
GTGGGGGTCTGG GT TG GTAA TGTTC AA ----
GAM8292 14044 GTCTCTTTTTACCTAGTAAG T TTT - A GAC AAGTC
AGTAGACTTCTTTAAGTCAA GTC CT TACCT AGTA GAGTA TTCTTT
GGAATATGCTTTATTCAGGT CGG GG GTGGA TTAT TTCGT AAGGAA
GCTCGGCGGC C CTC C - AT- -----
GAM8293 8105 CATTTCTGGCCCCCTGCATG C- CT- CAC AGAA ATGCG
CCACCCAGAATGCATGCGGC CATTT TGGCCCC GCATGC CC TGC
GCCCAGGATGCATGCTGTGG GTAAG ACCGGGG CGTACG GG GCG
GGCCATTGAATG TT TGT TA- ACCC -----
GAM8294 7665 TCTGCGCAGTCCGCGCAAAC AG AAACAT GG AAGAG
ATGCAGGTGCTTGAAGAGCG TCTGCGC TCCGCGC GCA TGCTTG
AGCGGTGCGTGCGGAAGCGC GGACGCG AGGCGTG CGT GCGAGC
AGG A- ------ G- -----
GAM8295 6909 CTGTCACATTCAGGGGCTTC C- G CC CT CCACACTGCCAA
CCCTCACTGTGCTGCACCAC CTGT ACATTCAGGG CTTCC TCACTGTG GCA
ACTGCCAATGTTATGCAGTG GACA TGTGGGTCTT GAAGG AGTGACGT TGT
ACTGGAAGTTCTGGGTGTTC CT - TC AT ----------
ACAG
GAM8296 15529 TCCTCCAAGGAAGTGATAAT CAAGGA G AA-- AA- AAAAGATA
AGTGGCAACATTTAAAAGAT TCCTC AGT AT TAGTGGC CATTT
AAAATGGGAGTTATTAGGAG AGGAG TTA TA ATTATTG GTAAA
ATGATTGGTGAGGA TGG--- G GAGG AGG --------
GAM8298 18280 CCCGGCCTCACCCCACCTTG G - CCC CC---- - CACAGAGCTTC
CCCCCAAGAGGTCCCACAGA CCCG CC TCA CACCTTGCC CAAG AGGTCC
GCTTCGGACCTCCTTGAGAC GGGC GG AGT GTGGGACGG GTTC TCCAGG
AAGGCAGGGTGCTGAGGGGC G G C-- AACAGA C ----------
GGG
GAM8299 8357 AAGATTGAATTAGGAGGTTA T AT T-- GGAG- ATCAAAGA
GGCAGGAGTAGGATCAAAGA AAGA TGA TAGGAGG TAGGCA TAGG
CTTAGAAAATGCTTGTTTCC TTCT ATT ATCCTCC GTTCGT ATTC
TCCTATTATTCTT T -- TTT AAAAG --------
GAM8300 11469 CCTTAAGAAACGCAGCGGTT AAACGC-- C- GG GAGA
CGGGGGAGGAGACTTTTAGA CCTTAAG AG GGTTC GGGAG
ATTATCTTTCAAACACTTAA GGAATTC TC TTAAG TTTTC
GG ACAAACTT TA A- ----
GAM8301 20888 ACTGGTGACACATGCTGGAG T ---- --- T TAACATT
CCAAGTGCTAACATTGCCTT AC GGTGAC ACATGCT GGAGCCAAG GC
GGTTCCACGGGCATGTGACA TG CCACTG TGTACGG CCTTGGTTC CG
GTCACCCGT C ACAG GCA - -------
GAM8302 12717 CCACTCATGAACCCTCACAT TCAT TC GCG C- -- - CCCCTT
CCGCGTGGGCCCCTCCTGAG CCAC GAACCC ACATCC TGGGC CCT CC TGAGC
CCCCCTTGCTTGTGGCTAGG GGTG CTTGGG TGTAGG ATCCG GGA GG GTTCG
CAGCCTAGGATGTGGGTTCT T--- -- --- AC TC T ------

GTGG
GAM8303 11378 TGTCCTTGATTATTTGTTAA CTT ATTTG CTG A----- GGAA
AATCTGCTAGAAAAGTAACA TGTC GATT TTAAAAT CTAGAAA GTAACA
GGAATGTTATCAAGCCTTTC ACAG CTAA AGTTTTA GATCTTT TATTGT
TAGACATTTTGAACACAATC T-- CACA- CA- CCGAAC ----
TGACA
GAM8304 8753 GAAACAGACTGGGCCAATGT C -- CACAAAGAA - CA- ACCCGATGTCCAAA
CCACAAAGAATTCCTGGTCA GAAACAGA TGGGCCA ATGTC TTCCT GGT GCACC
GCACCACCCGATGTCCAAAG TTTTGTTT ATTCGGT TGCGG AAGGA CTA CGTGG
GTGCAATATCAAGGAAGGGC - AG ACGGG---- A TAA ----------
AGGCGTGATGGCTTATTTGT
TTT
GAM8305 21950 GCTCACAATCGAGCACACGC A A- - ----- GCG-- CACA
GTGTGCACACACATGTGCAC GCTC CA TCGA GC ACAC TGTGCACA
AGATCAGTGTCAGAAGCATC CGAG GT AGCT CG TGTG ACACGTGT
GACCTGCGAGC C CC A AAGAC ACTAG ----
GAM8306 18968 TGCTCACAGGGTGTGACTGG T T G T----- C CTAGG
CCCACTATCTAGGGTAGTGA TGC CACAGGG GT AC GGC CACTAT
GCCTATTTTGTGGCCCCTGT ACG GTGTCCC CG TG CCG GTGATG
GTGCA T - G TTTTAT A -----
GAM8307 690 CCAGTGCACCCCAGCTCCGG T A - C - AGAAGA-- CTGC ATCT
GGCAGAAGAGGCAGCCTGCA CCAG GC CCC CAGCT CGGG GC GGCAGC AG
GATCTCTGCTGCCGGGAAAG GGTC TG GGG GTTGA GTCC CG CCGTCG TC
AGCTCCTGAAGTTGTGGGGT - - T A T AGAAAGGG ---- ----
CTGG
GAM8308 21313 GACAATGCCGCTGCACTGCC AT C ----- --- GGGA
TACTTTGAGGGATCGAGGTG GACA GC GCTGCACT GCCT ACTTTGA
TGAGGTGAACAAGTGCAGCC CTGT CG CGACGTGA TGGA TGGAGCT
GCTGTC -- C ACAAG GTG ----
GAM8309 15612 GGTCCAATTGGTTCCAAGAC CA- AAGA GTAGG--- T-- - AAAGCCCC
GCGTAGGCGAGTTGGTCTGA GGTC ATTGGTTCC CGC CGAG TGGT CTG
AAGCCCCCGGTATCATTCCT TCAG TAACCAAGG GTG GCTC ACTA GGC
CGAATTTCAAGTGCGGGAAC ACG GC-- AACTTTAA CTT T --------
CAATGCAGACT
GAM8312 8206 AAATTTTTGGGGGAGCGAGG TT G C GG TTAA AACT- GCAC
GAAGGAGTTAATGAAACTGT AAATT TGGG GAG GAG AAGGAG TGA GTATT
ATTGCACAATGCTCTGATCA TTTAA ACCC TTT CTC TTTCTT ACT CGTAA
ATCCTTCTTTTTCTCTTTTG C- G T TT CCTA AGTCT ----
CCCACAATTT
GAM8313 19554 GCACGCCAAGCGGGGCTGGG A A GGG C G GG TGAAAT
GTGCATCCTGGGCAGGGGAC GC CGCCA GCG CTGGGGTG ATCCTGG CAGG AC
TGAAATGTACCTGTCAGGGT CG GTGGT CGT GACTCCGT TGGGACT GTCC TG
TTGCCTCAGAAGTGCCTGGT A C GAA T - A- ------
GAGC
GAM8314 5763 GGCTGTGGGGGGATGAGCTC ------ T TCT CCCTCA
ACTCTGGTCCCCTCAGACCT GGCTGTGGGGGGAT GAGC CAC GGTC
GTGGCTCCAAGGAATCTTCC CCGGCACCCTTCTA CTCG GTG CCAG
CACGGCC AGGAAC - T-- ------
GAM8315 60 TCGTAGGCCTTCTCGATGCA A -- - ACC C CTC
CCCAGCGATCTCATCCCTGA TCGT GGC CTT CTCGATGC CAG GAT

TAGTGTCGAGCAGGATGTCA AGTA CTG GGA GAGCTGTG GTC CTA
ATGA A TA C ATA C ---
GAM8317 1643 TGATGTCAGTTCCTTTGCGC G AGT - - ----- A CATC
CCTGACTGCATCATCATGCG TGAT TC TCC TTTG CGCC CTG CTGCAT
GCGGCGAACGGTGTCAAATG ACTG AG AGG AAAC GTGG GGC GGCGTA
GATAGGAAGTCA A GAT T T CAAGC - ----
GAM8318 16594 TTATTTACAATGCTAGAAAT T C CT - ACTTA TACATC T CCTAA
ACAGACTTACCTTACATCAA TTA TTA AATG AGAAAT ACAG CCT AATTT GT
TTTTGTCCTAAACCGAATTT AGT AGT TTAC TCTTTG TGTC GGA TTAAG CA
CTCAGGATTACTGTGGTTTC T C TT G ATTA- CTCT-- C -----
TTTCATTCTGATTGA
GAM8319 2497 GTGGTGGATGGGCCATCAGA GGG CAGAATATA ----- TAA
ATATACACTTGCTAGATAAT GTGGTGGAT CCAT CACTT GCTAGA
TTGGCTATCTGAGTGAAATG CATCATCTA GGTA GTGAG CGGTTT
AGTTATGGATCTACTAC --- TTGAGTAAA TCTAT ---
GAM8320 16006 TACATGTAGATATGATCAGA AT- C TT A AGGGGGAAGAGGGA
TTTACCATTTTTAGGGGGAA TACATGTAG ATGAT AGA TACC TTTTT
GAGGGAAAAAAAGGTGTTTT GTGTACATC TACTA TTT GTGG AAAAA
TATCATCAACTACATGTG AAC - TT A ----------
GAM8321 14011 TATGTTTGCCGTAAAGTCAC CGTAAA G CAGGC TG AA- TTCT
ACAGTCCAGGCTTGATAATC TATGTTTGC GTCACACA TC T AT TC
TTCTGAGAAATTGATAAAAG GTACAGATG TAGTGTGT AG A TA AG
ATGTGTGATGTAGACATG ------ - AAAAT GT AAG ----
GAM8322 9002 GCTCAGAGAGATTACCTGGA A G A A - GACTGA
CTTCCTGGACTGACGAGGAA GCTC GA AGATT CCTGG CTTCCT G
GACCAGGGAATTTATCAGAG CGAG CT TTTAA GGACC GAAGGA C
C A A G A G ------
GAM8323 18072 CCCTGCCATCCAGACAGTCC C AGA- TC CC - ------ TCTCCTAT
CCCTGCCCCCAGGGCAACCA CCCTGC ATCC CAG CCCCTGCC CA GGGCAACC AGT
GTTCTCCTATGCTCTATGAG GGGACG TAGG GTC GGGGACGG GT TCTGTTGG TCG
GTTGTCTATGAGGCAGGGGC - AGAG CC A- A AGTATC --------
CCTGGAGAGGATGCAGGG
GAM8324 6983 GCAGATGTGTACAGATGCTA AGA --- A A TG - AAATGCTG T GA TCTC
AACTGTTGGGAAAATGCTGC GC TGT GTACAG TGCT AAC TTG GGA CTTA GA CA
TTATGAGACATCTCTGCTTC CG ACA CATGTC ACGA TTG AAC TCT GAGT CT GT
TTGAGACCTGAATCTGCAAA AAA TTC - G TA G AAGTCCA- T TC ----
TGTTGAGCACTGTACCTTAC
AAAAGC
GAM8325 3015 GTTTACAAGACATGATTTTG CAA - TT-- CTTTAC A ACATT
CTGGCTTTACAAAAGGACAT GTTTA GACA TGA TTGCTGG AAA GG
TCTATTTATTTTTCCAGTAA CGAAT CTGT ACT AATGACC TTT TC
TTCTTCATTGTCCCATAAGC ACC T TCTT TTTTTA A -----
GAM8326 5181 GAGGGGGCAAGTCACATGGG A TCACAT --- A---- C G AGTCTCA
CAGAGATAGCCGTGTGAGCA GAGGGGGC AG GGG CAGAGAT GC GT TGAGC
GTCTCAGCTCAAGCTGCCCC TTCCCCCG TC CCC GTCTTTA CG CG ACTCG
CCATTTCTGTAACCCTCCTA A CT---- AAT CCCCC T A -------
GCCCCCTT
GAM8327 2343 AACTTCAGATCAGACTGAGG TC TC A ---------- CTG GCAA
ATGTCCTGGAGGCTGTAGCT AACT AGA AGACTGAGG TGTCC TGGAGG TAGCT
GCAAAGCTGGATCTTCCAGA TTGA TCT TCTGATTTC ATAGG ACCTTC GTCGA

TGACTTGATTGGATACTTTA T- TA - TTAGTTCAGTAG TAG ----
GTCTATTCTTAGTT
GAM8328 5656 GGAGAGGTGGATGCCTGGCC T ATGCC CC-- A -- GCCA
CGGCCAGCGAGAGCGGGCCA GGAGAGG GG TGGC GGCCAGCG GA GCGG
CCGCCATCCTGCTGGCCTGC CCTCTCC CC ACCG CCGGTCGT CT CGCC
CGCCACCTGCCCCTCTCC - GTCC- CCGT C AC ----
GAM8329 7182 GGACTTGGCCAAGCCCAGCT CTT C CCC- T AG -- C CG-------- CTCTA
TGAAGACACTGGGTCTGCAG GGA GG CAAG AGCT GA ACA CTGGGTCTG AG TCT
CGTCTCTCTAAGAAATCCTC CCT CC GTTC TCGA CT TGT GACCCGGAC TC AGA
TATCTTCAGGCCCAGGATGT ACT C TACT C AA AG T TATCTCCTAA -----
AATCCAGCTTCATCTTGCCC
TCATCC
GAM8330 10567 AGCTTTGCCACATTCTGCAC T A- T---- AC AC T CCG-- - C TGTTT
AGACGTGGACTCTGGGACCG AGCTT GCC CAT CTGCACAG GTGG TC GGGA TGGT GTG AGA

TGGTGTGCAGATGTTTTCTC TCGAA CGG GTA GACGTGTT TACC AG CCCT GCCG TAC TCT

ATGGCCGAGTTATCCCTGAA - GA TTTCC C- A- T ATTGA G - -----
CCATCTTGTGCAGCCTTTAT
GAGGGCAAGCT
GAM8331 12785 GAGGCTAAGTCTGGGCAGTG ---- T G - CCC TGAG
GGCTGGCCCCTGGTGTGAGC GAGGCTA AGTC GGGCA TG GGCTGG CTGGTG
ATTAGACCAGCCACAGTGCC TTCCGAT TTAG TCCGT AC CCGACC GATTAC
TGATTGGTATAGCCTT ATGG - G A A-- ----
GAM8333 19277 TTCTTCCCTGTTAGGGAGAG G- --- - G - AGCT
CTGAGGGCAGCTGCCACTGA TTCTTCCCT TTAGGGA GAG CT AG GGC
GTCTCCTGTCCCTGAGAAGG AGGAGGGGA AGTCCCT CTC GA TC CCG
GGAGGA AG GTC T G A ----
GAM8334 21222 GGCCCTCAGAGGCTCCTCCC - AG CCCTATCT C ACCACTA
TATCTCCTGGCTAGTTACCA GGCC CTC AGGCTCCT CCTGG TAGTT
CTAGGCTACCAGGTCTCTAG CCGG GAG TCCGGGGA GGACC ATCGG
GGGCCTGAGAGAGGCC A AG TCTCT--- - -------
GAM8336 9508 GTTACAAAATCCTGTGTTCG CAAAATCCT TT T-- CT TTAAAAGACT
GTTGTAACCTGAACTCATTA GTTA GTG CGGTTG AACCTGAA CA
AAAGACTTGTTTTCAGGTTT CAGT TAT GTCAAC TTGGACTT GT
ATCAACTGTTTATTTTCACT CACTTT--- TT TAT TT ----------
GAC
GAM8337 2677 TCATATAGCTGTGGGGGGCT T GC GG GC C- CATTTA
TTAATATTCTGGACATTTAT TCA ATA TGTGG G TTTAATATT TGGA
TCACTGATGTTAGAATCATC AGT TAT ACACT C AGATTGTAG ACTT
ACACATATCTGA C AC A- TA TC ------
GAM8338 872 GTTGAACTTGACCTCGGGGG AAC - G TA- AT T---- TTTAAAAACAT
GGATAGACATGGGTTTGGCC GTTG TTGACC TCGG GGGGA GAC GGGTT GGCC
TTTAAAAACATGGCCCCAGC CGAC GACTGG AGCT CTCTT CTG TTCGA CCGG
AGCTTCAGTCCTTTTCTCGT AC- T G TTC AC CGACC ----------
CGATGGTCAGCACAGC
GAM8340 9596 GGACCCCCATCTCTGTGACT AC- - - CTTCC ACC - AGCATG
TCCTGGAGCACCTCACTTCC GG CCCCAT CT CTGTGA TGGAGC TCAC TTCCT
TAGCATGAGGAACGTGAAGC CC GGGGTA GA GACACT ATTTCG AGTG AAGGA
TTTATCACAGAAGCATGGGG AGT C A ----- A-- C ------

TGACC
GAM8341 9576 GGCTGCGTTAGGTGGAAGCA CG AGGT A AG- A AAGGGA
GCGGAGGAAGGAGACAAAAG GGCTG TT GGAAGC GCGG GAAGG GACAA
GGATTGTCATTTTCATGTCG CCGAC AA TTTTCG TGCT CTTTT CTGTT
TGGCTTTTTAGAAGACAGCC AG GAT- G GTA A ------
GAM8342 22156 TCAGCATTCCTTACTATGTG TCCTTAC T AC A AAG
ATAAAATACATATAGAATAT TCAGCAT TATG GATAAAAT ATATAG ATAT
AAGATATACTATATACATTT AGTCGTA ATAC CTGTTTTA TATATC TATA
TGTCCATAAACGTTATGCTG TTGCAA- - CA A ---
A
GAM8343 7674 TTCGCCTCTTCCTGCTGTAT ----- A C CC CACTGAGCA
GCTCATCCCTGCACTGAGCA TTCGCCTCTTCC TGCTGT TG TCAT CTG
CAGATATGACAAGCAGTAGC GGGTGGAGGGGG ATGACG AC AGTA GAC
CATGGGGGAGGTGGG TACCG A - TA ---------
GAM8345 14771 CATTTCATATCTACCTCCCA T TATCTACC CA - TG-- C CTTACAC
AAGATATTCCTGTAGATTCA CA TTCA TCC AAGATA TTCC TAGATT AGT
GTCTTACACACTTAATTTGA GT AAGT AGG TTCTGT AAGG GTTTAA TCA
CTTGGAATTGTCTTAAGGAT T TTTCGT-- AA T TTCA T -------
GCTTTTGAATTG
GAM8347 8699 TCACCATCTGCAGCCTTGAA CA C- CC A TT GGAG- - AAAGGA
GGAGCTTTGGTTCGGAGACA TCAC TCTG AG TTGA GGAGCT GGTTC ACA GGC
GGCAAAGGAGCCATGTGTGG AGTG AGAC TC GACT CTTTGG CCGAG TGT CCG
AGAGCCTGGTTTCTCAGTAC CC CT AT - T- AGGTG A ------
TTCCAGACCGTGA
GAM8348 21205 ATGCCCTTTCTGACTGTGTT CCCTTTCTGACTGT TG T TGT---- - AT-- TAAG-
CTCTGTGTTTCAGTCCTGTC ATG GTTCTCTG TT CAGTCC CGTG C GTC CCCT
GTGCATGTCTAAGCCCTGTG TAT CAGGAGAT AA GTTAGG GCAT G CAG GGGA
CCTTGCCTTGGGAATAAGGG TTTC---------- GG T TTTTGGT T GAGT TAACA
ACAATGACTGAGGTTACGTG GTG- TGCCTT
GTTTTGGATTGTAAGGTAGA CCT
GGACCTTTTAT GGG
ATAA ------
GAM8351 9756 TCATGCTGCAGCATATTGTA C A TACT TGCTGGCCC
CTGGCCTGCTGCTGGCCCGC TCATGCTG AGC TATTG GGCCTGC
AGGCTTCTCAATAGGTTCGG GGTACGGC TTG ATAAC TCGGACG
CATGG - G TCT- ---------
GAM8352 2764 CTTCAGAGAGGTGGGATGTG G A TG TGGAG G AGGA GAGG
GAGGGGAGAGGACATGAGGA CTTCA AG GG GGATG GG AG CAT
TGGAGCTGCCAAAGCCATCC GAAGT TC CC CCTAC CC TC GTA
TGCCACTGTGAAG G A GT CGAAA G GAG- ----
GAM8353 22183 CTGTGTCTTTGGTTTTAAGA TG-- AA- AAA A--- AACAT
GTAAATTCTAGTTAACATGA CTGTGTCTT GTTTT GAGT TTCT GTT
CCTTCAGAAACTCCTGGAAA GACGCGGAG CAAAG CTCA AAGA CAG
CATCTGAGGCGCAG TCTA GTC --- CTTC -----
GAM8354 9014 CGCTCGCTGACCTGGCGCTG C - GG CTG - TG CT AGGATGAGAAGG
CTGCCCCTGGTGCCTGACGG CGCT GCTGA CCT CGCTG CC CCTGG C GACGG
AGGATGAGAAGGCCGTCTGT GTGA CGACT GGA GTGAC GG GGGCC G CTGCC
CCCGGGTGGACTCAGTGAGG - A -- TCA T CT T- ----------
ATCAGCAGTG
GAM8355 7431 CAGCAAAGAGGAGGCTGAAA AAAGA C A GCCA TTAC- GAATCCAAA

GAGGGTTGCCACTTTTACAG CAGC GGAGG TGAAAG GGGTT CTT AGTT
TTGAATCCAAAAGCTTTTAT GTCG TCTCT ACTTTC CTCAA GAA TCGA
AAGAAAAAACTCCTTTCATC ATG-- - - AAAA TATTT ---------
TCTGTAGCTG
GAM8356 9169 GGAGCACCTGCCAGATGCCA - G CCA --- GC CTGTAT
GCCAGAGCTCTCCTGTATGA GGAG CACCT CCAGATG GCC AGA TCTC
GGTGTCTGTCGGCCCCATCT CCTC GTGGA GGTCTAC CGG TCT GGAG
GGGAGGTGTCTCC T G CC- CTG GT ------
GAM8357 6728 TGGGCCTGTTGTGGAGTACG T TG AGT - T GA AGA ATCGAG
CTTTGGACTGAGAAGCATCG TGGGCC GT TGG AC GCT TG CTG AGC
AGGCTATAGGACGCAGCTGT ACCCGG CA ACC TG CGA GC GAT TCG
TGCCATGACGGCCCA - GT GT- T C AG A-- ------
GAM8359 7736 GAGTTAGCATCATGAATTTG -- ----- -- CT CT CTAAAATGCAA
CTTTTCTCCTCTAAAATGCA GAGT TAGC ATCATGA ATTTG TTT CCT
AAGGTTAGATTCAAATTATC CTCA GTCG TAGTACT TAAAC AGA GGA
ATGATTGTCAGCTGTCACTC CT ACTGT AT TT TT ----------
GAM8361 9449 GAAGTTTCAGTCAATAATCC -- CAATAA C TATAGG TGGTT
ACTGCATATAGGATGGTGGT GAAGTTT CAGT TCCA TGCA ATGG
TCCATAAGATTGTAATGGAG CTTTAAA GTCG AGGT ATGT TACC
CTGTAAAATTTC AT ------ A TAGAA- -----
GAM8364 11917 TCTGGAGTTTGGGAATCCAG TTT ATC GA AA T G TTCA
GATCAAGCCTGCGCATTTCA TCTGGAG GGGA CAG TC GCC GC CAT
GTGGCTGGTGAGGGCTGCTC AGACCTT CTCT GTC GG TGG CG GTG
TCCGCTTCCAGA CGC C-- G- AG T - ----
GAM8365 17661 CTTCATCCACTACTCAGTCA T CA T---- - CAA A ATTACAAATGC
TCCAAACTAGTGCCATTACA CT CATC CTAC CAG TCATC ACT GTGCC
AATGCGGCACAGTCGATGAT GA GTAG GATG GTC AGTAG TGA CACGG
CTGTCAATGTAGAGATGCAG C A- TAACT T C-- - ----------
GAM8366 1473 TCTTTGCAGGGCCAATATTG CAG A - C CA CACCAAAC
ACAGCAGAGTCACCAAACAC TCTTTG GGCC ATA TTGA AG GAGT
TTCCTTCAGTTATCGGTCAA AGAAAC CTGG TAT GACT TC TTCA
CAAAGA AA- C T - C- --------
GAM8367 6003 CCAGGCGGAGACTTCACCAG GG-- A- CCAG ATGG CA A A A A TACGGT
GGAGATGGCACAGGAGGAAA CCAGGC AG CTTCA GGAG CA GG GGAA G GC TC
GAGCATCTACGGTGAGCGCT GGTCCG TC GAAGT CTTC GT CC CCTT C CG AG
TCCCCGATGAGAACTTCAAA GGCA AC CAAA AAGA AG - - G - ------
CTGAAGCACTACGGGCCTGG
GAM8368 12962 GGAGCCTGAGAGGTGGAGGA CTGA - TTCT CCCCC CTTCC
GTTCTGATCCCCCGTTACTT GGAGC GAGGTG GAGGAG GAT GTTA
CCTAGCATTTTCTCCTCTTG CCTTG TTCCGT CTCCTC TTA CGAT
CCTTAAAAGTTCC AAAA T TT-- ----- -----
GAM8369 14982 CTCATAAGTGTGTGTGGGTG C AG TG TG ----- ATGGTGCC
TGAGAGCACGATGGTGCCTG CT ATA TG TGTGGG TG AGAGCACG
TGTTCTGTGAATGTGTCCAT GA TGT GT ATACCT GT TCTTGTGT
ATGTGTCTGTAAG A CT GT GT AAGTG --------
GAM8370 4936 CAAAGGCAGGCTTCTCCGGT A C C- CCGG-- ------ TAGA
GGCATGGTGGTAGACTACCC CA AGG AGG TTCT TGGCAT GGTGG
TAACAGTGCCAAAGCAAAGA GT TCC TCT AAGA ACCGTG CCATC
AATTCTACCTCTG C A TA AACGAA ACAATC ----
GAM8371 21551 GTAGCTTTAAAAGTCTTGAT TTAAA GATCTCT T A TCAT

CTCTGGTGATGTAAGTCATC GTAGCT AGTCTT GG GATGT AG
TAACGTCCTTTGTAAAGACT TATCGG TCAGAA TC CTGCA TC
GCCTTGGCTAT TTCCG ATGTT-- - A ----
GAM8372 8002 GGGCTTCCAGTGGGGGGAGA T - - CCC GG G A-- - GACT
GCCCCTGAGAGGTGATTGGC GGGCT CCAGT GGGG GGAGAGC TGAGA TGATT GCT TC TCT

TATCTCTGACTGGATGACTG TCCGA GGTCA CCCC CCTCTCG ACTTT GTTGA CGA AG AGG

AGCGAGTTGATTTCACAGCT - T T AC- A- G GTC T ----
CTCCTCCCCTACTGGAGCCT
GAM8373 10780 GCGTGCCAAGCTCGACCCCC CA G C-- CC CCACTACTTCCTCTTCGA
TCCGCGGCCACTACTTCCTC GCGTGC AGCTC ACC CCT GCGG
TTCGACTGCCCAGGCCAGGT CGCACG TCGAG TGG GGA CGTC
GGAGCTCTGCACGC TC G ACC CC ----------
GAM8374 1040 CTCTGTTTAGTTTGATATTA AGT-- TAAAGCAAA G - TTTTTC
AAGCAAAATTAAGAGGTCTT CTCTGTTT TTGATAT ATTAAGAG TCT TAG
AGTTTTTCCTATAGAACTTT GAGATAAA AACTGTA TAATTTTC AGA ATC
TAATATGTCAATTCAGAAAT GACTT --------- A T ------
AGAG
GAM8375 22804 CCAGGACAGGGAGGCTGGCC - - AG T- G- G GCAGA
GGAGGTTCCTGCAGAGGGAG CCAGG ACAG GG GC GGCC GA GTTCCT
CGTCAAGGCCCTGTGCTGCT GGTCC TGTC TC TG CCGG CT CGAGGG
GTCCCTGG C G G- TC AA G -----
GAM8377 22823 CTCTTTGAGATGACTGGTAT T G T TG A AAT AG G AG C A CT CTAACT
TGAATGGAGCAGTCTTTGAA C CTTT AGA GAC GT TTG GGAGC TCTTT AA G ACCA CC TC
AGGCACCAACCCTTCCTAAC G GAAA TCT CTG TA AAC TCTCG AGAAA TT C TGGT GG AG
TGATGGTGGTCTCTTGAAAG T G T TT - CT- G- G CT - - T- ------
AGGCTCTTCCAAATTTGTCT
TCTGAAAGTG
GAM8379 15843 CAGGCCCTGCCACGGTCAAC ------ CAA CAGCCA
TCAGGTCAGCCAGCCTGAGG CAGGCCCT GCCACGGT CTCAGGT
CTGTGGCCTCCAAAGGGTCT GTCTGGGA CGGTGTCG GAGTCCG
G AACCTC --- ------
GAM8381 19867 TTTAGTTCCTCAGGAACAGA T - A A ACT TG AAT CT ACTC
GAACTTTGCAATGATGATCT TTTAGT CCT CAGGA CAG GA T C GATGAT CA
CAACTCTGCATCATCTGGTG GAATCA GGA GTCTT GTC CT A G CTACTA GT
ACTCCTGATTCTGCAGGACT - C A - C-- GT GT- C- ----
AAG
GAM8382 20885 TAGTAAAGAATAGAAATGCA AT- GCA-- CACAC TTCGTC
GCTACACACCCAATTCGTCT TAGTAAAGA AGAAAT GCTA CCAA
TGGTCTGGCCTAAAATTTCT ATCATTTCT TCTTTA CGGT GGTT
CAGTCTTTACTA GAC AAATC CT--- ------
GAM8383 22313 CATGCCAAGCACGGTTCAGC T CA C T- G CCAAG- A- GGTCTTCA
TCCCTGCGGCCAAGTCGAAA CA GC AG ACGGT CAGCTCCCT CGG TCGA ATGT
TGTGGTCTTCAGCATCATCG GT CG TC TGTCG GTCGAGGGA GTC AGCT TACG
AGCATTTCTGGAGGGAGCTG C AC - TC G TTTACG AC --------
CTGCTGTCTCAGCCTG
GAM8384 2418 GCCATTGAGTCACTCCACCC G T TC CC - TA CATCCC
TGGGGCCTAGGCCATCCCGC GCCATT AG CAC CA CT GGGGCC GGC
CCTGGCCCTGAGATGATGTG CGGTAA TC GTG GT GA TCCCGG CCG

CTAAATGGC A - TA A- G TC ------
GAM8385 22163 GTGAGGATGGCAGTGCAGGA ------ C GC- C-- A T- C GATGCAGA
TGCAGTAGATGCCCTGATGC GTGAGGA TGG AGT AGGATG AGT GA GC CT
AGAAGTGCTTTCAACTCCTC CACTCCT ACC TCA TCCTGC TCA CT CG GA
GTCCTTCAACTCCAACACCT TCCACA - ACT TCC A TT T --------
TCCTCAC
GAM8387 2586 GGTTACCAGAAATCACAGTG T AAATC T C-- TT C TAATAAT
GGGTCTCCTTGTTGGCATCT GGT ACCAG ACAG GGGGTCT CTTG GG ATC
AATAATGATCTTCCAAGACA CCA TGGTT TGTC CTCTAGA GAAC TC TAG
AGATCTCCTGTCACTCTTGG - CTCAC - ACA CT - -------
TACC
GAM8388 7686 TGACGCGCACGCCCCTGCTA C CC T ACTA- TGG
TGGACTATCGGAGTTTGGGA TGACGCGCA GC CTGCTA GG TCGGAGTT
TTTCGGGAATGCCTGGCAGA ATTGCGCGT TG GACGGT CC GGCTTTAG
AGTTGCGCGTTA - AA - GTAAG ---
GAM8390 17165 TTGGACACCACAAATTGTGG CAC- AAT TG--- AATATTGC
GTATTGTCAAATATTGCTGG TTGGA CACA TGTGGGTAT TCA
ATCCTGTACCCATGTTATGT AACCT GTGT GTACCCATG GGT
GACTCTCCAA CTCA ATT TCCTA --------
GAM8391 5931 GGTGCGGGAGCGACGGGGCC G G CCAGGGATT TAAA TGCTT
CAGGGATTGTGTTTAAAGTA GGTGC GGAGC ACGGGGC GTGTT GTAG
GTGCTTCTACCAACATGTCC CCGCG CCTTG TGCCCTG TACAA CATC
CGTGGTTCCAGCGCC A G --------- C--- -----
GAM8392 17610 CAGAAACGTCCCACATGCCC ------- A- CCACCAG TCAAAATGTTC
ACCAGGAGCAAGCTTCAAAA CAGAAACGTCCC AC TGC GAGCAAGCT
TGTTCAGCTTGCTTACATTA GTCTTTGTAGGG TG ACG TTCGTTCGA
AGCAGAGTAATTCCAGGGAT ACCTTAA AG AATTACA ----------
GTTTCTG
GAM8393 1653 AACTCACAACCCTACCAATG AC TACCAA C - AAG ACA GGAA
CTACTCTCAACAAGTTCACA AACTC AACCC TG TACTCTCA AC TTC GAG
GAGGGAACTTAAGGAAGTAT TTGAG TTGGG GC GTGAGGGT TG AAG TTC
GGGAGTGACGGACTTTGGGT GC TTTCAG A A --- GAA ----
TCGGAGTT
GAM8394 5690 CCGTGGCTTATGGAGTTAAG T T TT CACGT AACA TGTTC
GAAGGTCACGTGAGCAAACA CCG GGCT ATGGAG AAGGAAGGT GAGCA GAAG
GAAGTGTTCCTTCTGCTTTT GGT CCGA TATCTT TTTCTTCCA TTCGT CTTC
TACCTTCTTTCTTTCTATAG C - TC TTT-- ---- -----
CCCTGG
GAM8395 4138 GGTCTGATTGGGTTTGGTTT T--- - TG TTT A C GAGCGTAA
AGTATTCCTATGAGCGTAAA GGTCTGA TGGGT T G AGT TT CTAT
TGGTAAAATTCTTCTGATAC TCAGATT ACCCA A C TTA AA GGTA
CCACTCTTTAGACT TCTC T GT TTC A T --------
GAM8397 7221 TGTCACCATCCTCTGCATTG CA C- AT- C TG CACT C TCCT
ACTTGGGCACTGACATGGTT TGTCAC TC TCTGC TGA T GG GA ATGGT
CCTGCCATCTCCCTGGCTTA ACAGTG AG GGACG ATT G CC CT TACCG
TGAGCAGGCTGAGAGTGACA AG TC AGT C GT ---- C ----
GAM8398 17725 GGAGTTAAACATTATGAGGC TAAACA A GATGAA A G TATCA
TGATGAATTTGAGATGGCTA GGAGT TT TGAGGCT TTTGAG TG C
TCAGGCACTTCGAACAAGCC CTTTA AG ATTCCGA AAGCTT AC G
TTAAGAGAATATTTC TAAG-- A AC---- C G -----

GAM8399 10011 GATCTTGTGTCTAGAGGCTC TC TC- GAG C - TGCGAT
CAGAGCCTTGCGATAGGCTT GA TTGTG TA GCTC AGA GCCT
CTTGAGTACATATATCACGA CT AGCAC AT TGAG TCT CGGA
CTTC TC TAT ACA T T ------
GAM8400 5444 TCCTGAGCTCGCGCTGTCCT A C TGT T- G T A--- ATA
CTCGTGTGGCCACAGCCTGA TCCTG GCTCG GC CC CTC TG GGCC CAGCCTG
TACAGGCTGGAAAGGTCCAG AGGAC CGAGC TG GG GAG AC CTGG GTCGGAC
GAGTTGGGTCCGAGCCCAGG C C --- TT G - AAAG ---
A
GAM8402 459 AGGAGTAAAGGCATAGGCCC AA A CTCAT CCT - ACCCCAG
CTCATGACCTGCAGGGACCC AGGAGT AGGC TAGGCCC GA GCAG GG
CAGCCACTGCCTCTGGGCTT TCCTCG TTCG GTTCGGG CT CGTC CC
GGCTTGAGCTCCT AG - T---- C-- A -------
GAM8403 10001 ATAATAGTGTAAATCAGATA T C TATAATTGAG TATA TAAAA
TAATTGAGGGCTATATGGCA ATAATAG GTAAAT AGA GGC TGGCAG
GTAAAACTGCTAGTGCCAGT TATTGTC CGTTTG TCT CCG ATCGTC
TTTCTTGTTTGCCTGTTAT - T TTTGA----- TG-- -----
GAM8404 88 ATGAAGACGAGTATGAAGTA G A- T AGTAAATTTGAAA TTTGA ACAGCCC
AATTTGAAAGACTTTGAGCC AT AAG CGAG ATGA GAC GCC
ACAGCCCGGTAATATGTCTC TG TTC GCTC TACT CTG TGG
ATCCTCGGCCTTGGT G CG C ---------- TATAA -------
GAM8405 11041 CCATGCAGGCTACTCCATGT GCT TTT CT----- CACCGT
TTGGGGCTGGCCTCACCGTA CCATGCAG ACTCCATG GGGG GGCCT
GGCCTGTCTAACCTCTTCTG GGTGCGTC TGAGGTGT CTCC CCGGA
TGGAGTCTGCGTGG --- CTT AATCTGT ------
GAM8406 965 AGGCAAAGAAAGACTTAAGG A- A-- CTT - - A CTG
GAGCAGAGGGCTGTCTGTTG AGGCA AGAA GA AAG GG AGCAG GGG
CTACCATTTTTTTCAAATTC TCCGT TCTT CT TTT CC TCGTT TCT
TACTGCCT CA AAA TTT A A G ---
GAM8407 8874 TTGAAGCCAGAGCAAGTATG A AGCAAG TCCT T G GAAC- TGAA
TCCTTCATCAGGTAATCAGG TTG AGCCAG TATG TCA CAG TAATCAG TCTTCAGT
AACTCTTCAGTTGAAGCTGA AAC TTGGTT ATAC AGT GTT ATTAGTC AGGAGTCG
GGAACTAACTGATTAGTTGT A AATATA T--- T G AATCA ----
TGATCATAATATAATTGGTT
ACAA
GAM8408 2868 TGTGAGCCCGAGTGGTGTGA - AG-- T GA A C CTTCATCCTGTACACC
TGCCTGAGGACCCACTCTTC TGTGAGCC CG TGG GT TGCCTG GGA CCACT
ATCCTGTACACCAGTGGCTC ACACTTGG GT ACC CA ACGGAC CCT GGTGA
CACAGGCAAACCCAAGGGTG T GGGA - A- A C ----------
TGGTTCACA
GAM8409 21663 CCCTGTATCAACCTATTTAA ---- C TTAA TT CAGGAC
CACTTCAGCAGGACCTGGTG CCCTGT ATCAA CTAT CAC CAG
CATGTGGATTGATACTAGCA GGGACG TAGTT GGTG GTG GTC
GGG ATCA A TAC- -- ------
GAM8410 17996 CCATTGCTCAGTGACAGTAT CA ACA A A GTCCA
CTTAAAGCTTGTCCAGAGCT CCATTGCT GTG GT TCTT AAGCTT
TGAAGGACCACACAGGTAGT GGTGATGG CAC CA GGAA TTCGAG
GG A- AC- - G -----
GAM8413 15755 GTCCTCCATCACCAGAGCAA A- C AAGTTCAG ACC CT - ACAGTGCCAAGA
GTTCAGCCACCAGGCCCCTT GTCCTCC TCAC AGAGC CC AGGCCC TAAG C

AAGCACAGTGCCAAGAGCCT CAGGAGG GGTG TTTCG GG TCCGGG ATTC G
TACTGGGCCTTCAGGAAGTT AC T GACTTGAA ACT TC C ----------
CAGGCTTTTGTGGCAGGAGG
AC
GAM8414 20336 CAGGTTCCACAAGTTCCATT - AA- TC- TACCT - GCCCTCA
ACCTGGCCTTTGTGCCCTCA CAG GTTCCAC GT CAT GG CCTTTGT
GCAGAGGACCTCTATGACTG GTC CGAGGTG CG GTA CC GGAGACG
CAGGGTGGAGCACTG A GGA TCA TCT-- A -------
GAM8416 1640 TCCCACGTTTGTTCCAGAGG C T CCA --- A CTTTC ATTTTTCCA
AATTTAACTTTCTGTATTTT TC CACGT TGTT GA GGA TTTAA TGT
TCCAACATTAAAATCCACAT AG GTGCA ACGA CT CCT AAATT ACA
CAATAGCACACGTGTGA T C TAA ACA A ----- ---------
GAM8419 18355 TGAAGAAGGTGTAGCTCTCG AGA T CT A AC TGGACC
GCGGGGATGTTACCCTTGGA TGA AGG GTAGCT CGGCGGGG TGTT CCT
CCAGGAACACTTTGTTGTAG ACT TCC CGTCGA GTTGTTTC ACAA GGA
CTGCCCTCCATCA ACC - T- - -- ------
GAM8420 18771 TTTGGCTTCCTTTTATTTCT T TTTTA A-- A ATGAAAC
TGAGGATTACATGAAACGTG TTTGGCT CC TTTCTTG GG TTAC
AACTATACAGGAAAGTATGG GGACCGA GG AAAGGAC TC AGTG
CAGCCAGG C TATG- ATA A -------
GAM8421 18479 TGGATCATGGGTGGTGGTGA TC -- T A - AG---- ATGGATG
ACAGCAGAAAGGGATTATGG TGGA ATGGGTGGT GG GA CAGC AGAA GGATT
ATGAATCTGCATTGTTCTAG GCCT TGCCCACCG CC CT GTCG TCTT TCTAA
CTGCTCCCCATGCCACCCGT C- TA C C A GTTACG -------
CTCCG
GAM8423 7383 AAGATCCAGGAGCAGCTCTG TC A-- C ---- CTCCA TCCA
CCTGGTCCAGGACTCCAATC AAGA CAGG GCAG TCTGCCTGGTC CAGGA ATCG
GTCCATGATGTTCCTGCTAT TTCT GTCC TGTC AGACGGATCAG GTCCT TAGT
GACTAGGCAGACTGTATCCC GA CTA - TATC TG--- ----
TGAGTCTT
GAM8424 1169 ATAGGCACGTTTCCATAACT TTCCATAACTC CCCAA T ATAAC
CCCTGTTCCCAAGGTTTGGA ATAGGCACGT CCTGTT GGT TGG
TAACCTATGCTCATTTAGCA TGTTCGTGCA GGACGA TCG ATC
GGAACACTACACTACGTGCT TCACATCACAA TTTAC T -----
TGT
GAM8425 2758 GGTGTTGGCGGGGGCGGAGG C - A C GAACGGGA
GCAGGGGAACGGGATCCTTC GGTGTTGG GGG GGCGG GGG AGGG
TCCCGCTGCCCACCAACACC CCACAACC CCC TCGCC CTC TCCT
A G - T --------
GAM8426 11787 GCTGGGAAGTGGTTAAGTGT TG TG GTG - CC CTCCTCCA
GCCCACCCGTGTTCTCCTCC GC GGAAG GTTAA TGCCC AC GTGTT
AAATGCTTGTCGGGCAAGAT CG CTTTC CGATT ACGGG TG CGTAA
TAGCTCCTTTCATGC TA CT AGA C TT --------
GAM8427 9651 GTTGCCAGAACGCTGGTGTG TG --- TGT TT-- TTTGG
GGGCGCTTGTCTTTGGGACC GT CCAGA ACGCTGG GGGGCGC GTC
TTTGTGCTTCCCAGTGTGTG CG GGTTT TGTGACC CTTCGTG CAG
TTTGGTGGC GT GTG --- TTTC -----
GAM8430 19779 GGCCCCCATGGGCCCGGGTC AT GC GT TTCA TTTT
CATTCACCCTTTTGGGCAAT GGCCCCC GG CCGG CCA CCC
TGGGACCGGTTCCCGGGGGT CTGGGGG CC GGCC GGT GGG

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        C                  C- TT   AG  TAAC  ----
GAM8431 834   TCTCTACTGTAATTAATTGG     C   ATTAATT     ATTATTA TC    TCCATC
        GTCTATTATTAACTCTCTGT TCTCTA TGTA      GGGTCT      AC  TCTGT
        TCCATCATAGAATGTGGCCA AGAGGT ACAT      TCCGGA      TG  AGATA
        GGCCTTACAATGGAGA        A  -------     CCGG---  TA    ------
GAM8432 10017 GTCTACAAGAATAAGTTTGT   TACAA  T      TT   A   -    ATAGCTAC
        TTTGGAAAGTTGAGCTATAG GTC    GAA AAGTTTGT  TGGA AGTT GAGCT
        CTACAGCTCTAGCTATCCAG CAG    CTT TTCAGACG  ACCT TCGA CTCGA
        CAGACTTTTCATTATGAC    TATTA  -      --   A   T    --------
GAM8433 4123  GAGACTCTTCCAGGTCAAAG  GA       T  A   -  GG  T    CCGT
        GGCTGGCGTGTGGTCCGTGC GA  CTCTTCCAGG CA AGG GCT  CG GTGGT
        CACCGAGGTACCTGTGTCCT CT  GAGAGGGTCC GT TCC TGG  GC CACCG
        GGGAGAGCTTC         TC       T  G   A   A-  -    ----
GAM8434 5873  GGATTTATACATACAGAGAT     A    --      T  A      T   GAA
        TGTAGTATTTAGTATATGAA GGATTT TACAT  ACAGAGAT GT GTATTTAG ATAT
        ATATTTTGAATACACATCTC CTTAAA GTGTG  TGTCTCTA CA CATAAGTT TATA
        TGTCAGTGTGAAAATTC       A    AC      -  -      T   ---
GAM8435 17064 TTCACCGCACCCTCGGACTG      -  CTCGGA   -  AG       -  - AG    TCCG
        CCCCAAGGCCCCGCCGCGCT TTCACCGC ACC     CTGCC CCA  GCCCCGCCGC GCT CC  CGCCGC

        CCAGCGCCGCTCCGGCGGCG AGGTGGCG TGG     GGCGG GGT  TGGGGCGGCG CGG GG
GCGGCG
        GCGGCGGCGGCGGCGGGGTG      G  C-----    A  GG       G  C  CG    ----
        GTGGAGGCGGCGGTGGCGGT
        GGA
GAM8437 1334  CGCGGCGCTGGCCGACTGGG   -      C A  G-     CC   CACGA  G   C---   ACTACGA
        CGTCGCCCTTCCACGAGCGC CGC GGCGCTGGC G CTG  GCGTCGC  TTC    GC CCA   TTCC

        CACTTCCACTACGAGGAGCA GCG CTGTGACCG C GAC  CGCGGCG  AAG    CG GGT   GAGG

        CCTGGAGCGCATGAAGCGGC   A      - -  GA     --  TACG- A   CCAC   -------
        GCAGCAGCGCCAGTGTCAGC
        G
GAM8438 15202 CTTTTGGCAGAGCTCCCACT       AGA    CACTATT G         GATAAA
        ATTTGCAATGGATTTTGGAT CTTTTGGC   GCTCC      T CAATGGATTTTG
        AAACAAGATCTGTTGGAGGA GAAAACCG   CGAGG      A GTTGTCTAGAAC
        GCGCCAAAAG              ---    ------- G         ------
GAM8440 17936 GGAAGATCACTCTGCTCTGA   AGA  A    CTC-  TTA   AA    TCAA
        TTATGGAAAAGTCTTCAAGG GGA   TC CTCTG    TGA   TGGA  AGTCT
        GCTGCTTCAAACTCAAACAC TCT   AG GAGAC    ACT   ACTT  TCGGG
        AGAGAGAAACTCT        CAA  A    ACAA   CAA    CG    ----
GAM8441 13882 GTTGTCTGTTTGTGGATTTC      GTT   GGATT   -        T-  TTTTTACTTCTTCTTT
        ATTTCTGCCTTTTAGTTTTT GTTGTCT   TGT    TCA TTTCTGCCTTT  AG
        ACTTCTTCTTTCTTTGGAGG TAACAGA   ACG    GGT AAAGACGGAGG  TC
        CAGAAATTGGGCATAAGACA      AT-  -----  T        TT  ----------------
        AT
GAM8442 16654 GGGCTCTGTATGGGAGGCCA    TC----  A    -    TG CCTTCG    ATCTATAA
        TGGCCTTCGCCAGCATCTAT GGGC     TGT TGGGA GGCCA  G     CCAGC
        AAGCTGGACAACCTTGTGGC TCCG     ACA ATCTT CCGGT  T     GGTCG
        CATTCTAGACATCAATCGCC    CTAACT  G    A    GT CCAACA    --------
```

```
        T
GAM8443 1017  GATACAGCCTTTTCTTTATC  TA      CT  A  TA  C  AAAAAAAA
        TTATAGCAGGAAAAAAAACC GA  CAGCCTTTT  TT TCT  TAG AGG
        TTTTGAGGGAAATAGAAGGG TT  GTCGGGAAG  AA AGG  GTT TCC
        CTGCGTT           GC      AT  -  GA  T  --------
GAM8444 3942  GGAGACAAATATCTGGGGCC   A  A   TG -----      GTTCTTA
        TGCAGTTCTTATGCAGGCCT GGAG CAA TATC  G    GGCCTGCA
        ATCGCTGGATGATTGACTCC CCTC GTT GTAG  C    CCGGACGT
                    A  A   GT GCTAT      -------
GAM8445 20286 GGGGTTCTCCGGGGAATCCT              CC-     GTCAG
        CCAGCTTGGTCAGCAAGTTC GGGGTTCTCCGGGGAATCCT  AGCTTG
        TCGGGGTTCTCCGGGGAATC TCCTAAGGGGCCTCTTGGGG  TTGAAC
        CT                        CTC     -----
GAM8446 10965 GAATTCCTGAGGCCCGAGCC     CTG   -  AG  A    TAAACCAAT  ATCA
        ACACCCTAAACCAATTTCAT GAATTC  AGGC CCG  CC CACCC       TTC
        CAGAATCTCTGGGTGGGACG CTTAGG  TCCG GGC  GG GTGGG       AAG
        GAGCCTGGATTC          ---   A  A-  -    TCTCT----  ----
GAM8448 5421  GCGTCGCCGCGATGGTGTTG   C  G   ---- TG  G      CGAG---     TGAC
        TTGGAGAGCGAGCAGTTCCT GCGT GCC CGAT   GG  TT TTGGAGAG     CAGTTCC
        GACGGAGCTGACCAGACTTT TGCG CGG GCTG   CC  GA GACCTTTT     GTCGAGG
        TCCAGAAGTGCCGGACGTCG   A  -  CAGG  GT  A      CAGACCA     ----
        GGCAGCGT
GAM8449 8250  ATGGTCAACGGCGCTACAGA      AC  -  CTAC   ACAAA   GA-   TAAA
        ACAAAGGGCGAGCTCTAAAG ATGGTCA  GG CG   AGA    GGGC   GCTC
        AGTCCAGCTCATCCTCTTCC TGCTAGT  CC GC   TCT    CTCG   TGAG
        CGACCTCTGATCGT          CT  A  CCT-  CCTA-   ACC   ----
GAM8450 14422 CTTCCTCCATCCTGAGGTTT    TC    GAGGTTTG    GA   TGAAC
        GGGGGGAGATGCAGTGAACC CTTCC  CATCCT      GGGGGA  TGCAG
        TGCAAATTCCCCAATTTGAA GGAGG  GTGGGA      CCCCTT  ACGTC
        AGGGTGCTGGAGG          TC     AAGTTTAA     AA    -----
GAM8451 4734  TTAAGACCCACTCTGTTTAA     ACC  --  --  -  A  -  ----       TGCG
        AAATATATATTCTATGTATG TTAAG   CAC  TCT  GTT TAA AAT ATAT   ATTCTATGTA
        CGTATATGGAATTGAAATGT AGTTC   GTG  AGA  CAA GTT TTA TGTA   TAAGGTATAT
        CATTATTGTAACCTAGAAAG     C--  AA  TC  T  A  C   AAGT       ----
        TGCCTTGA
GAM8453 6010  CACTTCTCTGAGTGAAGCTG     T  GA   AGCT    ------      AAATCTGCCAAA
        AGGAGAAGGCTGTAAATCTG CACTTC CT  GTGA   GAGGAG    AAGGCTGT
        CCAAAACAGCCTTGAAGTAT GTGAAG GA  TACT   TTTCTT    TTCCGACA
        TCTTTTGTCATGAGGAAGTG     - G-   GT--     ATGAAG      ----------
GAM8454 10515 TTCATTGGTACAAACATCTT         AAACATCTTTC    A-  G  ATGATAAAATGA
        TCATACACAATAGGCTATGA TTCATTGGTAC         ATACAC  ATA GCT
        TAAAATGAGGCATATGGGTG AGGTAATTATG         TATGTG  TAT CGG
        TATAACTACAGTATTAATGG         ACATCAA----     GG  A  ----------
        A
GAM8455 4422  GCCAGCAGAGTTCTGGAGAG  CCAGCAGA-    G  A  AGAAT-   AGACT  A   GCA-- TG-    G

        AGAGAATTCTGAGACTGCCA G       GTTCTG AG GAG     TCTG    GCC CAGG    TC  GTACCA TT
        CAGGGCATCTGGTACCAGTT C       CAAGAC TC CTC     AGAC    CGG GTCC    AG  CATGGT AA
        CAAATTCGCAAAGTGGTACA  AATGAATGA    - C  AGAAAT   C----  A   AAGTG  TAA    G
        ATGAGTGAACCTGAGGCCCA CAAATTCGCA
```

GATAAAGACTCCCTCAGAAC
AGTAAGTAAC

GAM8456 7439 ACCATGGCGTCCTCCGCGGC A CGT - CG T GA---- GG GAGT
CGGCTGCGTGGTGATCGTTG ACC TGG CCTCCGC GGC GC GCGTGGT TCGTT CAGTG
GCAGTGGAGTCATTGGGCGA TGG ACC GGAGGTG CCG TG CGTACCG AGCGG GTTAC

AGCTGGGCCATGCTGTTTGC - TTC A TT T GGTCGA -- ----
CAGTGGAGGCTTCCAGGT
GAM8457 17786 GGGTCCCTGATCTGGAAGGT C ATC AA ATT- CCT GACAAG
GGATTTCCCCTATCAGGACA GGGT CCTG TGG GGTGG TCC ATCAG
AGCTGGTCGGATACATCACC TTCG GGAC ATC CCACT AGG TGGTC
AACTACAGCAGGCGCTT C GAC AA ACAT C-- ------
GAM8458 21920 CGTGGCCGGCCATGGGAAGA CA-- GG AG TTC
GCCATGTTTTCAACGTGGAG CGTGGCCGGC TG AAG CCATGTT
CTTGGCAGCGAGCTGGCCAT GTACCGGTCG AC TTC GGTGCAA
G AGCG GG GA ---
GAM8459 865 TGCTTCTTTATTAATGATTA TATT TATAAATCA- AGCAGC
TAAATCAGGATCTAGCAGCA TGCTTCTT AATGAT GGATCT
GGTCTAGTAACTTCTGTCGT ACGAAGAG TTGCTG TCTGGA
TTTGAGAAGCA TT-- TCTTCAATGA ------
GAM8460 19385 CCGGCCGGGTGCAGTGTTTT G---- A TTT G--- GCGG
GGCCTGGAGCAGGGCGGCCT CCGGCCGG TGC GTG TGGCCT GAGCAGG
GTTCGTGGAGGCCACGCCGC GGCCGGCT ACG CGC ACCGGA CTTGTCC
AGCAGGATATCGGCCGG ATAGG A CGC GGTG ----
GAM8461 20606 TCGATCTCCTGACCTCATGA A C A A CC C CCTC
TCCGCCCGCCTTGGCCTCCC TCG TCTC TG CCTC TGATCCG CGC TTGG
AAAGTGCTCGGATTAGAGGC AGT AGAG AC GGAG ATTAGGC GTG AACC
ATGAGAATGA A T - - TC A ----
GAM8462 16042 CTGAACTTGGGCCAGCCACT AAC G G A A ---- TCCTTC CCCT
CATCTGACTTGTCCTTCGTT CTG TTGG CCA CC CTC TCTG ACTTG GTT
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CGGAAGAGGGATGGACCGAA CA- A A - A AAAA TGTC-- ----
CCAG
GAM8464 22254 GGCACCCAGATCGGAAACAC A - A AACA- GA-- A TT C A TTT
CATGAGAGCACTTTATCTGT GGC CC CAG TCGGA CCAT GAGC CT AT TGT GGTCC
AGGTCCTTTGGGCCAGCAAT TCG GG GTC AGTCT GGTA CTCG GG TA ACG CCGGG
TTGGGCTCACAAATGGACAC - A G CCACA AACA - TT - A ---
CTCTGAGCTGAGGGCT
GAM8465 22698 GCTGATCTCCTGCCTGATGT CCT AT -- CAGAGCCAA AAGA
TTCTGTCTCAGAGCCAAGGC GCTGATCT GCCTG GT TTCTGTCT GGCC
CAAGAGGCCCAGACAGAGTT CGACTAGG CGGAC CG GAGACAGA CCGG
GCCCCAGGCCCGGATCAGC CC- CC TT C-------- ----
GAM8466 1343 GGAGGAGCAGCTGACTCAGG C - CA G- - - CTAGGAAT
GGTGGAGGAGCCTAGGAATG GGAGGAG AGC TGACT GGG TGGAG GAG C
CCTCTCTCCAGGCCCAAGTC CTTCCTC TCG GCTGA CCC ACCTC CTC G
GTGCTCTCCTTC - T A- GG T C --------
GAM8467 539 GGGCGGCTGCACGAAGGATG ACGA- ATGAAC TT T AGGTGAC
AACGGTTTGTGGCAGAGGTG GGGCGGCTGC AGG GGT G GGCAG
ACCTGCCTGGACCCCCTGAG TCCGCCGACG TCC CCA T CCGTC

GCGCAGCCGCCT CGGAG C----- GG - -------
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CTTCACACATAACCAAAAAC GGGCT AGG TCT AC ACTTCAC CAT
AGAGAAGTGGTGAAGTGGTG TCCGA TCT AGG TG TGAAGTG GTG
AAAGGAGTTTCTCAAAGCCT AAC TTG AAAG G - ----------
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ACCACAGCTCCTTGGGCCTT G TGTAGGG AGG GTGA CAC GCTC TTGG
CGAGAGTAGTGATTACTACC C GCGTCCT TCC CATT GTG TGAG AGCT
TTCCTGCGTGC GT --- AT A A - ----
GAM8470 22216 TGCCACCATTCTCTTCTCCC A CTCT CC C-- TG A- CAGAT
CTCCCAGTGGCAGCGAGGCC TGCC CCATT TCTC CTC CAG GCAGCG GGC
AGATGCTGCTGCTGCGCCTG ACGG GGTAA AGAG GAG GTC CGTCGT TCG
TAAGAGTGAGACTAATGGAG A TC-- T- AAT CG CG -----
GCA
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TGATATTTGGCTTTCTAAAT GG TCCCTA GTATC ATATTTGG
ATGATACTCTGGGGAGGAAC CC AGGGGT CATAG TATAAATC
C AAGG CT- ---- ----
GAM8475 18979 GGTCTTGATCTCCTGACCTC CT-- T CTG C - CC C CCTC
GTGATCCACCCACCTTGGCC GGT TGA CTC ACCT GTGAT CCA CAC TTGG
TCCCAAAGTGCTGGCGTTAC CCA ACT GAG TGGA CATTG GGT GTG AACC
AGGTATGAGTCACCGCACC CGCC - TA- - C C- A ----
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GAGGGGG A - A- CCA ----------
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GGTTGGCTGCTGTTCCACTG GG C - GTTG G TTATGTAT ----
GGAGCTG
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GGTGCCACCCTTAGTCACTA GT TA TGGA GTA CGGGG TGC CCCTT GTC TACCA
CCAACTTCCTGGTGAAAGAC CA GT GCCT CAT GCCCC ACG GGGAA CAG GTGGT
CAAGGGAATGCAAGTCCCCG T A A A TGA-- TAA C AAA ------
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GTGCGGGGGTGTCATCAACA TC -- AA- - - - - A GGGC ----
CCAGTGGCCAAGGAAGGTGC
TGGACTGGC
GAM8481 20572 GTGATGTCCGGAGATTCGGA A - ---------- C ATCTGGATCTAA
GCGGCGATATCTGGATCTAA GTG TGTC CGGAGAT TCGGAGCGG GAT
GTCTCCGCTCCGATGTGAAG TAC ACAG GTCTCTA AGCCTCGCC CTG
TCTATCTCTGTGACACCAT C T TCTGAAGTGT T ----------
GAM8482 6045 GTAGTACAGAAGAGAAAATC ------- GAAG A --- AT ATGAGTCA
AGTGGATCATCTATGAGTCA GTAGT ACA AGAAA TCA GTGG CATCT

AGATGCCCATCTTTGGATTT CATCG TGT TCTTT GGT TACC GTAGA
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GAM8484 10513 GCGGTTCTGCGCGCCGCCGA - C CCGATCT C A G AGGCT
TCTTGCCGATGCTGTGCAGG GCGGTTCT GCG GCCG TGC G TGCT TGC
CTGCAGAGCGCGCACGGCTC CGCCGAGG CGC CGGC ACG C GCGA ACG
GCTGGAGCCGC T T ------- - - G -----
GAM8486 7273 GGGAGTATAGGGCTGTGACT TATA---- - AGT GAG -- GGAGAGTGA
AGTATGTTGAGTCCTGTAAG GGGAG GGGCT GTGACT ATGTT TCCTG TAAGTA
TAGGAGAGTGATATTTGATC CCCTC CCCGA CATTGG TGCAA AGGAC GTTTAT
AGGAAACGTGGTTACTAGCC TTGAGAGA T --- --- TA ---------
CAGAGAGTTCTCCC
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TAATCCCAGCTACTCAGGAG GT CGATG GCTCA CTGTAATC CCA CT CTCAGG
GATTGCTTGACCCTGAGAGG CA GCTAC CGAGT GACGTTGG GGT GA GAGTCC
TGGAGGTTGCAGTGAGCTCA AC CACACTAGACT --- A G - ----------
GATCACACCATCGCAAC
GAM8488 8101 GGGTCCTCTTCTTTTCCCAG TC TTTTCCC ACCCCAACCA
AGCTCCACCCCAACCAGGAG GGG CTCTTC AGAGCTCC
CTCTAGTTAATGGAGAGCTC CCC GAGAGG TCTCGAGG
CC TC TAATTGA ----------
GAM8490 6265 GCACCACAGCAAGGATTATC CC AA TA- A GC T A CATAC
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ATATCCAGCTGTTGC -- A- TAA A TA T A -----
GAM8491 18775 GCACTGGCTTGCCAGTTCTT TGG CT - TAG TG A TTAA AAACG
CAGCTCTAGGACTTGTAGCT GCAC CTTGCCAGTT TCA GCTC GACT T GCT GC
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GAAAGTCCCGGAAGATAGCT CATC GAC CGG TTCAGAA CCCGGA GA AGC
GACAGCTTCTCTGGGTTCTG GTGG CTG GTC AAGTCTT GGGTCT CT TCG
AAGTTCTGGGGTCCCATTGG TTACC GG TTG --- - - -----
TG
GAM8493 14724 TGTCTGGTAACGGCAATGCG GTAA - T - GCAACG AAGAAAACA AA-
TGAGAGTGAT
GCTGCAACGGCGGAAGAAAA TGTCTG CG GCAA GC GGCT GCGG GCCCA GA
CAGCCCAAAGATGAGAGTGA GCAGAC GC CGTT CG CCGA CGCC TGGGT CT
TTCGCGTGGGTACCCGCAAG ATAC T - A GAA--- CA------- GCG ----------
AGCCAGCTTGCTCGCATACA
GACG
GAM8494 7130 CTGCCCAGCTGGCTAAAGTT - -- TAAAG --- AATACTATTGC
CAAGAAAATACTATTGCTTC CTGC CCA GCTGGC TTC AAGAA
TTTAAGAAATGCTGCTAGTC GACG GGT TGATCG AAG TTCTT
ATGGTGCAG T AC TCGTA AAT ----------
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CCTGGCAGGGGTGGAGTGAT CCACT TCCT CCGGGGGCCT GGT
GTGAACTAAGGGTCCCTGGA GGTGA GGGA GGTCCCTGGG TCA
AAAGGGTGGAGTGG GGT AAA AA---- ----------
GAM8496 14037 TCTTGCCCAGGCTGGAGTGC - -- C-- -- T GATCTTG

AGTGGTGCGATCTTGGCTCA T CTTG CCCAGG TGGAG TGCAGTGG GC
CTGCAACCTCTGCCTCCTGG A GAAC GGGTCC GTCTC ACGTCACT CG
GTTCAAGCA C TT TCC CA - -------
GAM8497 14410 GGACATCCACCTCTTCCCTG A AC CTTCC C AC A - --- ACCC
CTCGTCACTGAACGGAGCTT GG CATCC CT CTG TCGTC TGA C GGAGCTT GATG
GATGACCCCATCCTTGAGTT CC GTAGG GA GAT AGTAG GCT G CCTTGAG CTAC
CCTGCTCGCCGATGATAGCC - GT CCACC - CC C T TTC ----
ACCAGTGGGATGCC
GAM8498 83 ATGGTGACAACATGCTGGAG AA-- G - GCTAAATG
CCAAGTGCTAAATGGCTTGG ATGGTGAC CAT CTG GAGCCAAGT
TTCACGGATGGCAAGTCACC TGCCACTG GTA GGC CTTGGTTCG
GT AACG - A --------
GAM8501 666 GTATTTGACTCGACCTTGGA A A T ACA CCC A C- TTTAACATTTCACC
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GGGTTTAACATTTCACCTCC TATAGAC GAGC GGA TCT GACC AC CT AGTCCCT
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TTCCTTGCAGTATAGAAGGC ATAT ACGTAAACG AGATATGAC TTGT
AAATGCAATTATA TA GA GTTCC ------
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TGCACATCGGAGTTGTAGTA GCAGCA GG GGCGCGG TGCA GGAGT
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CCTGCTGC ---- A T CAA- ------
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GTGACTTGCTTGGGACCGTG C G AGG- C-- A - GAG ----
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GAM8507 19847 GGCGGCTGGGTCTTGGAAGG T T ----- - GCT-- A-- T TCTGAC
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CTGTCTTCTGACAGGCAGCT CTGCCG CCCAG ATCT TCCTC GGA CTTCT CC CTCGACGGA

CTCCGAATCTTCCACCAAGG T T GAAGT A ACCAC AAG T ------
ACTCCTTGAAGTCTATGACC
CTGCCGTC
GAM8508 19331 ATGGTGCTATAATAAATAAA T TAATAAATAAACTTC TCTTTATGATAACAACACT

CTTCAACACTCTTTATGATA ATGG GCTA AACAC
ACAACACTGTGTTATATTCT TACC CGAT TTGTG
TTGAATCCTAGCCCAT - CCTAAGTTTCTTATA ----------
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TGCTCTTTGGAAAATGATGA CTTGAATG AAG TTG T CT TTTG AATGAT

TTGTTATTACAGAAGTGAAA GGACTTAT TTC AAC A GA AGAC TTATTG
CAAACTTCTATTCAGG C- A AA GT - A-- ----
GAM8510 1439 GTCAGAGGAAAAGGCACTTT A AAAA - C---- TG CT ACGA
GAACCTCCTGTAACGATGCT GTCAG GG GG CA TT AACCTC GTA
GAGGTTTGGACATTCTGACC CAGTC CC CC GT AG TTGGAG CGT
CAGCCCCTGAC C GAC- A CTTAC GT T- ----
GAM8511 2216 GTGGAGGTGCACATGGAACC G - A -- A- CCCCACC
AAACCTCCCCACCAGGTGCT GTGGA G TGCAC TGGA ACCA ACCT
GGTATTCCAGGTGCAGTGTC TACCT T ACGTG ACCT TGGT TGGA
CAT G G G TA CG -------
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GGTATCAGAGGGGTTGGTGT CCCTTAC TGG GGGGAGA GGGA
ACATTCCC ATG TT CTAT ----------
GAM8514 16545 GAAGCTCTCTTGGGCTGCTA CTAA G CT GAACA
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GGTTTT A--- G CC -----
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GGCGTGCTTGGCTCTGCTTG TT CTC C C--- GA--- G --------
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CCAAAAATACCTCCCTGGAA TACTGAAATTA AAG CCTC AC
AAATTAAAGTCAT AA GTC- CATAAAA --------
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TCGTGAAGCCCAATGGCGAG GTTCA TTC AGC CCA GA AGCC TGG GAGA GCCGGAC
AAGCCGGACGAGTTCGAGTC CAAGT GAG TCG GGT CT TCGG ACC CTCT CGGCCTG
CGGCATCTCCCAGGCTCTTC A G A - TC---- --- - A --------
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TGGTTAATGTTGCATTAGAG GTTC CAAATGTTGATG ATG GTT TGC
CACTTTGCAATTGCATAATT CGAG GTTTGTAATTAC TAC TAA ACG
CATTAATGTTTGTGAGC T TTAA GT CGTTTC ------
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GGAGTTAGGGGGCCCCTGTG AGG TAGA AGGGGGA CAGGAGTT GCCCCT
TAGGGGTATAGGGCTCCTGC TCC GTCT TCTCCCT GTCCTCGG TGGGGA
ATCCCTCTGGGATCTGAGCC GA AGGG AC GATA- ----
T
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TTCTCTTCCTCTGGTCCCTT GGC TAGC G AGAAGTGG GGTCCC
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GAM8526 6104 AAGATATTCAGATACTCTTC TTC T CT A AA A -- C G CCT
TATGCCAGGAAGCACAAAAG AAGATA AGA ACT TCTATGCC GG GC CAA AAGA TTGTTGA ATTG

ACTTGTTGAGATTGCCTCAG TTCTGT TCT TGG GGATACGG CC CG GTT TTCT GATGACT TGAC

TTCAGTAGATCTTCCTTGGC --- T T- A GA - CC A - ---
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TTGTCTT
GAM8527 19951 GGCTGCCAGATGGGACCTCA G G GA TGAC- ACG- GGCC
CTGACCCAGACGTTCCGGGC GGCT CCA ATGG CCTCAC CCAG TTCCG
CCGGGAACAGCTGGCAGCTG TCGA GGT TATC GGAGTG GGTC AGGGC
TGAGGCTCTATGTGGAGCT - G TC TCGAC GACA ----
GAM8528 20186 TTTCTAACACTGGCCTCAGC AACA G T - A T-- GA CT T CA- AAA
ACTAGTTCCCTGAGACTTCC TTTCT CT GCC CA GC CTAGT CCCTGA CTTC TAGGT GT TGG

TTAGGTTGTCATGGAAACCA AGAGA GG TGG GT CG GGTCA GGGACT GGAG GTCCA CA ACC

GCCACACCTGGAGAGGCATC GCTA G T T - CCC AC AG - CCG ---
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TGGGATCGAGAGA
GAM8529 10519 GAGGCAGGCGGATCATGAAG CGG-- A- GATTGAGACCA
TCAGGAGATTGAGACCATCC GAGGCAGG ATCATG AGTCAGGA
TGGCTAACATGGTGAAACCC CTCTGTCC TGGTAC TCGGTCCT
TGTCTC CAAAG AA ----------
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AGTCTCCCCAAGGCGGCCAT GGG CCTGGCG GCGGGTC GAG TCC GGC GC
CCCAAGCAGCTCCCCGGATG CTC GGATCGC CGCCCAG CTC AGG TCG CG
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GGCTC
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TCTG A- TT-- --- A --------
GAM8533 3298 GCGTGGGCGGAATCACTTGA AA-- TGA-- AGT AGAT
GCCCAGGAGTTTGAGATCAG GCGTGGGCGG TCACT GCCCAGG TTG
CCTGGGCAATATAGTGAGAC TGTATCTGCT AGTGA CGGGTCC GAC
CTCGTCTATGT CCAG TATAA --- ----
GAM8534 13954 CCTAAGTCTGAAGTCTCATC A AG --- AC- GACATCCA
AGACGAACGACATCCAGTTC CCT AGTCTGA TC TCATCAG GAAC
AGCCTGGTGACAAGAATCGG GGA TCAGGCT AG AGTGGTC CTTG
ACTGAGG G A- AAC CGA --------
GAM8535 3151 AGAGCTGCTCTGCAAGCTAG A - T A T AA-- TG - A ATCCT
AACGTGGGACGCACACATCC AG GCT GC CTGCA GC AG CG GGAC GCAC C
TGGGTGCTGTCTTGTGAAGC TC CGA CG GACGT CG TC GT TCTG CGTG G
CTTGCTGCAGGCAAGCCCT C A - - T CGAA GT T G -----
GAM8537 16577 GGCGAGAGAAGAAGGAATGG A- AAT-- - -- - GACTGA
GTTGAGAAACTGACTGAAGT GGCGAG GAAGAAGG GG GTTGA GAA ACT
GTTCTATCAGCGTCTGATGC CCGTTT CTTCTTCC CT CGACT CTT TGA
CTTCTTCCCTTTGCC CC GTAGT G AT G ------
GAM8540 15813 TCGACGGAGACTCTCCTAAC GA AGA - C - TTCT

CCCTATGGTGTTCTTACACA TC CGG CTCTCC TAACC CTATG GTG
TGGAGGTTAGGGAGAGCCCT AG GTC GAGAGG ATTGG GGTAC CAT
GGAGA AG CC- G A A ----
GAM8541 19081 GGTCTTGTTGAACAGTGTGT GAA AGACTAG ACTG- GAAGAG
AGACTAGTGGGTTGACTGCT GGTCTTGTT CAGTGTGT TGGGTTG CT
GAAGAGAGATAACCGATCCA CCGGGACGA GTTACACA ACCTAGC GA
AACAAACACATTGAGCAGGG --- AACAA-- CAATA ------
CC
GAM8543 12611 TCGATTCCGAGCGTAGCTGT A G A - CTG GA CTAGAC
CTGGAGGAGAGACACTAGAC TCG TTCC AGCGT GCT GT GAGGAGA CA
TGCATTTCCTCGCGAGTGAC AGC AAGG TCGCA TGA CG CTCCTTT GT
GCTGGAACGA - - G G --- AC ------
GAM8544 9483 AACCTTCTGTTACTCCCTGG TTCTG CTCCCTG TG T- GCAG
GAGAAAGGCGCTGAGCGTGG AACC TTA GGAGAAAGGCGC AGCG GGCAT
CATGCAGGTGTCTTTGCTGT TTGG AAT CCTCTTTTTGTG TCGT CTGTG
GTTTTTCTCCACTTCTAAAT TA--- CTTCA-- -- TT ----
GGTT
GAM8545 2847 GAGCTGGCTCCTGGGCCCAC T GG C-- GCTGT AATAG
AGCTGTGCCTGGGAATAGTC GAGC GGCTCCT GC CACA GCCTGGG
CAGGCTGTGCATGCAGAGGA CTCG TCGAGGA CG GTGT CGGACCT
GCTGCTC - GA TAC ----- -----
GAM8546 11355 TTTCTGCATAGACTCACTTG TT TA - GTTA CAGTT
TTAAATAGCAGTTCTGTTGA T CTGCA GACTC ACTT AATAG
GAGTGGAGTTACTGCAGGGA A GACGT TTGAG TGAG TTGTC
GG CA G AG-- -----
GAM8548 7254 GGGTTCTTTTGTCTTTAAAT TT TGT AA AATA T-- A TTATGTT
CAATAAGTAATCTAGGACTA GGG CTTT CTTTA TC AGTAA CTAGG CTAGCA
GCATTATGTTTGCTAGACCT CCT GAAA GGAAT AG TCGTT GGTCC GATCGT
GGCATTTGCTCGGGACATAA TT CTT AC GGC- TAC A -------
GGTTCAAAGTTTCC
GAM8552 12846 CATGAAAGAAGCCTGGTTAC GAA GGT GAT AAAA CTTAA
TGATTTGTATAAAATGTACT CATGAAA GCCT TACT TTGTAT TGTACT
CTTAAAGTATAAAGTATAAG GTACTTT TGGA ATGG AATATG ATATGA
GTAAGGTAAATTTCATG AAA --- --- AA-- -----
GAM8553 8416 GTGAATGGAGGTGCTCGTGA GA-- GCTC- AAAAC ATGGG
TGTAAAACTTCTCATGGGGG GTGAATG GGT GTGATGT TTCTC
GAACCAGGGCATTACTTTTA CACTTAC CCA CATTACG AAGGG
ACCAAAACATTCAC AAAA ATTTT GGACC -----
GAM8554 1516 CTAACAAACTTGGAGGGCAT CAA TT CATT GAG GACG
TTGTTTGAGAGGCAAGGGAC CTAA AC GGAGGG TGTTT AGGCAAGG
GCCTTGCTTAGAAAACATTC GATT TG TCTCCT ACAAA TTCGTTCC
CTCTTGTGCTTAG CG- T- T--- AGA ----
GAM8556 22444 CTCTTTCAGTGGAAAACCGA TC T AAAA A--- A T CCCAA
TGGGGAACCTGGCCCCCAAG CTCTT AG GG CCG TGGGG ACC GGCC
GCTGGTCCCCCAGGAACGGG GAGAA TC CC GGC ACCCC TGG TCGG
CAGCCCTTCAAGAG CT - GACG AAGG C - -----
GAM8557 2185 TGATTTCTAGGACTCAAGCA TAG--- TCA AA- - GATT
GCAAGCCAGGATTCTAGGTG TGATTTC GAC AGCAGC GCC AG
TGGCTGCTGTGTCATCTTTG ACTGAAG CTG TCGTCG TGG TC
AAGTCA TTTCTA TG- GTG A ----

GAM8558 12856 CTCCAGAGTAGCGTAGGACT - - G AC- CACCAC
TCAGGCATGCACCACCATGC CT CC AGAGTA CGTAGG TTCAGGCATG
CTGGGTAACTTGCGTATTTT GA GG TTTTAT GCGTTC GGGTCCGTAC
CGGTAG T C - AAT ------
GAM8559 18778 CTCGGGTCCCACGTGTCCCC C A T T TACTCGCC AGCCT
GGTACTCGCCGGCCGGAGCC CT GGGTCCC CG G CCCCGG GGCCGG
TCCGGCTTCCCGGGGCCGGG GA TCCAGGG GC C GGGGCC TCGGCC
GGACCTTAG T G - - CT------ -----
GAM8560 3485 CTGAGGTTACTGTGGCTCGG A A TG TC CAA - G ATCTGCAAG
CAAAGGCAGCTAGAGGAATC CTG GGTT CTG GC GG AGGCAG CTAGA GA
TGCAAGTCATCTGGCCTGCT GAC CTAA GAC CG CC TTCGTC GGTCT CT
TCCAGGCTGCAGAATCCCAG C - GT GA --- C A ---------
GAM8564 7802 TCTTGTGTTGAGACTTCGTG GAGA GT--- C AAAGGAAGAAGAAAG
GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG TAAGA
AAGAAAGTCTTACACCACTC AGAACACGA GAAG TCACCAC ATTCT
CCAAGAAGAATAAGCACAAG ATAA AACCC - ----------
A
GAM8565 21274 AGCCGGGCATGGTGGCTCAC C --- - AC- - A CAG GAGG
ACCTGTAATCCCAGCACTTT AGCCGGG ATGGT GG CTC ACCT GT ATCC CACTTTGG
GGGAGGCCAAGGTGGGTGGA TCGGTCC TACCA CT GAG TGGA CA TAGG GTGGAACC

TCACAAGGTCAGGAGATCGA - GAG A GAC A C TGG ----
GACCATCCTGGCT
GAM8566 7370 CCTCTTCCGTGAGGCGCGCT T A GCTGAGAC G -- CTGA
GAGACCCGGACCGGCCCTCC CCTCT CCGTG GGCGC CCG ACCGGC CCTC
TGAGAGGATGCCGGTGCGGG GGAGA GGCGC CCGCG GGC TGGCCG GGAG
CGCCCGCGGAGAGG - - -------- G TA ----
GAM8567 2039 GATCGGTTGCACGCAGCTGA G- -- G C- A----- A CTCAA
GCAGGAGAGCCTCAAGCGCT GATC GTT GCAC CAG TGAGC GGAG GC
CCAAGGTAGCTCAACCTGGT CTAG CAG CGTG GTC ACTCG CCTC CG
GCTGGACGAGATC AG GT - CA ATGGAA G -----
GAM8568 14966 CTCCTGTGAGCCCACATTCA - G CACA AA A CATTT T- TCTT
ACATTTTTTGATACATTTGA CTC CT TGAGCC TTC CATTTTTTG TA GA CCA
TCCATCTTTGGTTTCTACAG GAG GA ATTCGG AAG GTAGAAGAC AT CT GGT
AAGATGAAGAAGATAGGCTT A G ATAG AA - ----- TT ----
AGAGAGAG
GAM8570 21359 GCACTGCTGCTGAACCGGCC T GC ACC G CG TGTC
CCGGGCGGCCACTGTCGTGG GCAC GCT TGA GGCCCC GG GCCAC
CCCGGGGGCCCCTCAAGTGT TGTG TGA ACT CCGGGG CC CGGTG
GT - -- CC- G -- ----
GAM8572 18395 CTCCAGCAAACGACAACCAA AAAC AA- A- C G G AGG
CTGCACGATGGTCTGAGGCA CTCCAGC GAC CC ACTG AC ATG TCTG
GAGTGTGGTTCAGTCAGGGA GAGGTCG CTG GG TGAC TG TGT AGAC
GGTCAGAAGCTGGAG AAGA GAG AC T G G ---
GAM8574 10021 GCCTGTGGCTTTGACCCAGT TGG- CCA G TGGTT
GGGCTTGGCCTGGTTGGCAG GCCTG CTTTGAC GTGGGCTTG CC
GCCCATCGTCGGAGGGTTCA CGGAC GAGGCTG TACCCGGAC GG
GGC TTGG C-- - -----
GAM8575 7485 CACAGAGGGCTTGCTGAGGG TG-- AGG--- A TGCT
CAGGGCTGCTGCTCCGCAGA CACAGAGGGCT CTG GC GGGC

GAACAGACTTGGCCCTCTGT GTGTCTCCCGG GAC CG CTCG
G TTCA AAGAGA C ----
GAM8576 11902 TGCAGGAGTCTTGGAGGGTC GA T G --------- GG GAGG
GGATGCGGCGCCGGATGAGG TGCAG GTCT G AGGGTCGGATGCG GCGCC AT
ATGAGGCGTGGCGGAAGATG ACGTC CAGA C TCTCGGTTTGCGT TGCGG TA
CGTTTGGCTCTGCAGACACT A- - G AGAAGGCGG AG ----
GCA
GAM8577 6294 TGTGATGGGAGGAGTCCTCT T - AG CT-- T C C T- - TCCCTCTC
GTATCTCAGTCTGATCCTGG TGTGA GGGA GG TCCT GTA CT AGT TGA CC TGGTC
TCTCCCTCTCGGCCATGGTC ACACT CCCT CC AGGG CGT GA TCA ACT GG ACCGG
TCACACTAGTGCTGCTGGGA - A AA TCGT - - C CT T --------
AACCATCCCTCACA
GAM8578 16813 TGCATATTTTAACATCTGAA ---- ACA- ---- TCTT
ATCAGAAAGTGTCTTTACTG TGCA TATTTTA TCTGAAATCAGAA AGTG
GGTTTTTGGTTTTAGAAACA ATGT ATAAAAT AGATTTTGGTTTT TCAT
TAAAATAATAATGTA AATA ACAA TGGG ----
GAM8580 12037 GCCCTGCCAAGCACAGCGTA G- A- A G G --- AGAAT
GATCTGGAAAGAGCAGAATG GCCCT CCA GC CAGC TA ATCTGGAAAG AGC
CTTTCCTTTTCAGATGTGGC CGGGG GGT TG GTCG GT TAGACTTTTC TCG
TGGTCATGGAAGGGGC AA AC - - G CTT -----
GAM8581 13593 GCCCATTGGCAGGGGTACCA CA GGCAG CAAAG- C CATCTTAAA
AAGTGATCCTCCATCTTAAA GCC TT GGGTAC TGATC TC
GAAGATCAGACAGAGTACCT CGG AG TCCATG ACTAG AG
AGAAGAGAGGC AG AAGA- AGACAG A ---------
GAM8582 2876 GTTGTTGGACCAGAAGCACC A GA CCTC - G - G TG GAAC
TCTGGCTGCTGGGATCGTTG GTTGTTGG CCA AGCA TG GCT CTG GGATC T G
GGAACCTGAGGTCTGCAGGA CGACAACC GGT TCGT AC TGA GAC TCTGG A C
GTGCAATGCTATGGCCCAAC C A- A--- G G G - GT ----
AGC
GAM8583 18162 GCCTAGAATTCAGAATGTAC - AA GAA C AT C TAACA
CCGATGTCCACTAACAGTAG GCC TAG TTCA TGTA CCG GTC AC
ACTGGATACATGAACTGTGG CGG GTC AAGT ACAT GGT CAG TG
C T -- --- A -- A -----
GAM8584 141 GCTTCCTATCTCAGCGCCCT CT TCT G -- G - ----- A A GCCC
GCCGCCGCCGCCGCGGCCAG G TCCTA CAGC CC CT CCGCCGCCGC CGC GGCC GCG GCG

CGAGCGGCCCTGTATGCAGG C GGGAT GTCG GG GA GGTGGTGGTG GTG CCGG CGT TGT

CCATCAAGTGTGTGGTGGTG AT --- A CA G T AACTA A A ----
GGAGACGGAGCTGTAGGGTA
C
GAM8585 19942 AGCAACTGGGTTCCCATGGC AA TC---- T - - CTTAGAGG GTTCA
ATGTGGTGGCCTTAGAGGAG AGC CTGGGT CCA GGCAT G TGGTGGC AGGT
GTGTTCAGCCTGCCACCGTC TCG GACCCG GGT TCGTG C GCCACCG TCCG
GGTGCTTTGGTGCTCTGCCC AG TCTCGT T G T -------- -----
AGGAGCT
GAM8586 21199 AGCATCTGCAGTACATCGTG -- - G -- A - T CTC GC TCCTACC
ACCTGGTATGGACTCTCTGC AGC ATCTG CA TACATC GTG CCTG GTA GGA TCT AGCTACA

AGCTACATCCTACCTGTGGT TCG TAGAC GT GTGTGG CAC GGGT CAT CCT AGA TTGGTGT

TTAAGAAATTCCTACGTGGG AC A - TC A G - TAA AT -------
ACACCTGGTGTGTGACAGAT
CAGCT
GAM8587 12293 GGTGGTGACCTGGAAGGTGT GT GGAAG T A CATA - GACC
TGTAGGCATAGTCACAGAAG GGTG GACCT GTGT GT GG GT CACAGAAGGT
GTGACCACCTTTTGTGCACG CCGC TTGGA CGCA CG CC CA GTGTTTTCCA
CTCCCGGCCACGCATGAGGT AC GTA-- C G CTCG C ----
TCACGCC
GAM8588 5431 CAAGAAGAACAGGTTCACAG GA GGT AGA GA - CA GG A A
GAAAAATGTCCAGA
AAGGAGATACCAAAGGGGAT CAAGAA ACA TCAC AG GATA C AAGG ATAG AA ATGG
AGAAAAATGGGAAAAATGTC GTTCTT TGT AGTG TC CTAT G TTCC TGTC TT TACC

CAGAAAGCCATGTTCCTGTT -- AT- AG- TA T AG TT C G ----------
TCCTTGAGTTATCATCTGAG AAG
TGATATGTTTCTTG

GAM8589 15586 TAATGGTCTTATGCCAATCC ATGCCAA- A GAAAAATAAGACACAA
ATGCAGAAAAATAAGACACA TAATGGTCTT TCC TGCA
ATGCAGGAGTCAGATGAGGA ATTACCAGGA AGG ACGT
CCATTA GTAGACTG - ----------
GAM8590 21185 ATGCAGTGTCCCAAATTTCT AGT - AA - AGCATG
GTCTACAAGCATGTGTGTGG ATGC GTC CCA TTTCTGTC TACA
CAGAAAACTGGAGACCAGGC TACG CAG GGT AAAGACGG GTGT
AT GAC A CA T ------
GAM8591 11778 TCTTTGAGTCTCGACAGAAC T G AACGCT --- ATATGA
GCTGTTCTATATGAAGCCAA TCT TGAGTCTC ACAG GTT CT
ACTAATTGCTGTGGAGATTT AGA ATTTAGAG TGTC CAA GA
ACAGA C G GTTAAT ACC ------
GAM8592 2171 TGGTGCAGCAGACCTGTAAA - AC AA TCT- AAATTCATTATTCCTCA
TGTCTTCAAATTCATTATTC TGGTGCAG CAG CTGTA TG TC
CTCAGATCGTCAAGTACAGT ACTACGTT GTC GACAT AC AG
CCTGATTGCATCA A CT GA TGCT ----------
GAM8593 19417 TGCTCTCAGGAGTGCAACGA T C AAC GTAAA AAGAA
GGTAAAAGCAAGAAGCTCTA TGC CT AGGAGTGC GAG AGC
TTCAACGCATTTTTTAGGTA ATG GA TTTTTACG CTT TCG
- T CAA ATC-- -----
GAM8594 15686 ATCTCGGCTCATTGCAAGCT G CGCC AC AGT
CTGCCTCCTGGGTTCACGCC ATCTCGGCTCATTGCAA CTCTGCCTCCTGGGTTCA ATTCTCCTG
TCAGCCTCCCG
ATTCTCCTGACTCAGCCTCC TAGAGCTGAGTGACGTT GAGATGGAGGACCCAAGT TAAGAGGAC
AGTCGGAGGGT

CGAGTAGCTGGGAGGCTGAA G TCAC GA ---
GCAGGAGAATCACTTGAACC AGC
CAGGAGGTAGAGGTTGCAGT
GAGTCGAGAT

GAM8595 9234 CCCACTCCACGGGGATGTCG C A G TC GGATAAAA TTT - GTAAGG

TTGGGATAAAAGCCTTTGAC CCCA TCC CGGG ATG GTTG GCC GACCAGG CAG
CAGGCAGGTAAGGCTGACCT GGGT AGG GCCC TAC CAAC TGG TTGGTCC GTC
GGTTTTTGGTCAACTCATCC - - - T- -------- TTT A ------
CGGGATGGG
GAM8596 332 TGCCCAGCTCCACAAGCGCC CCACAAGC CA - C- CACCG
TGCAGCGCCTCCACGTCACC TGCCCAGCT GCCTG GC GC TCCACGT
GGCGTGGGCAGCAGCACAGG ACGGGTCGG CGGAC CG CG GGGTGCG
CCAGGCTGGGCA AC------ A- A AC -----
GAM8597 1977 GGAAGTGGGCAGCAAGATCT G G AAGA ----- G T T CTTAT
ACGTGGATGATGGGCTTATT GGAAGT GGCA C TCT AC TGGA GA GGG
TCTCTCCAGGTGAAGCAGAA CCTTCA CCGT G AGA TG ACCT CT CTT
AGGTGCCGACTTCC G - GAA- CGAAG G - - -----
GAM8598 3499 CTAACTGGTTTTTGCTTTAC AC TG T ACCAA GTC GGCA
CAATAAAATGTCCTCGGCAG CTA TGGTTTT C TT TAAAAT CTC
AGTAAATTTTAAACGTGAAA GAT ATTAAAA G AA ATTTTA GAG
ATTATAG -- GT C ----- AAT ----
GAM8599 16732 CTTGAGGCTTTAAACAATCA A C CAAT - GG--- AAAATTC
CTGTATGGATAGTAAAAATT CTTG GG TTTAAA CACT GTAT ATAGTA
CTACTGTATGGAATACAAGT GAAC CT AAGTTT GTGA CATA TGTCAT
GTAATTTGAATCCAAG - - AAT- A AGGTA -------
GAM8599 19412 CTAACTGTACTGTTTTTTCT AACTG TT TCACG TG AGCTGCA
ATTCACGTGTGTCTAGCTGC CT TACTGTTT TCTAT TG TCT
AGGATGTAACATGGAAAACA GA ATGACAAA AGGTA AT AGG
GTAACTAAAG AATCA -- CA--- GT -------
GAM8600 18389 GAGGAAGGACTGGAGAGCCA G T-- - C ATGTTAA A TAAAA
CTTGAGGTCATATGTTAAGG GAGGAAG ACTGGAGAGCCAC TG AGGT AT GGT TG
TATGTAAAACACACTGTTCT TTCCTTT TGACCTCTCGGTG AC TTCA TA TCA AC
GATCACTTACATCTGTGGCT - TCT A C GTCTTG- C -----
CTCCAGTTTTCCTT
GAM8602 9053 GAGAAAGTTGTCTTTTGTAA AA T-- TAATG- T CCACTCCCT
TGCTGAATATGAACCACTCC GAGA GTTG CTTTTG CTGAATA GAA
CTTTCTGTTCAGGTGCTCCA CTCT TAAC GAAGAC GACTTGT CTT
GAAGCCCCAATTCTC -- CCC CTCGTG - ---------
GAM8603 16759 CTGGTGTTGTGGGAGAAAGA GG GAACGC GC AAAAAAA CCAAATTATGAAC

ACGCGGGGCCCGAAAAAAAG CT TGTTGTGGGAGAAA GGG CCG GTC
TCCCAAATTATGAACGACGC GG GTAACACCTTTTTT CCC GGC CAG
CTGCGGAACCCAATGTTTTT GG GTAA-- AA GTCCG-- ----------
TCCACAATGGGGG
GAM8604 15752 GCGGGCTTTTGTCTCTGGAT G TT- - - - TC C CGGG
TCGATGGCTCTGCGGGCACA GC GGCT TG TCT CTG GAT GATGGCT TG
GCCATCATCACAGAAGAGCA TG CCGA AC AGA GAC CTA CTACCGA AC
TGCAGCCAGT A CGT G A A -- C ----
GAM8605 1636 GATGGGTGTAATGCCTGAGA GTAAT A TGCACA C T A ATGGATTGG
TTGCACAAGCTGTGGAAGAG GATGGGT GCCTG GAT AG TG GGA GAG
ATGGATTGGCTCCTCCCAAC CTATCTA CGGAC CTA TC AC CCT CTC
TGATATCCAGGCTGAATCTA AGT-- - TAG--- A - C ---------
TC
GAM8606 5940 CAGTATCATGATGTATATGA A---- GTATAT-- C-- G- - AATTAG
GGGCTAACCCATTGTGGTTT CAGT TCATGAT GAGGG TAACCCATT TGG TTTACTTAAA

ACTTAAAAATTAGTTTAAGT GTCG GGTATTA CTCCT ATTGGGTGA ATT AGGTGAATTT
GGAGTTAGAAGTGGGTTATT ATACA AAAGTGGT TTT AG G ------
TTCCTCTGGTGAAAATTATG
GACATAGCTG
GAM8607 7941 CAGGAGGCAGAAAGTTCCAG - GAA- TC AA AAG- G ACCTG
AAACCAAGGAGCCAACCTGT CAGGAGG CA AGT CAG ACC GA CCA
GGATTAAAGGGTATTGTGAC GTCCTCC GT TCA GTT TGG TT GGT
TCACATGTCCTCCTG T ACAC GT A- GAAA A -----
GAM8608 21392 GCTTCTCTGCTCCCCTGGGT - T G-- - ---- TG TG GCC A- C TCC CACCT
GATGGGTGGGCCCAGAAGGT GCT TC CT CTC CCCTG GG ATGGG G CAG AGGTGG AG CA

GGCAGTCCCACACCTTGTCC CGA AG GA GAG GGGAT TC TACCT C GTC TCCACC TC GT
TCCCACCTCCCTGAAACTGT C T ATG T ATTT GT GT AAA CC C CT- -----
CCATTGCTTTTATAGGGTGA
GGTAAGTGACAGC
GAM8609 10921 TCCCAGCTCACTCAGCTGGA CA- CA A A- - AA GCTT
GCTGAAGGGGAACTGCTTGG TCC GCT CTCAGCTGG GCTG AGG GG CT
ACCGCCTGCCAGCCCAGCTG AGG TGA GGGTCGACC CGAC TCC CC GG
GGCCAGTGTCGGA CTG CC - CG G A- ----
GAM8610 11136 CACTGGCAGCAGTTCTACTT TG AGC--- A GA AGC G - ACCT
CCTGAGCAAGCGTGGCCGGA CAC GC AGTTCT CTTCCT GCA GT GC CGGA
ACCTTCTGCGTAACCCGTGT GTG CG TCAGGA GAAGGG TGT CA TG GTCT
GGGGGAAGAGGACTTGGAAG GT GAAGGT - GG GCC A C ----
GCTGGTG
GAM8612 15293 ACAATATAGTTTCTCCTGAA TA- - AA C TTCC TG GAGT
CACCTGCTTTCCTTCTGGGA ACAA TAGTTTCT CCTG CAC TGCT TTC G
GTCTGGAATTTTGGTATGTG TGTT ATCAGAGA GGAC GTG ATGG AAG C
CCAGGCAGAGACTACCTTTG TCC C C- T TTTT GT ----
T
GAM8613 18164 GGTGCCAGCAACAGCTGCAA CA C T----- A - TG CATAGTCAC AGGATA
CCAGGATCTTGACATAGTCA GGTGC GCAA AGC GCA CCAG GATCT A TAGTTGGTG
CTAGTTGGTGAGGATACATC CCACG CGTT TCG CGT GGTC CTGGG T ATCGACTAC
AGCTATCTCAGTATTTGGGG -- T TGACTT - A GT TATGACTCT ------
TCACTGGTGCTTCAGTGCTT
TTGCGCACC
GAM8614 9422 TTGCAGGAATTGAAGCTTTT TG AA TG CT C G C AGAAGTAGG
ACAGCTGGAGACTGAGAAGT T CAGG T AAG TTTACAG TG AGA TG
AGGCATCTGTACTGTAAACC A GTCC A TTC AAATGTC AT TCT AC
TTTGACCTGTGA GT -- GT C- - G - ---------
GAM8615 16433 TGAGATGGAGTCTCACTTTG AT- TC T TC --- C -- TG ATAT
TCACCCAGGCTGGAGTGCAG TGAG GGAG TCACTT G ACCC AGG TGGAG TGCAGTGG TG

TGGTGTGATATCGGCTCACT ACTC CCTC AGTGAA C TGGG TCC ACCTC ACGTCACT GC
GCAACCTCCACCTCCCGGGT CGT TT - T- CCC - CA CG ----
TCAAGTGATTCTCCTGCCTC
A
GAM8615 19782 CTAAGAAGAAGCGAGGTGGT A A G TT TG- - CTTC ATCGGA
TGAATTTTGGAAGCACTTCT CTAAG AGA GC AGGTGG GAATTT GA AGCA TTGA
TGAATCGGATTAACCCATGC GATTT TCT CG TCTACT TTTAAG TT TCGT AATT
TCTTATTGAATTTTTTCATC G - - TT TTA C ACCC ------

TGCTCTGTTTAG
GAM8616 15955 GGGGTACCAACGAGTCCTGG GG C T - G T TG A C TTACACC
CCTTGTCTGTGGAGGCGGAT GG TACCAA GAG CCT GGCCTT TC G G GG GGA
TACACCTTCCCATTGCTGAA CC GTGGTT CTC GGA CTGGAA AG C T CC CTT
AAGGTCGAGGCCTCTTGGTG TA - C G A T GT A - -------
ATCC
GAM8617 11361 GAAGCACATTTAAAGCACTT C TT CACT GTAA TA TCCTT
TTCTGTAAAAGCTAGTTCCT GAAG ACA TAAAG TTTCT AAGC GT
TACCTGCTTGGAAATCTTTT CTTC TGT GTTTT AAAGG TTCG CA
TGTTTGTTCTTC T TT TCT- ---- TC -----
GAM8618 3755 CTACGTGCCAGCTCTAGTTT CTCTAGTTT CCTT TTATTCT
TCAGCCTTGGGAGGTTTTAT CTACGTGCCAG TCAG GGGAGGTT
TCTGACTTCCTCTGATTTTG GGTGTACGGTT AGTC TCCTTCAG
GCATGTGG TT------- ---- -------
GAM8619 9690 GGAAAGGTCCAGAGCTGTGG AAA - A AAG- T-- TCTC
AGAAAGAAGGGGCTCCCTGT GG GGTCC AG GCTGTGGAGAAAG GGGC CCCTG
CTCCAGGGTTTGTTTAAGGT CC CCGGG TC CGGTACCTCTTTT TTTG GGGAC
TTTCTCCATGGCCTAGGGCC GAC A - GGAA TTT ----
CAGCC
GAM8620 4869 CTGCCATTGCCCACTTACTA CA GC AC- AC C--- AT- ACCGT
CACCCTGCCCAATGCCACCG CTGC TT CCACTT TAC CCTGC CA GCC
TGGCTCCTGAAACGCGGGCA GGCG AG GGTGAA ATG GGGCG GT CGG
GTAATCAAGTGGATGAAGCG A- TA CTA AC CAAA CCT -----
G
GAM8621 19139 CCTTTCTCCGTCCTTCATGG C- -- T CT GAGATAA
AAGCCCTGGGAGATAACCTG CCTTT TCCGTC CTTCA GGAAGCC GG
GCTTCCTGGAGTTGATGGAA GGAAA AGGTAG GAGGT CCTTCGG CC
TAAAGG TA TT - T- -------
GAM8622 11554 GTCCTTCTTTCAGACCAAAG -- T A AAA TGGA G CCAG
CTTGGACGTCAGTGCCAGCG GTC CTTCTT CAG CC GCT CGTCA TG
ATGATGAGATAGCCAGGCTG CAG GAAGAA GTC GG CGA GTAGT GC
AAGAAGCAGAC AC - - AC- TAGA A ----
GAM8623 7576 GTACTGCCTGCCCGGGGCTT C - CC TT A- T CACC CT CGGGAC
AGGAGGGTGGCACCGGTGCT GTACTG CTG C GGGGC AGG GGG GG GGTG GGGACACA

GGGACACACGGGACTGTGTC CGTGAC GAC G CCCCG TCC CCC CC CCGC TCCTGTGT

CTCGCCAACCCCCGACCTGC C C TC -- AG - AA-- -- ------
CCCCTGCCAGCCAGTGC
GAM8624 22071 AGAAAGGGCCTAAAGTTGGT A CTAAAG CTAATCC T-- ATTTAACCCG
GACTAATCCCATGTGGAAAT AG AAGGGC TTGGTGA CATG GGAA
TTAACCCGTTCCTTTCATGA TC TTCCCG GACCACT GTAC CCTT
ATCTTCACCAGATGCCCTTG G TA---- TCTAA-- TTT ----------
CT
GAM8627 9470 CGGGATAATGGGGTCTCAAA TAA -- AAAA - A GTAGA
AGGTTTTGGAAGTAGTAGAT CGGGA TGGGGT CTC GGTTTT GGA GTA
ACCTCTAAAAGCCAAGGAGC GCTCT ATCCCG GAG CCGAAA TCT CAT
AGCCCTAGTTCTCG TG- AC GAA- A C -----
GAM8628 4482 CTCTCACCTGAATTTTGTGG - T--- GG AAA T- - -- G CGTGTTAAA
TAGAAAGTCTGTATTTGTTG CTCTC ACCTGAA TTTGT TAG GTC GTA TTTG TTGTTGT AG

TTGTGAGCGTGTTAAATTGA GAGGG TGGGCTT AGACG ATC TAG CAT AAAC AACAATA TT

TAACAAACCAAACTACTTGA G TGTT AA GA- TT C CA G ---------
TAGCTAAAGCAGATTGTTTC
GGGTGGGGAG

GAM8629 13414 CCAGAACGATGGTGTGCCCT - A TG TCGGTT G TCGAGTCCTTCATGCT
CGGTTGGGTCCGGGCTCGAG CC AGAACG TGGTG CCC GG TCCGGGC
TCCTTCATGCTGTCCGGGGT GG TCTTGC GCCGC GGG TT GGGCCTG
TGGGACCGCCGCGTTCTCGG C - CA ------ G ----------

GAM8630 16531 TTATTTCCTGGCAACTGCTC TTCCT CT C CCGACAA - C CATTGA
TCTGTACCGACAAAATCTAT TTAT GGCAA GCTCT TGTA AATCTA TC CAAGG
CCCAAGGCATTGACCTTGTG AATA TCGTT CGAGA ACAT TTAGAT AG GTTCC
ATTAGATTTACACAGAGCTT TTT-- TT C ------- T T ------
TTGCTTTTATAA

GAM8633 6789 TCTCTTGCCCTCTGTCATCC T ------ CC C G GA - - T CTTCGT
TAGCAGTGTGGATGGTTGGT TC CTTGCCCT CTGTCAT TAG AGT TG TG GTTG G TGGGAT

TGGGATCTTCGTGTCCCGTC AG GGACGGGA GACAGTG GTC TCG GC AC CGAC C GCCCTG

TCAGCACACTCGAGCTCTGA - AGGAGT AA - A TC A T T ------
AGTGACAGTGAGGAAGGGCA
GGGA

GAM8634 4071 CTAAGATAGTTCAGATTGAT AG -- ATCT AATGGTAA
CTTAGGTCAATGGTAAGACC CTAAGAT TTCA GATTG TAGGTC
TATGTAGTTCATGAAGTCTT GGTTCTG AAGT TTGAT ATCCAG
GG -- AC GT-- --------

GAM8634 17838 GTGCCCGCCCTGGCCCCACG C GG ----- -- CA - T ATCGGA
GCAGAATCAGCTTCTGGGTC GTGCCCGC CT CCCCACG GCA GAAT GC TTC GGGTCC
CATCGGAGGATCCGAGTGTG CGCGGGTG GA GGGGTGC CGT CTTA TG GAG CCTAGG

AATTCCCTGCAAGAACGTGG T GA AAGAA CC AG T - ------
GGAGAGTGTGGGCGC

GAM8635 19096 CCCCGAGTGAGCAATTTCTG GAG- AG -- - T AGG T AA CTAA
TCCCTTTTAAGGGCTCACAA CCCC TG CAATT TC TG CCCTTTTA GC CAC CT
CTCTAAGGGGGTGTGCGTGA GGGG AC GTTAG AG GC GGGAGAGT CG GTG GG
GAGGGTCGTGATCGATTGAG ACGA GA CT T T G-- T GG ----
CAAGCAGGGG

GAM8637 9574 GGGACAAGGGAGATGGAGGT - - GGA---- - AGATGAACACAACACA
AAGACAGATGAACACAACAC GGG ACAAGGGA GAT GGTAA GAC
AGTCTTTGCTGAAGGAGGTC CCC TGTTCCCT CTG TCGTT CTG
ATCCCTTGTACCC A A GAGGAAG T ----------

GAM8638 19030 TGGCGGACGGGACCTGTCAG GGA- TCA - AT-- T- TACAAGGACTC
GACGCGGCCATCGTGGGCTA TGGCGGACG CCTG GGACG CGGCC CG GGGC
CAAGGACTCGCCCTCCGTCT ACTGCTTGC GGGC CCTGC GCCGG GC CCCG
GGGCCGCCGTCCCCGGGAAA AAAA C-- C GTCT CT ----------
ACGTTCGTCA

GAM8640 13274 GCCTCTTCTGAAGGAAAAGA ---------- TG AAAA-- GT G AACATC
CAGTGTAGTCCTGCAAAACA GCC TCTTC AAGG GACAGT AGTCCT CAA
TCTTGAGGACTACTGTTCGA CGG AGAAG TTTT TTGTCA TCAGGA GTT
AGATTTTTGGAAGAATACTG CAAGAGTCATA GT AGAAGC -- - ------

AGAACGGC
GAM8641 20236 GAGTTAGAGTTGAGCTCCCC T- -- AGCTCCC TG G C TAGATAT
TGTAGCCCAGGACTATGCTG GAGT AGA GTTG C TA CCCAGGA TATGCTG
TAGATATCAGTATGATCCTG CTTA TCT TAAC G GT GGGTCCT GTATGAC
GGGTGTGGCAAAAACAATTT TT TT AAAAAC- GT G A -------
TCTTTATTC
GAM8643 462 ATGGTTTAACTTTGTTGTTT TT TTT GT CC- -- CTT CAAGA
AACTATCCTCAGCATCCTTT ATGGT AAC GTT TTAACTAT TCA GCATC TCCAT
CCATCAAGAATGGAGGTGCT TATCA TTG CAA AATTGGTA AGT CGTGG AGGTA
TTGATTAATGGTTAAAACTT TT TT- -- ATT TT --- -----
GTTTTACTAT
GAM8644 9067 CTTATGAGTGTGAAGAATGT ATG GAAT GAAA T CAAA GCAC
GGAAAATGTTTTAGTCAAAA CTT AGTGTGAA GTG ATGTTT AGT AGG
GGGCACCCTAACTGAACATC GAG TCACACTT TAC TACAAG TCA TCC
ATCGAGTTCACACTAGAG A-- GAGC ---- - A--- ----
GAM8645 552 GCCTGACAGGACATTTGAAA GA CATTT TA AT ACAGC
TTAAGATTGGACAGCCCACT GCCT CAGGA GAAAT AG TGG
GTTTCCTACTTCCTGAAGGC CGGA GTCCT CTTTG TC ACC
A- TCATC -- -- -----
GAM8646 13403 TGCCCCCCGGGCCGTCTTCC GGC ---------- TCCATCGT
CCTCCATCGTGGGGCGCCCC TGCCCCCCG CGTCTT CCCC
AGGCACCAGGGCGTGATGGG ACGGGGGGT GCGGGA GGGG
GGGCA AGT CCACGGACCCCGC --------
GAM8648 13052 TGCGAAAGACGGGGCACTGG GAAA--- - CT TTTTAAA AGAGTG
TGCTTTTAAATCCAGAGTGG TGC GACGGG GCA GGTGC TCC
GACTGCCTGCGCCTGCTCCT ACG TTGTCC CGT CCGCG AGG
GTTATCAATAGCA ATAACTA T -- TCCGTC- ------
GAM8649 22115 GGGTCCTAGGAGAAAAAGTC CTA A CTACTTT TCCCC CAAG
CTACTTTTCTGGGTCCCCAG GGGTC GGAGAAA AGTC TCTGGG AGGTG
GTGCAAGCACCTCCCGGAGA TCCGG CCTCTTT TCAG AGGCCC TCCAC
CTGTTTCTCCCATGGCCT TAC G ------- ----- ----
GAM8650 8516 TTACACATAAAGAAATGACA - AA AA AACC - GAAA
ACCTCTGGGGCTTGAAAAAG TTACA CATA GA TGAC TCTGG GGCTT
CCTCCAGACAAAGTTAACTC GATGT GTAT CT ATTG AGACC CCGAA
CTATGTTGTAG T C- CA AAAC T ----
GAM8651 17320 TAAGGAAGTCAGCACTTACA CA TTACA- GAAAA TACAAC
TTACGAAAATTGGGTACAAC TAAGGAAGT GCAC TTAC TTGGG
CCCGACAAAGTAGCATTTTG GTTCTTTTA CGTG GATG AGCCC
TGCCATTTTCTTG C- TTTTAC AAAC- ------
GAM8652 1879 CTGTGTCCAGCCCTTGCAGA T CCC C -- - CCT-- ACAT
GAGCTTTGTCCTCTGACATC CTGTG CCAG TTG AGA GAGCTT TGT CTG
AGCTACCACACAGGCTCATT GACAC GGTC AAC TCT CTCGGA ACA GAC
CTCAACTGGCACAG - --- - TA C CCATC ----
GAM8653 17809 TGGGGGTCCTGCCCCTGGAG - TGCCCCTGG ATGGA AGCT
GGCCTTATGGACCACCAGCT TGGGG GTCC AGGGCCTT CCACC
GGTGGAGGGCCCTATGGACA ACCCC CAGG TCCCGGGA GGTGG
CCCCA A TA------- ----- ----
GAM8655 16743 TTCAGGAAGTACAAGAAGAT AG G- --- ATAATA-- G A ACGAAA
AATAAGGGTTCTTCTATCAC TTC GAA TACAA GAAG AGG TTCTTCT TC
GAAAGGGGAAGAGGCCTAAA AAG CTT ATGTT CTTC TCC GAGAAGG GG

AATTCCTTCGCATTGTAAAT GA AA ACG CTTAAAAA G - ------
TCAGGAA
GAM8658 5817 GAAACAGACTGGGCCAATGT C -- CACAAAGAA - CA- ACCGATGTCCAAA
CCACAAAGAATTCCTGGTCA GAAACAGA TGGGCCA ATGTC TTCCT GGT GCACC
GCACCACCGATGTCCAAAGG TTTTGTTT ATTCGGT TGCGG AAGGA CTA CGTGG
TGCAATATCAAGGAAGGGCA - AG ACGGG---- A TAA ----------
GGCGTGATGGCTTATTTGTT
TT
GAM8659 20184 GGAGAGAGGGTGTAGAGTCA - - A T TGCC T - G GACA
TGCCAGTTCTTAGGTGCTCC GGAGAG AGGG TGT GAG CA AGT CT TAGGT CTCCT
TGACAAGGAGATCTGCAGCA CCTTTT TCCT ACA CTC GT TCA GA GTCTA GAGGA
CTCTGCTCACATTCCTGTTT G T - - C--- C C - ----
TCC
GAM8660 9565 GGGCGGCCGCTCTAGAGGAT C C C TCCAA T-- A TGCA
CCAAGCTTACGTACGCGTGC GGG GGC GCT TAGAGGA GCT ACGT CGCG
ATGCGACGTCATAGCTCTTC TCC CTG TGA ATCTTCT CGA TGCA GCGT
TATAGTGTCACCT A - T ----- TAC - ----
GAM8661 13061 GCAGTTCAGAGAAGGCTGCA T- --------- GCAG A TGACCT
GTCAGCTACCTTGACCTAGG GCAG TCAGAG AAGGCT TCAGCT CCT
GGCTGAAGCCTTAACTTCCC CGTC AGTCTC TTCCGA AGTCGG GGA
ACTCTGATTCTGC TT ACCCTTCAA ---- - ------
GAM8662 13573 GGGCACCCTGCAGACGGCAT CC- CG A - CA T CCCAT
TCCCGTTCAGCTGCATCCCA GGGCA CTGCAGA GC TT CCCGTT GC GCAT
TGTGCGTCGATGGGCAAAGT CCCGT GATGTTT TG AA GGGTAG TG CGTG
ATTTGTAGCACTGCCC CAC A- A C C- - -----
GAM8663 5660 ACTCTTCCGCGCCTCGAGGA GCC GAAC- GA TT CAACATT
ACCCGATCAGCTGTTGCCAA ACTCTTCCGC TCGAG CC TCAGCTG GC
CATTGCCCTGGCTGAAGGCC TGAGGAGGTG AGCTC GG AGTCGGT CG
TTACTCGAGTGGAGGAGT --- ATTCC A- CC -------
GAM8664 18877 CTTTCCTGGGGTTCTTAGGA TTCT T- A ATGTGGG
GTGAGGAGAAGTATGTGGGA CTTTCCTGGGG TAGGAG GAGGAGA GT
CATCTCTTCTTTTCCTGTTC GGAAGGATCTC GTCCTT CTTCTCT CA
CCTCTAGGAAGG CCTT TT A -------
GAM8666 22689 TTGATGATGTCTCTCACTCT A T C T- CTTTAATTACAA CTGA
GTTCCTTTAATTACAAAGTC TTGATG TGTC CTCA TC GTTC AGTCT
TCTGAAGACTCTGAACTTGA AATTGT ATAG GAGT AG CAAG TCAGA
CTGAGGATAATGTTAA A - C TT TC---------- ----
GAM8669 4473 AGGAGCGCCATGGATTACTA CC TT TA- ATA - CT-- TTTCT
CAGAAAATATGCAGCTATCT AGGAGCG ATGGA AC CAGAAA TG CAG ATC
TTCTGGTCACATTGTCGGTG TCCTCGC TACCT TG GTCTTT GC GTT TGG
TTTCTGCATGTTCTCCATTC CT CT TAC GTG T ACAC -----
CGCTCCT
GAM8670 2576 GCCCTGAGTCAAGGTGCAGC C TCAA CA A GTTGAGC CATCCGTA
AGGATCCCGTTGAGCTGCCC GC CTGAG GGTG GCAGG TCCC TGCCC
CATCCGTAGGGCGTAGGGGC CG GACTC CCGC CGTCC GGGG GCGGG
CTGCACCGCCCTCAGAGC A ---- CA - AT----- --------
GAM8671 6774 GAAACCTACTTTGAAGTTAT C TTGAAGTT- C TTAT
CCCCACTATTATTATGGGGG GAAA CTACT ATCCCCA TA
TTAAGGAGCTAGTAGATTTC CTTT GATGA TGGGGGT AT
A TCGAGGAAT - ----

GAM8672 12566 ACTCTTGAGTTTGGTGTTCA TTG TC - AT ATTAAAA
GGCATCATTATTAAAAAGTG ACTC AGTTTGGTGT AGG C CATT
GAGTCCTATGTACCAGACTG TGAG TCAGACCATG TCC G GTGA
AGT --- TA T AG -------
GAM8673 9956 ACTTTCAAGCTCCTGGGGAA T G CT - G GC CCGTTTT CAA
ATGTTGCTGGTTGACCGTTT ACTT CAA CTC GGG GAAAT TT TGGTTGA TGGG
TTGGGCAATCCATTTTCGGC TGGA GTT GAG CCC CTTTA AA ACCGGCT ACCT
CAAAGATTTCACCCTTGAGG C G TT A G -- TTT---- ---
TTGCAGGT
GAM8674 4015 CCTGTTTCTCTTCAAATTCT TT CTT---- TCTTCCC AA C CCACCCT
TCCCCTCGGCAATGGCCATC CCTGT CT CAAAT CTCGGC TGGC ATCT
TCCACCCTGGATAGTTAGGC GGACA GA GTTTA GAGTCG ATTG TAGG
TGAGAGCAAATATTTGTGAA GG TAAAAGT TAAACGA G- A -------
AATAGGGACAGG
GAM8676 1633 TGCTCTGGTGTGTGAAGGTC TCT - GA------- - TAACTGTGT
GGTGGGTTAACTGTGTGCCT TGC GGTG TGT AGGT CGGTGGGT
ACTGAACCTGGCAAATAAAC ACG CCAC ACA TCCA GTCATCCG
ATCACCCTGCA TC- T AATAAACGG A ---------
GAM8677 16748 GACCACTGTAATCCCAGCGC CACTG- TC ---- CC-- G---- C C GG AACTT
CCAAGGAAGGCCACTTCTCA GAC TAA CCA GCGC AAGGAAG CCA TTCT AACT CAG
ACTGGCAGAACTTCTGAAGT CTG ATT GGT TGTG TTCCTTC GGT AAGA TTGA GTC
TTAGAATTGGAATTACTTCC TTTTAA C- TTTC ATCA ATTAA T T A- -----
TTACTAGTGTCTTTTGGCTT
AAATTTTGTC
GAM8679 322 CCAAAGTCTGGGGGTTAGAA A GG TAGAAAG-- - GACCCAAACA
AGAAGGAAGCTTGACCCAAA CCAA GTCTGG GT AAG GAAGCTT
CAAAGTTTCATTTACAGTAT GGTT CGGACT CA TTT CTTTGAA
ATACAGTCAGGCCTTGG C GA TATATGACA A ----------
GAM8680 9256 TGATCTCCTGACCTTGTGAT T C A T -- C AC CCTC
CCGCCCGACTTGGCCTCCCA TGA CTC TG CCT GTGATCC GC CG TTGG
ACGTGCTGGGATTACAGGCA ACT GAG AC GGA CATTAGG CG GC AACC
TGAGTCA - T - - GT T -- ----
GAM8681 2696 CTAAGTAATCTCAAAAAACT AATCTCAAAAA A C GG G CCT
GTAGGAACGGGTGTCTCCCT CTAAGT ACTGT GGAA G T TCTC
GAGAAGTTCTTCCACAGTGC GGTTCG TGACA CCTT C G AGAG
TTGG ---------- - - TT A ---
GAM8681 7819 TGCTGAGGTTCTGGAGTGGC AG GAG - A- GAGGAGCAAATGACA
ACAGGAACAGGAGGAGCAAA TGCTG GTTCTG TGGCACAG GA CAG
TGACACTGGGTCTTTGTGCT GCGAC CAGGAC GTCGTGTT CT GTC
GAGGCAGGACACAGCG A- GGA T GG ----------
GAM8682 9667 TTGTCTTCCTAATGCTACCT AAT ACCTTTG TC TCTTCCTT
TTGTTGGTCCTTTCTTCCTT TTGTCTTCCT GCT TTGG CTT
AAGTGCCAAGTGCTGAGCTA AATAGGAGGA CGA AACC GAA
AAGGAGGATAA AAT GTCGTG- GT --------
GAM8683 1100 CTAAGTAGATGGGAGAATAT TA GG T AAAATAT AAT
GTTTAAAATATTAGGAATCC CTAAG GAT GAGAATATG TT TAGG
TAGACCATATTTTCAAGTCA GATTC CTG CTTTTATAC AG ATCC
TCTTAG TA AA C ------- ---
GAM8683 14864 GAGGTTAAGTGACTTGCTCA - G -- AAT ACA GAAAATTTAGCACAA
ATGCCACACTGAAAATTTAG GAGGT TAAGT ACT TGCTC GCC CT

CACAAAGCCAGGTCTGGAGC CTCCA GTTCG TGG ACGAG TGG GA
AGAGGTGGCTTGAACCTC A G AG GTC ACC ----------
GAM8685 9524 CTGAGATGCCTTTAGTGGAA T C-- T AACTCT CA - A T - ACTC
CTCTTCTCCTCAGAACCATG CTGAGA GC TTTAG GG TCTCCT GA ACC TG AGAGT CTACCTG

TAGAGTCTACCTGACTCCAG GACTCT CG AGATT CC AGAGGA CT TGG AT TTTCA GGTGGAC

GTGGTACTTTTAAGGTATCC - TTT T ------ C- A A - T ----
AGGAGACCTTTAGATTTGCT
CTCAG
GAM8686 4655 TGGGGGAGCGAGGGAAGGAG G C GG TTAA AACT- GCAC
TTAATGAAACTGTATTGCAC TGGG GAG GAG AAGGAG TGA GTATT
AATGCTCTGATCAATCCTTC ACCC TTT CTC TTTCTT ACT CGTAA
TTTTTCTCTTTTGCCCA G T TT CCTA AGTCT ----
GAM8686 13016 CTAAGTATTCCAAATAAGTT ATTCC - TCATAC TGTTTATT
GACTCATACAGTGTTTATTC CTAAGT AAATAAGTT GAC AG
TTTTATGTCTGGCTTATTTC GATTCA TTTATTCGG CTG TC
ACTTAG C---- T TATTT- --------
GAM8688 2792 AAAGCTTTTCTTAATGTAAC TT T TAAC ACAT TGCCTTCTATTT
TTTGAGTACATTTTAATGCC AAAGCTT CT AATG TTTGAGT TTTAA
TTCTATTTTTAAAACTCAAA TTTCGGG GA TTAC AAACTCA AAATT
ATCATTAGTTGGGCTTT TT - TA-- ---- ----------
GAM8689 16057 GGGGCCGTTTGATCTTCCCA CCGT TG CT- AAAA CA ATAAGG
AAATTTTCCAGGATAAGGCC GGGG T AT TCCC TTTTC GG
ATGAAGAGGGACATATTGAT CCCC A TA AGGG AGAAG CC
TCCCC TT-- GT TAC ---- TA ------
GAM8690 295 AGCCGGCGACACCCTGGAGG - GA- T A- T GGTGA
GACGGGCAGGTGTGGTGAGC AGCC GGC CACCC GGAGGG CGGGCAGG GT
CTCTGCCCGGGTTCTCTGGG TCGG CCG GTGGG TCTCTT GCCCGTCT CG
TGAGGGCCAGGCT A GGA - GG C -----
GAM8691 17867 GTAGTAAAATAAGCCTCACT TAA CTCAC AACAT - TCCTATT
CAAACATAGCTGACTTCCTA GTAGTAAAA GC TCA AGCTG ACT
TTGGTACAGCTTGAAAAGCA CATCATTTT CG AGT TCGAC TGG
CTTTTTACTAC TCA AAA-- ----- A -------
GAM8692 10359 CTCAGTTCTGCCTCCTGACT T- G - C A- A C- - GCTCAACTA
ATGACAGTAATCCCACCCAG CTCAG TCT CC TC TG CTATG CAGTAAT CCAC CCA
CTCAACTATGGTGTGGCAGT GAGTT AGG GG AG AC GGTGT GTCATTG GGTG GGT
TACTGATGTGGACCATGATG TC - T T CA A AC T ---------
GGGACTTTGAG
GAM8694 9644 CTGGGGTGTTTATGGCAAGT GG TT- C CTTT A ATTGTGGC
CACTTTGACAGACATTATTG CTGG TGT ATGG AAGTCA GACAG CATT
TGGCAATGTTGTCTGACTTA GACC ACA TGTC TTCAGT CTGTT GTAA
CTGTTTCACAAACCAG AA CTT A ---- - --------
GAM8695 11037 TTATACTGCATATGGTGAAC C GGTGA TA AG AAATAAGAGGA
ATGAGGAGGATGTAATGCTA TTATACTG ATAT ACATGAGGAGGATG ATGCTA TG
AGTGAAATAAGAGGACAAAT GATGTGAC TATG TGTATTCCTCTTAC TGTGAT AC
AGTGTATCATTCTCCTTATG C AAG-- TA AA ----------
TGAAGTATCCAGTGTAG
GAM8696 1904 TGTTAAGAAGTGAGGGGCAG AAGA --------- - A AAA A AG TAGGTAT
GATGAAATCACCTAGGGTAG TGTT AGTGAGGG GCA GG TG TC CCT GG

GTATTTAGAGGGAGGGCGCC ACAA TCACTCCT CGT CC GC AG GGA TT
GTGCAAAATAAAATCCTCAC AGTA AAAATAAAA G - GGG - GA -------
TATGAAACA
GAM8698 8063 CTTTTGTGAGTGTATATAAT GAG T AA AGGAT
GGTTTTGTTAGGATGGCAAA CTTTTGT TG ATAT TGGTTTTGTT
ACCAGGTATCCAAAGGCGAA GAAAGCG AC TATG ACCAAAACGG
AG GAA C G- -----
GAM8699 1117 GCTGGTCCCAGGAAGATGTC T A AAGA - A-- CCCT - T TCACG
CGTCAGCCCCTGGAGAGCTG GC GGTCCC GG TGTCC GTC GC GGAG AGC GGC
GCTCACGGCCGCTGCTTCCT CG CCAGGG CC ATAGG CAG CG CTTC TCG CCG
GCCCAGACTGGATACCGGGA - - ---- T ACC TC-- G - -----
CCGC
GAM8700 1549 CACTGAGTGTAGACAAGTCC T T ---- C CA-- TA GAGCT
TCCAGCACAGCCTATATGGA CAC GAG GTAGACA AGTCCTC AG CAGCCTA TG
GCTCACTAGGCTGACATCTG GTG CTT TATCTGT TCAGGAG TC GTCGGAT AC
AGGACTCTGCTGTCTATTTC T - CGTC - TACA C- -----
TGTG
GAM8701 2568 TGTTTTGAAAGAAGAGAAAT T AG A ---- G TT G GCTCA
ATGGGTCTGTTCCGCTGGCT TGTTT GAA AAGAGA ATA TGG TCTG CC CTG
CACGGAGGTCAGAGTTAAGG ACAAA CTT TTCTCT TAT ATT AGAC GG GGC
TTATCTCTCTTGTTCTAAAC T G- C TGGA G T- A -----
A
GAM8702 2619 TCAGGTGTCACATTCCAAGC G AC-- CAA G CC ATCCTTCA
GGATTGGCCCTCATCCTTCA TCAGGT TC ATTC GCGGATT GC TC
GAATGTGGATCTGCCGAATT AGTCCG AG TAAG CGTCTAG TG AG
GAAGAGGCCTGA G AAGT C-- G TA --------
GAM8704 6606 CAGAGATCAGAATACGAAGC -- AC GC------- GCATCA
TTCCTCTCAGCATCATGGGA CAGAGATCA GAAT GAA TTCCTCTCA
GGAGATAAAATAATTCATTC GTTTCTGGT CTTA CTT GAGGAGGGT
TATGGTCTTTG AT -- AATAAAATA ------
GAM8705 9081 CCCCGGCTGGATCAGGAGGC GCTGGAT - GA ATAT - - AC AAGAA T TTGCG
GACCATATGGCTTTTCTTGT CCCCG CAGGA GGC CC GG CTTTT CTTGTTTC GTG TC G
TTCACGTGAAGAATCTGTTG GGGGC GTCCT CCG GG CC GAAGA GGACGAGG CAC AG C

CGCTGAGAGCACCAGGAGCA ------- A AC GC-- A T AC GAG-- T -----
GGTAGAAGACCCGGGCAGCC
ATCCTGCGGGG

GAM8706 20930 TTTGTGGCCCCTGTGTGCAG - CCC -- TCAA-- - CCT T CT - TTGTT
TCAAGCCCCAACCTCCTGGC TTTG TGG CTGTG TGCAG GCCC CAACCT GGCT GGT CCG C

TTGGTCTCCGCTTGTTGTTG GAAC GCC GACAT ATGTC CGGG GTTGGA TTGA CCA GGT G

GCTACCTAGTTCCAGGTTGA T CC- TG CTCACC A CC- T TC T -----
GGGCCCACTCCTGTAGTTAC
AGCCCCGTCAAG
GAM8707 2704 AGTGCCTCTTCCCTCCCCCT C-- C CCC CGAA AGAATCCGAACCA
GCGAACGCTAGAATCCGAAC AGTGCCT TTCC TC CTG CGCT
CAAGTGAGCCCAGAACGAAG TCGCGGG AAGG AG GAC GTGA

GAACACGGGCGCT CAC A CAA CCGA ----------
GAM8708 12917 TGAGTCACCGAAGAGTGATA T G GTGATAATCCCAGGCAGT A AG CT--- T --
ATCCCAGGCAGTACAGAATG TGAG CACC AAGA ACAGA TG CTCAG GAGGT GT GCA
AGCTCAGCTGAGGTTGTGCA ACTT GTGG TTCT TGTCT AC GAGTC CTCCA TA TGT
ATGGGTTGTGAATGACGATG - - ---------- C A- TTGGT C GG
AAGTTGTGGATCACCTCTGG GG- GAATG
TTCTGAGACACTCTGTTCTT AT GTTGT
GGTGTTCA TG TAGCA
AAG -----
GAM8709 18511 CCCTGTCTACTGATAGTCAG AC AG - GTG AGCAC
TTTGCTGTGTCAGAAAGCAC CCCTGTCT TGAT TCA GTTTGCT TCAGAA
TTCTGAAAGCAGATATGAGT GGGACAGA ACTG AGT TAGACGA AGTCTT
CACCAGACAGGG CC -- A A-- -----
GAM8709 18612 CTAATAATTTTTAGACAGAA C A G TT G ATA TGTA
GCAGGACATTGTGTGCAATA CTAATAATTTTTAGA AGA GCAG ACA GT TGCA TGT
TGTTGTAGCAACTGTGGATT GGTTGTTGGAAGTCT TCT CGTT TGT TA GTGT ACG
TTGTGTTGCTCTTCTGAAGG - - G TT G CA- ----
TTGTTGG
GAM8723 20966 CTAATCAGTTTCAGCTTTGC - A G GAG- GCATAAATT
AGGAGGTTTCCTGCATAAAT CTAATCAG TTTC GCTTT CAG GTTTCCT
TGGGAAGTAACACTGGAAAG GATTGGTT AAGG TGAAA GTC TGAAGGG
TAGGAATTTGGTTAG T A G ACAA ---------
GAM8732 5843 CTAATGAATTCTCTTAAAAA AA TC- ---- T TTCTGT
CATACTGTATTCTGTTGCTG CTAATG TTC TTAAAA ACATAC GTA
TGTGTTTCATTTTAAATTGA GATTAC GAG AATTTT TGTGTG CGT
GCATTAG -- TTA ACTT T ------
GAM8746 5787 CTAATTAAAGGAGTTTCAAG A--- G AGCCT T ATATA
AGCCTTTCTTGTCAATATAT CTAATTA AGGA TTTCAAG TTCT GTCA
GACAGAACTTGGAAGTCTTA GATTAGT TTCT AAGGTTC AAGA CAGT
TTCTGATTAG CTTA G ----- - -----
GAM8769 6477 CTAATTTTTGAGGTGCTGAT G GATTTAGA A GA---- C GGTATTTCA
TTAGAGGCAAAATTGCAGAA CTAATTTTTGAGGT CT GGCA AATTGCA ATAA AAAGAAAT
TAACAAAGAAATGGTATTTC GGTTAAGAACTCCG GG TCGT TTAATGT TATT TTTTTTTG

AAGTTTTTTTTTTTATAAGCA G ACACTTA- A AACGAA T ---------
ATGTAATTATGCTATTCACA A
GGGGCCTCAAGAATTGG

-

GAM8812 3319 CTACACTATTAACTTCTACA CTATT T- C CC TCATCCTCACCT
CGTCCATGCTCATCCTCACC CTACA AAC TCTACA GT ATGC
TGCATCACTGTGGATCGTTT GATGT TTG AGGTGT CA TACG
CATTGTAG TACT- CT - C- ----------
GAM8827 5614 CTACAGCCATGTCACTCCTG - G - - GACCC - T AT GGACAG
GCGACCCTGGGGCTGGATGC CTAC AGCCAT TCA CTC CTGGC TGGG GC GG GCT
TGGACAGGGCCCTGCTCCCA GATG TCGGTA GGT GGG GATCG ACCC CG CC CGG
GCTAGTGGGCTGGGATGGCT C G C T ----- T T -- ------
CGTAG
GAM8919 12628 CTACCCTCACCCCATCACAG -- AC T C--- - AGAAT
CACCCTGAGAATCACGGGTC CTAC CCTC CCCA CACAG ACCC TG

CAACTGTGTGGGAGGGGGCT GGTG GGGG GGGT GTGTC TGGG AC
GTGG TC GA - AACC C -----
GAM8946 18467 CTACCTTGCCTGCGTTGGCA - CC- G TCACACAA - TCGA
TCACACAAGACGTTCGAGCA CTAC CTTG TGCGTTG CA GAC GT
GTCCATTTGTAACGCATACT GATG GAAT ACGCAAT GT CTG CG
AAGTGTAG T CAT - TTAC---- A ----
GAM8948 9749 CTACCTTTAAGATGCAGTAT - AA GTAT A TT ---------- C--- ----
GATCGAACTTGTGAGTGGAC CTAC CTTT GATGCA GATCG AC GTGA GTGGA AGGA CT
AGGACTTAAATTCAGCAATG GGTG GGAA TTACGT TTAGT TG TACT CACCT TCCT GA
ATGGCAAGCTCATCCTCATT A AC AG-- C CT TCGACGGCAAC TTAC ACTC
TCCACCAACGGCAGCTTCAT AAAT GCAA
TCGTCTGATTGATGCATTCA T TCA
AAGGAGTGG A AGT
CGGT ----
GAM8961 9160 CTACGGCCTGAGCCACGGCC CACGG A- CT GT CT A- GGTCCT
TAACCTCCCGCCAGTGGTGG CTACGGCCTGAGC CCT AC CCCGCCA GGTGG GG TGT
CTGGATGTGGTCCTGCAGAC GATGTCGGACTCG GGA TG GGGCGGT CCACC CC ACG

CTTCCACCTGGCGGGTGTCC TA--- CC T- -- TT AG ------
AGGATGCTCAGGCTGTAG
GAM8986 1292 CTACTCAAGGAAAGTCAGTA AAAG G - C CCCTAATCT
ATCGTTTTAGCCCCTAATCT CTACTCAAGG TCA TA AT GTTTTAGC
GTTAGAGCCGTATGGTGAGC GATGAGTTCC AGT GT TG CGAGATTG
AGCCTTGAGTAG GACG G A C ---------
GAM9005 6668 CTACTCTAGGCCTTAAACTG AC CC C AG C T AGCT
AGAAATGCCAGGCTATTGTA CT TCTAGG TTAAA TG AAATGCCAGG TAT GT
GCTATTATATCTTGGTATTT GA GGATCC AATTT AC TTTATGGTTC ATA TA
GCATTTTAATTCCTAGGACA CA TT T G- T T ----
G
GAM9034 22326 CTACTGGTAGAAAGCCAAAT CT GT CCAAATCT T-- AAAATG
CTTTTCTTGATGAAAATGCA CTA G AGAAAG TTTC TGATG
TTACATGAAATTTTAAGTCT GAT C TCTTTC AAAG ATTAC
TTCTGTCTATAG AT TG TGAATTTT TAC ------
GAM9051 3795 CTACTTCCTCTGAGTGGTTC - G - GTG AGCCC
TTGTGCCTAGCCCAGGAGGG CTACTTCCT CT AGTGGT TCTT CCT
GACGCCGTTGAGAAGGAAGT GATGAAGGA GA TTGCCG AGGG GGA
AG A G C GA- -----
GAM9052 14441 CTACTTCGGGCGGCAACCGA G- CAACCGA C C TTCGC
GGACCGCCTGTCCTGCTTCG CTACTTC GGCGG GGAC GCCTGTC TGC
CGCAGACGGGTGTCCCCCGC GGTGAAG CCGCC CCTG TGGGCAG ACG
CGAGAAGTGG AG C------ - - -----
GAM9055 1125 CTACTTCTCCACTGTCCCGT AC CA G GTTCAG AATG- ACAACCAGCCA
TCAGTCTGAATGCTGCCACA CT TTCTC CT TCCC TCTG CTGCC
ACCAGCCAGGCAGGTCCACA GA AAGAG GA AGGG AGAC GACGG
GAGAGGGAGAGCAGAGAAAG -- AC G AG---- ACCTG ----------
GAM9082 9423 CTAGAAATGTCTTCAGGGTA ATG CAG AATGC T TCTC
ATGCCAATTTAAGATCTCTC CTAGAA TCTT GGT CAA TTAAGA
TTAACTTGTGGCCAAGAAAT GATCTT AGAA CCG GTT AATTCT
TCTAG AA- --- GT--- C ----
GAM9086 9673 CTAGAACAAAATATGACTTT CA TGA--- CACCATCT G GA TTGGCTTT

TTTACACCATCTTGCTGTTG CTAGAA AAATA CTTTTTTA TGCT TT TTCA
ATTCATTGGCTTTTGAAGAG GATCTT TTTAT GAGAAGAT ACGA AG AAGT
AAGCATAGAAGAGACTTTTT A- TTTTCA -------- - AG --------
ATTTATTCTAG
GAM9098 2897 CTAGAAGCCTTGGTACCTTC GA TT A -- A GTAAA CA GGTGGA
CTCATAGTGTAAAGCCACGG CTA AGCC GGT CCTT CCTC TAGT GC CG
GTGGACGCAGCATGAGACTA GAT TCGG CCA GGGG GGAG ATCA CG GC
GAGGCTGGGGAACCTGGCTA A- T- A TC - GAGTA AC ------
TAG
GAM9116 8569 CTAGACAGAGTGTGCAACCC A TGCAACCCT CTAG--- TAACCCTT
TTGCTCTAGATTTTAACCCT CTAGACAG GTG TGCT ATTT
TAGATATACCTCAGCATAAA GGTCTGTT CAT ACGA TAGA
TTTTCTACATTGTCTGG A CTTTTAAAT CTCCATA --------
GAM9131 8527 CTAGACTAAAATTTCACTTT AAAA C-- A CAAT T ACC TATGA
AGCACAATGGTAGAACCTGG CTAGACT TTTCA TTT GCA GG AGA TGGC
CTATGAGTCATCTTCCTCTG GATCTGG AAAGT AAA CGT CC TCT ACTG
CAAAACAATGAAAGGTCTAG ---- AAC A CT-- T --- -----
GAM9156 4259 CTAGAGGACTTTAACATGCT --- AC- TA T A G TTCCC
GTAGGTGATTTCCCATGACC CTAGA GG TT ACA GCTGT GGT AT
ACAGCTGTAGGATTGCCAGA GATTT CC AG TGT CGACA CCA TA
TTTAG AGA GTT GA - - G -----
GAM9186 4816 AGTTTTTTTCTTCCATTTCA -- C------- T C GAAA
GGTGTCGTGAAAACTACCCC AGTTTTTTTCT TCCATTT AGG GT GT
TAAAAGCCAAAATGGGAAAG TCAGAAAAGGA GGGTAAA TCC CA CA
GAAAAGACT AA ACCGAAAA C T ----
GAM9191 10442 ATAAAAAAAAAAACCCATGC AAAAAA- CAT-- - AGTGAGCA
AAACCTGAGTGAGCACAGGA ATAAAAA CC GCAAA CCTG
TTTGCTTCTAGGCCCATTAT TATTTTT GG CGTTT GGAC
TTTTAT ATTACCC ATCTT A --------
GAM9212 7758 ATAAAATAATGATCCTATAT ATA A CTTTTAATACAAAATCACA
ACTTTTAATACAAAATCACA ATAAA ATG TCCTATATA
TATGTAGGGCATCACTTTAT TATTT TAC GGGATGTAT
CAC - ----------
GAM9230 22677 ATAAACGTGTTCTTTTGAGA T TT T TG TC TTCATATCCTT
AGTGTCTGTTCATATCCTTC ATAAACG G CT T AGAAGTG TG
GCCCACTTTTTGATGGGGTT TGTTTGT T GG A TTTTCAC GC
GTTTGT - GG T GT CC ----------
GAM9302 525 ATAACAAATACTCCGTCCTT ACTCCG- --- TTGG
TTGCCATTGGTGGCTAAAGA ATAACAAAT TCCTTTT GCCA
AGGAAAACTCCATTTGTTGT TGTTGTTTA AGGAAGA CGGT
CCTCAAA AAT ----
GAM9316 11516 ATAACCACAAATGACTTTAA AA CAAA AAA--- - G GG TACGGA G- - A
AGTTCTGGATGGTAATTACG AT CCA TGACTTT GTT CTG AT TAAT TTGT GACC AGTAATA
GATTGTGGACCAGTAATAAA TA GGT ACTGAGG CAA GAC TG ATTG GACA TTGG TTATTGT

GGGATTATTAAATGTTATTC GG CAA- GTTAAA T A AA ------ AA C A
GGTTAAACAGGTTAAAGTAC AG ATTA
AGTAACAAATTGGGAGTCAA GG
ACTGGGGAT TT
AA ----

GAM9339 647 ATAAGAATATAGGAATACAT A- AATACATA CT ACAT
ACAATCTATATACATATATT ATAAGAAT TAGG CAAT ATAT
TATTGCAAATACTTAAAATT TATTCTTA ATTC GTTA TATA
CTTAT AA ATAAAC-- TT ----
GAM9352 4831 ATAAGATCTAAAGAGTTACC A--- A A C TACAGAAAGAAGAT
TGGCTACAGAAAGAAGATGC ATAAG TCT AAG GTTA CTGGC
CAGATGACACTTAAGACCTA TGTTC AGA TTC CAGT GACCG
CTTGT ATCC A A A ----------
GAM9354 17746 ATAAGCATCTGGAGGAGGTT G GGAGG- AG ---- GAGACTTGGA
CAAGGCCCAGAGACTTGGAT ATAA CATCTGGA TTCA GC CCA
GGACAAGCAGTGGAGGGAAA TGTT GTAGATCT AGGT CG GGT
TCTAGATGGTTGT G AAAGGG GA AACA ----------
GAM9386 13433 ATAAGTAATACCTGATTGTT T C AT TTTCT CTAGT
TCCTTTTCTGTTCTAGTAAC ATAAGTAA AC TG TGTTTCCT GTT
TCACAGGAGATACGTGTTTT TGTTTATT TG GC ATAGAGGA CAA
ATTTGT T T -- CACT- -----
GAM9393 137 ATAAGTTGAATATTATTCTT GAA TTA- AC--- CA TTCT
TAATGTGACTAGCAAAAAAA ATAAGTT TATTATTCT ATGTG TAG AAAAAA
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TATATGCCTAGAATAATGAA A-- TCCG GCTAC AA ----
ACTTGT
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CAGAATACAATTATTTGGTA ATAATATTGTA C AATATT AGAATACAATTA TT
AAATTAGTTGTATTTTTAAT TATTATGACGT G TTGTAA TTTTATGTTGAT AA
GTTCCAGTTGCAGTATTAT T ACC T T -----
GAM9428 15594 ATAATGAATTATAAAACTTT TT A-- ----- TACATTGT
GATAGTTACATTGTACTATC ATAATGAA ATAAA CTT TGATAGT
ATTTATGAGGCATTTATTTT TATTACTT TATTT GAG ACTATCA
TCATTAT TT ACG TATTT --------
GAM9492 252 ATAATTTTTGTTAATTTAAA TT ATTTAAA GAAATGTGTAA
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TAAAGTTTTTAAAGTAAAAT TATTAAA TAAT TGAAATTTTTGA
GTAATTAAATTAT T- GTAAAA- ----------
GAM9534 15429 ATACAGGATGATAGTTCGTG A ATGAT TC G CACAGATATCA
TGACAAACACAGATATCATT ATAC GG AGT GT TGACAAA
TGTCAGATTGCTTATGCCCG TATG CC TCG TA ACTGTTT
TAT C GTAT- T- G ----------
GAM9583 14833 ATACCCCCTTGTAGGGATGG CC T A A GTTT CACA
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TCTTTAAAGGGTAT A- T - - AGT- ----
GAM9592 15914 ATACCTCTGTTGATCTTGAA T G T GG GTG- AA A TG GGTATT CGT
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GCCCG
GTATGGTGATGGTATTGCCC TATGG GA AATT GGACTTCTTTTGA TG AGAA CG ACT TA
CGGGT

GCGTACATGGGCTGAGGAAT - - C GA GTAA GA A TG AGGAGT ---
GTTCAAGCAGAAGAAATGGT ACA
AGAGTTTTCTTCAGGCTTAA

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        AGGGTAT
                 ---
GAM9600 22382 ATACGACTCACTATAGGGAA    GAC     TA      -  T    C  CA   A    T    AATTC
        AGCTGGTACGCCTGCAGGTA ATAC   TCACTA  GGGAAAGC TGG ACGC TG  GGT CCGG CCGG

        CCGGTCCGGAATTCCCGGCC TATG   AGTGAT  TCTTTTTG GCC TGCG AC  CCA GGCC GGCC

        GGACCCACGCGTCCGTGTTT    AT-     TG      T   -    C  --   -    -    -----
        TTCTGTTAGTGATAGTAT
GAM9604 15062 ATACGCTTAGTGCAGTATTT       A  GCAG--   T    AATT   ACAAA
        ATCCAATTCACACAAAGTGC ATACGCTT GT     TATT ATCC    CAC
        GGGATCAGTGGTTTAAACAA TATGCGAA CA     GTGA TAGG    GTG
        GCGTAT                 -  AATTTG    C    GC--   -----
GAM9631 5304   ATACTCTATTCAACATGTGC    TCTAT-  AACA     TCCT-    ACTTACTAA
        ATCCTGTGTACTTACTAAGC ATAC     TC    TGTGCA    GTGT
        ATTTATTTGCACAAGGATTT TGTG     AG    ACACGT    TACG
        TCTGTGT              TCTTTT  GA--     TTATT   ---------
GAM9665 11453 ATACTTGAAGCTTTATTCTT      AAG-       TT    AAGAAAGAAA
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        CTGAATAAGGATCATAAGTA TATGAAT    GGAATAAG  GATCT
        T                  ACTA       TC    ----------
GAM9674 2665   ATACTTGTATTTTGTGGTGG           G-    G   AAT    GGTA
        CAAATGTTTGGTAGAACTGT ATACTTGTATTTT  TGGT GCA   GTTT
        AATTAGAAAAATACAAGTAT TATGAACATAAAA  ATTA TGT   CAAG
                           AG    A   ---    ----
GAM9690 615    ATAGAAAAAAGAGAAGATGA       --    A    A---  A   TCAG    AGCT
        GAATCAGGAAGAGCTCTTTA ATAGAAA  AAAG GAAG    TG GAA    GAAG
        CTTTCACAATCCCTTTACTT TGTCTTT  TTTC TTTC    AC CTT    TTTC
        TAATTTCTGT             AA    A    CCTA  A   TCA-    ----
GAM9711 4712   ATAGAAGTATACTGAGAGTC          TG   GTCTAAAA   ATTCTA
        TAAAATACATTCTAGTAGTG ATAGAAGTATAC  AGA       TAC
        CATGTCTTGGTGTGCTTTTG TGTTTTCGTGTG  TCT       ATG
        T                    GT   GTACGTG-   ------
GAM9730 7223   ATAGACTACGATCAGAGCTG       ACG    GA   G  ATC     TT      TG-      AGAACAAG
        CCATCTGTGGTTTTCCAGGG ATAGACT   ATCA  GCT CC   TGTGGT  TCCAGGG   ACGCAAG
        TGACGCAAGAGAACAAGCTT TGTCTGA   TAGT  TGA GG   ATACCA  AGGTTTT   TGTGTTC
        GTGTGCTTTTTGGACACCAT       CA-    --   -  AA-     C-      TCG      --------
        AAAGGAGTTGATACAGTCTG
        T
GAM9739 21723  ATAGAGAAAACACTGATTGA    -       C   TT-   AA-   GCATT
        TAATAGGCATTTTAGTGGTC ATAG AGAAAACA TGA   GAT   TAG
        TTTTTAATGTTTTCTGCTGT TGTC TCTTTTGT ATT   CTG   ATT
                           G       A   TTT   GTG   -----
GAM9753 8012   ATAGAGGCTTTTCTTCTGGA      -  T     TCT     CCAA  CATTCAAA
        TGACCAAGACATTCAAATCC ATAGAG GC TTTCT   GGATGA    GA
        TTCATTTCTAGAAATGTACT TGTCTC TG AAAGA   TTTACT    CT
        CTGT                 A  T    TC-     TC--  --------
GAM9760 13396  ATAGAGTCGTGTAGAAGTTC           AGAAG--    TA   AA   AAA
        CTAGCGAAGTTAAAAACGCC ATAGAGTCGTGT      TTCC  GCG  GTT
        GCCGGGGGAGACACCGCGCG TGTCTCGGCGCG      GGGG  CGC  CAA
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GCTCTGT CCACAGA GC CG ---
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TTGGTTACTGTAGTTTTACA ATAGCCAG AC AC TTGG ACT GTAGTTTT CAG
GCAAGTTTTGAAACTGAAAA TATCGGTT TG TG AACC TGA TATCAAAA GTC
CTATGAGTCCTCCAATTTTG T AT- TTTT TCC G - ----------
TTAGTTTTGGCTAT
GAM9818 22367 ATAGCCAGTTTTCCCAGCAC - TTC CACCATT AA TAGTT
CATTTATTGAAGAGATAGTT ATAGC CAGTT CCAG TATTG GAGA
TTTCCCCAATGTACATTCTT TATTG GTCGA GGTT GTAAC CTTT
GGCAGCTGTGTTAT T C-- CTTACAT CC -----
GAM9820 4558 ATAGCCCAAAGGCTCTGCAG CCAA T AG CTC - - A ATT
TATTCCCTCCAATGGCCAAG ATAGC AGGC CTGC TATTCC CA ATGGC CA GG
GATTCCGTGTGTCATCTGCA TGTCG TCCG GATG GTGAGG GT TACTG GT CC
GGAGTGAGTAGGCCTGCTGT ---- - A- AC- C T G ---
GAM9827 15922 ATAGCCTTTTTATTGACTAC CTT T - ACTT A -- --- ACAT
TTTAAGTAGAACAAACTAAA ATAGC TTTA TG ACT TAAGT GAAC AAACT AAAT
TACATATTTAACAGTTTTGG TATTG AAAT AC TGA ATTTA CTTG TTTGA TTTA
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AATAAGTTAT
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TGCCACTGCCTTGCTCGGTA CCTGTT CC CT CT TCC TGCC GC CTTGCTC GT
CATCCAGCACATGGAGCAAG GGACAA GG GA GA AGG ACGG CG GAACGAG TA
AGCTGAAGGCACAAGGACAG - AC G C AAC AAGT A G ----------
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GCAAGAGTGACTTTAGTATT CCTGTTA TTGTT CAAG TGACTTT TATT
CATGAACAGTAAATCAGAGG GGACAGT AGCGA GTTC ACTGGAG ATGA
TCAGACTTGACAAGAGCGAG G-- GAACA- AG ACTAA -------
TGACAGG
GAM9848 13829 CCTGTTCATAATGGCATTAG TT AA T TCTCTG CATTTTA
TCTCTGAGTACATTTTATAT CCTG CAT TGGCA TAG AGTA
TATCTTTGCTGCCACATGTC GGAC GTA ACCGT GTT TTAT
AGG T- C- C TCTA-- -------
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CCTCTCTCTTTCGTGCTGCT CC GT CTTC TTA ACGG CCT GCTG
TCTTCAGCAGGCTGTGTAGG GG CG GAAG GAT TGTC GGA CGAC
AAGTGCTGG T T - G - ---------- ------
GAM9896 10441 CCTGTTTTTCCTTGCCACAT ---- TG- CAT A CCAG
TGGACTTCCAGAAGCCATTT CCTGTTTTT CCT CCA TGG CTT
GGATTGGGTTTAGAAGATGG GGGTAGAAG GGG GGT ACC GAA
G ATTT TTA TT- - ----
GAM9898 13809 CCTTAAAAAAAAAAAAGGCA AAAAAAAAA ACCAC-- CCAG
ACCACCCCCCAGGGGAAACT CCTTAAA GGCA CCC
CGTGCCAAGGAAATTTGGGG GGGGTTT CCGT GGG
AAAGGAA-- GCTCAAA ----
GAM9928 11190 CCTTAATATGATTTTGAAAC A T TTT CC ATT AATT
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TTAATTTTGTGTTCTTATGA GGAA TAT CT GTTTT TTCA CG
AGG G T TGT AA CT- ----
GAM9932 7780 CCTTAATGGCCAGCTCTCCA T CTCTCCAC - CAT AATG

CGCTGCTCGGCATCTGCAAT CCTTAA GGCCAG GCTGCTC GG CTGC
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TCTGGCCTTTGAGG T TCC----- A TCC ----
GAM9937 5208 CCTTAATTTTAGAAAATTGA T-- AAAT AG- CAT
TCCAGGTACCATGTGCATGG CCTTAAT TTAGA TGATCC GTAC
GGTTATCTGGTATATTAAGG GGAATTA GGTCT ATTGGG CGTG
TAT ---- GTA ---
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CCCCCACCCATCCACCCACC CCTT AGGC GA TGCC CC TCCA
AATGGAAGGAAAGTCAGGCA GGAA TCCG CT ACGG GG AGGT
TCGCCTAAAAGG AA ---- - ACTGAAA A --------
GAM9995 2610 CCTTATATGATTTTAATAAT T- GA ATAAT -- A TAATTTT
TCTCACTTAACTAATTTTGT CCT ATAT TTTTA TCTCA CTTA C
AAGCCTGAGATCAATAAGAA GGA TGTA AGAAT AGAGT GAAT G
ATGTTCAGG CT A- AACT- CC - -------
GAM10046 20564 AAAATCTAGGTTTTTTTCAA TA-- TTTCA TT-- TGAGCACT
CATTAGCAGTAAATTGAGCA AAAATC GGTTTT ACA AGCAGTAAAT
CTGTTTACTGTTTCATTGTA TTTTAG CCAAAG TGT TTGTCATTTG
CCATGAAACCATTTGATTTT TTTA TACCA TACT --------
GAM10060 9046 AAAATGAGACTGTCAAACTT --- - --- ACA TAATCAAATCAAAT
TACAGTATAATCAAATCAAA AAAATGAGA CTG TCA AACTTT GTA
TTACAAAGTTAGATGACCAG TTTTACTCT GAC AGT TTGAAA CAT
TATTCTCATTTT TAT C AGA --- ----------
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GCTCACTTGGCCAATTCGCC AAAATGCGG CCG AATTCGA CTCACT GGC
CTATAGTGAGTCGGATTACA TTTTGCGCC GGT TTAGGCT GAGTGA CCG
ATTCACTGGCCCGCGTTTT C CACTTAACA - TATC ------
GAM10074 20205 AAAATGCGGCCGCAATTCGA C-------- T G T--- CAATTC
GCTCACTTGGCCAATTCGCC AAAATGCGGCCG AAT CGA CTCACT GGC
CTATAGTGAGTCGTATTACA TTTTGCGCCGGT TTA GCT GAGTGA CCG
ATTCACTGGCCGCGTTTT CACTTAACA T - TATC ------
GAM10075 3809 AAAATGCGGCCGCAATTCGA - C-------- T G T--- CAATTC
GCTCACTTGGCCAATTCGCC AAAATG CGGCCG AAT CGA CTCACT GGC
CTATAGTGAGTCGTATTACA TTTTGC GCCGGT TTA GCT GAGTGA CCG
ATTCACTGGCCGTCGTTTT T CACTTAACA T - TATC ------
GAM10094 5109 CCTTATGTGAGTATGCAAAT ------- ATGCA AT TG TATG
ATATAAATTTGAGTATGCTT CCTTATG TGAGT AATATATAA T AG
GATTGTATATTGGAACTCAA GGAATAC ACTCA TTATATGTT A TC
CATGATCATAAGG TAGTACA AGG-- -- GT ----
GAM10111 19646 CCTTATTTCTGAGAATTTGG AT A AT TG CCC- --- TGTTTT
GCCCCAGCTGTTTTGCCTTT CCTT TTCTG GA T GG CA GC
GACTCCCTGACCTCCAGAGC GGAA GAGAC CT A CC GT CG
CAAGG CC - CC GT CTCA TTC ------
GAM10112 19494 CCTTATTTGAATACTTAGAA -- - AGAAAA A AGT
AAAAATGGCCAGTGGCCGAT CCTTA TTTGA ATACTT AA TGGCC
TGAAAGGTATATTAAAATTA GGAAT AAATT TATGGA TT GCCGG
AGG TA A AAG--- A ---
GAM10133 4653 CCTTCACTGAACAACTGTGT AACA T ACTT----- TCACTGTATCTCT
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CCTCACCAGTACAGTGGAGG A--- - CCCTCAATT ----------
GAM10167 22175 CCTTCCACAGTGTCAGAGAC TCCAC AG-- TCA ACTCTTACA
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ATAGTACCACTGGCACTTCT GGA TCACGGTC TGA CGA
ATAGG TATCT ACCA TAA ---------
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CTTAAGATTGGAAGAGAAAA -- A GAAG TCA GTA ---- ----
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GCATGAGGAAGG
GAM10184 619 CCTTCCCGACGGAGTGCGTT - ACGGAGT T- ATGA AAGG
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TGAGATTGAGCGTGGCAGCG GGAGG GGC TGCGAG AGA TCC
GAGGAGG A GACGG-- TT GTG- ----
GAM10215 4645 CCTTCGACACGGTGCGGCGG ----- GG GC- ATG - GGGCGCAAA
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TGTACACGGGCACCGTCGAC TCAGC G- ACA A-- G ---------
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GAM10257 11543 CCTTCTGCTGTGTATGTATG --- GTATGTAT AGA G AATGCTCAAGG
CCAAGGAGACCGTGGGCTTT CCTTC TGCTGT GCCAAGG CC TGGGCTTTGG
GGAATGCTCAAGGCCAAGGC GGAGG ATGACG TGGTTTC GG ACCCGGAACC
CCAGGCTTTGGTGCAGTACC TCC -------- --- - ----------
TGGAGG
GAM10267 1704 CCTTCTGTTGACTCTACAGA TC- ACTCT ACCACA TGCATCC
CACCACATGGCTTGCATCCA CCT TGTTG ACAGAC TGGCT
GCCAGTCTGTCTTGTAACAT GGA ACAAT TGTCTG ACCGA
GTAGG TGT GTTC- ------ -------
GAM10294 11273 CCTTGAAAGGCAATTGTTGG GAAAG AA GGCTG ATAAGCAG
CTGTTTTCATAAGCAGGAAA CCTT GC TTGTT TTTTC
AATAAACAGAAGTATAAAGG GGAA TG GACAA AAAAG
ATA-- AA ATA-- --------
GAM10326 9947 CCTTGATGAAGGGATGGGAC -- AG G - G-- ATCCTTCA
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GGACAGGTATCGGTTTGTCA GGGACT ACT TTTG CT TGGACA TCG
CCTCAGGG CC G- G A GGG --------
GAM10372 11991 CCTTGCTCTGCAGAAAGAAC T C ---- A C-- T GAATA
CCTGGGGTGAGGGAATATTT CC TG TCTG CAGA AGAACC TGGGG GAGG
CCCCCAACAGGTTCTATCTG GG AC AGAC GTCT TCTTGG ACCCC CTTT
TCCCCAGACATGG T - CCCT A ACA - -----
GAM10404 4927 CCTTGGAGACCTGATGCGGT CC TGC- T- - AACG
TATTAGTACGAACGTGTCAC CCTTGGAGA TGA GGTTAT AGT ACG
TCCATAGCCAGATTCAATTT GGAACTTTT ACT CCGATA TCA TGT
TCAAGG A- TAGA CC C ----
GAM10427 22354 CCTTGGGAAAAATGAGAACA AAAAT- A ATAAC-- CGTCCC
TATAACTGGGCGTCCCTCCA CCTTGGGA GAGA CAT TGGG
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TTCCAGGG ATACTT - CTCTACC ------

GAM10470 2464 CCTTGTCAGCAGCCTTTTCT TCAGCA TC GGAG CGGA AAGT G AT AACC
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TGACCC
GAACCCAGGCAGCGTCAATC C----- -- GTA- ACA- ---- G CC CCCT
CCCCCAGTCCTGGGAGGTAG CA AGC
AAACATGGGATGGGTAGAAG GGC
AGGCCCGGGG CTG
AA ---
GAM10511 17069 GAGGTATCTCTGCATTAGCC C- C TAG TGG AT AAAGGG
AGATTGGACATATGTAAAGG GAGGTAT TCTG AT CCAGAT AC ATGT
GACATCAGTATATCTGGATC CTTCGTG AGAC TA GGTCTA TG TACA
ATCAGATTGTGCTTC TT - CTA TA- AC ------
GAM10620 10120 GAGGTGCGCTGTGTTCCAGT T CCA C A TCA
GCGCACAGTGTCACGCAGTG GAGGTGCGCTG GTT GTG GCAC GTG
CTCGCCGACTCGGTGCACCT CTCCACGTGGC CAG CGC CGTG CGC
C T C-- T A ---
GAM10649 11827 GAGGTGGAGGTTGTGGGTCT TG TTG G T CA - CGAA
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TGTCCCAACAGCTGCAGACA CTTC CTCC AC CAGACG CGA ACCC GTT
CAACTCCTCTCCTTC CT TCA A T CA T ----
GAM10662 15932 GAGGTGGCCAGCAGAGTGGC GG - A T C GT-- - CA - CCAGGA
CTCAGATGTTCCTGCACCTG GA TGGCCAG C GAG GGCCT AGAT TC CTG CCTGG C
GCCCAGGAGCCCAGGACAGA TT GTCGGTC G TTC CCGGA TCTA GG GAC GGACC G
GGTCAAATCTAGGCCCCTTG AG T G C - AACT A A- C ------
GTCTGGCTGGATT
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CCCATCTC CAA- TACAA --- ----
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CCGGCCAACATGGTGAAACC CTC CCC AGTGG CCGG CCG GAC
CCGTCTC TG CAA TACAA - -- ----
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TGATGACAATGAAGATGAAA GAGGT GGGTA CT GCA CTGAT TGAA
ATTCAGCCAATCAGATTGCA TTTCA CCCAT GG CGT GACTA ACTT
GGCAAAATACCCAACTTT A AAAAC A TA- ACCG- --------
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GGTCAGGAGTTCGAGACCAG GAGGTGGG TCACC TG GGTCAGG GTT
CCTGGCCAACACGGTGAAAC CTCTACCC AGTGG AC CCGGTCC CAG
CCCATCTC CAA- C AA GAC ---
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GTGTGGTCCGTGCCACCGAG CTTC CA CG GT TTC GAGAGGGTCC GT TCC TG GC CACCG

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CTTCAACAATGGCGACTGCT

TC
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GAGTGCGCTCACGCGAGGGC GAGGTG TC TC GC GC TGCG
TGGCTGTGATGAACACATCT CTCTAC AG AG CG CG GCGC
C ACA T TGT GT GGA- ----
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GAGGAAAATGGTTGGAAGTA TTCCAAC TCC TA CG TTGTAA AT AGGTT
GAATGTTCGCTGATGACCTG ACG AG GT--- C G GA ----------
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AAAGCCCATGTCATCATCAG GAGGT AG AAAGA CC GTC
ACTCCTCGGATTCTTCTTTC CTTCG TC TTTCT GG CAG
TTTGCTTC TT ---- TCTTA- CTCCT -------
GAM10854 4640 GAGGTTTCCCGTGTTGGCCA TTCCC TT GC G T T ATCT
GGATGGTCTGGATCTCCTGA GAGGT GTG G CA GA GGTC GG
CCTCGTGATCCACTCATCTC CTCTA CAC C GT CT CCAG CC
CT--- -- TA G - T ----
GAM10873 13718 GAGGTTTTTATTCACAAAGT T CACAAAG --- G A A- ACAAAATA
TGATGGTCTGTCTGATGATC GAGGTT TTATT TTGATG GTCT TCTG TG TC
ACAAAATAGAAACACAGAGG TTCCAG AGTAA AACTAC CAGG AGAC AC AG
GACATTCATCAAAGGGCCAA T CCGGGA- TTA G - AA --------
TGATGACCTT
GAM10896 4699 GAGTAACATACAAAGCTATA TACAA TATAA GAAG AAAGCCAAAA
ATTAAGATGAAGTAATGAAA GAGTAACA AGC TTAAGAT TAATG
GCCAAAACATTAAAATTTTA TTCATTGT TCG AATTTTA ATTAC
AAACTTGCTTGTTACTT ----- TTCAA AA-- ----------
GAM10921 13139 GAGTAATGGGATATCCAATA ATG TAT ---- CT- ---- GCTC
AACTGAGAAGGCTCCTTCAC GAGTA GGA CC AATAAA GA GAAG
AATCTCCTTTATTCTTCGGT CTCAT CCT GG TTATTT CT CTTC
CCTCCAAGTACTC GAA CCT CTTC CCT AACA ----
GAM10933 14206 GAGTACAGTGCAATGAGGGA AGT T A----- ACATGAGG
CCAGTACATGAGGACTGGGG GAGTAC GCAA GAGGG CCAGT
AGGGCTTTCTTTGTGTATTT TTTATG TGTT CTTTC GGTCA
--- T GGGAGG --------
GAM10940 22471 GAGTACCCAAGCAATGCCGT TA AA AT--- T GAGG ACTCA
GGAGGAGGTCACTCAGAACA GAG CCC GCA GCCG GGAG TC
ACTTCCGGCTCCTCTGCAAG CTC GGG CGT CGGC CTTC AG
GGCTC -- AA CTCCT - AACA -----
GAM10948 17196 GAGTACGTGCTAAGTGCCTT T -- T TG T T TTTGTGAGCTCT
GTGTACTTTGTGAGCTCTGT GAG ACGT GC AAG CCT G GTAC
GCCAGGTGCTTTGTGGATGT CTC TGTA TG TTC GGA C CGTG
TCTC T GG T GT - - ----------
GAM11020 17537 GAGTATCCCATAAACCTTAA A CATAAACCT TTA TATTGTAAATCTC
TGTTAAAGTCATATTGTAAA GAGT TCC TAATG AAGTCA
TCTCTGACTTCTTATTACCA CTCA AGG ATTAT TTCAGT
AGGACACTC C AACC----- TC- ----------
GAM11033 15929 GAGTATGGGGTGACAAAAAT CA--- TCCT GCTTAATGAAACTTTCT
TAGTTCCTGGTGCTTAATGA GAGTATGGGGTGA AAAATTAGT GGT
AACTTTCTGCCACTGATTTT TTCGTGCCCCATT TTTTAGTCA CCG

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          ATATATTACCCCGTGCTT            ATATA       ----  -----------------
GAM11046 12122  GAGTATTCGGCAATTGAGAC    ATTC  AAT-   A  ---  A     A   --  AGTCAC
          CTTGGACGCACGCACTTGCT GAGT    GGC    TGAG CCT   TGG CGCACGC CTTG  CTG
          GAGTCACCAGATCGAGCGCG CTCA    CCG    ACTC GGA   GCC GCGTGCG GAGC  GAC
          TGCGCCGACCAGGCTCACTT    ----  GTTC   -  CCA  -     C    TA  ------
          GGCCACTC
GAM11128 441    AAAAAAAAAATGGCACTCTG    AA  AA    A  CTGATTAAA    TTACAGCC
          ATTAAACTGCATTACAGCCT AAAA  AA  TGGC CT       CTGCA
          GCAGGACACCTTGGGCCAGC TTTT  TT  ACCG GG       GACGT
          TTGGTTTT            GG  CG   -  TTCCACAG-    --------
GAM11132 15092  AAAAAAAAAGGTGGCAGTTG      AA -------  C   TG    TGGACTT
          TTTGGTGGACTTCCGGATGG AAAAAAA  GG      TGG AGT  TTTGG
          CTTCTAAGTAATTCCAATTT TTTTTTT  CC      ATC TCG  AGGCC
          TTTT                AA  TTAATGA   T   GT    -------
GAM11192 13541  AAAAACTTTACAAAAAATGG         CAAAA    C  -  AA-   TAGTTTTCA
          CAGCAAAGGGTAGTTTTCAT AAAAACTTTA     AATGG AG CA   GGG
          CTGGGTGTCTTTCATTTAAA TTTTTGAAAT     TTACT TC GT   TCT
          GTTTTT                -----    T  T  GGG   ---------
GAM11205 13989  AAAAAAAAAAAAATATAGTT           TAT  TTTCC   T       TGTTT   TCCAATT
          TCCATATTTGATCAGTGTTT AAAAAAAAAAAAA   AG    ATA TTGATCAG     GCT
          GCTTCCAATTAGCTGTTTGA TTTTTTTTTTTTT   TC    TAT AACTAGTT     CGA
          TCAATTATCTTTTCTTTTTT           TTT  TTTTC   T       TGT--   -------
          TTTTTTTTTTT
GAM11232 8227   AAAAAAGACTGAATTTCCTG       CT   TT   TG -  TACTTGCATATAC
          GCTTACTTGCATATACAGAC AAAAAAGA  GAA  TCC  G CT
          TGGGATTTTTTTTTTTTTTT TTTTTTTT  TTT  AGG  C GA
                          TT   TT   GT A  ----------
GAM11235 4026   AAAAAAGGGAATGGCAATTG            CAAT     CCT GG     AAAT
          GGCCCCTGGGGCCAAAAATT AAAAAAGGGAATGG   TGGGCC   G  GCCAA
          TGGTTTCCCGGCCCACCATT TTTTTTTTTTTACC    ACCCGG   C  TGGTT
          TTTTTTTTT                   ----     CC- TT    ----
GAM11236 18196  AAAAAAGGGCCTTATCTTTT           ---         CCAGAGTTATAAT
          TTATCCAGAGTTATAATATA AAAAAAGGGCCTT   ATCTTTTTTAT
          AAAAGGATTTAAAGGCTTTT TTTTTTTTCGGAA   TAGGAAAAATA
          TTTT                      ATT        ----------
GAM11242 20149  AAAAAATGGCCCGGGTTTGG      TG   GGGTTT           CAGGAA
          GAGGGGGGCCCCCCAGGAAG AAAAAA  GCCC     GGGAGGGGGGCCCCC
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          GTTTTTTTTT             TT   AAAT--           ------
GAM11259 5451   AAAAACCCCGCACTGTGGCA      CC---   TGT   AC   TCT  TTTTC
          ACTTCTTCTCTTTTTCAGCC AAAAACC    GCAC   GGCA  TTCT   CT
          TAGAAATGTCTGTGTTAAGT TTTTTGG    TGTG   CTGT  AAGA   GA
          GGTTTTT               TGAAT   T--   A-   TCC  -----
GAM11262 8825   AAAAACTCAAGAGCAAAAAA       AAGA     AA-  T  G   TAATTTT
          AAGGTATGCTATAATTTTTA AAAAACTC    GCAAAAA   AGG AT CTA
          GGTCTTCAATTTTTGTATAG TTTTTGAG    TGTTTTT   TTC TG GAT
          AGTTTTT               ATA-      AAC  -  -  -------
GAM11282 9875   AAAAAGGAAAGTGTATTTTG      AAAGTGTATTTT     AA  TC      AAAAT
          GGAATAAAGTCAGGTGGGAA AAAAAGG         GGGAAT  AG  AGGTGGG
          AATTCCATTTTTTTAAATTC TTTTTCC         CCCTTA  TT  TTTACCT
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CCCCTTTTT ---------- AA TT -----
GAM11285 769 AAAAAGGGGGGGGGGCCCC - ----- AAAAAATTACCCCGAG
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CCCAATTCCGCCCCCCCTTT TTTTTCCCCCCC CC CCGGGG
TT G TTAAC ----------
GAM11300 19438 AAAAAGTATTCTAGCACAAG TATTC C G TT TAAACC
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TTATGTTTGCTAAACCTTTT TTTTTC ATCGT TT TA AAGAT
T CAA-- - G TT ------
GAM11305 11364 AAAAAGTTGTCTCTAGAGAA - G A ACTA- CAATC
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ATTTTTT T G C GTACG -----
GAM11316 15498 AAAAATCAATGGCAACAGGT GCAAC - A CAG TCAAAG
TGGGACACAGCTATTTCAAA AAAAATCAATG AGGT TGGG CA CTATT
GGGTAGAATGCCTATACCTA TTTTTGGTTAC TCCA ATCC GT GATGG
CATTGGTTTTT A---- T - AA- ------
GAM11371 21633 AAAAAGGGTGATATTCAAGG A G - AG AAAAGTAATAAGAGAAGCG
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ATTT A G A AA ----------
GAM11376 18095 AAAAAGGTTTCATAAGATTA ----- GAT-- CAATGC
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T TATGT AACAT ------
GAM11386 16604 AAAAATAAAAATAAAAAGTT A GT GAATT AGAAAA
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A TG AGAAT ------
GAM11396 21631 AAAAATAGAAAAATCACTCA G CAC ACAA CA A A TCTT CTC
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TCG GT
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CG

GTCTCGGCCTCCTGAATAGC G ATC CACA CC C A CCTC ---
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ACCACACCTGGCTAATTTTT
GTATTTTT
-
GAM11398 21059 AAAAATATATGCTATTGTTT TATGCTATT A CCA TTTTTTTTTTATTTT
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TTTTTATTTTGAGGAAAAGT TTTTTAT TAAA CTGAAA AGGAG
CAAATTCATTGTTTATTTTT TTGTTACT- - --- ----------
GAM11399 9782 AAAAATATGGTAAATATTCA TG --- GAATG CG TGAGTAATATGTTT
GAATGTGGTCGCAGGTGAGT AAAAATA GTAAAT ATTCA TGGT CAGG
AATATGTTTTCTGTAGCCAA TTTTTAT TATTTG TAAGT ACCG GTCT
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GAM11406 14000 AAAAATCCAGCTGAGTGATA --- T A AA- GAGT AG A TT AGTTTTAA

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CGTATTTGCGATTGAAGCTG TGT T - GAG AGT- GT A CT --------
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TTTT
GAM11416 1012 AAAAATGACAAAAGTACATG ACAAA -- CCCACCTATCCCTTA
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TGCTATTTTT CG--- AT ----------
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AGTAATTAGTTGTTAGATAG TC
CTATCATTTT AG
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AAGCTTTT ----- T---- C- ----
GAM11587 17059 AAAATAAAAAGCAGTTGGGA - TG---------- TA GCTAATTCCAAA
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GA- A ATAAA-- -----
GAM11651 7029 AAAATCCCACATTTTTGGAT A CA T C- CAC CCTG
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GACTTGTCGTTACGTGTTTT TTT AGGGT GAAGATTT GTGCA GCTG CAG
AGAAGCTTGGGACTTT C TC T TT TT- ----
GAM11679 22138 AAAATGCGGCCGGAATTCGA - -------- A CA ---- CAATTC
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        GGTCTTCGACGCTCCGGGGT AAAATGGGG  GGGTTTTT  G CTTCG
        CTGGGGGGCCCTCCCATTTT TTTTACCCT  CCCGGGGG  C GGGGC
                        --       GT T    ------
GAM11708 617   AAAATGTTTTTGGCTTTGGT     TTTTT   TT-     TC    ACT-   AG   TTTAA
        TTTTCTGGGGACTGATAAGT AAAATG    GGCT   GGTTTT  TGGGG   GATA  TGC
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GAM11720 16985  AAAATTATTACTGTAAGAAA      --     --     -      TATAAAC
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        TTTT                 TT     TT     A      -------
GAM11724 15654  AAAATTATTTGTCAAAGCAC    T     T    - CAGAA     ACGC
        AGAAAGTGAGACGCCTCATT AAAA TATTTG CAAAG CA     AGTGAG
        GCTAATGACTTTGTAAATGC TTTT GTAAAT GTTTC GT     TTACTC
        TTTT              C     -     A  AATCG      ----
GAM11735 4946   AAAATTGGCAAAAGTAACTT         A    AACTT    G   ACGTTCAA
        AAGTAGTTAACGTTCAATAG AAAATTGGCA AAGT     AAGTA TTA
        ATACTTTCAAAATTTCTGTT TTTTAATTGT TTTA     TTCAT GAT
        AATTTT                  C    AAACT     A  --------
GAM11740 502    AAAATTTACCTTTAAGTATT ---      CCTTT     TTTACT-      AA-----       - TTAACTC  AC-
        TACTTTAAAAAATTTAATGG A   AAATTTA     AAGTA      TTAAAA      TTTAATGG C      GA   TT
        CTTAACTCGAACTTGAAGAC T   TTTAGAT     TTCGT      AGTTTT      AAATTACC G      CT   AA
        ACATACTTCAACTGTCCTTA  CAT      ATT--     TCTTTTT      AATAGTC       T TTATTC-  GTC
        TTGTCCATTAAACTGATAAT     ACACATA
        TTTGATTTTTCTTGCTTTTA GAAG
        TAGATTTTACT         CTTC
                        -------
GAM11756 15346  AAAATTTTTAAAGAAAGTTT       T     A        C     TAAAGCATT
        GGACACTCATAAAGCATTTG AAAATTT TAAAG AAGTTTGGA ACTCA
        GGTTTTAAACTTATTTTACG TTTTAAG ATTTT TTCAAATTT TGGGT
        AATTTT                  C     A       -     ---------
GAM11799 10988  AAACACTATTTTATTTAAAT     A      -  TAAATA       CTTT TAAAA
        AAGGGGAAGCTTTCTAAAAG AAAC CTATTTT ATT     AGGGGAAG    C
        TATACTTCTCCTAATAAAAA TTTG GATAAAA TAA     TCCTCTTC    G
        TAGGTTT             -      A  ------       ATAT -----
GAM11814 353    AAACAGGTGAACCAGGGCCA     - T    CA  GCCA  AA     TACA    TCTTAT
        GCAATATTGTACAAAGCTCT AAACA GG GAAC  GG    GC  TATTG    AAGC
        TATGCTTCTGCCAGTAGCAA TTTGT TC CTTG  CC    CG  ATGAC    TTCG
        CCGTTCTCTATGTTT          A  T    --  AA--  --     CGTC    ------
GAM11816 17627  AAACAGTAGGAAGAGCTTGC     GTAG        CT   TTTA     ACATTTA
        TTGTTTTAACAGAACATTTA AAACA    GAAGAGCTTG  TGT    ACAGA
        TTTGTACACATTAAGCTCTT TTTGT    TTTCTCGAAT  ACA    TGTTT
        TAGATGTTT             AGA-        T-   CA--     -------
GAM11870 17565  AAACCTAATCAGTGTGTTCA     TAATC-     TTC--   AT   TCCACACT
        CTATGCTTCCACACTAGCCA AAACC     AGTGTG     ACT  GCT
        GTCTTCTCACACTTCTTCTG TTTGG     TCACAC     TGA  CGA
        GTTT                  TCTTCT     TCTTC   C-  --------
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GAM11901 17441 AAACTATGTACAAGCTACAA TG-- A A - G CTCTTTC
AATAGCATCTCTTTCATGGT AAACTA TACA GCT CAAA ATA CAT
ATGTTTGAGTGTGTAATTTT TTTGAT ATGT TGA GTTT TAT GTA
AGTTT TTTA G - G G -------
GAM11903 10840 AAACTATTTTCAGCTTTTCT TC TTCTC TAA T TATA
CAATTAACATTTTGGTAGTA AAACTATTT AGCTT AAT CATTTTGG AG
TACTTCAGAGTGATGTTATC TTTGATGAA TTGAA TTG GTGAGACT TC
TAAGTTTAAGTAGTTT T- TCTA- TA- - ----
GAM11944 13870 AAACTTCCCGGGGTGGTTGT T GG G --- C GTGTG
TTCCCCAAAGTGTGTTTGTG AAAC TCCCG GT GTTG TTTCC CAAA
GAAAAACCAGCGGCGCGGGA TTTG AGGGC CG CGAC AAAGG GTTT
TGTTT T G- G CAA T -----
GAM11964 7401 AAACTTTTGGCATTAAATTG - C TT- A AAAAA ACAAATTATCACAATAA
CAAGAAAAAAGAAATACAAA AAACT TTTGG ATTAAA GCA GA GAAAT
TTATCACAATAAATTTCAGA TTTGA AAACC TGATTT TGT CT CTTTA
ATCTGTTTCTTTAGTCCAAA T - CTT - AAGA- ----------
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GAM11993 17443 AAAGAAATGTATCAGGTTGA AA TA GT- TTT- ATA
TTTTCTTAGATACTAAGTAT AAAG ATG TCAG TGAT CTTAG
TATTATCACTGAACCATACT TTTC TAC AGTC ATTA GAATC
TT A- CA ACT TTAT ---
GAM11997 21947 AAAGAACCTCGTCGTGACAT AA -- --- T TCAGAAGCCAT
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T C- GT TCC C ----------
GAM12023 357 AAAGACAAACTGCTGTGGCC C CT C GT- AA CA TTTT AGTTAA
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AGATTAGTGTTTTTTAAGAA C -- T AAG A- A- TGAT ------
TGAGAATATGAAAATTGTCA
CAGTTTTCTCTTT
GAM12062 17021 AAAGAGATTTAAGTGATTAC T- AGTG GTG TATC
AGTGTAGAAATATCTTTCTG AAAGAGA TTA ATTACA TAGAAA
TATGTGATACAGTGGTTTCT TTTCTCT GGT TAGTGT GTCTTT
CTTT TT GACA AT- ----
GAM12160 10662 AAAGCGACCCAAAGGTGGAT GACCCA AT---------- A- A ACACAC-- GCT
AGTCTGAGAAGCTCTCAACA AAAGC AAGGTGG AGTCTG GA GCTCTCA ATGG
CACATGGGCTTGCCAGGAAC TTTCG TTCTACC TCAGAC CT CGAGGGT TACC

CATATCAACAATGGGAGCAT ACC--- GGGATTTAAGAACT CA A AACAACTA ---
CACCAGACTTCAAGAATTTA TGCCAGGAA
GGGCCATCTTCCAGCTTT

GAM12207 19676 AAAGGAGGGATAAATACTGA T A AAG- TTACTAAACAAAT
AGGGATTTACTAAACAAATG AAAGGAGGGA AAAT CTG GGAT
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TTTTT - A ACTA ----------
GAM12208 13370 AAAGGAGGGGGGGCAGGCATG A CA CAT - TCCTT

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        GCCCTGATTCCTTATTAAGG AAAGG GGGGGG  GG   GGCCCT GAT
        GCCCCCCACCCTCCACCTTT TTTCC CCTCCC  CC   CCGGGA TTA
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GAM12221 1681   AAAGGCATGAGAAACAGTCA     A    AACAGTC    AATAA    AAGACATGA
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        GAGCATAAAAGAGGTTCTCG TTTCCG GCTCT      TGGAG    TACG
        GCCTTT               -    -------     AAAA-    ---------
GAM12247 10495  AAAGGGCAAGAATATCACGG         AATATCAC-   T      AG-   TTGAAACT
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        T
GAM12268 2403   AAAGGTCGTTTTGTGTTTTG    GT G   TGTGT   G    GAAA    TGTTCCTT
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        TGCCCAGAAACTGGAAGAAG TTTC  G AAG    AAG TCAA    ACCCG
        GGTCTTT              TG G   -----   G    AG--    --------
GAM12280 638    AAAGTAACTTTTTTTTTTGC       C  T  T   TG -     ATTGAG   TCTGAT
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GAM12316 10389  AAAGTCTAGAAATAGCCCCA        GAAATA   C  ACT   CC    A  -      ATGATA
        ACTGTACCTAGAAATCTACT AAAGTCTA     GCC CA   GTA  TAGA AT CTACTGT
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        CTAAATACTGAGGCATATAT        ATATA-   A  ---   AA    C  T      ------
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GAM12329 10963  AAAGTGAGGCTACCACATTT    T-    TAC  CATT    ACTC    AATCAGC
        CCTACTCTAGAAATCAGCTC AAAG  GAGGC   CA    TCCT    TAGA
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GAM12334 13137  AAAGTGCTAAATAAATAGAT      CTA    AA    TC  C       CATATTTA
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        ATTTACTTT              ---    GA    CC  T       --------
GAM12335 11346  AAAGTGCTAGGATTACAGGT       T    TT--     TG     CA-   -  TGCCT
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        GCTTTCTGCATTTT           -   TCGT     TG     AAG   C  -----
GAM12431 10783  AAATAACAATTCAGGGGAGA        ATTCAG- GG -   T  AG     AG-  TATGTT
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GAM12462 4603   AAATAATTTTATAATATCCA      A  TT    ATCCA     TTTC      ACC
        TCTTGATTTCATTGTTGACC AAATA TT  ATAAT     TCTTGA    ATTGTTG
        CAACAATCATTCAGGAGCAG TTTAT AA  TATTG     AGGACT    TAACAAC
        GTTATTTAACTATTT         C  TT    GACG-      TAC-      ---
GAM12481 13928  AAATAGAAAATTATATAATC       AAA    T  TC   -  TATTTTTT
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        TCAATTTCTATAACATTTAT TTTATTT   AATAT TT  ACTT CTC
        TT                   AC-     C  TA    G  --------
GAM12501 16919  AAATAGTATCTTTCTTGAAA    -          ------------       TTATTGAC
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GGATTATTGACTCTTTTTGC AAAT AGTATCTTTCTT GAAAGGA
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GAM12512 17521 AAATATAAGGTTGGGTTAGC TAAGG-- GT G - TTATA TATTTTTT
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TGGTCCAGAAGAAATTATTT TAAAGAA TG - C TAA-- --------
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TTT CTG AAGCTCT AT ---------
GAM12531 17440 AAATATGGTAATATTACAGC - A---- GCCC C ACTGC
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ATTT A CAATA ACTT T -----
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TT A ATTT TA--- TCA- ------
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GAAAATAAAAAGAAAACAAG A GAAAAATAAA C T ----------
ATTT
GAM12648 11772 AAATGAAGGCTTTTTATGCT AAG- ATG C T GCAG
CCAGTTCATGCAGATGACTT AAATG GCTTTTT CTC AGT CAT
GAGAGAAGGGGCACAGTATT TTTAT CGGGGAA GAG TCA GTA
T GACA GA- T - ----
GAM12656 19729 AAATGACATAGTAAATGATT CA AT TTAAAATTTTTA- CC A AACA
GTTTAAAATTTTTAAATCCA AAATGA TAGTAA GATTGT AAT AG CATA
GACATAAACATATGGCTTCA TTTATT ATCATT CTGATA TTA TC GTAT
TTATTAACATCCTGTATAGT AA AC TGTCCTACAATTA CT G ----
CCATTACTAAATTATTT
GAM12678 13245 AAATGATGTTGTGGATGCAA T T-- CAAC AC A ATAATCG
CAGAACTCCTACAATGTAAA AAATGA GT GTGGATG AGAACTCCT AATGT AA
ATAATCGTTCACATTTGAGG TTTATT CG CACCTAT TCTTGGGGA TTACA TT
GGTTCTTATCCACTTTGCTT - TTT ---- GT C -------
ATTT
GAM12708 9904 AAATGGAAGAAGATACAGTA G C TATT -- - A AAA TTTGTTT
TTGTTTAGATCAGAATCATT AAATGGAA AAGATA AG GTTTAGA TCAGAA TC TTAAA TATT
AAAAAATATTTTTGTTTAGT TTTACCTT TTTTAT TT CGGATTT GGTCTT AG AGTTT ATGA
AAGTTTGAAGATTTCTGGCT G C TTC- TC T A GA- -------
TTTAGGCCTTTTCTATTTTG
TTCCATTT
GAM12709 10953 AAATGGAAGGATTCAGCTTT A C C - AA- TG AAAGAGAAA
CAGTTAAAAAAAAAGAAAAA AAATGGA GGATTCAG TTT AGTTAAAAAA AAAGAAA GAAA GC

GAAATGGCAAAGAGAAAGTT TTTATTT CTTGAGTT AGA TTAATTTTTT TTTCTTT CTTT TG
TTTTCAAATTTCTTTCTTTT A - T C AAA TT ---------
TTAATTTAGATTGAGTTCAT

TTATTT
GAM12710 22569 AAATGGAAGGATTCAGCTTT A C C - AA- TG AAAGAGAAA
CAGTTAAAAAAGAAGAAAAA AAATGGA GGATTCAG TTT AGTTAAAAAAGAA GAAA GAAA GC

GAAATGGCAAAGAGAAAGTT TTTATTT CTTGAGTT AGA TTAATTTTTTCTT CTTT CTTT TG
TTTTCAAATTTCTTTCTTTT A - T T AAA TT ---------
TTAATTTAGATTGAGTTCAT
TTATTT
GAM12711 17744 AAATGGAAGGATTCAGCTTT A C C GAAGA GGC GAAAAG
CAGTTAAAAAAGAAGAAGAA AAATGGA GGATTCAG TTT AGTTAAAAAAGAA AGAAAT AAAGA

GAAATGGCAAAGAGAAAAGT TTTATTT CTTGAGTT AGA TTAATTTTTTCTT TCTTTA TTTTT
TTTTCAAATTTCTTTCTTTT A - T ----- AAC ------
TTAATTTAGATTGAGTTCAT
TTATTT
GAM12712 15494 AAATGGAAGGATTCAGCTTT A C C - AA- TG AAAGAGAAA
CAGTTAAAAAAGAAGAAGAA AAATGGA GGATTCAG TTT AGTTAAAAAAGAA GAAG GAAA GC

GAAATGGCAAAGAGAAAGTT TTTATTT CTTGAGTT AGA TTAATTTTTTCTT CTTT CTTT TG
TTTTCAAATTTCTTTCTTTT A - T T AAA TT ---------
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TTATTT
GAM12717 13417 AAATGGGATGGTTGCGCCTT GATG CG T C GAAC T CTTTTT
TGCTGGAACATGTACAAACT AAATGG GTTG CCT TG TG ATG ACAAA
TTTTTTTGTCATTAAACAAT TTTATC CAAT GGA AT AC TAC TGTTT
ATAGGTATAACAACTATTT AA-- AT T A AAAT - ------
GAM12729 11182 AAATGGTTAACTCATAATGA TAACTCAT AA ACTT TACATTGT
ATTATAAAACTTTGATAGTT AAATGGT AATG TTATAAA TGATAGT
ACATTGTACTATCATTTATG TTTATTA TTAC AGTATTT ACTATCA
AGGCATTTATTTTTCATTAT CTTTTTAT GG ---- --------
TT
GAM12730 11315 AAATGGTTGAATGGGTAACA - G- CATGC ATCAATACAACAAC
TGCATTGATCAATACAACAA AAATGGTT GAAT GGTAA ATTG
CCAATAATATTTACTGAATT TTTATCAA CTTA TCATT TAAC
CAAACTATTT A AG TATAA ----------
GAM12741 13267 AAATGTAGGAAGGTTTCAAA T G AAG TTTTG GAAAGA AGT
GACATTTTGGAAGAAAGAGG AAATG AGGAAG TTTCA ACA GAA GGAAATCAG
AAATCAGAGTCTGATTTTTA TTTAC TTCTTC GAAGT TGT CTT TTTTTAGTC
AAAATTCGTTTTTGTAGCTG - - CGA TTTTG AAAAA- ---
AAGCTTCTTCATTT
GAM12768 21910 AAATGTTAAACAGTATTAAA TTAA T-- --- CTGATTTT
TAGCACCTGATTTTGTGTTA AAATG ACAG ATTAAA TAGCAC
AATTTTAGTTCCCTGTCGTT TTTGC TGTC TGATTT ATTGTG
T ---- CCT TAA --------
GAM12814 10776 AAATTATATTTGTGTGAAAA T AATGT AACACACTTATC
TGTGACAAACACACTTATCT AAATTATATTTGTG GAA GACA
GTCTCTTCTACAAATGTGGT TTTGGTGTAAACAT CTT CTGT
TT - CT--- ----------
GAM12847 2219 AAATTGATGTTTGGCTTTTT T ---- CT C GATTAAAAAA
TTTCCTCCACGATTAAAAAA AAATTGA GTT TGG TTTTTTTCCTC AC

GTAGGGGAAAAAAACCCACC TTTAGCT CAA ACC AAAAAAAGGGG TG
TCAACTTCGATTT T CTCC C- A ----------
GAM12848 528 AAATTGCATTCTTTTCAAAT T A CAAATTTATAA CTAAGAAA
TTATAAGTCTAAGAAAACAA AAAT GC TTCTTTT GT
AACCAAATAAAAGAAGCCAT TTTA CG AAGAAAA CA
TT C - TAAACCAAAA- --------
GAM12860 15188 AAATTGTGGGAGCTGGAAGA - CT G TAG--- GAGA
GGTAGGGGGAGACCCAGCCA AAATTG TGGGAG GGAA AGG GGG
TCCTGTTCTGACTTCTAGCA TTTAAC ATCTTC TCTT TCC CCC
ATTT G AG G TACCGA ----
GAM12930 9914 AACAAAGTTTAAGCTAGTGT T C TGTTAATA-- AAAAAA
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CTTGTCTGTCTACTTCAGCT TTGTTTCGA TTC ATC TTAA
TTGTT C - TGTCTGTTCG ------
GAM12931 10421 AACAAATATGGGAAGTAAAT TAT A TG AA AAAA - AAT
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TAGAATTTATTACATGCTTT TTGTTT CCCTTTGT TGG T AGTTT TAC TTATT
GAGGTTGGGTATGTTTCCCT --- A GT GG CG-- A ---
TTGTT
GAM12934 15066 AACAAATGCTTCCAGGTGAA - CCAG GA TCA ATATAG
AAAACTGATCAGCTATATAG AACAAATG CTT GT AAAAACTGA GCT
AGTCACTCAGTTTTTAATAA TTGTTTAC GGA TA TTTTTGACT TGA
AGGCCATTTGTT C AA-- A- CAC ------
GAM12948 16059 AACAAGAAATCCAGCTGAGG A CCA G C- --- CTTC CCTTTCTTACTTTCCT
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GCCCTTTCTTACTTTCCTGT TTGTTCT TA TGA TTCTC GTC GTCGTT ACGTTG
TGCATTTGCTGAGTCTGTTC A AC- G TT TGA T--- ----------
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GAM12956 4550 AACAAGTAAAAAGTTAGACA AAA GAC- T CAAAA
AATGTTACAAAATAACCTTT AACAAGTAA GTTA AAA GTTA
TCAATAGCCAGTTGCTTGTT TTGTTCGTT CGAT TTT CAAT
GAC AACT C -----
GAM13009 6686 AACACCTAAGTATCCTCTTC ---- ----- C CAGTCC
ATAGCAGTCCCTATAAGGGG AACACC TAAGT ATCCTCTT ATAG
ATAAAACACTTATTTCGGTG TTGTGG ATTCA TAGGGGAA TATC
TT CTTT CAAAA - ------
GAM13057 13068 AACAGCCGAAACCTGTCTTG AA-- CTGTCTT- AAT - TTT
CAATGGGGGGAGGGGGCGTT AACAGCCG AC GC GGGGGGAGGGG GCG
TCGCTTTCCTTCTTCTTGGC TTGTCGGT TG CG TCTTCTTCCTT CGC
TTTCTCTCGTCTTGTGGCTG GTTC CTCTCTTT GT- T ---
TT
GAM13065 13171 AACAGCTCCAGTTACAACAG --- C- C ---- TCCA--- C T --- TG
CTCCAGTATAGCTGTGGACT AACA GCTC AGTTA AA CAGC GTATAG TG GGACTT
TTAATATA
TTTAATATATGGACTTTATT TTGT TGAG TTAAT TT GTCG CGTATC AC CTTGAA AGTTGTGT

GTGTTGAGGTAAGTTCCATC AAG TA T ACGA TTTTATC T - TGG --
TATGCCTATTTTGCTGAGCA GACTTTAT
TTTTAATTATGAGTGAATGT
T

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GAM13141 17603  AACATGAATGTGTTGAGTCA    TGAAT  T AG      -  TG  AATGGCAGTAAGGAG
         TCCTCTCCTGGTAATGGCAG AACA    GTG TG  TCATCCTC TCC  GT
         TAAGGAGGCTGGGATGAGGG TTGT    CAC AC  GGTGGGAG AGG  CG
         TGGAGCACCACTCAACTGTT    CAACT  C  GA      T  GT ----------
GAM13178 17148  AACATTGCCATCCTGTGTGT    T-   TCCTGT---       ATGT
         ATGTATATGTATATGTATAC AACAT  GCCA       GTGTATGTAT
         TTTTTTCACTGGCTTATGTT TTGTA  CGGT       CATATGTATA
                        TT   CACTTTTTT       ----
GAM13184 165    AACATTGTAGAAACAGTGCT   A     AACAGTGCTACAA  A   TCAGAT
         ACAAAGAGAATTCAGATATT AAC TTGTAGA          AG GAAT
         CCTATACTCTTCAGTCTACA TTG AACATCT          TC CTTA
         ACGTT             C      GACTTCTCATA-- -   ------
GAM13224 15549  AACCACCAGATCACGGTCCT         CACGG  CT  -  TCTACCACCATGCCT
         GCACGTCTACCACCATGCCT AACCACCAGAT    TC  GCA CG
         CGATGCTGAACATCTGGTGG TTGGTGGTCTA    AG  CGT GC
         TT                    CA---  T-  A ----------
GAM13271 15738  AACCCAGACGCCATGAAAGC      AC  C    A CTG   T-  C    AGAAAAAGCTGAA
         TGCCATGGCCCTGGAGAAAA AACCCAG  GC ATGAA G   CCA  GG CCTGG
         AGCTGAACCAGGCCCTTTGG TTGGGTC  CG TACTT C   GGT  CC GGACC
         ATCTTCATGCCTGGGTT        -- -    - TA-   TT  C    -------------
GAM13285 17831  AACCCGGTGGAAAAAAGGGG       GGAAAAAA    T  C  GGAC---      CCTG
         CTCCCCGGAGGACAACCCCC AACCCGGT       GGGGC CCC GGA      AACCCCCC
         CCCTGGGGGGGGTTTACTAAA TTGGGCCG       CCCCG GGG CCT      TTGGGGGG
         TCCCGGGGCCCCGGCCGGGT       G-------    -  C   AAATCAT       ----
         T
GAM13325 14191  AACCTCTATCAGACTAAGTA   C    - ----------    A T   TCCCTTT
         ATTTCCCTTTAATTCCTAGT AAC TCTAT CA        GACTA G AATT
         TTTTTTTATTGTGAATGGAT TTG AGGTA GT        TTGAT C TTAA
         GTT               T    A  GTTATTTTTT    - C    -------
GAM13331 10669  AACCTGAGAACATCCATTTC    T      CCATTT  ---- TC   AACAC    ATCCC   AAAAAG
         AATGTCCCCAAACACTATTT AACC GAGAACAT     CAA   TG  CCCA    TATTT    CTG
         ATCCCCTGAAAAAGCAGCTT TTGG TTCTTGTA     GTT   AC  GGGT    ATAAA    GAC
         AAAATATGGGTGCACATTTT    T      TTCGAC   TTAC  GT   -----    ATTC-   ------
         GCAGCTTATGTTCTTTGGTT
GAM13365 4635   AACGAGAACGGGTATAGAAG       ACGGGTA--   AGAA    AA    TGTGCGAT
         AAGAGAGAAGACTTGTGCGA AACGAGA        TAGA    GAGAG  GACT
         TAGTTCACTCTTTCTAGAAG TTGCTCT        ATCT    TTCTC  TTGA
         AGGACTCTCGTT             CAGGAGAAG   ----    AC   --------
GAM13371 5021   AACGCAGTGATAAAATGAGA    GCA    AAAA--   G---    CAAACTTT
         CTGTCAAACTTTACAGTATA AAC   GTGAT     TGA    ACTGT
         ATCAAATCAAATTACAAAGT TTG   CATTA     ACT    TGACA
         T                 AAA     AACTAA   AATA    --------
GAM13375 15308  AACGCTCCCCGAGGCACTTT      -  ---    A  TTTC   -  GTCT
         TCGGGGCCGTCTGGCGCCCT AACGCTC CCC   GAGGC CT    GGG GCC
         GGGCCTTCGTGGGTGGGCGT TTGCGGG GGG   TTCCG GG    CCC CGG
         T                    T   TGC    -  T---   G   ----
GAM13379 7609   AACGGAACTTCACTTTGTAA     AAC-   AC-      C   ATTTTTAT     -   TTATAGTATC
         CGGGATTTTTATTTTGCTCT AACGG    TTC   TTTGTAA GGG       TTTGCT CTTT
         TTTTATAGTATCAGGGAAGC TTGTC    AAG   GAACATT TCC       AAACGA GGGA
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AAACTGCCTTTTACAAGTTA GTAA ATT T GTC----- A ----------
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GAM13381 13646 AACGGATTGCGGCCTTTTTG TT- GC G TCTCGACGCT
TGTCACGCTCTCGACGCTGC AACGGA GCG CTTTTT TGTCACGC
GTGGCGAAAAAAGATGCCAC TTGCCT CGT GAAAAA GCGGTGCG
TCCGTT CAC A- A ----------
GAM13388 1918 AACGTGTCTGTGCAGGGTAT G- G G ATTATCATC CCGCTAC
TATCATCTACCGAGCCGCTA AACGT TCT TGCAG GT TACCGAG
CTTCGGTATCTATGACACTG TTGTA GGA ACGTC CA ATGGCTT
CAAAGGGAATGTT AG A A GTATCT--- -------
GAM13391 10559 AACGTTCTCATCACGGAATT C C GGAA CAAATACTGTAC
TGAAGCAAATACTGTACCTT AACGTT TCAT AC TTTGAAG
CAAGGAGTAATGACAATGTT TTGTAA AGTA TG GAACTTC
C A AG-- ------------
GAM13436 19610 AACTATTTACCAAAACAAAT TTACC AA----- -- CATCCAAAAGCACA
GGAGAAGAAACATCCAAAAG AACTAT AAAACA TGGAGAA GAAA
CACATTTCATTTCTCCAAAC TTGATA TTTTGT ACCTCTT CTTT
TTTGTGTTTTAAATTATAGT TTAAA GTTTCAA TA ----------
T
GAM13452 11379 AACTCAGAGAACAGAAGTGC A ---- AG- A GATGGGAGGA
AATGTGATGGGAGGAACATA AACTC GAGAA CAGA TGC ATGT
GCAATATCTGCTCCTTTTCG TTGAG CTTTT GTCT ACG TACA
AGTT - CCTC ATA A ----------
GAM13459 6849 AACTCAGTTTCTAAGGTTCT C TTCTA GT GAGT CCTT
CTGGAGTCCCCTTGGTCAGC AACT AGT AG TCTCTG CC
AGAGAGTCTGTTCACTTGGT TTGG TCA TC AGAGAC GG
T T CTTG- TG GACT ----
GAM13463 22722 AACTCATTACAAGGCCCAGA G CGA TCTTT
AGACGATGATTCAGAAGGAT AACTCATTACAAG CCCAGAAGACGATGATTCAGAAGGATT AC

TCGAACTCTTTGTCCAAATC TTGAGTAATGTTC GGGTCTTCTGCTACTAAGTCTTCCTAA TG

CTTCTGAATCATCGTCTTCT - ACC -----
GGGCTTGTAATGAGTT
GAM13473 2126 AACTCCGCCTGGCCCTGCCT ------ ------ T AGTA CAGA
GCAGTACTGGCCAGAGCCAG AACTCCGCCT GGCC CTGCC GC CTGGC
GCCGGCAGCAATATGGCCTC TTGAGGTGGA CCGG GACGG CG GACCG
ATGGAGGTGGAGTT GGTACT TATAAC C ---- ----
GAM13484 7584 AACTCGGTTAAATGTGATCA CG AAAT A A T TTAAGACAGT
TATTGATTCTTAAGACAGTG AACT GTT GTG TCAT TTGA TC
ATTCAAATGGCACCTAGAAT TTGA TAA CAC GGTA AACT AG
TAAGTT AT GATC - - T ----------
GAM13485 11893 AACTCTAAAGGATCAGCTGA AGGAT ATTTA --- AAA AAGAACAGAC
TTTATAATCTTCTAAAGGAA AACTCTAA CAGCTG TAATCT TCT GG
GAACAGACCCCCCAGAATAA TTGGGGTT GTTGAC ATTAGA AGA CC
GATTACAGTTGTTGGGGTT ----- ----- ATA CCC ----------
GAM13500 22767 AACTGAAATACAGTAGAAAT AAA A - TGG-- ACAGC
GGAAAACTACAGCAGTTTTG AACTG TAC GT AGAAA AAAACT
ATGTTTTCTCATAGTAATGC TTGAC ATG TA TCTTT TTTTGA
AGTT GTA A C TGTAG -----

GAM13505 7594 AACTGAAGGACATCGCATGT AA-- - TT AA TG GAACA
TTAAAATGTGGGAACATTGT AACTG GGACA TCGCATG TAA TG G
AGGTTATCATGTGATTGTTC TTGAT CTTGT AGTGTAC ATT AT T
CATGTAGTT GTAC T T- GG GT -----
GAM13553 13572 AACTGGATCACACTGCATAT TC C GTCCC AAAGAAAGCACAA
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ATGTACAAAATGTGCATGTT TTGACTT TGT ACGTGTA TGT
TCAGTT -- - AAACA ----------
GAM13558 14803 AACTGGCCACAAGAAGCCTA - CA A CTAA - TTTAATT
ACATTCATTTTAATTATGAT AACTG GCCA AGA GC CAT TCAT
ATGAAATGCTCTATTGGTGT TTGAT TGGT TCT CG GTA AGTA
AGTT G TA - TAAA T -------
GAM13563 2552 AACTGGGCGGAGGTGGAGGT GGAGGT G T ACTG
GCAGTGTCAACTGTGGCTCT AACTGGGC GGAG TGCAG GTCA
GTAACTCTTCAAAGGCCCAG TTGACCCG TCTC ATGTC CGGT
TT GAAACT A T ----
GAM13570 7015 AACTGGTGATTGTCGGTGAT GA CGGTGA C A- ACATG
GGAGCCTGTGGAAAGACATG AACTGGT TTGT TGGAG CTGTGG AAG
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AGGACCAGTT GG ------ T CG -----
GAM13571 15858 AACTGGTGATTGTTGGTGAT GA T G-- CT GAAAGACA
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AGGACCAGTT GG T ATA TT --------
GAM13588 13923 AACTGTGCATGTCCTTCATG T- GTCCT- TA--- GAGC
GTAGGTGAGCACCAGTCTCC AACTG GCAT TCATGG GGT
ATGATCAAAAATGCCCCAGT TTGAC CGTA AGTACC CCA
T CC AAAACT TCTGA ----
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AAGATTTTTACAAGCATTTT TTGGTAA GTCTAGT TTTTAC AA
AAAAAAGAGGTGATCTGAAT - GGAGAAAAAA---- G ----------
GGTT
GAM13641 7238 AACTTGAAAGTGAACAGTAT T AG- T ACTTTCC AT ACAG
GACTTTCCTGATCCAGAACA AACT GAA TGAACAG ATG TG CCAGA
GTTTGGCCCACATCTGTTTA TTGA CTT ATTTGTC TAC AC GGTTT
ATCTTCCAGTT C CTA - ------- CC ----
GAM13657 11018 AACTTGGGACTTGGGTGGTG AC CTT--- T T ACCTCACCCCTG
GGACTGGAGACCTCACCCCT A TTGGGA GGG GGTGGGAC GGAG
GCTCCCGTCCCGCCCCCTTT T AACCCT CCC CCGCCCTG CCTC
CTATCCCAACCT CC ATCTTT - C ----------
GAM13693 6886 AACTTTTGTGGATGATTATT - GA A A AAA T AAGT
ATGTAAACGCTGTTTAAGTG AACTTTTG TG TG TTATT TGT CGC GTTT
AACGTGGGATAAAGTGGCAG TTGAGGAT AC AC GGTGA ATA GTG CAAG
CATTAGGAGTT T G- - A GG- - ----
GAM13717 14161 GGCACAAGTTGGTTTTAGCG C T CGT CCGTA
TATTTGGAACCGTATTTTAA GGCA AAGT GGTTTTAG ATTTGGAA
ATCACTGGAACTACTTTGCC CCGT TTCA TCAAGGTC TAAATTTT
- - AC- -----
GAM13721 4661 GGCACAATGTTTACTTACAC CA- A TACACAA TGT AATTAG

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        AATTACATGTAGTGAATTAG GGCA  ATGTTT CT     TTACA  AGTG
        CACTTTTGTAACTCAGAGAC CTGT  TACAGA GA     AATGT  TCAC
        ATGAATGTC           AAG    - CTC----    TT-   ------
GAM13774 16295  GGCACATGCAGGTGGTGGAG   A-  G -------  G    GACC    GAAGCACGG
        ACCTTGCTGAAGCACGGAGC GGC  CAT CA      GGT GTGGA   TTGCT
        AAACATCCATGACCAACTTT CCG  GTA GT      CCA TACCT   AACGA
        ATGATGGAGCC          AG  - ATTTCAA  G    ACA-    ---------
GAM13812 19514  GGCACCCCAGACACCTTCCT  C  C  AC--    CC      AGGGC
        TCAACCCAGGGCGGGTTGGA GG ACC CAG   ACCTT  TTCAACCC
        CAGGGTTCCCCTGTGGTTCC CC TGG GTC   TGGGA  AGGTTGGG
                    T  T  CCCT    C-      -----
GAM13813 11984  GGCACCCCTCCCGTCGACCC   C  C   GTC  CCCACA   A  TGAA
        CACAGTTCAGTGTGAACACC GGCA CC TCCC  GAC    GTTC GTG
        GAGCGCTCGTCCAGGGAAGG CCGT GG AGGG  CTG    CGAG CAC
        CTGCC               C A   AC-  CTCG--   C  ----
GAM13814 2161   GGCACCCCTGGCCGGGCACC      ---     G  AC  ----    T-----   AAACA
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        GTTCCTTGGCATAGACCAGC CTGTGGG  GACCGG CCG  GAC   TACGG    GTCG
        GCCAGGCCAGTGTGGGTGTC      TGT    A  C-  CAGA   TTCCTT   -----
GAM13828 14274  GGCACCGTGACTGTGATCAG  G  C   CT  A    -   G   TA   ACAA  T    --   ATGT
        CCCCCTGGAGCTTATGCGGA G CAC GTGA  GTG TCAGCC CCCTG AGCT  TGCGG   AGC GCAGGC
TCAGC
        CAAAGCTGCAGGCTCAGCAT C GTG CACT  CGC GGTCGG GGGAC TCGG  ACGTC   TTG TGTCCG
GGTCG

        GTGTCGTACCGGGAGCTGGG  G  T   --  -    T   -  TG   AAGC  -    TG   ----
        TGCCTGTGTTCGAACTGCAG GTCGTACCGGGA
        TGGCTCAGGGTGGCTGGCGC
        TCACTGTGGC
                  ------------
GAM13850 5049   GGCACCTTGGAGAACTGAGA   ACC     ACT  AA   -  CCTCTATTTT  G   TG   A-     A
        ACTTGGGACCTCTATTTTGT GGC   TTGGAGA   GAG  CTTG GGA        GTT ACTT  GAGAT
CTGGAGG T
        TGACTTTGGAGATACTGGAG CCG   AACCTTT   CTT  GAAT CCT        TAA TGAG  CTCTG  GACTTCC
G
        GATTGCCACTGGAGGACCTT   ---      AC-  CC   T  ----------  G   GA   GG     A
        CAGGGGTCTCAGGAGTGAAT TG  ACT
        TCCTTAAGCCTTCCATTTCC   CC
        AAGCC              GG
                  GA  ---
GAM13853 17146  GGCACGACGGTGGGACCTTC     GAC      ------------    C  G  ACACAAAGCACACCACCAC

        CACTGCAGACACAAAGCACA GGCAC   GGTGGGA          CCTTC ACT CAG
        CCACCACCTGAGGTCGAGGG CCGTG   CCATCCT          GGGAG TGG GTC
        TTATGATTTGAATCCTACCA     AA-      AAGTTTAGTATT    C  A  ----------
        AGTGCC
GAM13856 10632  GGCACGAGGCGACTCTTAGC    AC       TCTT   T-- GT   GA-  TAA
        TTGTCGGGGACGGTAACCGG GGC  GAGGCGAC   AGC   T  CGGG   CGG
        GACCCGGTGTCTGCTCCTGT CCG  TTCCGCTG   TCG   G  GCCC   GCC
        CGCCTTCGCC           C-       TCC-   TCT TG   AGG  ---
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GAM13871 113 GGCACGGTTTTTATACATAC C T ACATAC-- A A AAACACACAC
GTACATATATATATATAAAC GGCA GG TTTTAT GT CATATATAT TAT
ACACACATAGGTATATATGA TCGT CC AAAGTA TA GTATATATG ATA
ATAAACAAAAATGAAATCCC C T AAAACAAA A G ----------
TGCT
GAM13883 13439 GGCACTAGGGACTCTTTGCA -- T- CAG T TTCCTC
GGGTTCCTTCCTCGGATCAT GGCAC TAGGGAC CTTTG GGT CC
CCAAGGCTGTCCCTACTGTG CCGTG ATCCCTG GGAAC CTA GG
CC TC TC CTA - ------
GAM13889 4956 GGCACTCACGTGGCATCAGT C A- CA CCC GC CCACG
CCCCACTGCGGTCCACGGCC GG ACTC CGTGGCAT GT CACT GGT
AGGTGAACAATGCCGCGGCG CC TGAG GCGCCGTA CA GTGG CCG
AGTCC - CG A- A-- A- -----
GAM13893 22421 GGCACTCGACACAACATTTG - ACA - ----- ACT T C- ATT
CGCTCAACTGTCTTGTCCAC GGCACTC GAC ACATTTGCG C TCA GTCT GT CACC
CATTGGTGTTGCTGGGCTTG CCGTGGG CTG TGTGGACGT G AGT CGGG CG GTGG
TGATCTACGTTGCAGGTGTA T GA- T CATCT GTT T TT ---
GGTCTGGGTGCC
GAM13900 14797 GGCACTGACTAAGCGAGGCT T- T - CTCA- GCTTCCATA
CAGAGCTTCCATATCAAATT GGCAC GAC AAGC GAGG GA
CCTCAGCTTTGTTCTGTGCC CCGTG TTG TTCG CTCC CT
TC T A TTAAA ---------
GAM13935 11465 GGCACTTTTGTTAAGTATTA A - AAGTA -- ACAGGGTCCCACAATA
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CCACAATAGGCTGTCTGCAA CCG GAG AACGA AGTTGAACG TGTCGG
GTTGAGGAGCAAGGAGAGCC A G GG--- TC ----------
GAM13959 11452 GGCAGAAGAATTTAAGAAAC ---- - -- CT CAA
TCAACTGCCAAGTGATTGGG GGCAGA AGAATTTA AGAA ACTCAA GC
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TCTGTC TCAC G CG AG ---
GAM13962 7658 GGCAGAAGCCCTGGCAATTT GCCCT AATTTT CT- GGCT
TGCACTGTGTGGCTACGCCC GGCAGAA GGC GCA GTGT
CTGCTCCTCGCCCTATTCTG CCGTCTT CCG CGT CGCA
CC ATC-- CTCCT- CCC ----
GAM14043 7338 GGCAGAGTTCCAAGACAGGA -- AGA------- ATATC CT GAAAGACA
TATCGGGTGCATCTGAGAAA GGCAGA GTTCCA CAGG GGGTGCAT GA
GACATCGTGCACTCTGGCTT CCGTCT CGAGGT GTTC CTCACGTG CT
GGCATACACAATGGAGCGTT TG AACACATACG GGT-- -- --------
CTGCC
GAM14071 11929 GGCAGCAAAATTTCGGGTTG AATTTC TTG- CTTG GA AATGC
GGAACTTGAAGAAGCAATGC GGCAGCAA GGG GGAA AA AGC
GCTAATTATTATTCCAAGTC CCGTTGTT CCC CCTT TT TCG
CCAGTTGTTGCC GA---- TGAA ATTA AA -----
GAM14076 11507 GGCAGCACAAAGGCGGCGCG CAAA C - CATC TGTAGT
GTGCACATCGGAGTTGTAGT GGCAGCA GG GGCGCGG TGCA GGAGT
ACTTCAGCTGCATCTGCGCC TCGTCGT CC CCGCGTC ACGT CTTCA
ACCTGCTGCT ---- A T CGA- ------
GAM14078 13148 GGCAGCACACTGGAGCAAAA A ACAC AGCAA A AAACCAGCACAA
GAAGAAAAACCAGCACAATT GGC GC TGG AAGA GAA
CATCTTATTACCACTTAGCA CCG CG ACC TTCT CTT

```
        GCC              A ATTC  ATTA-  A  ----------
GAM14086 8000  GGCAGCAGGCCACAGGGCAG       CCACAG  A-   ---- A ATCT
        AACTGACCATCTGGGCACCG GGCAGCAGG    GGC  GAAC   TG CC
        CGTTCCAGCCACCAGCCCTG TTGTCGTCC    CCG  CTTG   AC GG
        CTGTT                CGACCA  AC   CGCC  G ----
GAM14098 14898  GGCAGCCAGTCATTACTAGT    CA   TTAC--     TCTGC  AGATCA
        ACCTCTGCGGGAGATCATCC GGCAGC  GTCA    TAGTACC    GGG
        GGTGCTAAAACATTGACAGT CCGTTG  CAGT    ATCGTGG    CCT
        TGCC               A-  TACAAA     -----  ------
GAM14123 7793  GGCAGCCTGGAGGCTGAAGA   G C  AGG-  AAG       ---  G  ATG
        GTGGGTGAGCGGGCGGATGC GGCA C TGG   CTG  AGTGGGTGAG  CGG CGG
        CGACCGATCTTCATTCACTG CCGT G ACC   GGC  TCACTTACTT  GCC GCC
        CGGAAGGCCAAGTGCC       - A  GGAA  G--       CTA  A  ---
GAM14135 263   GGCAGCGCAGGTGGCCTATC   A    GTGG  A   ATG----   A-  TAGTGC
        AGATGTGGGAACTTAGTGCA GGC GCGCAG   CCT TCAG     TGGG  ACT
        GTGGCCCGAGTAGAGCTGAA CCG CGTGTC   GGG AGTC     GCCC  TGA
        GGGAACTGTGCGCC       -    AA--  A   GAGATGA   GG  ------
GAM14141 11505  GGCAGCGGATGAATATTGGG    G  GAATATTGGGAAG      AGCTG
        AAGCTCTAGATTAGCTGAAT GGCAGC GAT          CTCTAGATT
        CTGGAGGAAAAGTCAGTTGC CCGTTG CTG          GAGGTCTAA
        C                  A  AAAAG--------       -----
GAM14149 17634  GGCAGCTAAGGAAATTGAAG  C  TAA   AT   TTG      CGGAAA
        TTGGTGGTGGTCGGAAAGCT GG AGC  GGAA  TGAAG  GTGGTGGT
        ATCATAATCTTTGTTCCCGT CC TTG  CCTT  GTTTC  TACTATCG
        TCC              -  C--  --    TAA      ------
GAM14155 11393  GGCAGCTCTGGCCCAGACAT         CC---  ----------------     ATACC
        GAATACCTCGTGTTCCTCCT GGCAGCTCTGG    CAG             ACATGA
        CCCTCTATTACTGTTTCACC CTGTCGAGACC    GTC             TGTGCT
        AGAGCTGTC                ACTTT  ATTATCTCCCTCCTCCT     -----
GAM14163 22614  GGCAGCTGCTGCGTGGATGT     TGCT -  A T   - T  -   A T A T   CTCTCATACAT
        GCTGGGTGCTGAGCAAGCTG GGCAGC   GC GTGG TG GCTGG G GCT GAGCA GC GG GC CAGG

        GAGCTCAGGCTCTCATACAT CCGTTG   CG CACC GC CGACC C CGA TTCGT CG CC CG GTTT

        TTTGGCCCTGCCTGCTTAAG     CC-- T   C C    T C  A   C  T - -   ----------
        CCCTCCAGCCCGCCCACTGC
        CCGTTGCC
GAM14245 2144  GGCAGGAGCGGTCCGGAGCC   AGGA  G   G  -      GCGTG
        GGCTGCGGCGTGTGCGGCCG GGC   GC GTCC GAG CCGGCTGCG
        GCCTTGGGACAGCGATCGCC CCG   CG CAGG TTC GGCCGGCGT
                    CTAG  A   G   C       -----
GAM14274 2086  GGCAGGCATTCACCCTCAGA       -  A   - -  GCTTG    ATGAGA
        AGCTTGTACCAATGAGATGG GGCAGGCA TTC CCCT CA GAA    TACCA
        TAACATTCTTGCAGGGCGAG CTGTCCGT GAG GGGA GT CTT    ATGGT
        CTGCCTGTC              C  C   C  T  ACA--    ------
GAM14281 13333  GGCAGGCCTGGAAGTCCCCG  C   C   A TC      TC    TTTGTCTTGACT
        TGGGTCAAGCATTTGTCTTG GG AGGC TGGA G  CCCGTGGG  AAGCA
        ACTTGCTTTCCTCGCGGGTC CC TCCG ACCT C  GGGCGCTC  TTCGT
        TCCAGCCTCC          -   -   - T-      CT    ------------
GAM14290 4844  GGCAGGCTAGAGATTTCACC   - CT   TT   CATT  T       TA   AG  CAG  TTACC
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CATTTTGTGGGCTGGAGTTA GGCA GG AGAGA TCACC TTG GGGCTGGAGT CCAGT CTC CAG

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CCTGAAGAGAGATTGGGCTT A C- T- AC-- T -- GA AA- -----
CAGCCTTCAGCAGGTGGTTC
TCTCCCATGCC
GAM14302 14270 GGCAGGGAAGAAGATTCCGG A--- GATT AAT CT-- TGAAATCATGT
AATGCAGACTCCCTGAAATC GGC GGGAAGAA CCGG GCAGA CCC
ATGTGGGTTTTTTTGTTGCC CCG CCCTTTTT GGCC TGTTT GGG
GGTTTTTCCCATAAGCC AATA ---- GT- TTTT ----------
GAM14352 16267 GGCAGGGTGGCCTCAGGGAG -- CCTCA GATTC CC CCCAAA
ATTCCAGGCCAGCCCAAACT GGCAGGG TGG GGGA CAGG AG
ACCCTGCATCCCAACCCCCA CCGTCCC ACC CCCT GTCC TC
ACCCCTGCC CA CCCAA AC--- CA ------
GAM14356 22883 GTTCACGGCCTTGCGATCCT T- --- TCTT-- T-- ACTGTGA
CTTTGGGTTGGTCACTGTGA GTTCACGGCC TGC GATCC TGGG TGGTC
GATCATCCCCCACTACCTGG CAAGTGTCGG ACG TTAGG ACCC ACTAG
ATTCCTGCACTGGCTGTGAA TC TCC TCCATC CCT -------
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GAM14366 17341 GTTCACTGACAAACATGGGG GACAAACA GCCCA GGC- AACCT AG ACC
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AAACCTGGCAGTGATACCAT CGAGTGA ACCTCTTTATA CGA ACCT CCG ACTA
CAAGCCTGATGTCCAAAAGA AGACGA-- AGAAA GAAA GTAGT A- ---
GCAAAGAATATTTCTCCAAG
CAGAAGTGAGC
GAM14403 5188 GTTCAGGAAAAACTAAGTTC AAA- TAA -- A A - A TTAAAATAAAAAATCAT
CCATTACTTCCAGATTATTT GTTCAGGA AC GTTC CC TT CTTC CAG TTATT
TAAAATAAAAAATCATGATG CGAGTCCT TG CAAG GG AA GGAG GTT AGTAG
ACTTGTGAGGAAAAGGAAGA AGAC TA- AA A A T C ----------
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GAM14411 19621 GTTCAGGTAATTCCGATATT A TCCGA C G CAAATCATGA A TTT TTA
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AATATAATTCAACCTTTGCA CAAGTCCA TA ATAGAT GGC CAAC TGTA TGAGTTGG TGTAG

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TTAGATAACAGTATAACCTG
AAC
-
GAM14443 2093 GTTCATCTCAGCAACAGACA GCAA- GACACCA A AAGAA
CCATCCGGAAGATGAAGAAC GTTCATCTCA CA TCCGGAAG TG
GATTTCCGGAAGATGGAGGA CAGGTAGAGT GT AGGCCTTT GC
TGAGATGGAC AGGAG AGA---- A -----
GAM14474 532 GTTCATTACCTTAGCTATGT CATTACCT A ---- GAACCAAATTAC AACAAAAGAAACA

ACTTAATGAACCAAATTACC GTT TAGCT TGTA CTTAAT CCA
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ATATAAAAATGTTAAGAATT TAAAACAT A TTAA TAAAAATATAAC ----------

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          TACAAAGCTGTACAAAATAA
          C
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          CAGACTGGCTGGTTGACGGT GTT   AGCCC TG GC   CCAG C  GCTG
          TGGCTGGTGGCCCATGGGCT CAA   TCGGG AC CG   GGTC G  TGGC
          TCCAAC              CCT    T  C  GT-    - GT   -----
GAM14537 16949  GTTCCAGTTCACGCCAACAC   C      GCCAA   T    G  CCAG
          ATGTGGGGCTCCAGAGACTC GTT CAGTTCAC    CACA GTGGG CT
          ACTGTGGAAGTGGACTGCAA CAA GTCAGGTG    GTGT CACTC GA
          C                C      AAG--   -    A  ----
GAM14540 2108   GTTCCATATACAATAAGAAC   C        -------    CCCA  TTTA
          CCACCTTTAGGATTTTCTTT GTT CATATACAAT      AAGAA   CC
          TAGAAAATTGTATATGCAGC CGA GTATATGTTA      TTCTT   GG
                          C        AAAGATT    TTA-  ----
GAM14584 14958  GTTCCCGAGCACGGTCGGGA   -  A    --  G   ACCG  A  AGGAA
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          CACACCATCACGATCCCGTG CAAG GGC CGTGCC  AGC CTAC   CC AG
          CGCGGTGAAC           T  G     CT   A   CACA  A  -----
GAM14586 19726  GTTCCCGCATCTGGAGTACA   T  C  A      ACA  A  A  C   GAAA
          GGAGTATTCGGGGAAACCTC GT CC GC TCTGGAGT   GG GT TT GGG
          AACACCCGGCTTCGGAAGCT CA GG CG AGGCTTCG   CC CA AA TCC
          GGAC              -  T  A      G--  -  C  C   ----
GAM14600 5200   GTTCCCTGCCGAAGACTGGG      TG---  GAAGA TG     -  TTAGATGAAGATGAAGAT
          CGTGGCTTAGATGAAGATGA GTTCCC    CC    C  GGCGTG GC
          AGATGCACATGTCTGGGAGG TAGGGG    GG    G  CTGTAC CG
          ATAATGGGGAT             TAATA  AG--- GT     A  ------------------
GAM14608 12010  GTTCCGATGGTGTCTTAGAT    -  T   TCTTAGATGTT   T  T   TCTGGTT
          GTTGGGCTGATGAGGTCTGG GTTC CGA GGTG         GGGC GA GAGG
          TTCCTCTCGCTTCACCTTCG CGAG GCT CCAC         TTCG CT CTCC
          AGAGC               A  T   -----------   -  -   -------
GAM14649 10552  GTTCCTCGTAATTTTCGCTT   T  -   AATT   G   G   GAAGAA   GAAG
          GTTGGAAGAACTTGAAGAAG GT CC TCGT    TTC CTT TTG     CTT
          GACAAAAAGGAGTAGGCGAC CA GG AGCG    GAG GAA AAC     GAA
          GGTAC              T  C    GAT-  -  A   AG----   ----
GAM14674 21952  GTTCCTGGGGCCTTGCCGAA    -   GG     CGAAAT    TACACCTC
          ATGCCGGTACACCTCTCGGC GTTC CTGG  CCTTGC     GCCGG
          CCTTGCGAGGACCGGAGAGC CGAG GGCC  GGAGCG     CGGCT
                          A   A-     TTCC--    --------
GAM14680 5201   GTTCCTGTGTTAGTTTGCTG       G TAG    TGA   G   TTTCCAGCTTCAT
          AGGATGATGGTTTCCAGCTT GTTCCTGT T   TTTGC   GGAT ATGG
          CATCCATGTCCCTGCAAAGG CAAGGACA G   AAACG   CCTG TACC
          ACAGGAAC                G ---    TC-    -   -------------
GAM14702 2446   GTTCCTTTTCTATGCGGCCC       TT  A-     CCGA   -   ATG
          GAGCCGGCCATGGGCCAGGT GTTCCTT  CT  TGCGGC    GCC GGCC
          GAAGCTGCAGCAGTAAGGAA CAAGGAA  GA  ACGTCG    TGG CCGG
          C                   T-  CG     AAG-  A    ---
GAM14737 10608  GTTCGTAATTAAGAGAAGAA       ATT         CCACCAAATGA-      CGTAAA
          ACCACCAAATGAGCATATGC GTTCGTA   AAGAGAAGAAA          GCATATG
          GTAAATATATGCAGTAATGA CAAGTGT   TTCTTTTTTTT          CGTATAT
          AGTCTTTTTTTTCTTTATGT       AT-         CTGAAGTAATGA      ------
```

GAAC
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GAM14758 11526 GTTCTACCCCAGAACATGAC TACCCC- TGACTA CACGC
TACCACACACGCTGTGGCTA GTTC AGAACA CCACA
TTTTGTTTTATACATTGAAC CAAG TTTTGT GGTGT
TTACATA TTTATC -----
GAM14773 22576 GTTCTATAGAGTTTACCCTT ATA ACCCTTACC ---- ---- - AA TT C -
ACCTGTGTCGGGCCTTGAAA GTTCT GAGTTT TGTGTC GGGC CTTG AA CA CGT AAAGA
C
ACATTCGTCAAAGACCGTAA CGAGA CTTAGA ACACAG TCCG GAAC TT GT GTA TTTTT G
AGAGATCCCTCTTGCCAAGG G-- --------- ACCA TCCA C AC T- - A
ATTTTTATGTTGCATTCCAA GTA-- ATCC
GACCTGCCTACCAGACACAA C AAGAG
GATTCGAGAGC G TTCTC
AACCG ----
GAM14817 2119 GTTCTCTAGAAGTATGTTAC A- TA AC GC--- TAAA
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AAAAATACGCTTTGAGGAGA TAAGAGG TTTC ATAA AC AGA
AT AG GC AA ACTTT ----
GAM14885 11903 GTTCTGGCATACATGTGCAT GCA C CGA CT - CTTT C AACCTCCTTTTC
CGATCCTCCTTTCCCTTTAG GTTCTG TACATGTG AT TC CC TTTCC AG AC
CACAACCTCCTTTTCGTCCT CAAGAC GTGTACAC TA AG GG AAAGG TC TG
GGAAATGGCAGAACATACAC --- A CA- AC T ---- C ----------
ATGTGCAGAAC
GAM14892 15223 GTTCTGGGTCCCATGGCCAG T -- C- ATACCCC --- GGAGAA
TGAATACCCCTGGTCCGGAG GT CTGG GTCCCATGG CAGTGA TGG TCC
AAGGAAAACCATCATTGCAT CG GACC CGGGGTACT GTTACT ACC AGG
CATGGGGCAGCCAGGC - GA AC ------- AAA ------
GAM14893 11649 GTTCTGGTAATCCTACACAG - AAT ACACAGTTT CC- TTTT
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GAM14895 15079 GTTCTGGTGAATGCTGTCTA GG- AAT- C TT AGGAAA
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AACAGTTTGACAAGGAGAAC CAAGA AC TGACA GTA GTC
GGA AGTT A GG ------
GAM14906 15642 GTTCTGTATAAACTGGTGGA ATAAAC-- T ACA TTCCTTTGTT
CAGTAAGTTAGTTCCTTTGT GTTCTGT TGG GG GTAAGTTAG
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TTCACCGCAGAAT CCACTTCA - GAA ----------
GAM14927 17194 GTTCTGTTTCTGGTGTTGTT T - G TT ATTATGC
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ACGGGACCATGGAACAGTGC CG GACAAGG ACCA GGCA GTAGT
T T G CC -------
GAM14935 11910 GTTCTTAGTGGCCAAGTGCC TA CA G- GT AGCA C A ATCAGC
AGGTGGCTTCAGCAGCTTCC GTTCT GTGGC AGT CCAG GGCTTC GCTT CT CG
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TCGAGAAC
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CTTGATGATTTGCTCCCAGA CAAGAG ACCC CGT TAGTA GTT
GAAC ---------- T T - ------
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CTTGCCAACCACAGGGACCA GTTCT TGG GCTC CTTC CAC GGG CCA AGCTG
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TCACAAAGTGTGGTGACAGG GTT TTGTC GT AGAGG GTCAC
AGCCTCTGACGGGACGACTA CAA AGCAG CA TCTCC CAGTG
AC TC GG G GAGGA --------
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GAM15017 47 TGCTTACTACAGTGGATGAT - ACTA ---- TG GAATT GCAA
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ACA A AAG- CAGT GT AT--- ----
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GAAGACTTAGAAGAGTA AA-- --- C GA-- ----
GAM15040 13434 TGCTTAGTAATTTCTGGTCT A TTCTG CA AATTAT TTTACT
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GGACAATATATAACTGGGTA A TATAA AA AAATTT ------
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AA- --- T ----------
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TCATAAGCA
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TCCTAAGTGGCA T ATCC - CTTGC T - ---

GAM15209 16913 TGCTTTAAATGCTCCCTGCC TTAA- CT GG TG T GTCC
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CATGGCACGGCA CACGG T- A- GT - ----
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GCA - C--- - -- TT ------
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GCA A AAGACA TTAATG -----
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GATTGTTCCA AGGACTT T TCTTCTT -----
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A ---- A A - GGT -----

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TCCA - AAA TTCATG AT- ----
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GCTAAACAGCAAAAGAGAGT ACCTTC TT ATTA GCATTGA AACG ATC
TACGAATTACGTTACTTCCA A GC A-- GAGAA ACAA ---
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TCCA - G T GT C - -------
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TCTTTTCCA
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TCA
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CA AT TATT C ----------
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TCTTTAGAATTCTTAAGTAT ATCTTAT AATT TTAAGATT ACCAT
TCTA G C TCTA- ---
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TTCAAAAAGCCACAGTCTCT ACC TAAGG TAT GTC TGG GAACCA TCTGA
GACCAAGTGGTCTGATATTT G TT A- -- T GTC ----------
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AACAATAGTCAAAACTCACA ACT AAAC TTTTT ACC GTAAAAACC TTTTT TTTGT GT AG

TGGATAGAGTGTGTTTGTTT CC CC CAG CC GT G - G ----------
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CTTTTTCCCAAACCTCA

GAM15625 13818 TGGACAAACTGTTTGAGGCT ACAAA TGAG - --- AAACCTCTA
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GTGACAGGACCA AG--- ---- C GAA ---------
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TGATTCTCGTGGCAAACGTG AATGGG GAGGAGAT ATT TTCT GGC CG
AATTTGATAGGCCTAGTGGA TTACCC TTCTTCTA TAG AAGG CCG GT
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CATT
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AACACATT A- TC - A GA- -----
GAM15773 18313 AATGTTAAATGATAGTACGC AAAT- A A ------- ATT
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TGGGGTTTAACCATGTTTGT TTACAA CTG TA GTGTTTGT TGGGGTTAC
GCATAGTCTGCAGAACATT GACGT A C ACCAATT ---
GAM15917 1171 AATTCAGAGTTAATTACAAA G - TTACA GT- CAAAA
TTCAGTTGAAACAAAATTTC AATTCA AGT TAA AATTCA TGAAA
AGTTTGGATTAAATTTACAC TTAAGT TCA ATT TTAGGT ACTTT
TGTGAATT G C TAAA- TTG -----
GAM15952 3876 AATTCTCAAAGGTGCTAGAA CAAA T AATC CCACTTCT
CAAATCGTCCACTTCTACAG AATTCT GGTGC AGAACA GT
TGTTCTCGTATCCAACAGAG TTGAGA CTATG TCTTGT CA
TT CAAC C GA-- --------
GAM15982 20395 AATTGAGTAGTGAAAGGAAG A AGTGAA - GG-- AAGGAAATTAAATG
GAGGAGGAAAGGAAATTAAA A TTGAGT AG GAA AGGAGGA
TGTCCTTCTAGTATTCTCTG T AACTCA TC CTT TCTTCCT
GACTCAAGT G GG---- T ATGA ----------
GAM16007 12382 AATTGGATTATTAGATTGTT T T- T TT- TATTAAGT
TTTCGTATTAAGTTGTCTAA AATTGGA TA TAGAT GTTT CG
GCTATTTACTTATTCTAGTT TTGATCT AT ATTTA CGAA GT
T TC T TCT --------
GAM16073 8991 AATTTCAGCACCCAGCAAAT - - CC------- A GCACTG
AATAGGCACTGTTAATATTT AATTT CAGC AC AGCAAATA TAG
GCTTAATATAACGTAGCTGT TTAAG GTCG TG TCGTTTAT ATT
GAATT T A CAATATAAT A ------
GAM16116 1156 AATTTGTACTGTCTGCGGCA A G CG- TTTTT - A TAGTGACT
TTTTTTATAATATTGTATAT AATTTGT CT TCTG GCA TATAATATT GT TA
AGTGACTTGACAAATATTGT TTGGACA GA AGAT TGT ATGTTATAA CA GT
ATTACTGTACATAGAGAGAC - G ACA CATT- A - --------
AGGTT
GAM16125 20783 AATTTGTGTTTTATATACGT - ATA GTATATC T AATAATA
ATATCTCTTTTGTAATAATA AATTTGTG TTTT TAC TCTTT GT
GCCAAAGAAAGTAAAAATCA TTAAATAC AAAA ATG AGAAA CG
TAAATT T --- AA----- C -------
GAM16141 19957 AATTTTATACTTTTAATTTT AC - T T - ATTT
TTTTGTATTTGAAATTTTTC AATTTTAT TTTTA ATT TTT TGTATT TGAA
ATAATACATAGATGATATAA TTAGAGTA AAAAT TAG AGA ACATAA ACTT
AAATGAGATT -- A T T T ----

GAM16178 12638 AATTTTTATTTTGGTTTTCT A TG TT AAG ACATTTTCCA
TACAAAGGTTGACATTTTCC AATTTTT TTT G TTCTTACA GTTG
ATAACAGGTGTAAGAGTGTT TTAAAAA AAA T GAGAATGT CAAT
GAAAAAAAAATT A GT GT GGA ----------
GAM16188 14004 AATTTTTGTTCAGGAATGAC TT TCAG A TG C T G AAAAATA
TTGCTCATTCTGTGTTTTTA AATT TGT GA TGACT CT AT CT TGTTTTT
AAAATAGGAAATAAGGCATA TTAA ACA CT ACTGA GA TA GG ATAAAGG
GTGAGTCATCATTACATCAA CT TTA- - GT - C A -------
TT
GAM16192 20161 AATTTTTTTATTCTACATAA ------- CATAAAA ---------- AGTT
AAGCTGTCAAAGTTTTGACA AATTTTTT TATTCTA GC TGTCAA
CATCAAAAATGCAAAATAAT TTAAAAAA ATAAGGT CG ACAGTT
GGAATATACTTTAAAAAAAT ATTTCAT AATAAAA TAAAAACTAC ----
T
GAM16214 8736 ACAAAAAGATGTAAATTGTG A- AATT GA AAACA TATGTTAT
ACACCAAACACATATGTTAT ACAAAAAG TGTA GT CACC CA
TGGGGGTGGACTATGTGCAG TGTTTTTC ACGT CA GTGG GT
ACTTTTTGT AG GTAT G- GG--- --------
GAM16251 21124 ACAAAATATACACTAACTTA AC-- A AACAAA TT G AAA
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ACATAAAATGTTATATTCTC TGTTTTATG TGG TGAATTTT TCT TAT ATTGTA
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TTTTGT
GAM16286 6525 ACAAAGACATGAAAGCTAAA ----- A C TCAAGAGCTTTT
AAAGAAAACACCTCAAGAGC ACAAAGACA TGAAAGCTAAAAAAG AAA ACC
TTTTGGTTTTACTTTTTTGG TGTTTTTGT GTTTTTGGTTTTTTC TTT TGG
TTTTTGTTTTTTGTTTTTGT TTTTT A - ----------
GAM16341 2308 AAGAAATAATGCAGCTACAG AA-- CTAC CAAA AATTACTA
GAGCAAATTAAATTACTATA AAGAAAT TGCAG AGGAG TTA
AAACATTCCTTCATCTGTAA TTCTTTA ATGTC TCCTT AAT
AACATTTCTT CAAA TACT ACAA --------
GAM16344 14887 AAGAAATAGTTTTAAGTAAC A TTTT- TTTT G A TG TAT GTAATCTAA
TTTTTATAGCAAGATGATAC AAG AATAG AAGTAAC TATA CAAG TGATACAA G GAGT
AATGGTATGAGTGTAATCTA TTC TTATT TTCATTG GTAT GTTC ATTATGTT T TTCA
AACTTCCTTGTTGTATTACC C TTATT TC-- - C GT CC- ---------
TTGTATGCTGTTACTTTTAT
TTTATTCCTT
GAM16346 14255 AAGAAATATGCAAAGAAAAA AA CA- A AAA---- CAA
AAGAAAAATGCAGCAATTGC AAGA TATG AAGAAAA AAG AATGCAG
GTTAACACGACTTATTTTCT TTCT ATAT TTCTTTT TTC TTGCGTT
TCCTTATACTCTT C- TCC A AGCACAA ---
GAM16363 4879 AAGAACACAGCATCCCTGCC AC AGCA GCCTCGTC AGATA
TCGTCTTTTTTATAGATAGT AAGA AC TCCCT TTTTTTAT
AAGAAAAGGGAAAGTAGTCT TTCT TG AGGGA AAAGAATG
T GA AA-- -------- -----
GAM16416 4880 AAGAAGGTGATGCCGAAGCT AG G- ------- GG- GAAATTA
GAGGTCGGAAATTACGAAGA AAGA GTGAT CCGA AGCTGA TCG
TCAGCTATCAAACTTGGAAA TTCT TACTA GGTT TCGACT AGC
TCATGTCTT G- AA CAAACTA AGA -------
GAM16417 16367 AAGAAGTAAGCCTTTATTTC G TTTATTT TT CAAA

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        CTTGTTTTGCAAATAAAACT AAGAAGTAA CC      CC  GTTTTG
        GGCTAAGTTGGTTGCTTTTT TTTTTCGTT GG      GG  CAAAAT
                           - TTGAATC  T-     ----
GAM16447 15572  AAGAATTAAACTAATGAGAA         CTAA    ACC   G   GCGGA
        CCGAGGCAGGCGGACTGACT AAGAATTAAA    TGAGA   GAG CAG
        CAGATTTTAATTTTGATTTT TTTTTAGTTT    ATTTT   CTC GTC
        T                    TA--     AGA   A  -----
GAM16482 10563  AAGACAGTATGAGTAATGAT    -     GAGT   -       G --     G   CTT   TGA   TCTGGCTC
        AATTTTTAGAGGCATTAGGA AAGA CAGTAT    AATG ATAATTTTTA AG  GCATTA GAT   GAT   AAT

        TCTTGATTGAAATTCTGGCT TTCT GTTATA    TTAC TGTTAAGAAT TC  TGTAGT TTG   CTA   TTG

        CTGTTGTATCCTGTTGTGAT    A     AT--   G        G  AC     G   TC-   TG-   --------
        GTCACTGTAAGAATTGTGCA T
        TTTAATATTGATCTT

                    -
GAM16498 12068  AAGACCAGTCAGTGGTTGCT     CA   AGTG  T       CCA     TGGC
        CCTACCCATTCAGTGGCCTG AAGAC  GTC    GT GCTCCTAC   TTCAG
        AGCAGTGGGAGCTGCAGACC TTCTG  CAG    CG CGAGGGTG   GAGTC
        AGTCTT               AC   A---  T       AC-     ----
GAM16511 7172   AAGACGACTCCATGTTTTTT       CT    GT    TTAA   TTCAA   --    GGATGTAA
        TAATACTTCAAACACATTGG AAGACGA  CCAT  TTTT    TAC     ACA  CATTG
        GATGTAACAATGAATGTCAA TTTTGCT  GGTG  AAGG    ATG     TGT  GTAAC
        CTGTAGGAATGGTGGTTTCG       TT    GT    ----   TCAAC   AA    --------
        TTTT
GAM16527 2151   AAGACTCCATGCCCAAGTGC        AT  CCA---  T    GTAATCCCCCCCCTCA
        CTGTAATCCCCCCCCCTCAAG AAGACTCC  GC     AG GCCT
        GCCCTGTTTATGTTGGGAGT TTCTGAGG  TG     TC CGGA
        CTT                  GT  TATTTG  C   ----------------
GAM16528 1853   AAGACTCCTTTTCAGAAGCA    CT    TT     ------------   CTGTT
        GCCTGTTGCTGATTGCCTCC AAGA  CCTT  CAGAAG         CAGC
        TTCCTTCTGTAAGGCTTCTT TTCT  GGAA  GTCTTC         GTCG
                        TC   T-     CTTCCTCCGTTA   -----
GAM16557 19730  AAGAGAAAGCATACGTTACA    A  AAGCATACG       ACATCCTCAAATAACCAG
        AGCACATCCTCAAATAACCA AAG GA        TTACAAGC
        GGCTTGTGAAAAAATAAGTC TTC CT        AGTGTTCG
        CTT               - GAATAAAAA      ------------------
GAM16565 11551  AAGAGAAGTGAGACAAACCA     -       CA   CATCTAATA  TG     -   ATTAATA
        TCTAATATCTGTATCATGCT AAGAG AAGTGAGA  AAC        TC  TATCAT GCT
        ATTAATAGGCTGTGATGTTG TTCTC TTCACTCT  TTG        AG  GTAGTG CGG
        AGTTTCTCACTTACTCTT       A       --  --------- TT     T  -------
GAM16568 10069  AAGAGACAGCTTTACAGGGC         CTT   AGG   ATGTC       CAAAGAA
        CATGTCAGAATATGTCAAAG AAGAGACAG   TAC   GCC    AGAATATGT
        AAATATATTTTTGGGTAAAG TTCTTTGTC   ATG   TGG    TTTTATATA
        TACTTCTGTTTCTT             TTC   AAA   GT---       -------
GAM16573 16112  AAGAGAGACCAGTCAGTCCT    A   ACC   C   CCTAA      AAATGAA
        AATGTGAGTAAATGAAATTT AAG GAG   AGT AGT     TGTGAGT
        ACAGGTAACTTACTTACTCC TTC CTC   TCA TCA     ACATTTA
        TT               -  AT-   T   ATGG-      -------
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GAM16588 22029 AAGAGAGGCTGGACGGCTGT A G T ACA--- TGCTCT
ACAGCATTTGCTCTGATGTA AAGAG GGCTG ACGGC GT GCATT
TGAAGGCCGCCGTGTGGCCA TTCTT CCGGT TGCCG CG TGTAG
TTCTT A G C GAAGTA ------
GAM16681 4545 AAGAGTACTGAAACAAGGAC T T GA TCTTG- ACAGC
TTCTTGTCAGAAACAGCTTC AAGAG AC GAAACAAG CT TCAGAA
TGGAATCTTGGGTTTTGTTT TTTTT TG TTTTGTTT GG GGTCTT
TTGTTTTTT - T TG TTCTAA -----
GAM16683 16377 AAGAGTAGGATGTCTGCTGA GAT G GAAG C-- T AAGAAG
AGTCATCCATCAGGTTGAAG AAGAGTAG GTCT CT TCATC ATCAGGT G
AAGCACTTGATACAGATGAG TTCTCGTC TAGA GA AGTAG TAGTTCA C
AAGGAGATGCTGCTCTT G-- G AG-- ACA - ------
GAM16689 11286 AAGAGTCTCTCTCCCTCCTT G T C T TGT AG AAT TC TGGACTT
GTGTTCTAGTCTGTGAATGG AAGA TCTC CT CC CCT GTTCT TCTGTG GGC ACACT
CTCACACTTGGACTTAGTGT TTCT AGAG GA GG GGG CGAGG GGGTAT TCG TGTGA
AGGCTCCTATGGGAGGAGCG A T T C --- A- CC- GA -------
GGCGGTAGTGAGAATCTT
GAM16726 6969 AAGATACTGAAGAACTACCA TG AAC- -- A-- A GCATG
GGCCAGTATCTGCATGAGAA AAGATAC AAG TACC AGGCC GT TCT
CAAAGGCCTAGGGTGATGAT TTTTATG TTT GTGG TCCGG CA AGA
TTTGGTATTTT GT AGTA GA AAA - -----
GAM16740 15239 AAGATATTAATGAAAACTAA A GAAAA-- AT - ACGCAC
TTGAAAGTACGCACACTTCT AAGAT TTAAT CTA TGA AAGT
CATGTAGGAACAAAATTAAA TTTTA AATTA GAT ACT TTCA
ATTTT A AAACAAG GT C ------
GAM16743 7935 AAGATCAAATGACAGTCGAA TCAAA AGTCGA AATTGA AATCTA
CTCAGAAATTGACCAATCTA AAGA TGAC ACTCAGA CC
GGCCTCTGAGTGTCAGTGTT TTCT ACTG TGAGTCT GG
TCTT TTGTG ------ CC---- ------
GAM16754 2280 AAGATCCTTCTATTTGGGTC ---------- TA- T TTTG
GCATAATTTGTTATGCGCCC AAGATCC TTC TTTGGG CGCATAA
CAGAATTGAAACGTAATATA TTTTAGG AAG AGACCC GCGTATT
TGGATTTT TATATAATGCA TTA C ----
GAM16774 13387 AAGATGAATGGATTAAGTTT AA--- ATTAA - A AAA
GATGATGACAAAGTCAGCAT AAGATG TGG GTT TGATG TGAC
CGTAACACCAGAAGATATCT TTCTAT ACC CAA GCTAC ACTG
T AGAAG A---- T G ---
GAM16786 15423 AAGATGCTACCCAGCATCTT AC- CA C C TG T GGATA
TAAACCAGCTTGGTGCGGAT AAGATGCT CCAG TCTTTAAAC AG T G GC
AGTCTGACTAGTTTAAGGAG TTCTGCGA GGTC AGGAATTTG TC A C TG
ACTGGCGAAGCGTCTT AGC AG A - GT - -----
GAM16787 11735 AAGATGCTGCGGAATCTGCT - AATCT TG- CT AGATTGGGCAGAG
GGCTCTTCGTCAGATTGGGC AAGATGC TGCGG GC GCT TCGTC
AGAGGACGATAAGCACTGCT TTTTACG ACGCC CG CGA AGCAG
TCCCGCAGGCATTTT G CTT-- TCA AT ----------
GAM16811 14135 AAGATTAACTACAAAGATAA CT- A- AAC AAAATAAATAAATAAATA
ACATGGCCAAAAATAAATAA AAGATTAA ACAA GATA ATGGCCA
ATAAATATGGCCATATGTCC TTCTGATT TGTT CTGT TACCGGT
GTTGTTGCTTAGTCTT CGT GC A-- ----------
GAM16813 15698 AAGATTACCTAGGAACAGTA AT T GAACA C ------ - GTTA

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        CGATTTGGGGTTATCACAAA AAG  TACC AG    GTA GAT     TTG GG
        TAAACATCTTGCGAAACTGG TTC  ATGG TC    CGT CTA     AAC CT
        TATCCTT            CT   - AAAG-  T   CAAATA   A ----
GAM16853 17334  AAGCAAAAAGGAATGTTTTA    AAA          CAACAA    TATTAAAACATCT
        CAACAAAGCTTATTAAAACA AAGC   AAGGAATGTTTTA     AGCT
        TCTGGTTCCTGGAATATTTC TTTG   TTCTTTATAAGGT     TTGG
        TTGGTTT            G--          CC----    ----------
GAM16895 11027  AAGCACATCATGAAAAATGA    A  C       T  GTATATTTG-  ---        AGAAC
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        AAGTCTAGAAATCTTTTTTA   -  A      - AAAGATCTGA   AAC       -----
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GAM16928 15495  AAGCAGCCCAGGAAGAAATG   C   CA---       T  AAC  T  AT   TT  -    GCCAGCTG
        AAAACTCCTCTGATGTGGTT AAG AGCC    GGAAGAAA GAA   TCC CTG  GTGG  GGG GGGTCT

        GGGGGGTCTGCCAGCTGGGG TTC TCGG    CCTTTTTT TTT   GGG GAC  CGCT  CCC CCCGGG

        CCCTCCCTGTCGCCAGTGGG   C   TCCCA      T  CAC  T  --   GT  T    --------
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        GGCTCCTT
GAM16939 13498  AAGCAGGGACAACCTGGGCC      -   CCT   CCATT   AG  CTTATCCT
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        CACCAGGCACTTCCTCCTTG TTCGTCT CTGTT   TCC    GGAC  CG
        TCATCTGCTT            A   CC-  TTCAC   CA --------
GAM16962 2134   AAGCATATATCTGCTTTTTT   CA  T  T     TTTATTT       C  -   T    TTTAAAAATTTGATC
        TTATTTTGCAATTCTCTGTA AAG  TA ATC GCTTTTT      TGCAATTCT TG TATTC ATGTC
        TTCTATGTCTTTAAAAATTT TTC  AT TAG TGAAAAA      GTGTTGAGA AC GTAAG TACAG

        GATCTTGACATTGAATGTCA   AG  T  -     TTTTTTT       C  T   T   ----------------
        CAGAGTTGTGTTTTTTTAAA TT
        AAGTGATTTAGACTT

                  --
GAM17015 15054  AAGCCAGGGTTATGTCAAGG     A-   TAT   AG   -------   CAAG
        CTTCTTTCAAGGAGGCTCAT AAGCC  GGGT   GTCA  GCTT      CTTT
        AAAAGCAGTGACCTCATCCG TTCGG  CCTA   CAGT  CGAA      GGAG
        GGGCTT              GG   CTC   GA   AATACTC   ----
GAM17061 22904  AAGCCTCATAAGATCATAAG   C   T-      TAA---      GTATATAT   TTTCAC
        GAAAATGTATATATGCTTTT AAG CTCA  AAGATCA     GGAAAAT       GCT
        CACAGCTTTCTAGAATTTTT TTC GAGT  TTTTAGT     TTTTTTA       CGA
        TGACATTTGATTTTCTTGAG   A   TC      TTACAG      AGATCTTT   ------
        ACTT
GAM17063 19639  AAGCCTCCCGGGGAGCTGGG     TCCC-         ACCACA   ACGT
        ACCACAGGCACGTGCCACCA AAGCC     GGGGAGCTGGG     GGC
        CACCCAGCTCTCTTTCTTGG TTTGG     TCTCTCGACCC     CCG
        TTT                 TTCTT         ACACCA   ----
GAM17065 4668   AAGCCTCTTCCAGATCCTTA    C     AGA-    A---  C   -    GAGAA  CAAG
        TGCTTCAGGGAGAGAAGACA AAGC TCTTCC    TCCTT    TG TTC AGGGA    GA
        AGTTGGAAATCCCTAGAACC TTCG AGAAGG    GGGAA    AC AAG TCCCT    TT
        AAGTCAAGGGCAAGGGAAGA    T     GAAC     CTGA  C   A    AAAGG ----
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TGCTT
GAM17077 13154 AAGCCTTTTCCTCTACTCTC -- T--- CTCTTCC TT ATCATTTCTTCTTC
TTCCTTGTTCTGAATCATTT AAGCCTTTT CC CTACT TTG CTGA
CTTCTTCTCAGGCCAAAGTA TTCGGAGGA GG GATGA AAC GACT
GCCATGGTAAGGAGGCTT AT TACC ------- CG ----------
GAM17082 7453 AAGCGCAGGAAGAGTCCTGG CA AA-- CT----- C - -- GAGA
GGGGACCGCGGCGGGCGGGA AAGCG GG GAGTC GGGGGGA CGC GGCG GGCGG

GACCGTTGGCGCCGGCGCTT TTCGC CC TTCGG TCTCCTT GCG CCGC TTGCC
CCTCTTAATCCCGGCTTGTT AG CTTG CCCTAAT C G GG ----
CCCGACGCTT
GAM17127 1969 AAGCTCCACACATGGCAGTC TCCACA AG-- GCG GATGA
ACGGCGTCTGATGAAGAAAA AAGC CATGGC TCACG TCT
CGTGAGGTGGCCATGATGCT TTCG GTACCG AGTGC AGA
T TA---- GTGG AAA -----
GAM17162 16279 AAGCTGGTACGCCTGCAGGT T C CA AC GT AATTC
ACCGGTCCGGAATTCCCGGG AAGCTGG ACGC TG GGT CG CCGG
TCGACCCACGCGTCCGGTTT TTTGGCC TGCG AC CCA GC GGCC
- C -- -- TG -----
GAM17195 16124 AAGCTTCCTTTTGACACAGC TTCC- C - ----- ACCAT
TGGGACCATCCTTATATAGT AAGC TTTTGA AC AGCT GGG
TAGTTTTAAAAATCTTGCTT TTCG AAAATT TG TTGA TCC
TTCTA T A TATAT -----
GAM17206 11118 AAGCTTTATTCCCATTGGGT AT A G - T AAGGATAGTTAAAAAA
CCAAGGCTGGTAAGGATAGT AAGCTTT TCCC TT GGTCCA AGGC GGT
TAAAAAAGCTGCCTATGGGC TTCGGAG AGGG AG TCGGGT TCCG TCG
TGGAGGGAGAGGCTT -- - G A - ----------
GAM17231 21818 AAGGAACATGAAGATTATTG A GAA T GG CGG GAACTA
TGGTGCCCGGACGGAACTAT AAGGA CAT GATTAT GT TGCC ACG
GTGGCAACTGTGGTCGCAAT TTCCT GTA CTGGTG CA ACGG TGT
GTCCTT - ACG T -- --- ------
GAM17289 14809 AAGGACCAAGGATGGGAGGT GA AT G AA GAAACAGCAG
TTTAAAGCAGGAAACAGCAG AAG CCAAGG GGGA GTTTT AGCAG
TTGTTGAAAACGTCCCCATT TTC GGTTTT CCCT CAAAA TTGTT
TTGGGACTT AG AC G G- ----------
GAM17342 13285 AAGGAGTAGTTGTGAGCTCT - CTCT---- AAATAAAATACTCTA
ATTCTAAATAAAATACTCTA AAGGAGTAGTTGT GAG ATTCT
AGAATTTATTTCTCTCTGCA TTCTTTATCGACG CTC TAAGA
GCTATTTCTT T TCTTTATT ----------
GAM17353 7755 AAGGAGTTTTTCTCGTAGTG TTTT T TTCTCAA C TAGGCAT
ATTCTCAAAGTCTTGGTAGG AAGGAG TCTCG AGTGA AGT TTGG
CATTCGAACTGGTCCTTTCA TTCTTT AGAGT TCACT TCA AGCT
CTTTGAGATTCTTTTCTT TCTT T TTCCTGG - -------
GAM17363 13554 AAGGATCTAAACATTGAGAT CTAAAC TTAAATCA TT-- AGTTGGCA
TTTTAAATCAAGGTTTTGAG AAGGAT ATTGAGATTT AGG TTG
TTGGCACAATGTTCCTACTA TTTCTA TAACTTTGAA TCC AAC
AGTCAAGTTTCAATTAGCAC CACGAT CTGAATCA TTGT --------
ATCTTT
GAM17429 21982 AAGGCCATTCAAGTTCAAGC C TCAAG -- ACAAA TTTCA
ACAGAGATACAAATCTTTCA AAGG CAT TTCAAGCACAG AGAT TC

GAGCCCCATCTAGTTGTGTT TTCC GTG AAGTTTGTGTT TCTA AG
TGAAATATGTGACCTT A TATA- GA CCCCG -----
GAM17454 13317 AAGGCTAAAGCCGGAGCAGG T C A A TC- CCCTCTCCA
CTCTGCCACCCTCTCCATGG AAGGC AAAGC GG GC GGC TGCCA
CGTATGCCGGCGCCCGCTTT TTCTG TTTCG CC CG CCG GCGGT
GTCTT - C G G TAT ---------
GAM17464 15247 AAGGCTCCACATACTTCACA C T T - ACTTCCA- TTTCTTGTGC
AACTTCCATTTGTTTTTCTT AAGG TCCACA AC TC ACAA TTTGTT
GTGCAGCAAAGCTTTCAATT TTCC AGGTGT TG AG TGTT AAACGA
GTCGACGTTGTGGACCTT - - C C AACTTTCG ----------
GAM17471 17678 AAGGCTCTTGTAGGTAACTC TCTTGT AACTC CC GGT
TCCTCCAGTCGGTGATTCAG AAGGC AGGT TCCT AGTC
GGACCCAGCCTCCTTCTGCC TTCCG TCCG AGGG TTAG
TT TCTTCC ACCC- AC ---
GAM17479 13848 AAGGCTGTCTGGGGATAAAA ----- AAAAGTGGTA C GAATATGGG
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GGGCAGGAAGGCATCCCTAG TTCCGATA GATCCCTA GG AGGAC
TGACCATAGCCTT CCAGT C--------- A ---------
GAM17481 4911 AAGGCTTAGAGGCTGGACCA T G AGCATT-- TG GCAAGGA
GCATTGTTGGGCAAGGACTG AAGGCT AGAG CTGGACC GT G
ACTCTCCAAGGGTTTAGTTC TTTCGG TCTT GATTTGG CA C
TTGGCTTT T - GAACCTCT GT -------
GAM17482 15905 AAGGCTTCGTCTGCCAAACA CG G CA---- CAAGTGTGCC
GAGACTCAAGTGTGCCAGTC AAGGCTT TCT CCAAA GAGACT
TCCAAAAATTTGGAGAAAGA TTTCGAG AGA GGTTT CTCTGA
GCTTT AA - AAAAAC ----------
GAM17485 6825 AAGGCTTGATCTTAGAAGTT TTAGA TCAAAAT ---- ATAT
CAAAATTGTTCCATATGGTA AAGGCTTGATC AGT TGTT CC
AAGACACATTCACTGCCTGG TTCCGGACTGG TCA ACAG GG
TCAGGCCTT TCCG- CTTAC-- AAAT ----
GAM17507 4967 AAGGGAATCACGAACACAGA AT CGAA ACGTCATC ACA
GACGTCATCGTAGGACACCT AAGGGA CA CACAGAG GTAGG
GCCCTTCCTCTGTGAGACTG TTCCTT GT GTGTCTC CGTCC
TCTTCCTT CT CAGA CTTCC--- ---
GAM17528 7699 AAGGGAGGACTCAGATGCAC ---- CTC - CACTCC TG GG--- AACCAGCCAAAA
TCCCTGTGGTCTGGGCTCAA AAGGGA GGA AGA TG CTG GTCT GCTC
CCAGCCAAAAGAGCAACAAA TTCCCT CCT TCT AC GAC CAGA CGAG
GACTCCAGAAACCACTCTAC AACT CCA C CAAA-- CT AACAA ----------
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GAM17540 21826 AAGGGCAAGGGGAGCGTCTG CAAG A TCT G GGG- C CT TCC-- GTCC
TTGTGGGCGGGGGAGCGGCT AAGGG GGG GCG GTTGT GGCG GAG GG GCCT CGGAGA

GCCTTCCCGGAGAGTCCTCT TTCCC CCC CGC CAACG CCGC CTC CC TGGA GCCTCT
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AGACGCCGGCAACCGCCCCG
TCCCTT
GAM17572 17362 AAGGGGAGTTTAAACAAGTG TAAAC G -- TTTTAATGTCCT
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TGTTGACTTATGTAATTCCC TTTCCCTTAA TTCA TTG TG
TTT TGTA- G TA ----------

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GAM17586 13470  AAGGGGGCTTGGACCTGTGA          AC- GTGAC    ------   CATTT
         CTCAGTTCCACATTTTGGAT AAGGGGGCTTGG  CT   TCAGT    TCCA
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         AAGTCTTCTT                GAA  AAA--    TACGTT   -----
GAM17594 16297  AAGGGTCACGCTAGAAAAGC    TC -    A     ----------  ATCCTC
         CTTAGAATCCTCTCTCCACC AAGGG  AC GCTAGA AAGCCTT       AGA
         CCGTGAAGGTTTCTCTAGCT TTCTC  TG CGATCT TTTGGAA       TCT
         GTAGCTCTT            GA  T    C     GTGCCCCACC  ------
GAM17606 5180   AAGGTAAATAGCCATGGGTG    TAAATA     TGG     AA---    T-  AAT
         GGCCTACAAAATTCCCTGTC AAGG    GCCATGGG   GCCTACA   ATTCCC  GTC
         AATGACTTGGGGATGACCCT TTCC    TGGTATCC   CGGGTGT   TAGGGG  CAG
         GTGGGCACCCTATGGTCCTT  ------     CA-     CCCAG    TT  ---
GAM17622 13500  AAGGTATAATCCTAAAAATC    ATAATCC    - TT    TTAGCAAC
         TTAATACTTTAGCAACAGTA AAGGT     TAAAAAT C  AATACT
         TTTTGAATTTTTGTTCAACA TTCCA     GTTTTTA G  TTATGA
         ACCTT               ACAACTT    A TT     --------
GAM17623 19590  AAGGTATAGTAGTTGGTGGG     TA-      G    A   A-  CCTGTT
         TAAATAGAAACCCTGTTGTA AAGGTA   GTAGTTGGT GGTAA TAGA  AC
         CTCTGTTGCTGACTAATTGT TTCCAT   TGTTAATCA TCGTT GTCT  TG
         GGTTACCTT             TGG      G   -   CA ------
GAM17635 22478  AAGGTCACCTGCGCAGCCTG   GT -  G   -    CC----    ACAA   -   AGAGAACTACGAA
         GTCCTGGGGGACAACTGCCT AAG  CA CCT CGCAG CCTGGT    TGGGGG   CTGCC TCTC
         CTCAGAGAACTACGAAGAGA TTC  GT GGA GCGTC GGGCCG    ACCTCC   GACGG AGAG
         CGGCAGCCGCCCTCCACGCC   AG C  G   C    TCCCGC    CGCC   C  ----------
         CTGCCGGGCCTGCGGAGGCT
         GGACTT
GAM17636 10787  AAGGTCACGTGGCAATGGTC   GG   - GG A   ---     TTTGG
         TCGGGACTTTGGGTCCCGGA AA  TCAC GT  CA TGGTC   TCGGGAC
         GTGGCCGTGAAACGGTGGTA TT  GGTG CA  GT GCCGG   GGCCCTG
         TT              AT   G  AA -    TGA     -----
GAM17645 17265  AAGGTCCAAAGCTTAAGGAA       A    ---       T  CA   ATTTGAA
         ACAGTGGCCAAGTTATTTGA AAGGTCCAA GCTTA   AGGAAACAG GGC  AGTT
         AAACTGAGTTCTGTTTTCTA TTCTAGGTT CGGAT   TCTTTTGTC TTG  TCAA
         CATAGGCTTGGATCTT          -   ACA      -  AG   -------
GAM17646 22622  AAGGTCCAAATAGTGGCCAA   GT      TGG     -   CTGAGA
         GCTGGGACTGAGATCTCGAG AAG  CCAAATAG   CCAAGCT GGGA
         TTTGGGTTTGTTTGGGTTTT TTT  GGTTTGTT   GGTTTGA CTCT
                     TG      TG-     G   ------
GAM17684 7855   AAGGTGTCCAGGCCACAGTC        -----   CAC   TCAA      T  C   TTGGG
         TCAAGGGCTTTCTAGCAGCT AAGGTGTCC    AGGC   AGTC   GGGCTTTC AG AGC
         TGGGGCTCCTGAAAGTCTGG TTCCACAGG    TTCG   TCAG   TCTGAAAG TC TCG
         CTGACTCTGCTTCTCTCGGA       CTCTC   TC-   TCGG     - C  -----
         CACCTT
GAM17707 4867   AAGGTTGGCCTTAGTAGTCA    TGGCCT   -    -----   A-  T  TAGC   CACGT
         AAAACAAAGCTGATAGCCAG AAGGT    TAGTA GTCAAA    AACAA  GC GA   CAGA
         ACACGTTCTGATTTCTGCCC TTCCG    ATTAT CAGTTT    TTGTT  CG CT   GTCT
         TTGTTCCAGCTTTGACGTAT    TTGTCT    G    CGACC    CC  T  TTA-   -----
         TATCTGTTGCCTT
GAM17807 16952  AAGTAGTTGTTCCCCTTGCT    G   -  C TG   G    CACG
         CTGGAGGGGCCACGGCTTTT AAGTA TTGTT CCC T  CTCTG AGGGGC
```

GTGGAGTGATGGGTAACGAT TTCGT AGCAA GGG A GAGGT TTTTCG
GCTT - T T GT G ----
GAM17818 21864 AAGTATAGTATAGTAAATAC T- A CATAAA A A C T TCAT
ATAAACCAGTAACATAGTCA AAGTA AGTATAGTAA TA CC GTA CATAGT ATTTA TG
TTTATTGTCATTATTAAATA TTCAT TCATGTCGTT AT GG CAT GTATTA TAAAT AT
TTATGTACAGGACATAATTG TT A ACA--- A - - T ----
CTGTACTTTTACTT
GAM17857 11435 AAGTCACTCAACTTCTCTGT C- AC T CCT---- TCTC- TAAAA
GCCTTAGTTCTCTTCTTTGT AAGTCA TCA TTC CTGTG TAGT TTCTTTG
AAAACAGGGAAATAATACTA TTCAGT AGT AAG GACAC ATCA AAGGGAC
CCTACCTCACAGTGAAAATG AC AA T TCCATCC TAATA -----
ACATGACTT
GAM17903 2592 AAGTCTCAAGGCCTGACAGA - GC- C A GGGCTT TTTTT
CAGAAGGGCTTGGAGATTTT AAG TCTCAAG CTGA AGAC GAA GGAGA
TTTTCTTTACAATTCAGTCT TTC AGAGTTC GACT TCTG CTT TCTTT
TCAGCAACTTGAGAGCTT G AAC - A AACATT -----
GAM17908 22892 AAGTCTCTATTTATAATCCT - TATAATCCTCCCAC C CCCAAGT TG ACTATA
ACAT
CCCACCTCCACCTCCCAAGT AAGTCT CTATT CT CACCT AGC GG GGC
AGCTGGGACTATAGGCACAT TTTAGA GGTAA GA GTGGA TCG CC TCG
GCTACCACACCTGGCTTAAA C TTTT---------- C AAT---- GT ACACCA ----
GGTGCAGTTTTAATGGCAGA
TTT
GAM17911 15116 AAGTCTGAAACATTTTACTT G AA TT- AC ATTACACATACT AAAAGGCAGAAACA

CATATTACACATACTTTTCT AA TCTG ACA TT TTCAT TTTCTTTTAA
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TGAAGGAAACAACACTCAAC G CG TCC GA CAACTCACAAC- ----------
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AGTT
GAM17913 21876 AAGTCTGCAGATTTTTTTAT G TTTATT GCAGCTT A TTTTAAAATT
TATGGTGCAGCTTTTTTTTA AAGTCT CAGATTTT ATGGT TTTTTTAATT TGT
ATTATGTTTTTAAAATTATA TTTAGG GTCTGAAA TACCG AAAAAGTTGA ATA
CAGTTGAAAAATATGCCATT A TACTT- TAT---- C ----------
TCATAAAGTCTGAGGATTT
GAM17921 13686 AAGTCTTGCTGTAGTGTGGA G T TG-- T TT TG A GTGGATA
TGAAGTTTTGTTGTAGTGTG AAGTCTT CTG AG TGGA GAAG TTGT T GT
GATAGCAATGACAGTCTTTC TTTAGAA GAC TT ATCT CTTT GACA A CG
TCTAATGTTTCCAGAAGATT - C TGTA - CT GT A -------
T
GAM17926 4739 AAGTCTTTGCTATTGTGAAT -- TGT ATA - AATAAACATAC
AGTGCCGCAATAAACATACG AAGTC TTTGCTAT GA GTGC CGC
TGTGCATGTGTCTTTATAGT TTTAG AGATGATA CT TACG GTG
AGAATGATTT TA TTT GTG T ----------
GAM17944 17643 AAGTGAAGTAAGTACCTGAG - TAAG CT - - TGTT ATG
AATGCTGTTACAGATGCTGT AAGT GAAG TAC GA GAAT GC ACAG
TTCTGCTATTCATTGAGTAA TTCA CTTT ATG TT CTTA CG TGTC
AGTTTCAACTT A GAA- AG A T TCTT ---
GAM17958 19670 AAGTGAGAATGACCTTCAAA A AC- TCAA ATTTT AACATA
CTAAATATTTTAGAACATAC AAGTGAGA TG CT ACTAAAT AG

TCCCCAATTTAGTCTAGACA TTTACTTT AC GA TGATTTA TC
CAATTTCATTT A ACA TC-- ACCCC ------
GAM17987 4820 AAGTGCGAAAAAAGCAGTGT GAAAAAA - GGCGCGG
GGGCCGGGCGCGGTGGCTCA AAGTGC GCAG TGTGGGCCG
CGCCTGTAATCCCAGCACTT TTCACG TGTC GCACTCGGT
ACCCTAA C -------
GAM18018 19728 AAGTGGAGAATAATGCTATA - TAAT TAT TAATAT C A- CATG
TTAATAATATGAGATCTCCT AAGT GGAGAA GCTA TAA GAGAT TCCTT TC
TATCCATGGACCAAGGATGT TTCA TTTCTT CGAT ATT TTCTG AGGAA AG
CTTTCCATTTATTTAGCTCT A CT-- TT- TACCT- T CC ----
TCTTTAACTT
GAM18028 12057 AAGTGGCCCTGATAATGCGT G T - C A TAATTC
TGAAAGCTAATTCGTTTGCA AA TGGCCC GATA ATG GTTG AAGC
GCCGTGTATTTGGGCCAGTT TT ACCGGG TTAT TGC CGAC TTTG
G T G - G ------
GAM18035 11689 AAGTGGGATACTTAGGAACT ATAC CTTTAATAA AAACA
TTAATAATGGTAAACAATCG AAGTGGG TTAGGAA TGGT
AAACATATTTTCCTGAAAAC TTTATCC AGTCCTT GCTA
CTATTT AAA- TTATACAAA -----
GAM18040 15921 AAGTGGTCTCTGCTGGGGAA GC GG--- TTTACTTTTCTTTTT
GGGTTTACTTTTCTTTTTTT AAGTGGTCTCT TG GAAGGG
CTTTAATAACAAGGAGATTA TTCATTAGAGG AC TTTCTT
CTT A- AATAA ----------
GAM18053 513 AAGTGTATACAAGTGCATTG T A ATT -------- AGCT AAT
CAAATGAGCTCTTTAAAATT AAGTGTA ACA GTGC GC AAATG CTTTAA
TAAAGTCCATTTCCCCTTTA TTTACAT TGT TACG CG TTTAC GAAATT
GCCAAGCATATGTCTACATT C A AAC ATTTCCCC CT-- ---
T
GAM18076 13884 AAGTGTGTGGTGGTGGGAGA - G GGA G GCT AAC
CGGAGCTGTAGGTAAAACTT AAGTGTGT GGT GTG GAC GA GTAGGTAA
GCCTACTGATCAGTTACACA TTTACGTA CCA CAC TTG CT CATCCGTT
ACCAATGCATTT A A A-- A AGT ---
GAM18091 13282 AAGTGTTTTTATTTTGCTAA TA-- T AAA AAGTTTTGTTTTGTAG
ATCTTCACAAGTTTTGTTTT AAGTGTTTT TTT GCT TCTTCAC
GTAGGTGAGGAAGCTGAGGC TTTACGAGA GAG CGA AGGAGTG
CCAGAGCATTT CCCG T --- ----------
GAM18108 17806 AAGTTACTCTAGCTTTTTAA - TT AA- GTT----- AA GTAAAA
AAGGCTGTTTACAATTCTGT AAGTTA CTCTAGC TTTA AGGCT TAC TTCTGT
GTAAAAATAGAGCAGTATCT TTTAAT GGGATTG AAAT TTTGA ATG GAGATA
ACTCAAGTTTGTGTAAATGT A T- GTG ACTCATCT AC ------
TAGGGATAATTT
GAM18111 14109 AAGTTAGAAGTTTTTTTTTG T A TTTTT G G TTTAAATTTTTAACAAAT
GTGGTGGTTATTTTAAATTT AAGT AG AGT TTTG TGGTG TTAT
TTAACAAATATAAACACCAG TTCG TC TTA AGAC ACCAC AATA
CAGATACTATTACTTGCTT T A TCAT- G A ----------
GAM18169 4562 AAGTTGCCCGCTGTGTAAGA CC --- AAAAA - ACTG
AAAAGCCAAGAGACTGCTTT AAGTTGC GCTGT GTAAG GC CAAGAG
TGAGTGACATTTATTTAGCA TTCAATG CGACG TATTT TG GTTTTC
GCTAGTAACTT AT ATT ACAG- A ----
GAM18177 11293 AAGTTGGCGTGCAGCTGGGA G G AG A--------- AAGTT

GAGCTAGACTAAGTTGGTCA AAGTTGGC TGCA CTGGG AGCT GACT
TGATGCAGAAGCTACTCAGG TTCGGCTG ACGT GACTC TCGA CTGG
TGCAGTCGGCTT - G A- AGACGTAGTA -----
GAM18179 13385 AAGTTGGGAATGAGACCATC GA A- C - T-- GATAAGAA
AGATGTGATAAGAAACTCTT AAGTTGG ATG GAC ATC AGA GT
CTAGATGTCAACATAACCAA TTCAACC TAC CTG TAG TCT CA
CTT AA AA - A TCT --------
GAM18200 1795 AAGTTTATCCTTTATGTGTG TA- GTG---------- TAAAATT
TTAAAATTGCAATTCTATAT AAGTT TCCTTTAT TGT
CAGAAATGAAGGAAACAACT TTCAA AGGAAGTA ACG
T CAA AAGACTATATCTTA -------
GAM18229 15354 AAGTTTTAAATTCTGATTTT - - T- CTACTACTAA - TACACCAGAT
TCACTACTACTAAAGATAGA AAGTTT TAAATTCTG ATTT TCA AGAT AGA
TACACCAGATTCTCATTTAT TTCGGA GTTTAAGAC TAAA AGT TTTA TCT
TAAATTCATGACCAAATCCA T C CC ACTTAAATTA C ----------
GAATTTGTAGGCTT
GAM18264 2013 AATAAAATTTCTCAAACTAT AA C CT CAA CTAAA
ATCAATATCTAAAGTGCATA AATAA TTTCT AAA ATAT TAT
TATTTTTTAAGAAAGATTAT TTATT AAAGA TTT TATA GTG
T AG A TT TAC -----
GAM18283 4693 AATAAATATATAGAGAGACA ATAT AGACATAAT GG- AAAAT
TAATTTTAGTGGCAAAATGA AATAA ATAGAG TTTAGT C
AGACTAGACTCTATTATTAT TTATT TATCTC AGATCA G
T AT-- --------- GAA -----
GAM18347 22768 AATAATTGAAAATGTCAAAA GAAAA-- AAATTATAT A CATTTC
TTATATGCCATATACATTTC AATAATT TGTCA GCC TATA
TGTGGGCTTGAAAATGATAC TTGTTGG ATAGT CGG GTGT
CATATAGGTTGTT ATATACC AAAAGTT-- - ------
GAM18372 2661 AATACAGTTTTGAGTTATTT TT G TGATG TAA
TGATGTGGCTTTTTAAAAAA AATACAG TT AGTTATTT TGGCTTTT
GTTAATGGGTAGCTAATGTT TTATGTT AA TCGATGGG ATTGAAAA
GTATT GT - TA--- ---
GAM18374 10102 AATACATAAGATTATTCCAT CAT- TTAT GATTAAA CCAAATCTAATAACCTTAA

GATTAAAAGCCCAAATCTAA AATA AAGA TCCAT AGC
TAACCTTAAGCTACATTAGT TTAT TTCT AGGTG TCG
GGATCTCTTTTCATATT ACTT CT-- ATTACA- ----------
GAM18382 323 AATACCTGTATGTCAAGTTT GTA AAG G TT ATTAAATG
TGACTTTAAAAATATTAAAT AATACCT TGTC TTTT ACT AAAAAT
GGTTTTTAGTGAAAAGGCAG TTATGGA ACGG AAAA TGA TTTTTG
AGGTATT G-- --- G -- --------
GAM18391 22459 AATACTCAGGCTAACCTAGT CA - AACCT GT T AACTT
GGATGTGATCTGTGGAACTT AATACT GG CT AGTGGAT GATC GTGG
CCATGATTATCCACTTAAAG TTATGA CT GA TCACCTA TTAG TACC
ATCAAAGTATT AA A AAT-- -- - -----
GAM18401 21988 AATACTTCCTAGGTTCTCAC CCT CTC AACAT TATTT
ATATTAACATTTGTATTTCA AATACTT AGGTT ACATATT TTG
ATCGGTATGTTGATCTTTAA TTATGAA TCTAG TGTATGG AAC
AGTATT ATT T-- CT--- -----
GAM18409 15313 AATAGAAACAATACTATTCA AA ATT- TTTCCTCAA CAA

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        TCATTTCCTCAAGAGAAACA AATAGAAAC  TACT   CATCA      GAGAAA
        ATTTCTCTGGTGCTAAGGTA TTATTTTTG  ATGG   GTGGT      CTCTTT
        GGTTTTTATT              G-   AATC    ---------    ---
GAM18428 5321   AATAGAGTAAAAAAAAAAAA     GTAAAAAAAAAA      AC  ATTGCATATATA
        GTAGGACACACATTGCATAT AATAGA         AAGTAGGAC  AC
        ATAGTCAGTCTTATTTGGGC TTATCT         TTTATTCTG  TG
        AGAAGGAATCTATT          AAGGAAGACGGG       AC  ----------
GAM18457 15928  AATAGGGATCAAGTTTTAAA       T   TT  AAA-    ----   TTCCCTTTTTTCT
        TCCTCCTCCTTCCCTTTTTT AATAGGGA CAAG  TT   TCCTC   CTCC
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        GTTTTTGTTTTTGTT         -   TT  GACC    TTCT   ----------
GAM18458 5164   AATAGGGATCAAGTTTTAAA       T   TTT   TC  CT-    C---   TTTCT
        TCCTCCTCCTTCCCTTTTTT AATAGGGA CAAG   TAAA  CTC   CCTTC   CTTT
        CTGGAGTCTTGAGGGCCAGA TTGTTTTT GTTT   GTTT  GAG   GGGAG   GAGG
        GTTTTTGTTTTTGTTTTTGT      -   TT-   TT   ACC    TTCT   -----
        T
GAM18497 13477  AATATAATTTGGAGCTCCTT     AATT     CC  A   A--   GTGAA
        ATCTTACTAAGTGAATTGGC AATAT   TGGAGCT  TT TCTT   CTAA
        CAAGGAAAATTAGCTCCACC TTGTA   ACCTCGA  AA AGGA   GGTT
        CAATGTT             ACCC     TT  A   ACC   -----
GAM18639 5163   AATCACAATGGTGGAATGTC     C  TG      TCA     AAGGCAGG
        ATCAGTTAAGGCAGGAACTG AATCA AA  GTGGAATG   TCAGTT
        GCTATTTCACGTTTATGGTT TTGGT TT  CACTTTAT   GGTCAA
                    A  TG      C--     --------
GAM18706 9920   AATCCATCATTTGCGGCACA       ATTT   G   A   TG  G-   G     TTTCT
        TGGTGGTGTGCGGGGGCTAT AATCCATC   GCG CAC TGG  GT  TGC GGGGCTA
        TTCTTGGCTTTGGCGGAATT TTGGGTAG   TGT GTG GCC  TA  GCG TTTCGGT
        GCCGGGTGGTGTGATGGGTT      ----  G   G   GT  AG   G     -----
GAM18720 15664  AATCCCATTTTGGGGTTTTC      ATTT    TTTTCCATCCG         TTT
        CATCCGGAATTTTTGTTTTT AATCCC   TGGGG         GAATTTTTGTT
        AATAAGGGTTCAGTTTCTTT TTAGGG   ACCCC         CTTGGGAATAA
        TTCCCCAGGGATT          ----   TTTTTCTTTGA         ---
GAM18742 489    AATCCTTCTTTTTCTCTTTT        TTTTC      CC   A   AGCAAG
        GCCCACAATTTAAGCAAGTA AATCCTTCT    TCTTTTGC  ACA TTTA
        GATGTGCAGAAGAAATGGAA TTAGGAAGG    AGAAGACG  TGT AGAT
        GGATT                  TAA--      --  -   ------
GAM18748 22887  AATCGAGAATTTCTCACAAT       ATT   - -----   -   A  AAGA   AT  GAAACAAAGTTTATT
        GGGTGGTATACAAGACTGGA AATCGAGA   TCTCA CA    ATGG GTGGT TAC   CTGG  GG
        TGGGAAACAAAGTTTATTAA TTAGCTTT   AGGGT GT    TACC CACCG GTG   GACC  CC

        CCCCAGGTGAGCCACTCCAT       ---    A  TTCAA   T   A  ----   --  ----------
        AACTTTGATGGGATTTCGAT AA
        T


                  --
GAM18756 13270  AATCTAAGGCAAACAGACTT     AA   A     T------    T     ACCCACTGCATTCTCAAG
        GACCATCTTCAGACCCACTG AATCT  GGCA ACAGACT      GACCA CTTCAG
        CATTCTCAAGCTGAAGTGGT TTGGA  CCGT TGTTTGA      CTGGT GAAGTC
        CTGCTCATAGTTTGTGTGCC    --   G      TACTCGT   -    ----------
        AGGTT
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GAM18801 7093 AATCTTAGCAGTGTCACTAG - A AA-- TAC TAGGCAGG
TAATAGTCTTACAAAGTAGG AATC TTAGC GTGTCACTAGT TAGTCT AAAG
CAGGTTTTTTTAGGCTAAGT TTAG AATTG TACAGTGATTA ATCGGA TTTT
GATTAGTGACATAGTTAATG T A GTGA TTT --------
ATT
GAM18818 2607 AATCTTTGTCAGATGCATCG TTTGT- C TTT AATATTTTCTCC
TTTGTGAATATTTTCTCCCA AATC CAGATG ATCG GTG
CTCTGATTGTCTGTTTGCTG TTAG GTCTGT TAGT CAC
ATT TCGTTT - CT- ----------
GAM18827 14125 AATGAAACCATCTGAGCGAG AAA TGA--- G TC- AT TTCTT
TCCCTGGAGCAACTATGCTT AATG CCATC GC AG CCTGGAGCAACT GC
CTTGCTAAGTTGCTCCAGGA TTAC GGTAG TG TC GGACCTCGTTGA CG
TTCTGGTGCCCCTGATGGAA AA- TCCCCG G TTA AT -----
CATT
GAM18929 1480 CACGAGGCCGACGCCCCAGG A- -- - AGG TG CCG
CGTGATCCCCGGGATTGTGG CACG GGCC GAC GCCCC CG ATCC
GGGCTGTCGTGGTCGCCGTG GTGC CTGG CTG CGGGG GT TAGG
CG TG T --- GT ---
GAM18990 3163 CACGGATGCTCACACGCTCA C -- A CGC CCGG
CATGGCCACTCAATACCGGT CA GGATG CTC CA TCACATGGCCACTCAATA
ATTGAGTGGCCATGTGATTG GT CTTAC GAG GT AGTGTACCGGTGAGTTAT
GGAGTTCATTCATG A TT G T-- ----
GAM18995 21556 CACGGCCCCCGTGGCCACCA -- TG A- CTTCT CCCCACCTCCAC
TGGCCTTCTGACCCCACCTC CACGGCCCC CG GCCACC TGGC GA
CACTCTGCTAGCCACAGGTG GTGCCGGGG GT CGGTGG ACCG CT
GCTGTGATGGGGCCGTG TA GT AC ATCGT ----------
GAM18999 6150 CACGGCGCTGTACGGCGAGA TGTAC A A TCTAATCCACCCCGCCC
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CCCGGCCGCCCTCGTCTTGT GTGCCGCG CTGCTC CGC GG
GCGCCGTG TGTT- C C ----------
GAM19004 22258 CACGGGAAGCTGGTGGAGGG G - T A CCC GGA
TTCCCTGTCAGGGACTGACA CACGG AAG CTGG GG GGGTT TGTCAG
TGACCTGCTTTAGATTTGTT GTGTT TTT GATT TC TCCAG ACAGTC
GTG G A - G T-- ---
GAM19010 8463 CACGGGCTGGGCTCTAGGCG CT C G G ATGATCG
GTCTTGGGGCCATGATCGGG CACGGG GGG TCTAG CGGTCTT GGGCC
CCCGGGGGCTGGCTGGACCC GTGCCC CCC AGGTC GTCGGGG CCCGG
CCCCGTG C- - G G -------
GAM19012 8599 CACGGGGGAGGAAGGAAGGA GA-- GGAA A -- AACTC TGGCCT
GCTCCCAACTCGCCTGGCCT CACGGGG GGAA GG GC TCCC GCC
GGCCACGGGATGGCCCCCAA GTGTCTC CCTT CC CG AGGG CGG
ATTCCCAGACTCTGTG AGAC AAAC C GT CAC-- ------
GAM19016 12887 CACGGGTGGAAGGCGTCCGG AG - GG-- AC GT-- - CCACTC
CGAGCACTCGTTGCACGGCC CACGGGTGGA GCGT CC CGAGC TC TGCACGG C
CACTCGTCCGTGCGTTCAGG GTGCCTACCT TGCA GG GCTCG GG GCGTGCC G
CAGCTCGACAAGGAACGTGT G- A AACA AC ACTT T ------
CCATCCGTG
GAM19020 9369 CACGGTGAAACCCCGTCTCT - AAAC T A-- AAAA CAAAAAAT
ACTAAAACTACAAAAAATTA CAC GGTG CCCGTC CT CT CTA
GCCGGGCACAGTGGCGGGCG GTG CCGC GGGCGG GA GG GAT

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        CCTGTG            T   ----    T CAC  GCC-  --------
GAM19030 1275  CACGGTTCCAATTCTAAACT    TTCC    AA    G    A-  AAAAAA
        TTTGCTTAAAATAAAAAAAT CACGG   AATTCT  ACTTTT CTTAA  AT
        GATTAGGAAGAAGTAGAGTT GTGTC   TTGAGA  TGAAGA GGATT  TA
        TCTGTG            T---    --    A    AG ------
GAM19079 19923  CACTAAAAGTGGTATATATA    AAA   -       A   -  AAA   - A          A  A
        TATATACACTAAAAGTGGTA CACT   AGTG GTATATATAT TATAC ACT   AGTG GT
TATATATATATATATAC CAC
        TATATATATATATATACACA GTGA   TCAC TATATATATA ATATG TGA   TCAC CA
ATATATATATATATATG GTG

        CACTAAAAGTGGTATATATA    AAA   G       C    G   AAA    A  C          -  -
        TATATATACACACACTAAAA CTAAAA
        GTGGTATACATATATATATG
        CACTAAAAGTG
                ------
GAM19081 4064   CACTAAAGTTGTATACAGTA    AA   TAT   - CT   CCACCGCTC
        CTTGTTCCACCGCTCAGCAT CACTA  GTTG   ACAG TA  TGTT
        TTACCTGTTCAGCAATGGTG GTGGT  CGAC   TGTC AT  ACGA
                AA   T--   C  TT   ---------
GAM19083 19943  CACTAACAACTTCTGGCCGG    AACAA      C   CC--      TCAT
        GCCACGGGGCTCATGCCTTG CACT    CTTCTGGC GGG    ACGGGGC
        TAATTCTCAGCCAGAGGGCG GTGG    GGAGACCG CTC    TGTTCCG
        GGTG              GCG--      A   TTAA      ----
GAM19084 6531   CACTAACATATACGCCCCAT    ACA-   AC   - A   ----    G   CTGTCC  A       TTG   G
        TCCCTGCTGAGGCCTGTCCC CACTA    TAT  GCC CC TTCC    CTGCT AGGC     CC CCTCACCCC
GTT T
        CACCTCACCCCTTGGTTGTC GTGGT    GTA  CGG GG GAGG    GACGA TCCG     GG GGAGTGGGG
CAA G
        GATGGTGTGGAACATTGGGG    CAGG   AA   A  -   TCGA    A   TAAAAC  -       TTA   -
        TGAGGGGCAAAATGCCTAAG   ATGGTG
        CAGAGCTGGAGGGAGGCAAA CG
        TGGGACTGGTG        GT
                ------
GAM19114 9569   CACTAGACTGAAAGGCTGTG   C    T   GGC    GA  C   GGCACTAA
        GAGTCACTGGCACTAAAGTA CA TAGAC GAAA   TGTG  GT ACT
        ACGACACAAATTTCCGTCTA GT ATCTG CTTT   ACAC  CA TGA
        CTG             C    C    AA-    AG  A  --------
GAM19178 3645   CACTCACCACCAACTATGCC    -   ACCAA   T-   C    GTGAATGTG
        CCCGGGTGAATGTGCCGGAG CACT CACC     CTA  GCC CCGG
        GCCCTAGAACAAGGTGAAGT GTGA GTGG     GAT  CGG GGCC
        G               A   AACAA   CC   A   ---------
GAM19241 14613  CACTCGGAACACCACCAGGC   CT    ACA-      CT    CCA     TGAA  T    TGCAT
        TGTGTGCCAGAATCTTGAAT CA  CGGA    CCACCAGG  GTGTG   GAATCT    TG TCATG
        GTTCATGTGCATCATGACCA GT  GCCT    GGTGGTCT  CACAC   CTTGGG    AC AGTAC
        CGGGTTCCACACTCTGGTGG   AG    AAAG      --    ---     C---  C     -----
        GAAATCCGGATG
GAM19272 6161   CACTGAAACAACCAAATATT    GAA      AATAT--   AAA   A   TGAA
        TTAAATATAACTTGAAAGTC CACT   ACAACCA      TTT   TAT ACT
        ATAAAGGAATCTATACTGGT GTGA   TGTTGGT      AAG   ATA TGA
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        TGTGAAGTG            AG-     CATATCT  GAA  C  ----
GAM19279 22272  CACTGAAGAATTTATATAGA     A     ATA   A--   TATTATTTCTTCC
        ATTAGTATTATTTCTTCCCT CACTGA GAATTT  TAGA  TTAG
        AAATGTTTAGTAGAATTTAT GTGACT TTTAAG  ATTT  AATC
        CAGTG               A     ATG   GTA  ----------
GAM19280 14010  CACTGAAGACAAGCTGAAAG     AA  CAAGCTGAAAG  A   TGAAAGAG
        GGAAGAGGTGAAAGAGTCTC CACTG  GA         GGA GAGG
        TCCATAAAACACACTCACCA GTGAC  CT         CCT CTCT
        GTG                 CA  CACACAAAATA  -   --------
GAM19307 12477  CACTGAGTAAAGAGCTACAT    G   AA   GCTA     GAG--   TCAA
        TCAGAGTTCTCAAGAAAGTT CACT AGT  AGA    CATTCA     TTC
        ATGAATGAAATCTGGGCTAG GTGA TCG  TCT    GTAAGT     AAG
        TG                -  GG   AAA-     ATTGA  ----
GAM19347 12405  CACTGCCTGGCCGCGGCGGT       TGGCC      T  CA   A  ACCCTTCCCGTCC
        TCCAGGCACCACCCTTCCCG CACTGCC     GCGGCGG TC  GGC CC
        TCCGGGCTGACCCGCTGTGG GTGACGG     TGTCGCC AG  TCG GG
        CAGTG               -----      C  --   -  ----------
GAM19353 20026  CACTGCGCCAAGTGCTTCCG    G   AA-  CT    ------  A--   AGTC
        CTACAAGCAGTCGCTCAAGT CACT CGCC   GTG  TCCGC     TAC   AGC
        ACCACCTGCGGACCCACACG GTGA GCGG   CAC  AGGCG     ATG   TCG
        GGCGAGTG            -   GCA   CC    TCCACC   AAC  ----
GAM19354 2996   CACTGCGCTTTATGACGATG   C  C  TTTAT  CGA   CTCC       TC   G    GTTCT
        CCTCCCATGGCTCTCCCAGT CA TG GC     GA   TGC    CATGGCTC  CCA TAGTT
        AGTTGTTCTGACTGTGGCTG GT AC CG     CT   ACG    GTACCGGG  GGT GTCAG
        GGCCATGCCATGCACCTCTT   C  C  TTTTT  CC-   TACC       TC   -    -----
        TTTGCCCACTG
GAM19355 3363   CACTGCTACTCCTATAGGTT     CTA-    ATAG--      C     TAAA  AAGGAAA
        TGCCCTGCTTTAAACAAAGG CACTG    CTCCT     GTTTGCC TGCTT    CA
        AAATGGACAAGTATGGCAGG GTGAC    GGGGA     CGGACGG ATGAA    GT
        CAGCAGAAGGGGCCTACAGT     ATCC     AGACGA      T     CAG-  -------
        G
GAM19367 8153   CACTGCTGTCTTGGACTGTC   CT      T GA     T  GT          CAGA
        TTGAGTATTTTTTGTTTTTC CA  GCTGTCT G  CTGTCT GA  ATTTTTTGTTTTT
        AGAGAGAGCAGGAGATTCGG GT  CGGTAGA C  GGTAGG CT  TAGAGGACGAGAG
        ATGGGTCAGATGGCTATG     AT      - TG     -  --           ----
GAM19384 19029  CACTGGATGGTCTGGATTCG      A-    C      -------    C TG   G  ACAAAC
        GTTCTTGGCTGGGACAAACT CACTGG  TGGT TGGATTC       GGTT T  GCT GG
        CGGGCTGAAGCTTCAATGTG GTGACC  ACCA ACTTAGG       TCGA A  CGG CT
        GATTCATACCACACCAGTG       AC    T      TGTAACT    - GT   G  ------
GAM19390 19821  CACTGGCCGAACTCTCGGTC     G  CG     -    CT       GAGT
        TCGGGTCTTGAGTGGGGCCC CACT GC  AACTCT CGGT  CGGGTCTT
        GCAGCCGAAGAGTTGCAGGT GTGG CG  TTGAGA GCCG  GCCCGGGG
        G                   A  --      A    AC       ----
GAM19411 12250  CACTGGGTTCTGCTACTCCC        ----        --   CA     A  GACAACTG
        CAGACCTCAGGGACAACTGC CACTGGGT    TCTGCTACT  CCC  GACCTC GG
        CGGGGGTTCAGGGTTGGTAG GTGACCCA    GGACGATGG  GGG  TTGGGG CC
        CAGGGAGTACCCAGTG           TGAG        TT   AC     G  --------
GAM19430 12836  CACTGTAGGAGGCACAGGGA    TGTA     C  AG-     CTG   A  AAAG
        CGCTGACTAGGAAAGCCAGG CAC    GGAGG AC    GGACG   ACT GG
        TATTGTCCAAGGTTTCTCCC GTG    CCTCT TG    CCTGT    TGG CC
```

CATGTG TACC T GAA TA- A ----
GAM19467 3328 CACTGTTAACAAAGAATGGG CAAAGAATG CCTAATTGCTTA
ACCTTAGACCTAATTGCTTA CACTGTTAA GGACCTTAGA
TTTGAGGTTCAAAAAATTAA GTGGCAATT CTTGGAGTTT
CGGTG AAAAAA--- ----------
GAM19476 20700 CACTGTTGCCCAAGCTGGAG GTT -- C TAG-- CA ATCTT
TAGAGTGACACCATCTTGGC CACT GCCCA AG TGGAG AGTGA CC
TCACTGCAACCTCCGCCTCC GTGA TGGGT TC GCCTC TCACT GG
TGGGTTCAAGTG ACT CC C CAACG C- -----
GAM19488 19358 CACTTAACCACTAAATCTTT AACCACTAAA GAA TT ACAGCAA
ATTGAATTTTTATTGTAACA CACTT TCTTTATT TT TATTGTA
GCAATGCAATATTAGCAAAT GTGAG AGAGATAA GA ATAACGT
AGAGAGAAATATAGAGTG ATATAAAG-- AC- TT -------
GAM19489 4224 CACTTAACCAGCTAGATGAC ACC A T T TGTTACTTGTATGAATTTT
TGAGCAAGATATGTTACTTG CACTTA AGCT GA GAC GAGCAAGATA
TATGAATTTTTGTTTTGTTC GTGAAT TTGG TT TTG CTTGTTTTGT
TGTTTTTAGGTTTCCTAAGT CCT A T T ----------
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GAM19499 2930 CACTTACAAAGTCATTGTTT T AA A TG ----- T- TT - A- - -- CTC
GAACTTGGCTCTTGTTTAAC CAC TACA GTC T TTTGA AC TGGCTC GT TTA CCT CTG TAAAC
A
CTCTGTAAACCTCAGTTTTC GTG ATGT TAG G AAATT TG ATTGAG CA AAT GGG GAC ATTTG
T
TTGTTTATTCAGTGGGGCTA T AG - GT ACAAA TC TT T CG T TT T--
ATACTTGAGTTACTGTAAAC TTTT
ATTAAATGGGATGATGTATG G
TG C

GAM19563 18950 CTGGCGATGGCGATATGAGC A ATAT C G G - ACGCGGCCC
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GACGCGGCCCCCCAGCTCGC GACCGC GCCGC CTC TCG GCCCC GCCGC CGACCC
CGACCCCGGGCTCTCGGCGC G GG-- - G A T ---------
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GAM19579 3111 CTGGCTAAACTGGATGCAAT TAAAC- AT G- AGAATTG
TTGTAGAAGAATTGTTTAGA CTGGC TGG GCAATTT TAGA
AAGTTGCCCCATTCCATGCC GGCCG ACC CGTTGAA ATTT
GG TACCTT C- AG -------
GAM19624 16722 CTGGCTGCCAGAAACTCATT GCT GAAA--- T TGG TGAACGCAAACT
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ACTTCGTACTTTCTATGAGA GAC CGGT GAGTA CTTT TGCT
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ACGGGGTACGTGCCAAGCAT CTG CT CTGGG AAGT TGTA CGGGGT CG GC AAGC TCTCGCG
CCCG
CTCGCGCGACCCGAGAGCCC GAC GA GACCC TTTA ACGT GTCCCG GC CG TTCG GGGGCGT
GGGC
GGGGATGCGGGGGCTTGCCG A - A CTC - - - - - AG- ------
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CAGAGACAG

GAM19639 19043 CTGGCTGGAGGGCTTGGCCC --- --- - - CTTCT CCCACTA
AGCTTCTGGCCCCACTAGCC CTGGCTGG AGGGCT TGG CC CAG GGC
CCCTGAGGTCCATGCAGCCC GACCGACC TCCCGA ACC GG GTC CCG
TGTGCCAGCCAG GTG CGT T A CC--- -------
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CTTGCTGATGAACCTGACTG CTGG GGGCTGG CGG GG GCT ACCT
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GCTCCCCCGCCCGACCGGTC CT A CG CCCT ACCCTGCCCTGTGGG -----
CTCCCAG
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G AAG TT TA ---------
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AG CCAGCTCCAC A AACA AA ----
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CTGTACTGATGCCAAAGTTA GACCTT TCTA ACCGATT AA GTAGT CAT
GCCACATCTTACTTCCAG CAT C-- G ACC - ------
GAM19798 8717 CTGGGATGTGGCTGTCATTT G A TG C- ACAA ATCCGA
CACAAGAGCATCCGAGTTTG CT GG TG GCTGT ATTTC GAGC
GGGAGATATGCAGCTGTACC GA CC AT CGACG TAGAG TTTG
AAG A - GT TA GGG- ------
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GAGCAGAGCCACAACGGACT CTGGG AG AG GGT GAG GAG CC
CAACTCCACCCACTACCTCT GACCT TC TC CCA CTC CTC GG
CCAG C CA AC-- C AA A -----
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G T T G GT --------
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CCCAG ACA- T C T- ----------
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TCTACCTAGAGGATCAATAT GACCT TAGGAGA CATCTT
TTCCAG TTATAAC TC- ----------
GAM19884 20849 CTGGGCCTGGGCTTTTGAAA GCC AAA G GA AGGA
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CAG AAA C-- G A- ----
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TCAGCAAGATCCGTGAGGAG GGCCC TTG GTGCCT AG CG TACTCG
TTCCCGG - AGGA - AA AC -----
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TCACCCAG A- AAAC GAC AC- -----
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TGTCTGG GT G GAGAGA - CAA ---------
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GCCCAGCACCCAG A A- CAC AA GTTCA ----
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TAG GCG CCTT- ---
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CCCAG AATAT- TCCTTGA-- ------
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CTTGGTGTAGACTCCAG A TG- TTC A ----------
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GG C - G - ------
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TGG GT AA GGG T - A -----
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AACCTAG
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CCCCAG ACC TCCTTT-- - --------
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CTTACTGTTTCAACAAACCA AAA TT- A- ---- - -- ----
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CGGCT
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TGCCCTGG
GAM20148 20275 CTGGGTGCGGTGGTGTGCAC - --------- C - G A --- T GGC
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AGGC GA
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TTCG CT

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ACACCACTGCACTCCAG

GAM20156 8417 CTGGGTGGCCTTCGTTTTCC G C TT-- G TCATGGTAC
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A A TCTC - ---------
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TAGAAATATGTTTTTACCTA GATTCA TATC TTTTTGTAT ATTT
TTACTTAG T CA AAAG ----------
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TTTCTAACCGCCAGACACAC CTGGTAA TTGC CTAGGTA TCTA CG

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CCTGGGCGACCTTGCCAG CC -- TC A- ----------
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GCACCCACATGTCTTAATGG CGGGG TA TCTG ACCC TTATA
GGC ------ AT TAC ACG ----
GAM20238 18864 GCCCCCAGCAGCGCCGGCGG CA C - TAA AGG- G AGACG
GCTAAGCCCAGGGCCGGGCA GCCCC GCAG GCCGGCGG GC GCCC GCC GGC
GACGGCCGGGCGAGGGGGCA CGGGG TGTC CGGTCGTC CG CGGG CGG CCG
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GGGGC
GAM20245 18994 GCCCCCAGGGGCGGGGTTCT A-- -- ATAAA CGC
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CCCGGGGGC CCC CA CTC-- ---
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CTGGGAGGAACAGGGCTAGG CGGGG GGT GG GGGACAAG TCCG AC
ATGGAGGGGC A A ATC GAGGG ---- ----
GAM20281 3175 GCCCCCGGTATCATTCCTCG C ATCAT T AA C G AACCAATGCAGA
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TGCAGACTGGCATTAAGGCT CG GGGTCG AGG GT GAA TTACG TC
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GAM20288 8848 GCCCCCTGAGAGCCTGGCGC C---- C CAG----- ACTC
AGCTGGGACTCCCCAGAAAT GCCCC TGAGAGC TGGCG CTGGG
TCACTGCCAGCTCTTAAATA TGGGG ATTCTCG ACCGT GACCC
TGGGGT TATAA - CACTTAAA ----
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TCAGGCCGCCCGGGGC C - GCC GGACACG ----
GAM20324 1093 GCCCCGCCTCGTGGTGCCGG C- T T G TTCT CGCTCGCC
CTGGTTCTTCGCGCTCGCCC GCCC GCC CGTGG GCCG CTGG TCG
GACTTCCCAGCGGCCCCGTG CGGG CGG GTGCC CGGC GACC AGC
CGGCCCGGGC CC C C - CTTC --------
GAM20341 19197 GCCCCGGGGCTAAACAGCAG CG AAACA G - ATATTGA
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GCCAATGCGGCTGCGAGGAG CGGG CTCGA CGTC GC TAACCGAC
CTCGGGC -- GGAG- G G -------
GAM20342 21458 GCCCCGGGGGCAGTCGCGCC - - AGT C TGAAC GGG--- AGAC
TGTGAACGGTGGGGCAGGAG GC CC CGGGGGC CG GCCTG GGT GCAGG
ACCCTGTAGGAGGACCCCGG CG GG GTCCCCG GC CGGGC CCA TGTCC
GCCGCAGGCCCCTGAGGAGC A A GAC - C---- GGAGGA ----
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AACGTCTT C AAC ----
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C
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GT C CAGC AA G - G ----
GAM20399 8763 GCCCCTGACTGCCCTGGAAG - A ----- AA TTGGA AGGT
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GGCAGTGGGC T - CGAGT GG TG--- ----
GAM20405 16435 GCCCCTGCACGTCATCAAGG - ------- - T- A- ACAGTAAATC
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GAM20450 9863 GCCCGAGGACGTCCTGGATG GA A C A A ACGA CG GAACCCTGA
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C G G ATTAAAA ----------
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ATCTGCGCAGCCCGGCGGGC CGGGCGG CCC CG CT GT CCGG
- GA CGT A - --------

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                GCGTGC           T  AGC   CAT  -  GA--  -------
GAM20487 21221  GCCCGCTCATAAGGGGATGG  -    AAGGGGA    GG  --  TATA
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GAM20488 16845  GCCCGCTCATAAGGGGATGG  -    AAGGGGA    --  GGTTTATAGA
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GAM20502 18460  GCCCGGATGGTGGTCACCTT  C     TGG  -  T    TA-- --    CCAGGAGTTAAA
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                GGCCGGCGCCGGGC           G  GG G   G   -  AAG  -----
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                CGCGGACGCGGCTGCAGCAG CGGGT  GAC  GC GC CCAG TG ACGACG   TCG  GCG
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GAM20598 736    GCCCTACGAGGGGTCTCGCG   CT  A     - GC        TTG
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                TGGC             TT  -     A A-        ---
GAM20656 854    GCCCTCCCTCTGGCTGAAGA    C  T   G T   A  G      AAG
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                AGGGC              C  C   - T   A  -       ---
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GAM20658 12710 GCCCTCCGCGCGCCTACATT CCTC --- CT TTCT T T CCCGCCCACTTCT
TCTCGGTGCTACTGATGCCC GC CGC GCGC ACAT CGGTGC AC GATG
GCCCACTTCTCATTTGTCGC CG GCG CGCG TGTG GCCACG TG TTAC
ACCGCCGTGTTCGCGCCCCG CC-- CCC CT CC-- C T ----------
CGCCGC
GAM20660 1157 GCCCTCCTCATTCTCTTTAT C - CTCTTT CTCA CACT
CCTCAGCACACTTGTAGTAG GCC TCCT CATT ATC GCA
ATTACATTGATGAAGGAAGG CGG AGGA GTAG TAG TGT
C A A TTACAT ATGA ----
GAM20736 21133 GCCCTGCCTTGGGGACCAGG G GA ------- GCAC TGGGGAAATT
GAAGGCACCCCCCGGGTTTG GCCCT CCTTGGG CCAG GGAAG CCCCCGGGTT
GGGAAATTAGCCCGGGGGTT CGGGG GGGACCC GGTC CTTTC GGGGGCCCGA
AACTTTCATTATCACTGGCT - TC ACTATTA AATT ----------
CCCAGGGGGGGC
GAM20769 8512 GCCCTGGCCCTTTCCGCTCT T---- CCTTT T TC- CCC TGTC
CTCCGGTGGGTTCCAGCCCC GCCC GGC CCGCTCTC CCGGTGGGT CAG CCAG
CAGTGTCCTGGCTTCTGTCT CGGG CCG GGCGGGGG GGTTACCCG GTC GGTC
GCCCATTGGGGGGGCGGCCC TGTCT TCCC- - TCT TTC ----
TGCCTCTGTGGGC
GAM20781 8265 GCCCTGGGCTTTCTACACCC G--- TTCTA - G TC A - TC GCAC
TTCACGTCAGCAGTCGGCAC GCCCT GGCT CACCCTTC AC TCAGCAG GGC CT GAG CCTG

TGAGTCCCTGGCACCAGGCT CGGGA CCGG GTGGGAGG TG GGTCGTC TCG GG CTC GGAC

CTGGCGCTCTGCTGGGTGGG GGTA ----- G - -- C T -- ----
AGGGTGGGCCATGGAGGGC
GAM20799 3368 GCCCTGTAGGAGGGATTGTG TA AG GTGGAT A TCA
GATGGCAAAACCTCAGGTTC GCCCTG GG GGATT GGCA AACC
TGCCCAAATCCTCCCCTTGG CGGGGT CC CCTAA CCGT TTGG
GGC TC CT AC---- C ---
GAM20818 4405 GCCCTGTTGCCGACCGAGGA ---- C G GACCACTCGACCA
CTGACCACTCGACCAGGTTC GCCCTG TTG CGACC AGGACT
TGGGTTGACAAATATCAGGG TGGGAC AAC GTTGG TCTTGG
T TATA A G ----------
GAM20832 13984 GCCCTTCAGTGAAGTGCAAA A-- A- ACT- G- AAGTGTG
CTCAGTGGCCAAGTGTGGGC GCCCTTC GTG AGTGCAA CA TGGCC
CAAGTGTGCATTGTACTGGC CGGGGAG CAC TCATGTT GT ACCGG
ACAGAGAGGGGC AGA GG ACGT GA -------
GAM20846 18919 GCCCTTCTGTGCTTGTTAGT TTGTTAGT TCA GG TCT TTGTGT
TGCTCATGACATGGCTCTGA GCCCTTCTGTGC TGC TGACAT CTCTGAG GCAT
GTCTGCATTTGTGTGTGCCT TGGGAGGACGCG GCG ACTGTA GAGGCTC CGTG
CGGAGATGTCACTGCGTGTT TTGT---- TC- -- --- ------
GCGCAGGAGGGT
GAM20869 4494 GCCCTTTATTGAGAATATTG GAGA- G- GCACTGCATTACA
GGATAGCACTGCATTACATA GCCCTTTATT ATATTGG ATA
TAGCCAATATCCATAAATGA TGGGAAGTAA TATAACC TAT
AGGGT ATACC GA ----------
GAM20885 8577 GGTACAGGCATGGGGGTGGG - CATGGG- TG - TAA C TCGTC
GGTCCTAAAACCCTTCGTCA GGTACA GG GG GGGG TCC AAC CT
GCGTTCCTGGAGCCCTTGCC CCGTGT CC CC TCCC AGG TTG GA

AAGCTTACCATGTGCC A ATTCGAA GT G TCC C -----
GAM20921 1124 GGTACCCCAGGAGGATGCCT A AG CCT AC TC GT TA TAATGAAT
TGTAACTGCTCTTTGGTCAT GGT CCCCAGG GATG TGTA TGC TTTG CATGA GTGG
GATAGTGGTAATGAATCCAT CCA GGGGTTT TTGT GTAT ACG AAAT GTACT TACC
TCATGTAAAATGCAATATGT C GA CT- A- TA -- -- --------
CTGTTAGTTTGGGGCACC
GAM20952 6182 GGTACTATTAAAAGCTGTAT TA--- TAT A ATGT
TTGGAATATGTGTACCAATA GGTACTAT AAAGCTG TTGG AT
TCAGTTTTCCTTTGTAGTAC TCATGATG TTTTGAC AACC TG
T TTTCC TAT A ----
GAM20977 14436 GGTACTGTTGCAGCCGCTGC -- C G - -- CCA
AGCTGCTGCCACAGCAGTAT GGTACT GTTG AGCC CTG CA GCTGCTG
TGCCGGGGCTCCAACCCAGT CCATGA CAAC TCGG GGC GT TGACGAC
ACC CC C - C TA ---
GAM20988 12380 GGTACTTTTTGAAACGTGAC CTTT GAA T C--- T ACAA
TGCGTTGTGTGAACAATCTG GGTA TT ACG GACTG GTTGTG GA
CAATTTTTCAGTCCGTGAGA CCGT AG TGC CTGAC TAACGT CT
TCCTGCC CCT- AG- - TTTT - ----
GAM21065 8264 GGTAGCCGGAGGGGCCCGCC A C C A --- G A TGGCGGACT
GAGGCGGCGGCGGCGGCGGC GGTAGCCGG GGGGC CGC G GGCGGC GGC GCGGCGGCA GA

AAGATGGCGGACTTCCTGCC CCGTCGGCC CTTCG GTG C CTGTCG CTG CGCTGCCGT CT

GTCGCGGTCCGTGCTGTCCG C T - - TGC G C ---------
TGTGCTTCCCCGGCTGCC
GAM21066 3106 GGTAGCCGTTGGGGATGCCA C T- GC--- C TA CCCA
CCCTGTAGCCCCAGCCCCAG GGTAGC GT GGGGAT CAC CTG GC
CGTGTCCAAGTCTTTCTGCC CCGTCG CG TTTCTG GTG GAC CG
GCTGCC C TC AACCT C CC ----
GAM21069 21102 GGTAGCCTGCTACGCGCTTC C TAC TCT- A GCT G G C G CGGCGT
TGGGCCGCACGCTGCTGGCC GGTAGC TGC GCGCT GGGCCGC CGCT GGCCGCCA GG GC C
AGCGC
GCCAGGGGGCCCGAGCGCCG CCGTCG ACG CGTGG TCCGGCG GTGG TCGGTGGT CT CG G
TCGCG

GCGTGCGCTGCGCGTCGTGG - T-- TGCT - TC- G G C - ------
TGGCTCTGGTGGCGGCCTTC
GTGGTGCTGCAGCTGCC

GAM21122 3851 GGTAGGCGCAGTACCGTGTA G AG GTAT AG TA A AA G GCCG
TCGTAGGTAGCAGTAGGAAC GGTA GCGC TACCGT CGT G GC GTAGG CG GG
GGGGGCCGCCGCGGCCTGCA CCGT TGTG GTGGCG GTA C CG CGTCC GC CC
GCCGCTCATGGCGGTGAGGT G GA ---- CT GC A G- G ----
GTGTGCC
GAM21142 814 GGTAGGTACTACTCCTCTCA - A-- - T A ATGTGA
TTATATATGTGAATAAATGG GGTAGGT ACT CT CCTC CATT TAT
AGGAAGATAAGTAACTTGCC CCGTTCA TGA GA GGAG GTAA ATA
A ATA A - - ------
GAM21171 714 GGTAGTTAAAAGTAGTCATG AA GTCAT- CCCTGAATGCT

CAGCAACCCTGAATGCTTTG GGTAGTTA AGTA GCAGCAA
CTGCCTTAGATATTCCTAAT TCATTAAT TTAT CGTCGTT
TACT CC AGATTC ----------
GAM21176 8085 GGTAGTTGATGCCAACCTTG A A A - - G - A CACAA
AAGCCAGTGGGGCACCAATC GGT GTTG TGCCA CC TTGAAGCCA GTG GGCA CCA TC
CACAAGACTGGATGCTGCGC CCG CGGT ACGGT GG AGCTTTGGT CGC TCGT GGT AG
TTGGTTTCGATGGTGGCAAT A A - T T G A C -----
GGCAGCC
GAM21225 1745 GGTATATTGAAGTTAGAGCA T - GTT C CACATTA TAGGCATT
TGATCACATTATGTTTCATA GG ATAT TGAA AGAG ATGAT TGTTTCA
GGCATTTGAAACACTGTCAT CC TGTG ACTT TCTT TACTG ACAAAGT
CTTCTTATTCACGTGTCC - C AT- C TC----- --------
GAM21260 9000 GGTATCTGGCACATAATAGG - C- AT T CACAACAAGCTTA
TGACCACAACAAGCTTAGTC GGTAT CTGG ACATA AGG GAC
CCTTATGTTTTCAGTATATT TTATA GACT TGTAT TCC CTG
T TT -- - ----------
GAM21266 8571 GGTATCTTGGTTATGACAAA ATC T AA TACAAAT TAA
GTCATTACAAATGTGACTAA GGT TTGGT ATGAC AGTCAT GTGAC
GTCATTACAAATGTGACTGA CCA GACCA TACTG TCAGTG TACTG
GTCATTACCAGTGGACC GGT T AG TAAACAT ---
GAM21313 5506 GGTATTAAGCCATTTGGAAA TTAA - A CC--- TTCT A ---- - TCA
TTGCCACTTTTTTCTGGGTA GGTA GCCATTT GGA ATTG ACTTTT GGGTA CC TGT TTTAGGT

ACCTGTTTTAGGTTCAGCTC CCGT TGGTGGA CCT TAAC TGAAGA TCCAT GG ACA
AGATTTA
TACCGCCATTTAGACACACG ---- T A CACAA TATT - CAGC C C--
ACGGTACCTTTATAGAAGTA TCTACC
ACACCAATATCCTAGGTGGT GC
TGCC CG

GAM21351 8412 GGTATTGTGAATAGTAGCAT TATT AGCA G C AAGTGCAG
GGTAAATCATACAAGTGCAG GG GTGAATAGT TG TAAAT ATAC
GTATCATTTAGTAGAACTAT CC TATTTATCA AT ATTTA TATG
TTATTTTCC TTT- AG-- G C --------
GAM21353 5627 GGTATTGTGTATTCTGTAAT T TG - - TA-- A TTGTTT
TATGAAAAAGGTTGTTTCTA GGTA TG TATT CTG TAAT TGAAAA GG
TTTTTACAATATTATCAGCA CCGT AC ATAA GAC ATTA ATTTTT TC
ATAATCATTGCC T TA C T TAAC A ------
GAM21365 8923 GGTATTTGTCCTCAGCCTCT TT T G C GT GGAGTG TG TATT
CCCCAGAGTCCCTGGGAGTG GGTAT GTCC CA CCT TCCCCAGA CCCTG TTTC T
TTTCTGTTATTGTGGAGGGA CCATG CAGG GT GGA AGGGGTCT GGGAT GGAG G
ATAGGGGATCTGGGGACAGG -- - G C AG AAG--- GT ----
GTGGGACGTACC
GAM21400 6585 GGTCAAGAGCACCTCACAGC T A C C- C CCG CGC - GTG AAACGAC
TGCTGAGCCGTCCGCTATCT GG CA GAG AC TCA AGCTGCTGAG TC TATCTG CAGTG CTG

GCAGTGGTGCTGAAACGACC CC GT CTC TG GGT TCGACGACTC AG GTAGAC GTCAT GGC

GGAGATACTGACAGATGAGA T A - AC - CG- A-- A AGA -------
GCCTCAGCAGCTTGGCAGTC

TCATGTCC
GAM21403 8031 GGTCAAGATAAAGTCAAAGC AGTCAAAGC TCAAA-- TCCAGTCT
GCAGGAGCCAGTCAAAGGTC GGTCAAGATAA GCAGGAGCCAG GG
CAGTCTCCACTAAGCCTGGC CTAGTTCTATT CGTCCTCGGTC CC
TCCTGCCCCATTATCTTGAT ACCC----- CGAATCA --------
C
GAM21408 19206 GGTCAAGCTGTAACCGGGTC - A ---- GTGGA
AATGTGTGGAATATTGGGGG GGTCAAG CTGTA CCGGGT CAATGT
GCTCGGCTGCAGACTTGGCC CCGGTTC GACGT GGCTCG GTTATA
A C GGGG -----
GAM21414 21334 GGTCAAGTAAACTATGAAGA T C TGAAGAG AT -- -------- A GAAG
GTTTGTACAAATGATGACAG GG CAAGTAAA TA TTTGTACAA GAT GACA GCAA GT
CAAAGTGAAGACCTTGTACA CC GTTTATTT GT AAACATGTT TTA TTGT TGTT CA
GAATGTGTTAAATTTCTTGT - T TA----- CT AA GTAAGACA C ----
ACAAAATTGTTTTATTTGCC
GAM21419 18229 GGTCAATGCAGGTGGGGGCT AA-- A- - --- CC GGCAA
CGCTGGGCCCAGGCAATGAA GGTC TGC GGTGGGGGCTC GC TGGG CA
CCCACCCGTAGAGCCCTCAC CCGG ACG TCACTCCCGAG TG ACCC GT
TGGGCAGCAGGGCC GACG GG A CCC AA -----
GAM21429 8513 GGTCACAAAGAGGCTTTCAC AAAGA- T ACC GAAGCA
CAGCGGCGAAGCAGTCGCTC GGTCAC GGCT TC AGCGGC
AGACGGCCCCAACCGTGGCC CCGGTG CCGG AG TCGCTG
CCAACC C AC- ------
GAM21449 817 GGTCACAGGATTGAGGCCAG TC AT CC TTACAGTTT GG TGATT
CATTACAGTTTGGGGTGATT GG ACAGG TGAGG AGCA G G
TTTCTTTTATTTGCTCCCTC CC TGTTT ACTCC TCGT C T
ACTTTGTTTCC TT C- C- TTATTTT-- TT -----
GAM21459 21002 GGTCACCAGATGGAGGCATG CCAGA G -- TC- - TG TCA
GTCTTCCCTTGAATTCAATT GGTCA T GAGGCAT GG TTCC CT AAT
TGAGTGGAATCTCTAAGTGC CCAGT A TTTCGTG TC AAGG GA TTA
TTTGATGACC ----- G AA TCT T GT ---
GAM21477 4061 GGTCACGACCACGGTGCTGG A ACCA T AG CACCA GAGC
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GCCAATTTCTCGTGCCGCAC CCAG GT GTCACG CCGT CTCTTTA AC
TGAACTGGACC - CAA- - G- ----- ----
GAM21491 19877 GGTCACTCGTATAGAACAGT --- A GAA TATT TATAATTT
ATTGTTTCTATAATTTGAAG GGTC ACTCGT TA CAG GTTTC
CTCCCTGAATGGACGGGTTC CCGG TGGGCA GT GTC CGAAG
AGGCC ACT G AA- CCT- --------
GAM21580 15983 AATGCAAATTTTCTGGTAGG CAAAT ---- - TTTTTTTGCTAT
TATCTCTTTTTTTGCTATGA AATG TTTCTGGTAGGT ATC TC
TGATTCCAACTTATCAGAGA TTAC AGAGACTATTCA TAG AG
CCTCCCATT CCTCC ACCT T ----------
GAM21582 4972 AATGCAACAGATAGTTCTTC A TAGTTCTT - AATCATAAGCA
CACATCCAATCATAAGCAGG AATGCA CAGA CC ACATCC
ATGTCGGCATTTCTGCTGCA TTACGT GTCT GG TGTAGG
TT C TTAC---- C ----------
GAM21603 19562 AATGCATCAGAAGAAGAAAT GA- - T GAAAAAAAGCA
GTCAGGAAAAAAAGCATTGT AATGCATCA AGAAG AAATG CAG
ATTTATTTCTGAATGATGTA TTATGTAGT TCTTT TTTAT GTT

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        TT                  AAG    A    -  ----------
GAM21614 5271  AATGCCCCGACCGCTACCTC    CCC  C  AC-----  C- A   AAT  TCGCA
        ACGTACCTGAATGCTCGCAG AATGC  GAC GCT     CTCA  GT CCTG  GC
        CTCCCGGGACTTTGAGTACT TTGTG  TTG CGA     GAGT  CA GGGC  CG
        ATAAGCAGTTCTGTGTT       TC-  A  ATATCAT   TT -   CCT -----
GAM21621 17182  AATGCCTGATACACTCTCTA      - TACACTC      TGTTT     TG ATT
        GGCATGTTTGAATTTTGAAT AATGCCT GA     TCTAGGCA    GAATTT  A
        TTTGGGATTCTTGCCTGGAA TTACGGA CT     AGGTCCGT    CTTAGG  T
        TCAGCTTCAAGGCATT         A  TCGACTA      T----     GT ---
GAM21693 15950  AATGGCTAGCAAACATGGAG      AGCAAA       CACCACA  ATGAATC
        AACACCACAGTGATGAATCC AATGGCT     CATGGAGAA      GTG
        ACAGAGCTTTTCTCCATGAG TTATCGA     GTACCTCTT      CAC
        CTATT                ------       TTCGAGA   -------
GAM21753 10142  AATGTAGACGTGTCAGAAAA      AC  GT   AAA   AAA    GA---  ATTTC
        TGAAATGGAGGAGATATTTC AATGTAG  GT  CAG   ATG   TGGAG    GAT
        ATCAAATACTCCAGACTATG TTACATC  TA  GTC   TAT   ACCTC    CTA
        CCTGGAATAGCTACATT        GA  AG   CG-   CAG    ATAAA  -----
GAM21800 6929   AATGTGCCTAGTAGAAAATT      ---       AATTTTAAATTA  TATGT
        TTAAATTACCTATGTGGCTC AATGTGC   CTAGTAGAA         CC
        ACATTATACTTCTACTGGAC TTACATG   GGTCATCTT         GG
        AGTACATT              ACA       CATATTACACTC  -----
GAM21821 13242  AATGTGTTTCTTCAGTTATG       -   - AGTT    CT   - T  ATAGA
        TCTGTGCTGTATAGAACTGT AATGTGTT TCTT C    ATGT  GTG C GT
        CACTAACATTAAAGAAAGAG TTACACAG AGAA G    TACA  CAC G CA
        GACACATT               G    A AAAT    AT   T T  -----
GAM21838 11117  AATGTTCATTCTGACTTTAC        T   A  TTACTA   - A    CTCTGTT
        TAGAGCCATGGCCTCTGTTG AATGTTCAT CTG CT     GAG CC TGGC
        CCAGGACTCCACAGCAGTAT TTGCAAGTA GAC GA     CTC GG ACCG
        GAACGTT                T   -  CAC---   A  -    -------
GAM21842 22417  AATGTTCTGTGTACATGTCA      CT    ACA   CAA   AGG  A  CCAG
        ATGTAGGTTAGGCCAGCCAA AATGTT  GTGT   TGT   TGT   TT GG
        AAGACAAAGCAAAGCATCAA TTACAA  TACG   ACG   ACA   AA CC
        CATT                 C-    AA-   AA-   GA-  A  ----
GAM21873 10206  AATTAACTAAGTCACAGGAA     -    GTCACA  A        T    A   ---   -  TC  TCCAAAAT
        GGTCTCACTTAAGCAGATTA AATTA ACTAA      GG AGGTCTCACT AAGC GAT   TAT GA  AA
        TGATCAATCCAAAATTTCTT TTAAT TGATT      TC TTTAGAGTGA TTCG CTG   GTA CT  TT
        CTATGTACGTCAGCTTTAGT     A    ACC---  A        T    A   CAT   T  TC  --------
        GAGATTTACTCCATTAGTAT
        AATT
GAM22009 17214  AATTCTGTGAATAAAGTGCT      - -    A-------      -   CATATA
        CAGCATATACTGTGGCACTC AATTCT GT GAATA       AGTGCT CAG
        TCTACTATATTCTACTGGAA TTAAGG CA CTTAT       TCACGG GTC
        TT                   T  T     ATCATCTC     T   ------
GAM22014 13264  AATTCTTCTATATGAAAATG     TTCTA    AAA   A  G   A   TTAAA
        TTACTGTATAGCTTTAAAGG AATTC     TATGA   TGTT CT TAT GCT
        CAGTAAGAATAAACTCGTAG TTAAG     ATGCT   ATAA GA ATG CGG
        CCATGAATT              TACCG    CAA   -  -  A  -----
GAM22017 5126   AATTGAAAATAGTCATTTTG   TT  AAAT    T     CCTA   TTAT
        AATCCTATTGATTATTCAAA AA  GA    AGTCA TTTGAAT    TTGA
        AATTCAGGCTGATTTGTCTT TT  CT    TTAGT GGACTTA    AACT
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        TT              TT  GT--    C     AA--   ----
GAM22018 4547   AATTGAAAGACTTCAGTGAA    GA   CTTCAG  A-  AGG      CAGC   T  AGCAGCTAGATTTCA

        CAAGGATTTACTTCAGCGTA AATT  AAGA     TG  ACA   ATTTACTT    GTA TC
        TTCAGCAGCTAGATTTCAGA TTAA  TTCT     AC  TGT   TGAGTGAA    CAT AG
        TTACACAAAGTGAGTAACTG    AA   TAA---  CG   CAA      ACA-   T ----------
        TGCCAAATTCTTAAAATT
GAM22036 7230   AATTGATAAAAGCCAGAGTT     ATA       G    GA    AACCAC   T   - A-   A  AGACAATGA
        GGAGACACAGAACCACTGGT AATTG   AAAGCCAGA TTGGA  CACAG     TGG TCAC CT  CCA TG

        TCACCTACCAATGAGACAAT TTGAC   TTTCGGTCT AACCT  GTGTC     ACC AGTG GA  GGT AC
        GACAGTGGAGAGTGTGACCC     G--       -    --    GA----  C    T  GA   G ---------
        AAGCTGTGTCCAATCTGGCT
        TTGCAGTT
GAM22064 22652  AATTGGTCTGTTGGGGTATT     GTCT     GTA      A  TTGTGACTTA     -    -    G    T
        AAATGAATTTGTGACTTAGG AATTG    GTTGGG   TTAAATG AT        GGATAT TTTCA TTTAT ATGGG
TT
        ATATTTTCATTTATGATGGG TTAAT    TAATCC   AATTTAT TA        TCTATA GGAGT GAATG TACCC
AA
        TTTATCAGGAAGTAACCCCA     ----     A--      A  TG--------     C    T    G    C
        TGGTAAGTTGAGGCATATCT   CAGGAA
        GTATATATTTAAACCTAATT AT
        AATT             TG
                        ------
GAM22110 11724  AATTTAGAAACATAAGAAGG            AGAA-----        TATCA
        ATTTAGGTATCACCTAAATT AATTTAGAAACATA        GGATTTAGG
        CAAAGAAATGTGTGTTTCTA TTGGATCTTTGTGT        CTTAAATCC
        GGTT                        GTAAAGAAA        -----
GAM22111 7934   AATTTAGAGTCTTTTTTGCC        TC     GCCC       TAAGACTTACACCCC
        CAGATCTTTTAAGACTTACA AATTTAGAG  TTTTTT    AGATCTTT
        CCCCAGAGATTTAAGAAGAA TTAAATCTC  AAAGAA    TTTAGAGA
        AACCTCTAAATT              CA     GAA-       ----------
GAM22138 19641  AATTTCCCTTTCGCCAGCTG      C     ---  -   C    AGCCAA    CC   ACCGA
        CCGTAATAGCCAAGAGGCCC AATTTCC TTTCGC   CAG CTGC GTAAT     GAGG  CGA
        GAACCGATCGCCCTTCCCAA TTAAAGG AAGGCG   GTC GACG CGTTG     CTTC  GCT
        CAGTTGCGCAGCCTGAATGC       T     TAA  C   -    ACAACC    CC  -----
        GGAATGGAAATT
GAM22145 14826  AATTTCTAAGTTGGGTTTAC      TAA-  T     A    ACA  AAGA  TGACA
        CTGACAAGAAGAACTGACAG AATTTC    GT GGGTTT CCTG   AG    AC
        TGATGCTGGCGGGAAAACCC TTGAAG    TA CCCAAA GGGC   TC    TG
        TATGAGCGAAGTT           CGAG  T     A    GG-  GTAG  -----
GAM22170 133    AATTTGGGGACTTTTGCCAG        AC--     C  T-     AA   TTTTT
        TTCAGGAAGCCTTTTTGGCC AATTTGGGG    TTTTG CAG  TCAGG  GCC
        CCTTGGTTTTGATAAAACCC TTAAACCCC    AAAAT GTT  GGTTC  CGG
        ACCCCAAATT              ACCC    A   TT    CC  -----
GAM22204 11457  AATTTTCCTTGGACAACACC      C-  TG  CAAC-       C    TACTC    GGCAT
        AAAAACACAGTACTCAAACG AATTTT  CT  GA     ACCAAAAA ACAG     AAAC
        GCATGTTTTTTTTTTGTTTT TTAAGG  GA  TT     TGGTTTTT TGTT     TTTG
        TTTGGTTTCTTTTTGAGATG      TA  GT  TTCTT       T    TTTTT   -----
        GAATT
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GAM22231 17464  AATTTTTTTAAACACACAAA   TTTT   C  -  A  TTT   TACT
                AAGCTTTTCTGTACTTAGAT AAT   TTAAA ACA CAAA AGC  TCTG
                TGCTGTTTGCTGTTTTTAAT TTG   AATTT TGT GTTT TCG  AGAT
                GTTGTT           TTGT   T  C   G  TT-   ----
GAM22234 7541   ACAAAAAAAAAAAAACAACAA      AAAAAACAACAACT   A--    C--   C-  TTTCAAT     TTTT
                CTTAAAAATCCTTGCTTACC ACAAAAAA         TAAAA  TCCTTG  TTAC  TG     TGGAGAA
                TGTTTCAATTGGAGAATTTT TGTTTTTT         ATTTT  AGGAAC  AATG  AC     ACTTTTT

                AATGTTTTTTCATTTTATTC      CAAT----------    AAC    CAA   TT  TTATTTT     ----
                ATTGTAAAACCAAGGACAAT AATGT
                TTTATAACTTTTTTGT

                      -----
GAM22263 2036   ACAAAAGGTACTTTTGGAGA    A  ACTT  G  ACCT   ATG   TCAC
                CCTCTGTCATGGAAGTCACC ACAAA GGT   TTG AG   CTGTC  GAAG
                TTCAAGACAGTACTGTAACA TGTTT CCG   AAT TC   GACAG  CTTC
                AGCCATTTGT           A  AAC-  G  AT--   AA-   ----
GAM22313 22803  ACAAAGCTCCATCTATGTAT   A-  CC   AT   TTCT    TT  CAA    GTTC
                TCTTCTGTATTTGCAAGCTG ACAA  GCT  ATCT  GTA   TCTGTA  TG  GCTGCAT
                CATGTTCATGTAGCCATCTA TGTT  CGA  TAGA  CAT   AGACAT  AC  CGATGTA
                CAGATACCAGATAGCCCTTG   CC  --   C-  ----    CT  ---     ----
                T
GAM22328 4541   ACAAATAAGTTAATTAAGGG    A  TTA   A  G-    ACTAAACCAAGATAC
                CCTGTTACTAAACCAAGATA ACAAAT AG   ATTA GG  CCTGTT
                CAACAGGAGCCTAATGTTTA TGTTTG TT   TAAT CC  GGACAA
                GTTTGT               A  TG-   -  GA    ----------
GAM22329 17095  ACAAATACATAAGGCATAGA    TAC    GCAT    TTTACT  AA   C   TGAA
                ATGGTTTACTGGCAAATAGC ACAAA   ATAAG   AGAATGG    GGC  ATAG AGTG
                AGTGTGAATACTCTATAGGC TGTTT   TATTC   TTTTACT    CCG  TATC TCAT
                CTAACTTCATTTTTACTTAT    TT-    AT--    TCAAT-  GA   -   ----
                TTTTTGT
GAM22344 14991  ACAAATCTTACAAAGGGGGG   AAT--    A-- ---    CTTC-   A    TC  C   C   TTT
                TGCTTCTGGGTATTTAGGTC ACA    CTTACAA   GG   GGGGTG    TGGGT TTTAGG  CA ATT TAT
AAGG
                CACATTCTATTTTAAGGCTG TGT    GAATGTT   CC   CCCTAC    ACCCG AGGTTC  GT TAA ATA
TTTC
                TATATTCGGCTTTCATAAAT   ACTGT    CTA  TGT    TATTA   G    TT  -  -  C--
                TGTTCTTGGAGGCCCAATTA   TATATT
                TCATCCCTGTCCATCTTGTA CTG
                AGTGTCATGT        GGC
                      ------
GAM22381 12046  ACAACACTCTTCTGTGTGTG      T  TCT   GT        CC   ACTACG
                GGAGGAGCTTCCCCTTACTA ACAACAC CT   GTGT  GGGAGGAGCTT  CCTT
                CGAAGGAAGGTTTCTCCCTA TGTTGTG GA   CATA  CCCTCTTTGGA  GGAA
                ATACTTAGGTGTTGT          -  TT-   AT        A-   ------
GAM22386 7701   ACAACAGGTAGGATGTGGGT   AC-     ATGTG    ATT    TGTG
                AGGATTTGGCCTGTGGGCCA ACA   AGGTAGG    GGTAGG   TGGCC
                TTGTTTGCCATTGCCTGCTT TGT   TTCGTCC    CCGTTT   ACCGG
                TGGTGT            GGT     GTTA-     GTT    ----
GAM22397 16954  ACAACCCAGTAACCATTCTG   AC    ACCATTCT    AT  ATGTCATTTG
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          TCCAATTTGATGTCATTTGC ACA  CCAGTA       GTCCA  TTG
          AATATGGGCTATGTAGCTAC TGT  GGTCAT       CGGGT  AAC
          TGGTATGT             AT     CGATGTAT    AT  ----------
GAM22405 171    ACAACTAAGTTAAAATGTTG       --   AAAA-   G      TTTTAT
          ATGTGAGTTTTATTTCACAT ACAACTA  AGTT     TGTT ATGTGAG
          GGATGGAATAAACTTGTGGT TGTTGGT  TCAA     GTAG TACACTT
          TGT                  GT    ATAAG    G      ------
GAM22482 17620  ACAAGGGGATGACTGGTGGG    AG     ACT  T--          C    GGTG
          TCTCTCTTGGCCCGTGGTGG ACA  GGGATG   GG   GGGTCTCTCTTGG CCGT
          CGGTCCGGGGGGGGGCTTCTT TGT  CCCTGC   CC   TTCGGGGGGGGGCC GGCG
          CCTTACGTCCCTCTGT       CT     ATT  TTC          T    ----
GAM22517 17576  ACAAGTTGGTATGGCGTGTG     TTGGTAT    T  GC      ATTCT   AAAGT
          CTATCAGCATTCTGGGAAAG ACAAG      GGCG GT  TATCAGC     GGG
          TCTCTGGCTGATGAACTTGC TGTTC      TCGT CA  GTAGTCG     CTC
          TCTTGT               -------   T  A-      GT---   -----
GAM22531 11726  ACAATAATTATTGGCCTACT       TT   GG    CTT    C-     TGC  TGAGAT
          TAATACTCCAGTGCCTTGAG ACAATAA  ATT  CCTA   AATA  TCCAG   CT
          ATAGTTGGACATATTTTAGG TGTTATT  TAG  GGAT   TTAT  AGGTT   GA
          AAGATTTTATTGT            T-   AA    T--    AC     ---  ------
GAM22533 11566  ACAATACTGTCTTTGTGGTT     TA  GT    GTGGTT    C      GCAC
          CTGGCTGTTTAGCACTAAAC ACAA  CT  CTTT     CTGG TGTTTA
          ACCCAGTTATAAAAGGTAGG TGTT  GA  GAAA     GACC ACAAAT
          CTTGT                CG  TG    ATATT-    C     ----
GAM22587 11880  ACAATGTCATTGTAAACTTC    AT     GTAA    CTTGAG     TCCAT
          TTGAGGGGCATCCATTGCCC ACA  GTCATT    ACTT     GGGCA
          AGATAAAGTCCAAGTGATTG TGT  TAGTGA    TGAA     CCCGT
          T                --      ACC-    ATAGA-     -----
GAM22603 14769  ACAATTCAAGAATCGTTATT    AT   A AA-   TT -       ATAATGGGAAA
          CATCACATAATGGGAAAGTG ACA  TCA G   TCG  A TTCATCAC
          GTGAGTTGGTGAGTGCTGAT TGT  AGT C   AGT  T GAGTGGTG
          GT                --   - GTG   GG T       -----------
GAM22606 4579   ACAATTCTATTACCATATAA     TCTATTACCATA   -       ATCCTT  CCAGCTTA
          GGTTTCCCAAATCCTTACCC ACAAT          TAAG GTTTCCCAA      AC
          AGCTTAGTTCTCTTGGGAAG TGTTA          ATTC CGAAGGGTT      TG
          CTCTTAATTGT          ------------   T       CTCT--  --------
GAM22625 22512  ACACAAACATGCAATTCCCT    A    GCAATT  CTCTC     ATAA
          CTCTGCAGAATAATCTGCAA ACAC AACAT     CC     TGCAGA
          TTTGGTATAAATGTTAGTGT TGTG TTGTA     GG     ACGTCT
                        A    AATAT-  TTTA-     ----
GAM22645 5190   ACACAATCCTGGCACAGAAG      TC  GG-----  A-  --    TTT    -    ATCA
          TTTGTTTGGTGATGGCCATC ACACAA  CT      CAC  GAA  GTTTG   GGTGA TGGCC
          AGGTTATTTACTTCAAATGG TGTGTT  GA      GTG  CTT  TAAAC   TCATT ATTGG
          TTCGGGTGAAAAGAAAGTTT      TT  AAGAAAA  GG   GG    T--    T    ----
          TGTGT
GAM22652 21852  ACACAATTCGTCCAAATGAA   A     GT   AATGAA     TGGG     CTCT
          AGCCTTGGGCCTGGCTCTCC AC CAATTC  CCA     AGCCT    CCTGG
          AGGAGGCTCACCAATGGGGG TG GTTGGG  GGT     TCGGA    GGACC
          TTGGT                -     --  AACCAC     ----     ----
GAM22667 15548  ACACACCACATTTTCTTTAT       CAT     TTATCCACT     T  ATAG
          CCACTCGTTGGTTGATAGCA ACACACCA   TTTCT       CGTTGG TG
```

TCTAATGTTCATCAGAGATA TGTGTGGT AGAGA GTAATC AC
TTGGTGTGT TAT CTACTT--- T ----
GAM22669 6972 ACACACCTGGCTTTGTGGTC - TTTGT- -- TTTCCCTGCATGTT
ACCTTTCCCTGCATGTTGGT ACACA CCTGGC GGTC ACC
CCGGCTTGTCCTGTCAGGCT TGTGT GGACTG TCGG TGG
GTGT C TCCTGT CC ----------
GAM22697 22620 ACACAGGATGTGCTGTGAGC ATG TGAGCCTT GG T- ATTCAGTA
CTTGGTGGTATGTAACATAT ACACAGG TGCTG GGT TATG AACAT
TCAGTAGTGTTTTCATGAAC TGTGTCC ACGAC CCA GTAC TTGTG
CTGTCAGCAGAGCCTGTGT GAG TGT----- A- TT --------
GAM22749 11390 ACACCACACCCAGCCAGGTC A- GC G T GT AGGTGCAAA
TGATGAGTTTTTAAGGTGCA ACACCAC CCCA CAG TCTGA GA TTTTA
AATGGGAGTTTTTCAGGCTG TGTGGTG GGGT GTC GGACT TT AGGGT
TGTGGGAAGTGGTGT AA GT - T TG ---------
GAM22788 21783 ACACCGTGGGCTTGTTAACT CC TG TTG-- C GAGTTG
TGCTTTGAGTTGGAAGCGGT ACA G GGC TTAA TTGCTTT
TTGAATTACGCCTGTAATGT TGT T CCG AGTT GGCGAAG
AA GT CATTA T ------
GAM22795 8022 ACACCTAGGCCTATTTTCAC CC CCT C C--- A - G CCTAA
GGCTGTGTAGCCTCAGTGCC ACA TAGG ATTTT ACGG TGTGT GC CTCA TG
TAACAATGGGTGCCACATAA TGT GTCC TAAAA TGCT ATACA CG GGGT AC
ATATCGTAAAATCACCCTGA TA CAC - ATAA C T A -----
TTGT
GAM22804 2007 ACACCTGCAACGTGAAGGCT GCA A - AT TGCGAGA - CT- GCCC
CGATCCTGCGAGAAGGAAGT ACACCT ACGTGA GGCT CG CC AGGAAG TGGT CT
GGTCTCTGCCCAGCCTGCCA TGTGGG TGCACT CCGA GC GG TCCTTC ACCG GA
CCTTCCTGGCCCGTAGCCCT --- C T CC ------- C TCC ----
CACGTGGGTGT
GAM22809 4696 ACACCTGTCCAGCTGTGAGC - CT G CTGCTT AATAA TCTGG
TCTGCTTGGTCCGAATAAAG ACACCTGT CCAG GT AGCT GGTCCG AGTCC
TCCTCTGGGGGCTCCCTGGG TGTGGGCG GGTC CG TCGG CCGGGT TCGGG
CCCTGATGGCTAGCCTGGCG C -- A TAGTC- CCC-- -----
CGGGTGT
GAM22811 11932 ACACCTTCGAATTAAGCACA T AA-- --- A CC A CCA-- AAAGCACC
TTCCTCGATTCCAGCAAAGC ACACC TCG TTA AGC CATT TCG TT GC
ACCGCAACATGACCGAAATG TGTGG AGC AGT TCG GTAA AGC AG CG
AGCTTCCTGAGCAGCGAGGT - GACG CCT A -- C TACAA --------
GT
GAM22849 5065 ACACGTGTGGTGGGCGGCGT TGT GGCGTG GCAAGAGAGAA
GGGCCGCAAGAGAGAAGGTT ACACG GGTGGGC GGCC
ACAAAAGCCCACCTTCGTGT TGTGC CCACCCG TTGG
TT- AAAACA ----------
GAM22901 17342 ACACTGCGCTGATGGCACGG T G G ACG- T AG CGCGAGACA
TTCTCAGTCGCGCGAGACAC ACAC GCGCT AT GC GT CTC TCG
GGAGGAGACAGAGGCGATGG TGTG CGTGG TA CG CA GAG GGC
TGCGTGT - - G GAGA - GA ---------
GAM22910 15712 ACACTGGTTTTCCAATCGGC T - C---------- TAAA
GTCTAAAGACCACGTTCCTT ACACTGGT TT CCAATCGG GTC
GCCTTTCGATTGGCAACACC TGTGGCCA AA GGTTAGCT CAG
GGTGT C C TTCCGTTCCTTGCAC ----

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GAM22944 16877  ACAGAAAAGGATAATGATAC    AA   ATAA  T---    AAA  TTTCACCCT
                CTAAAAAGCTTTCACCCTGT ACAG  AAGG   TGA   ACCTA  AGC
                TACGTAGGTCAACTCAGTTA TGTC  TTCC   ACT   TGGAT  TTG
                CCTTGGCTGT           GG   ATTG  CAAC   GCA  ---------
GAM22960 11503  ACAGAAATGTTTTTAAAGCT     A----     TA    G TCA     AGTAGAAA
                GTTCATGATTTAGTAGAAAG ACAGAA    TGTTTT  AAGCT T   TGATTT
                AATCAGGAGCTTGAAACAAT TGTCTT    ACAAAG  TTCGA G   ACTAAG
                TACTTCTGT            CATTA     --    G ---     --------
GAM22969 2439   ACAGAACTTCTATCCTTTTT      TTCT    TTTAA    CTTGTAT    AAAAAA
                AAACTGACTTGTATATTTTA ACAGAAC   ATCCTT    ACTGA     ATTTT
                AAAAAAAAATTCTTCAGTAG TGTTTTG   TGGGGA    TGACT     TAAAA
                GGGTGTTTTGT          ----    -----    TCT----    ------
GAM22982 17223  ACAGAAGTACCGAGAATGCC     ---  A    AATG     GGGG---  TTTAT
                GTTCGGGGGGCCTTTATGGCG ACAGA   AGT CCGAG    CCGTTC      GCC
                ACGTAAGAACGGGCTTGGAC TGTCT   TCA GGTTC    GGCAAG      CGG
                TTGGTCTGT            GGT   -    G---     AATGCAG   -----
GAM23011 17479  ACAGACATATCTAGGAGCCC    ACA  C     CCCTGAATA     CAGTC
                TGAATAGAGGCGCAGTCTGC ACAG   TAT TAGGAG       GAGGCG
                CTCACCTCCTGAATGAAGCT TGTC   GTA GTCCTC       CTCCGT
                GT                   GAA  A     CA-------     -----
GAM23027 13338  ACAGACTTCCGGGGAATTTT  AG    C     T- TG  G   TC  -  G    A    TCCAG
                GATGTTTTCCCGTGTTGTAG AC  ACTTC GGGGAA  TT  AT TTT  CC GT TTGT GAGCT
                AGCTTCCAGGGTTTAATAAA TG  TGAAG CCCTTT  GA  TA AAA  GG CA AATA TTTGG
                ACTGGTTAAAAATTGAGTCT  AA    T     CT  GT  A   TT  T  A    A    -----
                TTCCCTGAAGTAAGT
GAM23036 11949  ACAGAGACTATGTGAGAGAT    AGACTA  T   A    C  CT       A   ATCCATCC   CTTACCA
                ACGACTTGGTCCCAGATCCA ACAG     TG GAG GATA GA  TGGTCCCAG TCCA       CTG
                ATCCATCCCTGCTTACCACA TGTT     AC CTC CTGT CT  ACCAGGGTC GGGT       GAC
                GTGGGCTGGGACCATCATGT    GCACC- -  -   A --       -   --------  -------
                CCTCCACCACGTTGT
GAM23100 15435  ACAGATCCTGGGCTCCAACT      C  G      A      GTTT    ATTCAG
                CTAGAGTTTTCTGATTCAGC ACAGAT CT GGCTCCA CTCTAGA    TCTG
                AGGTTTGGGGTGGGGCTGAG TGTTTA GA TCGGGGT GGGGTTT    GGAC
                AATTTGT              A  G     -     ----    ------
GAM23118 16     ACAGATTAAAGGATAGGGTG      TAAAG     --   A  AT       TTTTAAGGC
                CACCATTTTTGTAACTTTTA ACAGAT    GATAGG  GTGC CC  TTTTGTAAC
                AGGCGTTGCAAAAGGGCATT TGTTTA    CTGTCT  TACG GG  AAAACGTTG
                TTCTGTCAAATATTTGT        TAAA-     TT   -  --        ---------
GAM23127 5185   ACAGATTCCGCGACAAAATT      T-- -    AAAATTCACTC    CA    GGCA
                CACTCCAGTCACTCTGGGCA ACAGAT   CC GCGAC         CAGT  CTCTG
                CAGAGGCTGATAGTTGCAGG TGTCTA   GG CGTTG         GTCG  GAGAC
                TCTATCTGT            TCT  A    ATA--------   --    ----
GAM23130 10426  ACAGATTTGAAGGAAAAAAT   GATTT     A       ATG   CAATTTT
                TTTGATGTAACAATTTTTTA ACA     GAAGGA AAAATTTTG   TAA
                AATAAAATTTTGTTTTTCTG TGT     CTTTTT TTTTAAAAT   ATT
                TAATGT               AATGT     G       AA-   -------
GAM23147 11478  ACAGCACTGAGATACACTAC   --     A  A   TACT   CTAAG  CACG
                TCTTCTAAGGGCACGCCATC ACA  GCACTG GAT CAC    CTT     GG
                TAAGTTTGTGATCCCAGTGT TGT  TGTGAC CTA GTG    GAA     CC
                CATGT                AC     C   -   TTT-   TCTA-  ----
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GAM23158 10712 ACAGCAGCCTCCACTGCCCG A- C CA A TG GAGGGACGGCGAGGGA
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GACTGGGATGGGCAGCTGAG TG TGTCG AG GACGGGT GG C
CTGTGGGT GG - TC A GT ----------
GAM23205 13743 ACAGCCTCAGCAGCCAAGAC TC C C CT TA A TGTTCT
TGTTTAGCTGAGTTGTTCTG ACAGCC AG AGC AAGA GTT GCTG GT
CCGGCGGCTTCTTGCTCCTT TGTCGG TC TCG TTCT CGG CGGC CG
TGGCTGT TT C - T- -- - ------
GAM23277 194 ACAGGACACCGAAGAAACCA CA AAGAAA- A C A CGCAA
TCACGTACACGCAATGCACT ACAGGA CCG CC TCA GT CA
GACGGATATGAGTGGGATCC TGTCCT GGT GG AGT CA GT
TGT AG GAGTATA C - C -----
GAM23291 21822 ACAGGAGAGTCATAGCTTCC - T -- - TCCAC-- - A TCTATT
ACAGATGCACAGATCTATTT ACAG GAGAG CA TAG CT AGATG C CAGA
CTGGGTTATCTATTTCACAG TGTC CTCTC GT ATC GA TCTAT G GTCT
TCTATTTGTCTCTCTCTGT T T TT T CACTTTA T G ------
GAM23315 15773 ACAGGCATGAGCCACTGCGC TGAGC - CC - TTAA
CCAGCCTGGAAGTTAATTTT ACAGGCA CAC TGCGC AGCC TGGAAG
TATGGTTGTGTATGTGTTGC TGTTCGT GTG ATGTG TTGG ATTTTT
TTGT T---- T -- T ----
GAM23320 547 ACAGGCCACTGGCTCCAAGG CA-- - AA- AGCCCTTTCCAA
CCTCAGCCCTTTCCAAGAGG ACAGGC CTGG CTCC GGCCTC
CCGACGGAGTCCAGCTCTGC TGTCCG GACC GAGG CCGGAG
CTGT TCTC T CAG ----------
GAM23322 6815 ACAGGCCAGGGCACACTTCC G ACT- TC C T CC GGCC
CTATCTGGACAGCGGTCTCC ACAG CCAGGGCAC TCCCTA TGGACAG GG CT CGGG
CGGGGGCCCCTGTCAGCTTT TGTT GGTCCCGTG AGGGGT ACCTGTT TC GA GTCC
GTCCATGGGGACTTGGTGCC A GTTC -- - - CT ----
CTGGATTGT
GAM23329 13090 ACAGGCGTGCACCACTGTGC - TGC A G GGATTATTT ATTT
TCGGATTATTTTTGAATTTT ACA GGCG ACC CTGT CTC TTGA
CAGTAGAGACAGGGTTTTGC TGT CCGT TGG GACA GAG GACT
CATGT A TT- - - AT------- ----
GAM23390 11108 ACAGGTGCACACCACCCCAC GCACACC CCCA- TTTTTGTATTT
CCAGCTAATTTTTGTATTTT ACAGGT ACCCCA GCTAA
TAGTAGAGATGGGGTTTCAA TGTTCA TGGGGT TGATT
CTTGT ACTT--- AGAGA ----------
GAM23393 11330 ACAGGTGCCCACCACCACGA - CCC A CGACCA TTTTGTATTT
CCAACTAAATTTTGTATTTT ACAGG TG ACC CCA ACTAAA
TTAGTAGAGATGGGGTTTCA TGTCC AC TGG GGT TGATTT
CCCTGT C TT- - AGAGA- ----------
GAM23404 11879 ACAGGTGTGTGCCACCACGC - TGT A CCCG TTTTTTGTATTT
CCGGCTAATTTTTTGTATTT ACA GGTG GCC CCACG GCTAA
TTAGTAGACGTGGGGTTTCA TGT CCAC TGG GGTGC TGATT
CCATGT A TT- - AGA- ----------
GAM23433 11239 ACAGTAGGTACTCGCGTCTA - TACTCGC TATCTT TTACTCACC
TCTTCTTTTACTCACCAAGT ACAGTA GG GTC CTT
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GT A TAATCA- TTTTT- ---------
GAM23448 15730 ACAGTCACCCTGGTTAATAA GT TG-- - AAGTTTT TG TTG

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          CAAGTTTTACTGATCAGTTG ACA  CACCC   GTTAAT AAC      AC  ATCAG
          CTGGTTGGTTGGTTGGTTGG TGT  GTGGG   CGGTTG TTG      TG  TGGTC
          CATGTGGGTGTGT        --   TGTA    G  GT----- GT    ---
GAM23464 4604   ACAGTCTTCAGGGATACACT    T      A  -   T  - GGGGCTTAA
          TGTCCAGGGGCTTAATGAGG ACAG CTTCAGGG TA CACT GTC CA
          CTGGTGATGACCTTGAAGCT TGTC GAAGTTCC GT GTGG CGG GT
          GT                -      A  A   T  A ---------
GAM23466 16906  ACAGTCTTTTTACAGTTGTT    T  T   C  TGT  TTTC    - GT  GAATAT
          GTTTTCAGTGGGGTCCGAAT ACAG CTT TTA AGT  TGT   AGTGG G  CC
          ATGGTTCACCATTTGCATTT TGTC GAA AGT TTA  ACG   TTACC C  GG
          ATTTGATAAGTCTGT       T  T   -  TTT  T---    A TT  ------
GAM23486 1372   ACAGTGCCAGCTTACTTTAA   GT---    TTACTTT   AC  T     AGGCTACCAAA
          TGACTCTCAGCGTCAGGCTA ACA    GCCAGC     AATG  TC CAGCGTC
          CCAAAGATGCTGGAACTATT TGT    TGGTCG     TTAT  AG GTCGTAG
          GCTGGTCTCAATGT       AACTC    -------   CA  -     -----------
GAM23501 15139  ACAGTGGTGATGATGTCCAG   -   G G    G   C     GTGAAGCAGGAGAAGA
          CAACTCTGTGAAGCAGGAGA AC AGTG T ATGAT TCCAG AACTCT
          AGAGGAGTTTTTGGAAATCA TG TCAC G TACTA AGGTT TTGAGG
          TGGCACTCGT          C   - G    A   T    ----------------
GAM23575 11237  ACATAACGAGACATAGTGTA    AA  AGA-  A  G  AA    AATGAATG
          AATAGATTAATGAATGGATC ACAT  CG   CAT GT TA  TAGATT
          TAAGTAAATAATGGAGGCGA TGTA  GC   GTA TA AT  ATCTAG
          TGT                -- GGAG   A  A  GA    --------
GAM23631 11998  ACATAGAGCTTAAATAATAT      GCT-   A---      AT   A-   GA  G   G  C   TAA-------
          CAAAATGCAAATATAGATTG ACATAGA   TAAAT   ATATCAAA  GCAA  TATA  TT GGT CA TGT
          GGTGCACTGTTAAGCTGAAT TGTATTT   GTTTA   TATAGTTT  CGTT  ATAT  GG TCA GT ACA
          TGCAAATTATGGCAACACAC      GTTT   CCAC      --   GC   G-  G   G  C   CACAACGGTA
          ACTGGACTGGGGTATACGTT -----  TGAATT
          GCTTTGATATCACCATTTGT    GC
          TTGTTTATGT            CG
                    TTAAA ------
GAM23714 5340   ACATCCGCCCCAATGGGCGG     G   AAT  C     A  GAAAAAAAAAAAAAA
          GGGGGAGGGAAAAAAAAAAA ACATCC CCCC   GGG GGGGGGG GG
          AAACCCCCCCCCCCCGGGGG TGTGGG GGGG   CCC CCCCCCC CC
          GGGTGT               G   ---  -     -  ---------------
GAM23722 7921   ACATCGATACAGTGTCACGC      ATACA  G   CG     AG-  ACAGG
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          GCGAGGATGAGGCGAATGAT TGTAGT    CG AGT  GAGCGC   GC
          GT                 AAG--  G   AG     GAG  -----
GAM23779 4798   ACATGAATTTCTCAGTCTAG     ATTTCTCAG--      T  A  AAG----    TA      ATTAA
          GTTAGAAAAAAAGTGTTTTA ACATGA         TCTAGGT AGA AAA      TGTTT  AGATTTTT
          AGATTTTTATTAAAAAAATT TGTACT         AGATCTA TCT TTT      ACAAA  TTTAAAAA
          TAAACAAAATTTGTTTATCT      AGCATATTCAA      T  A  GTTTAAA   --      -----
          TATCTAGAAACTTATACGAT
          CATGT
GAM23789 13055  ACATGAGGGAGGAAAATTAA           AAATT---   -   A  ------   C  CAC
          TATCACAGCAGTAACGGCAC ACATGAGGGAGGA      AATA TCAC GCA     GTAA GG
          CCTTTACATTATGTGCAGTG TGTACTTTCTTCT       TTAT AGTG CGT     CATT CC
          ATTATTTTTTAAAGTCTTCT          GAAATTTT   T   A  GTATTA   T  ---
          TTCATGT
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GAM23901 4832 ACATGGTGAAACCTGTCTCT --- AA -- CTA AAATAAAAAA
ACTAAAAATAAAAAATTAGC ACATG GTG ACC TGTCT CTAA
CAGGCATTGGTGGCATGTGC TGTAC TAC TGG ACGGA GATT
ATGT GTG GG TT CC- ----------
GAM23922 7025 ACATGTGACCTCGGGACGCC ----- C G GG CT GTGA
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AGCATGTACATGAGTGGGTG TGTGCGC TGGA CT TGTGGGT GTACA TGTACG
TGTCTAGGTGCGTGCGCGTG GTGCG T G GA -- ----
T
GAM23924 375 ACATGTGCATTGGTGATTTT T - TT- TTT-- TCCATTCTTAATATT
GATCATCCATTCTTAATATT ACA GTG CA GGTGAT GATCA
TGATTTCTGTGTCACCTACT TGT TAC GT CCACTG TTAGT
GTCATTTGT T T CAT TGTCT ----------
GAM24005 601 ACATTCCTGTGATACATCTT - GATA-- TTT-- T CT AGTT
TTAGTATTCATCTTTGGATA ACATTC CTGT CATC TAG ATTCAT TTGGAT
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GCTTCTGATGGACATAACAG A ATACAG TCTTC T AC ----
AGAATGT
GAM24013 7670 ACATTCTTTCAAAAAATTGG TTTCAA GC- ---------- G AAATTTGC
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ACAATGTCTTTATGAAGATC ------ ACT TTTCTGTAACAAT A --------
ACAATTTTGAATGT
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ACGTGT CAA GT A -- AGA- ---
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GGCTACCTGTAGTCTCCATC TGTA ATTTTCCTAGT TTATTATTT TG TC ATACA CTGAT
ACATATTCTTTGTCTTTATT AA AT C TT- TT CTACCT ----
ATTTATGATCCTTTTAAAAT
GT
GAM24047 2118 ACATTGTAAGTACCCAATCC GTA CCCA---- CATT C ACG
ATTCTGTCCTGACGCAGTAC ACATT AGTA ATC CTGT CTG
AGTTTTGATGTTAATGTTGC TGTAG TCGT TAG GACA GAC
TGAGATGT AG- TGTAATTG TTTT T ---
GAM24054 11048 ACATTGTTAAGGTCATGATG AG CA--- GT- CAGTCACTTTCAA
TACAGAGCAGTCACTTTCAA ACATTGTTA GT TGAT ACAGAG
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ATGACAATGT A- AAATA AAT ----------
GAM24094 4949 ACATTTCTGAAATGACCAAA AA-- CA G A AA GAGAA
GTACACAAATGGAGAACAGA ACATTTCTGA TGAC AA TAC CA TG
TGAGTGGTTGTCAGGGGTTA TGTAGAGATT ACTG TT GTG GT AC
GAGATGT GGGG -- G A AG -----
GAM24118 15754 ACATTTTCAGAACCTCCAAT -- AA TCCAAT G GACC TATAAT
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GAAGAATTGT TA AG ------ G AAAA ------
GAM24128 6447 TCAGCACACCTACAGGACTG GC A A A GAAA ATAAAG ATTTATG

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TGGACCTCGGCCTGAGGAGT A- A - - GG-- GACG-- -------
ATGA
GAM24134 18067 TCAGCACTCTGTGTCTAGCT AG CT GT- - T - TAAATATACCAAT
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TAATCTAGTGGGGA GG TC ATC T T C ----------
GAM24137 17988 TCAGCAGCACAAATCCCTTT C ACAAA AA---- TTC A- A- AAGTAGA
TATTAACCATCTTCCCTTTC TCAG AGC TCCCTTTTATT CCATCTTCCCT TCG GTAT CAC
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GATAGGGAGGGTGGGGAGAG AAAGAAACA
GATGGGAGGGGGCTCCTGA

GAM24156 19384 TCAGCATCCCCCCTGACTGT TC T -- TCC-- GAAA
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CTGG TC T TT TATAA ----
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ACAGTGTGCCGAGAGGCTAG TCAG CCCAAGGT GCAG CCACAG GT GCC
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GAM24187 21362 TCAGCCCCCAAAATAGGAAA - AAATA AAA C GTTAAA
TTCACAGCTGGTTAAACATC TCAGCCC CCA GG TTCACAG TG
TGTGGGCCACTGGCGGGCTG AGTCGGG GGT CC GGGTGTC AC
A C CA--- --- T ------
GAM24190 860 TCAGCCCCTTTGATCAGGTG A TTT-- - G CTGAGA TCA A AG--- -- - G-
CTCTGAGAAGAGGTCAGAAT TC GCCCC GATC AG TGCT AGAGG GA TGGC GC AG
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CCCCG
GGCGGTGCTTCTTGAGCCCC C TCGTT G G ------ TA- C GTCAA AT A AG
ACTTAGCAACTGGTCACTCA GCGGTG
TCCTCTGGCAGCTGGATCTT GGGAAG
GCTGGGGTCGA TTCTTC

GAM24195 6380 TCAGCCCTTACAATCTCACA - CAAT CATGC TCTTCTGT
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GTTCCTGAGCCTTGAGGAGT AGTTG GGAGT GAGT GATGG
TGA A TCC- CCTT- --------
GAM24219 16422 TCAGCCTGCTGAACAGTTCC CT - G CCTTTTTC TA C TCCAAAAATTTCC
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CATCCAAAAATTTCCTGATA AGTCG CG G TTGTCAA TTTTTGT CTAT GT

TCCTTGTTTTTAACTGTTGG TT G G -------- TC A ----------
GGCTTGCTGA
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GAGCATTACACCTGACCAAA TCAG GA TG ATTGAG CATT
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TCAATCCTGA - A TCATTTCCAACT T ----------
GAM24242 2892 TCAGCGTCTACTACAACGAG C C ----- CTCTT CACA
GCCTCTTCTCACAAGTACGT TCAG GTCTACTA AA CGAGGC CT
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ACCTGG - C ACCGA TGCAT ----
GAM24258 20502 TCAGCTCAAGAAATTAACTA CTCA AATT TAGCATTCTTCATCCCC
ATAGTAGCATTCTTCATCCC TCAG AGA AACTAATAG
CCTGTTAGTTTTGTCTATTC AGTC TCT TTGATTGTC
TGA TTA- GTT- ----------
GAM24280 20552 TCAGCTGCAACACCTGTTTA CT AACACCT GAT - CCTCA
TGATCCTGGCCTCACCAAGG TCAG GC GTTTAT CCT GG
TATGTGGACCGAGTGACTGA AGTC TG CAGGTG GGA CC
AG AGC---- TAT A -----
GAM24314 5792 TCAGGAAAATAATGTGGAGT AAAATAATG -- GAAAC GCGA
AAGAAACTTGAAGGCGATTT TCAGG TGG AGTAA TTGAAG
TAAAAATTACTAACCAACTT AGTTT ACC TCATT AATTTT
CTCATTTGA ACTCTTCA- AA AAA-- ----
GAM24323 858 TCAGGAACATGGTTACCCCA AACA-- GT A - ACTT TAG A ACCCAGA
CGATCAACTTGGGTATTGTA TCAGG TG TACCCC CGAT CA GGGTATTG GAG CA
GGAGACAACCCAGATGACTT AGTTC AC ATGGGG GTTA GT TCCGTAAC TTC GT
ACTCAATGCCTTGAATTGAG GTGCTG TT A A ---- TCA A -------
GGGTATTCAGTCGTGCTTGA
GAM24324 16788 TCAGGAACTGGGATGATGAG A ---- -- C TATG
CAAATATATGTATTTCTTAT TCAGG ACTGG GAT GATGAG AAATA
TATATCACAATCAGTGTTTG AGTTT TGACT CTA TTATTC TTTAT
A G AACA TA - ----
GAM24342 21462 TCAGGACGGGGGTCAGAACT GGA ------ AAC TG A--- G - ACA G
CTGTCCAGCGGAGGGAAGGC TCA CGGG GGTCAG TC TCCAGCGG GGGAAG CCG CTGG
AATG G
CGCTGGACAAATGGGCCTCA AGT GCTC CCGGTC AG GGGTCGCT CCCTTC GGC GGCC
TTGC C
TTTGGGGCACGTTCCCGGAC AA- AAGGAA AGT GT CGAA G A C-- A
GGGCTTCCCAAGCTCGCTGG ATTT
GTGGATGACTGGCCAAGGAA CCTC
CTCGAATGA GGGG

GAM24351 859 TCAGGAGCCAGGGTACCACA ------ ACCACA ---- GAGGTTGTAA
GCCTCAAGGGCTCTCAGGAG TCAGGAG CCAGGGT GCCTCAAGG GCTCTCAG
GTTGTAACTGAGGGTTGTTT AGTCTTC GGTTCTA TGGGGTTTT TGGGAGTC
TTTGGGGTCCATCATCTTGG TTCTGG CTACC- TTGT ----------
GGTCTTCTTCTGA
GAM24352 21068 TCAGGAGCCTCTTGGGGGTG GGA- ---- G GG CT GT --- A--- TCC--- T
CTCTGGTGCCGCCAGCCTCT TCA GCCTCT TG G TG CTG GCC GCC GCCTC GCTCTC
CC
CCGCTCTCTCCATGCTGTGG AGT CGGAGG AC C GC GGC CGG TGG CGGAG CGGGAG
GG

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        AGCAGGTGAGGGCAGCAGCG  GCAG    AGAT G TT AG  AT  GAC  GACA   CGACGA    T
        AGGCACAGGGTCAGGGCTAC A  GTGG
        GGGACGTTCGCATAGAGGAG  TGCT
        GCGACGTGA         ACGA
                  -   ----
GAM24386 20912  TCAGGCAGTAGCATCAACAT   GCA     CAACATCACC   AGCTTGTTAA
        CACCCTGAAGCTTGTTAATC TCAG  GTAGCAT       CTGA
        AGATTCTCACATGCTATCAC AGTC  TATCGTA       GACT
        TGA               AC-     CACTCTTA--  ----------
GAM24428 4231   TCAGGGACAGGGGCAGACCC   GGGA   G-   AC GG  T   -  A A   CCA
        GGTGGTCAGCGCCAAGAGCA TCA   CAGG  GCAG  CC  TGG CAGCG CCA G GCAA
        ACCATTGCCTGGATGCTGCC AGT   GTCC  CGTC  GG  ACC GTCGT GGT C CGTT
        AAGGCCTGCAACCTGAATGA   AA--   AA   C- A-  -   A  - -   ---
GAM24507 4223   TCAGGTGTTGAGACTGAGAT   G  T    TG    C  TTCGTATTTTTC
        GCGTGTTCGTATTTTTCCAC TCAG TG TGAGAC  AGATG GTG
        TTATCTGTCTTGTCAGCTGG GGTC AC GTTCTG  TCTAT CAC
                     G  T    --    T  ------------
GAM24512 6588   TCAGGTTCAGCTCTGTTCAG    TT  C-   --  G  C  TG G  T    TTTCACATCT
        CTCCTTGGGGATCTCCTGTT TCAGG  CAG  TCTGT  TCA CT CT  G GA CTCCTG
        TCACATCTCAGGAGTCACTG AGTCT  GTC  AGACA  AGT GA GG  C CT GAGGAC
        GGAAGATGACCACAGAAACT    CC   AA    CC   A  A  GT A  -    ----------
        GCCTCTGA
GAM24587 8494   TCAGTCCAGTGGCAGACGTG    T       AC   TG C       T  A-   TAGTTT
        TGACTCACAACTTTGTACCT TCAG CCAGTGGCAG  GTG  A TCACAACTT GT  CCT
        TAGTTTGGGAGGCCAAGTTG AGTC GGTCACCGTC  CAC  T AGTGTTGAA CG  GGG
        TGATTTGCACACCTGCCACT    C       CA   GT T       C  GA  ------
        GGCCTGA
GAM24588 16549  TCAGTCCCCACAGGCCCATG    TC    AG  CCA  -  CA-    AGGCCAG
        ACCCAGGCGGAGGCCAGCCG TCAG  CCCAC  GC   TG ACC   GGCGG
        TCACAGGTGCAGCTCGTGGG AGTT  GGGTG  CG   AC TGG   CTGCC
        TTTTGA              TT    CT  ---  G   ACA    -------
GAM24601 3776   TCAGTCTGAACATCAGTTTA   GT    CA   -    C   TC   ACT
        CCCAATCTGCACTGCGAGTT TCA  CTGAA  TCA GTTTA CCAA  TGC
        GGTTGGGCTTGACATTCAGG AGT  GACTT  AGT CGGGT GGTT  GCG
        ATGA              AG    AC  T    T   GA  ---
GAM24634 21514  TCAGTGCCCCAGCTGCAATG      CCCA  TG AAT   --  TCTTCCCCCCAACCAAC
        GCCCCATCTTCCCCCCAACC TCAGTGC   GC  C   GGCC  CCA
        AACTGGCTGGCCCGTGGCCT AGTCACG   CG  G   CCGG  GGT
        CCGCACTGA             CCTC  GT C--   TC  -----------------
GAM24637 5903   TCAGTGCGGGAACCAATGCA    --   GA-   AT  A  C       G   TGGA
        GACTGGCATTAAGGCTGTGG TCAGT  GCGG   ACCA  GC GA TGGCATTAAG CTG
        ATAGCTTGGTGCCAATTGGT AGTCA  TGCC   TGGT  TG TT ACCGTGGTTC GAT
        CGTGGTCAGCCGTGAACTGA    AG   GAC   GC  G  A       -  ----
GAM24640 4267   TCAGTGCTGAGTTGTTGGAG    T      GTT  A    -  T  GGGA
        CTGGACATCCGGGAGGTGTA TCAG GCTGAGTT   GG GCTGG ACA CC
        TCAGCCTGGCTCAGTTCTGG GGTC TGACTCGG   TC CGACT TGT GG
                     T      ---  -    A  -  ----
GAM24661 8118   TCAGTGTCAGTCTGCTTTGC    T  C  TC   TT---   TCT--      AGTCC
        AATCTTTACTTAAGTCCTAG TCAG GT AG  TGCT    GCAA    TTACTTA
        GTAACCATTTTGTCATCTAG AGTT CG TC  ACGA    TGTT    AATGGAT
```

CAAGCTTGCCTTGA C T GA TCTAC TTACC -----
GAM24674 3187 TCAGTTAAAAAAAGAAGAAG A AA AG GGC AAAG
AAGAAATGGCAAAGAGAAAG TCAGTT AAA AGAAGA AAGAAAT AAAGAG
TTTTTTCAAATTTCTTTCTT AGTTAG TTT TTTTTT TTCTTTA TTTTTT
TTTTAATTTAGATTGA A AA CT AAC ----
GAM24675 18369 TCAGTTAAAAAAGAAGAAGA A AA - GGC GAAAGG
AGAAATGGCAAAGAGAAAGG TCAGTT AAA GAAGAAGAA GAAAT AAAGA
TTTTTCAAATTTCTTTCTTT AGTTAG TTT TTTTTTCTT CTTTA TTTTT
TTTAATTTAGATTGA A AA T AAC ------
GAM24680 19801 TCAGTTAAGAGGGTACTTTA - GA TTTAAAAA CTTTCACAT
AAAAATAGAAGTCAGCTTTC TCA GTTAA GGGTAC ATAGAAGTCAG
ACATCTGATTTCTGTATGGG AGT CAATT TTCATG TGTCTTTAGTC
CTGTACTTGGTTAACTTGA T GG TCGGGTA- ---------
GAM24681 3938 TCAGTTAATAAAGAAGAAGA AATAAA - GGC AAAG
AGAAATGGCAAAGAGAAAGT TCAGTT GAAGAAGAA GAAAT AAAGAG
TTTTTCAAATTTCTTTCTTT AGTTAG TTTTTTCTT CTTTA TTTTTT
TTTAATTTAGATTGA ATTTAA T AAC ----
GAM24701 9231 TCAGTTGAGATGAAAAACAG AG A G TTC ATTATTCTAA
GTATTCAGTATTATTCTAAA TCAGTTG ATGAA AACAG TA AGT
CTCTTGCTGTTATTCATACC AGTTAAC TACTT TTGTC GT TCA
AATTGA CA A - TC- ----------
GAM24729 8620 TCAGTTTGATACATGCTATT ATACATGC GC AAATTTCCTAC
GATTGCTTAAAATTTCCTAC TCAGTTTG TATTGATT TTA
TAAAAAATTAATATTCTCAA AGTTAAAT ATAATTAA AAT
CTAAATTGA CAACTCTT AA ----------
GAM24736 6037 TCAGTTTTGAAGGCACATGG T ---- C TTC--- CTT
TTCTCTGCTTTAGATTTATC TCAGT TTGAA GGCA ATGG TCTG
CCATATGCTATTGTTTAATA GGTCA AATTT TCGT TACC AGAT
CTGG T GTTA A CTATTT ---
GAM24739 13980 TCAGTTTTTAAGTACAGGGT TTT T GTTTTATAGTGT AGAGTAA
TTTATAGTGTAATATATACA TCAGTT AAG ACAGG AATATATAC
GAGTAAGTGTATGTTTTTGT AGTCAA TTT TGTTT TTGTATGTG
TTTTCAACTGA CT- - ---------- -------
GAM24750 8567 TCATAACAACCTTTTAAGGC ACA AA -- TATTAGACATTAAAAAT
TCATATTAGACATTAAAAAT TCATA ACCTTTT GGC TCA
TGAAAGCTCAGAGAGGTGAT AGTAT TGGAGAG TCG AGT
ATGA AG- AC AA ----------
GAM24751 18623 TCATAACCAAATAAAGTTTT CCA TT --- - CATG
TTGAAGGCCATGGCTTTTCA TCATAA AATAAAGT TT TGAAG GC
CACAGTTATTTTATTTTATG AGTATT TTATTTTA GA ACTTT CG
A --- TT CAC T ----
GAM24754 20272 TCATAACTCTTTTCACTCTC A T CTCT TCC G -- GG A T T GCTTA
ATCTTCCTTGGGCAAGCTTG TCAT ACTCT TTCA CATCT TTG GC AAGCTT CTG TCCTCT TGC
AG
GCTGATCCTCTTTGCTAGGC GGTG TGGGA GGGT GTAGA GAC TG TTTGGG GAC AGGAGG
ATG TC

TTACTGATTGACTCGTATGG G T TTT- C-- G GT TA A T C -----
AGGAACAGATGGGTTTTGGT CTGATTGA
GCAGCAGATGTTTTGGGTAG

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        GGTGGTGG
                 --------
GAM24764 13008  TTCATTGTTATATCCTCAAA     TGTTATATC        AGCACATAG     CTGAA  AAT   T  ACAA

        GCCTAGCACATAGTAGGTAC TTCAT       CTCAAAGCCT       TAGGTA    TG   GAA GA    GGGGTG
        TGAATGAATGAATGAACAAG AAGTA       GAGTTTCGGG       ATCCGT    AC   CTT CT    CCTCAT
        GGGTGCCAGGAGACTGCTAC     TTTTACT--        ---------     CAAAG  C--   C  GAC-
        TCCCAGTCCTTCCCAGAAAC C   GAGA
        TGCCTAGGGCTTTGAGTCAT  CAG
        TTTATGAA           GTC
                 C   ----
GAM24808 6595   TTCCAAAAGCATTTAATTGA    AAAA- A      GAATT   CAA     TCA
        ATTTCTCAATGTTTTTCAAA TTCC     GC TTTAATT     TCT   TGTTTT
        AACAAAAAGATCCAAATTAG AAGG     TG AGATTAA     AGA   ACAAAA
        AGGTAAAAAGGAA          AAAAA  G      ACCT-   AAA     ---
GAM24824 17951  TTCCAACAAGACGATCCACG    A--     A  A  CA  CAGA    CAAA-    -   AAGAAG
        CAGAGCTCTCAAAGCTGGTG TTCC   ACAAG CG TC  CG    GCTCT     GCTG GTG
        AAGAAGCATGCGGCGCAGCG AAGG   TGTTC GC AG  GC    CGAGG     CGGC TAC
        GAGCACGGAGACCGCCTTGT    CCA    C  C  AG  A---    CGACG    G   ------
        ACCGGAA
GAM24825 6310   TTCCAACATACTCACCTCTT     ACATA  CACCT       AATCCCTTTCCAACTGC
        CCCATAATCCCTTTCCAACT TTCCA     CT     CTTCCCAT
        GCATGGGAGGTTCTAAGACT AAGGT     GA     GGAGGGTA
        GGAA                CA---  ATCTT       ------------------
GAM24834 9841   TTCCAACTGATTACCATTTA    CA     TTACCATTTA      C  AA   AACTGC
        CAGTGATCACAATGAAACTG TTC  ACTGA         CAGTGAT AC  TGA
        CTCAGAGTTATCACTGAACT AAG  TGACT         GTCACTA TG  ACT
        TCAGTAAGAA           AA     TCAA------      T  AG   ------
GAM24853 8758   TTCCAATACTTAGAAAATTA     AA       AAA-       -  CTGTGC
        TTGTTTGTCTGTGCGCATAA TTCC  TACTTAGA    TTATTGTT TGT
        TAATGAATAATTTGGGTAGA AAGG  ATGGGTTT    AGTAATAA ACG
        GGAA                AG       AATA       T   ------
GAM24911 1182   TTCCAGCAACTGGTCACTGC      CAACT--     CT  AGC     A T   ATGGCG
        AGCAGCGCACTCACATGGCG TTCCAG      GGTCA  GC   AGCGC C CAC
        GTGGGCGCTCGGGCTGACCT AAGGTC      CCAGT  CG   TCGCG G GTG
        CACCTTCTGGAA            TTCCACT     --  GGC     - -   ------
GAM24946 8741   TTCCAGTCCTCTGTTCAGGT     AG-   T     CAG      GACAGA   CATAA
        GCTTAGACAGAAGCCATAAG TTCC   TCC CTGTT   GTGCTTA     AGC
        CTGATGAGCATGACAGGGAA GAGG   AGG GACAG   TACGAGT     TCG
        AAGGAG              AAA  -    ---      AG----   -----
GAM24956 1526   TTCCATAAAAAAAACAAAAA    A     AAA     ----       AAAACAAACCATTATTA
        ATAAATTATAAAACAAACCA TTCC TAAAAA   CAAAAA    ATAAATTAT
        TTATTAATAGTTTATGATAT AAGG ATTTTT   GTTTTT    TATTTGATA
        TTTTGAGATTTTTAGGAA      -    AGA     ATAG       ------------------
GAM24977 2929   TTCCATCTTTTTATACCAAT     TCTTT      -   TG----     CTACCTTCATCACCTTCC
        TTGACATGCTACCTTCATCA TTCCA     TTATACC AATT     ACATG
        CCTTCCCATGTATAATTAAT AAGGT     AATATGG TTAA     TGTAC
        TGGGTATAATTCTGGAA       CTT--      G    TTAATA    ------------------
GAM25025 18035  TTCCCAATGCTACACAACCA   -  -      ACAAC      -----      T   A   GAAAATGA
        GAAAGTAAGGTGTTCTACTT TTC CCA ATGCTAC     CAGAAAG     TAAGGTG TCT CTT
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GAAAATGAAAGGAGATTATT AAG GGT TACGGTG GTCTTTC ATTTTAT AGA GAA
TTAGGTATCTTTCTGAAGTG A C AA--- TATGG T G --------
GCATCTGGAGAA
GAM25026 16458 TTCCCAATGCTACACAACCA CA ACAAC ----- T A AACAATGAA
GAAAGTAAGGTGTTCTACTT TTCC ATGCTAC CAGAAAG TAAGGTG TCT CTTG
GAACAATGAACAGGAGATTA GAGG TACGGTG GTCTTTC ATTTTAT AGA GGAC
TTTTAGGTATCTTTCTGAAG TC AA--- TATGG T - ---------
TGGCATCTGGAG
GAM25033 8565 TTCCCACTATTTTGCTACAT --- TTTT- AT- - G TGCTCTTT
AGACGGGTGTGCTCTTTTAG TTCCC ACTA GCTAC AGA CGG TG
CTGTTCTTAGGTAGCTCGTC GGGGG TGGT CGATG TCT GTC AT
TGGTTTCGGGGG CTT CTGCT GAT T G --------
GAM25035 6366 TTCCCACTGGAACTTTTTCT ACTGGAACTT C A AG G CTGGGATTT
CCAATTCGGGGTACTAGCCG TTCCC TTTCTCCAATT GGGGT CT CC GGA
GGACTGGGATTTTCTGGGAA AAGGG AAGGAGGTTGA TCTTA GA GG TCT
AGATTCTCAGTTGGAGGAAC GC-------- C - AA G ---------
GGGGAA
GAM25051 1120 TTCCCAGGCGGCAGGTCTGG G- CTGGG TG CATGC
GTCTGAGCACATGCTGTTTG TTCCCAGGCG CAGGT TC AGCA
GGGGATCACCTGGACGCCTG AGGGGTCCGC GTCCA GG TTGT
GGGA AG CTAGG GT -----
GAM25085 21451 TTCCCCAGTGTTACGGAGGG CCCCAGTGTTAC CCTTGAG G AAT TCT AGT
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TCCTTGAGGCAGGAGTGAAA TT GGAGGGT GCAGGA TGAA TGGG GGGGGTT CCTGG
ATTGGGTCTGGGGGTTAGTC GA CCTTTCG CGTTTT GCTT ACCT CCCCCAG GGGCC
CTGGGGTGGAGGTCTGGGCA ---------- CCCCACA G CT- --- GCT G
CGCCGGGTCGGACCCCCTCC GAGGTCTGGG
ATCTTCGGTTTTGCACACCC GTG
CGCTTTCCAG CAC

GAM25092 5505 TTCCCCCGAACTTGATCAAT CCC- - ATCA AC CTTACA
GTATACAATGCTTACACATT TTCC GAA CTTG ATGTAT AATG
CATATATGTGCAAGATTCAA AAGG CTT GAAC TATATA TTAC
CAGGAA ACAA A GTG- C- ------
GAM25093 12318 TTCCCCCGCAGCTCACGGCA - A CAC - CA-- T A GACCATA
CTCAGCTTACTTGAGAGTTG TTCCC CCGC GCT GG CACT GCT ACTTG GAGTT
ACCATAGACTCCCGGGTGGC AGGGG GGTG CGA TC GTGA CGG TGGGC CTCAG
ATCAAGTGACTCAAGCAGTG T A AC- A ACTA - C -------
GTGGGGA
GAM25120 20427 TTCCCCTTTTCCCAGTATTA - T TATTA---------- AATAGTCC
CTGAATAGTCCCAGCTGGAG TTCC CCT TTCCCAG CTG
AGTCCAGGCCCTGGGAATGG AAGG GGG AAGGGTC GAC
GAGGAA A T CCGGACCTGAGAGGTC --------
GAM25128 12419 TTCCCGTCTGTCCCCCTACC C CT - A CAA C CAGTCCCTCAAA
CCAAGTCCCCCAGTCCCTCA TTCC GT GTCCCC CT CCC GTC CC
AAGGAGGCAGGGAGTGGGGA AAGG CG CAGGGG GA GGG CGG GG
CTGCAGGAA A T- T - A-- A ----------
GAM25129 943 TTCCCGTGGGCCCCCGAGAC CCCC CC- A AGGAAGCG
CCGCCTAGATGGAGGAAGCG TTCCCGTGGGC GAGA CGCCTAG TGG
CTGCTGGGCGCCCTCTTACC AGGGGCACTCG TTCT GCGGGTC GTC

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        GCTCACGGGGA              CCA-  CCC    -  --------
GAM25191 18624  TTCCCTTTTTCCTTCCTCAG  -  TTT  TT   GGTTTT      G   TCCC
        GTTTTGTCTCTTCCTGTGTT TTC CCT  TCC  CCTCA    GTCTCTTCCT TGTTG
        GTCCCCAGCAAGGGAGAGAC AAG GGG  AGG  GGGGT    CAGAGAGGGA ACGAC
        TGTGGGGTGGATTGGGAGAA  A  TT-  T-   GT----      -   ----
GAM25197 12735  TTCCGAGTGAAATGTGTCCA     T  AAT  GTC-  ACA-   A  ATCTA
        GACAGCAGGAGAGATCTACT TTCCGAG GA  GT   CAG   GCAGG GAG
        TATCTGTGAGACTGAAGAGC AAGGTTC CT  CG   GTC   TGTCT TTC
        CTCCTTGGAA           - C-- AGAA  AGAG   A  -----
GAM25205 20391  TTCCGCTCCTGAGGTCCATA      C   T  ATATG  C   G   C  CGGTCTT
        TGTCGACTGCGGGAAGCAAG TTCCGCTC TGAGG CC   TCGA TGCG GAAG AAG
        CGGTCTTCTTCTTCACGCAA GAGGCGGG ACTCC GG   AGCT ACGC CTTC TTC
        TCGAGGTCCTCATGGGCGGA      T   T  -----  A   A   -  -------
        G
GAM25222 21464  TTCCTAAAAGGCAACCTTTG      AA  AACC     CA   CGGTACC
        TTACAATCACGGTACCTGAT TTCCTAA  GGC   TTTGTTA  ATCA
        ATAACAAGCAGCCCTTAGGG AGGGATT  CCG   GAACAAT  TAGT
        A                 C-  AC--     A-   -------
GAM25267 6307   TTCCTCAGCTAGTGCAATTT    - A-   GTGC    ATT TT TTAGTAT
        ATTTTTCTTAGTATGGGGCA TTCCT C  GCTA   AATTT   T  C
        GGAGTTAATATGGCCAGAAG AAGGA G  CGGT   TTGAG   G  G
        GAA               A AC   ATAA    GAC GG -------
GAM25317 12931  TTCCTCTTTACCAGTCTACG      TTTACCA      ACTTTT   T  -  ATCTT
        TACTTTTGCCTTTAATGATC TTCCTC      GTCTACGT     GCCT TAA TG
        TTCACTTATAGGCCCCACGT AAGGAG      CGGGTGCA     CGGA ATT AC
        GGGCCCAACGAGGAA          CAACC--      CCC---   T  C  -----
GAM25332 6431   TTCCTGAGGGAGGATGCATT     GA-  A  -  A   GGG     -- AAGCT
        CTGGGCACTGGTGCAAGCTG TTCCT   GGG GGA TGC TTCT   CACTGGT  GC
        CTGGCCAGTGAGAAGCACTC AGGGA   TCC CCT ACG AAGA   GTGACCG  CG
        CCCTGCAAGGGA           ACG  -  C  -   ---     GT  -----
GAM25341 21156  TTCCTGCAACTAAAGGCATA       A  AA-  CAT     ATATTGTAGCAA
        TTTAAAATATTGTAGCAATT TTCCTGCA CTA   GG   ATTTAAA
        TAGATTCTCCAGATAGTGTA AAGGATGT GAT   CC   TAGATTT
        GGAA                 -  AGA  TCT     ------------
GAM25360 21618  TTCCTGCTGGCCACCATCCT   -   G   -  CCTTG  A   TGCCT  CCAT  GAGCG
        TGGGACCGCCTGCCTGGCCA TTC CTGCT GCCAC CAT    GG CCGCC    GG   TGC
        TTGCGAGCGGCATCTACCTA AGG GACGA CGGTG GTG    TC GGCGG    CC   ACG
        CTGGCGGCTGTGCGTGGCGA  T   G   C  -----  -   TCAT-  ATCT  -----
        GCAGTGGA
GAM25414 7976   ACATTTTGATGTATACAATA     T        AA     -- A    TTTTGTTT
        TGGCTATATTATATTTTGTT ACATT TGATGTATAC  TATGGCT  AT TTATA
        TTATAAAATCAAGTCATAGT TGTAG ATTATATATG  ATACTGA  TA AATAT
        ATATATTATGATGT          T        --      AC  A    --------
GAM25501 1957   ACCAATGCATTTCCTGGAGA    AT    TCC  -    TATCCCTAC    TTT
        ATATATCCCTACTGTCTTTG ACCA  GCATT   TGG AGAATA       TGTC
        ACAATTATTCTGCCAAATGT TGGT  TGTAA   ACC TCTTAT       ACAG
        CATGGT               AC    ---  G    TA-------    ---
GAM25503 19539  ACCAATGCCAGAACTTGTAT    A  -  GA---  T   ATCAA-    AGGGTAA
        CAACTTGAGGGTAACAAGCG ACCA TG CCA     AC TGT      CTTG
        AATAACATGTAGAAATGGAC TGGT AC GGT     TG ACA      GAAC
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        AATGGT              A  A   AAAGA  T   ATAAGC   -------
GAM25567 11947  ACCACCGCTTACTAGCTGGG    C  C  ACT   TG   AA-   CCT-   AC  CACCGACA
        AAAACACCTGCGACGACACC ACCA CG TT   AGC  GGA   ACA    GCG  GA
        GACATCACGCTCCTTGTCCG TGGT GC AG   TTG  CCT   TGT    CGC  CT
        TCCTGGTTCGACGATGGT      A  -  C--   GT   GCC   TCCT   A-  --------
GAM25579 10341  ACCACGCAGAAGAGGTGCAG    C     AG    -     - AT   AGGA
        TGTGATGGCAGGAGCTTCCA ACCA GCAGA  AGGT GCAGTG TG  GGC
        CCGCTGCTGCTTTCTCTGCA TGGT CGTCT  TTCG CGTCGC AC  TCG
        TGGT              A     CT    T     C  CT   ----
GAM25586 4924   ACCACGCCTGGCTAGATTTT    C     - TA------  TT   TT       TTTTT
        TTTTTTTTGTATTTTTTATA ACCA GCCTGG C       GA  TTT  TTTTTGTA
        GAAATGGAGTTTCGCCATGT TGGT CGGACC G       CT  GAG  AAAGATAT
        TGCCCAGGCTGGT          -     C TTGTACCG  TT   GT       -----
GAM25590 13229  ACCACGGCCGTCTTGTTTTC    --        -    ---       ----- A    CTTCAT
        CCGGCCAGGAAGCTTCATCT ACCA  CGGCCGTCT TGTT   TTCCCGG    CC GGAAG
        TCCGGATCATCCGGGAAAGG TGGT  GCCGGCGGA ACAG   AAGGGCC    GG CCTTC
        GACAGAGGCGGCCGGTTGGT    TG        G   GGA      TACTA  -    ------
GAM25592 11711  ACCACGGGGTCCAGGCCTGT    C     CA  C       CAAC   C  GAAG
        GGGCCAACCACCAGGAAGCT ACCA GGGGTC  GG CTGTGGGC    CAC AG
        GTGCATGCCCACAGCCCGAG TGGT CCCCGG  CC GACACCCG    GTG TC
        GCCCCTGGT           -     AG  C       TAC-   -  ----
GAM25623 16246  ACCAGAAATCTTCATGCAAT       T-----------      C   G   AATAC
        GAAAAATACTTTAATTCATG ACCAGAAA          CTTCATG AAT AAA
        AAGCTTACTTTTTTTTTTTT TGGTTTTT          GAAGTAC TTA TTT
        GGT                  TTTTTTTCATTC      -   A   -----
GAM25657 5127   ACCAGCAGGACATTCTCGCC        AC   TCGC    ---    AATCTGA
        TCGAATGAAAATCTGATTTA ACCAGCAGG  ATTC    CTCGA   ATGAA
        TGTGTCGAGTGAATACCTGC TGGTCGTCC  TAAG    GAGCT   TATTT
        TGGT                 A-   T---    GTG    -------
GAM25677 13705  ACCAGCCTGGCTAACATGGT    -       ACA----------   -    CCCG
        GAAACCCCGGTTTCTACTAA ACCA GCCTGGCTA           TGGT GAAAC
        AAATACAAAAAACTAGCCAG TGGT CGGACCGAT           ATCA CTTTG
        GCGTGGT              G        CAAAAAACATAAAA   T    ----
GAM25720 2131   ACCAGTAAGGGGTTCCCTGA      ------       CC  GACAC   A   AA   G   ATAAAGAG
        CACCTACACAAAATGTGGAA ACCAGT     AAGGGGTT  CT    CTAC CAA  TGT GAA
        ATAAAGAGTTTGGCAATTGG TGGTCG     TTCCCTAA  GA    GATG GTT  ACG TTT
        TAGAGTAAATCCCTTTGGAA      AAAGGT       AT  -----   -   A-   G   --------
        AGCTGGT
GAM25722 17523  ACCAGTACTATCTGCGGGTC      ACTATC  C     C---  C  T     CCA--     --   -    CGTTC
        ACCACGGTGGCTTCCCACAC ACCAGT     TG GGGTCA    CA GG GGCTTC    CACTTC  TGAC TCGGA

        TTCTGACTCGGACGTTCCTT TGGTCA     AC CCTAGT    GT TC TCGAAG    GTGGAG  ACTG GGCCT

        CCGGTGTCACTGAGGTGGTC      CT----  -     CTCA  T  -     TGCTG     TC    T     -----
        GTGAAGCTCTTTGACTCTGA CT
        TCCCATCACTGGT

                  --
GAM25737 19595  ACCATAAGGATTTTTCCTCG          T-   CT     TG   AAGTC
        AACTTGGGCAAGTCGTCGGT ACCATAAGGAT  TTTC  CGAACT  GGC
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          TTGCGAGATCGTCCTTATGG TGGTATTCCTG  AGAG  GTTTGG  CTG
          T                    CT   C-    --  -----
GAM25746 19724  ACCATATACCTACTCAGTTC   T   -- A--   G-    T  AGATCAG
          TGTTGGGAGATCAGTCTGCA ACCA ATAC  CT   CTCA  TTCTGT GGG
          GAGAATGGGATGAGAAGTAT TGGT TATG  GA   GGGT  GAGACG TCT
          TGGT              -   AA  GTA   AA    -  -------
GAM25752 21971  ACCATCCCATATATATAACC            AACCATATCC      ATAT
          ATATCCATATATATATATAT ACCATCCCATATATAT        ATATATAT
          ATATATCCCACATATATATG TGGTAGGGTATATATA        TATATATA
          GGATGGT                    CACCC-----       ----
GAM25760 10444  ACCATCTTTCCTGCAATATA   AT      CAATATATCGA    -  AAGCAC
          TCGAATCTCAGGTAAGCACA ACC  CTTTCCTG         ATCTCA GGT
          TCATGAGATCAGGAAAGCGG TGG  GAAAGGAC         TAGAGT CTA
          T               C-      ----------     A  ------
GAM25764 17052  ACCATGAAGGCACCCTTGAA   A  A  CAC- TT   CAT   T   GCAC
          CCATCCATGATTGCACAGTC ACC TGA GG   CC  GAAC   CCA GATT
          TGGTGTTCTTGGCTTCCCAT TGG ATT CC   GG  CTTG   GGT CTGA
          TAGGT             -  A  CTTC  TT   T--  -   ----
GAM25779 17389  ACCATGCTATATATTATTCA      TATATAT    GG   GAT   AGAATGCCCA
          GGTTAGATTCTCAGAATGCC ACCATGC     TATTCA  TTA   TCTC
          CAGGGATATGAATGGATATT TGGTACG     ATAGGT  AGT   AGGG
          CATTGCATGGT            TTACTT-    A-   AT-   ----------
GAM25810 15185  ACCATTTCCATTCTTATCCC   --   C TT    CC  GT   A   GAAT
          TAGTTTTCAGGTGGAATCAC ACC  ATTTC A  CTTATC  TA  TTTC GGTG
          TAGAAAGTTAAGATGGGCTT TGG  TAAAG T  GGGTAG  AT  AAAG TCAC
          GAAATAAGGT          AA   - TC    A-  TG   A   ----
GAM25823 11331  ACCCAAAGTGCTAGGGATTA    AAGTGC   GA-   A    ACGAAC
          CAGGCGTGACGAACCACGCC ACCCA    TAGG   TTAC GGCGTG
          GGTGGAAACTTAATTTGTGG TGGGT    ATTC   GGTG CCGCAC
          GT                GTTTA-   AAA   G    ------
GAM25859 21820  ACCCAGACCTGTCGCTGAGC   CA- C    G   AG  TC  -  CCA
          CTCTCTACCCCAGGTCAGAC ACC   GA CTGTC CTG  CC  TCT ACC
          GGACAGGACAGATCACAGGT TGG   CT GACAG GAC  GG  AGA TGG
                        ACA A    -  A- C-  C  ---
GAM25918 19511  ACCCAGGTGACCACCGTTGA     G  A  C   GAA    C--   A   -  GTTAG
          AGGTGCCTATGATTGAAGCG ACCCAG TG CCA CGTT   GGTGC   TATG TTGA AGC
          TTAGGCTGTTAACATGCACG TGGGTC AC GGT GCAG   TCACG   GTAC AATT TCG
          CACTGTAGACGCTGGCCACT     - C  C   ATG    CAC   -   G  -----
          GGGT
GAM25960 1666   ACCCCAGCCTTTCTGCAGAT   C    CTTTCT     TC   AA   AG   G   AACGGGAG
          GTCCCTAAGGTAGAGGTGTG AC CCAGC     GCAGATG  CCT  GGT  AGGT TGG
          GAACGGGAGCTGGCCTGGCT TG GGTCG     TGTCTAC  GGA  TCG  TCCG GTC
          GAAGGAGCATCTGTCCCAGC   A    ACCC--      GA   AG   G-   -  --------
          TGGAGT
GAM26004 11807  ACCCGAACAACATGCACTCG     A-     T  C       GTC     GGCTGGGA
          TCGATGTCACGGTGGGCTGG ACCCG  ACAACA GCA TCGTCGAT   ACGGTG
          GATGCCGTAGTTGACGATGT TGGGT  TGTTGT TGT AGCAGTTG   TGCCGT
          TGTTGTCCTGGGT          CC    -  -      A--      --------
GAM26005 15214  ACCCGATTTTTTTCAACCGT           CA------    G  TATAAAAGCTG
          GGGTATAAAAGCTGTCAATG ACCCGATTTTTTT       ACCGT GG
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GGT AAAAAAAA A ----------
GAM26037 4684 ACCCGTCCCTGATCCTGGCC CTGA T C CAGA CG - AGGAGCTG
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ACCAGGAGCTGGGTGGAGGA TGGGCGGG AGG CCGGT TCCGT GCGG GAG TGG
GGCGATTGCCTATGGCCGGA TCGA - A TA-- AG G --------
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GAM26083 16917 ACCCTGGAAACTACAAGCCC TG ACTACA AAC CTCAA TTCTCC
CAACGTCACTCAATACTTTC ACCC GAA AGCCCC GTCA TACT
TCCGGTGCTTCATGACAAGG TGGG CTT TCGGGG CAGT GTGG
GGCTGCTTCTGGGGT GT CG---- AA- ACTTC ------
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AGT A C T TCA- ----------
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TGGTAGGGT T- ACC ATCG--- TT ------
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CGGCCCTGATGTAAAGACGA TGG CTTT TCTAG TGTA CCGG
TCTATTTCTGGT T A CAGAAA GTC ----------
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TCACGGT A - CTCCT-- CTC- G ----
GAM26145 11527 ACCGCTCCACGAGCCTGGAG GC A- A A- CGGA GA CCTG
AGCTCGGACTGCGAGTCCCT ACC TCC CG GCCTGGAG GCT CTGC GTC
GGACAGCAGCAACAGTGGCT TGG AGG GC CGGGCTTC TGA GACG CAG
TCGGGCCGGAGGAAGGT A- AG - GG CAAC A- ----
GAM26163 15402 ACCGTAACCTTTGTACTTGT TAAC T -------- CCTG
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CAGAACAGTGCAAGGACTGG TGGT GGAACGTGA CAAG AGGG
T CA-- - ACTGTGAA ----
GAM26169 22014 ACCGTGGGTAGGCTCCCAGC - T -- G- A -- TG AGAC
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GAM26203 4925 ACCTACTTCCCGCACTTCGA A C CA-- CG ----- CACG
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AAGGT A C ACCG AT CCCGT ----
GAM26207 540 ACCTAGCAGATATGGGCTAA A AT-- - AA--- ACAAGG
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CACAGCCGCGAGGATCCGCT TGGATCG CTA C CCGA GTGGGG
AGGT C GGAG G CACAC ------
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T ----- C -- ----------
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ATCAACCGAGTTCGGGTGTC TGGGGTCGGT TC G CGGTACT GGG TGA GCCA
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GAM26262 4654 ACCTCAGTTTCCTGAATAGC T --- GC CCA--- CACCAT
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GT --- C G AG G -----
GAM26298 11415 ACCTCGGTAAAACCACACCA AAA-- A CAGAA TTC A AGA
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CACACCGGGGT CACAA - ----- C-- G ---
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TGGGGGAGGT GTCATTAC AAAA ----------
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AGCAGTGCCGTCTTAGCTCT TGG AT TCGATT GACG ACGTCT
ATGGT T C CTGCCGT -- -----
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GCATCAGTGGGCAGGT A-------- C CA TT ----------
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TGAGCGGAGGAGGGCCCGAG A C - C- GT - CGAA - ----
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GCCACAGGACCACTGGTGTC GG AC CT TC ---- CC-- -----
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ACAGACACAACACACGAGAG ACCT TCC CA GGTC GACAG CACGAGA
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ACACTTGCTTGGTTGCCCTG ACCTGT TGT GC AGT CACT GC TTGG CCCT
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TGAACTCAGCGGTGCAAAAC AA TGG AC A- T TT CA- ----
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T TG AC ACGTA -----
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GT T --------- TCT -----
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CACAACCGACGTGGATTCCC TGGG C CC TC GTTCTT GG GTCGG CTACC TAG GTG
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          AGGT                 T AGTG    GAACGAGAACGA ----
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          AGAATGGGGTCATTTAAAGC TG TCCG AATT CTGGG   AGG AC
          CTAGT           A-   A-   TA   GTAAG  G ---
GAM26610 23002 ACGACGGCAGTTAGAGACGA  A-  C  TAGA  AG   TT  GTGAA
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          TGTAGTGTTACTCCGGACGT TGC GCC TCA   TTGT  TGTA  GTC
                    AG  -  ----  GA   T-  -----
GAM26611 5143  ACGACGGTGAAGCAGACGGC     G  A   A -----      TGATGC
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          T                G  C   A TAGTA      ------
GAM26624 22987 ACGAGCTTTAGTTTGTTTTC  GA   A -   TT   TTTAAA   AAAAG  TCTCTT
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GAM26629 2451  ACGAGGAGCCCACGGGTTGG  A AG  A   ----      T TAGTTAAATCATT
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          TGCCCTGGTTCAACTTGCCC TGT CC  GGG GCCCG   ACTTGGTC CG
          GGGGACCCATGT        A CA  -   TTCA      C ----------
GAM26630 9963  ACGAGGAGGTCCCTAGTCAG  A   TCCCTA    AC A     A A ATA AATC
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GAM26636 10692 ACGAGTGTGTGTGTGCAGAT  A G TG TG G TG  -     --- TGTGTGT
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GAM26638 12048 ACGAGTTGAGATTGGGCAGT  G TT    - C---  G    A-  TTTCTTCATACGGC
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          CTCTCCCCACAGTCTTTCTG  - T-     A CCTC  G    AA  ----------
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GAM26648 2546  ACGATGTTGATGTCCAAATT    G G  TCCAAA-   CAGGAG  T   T   AAGACA
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          GTCGAGATCTATCATGGAGA    G G  TATCTAG   ------  -   T   ------
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GAM26665 16138 ACGCAGGTTTCTCTATGATT      ---  -   GAT    TG  T------   -   AAGT
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          TGATAAAGTATAATAGATGA     CTA  T   AT-    TA  TTCTAAC   C   ----
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GAM26686 22544 ACGCGAAACGCGACGTTTTC AA- GACG-- AG--- G ACAT
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GCGT CAG ATAAGG GCGAA G ----
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GCCGT - ----- - - ----------
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CGCACCGT CC - GC TA- ----------
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GAM26812 1938 ACGTCACACTCCCAGACCCC A CCA- C- A GG - CAGG
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CTGGTGGGGACTGCAGGATG TGTAG GTGAG CTG GGAC TC GGGTG TCA
TCAGAAGAGTGAGATGT A AAGA TA G AG G ----
GAM26817 12024 ACGTCAGGTGAGGGCTCGGC GT TGA - ---- TC CGTT

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GAM26824 5139 ACGTCGCCCTGGACTTCGAG GC-- TG CTTC C GA CACC
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AAGACGT AAGA GT CTT- C AG ----
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CGGATGTCGT T- G G CTCTA - GT -------
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TGGCGT - G TT AGAGA----- ----------
GAM26867 19599 ACGTTCCCCTGTTGCCACCT TC - CCACCTGTTTTTG AC AG GCTGTAAAAGAAA

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CCCTCGGAATCCAACACGGG GA C CTA---------- CT AG ----------
AGGCGT
GAM26912 19687 ACTAACAAATGGTAGCATCT A -- T TCTAATAT --- G CTTCTAAA
AATATGCAAATGACCTTCTA ACT AC AAATGG AGCA GCA AAT AC
AAGTAATTTTCTGTTTTTAT TGA TG TTTATC TCGT TGT TTA TG
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TCCCGAGCCCGGAGAGGACC ACT CCTG GG ATGC CTC CCG
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T ACC - AG CACCCAG A ----
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CTGGT
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GAGACAGGATCTTGCTATGT TG ATCGTT GGACA GAT
T CTA GA ----------
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GCTGTCATTTTTGTTCTATA TGAT ACT ATAC GT TACTA GATATCTT
GTCATATCATCATGTCATAG AACT AAGAGG T AC TACT ----------
GAGAATCATCAATAGT
GAM27049 4620 ACTAGGGTGGCGGGGGGACG TG --- CGAAC TCTT T TTACTGTTTCTTT
AACTTCTCTTCCTCACATGA ACTAGGG GC GGGGGGA TTC CCTCACA GAGG
GGTTACTGTTTCTTTCCTCT TGGTCCC TG CCCTCCT AGG GGGGTGT CTCC
GTGGGGCATTGGATCCTCCC GT ACA ----- TTAC - ----------
ACAGTTGCCCTGGT
GAM27070 22097 ACTATAATGCTTCCTTAGAG AA TTA AA---- - TG - GTCTTA
GTGGAAGACAGTTCTTGATG ACTAT TGCTTCC GAGGTGG GACA GTTCT A TG
GTCTTACACTTGGGAATGTG TGGTG ACGAGGG TTCCACC TTGT TAAGG T AC
TTGCTCAGCCACCTTGGGAG AA --- GACTCG G GT C ------
CAAAGTGGT
GAM27081 16108 ACTATATTAACTCTGGTGGG - A- T G GT AAAC- ACTTTAACC
CCTGTTTGAAACTGTGTGAC ACTA TATT ACTCTGG GG CCT TTG TGTGTG
TTTAACCCGCACAAAAAGCA TGGT GTAG TGAGACC TC GGG GAC ACACGC
GTGGGGACTCCAGAGTGCGA C CG - A GT GAAAA ---------
TGCTGGT
GAM27096 5288 ACTATCTGACAAGAGATAAC GACA AG A TCT G ATGGTGA
CTCTGGGTGGTTTGTCACTA ACTATCT AG AT ACC GGGT GTTTGTCACT
TGGTGAAGTGACAAATGACT TGGTGGA TC TA TGG TTCA TAAACAGTGA
TTGGTCATTGCTGAAAGGTG AAG- GT C T-- G -------
GT
GAM27109 7597 ACTATGCACCAGGTGCCATG - CC GCCA TCATTT TCTCATT
TTTCATTTATGTTATCTCAT ACTA TGCA AGGT TGTT ATGTTA
TTAATATTCACAACAAGCCT TGAT ACGT TCCG ACAA TATAAT
TGCAGTAGT G -- A--- CACT-- -------
GAM27157 7588 ACTCAAATCCTGAAATTACT TC AAA A - TTTTCTCCT
GTTTTCTTTCTGGCCTTTTC ACTCAAA CTG TT CTGTTTTCTT TCTGGCC
TCCTGGTTAGAGGAGGAAGC TGAGTTT GAT AA GGCGAAGGAG AGATTGG
GGAAAGTAGTTTTGAGT T- GA- - G ---------
GAM27186 10613 ACTCAATTATAGTGTCATGT C TAT-- T CTCT CCGTA

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        ATCCTCTCAACCGTATTGTG ACT AAT    AGTGTCATG ATC   CAA
        ATTATGACGCTTTACTGTTA TGA TTG    TCGCAGTAT TAG   GTT
        GT              - TCATT      - T---  -----
GAM27232 15587  ACTCAGGTGAGTTTTAGCTT      G  TTT   TTATT  GG-      ATCTAAAA
        TATTGGGGAGGGGGTGATCT ACTCAGGT AGT  AGCT    GG  AGGGGGTG
        AAAACACTCTTTACGCCGGC TGGGTTCA TTA  TCGG    CC  TTTCTCAC
        TTCTATTGACTTGGGT         G  TCT   -----  GCA      --------
GAM27244 4857   ACTCATCTTCAAAAGACTGG  T   T   AAG  -   -   G  ATG  C  TAT-  TTGA   C   T TTGG
        GACTGCTGAGATGTCCTCTA AC CATC TCAA  ACT GGGAC TGCT AG  TC TC   TC   AGAG GTAT C

        TTCTTGAAGAGCGTATTCTT TG GTAG GGTT  TGA TTCTG GCGG TC  AG AG   AG   TCTC CATA G

        GGAGCTGATACCTCTGTTGA  -  T   A--  A   T   G  AA-  A  TTCT  TTG-   -   - ----
        TCTTGAAGAAACTGGGCGTG AGCT
        TCTTAAGTATTGGTGATGGT

                ----
GAM27269 10937  ACTCCACGGCGATGTCGCTG    A   GAT-  G    T-     TTT    AG-  GTCAA
        GGATAGAAGCCTTTGACCAA ACTCC CGGC   GTC CTGGGA  AGAAGCC   GACCA   CAT
        GCATGTCAAGTGACCTGGTT TGGGG GCCG   TAG GGCCCT  TCTTCGG   TTGGT   GTG
        CTTGGCTTCTTCTCCCGGGA   -  GGGT  -   CT     TTC    CCA  -----
        TTGGGGCCGGGGGT
GAM27275 10056  ACTCCAGCCTGGACAACAGA   C     GACAACAGAAA---    CAT
        AAGAGACCATGTTTCAAAAA ACT CAGCCTG          GAGAC
        AAATAAATACAGGTTGTAGT TGA GTTGGAC          CTTTG
                    T     ATAAATAAAAAAAA    ---
GAM27365 17188  ACTCGTTGGAAGGGATGTGG   GTTGGA   TG     GG-  TGGA
        CCTGGGGCTGGAGTGAGCAG ACTC    AGGGA  TGGCCTG  GC
        GCCGTGTCCCTGAGTCAGAG TGAG    TCCCT  GCCGGAC  TG
        T               ACTGAG   GT     GAG  ----
GAM27400 2294   ACTCTCATGTCAGATGTGGG          T    CAA  A   ATCTCCACCAA
        CCAAACTAGGCTGATCTCCA ACTCTCATGTCAGA GTGGGC  ACT GGCTG
        CCAACAGCCCAGTCAAGCTC TGAGAGTACAGTCT CACTCG  TGA CCGAC
        ACCTCTGACATGAGAGT            C    AAC  C   ----------
GAM27486 13423  ACTGAAATCTTTCCAGAAAA     ATC   CAGAAAA   G  CG  TAGTA
        TCCAAGTCCGGCGTAGTACG ACTGAA  TTTC     TCCAA TC  GCG
        CGAATTGGAGAAAAAGTTCA TGACTT  AAAG     AGGTT AG  CGC
        GT                GAA   -------   A --  -----
GAM27554 15154  ACTGAGAAATGAACCGCAGC      AATGAA   -  -   ATTA     TAATAAAT  ACAA--  GC
        AGACGAATTAGGGGTAGTAA ACTGAGA    CCGCA GCA GACGA   GGGGTAG      AAG    TAA
ATAG
        TAAATAAGACAATAAGCATA TGGCTCT    GGTGT TGT TTGCT   TCCCGTC      TTC    ATT  TATC
        GCAGCCAAAAGCTATATTAG     ------   G  A   GA--     --------  GCAGAG  A-
        AGACGCTTCTGCCCTAGTCG  AGCCAAAA
        TTATGTGTGTGGTCTCGGT  C
                G
                --------
GAM27571 15406  ACTGAGGCTGCCCGCTGTGC  T     ----------  C    AACTAAA
        TAACTAAAGGCACACGGCAT AC GAGGCTGC          CCG TGTGCT
        GTTCTCTCTTTGCAGCTTTT TG TTTCGACG          GGC ACACGG
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        GT              T      TTTCTCTCTTGTAC  -    -------
GAM27575 14146  ACTGAGGTGCTACATTTGGT    AG    A T     T TCG-    CCAATA
        ATCATCGATGAGCCAATACT ACTG  GTGCT CA TTGGTA CA    ATGAG
        CATACATTGTTACTAACTGA TGAC  CATGA GT AATCAT GT    TACTC
        GTACACAGT           A-    - C     T TACA    ------
GAM27590 19589  ACTGATAATTATAGCTGAAT    ATAAT-          T  TAAATGATGAAC
        AGTCCTTAAATGATGAACAG ACTG     TATAGCTGAATAG CCT
        GTTATTTAGTTATATAAATG TGAC     ATATTGATTTATT GGA
        CAGT              GTAAAT         -  ------------
GAM27602 10689  ACTGATGTTCTTCTACATTT       TCT     TTT  AG--    ---      TACTACT
        GAAGAGTTCTCCGTAGTACT ACTGATGT   TCTACA   GA    AGTTC   TCCGTAG
        ACTTTATGGATCTGAACTGA TGACTATA   AGATGT   CT    TCAAG   AGGTATT
        AGTCCTGTAGAATATCAGT        ---     C--  GAAG    TCT      -------
GAM27603 5266   ACTGATTACCATTTACAGTG     TTACCATTTA      C  AA   AACTGC
        ATCACAATGAAACTGCTCAG ACTGA        CAGTGAT AC  TGA
        AGTTATCACTGAACTTCAGT TGACT        GTCACTA TG  ACT
                        TCAA------      T  AG   ------
GAM27664 7807   ACTGCGAGCATGGCCGACTC    CGA    G --   -  ACAGACTACGATAACA
        GGACAGACTACGATAACACT ACTG   GCATG CC  GACT CGG
        GAAGTCATGGCATGCCCAGT TGAC   CGTAC GG  CTGA GTC
                        C--    - TA   A  ----------------
GAM27666 13768  ACTGCTACTGGGATTTATAA       C    ATTT    T    C   CTTC-   C      T   CTGG
        TGATTCTGTCTTCTCTCTTT ACTGCTA TGGG    ATAA GATT TGT     TCT TTTGGA AAT
        GGATAATCTGGGTTTTCCAG TGACGGT GCCC    TGTT CTGA ACA     AGA AGACCT TTG
        AAGAAAATTACAAAGTCTTG       A   C---   -   A   TTAAA   -     T   ----
        TCCCCGATGGCAGT
GAM27667 7578   ACTGCTAGAGCCGAGCGAAG          CC   -----      TG-   AAATCAA
        CGATGCCTAAATCAAAGGAA ACTGCTAGAG  GAGC    GAAGCGA   CCT
        CTTGTTTCTTCAAGCTCTTC TGACGGTCTT  CTCG    CTTTGTT   GGA
        TGGCAGT                  --   AACTT      CAA   -------
GAM27682 7566   ACTGCTGGGGAGTCCCTGCC    C      TCCCTGCCACAC    CCCCCACCAC
        ACACTCAGTCCCCCACCACA ACTG TGGGGAG          TCAGT
        CTGAATCTCCCCTCCTCACA TGAC ACTCCTC          AGTCA
        GT                -      CCCTCTA-----    ----------
GAM27684 4614   ACTGCTTAGTGGCTATGTCT     T    CTA-  TC    CTC    CTTTA
        GTGCTCACTCCTTTAGAGTT ACTGCT AGTGG    TG  TGTG   ACTC
        TTATATTTAACTTCCATTAG TGATGA TTACC    AT  ATAT   TGAG
        TAGT                -    TTCA  TT    TT-   -----
GAM27708 5350   ACTGGACTGTTTGTACGTGA    G  G    A-    AAC--       CTAAGCTT
        AACAGAAGAGGCTAAGCTTC ACTG ACT TTTGT  CGTGA    AGAAGAGG
        CTTTTTTTACACTTATGAGA TGAC TGA AAACA  GTATT    TTTTTTCC
        CAAAAAGTGCAGT          G  A    GA    CACAT      --------
GAM27713 15095  ACTGGAGTGAATGTTGTAAA      G    GTTG     TTGAAA  A     TATAG
        AGTTGAAATGTATATTTGTA ACTGGA TGAAT    TAAAAG     TGT TATTTG
        TAGCAAATAACAAAATCCTT TGATCT ATTTA    ATTTTC     ACA ATAAAC
        TTAAAATTTAATCTAGT        A    AA--     CTAAA-  -     -----
GAM27729 15954  ACTGGCCCATGGGTTGCATT       - T----  -    -- TG  A  CAACGTT
        GAGAACCAACGTTGTGCTTG ACTGGCC CA     GGG TTGCA  T  AG AC
        ACTTGTAGTCCCTTTACTGC TGACTGG GT     CCC GATGT  A  TC TG
        GGTCAGT                C  CATTT   T     TC GT  G  -------
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GAM27782 4812 ACTGGGTGAAGCCACACACA CAC A C AACATTTTCTCC
CCCAATGAACATTTTCTCCC ACTGGGTGAAGC AC CACC AATG
ATTTGGTGGTTTAGTTTCAC TGACCCACTTTG TG GTGG TTAC
CCAGT ATT - T ----------
GAM27784 22996 ACTGGGTGTCCCGGCTGGCA - T -------- CAAA-- CACGCA
AACCTCACGCAAGGCGAAGA ACTG GGTG CCCG GCTGG CCT
CCAGTACTATCTGCGGGTCA TGGC CCAC GGGC TGACC GGA
CCACGGT A T GTCTATCA AGAAGC ------
GAM27855 15292 ACTGTCACTCTAGGAAGAAG CAC AG -------- A ATT
ACACATGACAGATTCTGACA ACTGT TCTAGGAAGA ACACA TG CAG
TTTATATTTGTGTATTTTCC TGATA AGGTCCTTTT TGTGT AC GTC
TGGATTTATAGT TTT A- TTATATTT A ---
GAM27859 14224 ACTGTCAGTCACTCACACCC - AG A CAG A AATTCCG
TGCAGGGGCACTAATTCCGA ACTG TC TCACTCAC CCCTG GGGC CT
GAGCCTTAGGGGTGGGTGGG TGAC AG GGTGGGTG GGGAT TCCG GA
GAGCAGT G G- - --- A -------
GAM27884 16909 ACTGTGAAAAAGATATCTGT GA GAT G - CA AA-- AAGACA
TGGTGGCATTAAAGAAGACA ACTGT AAAA ATCT TT GGTGG TT AG
CTGAAGAACATCACCTAAGA TGACA TTTT TAGA AA CCACT AA TC
GATTATTTTGAACAGT AG AT- G T AC GAAG ------
GAM27896 17504 ACTGTGATAGTCATGATTTA GA CA AAA T AAACTTC
AAGTTATGAAACTTCCATTG ACTGT TAGT TGATTT GT ATG
CAAAATTACAACTGAGACAG TGACA GTCA ATTAAA CG TAC
T GA AC A-- T -------
GAM27910 13671 ACTGTGGGCTCCCTGGCCGG GG T T - CCAG ACAGG
CCAGCCGCTACAGGAGCGGA ACTGT GC CCC GGCC GG CCGCT
CCCAGGCCTGGGGCGAGCGG TGGCG CG GGG CCGG CC GGCGA
T AG - T A CA-- -----
GAM27928 22647 ACTGTGTTATTTGATTAGTA TATTTGATTA TTC TTCA
ATATGTTCCCTTAAAATTCA ACTGTGT GTAATATG CCTTAAAA
TTTTGAGGTGTATGTTATAC TGACACA TATTGTAT GGAGTTTT
ACACAGT CA-------- GT- ----
GAM27929 15742 ACTGTGTTCAGCTGCCACAG T -- C-- T GAGT
GCCTGGAGGAGTTTCCTGGC ACTG GTTCAGCT GC ACAGGCC GGAG
CTGTCACGTGAGGTTGGATC TGAC TAGGTTGG TG TGTCCGG CCTT
AGT - AG CAC T ----
GAM27961 12076 ACTGTTTAAAGTTAACACTT TT T A TGTTTA TT C A TTTA
GTTTAAATTTTTTTACACTA ACTG TAAAG TAAC CT AATTTT TA ACTAT GCA
TAGCATTTATGCAATGGTTT TGAC ATTTT ATTG GG TTAAGA AT TGGTA CGT
ACAGAATTCATGGAGTTATT T- T A TAC--- C- T A ----
TTTATCAGT
GAM28001 5055 ACTTAAGGGTAGTTTATCTA AGTTTA -- AGG - TTCCCT
GATACAGGACTTTCTTCCCT ACTTAAGGGT TCTA GATAC ACTT TC
GATAAGTAGTATCATTGGAG TGGATTCCCG AGGT CTATG TGAA AG
CCCTTAGGT ------ TA A-- T ------
GAM28017 2532 ACTTACACCACTTTCAGGCA CACCAC CA- A A CCTA
CATCCAAAGAGTTCCTAGAT ACTTA TTTCAGGCA TCCAA G GTT
ACTTGGAAAATGTCTGAAAA TGAAT AAAGTCTGT AGGTT C TAG
TTTTTAAGT TTTTA- AAA - A ----
GAM28025 17412 ACTTACGGCAAGCCTGTCCA A CA TGT CA AA AAA G GA- CTTCAGTCC

TCATGGTGTTAACCAGCTAA ACTT CGG AGCC CCAT TGGTGTT CCAGCT GTTT CTC AGC
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TCCGTTGCAGAGGAGCGAGC A -- --- TC -- G-- - ACG ---------
TGGAACGCCACTGTGGGGCT
CTGAGAGT
GAM28034 328 ACTTAGGCTATGTATAGGCC C-- ---- G T AATC
TGCGTGTTAATCGGCCGAGG ACTTAGG TATGTAT AGGCCT CG GTT
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TGAGT ATT CGTT A - ----
GAM28070 10288 ACTTCAATCCCCTCTGCGCT ATCCC GCGC G AA-- A AATGCATGCCAA
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TAATGCATGCCAAATCAAAG TGAAGT GAGG AAGACTGT CT AGAA ACTA
AAGCATCGTGTCAGAAACAG AAAA- ACA- G ACGA - ----------
GAGAAAATGAAGT
GAM28096 6881 ACTTCATTGCGCCCTAATAA --- CCTAATA -- CTTT
CAAGGGCTTTCCCTTACGTA ACTT CATTGCGC AC AAGGG
ACCACCGTGCAGTGCTTAGG TGGA GTGACGTG TG TTCCC
T TTC CCACCAA CA ----
GAM28102 22567 ACTTCCAGCTCAGCGGTGCT CA-- C GC- A T A GCTTTCCAA
TTAGGAGATTTTGATTCGCT ACTTC GCT AGCGGT TTT GGAGAT TTG TTC
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AGAATAACCGTTTGGCCTTT TTTC T ATA G T - ---------
GAAGT
GAM28114 16358 ACTTCCGCTGCAGGCTGACT C--- CA C TATT AT ACCAAAGCC
TATTCCCATCAGCACCAAAG ACTTC GCTG GG TGACT CCC CAGC
CCGCTGGAGGGGGTCATCCA TGAAG CGAT CC ACTGG GGG GTCG
CTAGCAAATGAAGT TAAA CA T ---- AG ---------
GAM28122 6839 ACTTCGGAACCCAGGGCAGG A- C G CCACTAGCC
CTCTACCACTAGCCTAGGGC ACTTCGG AC CA GGCAGGCTCTA
TTGTCGTGTGTCCCTGAAGT TGAAGTC TG GT CTGTTCGGGAT
CC T G ---------
GAM28173 15560 ACTTGAATTGTGCACACAAA - G CACACAAA TTTATACTTAGCCT
ACTTCATTTTATACTTAGCC ACTTGAA TT TG ACTTCAT
TGTGAAGTGTCAGTACCAGA TGAATTT AA AC TGAAGTG
ATTTTAAGT T G CATGACTG ----------
GAM28193 19523 ACTTGATGGTATGAAATGAA --- GG A AAATTTT TTTACCATT
ATTTTGTTACTTTACCATTG ACT TGAT TATGA ATG GTTAC
TAACTATGTCATAAAGTCAT TGA ACTG ATACT TAT CAATG
AAAGT AAT AA G ------- ---------
GAM28211 10161 ACTTGCTGAATTATACAACT - T CAA--- A CATG
AAAATGCATGTATTGTAGGT ACTT GCTGAA TATA CTA AATG
AAAATATACTTCAGCAAAGT TGAA CGACTT ATAT GAT TTAT
A C AAAATG G ----
GAM28241 1895 ACTTGGTCCCTAAGTCAGCA - TAA A A GA- TTATC
AGAGGAACATTATCTGTCAA ACTTGG TCCC GTC GC AGAG ACA
TTCTAGCGATGGGATTCAAG TGAACT AGGG TAG CG TCTT TGT
T T --- - A AAC -----
GAM28242 13438 ACTTGGTCTTGACAGTCATG CT C--- TGCTTT CTT
TGCTTTGTAAGTCCTTGATT ACTTGGT TGA AGTCATG GTAAGTC

TACCATGACTACATTCGTAG TGGACCG GCT TCAGTAC CATTTAG
CCAGGT AT TACA ------ ---
GAM28246 2660 ACTTGGTTGGTAGGGTGGGC GT----- GTGG - TATAG
AGTGGTTATAGGCTATGTGT ACTTG TGGTAGG GCA GTGGT
AAATCTGCCACAAAAAACAG TGGAC ACCGTCT TGT TATCG
GT AAAAAAC AAA- G -----
GAM28270 11934 ACTTGTGCTGAGAATAGTGT T AGAATAG GT G- TAAGC
CTGATTATACGACTTTTAAG ACTTG GCTG T CTGATTATAC ACTTT
CAAAGTGGGTGTAATTAGGT TGGAC CGAC G GATTAATGTG TGAAA
GAAACACAGCCAGGT - ACAAA-- TG GG -----
GAM28278 17931 ACTTGTTGAAATAGTGATTT T AA- T GCAATA-- - AAACATTCC
GCAATAGACTAAGAAACATT ACTTG TGA TAG GATTT GACTA AG
CCCTGTAGTCAACATTCAAA TGGAC ACT ATC CTAAA CTGAT TC
ATCCTACTATCATCAGGT T ATC - ACTTACAA G ---------
GAM28288 13375 ACTTTAAAACTGTAAAGCTG CTGTAA TGT CTG- TG TAG
TGTATAGAACTGTTTGTGTA ACTTTAAAA AGCTG ATAGAA TT TG
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CTTTTTAAAGT ------ --- ATAA GT ---
GAM28326 7677 ACTTTATTTTTCTTACACTT T TTACACTTTT GATGAAA
TTAAGGTTGATGAAAAACCT ACT TATTTTTC AAGGTT
TCATTTCAATTGAAAAGTAT TGG ATGAAAAG TTCCAA
GGT T TTAACTTTAC -------
GAM28327 15783 ACTTTCAAAAATTCAACTAC C AA C AATA CCTCCAGTT
CTAGAAATAGTTACCTCCAG ACTTT AAA TTCAA TACCTAGA GTTA
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GGACATTTAAAGT - AC T ACA- ---------
GAM28335 17277 ACTTTCATGTGTAGATGAAG A- G TGA A TAC AGAT
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GAGAAGGT AG G TA- A TCT ----
GAM28350 22948 ACTTTCTGGGAAGAATTCAA C -- - ACCAT AGAC
CAACCATTTAGTAGACACTG ACTTT TGGGA AGAAT TCAACA TTAGT
ACTATGTTGATGTTCTTGTC TGAAA ACCCT TCTTG AGTTGT AGTCA
CCAAAAGT - GT T ATC-- ----
GAM28363 2388 ACTTTGATCTCTGGTCATTC AT-- - A A TTGAA
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GAAGACTCAGAGTCCCCAGA TGAGAC GAGAC CAG AGGTCGT GG
GT CCCT T A A -----
GAM28433 13552 ACTTTTCCCAATATTTTCGT ----- CAATATT T CTT AGGTTAAA
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CCTTCGAATTAAACCGGCTA TGAAAA GG AAGC TC CCGG
AAAAAAGT AAATC CCAAATT T --- --------
GAM28437 19618 ACTTTTCCTTTGTTTTTTAA TTT T CTACACA TTTCTACC
CTACACACAGATTTCTACCT ACT CCTTTG TTTTTAA CAGA
CTGGGCTCTTTAAAAATCAA TGA GGAAAC AAAAATT GTCT
AGGTAGT T-- T TCTCGG- --------
GAM28448 6820 ACTTTTGATAGATACTGAGT TG - GA - TTGCTAC
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GTGTGGGGT TG T GA A -------

GAM28468 7322 ACTTTTTTAATGGGTCTCAA T TC AATTCTG AAATTTTTG
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GTCAAGTTGATTCCATTAAA TGAAAAA TTACCT AGTT ACTG
AAGT - T- GA----- ---------
GAM28469 7357 ACTTTTTTAATGGGTCTCAA T TCT AATTCTG AAATTTTTG
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GTCAAGTTGTTTCCATTAAA TGAAAAA TTACCT GTT ACTG
AAGT - TT- GA----- ---------
GAM28470 7128 ACTTTTTTAATGGGTCTCAA T TCT AATTC T ATTT
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AAGT - TT- GA--- - ----
GAM28471 15942 ACTTTTTTAATGGGTCTCAA T TCT ATTCTG AAATTTTTG
ATTCTGTGACAAATTTTTGG ACTTTTT AATGGG CAA TGAC
TCAAGTTGTTTCCATTAAAA TGAAAAA TTACCT GTT ACTG
AGT - TT- GA---- ---------
GAM28479 16961 ACTTTTTTTTTTTTTTTGAA TTTTTTTT A TTAT-------- TTAT- TGAC
GGCAGTTTTATAACTTTATT ACTTTT TTTG AGGCAGTT AACT TTGATC
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GAM28513 2626 AGAAAAATGATACTTCTCTT T TTCTCTTTT C-- TCCACCAAAT
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TTTATTTTTTT T TTTTTCGT- TTA ----------
GAM28570 1858 AGAAAATCAATATAATACCA - AATACCATG TA AAAACCACATAATA
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GAM28587 11372 AGAAAATTATGTGTATCCAC TATG-- CCA-- C ATTTTAAA
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TTTGTTTTCT TTTGAA AATCA T --------
GAM28589 16905 AGAAACAAAAGCAGGTGCTG CAA- C -- TCA--- AAACC
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TTTTCT TTAA - TA TTATTA -----
GAM28601 14785 AGAAACATGCTTGCCTTATG CATGC TT AGA- CA TCA
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GCAACTTTTTCT TTC-- TT AGAA AG ---
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AAATGGGCCCACAGGCAAGA TCT TGGAC AGAACG CACCC GT
CAGGTATCT A -- GA- GG ----------
GAM28651 15533 AGAAAGACCGGGTGGCCCTG ACCG- - AA- GGAGGTGA
AACCAGGAGGTGATGGCTCC AGAAAG GGTGGCC CTG CCA
AGAGGCCACCAAGAACTTTT TTTTTC CCACCGG GAC GGT
T AAGAA A CTC --------

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GAM28652 4697   AGAAAGACCGGGTGGCCCTG      ACCG-      -  A    GGAGGTGA
                AACCAGGAGGTGATGGTCCA AGAAAG     GGTGGCC CTG ACCA
                GAGGCCACCAAGAACTTTTT TTTTTC     CCACCGG GAC TGGT
                                AAGAA      A  C   --------
GAM28675 11687  AGAAAGGGGGGTGCCAGGCA         ---     CAG----  C    GCTCA
                CGGTGGCTCACACCTGCAAT AGAAAGGGG   GGTGC      GCA GGTG
                CCCAGCACTTTGCCCTTTTC TCTTTTCCC   TCACG      CGT CCAC
                T                    GTT     ACCCTAA   -   -----
GAM28691 10343  AGAAAGTGGCAGTTCCTTAC         ---     CTTA-      GCTGCT
                AGCCCTGCTGCTGGGGTTGA AGAAAGTGGC   AGTTC     CAGCCCT
                TTTTGAACTGGAGTCATTTT TCTTTTACTG   TCAAG     GTTGGGG
                CT                   AGG     TTTTA      ------
GAM28777 11491  AGAACAAGTTGTTAAAACAT   A   A       AACAT      T    G   ATTGCTA
                TTAATATTATATAGGATATT AG ACA GTTGTTAA     TTAATAT ATATA GAT
                GCTAATTGTGTATATGTTGG TC TGT TAATAATT     GGTTGTA TATGT TTA
                TTTAATTAATAATATGTACT   A   A       AATTT      -    G   -------
GAM28824 15804  AGAACCAGCAGTTGCAAGTG     C  - --    GCA  TG    ----    TGAT
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                TGGTTGCTAAAACTTAGTCT TCTTG TC G  TCAA   TC  TGGT    AAAG
                AGTTCT               A  T AT    AA-  GT    CATA    ----
GAM28827 14264  AGAACCAGGACAGCCAATGA     CA    -   AATGAT    AA-     - AAA   CATTT
                TGCAAAACAAGTCCAAAGGC AGAAC  GGAC AGCC     GCAA   CAAGT CC   GGC
                CATTTGCTGGGGAATTTGCT TCTTG  TCTG TCGG     CGTT   GTTTA GG   TCG
                CTTGCTTGGGAGGCTGGTCT     TC    G    AGGGTT    CTC     A  GG-   -----
                CTGTTCT
GAM28849 15941  AGAACTAATACTGGTGAAAA      TAA---      T  AA-    ----   TAAAACCTT
                TTTACCTAAAACCTTGGTTA AGAAC      TACTGG GA   ATTT    ACC
                TCAAATACATCTCCAGTACA TCTTG      ATGACC CT   TAAA    TGG
                TTCCGTTCT            CCTTAC     T  ACA    CTAT   ---------
GAM28872 19699  AGAACTGGGTTTCTGGGGAT   A   GGGT        AA   GAAAG    -   TG G   TACC
                AAGGGGAAAGGCCAGCTTGA AG ACT    TTCTGGGGAT  GGG     GCCA GCT  A TCT
                GTCTTACCGGAATTGGGCGT TC TGA    GAGACTTCTG  CCC     CGGT CGG  T AGG
                GGCCCCGTCTTCAGAGAGTA   A  ----        --   -----    G   GT A   ----
                CT
GAM28954 10307  AGAAGATAAAGCAAGTTGTC      T     --   TT    -- CT     TA--   TAAAT
                TGACTTAATTTAGGATAAAT AGAAGA AAAGC  AAG  GTCT  GA  TAATT    GGA
                TCTCAGTGATTGTTTCAAAG TCTTCT TTTCG  TTC  TAGA  CT  GTTAG    TCT
                ATTTCTTTAGCTTTCTCTTC      C    AT   TT    AA  TT     TGAC   -----
                T
GAM28958 21736  AGAAGATATGTTTGTATTAT      TAT     --    -  A    GA     AAA
                GTGATCCGGAAATGGAAACT AGAAGA   GTTTGT  ATTAT GTG TCCG  AATGG
                GTTATGGACACTATAGTTGA TCTTCT   CAGACA  TGATA CAC AGGT  TTGTC
                CAGACTCTTCT            ---     GT    T   -   A-     ---
GAM28969 17291  AGAAGATTCCTGTATCTGGC      ATTCC   ATCT  - -       TGCTG
                TATGTAGCTGCTGGCTATAT AGAAG     TGT    GG C TATGTAGC
                GTGTCCTGTGGCATTCCTTC TCTTC     ACG    CC G GTATATCG
                T                    CTT--   GTGT  T T       -----
GAM29008 2181   AGAAGCGCGTCGACCTGCGC    A-  -     CC-   C-     --     T  TCACCAT
                CATCTGCCGTTCGTCACCAT AGA  GCG CGTCGA   TGCG  CATCT  GCCGT CG
                CGACGGCGAAGATGCCCGCG TCT  CGT GCAGCT   GCGC  GTAGA  CGGCA GC
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        ACTTCGACGATGCGGTCT    GG  A    TCA   CC    AG    - -------
GAM29028 13123  AGAAGGAACATCTGTCTATA    GA   CTG   T     GAAATCCCAATCAAA
        CGGTGCTGAAATCCCAATCA AGAAG  ACAT   TCTA ACGGTGCT
        AAAGTATTGTTTAGAAATGT TCTTT  TGTA   AGAT TGTTATGA
        ATTTCT              A-   A--   T     ----------
GAM29034 13409  AGAAGGATACCAAATACCAT     AT-      CCATGTACATAA   TTGCTAT
        GTACATAATTCTTGCTATGA AGAAGG   ACCAAATA         TTC
        AAAGTTTCCCCATTATTTGG TCTTCT   TGGTTTAT         AAG
        TTTATCTTCT            ATT      TACCCCTTTGAA  -------
GAM29039 13244  AGAAGGATTTCAGCAAATTT          CA   TG  G   - --   TG TCTTTT
        GGAGCAGGGCTGTTTGCTCT AGAAGGATTTCAG  AATT  GA CAGG GC  TGTT  C
        TTTGTGGATATTGTGCCTGT TTTTTTTGAAGTT  TTAG  CT GTCC TG  ATAG  G
        CAGGATTCTTGAAGTTTTTT          C-   GA  -   G  TT   GT ------
        T
GAM29040 15161  AGAAGGCAAACTAATCACCC      AAACTA    CAC  AT A  GTTCA
        ACCGATCAGCGTTCAGCCGG AGAAGGC     ATCACC   CG  C GC
        GCGTCGGTGATCCAGGCTTT TCTTTCG     TAGTGG   GC  G CG
        CT                  GACC--     CT-  GG C  -----
GAM29066 15775  AGAAGGGTGTGCTGTTTGGA   A   G   TG    G    GG      CC-   - A-     AAG   C   G
        GTTCCTGGGGCCTTCACCCC AGA GGGT TGC  TTTGGA TTCCT  GGCCTTCA   CCT GG  TGTTCC
ACA ACCT
        TGGATGTTCCAAGACACACC TCT TCCG GTG  GGACCT AGGGA  CCGGAAGT   GGA TC  ACGAGG
TGT TGGG

        TGCCAGGGTTTGTGGAGCAG   G   -  GT    G    A-      CTC   G  GG     ---  T   -
        GCTGAGGCTCTGAAGGCCAA CCA
        GGGAGTCCAGGTGGTGGCCT
        GTCT
                  ---
GAM29093 15487  AGAAGTCATATTCTCTGCAT     C---     TCT  A   AA--    C   TTTC    -    CTATGAA    A
        TTAATCTTTCGTCTTTCTGC AGAAGT    ATATTC   GC TTT    TCTTT GTC    TGCT TCTCC      AAGAA
        TTCTCCCTATGAAAAGAAAG TTTTCA    TATAAG   CG AAA    AGAAA TAG    ATGA AGAGG      TTCTT
        CCACAGGACTTCTTGAGGAG      ATTT     TCT  A   CAAC    -   TTTT    G    AG-----    C
        AGAGTATTTTGATAAAGACA G  ACA
        ACAAAAGCTCTGAATATTTT  CC
        AACTTTT             GG
                  A  ---
GAM29099 17127  AGAAGTGATGGAGCAAAGTG    A     GA   AA T    G-   C     CGCAAGTCCT
        CCGGGATCATGTACCGCAAG AGA GTGATG  GCA  G GCCG  GAT ATGTAC
        TCCTGTGCATCATCAGCGGC TCT CGCTAC  TGT  C CGGC  CTA TACGTG
        CTGTCTCATCGCCTCT      C     TC   -- -   GA   C     ----------
GAM29116 13379  AGAAGTTAGACTTTAAACCT       AGAC----      C    A    - ------  C   AGAG      TAT
        TTGATCTCCCACACCAAAAG AGAAGTT       TTTAAAC TTTG TCTCC CA     CAC AAA    AAAATAA   TT
        AGAAAATAATATTTATATGG TCTTTAA       AAATTTG GGAC AGAGG GT     GTG TTT    TTTTATT   AA
        AAGTAATTTTATTTTAGTGT      GATTTTAA      T   G    T  TATTTA  -  GTGA      TT-
        TTGTGATTTATTGTGGAGAG   ATGGAA
        CAGGTGTTTAAAAATTTTAG AT
        AATTTCT           TG
                  ------
GAM29138 122    AGAATAACCAGGCTCAATTC    TAACCAG-     TTCC   C  CA     -   A  -    CACCCA  CATTT
```

CAGACCACAGCCTTGAGTAG AGAA GCTCAA AGA CA GCCTTG AGT GC TTAT GC
CTTATCACCCAGCCATTTGC TCTT TGAGTT TCT GT TGGAAT TCA CG AATA CG
AACAAAATAATGCAACTGTA TCTTACCA TC-- T CG G A T AAACAA -----
AGGTGCTGTTCTCTTTGAGT
ACCATTCTTTCT
GAM29178 22723 AGAATATGTAGGGCTATGAG TG AGG --- G --- GTGA
GGCGTTTTCTCGTGTGAATG AGAATA T GCTAT GA GGCGTT TTCTCGT
AGGGTTTGATGTTGTTAATG TTTTAT G TGGTG TT TTGTAG GGGAGTA
TGGTGGGTGTATTTT GT GG- TAA G TTT ----
GAM29193 5211 AGAATCAGAAAGTTCTAATT A A C TAGAAAAT ATATA
AGAAAATCAAATATATTGCA AG ATCAGAA GTT TAAT CAA
TATTGTTAAAACATTTTGGT TC TGGTTTT CAA ATTG GTT
ACT A A A TTATAC-- -----
GAM29201 7330 AGAATCATTCCTTACTGTTG A ATTCCT T- TC A---- ACCC
CTCATGGAGAGCACCCGCTC AGA TC TACTGT GC ATGG GAGC
CACCCCCATTTGCTCGCAGT TCT AG ATGACG CG TACC CTCG
ATCCTAGAATCT A ATCCT- CT TT CCCAC ----
GAM29209 17799 AGAATCCCTAGTGGAAGATT T-- GAAGATTATA-- TAAACTT
ATATGATAAACTTTCAGTCC AGAA CCCTAGTG TGA
TGACATAACACTAGGGCATT TCTT GGGATCAC ACT
TCT TAC AATACAGTCCTG -------
GAM29249 2590 AGAATGAATTTTGGATATTG TTTTG---- --- - TG TTTTT
TTGAGTGGTTTTTCTGCATC AGAATGAA GATATT GTTGA G G
AATTGGGATATCATATGGGT TTTTACTT CTATAG TAACT C C
TTTCATTTT TTGGGTATA GGT A GT -----
GAM29296 22679 AGAATTAGGCAGCTGGACTC TT -------- A AGT- - ATCCCAA T- GCAA
AGTTTAGATGATCCCAATTT AGAA AGGCA GCTGG CTC TTA GATG TTTTG TG
TGTTGGCAACATCCAAAGCA TCTT TCCGT TGACC GAG AAT CTAC GAAAC AC
TCGTAATCAGGAGCCAGTCT CT ATACAATC - GACT G ------- CT ----
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GAM29327 1398 AGAATTTAACAGTTGCCCAC A- C T -- TC --- CTTCC
TTTCTCCTAGTATACTTCCT AG ATTTAA AGT GCC CACTT TCCT AGTATA
ATATTTCCAGGACAAGTGCT TC TAGATT TCA CGG GTGAA AGGA TTATAT
GGCACTTTAGATGACT AG - - TC C- CCT -----
GAM29334 7866 AGAATTTCTACAGACATACG - ACAGACATA- T T ATGCC
CAGTAGGTCTATGCCAGTCC AG AATTTCT CGCAG AGG CT
TTTTGTGAACTTTTAACGGA TC TTAAAGG GTGTT TCC GA
AATTACT A CAATTTTCAA T T -----
GAM29341 13512 AGAATTTGCATACTTACCTA TT- - CCT CTTTTCTAGAATTATT
GTGAAACTTTTCTAGAATTA AGAA TGCAT ACTTA AGTGAAA
TTTTTCACTCTAAGTCATGT TCTT ATGTA TGAAT TCACTTT
ATGTTTCT TGT C C-- ----------
GAM29345 7280 AGAATTTTTACAGACATACG - ACAGACATA- T T ATGCC
CAGTAGGTCTATGCCAGTCC AG AATTTTT CGCAG AGG CT
TTTTGTGAACTTTTAAAGGA TC TTAAAGG GTGTT TCC GA
AATTACT A AAATTTTCAA T T -----
GAM29348 13176 AGAATTTTTGGCTTATTTAT A GC- - AAAA- TCAAC
TTAAAAAAAGTCAACCTTAT AGA TTTTTG TTATTT ATTTA AAG
ACATAAATAGAATAAAAACA TCT AAGAAC AATAAG TAAAT TTC
AGAACTCT C AAA A ACATA -----

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GAM29372 16895  AGACAAGGAGGAAAACTGTT    A   GAAAAC-    CAA   C  GTTTAAATA
                TCAATGTTCAGGTTTAAATA AGACA GGAG     TGTTT  TGTT AG
                CTAAGCACAAAAATATAACA TCTGT TCTT     ATAAA  ACGA TC
                AATTCTGTGTCT          G   AAACAAT   AAC   A ---------
GAM29398 6709   AGACACCTCTCTCATGTACC   AC   CTCA---   -----   GG-  ACTT
                CAGAGGACACTTGTAAATCT AGAC  CTCT     TGTAC   CCAGA  AC
                GGACCAAGTACGAATACACA TCTG  GAGA     GCATG   GGTCT  TG
                GAGTGGTCT             GT   CACATAA   AACCA   AAA ----
GAM29400 16220  AGACACTAACGGCCAGTGAG     AA-  G  A  AGTTGGAGT     C   TG--     CCC--  A  AAA
                TTGGAGTCTCAGGGCAGGGT AGACACT   CG CC GTG       CTCAGGG AGGG   GCAGTTT    TTG GC

                GGCAGTTTCCCTTGAGCAAA TCTGTGG   GT GG CGC       GGGTCCC TTCC   TGTCAAG    GAC CG

                GCAGCCAGACGTTGAACTGT      GAC  G  A  ---------     T   TTTG     TTGCA  -  ---
                GTTTCCTTTCCCTGGGCGCA GCA
                GGGTGCAGGGTGTCT


                        ---
GAM29469 13545  AGACAGTGAGAGAAAGATTT   CAG--   GAAA---  TATA    T      AGGATTTTTACA
                ATAAAGGCATCATTCAAAAG AGA    TGAGA     GATT   AAGGCA CATTCAAA
                GATTTTTACATTTGGGTGTG TCT    ACTTT     TTAG   TTCCGT GTGGGTTT
                CCTTACTCGATTACAAAAAT   ACCAA    AAAAACA   CTCA    -      ------------
                TTCAAACCATCT
GAM29490 5274   AGACATCGAAACTGAGGGCG       A-------      GCG   --   TCCAG
                CCCAGAGTCCAGCTCTCAGG AGACATCG      AACTGAGG   CCC  AGAG
                GATCTCAGTTATTGGCCATG TCTGTAGT      TTGACTCT   GGG  TCTC
                ATGTCT                ACCGGTTA      A--   AC   -----
GAM29491 15899  AGACATCTGAATTTCAGGCT    TCT    TC    - AA--  TATCA
                GGAAAACTATCAGTATGATC AGACA   GAATT  AGGCTG GA   AC
                TCAGCCTCAGTTCTCTTGTC TCTGT   CTTGA  TCCGAC CT   TG
                T                TCT    C-     T  AGTA  -----
GAM29526 17088  AGACCAAAACAGACAGACAA      AACAG   GA  AGTCCAG   AA  AGAT
                GTCCAGCAGAAGCAGATGCA AGACCAA    ACA  CA     CAG  GC
                CCTGACAAAAATGGATGTAT TCTGGTT    TGT  GT     GTC  CG
                TAATTGGTCT             AATTA   AG  AAAAACA   CA  ----
GAM29670 13336  AGACTACTCCCAGCTAATAC   A   C    GCTAA   TTACTG   TTATATCTT
                TTTACTGTCATTATATCTTT AG CTA TCCCA    TACT     TCA
                GAAATTAGTACTTATGGGAC TC GGT AGGGT    ATGA     AGT
                TGGCT             -  C    ATTC-   TTAA--  ---------
GAM29733 22598  AGACTGCTATGGGGAAAGCT   A   T  G  GAA     TA---   GATA
                GGTACACTGATAGGTGGTCA AG CTGC AT GG   AGCTGG    CACT
                TCCGGCTGGACCGGTGCGGC TC GGCG TG CC   TCGGCC    GTGG
                CT               C   -  G  AGG     TACTG   ----
GAM29743 10967  AGACTGGGGCTCCCAGAGGC   AC    C   CAG     T--   AGGTTAG
                CATTTCATAGGTTAGATGAT AG  TGGGG TCC   AGGCCAT   TCAT
                GTATGGCCTATGGACCCCCA TC  ACCCC AGG   TCCGGTA   AGTA
                TCCT              CT    C   TA-     TGT   -------
GAM29753 10285  AGACTGTTTAAAGTCAGCAA   C     AA-   GCAAGA  G   AGAAA
                GAATGAGGAGAAACCTGTGC AGA TGTTTA   GTCA     AT AGG
                AAATGATGTCTAAGCAATCT TCT ACGAAT   TAGT     TG TCC
```

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                        A    CTG   AAACG- -  -----
GAM29775 17260  AGACTTGGCTGTCCGCTCTG      C--  CCG   G        C   --- TTTCG
        CGGCCTTCGGGCCCAGCCCT AGACTTGG  TGT  CTCT CGGCCTTCGGGC CAGC  CC
        TTCGGGCTTGCTGAGCCTGG TTTGGGCC  ACG  GAGG GCCGGAGGTCCG GTCG  GG
        AGGCCGAGGAGAATGCACTT      TTC  TAA  A        A   TTC -----
        CCGGGTTT
GAM29797 1823   AGAGAAAAAGTAACCAAGAA     AA-  A-    AAA   AATATTTCCCC
        AATTAAAATATTTCCCCTTG AGAGAA  AGTA  CCAAGA  TTAA
        AAGGTTTTGGAGTATTCTAT TCTCTT  TTAT  GGTTTT  AGTT
        TCTCT              ATC   GA    GGA   ----------
GAM29802 1404   AGAGAAAACAGCTGGGCCCC   GA--  C   G   C--    ACAC    - AAGACGCGGA
        GGGGACACCTACCATCAAGA AGA   AAA AGCT GGCC  CGGGG   CTACCA TC
        CGCGGAGACTGGTAGCGGCC TCT   TTT TCGG TCGG  GCCCC   GATGGT AG
        CCGAACGGCTAGGCTCTTTG  ATAG  C   A   CAA   GGC-    C ----------
        ATATCT
GAM29906 15196  AGAGACGTTTGGCTGTCTGG   A--    -  GT--  T   GC   C    TTAAGC
        TGTTGGGCGAAACATTTTTT AGAG  CGTTTG GCT   CTGG GTTGG  GAAA ATTTT
        AAGCAAAATTTTTACCGGCT TCTC  GCGAAC CGG   GACT CGGCC  TTTT TAAAA
        TCAGCAGAGGCGCAAGCGCG   AGC    G  AGAC  T   A-  -   ------
        ACTCT
GAM29911 7679   AGAGACTATTAAATGTGACA   G  -  A   A    TT------ G     AAAA
        TGAATTATGGAGTAGAAAAA AGA ACT ATTA ATGTG CATGAA      AT GAGTAGA
        TCTGCTTGATTTATTAATTT TCT TGA TAGT TATAT GTATTT      TA TTCGTCT
        TATGATATATGTGATCAGTA   A  C   G   A    TAATTATT  G     ----
        TCT
GAM29970 12128  AGAGAGGCAAGGGCATAAAG  AG   A     AAGC     AAGC  -  CAGG
        CGTGGCAGAAGCTGGGGGCA AG  AGGCA GGGCATA   GTGGCAG   TG GGGG
        GGTCCCACACTGTCGCTATG TC  TCCGT CCCGTAT   CGCTGTC   AC CCCT
        CCCTGCCTGCCT        CG   -    ----     ---- A   ----
GAM30010 9924   AGAGATAGGGTTTCACCATG   ATA   TTCACCATGTT     C--  ATCT
        TTGGTCAGGCTGATCTCAAA AGAG  GGGT       GGTCAGG  TG
        CCCTGACCTCAAGTAATCCA TCTC  CCCA       CCAGTCC  AC
        CCCACCTCT           CA-   CCTAATGAACT     CAA ----
GAM30014 7188   AGAGATATTGTTGATTAAAG    T        - AAATC      AAGTGAAAGAAGAGAGTTC
        AAAATCTAGAACTGAAGTGA AGAGA ATTGTTGATTAAA GA    TAGAACTG
        AAGAAGAGAGTTCCAGTTCT TTTCT TAACAATTAGTTT CT    ATCTTGAC
        AATAGTCTTTTGATTAACAA    -         T  GATA-      ----------
        TTCTTT
GAM30033 17861  AGAGATGCATGGTGGTATTT      - TG T     AAGT     TCAT
        AAGTAGTATGTCATCATATT AGAGATG CA  G GGTATTT   AGTATG
        TGAAATGCCTTTGTGACATT TTTTTAC GT  T CCGTAAA   TTATAC
        TTT                A  GT T     GT--     ----
GAM30049 13298  AGAGATTCCTTTTCTTCACC   ATTCCTT    ACCA  -  ATTTCCT   T   GG     TCCA
        ACTGTTGCTATTTCCTTCCA AGAG     TTCTTC   CTGT TGCT     TCCAC GTTCC  ACGGGGG
        CTGTTCCGGACGGGGGTCCA TCTC     AAGAAG   GACG ACGG     GGGTG TAGGG  TGCCCTC

        CTCCCGTGGGATTGTGGGCG   GTCTCAC    AA--   T   ACGC---   T   --     ----
        CAGGCATGCAGAAGAAGAAC
        ACTCTGCTCT
GAM30056 22968  AGAGATTTATAACCAAATTC   ATTTATAA   A   G  A   ACTTCCAGTCTTTC
```

TGTAATTGGGACTTCCAGTC AGAG CCAA TTCT TA TTGGG
TTTCCCCAAGTAGAGAATTG TCTC GGTT AAGA AT AACCC
GACTTACTCT ATTCA--- - G G ----------
GAM30091 14269 AGAGCAGCACAAAAAACATT CACAAAAAA-- CTTCATCGCGTC
CTGCTTCATCGCGTCCAGAA AGAGCAG CATTCTG
TGCACAAATCCTTTTGCTCT TCTCGTT GTAAGAC
TTCCTAAACAC ----------
GAM30143 11462 AGAGCCGGCTGGGAGAGGCG - A - T TGGG
GCGTCAGGGTGGGTCCTGCG AGAGCCGGC TGGGAG GGC GGCG CAGGG
CCTGCCCTTTCCGCGCCGGC TTTCGGCCG GCCTTT CCG CCGC GTCCT
TTT C C T - ----
GAM30156 17280 AGAGCGAAGGATTTGAGAGC AAGGATT- CA C AGAACAA
ACTCTCCAGAACAAGGAAAG AGAGCG TGAGAG CT TCC
ATTTTTATTGCAAGGCGCTC TCTCGC ATTTTT GA AGG
T GGAACGTT A- A -------
GAM30252 22349 AGAGGACTGTGTTGTGGTCT A T T TG C - - TAAT
GGGGAGAATGTAATCATTCC AG GGAC GTGT G GT TG GGGAG AATG
TTCCACAACTGCTGCATGTC TC CCTG TACG C CA AC CCTTC TTAC
CCT - - T GT - A C ----
GAM30261 15935 AGAGGAGCTGCACTTTTCCC AG CACTTT CT CGAG - AAACT
TCCCGAGTAACTCAAACTGA AG GAGCTG TCC CC TAACT C
AGTTAGGCCGGACAGTTCTC TC CTTGAC AGG GG ATTGA G
CT CT ------ CC ---- A -----
GAM30262 14801 AGAGGAGGAAATGGGGTGTG GA AAATGG G T GT AA AGGAAAGGTAA
ATGGGTCAAAGGCAGGAAAG AGAG GG GGT TGA GG CA GGC
GTAAGCCATGGTCCTCAAAC TCTC CC CCA ACT CC GT CCG
CAAAGAGCCCTCTCT TC GAGAAA A - TG A- ----------
GAM30327 17895 AGAGGCGGGCGGATCACGAG CGGA GA---- GATCGAGACCA
GTCAGGAGATCGAGACCATC AGAGGCGGG TCAC GGTCAGGA
CTGGCTAACACGGTGAAACC TCTCTGCCC AGTG TCGGTCCT
CCGTCTCT CAA- GCACAA ----------
GAM30353 22860 AGAGGGAAGTTGCAACTTAG -- T CA- C- TATTAT
CATAGTATTATCTGTCTTTA AGAGG GAAG TG ACTTAG ATAG
AGTCCTCATCTTCTTCCTCT TCTCC CTTC AC TGAATT TGTC
TT T TCC TC ------
GAM30392 6722 AGAGGGTGGGAGCCTAAGGA T AA - CG GGGT AGAT AAT ACGAGGTCCA
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GTAATGGTCACGAGGTCCAG TCTCTT CCCTCGGA CC TTC AC TCG CCTCA CCAG
ACCCACTCCCAAAGCTCAGA T -- G AG ---- AAAC C-- ----------
CTTGCCAGGCTCCCTTTCTC
T
GAM30396 13728 AGAGGGTTAGTGAAAGTCCA TTA - TCCAG- C CCAA CCTACC
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TCAAGCCTCTATTCACCCCT --- A TCCGAA - AACA ------
TT
GAM30406 2001 AGAGGTATTCCTTGGGGGAA TTCCTT TGGG- - CTTAC
ATGGGTGCCTCTTACAGTGT AGAGGTA GGGGGAAA TGC CT
AAAATTTTTCCTCCTTTACC TTTCCAT CCTCCTTT ATG GA
TTT TT---- TTAAA T -----

GAM30408 19486 AGAGGTCAGAATGGCAGGCA TCA A AG--- -- - G- GCGGTG
GGGGGTGGGGAAGGCGGTGC AGAGG GA TGGC GC AG GGGGT GGGAAG
TTCTTGAGCCCCACTTAGCA TCTCC CT ACTG CG TC CCCCG TTCTTC
ACTGGTCACTCATCCTCT TA- C GTCAA AT A AG ------
GAM30414 4546 AGAGGTGCACAGGATGCTGC T CA T TG CCAT C TG- G TTTGGCAT
AGCTGGCCATCAGCGAGGGT AGAGG GCA GGA GC CAGCTGG CAG GAGGGT C AGGGC

TGCGAGGGCTTTGGCATGCT TCTCT CGT CCT CG GTTGACC GTC CTCTCA G TCTCG
CTGACCACTCTCCTGTCATC - AC - -- TACT - CCA - --------
CAGTTGGCTCCCATGCTCTC
T
GAM30445 21714 AGAGGTTTTAAATGATACCT -------- - CCTG CCTTC-- GG- AG T
GGGGTTTCTTCCCTTCGTGG AGAGGT TTTA AATGATA GGGTTTCTTC GT TCTGG ACTC
A
TCTGGAGACTCTACCTTTTG TTTCCG AAGT TTGCTAT TCCAAAGAAG CA AGACC TGAG T
TGAGTTCCCAGAAAGACTCA CAAGTAGA G TTA- TATAACT GAA CT -
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CGTTGTGAAAGATGAACGCC C
TTT G

GAM30471 2505 AGAGTAGGGAAAAGACAGGA GAAAAGAC TCAAAAA CATTC
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ACTCT AAA----- TTCG--- -----
GAM30482 17873 AGAGTATGTATTGGCTCATT A A - T TTA-- AGTTAGAGGA
TATTTGCAAAGTTAGAGGAT AG GT TGTATTGG C CAT TTTGCAA
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ATGCAGACCT - G C T TCGTA ----------
GAM30497 6865 AGAGTCCCAAATATGTCTTT CCCAAAT---- C AAA TAAA
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AGCTCT ACTACTAATAT A GGA ----
GAM30517 17889 AGAGTCTGGAGACTGGGAGC AGAC A CACTTC CC G G ATAGG
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CAATAGGAAACCCCTAAAGG CCAA A AATCC- AA A A -----
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GAM30531 11545 AGAGTGACAGCGTGAGGCTG A CGT G - --- TT TTGA
GGAGGGAGGACTTGGCTTGA AG GTGACAG GAGGCT GGAG GGAG GAC GGC
GCTTGTTAAACTCTGCTCTG TC CGCTGTT CTCCGA TCTC TCTC TTG TCG
AGCCTCCTTGTCGCCT - C-- G G AAA T- ----
GAM30554 10666 AGAGTGGCTTTGAGAATTTT - ---- AA-- ---- A CATGTT
GTAAGGAACAAACATGTTTT AGAGT GGCTT TGAG TTTTGTA AGGA CAAA
TGGTTCTGGAATATAGGAGG TCTCA TTGAA ACTC AGGATAT TCTT GTTT
TGCTCAATAAAAGTTGACTC G AATA GTGG AAGG G ------
T
GAM30562 2404 AGAGTGTAAGTTAGCAAAGT T A AGC A- TA- C AGC
ATTAAATAAAATTTCAGGGA AGAG GT AGTT AAAGT TTAAA AAATTT AGGG
GCCCCTAAATTTATTTTTAA TCTC TA TCAA TTTCA AATTT TTTAAA TCCC
GAACTTTAGAACTAATTCTC T A GA- AG TTA - ---

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          T
GAM30598 2265  AGAGTTGGAAAACGGGATGT      GA   G   G G   T G   AAAAG---  AG   AGAAATTTGG
          TGCACGTGTGTCTTAAAAGA AGAGTTG  AAAC GGAT TT CACG GT TCTT      AGCA  CTGT
          GCAAGCTGTAGAAATTTGGA TTTCAGT  TTTG TCTA AG GTGT TA AGAG      TTGT  GATA
          TAGAATGTTAAGAAGAGGAG      GG   G   G -   - G   GAGAAGAA   AA  ----------
          AGATTGTGGAGATCTGGTTT
          GGTGACTTT
GAM30619 17027  AGATAAAAGGTTTCTAAAAC     AAAGG  C  AAA    C      GAGATGA
          ATGACGGAGGTTGAGATGAA AGATA    TTT TA   CATGA GGAGGTT
          GCTTCTTCATGGAGTAAAAA TTTAT    AAA AT   GTACT TCTTCGA
          ATGTATTT              GTA--   A  GAG    -      -------
GAM30687 10706  AGATAGGATAGTACAGAAGG    A   AG    AAG   GG     TTCCTCCTTGCACCT
          AATGGTACCAGTTCCTCCTT AGAT GGAT  TACAG   GAAT  TACCAG
          GCACCTCTGGTAGAATTCGG TCTA CCTA  GTGTC   CTTA  ATGGTC
          CTGTGAATCCATCT        -  A-    GG-   AG    ----------------
GAM30723 527   AGATATTATAATTCTCTAAT    A  T  T   TAATCT     C   TAGTCTTTTTATAT
          CTGAAATGTCCATTTAGTCT AGAT TTA AA TCTC     GAAATGT CATT
          TTTTATATAGTGCATATTTC TCTA AAT TT AGAG     CTTTATA GTGA
          TCTGCTGAGATTTTTAAATC    -  T  T   TCGTCT     C   --------------
          T
GAM30783 15897  AGATCCATGAATCAAGGGGG     CA  -   AA        CA----  -    C   TCAACCC
          GGAAATCAAGGGGTCCCTAT AGATC  TG AATC  GGGGGGGGAAAT     AG GGGTC CTA
          CAACCCTAGTGACCCACTAG TCTAG  AC TTGG  CCTCCTCTTTA     TC CCCAG GAT
          CAAAATTTCTCCTCCGGTTA     AG  A   --        AAACGA  A    T  -------
          CAGAGATCT
GAM30793 402   AGATCCTCCTGTGCCTTCTT          CCTTCTTCTTC   TT   TTTTTC
          CTTCTTCTTGGGTTTTTCTT AGATCCTCCTGTG         TTC  GGG
          CTTGAATTACAGGGGGGTTT TTTGGGGGGACAT         AAG  CTT
                              T----------   TT   ------
GAM30803 22875  AGATCGGTCGTTTTTGATGC      TC   TTTG    -   GA   C--     TTC    G  T   TCACTTATAC
          TCGATGAATGCTGGGAATTC AGATCGG  GTT    ATGCT CGAT  ATG   TGGGAA   AGAG AA GTCT

          AGAGGAATGTCTTCACTTAT TTTAGCT  CGA    TATGA GCTA  TGC   ACCCTT   TCTC TT TAGG

          ACTTGGATTTGCTCTCTTCC      TT   ----    T   G-   TTT     C--    G  -   ----------
          CATTTCGTGATCGTAGTATA TT
          GCTTTCGATTT

                    --
GAM30831 17046  AGATCTTCGAGGAGCTCACC     TT  AGGA      C  CACAA    AC     TGATGC
          CTGCACAAGCCCACGCAGGT AGATC  CG    GCTCACC TG    GCCC  GCAGG
          GATGCCCTGCCGGGCGCCCA TCTAG  GC    CGGGTGG AC    CGGG  CGTCC
          AGGTGGGCCGCTGATCT        TC  ----      A  CCG--   C-    ------
GAM30855 12033  AGATGAAGTATTTGGAACAG   AT    TAT   GA      AGGAAGA-     ATTACATG
          TAAAGGAAGATGTATCATTA AG  GAAG   TTG  ACAGTAA       TGTATC
          CATGGATATAAAAAATACTT TC  CTTC   AAC  TGTCGTT       ATATAG
          GCTGTCACAATCTTCCCCT    CC    T--   AC      CATAAAAA     --------
GAM30867 5312   AGATGAGAGGCAGAGCAGGC    GA-  G    --    -    AA-  C   A   TGCAGAGT
          CTTAATCCTGAAGATTGCAG AGAT   GA GCAGA  GCAGG CCTT   TC TGA GAT
          AGTATTATTATGAAGAGAGG TCTG   TT CGTCT  TGTCC GGAG   AG ATT TTA
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ACCTGTATTCTGCGTTGTGG GTG G TA A AGA T A --------
TCT
GAM30907 10370 AGATGCCTTTTCCCTGTTTG T T--- - TT CA-- TATTGTAT
GTTCATTGTATTGTATTAGG AGA GCCTTT CCCT GT GGTT TTG
TTAAGCTCTACTAGGGTAAT TCT CGGAAG GGGA CA TCGA GAT
GAAGGCTCT - TAAT T TC ATTG --------
GAM30917 2432 AGATGCTGACAATACTTGGG GA AC--- AAC- GAAAA
AACCTGAAGAAAATTTAGAT AGATGCT CAAT TTGGG CTGAA
TGTCCAGAATTGATTGAAGC TTTGCGA GTTA GACCT GATTT
GTTT A- GTTAA GTTA -----
GAM30966 117 AGATGGGAAGATTGCTTTGA AGA T AGA- AAGTTTGAGACCAGC
GACCAGAAGTTTGAGACCAG AGATGGGA TTGCT TG CCAG
CCTGGGCCACATAGTAAGAT TTTGTCCT AATGA AC GGTC
CCTGTTT AG- T ACCG ----------
GAM31015 15898 AGATGTCGTACAAGGTGTGC T G - - C TGAAGACCTT
AATGTGATTGAAGACCTTGT AGA GTC TACAAG GT GTG AATGTGAT
CACATTCATGACATTTGTAA TCT CGG ATGTTT CA TAC TTACACTG
GGCTTCT T A A G - ----------
GAM31017 17533 AGATGTCTTATTATTAAAGT TTA AAGTT TATT AAATAAA
TACCTATTATTGTTGGAAAT AGATGTC TTATTA ACCTAT GTTGG
AAACTAATTTGTATGGGTTT TTTACGG AATGGT TGGGTA TAATC
AGATGGTAACATGGCATTT TAC AGATT TGTT -------
GAM31041 11026 AGATGTTATTTATGGTGTGG T ATTTAT T - A AA--- GATATTTTACAA
AGGAAGCATGATATTTTACA AGA GTT GG G TGG GG GCAT
AATGCGATTGCCGCCAGCTC TCT CAA CC C ACC CC CGTA
CTTACAGAACTCT - GACATT T G G GTTAG ----------
GAM31094 11840 AGATTCATTTCCTCATGTCT A CC-- TCTG-- TT CAGG
GTTTCTTTCCAGGGGGAGAA AG TTCATTT TCATG TTTCT C
GAGTCCCCATGAAATAAGAT TC AAGTAGA AGTAC GAAGA G
GAAACT A ATAA CCCTGA GG ----
GAM31098 2191 AGATTCCAGGCCCCACCCTA - G C- AC CTGAATCA
GACTTCCTGAATCAGAAACT AGATTCC A GCCCCAC CTAG TTC
TGGTTGTGGGGTGTGGGGAT TCTAGGG T TGGGGTG GGTT AAG
CT G G TT CA --------
GAM31100 11523 AGATTCCGGGTGCTGTACGT T --- C C- TTG ACAT
CTTTGTGGACATCCGGATAG AGA TCC GGGTG TGTA GTCT TGG
ACACTACACACCTCCTGGAC TCT AGG TCCAC ACAT CAGA GCC
TCT C TCC - CA TAG ----
GAM31129 15391 AGATTGATGACCGATGATGA G G G G GAAGAGGATGGTGATGACG
TGAAGAGGATGGTGATGACG AGATT AT ACC AT ATGAT
ATTATGATGGTGATGGATTT TTTAG TA TGG TA TATTA
G G - G ----------
GAM31154 12027 AGATTTAACAATTTAGCATG AT T- A GACA -- - CAGG AAAGCAGTTAA
GACATGTACTTGTAGACAGG AG TTAACAAT TAGC TG TGT ACTTG TAGA ATTC
ATTCAAAGCAGTTAAGAATG TC AATTGTTA ATCG AC ACA TGAAC GTCT TAAG
TCTCTGCCAAGTCGACAAAC CC TT - AA-- GC C CTG- ----------
AGCTATTATTGTTAACCCT
GAM31190 67 AGATTTTAGTTAACAATAAT -- TA TAAT - G A AGTA
GAGCCTGGGAGCAGTAGTAC AGATTTT AGT ACAA GA GCCT GG GC
TAAGGCGTCTTTTGTAGGCT TTTAAGA TCG TGTT CT CGGA TC TG

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        TAAGAATTT              AT  GA   TT-- G   A A ----
GAM31194 13897  AGATTTTCAAGATCAGATTC        ---- AT       C    AGTAGTTTTCAGTGGAG
        CACCGGTTTAGTAGTTTTCA AGATTTTCA   AG  CAGATTCCAC GGTTT
        GTGGAGGAGCCAGTGGAATT TCTAAAGGT   TC  GTTTAAGGTG CCGAG
        TGGGCTCATTTGGAAATCT         TTAC  GG       A    ----------------
GAM31261 11169  AGCAAAGGGGGAAGAATTGA   A       AT  AAA---- G    AA    AATACAGAGAGCTTAC
        AAGAGAGAGAGAAGAAAGAA AGCA AGGGGGAAGA  TG      GA AGAGAG  GAAAG
        TACAGAGAGCTTACCTTTTG TTGT TCCTTCTTCT  AC      TT TCTTTC  TTTTC
        CCTTTCTGTTGATGTTACAT    A       CT  ATTGTAG  G    CG    ----------------
        CTCTTCTTCCTATGTT
GAM31262 22989  AGCAAAGGTACATATATTTT    A   ACA       -   TTTTCCTTATTTC
        AATAATTTTCCTTATTTCTT AGCA AGGT   TATATTTTA ATAA
        ATATAAAATATAGCCTATGT TTGT TCCG   ATATAAAAT TATT
        T                A   ---       A   -------------
GAM31294 7367   AGCAACCAGCCTGGGAGCCT    A-   -  GGGAG    A-   GCG
        TCGACGTAGGCGCTGTGGGC AGCA  CCAG CCT    CCTTCG  CGTAG
        GAAGGAAAAGGCCTGGCCTG TCGT  GGTC GGA    GGAAGC  GTGTC
        CT               CC   C  AAA--    GG    ---
GAM31300 21799  AGCAACCCCCAGCCTGGAGC      CC   C--    G   AA   ATCA  ATCCAATG
        ATAAGAGATCAAGATCCAAT AGCAACC  CAG   CTGGA CAT  GAG    AG
        GCTAAACTCCAATGGTTCAG TCGTTGG  GTC   GACTT GTA  CTC    TC
        TGACTGTGGTTGCT          T-  AGT    G   AC   AAA- --------
GAM31304 11743  AGCAACGACATGTACCACAG    A   CA   ACCACA  C       CAGG
        CCGCGCGCTGCAGGTGGTGC AGC ACGA  TGT     GC GCGCGCTG
        GCGCCCGCAAGCAGATCGTA TCG TGCT  ACG     CG CGCGTGGT
        GCT              A   AG   AACGCC -       ----
GAM31312 21973  AGCAAGAAAATGGCTGGAAG    AA--  A-     TG  ---          TG ---    ACCT
        AGCTGTCTTGTTGGCAGGAC AGC    GA  AATGGC  GA   AGAGCTGTCTTGT  G   CAGG
        CTCCTGGAACTGGCAAGACA TCG    CT  TTATCG  CT   TCTCGACAGAACG  C   GTCC
        GCTCTGGCTCTGGCTATTGC    AGGA  CG     GT  CGG          GT AAG    ----
        TCAGGAGCT
GAM31354 7530   AGCAAGTGGAGACTATAAAT    AAG    AC   AAATAT       GATAGTTGA
        ATTCAGGAAGAGATAGTTGA AGC   TGGAG  TAT     TCAGGAAGA
        TTTTTTTGGTTGATGCCTCC TCG   ACCTC  GTA     GGTTTTTTT
        AAGGCT              GA-     C-   GTT---       ---------
GAM31386 7304   AGCAATTATATACACCTAAT    AATTATAT      --   C    CCCTACAA
        GGCTTATTCCCTACAAAATG AGC       ACACCTA  ATGG TTATT
        AACTATTATGGGTGTCAGAA TCG       TGTGGGT  TATC AGTAA
        AAGGCT              GAAAAGAC      AT   A    --------
GAM31389 15867  AGCAATTCACTAGACAATCT       ACTA    ATC      GAAT    TA  C     TC   CGAG
        TCACATGAATGTCGGTAGCC AGCAATTC    GACA   TTCACAT    GTCGG  GC AGGGTC  TCC
        AGGGTCTCTCCCGAGGGATG TTGTTAAG    CTGT   AAGTGTA    TAGTT  TG TTTCGG  AGG
        GCTTTAGTCTTGATGAATGT       G---    ACC      AG--    C-  A     T-   ----
        GAACCATGTCGGAATTGTT
GAM31399 10230  AGCAATTTTTGGTTCTGAAG       TT  -   TGAA-       CTCTAGCT
        ATGTAGGCTCTAGCTCCTAC AGCAATT  TG GTTC    GATGTAGG
        GTTGCTGTGGACATATTGAT TCGTTAG  AT CAGG    TTGCATCC
        TGCT                TT  A   TGTCG       --------
GAM31438 10514  AGCACAGGCCCAATTCTTCC    -    CCCAATTC---    T  CTTTTATCACCCTGTCA
        CTGCCTTTTATCACCCTGTC AGC ACAGG         TTCCC GC
```

AGCTGGGAGTATCTTTTCTA TCG TGTCC GAGGG CG
CCTGTGGCT G ATCTTTTCTAT T ----------
GAM31486 5092 AGCACCTTTTAGAATATCCC - TATCCCA C GCAATA
ATGTTCTGGCAATACAAACA AGC ACCTTTTAGAA TGTT TG
CGTTCTTCTGAAAGGTAGCT TCG TGGAAAGTCTT ACAA AC
A CTTGC-- - ------
GAM31520 16953 AGCACTGTCTAAGCTAGTAA ACT --- TAA--- GAAA
AAATTGGAAACAATTTAAGT AGC GTCTAA GCTAG AAATTG
ATCTAGCACATTGGATTGGT TTG TAGGTT CGATC TTTAAC
T GT- ACA TATGAA ----
GAM31557 21890 AGCAGAATTCCAGACAAGAA AA - ACA CTACA AA-- AG GTCGGAA
CTACAGGTCAGAAATGGAAG AGCAG TTCC AG AGAA GGTCAGA TGGA GGAT
GGATGTCGGAAATCTAATCT TCGTC AAGG TC TCTT TCAGTCT ATCT TCTA
AAACCTCTGACTTTCTAGAC G- A AGA ----- CCAA AA -------
TAGGAAGCTGCT
GAM31584 17072 AGCAGAGTTCCCTCAGCCCT GA --- CT TG --- G ACATCC
GCTGTGGCCTCCCCAGGCCA AGCA GTTCC CTCAGCCCTG G GCC TCCCCAG CCA
ACATCCTGGTTGGGGAGAAG TTGT CAAGG GGGTCGGGAT C CGG AGGGGTT GGT
GCTGCTAGGGCTGGGTCCGG AC CCT -- GT AAG - ------
AACCATGTT
GAM31601 6899 AGCAGCAAGCAGAAAGAACT - A- ACTTAT- CCTT TTACACAATT
TATTAAAATATCCTTTCTTT AGC AGCAAGCAG AAGA TAAAATAT TCT
ACACAATTAGATTAGTATTT TCG TTGTTCGTT TTCT GTTTTATG AGA
TGCTTCATGTCTTCATTGCT A AC GTACTTC ATT- ----------
TGTTAGCT
GAM31609 7532 AGCAGCAGGCGGGCGCCATG GCAG CCATGC - CACA
CTTCTCTTGCACACGAGCAG AGCA GCGGGCG TTCT CTTG
AACTCTCTGCCCGCATCATG TCGT CGCCCGT AAGA GAGC
CT ACTA CTCTC- C ----
GAM31614 1937 AGCAGCATCTCCTGGATGCG ATCT ATGCGG G ATGAAGAG
GACCTGCTGGATGAAGAGCC AGCAGC CCTGG ACCT CTGG
AGGAGGTGACCAGGCCAGGC TCGTCG GGACC TGGA GACC
TGCT GACC AG---- G --------
GAM31620 14973 AGCAGCCCCGCCCCGCCCCT G - - -- TT CACAA
GCGTTACCACAAGTTCTGTT AGCA CC CCGCCC CGCCCCT GCG AC
GGGGGGTGCGGGTGGAGGAT TCGT GG GGTGGG GTGGGGG TGT TG
GCT A A C GT CT -----
GAM31626 17184 AGCAGCCTCTAGGATCTTGT - T-- TCTT AGCTG CTCTCT
CAGAGCTGCACCTCTCTGTG AGCAGC CTC AGGA GTCAG CAC
AACTGGCCATTCCTTTCGAG TCGTCG GAG TCCT CGGTC GTG
TGCTGCT T CTT TAC- AA--- ------
GAM31645 1360 AGCAGCTGCACGCCGTGGAG G G C AGA A TGCAC
ATCAGCGCGGTGCACTCGCG AGCA CT CA GCCGTGG TC GCGCGG
CGACCACGGCCTGGAGGTGC TCGT GA GT CGGCACC AG CGCGCT
T G G C --- - -----
GAM31657 16359 AGCAGGACGGGCGGCGCTCT - ---- -- C CT A CCCGTTAA
GCTACTGGTCCCGTTAAGCC AGCAG GAC GGGC GG GCT GCT CTGGT
AGAGTAGCCCAAGCCCTGAA TCGTC CTG CCCG CC CGA TGA GACCG
GTCACTGCT A AAGT AA - -- - --------
GAM31666 7311 AGCAGGCAGATCATCTGAGG -- A--- - A- A-- CGA

TCAGGAGTTCGAGACCAGCC AGCA GGCAG TCATC TG GGTCAGG GTT
TGGCCAACATGGTGAAACCC TCGT CTGTC AGTGG AC CCGGTCC CAG
TGTCTTTGCT TT CCAA T AA GAC ---
GAM31673 4669 AGCAGGCTGTACGGCCTGGG TAC-- T TA TT T GCGC
GTATGGATTCGTCCGGCGCT AGCAGGCTG GGCC GGGG TGGA CG CCG
GGCGTCTAGGTCTCGGCCCT TCGTCCGAC CCGG CTCT ATCT GC GGT
CCCCAGCCTGCT CCCTC - GG -- - ----
GAM31681 21860 AGCAGGGCCAGTCCACTCGG GCCAGT TC TT T C GATGG
TTGATGCCTGGCGCGATGGG AGCAGG CCAC GG GA GC TGGCGC
CGCCAGCTTTCCCTCGTGGT TTGTCC GGTG CC TT CG ACCGCG
ACCTGTT AT---- CT CT - - -----
GAM31696 2397 AGCAGGTTTAAAAGGTGCTC TTTA TGCTCAG GA TA ATTAAG
AGTTAGAGATTCTAACCAAT AGCAGG AAAGG TTA GATTC ACCA
TAAGTGGTGAATTATAAAAT TCGTCC TTTCT AAT TTAAG TGGT
TTCTTTCCTGCT ---- TTAA--- A- -- ------
GAM31716 11154 AGCAGTCTGTACTTTGTGAT C ACTTT- GATAA A AGAAGAGCA
AAGTAAGAGCAGAAGAGCAG AG AGTCTGT GT GTAAG GC
CATTTACATCCAGCCTAACA TC TCAGACA CG CATTT CG
ACAGACTCT - ACAATC ACCTA A ---------
GAM31745 10591 AGCAGTTTGACTCCTGAGGC G CTCCTG C ATAAACTAC GT GAGA
CATGCTATAAACTACTAGGT AGCA TTTGA AGGC ATGCT TAG TACAT
TACATGAGAATGTATACTAA TTGT AGACT TTCG TGTGA ATC ATGTA
TCTACATGAGTGTGCTTATT G TTA--- - GTACATCTA AT ----
TCAGAGTGTT
GAM31747 14082 AGCAGTTTTCTCTTAACACA T ACACACC-- ATGGCCCATGA
CCCCTTAATGGCCCATGATG AGCAGTT TCTCTTA CCTTA
AGGTTTCAGAGCTGAGAGAC TTGTCGA AGAGAGT GGAGT
AGCTGTT C CGAGACTTT ----------
GAM31752 10228 AGCATAAATCAGTATTTAAC ATC AACCTA-- TACAT
CTAAAATTACATATTTGAAA AGCATAA AGTATTT AAAT
CAGAAGATATTATGTTATGC TCGTATT TTATAGA TTTA
T GTA AGACAAAG -----
GAM31780 2486 AGCATCATGGAGGTTTGAAG C G GT G- - - A C- TGAAT
ATGCCGCATGCGGAGTCGGA AGCAT AT GAG TTGAA ATGCC GCA TGCGG GT GGA
TGAATTCCAAATACTGCGTT TCGTA TA CTC AATTT TGCGG CGT GCGTC TA CCT
GCTGGCGTGGTTTAATACTC - G AT GG T T A AA -----
GATATGCT
GAM31784 2003 AGCATCCAGAGTCTGGTGTC A AGTC G TTTAATCA CAGGT
CTTTAATCAGTTGGCAGGTT AGC TCCAG TGGT TCC GTTGG
CAACCTGGAGGCCACTGGAG TCG AGGTC ACCG AGG CAACT
CT - ---- G TC------ -----
GAM31799 11308 AGCATCTGTGTTTTCATTCG TC----- TT A T - A T CTAG
TTTGTACCTACTGTGGGCTA AGCA TGTGT TC TTCGTT GTA CCT CTG GGG
GCCTCTAGAGGATACAATGA TCGT GCACA GG AAGTAA CAT GGA GAT TCC
AAGGCTACACGTCATTCTTG TCTTACT TC A - A - C ----
CT
GAM31805 15526 AGCATGAGAGAGATCTGTCT A A CTGTC ACCA TTGGATTCT
ATGGGACCAGTGGCTTGGAT AGCATG GAG GAT TATGGG GTGGC
TCTGCCACACCCATAAATCC TTGTGT TTC CTA ATACCC CACCG
TTGTGTGTT G - A---- A--- ---------

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GAM31821 21923  AGCATGCTCAGTTAAATTTG  C        A        C     ----------   C   C
        AATTTCAGACAAATAATGAA AG ATGCTCAGTTAA TTTGAATTTCAGA AAATAAT       GAATG TTTTA
TGTAA
        TGCTTTTACTGTAAATATAT TC TACGGGTCAATT AAACTTAAAGTCT TTTGTTA       CTTAC AAAGT
ACGTT
        GCCAAATATTGCATGAAACA  -       C        C     ACAGTGCAATT   -   -
        TTCTTAACGTGACAATTGTT A  ATGCCAA
        TCTCTGAAATTCAAACTTAA  TAT
        CTGGGCATCT        ATA
                  -  -------
GAM31849 1375   AGCATGTGGCCTCCCCGTCC    T TG  CT-   ----    TCCCC  G  GAACCCA
        CTTCCCCGGTGGCGAACCCA AGCA G  GC   CCCC   GTCCCT   GGT GC
        GTGACCCAGGGACACGTGGG TCGT C  CG   GGGG   CAGGGA   CCA TG
        GTGTGCTGCTGCT        - GT  TGT   TGCA    C----  G  -------
GAM31860 11407  AGCATTACATATTGTAGATT   ATT   --   ---   A   TACAGCATT
        AGCATTACAGCATTATGCAA AGC   ACAT  ATTGT   AGATT GCAT
        TTTCACACAATTCATGTTAG TCG   TGTA  TAACA   TTTAA CGTA
        CT              AT-   CT    CAC   -   ---------
GAM31878 11552  AGCATTCCAACAAAGGGTTT    TTC    AA--  TTTTAA    TTTTTTTTT
        TAATGTAGATTTTTTTTTTT AGCA  CAACA   GGG    TGTAGA
        TGCACCCCATGCTGTTGATT TCGT  GTTGT   CCC    ACGTTT
        GCT              TA-    CGTA  C-----    ---------
GAM31906 13776  AGCATTTGAATGCATTTTGT    ---      AT    TG  TTGTATT
        TTGGTATTGTATTTATTCAA AGCAT  TTGAATGC  TTTGTT  GTA
        TAAAGTATTTAATTAGTGCT TCGTG  AATTTATG  AAATAA  TAT
                        ATT      --    CT  -------
GAM31923 17439  AGCCAAACCATATCACTTGC    AACCATATCACTT-  TTA  CTCATTTTT
        TTTATCCCTCATTTTTGGAA AGCCA          GCT  TCC
        ACAGCTCATCATACACATAT TCGGT          CGA  AGG
        GGCT               ATACACATACTACT  CAA  ---------
GAM31957 4783   AGCCAATCTGCAGACAGACA  CCA   -   ACA---   C    A   -   GAC    CC  GAA  GA  A--
        CTGGCAACATTGCGGACACC AG  ATCT GCAG    GACA TGGCA CAT TGCG  ACCCT  AG  GC  GA
TG
        CTCCAGGAAGCGAGAATGCA TC  TAGG CGTC    CTGT ACCGT GTA ATGT  TGGGA  TC  CG  CT
GT
        GAGTTTCCTCTGTGATATCA  AG-   T   CACATG   T    C  G   ---    CT  A--  AA  ATA
        AGCACTTCAGGGTTGTAGAT    TTTC
        GCTGCCATTGTCGTACACCT CAGAG
        GCTGGATGACT       GTCTC
                    ----
GAM31996 5026   AGCCACGTGTCCTCATTTGT   CACG-     ATTT  GT   TCA TG CTGG
        GTCCTCTCATTGGCTGGCTG AGC    TGTCCTC   GT  CCTC  T  G
        GGCTGGGGGTACTGGGGGAC TCG    ACAGGGG   CA  GGGG  G  C
        AAACAAGCT          AACAA     GT--  TG   TCG GT ----
GAM32023 14090  AGCCAGATTTGCAGCTACGA    GA   -   TACG  TCAT  TCCAGAC
        AATCATCACTCCAGACGTGC AGCCA  TTTG CAGC   AAA   CAC
        CCTTTACTGTTGACAAAGAT TTGGT  AAAC GTTG   TTT   GTG
        GGTT               AG   A   TCA-  CCC-  -------
GAM32024 11170  AGCCAGATTTGCAGCTACTA    GA   -   TAC   TCAT  TCCAGAC
        AATCATCACTCCAGACGTGC AGCCA  TTTG CAGC   TAAA   CAC
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CCTTTACTGTTGACAAAGAT TTGGT AAAC GTTG ATTT GTG
GGTT AG A TC- CCC- -------
GAM32050 344 AGCCAGGTATTCTCTACTGC A GT T C CTG- GA TCAAA
CGCTGATGGTCAAACCGCAA AGCC G AT CT TA CCGCT TGG
GTGGAAATTAAAGTGTGTCA TCGG C TG GA AT GGTGA GCC
GGCT A TG T A TAAA AC -----
GAM32052 13427 AGCCAGGTGCAGTGGTGTGT TG AG G - -- A- C- A GAG G GAGGA
GCCTGTAGTCTCAGCTATTT AGCCAGG C TG TGTGT GCCT GT GTCT AGCT TTTGA GCT
AGGTGA
GAGAGGCTGAGGTGAGAGGA TCGGTCC G AC ATACA CGGG CG CAGA TTGA GGACT TGA
TTCACT

TCACTTGAGTTCAGGAGTTC CT A- G A TC AC AC - --- G -----
AAGACCAGCCTGGGCAACAT
AGCAAGTCCCTGGCT

GAM32060 19561 AGCCAGTGGATCTTAGCTTG - A T - T GC GGGG
CTGGGCCCTGTGGGGATGGG AGCC AGTGG TC TAGCTT GC GG CCTGT
ATCTGCTGAGCTAGACCACT TCGG TCACC AG ATCGAG CG TC GGGTA
TGGCT T - - T - TA ----
GAM32065 4615 AGCCAGTTTATAAAGTGGAA A A TATTAG AGATT
GTATTAGGAGATTCATAAAT AGCCAGTTT TAA GTGGAAG G
CTTCTATATTGAGAATTGGC TCGGTTAAG GTT TATCTTC C
T A A TAAATA -----
GAM32078 15540 AGCCATCCAGCGTCGCTGTA - GTC- GTA T CTGTCTC
AGTTCCTCTGTCTCAGGGCT AGCCATC CAGC GCT AGT CCT
GAAGTACCAGCTGAGGTGGC TCGGTGG GTCG TGA TCG GGA
T A ACCA AG- - -------
GAM32082 15763 AGCCATCCTGTCAAGCGCTG C TCA-- G ATT GATCTCTG
GGATTGTTCTGATCTCTGGG AGCCAT CTG AGC CTGGG GTTCT
AGCCTCCAGGGCTGACTCCA TCGGTA GAC TCG GACCT CGAGG
GTATGGCT T CTCAG G C-- --------
GAM32085 10831 AGCCATCTGAGATACCCAAG CA A ACCCA G CCT- AG TG TTA
TAGTAGAATCCTTTCAAGCA AGC TCTG GAT AGTA TAGAAT TTCA CAC G
CTGGTTACTGGTGATGAATT TCG AGAC CTG TCAT GTTTTG AAGT GTG C
TTGTTTTGTACTGTCACAGA -- A ----- - TTTT A- GT ---
GCT
GAM32098 21785 AGCCATGGCCAGTACAGTGG AT A CAGTGG - ACTGA
TAGCAGTTGGACTGACCATG AGCC GGCC GTA TAGCAGT TGG
CTGCTGAGGGATTGCAGGCC TTGG CCGG CGT GTCGTCG ACC
GGTT -- A TAGGGA T -----
GAM32141 13138 AGCCCAGAAAGAGTTAAGAA CAGAAAGAG AAG CG G CTCATA
GGTGCTGGGCGTGGTGGCTC AGCC TT AAGGTGCTGGG TG TGG
ATACCGGTAATCCCAGCACT TCGG AG TTTCACGACCC AT GCC
TTAGGAGGCT --------- GA- TA G ------
GAM32175 16227 AGCCCCACCTCGGCCCGATA C C GC ATAA GACA AAGAACTTG
AGCTGACACTAAGAACTTGA AG CCCAC TCG CCG GCT CT
GGGAGAGCGAACGGCTCGAG TC GGGTG AGC GGC CGA GA
TGGGTCT T - TC AAG- GAGG ---------

GAM32176 19580 AGCCCCACTGATGGTCTGTC CA ATG - CT ACCT
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GCAGGGTT AC AA- A -- ----
GAM32186 22694 AGCCCCATCATTTAATTTCT A AA TG GGGGG GAAGTTAGAAG
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GTAAAGCTGGAGAAGATGAA TTGGGG AGTAGA AGAG C TG
GGGGTT A -- GT GAAA- ----------
GAM32196 15436 AGCCCCCGCGCCGGGGGCTC CC CTC- CT T TTT------ AGTC
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TCATTTTCAAGTCTGAAAGT TTGGG TGCGGTCCTT TCT GTTG TTTCCG CGGTGAAAGT
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TCTGGGTT
GAM32200 22998 AGCCCCGGCCGGCCGAGGCG C -- G ACAG G CGCG AGGAT
CTGACAGGTGGGCGCGGCGG AGCCC GGCCGGC CGAGGC CTG GT GG GCGG
AGGATCCGCAACCGGCGCGG TCGGG CTGGCCG GCTTCG GGC CG CC CGCC
GCTTCGAAGCCGGTCGGGCT - AA - G--- G AA-- -----
GAM32238 11124 AGCCCTCGATGAGAACAAGG ---- GAT- AACA-- C C TTTACTTGAGCGT
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TGAGCGTTCGGCTTACTCTG TCGG GAG CTC TCCAGT TCA TCGGCT
ACCTGACACACTCCACAGAG TCAC ACAC ACACAG C T ----------
CACTGGCT
GAM32284 21759 AGCCGCACCAACGAGACAGG C AA-- GACA--- TG- GGAGCTGAA
TGGAGCTGCAGGAGCTGAAT AGC GCACC CGA GGTGGAGC CA
GACCGCTTCGCCAACTACAT TCG CGTGG GCT CCGCTTCG GT
CGACAAGGTGCGCT - AACA ACATCAA CCA ---------
GAM32288 12038 AGCCGCGTGGTTCTGGGGGA C- - GG ------- GTTCGCAATG
GTTTGGGGTTCGCAATGTCC AGCCG GTGGTT CTGGG AGTT TGGG
ATACTACTGACTTTCCCGGT TTGGC TATCAA GGCCC TCAG ACCT
AACTATTCCGGTT CT T TT TCATCAT ----------
GAM32319 5303 AGCCTACGGCAGCGGCGAGC CTA A CGA CCAA- TAC
CCAAGCCAGCTACGCTGGCC AGC CGGC GCGG GC GCCAGC
CACCGCCCACCGTGGCCGAG TCG GCCG TGCC CG CGGTCG
CT A-- G ACC CCACC ---
GAM32339 17318 AGCCTCACAGCTCAGGTCTC CACA GTCTCT- GC TCA
TCTTTGCCTGTCACAGTGGA AGCCT GCTCAG CTTT CTG
AGTCCCGTGCTGAGCCCAGG TTGGA CGAGTC GAAG GAC
TT CC-- GTGCCCT GT ---
GAM32346 262 AGCCTCAGGTCTATTTTTAT AGGTCTA ATAAC GTCGTA
AACTTGTGGTCGTACACAAT AGCCTC TTTTT TTGTG
AACAAAAAAAAAAAGGGGGC TCGGGG AAAAA AACAC
T GAAAAA- ACAAT ------
GAM32348 10729 AGCCTCAGTGCTCTTGACAT CAGT G TTTT- CATACA
TTTGGACCATACAGTTCTTT AGCCT GCTCTT ACA GGAC
ACTGTGGGGAGCTATAGGTT TTGGA CGAGGG TGT CTTG
TAT- G CATTT ------
GAM32358 227 AGCCTCCCAAAGTGCTGGGA TC T---- AT -- GTGA
TTACAGGCGTGAGCCACTGT AGCC CCAAAG GCTGGG TACA GGC

GCCCAGCTATTTTTTTGGAG TCGG GGTTTT CGACCC GTGT CCG
GGCT GA TTTAT -- CA ----
GAM32409 14955 AGCCTGAGATGGGGATGAGG C A ---- - CA A GAGC
GCAGAGAGAGGGGAGCCCCC AG CTGAG TGGGGA TGAG GG GAGAG GGG
TCTTCCACTCAGTTGTTCCT TC GACTC ATCCTT ACTC CC TTCTC CCC
ACTCAGACT A - GTTG A -- - ----
GAM32411 13210 AGCCTGAGGAGCCATTTGGA GA A AA- ----- ACG CGG GTGT
GCAATGGGGAACGCTCACGG AGCCT GGAGCC TTTGGAGC TGG GGA CTCA ACT
ACTGTGTGGTAATGAGAGAT TTGGG TTTCGG GGACCTCG ACC CCT GAGT TGG
CCAAACACCAAGCGCTCCAG -- - CGA ACAAA AGA AA- ----
GGGCTTTGGGTT
GAM32481 17738 AGCCTTACGTGGACCTCGCC G C - GCTCG------ C -- GATT
GCTCGCTGGCGGTCACGATT AGCCTTAC TGGAC TCG CC CTGG GG TCAC
GTGAGCCCTCCAGACAATTT TCGGAATG ATCTG AGT GG GACC CC AGTG
TTAAGGTTGAGTCTAAGTAA A - T AATTTTTAACA T CG ----
GGCT
GAM32544 10081 AGCGAGCCCAAGTCATGTAA C CCAAG T AAAC GTACATTAAA
TTGAAACTTCTGTACATTAA AG GAGC TCATG AATTG TTCT
AAGAACTGATTCATGAAGAC TC TTTG AGTAC TTAGT AAGA
GTTTTCT T CAGA- - C--- ----------
GAM32550 17594 AGCGAGGTGCGCAGGAACTT - GC AGGAA GA ACT T - CTGACTAC
TGATGCACTGGTGATGGACC AGC GAGGT GC CTTT TGC GG GATGG AC
TGACTACGTACTATCCCGCA TCG CTCCG CG GAGA ACG CC CTATC TG
AGAGCGAGCATGCCTCAGCT A TA AGC-- -- --- - A --------
GAM32567 15167 AGCGCAGGCCCACTTCCCCC GC - - TT ACTCGGCA
AGTTCTCCTACTCGGCAGGG AGCGCAG CCACTTCC CC CAG CTCCT
AGGCCTGAGGCGGGGGTGGA TCGCGTC GGTGGGGG GG GTC GAGGG
CTGCGCT A- C A CG --------
GAM32582 11736 AGCGCGCGGCGGCACCGGGG - CA- ------ G C AC G C CGAC
ACGCTGGAGCCCGACGCGGC AGCGCGCGGC GG CCGGGG ACGCTGGA C CG GC GCGG GG

GGCGGCGACCCCCGCGGCTC TCGCGTGTCG CC GGTCCC TGCGACCT G GC CG CGCC CC

CGAGTCCAGCGTCTCTCCCC G CTC CCTCTC - A CT G - ----
CTGGCTCCCGGCTGTGCGCT
GAM32590 1359 AGCGCTTTGAGGTCCAGGAT - TT TCCAG A CAATGAC C GAT - -- ---
ACTGGCAATGACCAGCATAG AGCG C TGAGG GAT CTGG CAG ATAGAA CACCA GTT
GCTGA
AAGATCACCAGTTGCTGACG TCGT G ATTCC CTA GACC GTT TATTTT GTGGT CAG TGATT

TGTGGACAACTCGAGATTAG T TC TTA-- A ACCCA-- C --- T TT AGA
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TGACCCACCAGAATCATTCC CG GT
TTACTGTTGCT GC CA
T -----
GAM32592 22125 AGCGGAAGATGGAGAACCGT AAGA C TTA GGA - G TTTG
GATTACCGGGATGCACAGGA AGCGG TGGAGAAC GTGA CCG TGCA CAG AG
GTTTGCTGCTGATGTACGGC TCGTC ACCTCTTG TATT GGC ATGT GTC TC
TTATGTTCTCCAACTGCT A--- - C-- --- A G ----
GAM32614 7278 AGCGGGATGGCTGCAGCCAA T- GC AAG G GGAGGG

GGAGCTGGGGGAGGGCCGGG AGCGGGA GGCT AGCC GAGCT GG
CTCAGGGCTAGCCCTTTCCG TCGCCTT CCGA TCGG CTCGG CC
CT TC -- GA- G ------
GAM32629 15874 AGCGGTGGAGTCAGGACAGT - TG G GA ----- ACGTGC
CCACACGTGCGTGGTTTGCA AGC GG GA TCAG CAGT CCAC
CTGAGCTGGGTTTGTCAGTT TTG CT TT GGTC GTCA GGTG
A GT G GA CGTTT ------
GAM32661 11150 AGCGTGTCTGGAAACGCAAA C -- A CA-- TCATTAATTTCATAC
CTATCATTAATTTCATACTA AG GTGTCT GGA ACG AACTA
GTTGTACCGTATCTGTAGGC TC TACGGA TCT TGC TTGAT
ATCCT C TG A CATG ----------
GAM32667 17844 AGCGTTTTCAGTTGCTGGAG ----- GC AG-- CCTGAGTCGAT
GGGCCCCCTGAGTCGATGGG AGCGTT TTCAGTT TGG GGGCCC
CCTGAGGCCGATGACTGGAA TCGCAG AGGTCAG GCC TCCGGG
TGTTGACGCT TTGTA TA GGAG ----------
GAM32692 16878 AGCTAATGAGACCATCTTTT AATGAGA ---- AGCT-- GAAC
GCGAGCTGGGGAACCCCTTC AGCT CCATCTTTTG CG GGG
AAACGGAACCAGAGGATGGA TCGA GGTAGGAGAC GC CCC
GCT ------- CAAG AAACTT ----
GAM32734 478 AGCTAGAAGACCTGTTGCGG AGAA CGGA - G- AA AGA
AAGGTTCGCGCCAAGGAGAC AGCT GACCTGTTG AG GTTCGC CC GG
CAGGAAGCGAGCACTCAGCA TCGA TTGGACGAC TC CGAGCG GG CC
GGTTAAAGCT AA-- ---- A AA A- ---
GAM32736 17376 AGCTAGAATTTTCTAGCTAC - TCTA C AGAA-- GAAA
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TTCATAGCT A CA-- A ACCCGA ----
GAM32749 21831 AGCTAGCTAATTCTTGTTTT C AATTCTTGT TTT CTTTTA-- TCCTG CTA-----
CTGATTTAAAGCACTTTTAA AG TAGCT TTTCTGA AAAGCA AATCTTA CCCC
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AACCCTGTTTTTCAGAAGGG AAAAC
CTACT TTTTG

GAM32752 14174 AGCTAGGATTCTCAAATGGA TTCTC GAA----- TATA
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GCT TTCGT AAAAATTG ----
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AGAAAGCTCCACACTTGAAG AGCTATGAAG CACCT AGA AGCTC
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GAM32788 10822 AGCTATTCAGTTGGTAAGCT TTGG ---------- AGGAAAAA
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GAM32971 21868 AGCTGAGTACATTGGCTACA ACA-- ACAAAA TG TCCT
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GAM32986 2556 AGCTGATGCTGTGTGCTGCC ATG T T- - ATGACC AGCT
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AGGGCTGTGCCTGCGCCCAG TCGAC GAC CGCG CG GTC TCC
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GAM32996 17575 AGCTGCAGACATCAGGCCAA T GA- G C - AGGAG
GGACCAAGAGGAGCTGTGGT AGC GCA CATCA GC AAGGACCA AG
TTTTGTGTGATGAAATGTGC TCG TGT GTAGT TG TTTTTGGT TC
T - AAA G - G -----
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GACTCGCCCGTGTTCGACGC AGCTG CGCG GTCCGAC CG GTTCG GC
GCCCCCCAGCCCCCCGGACT TCGAC GCGC CAGGCTG GC CAGGC CG
CGCTGTCGGACCGCGACAGC A ------ TC--- T CCCC --------
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GAM33066 22527 AGCTGGCCTTCAACCTGGAC CTTCAACC CTACTACA- T ACC TCCTACCTGCTT

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CACCTGGATTTCTGACCCTT CAATCACA TCTTTCCCA - ACC ----------
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CT
GAM33070 19768 AGCTGGCTTCTACACGGCCA G CA T GG CCA A - GA T- AT TTA
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CCT
ATTCTTAGATACTTAATCCT TTGA CGGGGGT GTTGGTG AC TT CT TA GGGGTAAGGGT GTG GT
GGG

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        CAAGTT
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GAM33172 22616  AGCTTAGCAGAGAAACCAGC       AGAGAA  A GAAAC      G   TGAA
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        AAGATGACTTCACGGAGGCG TCGAGTCG     TGG CG    GGCACTTC GTAG
        GTACAGCTGAGCT           ACA---  - GA---      A   ----
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TATG

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        CTCCTGAGTT
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CCTCA
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GTAGT GGAGT
        ACTCTGGATGAGGCTGATGA  G   C   T   C   G    CC    TTTTTA    AC  A   A--    C
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        GTCCCCGGGTGGGGAACGAG  CC
        CTGTGCGAGGT         GG
                  A  -----
GAM33213 7005   AGCTTCCTGAGCAGCGAGGT    T  TG   AG   GGT    T     TTGAT
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GAM33216 13430  AGCTTCGGCAAGCTCGGGAG    T    A-  T   --   T    AGGCCG
        TGCCCAAGGCCGTGGGCCCT AGCT CGGCA  GC CGG  GAG GCCCA
        CAGCCGTGTGGTGCTGAGCT TCGA GTCGT  TG GCC  CTC CGGGT
                    -    GG  T   GA   C    ------
GAM33239 19714  AGCTTGATTGAAAAGATACT     GA      GATACTAAG   TAAACTGAACCC
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        TACTAACCATTTTCAAAGGC TCGGA  AACTTTT        TTG
        T                  --      ACCAATCA-  ------------
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        GTTTTTAGCTAAGGAAAATA TTGA   ATGTTTAGA         TC  TTT TGG
        AGATTTGTAAATAGTT        TAA       ATAAAAGGAA  GA   T   ----
GAM33271 15465  AGCTTGTGCTTATAGAGTGT   C      TA   A     AT---     AGTGAAA
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        ATGCCACCGCATACCTACCA TC AATACGA  ATC CATACG     GTAGAT
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CCAAATATTCAAGAGTATAT AGCTTT GTTCCA CC ATAT
GCAGGCCCTGGAACTAGAAG TCGGAA CAAGGT GG TATA
GCT GAT--- CCC ACG --------
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AGAATTTATACAGTCTTCAG TCGAAA ATTGTG AAAATGT AG CTTC GAC
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AAAAGCT
GAM33317 13930 AGCTTTGTCTGTGGGTTAGT - G GGTT G A TCTG
ATTGGTGTATGTATGAGTAT AG CTTT TCTGTG AGTATTG TGTATGTATG GTA
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GGCT AA TT C ----------
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CAAACTTCAAGTCTACCTGT AGCTTT TCT TCA TC CTTCAAGT CTGT GGTTT GTG
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T T T ------
GAM33381 2515 AGGAAAATGTCTGTTGATGC TGTCT-- T C CAG ACCGTGAGA
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GAGAGCTGCAACGGGCTCAC TCCTTTT CG TTAC ACTCGGG CGTCG
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GAM33458 10744 AGGAAATGCAAAGGATCATT GCAAAG AGC--- CAA
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TACACAGGAATGGTTACGAT TCCTTTA TTGGTAAG TGACATT
TTCCT GCA--- GACACA ---
GAM33459 17687 AGGAAATGCGGAGCCGCGTG AAATG- G C- - GG TG - TCGCAATGTCCAT
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CTTTCCCGGTAACTATTCCG GTAGTA A CT T TT GT A ----------
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GAM33497 17017 AGGAACCATCCCAGGTGCGG A - GG G A- - - TCACCC

GCGGCACCCAGAGACTCACC AGGA CCATC CCA TGC GGCGGC CCCAG AG AC
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GAM33530 17162 AGGAAGAAAGGAATAAGGAA AA AA T GA A AACTATTTTCCATC
CTTTTTACTGGGAACTATTT AGG GA GGAA AAG ACTTTTT CTGGG
TCCATCTCTAGGAAAAAGTG TCC CT CCTT TTC TGAAAAA GATCT
CTTCTTCCCCTCCCCCT CC CC C G- G ----------
GAM33535 15657 AGGAAGAAGGATTACTAAAT GA G AC A GA AG TGCT
TAGATCAGATTTTGCTAAAT AGGAA AG ATT TA ATTA TC ATTT
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GGTTCCT GG G CA A AA G- ----
GAM33626 17837 AGGAATAGAGCATGCACACG A GCACA------ C GACA
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T - TTTAATCTCTA T ----
GAM33698 11344 AGGACAACATTTAATTATTT CA- TTTA T- A CT GA TAAAGAT
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ATTGTAATCTTTTGTGTCTC CTG TTTC TT - -- AA -------
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GGAGCCTTCACCTCTCCGTC A TG TC TTC-- G CTG - --------
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GAM33787 1414 AGGACGAGTTTCAGGTCTGG CGA TCTG C-- G AAT- TATGGCGAAT
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GAM33886 15283 AGGAGACCCAGTCAGGACAC A AGT CAC- AT ATGAGA
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CGCTCAGCTCCTGGGGCTCC TCCTC GGG GTCCT TCG CCTG
T - --- CGAC CT ------
GAM33887 13212 AGGAGACCCAGTTAATGTAA A AAT TT GAAGC ATTTGCCAA
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GAM33905 17384 AGGAGAGATATGCCATTTAC A A TTTA T AAAC-- GAATA
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        CTT                      GATA  AC    -  ----
GAM33924 22665  AGGAGATATAAAGCTGGCTT      ATAAAG     G--   -   GTT   AT   CACTCCT
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GAM33933 6938   AGGAGATGATTAAGTCTGGA     ATGATTAAG   GAA  AA   -  T  -  -  ACT   -    A  CATG
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        CTTCTCTCATGGAACTCATG TCTTC       AGGC   AC  ACAC CG GTA GA CT   AGAGG GTACC TGA
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GAM33962 12028  AGGAGCATCCCGCGGATGCC      ATCCC    T  CA   A-    AT   --   CT   GGGC
        AGACCAGGCTCATGTCGCGC AGGAGC     GCGGA GC  GACC  GGCTC  GTC  GCGC  GCC
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GAM33968 19478  AGGAGCCATTTTGAGCAATG  G    ATTTT   AA-    AA   CAC  AC   G   TAATGAGAGAT
        GGGAACGCTCACGGACTGTG A GAGCC     GAGC   TGGGG  CGCT   GG   TGT TGG
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        ACCAAGCGCTCCAGGGGCTT  G    GT---    GGG    --    A--  --   A   -----------
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GAM33978 23005  AGGAGCGCCTCTATGCCTAC   G    CT   T    ACCACCTGTC      GCCT
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        GTACGGAGGCCTGGCTGTGC TC TCGTG  GGT CGGA        GGCATGG
        TGCT              G    TC   C   ----------      ----
GAM34016 6946   AGGAGGAAGGAGAACTGGCT   G       GAAC    TTG   GCATACCACACAA
        TGCTAGCATACCACACAATA AG AGGAAGGA    TGGC   CTA
        GATTGTCAAATTCTTCTTAC TC TTCTTCTT    ACTG   GAT
        T                 A       AA--   TTA  ----------
GAM34021 10478  AGGAGGACGCGCTGCCCGGC         ------  G-   G  CAGAAAA       AAGGT
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GAM34025 143    AGGAGGAGCAGTGAGGGATT    A  -      AG  ---      TAAA  GA TAAAG
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        ACTGCTACCCCT          - A      CA  GTT      TAGG  TC -----
GAM34029 15753  AGGAGGAGGAAGGTGCGAGC         A   C   CG---   C    TGCTGAATACT
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        CATCATCCTCTTTCT             A   C   ACTTA   -    -----------
GAM34044 10673  AGGAGGATCTGTTTGGGAAA   G           GAA   T  ATT   -------      AAAT
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        AATGAGGGGAAAAAAAAAGA TT TCTTAGGTAAACT   TGT TC   CAGA      AGGGGAG
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GAM34057 16341 AGGAGGCGGTGGAGCGGCCG G CGTG GG GA GTAC
TGCTGGGGTCGACGGGGTAC AGGAG CGGTGGAGCGGC CTG GTC CGGG
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CACTGGCTCTT G A--- AT -- ----
GAM34082 11262 AGGAGGGGGCCTTCAAGCTG C TCAA GTACT GCAG GCATTG
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GTATTATCATTCAAAGCAGT TTCTCCCTC GA CGA TACT TG
CTCCCTCTT T ---- AACT- ATTA ------
GAM34146 5059 AGGAGTTCTGCTGGGCGTCG ---------- T C C A- CTT
CGAAGGAGCTTCTCCTCCCG AGGAGTTC TGC GGG GT GCG AGGAG
CCGCTTCCGTAACCTCTCTT TCCTTAAG ATG CCT CG CGC TCCTC
TGAATTCCT TTTCTCTCCA - T C CC ---
GAM34173 13595 AGGATAATAGGACAAGACAA ATAA AAGACAAA A C A- AAATGA
ATTACAGATTGTCTCAGAGA AGG TAGGAC TTACAG TTGTCT AGAGA AAC
AAACAAATGAGTTACTCTCT TCC ATCCTG GATGTC AACAGG TCTCT TTG
CGGACAAGCTGTAGGTCCTA ---- -------- G C CA ------
CCT
GAM34189 13758 AGGATAGGACCCTACTAGTA A CC T TATAC- ATTGG
TTGTATACCTATGATTGGCG AGG TAGGAC TACTAGTA TG CTATG
TAGCCCTCCCACTACTAGTA TTC ATCCTG ATGATCAT AC GATGC
GTCCTAGCTT G -- C CCTCCC -----
GAM34205 22063 AGGATATTCAATGGGCTAAT A CTA GGAT GTGGTGA
GGATTAAGTGTGGTGAACTT AGGAT TTCAATGGG AT TAAGT
ATGGAATCCTGTTGAAATCT TTCTA AAGTTGTCC TA ATTCA
T - --- AGGT -------
GAM34250 7356 AGGATCTTCGGAACTGATGA - T- AA- ATGAA ACA CG TGAG
AGCATCACATAGGTCGGTGA AGG ATC TCGG CTG GCATC TAGGT G
GCTAGCCTAGGATGTAAGCA TCC TAG GGCC GAC TGTAG ATCCG C
GGAGCCGGTTGATACCT A TT GAG GAA-- G-- AT ----
GAM34259 15603 AGGATGACCTGAGTGAGCTG ATGAC AG G G A A ACATGGGACAAC
CCACCGCTGGAGGACATGGG AGG CTG T AGCT CC CCGCTGG GG
ACAACCCCCGGCGGAGGAGG TCC GAC G TCGG GG GGCGGCC CC
CTGAGCAGCCT ----- GA - A A - ------------
GAM34299 2075 AGGATGGGTACCAGGCCTGA GTACCAG GTG T CATTA
GATTGTGGGAGTGGCATTAC AGGATGG GCCTGAGATT GGAG GG
CCTCTGGGAGTCTCGGGCAG TTCTACC CGGGCTCTGA TCTC CC
ATCACCATCTT ACTAGA- GGG - -----
GAM34418 11304 AGGCAAGGCTCCTGACTTCC CAA TC ACT TTCTT - ACT ACTCTACC T- TCT
TTCTTGCCGGCTCAACTTCT AGG GGC CTG TCC GCCGG CTCA TCTCCG AGCTGA GC
CCGACTCTACCAGCTGATGC TCC CCG GAC AGG CGGTT GAGT AGGGGC TCGACT TG
TCTTCACCCTGCCAGGGACC TTC TC GT- TC--- A --- A------- TT TCC
CCTGTTTTCAGCTACGGGGA TCA TGCCA
TGAGATTGGCCTGGATGCAG CCC
CTGCCCTTCCT GGG
CCA -----
GAM34471 17173 AGGCAGAAACTAGTAAGCAG A T---------- C AATAA
AAATAATCTCTTCAAACACA AGGC GAAACTAG AAG AGA
CACACCTCTAGTTTTAGTCT TCTG TTTTGATC TTC TCT

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                        A       TCCACACACACAAAC  -  -----
GAM34476 13165  AGGCAGAAGATAGACAGCCA       AG      GCCAGGTAACT  AG  -     -  ACA
          GGTAACTTGAGTGGACCTGT AGGCAGA  ATAGACA          TG  TG GACCTG TGG
          GGACACCATCAGGTCACAAG TTCGTCT  TATCTGT          AC  AC CTGGAC ACC
          CATGAAAAAAATGTCTATGT       G-       AAAAAAAGT--  GA  A     T  ---
          CTGCTT
GAM34522 11603  AGGCAGATTTTCCAGGACAA     A  T        C     CCT--   TTCCAT
          GAACCTGTGTTCCATCATTT AGGC GA TTTCCAGGA AAGAA     GTG
          TTTTTTTTTTTTTGGAGACT TCTG CT AGAGGTTTT TTTTT     TAC
          CCGTCT              C  C        T     TTTTT   ------
GAM34582 15131  AGGCAGGGCATAGCGACAGT     -       CGAC      GACCT  CCCCA
          GTGGGACCTGCCCCCAGCTT AGGCA GGGCATAG    AGTGTGG    GC
          CTGCCACGCTTTATGCCCTT TCCGT CCCGTATT    TCGCACC     CG
          GCCT                T       ----      GTCTT  -----
GAM34619 22734  AGGCATACCAGACTTGACTC    ATAC   ACTT-- C    AAA  -   ACGCC
          CTAAACTGATGGACGCCCCG AGGC    CAG     GA TCCT   CTG ATGG
          TACAGACCAGGACTCCCCCC TCCG    GTC     CT AGGA   GAC TGCC
          CCTGCACAGCCT          ACAC   CCCCCC  C    CCA   A   -----
GAM34687 11227  AGGCCACAGAAGTACTTACG    CC     A  ACTTAC   AA  AA   TT-     TCA-  -  TTAAGAT
          GAAATAAAATTTTAGAAGAT AGG  ACAGA GT     GGA  TA  ATT   AGAAGA    TA GT
          CATAGTTTAAGATACATAGA TCC  TGTCT CA     CTT  AT  TAA   TCTTCT    AT CA
          ATTCTTCTTATAATGGTACA   --    A  CAAAA-   AC  GG   TAT     TAAG  A  -------
          TTCAAAACACATCTGTCCT
GAM34713 13739  AGGCCAGTGTCAGGGTCGGA       ---  T   -     --   GC   GCTCT
          GTGGCCTGGCTCTTAGCACT AGGCCAG   TG CAG GGTCGG  AGTG  CTG
          GACCGACCATTGCCATTTCT TCCGGTC   AC GTT CCAGCC  TCAC  GAT
          GGCCT                TTT  C   A     AG    --   -----
GAM34726 4818   AGGCCCACATGGTCACTCAC      -   T   ---     ACAGCAG  GCAA
          AGCAGCCGCAAGGACCACGA AGGCCC ACA GGT   CACTC      CC
          GTGCAAGCTCTGTGGGGCCT TCCGGG TGT TCG   GTGAG      GG
                          G   C   AAC     CACCA--  ----
GAM34736 14164  AGGCCCAGGGCCCCGGAGGA    CCCA    CCC-  AG    G    GTCCTCCACTTA
          GCGGGCCTGTCCTCCACTTA AGG    GGGC    GG  GAGC GGCCT
          GGGTCGGCTCTCCCACCTGC TCC    CCCG    CC  CTCG CTGGG
          CCCTCTCCT            TCTC    TCCA  CT    G    ------------
GAM34751 10506  AGGCCCCTATGCTGCGCTTT      -  TGCTGCGCTT      CCGAT     AATCG
          GAGGCTCCGATTCTCGGAAT AGGCCC CTA         TGAGGCT     TCTCGG
          CGCTGGGACCGGCTTCATTC TCCGGG GGT         ACTTCGG     AGGGTC
          CCTTTGGTGGGCCT          T   TTCCCTT---      CC---      -----
GAM34752 22144  AGGCCCCTGAAGGCAAGGCC    CC  T      AGGCCA   A  C  TG AGAAT
          AGGGAGACGGTGGAGAATCT AGG  CC GAAGGCA      GGG GA GG  G
          GCCTCCCCTGCCTTTGGACC TCC  GG TTTCCGT      CCC CT CC  C
          CT                CA  -       ------   -  -  GT -----
GAM34756 22786  AGGCCCGAGCCGCGGGAGTC       ------        GAG   A   AAGACAG
          GAGCGAAGACAGCGCCGAGG AGGCCC     GAGCCGCGG   TCG GCG
          CCGCGGTTTCCCCCTGGGCC TCCGGG     TTTGGCGCC   AGC CGC
          T                  TCCCCC       GG-   -   -------
GAM34771 22939  AGGCCCTGAGCCCCACTTCT       G   -   -     CCTTC   TCT   TG   -   GAGCT
          GCCTTCACCTCTGCCTGGGA AGGCCCT AGCC CCA CTTCTG     ACC   GCC  GGA CCC
          CCCGAGCTGGGCTCCTGGGC TCCGGGA TCGG GGT GAAGAC     TGG   CGG  CCT GGG
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CTTGGTCCCCAGAAGATGGC - C A CCC-- TTC GT C -----
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GAM34776 17790 AGGCCCTGTGCCTGGCACTT C CCT CTTG GATCCCA
GTGCTGACTGGATCCCACAG AGG CCTGTG GGCA TGCTGACTG
TCGGCGTCTTGTCCCACAGG TCC GGACAC CTGT GCGGCTGAC
ACCT A C-- TCT- -------
GAM34800 2633 AGGCCTAACTTTGGGTGGTG A GTGG T TA- GATCAAAA
TAGATACAGATCAAAATGAA AGGCCTA CTTTGG TG AGA CA
TTCTCAAACCAGAGATGGGC TTCGGGT GAGACC AC TCT GT
TT A AA-- - TAA --------
GAM34801 19591 AGGCCTAATACTAACATTAA CTA T TTAA C TTTCT
GTTTTCTCTTTTCTAGAAAG AGGC ATAC AACA GTTTT TCT
GCCATTGTTCGTATGTGTCT TCTG TATG TTGT CGGAA AGA
TG- C TAC- - -----
GAM34804 13711 AGGCCTATGATTTAGCTGGC ATG A TG CA ------ - CAAG
AGGCCAGGTTTTCTCAAGAG AGGCCT ATTT GC G GGCCAG GTTTT CT
CAAAATCACCCTCTGGCCCC TCCGGA TGGA CG T CCGGTC TAAAA GA
TTGGCAGGTAAGGCCT A-- - GT CC TCCCAC C ----
GAM34814 7060 AGGCCTCTCTGGGACTCCAG CTC A - -- AAGGGTAG
TTCCTCGAAGGGTAGCGGCA AGGCCT TGGG CT CCAGTTCCT CG
GGAGCTGGTAGCCCATCAGG TCCGGA ACCC GA GGTCGAGGA GC
CCT CT- - T CG --------
GAM34834 16374 AGGCCTTCTCTTTTTCAGAA CT-- AAA--- GTCT--- TAAATTCATC
ACACGTCTGACTTTTTAAAT AGGCCTT CTTTTTCAG CAC GACTTTT
TCATCAAAAGTCCCTCAAAG TCCGGAA GAAGAGGTC GTG CTGAAAA
TGCCAGGGCTGGAGAAGTCC CCCT GGGACC AAACTCC ----------
CAAGGCCT
GAM34849 5140 AGGCGACGGGGAGGCCTGGG G CCTG--- TGACTCTAGCT
CTCTGACTCTAGCTGGGCCA AGGCGACG GGAGG GGCTC
GCTAACCCTCTGTGTCGCCT TCCGCTGT TCTCC CCGGG
G CAATCGA ----------
GAM34917 339 AGGCGGGAGTTTGGGGAGGT C A T A--- AGCTGAG
CCAGGAAGCTGAGTTCTGGG AGG GGG GT TGGGG GGTCCAGGA
CTGCAGCCCCACACCTCTCC TCC CTC CA ACCCC TCGGGTCTT
T T - C GACG -------
GAM34935 19585 AGGCGGGGTGGATCACTTAG GGA TAGG- A-- CAA
GGGTCAGGAGTTCAAGACCA AGGCGGGGT TCACT GGTCAGG GTT
GCCTGGCCAACATGGTGAAA TCTGTCCCA AGTGG CCGGTCC CAG
CCCTGTCT A-- TACAA GAC ---
GAM34938 22542 AGGCGGGTGGATCACCGGAG TGGA CGGAG-- A-- CAA
GTCAGGAGTTCAAGACCAGC AGGCGGG TCAC GTCAGG GTT
CTGGCAAATATTGTGAAACC TCTGCCC AGTG CGGTCC CAG
CCGTCT CAA- TTATAAA GAC ---
GAM34956 17222 AGGCTAAAGCCCGGAGCAGG T CC A A TC- CCCTCTCCA
CTCTGCCACCCTCTCCATGG AGGC AAAGC GG GC GGC TGCCA
CGTATGCCGGCGCCCGCTTT TCCG TTTCG CC CG CCG GCGGT
GCCT - C- G G TAT ---------
GAM35024 7690 AGGCTCCTGCTCCGTGTTTC CT GC TGTTT GTG GGATTG
TGGTGGGTCCGGATTGGGAC AGG CCT TCCG CTG GGTCC
CACACAGTTCTGGGAAAGGC TCC GGA GGGT GAC CCAGG

ACCT AC AA CTT-- ACA ------
GAM35046 5295 AGGCTCTTGGGGTGACGTAG CTCTT C - T-- AG CA-- TTTGCT
CTAAACTTTCCAGACCACAT AGG GGGGTGA GTAGCTAAA CTT CC AC CA
TTGCTTGATCAGTTCGGCAT TCC CTCCACT TATCGATTT GAA GG TG GT
AAGATTTAGCTATTTCACCT TTACT T A TAC CT ACTA ------
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GAM35054 15820 AGGCTGACACTCTCAAAGGT A C---- AG--- T GA-- GA GG - -
CTTCTCGGATGGAAGTCTCC AGGCTG CA TCTCAA GTCT CTCG TG AGTCTCC CTC CAG
TCGTCT
GGCTCCAGTCGTCTGTCCAC TCCGAC GT AGAGTT CAGG GGGC GC TCGGAGG GAG GTT
AGCGGA
TAAGCGAGAGGCGAGTTGCG - ATCCC GTATG C GGGG G- -- C G
AGGGAGGCTGCGGGGGCGGG G CACTAAGC
CGGACGTATGTTGAGACCCT TC
ATGCAGCCT AG
G --------
GAM35106 614 AGGCTGGAATGAAGTGGTAT AATGAAGT TCTC AA C CCACCTCCT
GATCTCAGTTGAATGCAACC AGGCTGG GGTATGA AGTTG TG AACCT
TCCACCTCCTAGGTTCAAGC TCCGACT CCGTACT TTAGC AC TTGGA
GATTCTCATGCCTCAGCCT -------- C--- GA - ---------
GAM35151 15592 AGGCTGGAGTGCAATGGCAT T TGCAATG A T CTCACT ACCTC
GATCTTGGCTCACTGCAACC AGGC GGAG GC TGA CTTGG GCA
TCTGCCTCCCAGGTTCAAGC TCCG CCTC CG ACT GGACC CGT
AATTCTCCTGCCT T TTAA--- A T CTC--- -----
GAM35324 609 AGGCTTCTGCAATGTGATCC TT AATGT C TG GA AG G ACAAC
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AACCACAACGGTTATCAGGG TTCG GACG CTA G CGG TTCGTG GACT TTGG
TGCTTGGGCTGGTATCTGGC -- GT--- T GT G- G- A -----
AGGCTT
GAM35328 7289 AGGCTTGAGAGTGGGAAGGT TG AGT GA--- T GA- T GTAGCTCA
CTGAGTGTAGTCAGTGTAGC AGGCT AG GG AGG CT GTG AGTCAGT
TCAGCTGACTTACGTAAGTC TCCGA TC CC TTC GA CAT TCAGTCG
TTGAGGACCTTGCTTGAGCC GT GTT AGGAG T ATG - --------
T
GAM35331 16120 AGGCTTGCCAGCCCCCTCCC CCA CCTCTT AATTCCTG
TCTTAATTTAATTCCTGAAG AGGCTTG GCCCCCTC AATTT
TTTTTGGGGGGGCCAAGCCT TCCGAAC CGGGGGGG TTGAA
--- TTT--- --------
GAM35334 501 AGGCTTGGGCCTGAGCAGCT G - - CT CT TTCTCCCC
GGGAGGGCTCCTTCTCCCCG AGGCTT GG CCTGA GCAG GGGAGGG CC
GCCCCCTCTTTCTGCATCGG TTCGGG TC GGGCT CGTC TTCTCCC GG
GACTGGGGCTT G A A T- CC --------
GAM35336 13857 AGGCTTGGGGACCTTTTATT ----- TTA-- CTTCTA GA TGATCT
GAGAACTTCTAAGAAATGAT AGGCT TGGGGACCTT TTGAGAA AGAAAT TTG
TGTGATCTCAAATTTTTTTT TCCGA ACCTCTGGGA AACTTTT TTTTTA AAC
TCAAACCCTAGGGTCTCCAA CCAAA TCCCA ------ -- ------
AACCAGCCT
GAM35337 7226 AGGCTTGTACATTATCTCTA GTACA CTAG GG -- TAGTTT
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GTTTGCTTGTAGGATGATTT TCTGGA AATAGA CACTTT TAGG GTTCG

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          CACAGAAGATAACAGAGGTC      GAC--     AGA-     AG   AT    ------
          T
GAM35354 2339   AGGCTTTGTCCCCTGTCCTT   CTT  -  CCTG-       CG--   A  GGAGTTTG
          TGGCGAAGGAGTGGAGTTTG AGG   TGT CC    TCCTTTGG    AAGG GT
          ACCCCTTACCACCAAAGGAA TCC   ACA GG    AGGAAACC    TTCC CA
          GTAAGGTACACCT         ---   T  AATGA      ACCA   C --------
GAM35375 15869  AGGGAAAGCTGGTACGCCTG   G     T  T    C  CA   AC  GT    AATTC
          CAGGTACCGGTCCGGAATTC AG GAAAGC GG ACGC TG  GGT  CG  CCGG
          CCGGGTCGACCCACGCGTCC TC TTTTCG CC TGCG AC  CCA  GC  GGCC
          GCTTTTGCT           G     -  -    C  --   --  TG    -----
GAM35379 10264  AGGGAAATCTAAACAGTTGA       C-     ---     CTAT  ---     AAAATGA
          CTATGCGGACAAAAATGATG AGGGAAAT  TAAACA   GTTGA    GC   GGACA
          TTTCAGGCTATTTTAATAAA TCCCTTTA  ATTTGT   TAATT    CG   TTTGT
          TGTTTAAAATTTCCCT          AA     AAA     TTAT  GAC    -------
GAM35383 148    AGGGAAATTACAGTGCAACC    AAA    GTG    C  AA   T  TT  TA   AATT
          TGAAACATGCTTCTTAATGA AGGG   TTACA   CAAC TG  ACA GC  CT  ATG
          ATTCATAGTGCTGTCACAGT TCCC   AATGT   GTTG AC  TGT CG  GA  TAC
          TGAATGTAAACCCT         A--     AA-    -  AC   -  T-  --   ----
GAM35431 15728  AGGGAATGAACACTGATTGA    AA----   A  C   T   A    TATGCACTTATAACTT
          ATACCTATGCACTTATAACT AGGG     TGA CA TGA TGA TACC
          TGGTATCATTCAATGCTCAC TCCC     ACT GT ACT ACT ATGG
          AATAACCCT            AATAAC   C  A   T   -   ----------------
GAM35462 2167   AGGGACCATCACCGCCCCGA       --  AC    --    G  TGCGCACACAGAAC
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          TCGGAAGGCGAGAACTGGTC TCTCTGGT  AG  GCGG  GGCT GC
          TCT                   CA  A-    AA    G  --------------
GAM35471 22769  AGGGACGGGGTTTCTCCATG           T                       A   T  G GG   GGG
          TTGGTCAGGCTGGTCTCGGG AGGGACGGGGTTTC
CCATGTTGGTCAGGCTGGTCTCGGGCTCCCGGC CTT GG G  CCG
          CTCCCGGCACTTTGGGGGGC TCTCTGCCCCAAAG
GGTACGGCCGGTCCGGCCAGAGTTTGAGGGCTG GAG CC C  GGC

          CGGGGCGGGCGGATCGCCTG           C                       -   T  G TA   ---
          AGGTCGGGAGTTTGAGACCG CGGG
          GCCTGGCCGGCATGGCGAAA
          CCCCGTCTCT
                    ----
GAM35478 15443  AGGGACTGGGGGAAGGAAAC       GGGGAA--         GGAAAACTTGATGAG
          TTATTGGAAAACTTGATGAG AGGGACTG       GGAAACTTATT
          AATGAGTTTCTGCTTGGCAC TCTCTGAC       TCTTTGAGTAA
          AGTCTCT                ACGGTTCG         ----------------
GAM35480 22658  AGGGACTTCTTATGAGGTCA       TCTTATGAGG   A    GATATTTATA
          AATTCAGATATTTATATGAA AGGGACT        TCA ATTCA
          TATGAAATACCATGGTCCCT TCCCTGG        AGT TAAGT
                         TACCATAA--   A    ----------
GAM35489 4726   AGGGAGAAGCTGGTGCTACC     GAA    T  TA----    G  --   G  ACT
          GTCGCCCCTGGGACTTCGAG AGGGA   GCTGG GC     CCGTC CC  CCT GG
          GCAGGAGATGGGCCACCGCC TCCCT   CGGCC CG     GGTAG GG  GGA CT
          CGGCATCCCT            A--    -  CCACCG    A  AC   G  ---
GAM35494 5335   AGGGAGAGGCTCTTCTGTGT    A   GC    -   GTA   GTT    GAGCCTCA
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GTAGTGGTTGTGCAGAGCCT AGGG GAG TCTTCT GTGT GTG GTGCA
CATGCATCACGGAGCATGAG TCCC CTT AGAAGA TACG CAC TACGT
AAGACATTCCCCT - AC G AGG --- --------
GAM35515 21899 AGGGAGCTTGTCAGATCACA CTT CACACCTTTT CTT CTACA
CCTTTTTGCCTTGGAAATCC AGGGAG GTCAGAT TGC GGAAATC
TACAGATTTCCTGTACGCCT TCCCTT TAGTCTA ATG CCTTTAG
TCATATCTGATTCTTCCCT CT- TACTTCCGC- T-- -----
GAM35527 11920 AGGGAGGAGCTGGAAGCAGC GAAGCA--- G C TC TTGCTC
CGTGGCATCTCTTGCTCGAA AGGGAGGAGCTG GCC TGG A TC
GTCCAGGGCGACGTAGCACA TTCCTCTTCGAC CGG ACC T AG
GCTTCTCCTT ACGATGCAG G - GA ------
GAM35529 14931 AGGGAGGAGGGACTCTGGTA GGA A AG CCA AAC GAGG
GCTCCAGGAACCAGGTTGGG AGGGA GGG CTCTGGT CT GG CAGGTTGG
AGGCCAGCTTGCCCATCAGT TCCCT TCC GAGGCCA GA CC GTTCGACC
CACCGGAGCCTGTCCCT G-- - CT CTA C-- ----
GAM35585 16960 AGGGATGTATTGTGATTATC AT- GA---- T ATTGAG
TGAAATATTGAGATTTTTGG AGGG GTATTGT TTATC GAAAT
TAGACCTGGACAATACTAAC TCCC CATAACA GATGG TTTTA
CCT AAT GGTCCA T ------
GAM35638 15871 AGGGCAGCCTCGAATTCCAC T AA A--- G TG GC TTCC
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TCCAAGGCAGCCCTGGGTTT TCTCGTCGG GC AGGG GTTT G CCCGA CGGAA
GCGCAGGGACGCGGCTGCTC C -- ACGC G GT -- ----
T
GAM35662 15997 AGGGCCACTCTCCGGCCCCG CT-- CC A TG T C- G CCCTGCCTCTTCT
AGGGAGTGGATGGCTCTGTA AGGGCCA CTCCGG CCGAGGG G GA GGCT TGTAGCCT GGG

GCCTGGGGCCCTGCCTCTTC TCTCGGT GGGGTC GGTTCCC C CT CCGA ACGTCGGA TCT

TTCTGAGGCTGCACTAGCCT CCTT C- C GT - TC G ----------
CTGCCCCCTTGGCCTGGGGT
TCCTGGCTCT
GAM35668 2110 AGGGCCATTACCGGCAGGCG T G GGCGCAGTT CA AGTGGCCA
CAGTTTGACATCGCAGTGGC AGGGCCA TACCG CA TGA TCGC
CAGCGAGATCATGGCGGTGC TCCCGGT GTGGC GT ACT AGCG
TGGCCCT C G --------- AG --------
GAM35690 4592 AGGGCGACTACGCGTGCGGC ACTAC T CCC A TAC CGCCAT
CCGCACGGCTACGGCGCCAT AGGGCG GCG GCGG GC CGGC GG
CCCCGCCGCGCCCCCGCCGC TCCCGC CGC CGCC CG GCCG CC
CGCCCT ----- - CC- C CC- ------
GAM35693 2063 AGGGCGGATCCTCTCTGGCG G CC T T CAA AAGATGCAGAGGAC
TGGTGACCAAGATGAAGATG AG GCGGAT TCTC GGCG GGTGAC GATG
CAGAGGACCATTGTCATCCG TC CGTCTA AGAG CCGC CTACTG TTAC
CCGAGACTATCTGCACT A TC - - --- ----------
GAM35694 11251 AGGGCGGCGGCGGCATCAGT GG C CAT C CCCT TCC- AG TCATCTT
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TCATCTTGTCCCCTTTCGCC TCTCG GCC CC GTCA CTCC CG CCC G
CCTCACTGCCCCCCGAGCTC A- - CC- - C--- CTTT CT -------
T
GAM35704 16247 AGGGCTACCAAGTTCCTCCA TA AAG TC GA CA G TT GG CAAG

GGAGCCACATATACTGCCAT AGGGC CC TTCC CAG GCCA TATACT CCA GA CTCC
TGAGGCTCCCAAGGGAGAGT TCTCG GG GAGG GTC TGGT ATGTGG GGT CT GAGG
CTGGGGTGTACCTGGTGTCT GC A-- TA TG CC - -- GA ----
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GAM35713 5149 AGGGCTCCTGCGGCATCGGG T G ATCG CATC -- TCCA
GGCGGCATCGGGGGCGGCTC AGGGC CCT CGGC GGGGCGG GGGG GCGGC
CAGCCGCATCTCCTCCGTCC TCCTG GGA GCCG TCCTGCC CCTC CGCCG
TGGCCGGAGGGTCCT - G G--- T--- TA ----
GAM35715 15578 AGGGCTCGGGGGCGGGGAGG G -- - - T G-- G G CTGG
CCCCTCCGGCGGGGCGTGCC AGGGCTCG GGGC GGGG AGGCC CC CC GC GGGC TGC

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GAGCCCT
GAM35741 6902 AGGGCTTGGATCATGCATTA CTT A ACA G ATTA AGGC
CAGTGTGTTGATTACATCAA AGGG GGATC TGCATT GTGT TTG CATCA
GGCTGATGGACAAAATATAG TCCC TTTAG ACGTAG TATA AAC GTAGT
GATGCAGATTTTCCCT T-- - GA- A AG-- ----
GAM35763 7406 AGGGGACAACTGTGCTGGTG -------- - CT G TCTT--- -- TTTAC
CTGTCTTTTGCAGGATGTGT AGGGG ACAA CTGTG GGT CTG TTGCA GGATGTG
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ATTTTCAGACTTTACAGTTT AATTGTGA T T- - TTTTATC AA -----
GTAGTGTTAACCTCT
GAM35820 19673 AGGGGCATGAGGGAGGTGTG G T TGT ATTCAAAAC
GTGTAGGCAATTCAAAACTG AGGGGCAT AGGGAGG GTGG AGGCA
TCTTTCCCACCCTCTTTAGT TCTTCGTG TTTCTCC CACC TCTGT
GCTTCT A - CTT ---------
GAM35835 7882 AGGGGCGCCCGTGTCCCCGC CGC T -- -- - -- CG ATGAAGGAAA
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GGCATGAAGGAAAGCTGGGC TCCCC GGC CG GGGGCGG GCGGGGG TCGGC CCG GGTCG

CTGCGGCTGGGGGGCGGAGG A-- T GC AG G GT -- ----------
CGGGGCGGCTCGGACCCCT
GAM35848 16076 AGGGGGACCTTGACTTTGTT --- - A- GG C---- - CCTC C C T
GGCCACCTCTCGGATCAGGG A GGGGGACC TTG CTTTGTT CCAC TCTCG GATCAGGG TGA
AC GCG
CCTCTGACACCGCGTTTGAA T CCTCTTGG GGC GAAATAA GGTG GGGGC CTAGTTCC ACT
TG CGT
GCATAGCGTTGCTTGCTGTT ACT T CG -- TTCCC A ---- - T -
CACCTTGATCACGGGGCCCT TTGA TAGCGT
TGTGGAATAAAGGCCGGTGG AGCA
TTCTCCTCAT TCGT
---- ------
GAM35861 10169 AGGGGGGGGCTCCAAATAGT GG - AAATA G- TG CTTTAAATT
GTTGGCCTTTAAATTGCTGG AGGG GGGC TCC GT T GC
GAACGGGGAGGCCCAACCCT TCCC CCCG AGG CA G CG
AA G GG--- AG GT ---------
GAM35862 4709 AGGGGGGGGGGATATGAGGC G GG-- A GGAGT-- AAGAA

GGAGTGTTAAGCCAAGAAGG AGGG GGG GAT TGAGGC GTTAAGCC
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TCAAAACCTGTCTT G AAAA - AAGTGAT -----
GAM35863 9915 AGGGGGGGGGGGACATCAAC -- GA - -- -- AG GGAA
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ATCAGGCCTGACCAACAGTT TCTCTT TCCCC GTG GTTGA ACC TCCGG CTAA
GTGTGAACCCCTTATTCTCT AT AA T CA AG A- ----
GAM35871 17694 AGGGGGTGGGAGGTGTGCAT ------- A- G C AAAAAGTTATAAG
AAAAAGTTATAAGATCAGGC AGGGGGT GGG GGT TG AT
CGACCCGTGACAGACCCCTT TTCCCCA CCC CCG AC TA
GACAGTG AG G - ----------
GAM35872 2098 AGGGGGTGGGGGGTCTGTTG G TCTG G ACT T A ATTG
GGCAACTGGGGTGAAGGGAT AGGGG TGGGGGG TT GGCA GGGG GA GGG
TGCCCTCCCCCTGCTGGGAT TCCCC ACCCCCC GG TCGT CCCC CT CCC
CCCCCCAGCCCCT G TA-- G --- - - ----
GAM35889 13596 AGGGGTCTGTACCGGGCTGG CT-- C- C CC-- C TCACCTCT
CCTGTGCCTATCACCTCTTA AGGGGT GTAC GGG TGG TGTGC TA
TGCACACCTCCCACCCCCTG TCCCCA TATG CCC ACC ACACG AT
TATTCCCACCCCT CCCT TC C CTCC T --------
GAM35904 19460 AGGGGTGTAGGTGTCCCTTT G GT-- G - TT A GGCTAGGG
TGGTAAAAAATGGGCTAGGG AG GGT AGGT TC CCTT GGT AAAAATG
CATTTTTAACCTTAGGGCGA TC CTA TCCA AG GGGA CCA TTTTTAC
AACCTTTTAATCACT A ATTT A C TT A --------
GAM35908 11463 AGGGGTTAAAGGAGTAAAGG TT T - AG TTCA A- CTACCT
GGAGGAAGAGAAGGATTCAT AGGGG AAAGGAG AAAGGGG AGGAAG AAGGA TTTC TGC

TTCATGCCTACCTGTACAGA TTTTT TTTTTTT TTTTTTC TCTTTC TTCTT AGAG ATG
GACACTTTCTTGCTTTCTAC TT T A G- TCAC AC ------
TTTTTTTTTTTTTTTTTTTT
T
GAM35929 16254 AGGGTAGAGCTGTCTCTCAG AGAG TCT- ATA TCTCA
GTTATAACCTCTCAGGTGGA AGGGT CTG CTCAGGTT ACC
GGCCTGAGCCCTCAGACCCT TCCCA GAC GAGTCCGG TGG
---- TCCC AGG -----
GAM35945 4819 AGGGTCACTGAGTGTAGGAG AG A A CTT--------- CTAC
CCAGCTTCAGACCTACGTCT AGGGTCACTG TGT GG GCCAG CAGAC
GGCCCCAAAGGCTCTGGCCC TCTCAGTGAT ACA CC CGGTC GTCTG
ACAGCTAGTGACTCT CG - - TCGGAAACCCCG ----
GAM35957 22506 AGGGTCCTATGTGGAAATGA CTA--- GAAA G- CAA AAAAATAAACAAATA
GTGGGACAATGATAAAAATA AGGGTC TGTG TGA TGGGA TGAT
AACAAATAATTAAAATTCCA TCCCGG ATAC ACT ACCTT ATTA
AATCAAAACATAACTCCTGG TCCTCA AAA- AA AAA ----------
CCCT
GAM36001 10664 AGGGTGCAATATTAAGTGTT GCAATA --- TG AA- CTAAT
TGGAATTTGAAGCTAATTTT AGGGT TTAAGT GTT G TTTGAAG
TAAAAGGCTGAACTATACTT TCCCA AGTTCA CAA C AAATTTT
GAAGAAAACCCT AAAGA- TAT GT GGA -----
GAM36021 10550 AGGGTGGGGCCAGCCCCCAA - CCCCCAACACAGACA CACC
CACAGACACTGCACCCAGGA AGGGTG GGGCCAG CTG
ACACATGAGCATCTGGTCCA TCCCGC CCTGGTC GAC

CGCCCT A TACGAGTACACAAG- ----
GAM36034 420 AGGGTGTGTGTCACCTCATC GT T G-- ---- TCC- ATACT
ATCCCCATACTGGTTACTGA AGG G GT TCACCT CATCA CC
TGCTTAGGGTGAAGGGCCGT TCC C CG AGTGGG GTAGT GG
CCT TG - GGA ATTC CATT -----
GAM36038 14091 AGGGTTAAATTCAGTATTTG A AT ------- CATT
GACCTGACATTTCAGGTTAT AGGGTTAA TTCAGT TTGGA CCTGA
ATCTCCAAACTGAGGTTAAT TCTTAATT GAGTCA AACCT GGACT
TCT G -- CTATATT ----
GAM36043 13683 AGGGTTAGTTTTTGTAGCCT --- TT A- TC- CCCG
CGGCTGGCCCGTCGGCCTCT AGGGTT AGTTT GT GCC GGCTGG
GGCACGCTCGAACTTCCGGC TCCCGG TCAAG CG CGG CCGGCT
CCT CCT CT CA TCT ----
GAM36044 22673 AGGGTTAGTTTTTGTAGCCT --- TT A- TTC CCCG
TCGGCTGGCCCGTCGGCCTC AGGGTT AGTTT GT GCC GGCTGG
TGGCACGCTCGAACTTCCGG TCCCGG TCAAG CG CGG CCGGCT
CCCT CCT CT CA TCT ----
GAM36104 17761 AGGTAAGATCTTTGATAACT TC ATAA TATTTA A - ATA
TGTATTTAAGACTTTGCATA AGGTAAGA TTTG CTTG AG CTTT GCATAC
CATAGTATGCTAAGGCCTGT TCCATTTT AAAT GAAT TC GGAA CGTATG
CTTCTAAGCCATAAATTTTT TT ACC- CTTCTG C T ---
TACCT
GAM36129 21972 AGGTACGAGTAGAGGTTTAA GAG AAAATCA TTGTT AATGCA
AGAAAAATCAGTTTTTGTTC AGGTAC TAGAGGTTTAAAGA GTTT CTTAAA
TTAAAAATGCATTTAAGTTG TCCGTG GTTTCCGAATTTTT CAAA GAATTT
TAAACGTCTTTTTAAGCCTT AA- CTG---- TGTT- ------
TGAAGTGCCT
GAM36132 7870 AGGTACTCTGTGGATATCCC TA T CC- -- AAAC
CTTGGACAAAACTGTCGTCA AGG CTCTG GGATATCC TTG GACA
ATAAGGATGTCTTCAGAGAT TCC GAGAC TCTGTAGG AAC CTGT
CCT TA T AAT TG ----
GAM36152 11676 AGGTAGCCTACTGGTGATTT CT TTTCATATT ---- A AGAGT
CATATTGCCTCTGGTGGCAG AGGTAGCCTA GGTGA GCCTCT GGTGGC G
AGAGTCAGTTACTTCCAAGA TTCGTCGGGT TCATT CGGAGA TCATTG C
GGCCTTTACTTTGGGCTGCT T- TC------- ACCT A -----
T
GAM36191 7826 AGGTATGATGGGTTTCTCTT T- TC ----- TT CTTCC
CAAAGTTTAACTTCCTTGTT AGGTATGA GGGTT TCTT CAAAG TAA
CTTTGTTCTTAAGGTCAACT TCCATACT TTCAA GGAA GTTTC GTT
TCCTCATACCT CC CT TTCTT TT -----
GAM36221 4998 AGGTCACGCACACGGTGCTG A CACA T AG CACCA GAGC
GTGAGGAGAGATCACCATGG AGGTC CG CGGTGC GGTG GAGAGAT TG
AGCCAATTTCTCGTGCCGCA TCCAG GT GTCACG CCGT CTCTTTA AC
CTGAACTGGACCT - CAA- - G- ----- ----
GAM36231 11375 AGGTCAGGCGTGGTGGCGCA G TGGTG CA C ATAA- CACT
CGCCTATAATCCCAGCACTT AG TCAGGCG GCG CG CT TCCCAG
TGGGAGGCAGAGACGGACGT TC AGTTCGC TGC GC GA AGGGTT
ATCGCTTGAGCT G TA--- AG A GACGG ----
GAM36234 13072 AGGTCAGTGCATGGAAAGTT --- AAAGTTA AG AACA
ACTAACAGGAAACATCAAGT AGGTCAGT GCATGG CTAAC GA

TAGGGGGACTCGTGCTAAAC TTCAGTCA CGTGCT GATTG CT
TGACTT AAT CAGGGG- AA ----
GAM36244 2248 AGGTCATTGCTCCCTGGAGG T- G GA C AATTCTA
ATGCCTGAATTCTACAGACG AGGTCATTGC CCCT GAG TG CTG
GTTCAAGGGCCGCAATGACC TCCAGTAACG GGGA CTT GC GAC
T CC A G- A -------
GAM36246 22149 AGGTCATTTTATATGTCCAT - TTTT AT--- AAGACA AATACTTTGAGA
ACCTAGAAGACAGTGCAATA AGGT CA ATATGTCC ACCTAG GTGC
CTTTGAGAGCACCTGGGTCT TCTA GT TATACAGG TGGGTC CACG
ACAGGACATATTGCATCT C ---- ACATC ------ ----------
GAM36336 1842 AGGTGACCGAGTGTACACTG A T A TTAC---------- AATCAC
TTACGGAATCACCCAAAGGT AGGTG CCGAG GT CACTG GG
TCGGGCCTTAGTGACCTTGG TTCAC GGTTC CA GTGAT CC
GCACTT G - - TCCGGGCTTGGAAA ------
GAM36354 15758 AGGTGAGTTGTGACTGATTG T TT A -- TTCC AGC
CTTTTCCTGCAGCGCACGTG AGG GAG GTG CTGAT TGCTT TGC
AGCAGTATCAGCCATCTCTC TCC CTC TAC GACTA ACGAG ACG
TCCT T TC C TG TGC- ---
GAM36355 21770 AGGTGAGTTGTGACTGATTG T TT A -- TTCC AGC
CTTTTCCTGCAGCGCACGTG AGG GAG GTG CTGAT TGCTT TGC
AGCAGTATCAGCCATTTTTT TCC TTT TAC GACTA ACGAG ACG
TCCT T TT C TG TGC- ---
GAM36379 6706 AGGTGCAGTAAAGGTCCATT - AAAG C- --- G CCTATGA
GTGTGGCTTGAGACCTATGA AGGTG CAGT GTC ATTGTGT GGCTT AGA
TCTGAGGCTTGTGCATAATA TCCAT GTCG TAG TAATACG TCGGA TCT
AGATGGCAGCTGTTACCT T ACGG AA TGT G -------
GAM36444 11311 AGGTGGGAAGATCGCTTGAG AAGA - A- A- TGAG
CTCAGGAGTTTGAGAGCAGC AGGTGGG TCGCT TG GCTCAGG GTT
CTGGGCAACATAGCGAGACC TCTACTC AGCGA AC CGGGTCC CGA
TCATCT CAG- T AA GA ----
GAM36461 19688 AGGTGGGCGGATCACTTGAG TG CGGA-- TTGA -- TGA
GTCAGGAGTTTGAGACTAGC AGG GG TCAC GGTCAGG AGTT
CTGGCCAACGTGGCAAAACC TCT CC GGTG CCGGTCC TCAG
CTGTCT GT CAAAAC CAA- GA ---
GAM36473 1397 AGGTGGGTGGATCACTTGCG TG GGA TGC-- A-- CGA
GTCAGGAGTTCGAGACCAGC AGG GGT TCACT GGTCAGG GTT
CTGGCCAACATGGTGAAACC TCT CCA AGTGG CCGGTCC CAG
TGTCT GT A-- TACAA GAC ---
GAM36474 13799 AGGTGGGTGGATCGCCTGAG - GGA - A- A-- CAA
GTCAGGAGTTCAAGACCAGC AGGTGG GT TCGCC TG GGTCAGG GTT
CTGGCCAACATGGTGAAACT TCTACC CA AGTGG AC CCGGTCC CAG
CCATCT T A-- T AA GAC ---
GAM36488 2214 AGGTGGTGTTCAGTTGCTGC G -- C CAA CCC AT GAGAT GGATAA
TCACAATAGTTGATACCCCA AGGTGGT TTCAG TTGCTG TCA TAGTTGATA CAGG TTG GCAGT

GGATTTGGAGATGCAGTGGA TCCATCA GAGTT AATGAT AGT ATCAGCTAT GTCC GAC CGTTA

TAATAGTAATTGCTGGCAGC G TA - TAC T-- -- GGT-- ------
CTGTTATCGACTACATTGAT TAGTA
AGTAAATTTGAGGACTACCT

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GAM36493 7361   AGGTGTAAGAAGGCAAAATA      A  GGCAAAATAA   AA  G     TTT
        AGGAAAAGGAGGAATGGGTT AGGTGTA GAA        GGAA  GGA GAATGGG
        TTCTATTTGTTCAGTTTCAT TTCACAT TTT        CTTT  CTT TTTATCT
        CAACTAATTTATACACTT       A  AATCAACTA-   GA  G     ---
GAM36496 10198  AGGTGTATATTTGGTATTAG  G     TT  ATTA   T--    TTCTT
        TTATTTTGAGTTCTTTTCAA AG TGTATAT  GGT   GTTAT  TTGAG
        CTTATAACACTGTATACAGT TT ACATATG  TCA   CAATA  AACTT
        T              G     --  ----    TTC    -----
GAM36565 645   AGGTTCAGCTGAAGTCCCGA  G      AA  --  GA  GTGAGG  AAG   G  ACAA
        CTGGTGAGGACAAGTGGAGC AG TTCAGCTG  GTC  CC  CTG    AC  TGGA CC
        CACAAGGGTCCAGACGTAAA TC AGGTCGAC  CAG  GG  GAC    TG  ACCT GG
        GCAGGAGGCAGACCCAGCTG  G      C-  AC  AG  GAAA-- CAG   G ----
        GAGCT
GAM36590 22811  AGGTTCTCTGAAAGGCTCCC   TC   A  G  TC-       GAAGA  G  G  -  CATCAG  T  CCCA
        TGAGTGTGGAAGAGCAGCTG AGGT  TCTG AA GC  CCTGAGTGTG   GCA CT TC ACT    TGG TGT

        TCACTCATCAGTGGTTGTCC TCTA  AGAC TT TG  GGACTTACAC   CGT GG AG TGA    ACC ATA
        CAATATCCAAGAAGCAGTAG   GA   C  G  TAA       GTAC-  -  G  A  CGAAGA  T  ----
        AGGGTGCCATGCACATTCAG
        GAATGTGTTCCAGAAGATCT
GAM36593 2128   AGGTTCTGAGGCAAGTATTT         CA  ATTTAT   A  AAACACGTGG
        ATTCCAAGCAAACACGTGGG AGGTTCTGAGG  AGT    TCCA GC
        CGTGGACAGCTATCTCAGAG TCCGAGACTCT  TCG    AGGT CG
        CCT                  A-  AC----   G ----------
GAM36607 16402  AGGTTGAAAGATTTATTCAA     AAA   T--   A    CAA   TGGCA
        GATCCCAAAGCTGGCAGTTG AGGTTG   GATT   ATTC AGATCC   AGC
        ATGGATCTGGGATTTCAATC TCCGAC   CTAA   TAGG TCTAGG   TTG
        CAGCCT               ---   CTT   G    TAG  -----
GAM36676 7726   AGGTTTCAGAGCATATTCCT   GT    G  ATTC    ATCAACAAGAAGAAAACC
        GTTTATCAACAAGAAGAAAA AG  TTCAGA CAT   CTGTTT
        CCAAACAGATGTCTGGACTC TC  AGGTCT GTA   GACAAA
        T               TC    -  ----    ------------------
GAM36682 22763  AGGTTTCCCAGTTCAGTGAC       A    G G  -  G   TT   A  GG   CAC   AATG
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        CACGCGGAATGCTGCCATGG TTCAAGGGG CAAGT A TG GG TAG  TGG CT  AGGT   CGTC
        AGATCCGGTTGATGGTGTGA       A    - G  T  -   T-   C  AG    AC-    ----
        TGAACAGGGGAACTT
GAM36704 15451  AGGTTTGTTCATTTTCTATA    TGT      ATAGCA     AG  -   TAT  C     ATCC
        GCATTACTGAAGTGTCCGTA AGGTT   TCATTTTCT    TTACTGA  TG TCCG   GC TTGATA
        TGCCTTGATAATCCTATCAA TTTAA   AGTAAAGGG    GGTGACT  AC AGGT   TG AACTAT
        TGTTTGGATCATCTCAGTGG    TTC       ------     CT  T   T--  T     ----
        GGGAAATGACTTAATTT
GAM36714 11548  AGGTTTTAGCGTCTGTTGAT   TTTT   GTCT  TG TG    GCCTA    ATATTTA
        GGCCATTGCCTAAATCCATA AGG   AGC   GT  A  GCCATT    AATCC
        TTTAGGGTTGCAAAATGGTG TCC   TCG   CG  T  TGGTAA    TTGGG
        CTTGGCTTTGGCTTACTCCT   TCAT   GTTT  GT CG    AACG-    -------
GAM36717 5151   AGGTTTTAGGGTTAATATAC    TTA   TAATAT---  GTTT-  TATAC
        TGTTTCATATACTGTACAAA AGGTT   GGGT       ACT    CA
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GTTTCATCATTGCCCCCAAC TCCAA CCCG TGA GT
CT CC- TTACTACTT AACAT -----
GAM36730 10049 AGGTTTTTCTAAGAGAAAGG TTTTC- ---- CA- T-- TGCTTGGT
TCCTCAAAGATTCAGTGTGC AGGT TAAGAGAA AGGTCCT AAGA TCAGTG
TTGGTTACTGGTATTCTTAG TCCA ATTTTCTT TCTAGGA TTCT GGTCAT
CAGGATCTTCTGTTCTTTTA CATTAT GTCT CGA TAT --------
TATTACACCT
GAM36781 4912 AGTAACACGACGACTGAAAT ACAC G - TC AACTA AAAGAC
CTGCAACTACTGCAAAGACG AGTA GAC ACTG AAA TGC CTGC
CGGGCACTTTTACAGTGTTC TCGT TTG TGAC TTT ACG GGCG
TGCT C--- - A TC ----- ------
GAM36789 554 AGTAACTGCAAAGATGCTGT C C CTG GT C G C- GT C TTCCTCGGC
CCGTGCGCGTTGCTGCGGCC AGTAA TG AAAGATG TCC G GCGTT CTG GGCC GGTCCG GCCC

GTGGTCCGCGCCCTTCCTCG TCGTT AC TTTCTAC GGG T CGTAA GAC CTGG TCAGGC CGGG

GCGGGCCGGACTGGTCTCCA - - TT- TG - A CT -- - ---------
GAAATGCTGTGGGTTCATCT
TTCATTGCT
GAM36790 11964 AGTAACTGCAAAGATGCTGT C C CTG TGC G C- GT C TTCCTCGGC
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GTGGTCCGCGCCCTTCCTCG TCGTT AC TTTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG

GCGGGCCGGACTGGTCTCCA - - TT- TT- A CT -- - ---------
GAAATGCTTTGGGTTCATCT
TTCATTGCT
GAM36791 4637 AGTAACTGCAAAGATGCTGT C C CTGT TGC G C- GT C TTCCTCGGC
CCGTGCGCGTTGCTGCGGCC AGTAA TG AAAGATG CCG GCGTT CTG GGCC GGTCCG GCCC

GTGGTCCGCGCCCTTCCTCG TCGTT AC TTTCTAC GGT CGTAA GAC CTGG TCAGGC CGGG

GCGGGCCGGACTGGTCTCCA - - TT-- TTT A CT -- - ---------
GAAATGCTTTTGGTTCATCT
TTCATTGCT
GAM36806 15044 AGTAAGCAGAGAGATGGACA AA GACAA AA CTTAAAGA
AGGAAACACTTAAAGATGTG AGT GCAGAGAGATG GG ACA
GCCAGGGCATCTCTTTGTAC TCA TGTTTCTCTAC CC TGT
T -- GGGA- GG --------
GAM36815 10322 AGTAAGTTCTTATCTTAAAA T T AAAA TCTTTCAAT
TTTTAAGATCTTTCAATTTT AGTAAG TCT ATCTT TTTTAAGA
TAAAAAAGAAGATAGATTTT TCATTT AGA TAGAA AAAATTTT
ACT T - GAA- ---------
GAM36867 16884 AGTACAGGTGCAGCTGAGGG C T A ---- ACCAGG T - TCTGCTCCAT
ACCAGGCTGGTGGGAAGCTC AGTA AGG GC GCTGA GGG CTGG GGGAAG C
TGCTCCATGTCTTCTCCCAG TCAT TCT CG TGACT CCC GACC CTCTTC G
ACACCCATATTCAGTGGCTC - - G TATA ACA--- - T ----------
TTACT
GAM36880 6967 AGTACCATGTTTTTCAGACT A TTTTC-- TCACTT- ATTC
CACTTGTATTCGCTTCATTT AGTACC TGT AGAC GT

GTCTCCCCAATACAAGGTAT TTATGG ACA TCTG CG
T A TAACCCC TTTACTT ----
GAM36885 15358 AGTACCCTACATGCAGAAAA A ACAT ACCC AG ATT GAAAACAAG
ACCCAGAGTTAGATTCATTG AGT CCCT GCAGAAAA AGAGTT ATTC GCT
CTGAAAACAAGAGCCTGGAG TCG GGGG TGTTTTTT TCTCGG TGAG CGA
TAGGGCTCTTTTTTTGTTAA A AAAT ---- GA GTC ---------
AGGGGAGCT
GAM36889 22687 AGTACCGATCTCCTGAACAG C CC CA- CT GTAATAA
AACTGCTGTAATAAAGCTTC AGTAC GATCT TGAA GAA GCT
ATATTCACCAGGTCCGTATT TTATG CTGGA ACTT CTT CGA
C CC ATA -- -------
GAM36991 11451 AGTAGCCTGCCCCCATGCCC - CC ------- ----- TTTTTGTATTT
AGCTAATTTTTGTATTTTTA AGTAGCCTG CC CATG CCCA GCTAA
GTAGAGATGGGATTTCACCA TCGTCGGAC GG GTAC GGGT TGATT
TGTTGGCCAGGCTGCT C TT CACTTTA AGAGA ----------
GAM37033 7966 AGTAGTCCACCTTCATTTAA T TTCATTTA TGAA -- TCATCTT
CTCTTTGAAACTGTATCATC AGTAG CCACC ACTCTT ACT GTA
TTTGCCAAGTAAGAGTGGTG TTATC GGTGG TGAGAA TGA CGT
GCCTATT C -------- ---- AC -------
GAM37039 19577 AGTAGTGGGAGCACTGTGTT G CA- T- TT ---- CACTGTTTGAT
TAGAGTTAAGAGTGAACACT AGTA TGGGAG CTGTGT TAGAG AA GAGTGAA
GTTTGATTTTACTTGGAATT TCGT ACCCTT GATATA GTCTC TT TTCATTT
TCCTCTGTTATATAGCCTTT A TCC TT CT AAGG ----------
CCCAATGCT
GAM37040 1424 AGTAGTGGGAGCACTGTGTT G CA- T- TT ---- CACTGTTTGAT
TAGAGTTAAGAGTGAACACT AGTA TGGGAG CTGTGT TAGAG AA GAGTGAA
GTTTGATTTTACTTGGAATT TCGT ACCCTT GATATA GTCTC TT TTCATTT
TCCTCTGTTATATAGCTTTT A TTC TT CT AAGG ----------
CCCAATGCT
GAM37045 11636 AGTAGTTCCTGGGTGCTTTG T - GTG-- TG--- TAAGTCAT
ATGTTAAGTCATACATAATT AG AG TTCCTGG CTT ATGT
CGAGAAATACCAGGAATCTT TC TC AAGGACC GAG TACA
CT T T ATAAA CTTAA --------
GAM37046 7071 AGTAGTTCTTTGATGTGAAA A --- ---- G CAGCACA TTTAAACT
GGGGCAGCACAGTCATTTAA AGT GTT CTTT GATGT AAAGGGG GTCA
ACTTGATCCAACCTCTTTGC TCG CAA GAAA CTACG TTTCTCC TAGT
ATCTTACAAAGTTAAACAGC A ATT CATT - AACC--- --------
T
GAM37061 10226 AGTATATATAGTAGGAATTA T ----- A ACT T TTGTC
ATGTACTCTTGCTTTTGTCA AGTA ATATAGTA GGAATTA TGT CT GCTT
AGCTAGTAGGCAATAGTTTC TCAT TGTATTAT CTTTGAT ACG GA CGAA
CAAGGTATTATGTTACT - GGAAC A GAT T -----
GAM37139 7890 AGTATTCCTAAGCATGATAG A- AA- A A AAAAAAG GACTA
AAAAAAAGTATGGACTACAT AGT TTCCT GC TG TAGA TATG
AGAAACATCTGACAGCAAGA TCA AAGGA CG AC GTCT ATAC
GGAACCACT CC GAA - A ACAAAG- -----
GAM37161 7195 AGTATTTAGCTTGGATATGT AG GGA GT- A G A TAGAC AAGATA- AAAAGG
TAATTCTGAGATCCCTATTA AGTATTT CTT TAT TA TTCT AG TCCCTAT CTCC TT
GACCTCCAAGATATTAAAAG TCATGGA GAG GTA AT GAGG TC AGGGGTA GAGG AG
GGAGAAATTGGGAGAGATAT CT AGG AAC A - - TAGA- GTTAAAG ------

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GGAGAGTCAGGTACT
GAM37241 14103 AGTCAGAAAACTATTCCTCA AAAACTA A A TTAATTTT
AAAGAATTTAATTTTATATT AGTCAG TTCCTCA AAG AT
TATGAGGGGCCCTGTGCTGA TCAGTC GGGGAGT TTT TA
CT GTGTCCC A A --------
GAM37271 331 AGTCAGGTGCCTGGGTCTGG ------ -- ATCCA
GTCTCATCCAGAGACCCACG AGTCAGG TGCCTGGGTCT GGGTCTC
GGCCTAGGCAGAGCATCCTG TCGGTCC ACGGATCCGGG CCCAGAG
GCT TACGAG CA -----
GAM37280 23000 AGTCAGTTACGTTGCTTCCA TC TACG T AAT C TGTTGAC
AATAGGTGCTGCTGTTGACG AG AGT TTGC TCCA AGGTG TGC
TAATATCTTGTGGACGCAAG TC TCG AACG AGGT TCTAT ATG
CTTCCT CT ---- C GT- A -------
GAM37360 13129 AGTCCCAGGACGGTGGAAAC C- GGT AAC T A-- TG CAT
TAGCTAGTAGATTGCAGCCA AGTC CAGGAC GGA TAGC AGTAG T CAGC
TGTTGTGGAAGCTGCTGCTG TCGG GTCCTG CCT GTCG TCGTC G GTTG
AGATCCCAGTCCTGCAGGCT AC AC- AGA - GAA GT ---
GAM37371 17233 AGTCCCGGAGATCCGTGATG AGA T AACAA T A AATCGG
TAACAAGGATTGAGCGAATC AGTCCCGG TCCG GATGT GGA TG GCG
GGTGCCCACTCCCACATCCG TCGGGGTC GGGC CTACA CCT AC CGT
GGGACTGGGGCT AG- - C---- C C ------
GAM37372 5085 AGTCCCGGCGGCGGCCCAGC C CG C- T CCA -- CAAC
CTCAGTTCCAGCGCCAACGC AGTC CGGCGG GCC AGCC CAGTT GC GC
CAGCACCGGCTGCGGCTCCG TCGG GTCGCC TGG TCGG GTCGG CG CG
GTTCCCGCTGCGGCT C CT CC C CCA AC ----
GAM37415 588 AGTCCTGTAACTTATTCTCC CTT AAGA TT-- T ----- TTGTATTTCT
CAAGATGTTTGGCTTATTCT AGTCCTGTAA ATTCTCCC TGT GGCT ATTCTACGG CCT
ACGGCCTTTGTATTTCTAGG TCGGGGTATT TAGGGGGG ACA TCGA TAAGGTGTC GGA

TGAATCTGTGGAATTAGCTT TTT GGAA TTGT T TAAGT ----------
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TTTATGGGGCT
GAM37420 2096 AGTCCTTAAGCTTTAGATCA CT T A CAACAT-- CAC- CATCCAGA
ACATTAGTGGCACCAGCATC AGTC TAAGC TT GAT TAGTGG CAG
CAGACTGTTTTCTACTATCT TCAG ATTCG GA CTA ATCATC GTC
TCTTCATCCAGTGCTTAGAC -- T C CTTCTTCT TTTT --------
T
GAM37490 7511 AGTCTCATGTGGCTGCTGCA C GT TG T ACC C TATATGC
CCTCCAGATATATGCTCTCG AGT TCAT GGC C GC TC AGA
AACAGTGTGGCCTGATGAAA TCA AGTA CCG G TG AG TCT
CT A GT GT - ACA C -------
GAM37528 10066 AGTCTGAAATATTCGATTCA ATAT- GA TT AA- TTTGA
ATTGCAAACTTTGAGTGTAG AGTCTGAA TC TTCAA GC AC
TTTTTGAAAAGATGTTATTT TCAGATTT AG AAGTT TG TG
AGACT ATTGT AA TT ATG -----
GAM37531 7050 AGTCTGACGAGCGGCTGTAA GAC GG AA ACCGA AATGGA
GGACCGATGGAAATGGATCC AGTCT GAGC CTGT GG TGGA
AAAGCACCAAACAGAGCTTT TCAGA TTCG GACA CC ACCT
AAGACT AT- A- AA ACGAA ------

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GAM37534 22602  AGTCTGAGGCGAAGCTTCGG     GA   GAA   TC       -- GG    -    AAAG
                AGCGGCCGGTACTGTTGAAA AGTCT  GGC   GCT  GGAGCGGC  C  TACT GTTG
                GCGACAAGTGGAGGCGCCGC TCAGG  CCG   CGA  TCTCGCCG  G  GTGA CAGC
                TCTAGCGGCCGGGACT         G-   G--   --       CG AG    A    ----
GAM37624 196    AGTCTTTGCTACTGTGAATA     TTTG         TA---    -    AATAAACATAC
                GTGCCGCAATAAACATACGT AGTC    CTACTGTGAA     GTGC CGC
                GTGCATGTGTCTTTATAGTA TTAG    GATGATATTT     TACG GTG
                GAATGATT             TAA-        CTGTG    T    ----------
GAM37650 2431   AGTGAAATGGTTAAAAATAT     AATG       T  T  T     TAGA
                TTATCCTGTTAGAATAGGCT AGTGA    GTTAAAAA AT TA CCTGT
                GCATCTTTTTAACAACTCAT TTACT    CAATTTTT TA GT GGATA
                T                CAA-       C  C  C     ----
GAM37666 2085   AGTGAAGCAAATATTTTATT     AA    ATAT      AA  C   C  CAAATC
                TAAATCAGTCGTCAAATCAC AGTG  GCAA    TTTATTT  AT AGT GT
                AACTTATCCAAATGAATGTG TTAC  CGTT    AAGTAAA  TA TCA CA
                TTGCAACATT           AA    GTGT      CC  T   A  ------
GAM37677 19441  AGTGAATAAGAATGGATTAT       AGAAT    T    ATG---       A AGCATGGG
                TTATGTTACAGAAAACAGCA AGTGAATA     GGAT ATTT      TTACAGAAA C
                TGGGGTTTCTGTAAAGAGAA TCATTTAT     CCTA TAAA      AATGTCTTT G
                AAATTATCCTGGTATATTTA       ATGGT    T    AAGAGA       - --------
                CT
GAM37680 13299  AGTGAATACCACATTTCAAT    -    ACCAC     ATT    CCAATGACA
                TGCTGCCAATGACACAGCCC AGT GAAT     ATTTCA   GCTG
                CTGAAGTTATTAATTCTACT TCA CTTA     TGAAGT   CGAC
                           T    ATTAT     CCC    ---------
GAM37719 11651  AGTGACCCAGAATACACCAT      CCAGAA   A    CATCA  AA     TTTA
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                TTTCCCAGTGGAGTAAAGAA TCACTG      ATG GGTG     AC  TTTGG
                AGTCACT              AAAGAA   A    -----  CC     ----
GAM37724 358    AGTGACGAAAAATAACAATA    - GAAAA  AA    -    A-   TTTC
                CAGGACTCTTTCGAGGCCCT AGTG AC     AT  CAAT ACAGG  CTC
                GTAATTGGAATGAGTCCACT TCAC TG     TA  GTTA TGTCC  GAG
                           C  AG---  AG    A     CG   ----
GAM37822 14963  AGTGATGGGTCTGTTTGCAG       GG     TGCAGTAAA   A-       GAC
                TAAAGTTTATGCAGAATGAC AGTGATG  TCTGTT       GTTT  TGCAGAAT
                GTTTTGCAGAAAATAACAGA TCACTAC  AGACAA       TAAA  ACGTTTTG
                AGCATCACT              GA     ---------    AG       ---
GAM37860 16136  AGTGCAATGTTGATTCTGCT    -  T    -  GC    CC--  ATAT
                TTACCACATATGTATTTTAG AGTG CAA GTTGAT TCT  TTTA    AC
                AAAGATGTCAGCTTTGTTGC TCGT GTT CGACTG AGA  AGAT    TG
                T                T  T     T  A-    TTTA  ----
GAM37903 13947  AGTGCCATCTCTCTCAAGGC   G  A   -   -  AG-    C TC    A-   GAAGCTGTCCTCAA
                CAACATCCCTGAGGTGGAAG AGT CC TCT CTC TCA   GCCAA A  CCTG  GGTG
                CTGTCCTCAACACCGACAGG TCG GG AGA GGG AGT   TGGTT T  GGAC  CCAC
                AGTTTGGTGTGTGATGGGAA   G  -   A   T   GTG    - GA    AG    ----------
                GAGGGGCT
GAM37909 5168   AGTGCCCAGGATGATATTTT     C-   AT      TTACACAA     AAATA    AGGATT
                TACACAAGCTGTAAATATGG AGTGC  CAGG  GATATTT       GCTGT     TGGC
                CAGGATTGCCAGCAGTGAGT TCACG  GTCC  CTATGAG       TGACG     ACCG
                ATCCCTGTTGCACT          TT   --      --------     -----    ------
```

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GAM37928 138   AGTGCCTGATCTGGGGAAGC  TG  TGA     AA -       ACTTCCTGC
               CGGGGTGTAACTTCCTGCTG AG  CC   TCTGGGG  GC CGGGGTGTA
               CACCCTGCGCCTCCAGAGGT TC  GG   AGACCTC  CG GTCCCACGT
               CCT              CT  ---     --  C       ---------
GAM37934 6952  AGTGCCTGTGCAACCTCGTG   --   G   AA ---- -    -  CAGACC
               CTCAGCAGACCCTGTGGCAC AGT  GCCT TGC  CC   TC GTGCT CAG
               AGATGCTGGCAGCAGAGGCC TCG  CGGA ACG  GG   AG CACGG GTC
               CGCT             CC   G   AC  TCGT  A    T  ------
GAM37963 21782 AGTGCTGAGCTTTTAACAGG  G-    TT    GG--  GT-  CCTAGGTATTA
               AAATGTGGCCCTAGGTATTA AGT  CTGAGC  TTAACA   AAAT  GGC
               GTCTTAGTTTAAAATGTTGG TCA  GATTTG  GGTTGT   TTTG  CTG
               TGTTTAGAGACT         GA    T-    AAAA   ATT  -----------
GAM38001 22573 AGTGGAAATTAGCAGAAATA   GAAA  GC  AAT    TCAT   T   TATTT
               TCCATTCATTTGCTGTACTA AGTG   TTA  AGA  ATCCAT   TTGC GTAC
               TTTGTATGTAATATATGGGT TCAC   AAT  TCT  TGGGTA   AATG TATG
               TGATCTATAAACACT       A---  A-  AGT    TAT-   -   -----
GAM38043 7635  AGTGGATGTCCTGGTATTTA   G   CC--  TA  AAC   AGAAAAG
               ACTTATAGAAAAGGTAAAGG AGTG ATGT   TGG  TTT   TTAT
               AAACCCCAACATGCATGCAC TCAC TACG   ACC  AAA   AATG
               T                G   TACA  CC   GGA  -------
GAM38047 16111 AGTGGCAAAGGTTGAATAAA      -------   TTGAATAAAA   TTTCTT
               AGAGTTTCTTCTCCAACTTA AGTGGCA     AAGG       GAG
               CTTCCTTCTGTTAATGTCAT TTACTGT     TTCC       CTC
               T                AATTGTC   TTCATTCAAC  ------
GAM38052 17042 AGTGGCAGCTCCGAGTTACA       ----------  GA--  ACAAGAAATTATGAGAA
               AGAAATTATGAGAAGACGAC AGTGGCAGC       TCC   GTT
               AGGAAAAAATCAGTGCTGCC TCGCCGTCG       AGG   CAG
               GCT                  TGACTAAAAA  ACAG  ------------------
GAM38053 17037 AGTGGCAGGTACCGCAGTTT      GTACC    TTG-     TGATA   T GG TAAATCAGTTTT
               GTGCTGAATGATATGTATGG AGTGGCAG    GCAGT   TGCTGAA    TGTA G  G
               GGTAAATCAGTTTTTTTCTT TCACCGTC    CGTCG   GCGGCTT    ATAT C  T
               ATAGAATTTCGGCGTTTTGC       AA---    TTTT     TAAG-   T TT ------------
               TGCAACTGCCACT
GAM38061 7436  AGTGGCCAGCTGTGTGGGTC    CC   TG  T    A   CAGCTCC   T   TCTGCC
               AAGATCAGCTCCAGCTGGGT AGTGG  AGC  TG GGGTC AGAT      AGC GGG
               CTGCCTCCTGCTTTACGTCT TCACC  TCG  GT CCCAG TCTG      TCG CCT
               GGACCCTTGTGGCTCCACT     --  GT  T    G   CATT---  T  ------
GAM38071 5120  AGTGGCGTTCAGCCAACCGA   -   T   AA   ATTGAGC  AAC   TGTGAT
               GATTGAGCCATAACAGGTCT AGTG GCGT CAGCC  CCGAG     CAT   AGGTC
               GTGATGACCTTAGATGTTCG TCGC CGCA GTCGG  GGCTT     GTA   TCCAG
               GGGCTGCACGCGCGCT       G   C   --   -------  GAT   ------
GAM38086 10546 AGTGGCTGCCTCCCCAGAAG   G   CTC   AAG   AA  T  GTAGAGAA
               ACATAAAGCTGTGTAGAGAA AGTG CTGC   CCCAG   ACAT  AGC GT
               GCGCTCGATGTGCTGGGTGC TCGT GACG   GGGTC   TGTA  TCG CG
               AGTGCT              -   T--    G--   GC  -  --------
GAM38106 11267 AGTGGGAGCAGGAGCTTGGA  T     GA  T    GA  ACA     CCACTTGA
               GGTGAGCACAGGAAGCCCCA AG GGGAGCAG  GCT GGAGGT  GC   GGAAGCC
               CTTGAGGCTTTTACGCAGCC TC TCTTTGTC  TGA TCTCCG  CG   TTTTCGG
               TCTAGTCTCTGTTTCTTCT   T      TC   -    A-  CA-     --------
GAM38131 15946 AGTGGGGGCAAGAATCAGGG     G  AA  AT-     AAAATGA  GTAA
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TGAAAATGAGTGTAAACAAA AGTGGG GC GA CAGGGTG GT
GCCCATCCTGTGGTCAGCAC TCACCC CG CT GTCCTAC CA
CCACT A A- GGT CCGAAA- ----
GAM38138 13903 AGTGGGTCCTTCAGAGCGTG T AG T GGGAT ---- AT CTAGC
TGGGGGATTCTCTGCCGGCT AG GGGTCCTTCAG CG GTGG TCTCT GCCGGCTTG GGG

TGATGGGCTAGCTCCTCTAA TC CTCAGGGAGTC GC CACT AGAGG CGGCCGAAT CCT
GCCGGCTGCTGGAGACATCA - G- - AC--- TCGT CT -----
CCGGCTGAGGGACTCCT
GAM38152 13440 AGTGGTAGCAAGGACCCTTC G A C- TCAAAAAAT T - AAAAGT C
CATATTGGATTTTA
AAAAAATGATACATGCAAAA AGTGGTA CA GGA CCT GA ACA TGC TG TGGG
GTTGCTGGGCATATTGGATT TCGCCAT GT CCT GGA CT TGT GCG AC ACCC

TTACCCATCATAGGCGCTGT - - TT TTCT----- - C GAT--- T ----------
TCTCTTAGGTTTCCTGTACC
GCT

GAM38153 10702 AGTGGTAGCTTTTCACTAGG GTA -- - AG - GGTACA
ATCTCTGGGTACATAGCAGA AGTG GCTTT TCA CT GATCT CTG
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CACT AAA TC T AT C ------
GAM38184 1676 AGTGGTTGCTCTCACACCTG TG C TCACACCT ATAA -- CTTCC
TGCCATAACATCATCTTCCA AG GTTG TC GTGCC CA TCAT
TGACTTGGACGGGCACTTCC TC TAAC AG CACGG GT AGTA
TTGACAATTCCT CT - TTCCTT-- GCAG TC -----
GAM38192 15458 AGTGTAAAAGCTAGAGATTT AAA A-- TTA TTTTATGAT
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AAATTGTCAAATTAGTTATG TCACA TTGATT CTG AATAAT
ACACT GTA AAA TTA ---------
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ATCCCAGAAAGCTCTGGAAA AGTGTA TTTATTT CCAGA
AACACATAAATGAATACATT TTACAT AAGTAAA GGTCT
- TACACAAAAA ----
GAM38209 1385 AGTGTACTGATGCTGCTGGT A G G- ---- TG CCACCA
ATCTGTGACCACCATTGCAG AGTGT CT ATGCT CTGGT ATCTG A
ATGGAAACCGGGAGGTGTGG TCATA GG TGTGG GGCCA TAGAC T
GAATACT A G AG AAGG GT ------
GAM38223 15415 AGTGTATTAAAAATCATATT A AAATCATATT - AA G ATGATAATATAGGAGA
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GAGAGCTCAGATAACAAGAA A ---------- C -- A ----------
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T

GAM38224 14741 AGTGTATTAGATAAATGGAA AGA TTA---- - ATATG
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AAACTTTTTTCTATTTAAAA TTATATAA ATTTATCTT AC TATA
ATATATT AA- TTTTCAA A -----
GAM38266 15046 AGTGTGACTGTAGAGAATGC G C AA --------- TT CTTTGCT
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TGCTTCTATAGCCCTATACA TCG ACT ATATTTT ACGGTT TATCCCGA ATCT
CTTCTTTTGGCAGGTTTTAT G - GG TTCTTCACA T- -------
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GAM38384 607 AGTGTTTTGTTTGCTTCTGC T T T CATAAAT TT ATA - TAGATACAGT
ATAAATTTCTATTCAGGAGA AG GTT TGTTTGC TCTG TTCTA CAGGAGAGA GCAAAT ATT
GAATAGCAAATATTTAGATA TC CAA ACAGATG AGGT AGGAT GTCTTCTTT CGTTTG TAG

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ATAACCCT

GAM38452 11933 AGTTACCTCAGGGAAAAAGA TA T GG AAGAA --- CAGG
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TGGGCTGCT TC - AA CGAC- GAC ----
GAM38517 641 AGTTATGGGTATGTATTATA A A A AAAATGCAAATAAATATAA
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TATAAAGAAAATAAATATAA TTAATACCCA ATATAA AT AAAGA
CCCATAATT - - A ----------
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GTAATTACACGAAGGCTTTT AGTTATTC TGT TTATG TAA AAGGCTT
AAAAGCTTTAATTCTTGGTA TTAATAAG ACA AGTAT GTT TTTCGAA
TGAGTTGACAAAAAGAATAA AAAA GTTG G CTTAA-- ----
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GAM38529 22795 AGTTATTTGCTTCATCTTGA GCTTCA CCT TTTTAAATGT
CCTGTTTTTTTAAATGTAAA AGTTATTT TCTTGA GTTT
CTTTTAAGGACTTGAGATAA TCAATAGA GGAATT CAAA
CT GTTCA- TT- ----------
GAM38604 73 AGTTCCTCACTTTTTATTCA TC-- TT TTCATT TC TACCT
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AGTAAATATATTAGTTAGTA TTAAGG TGA GAT ATAAA GATG
CATGGAATT TACA TT TAT--- T- -----
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ATAATTATGGTTGAAATGTC TCG AGGTT TTG TGTCT TGGTATT
TGTGGTTCCTTGGAAATGCT TAA CC G-- GTAAAGT --------
GAM38647 14861 AGTTCTGTGCTGGTGGGTCA C TG -- ATA GT A CCCC T ATGGT
TATGTTGGTGAAGATTGTCC AGTT TG CTGGT GGGTC T TGGTG AGATTGT AG GG
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CAATCTCTACTAGTGAAGAC - CG AC AA- TG C CTA- - -----
CCCAACCAGGCCAAACT
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TTAATT -- A-- - -----

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GAGAGCT G- A C TG ---- -----
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TT AG-- G- ----------
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TTGGTACAAGCTCCTCTCCC TCAACCA C CC TTCTCCCC CT CCTCG CA GG
CCCTCTTTTCCCACCAACT - - TT C CT AA- T ---
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CTAGGAGGGTGTTGATTATT TTAA ATTATTAGTT GATCG
AAAATT A GTGGGAG------ ------
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GTGAAGTTTATGATCCTGCC TCGAGTC TACAAAGAC CC TC A TGAA TG
TCAGAAACATGGACTGAGCT AGG--- T G CT GTATT G ----
GAM38840 10135 AGTTTAGGATAAACACATGG T T CAC CAC--- TA CAAATCCA
CACAGTAACCAAATCCAGTC AGTT AGGA AAA ATGG AG AC
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CTTTAGCT T T TA- CTATAC TC --------
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AAGCCATTAAGATGGCTTAC AGTTTCC CA TGT AG AAGCCAT
TGTGACAAGCAAATGTGGAA TCAAAGG GT ACA TC TTCGGTA
ACT T AAACGA GTG A ----
GAM38891 19710 AGTTTCCTTTTTGGAAAATG CC AAA- G CATT GAAA
GTCTACATTCAGAAATGTCT AGTTT TTTTTGGA TG TCTA CA
TAGAACAAGCATTTAAAAAA TCAAA AAAAATTT AC AGAT GT
AACT -- ACGA A TCT- ----
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ATCTCAGCTCACTGCAACCT TC AGTGA TGGG CC ACCTC CGTCAC CG
CCATCTCCCGGGTTTAAGTG TT ATT--- C TCT CAA T ---------
ATTCT
GAM38948 17154 AGTTTGGGTTTGTTTTTGTT T -- TG A TTTTGAAGGT
TTAACTATTTTGAAGGTTAG AGTT GGGTTTGTTT T TTTTA CTA
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TAACT - CG GT G ----------
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GG TA------- -------
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GGCTTGTACGGGGCAGAGAA AGT TGTCAGTA ATGGCT GTA GGGGC AG
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GCCATTCTTGCTGACATCAC CT TCT-- TT - GAGG -----
T

GAM39081 10392 ATAGCTTTACAGCGTAGGAT TTA CG GATCATA-- ACCAAAAGAGC
CATACCACTACCAAAAGAGC ATAGCT CAG TAG CCACT
AGTGGACAATAAGACTATAC TATCGA GTC ATC GGTGA
TGAGCTAT --- AT AGAATAACA ----------
GAM39115 21761 ATAGGGCTGGAAAACGCTGA AAAAC-- TGAAAA GCTTTCACTGA
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GTCAAGGATTGTAATATTGC TGTTTCGACC TG ACTGG
CAGCTTTGT GTTATAA TTAGGA ----------
GAM39215 2435 ATAGTTTATGCTGTAATAGT - GTA T T A TTAT A T T A
TTATGCTGTAATAGTTTATG A TAGTTTATGCT ATAGT TA GCTGT ATAGT GCTGTA TAGT TA
GCTAT ATAG
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TGATA TGTC
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GTAATAGTTTATGCTGTAGC T
ATAAACTATT G

GAM39240 15243 ATATAACATTTTATTTAAAA C T TT A A-- A G ACAT- ACATTA
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CGGTAGGAGGTGGAATACCT TGTGT AAGTA GTT TATG AGA GGGGAGT GGT TCCTCCAT

CCTTGGCTATGAGGGGCAGA C - - T C ATC----- -- ---
TGTATTTGATGAACTGTGT
GAM39283 7619 ATATAGGAAGGTATACTGGT TAT ATACT T - TT- --- T TCCTT TA
TTCTGGTGTGATTCTTTAGC A AGGAAGGT GGT TCTGGTGTGATT CT AGCT ACA TTAT
GTCT
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TGTCATTTCACTGGATCATG TAC AC--- T A CTT TCC C TAC-- TC
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AATTATATTAGATGCCCAGC TG
CTTTCTCATT AC

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AGTGGTATATAT GAAA ----
GAM39340 2650 ATATATGTTTTCTTTTTAAG - TAAGCTA A- AAT TGATC
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TATGTAT
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TAATTAATTCCTTGTAGCCC ATATCC GACT ATAT CCT TGTAGCC
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AGGCTAAGCCCCATATTACA AG- CAT CCCCGAATC G ----------
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CACAAAGTGTGTGTGTGAGA T T AACAC- G GT GG ----
TGT
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AGTATCTATCAAAATACCAT ATATGGCA CAG TCT CAAA
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TTCATGCCATGT ACTTTATTCA- CA AAT ------
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ATAT G AA- CT - - ----------
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GT CT ACC AGCAA --------
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AAATTTTTACTTTAGTATAT ATATATG C - TTTC A -----
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TACAATTTACAGTCTTGTCT ATAT CGA TATTT CAA CAG
GACATTTGGTAAATAGCTAA TATA GTT ATAAA GTT GTC
TTGTGATAT GT AATCG TG- TACA ------
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TGTTGAACTTCCTTTTGGAA TATG GGTTTTCCT TTGTCA TTC

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        TGTAT              TAA       TCAAG     ----  ------
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        TTACACTTTATGCACAAAAT ATATT  TATG    ACA         GCAC  AA GTAGGGTTATAA       ATGT
        GTAGGGTTATAATAATGTTA TGTAG  GTAC    TGT         CGTG  TT CATCTTAATATT       TACA
        CCATGGACATGATCTTTCTT     TT   CTC--  ------------   AG  T         TCTTTCTAG
        TATAATTCTACTTTGAGTGC  ACCATG
        TGTCTCCATGTTGATGT    T
                    G
                     ------
GAM39704 16379  ATCAACAACATAACTATATG     CA   AACTATAT  A     T  CTAACAT
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        TTCAAATGTAGACTGACCAC TAGTT  TGTA       CAG TGTAAA CTT
        ATGTTTGAT             --   CACCAGT-  A     -  -------
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        GACCCATTAAGGATGAATTA ATC AT TCGGAG TAGCAAG     TTAA
        AAACTTGCTGATTCTGAAGT TAG TG AGTCTT GTCGTTC     AATT
        GGAT               G  A     A      AA---   -------
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        AAGGATGCTAACAATTAATT ATCACAGCTGT  CAGT      GATG
        TTATCAAACCTAACTGTGAC TAGTGTCGACA  GTCA      CTAT
        AGCTGTGAT                 GT   ATCCAAA   ----------
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        CAGTGAGATCTGGATGTCAT ATC CT GGA    AGAGA  AG GAGA    GG TGT  ATT
        TACACGAATATACACCCTTT TAG GA CCT    TCTCT  TC CTTT    CC ACA  TAA
        TTTTCCTTCTCTTCCAGGAT   -  -  ----    --  -   TTTT  C   TA  -----
GAM39834 16219  ATCAGACAGATCACAGCTAC     A      CAGCT   T  C     GCCACTGTT
        GGTGACATTTCTGCCACTGT ATCAG CAGATCA     ACGG GA ATTTCT
        TGGAAGTTTCTTGTTCATTT TAGTC GTCTAGT     TGTT CT TGAAGG
        GATCTGCTGAT           -      TTACT   - T     ---------
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        AATTTACACCATTGAACTCC TAGTCGT    GGGTGG    CGG  CG  TTTGGGT    CCT AAGT
        TGGGTTTTGGCTTGGCATGG       ACTC      TA---   TT  GT      ----  C   ------
        TGGGCTCATGCTGAT
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        TGGCTTCCTCTTTTCCAATT ATCAG CA    AC GAGATAG   GGC TCC
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        CTCTTGCCTGAT           C  TCTC  C      TC-   T  -------------
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        GAGCCAAGTCGGCAGTTTGT ATCAGGT    TGCA TTT    AGCCA GTCGG    AGTTT
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        GAT
GAM39928 5103   ATCATCGGCTCTCTGGGTTT     TC      T-   TTT--     TTTTCATC
        TACCATTTTCATCTGGTGTT ATCA  GGCTCTC  GGG     TACCA
        TCTCTCTTGGGGGCTTTGAT TAGT  TCGGGGG  CTC     GTGGT
                          T-      TT   TCTTT    --------
GAM39940 22682  ATCATGAGATAGACACTGTT         TA-  C    T--    G   GCATA
        TAAGGCCGCATAGGTGTTAG ATCATGAGA   GA ACTG   TTAA GCC
        TCCCAGTTCCATTTTCATGA TAGTACTTT   CT TGAC   GATT TGG
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T TAC - CCT G -----
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TAGTAAAAATGTTAGAGTAA --- ATT T- T TCT- -------
TGAT
GAM40018 7915 ATCCAAAGATGTAGTAGACT AAGAT C GA- AAAT
ACAGTGAGGAAAATTTTGCA ATCCA GTAGTAGA TACAGT GGA
ATTGTATTTGCTGCTATGGG TGGGT CGTCGTTT ATGTTA TTT
T AT--- - ACG ----
GAM40023 13446 ATCCAACACTTCTGTCTTCA AACA AGGGA- TACAG
GGGAGAGTACAGCTTGTTGT ATCC CTTCTGTCTTC GAG
GGGGGATGGAAGAATGGGAT TAGG GAAGGTAGGGG TTC
GTAA GTGTTG -----
GAM40027 15522 ATCCAAGAGTGTGATGGATT AGTG----- TTCT GAAAA
CTATTAAGAAAATTGATTTC ATCCAAG TGATGGA ATTAA
CTCCGTTAATAAGGATCCTT TAGGTTC ATTGCCT TAGTT
GGAT CTAGGAATA CCTT -----
GAM40051 13162 ATCCAGAGCTGCAGCACCAG A-- C- CC TAATTTCAATCAAC
AGATAATTTCAATCAACTCT ATCC GAGCTG AGCA AGAGA
TTTTTGTTTACAGCTTGGCG TGGG TTCGAC TTGT TTTCT
GGT CGG AT TT ----------
GAM40082 21 ATCCATTCTCAAGAAAAGTC T - T --- C CTA CACTCTT
TTAACTAGGAAACTAAAAGC ATCCATTC CAAG AAAAG CT TAA TAGGAAA AAAGCTTT
TTTCACTCTTAAAGCTTTCA TAGGTAAG GTTT TTTTT GA ATT GTCTTTT TTTCGAAA
TTTTCTGTTTATTCAGTTTT - A T CTT T AC- -------
TTATTTGGAATGGAT
GAM40084 216 ATCCATTGCCATTTGGTACA ATTGCCA - G ------- TGT
AATGACATTTGTTCTTTCTG ATCC TTTG GTACAAAT ACATTTG TTCTTTC
TGAAAGAGATGCCCTCGAGT TAGG AAAC CATGTTTG TGTGAGC GAGAAAG
GTGTTTGTACACAAACCCTT ATTCCC- A - TCCCGTA ---
AGGAT
GAM40118 22107 ATCCCCATGTAGAAGTGTTG -- GA G TG CTACT TTGC TACAAG
TCTTCTACTGCTTGCCACGT ATCCCCA TGTA AGT T TCTT GC CACG
ACAAGTGTGAAATGCCAAGG TAGGGGT ACAT TCA A GGAA CG GTGT
TGAGACTCGTACACTTGGGG TC GC G GT C---- TAAA ------
AT
GAM40121 10627 ATCCCGACGTGTGTGCCGGG GA -- G T TC ------- GAA
TGCGCTGCGTCGTGTCGAGC ATCCC CGTGTGTGCCG GGT CGC GCGTCGTG GA GCCGTGC

CGTGCGAAGCACGGTGCGTA TAGGG GCACGCGCGGT TCG GTG CGCAGTAC CT TGGCACG

CGTCTCCATGACGCCGTGGC AG GA - C CT GCATGCG ---
TAGTGGCGCGCACGGAGGGA
T
GAM40123 13530 ATCCCGCGACTGAGTCAGTA C A G A A GT TACA
CCTGGTTAGTACACTACACA ATC CGCG CT AGTC GT CCTG TAG
GGAGCAGACTGGGGCGTGTG TAG GTGC GG TCAG CG GGAC ATC
AT T G G A A AC ----
GAM40141 14915 ATCCCTTGTGCTGACGCGAC GTGCTGA G---- AAGA

GGGATGCCAGCAAGAGCTGG ATCCCTT CGCGACGG ATGCCAGC
TATAATTATCGTCGCGCTGA TAGGGAG GCGCTGCT TATGGTCG
AGAGGGAT AAGTC-- ATTAA ----
GAM40144 16217 ATCCGAGGAGGTCTGATGAT C ATGAT- CAT TTTG
GACATGGGCTTTTGGGTCTT ATCCGAGGAGGT TG GA GGGCT
TTCTTGATGTAAACCTCTTT TAGGTTTCTCCA AT CT TCTGG
GGAT A GTAGTT TT- ----
GAM40145 4740 ATCCGCATCGGCCTCCCTGC A C -- - ACAAAG- ACAAC
CCACAAAGCGCCACAACGGT ATCCGC TCGGC TCC CTGC CC CGCC
GACCAGCCGGAGCAGCCGGA TAGGCG AGTCG AGG GACG GG GTGG
GCTGAAGCGGAT A - CC A CCGACCA -----
GAM40174 22044 ATCCTCACAGGCACTGGACA TCAC TG ACA AAA- TAAAGT
ATTCAAAAAACGTAAAGTTG ATCC AGGCAC G ATTC AAACG
TTTGTTAGAATACTGGTGCT TAGG TTCGTG C TAAG TTTGT
TTTGGAT TT-- GT A-- ATTG ------
GAM40177 10129 ATCCTCAGGCTTTTCCCTAC A TTTT TA GG CACCTT
CAGTTTGGCGCACCTTTGAA ATCCTC GGC CCC CCAGTTT CG
AGCTGGCGGGGCCTGCTGGG TGGGGG TCG GGG GGTCGAA GT
GGGT G TCC- GC A- ------
GAM40187 19651 ATCCTCTTGCCTCTGCAGCC TTGC CCT TTTTTTTTTAATTT
TAATAATTTTTTTTTAATTT ATCCTC CTCTGCAG AATAA
TTATTTTTTTGTAGAGTTGG TAGGGG GAGATGTT TTATT
GGAT TT-- TTT ----------
GAM40197 19500 ATCCTGGACCTCAGCATCAT ACCTCAGCATCAT C TCTTTACT
CAAGCACCTCTTTACTGGTC ATCCTGG CAAG ACC
CTTGTCCTCTCCAAACACCA TAGGACC GTTC TGG
GGAT ACAAACCTCTCCT C --------
GAM40218 15181 ATCCTTGAAGGAAATGACAT AAGGA GACAT A --- T CAGCG
TGAGCTTGTTTCAAATTCAG ATCCTTG AAT TG GCTTGTT TCAAA T
CGGCTTTGATTCAGCAAGCC TAGGAAC TTG AC CGAACGA AGTTT G
ACAACAGTTAAAAACAAGGA AAAAA ACAAC - CTT C -----
T
GAM40227 5195 ATCCTTTTTGTAGTCACTCA - GT C A-- AGACTTAG
TAGGCCAGACTTAGGGCTAG ATCCTTTTTGT A CA TCAT GGCC
GATGATGGTTAATAAGAGGG TAGGGAGAATA T GT AGTA TCGG
AT A TG - GGA --------
GAM40228 2176 ATCGAAAAGAAAACTATTTA A- AACTA CA AAATACAAAA
CATTTCAAATACAAAAGAAA ATCGA AAGAA TTTA TTTC
ATTAAAATTATTCTTGATTG TAGTT TTCTT AAAT AAAG
AT AG ATTA- TA ----------
GAM40238 14122 ATCGCACGAGAATGATTCAG AC GA AGCAA G GGGCAA T AAATA
CAATCACGGAGTGGGGGCAA ATCGC GAGAAT TTC TCAC GAGTGG TGCGCG CGAG
TGCGCGTCGAGAAATATTTG TAGCG TTCTTA AAG AGTG CTCGCC GCGTGT GTTT
TGTGCGCCGCTCAGTGAGAA A- AC ----- A ------ - -----
CAATTCTTAGCGAT
GAM40246 7404 ATCGCTTTCTCCAAACCCAA TT------- AAC A- AATT
GAAAAAGAATTTTTTTTCCA ATCGCT CTCCA CCA GAAAAAG
TGGTGGAGTTGATGATTAGC TAGCGA GAGGT GGT CTTTTTT
GAT TTAGTAGTT --- AC ----
GAM40260 597 ATCGTGGGGCTTGTGGGAAA G TT GAA GG-- AGTG

TGGTGGGGAGTGCCAATGGC ATCGTGG GC GTGG ATGGT GG
CGTAAATTATGTGTCGCGAT TAGCGCT TG TATT TGCCG CC
G -- AAA GTAA ----
GAM40279 14235 ATCTAATGCTAATGAACAAA A C- A- GG TA TAAA
GGTTATTTTTAAAAAAACGG ATCT ATG TAATG ACAAA T TTTT
TTTTTGTGATATTAACCATG TAGG TAC ATTAT TGTTT G AAAA
GGAT G CA AG TT GC ----
GAM40281 7751 ATCTAATGTGTGTGTATATA AA G TGTG
TGTATGTGTGTATGTGTGTG ATCT TGTGTGTGTATATATGTATGT TGTATGTG
TATATATAGATGTATATATA TAGA ACACACACATATATATATGTA ATATATAT
TACACACACAGAGAT G- G ----
GAM40296 13514 ATCTACAGTATTGATTTCAC AC--- ATT A CG- ATTCGAGA
CCGCTTCAAAATTCGAGATT ATCT AGTATTG TC CC CTTCAAA
TGGAGACAGGGACAGTACTT TAGA TCATGAC AG GG GAGGTTT
TTTGAGAT GTTTT --- - ACA --------
GAM40304 6743 ATCTACTGGGCGCCTGTCAC TA C A C--- ACTG- AGATTG
CCAGGAACTCTACTGGCAGA ATC CTGGG GCCTGTC CC AGGAACTCT GC
TTGGCATTGAAGAGTTCCTC TGG GGCCT CGGACGG GG TCCTTGAGA CG
ATCGGCGGCAGGCCTCCGGC TC C C CTAC AGTTA ------
TGGT
GAM40315 17713 ATCTAGCCTTGCTGAATGTA CT - AAT- A T CT TCTTGAAT
ACATGTATACTTGGTCTTGA ATCTAGC TGC TG GTA CA GTATA TGG
ATTCATTGTACTGATATTAA TAGGTCG ACG AC TAT GT CATGT ACT
ACATGCATGCTGGAT T- T AAAT A - T- --------
GAM40333 17562 ATCTATGAGGGCCAAGTGGA TGAG CAA GA GA ATA A GAAG
GGTGACTGGTGATGAATACC ATCTA GGC GTGGAGGT CTGGT TGA CCA TGTG
AATGTGGAAGCATGATGGTC TAGGT TCG CACTTCCG GACCG ACT GGT GTAC
AGCCAGGTGCCTTCACCTGC TA-- TC- TG -- --- A ----
TATTGGAT
GAM40353 15089 ATCTCACACCTTAGCTATTC CACCTT TCC - CCCAG CTGACA
CCAGGGAACCCCAGGGGGCA ATCTCA AGCTAT CAGG GAAC GGGGCAA
ACTGACATTGCTCCAAGATG TAGAGT TCGATG GTCC CTTG CCTCGTT
TTCTCCTGATGTAGCTTGAG ------ TA- T TAGAA ------
AT
GAM40407 22756 ATCTCTCAGAGTTAAAAAAC CA AACC A- TT CC -- TCGG
CCCAAGGCTTGGCCCCCAGG ATCTCT GAGTTAAAA CCA GGC GGCC CA GGG
GTCGGTCCGTTGCAGGCTTT TGGAGA TTCAATTTT GGT TTG TCGG GT CCT
GTTAATGGCAAGTTTTAACT AC GAAC AA TT AC TG ----
TCAAGAGGT
GAM40422 11665 ATCTCTGTGGAGAGATCGCT GGA TCG CG ATC
CGATTTTCGCATCGTGGAGA ATCTCTGT GAGA CT ATTTTCGC
TGAAGACTTCTTGTAGCAGA TGGAGACG TTCT GA TAGAGGTG
GGT ATG TCA AG ---
GAM40425 1911 ATCTCTTTATCTATAGGGCA C- A AAGCGT CCATCTAGACTA
AGCGTGCAGGCCATCTAGAC ATCT TTTATCT TAGGGC GCAGG
TACTTGCTCTAAGTCCTGAG TGGG AAGTAGA GTCCTG CGTTC
ATGAACTGGGT TC - AATCT- ----------
GAM40449 5199 ATCTGAGTGAGTGTGTGCTT AG-- C AAAGGT A AATAATGTGACA
ATAAAGGTCCTTTGATCAAT ATCTG TGAGTGTGTG TTAT CCTTTG TC
AATGTGACAGAACGAGGGTA TGGAC ACTCATATAC AATG GGGAGC AG

GTAACATATACTCAATAACA AATA - AT---- A ----------
GGT
GAM40454 15988 ATCTGATCTCTCGGTCCCTT A - TCCT A ATAAAAAGAA
CCTTAACCCCATAAAAAGAA ATCTG TCTC TCGGTCCCT TA CCCC
GGGGATATTTGGGGACCGAC TGGAC AGGG AGCCAGGGG AT GGGG
GGGAACAGGT A C TTT- A ----------
GAM40462 17144 ATCTGCAGACAGACACTGGC - ACA--- C A - GAC CC GAA GA A--
AACATTGCGGACACCCTCCA ATCT GCAG GACA TGGCA CAT TGCG ACCCT AG GC GA
TGCAGAG
GGAAGCGAGAATGCAGAGTT TAGG CGTC CTGT ACCGT GTA ATGT TGGGA TC CG CT
GTGTCTC
TCCTCTGTGATATCAAGCAC T CACAAG T C G --- CT A-- AA ATA
TTCAGGGTTGTAGATGCTGC TTTC
CATTGTCGAACACCTGCTGG
AT

GAM40468 10844 ATCTGCCACTTTGTGAGCTC CCAC - CATCATC C AAGT
ATCATCAGTCCCAAGTGGAA ATCTG TTTGTGAG CT AGT CC
CTAGACTCACAGACCTAGAT TAGAT AGACACTC GA TCA GG
CC-- A ------- A ----
GAM40498 1979 ATCTGGCTGGTTGGACAAGA GC A - AAGG ACAT
TGTCTAAGGGACACATGTCG ATCTG TGGTTGG CAA GATGTCT GAC
GCAGATGTCGTTGCCAATCA TGGAT ACTAACC GTT CTGTAGA CTG
ATAGGT A- - G CGG- ----
GAM40505 21925 ATCTGGGTGCAAAAGCCCAG G A CA TTAGGAAC GCATG
GGTTAGGAACCGTAGGCATG ATCTGGGT CAAA GCC GGG CGTAG
CTGCGCCCCAAGGCTTTGAC TGGACCCA GTTT CGG CCC GCGTC
CCAGGT - - AA C------- -----
GAM40510 2542 ATCTGTAAATGGGATTCGTA AAAT ATTCGT-- GCA G GGTA
ATCCTTGCAGTGCTTGGTAG ATCTGT GGG AATCCTT GT CTT
GGGACAAAGAGGATTCATTC TAGACA CCC TTAGGAG CA GGG
AAACCCTAGGACAGAT GGAT AAACTTAC AAA G ----
GAM40529 15485 ATCTGTGTAACTAGAACACT ACTA CAC ACT ATAT
TGACTAAAATTATATAATTT ATCTGTGTA GAA TTG AAAATT
TTACAACGCTTCACTGCATA TAGATACGT CTT AAC TTTTAA
GAT CA-- CGC AT- ----
GAM40534 14217 ATCTGTTACCTGTGTTGATC TACCT CAA C- AAATCCCAAAA
AAGACTTCAAATCCCAAAAG ATCTGT GTGTTGAT GA TTC
AACTTCATCATTAACATGAC TAGACG TACAATTA CT AAG
TTGCAGAT TTCAG CTA TC ----------
GAM40540 572 ATCTGTTTTCTGGGTTTCAA ---- C TTTC- CTTA CTTC
TCTCTCTTACAACTTCTTGA ATC TGTTTT TGGG AATCTCT CAA
CCAGAGATTACTTGTCCAAA TAG ACAAAA ACCT TTAGAGA GTT
AACAACATGAT TACA - GTTCA CCA- ----
GAM40560 15042 ATCTTAGCCATTCATGATAG TA - C A- -- CC G C GATG
CTATAAACCCGAATTCCACA ATCT GC CATT ATG TAGCT ATAAA C AATTCCA AGT
GTGATGACTCTGGGGTTGAA TAGA CG GTAG TAT ATCGA TATTT G TTGGGGT TCA
TTTATTGAGCTAGATATTGA C- A T AG GT AA - C ----
TGAGCCAGAT
GAM40596 15743 ATCTTCTCTCCCAGCTTTGA CTCTC TTTGAG TT - T GGAA

GGTTTCGGGGCTCTGGAAAG ATCTT CCAGC GT CGG GGC CT
GCCTCTGGGATGCTGGCCTT TAGAA GGTCG TA GTC CCG GA
AAGAT TTCC- ------ GG T - ----
GAM40602 8020 ATCTTCTTTTTTTTTTTTTT T TTTAAAGCATAA CACAA
TTTAAAGCATAATCCCACAA ATCTTCTTTTT TTTTTTTT TCC
GGACAAAGGAAACAAGAAGA TAGGAGAAGAA AAAGGAAA AGG
GGAT C C---------- -----
GAM40652 17033 ATCTTTGAGTGTGAGCTCAA TG TG T AGCT - TGGACACAGAAAAAGGC
GCTCTCCAGTGGACACAGAA ATCTT AGTG AGC CA CT CCAG
AAAGGCCTGGTAGTAAGTGG TGGAG TTAC TTG GT GA GGTC
TTTGCATTGTGAGGT TG GT - GAAT T ----------
GAM40689 7540 ATGAAAACATGGGTCTTTTC AAACA C TT C- TCTTCTACATCATTTC
TCAGGTCTTCTACATCATTT ATGA TGGGT TT CT AGG
CCCTTAAGTTGACACCCAAA TACT ACCCA AG GA TCC
GTCAT GAA-- C TT AT ----------
GAM40726 13321 ATGAAATACCAAAGTAATTC AATA AA GAAAGG TGAACC
TTGAAAGGCTGGTTGAACCA ATGA CC AGTAATTCTT CTGGT
CCAGAAAGGAGTTATTGGGG TACT GG TTATTGAGGA GACCA
GAATCAT AAG- GG AA---- ------
GAM40754 14205 ATGAACCTTCAGTGAAAGTA AACC TG--- TA ACAGCT CCTT
GGCTGCACAGCTAAATGGCC ATG TTCAG AAAG GGCTGC AAATGG
TTCTATTTTGAGGCAGTTCT TGC AAGTC TTTC TTGACG TTTATC
TTATATTCTGAAATAGCGT GATA TTATA -- GAGT-- ----
GAM40804 10806 ATGAAGTTATGTGTGCACAA T - ACAATT --- A- TTGGTATATT
TTCAAGTGGACTGTAAACTG ATGAAG TATGT GTGC CAAGT GGACTGTA ACTG
TTGGTATATTCAGTGATGCA TATTTT ATGTA TACG GTTCA CTTGACGT TGAC
GTTCTGAACTTGTATATGGC T G GTATAT AGT AG ----------
ATGATGTATTTTTAT
GAM40818 10394 ATGAATGAGATCTGTTTTCT G C TTC- GA- ACAT
GTGGAGTGTACATACACAAA AT AATGAGAT TGTT TGTG GTGT
CGCATTGCAACATGTTTCAT TA TTACTTTG ACAA ACGC CACA
TGAT G T CGTT AAA ----
GAM40833 15321 ATGAATTTTACTCACTACAG TT A ACA AC A- ATTAAA
TTATACTCATTTTACATTAA ATGAAT TACTC CT GTTAT TC TTTTAC
AGTAAAAAAGAAAATAGCCA TACTTA ATGAG GG CGATA AG AAAATG
GGAGAGTAATTCAT -- A AC- AA AA ------
GAM40845 74 ATGACAATGTAGAGGATGAC A AGAGGATGAC A- TACGA
TTCTCTAATCAGTTACGAGC ATGAC ATGT TTCTCTA TCAGT
TGAACTAGAGAAACATGGTT TATTG TACA AAGAGAT AGTCG
AT G ---------- CA -----
GAM40859 15793 ATGACATGAAGACAGAGGGC ATGA C - TAT- A --- -- AACGGTAGCA
TATGAGGCAGGCCTGGCTCC ATGAC AGA AGAG GGC GAGGC GGCCT GGCT CCGC
GCAACGGTAGCAGTGGGTGG TATTG TCT TCTC TCG CTCCG CCGGG TCGG GGTG
CTCAAGGGCCAGCCTCCAGC GATG T G CGAC A AAC TG ----------
GCTGCTCTTTCTGTAGGTTA
T
GAM40863 13710 ATGACATGTCTCCACGAGGG CA C-- A-- ACAG-- CTTACTTTTA
TACAGCTGTGCTCTTACTTT ATGA TGTCT CACG GGGT CTGTGCT
TAAGCACGGAAATCGACCTG TACT ACGGA GTGC TCCA GGCACGA
CCCGTGAATAGGCACTCAT C- TAA CCG GCTAAA ----------

GAM40943 13613 ATGAGAGTGGAGGCTTTTTT ----- G TT TG CATTA
GCTTGGTCATTAATTTAGCA ATGAGAGT G AGGC TTTTGCT GT
GAATTGCTTGCAGCAAACTC TATTCTCA C TTCG AAGACGA TA
TTAT AACGA G TT TT -----
GAM40979 384 ATGAGGAACTCCTACAACTC G A TACAAC ATA AAAACAAACAAAA
AATAGTAAAACAAACAAAAA AT AGGA CTCC TCA GT
CCCCTGATTCCTGGAGATCC TA TCCT GAGG AGT CA
TGAT G A TCCTT- CCC ----------
GAM40980 7645 ATGAGGAAGAGGGAAGTGAA A GGAAG AAAT TT GAGATA
AATGGACTTTTTGGGGAGAT ATGAGG AGAG TGA GGACTT TGGG
ATTTAGAGTCTTCAAACTCT TACTTT TCTC ACT TCTGAG ATTT
ATTTCAT A AA--- ---- -- ------
GAM41033 10964 ATGAGTCCCCCCCTCTTGTC A - T T CT --- TGAAATT
TCCCCCCCCTGAAATTGGGC ATG GTCCCCC CC CT GT CCCCC CCC
ATGGGGGTGCGGTGGTGGGG TAC CGGGGGG GG GG CG GGGGG GGG
GGCCAT - T T - T- TAC -------
GAM41083 13838 ATGATCCATCTGTGTAGTTT CCATC TTTC C CA TTCCAG TTTA
CCTGAACAGTCAGCGATTCC ATGAT TGTGTAG CTGAA AGT GCGA GT
AGGTTTTAACATAGTTTGTA TACTA ACACATC GACTT TCA TGTT CA
AACTTTTCAGTTTCTACACA TTTC- TTT- T AA TGATA- ----
CTTTATCAT
GAM41111 11899 ATGATGTAAAGAATGCTTCT AA ATGC T TA GGAGT
TGTTCATTACATGGGAGTCA ATGATGT AGA TTCTTG TCAT CATG
TGATGATCAAGAATCTGGAT TACTATA TCT AAGAAC AGTA GTAC
ATCAT GG ---- T -- -----
GAM41202 9999 ATGCACAGAGTTAGGTAACA C- A AACAAAAATTCCTA GAGTAAAA
AAAATTCCTATCAGAGTAAA ATGCA AGAGTT GGT TCA
ATGACAAAGCACAGAAAAAC TACGT TCTTAG CCA AGT
CAGATTCTAATGCAT AA A AAAAGACACGAAAC --------
GAM41227 10247 ATGCAGCACAAGTTCTCATA C TT CATATCC TTTTTCCATTTT
TCCTTGCTTTTTCCATTTTG ATGCAG ACAAG CT TTGC
CAATCAGGTTTTTGTCTGCA TACGTC TGTTT GG AACG
T - TT ACT---- ----------
GAM41246 22500 ATGCATAAACAGTCTATGCT -- ATGCTGC G GTC --- C TT T
GCCTGGGAGGAAAAGTCTTT ATGCATA AACAGTCT CTG GAGGAAAA TTTTTAAGT TAAA TTAT
AC
TTAAGTTAAACTTATTTACT TATGTAT TTGTTAGA GAT TTTCTTTT AAGAATTTA ATTT AGTA
TG

ATAGTTATGATTTATATATT AC ------- A AA- TAT - T- -
TAAGAAAATTTTCTTTATAG ATA
AGATTGTTCATATGTAT

GAM41274 2242 ATGCCAAACCACTGCTAATT AAAC-- AATTT GACCAAAA A ACTAGATGAAATA

TAGAGGACCAAAAGGACATG ATGCC CACTGCT AGAG GG CATG
ACTAGATGAAATACATGCCG TGCGG GTGACGA TTTT CC GTAC
AAAATTTTTGAGCAGTGCTG GAAGTC GT--- AAAAG--- - ----------
AAGGGCGT

GAM41289 15999 ATGCCAGGAAAAGGTCTCAG - AAAG-- C- AGGGT
GTGTAGAGGGTCTACATTTC ATGCCAG GA GTCT AGGTGTAG
AGGATAAATGGTCTCTGGCA TACGGTC CT TAGG TTTACATC
T T GGTAAA AC -----
GAM41321 17517 ATGCCTACCCTGGTGGCATT TAC ---------- ATCCAC
CTCATCCACGAGACTACCAC ATGCC CCTGGTGGCAT TCTC
ATCCATGCCACTAGGTGGCA TACGG GGATCACCGTA AGAG
T T-- CCTACACCATC ------
GAM41326 7405 ATGCCTCAGTGATAAGAAAG CC ATA ------- CTCCTT
ATGCCTCCTTGTGTCTCACT ATG TCAGTG AGAA AGATGC
GTTTTCTAGCACTGAAACAT TAC AGTCAC TCTT TCTGTG
AA GA- TTGTCAC ------
GAM41337 8007 ATGCCTGGCAGTTCTCCAAA C- CA- T AA - ACCT AA - G GAAATA
AATGAGGACCTTCAAATAAG ATGC TGG GTTC CC AAATGAG G TCA TAAG AGT ATT
AGTGATTGAAATAAATAACT TACG ACT TAAG GG TTTACTT C AGT GTTC TCA TAA
ACTTGCATGATATGCTTTCA TT TCA T G- T GTAT AC A A ------
TTTGGGTGAATACTTCATTG
CAT
GAM41354 17900 ATGCGGTTCCGGATGAAGAT TT G- AG------- GAGAAT AAGA-- AA CCACCA
GCAGAGAATGGCGAAGATGA ATGCGG CCG ATGA ATGCA GGCG TG GAGCA
AGAGCACCACCATGCTCACC TACGTC GGC TGCT TACGT CCGC AC CTCGT
AGGAGCACGCCCATGCATGA TG GA GAAGTGGAG AC---- ACGAGG CA ------
GGTGAAGTCGTAGCGGGTCT
GCAT
GAM41389 14185 ATGCTCCCTATAATCAGACA C CTATAA --- ACT- - TA- C AT TA
TTAACTGGATATAATGACTA ATG TCC TCAGACA TTA GG ATA ATGACTA ATCAAG GAGCAT
AT
CATCAAGATGAGCATTAATC TAC AGG AGTCTGT AGT CC TAT TATTGGT TGGTTC CTTGTG
TA
CTAAGAAACTTGTAATGGGT T ------ CTA CCGT A TAG A -- GG
GTTCCTTGGTATGGTTATGA CC AAA
TTATACCTGCCTGAATCTGT TAAG
CTGAGGATCAT GTTC
AT ---
GAM41395 19609 ATGCTCTTCCGGCAGCTGCA TC- G T AGC C A TACCCTTGATAAACCAT
TCAGGAGCTGCCCTCTCATG ATGCTCT CGGCAGCT CA CAGG TG CCTCTC TGGGG
GGGTACCCTTGATAAACCAT TATGAGA GTCGTCGG GT GTCC AC GGAGAG ATCTC
CTCTAGAGAGGACATCCCTG CGT - C CT- A - ----------
CTGGGCTGCTGTGCAGAGTA
T
GAM41405 13569 ATGCTGATAAAGTTATAAAA TAAAGTTATAAA AAGT GTACTATTTA
GTTGCAAGTCACTGTACTAT ATGCTGA AGTTGC CACT
TTAAGTGGCAACTGCCAAAA TGCGACT TCAACG GTGA
GTGATTCAGCGT TAGTGAAAACCG ---- ----------
GAM41407 13544 ATGCTGCAGTGCCCTTCATT A CCT G CGAT CTTCCA
GCACGATCCCCTTCCAGGGC ATGCTGC GTGC TCATT CA CCC
CTGGGTGAGCACCGCAGCAT TACGACG CACG AGTGG GT GGG
C --- - CC-- ------
GAM41412 17665 ATGCTGGACACTGCCTTAGG GACA-- CCT AACCA GGTG
AAAACCACGAGAGGTGTTTC ATGCTG CTG TAGGAA CGAGA

GACTTCCTACAGATTTGACA TACGAC GAC ATCCTT GCTTT
GCAT AGTTTA --- CA--- ----
GAM41452 14261 ATGCTTGAGAAATGCCCTTT --- G- C CCT CTCAGAT
TCCTGCTGGCTCAGATTTAG ATGCT TGA AAATGCC TTTT GCTGG
CCCAAAAATGGCATTTGATT TACGA ATT TTTACGG AAAA CGATT
AAACAGCAT CAA AG T ACC -------
GAM41460 12074 ATGCTTGTATACAGAGTATT TAT - A - GTT--- TTCATATGC
TATACAAATGTTTTAGCATC ATGCTTG ACAGAGTAT TT TACA AAT TTAGCATC
TTCATATGCGGTGTTAACCC TATGAAC TGTCTTATA GA ATGT TTG AATTGTGG
CTAGTTCTGTACAGCATATT T-- C C C ATCCCC ---------
CTGTTCAAGTAT
GAM41461 6689 ATGCTTGTATTTGGAGCCTT T GG - T- ACATTACTTCCCA
TGGGCACATTACTTCCCAGC ATGCTTGTA TT AGC CT TGGGC
TCACTAGTGCTGAGATTACA TACGGACAT AG TCG GA ACTCG
GGCAT T AG T TC ----------
GAM41497 15444 ATGGAAGGATGAAGCGGAGA GAA-- GA -- - CCTTCGAGACATTCA
AAGTGCCTTCGAGACATTCA ATG GGAT AG CGGAGAAA GTG
CACATTTCTCTGGACTCAGT TAC TCTG TC GTCTCTTT CAC
CTGTTAACAT AATTG AC AG A ----------
GAM41546 15882 ATGGAGCAATGCCAATAAAA CAA AATAAAA T TAAAAAAGTT
TTTTATAAGTTAAAAAAGTT ATGGAG TGCC TTT ATAAGT
ACTTGTTAAAGGCAGATTTC TACTTT ACGG AAA TGTTCA
AT AG- ------- T ----------
GAM41570 7454 ATGGAGTCAGTGTGACAACG TCAGTGT C- ACC AATC
GGCTGTACCCAAATCTGAGA ATGGAG GACAA GGGCTGT CA
CGGCTCTCTTGTCTTCTCCA TACCTC CTGTT CTCGGCA GT
T TT----- CT GA- ----
GAM41600 14256 ATGGATTAATAGAGTTGGAG ATA- AGTTTT- AAG
TTTTATTTTTAAGAAAAATT ATGGATTA GAGTTGG ATTTTT
CACAAGCTAACTTCCACTAA TACCTAAT TTCAATC TAAAAA
TCCAT CACC GAACACT ---
GAM41601 11618 ATGGATTAGTGGAAGTTAGC A AGCTT GA- CTT
TTGTGAATTTTTCTTAAAAA ATGGATTAGTGGA GTT GT ATTTTT
TAAAACTCCAACTCTATTAA TACCTAATTATCT CAA CA TAAAAA
TCCAT - CCT-- AAA ---
GAM41665 11791 ATGGCCGAGGAGAAGCGCGA G -- A AGG A------- CCTGA
GGGCTACGAGCGTCTCCTGA ATG CC GAGGAGA GCGCG GCTACG GCGTCT
AGATGCAAAACCAGCGTGGC TAC GG CTTCTCT CGCGC CGGTGC CGTAGA
GGCCGCGCTCTCTTCCAGGA A AC - CGG GACCAAAA -----
CAT
GAM41687 19620 ATGGCTCATTTGTTTAGAAT CA TT AAT A T CTGTCC
ACAATGATTGTCTGTCCGCA ATGGCT TTTGT AG ACA TGA TGT
TTCATGTTGGCTTATAGAGC TACCGG AGATA TC TGT ACT ACG
GGCCAT CG T- GGT - T ------
GAM41693 6804 ATGGCTGCCGTCCCGATCCC T CGTCC --- G TACACCTCCACCT
AGTCATACACCTCCACCTTG ATGGC GC CGATC CCA TCA
ATGGTCCGATCGTAGTCGCC TGCCG TG GCTAG GGT AGT
GT C AT--- CCT - ----------
GAM41765 22970 ATGGGCCAGAAGGACTCCTA C----- A--- CTC ------- GACGAG
CGTGGGCGACGAGGCCCAGA ATGGG CAG AGGA CTACGT GGGC

GCAAGCGTGGCATCCTGACC TACCC GTC TCCT GGTGCG CCCG
CTGAAGTACCCCAT CATGAA CCAG AC- AACGAGA ------
GAM41771 17463 ATGGGCCTTTGAGGGTGGAT - - TGA TTG AG- AGAAAGGATTTTAATAA
TGTCAGGGGATGATAGAAAG ATG GGC CTT GGGTGGA TC GGGATGAT
GATTTTAATAAGTCATCCTG TAC CCG GAG TCCACTT AG TCCTACTG
AGGAAATTTCACCTAGTGAG A A TGA TAA GAG ----------
AGCCACAT
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AACTCTTTCATGTTCGAGGG ATGGG ATGGGGAT ATTA CTCTTTC
AGCCAATAATAGTCTTTATC TACTC TATTTCTG TAAT GAGGGAG
TCAT --- A AACC ------
GAM41800 11579 ATGGGGTTGGGATCACAATA -- T T C TCCAAT
TGGTCTGGTCCAATCTGCAT ATGGGGT TGGGA CACAATA GGT TGG
CTTGTTGTGTCCCAAGACCC TATCCCA ACCCT GTGTTGT CTA GTC
TAT GA - T C ------
GAM41821 10886 ATGGGTTATGAACATGCCTT T- CAT TGT-- - TTTT
GTCATCAGTTCTTTTGAACA ATGGGTTA GAA GCCT CATCA GTTC
TGATGTCTATGGGTTTTTCT TATCCGAT CTT TGGG GTAGT CAAG
TTAGCCTAT TT TT- TATCT A ----
GAM41867 12066 ATGGTCTTGGCTCATTCTGG TG CATTCT- CAA AATCCTTTC
GCTCAAGCAATCCTTTCGCC ATGGTCT GCT GGGCT GC
TTAGCCCTCTCAGTAGCTGG TATCAGG CGA CCCGA CG
GACTAT GT TGACTCT TTC ---------
GAM41870 14124 ATGGTGAAACATGCTGGAGC - AA--- G - A T TAACAT
CAAGTGCTAACATGCCTGGT ATGG TGA CAT CTG GAGCCA G GC
TCACGGATGGAAAGTCAGCC TGCC ACT GTA GGC CTTGGT C CG
GT G GAAAG - A - - ------
GAM41871 10119 ATGGTGAACAACCATGCTGG ACAA G G-- A T TAACAT
AGCCAAAGTGCTAACATGCC ATGGTGA CCAT CT GAGCCAA G GC
TTGGTTCAAGGGGATGGAAA TGCCACT GGTA GG CTTGGTT C CG
GTCACCGT GAAA G GAA - - ------
GAM41878 9951 ATGGTGACAACATGCTGGAG AA-- G G A T TAACAT
CCAAGTGCTAACATGCCTGG ATGGTGAC CAT CT GAGCCA G GC
TTCAGGGATGGACAGTCACC TGCCACTG GTA GG CTTGGT C CG
GT ACAG G A - - ------
GAM41879 11860 ATGGTGACAACATGCTGGAG AA-- G G- T TAACAT
CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GAGCCAAG GC
GTTCAAGGGATGGCAAGTCA TGCCACTG GTA GG CTTGGTTC CG
CCGT AACG G AA - ------
GAM41880 11445 ATGGTGACAACATGCTGGAG AA-- G G T TAACAT
CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GAGCCAAG GC
GTTCAGGGATGGAAAGTCAC TGCCACTG GTA GG CTTGGTTC CG
CGT AAAG G A - ------
GAM41881 13526 ATGGTGACAACATGCTGGAG AA- - G GGA GTAACATG
CCAAGTGTAACATGGCTTGG ATGGTGAC CA T CT GCCAAGT
TCAAGGGATTGGAAGTCACC TGCCACTG GT A GG TGGTTCG
GT AAG T G AAC --------
GAM41947 1647 ATGTAAAATGTGAATGGAAA TGA AA- - TC-- ATAAACTAC
CTTGGAAATACTCGTTTTTA ATGTAAAATG ATGGA CTTGG AAATAC GTTTTT
TAAACTACAAAAACTTTTGT TATGTTTTAT TACCT GGACT TTTGTG CAAAAA

GTTTATCAGGAAATCCATAT TTA AAA A TTTT ---------
TTATTTTGTAT
GAM41960 15520 ATGTAACATTTTCCTGGGCC A - - - CTT -- CTTT A GA CCCATA
TTGACTACAGGGGGCTTTGT ATGT ACA TTTTCCTG G GC GACTA CAGGGGG GTGACAT ACT
ATG
GACATAACTGAATGCCCATA TACA TGT AAAGGGAC C CG CTGGT GTCCTCT CATTGTA TGG
TAC

ACCATGGTAATGTTACTCTT G T A T TCT CC TCT- A -- ------
CTCCTGCCTGGTCTCTGCTC AC
ACAGGGAAATTGTGACAT

--
GAM41972 19456 ATGTAAGTCATTGTGTCTAT CTA - GCCA TTAA
GATGCCACTTTTAAAAGGAA ATGTAAGTCATTGTGT TG AT CTT
AATGCAATTGCGTAATGGCT TATATTCGGTAATGCG AC TA GAA
TATAT TTA G AAAG ----
GAM42007 14236 ATGTACGTCGTAGTAACTTC CGTA- A CAG CTCCA ATCATTCAG
AGGTCTCCAGTTGTGTTATC ATGTACGT GT ACTT GT GTTGTGTT
ATTCAGAACATAATCATCAC TACATGCA CA TGGA CA TAATACAA
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TCTGCAAGATAAGAGAGGTG ATGTAGC TCTTG TATCTG GATA GAGAG
CTGTTAAAATGTTCTCATAT TACGTCG GGAAC GTGGAC TTAT CTCTT
TCTACAGGTGAAAAACAAGG - AAAAA ATC A ----------
GCTGCAT
GAM42063 10139 ATGTATAGTGGCACAATTTG - - ACAATT G TCATTCT AGGAAGA
TCTTCATTCTGATGGAGGGG ATGTA TAGT GGC T TCT GATGGAGGGGGAGA
GAGAAGGAAGATTTTCCCCT TACGT GTCA CCG A AGA CTACCTCCCCTTTT
CCATCTGTTTCTAGAGAGCC C T ------ G TCTTTGT -------
TACTGCTGCAT
GAM42083 13341 ATGTATGTCTTTTGGGATGT C T TATGCCTA TTATAATC
ATTATATGCCTAGCTTTATA ATGTATGT TTTTGGGATG ATTA GCT
ATCAGTATAAATTTTAATTA TACGTATA AGGACCTTAT TAAT TGA
TTCCAGGAATATGCAT - - TTTAAATA --------
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TATATCTAACACCAGGACTA ATGTAT CCAAAAT TA ACCA
GAATGGTAGTAATTTTGGGC TACGTA GGTTTTA AT TGGT
ATAATGCAT ATACG --------- GA ---------
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GTTGACAAAAAATGTATCTT ATGT ATTTAA GGTTGAC TGTAT
TAATACAGTCAGCTTTAAAT TACG TAAATT TCGACTG ACATA
TACGCAT CAT --------- ------ -----
GAM42143 385 ATGTCATTTTTAGAGGGAAA CA A GTATCTG GGAAGACAAA
TAGTGTATCTGCTATGGGGA ATGT TTTTTAGAGGGAAAT GT CTATGG
AGACAAATCATGGAAAGCCA TACA AAAAATTTCTCTTTA CG GGTACT
TTTCTCTTTAAAAAAAACAT AA C AAA---- ----------
GAM42158 17657 ATGTCCTCGGTTGCAAATGT G CAAA T TAGATG- G AATCCAAGTAC
GCCTAGATGGTCGTACCGGT ATGTCCTCG TTG TG GCC GTC TACCGGT

AATCCAAGTACACTGGTGGG TACAGGAGT AGC AC CGG CGG GTGGTCA
GCAGGAGCCGGCCAAGACGA A AGA- - CCGAGGA G ----------
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GAM42213 415 ATGTGAACCTTTGTATTTTT CTT TG ---- TAATTTT
GCTCCTAATTTTGGACTCAG ATGTGAAC TGTATTTT C TCC
TGAAAGTGTACTGTTTACAT TACATTTG ATGTGAAA G AGG
TC- GT ACTC -------
GAM42248 4639 ATGTGAGTTGGGGAAGTGTA GG - GTA- TACA TTGAA
AAAGTTTACACTTTTGTTTG ATGTGAGTTGG AA GT AAAGTT CTTTTGT
AAGCAAAAGGACTTTCAGAG TACACTTAACC TT CG TTTCAG GAAAACG
CATTTTCCAATTCACAT TT A AGAC ---- -----
GAM42257 16252 ATGTGATTTTCCCATTATGA G --- - TAT---- TTTCACTCT
AGTTTTCACTCTACTTCTTG ATGT ATTT TCC CAT GAAGT
GCTTATGAGGATAAAAATGA TACA TAAA AGG GTA CTTCA
CAT G AAT A TTCGGTT ---------
GAM42270 13747 ATGTGCCCACATGTAGCCTG -------- T CC--- TCCAAAGAC AATCAA
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CAACTTGCAAATCTGCCATT TATACGG GTGT CGTC ACCGTC GTTC
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TAATGAGAGTTTTATTTTTT TATATGGA TTGT CGACT TCGGT TTT TT TTTT
TTTTTCTGGCTCACTCCAAA A C- AAACCTCAC C-- T T ------
TCAGCCTGTTAAGGTATAT
GAM42286 11583 ATGTGCTTCTATGAGATTTA - TG -- C AACACAAATA
CTCCAACACAAATAGGACTG ATGT GCTTCTA A GATTTA TCC
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T A GT AT C ----------
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TGTCTGGTCTCTTGTCTACA TACATCT TTC CT GTC TCC
T G T G TGTA ----------
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AGAATTATTACTGGTGGAAA ATGTGGCT AAGA AG TTATT C
TAAAACTGACATCTTAAGGC TACATCGG TTCT TC AATAA G
TACAT AA--- ACAG AA A -----
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ATATCCTGTTTGCAAATCCC TACA CCCT ACG CCT GTAGT
AACAT A- AA TTTGT ATAG ------
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GGCCTAGCTATCTCCCTGTC ATGTGG CC GGC TG CCTAGCTAT
TGTGGTTGGGGCAGCCTGGG TATATC GG CCG AC GGGTTGGTG
GCATCTATAT TACG- GT - G ----------
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CTCCAGCCCGAGCCCAGCCC ATGTGT CCTTG CCCT CCA CCC AGCC GCCC
AGTGGGGTGGCTGGGTGGCA TGCACA GGGAT GGGA GGT GGG TCGG TGGG
GGGTAGGGAACACGT A ------ C - - -- ----
GAM42335 22632 ATGTGTATCACCTTTATGTT -- AC - GAAAATT TAAT

GAAAATTGTTATAATTGACT ATGTGTA TC CT TTATGTT GTTA
GAAAAGCATAATAGAAGACT TATACAT AG GA AATACGA CAGT
TACATAT TC AA T AAAGT-- ----
GAM42358 22353 ATGTGTGTGTAGAAAACACA AA AT- G T-- TT T AGTAA
CATGTGCGTCTTTATATATT ATGTGTGTGTAGA ACACAC GTGC TCT TATATAT TTG GTGTGT

TTTGTGTGTGTAGTAAACAC TATACACACATCT TGTGTG CGCG AGG GTATATA AAC CACACA

ACCAATATATATGCGCGGAG CG GGC - CGC T- - -----
CGCCGGGTGTGTGCTCTACA
CACATAT
GAM42362 11664 ATGTGTGTTCTTTAGATGTT TCTTT TTAC--- TTAA
ACAAACATTAATGTTTCTTC ATGTGTGT AGATG AAACA
TATCATTTTTGTTACATATA TATATACA TTTAC TTTGT
T TTGTT TATCTTC ----
GAM42375 7575 ATGTGTTTGTTCTTTAATAA TT T ATAA ACC - AGAAT
AGACCAGTTTCAGAATGCAA ATGTGT GTTCT TA AG AGTTT C
ACTCCTACTACAGAATACAC TACACA TAAGA AT TC TCAAA G
AT -- C CA-- C-- C -----
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ATCGGATAACTTGATTTCGA ATGT GCC CTGG ATCGGA
TTTTCGCCAGGGCCAACACA TACA CGG GACC TAGCTT
T CAAC -- GCTTT ---------
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CTTAATTAGTAAAGGAGCGA AT TTGGT CTGTTCA GGTTC
ACTGTGAATAGAACCAAGGT TG AACCA GATAAGT TCAAG
G A G ----------
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ATGATGGAGTCATAAGATTG ATGT GT CCA GGT AAGA GGAGTCATAAG TGG TG GGCA TG CCA
ACA
GGTGGGCAATGACCACACAT TACA CA GGT CCG TTTT TCTCAGTGTTC ACC AC CTGT AC GGT
TGT

GAGCCCTGTATGGAGCAGTG - T A AC- TT-- -- G T G GA A ---
TCTCAGCCACTTGTGACTCT GCCC
TTTTTTCAGCCATGGTACAC
AT

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GAGCATTTTTGTTTATAT TT T- A --------- G GT --------
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TAATAGCCAAAAGTCAGAAT TACAAAT GACTGAA AACCGA TAC
TTAAACAT TTAA ---- TAATT -----
GAM42550 625 ATGTTTTATTTCACTGGAAA A CT AA-------- GTAA
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T - TC GGTCTAAATC ----

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AT A TC GGTCTAAATC ----
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GAAA A ----------
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GACAGTGGCGTCGGGGTGAT TAGT GGCTG GG GACA CCG
GG C T---- GAGAA ---
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AGTTATAGGGATAGATTTAT TGGT GACGGT TTA TAGGG TATT
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TGAACGACTGTGACTATTCA ATTAA TTAT CCATGCTGA ACTGT ACT TC
GTAACGAAGTAATAGTAATT TAATT AATA GGTATGATT TGATA TGA AG
AATTAGTATGGTATAATCTT TCT-- T AATTAA A -- ------
TAAT
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TATATATAAATCAAAAACGA ATTAAT TAGT ATATATAA TC
TTATATGTTATTATAAAAGC TGATTA ATCG TGTATATT AG
TAATTAGT -- AAAATATTAT - ------
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TGCCAGCTGAGTTCACTTTT ATTACAG GT TA GGCCGCT CAG C GA GTT
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CATGAGACACTGTAGT A GA A A--- T T A --------
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TTCTCCAATTCCTTCATGTC ATTA TGGATCC CAGTTCT CCAA TTCCTTC TGT GTCCT CC TC

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GTCCACTGAT GG GG
GC ----
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TGAT TA-- - G -------
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ATCCCCTTTCTTCAAATCAG TAATG GTGT TCTCT AGAT CTTTA TTTC GAGACTA

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T
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AGACTTTTCCAAAACATGTC TAGTCTG ACCTT TCAGA AAACT
TGAT TACAAA T ATT -----
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GCAGCAAGATACCTGTGCAT TAATTGT CT AAC TACG TCCAT GAAC
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CTGAGT CTAA G GT TT- -------
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CCCCAGAGATGGTTTTGGTG ATTC GTCC CACCAAG CCCA GA
GGTCTTGGTGGGGCCCAGGA TAAG CGGG GTGGTTC GGGT TT
AT GACC -- T GG -----
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TGGAT A - AC GG T ----
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TTATTGAAAAGAATTTTTCA TAAGTA AAC CTTT AACTTTTTAAGA AG
AAAATGTTTCTGTACAAATG ---- ATGT GTAAA AA- -----
AAT
GAM43011 11349 ATTCATTTTAGGTTACTTTA A TACT AC TAA C ACTG
ACATTTTAATTTCCTGTAAC ATTC TTTTAGGT TTA ATTT TTTC TGTA
TGTACATGAGAGAATATAAT TAAG AGAATCCA AAT TAAG AGAG ACAT
CACCTAAGAGAAT - CT-- A- --- T ----
GAM43040 10647 ATTCCATCTCTTCCGTAGCC CAT CC-- TA - CC TCCAGAACCTCCC
TCCCATTCCAGAACCTCCCA ATTC CTCTT G GC CT CAT
TGCCAGAGCCGCCTCCAGGA TAAG GAGGA C CG GA GTA
GTAGAAT AT- CCTC GC A CC ----------

GAM43041 14216 ATTCCATGCTGCTCACATAG CT TCACATA AAA C - C CCCAAG ACCTA
CCACAAAGACGTTCACCTCC ATTCCATG GC GCCAC GA GTT CA CT AGCC
CAAGAGCCACCTAGGCTATA TAAGGTAC CG CGGTG CT CAA GT GA TCGG
AGTTGCAACTCCTGGTGGCA CT TA----- GTC - C T ATA--- -----
TGCTCCATGGAAT
GAM43111 2634 ATTCTAAGAGTAAACCCACC TCTAAG AAACCCACCCAA -- --- - AA T TTAA--
CAATATGGCAAACAATCAAA AT AGT TATG GCAA ACAA TCAA TTTT AAAAT CT
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TTGTTTCATACACAAATAAT TAG
TGACTGACTAT GTC

GAM43126 7351 ATTCTATAATGAAGATGTTT TATA- ----- A AC GG GCATGTA
CATGAACTGGGGCATGTATT ATTC ATGAAGAT GTTTC TGA T G
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AAAT A CT GGAA T ----------
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GAAT ATCGA GG A ----------
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CTAGT C TAC T A - -----
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GAT
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CTGAAGCCTGGTTCCTGGGG ATTGATG AG ATCAGGGGT GAA GCCTGG TC GGG
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TCTTGCCTCTGGTGACTGGC GG AG TT- GG T T- -----
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CTGCAGAGATGGTTCCATGA --- C T AG CCCTTT- A ------
CAAT
GAM43345 2051 ATTGATTTCATGTAATCTTT ATT T TTTGATGTACTT C------- TTTTGT
GATGTACTTCTTGTAGGCTT ATTG TCATG AATC CTTGTAGG TTC

CTTTTGTGAAACTTGTTTCC TAAC AGTAC TTGG GGACGTCC AAG
TGCAGGTGATGGTTCATGAC --- - TAGT-------- TTTGTTCA ------
AAT
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ACTTTTTAAATTGCATTCTT TA TTAAAC TTTTC CGT TAAAT CACT
TTCAAATTTAT T - TTA - TTTT-- ----
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TGATGCCCTCAGAACTCAAG CAAG-- C A C T - GTC C A ACTCA AC
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GCTTAAAGCTGAGGCACGAA
CGCAAT

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AGTACGGTGCAGTTGACCCA TGACGTTC CT TCGG GTCAC GGC TGAAT
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T GT AA G C GT --------
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CGCCTTTTTGTATATGTCTT ATTGT TAT TATATA TCG TTTTGT TATG TAGTCT
AGTCTCTTCAGGCTGCTATA TAACA ATA ATGTGT AGC AAAACA ATAT GTCGGA
ACAAAATTCCTTCGACTGTG A TTTA C TTCCTT - C-- ----
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GAM43551 1872 ATTGTCAAGTGTGTTGATTT T- ------ T A AAA
CTAAGATAAAATATTTGAGA ATTG CAAGT GTGTTGATT CT AGATA
ATTAATATTACCCAACTTGT TAAC GTTCA TATAATTAA GA TTTAT
CCAAT CT ACCCAT - G ---

GAM43577 11829 ATTGTGAATGCTCTGAAGAG - T ------ A GTGGACAAA
TCAAGTGGACAAATTGACCT ATTGT GAA GCTCTG AAG GTCAA
TAACATCTAGAGCTTTCTAT TAATA CTT CGAGAT TTC CAGTT
AAT T T CTACAA - ---------
GAM43594 15290 ATTGTGGACTGGCTGGCTCT ACT G- TCT AC C AAAAG
GTTATAACTCTGTCCAAAAA ATTGTGG GGCT GC GTTATA TCTGT CA
GTGTATGGAATATAACTTGT TAACACC TCGA TG CAATAT AGGTA GT
AAAGCTTCCCACAAT CT- AA TT- A- T -----
GAM43625 2423 ATTGTTGAGCTGAGTTTGGT T GAGTTT AT GAG GTAA
CTGTATTGAGGAGCGAGATA ATTG TGAGCT GGTCTGT TGAGGAGC ATA
GTAATATAAGCTTTTTAGCA TAAC ATTTGA TTAGACG ATTTTTCG TAT
GATTCTAGTGAGTTTATCAA T GTGATC -- AA- ----
T
GAM43637 7173 ATTGTTTGAATGTTTTATTC AA TA--- GCTTAAAACTTTACCCA
AGCTTAAAACTTTACCCATG ATTGTTTG TGTTT TTCA
AAGTCATAAACAGTAAACAA TAACAAAT ACAAA AAGT
T G- TACTG ----------
GAM43665 15331 ATTTAACTGGGATTCACTGT AA - T------ C CA TAAA- AA A GA TTGCA
CAGCACAACATAAATGAATG ATTT CTGGG ATTCAC GT AGCA ACA TG TGCG AGTT GCC
CGAAGTTGAGCCTTGCAAAA TAAG GACCC TGAGTG CA TCGT TGT AC ATGT TCAA TGG

ATGGTGGAACTATGTACAGA CG G TCCTTAT A -- TCTAG -- A GG -----
TCTTGTTGCTAACTATTCCT AAAAT
GTGAGTGCCCAGGCGAAT

GAM43666 5264 ATTTAAGAAAACTGATTCAG A --- - TTG---- GGAAAA
TTGTGTTGGAAAAAATAAAG ATTT AGAAAAC TGAT TCAG TGTT
AAATCTGATATTAAACGTTT TAGA TCTTTTG ATTA AGTC ATAA
TCTAAGAT A CAA T TAAAGAA ------
GAM43682 5223 ATTTAATCTTTAACAAGCTT A AA- ATG-- T- TTTT
ATGAAGTTAGTATTTTTATT ATTTAATCTTT AC GCTT AAGT AGTA
TTATTTAGACGAGGCATAGT TAGATTAGGAA TG CGGA TTTA TTAT
CAAGGATTAGAT C ATA GCAGA TT ----
GAM43687 7554 ATTTAATTTTTCTTTTTGGA AT C T A A TACA
AAATGTATGTATACATACAC ATTTA TTTT TTT TGGAAA TGT TGTA
ACAGTTTCCATAAAAAAACA TAGAT AAAA AAA ACCTTT ACA ACAT
TAGAT AC - T G C ----
GAM43697 13355 ATTTACCATGAGATTGCACA A--- A GCAC- TAGAT A ACAATG
TATAGATGTAATTATAAAAC ATTTACC TG GATT ATA GTAATTAT AA
AATGTTCATAGTTACTTAAT TGAATGG AC CTAA TAT CATTGATA TT
TATCTAAAAATCACACGAGG GAGC A AAATC TAATT C ------
GTAAGT
GAM43717 11823 ATTTAGATTTCTATTGACAT GAT G C TT- CTAATTTTA
CCTTTTGTTTTCTAATTTTA ATTTA TTCTATT ACATC TT GTTTT
AAAATTATAAAGATGTAAAT TAAAT AAGGTAA TGTAG AA TAAAA
GGAATTATAAAT ATT A A TAT ---------
GAM43773 17247 ATTTATGATTTAATTAAAAC - TA ACT GCTTCAAT
TATTTATGCTTCAATGTAAA ATTTA TGATT ATTAAA ATTTAT
TCTCTTTAATGATTATTAAA TAAAT ATTAG TAATTT TAAATG

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        T                T    --    CTC    --------
GAM43791 13759  ATTTATTGGCGAAAGGAAAT          AAAGGAA       --        CT  TG  GGAG
        GTGTAGTGTGGGCTGGACTG ATTTATTGGCG      ATGTGTAGT  GTGGGCTGGA  GT  GT
        TTGGTGGAGGCTGGCTTTTT TAGGTAACCGT      TACATATCG  CACCCGATTT  CG  CG
        AGCCCACTTGCTATACATGC          CG-----       TT        TT  GT  ----
        TGCCAATGGAT
GAM43799 6853   ATTTATTTTTTGTTATCAAA         TG   TCA--------   G    T   GA    TTGAGTACTAAAGAATT
        GAGAATGTCCAGAAACATTG ATTTATTTTT  TTA         AAGA AATG CCA  AACA
        AGTACTAAAGAATTTGTTCA TAAGTGAGAG  AAT         TTTT TTAC GGT  TTGT
        TGGCATTGTTTTACAAAATT         GT   CTTTTAAAACA   G   -   AC   ----------------
        TTCTAATGGAGAGTGAAT
GAM43805 9907   ATTTCAAATATAGATGAGTT       TAT   T    ATCC--   T     ACT
        ATCCAACTTTTTTTTGACTCA ATTTCAAA   AGA GAGTT     AACT TTTTTG
        AAGATAGTTTGCTTAGATTT TAGAGTTT   TTT TTTAG     TTGA AGAAAC
        TTTTTTTTTGAGAT           TT-  T    ATTCGT    T     ---
GAM43819 12012  ATTTCACTGAGATCCAGAAA    -     GA-----  A     AGCAATATAGG
        GTAGCAATATAGGACTTTTA ATTT CACTGA      TCC GAAAGT
        GGGGTATGTATTAGTGTAAA TAAA GTGATT      GGG TTTTCA
        T                T     ATGTATG   A     -----------
GAM43825 11104  ATTTCAGCTGATTGGACTAC     AG       CT  AAATTCACAA    AA-     CA-  GG A     A   G
        AAATTCACAAGGGAAAAAAG ATTTC  CTGATTGGA  AC        GGGA   AAAGT   AG  C TTTGGT TTT
GAG
        TCAAGGGCATTTGGTATTTG TAAAG  GACTGACTT  TG        CTCT   TTTCA   TC  G AAACCA GGA
CTC
        GAGACAGGAAAACTCAAGGA     --        -- GGAAAAAA--    GAA     TGG  AT A     A   A
        ACCAAAAGTACTGGTACTTT ACAGGAAAA
        AAGTCTCAAAAAAGGGTTTC
        AGTCAGGAAAT
                  ---------
GAM43849 21713  ATTTCCCAATTTTTAAAGCC       AA     AAA  ----    A     CAAGGAT
        AAGATACTTGACAAGGATTT ATTTCCC  TTTTT   GCC    AAGAT CTTGA
        AAGATCTTAAGGGGTCCGAG TAAGGGG  GGGAG   TGG    TTCTA GAATT
        GGGAGGGGAAT              AG    CC-   GGAA    -    -------
GAM43866 6755   ATTTCCTGTGTACAGAGAAT     CT      - GAA--   CA   ATATTC
        CACATGTATATTCACAATGA ATTTC  GTGTACA GA     TCA  TGT
        AGCAATCGTGTGCACCAGAA TAAAG  CACGTGT CT     AGT  ACA
        AT                  AC      G  AACGA   A-   ------
GAM43886 2490   ATTTCTAATAGCTGGTCTGT     TAA      TCTGT-   CCTTCTTCTAT
        GTGCCCTTCTTCTATGCATC ATTTC   TAGCTGG     GTGC
        TTTGCCCAGCTAACTGAAAT TAAAG   ATCGACC     TACG
                        TCA      CGTTTC   -----------
GAM43965 17919  ATTTGAACCAACAGTTCTTA     -   AA       A     TCTTCCAACC
        GACCGGTCTTCCAACCCTGG ATTTG AACC  CAGTTCTT GACCGG
        TTAAGAATTGGGTTGCAAGT TGAAC TTGG  GTTAAGAA TTGGTC
                        G    --       -     ----------
GAM43980 6792   ATTTGAATTTATTTTTTCT          TTTTTTTCTAATAT       AGATTTCAA
        AATATGTGAAACACAGATTT ATTTGAATTTA           GTGAAACAC
        CAAGTGTTTTATCTTTTTTT TAAATTTAAAT           TATTTTGTG
        TTTAAATTTAAAT              TTTTTTTTTC----       ---------
GAM43982 15446  ATTTGACACACTTGGAGGCA       A  CT       TG    -   A   A    --    TATGTACC
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TGGTCTAGTAATAATAATGT ATTTGAC CA TGGAGGCA GTCT AGT ATA TAAT GTAA
AATATGTACCTTGCTGGTTA TGGATTG GT ATTTCCGT TAGA TCA TAT ATTG CGTT
ATATAACTAAGATTTTGCCT G T- TT A A A GT --------
TTATTGGGTTAGGT
GAM43983 17271 ATTTGACACCCTTTATGATG CAC GA ACA TAACTT
TCACACCTTTAACTTAAGGA ATTTGA CCTTTAT TGTC CCTT
GACGGGTAAAGGATCTTAAA TAAATT GGAAATG GCAG GGAA
T CTA G- A-- ------
GAM43987 1801 ATTTGAGAAGGAGGCTGCTG TG AGG - GA AAAGGG
AGATGGGAAAGGGCTCATTC ATT AGA AGGC TGCT GATGGG
AAGTATGCCTGGGTCTTGGA TAG TCT TCCG ATGA TTACTC
T GT GGG T AC ------
GAM43988 5039 ATTTGAGAAGGAGGCTGCTG TG AGG - GA T AGGG
AGATGGGAGAGGGCTCCTTC ATT AGA AGGC TGCT GA GGGAG
AAGTATGCCTGGGTCTTGGA TAG TCT TCCG ATGA CT TCCTC
T GT GGG T A- - ----
GAM44000 15144 ATTTGATAATAGAGAAGGGA TAATA AT- AGTT
GTTTTATGGAAGTTTCTTTG ATTTGA GAGAAGGGAGTTTT GGA
AAGATTTCTTTTTTCCATTT TAAGCT TTTTTTCTTTAGAA TCT
CGAAT TTACC GTT ----
GAM44019 17769 ATTTGCATTTGTCTATATCT -- TG TAT-- -- - TATTTTTGCTT
AATAAATGTTTATTTTTGCT ATTT GCATT TCTA CTA ATAAA TGTT
TGACACTTTATACTAGTTAC TAAA CGTGA GGAT GAT TATTT ACAG
TTAGGTGAGTGCTTAAAT TT GT TCATT CA C ----------
GAM44022 10250 ATTTGCCAAGTATGTATCTG CAAGT TATCT CC - TC AGAA
ATCCACACAAATCCCTAGAA ATTTGC ATG GAT ACACA AA CCT
AGGTTTTCTGTGTAGTCTTC TAAACG TAC CTG TGTGT TT GGA
ATTAACGCAAAT CAAT- TT--- A- C TT ----
GAM44036 12117 ATTTGCTAGAATCAAGAATG C AATCAA TGA - TGTTCAGT
ATGGATCCATGTTCAGTTGG ATTTG TAG GAA TGGA TCCA
AGTCCAGCTTCGTACTACAA TAAAC ATC CTT ACCT AGGT
AT - ATG--- CG- G --------
GAM44062 16280 ATTTGGATCATCTGTTGAGA GAT ----- -- AAAG TGTGG
CGGGTGCGTGAAAAGTACTT ATTTG CATCTGT TGA GACGGGTGCGTGA TACT
GTGGGGTGGAGGTCACGCGC TAGGC GTAGATA GCT CTGTTCGCGCACT GTGG
TTGTCGCTCGTAATTATAGA AT- TTAAT CG GGAG -----
TGTACGGAT
GAM44083 10395 ATTTGGTATTCAGTTGGATT T C T - ATATT ATTA
TGGATATATTAGGATTACCT ATTTGG ATT AGT GGATTTG GAT AGG
CTCAGTCACAGATTCACTAG TAGACT TGA TCA CTTAGAC CTG TCC
TTCAGAT - - - A ACTC- ----
GAM44125 7685 ATTTGTGCTACCAATGATAC ACC ----- - TAT C TAA AAGTA
AGAGTTTATAGCAAATTTTC ATTTGTGCT AATGATA CA GAGTT AG AAATTTTC GGG
TAAGGGAAGTATCTGTGGAA TGAACATGA TTATTGT GT CTTAG TC TTTAAAGG TCT
ATTTTCTCATGATTCATGAA AGA AAAAA A TAC T TG- -----
AAATGTTATTAGAAGTACAA
GT
GAM44140 16218 ATTTGTTGCCCAGGCTGGGG TT C---- GC ACTCAC
TGCACGACTCACTGTAGCCT ATTTG GCCCAGG TGGGGT ACG
CAAACTCCCTGGGCTCAAGT TGAAC CGGGTCC ACTCCG TGT

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                          T-      CTCAA     A-  ------
GAM44144 1428   ATTTGTTTACATGGGAAAGA      -    G   AA       TACT    AAATA
          ATTATATACTCTAAAAATAT ATTTGTT TACAT GGA  GAATTATA    CTAA
          TGGCTATAGTTCCTCTGATG TAAATAA ATGTA TCT  CTTGATAT    GGTT
          TATAATAAAT              T    G   C-       C---    -----
GAM44151 17672  ATTTGTTTTTATTGGTGTAG          G    A  CG   C   T    TGCCAT
          TCGCTGCAGTTTTACCTGCC ATTTGTTTTTATT GTGT GT  CTG AGT TTACC
          ATGGTGGTGCTCAGGTATAA TGAACAAAGGTAG TACA TA  GAC TCG GGTGG
          CATAGATGGAAACAAGT             A    A  TG   -   T    ------
GAM44172 15401  ATTTTAATGATGTTTCACAA       T      CACA    -     -  CTTATTTCTAT
          GAGCTGTTTGGCCTTATTTC ATTTTAA GATGTTT    AGAG CTGTTT GGC
          TATGCTGAAGCAGATTCTGA TAAAATT CTGCAAG    TCTT GACGAA TCG
          ACGTCTTAAAAT             -      ----   A     G   -----------
GAM44184 6813   ATTTTACTTTCTTCATAGTT      C  TCT   TAG-  C  -  -  TT      TA-    TAATA
          CGACACCTTAAATGTATATT ATTTTA TT   TCA    TT GA CA CC  AAATGTA   TTAC
          ACTAATAGTAGCTTTGCATT TAAAGT AA   AGT    AA TT GT GG  TTTACGT   GATG
          TTTGGCTGATTTAAAAATTG      A  TAT   TAAA  T  A  C  TT      TTC    -----
          ATATAAATGAAAT
GAM44307 14099  ATTTTGCACATTCTAGTCAT      CAC     AG-   GG  GGG   -      TGTTG  AAGCTG
          GGTTGGGCTCTAAGGCAATG ATTTTG   ATTCT   TCAT  TT   CTC TAAGGCAA    TA
          TTGTAAAGCTGTAATTGTTT TAAAAT   TAAGG   AGTG  AG   GGG ATTCCGTT    AT
          GCCTTATGGGAAGAAGTGAA      ---    AAA    A-  AA-   T      TGTTA  ------
          AAGGAATTAAAAT
GAM44406 15418  ATTTTTCTAATATTGCTCAT       AATA  G  CA    G   GA---    ATACTTCAGAAA
          CTGTGTTTGAAACATATACT ATTTTTCT    TT CT  TCTGT TTT     AACAT
          TCAGAAAATGTTAAGGAAAA TAAAAAGA    AA GA  AGATA AAA     TTGTA
          AATAGAAAAGGAAAAGAAAA       A---  G  AA     A   AGGAA    ------------
          AT
GAM44421 1371   ATTTTTGGGTCTCCGGTCAC         CTCC---   CAC     CTTCACGCT
          TGCCACTTCACGCTTGGCAC ATTTTTGGGT      GGT   TGCCA
          ACCCAAACAAACCCAAGGAT TAGGAACCCA      CCA   ACGGT
                             AACAAAC   C--    ---------
GAM44423 10657  ATTTTTGGTCATTACTTGAA    TTT         GAAA--   AA    TT---  AAAT
          AATTAATAAGTTTGAAATCA ATT   GGTCATTACTT     ATT  TAAG     TG
          CTACTCTTAGAAATGGAAGA TAA   TCAGTAGTGAA     TAA  ATTC     AC
          AAGTGATGACTCTAAT       TC-         AGAAGG   AG    TCATC  ----
GAM44431 15289  ATTTTTTAACACCTACAGAA       ACA-  TA   A   GTTT  TT       ACTGGATG
          CTGTTTATTTGTTTGGATAC ATTTTTTA    CC  CAG ACT    AT  GTTTGGAT
          TGGATGATTCAAGCTCATTA TAAAAAGT    GG  GTC TGA    TA  CGAACTTA
          AGTCCTGGGGGAAAATGAAA       AAAA  GG   C   AT--  CT       --------
          AAT
GAM44434 15084  ATTTTTTAATGGGTCTCAAA           TCT   AATTCTG    AAATTTTTG
          ATTCTGTGACAAATTTTTGG ATTTTTTAATGGG   CAA      TGAC
          TCAAGTTGTTTCCATTAAAA TGAAAAATTACCT   GTT      ACTG
          AGT                      TT-   GA-----    ---------
GAM44471 15748  ATTTTTTTTGGATAGTTTAA        GGAT        A  -    TCACAGATT
          AACATTTTGATCACAGATTT ATTTTTTTT    AGTTTAAAAC TT TTGA
          CAACAGAGTTTTAGGCTGAA TAAAAAAAG    TCGGATTTTG GA AACT
          AAAAAT                  ----         A  C    ---------
GAM44482 9961   CAAAAAAACTGGTTGGCGGC    AAAAA     G  GG  G     AAAAACTTTTCAAACCA
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          CGGCAAGAAAAACTTTTCAA CAA    CTGGTT GC  CC GCAAG
          ACCACTTGTGGGGGCGGGCC GTT    GACCGG CG  GG TGTTC
          AGGGGATTG           AGGG-    G  G-  G   ----------
GAM44486 14811  CAAAAAAGACCTGCGCTGCG     A   TG  C   AA--     A  AG TACCG
          AACCCTCCACCAGCTACCGG CAAAAA GACC  CG TGCG   CCCTCC CC  C
          AGGGAGGAGGGAGGATGCGC GTTTTT TTGG  GT GCGT   GGGAGG GG  G
          TGTGGGTTGTTTTTG         G   GT  C   AGGA    A  GA -----
GAM44523 1925   CAAAACAAAACAAAAAACTC   A   A   AA    C-  TTCCT  ---   CAATATAAAA
          CCCTTCCTCACTGCCCAATA CAA ACAA ACA  AAACTC  CC    CAC   TGCC
          TAAAAGGCAAATGTGTACAT GTT TGTT TGT  TTTGAG  GG    GTG   ACGG
          GGCAGAGTTTGTGTGTTGTC   C   G   G-    AC  TACAT   TAA   ----------
          TTG
GAM44544 7216   CAAAACTGTAAAATTCATTG        AAAA   ATTGCT     TTCACTTTATCT
          CTTGTGGAATTCACTTTATC CAAAACTGT    TTC     TGTGGAA
          TTTCTACATTCTCAGAGGCA GTTTTGACG    GAG     ACATCTT
          GTTTTG                ----  ACTCTT     ------------
GAM44570 19419  CAAAAGCCTTAGAATAAGAA    A  CC    -   -   -    TT  TTTA
          AAGCTTTTTTTAAATTGCTT CAA AG  TTAGA ATA AGA AAAGC  TT
          TATCTGTATATCTGAACTCT GTT TC  AGTCT TAT TCT TTTCG  AA
          TG               C  A-    A   G   A    TT  ----
GAM44587 21916  CAAAATAACCATTTGAGCGC     TA   ATTT   C   -   C   ACTA
          TTGGCACAAAACTATTTTTG CAAAA  ACC    GAG GCTT GGCA AAA
          CCAAAGCCTTTACGGTCCTT GTTTT  TGG    TTC CGAA CCGT TTT
          TTG               CC   CAT-  -   A   T   ----
GAM44614 7150   CAAAATGTAGGGTTATAATA    AT         TA------    AACATG
          ATGTTAACATGGACATGATC CAAA  GTAGGGTTATAA       ATGTT
          TTCTTTATAATTCTACTTTG GTTT  CATCTTAATATT       TACAG
                        --          TCTTCTAG    ------
GAM44615 16163  CAAAATGTATTTATAAACCA      -     -------  C  A  C    TTTTC
          ATGCACCATTTTCTGGTCCA CAAAATG TATTTAT      AAA CA TG ACCA
          ATGATTTCCTGAAAATAAAT GTTTTAT ATAAATA      TTT GT AC TGGT
          ATTATTTTG              T      AAAGTCC   A  A  C   -----
GAM44643 6803   CAAACACTATTTATCCCCTG       A   TCC    A-   CAGCTTAA      -   CATTT
          AAAAAGCAGCTTAAAATATG CAAACACT TTTA   CCTGA  AAAG      AATATGGG TGCA
          GGTGCACATTTTGCAGCTTA GTTTGTGG AAGT   GGATT  TTTC      TTGTATTC ACGT
          TGTTCTTTGGTTAGGCTCTG       G   CTC    GG   --------      G   -----
          AAGGGTGTTTG
GAM44679 4905   CAAACTAATTCAACCATTTT   AA   -    ATTTTACA   CA   TTTTTTTT
          ACACAGCATTAATTTTTTTT CA  CTAAT TCAACC       CAG  TTAA
          TTAACTGGGTTGACATTGGG GT  GGTTA AGTTGG       GTC  AATT
          CTG              CG    C    --------  --   --------
GAM44682 2569   CAAACTCAACCTGGTACATG       AACCTGGTACA    -  --     GATCCA
          TGGGCAATATTTGATCCAAA CAAACTC         TGTGG GCA  ATATTT
          ATATTTTGCTCCATAGAGTT GTTTGAG         ATACC CGT  TATAAA
          TG                  -----------    T   TT     ------
GAM44753 365    CAAAGCGGGCCGCCCGAGCG   A      CGC    C      CC  GCC  AGCATCCA
          TCCACTCCAAGCCTGAGCAT CA AGCGGGC   CCGAG GTCCACT  AA   TG
          CCACACAATTCCAGTGGGCC GT TCGTCCG   GGCTC CGGGTGA  TT   AC
          CTCGGTGCCTGCTGTG      G      T--    C      CC  AAC  --------
GAM44787 10431  CAAAGGTAAATATCTGTATC     G      CTGTAT   TTAGG       T  ATAGACTTCA
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TATTAGGACATTTTTTACAT CAAAG TAAATAT CTA ACATTTTT AC
AGACTTCAGTGGAGATGTAT GTTTC ATTTGTA GAT TGTAGAGG TG
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CTTTG
GAM44799 5 CAAAGTATTTTTTCCGCTGG AA TCC- - T T TA---- GCCTT
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TTTTCATTAACTTGGTTAAC GA CAAT T T - TGTCAA -----
AGAAATGCAGTG
GAM44811 1378 CAAAGTGCAGCTGGCCATGC - A TG CCA GA--- A A- GGATAA
AGACCTACGAGATGGTGGAT CA AAGTGC GC G TGCA CCT CGAG TGGT
AAACCACATTCGAAGGCTTG GT TTCGCG CG C ACGT GGA GCTT ACCA
ATGCAGACCTGGCGCGCTTG G - GT CAG AGTTC A AC ------
TG
GAM44839 11645 CAAATAACTGAAAGCTGAAA AAATA GA GAAACC GA- ACTGTCC-- GC GTTT-
ATT
CCTCTGGAAGCCAACTGTCC C ACT AAGCT TCTG AGCCA CT ACAAAG ACA G
CTGCACAAAGGTTTACAATT G TGA TTCGA AGAC TCGGT GA TGTTTT TGT C
GAGAAATATCTCCTGTTCCT GTAA- AC AGAA-- AAG AATTTCTTT AC ATCCT C--
ATTTTGTCAAGTTTCTTTAA AATA
TGGCTGAACAGAAAGAAGCT AGA
TCAAGTAATGG TCT

GAM44871 2123 CAAATATGTATATATACATA TAT T AAA- CCTATA
TATAAAATATGTATATATTT CAAA GTATA ATACATATAT ATATGTATATATTTTA
TACCTATATAAAATATATAT GTTT TATAT TATGTATATA TATATATATATAAAAT
ATATACACATATATGTATCT CCT C CACA ------
ATATTCCTTTG
GAM44918 15995 CAAATGATTCCAATGTACAG TGA A- ACA TTATA A-- GAACAGA
TTTATACTGACAATGACTGA CAAA TTCC ATGT GT CTGACA TGACT
ACAGAAGTCACAATGTTAGC GTTT AAGG TACA CA GATTGT ACTGA
ACACACACATGAGGAACTTT C-- AG --- CACAC AAC -------
G
GAM44924 15933 CAAATGCCAGTGGTTTAATT AA- C TTAATTC GA TCAA
CAGTGGAGTTCAAACCTCAT CA TGC AGTGGT AGTG GT
TCCTATATCATTGCAGTGTG GT ACG TTACTA TTAC CA
GTG - TATCC-- TC ----
GAM44939 7139 CAAATGTAACCATGTTTTCA TGT TTT -- GG-- TAAA GTTC
TAGGATTTGTGGATTCTGTA CAAA AACCATGT CAT AGGATTTGT ATTCTG AGCA
AAAGCAGTTCTGCTCAGGAT GTTT TTGGTGCA GTG TTTTGAACG TAGGAC TCGT
AAATGCAAGTTTTCAGTGTT TT- TTT AC TAAA ---- ----
TACGTGGTTTTTTTG
GAM44974 14114 CAAATTGGAAGTAAAATAAG TT--- - AAG - TAA-- --- T ACA
TTACAAGATAAGTTTACAGG CAAA GGAA GTAAAAT TTAC AAGA GTTTACA GGGATA
ATTGCTT
GATATATTGCTTACAATTTT GTTT CCTT CATTTTA AGTG TTCT TAAGTGT TTTTGT TGACGGA

TAAAAGGCAGTTTGTTTTTT TGTTT A A-- A TTGTA ATT T ---
ATGTGAATATGTTTCTTAGT ATTTTTAAA
GAAATTTTACATTCCTTTGT

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          TTTG
                    ---------
GAM44980 10077  CAAATTTGCATAGCTGTTTA  A       TGTTTA      TC--  CAAT
          ATGTTAAGTCATGACAATTT CAA TTTGCATAGC     ATGTTAAG   ATGA
          ATTTTTCTTGGCATGCTATG GTT AAATGTATCG     TACGGTTC   TATT
          TAAACTTG            C       ------      TTTT   ----
GAM45069 5292   CAACCAGCTTAGAAAAATAA    CA  ---    A  -  CAT   AGAC
          TCATGGTAGACACCTTAGTT CAAC  GCT   TAGAA AAT AAT   GGT
          CATTCTTCTAATAAGCCTGT GTTG  CGA   ATCTT TTA TTG   CCA
          TG                TC   ATA    C   C   ATT   ----
GAM45154 15725  CAACTCCGCCTCTGGCCTGG      CGC  CT   CTGG      A  TGTGCT
          CCTCTTCAACTGTGCTGTGG CAACTC   CT  GGC   CCTCTTC AC
          GAGAGGAGTTGCTGAAGACT GTTGAG   GA  TCG   GGAGAGG TG
          GAGTTG                TCA  AG   TTGA      G ------
GAM45156 490    CAACTCGGAGTGAACAATGA      GGA   ACAA   GA   -    CTGGAGAAA
          AGATTCAAAGAGCCTGGAGA CAACTC   GTGA    TGAA  TTCA AAGAGC
          AAGTTCTTGTGGAATTCAGT GTTGAG   CACT    ACTT  AGGT TTCTTG
          CACAAGGAGTTG            GAA   G---   A-   G     ---------
GAM45160 14163  CAACTCTATAGAAAGAAAGG     CTA-  A-          A  ACCCAGAAT   ATGTA
          AGATTATTACCCAGAATTCA CAACT    TAG  AAGAAAGGAGATT TT       TCAC
          CATGTAGTGATTATTAAGGA GTTGA    ATC  TTTTTTTTTTTAA AG       AGTG
          CAATTTTTTTTTTAACTAA     AAAA   AA          C  GAATTATT-   -----
          AAAAGTTG
GAM45194 5331   CAACTTAGTACAGGGATAGA      A  A  G  A   -    C  TG    AATCT-    -  CGTATT
          CAAGCGTTGGGCCAAATCTG CAACTT GT CA GG TAG ACAAG GT  GGCCA     GGCAG TG
          GCAGTGCGTATTCATTTGCC GTTGAG CG GT TC ATC TGTTT CG  TCGGT     CCGTT AC
          TATTTGTGGCTGCTTTTGTA      A  -  A  -  A    T  --    GTTTAT    T ------
          CTACTATGGCAGAGTTG
GAM45213 11923  CAACTTTTTTTCTTTGTTGT          C       TT  A-   AACAGAAG
          TTAAATATAAACAGAAGTGT CAACTTTTTTT TTTGTTGT  AA  TATA
          ACCTTTTATAATAAAAAAAA GTTGAAGAAAA AAATAATA  TT  ATGT
          GAAGTTG                    A       TT  CC   --------
GAM45226 22531  CAAGAAAGCTCAGCTGGTGG      AG --     -    T   G   ACGAC
          TGATTGCACACGACGTGGAT CAAGAA  C  TCAGCT GGTGG GATT CAC
          CCCATCGAGCTGGTTGTCTT GTTCTT  G  GGTCGA CTACC CTAG GTG
          CTTG                  CT TT     G    -   -  -----
GAM45232 13281  CAAGAACAACACACCTCTAT          CACC   A    -  TC  -   CTC
          TTGTGGTCGCCGCCTCGCGT CAAGAACAACA    TCT TTTGT GG  GC CGC
          GCCCCCTGCGAGAAGATGTT GTTTTTGTTGT    AGA GAGCG CC  CG GCG
          GTTTTTG                   ----  A    T  CC  T   ---
GAM45234 17532  CAAGAACACTCCTTGGGCGT   A     CCTT     CCTT-   GTTTTGTTTGTGA
          CCTTGCTGTTTTGTTTGTGA CA GAACACT    GGGCGT     GCT
          AGCTTTCTATGCCCAGTGTT GT CTTGTGA    CCCGTA     CGA
          CCTG              C      ----      TCTTT  ----------
GAM45253 68     CAAGAATCAAGCTGTGAAGG    GAA  A-   G-    -----    AGCC   G CGTGG
          AGCGAGCCCAGGGCGTGGTG CAA   TCA  GCT  TGAAG     GAGCG    CAG G
          CTGAAAGTGCTCACAAACTT GTT   AGT  CGA  ACTTC     CTCGT    GTC T
          CAAGAGCAGTGAGATTG      AG-  GA   GA    AAACA     GAAA   G -----
GAM45294 17602  CAAGAGAGGAAGAGATGGCA     -  G       CAGCTTT     TGAAAT
          GCTTTTTAAGTGAAATTTTA CAAGA GAG AAGAGATGG      TTAAG
```

ATCTTATCTATCTTTTGTTC GTTTT CTT TTTTCTATC AATTT
ATTTTG A G TATTCT- ------
GAM45365 315 CAAGCAAGTACATTTAAAAA TACATTTAAAAAT CAGACA
TGAAGTCACAGACATGATTT CAAGCAAG GAAGTCA
TTCTATACATTTTTTTTGTT GTTTGTTT TTTTAGT
TG TTTTTACATATCT ------
GAM45414 523 CAAGCCGCGCACGGTGGCTC C CGCA- CACGCCT CAAAGTGCTA
ACGCCTGTAATCCCAAAGTG CAAG CG CGGTGGCT GTAATCC
CTAGGATTATAGCCACCGCA GTTC GC GCCACCGA TATTAGG
CCTCGTCTTG T TCCAC ------- ----------
GAM45422 13451 CAAGCCTGGCTTGAGGACGT TG G G AACG TCAAGT
CAAACGGCATCAAGTTGTAC CAAGCC GCTT AGGAC TCA GCA
AGTGAGTCCTGGGCGGTTTG GTTTGG CGGG TCCTG AGT TGT
-- - - GACA ------
GAM45442 1985 CAAGCTCATTTGTGCAGTGT A T GCA T A AAGT
GGCTGTTCATGAAGTCAGGA CA GCTCATT GT GTG GGCTGTTC TG
TGGCTTTACCAAGCAGTGAG GT TGAGTGA CG CAT TCGGTAGG AC
TGTG G - AAC T - ----
GAM45456 5100 CAAGCTGGTGATGCCCAACT AG T TGCCCA - C- AACATTC
ACCCATTCATCAACATTCGG CA CTGG GA ACTAC CCATT ATC
TCAAGTGGTGTGGTTCCTCA GT GACT CT TGGTG GGTGA TGG
GAGTG GA C ------ T AC -------
GAM45464 10287 CAAGCTTCTATGGGCCAAAG - ATGG AAG GC TGCCAAG
TCACGCAGGTGCCAAGTCTA CAAG CTTCT GCCA TCAC AGG
GTGGTGGCAGGGAAGACTTG GTTC GAAGG CGGT GGTG TCT
A GA-- --- A- -------
GAM45498 17433 CAAGGAGAGAGCTGGGCTTT - AG- TTTCCA TAC GACCTTAA
CCAAGTTACCTGACCTTAAA CAAGGA GAG CTGGGC AGT CT
GATGCTGAAGCTGTTCAGAA GTTCCT CTT GACTTG TCG GA
GTTCTTCCTTG T GAA TCGAAG TA- --------
GAM45548 1367 CAAGGGAGTTGCACTGGATA AGTT GA TTTTAAAGTCCCT- ATTTCA
AGTTTTAAAGTCCCTTTTCA CAAGGG GCACTG TAAG TTTCAA
AATTTCATTGAAACACTAAG GTTCTC CGTGAC GTTC AAAGTT
TCATGATCTTGAACAGTGCC ---- AA TAGTACTGAATCAC ------
TCTTG
GAM45567 2383 CAAGGGGAGGATCAAGTGGG - - A G GG C CTCG
GGGGTGCATCTCGGTCACCC CAAG G GGAGGATCA GT G GGGTG AT
ATCAACATGGTTTTTCACTC GTTC C CTTTTTGGT CA C CCCAC TG
TTG T A A A TA - ----
GAM45578 175 CAAGGGGTTCGGAATTAATT GGAATTAA AT GACCTTA
TCCCATATTGGGACCTTACT CAAGGGGTTC TTTCCC ATTGG
AATCCGGGAAAAAAAAGAAC GTTCCCCAAG AAAGGG TAATC
CCCTTG AAAAA--- CC -------
GAM45661 22464 CAAGTCATTCTTGATCCACC TCT- - ACCCCT CCCACCCC
CCTTCTCCCACCCCAGATCC CAAGTCAT TGA TCC TCT
CAGGACTCATCCTGTGACTT GTTCAGTG ACT AGG AGA
G TCCT C ACCCT- --------
GAM45757 21963 CAATAAATAAATGTGGATTT TAA GA- -- C--- A AA---- ATTAAAAAACTTA
GTGCTCTTGTATTTTTAAGT CAATAAA ATGTG TTTGT GCT TTGT TTTTT GTGG
GGATTAAAAAACTTACTACC GTTGTTT TACAC AAACA TGA AACA AAAAA CATC

TCAAAAAAAAAACAAACACA --- ACA AA CACA A AAACTC ----------
GTAAACAAAACACACATTTT
GTTG

GAM45770 10109 CAATAATAAATCCAAAGAGG AA AAGA-- GCC ACCAT
AGCCAGTTACCATGACTCAT CAATAATA TCCA GGA AGTT
CCAGGCACTGGAGATATTAT GTTATTAT AGGT CCT TCAG
TG AG CACGGA AC- -----
GAM45811 13896 CAATATATTATATTGCTTCA T G TC - C A TTC CATTA
AGCCAATGCAAAAAGTTCAT CAATATA TATATT CT AAGC CAATG AAA AG ATA
ACATTATATTCCCTATTTCA GTTATAT ATATAA GA TTTG GTTAC TTT TC TAT
TTGTGTTTAGAATATATTAT T - -- T - A CCT -----
ATTG
GAM45828 15051 CAATCACATTATTATTCCTA TAT TCCT C TGGTT
GTTATGCATCATGGTTTGAT CAATCACAT TAT AGTTATG ATCA
TATAACTGTATTCATGTGAT GTTAGTGTA ATG TCAATAT TAGT
TG CTT ---- - -----
GAM45890 10719 CAATGACTTGGGCCAATTAC GA - AATTACACGA CAA-- TAGA
ACGACTGCAAAGCTAGAGCT CAAT CTTGG GCC CTG AGC
GCCAACAGGGCTCCAGGGAG GTTG GGACC CGG GAC TCG
TTG AG T ---------- AACCG ----
GAM45937 16395 CAATGGGTGCTCTTCATGCA ----- -- GC C CCTA ATG-- ATA A
AGGTTGCAAACCTACCAAGA CAATGGG TGC TCTTCAT AAGGTTG AAA CCAAGA CATA
GTCTC
ATGCATAATAGTCTCACTTT GTTATCC ACG GGGGGTA TTCCAAT TTT GGTTTT GTGT
TAGAG

TCCCCAATAAAGAGATGCGT TCTGT TT A- - CA-- GATCA GCG -
GTGACTAGTTTTGGACTTTT CTTTTCCCCAATAAA
AACCTTAATGGGGGTTGCAT
GTCTCCTATTG

GAM45946 6701 CAATGTCCTAACTTACATAT T CT - C----- TCGTTC
ACTCATTCGTTCATGACCCT CAA GTC AACTTACAT ATA TCAT
CCTATGATGTGAGTTCTGAC GTT CAG TTGAGTGTA TAT AGTA
TTG - TC G CCTCCC ------
GAM45948 15467 CAATGTCGATTCTGGACATC ATG G GA- TTT AAAA TTGGAAAT
ATTTTTTCCAAAAGTCTTGG CA TC ATTCTG CATCA TTTCC GTC
AAATGACAGGAAATATTGAT GT GG TAAGAC GTAGT AAAGG CAG
GAAGCAGAATGGGAGTG GA- G GAA TAT A--- --------
GAM46018 11004 CAATTGTGACATAATTCAAT T CA T T - T- CAAAC
GACTCTTTGACAAACTCATC CAA TGTGA TAAT CAA GACT CT TGA
AGCAGTCTTGGTTATCACAT GTT ACACT ATTG GTT CTGA GA ACT
TTG T -- - - C CT -----
GAM46043 10713 CAATTTGAAATTTTACAGGA T TTT GA-- - ATTCAAGCTC
ACCAAGATTCAAGCTCCTTA CAAT TGAAA TACAG ACC AAG
GGTGCTACTGTATTTTTATG GTTG ATTTT ATGTC TGG TTC
TTG T T-- ATCG A ----------

GAM46062 6970 CAATTTTCTGATGCTTATAT TT CTTAT AT AA TTTCTAT
TATGTTAATGGGAGTTTTCT CAA TTCTGATG ATT GTT TGGGAGT
ATACTTCCAGGAGCCAATCA GTT AAGATTAC TAA CGA ACCTTCA
TTAGAATTTG T- ----- C- GG -------
GAM46135 6885 CACAACTTCGGGGCAGCCGG A GG A A CCAG TCAGGAC
GCACAAGCCCAGGCTCAGGA CACA CTTCG GCAGCCGGGC CA GC GC
CGCAGAGCTGGTCCGGCTGC GTGT GGAGC CGTCGGCCTG GT CG CG
GCGAGGCTGTG C G- - - AGA- -------
GAM46155 17855 CACAAGTGGCTCCATTACGA AA CT T-- ACA - A CATTCATCAAAATCAAGT
CAGGGATTAGAGTGACATTC CAC GTGG CCA TACG GG GATTAG GTGA
ATCAAAATCAAGTTCACACT GTG CACC GGT ATGT CC CTGGTC CACT
GGTCTCCGCTGTATCCTGGC GA AC CCT CG- T A ----------
ACCACAGGTG
GAM46170 2140 CACAATCTTCAAAATTCTTG AT AA---- T AC-- AACA
CAACATTAAACATAGTAAAA CACA CTTCA ATTCT GCA ATTA
TGCCAGAATATAAAATGAGG GTGT GGAGT TAAGA CGT TGAT
TGTG -- AAAATA C AAAA ----
GAM46260 17531 CACACCCCTGAGTACAGTGG CCTG- A----- GAGGT
AGGTTTAGGAGGTTTGGATC CACACC AGTAC GTGGAGGTTTAG
TCCACGTTTAAGTACTGCCA GTGTGG TCATG CACCTCTAGGTT
AGGTGTG AACCG AATTTG -----
GAM46284 5147 CACACGGCGAGCGGGAATCG CAC C -- G A- T GACA---- - CT- A C TG
TGCGCGACATCCAGGAGAAG CA GG GA GC GG ATCG GCGC TCCAGGAGA AG GTGC CGT
GCC
CTGTGCACGTCGCCTGACTT GT CC CT TG CC TAGC CGTG AGGTCCTCT TC CATG GCA
CGG
CGAAGCAGAGATGGCACGCG A-- A AT G GG - AGATCAAA C CCT C - TA
TACTCCCTCTCTCCTGGAAA AC GAAGCA
ACTAGAGTGCCGATGGCCGG TTC
TTATCACCATG GAG
-- ------
GAM46300 13235 CACACTCTGACAGGTCCTGC TGACAGG GCA T- --- TCTT
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TCTTGTCCTGGTGACAGCTC GTGTGAG AGGG GTGAC CTCG GTGGTCCTG
CTCAGTGGGGAAAAGTGAGT TGAAA-- --- TC ACA ----
GTG
GAM46306 2113 CACACTGGTGCTGACTGCAT CT CT TG GGTA-- CA GCTGAGG
TTGGTATTGCATTCCTGCTG CACA GGTG GAC CATTT TTG TTCCT
AGGAGGAGAACAAGCTGGAA GTGT CCAC CTG GTAGA AAC GAGGA
GATGTGGTCCACACCCCTGT CC AC GT AGGTCG AA -------
G
GAM46307 16065 CACACTGGTTACGTGTATAT TT TATATGACTTCTTT TCCTCGATATTC
GACTTCTTTCCAAATTCCTC CACACTGG ACGTG CCAAAT
GATATTCATTTGGTTCACGT GTGTGACC TGCAC GGTTTA
CCAGTGTG -- TT---------- ----------
GAM46335 15345 CACAGAATCAGACCATGACT AATC - GACTA TGGAA A ACGCCC
ACCTTCACCTGGAACATCAA CACAG AGAC CAT CCTTCACC CATCA CC
CCACGCCCGGCTGATGGTGG GTGTC TTTG GTA GGAGGTGG GTAGT GG
TGGAGGAACGATGTGTTTAC A--- T GCAA- TG--- C ------
TGTG

GAM46348 10990 CACAGACGAACAGGCAAGGG GACGAACA AGGGG G AGA- GGA A ---- TTCG

GCTAGGGAAGAAGAGGGGAC CACA GGCA CTA GGA AGAGG CCC TG TC
CCATGTCTTCGGAAATACAA GTGT CCGT GGT CCT TCTTC GGG AC AG
GGGACTTCTGCAATCCATGG AATAAA-- AAGA- A AACG A-- A ATAA ----
AGAATGCCAAATAATGTG

GAM46367 582 CACAGAGGCGAGTTTGTGGG G G CATAC AG TGT- GAGCTGT
CCATACCAAGGGATGTGCTG CACAGAGGC AGTTTGT GGC CA GGA GCT
AGCTGTGGCCTTCTCCTCTG GTGTCTCTG TTAGACG CCG GT CCT CGG
ACAAGCCGGCAGATTGTCTC - G AACA- CT CTTC -------
TGTG

GAM46371 2028 CACAGAGTCGGGGTAAGGGG A T GG T G AGCCAAAG
TTGGGGAGCAGCCAAAGGTC CAC GAG CGGGGTAAG GT GGGGA C
CTCACAGTTTGCCTCGCTTG GTG TTC GCTCCGTTT CA CTCCT G
GTG G - GA - - --------

GAM46403 16363 CACAGCAGCAGCTTCAGCGG G - G T AAT G CATCCT
GAATGCGTCCATCCTGAGCC CACA CAG CA CT CAGCGGG GC TC
CTCTGCTGCAGGTGCCTGAT GTGT GTC GT GA GTCGTCT CG AG
GTG A C G C CC- - ------

GAM46419 16140 CACAGCCGGGACCCCGCCAG A -- CC CAGAA CC T TGGCA
AAGTGCCCGGTGCATTGGCA CAC GCC GGGACC GC GTG CGG GCAT
GTGCCCGTCCACGCAGGTCC GTG CGG CCCTGG CG CAC GCC CGTG
CGTGGCCGTG C TG A- ----- CT - -----

GAM46421 13942 CACAGCCTCGTCCCCAGCCC CGTCCC CCC ------- CGCGCA
GCAGGTCCACGCGCATGGAG CACAGCCT CAG GCAGG TCCA
TACTCACCTGCCTGTGTCAG GTGTCGGA GTC CGTCC AGGT
GCTGTG CTGT-- --- ACTCATG ------

GAM46431 7022 CACAGCTCTGGGAAAACAAG ----- CTC CAA ------ G - CCCT C TC
AGGAGCAGACAGGGTTCCCT C ACAG TGGGAAAA GA GGA CAGAC AGGGTT GGGCC AG
TCA
GGGCCCAGTCTCAGCCCAGC G TGTC ACCCTTTT CT TCT GTCTG TCCCAG TCCGG TC
AGT
CACTGATGCTGGATGACCTT TTAAA T-- CA- AAAGAC G G ---- T C-
GGCCTGACCCTGGTCTGGTC GC CACTGAT
TCAGAAATCACTTTTCCCAT CCAGC
CTGTAAATTG GGTCG
A- -------

GAM46438 15015 CACAGCTGTTATGCCAGATG - ATG AGA- TTTAA ATATCAGC
GTCAGTTTAAAGATATCAGC CACAGC TGTT CC TGGTCAG AG
CTGTCTGACTACAAAGGAAA GTGTTG ATAA GG ATCAGTC TC
ATATGTTGTG T AA- AAAC TG--- --------

GAM46466 21792 CACAGGCTGGCAGCCTTCAG C CT ---------- CACCA
TCTGATCCACCAGATCAGAG CACAGGCTGG AGC TCAG TCTGATC
CTTTCTAAATCTGAGCTCTC GTGTCCGACT TCG AGTC AGACTAG
AGCCTGTG C -- TAAATCTTTCG -----

GAM46544 12077 CACATAAATCAGGTTTATTT AATCAGG A G CAG A T C ACAT
GTTTTTCAGAGAGTTTGTTG CACATA TTT TTT TTTTT AG GT TGTTG TAA
CTAAACATTTACCAGCACAC GTGTAT AAA GAG AGAGA TC CA ACGAC ATT
CCTAAAGAGAGGAGAAAAAA AAAA--- A G AA- C C C ----
AATATGTG

GAM46588 10739 CACATCCTGGGCTATTGGAC AT- C----- G AGCAGATTTG
TCTCTGTAGCAGATTTGGCA CAC CCTGGG TATTG ACTCTCTGT
GAGAGTATAATGAAGAATCT GTG GGATTC GTAAT TGAGAGACG
TAGGCGGGTG GGC TAAGAA A ----------
GAM46611 22688 CACATGCAGCAGAGCACACG GCAG CGA T G AG CCAGA
AATGTGTGTGTGCCAAGGCC CACATGCA AGCACA ATGTG GTGT CCA GCC
CCAGAGGCTGGATGCCCACA GTGTACGT TCGTGT TACAC CGTA GGT CGG
TATGTGCTGATGCATGTG AG-- A-- C - -- -----
GAM46651 10447 CACATTCCCATTCACTTTGA CCATT- T A C A A TTG A A AT
TTTTCTACATGTAATTACCT CACATTC CACTT G TTTT TAC TGT ATTACCTTCT TTTATC TTAG
TTTG
TCTTTGTTTATCATTAGATT GTGTAAG GTGAA C GAGA ATG GCA TAGTGGGAGA AGATAG AGTT
AAAC

TGATGGGGCCAAAGTTGAGA TACCCT - - - - G TA- - G --
TAGAATAGAGGGTGATGACG GGGGC
GTAAGAGCAAGTGTCCCATG
AATGTG

GAM46690 17364 CACCAAAATCCTGGAGAAAA AAA---------- GAAAAACATTTTATTAA
ACATTTTATTAATTTAGGGG CACCA TCCTGGA
AACAAGATAGAACACTGGTG GTGGT GGGATTT
CACAAGATAGAACAAG ----------
GAM46691 7801 CACCAAAATTGGCAAAATCA AA CAAAATCATAAA TAT GTAGAA
TAAATGAGTATCTGGTAGAA CACCAA TTGG TGAG CTG
CAGTTCTTCACTAAGCTTGG GTGGTT AATC ACTT GAC
TG CG ---------- CTT ------
GAM46715 10335 CACCAATCAGCGATCTCAAC CAG- - CA--- A-- TTTC
CACAAAAGGCGTTTTCACGT CACCAAT CGATC TCAAC CAA AGGCGT
CTATCTTGCCACTGTTGATG GTGGTTG GCTAG AGTTG GTT TCTGCA
ATCGAGCAGTTGGTG ACGA T TCACC CTA ----
GAM46718 5252 CACCACAAGGAATTCCAGAA ACA--- AA GAAACTAA TT GA TGG
GTATATTACAATTG
ACTAAAGTTCAGGATATGGA CACC AGG TTCCA AG CAG TA ATTGC
TTGCGTATATTACAATTGGC GTGG TCC AAGGT TC GTC AT TAACG
AATATTTACTCTGTTCTTGG ATACGG A- -------- TT TC TTA ----------
AAACCTGGCATAGGTG
GAM46774 23006 CACCAGGAGCCCCTCCGGGT AGCCCCTCC - --- GA C ATAG
AGCTACTACCCTGGACCCCC CACCAGG GGGTAGCT ACTACC CTG CCC CCA
CAATAGTGGAGGGCAGTATG GTGGTCC CCCATCGG TGATGG GAC GGG GGT
GTAGTGGGCTACCCCCTGGT --------- G TAT -- A ----
G
GAM46785 7717 CACCAGTGGCCATCTGAGGT AG TGAG - GGCTCTGAA
GTTTCCCTGGCTCTGAAGGG CACC TGGCCATC GTGTTT CCCT
GTAGGCACGATGGCCAGGTG GTGG ACCGGTAG CACGGA GGGG
-- ---- T ---------
GAM46825 5152 CACCATGTTGGCCAGGATGG CA TT- A T C TCTTGACCTCGT
TCTCGATCTCTTGACCTCGT CAC TG GGCCAGG TGG CT GATC
GATCAGCCCGCCTTGGCCTC GTG AC CCGGTTC GCC GA CTAG
CCAAAGTG AA CCT C C - ----------

GAM46826 6996 CACCATGTTGGCCAGGCGGT CA TT- - - CCT ACT ACCT
CCTGAACTCCTGACCTCAGG CAC TG GGCC AGGC GGT GA CCTG
CGATCCGCCTGCCTCGGCCT GTG AC CCGG TCCG CCG CT GGAC
CCCAAAGTG AA CCT C T C-- AGC ----
GAM46830 11813 CACCATGTTGGCCAGGCTGG CA TT- C- T CTC A ACT
TCTCGAACTCCTGACTCAGG CAC TG GGC AGGC GGT GA CTCCTG
GGATCCGCCCGCCTCAGCCT GTG AC CCG TCCG CCG CT GGGGAC
CTCAAAGTG AA TCT AC C C-- A ---
GAM46863 2352 CACCCAGGATAGTATCTTTG A T TACAT ACTAGTCA
TACATCATAGGACTAGTCAC CACCCAGG TAGTATCT TG CATAGG
TTGTGCTTTCATGGATACTG GTGGGTCC GTCATAGG AC GTGTTC
CCTGGGTG - T TTTC- --------
GAM46908 15352 CACCCCTCCGGCGCCCAGTC CCCT C- TCCCC T AACTC
CCCGTCCCGGAACTCCCGGG CAC CCGG GCCCAG G CCCGG
CCTGTCCTGGGCCCCCGGTC GTG GGCC CGGGTC C GGGCC
TGTG TCT- CC CTGTC - -----
GAM46922 11612 CACCCGCCTGGATTTGCCCC - T- A--- - TA- GCC
GTAGGCCCGGCCCGGGCCCC CACC CGCC GG TTTGC CCCG GGCCCG
TCGGGAGCAGAACAGCCTTG GTGG GTGG CC AGACG GGGC CCGGGC
GTGAGGTG A TT GACA A TCC ---
GAM46975 15039 CACCGAGGTCCGTATCTGCC CG- C- C C ---- AATTCAACC
CTGTGGAATTCAACCCCAAC CAC AGGT CGTAT TGCC TG TGG
TTCGTGGCGCGTATGATACC GTG TCCA GTATG GCGG GC ACC
TAAAGTG AAA TA C T TTCA ---------
GAM46983 335 CACCGCGCTGCTCGCCCCAC C - A A- CTGTTGTT
ATGCCCTCATGGCTGTTGTT CACCG GCTG CTCGCCCCAC TGCCCTC TGG
CCAGGGGGGGCAGTGGGGTG GTGGT CGGC GGGTGGGGTG ACGGGGG ACC
GGCCGGCCTGGTG C C - GG --------
GAM47008 11326 CACCTACAGTCCCAGCTACT C CCA A- -- TGAAAATC
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GAGCCTGGGAGGCAGAGGCT GTG ATGTCGG CGG GGTCCG TTCG
GTAGTG - AGA AG AG --------
GAM47012 21744 CACCTACGGTGAAAAGAAAG - TGAA AAAG TCCTAGG - AGCA
ATGAATCCTAGGGCTCAGAG CAC CTACGG AAG ATGAA GCT CAG
CACTGCAGCAGATCATTTCA GTG GGTGCC TTC TACTT CGA GTC
TATTGCTTCCGTGGAGTG A ---- GTTA TACTAGA C ----
GAM47021 19529 CACCTAGTTCTAGTAACCAT C TCT TAACCATC --------- CCAATCTTATCTCAT
CAGCTTGTGGCCAATCTTAT CAC TAGT AG AGCT TGTGG
CTCATCCATACATCTCTCCA GTG ATCA TC TCGA ATACC
GCTACCATCTCTTACTAAGT A TTC TACCA--- CCTCTCTAC ----------
G
GAM47025 7537 CACCTATGTGGACTTCCAGC A--- GACT - - G ACGTGCAT
CCAGTGGGACGTGCATTGCG CACCT TGTG TCCA GCC CAGTG G
CTGCGGCATGGACAACACAG GTGGA ACAC AGGT CGG GTCGC T
TGAAGGTG AGTG AAC- A C G --------
GAM47046 22934 CACCTCGCAGTCATTCTTGC C TCATTCTT - TG C-- T AGACA
GGCTTGCGCGCCCTTGTAGA CACCT GCAG GCGG CT CG GCCCT GT
CAGCCGGGGCCTTCGTGAGA GTGGA CGTC CGCC GA GC CGGGG CG
CCGCTTGTTTTCTGCAGGTG - TTTTGTT- A GT TTC C -----
GAM47056 2 CACCTCTTATCAAGTCAGCA T TAT A C ACCTTT CAAG

CACACCTTTTCCAAGGATTT CACC CT CAAGTC GCA AC TC
TACGTTGCGGCTTGTTAGGG GTGG GA GTTCGG CGT TG AG
TG - TT- - - CATTTT ----
GAM47071 16290 CACCTGCCCCAGCCCCTGCC C TG CCCCT--- CT - AAGT
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CTGCCCTCACTTCTGGGGTG GT G GGGGTC CG GAC GGGG
GATG A GT TTCACTCC TC C ----
GAM47089 10491 CACCTGGGCCTGCCCCAGTG G CCCCAGT AAT TTCACCAGCTAT
GCAATATGCCTTCACCAGCT CACCT GGCCTG GGC ATGCC
ATGGCATTAGCCCACAGGCC GTGGA CCGGAC CCG TACGG
AAGGTG A AC----- AT- ----------
GAM47115 13748 CACCTTCAATGTCACTGTCA AA CA C ACAAGACGC
CCAAGACTGACAAGACGCTA CACCTTC TGT CTGTCA CAAGACTG
GTCTTGCTGATGGGCAAAGA GTGGAAG ACG GGTAGT GTTCTGAT
AGGTG AA -- C ---------
GAM47120 15724 CACCTTCCATGATTGCTTTT TG - TTTT G AAG AC GCCA
GAGGGAAAAGCTACAGTGGC CACCTTCCA A TTGC GAG GAA CT AGTG
CACATTTCAGATGTTCACTT GTGGGAGGT T AACG TTC CTT GA TTAC
TTGCAATTTGTGGAGGGTG GT T TT-- A GTA CT ----
GAM47152 10014 CACGAAAATGTACCCAGTAT AAAA CCA-- TTCC AGTG
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TTACCAATTGTACACACGTG GTGC ACATG CAT ATCCG
AC-- TTAAC TTTA ----
GAM47154 22662 CACGAAGCGGGTAGCCTTGG AA GG GAGGAG AGAATAAGCC
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CGGAAACAGCAGGGCTACAG GTGC CG CATCGGGAC GGCC
CACCGTG CA A- GACAAA ----------
GAM47156 10651 CACGAATCACACAACAAAAA C C-- - - GA T G G T T
GGAGGAGAGATATTTTGGGT CA GAATCA ACAACAA AAAGGA G GAGATATTT GGGTTCAGAA AA
TAAA GA AAT
TCAGAAGAAGTAAATGATAA GT TTTAGT TGTTGTT TTTTCT C CTTTATAAA CCCAAGTTTT TT ATTT
CT TTA
TGTAGCTACATTTCTTTAGT - TAC G A TC C A G - -
TATTTTGAACCCCAAATATT AGCT
TCCTCATCTTTTGTTGTTGT GT
CATTGATTTTG CA

GAM47158 11586 CACGACCGGCTTGGCTCGGG C T CTC ACCCT T CGCC
ACCCTCGGCTCGGCCGCCGC CA GACCGGCT GG GGG CGGC CGGC
CGGCCGCCCTTCAGCCGGTC GT CTGGCCGA CT CCC GCCG GCCG
CTG C - T-- ----- - ----
GAM47161 15650 CACGAGAGCGCAGCATCCGA CG G ATCC TTGT- - GAGA
CCAGGTTGTCACTGAGAAGA CA AGAGC CAGC GACCAGG CA CT
TGTTTATTTTGGTCAGTTGG GT TTTTG GTTG CTGGTTT GT GA
GTTTTTATG AT G A--- TATTT A ----
GAM47185 17916 CACGCCATTCCTTCTCTCTC GCCAT CTC T CA - AA- CCTC
TGCAGCAAGGCAAATTTCTA CAC TCCTT TC CTG GCAA GGCA TTTCTA
CCTCTAGAGACTCTGCCATT GTG AGGAA AG GAC TGTT CCGT AGAGAT
GTCAGGAAAGGATTTAGTG ATTT- --- - -- A CTC ----
GAM47207 17084 CACGCTCAGCACCTTCATTG T - TT T A- A AAGAAGTA

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        AGGACCTGAAGAAGTACGGG CACGC CA GCACC  CA TG  GG CCTG
        GCTACCACTGTGGTGCGTGT GTGTG GT CGTGG  GT AC  TC GGGC
        GTGTG               T G    T- C CA G   --------
GAM47231 10593  CACGGCTCAAGCAGCGGCGC A   TCA  A-    CC A  TCAAAAACC
        CGCACACTCAAAAACCGTGG C CGGC  AGC  GCGGCG  GC CAC
        CTACGCCGCCAGCTGCCGCG G GCCG  TCG  CGCCGC  CG GTG
                  C   ---  AC    AT  -  ---------
GAM47233 7883   CACGGCTGGGCTGGTCACCA     T  CT T    T C-  -  AT    CATC-   CCTACCACACCATCT
        TCACGTCGGGCATCCAGGAC CACGGC GGG  GG CACCA CA  GTC GGGC  CCAGGA    GGCA

        ATCGGCACCTACCACACCAT GTGTCG CCT  TC GTGGT GT  CGG CCCG  GGTCCT    TCGT

        CTTCTTGCTCACCATCCTGG     T  AT  -    C  CC  T   AC    ACCAC   ----------
        CAGCCCTGGCCCTGCTGGTG TCT
        CTTATCCTGCTGTG

                  ---
GAM47237 13102  CACGGGCCATACGGAGACTA  A   C  - G  ACT  C    TTTGAAAT
        GCGAAGGTTTGAAATTCTTC C CGGG CAT AC GAG   AG GAAGG
        TCTTCCTCAGTGATGACTCG G GCTC GTA TG CTC   TC CTTCT
        AG             A   A  G A  CT- T   --------
GAM47245 6778   CACGGTATTGTACACGGTCA       GT--  --------  GGTC        C  ATTT
        TCTGTTGAAACAGATTTCTT CACGGTATT   AC      AC   ATCTGTTGAAA AG
        TTTTAACAGATCTTAGTTTA GTGTCATGG   TG      TG   TAGACAATTTT TC
        AAAAAGTCATAGGTACTGTG       ATAC  AAAAAATT  ATTC        T  ----
GAM47246 2059   CACGGTATTGTACACGGTCA       GT--  --------  GGTC        C  ATTT
        TCTGTTGAAACAGATTTCTT CACGGTATT   AC      AC   ATCTGTTGAAA AG
        TTTTAACAGATCTTAGTTTA GTGTCATGG   TG      TG   TAGACAATTTT TC
        AAAAAGTCTTAGGTACTGTG       ATTC  AAAAAATT  ATTC        T  ----
GAM47250 17709  CACGGTGCTGTCGGGCGGCA  C    ----  -    CACCA- A--     G---  ATT
        CCACCATGTATCCGGGCATT CA GGTGCT   GTC GGGCGG    CC   TGTATCC   GGC
        GCCGACAGGATGCAGAAGGA GT CCACGA   CGG CCCGCC    GG   ACGTAGG   CCG
        GATCACCGCCCTGGCGCCCA  A    CCCG  T    ACTAGA  AAG     ACAG  ---
        GCACCATG
GAM47252 145   CACGGTGGCTCATGCCTGTA  C    C  A     AA-----     CACT
        ATCCCAGCACTTTGGGAAGC CA GGTGG TC TGCCTGT      TCCCAG
        CAAGGCAGGCAGATCACCTG GT CCACT AG ACGGACG      AGGGTT
                  -   - -     GAACCGA    ----
GAM47263 17607  CACGTCAAACTGATTTCAAT     CAAACTGA-   ----     -  CGGATTA
        CTGATGCGGATTACATACAG CACGT       TTTC   AATCTG ATG
        GTTTCAAGAAAAATATAAAC GTGCA       AAAG   TTGGAC TAC
        ACGTG               CAAATATAA   AACT    A  -------
GAM47270 15717  CACGTCTCCGGCCACGCCCT     TC  G  A  -  C   CA  GAGA  CCCCA
        GTTCACAGAGACACCCCATG CACGTC  CG CC CG CC TGTT  CA   CA
        ACATGACAGCACGGACGGGC GTGCAG  GC GG GC GG ACGA  GT   GT
        GAGGACGTG             GA  -  -  A  C   CA  ACA-  -----
GAM47274 16172  CACGTGATAGCACATTATGA    - TAGC- -    G    AGTATAGTA
        TCAAAGTATAGTATTGATAA CACGT GA    AC ATTAT ATCAA
        TAATAGTATGATTCTACGTG GTGCA CT    TG TAATA TAGTT
                  T  TAGTA  A    A   ---------
```

GAM47282 4843 CACGTGGTGGACAGTGGGCC T AC T A GAA- TACGT
GCAAAGAACCTACGTGGATG CACGTGG GG AG GGGCCGC AA CC
ATTCGCGGTCCTCTACTCTC GTGCACC CT TC CCTGGCG TT GG
CACGTG T CA T C AGTA -----
GAM47283 13260 CACGTGTACATATGTATAGG G --- AG GC C CCG CCCTCC
TACGAGCGCTGCGGCCTCCC CAC TGTACA TATGTAT GTACGA GCTG GGCCTCC TGCG

CGTGCGCCCTCCCGCGACCG GTG ATATGT ATACATG TATGTT TGGC CCGGGGG GCGC

GGGGCCCGGTTTGTATGTAC G AAG -- -- - CCA ------
ATAGAATGTATAGGTG
GAM47295 11599 CACTAAAAACAGTTAATTCA C A TAATT A A- TTC- CAT
AGAGCATTGTTCTGGCATCC CA TA AAACAGT CAAG GC TTG TGG
AAATCCAAAAGCCTTGTTAC GT AT TTTGTCA GTTC CG AAC ACC
TGTTTCTAATG A C TT--- - AA CTAA ---
GAM47331 17782 CACTACGTTGACCTGAAGGA GA-- GAA- CCATTCT -- AAATACATG
CCATCCATTCTTTGCCGGCC CACTACGTT CCT GGACCAT TTGCCGGCCT GGTG
TGGTGAAATACATGCACTCA GTGGTGTAA GGG TCTGGTA GATGGCCGGG TCAC
GGGCCGGTAGTTGCCATGGT GTCG AGGG CCGTT-- AC ---------
CTGGGAGGGGCTGAATGTGG
TG
GAM47332 7612 CACTACGTTGACCTGAAGGA GA-- GAA- CCATTCT -- AAATACATG
CCGTCCATTCTTTGCCGGCC CACTACGTT CCT GGACCGT TTGCCGGCCT GGTG
TGGTGAAATACATGCACTCA GTGGTGTAA GGG TCTGGTA GATGGCCGGG TCAC
GGGCCGGTAGTTGCCATGGT GTCG AGGG CCGTT-- AC ---------
CTGGGAGGGGCTGAATGTGG
TG
GAM47347 1839 CACTAGGTGGGCCCTTGAAA C - GAAA G ---- T CC GATGAA
GGGAGCCCCACTCGTGGGCC CA TAGGTGGGC CCTT GGGA CC CCACTCG GGG CT
CTGATGAAAGCTTCCTGAGT GT GTCCACCCG GGGA CCCT GG GGTGAGT CCT GA
GGTGTCGGGTCCCAAAGAGG C A GAAA G CTGT - TC ------
GAGCCCACCTGCTG
GAM47352 16383 CACTAGTTTCTCGGTACTAT T TC A G ATGA AATATCAAA
GCATATGATCCAATATCAAA CAC AGTT TCGGT CTAT CAT TCC
GGAAATGATAGCATTGAAGG GTG TCAG AGTTA GATA GTA AGG
ACTCGTG C GA C - A--- ---------
GAM47357 4942 CACTATATTGCGTAATTCCT A- TG AATTC CAAATA GTACTTA
TTCAAATACCGTACTTAGGG CACT TAT CGT CTTT CC
AAAACAGAGCTCCAGCGTGA GTGA GTA GCG GAGA GG
TGACAGTG CA GT ACCTC CAAAAG -------
GAM47406 10090 CACTCAGTTCTGACTCTAGA C--- - C A ACCA GACGTAAG
GACCAGAGAGGTGACGTAAG CACT AGTTCT GA TCT GAG GAGAGGT
ACTTCTTCCTTAAGAATCTG GTGA TCAGGG CT AGA TTC TTCTTCA
GGACTACCAAGTG ACCA T A A C--- --------
GAM47411 7526 CACTCATTAAAAACACTTAA AAAAC-- AA CAT AATTAAA
CACATCCAATTAAAGGTTCT CACTCATTA ACTT CA CC
GCAAAGTCTTCTGCTGGTGG GTGGGTGGT TGAA GT GG
GTG CGTCTTC AC CTT -------
GAM47436 4833 CACTCCGGCCTGGCCTGTAG C C G A G ----- - - TC GCAGG
TTTGACCCTGAGCTGGTGCT CACTC GGC TGGCCTGTA TTTG CCCT AG CTGGTG CTG GTC GT

```
        GGTCTCGTGCAGGATTTGAC GTGAG CCG ACCGGACGT AAAC GGGA TC    GGCTAC GAC CAG  TA

        TCAGCCATCGGGGACCCTGA    A  C      -   G   G  CCAGG    C  T  TT -----
        GGGGCAAATGCAGGCCACGC
        CAGAGTG
GAM47461 10377  CACTCGTAGAGGCAGTGTCC    C ----  -   G G    --   AAATGC
        TGGATGAAATGCCGTTTGCA CACT GT    AGA GGCA T TCCTG  GATG
        GGAGGTGCCATCTCTTCACA GTGA CA    TCT CCGT G AGGAC  TTGC
        GTG              - CTTC  A   - G    GT   ------
GAM47483 22437  CACTCTGTAACCCAGGCTAG    C  T      CTA--  T  AG   -- AATCATA
        AGTGCAGTGGTGCAATCATA CACT TG AACCCAGG    GAG GC  TGGT  GC
        GCTTACTAAAGCCTCAAACT GTGA AC TTGGGTCC    CTC CG  ATCA  CG
        CCTGGGTTCAAGTG        - -      TCAAA  - AA   TT -------
GAM47549 13788  CACTGAGTAAAGAGCTACAT    G  AA  GCTA    - G  TCA
        TCAGAGTTCTCAGAAGTTAT CACT AGT  AGA   CATTCA GA TTC
        GAATGAAATCTGGGCTAGTG GTGA TCG  TCT   GTAAGT TT AAG
                    -  GG  AAA-    A  G  ---
GAM47556 17930  CACTGATACTATAAGCATTA      - TAA   ATT-  A  AC  G   AAG   AAATAAATGGAAAG
        TTTTAAATGACGCTGATCTT CACTGATA CTA  GCATT   TTAA TG  GCT ATCTT  TCTG
        AAGTCTGAAATAAATGGAAA GTGATTAT GGT  CGTAA   AGTT AC  CGA TGGAA  AGAC
        GCAGAAAAGGTGAGCCAGTT      A  TA-   GTTT   G --  G   A--  ----------
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        TAGTG
GAM47563 10957  CACTGATTCGAGAATATGAA    A  GAGAATA  A  AACG   G  ACATA
        GATAACGATGAAGTTCACAT CACTG TTC     TGA GAT   ATGAA TTC
        AGAGGTTCATAATCCTCGGA GTGAC AAG     GCT CTA   TACTT GAG
        ATACAGAAGCAGTG         G  ACATAAG  C  A---   G  -----
GAM47565 11977  CACTGATTTGTGGCAAGGGA  C A   TG -   GGA  G- G  CGAG
        TGTGCTGAGCCGAGGCTGGG CA TG TTTG  G CAAG   TGT  CT AGC
        AGGCACTTGACTGCAGGCAC GT AC GGAC  C GTTC   ACG  GG TCG
        TG              C  -   GT A   ---  GA  G   ----
GAM47572 11940  CACTGCACCGACCTGGGAGT    GCACCGA      TC-  ATC  GTAAA
        CACCATCCTGGTAAATAGAG CACT      CCTGGGAG   ACC  CTG
        GGTTCGTTCCCAGGAAGAAA GTGA      GGACCCTT   TGG  GAT
        GTG               AAGAA--      GCT  GA-  -----
GAM47573 10533  CACTGCACCGATCAGATATC     CA  G    ATATC    - AACGGCTC
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        TGAAAAAGTCCTGGTGGGAA GTGAT  GG TGGTC    AAAGTT CT
        TAGTG               AA  G    CTGAA    A --------
GAM47574 13734  CACTGCACTCCAACCTGGGT     A  CCAAC    -  GAATAAGAC   GTCTCA
        GATAGAATAAGACTCTTGTC CACTGC CT    CTGGGT GATA       TCTT
        TCAAGGAAAGAAAAAATGTC GTGACG GA    GACTCA CTGT       AGGA
        TACTCAGTAGAGCAGTG       A  T----     T   AAAAAAGAA   ------
GAM47610 21986  CACTGCTTTTATTTAGTTTG    C-----      AG  G    TTTC   C  A  CAGAAAACA
        ATATGTTTCTTTACAGAATG CACTG     TTTTATTT  TTT ATATG   TTTA AGA TG
        CAGAAAACACATCTTAAAAT GTGAC     AAAATAAA  AAG TATAC   AAAT TCT AC
        CATATAGAAGGAAATAAAAA     TACACA      GG  A    TA--   -  - ---------
        CACATCAGTG
GAM47629 15229  CACTGGCACTCACAGTCACC       -  A  G  AC-  A  GG  TG  GAAC
        AACAGGTCTGGGGAACCCTG CACTGGCA CTC CA TC   CA CA  TC  GG
```

GGTGATGAAGGAGTGGGGCT GTGGCCGT GGG GT AG GT GT GG CC
GCCGGTG C - G GAA A -- GT ----
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CCTGAGCAAGCGGCGCCGCA CAC GC AGTTCT CTTCCT GC GCGG CGCA
ACCTTCTGCGTAACCCGTGT GTG CG TCAGGA GAAGGG TG TGCC GCGT
GGGGAAGAGGACTTGGAAGG GT GAAGGT - G- -- CAAT ------
CTGGTG
GAM47631 5128 CACTGGCAGCAGTTCTACTT TG AGC--- A GA C CGC ACCTTC
CCTGAGCACGCGGCGCCGCA CAC GC AGTTCT CTTCCT GCACG GG CGCA
ACCTTCTGCGTAACCCGTGT GTG CG TCAGGA GAAGGG TGTGC CC GCGT
GGGGAAGAGGACTTGGAAGG GT GAAGGT - G- - AAT ------
CTGGTG
GAM47635 2463 CACTGGCGGAAGAGGCTTGG AC C A ------- TTG C CC CT AAA GC
TGCCGGGGCCTGGGGCTCTG C TGG GGA GA GGC GTGC GGGG TGGGGCT GAGGG
TTGAG CCTG
AGGGAAATTGAGGCCCTGCA G ACC TCT CT CCG TACG CCCT ACCCCGA CTCCT GACTC
GGGC
GTTAGTTTGCGGGAACTCAG GT - A TACCATC TGG A CC C- C-- AA
CTCCTCCAGCCCCACCTCCC TTAGT
AGCATGGTGCCCTACCATTC CAG
ATCTCCATGG GTT

GAM47638 19489 CACTGGCTGACTCTCCCATA GC ACTCT TA- AGAGATTC
TCTGCAAGAGATTCTGCAGG CACTG TG CCCA TCTGCA
AACTGGGTGTGCACACGGTG GTGGC AC GGGT GGACGT
AC GTGT- CAA --------
GAM47702 11530 CACTGTTCACTGCCGACATC TT GACA---- - - GCAGAA
CCTCCCCCAGCAGAATGGGA CACTG CACTGCC TCCCT CC CCCA
GGCAGGGGACAAGGGAGGCA GTGAT GTGACGG GGGGA GG GGGT
GTGGCTAGTG CG AGGGAACA C A ------
GAM47705 15377 CACTGTTCTACATGAGAATA CAT ATAAT AAA AAT
ATGTTTTAAAACCAATGGAA CACTGTTCTA GAGA GTTTTA CC
ATGAAGCTCTCTAGAACAGT GTGACAAGAT CTCT CGAAGT GG
G --- ----- AAA ---
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TGTGGATTTTTGGTCACCTA CACTTATT GTGCATT TCCTTG GAT
AGGAAATGCATTTGATGAGT GTGAGTAG TACGTAA AGGAAT CTG
G TT - CCA -----
GAM47786 10838 CACTTCCTTTGCCCTTCCTC TTCCTTT TT GCCTTTCTCAACTGTCCCA
CTGCCTTTCTCAACTGTCCC CAC GCCC CCTCCT
AAGGAGGGGGCCTCATTTGT GTG CGGG GGAGGA
G TTTACTC -- ----------
GAM47849 334 CACTTGTAATCCCCCCTGTA TTG A CC GT-- A TACTCACATT
CTTACCTACTCACATTGGAG CAC TA TCC CCT ACTT CC
AGTTCTGAGGCCGGAGTAAC GTG AT AGG GGA TGAG GG
TGTG TCA G CC GTCT A ----------
GAM47862 1673 CACTTTAAAAATCGACCTTG AAAAATCGAC - GA TG AAAAATAGC - GCACA
CAGATTTTGACAAAAATAGC CACTTT CTTG CA TTT AC CGT TAT
CGTTATGCACAATATACGAA GTGAAG GAAC GT GAG TG GCA ATA
TTTCAAAGTTGGAGATGACA CATCTTTAA- A A- GT AAACTTTAA T -----

AGAATTTCTACGAAGTG
GAM47874 22448 CACTTTAGGAGGCCGAGGCG T GGA G - G---------- GATC
GGCAGGTGATCACCTGAGGC CACT TA GGCC AGGC GG CAGGT
GGGAGTTGAGACCAGCCTGG GTGG AT CCGG TCCG CC GTCCA
CCAATATGGTG T AA- - A AGAGTTGAGGGCGGA ----
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AAATATGGAAAGGAAGTGGG CACTT CTGG GAG TATGG AGTG
AAGAAGTAAATGCTGGTGGC GTGAA GACC CTC GTGTC TCGT
TGTGACACTCTCCAGGGAAG GG T--- ACA-- GGTGG- ----------
TG
GAM47962 10393 CAGAAAACAAGAAGTCATAC A AA CATAC C AAAAAAA
CTTTTTCTTAAAAAAAAAAA CAGAA AC GAAGT CTTTTT TT
AAAAGTTTTTGCTTCAAGTG GTTTT TG CTTCG GAAAAA AA
TTTTG G AA TTTTT A -------
GAM48003 15931 CAGAAAGCTGGCAAAGAAAA AA- GCAA A GGTACAAAAAGAAA
AGATGGTACAAAAAGAAAAT CAGA GCTG AGA AAAGAT
CTTTATCTGACAGTGAATCT GTCT TGAC TCT TTTCTA
G AAG AG-- A ----------
GAM48075 10100 CAGAACTGCAGAATGACTCC CA GAC-- CT TCAGACAGCCAT
TTCCATTCAGACAGCCATAT CAGAACTG GAAT TC TCCAT
GGACAGAAAAAAGTTTCACA GTCTTGAC TTTG AG AGGTA
GTTCTG AC AAAAA AC ----------
GAM48093 11448 CAGAAGAAAACGCGTCAGAC AAAA- C A CTGT- A G G- - GTTC
TGTGGAAGCTGAGCAGAGGC CAGAAG CG GTC GA GGA GCTGA CA AGGC CA
CAGTTCTGTGCCTAGTGTCA GTCTTC GC CAG CT TCT CGACT GT TCCG GT
GCTCTTTGAATCAGACACGA GCAGA A A AAGTT - - GA T ----
GACGCTTCTG
GAM48113 13358 CAGAAGAGCTAAAACGGTTT A A AA T -- TTGAT
GATGATCCAGGTTTGATGCT CAG AG GCTA ACGGTTTGA GATCCA GGT
CATGGGTTTCAAGCCGTTGG GTC TC TGGT TGCCGAACT TTGGGT TCG
TACTGCTG G A -- - AC -----
GAM48127 7261 CAGAAGATGGCAAAGAATGA AA--- A TTTCAAT T CCACTAT
ATTTCAATTATTATGATCAC CAGAAGATGGCA GA TGAA TATTA GATCA
CACTATTGATTTAATATGAC GTCTTCTATCGT TT ACTT ATAAT TTAGT
TTCTTCAATTGGATGTGCTA GTAGG A CTTCAGT - -------
TCTTCTG
GAM48134 22749 CAGAAGCGAGCAACTGAAGC AG AA AAGC TT TAA
GAAGGGGCTTCCTAAGGTGC CAGA CGAGC CTG GAAGGGGC CC
CCCTTCCAGGCTTGTCTCTG GTCT GTTCG GAC CTTCCCCG GG
CT -- ---- T- ---
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CCCTCTGTGTCCACTCACAT CAGA CTCC CCA ATT CTCT TGT TCAC
AAAGGTGAAAAGCGAAGAGA GTCT GAGG GGT TAG GAGA GCG AGTG
AGATCAAAGTGGTGGAGAAG GAA- T GAAAC AA A AAA- ------
TCTG
GAM48231 7296 CAGAATGGTCAGTAAACCAG -- TAAAC TA A TCTC TTCC
GTAAAGAAGCTCTCTGGTTC CAGAAT GGTCAG CAGG AAGA GC TGG
CTCATGCTGCCTCTTCCTGC GTCTTA TCGGTC GTCC TTCT CG ACT
TGGCTTTATTCTG TT ----- -- C TCGT ----

GAM48263 22990 CAGACAAAGGGAATCAAAGT AA--- AA AG- TG GGGAAAATGTAAGGAA
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TGAAGATTGACCCAAATATG GTTTGT CCC AGTT A G
TTTG ATAAA -- AGA GT ----------
GAM48269 17228 CAGACAAGAGGAAGAAGCCA AAGAGGAA C AGG ATTTCA
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CAAAGTCTTGGCTTCAGTCT GTCTG CTTCGGTTC TG ACGG
G A------- - AA- ------
GAM48279 5294 CAGACACCTTGATGCTGTGG GA C GATGC GA CAAGGAA
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AACTGCTATATAGAGTTGGA GT GT GAG ATATCGTC AATT
TG AG T AT--- AA -------
GAM48291 17212 CAGACAGTTCATTCCTATAT A- TAT TT A CATG A- AG CTCCTTCT
CTTTAGACACCATGGTTGTA CAG CAGTTCATTCC ATCT AG CAC GTTGT GC TGC
GCAGTGCCTCCTTCTGCAAG GTC GTCAAGTAAGG TAGG TC GTG CGACA TG ACG
GTAAACAGCAGTGCTGGATT CC TT- -- - A--- AA GA --------
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G T CT TT TTCTT ------
GAM48318 11992 CAGACCCCACCCTGCCCTCA C-- CCTC - - CTTCC
CATCAGGCTCTTCCGGTACT CAGAC CCACCCTGC ACA TCAG GCT
GACTGTGCGGGGTGGTCTGT GTCTG GGTGGGGCG TGT AGTC TGG
CTG TCT ---- C A -----
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TGTATGTGGAAGTATACCTG GTC ATGAAGG GTAT CC
CAT T GTTTCCGT-- ----
GAM48402 13876 CAGACTGTTTGCAAAATAGA ----- AAAAT- GG-- GATCA
GGGAGGATCACTCATAATCT CAGACTGTT TGC AGA GAG
TACATAGCACTGTCAGCAGT GTCTGACGA ACG TCT CTC
CTG CTGTC ATACAT AATA -----
GAM48415 22178 CAGACTTGGCTGTCCGCTCT C-- CCG G C --- TTTCG
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GAGGCCGAGGAGAATGCACT TTC TAA A A TTC -----
TCCGGGTTTG
GAM48430 7844 CAGAGAAACTATGGGACACA A AA G- A A GA GT AA- ACGT
GATATGTTGAAGTATTCAAG CAG GA CTAT GGAC CAG TATGTT AGTATTCAA CA CA
TCAAACAACGTTGAAATGGA GTC CT GATA CCTG GTC ATACGA TTGTGGGTT GT GT
TTGGGTGTTGAAGCATACTG - -- AA - - AG AG AAA ----
GTCCAAATAGTCCTG
GAM48460 10481 CAGAGAATTGCCTGAGCAAA TGCCT- AACT C ATAC
CTGGAAACTGGTATACATTA CAGAGAAT GAGCA GGAAA TGGT
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CTTTG CAACCT ---- A ----
GAM48470 17724 CAGAGACATCACACACCACT ACATCACACA T AAGCTG AATG
GTTTGTCCAAGCTGTCCAAT CAGAG CCACTGT TGTCC TCC
GGGAACATCAGGATACATGG GTCTC GGTGGTA ATAGG AGG

TGGCTCTG ---------- C ACTACA ----
GAM48516 10895 CAGAGATATGCTATATATGA ATGC -------- ACAT
TATACATATGATACATATCA CAGAGAT TATATATG ATATACATATGAT
TATGTATGTATATGATACAT GTCTTTA ATATATAC TGTATGTATACTA
ATATAATTTCTG ---- ATAGTATA ----
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CTTGCTTCATTGGGGAAGAA GTC ACC AAG AG GTT CTTC CGTA
TCCAACTG A-- T A GG A GTT- ---
GAM48551 6910 CAGAGCAGGAGAAGATGGTG - A GA GGA CTG GCATATTCA
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CAGTCAGACTGCTAATTCCT GTCTCGT TC CTT ATCG TCAG ACTG
ATGCTCTG A - A- --- --- ---------
GAM48568 17741 CAGAGCCCACTTCCATCCTC CCA ------- T G TGAGG
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GGGCAGCATCTGGAGGAGCT GTCTCG GGAGGT GGGAG GAC AC
CTG A-- CTACGAC C - -----
GAM48581 17928 CAGAGCCTGACGTCTTCCTT A CGT TCCTTT C -- TT GTCCCA
TTTCCAACTTGTCTTGAGTC CAG GCCTGA CT TTC AACTT GTC GA
CCATCTGGCCTGAGTTTGAA GTC CGGACT GA AAG TTGAG CGG CT
CAATAGTAATCAGGCCTG - AAT TAAC-- T TC T- ------
GAM48582 1619 CAGAGCCTGCACCCTTGCCC G TGC C CCTC--- T T GGC
CCTCAGAGCTCTGCTGCAGG CA AGCC ACC TTGCCC AGAGCTC GC GCAG
GCCTGCGTGAGCTTTTACCA GT TCGG TGG AGCGGG TTTCGAG TG CGTC
CTGGGCGATGGTGGCTGTG G --- T TCACCAT - - ---
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TCCCACAGCAATGCACATTG CAG GCT ATGA ACTTTT CA CAGCAAT
CTGCTGCAATAGAAGTTCAT GTC TGA TACT TGAAGA GT GTCGTTA
GAAGTACTG A AG- - TAAC C ----
GAM48590 14773 CAGAGCTCAAATGATACTTT A CAA T CC- - GCAC
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CTGCTGCATAGAAGTTCATG GTC TGA TACT TGAAGA GT GTCGTTA
AAGTACTG A AG- - TAC C ----
GAM48597 11458 CAGAGCTCGAGCCAGCGGCT T A CA - GCC GATGATA
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AGACTGCATGTGCGTGCTCT GTCTCG GC TG CGTC GA GCGCT
G T G TA A --- -------
GAM48603 13501 CAGAGCTGCAAGGCCTTCGC CT AA- GCTC A- ACG ACCTCCCCA
TGGCTCTCCTGAGTACGTGA CAGAG GC GGCCTTCGCTG TCCTG GT TGA
ACCTCCCCATCAATGGCAAC GTCTC TG TTGGGAGTGAC AGGGC CG ACT
GGGAAACAGTGAGGGTTGGG AG GGG AA-- AA GTA ---------
GTGACTCTG
GAM48607 449 CAGAGCTGGCGCCGATGGGT CTGG - C A CATAGGCA
TTGTAGGCATAGGCACCAGC CAGAG C GC GATGGGTTTGT GG
AGACTCATCAGCTGATTCCT GTCTC G CG CTACTCAGACG CC
CTG CTTA T A A --------
GAM48655 1908 CAGAGGCTGGGATGGCCATA AG-- AT- TAGCA G TACA
GCAATGGCGCTTACAGGCGG CAG GCTGGG GGCCA ATG CGCT
TATTGGCTTCATCCAGCACA GTC CGACCT TCGGT TAT GCGG
ACTG AACA ACT ----- G ----

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ACTCACAGCCAGACGGGTAC CAGAGGGT CACATAC AC CACAGCC ACGGG
TCCGTGGCTGTGGTGTGTGT GTCTCTCA GTGTGTG TG GTGTCGG TGCCT
GCACACTCTCTG CAC --- - -- ---
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AAAAAAAAAAAAAGTCCTCC CAG AG AAGG CCCTGTT AAAGTCC
TTAAAGACATGGGCTTTCTA GTC TC TTCT GGGACAG TTTCGGG
GACAGGGTTCTTCTGCTG G - T ATC---------- ----------
GAM48706 17616 CAGAGTAATTTAGAAGACAA AT A AA---- G-- GTAAT
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ATTTTTTAAGTGTTAGAATA GTCTCAT AATT TTTGT TTGT TTTTTTAG
TGTTTGTTAACATACTCTG AC G ATAAGA GAA -----
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TTCACTCTGGGGAAAGCTGG GTCTC CG CG GGGTC TTCGT
CCTCTG - GT AAAG TCACTTGAAT --------
GAM48887 17031 CAGATGCAACTTTTCCTCCT G --- --- GGTGAA A TGACT
TGGTGAAAGATAGCATGACT CAGAT CAACT TTTCC TCCTT AGAT GCA
TGCAGTCTGTGAGAAGGAAA GTTTA GTTGA AAAGG AGGAA TCTG CGT
AGGAAAAACAGTTGATTTG - CAA AAA GAGTG- A -----
GAM48942 5276 CAGATGTGTCAGGCGAGGAC T A- - GGA- T G - GACTCAA
TGTCTTGCTGTTTGGTGACT CAGATG GTC GGC GA CTGTCT GCT TTT GGT
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TG
GAM48961 17000 CAGATTATGAAGAATCCAGA A TGAAGAA- GAA AAA- T ATACGA
ACATAAACTTAAATATACGA CAG TTA TCCA CAT CT AAAT
ATTTCAGAACGATGATGGAG GTC AAT AGGT GTA GA TTTA
AAGAAATTAACTG - TAAAGAAG A-- GCAA C ------
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GACAATGGCCAACAAGCTAT CAGAT ATG GACGG GACAAT GGC
GTTGTCAATGAAGCTTTCGT GTCTA TAC CTGCT CTGTTG TCG
CACATATCTG - A TTCGAAGTAA TA ------
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GCTG - GT C T AAA A --------
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GACACTTTTGATGACGATTC CAGATTTGTAT GTT CAAAG
TTAACAATAACGATACAAAT GTTTAAACATA CAA GTTTT
TTG G TAACAATTCTTAGCAGTA ----
GAM49010 2205 CAGATTTGTCAAACTCCTTC TTGTCAA TC- T A AGAG
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CTGATCTGAAGAATGTGCTT GTTTA TG GAAGTC AGTC AATG
GTATTTG TGTTCG- TAA T - ----
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CCACTCCCTCTCCCAATAAT GTCGTT TCT CCCT ACC AC
TGCTG AATAACCC - C C ---------
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GGTATTTTGGTCACAGGGTG CAGCAA TTCCTGGAC CGGGG TATTTTG
GTTTTGGTTTAGGGGGTTTG GTTGTT GGGGATTTG GTTTT GTGGGAC
TTTGTTG TGTTTG - G ----
GAM49093 13673 CAGCACAGGAGCGTCCAGGC A- G CA A - A GTCT
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TCGGCGCCAGAGCTCCCAGT GTTGTG CCTCG AG CCG GGC G TGGG
GTTG AC - A- C T A ----
GAM49102 13577 CAGCACATGTGGCCAAACAT GC - C AAC ACTAAAATCTCTTGTGAAA
GGGTGTACTAAAATCTCTTG CA ACATGTG G CA ATGGGTGT
TGAAAATACCTATAATGACT GT TGTACAC C GT TATCCATA
CACATGTATG A- T A AA- ----------
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TGGGAGCCTTAAAAGGGCCC CAG AC ACAG ATGG GGGAGC AAGG
CCTTCTTGCTTCCCTATCTG GTC TG TGTC TATC CCTTCG TTCC
TCGTCTG - C ----- - TTC-- ----
GAM49162 7628 CAGCAGAGGCCACTGTCCCT G GAG T - AA CTG - TCCTCACCACTT
TAAGACTGCCGGAGTCCTCA CA CA GCCAC GTC CCTT GA CC GGAG
CCACTTCTCCAGGATTCCAG GT GT CGGTG CAG GGAG CT GG CCTC
AGGAGACTGTGGCGATGGTG G AG- T A AC TA- A ----------
GAM49164 11021 CAGCAGAGGTGCCCATGGAG A T CCAT GC ---- TGCC
CAGGGGGAAGGGACCCATGC CAGCAG GG GC GGA AGGGGGAAGGGAC CCA
CTGGACCAGTCCCTTCCTCC GTCGTC CC CG TCT TCCTCCTTCCCTG GGT
TTCTGCCCCTGCTG - - ---- -- ACCA ----
GAM49230 7977 CAGCAGTGCCACTGCGTCGG GCCAC-- C C C --- CC- A CCA
GCCAGCGCTCCCCCGACAAC CAGCAGT TG GT GGG CAGC GCT CCCG CAACC
CCCAGGTTGCGGGAAAAGCA GTCGTCA AC CG CCC GTTG CGA GGGC GTTGG
GAGTTGACCCAGCCAAGAAC GACAAGA - A A AGA AAA - ---
AGACTGCTG
GAM49268 14972 CAGCATGGTGCAGCCGCAGA GCA T GC C -- A AAAGCC
CGTCCAAAGCTGAAAGCCCA CA TGG GCA CG AGACGT CCAA GCTG
GCCTTGGCAGCGTCTCCGAA GT ACC CGT GC TCTGCG GGTT CGAC
TGCCCAGATG AG- - AA C AC C ------
GAM49279 10052 CAGCATTTAAATGACATTCC TTAAAT C ATC C AAGTT
TTAATCTGAAACTGAAGTTC CAGCAT GA ATTCCTTA TGAAA TG
ATTTTCATGGGGAATATCCT GTTGTA CT TAAGGGGT ACTTT AC
TCCATGTTG CCTTC- A --- T -----
GAM49286 4898 CAGCATTTTTATTTTAAGTA TT ATTT TAT TTTTCCA TACCAT
TTCAGCATTTTCCAGGAAAT CAGCA TTT TAAG TCAGCA GGAAAT
TACCATATTTCTTGCTGACT GTCGT GGA ATTC AGTCGT TCTTTA
TATAAAGGTTTGCTG TT AAT- --- ------- ------
GAM49312 1811 CAGCCACTCCTTCCTCGGGC A T C CTCTC GCAGCA
CTCTCCCCCTGCAGCAAGGG CAGCC C CCTTC TCGGGC CCCCT
GACATGTCTGAGAAGGGGGC GTCGG G GGAAG AGTCTG GGGGA
TG - - - TACA- ------
GAM49342 14804 CAGCCAGTAAGTGGTGGAGA AGT-- G A ATTGTACA G GGCA
ATTGTACAATGAGGTGCCGG CAGCC AAGTG TGG GA ATGAG TGCCG
GCACGGTGGTTCATGCCTGT GTCGG TTCAC ACC CT TACTT GTGGC
AGTCCCAGCACTTTGGGAGG AGGGT G - GATGTCCG G ----
CTG
GAM49371 1677 CAGCCCACGCCTGGGGAGCC ACG TG CCTGCCTG TGAC

TGCCTGGGGCCATGTGACCA CAGCCC CC GGGAG GGGCCATG
TGGCCTCTCCCTGGGAACGG GTCGGG GG CCCTC TCCGGTAC
GCTG CAA GT -------- ----
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AAGCCTGAGTCCTTTCCTGT CA CCCAGA TGGG AGA AGCCTGA TC
GTGATAAAATCAGGCTAATT GT GGGTTT GTTC TTT TCGGACT AG
TACTTGGATTTGGGGTG G AG A AA AAAAT- ------
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GACAAGCTTAACCAAACACT CAG CAGG GGCGT TGG CAAG
TGCACCAGACGCCCCTGCAC GTC GTCC CCGCA ACC GTTC
CTG CAC ---- G AC ----------
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GAAGGCACCAGCAAGGACAT CAGC CAGAGG GT CAGG GGCAC AGC ACATT GT TTTGAT GAT

TGGTCTTTGATTTGATTCAG GTCG GTCTCC CG GTCC TCGTG TCG TGTAA TA GAACTG CTG

CAGTCCTGTCAAGTATAAAT AC - -- G- - GTAG A T TC ------
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CCCTCTGCAGCTG
GAM49436 11504 CAGCCGAGGAGCAGGCGCGG A AGCA - --- C ATATTGC
CCGCGGCGCCATATTGCGGC CAGCCG GG GG CGCGGCCGC GG GCC
CCTCAGCGGCCGCGACCGAG GTCGGT CT CC GCGCCGGCG CC CGG
TCATGGCTG A GAG- A ACT - -------
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GCCGTTGAGTAGTTTTCAAT GTTGGCC G TG GTTGCCG C CT GC
TCCGGTTG TTAACTTTT A A G GT T ----
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CCGACCTATTGGGCCCATGA GTTGG GT AGA GTACC GGG CCAG
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CACCCCCTGTATTCCCACCC A CCCT T C- CTCC T --------
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TACCACCTCCCGCAGGCTG TCCA ATA A ATCA CC ------
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AT A G - ----------
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GTTTGCCCTG C TTC G- A GA ---------
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CAGCTTGTTG G TCAA-- - - ------
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TGTTG CACT
A ----
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G CA-- GT - A ----------
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GC

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GTCGCTCCCTCCCCGAGCTG

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CAGTTG GTCA C AAA ----------
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CCTG TCCAAA T- A T - -----
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CTG CGTG GA- T AG C ---
GAM50121 15021 CAGGAGCTCATCTGTCTTGT GAG- TC - - -- TAATTACCCT
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G A ---- - AA---- ------
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T CGGATAGACT GG -----
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G - TAT T --------
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G AA T ACCT TCT -------
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CGACC CT TC T-- - ----
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AGGCCTG GGTT

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         GTTTTTTCTTTCCTTG            -  G     C  CAATC    ----
GAM50552 7789   CAGGGAATTACCTCGCGAAC   GG  TA T   A  C   CCAAAAAACA
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         ATGTGCGCGCGGATTAACTG GTC  TTA  GG GCGC TGT CAAA
                      AA  -- C   G  A   ----------
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                       A       -  -  G    --------
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         CCTG
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         GCACCAGGGTGCTCTGCTGT GTCC  TTACGG    GTCTCGT   ACC CG  TC
         TGGCATTTTCCTG         TT     TTGTC     GGG   A  GT  -----
GAM50697 22942  CAGGGGACAGTCAAGGATGT   GG   GTCAAGGA    G  GTAC   TCTACC
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CTG A- ----- A TCCC ----
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GTTCTTTATTTCAAAATTTT GTTCC TATC TTACT TTTAAAA TTTA TTCT
CATTTACCTATATTTTCCTT TTTTA CAT - C- T ------
G
GAM50848 7294 CAGGTATATCCGCCGGCGCA ATCC CAGCT C AGAA AAGGCTG
GCCAGCTGCTGCGGGAGAAT CAGGTAT GCCGGCGCAGC GCTG GGG TGCC
GCCAAGGCTGGGCACCCCCC GTCCATG CGGCTGCGTCG CGAC CCC ACGG
AGCGCTGCGTCGGCAGTACC A--- ----- - CC-- -------
TG
GAM50869 15634 CAGGTCATCTTCCTGGCCAG T G CA AATA - - GAATGA

GAATAACACGATCGTGAATG CAGGTCA CTTCCT GC GG ACACG ATC GT
AGCTGGTACGTGTGACCAGT GTCCGGT GAGGGA TG CC TGTGC TGG CG
GAGGGAGCTGGCCTG C G A- AG-- A T ------
GAM50885 1388 CAGGTCCTTCCTTTAGAGTC C A G GG GCA CT TT --- TGGCA
TGGTTGTTGCACCATCTGCT CAGGTC TTCCTTT GA TCT TTGTT CCAT GC GGTT GGC
TGGTTGGCTGGCAGCTGAGA GTTCAG AAGGAAA CT GGG AGCGA GGTG CG CCGA TCG

GCCCTGCTGTGGGAGAGCGA - - G GA GAG T- TC GAG -----
AGGGGGTCAAAGGAAGACTT
G
GAM50887 22482 CAGGTCGAGGTGGTGCATCT GA TG-- A TA-- GCAAA
ATCTATGGCAAACAGTTTGA CAGGTC GGTGG CATCT TC TG
AGATGAACTTCATCCAGACT GTTCAG CTACT GTAGA AG AC
TG AC TCAA - TTTG -----
GAM50930 16932 CAGGTGATCCTCCCATGTCA ATCCTCCC CA ----- AGTAAC
GCCTCCCGAGTAACTGGGAC CAGGTG ATGT GCC TCCCG
CACAGGCACGTACTACCACA GTCCAC TGCA CGG AGGGT
CCTG ACCATCA- -- ACACC ------
GAM50936 14757 CAGGTGCAGGGTGGACTCTT G C TCT GA TTGTAGT
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AGGGTGCGTCCATCTTCCAG GTC AC TTCTACCTG GGGAC AC
CTG G C CGT AG -------
GAM50951 21788 CAGGTGCGGATGCAGGCGGC A C - GC CGC
GGCGCGCGTGCGCCACAGCG CAGGTGCGG TGCAGG GG CGGCGC GTG
CTGTCCACCTGCAGCTGCGC GTCCGCGTC ACGTCC CC GTCGCG CAC
CTG G A T A- ---
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TTTATGAGAAATATTTGAAG GTCT CACATGA GAAGTTT TATTT
GCAGTACACTCTG - CG ATAAAGAG ----------
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TGAGTGCTATGACAAACCTG GTCCAAA AGT TCGTG GTA GGT
C--- A A-- --- ----
GAM51114 11376 CAGTAATAAATATAATGCAG AATAAATATAAT CTTA GT - TTGAA CAGT -
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GAGTTGAAAAGGCAGTGTAC GTCG TGTCGGAA TCT GTCA GACTTC TTCT CATGG GG
CCTTGATGGAAACAGTCAAA ---------- AA-- AC A ----- AC-- T
CTGGTGGTACCATCTTCTTC ---- - GAAA
AGAACTGCATCTAAAAGGCT TGA TG
GTGCTG ACT AC
TCAA G ----
GAM51126 7981 CAGTAATTAATATTAGGAAA GTA- AA- TACAGCC TAACCT
CATTACAGCCCTTAACCTAG CA ATTAATATTAGG ACAT CT
ATTAATATGTATACCTGGTA GT TAATTATGGTCC TGTA GA
TTAATAAAATG AAAA ATA TAATTA- ------
GAM51147 10854 CAGTACTTCAAGGAGAATGG TCAA A T ATGTGA GTCG
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GAAAAGTCTTTCACCCTGGT GTCATGG CC CTT CTGA GGTG
ACTG TC-- A T AAAG-- ----

GAM51152 38 CAGTAGACTTTGAGTAAAGT AGACT --- AA T CTAT
AATTACCTTCCTATGATGGT CAGT TTGA GTAAAGT TTACC TC
AAATTTTATGTGTCAATTTG GTCA AACT TATTTTA AATGG AG
ACTG GTTT- GTG -- T ----
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CAACTGGCAGTTTCACAGGT --- G TTG CAACAC A --------
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AATCCATCTTGGTTTAATTA GTCGT TAA GAGAT AATTTGG TCTAC TAA
GAGAATTTGCTG T - T--- T C ----
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TGACTG A-- G AAT-- -- ------
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CACCAAACTG
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GAGTGCTG
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TAGGAGTAGCTG AT A ATAAGA CC --------
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T CA GT AA -----
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TTG
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GCTCTGAGGAATGAATTG - A CT- AG G --- G -----
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TGCTTAAGCTGGCCCACAAG GTCGA G CCGGG CC CGGTT GTC GAG CGA CGAA GACC

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CTG

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CGCGGGCCCCGTCTTGGTAC C- TCTG CGC C TCTC -----

ACTG
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TAATCTTACCCAAACTGTAT GTCA CCA GA TGT GTC AAACC CA
GTCAGCACCCCACTG CC-- C C AT--- -- - ----------
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TCCAAGTTG G C - TT G T ------
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ATAAATAGGGGAAATTTATG ATT T AA AAA TTTATATAC ----
TATCTTATG
GAM51833 17619 CAGTTGGTCTTGGCACTCAG CT A - C --- C G ATCTT
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CTG TTAACAC ---------
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TG ATTGTAAAA ATTT C ------
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----- GAA CTAA ----
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TCTTTTCATCTGAATTTATA
TG

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TTTCTGG C
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TGCTGCCTGTACAGGAGTCT CAT
CAAGCTGGAG GTG

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TTCTGCGGTGGTTCACTTCC TTT C CACT - G- -- C-- C ----
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                       T    T  A-  -    ------------
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          TCCAATTACCTGCTGACACG GTG   TCGAAT TTGG   AGTCGT   CCA   AC
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          G                  GTAC   CTTAT    ------------
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          GGTGGGGATG           --  GG   G  GGACG      GG- -----
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          GCTGGTG              -    A   AC  TAACT-  ATG    ---------
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          G                  C   A  AACTA--  AT-    ---
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          TG                AAAGA    A T   GA  T   -----
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          TAAGCTGAGAGAACACTCCA GTAG ACCTC   AG    CG    CAGA
          CGATG               C    ACA  AGAGT  AATC   -------
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ATG A -- CACAGT - AC -------
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TG G AG-- ATA A ----
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G ---- ATA C GA ------
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G GT AGTGT CGC G --------
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GAM52987 11310 CATGATAATCATATTCGGAT A A- -- TATAGAA TTTTACAAGTAT
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TATTGCAATCATTGAGTAGA GTACTA TAG ATGAGT CTAA CGT
GATAATCATG A AG TA ------- ----------
GAM53004 11473 CATGATGATAGTGAGATTTC TG G AGTG GAGGCA GAGAGA A- ATTT
TTTGAGGCATCTGAGAGGAG CA AT AT AGATTTCTTT TCTGAGAG TCAAATG GCC
AGATCAAATGAGCCATTTGG GT TA TG TCTGAAGAGA AGACTCTC AGTTTGT TGG
TGGTGTTTGACTCTCAGAAG GT G CTTA ------ ------ GG ----
AGAAGTCTATTCGTGATTGT
G
GAM53014 16375 CATGATGTAAATGGCATACT A AA CA A G A- -- TTA C AGACAACCACCTACT
AGGTGCCAAAGGAAGTTTAT CATG TGTA TGG TACT GGT CC AAGGA AGT TGG TATC
GGCTATCAGACAACCACCTA GTAC ACAT ACT GTGG CCA GG TTCCT TCA ACC ATAG

CTTAGATACCAGGTACTACT - AA TC - G AG CA TGG - ----------
CCTTGAGGGACCGGTGCTTC TA
AAATACACATG

--
GAM53049 14825 CATGCACCCTCAAGACTTCA C TCAAGACTTCAAA C A TATAGAGC
AAACACTTTTTGAAACTATA CATGCA CC ACA TTTTTG AAC
GAGCGTTCCAAAGATTGTGC GTATGT GG TGT AGAAAC TTG
TTATAAATGGCTGTATG C TAAATATTCG--- T C --------
GAM53057 543 CATGCAGCTAATTTTTGTAT T CTA T- ATTTTT A- TCA ATGTT
TTTTAGTAGAGATCGGATTT CA GCAG ATTTT GT AGT GAGATCGGATT CC
CACCATGTTGGCCAGTCTGG GT CGTC TGAAA CG TCA CTCTGGTCTGA GG
TCTCGAACTCCTGGCCTAAA C TAG TC GTCC-- AG CC- -----
GTGATCTGCCTG
GAM53115 11889 CATGCCTTACGAACCATGCC CC C CA TCCTCA ATCCAC
TTCCTCAGTATCCACACATA CATG TTA GAAC TGCCT GT
AACGGGCAGTGTTTTAAAAC GTAC AAT TTTG ACGGG CA
ATG AA - TG CAAATA ------
GAM53123 5306 CATGCGCTGAATGATGTCAC AAT TG CAC- GT AACACA
GGCAGTCGTTGAACACACGG CATGCGCTG GA T GGCA CGTTG
CGGATGTTCTCAGTGTCCAC GTACGCGAC CT G TTGT GCGGC

AGCGCATG AC- GT ACTC AG ------
GAM53142 1431 CATGCTCTTGCGAAGCTTGA TCT------- C CTTG - GCGA
TGGGGCGCGAGCCCACATAC CATGC TG GAAG ATG GGGC
TTCCCATTCATCTCACGCAT GTACG AC CTTC TAC CCCG
G CACTCTACTT C A--- A ----
GAM53158 164 CATGCTGTTGGATTGGCACC CTGTT ACCTGCTG C TAC TC - TTCAT
TGCTGCACACGCTACAGATC CATG GGATTGGC CACA GC AGA CGG GGC
CGGGGCTTCATGCTGCTGAC GTAC CCTGACCG GTGT CG TCT GTC TCG
TCTTTGCTTGTGGCCAGTCC C---- -------- T TT- CA G -----
CCATG
GAM53163 13660 CATGCTTGAGCAAAACAACA A ACAA--- AT- GA TGGGTC
GACATTGGTGAGGGCTGGGT CATGCTTG GCAAA CAGAC TGGT GGGC
CGCCTGGACCACAAGTTTGA GTGCGGAC CGTTT GTTTG ACCA TCCG
CTGATGTTTGCCAGGCGTG - GTAGTCA AAC GG ------
GAM53186 11289 CATGGAATCTATAGATCTGT ATCTATA C--- AAACCTAGTA
TTGGGAAAACCTAGTATCTT CATGGA GAT TGTTTGGGA
AAACAACAAGTCCTTTCAAT GTACCT CTG ACAAATTCT
CCATG AACTTTC AACA ----------
GAM53249 22718 CATGGCCAAGCGGCTGAGCC C -- G CAA GG AAAAC A- AGAACCG
AAATTGGGGTGGAAAACACA CATGG CA AGCG CTGAGC ATT GGTGG ACAG GG
GAGGAGAACCGCCGGCTGTA GTGCC GT TCGT GACTTG TGG CCGCC TGTC CC
CCGCCAGGTCCTGTTCAGTG A AG - TCC A- A---- GG -------
CTGATGACCGTG
GAM53257 7848 CATGGCCCACTCACCCAAAC G -- AC AAC CCTACA A TATC
TTACCCTACACACACTAGGA CATG CCCA CTC CCA TTAC CAC CTAGGA
TATCTTCTAGGTGAAAGCAG GTAC GGGT GAG GGT AATG GTG GATCTT
TAAATGGAGGAGGTTGGGCA - TG GA A-- ACGAAA - ----
TG
GAM53274 7624 CATGGCTCGACGATTTCACT G A ATTTCA--- TG C TGCA
GGTATCCGCCATGCATGGCG CATG CTCG CG C GTATC GCCA
ATACTGGACCACACAGCGAC GTGC GAGC GC G CATAG CGGT
GAGACGTG A A GACACACCA GT - ----
GAM53280 7142 CATGGCTGTCTTCCCTCTGT TCTTCCCTCTGT C--- TTCT
GTGTCTTTGTCACTTCTGTT CATGGCTG GTGTCTTTGT AC
CTTATAAGGGCATCAGTCAT GTACTGAC TACGGGAATA TG
G ---------- TTCT ----
GAM53295 11606 CATGGGAGACAATCGGGACA AGACAA- CACA A - ACAA
CACACACACATTCATACAAG CATGGG TCGGGA CACAC CA TTCAT
TGAGCTGCGTGTGGCATCCC GTGCCC AGCCCT GTGTG GT GAGTG
GAGGAGCAACCCGTG AACGAGG ACG- C C ----
GAM53296 340 CATGGGAGCAGCTGTAATGA --- - CT A C AACT- ACACTGCTGAGC
GGCCTGGAAACTGGACACTG CATGGG AG CAG GTA TGAGG CTGGA GG
CTGAGCCCTGACATCCAGAC GTACCC TC GTC CGT ACTCC GACCT CC
CTCAATGCCCTGACTCAGCC GAC A C- A A ACAGT ----------
CATG
GAM53299 639 CATGGGATGGGGAAGTACGG AT AGTA - -- G A CTTCAGCCTCAA
CAGGTGTCTAAGCATGCCTT CATGGG GGGGA CG GCAGG TGTCTAA C TGC
CAGCCTCAAGCAGTTGGACA GTGTCC TCCCT GC CGTCC ACAGGTT G ACG
ACCCTGCTCGAATCCCTCCC C- AA-- T CA - - ----------
TGTG

GAM53302 5047 CATGGGCAAATAGCGTGGGA C- CG- GA G TG TCTT
TAGATTTGTTTCTTAATGGG CATGGG AAATAG TGG TA ATT TT
TGTGACCAATCCTGTTTTTC GTATCC TTTGTC ACC GT TGG AA
CTATG TT CTA A- G GT ----
GAM53305 628 CATGGGCGGTGAAACCCGAG G G GAAA AG AAT- GGAA
TGAATGGGCCGGGAACGGCT CAT GGC GT CCCG TG GGGCCG
TTTGGCAAGTGGGAATGGCC GTA CCG TA GGGT AC TTCGGC
GATG G G A--- GA GGTT ----
GAM53310 6890 CATGGGGACAAAGAAATTGG GACAA T GGCAGC AGCAG
AGGCAGCTCTGAGCAGCAGA CATGGG AGAAAT GGA TCTG
AATCCCATTTCTCACCCGTG GTGCCC TCTTTA CCT AGAC
AC--- C AA---- -----
GAM53328 7795 CATGGTACCTTTAAATATAT CTTT ATA T ATT CTTG
ATGTCAATTGGCCTTGGCTT CATGGTAC AAAT TATG CA GGC
TCTGCCATAAAGTTTTATGT GTACCGTG TTTG ATAC GT TCG
GCCATG TAT- AA- C CTT ----
GAM53361 10761 CATGGTGGCGCATGTCTGTA G C GT- C A AGACTA AAAGA
GTCCCAGCTACTCAGGAGAC CATGGT GCG AT CTGTAGTC CAGCT CTCAGG AGGTGA
TAAGGTGAAAAGATCATCTG GTACTA TGT TG GACGTCGG GTTGA GGGTCC TCTACT
AGCCTGGGAAGTTGTGGCTG G - AGT T A GAG--- -----
CAGTGAGTTGTGATCATG
GAM53388 5348 CATGTAAAACACAAATCTTT AAAA AATC A ATG A TG CACCTA
TGAGGCAAATGTGAAGTGGC CATGT CACA TTTTG GGCAA TGA G G
ACCTATTGCTCAGTATTGCC GTACA GTGT AAAAC CCGTT ACT C T
CAAAACTGTGGGACATG GG-- C--- - ATG - GT ------
GAM53406 19675 CATGTACCCAGGGGAGATTC ACCCA-- A--- C- ACA GCCCCCC
CAGCCAGACACCCGCCCCCC CATGT GGGGAG TTC AGCCAG CCC
GGGCCTGGCTAAGAAGTTGC GTACG TCCTTC AAG TCGGTC GGG
TTCCTGTTGCCAGCATG ACCGTTG GTTG AA C-- -------
GAM53416 14760 CATGTATAAAGGTCGATTGT TGT AA - AA G - TCA--- GT AAGG
AAGACTGGGGTATTAAATCA CA ATA GGTCGATTG T GACTG GGT ATTAAA GTG C
GTGGTCAAGGGGTCATGAAC GT TAT TCAGTTGAC G TTGGT TCA TAATTT TAC G
TTTTTAATAACTATGGTTGG TT- AA C GG A A TTCAAG TG ----
GCCAGTTGACTAATATTTTG
GAM53422 1854 CATGTATGACTTAAGATCTT TATGA- A --- TTTTGT
TTCTTTTTTTGTGAAGAAAT CATG CTT AGATCT TTTCTTT
TTAGGTCTCAAGAACTTTTA GTAT GAA TCTGGA AAAGAAG
TG TTTCAA C TTT ------
GAM53435 17332 CATGTCAGTTATCAAGAGAC T C AAGAGA AA GA AG G TCAGC
TCAACAGATGCAGATGAAGT CA GT AGTTATC CTC CA TGC ATGAA TT
TTCAGCAAGTTCGTGAGCAG GT CA TCGATAG GAG GT ACG TGCTT AA
ATGGAGGCAGAGATAGCTCA T C AGACG- -- AG AG G -----
CTTG
GAM53439 21849 CATGTCCCTGCTCCTCTGTG G - - -- TGTG G TGCG GGTA
AGGTGGACATGCGAGAGGTA CAT TCCCT G CT CCTC AGGT GACA AGA
TCTTGTCGGCCTGTGAGGTC GTA AGGGA C GG GGAG TCCG CTGT TCT
GGACGAGGGAGATG G G A CT TG-- G ---- ----
GAM53503 12127 CATGTGGCTTGCTCAGTGTT TG CT CAGT GCAA TCTTGGACT
TAATTGCAAGTTTTCAATCT CA TGG TGCT GTTTAATT GTTTTCAA
TGGACTTTGAAAACAGGATT GT GCT ATGA CAAATTAG CAAAAGTT

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          AAACCGTTAGTATTCGTGTG  GT  T-   TTGC      GA--      ---------
GAM53507 21875  CATGTGGGGACTCAACACTG   G   GA  AA    AC-   AT  CAGC
          ACCCAGATCACAGCTGGGCT CAT TGGG  CTC  CACTG   CCAG  CA
          GGACCCAGTGGGGAGAATCC GTA ACCT  GAG  GTGAC   GGTC  GT
          AGATG              G   AA  GG    CCA    GG ----
GAM53526 4945   CATGTGTTGTATAAAATGTT       TATAAA  G    GGAA-  AGGT
          GTTGGAATTCAGGTGGACGA CATGTGTTG     AT TTGTT    TTC
          AAGACAAGATAATCAATACA GTACATAAC     TA AACAG    AGG
          TG                  TAA--- G    AAAGC  ----
GAM53555 22416  CATGTTGACTTTCCATAAAT     TG C--      AATTGAGCG   GTTA
          TGAGCGTCAGGTTACTGGAT CATGT  A   TTTCCATA       TCAG
          ATGGGTATGGGAAAAATTGG GTACG  T   AAGGGTAT       GGTC
          CATG               GT AAA      GGGTATA--   ----
GAM53598 15025  CATTAAACATGGTGCATATT   TT   AT- --    AT   CTG   A -    - T  GATC
          TGACTGTGGGACTCGAAAAT CA  AAAC   GG  TGCAT  TTGA   TGGG CT CGAAAA TC GTT
          CTGTTGATCGACTGGTTTTT GT  TTTG   CC  ACGTA  AACT   ATTC GA GTTTTT GG CAG
          TGCAGCTTAACTTCAAATGC   TT   GGT  TA    --   TCA   - C    T  T  ----
          AATCCTGGGTTTTTTG
GAM53599 7642   CATTAAACTGAAAGCACCAT    AAACT    ACCAT-  C   A  CTAGTA
          GGCATAAAGTCTAGTAACAT CATT    GAAAGC    GG ATAA GT
          TATCCTCAAAAGCTTTTTCC GTAA    TTTTCG    CC TATT CA
          AATG               CCT--     AAAACT  -   A ------
GAM53601 15045  CATTAAAGTTAACTGGTCCA      G  AACT-   CAAC--  G    TTACA
          ACTCTGTCATTTTACAGATG CATTAAA TT    GGTC     TCT TCATT
          AAGAAACCAAGACCCTGAAA GTAATTT AA    CCAG     AGA AGTAG
          AGTTTAATG             G  AAGTC   AACCAA  -    -----
GAM53616 13092  CATTAAGAAACAGTGTATGT        CA   ATG      ---  AGGG     TGGA
          GCCGTTTTGGCAGGGGAAGA CATTAAGAAA  GTGT   TGCCGTTTT   GGC   GAAGAG
          GTGGATTCTTCAAGGCTATG GTGATTTTTT  CACG   ATGGCGAAG   TCG   CTTCTT
          GAAGCGGTAGCACATTTTTT        A-   ---       GTA   GAA-     ----
          AGTG
GAM53629 7822   CATTAAGTTTGTGTTAGTCT    AA-    TG---    CT  A  AAAAACA
          TTATTAAAAACAAAAAATAA CATT   GTTTG    TTAGT  TT TT
          CTAAAATTTCAGACAGCGAT GTAG   CAGAC    AATCA  AA AA
          G                 CGA    TTTAA    AT  A -------
GAM53648 11144  CATTACTGATTATCAAATAG    A   T   CA  T    A--   CCACTTCCATACA
          CATAGAAACCACTTCCATAC CATT CTGA TAT  AA AGCAT   GAAA
          ATTTCAAGATGCTCTTCAGT GTAA GACT ATG  TT TCGTA   CTTT
          ACTCAGAATG           -   C   AC  C    GAA   -------------
GAM53649 14843  CATTACTGGGTATTTAGCAG   T  --           --------      CAATATTT
          ATATTCAATCAATATTTGTT CAT ACT  GGGTATTTAGCAGAT       ATTCAAT
          GGATGCATATCAATCTGCTA GTG TGA  TCCGTGAATCGTCTA       TAGGTTG
          AGTGCCTGAAGTTGTG       T  AG           ACTATACG     --------
GAM53653 10031  CATTACTTGGCAAACACGGT    CTT   AACAC    AAAACAA   AAACAATTAGAA
          ATAAAACAAGTTTAAACAAT CATTA   GGCA    GGTAT     GTTT
          TAGAAAAATGAAAACGATAC GTGAT   CCGT    CCATA     TAAA
          CATTATGCCTCATAGTG       ACT   ATTA-    GCAAAAG   ------------
GAM53760 15314  CATTCCCACTTACGTATATT   TC     C    T  ATTAAAATTTATAAGCAAG
          TTATTAAAATTTATAAGCAA CAT  CCACTTA GTATA TTT
          GAAATTATACATAAGTGGTC GTA  GGTGAAT CATAT AAA
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        ATG              CT     A    T  ------------------
GAM53765 19653  CATTCCTAATTGTGGGCACA      A  TGG  CA  T  TG  GT     AA-  GTGAAT
        TGTTGTGGAGTTGAGCTGAA CATTCCTA TTG  GCA  TG TG  GA  TGAGCTG  TTCT
        TTCTGTGAATGGAAACGTGG GTGAGGGT AAT  CGT  AC AC  TT  ACTCGGT  AAGG
        CTCATTTGCATCATGCAGTA      G  GA-  --  T  GT --     GCA   ------
        AGTGGGAGTG
GAM53777 13492  CATTCCTGAGGGGTTGGCCT     TGA---    --   C  ACCCAAAGACACC
        CATGACCCAAAGACACCCAT CATTCC     GGGGTT  GGCCT ATG
        TAGGCCCCAGCTCCAACATT GTAGGG     CCTCGA  CCGGA TAC
        GGGATG              TTACAA     CC    T  -------------
GAM53789 7878   CATTCGTAGCCACTGGGGGT   TC   --  TG    CAG    G  CGTCA
        CAGCTTGTAGGCCGTCAGTG CAT  GTAGC  CAC  GGGGT  CTTGTA GC
        TACAGGAGCCCTGCGTGAAG GTG  CGTCG  GTG  TCCCG  GGACAT TG
        CTGCATGTG           TA    AA  CG    A--    G  -----
GAM53793 4769   CATTCTAGGGAAAGAATACA       GAAAG     GC-       T TGTTA
        GGCGGATGACACTTGTGTTA CATTCTAGG    AATACAG   GGATGACACT G
        CAGTGTTATTTTAACTGTAT GTAAGGTCC    TTATGTC   TTTATTGTGA C
        TACCTGGAATG              A----     AAT       - -----
GAM53818 12025  CATTCTGTATGTGACTATTT       A   ----      TATAACATTAGATAAT
        ATATAACATTAGATAATTAA CATTCTGT TGTG   ACTATTTA
        ATAGTGAGACATAAATAGAG GTGAGATA ATAC   TGATAAAT
        TG                  A   AGAG      ----------------
GAM53830 15951  CATTCTTAATTCGAGCCACA     TA   GAG  ACA   GGG   AAG
        GTCTGGGTCACAAGGTGGGG CATTCT  ATTC   CC   GTCT   TCAC
        AGGGCAGGAAAGAATCGGGG GTGGGG  TAAG   GG   CGGG   GGTG
        GTG                 GC   AAA  A--   AGG   ---
GAM53835 7880   CATTCTTCTTACGACTCTCT    TTC----   G  T    ATGCTT     C  TGT
        GATGCTTACTGTTACAGCTG CATTC     TTAC AC CTCTG     ACTGTTA AGC
        TGTTTGATAGTCTTCCCCAG GTAAG     AGTG TG GAGAC     TGATAGT TTG
        AGCGTGTGACCATCTTGAAT    TTCTACC   - C    CCCTTC     -  ---
        G
GAM53861 15959  CATTGACAACGTGCCCCTGC   GACA   CCC-  CTA   CCCTTTTCACCGACT
        TAGTGCCCCTTTTCACCGAC CATT   ACGTG   CTG   GTGC
        TGCACCCCAGAGACCATGTG GTAG   TGTAC   GAC   CACG
        TGAGATG             AGTG    CAGA  CC-   ---------------
GAM53882 10249  CATTGAGTTGCCATCTCTGG    A    CA    GGAA  G   -  GACCA
        AAGTGCTCTCCGACCAGGAA CATTG GTTGC  TCTCT   GT CTCT CC
        GAGGACAGAGAGCAATGTGG GTGGT TAACG  AGAGA   CA GAGA GG
        TG                  G    --    ---- G   A  -----
GAM53884 10611  CATTGATAACTTTATATTTG       ACTTT       ACAATA   TTGAT
        TTACAATAAAAGTTGATCTT CATTGATA    ATATTTGTT     AAAG
        TAAAATAAATATTATTAATG GTAATTAT    TATAAATAA     TTTC
                            -----        AA----   -----
GAM53898 5279   CATTGCACAATATCATGCTA    CAC    CA    CCTC    CTTTAAAAT
        CCTCTTGAATCTTTAAAATA CATTG   AATAT  TGCTA   TTGAAT
        TTCAATTGGCAAATGTTTTT GTAAC   TTGTA  ACGGT   AACTTA
        CAATG               TTT    A-    T---     ---------
GAM53921 10005  CATTGCTAAGTGTACTGCTG    G  A    AC--  C       TT----     GTTCCA
        CCGAAGTTGCCCCAGTTCCA CATT CT AGTGT    TG TGCCGAAG     GCCCCA
        TGGGGTTCGTGTCTTTGGCA GTAG GA TCATA    AC ACGGTTTC     TGGGGT
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        TCAACAAATACTGAGGGATG    G G    AACA T      TGTGCT    ------
GAM53928 12043  CATTGCTGTCAGGGGTGTTG   T    CA     -  CTA  CGCCA  G  GAAAAAAGGAGAAAGAAA

        GCTACTCCGCCAGCTGTTGA CAT GCTGT  GGGGTGT TGG  CTC    GCT TT
        AAAAAGGAGAAAGAAAGAGA GTA TGACA  CCCCACA ACC  GAG    CGA AG
        GCAAACTGAGATCCACACAC   -   CA     C  TA-  TCAAA  G ----------
        CCCACACAGTATG
GAM53947 1660   CATTGGCGTGATAATGGATT      GT---    GGA     TCAAATAAT
        TTGCATCAAATAATTGTAAG CATTGGC    GATAAT   TTTTGCA
        GGGTTATCCGAGAGCCAGTG GTGACCG    CTATTG   GGAATGT
                        AGAGC    G--     ---------
GAM53963 558    CATTGGTTCTGCAGACTATT        ---------    C  T  C       TTTTCCT
        GCAGGAATGTTTTTTCCTAG CATTGGTTCT       GCAGA TA TG AGGAATGTT
        CATTTCTATATTATCTGTCC GTGACCAAGG        TGTCT AT AT TCTTTACGA
        ATTCTGAGGAACCAGTG          AGTCTTACC    - T  A       -------
GAM53980 7277   CATTGTCGTCATTGGACACG    GTC--   T-  A  C   ATTC   CAAG
        TAGATTCGGGCAAGTCCACC CATT    GTCA  TGG CA GTAG    GGG
        ACTACTGGCCATCTGATCTA GTAA    TAGT  ACC GT CATC    CCT
        TAAATG             ATATC   CT   G  -   ACCA   ----
GAM53984 11595  CATTGTCTCCTTCTCAGAAG     TC----  TTC     ACTCCGTTT   G   AACAT      CAATAAC
        ACTCCGTTTCTGGGGAAACA CATTG     TCC   TCAGAAG       CTG GGA    CACTTTTT
        TCACTTTTTCAATAACAGGA GTAAC     AGG   AGTTTTT       GAC CCT    GTGAAGGA
        AGTGTCTCCGCAGCTTTTAC     TTCAAT   TC-     ATCATTTTC   G   CT---      -------
        TATTTTTGACTGGATAACTT
        CAATG
GAM54013 7957   CATTGTTGAAGGCAGTGTAG    GT   G   TG       GAGAT     CAC  C  A    A  CATT
        GGAGAGGAGATGGCAGGACA CATT  TGAA GCAG  TAGGGAGAG    GGCAGGA   AG AA CAGG CA

        CAGCAAACAGGACACATTTG GTAG  ATTT TGTC  GTCCTTCTT    CCGTTCT   TC TT GTCC GT
        CCTGCTTCTCTCTTGCCTAA    TC   A   CA       AAT--      C-- -  C   - ----
        TTCTTCCTGACCTGTATTTA
        CTGATG
GAM54032 22369  CATTTAACATTTAAGGAGAA   -        A     T   CTTTATTCCTCT
        TGGTCTTTATTCCTCTGCCT CAT TTAACATTTA GGAGAA GGT
        TTTTCCTAAATGTTGATGTG GTG AGTTGTAAAT CCTTTT CCG
                        T       -     T   ------------
GAM54041 7877   CATTTAATAGGTTAGAATGT      A   GT    AT     TAAAG   A  AATA
        AAATTAAAGTGTAGCAATAG CATTTA TAG  TAGA  GTAAAT    TGT GC
        CAACAAAATATTTATTCTAC GTAAAT GTC  ATCT  TATTTA    ACA CG
        TGTAAATG              -  --   --     TAAA-   A ----
GAM54046 13287  CATTTACATTTCTAAGTAGT    T  ATTT      TT   TA   GA   AGGAA
        TGTATAGTAGAAGCAGGAAG CATT AC    CTAAGTAG  GTA  GTA  AGC
        CTCTTATTGCTTATTTGGTC GTAA TG    GGTTTATT  CGT  TAT  TCG
        GTAATG              -  CT--       --   --   TC   -----
GAM54079 7958   CATTTATTTGAAACAGACTG    TATT-       C      --    CACAAAGAA    -  CA-    ACCGAT
        GGCCAATGTCCACAAAGAAT CATT     TGAAACAGA TGGGCCA  ATGTC        TTCCT GGT   GCACC

        TCCTGGTCAGCACCACCGAT GTAA     GTTTTGTTT ATTCGGT  TGCGG        AAGGA CTA   CGTGG

        GTCCAAAGGTGCAATATCAA    CTTAT       -      AG    ACGGG----    A   TAA    ------
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          GGAAGGGCAGGCGTGATGGC GTCCAAA
          TTATTTGTTTTGTATTCAAT
          G
                       -------
GAM54082 22543  CATTTCAAAAAAAAAGAATA         AAAAAGAAT     -    CATTTAGTT
          CTGATCATGACATTTAGTTT CATTTCAAAA        ACTGAT CATGA
          CATGCATTAGTTTTTGAAAT GTAAAGTTTT        TGATTA GTACT
          G                    ---------     C    ---------
GAM54091 13096  CATTTCAGCCAGAGGACTTT    T    AG-  G  TT      GTGAATATA     GAAGGGG
          GGAACTGTGAATATACTTCC CATT CAGCC   AG AC  TGGAACT        CTTCCT
          TGAAGGGGAGGGAGAAGGGA GTAA GTCGG   TT TG  ACCTTGA        GAGGGA
          GGAAGTTCCATTGTGTTAAA    T    AAA  G  TT      AGGAGGGAA     -------
          GGCTGTAATG
GAM54143 5019   CATTTCTTCTATTCTAGCAA       T  ATT---    -       GA    CTGG
          TATTTGAAGTGCTGGCACTA CATTTCT CT     CTAG CAATATTT  AGTG
          GAGATGTTGTCTGGTGAGCA GTAGAGA GA     GGTC GTTGTAGA  TCAC
          AGCAGAGATG              C  ACGAGT    T       GA    ----
GAM54151 12008  CATTTGAAAATGCCCTTGTG       AAA  C      GATACT     CT     TTAT
          GATACTTGGAACTGTAAATT CATTTGA   TG CCTTGTG     TGGAA  GTAAA
          ATTTTATTTTTTACATAAGG GTAAATT   AC GGAATAC     ATTTT  TATTT
          TCACTTAAATG             C--  T      ------     T-     ----
GAM54152 15316  CATTTGAAAATGGCCTTGTG       AAA         ATACT-     ACTGTAAATTA
          ATACTGTGGAACTGTAAATT CATTTGA   TGGCCTTGTG     GTGGA
          ATTTATTTTTTACATAAGGT GTAAATT   ACTGGAATAC     TATTT
          CACTTAAATG              C--         ATTTTT     -----------
GAM54193 7589   CATTTGTAGGGTTTCTCTCC          TTTCTCTCC     -----  T   CTGG
          GGAGTGGATGCGCTGGTGCT CATTTGTAGGG        GGAGT     GGA GCG
          CCTTCAGGCTCCCCCTGTAG GTGGATGTCCC        CCTCG     CCT CGT
          GTG                      ---------     GACTT   -   ----
GAM54222 10323  CATTTTACTTATGATAAACC      AC     ATAAA-    AT     TCAGTTAT
          AGATTATTTTCAGTTATGAA CATTTT  TTATG     CCAG  TATTT
          TATTGGCAACTGCATGAAAG GTAGAG  AGTAC     GGTT  ATAAG
          AGATG                AA     GTCAAC   --     --------
GAM54227 100    CATTTTAGAGTATCTTGGCA     T     - C    CAAAAT     AGGAT
          AAATGGTGAGAGGATCTCAC CATT TAGAGT AT TTGG     GGTGAG
          TTTCCCAATATCACTCTGTA GTAA GTCTCA TA AACC     TCACTC
          ATG                  T     C  T    CTT---     -----
GAM54237 15646  CATTTTATCTGGAACAGTTC        CTGG-   AGTT   CA      T-----------  TCTT
          CTCAGCCTTTCTGTCTCTTG CATTTTAT     AAC    CCT  GCCTTTC          GTC
          ACCTTAATATTTTTGAAAGG GTAAGATG     TTG    GGA  TGGAAAG          CAG
          TACAGGCAAGTTATTTTGTA       TTTTA   AAC-   CA      TTTTTATAATTC  ----
          GAATG
GAM54256 7014   CATTTTCATTTGTGTGTGAA      C       --  AATTTTTAATATAAA    GAGA
          TTTTTAATATAAATGCGGAG CATTTT ATTTGTGT  GTG            TGCG
          ACGTAAAGCATTAATGCAAG GTAAAA TGAACGTA  TAC            ATGC
          TTAAAATG              T       AT   GAA------------    ----
GAM54268 14219  CATTTTCTTTCACAGCTTGA         C  AGCT   CAAT       T   AAAACCCA  AAGAA
          CAATGTTTACATGTACAAAA CATTTTCTTT AC    TGA    GTTTACATG ACA       GC
          ACCCAGCAAGAAGCATCATG GTAAGAGGGA TG    ACT    TAGATGTAC TGT       CG
          TCATGTAGATTTCAGTAAGG         A  ----   T---        -   ACTA----  -----
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GAGAATG
GAM54271 11053 CATTTTCTTTTCTAATGGCA - - AT TGAA AAAAAAA - --- TTTT
TTGAAACTTTAAAAAAAATG CA TTTTC TTTTCTA GGCAT ACTTTA TGGATT C AACTG
TGCAG
GATTCAACTGTTTTTGCAGA GT GAAAG AAAAGGT CCGTG TGAAGT ACCTAA G TTGGT
GTGTC
ATGTAGAAAGTATTCTGTGT T T -- ---- GTTC--- A AAA TCCT
CCTTGGTTAAAGAAATCCAC TAGAAAG
TTGTGAAGTGTGCCTGGAAA AATG
ATGAAAGTTG TTAT

GAM54277 21727 CATTTTGATTTAGTGAATGG GA ---- T ----- GTTATAA
CATTTGCTGGTTATAACAGC CATTTT TTT AGTGAA GG CATTTGCTG
AAATGAAAGACTCTTCACTC GTGAAA AAA TCACTT TC GTAAACGAC
CAAAAAGAAAAGTG AG AACC C AGAAA -------
GAM54308 410 CATTTTTAGTTTTGTTAAAA A T TG AAAAAAAA - AAA GAAA
AAAAATTCTGACAAATCAGA CATTTTT GT T TTA TTCTGA C TCA
AATGGGGGTTCAGGAGTGGT GTAGAAA CG A GGT AGGACT G GGT
GGTGATGCAAAAGATG A T GT GGTG---- T GG- ----
GAM54339 17940 CATTTTTTTGGCCCGCATGA GG-- CATGA -- TCC C TTCATATC
CCTAGTTTCCCAGGCTATTC CATTTTTTT CCCG CC TAGTT CAGG TA
ATATCTACCCTGTTCAACTA GTGAAGGAA GGGC GG ATCAA GTCC AT
CTGGCTTCGGGAATGAAGGA GTAA TTC-- TC CTT C --------
AGTG
GAM54366 4568 CCAAAACCTGGGTGTCCTCA AA T T- A TG TG C--- AG-- G CAGG
CTGCTGCCCTGAGTCCAGCC CCAA CC GGG GTCCTC C C C CTGAGTCC CCAT GTTTT
ATGGTTTTCAGGGGGACAGT GGTT GG CCC CGGGAG G G G GACTCAGG GGTG CAGGG

GGACAGGGACTCAGAAATGT C- T TC - GT GT TAAA GACA A ----
GGTGGGAGGGCCTCCCTGGC
TTGG
GAM54367 13418 CCAAAACTGTAGAAAGAGAT AAAA - A AAGC AATAGA
AAAGCTGTTAATAGAGACAT CC CTG TAGAAAG GATA TGTT
GGGTATCCCTTTTTATCAGG GG GAC ATTTTTC CTAT ACAG
TCAGG ACTG T C GGGT ------
GAM54370 11837 CCAAAAGACTCCAGTACTAT AAG AGT T T TT GA CAAAATTTAAAGCA
TTTATTTTGATTGAAGAGTT CCAA ACTCC AC ATT TATTTTGA GAA GTT
CAAAATTTAAAGCAGACCAT GGTT TGGGG TG TAA ATAGAATT TTT CAG
TTTTAAGATACAATTGTTGG AA- GT- T C -- AC ----------
GGGTAATTGG
GAM54470 14738 CCAAAGCTATATTTGTAAAA A- T AAAC T- C AA TG GT- GCAG
CTGGATTGCAAAATCTGTCA CCAA GC ATATTTGTA TGGA TG AA TC TCAT GCT
TGTGCTGCAGAGCTTAATGG GGTT CG TGTAGATAT ACCT AC TT AG GGTA CGA
GTGAAGTTCATTTCCATATA CC - ---- TT - GA TG ATT ----
GATGTGCCCTTGG
GAM54485 14814 CCAAAGGGTCGGCAGGTGGA AAA ---- A GG GGGC
GCCTCGGGGGGGGGGCCCCC CC GGGTC GGC GGTGGAGCCTCG GGGG
GGTGGGGCTCCACCCGTCAC GG CCCGG CTG CCACCTCGGGGT CCCC
ATGGCCCGAGGG GAG TACA C GG ----
GAM54496 474 CCAAAGTGCTGGGATTACAA -- G C ------ C AGACACTACATCCAACC

GTGTAAGACACTACATCCAA CCAA A TG TGGGAT TA AAGTGTA
CCTACACTTTTAAAAATTAT GGTT T AC ACCCTA AT TTCACAT
CCCACAGTTCTTGG CT G - TTAAAA T ----------
GAM54499 16128 CCAAAGTGCTGGGATTACAG AAG ------ ACA - A CACC
GTGTGAGCCACCGTGCATGA CCA TGCT GGGATT GGT GTG GC
CCAAAAGTCCTTCTAATAGC GGT ACGA TCCTGA CCA TAC TG
AAAGTGG GAA TAATCT AAA G G ----
GAM54513 11900 CCAAATAATGATAAAAATAG AAT AAA ATGTA TCTGTAAAAATCT
ATGTATCCTCTGTAAAAATC CCA AATGAT AATAG TCC
TGGACTAAACTATTCAGTCA GGT TTACTG TTATC AGG
TTCATGG AC- AC- AAATC ----------
GAM54518 7573 CCAAATAGCAGGTGAAGGCA ATA AGGCAC C CCAT-- CTTTCCA
CCTGGCTGACCATCAATGCT CCAA GCAGGTGA CTGG TGA CAATG
TTCCACATTGTATTCATCAC GGTT CGTCCACT GACC ACT GTTAC
CAGTCACCTGCACTTGG CA- ------ - ACTTAT -------
GAM54560 14968 CCAACACCCCACATGACAGT AA-- A GACA TG AG ATAA
GAGAAGTCATTATAAAATGA CC CACCCC CAT G AGA TCATT
TCTTGCAAAGTGAGGGGTGG GG GTGGGG GTG C TCT AGTAA
CCAGG ACCG A AAA- GT -- ----
GAM54588 22982 CCAACCAAATTTCTGCATTC AAAT A C TT--------- TTTAAGTGTTAC
GAGTCTTAACCATATTTAAG CCAACC TTCTGC TT GAGTC AACCATA
TGTTACTGTGGTTCAAAGAA GGTTGG GGGATG AG CTTAG TTGGTGT
GTATGATTCTGAGTAGGGGG ---- - T TATGAAGAAAC ----------
TTGG
GAM54592 1684 CCAACCAGAGCAGTTCGACT AA AGA T C- AA-- CCGCA
GGGCCATCAATGACCGCATC CC CC GCAG TCGA TGGGCCATC TGA
AATGAGATGGTCCACTTCGA GG GG CGTC AGCT ACCTGGTAG ACT
CCTGCCAGGGCAGG AC GAC C TC AGTA -----
GAM54677 5259 CCAAGACTGCACAAAATTAC --- A AA--- T - AA A-- - TTGCAGT
AGTGCTAATGTATATGGGTT CCAA GACTGC CA AT ACAG TGCT TGT TATG GG
GCAGTTCACATAAAGACAAA GGTT TTGATG GT TA TGTC ACGA ACA ATAC CT
AGCATCTGTTATGGAAATGA ATA A AAAGG T T AA GAA A -------
GTAGTTATATTGG
GAM54681 7374 CCAAGAGAGGCTCTTCTGGG G TCT A- ACT CC AACCAAAAC
GGCCAGGCTGGGACTGGGCC CCAAGA AGGCTCT GGGGGCC GGCTGGG GGGC CGGA

CCGGAAACCAAAACTCCGTG GGTTCT TCCGAGG CTCCCGG CCGACCC TCCG GCCT
CCTTACCCAGCCGGGGCCCT - TC- GG AT- T- ---------
CCTGGAGCCTTCTTGG
GAM54746 11494 CCAAGGACAGCAGCGGGCAG A CA A A ATG AC- AGCCC
CATGTGGACGTGAGCCCCAC CCA GGA GC GCGGGC GC TGG GTG
CAGCCAGCGCCTGCAGCTCC GGT CCT CG CGTCCG CG ACC CAC
TGG - -- A - --- GAC -----
GAM54751 10981 CCAAGGAGAACTTCAGTTTG GAGAACTT -- GA- T GATCA
CTTGACTCGTTTGGATCACA CCAAG CAGTTT GCTT CTCGTT G
ACGAGCTAAAGCTCAGATTG GGTTC GTTAGA CGAA GAGCAA C
TCTTAAACTTGG AAATTCT- CT ATC - -----
GAM54787 669 CCAAGGTGAGCCGGGCACCA T C-- ACC GG AAT
GTGGGGCCAATGGAACCATT CCAAGG GAGC GGGC AGTGG CC
AGAGTCCTCCGTTCCTCTTG GGTTCT CTTG CCTG TTACC GG

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        G                C   CCT   AGA    AA ---
GAM54826 5112  CCAAGTGTTCCTGCAGAGGT      TTC    A  G  TAT TG CCTG
        GTCTATGTGTCCTGGTGCCA CCAAGTG  CTGCAG GGT TC  G  T
        TGAATCCTGCAGAGCCATTT GGTTTAC  GACGTC CTA AG  C  G
        GG                CGA    -  -  TAC GT ----
GAM54850 17468  CCAATAACTCTATCCTCGGG     ACTCTAT  T   C  CGACA  A  AACAA
        CGGTCGACATTTATTCAACA CCAATA     CC CGGG GGT    TTT TTC
        AGAAAAAAACCTTTCGTGGT GGTTAT     GG GCTT CCA    AAA AAG
        ACCGACTATTGG          CAGCCAT  T   T  -----  A  -----
GAM54894 11857  CCAATGCCATCTTTCGCTTC  AA  CA  TC    AA  G  AGTT   CATTCAGCTTCAA
        TAACTGCCAGTTGGCACATT CC  TGC  TCTT  GCTTCT  CT CC   GGCA
        CAGCTTCAATGCCTTGGGAA GG  ACG  AGGA  CGAGGA  GA GG   CCGT
        GGGAGGAGCAGAGGAAAGCA  GG  AA   GA    GG  A  GTT-   ----------
        GGGG
GAM54899 1932  CCAATGGCACATGGACTGGT  A   A  G-   G  GTT-     AAGGGACC
        GTTAGCAAGGAAGGGACCCT CC ATGGC CAT  GACT GT   AGCAAGG
        TTGTTTAGAACGGGTCAGAT GG TGCCG GTA  CTGG CA   TTGTTTC
        GGGCCGTGGG          G   G  GA   G  AGAT     --------
GAM54900 14912  CCAATGGCCTGGGGAAGCCC    GG  GG-          T  CTTAACCAATT
        CAAAAGGTGGCCTTAACCAA CCAAT  CCT   GGAAGCCCCAAAAGG GGC
        TTGCCCCTTTTGGGGTTTCC GGTTA  GGG   CCTTTGGGGTTTTCC CCG
        AAAGGGGAATTGG          AG  AAA          -  -----------
GAM54922 2645  CCAATTGGGGGCTTGGACTG   A  GG       CTGT  GT-   ACTG
        TACCGTTGCCACTGGGCATG CCA TT  GGGCTTGGA   ACC   TGCC
        TGGTTTTAAGCCCGGGAGTG GGT AG  CCCGAATTT   TGG   ACGG
        G                G  GG       ----  TGT   ----
GAM54943 11563  CCACAAAGAGATAATCGTGA   --     T  C    AG--   A   GC---- TG ATAA
        CAAGATGTACACTAGCTTGG CCAC  AAAGAGA AAT GTGACA   ATGT CACTA    T  G
        ATAACTGAAGATTATAGTGA GGTG  TTTTTCT TTA TATTGT   TACA GTGAT    A  C
        CATAAAATGTTATATTCTCT    AA     C  -    AAAA   -   ATTAGA GT ----
        TTTTAAGTGG
GAM54944 15332  CCACAAAGTCCTATTGCAAG    AA       GCA-  GCATAC    GACA
        AGCATACTCTGTGACAACGG CCAC  AGTCCTATT   AGA    TCTGT
        ATCATCTAACAGATGGGACT GGTG  TCAGGGTAG   TCT    AGGCA
        AGTGG              A-       ACAA  ACT---    ----
GAM54954 7684  CCACAAGCAGCACAGTCATA  A  AG    AGT  T   C    CCCAGT
        GGGCTTCACCCCAGTGTGAA CC CA  CAGCAC   CA AGGG TTCAC
        TCCTCTGGTGCTGGATGAGG GG GT  GTCGTG   GT TCCT AAGTG
                  A  AG    --- C   -    ------
GAM54964 15778  CCACAATGGAAGTCATTACC    AAT    CATTACCTC      ATTAA  TG  A    TTCCTTAT
        TCTGCAGTCAATTAAGTGTG CCAC   GGAAGT       TGCAGTCA    GTG  CTG GTTCCT
        CTGAGTTCCTTTCCTTATGG GGTG   CCTTCG       ACGTCGGT    CGT  GAC CGGGGG
        GGGCCCAGTGTGCAATGGCT    GTT    ACGACAA--      AA---  GT  C    --------
        GCAAACAGCAGCTTCCTTGG
        TGG
GAM54977 5017  CCACACAGCCCTATGGTCAA   -    -  AT---  CAAACAAT  TACGTT
        ACAATCCTACGTTGGTGCCT CCA CACAGC CCT    GGT      CC
        CTGCTTTTAAAGGTGCTGTG GGT GTGTCG GGA    TCG      GG
        CTGG              C    T  AATTT  TCTCCGT- ------
GAM55026 10013  CCACAGAGAAGGTGGCTGCC   C    A------    C    - ACCGCCTG
```

ATCCACCGCCTGGGCATGGC CCA AGAGA GGTGG TGCCAT CC
ACCACCGACAAGATCTTTCT GGT TTTCT CCACC ACGGTA GG
GG C AGAACAG - C --------
GAM55072 14914 CCACAGTGCCCTGGGGTTTT A CCC G TCCAA CCTCGCA
CCAAAGGCACCTCGCATGCC CC CAGTG TGGG TTT AGGCA
TGTTTGAAGCCTACATTGGG GG GTTAC ATCC AAG TCCGT
- --- G TTTG- -------
GAM55077 15416 CCACAGTTGAGGAATGTGTG ATGTGTGTAAC TTACCT
TAACTTCAATTACCTTTGAG CCACAGTTGAGGA TTCAA
CTGTAGAAAAATCTTTAGCT GGTGTCGATTTCT GAGTT
GTGG AAAAAGATGTC ------
GAM55112 17132 CCACATGTACTTCTGTGCTT - ------- T AACATTTTTACGGAC
AGAACATTTTTACGGACCTA CC ACATGTA CTTC GTGCTTAG
AGCGCTGGAGACGTTGCTGC GG TGTACGT GAGG CGCGAATC
ATGTCGG C CGTTGCA T ----------
GAM55120 7959 CCACATTCTTATTCTCCCAC A T TTCTCCC- CTAC C TTGA
ATCCCTACCCACGTTTGAGC CC CAT CTTA ACATCC CCA GT
TGGAAAGGATGTCCCTACCC GG GTA GGAT TGTAGG GGT CG
TAGGCATGAGG A C CCCATCCC AAA- - ----
GAM55162 19994 AAAACTGCTTTGCACGTGAC TTT- C A -- GAC AA CCACGTTTT
ACAAGCTGACCTCAAGAGCT AAAACTGC GCA GTG CAC AAGCT CTC GAGCT
CCACGTTTTGGCTTCGAGCA TTTTGACG TGT CAT GTG TTTGA GAG TTCGG
AGTTTTGGTGCTACTGTTTT TTTT - C GT AC- C- ---------
TGCAGTTTT
GAM55166 8690 AAAACTGTGTCCAAAAGGAT T TCCAAA---- - AAATATGCA
TGTTTCGAAATATGCATGCA AAAAC GTG AGGATTGTTT CG
AATAGTTCTGTTAATAACCC TTTTG CAC TCTTGATAAA GT
ACTGTTTT T CCAATAATTG C ---------
GAM55176 3826 AAAAGAAAACCAAAGTGGTC AAACCAA CC AA TCCTTT CTG
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TCTGAAGGTTTTACGATGCA TTTTCT TTACTA TGTT GTAG GGAA
TTGTTATCATTAACCAGTCT GACCAA- T- AC CATTTT ---
TTT
GAM55190 6411 AAAAGAATTATTTATGCATT TATT T- TTCCCC T GCCTA
CCCCTTAATTGTGTGCCTAA AAAAGAAT TA GCA TTAA TGTGT
CACGTTTAACTGCCTTATTT TTTTTTTA AT CGT AATT GCACA
TATTTTTTT TTTT TC C----- T -----
GAM55194 20697 AAAAGAGAACTCAATGTATT CT T TGCT
TTCCATGTTGCTGCATGGAA AAAAGAGAA CAA GTATTTTCCATGT
AATACTTTGTATTTTCTTTT TTTTCTTTT GTT CATAAAAGGTACG
AT T ----
GAM55214 13777 CCACCAAAATGCTTACATCC AA TACATCC - A-- C- GAAA
GTGTGTAATATCCCGAGAAA CCACC AATGCT GTGT GTAAT TCC GA
TTATGGAACAATTATAACAT GGTGG TTACGA TACA TATTA AGG TT
AGCATTAAGGTGG AA ------- A ACA TA ----
GAM55224 14906 CCACCACCATCAAGGTCATC C --- --------- TT T TGTCCGT
ATTGTCATCTACCTGTCCGT CCACCA CATCA AGGTCAT CA G CATCTACC
GGTGGGTGCCCTGTTGCTCT GGTGGT GTAGT TCCGGTA GT C GTGGGTGG
ACATGGCCTTCCTGATGCTG C CCT CATCTCGTT CC - -------
GTGG

GAM55237 17651 CCACCAGAGTAGTAATTTTC A -- AA- CCAAT CC AA TCAA TATTG
CAATCTATCCTTTAAAAGTT CC CCA GAGTAGT TTTT CTAT TTTAA GT GTGTAT CATTTTTT
CAAGTGTATTATTGCATTTT GG GGT CTCATCA AAAA GATA AAATT TA CACATG
GTAAGAAA
TTAAGTTGTAAAAGAATGAT - AA ACG TATAT C- CC TA-- TA---
GTACACATATCCTTAAACAT AAGTTGTA
AGTATATAAAAGCAACTACT
CAATGGGG

GAM55246 17009 CCACCAGTCCTTGCACTGTT AGT- GCAC T GACAC CCAGGA
CTGACACTTTCCCCAGGAGG CCACC CCTT TGT CT TTTCC
AAAACAAGTACAAAGGTTAC GGTGG GGAA ACA GA AAAGG
GGTGG CATT ---- T ACA-- ------
GAM55247 1735 CCACCAGTCTGTCCCCATCT C-- TCCC T T TC CCTTCTCTTTCCCCCT
CTGAAATCCTTCCTTCTCTT CCACCAGT TG CA CTC GAAA CTT
TCCCCCTAAGTCTTTTGAGT GGTGGTCA AC GT GAG TTTT GAA
GTCATCATGTACTGGTGG TGT TACT - - CT ----------
GAM55250 22829 CCACCATATGTTCTTTGACT A TAT TTGA TTA CAATAT
ATAATTATGGACAATATTTC CC CCA GTTCT CTATAA TGGA
ACTTTGTGGGATAGGATTGG GG GGT TAGGA GGTGTT ACTT
CGG C --- TAG- TC- ------
GAM55261 4584 CCACCATGTAAAAGTGAGCT A AAAA-- CTC CTCTAAAAA
CAGACGTCTCTAAAAAATGT CC CCATGT GTGAG AGACGT
TTCCTTTATAAAAGCACATG GG GGTACA TATTT TTTGTA
GCGG C CGAAAA CC- ---------
GAM55269 22697 CCACCCAAGGGCTACTTCCT -- AA-- T TTCC - A - ------ AACG
GACCAAGATCTTCCACCCGA CCA CCC GGGC AC TGAC C AGATCTT CCA CCCG
ACGTGGGCGCCAATGGCGAG GGT GGG CTCG TG ACTG G TCTAGAG GGT GGGT
ATCTGCGTCAACGTGCTCAA CA AGAA - CA-- C - C AACCGC ----
GAGGGACTGG
GAM55288 13948 CCACCCCCACCCCCTGGGGG CCA C GG-- C TG C CGGA
CACCTGGCAATGTCCGGAGA CCACCC CC CCTG GGCA C G AATGTC
CATTTTTGGTTGTCACAACA GGTGGG GG GGAC CTGT G T TTACAG
GGAGGAACGGGTGG CAA A AACA T GT T ----
GAM55293 16893 CCACCCCCACGATTCGGTAT AC C C GG - T T - - ACAG ATACACACGGCTCC
GATGCTGCCGGCACAGCTGG CC CC CA GATTC TA TGA GC GC C GGC CTGGG
GATACACACGGCTCCCCCAG GG GG GT CTAAG AT ACT CG CG G CCG GACCC
GCCTGAGCTGCTTCACTAGG AC C C GG C T T A T ---- ----------
GAATCCTGCGGCAGG
GAM55312 12023 CCACCCTCTTGCATTGGCCA CCTCT C G T - T GA ACCAACTA
GTGGAGGAAGATCTTTGATG CCAC TG ATTG CCAG GGAG GAAGA CTTT TGATGA
ATGAACCAACTATCATTAGA GGTG AT TAAC GGTT TCTC TTTTT GAGA ATTACT
AGAGCTTTTTACTCTTTGGG TTAT- - G - A C AG --------
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GAM55313 11770 CCACCCTGGGGGTTGGGAGG T - ----- - G AA - GAGC
CCCAGCCCAATTGGGGGGGG CCACCC GG GGGT TGGGAGGCC CA CCC TTG GGGGGGGGGGG

GGGGGAGCTTCTTCCCCCCA GGTGGG CC CCCA GCCTTTTGG GT GGG GAC CCCCCCTTCTT

CAGCGGGGGTGTGGTTTTCC - G CTAGA T G GC A ----

GAGATCACCCGCCGGGTGG
GAM55325 2612 CCACCGCTGGTGTAGTATTC - - -- G --- GACC TACTGAAT
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TATACACGCACGATGGTACA GGT GGTGA CC ACAT GTAG GCAC TAC
ATCCGAGTGGTTGG T G TA G CAC ATA- --------
GAM55329 2224 CCACCGGGGATCTAGCCTGT GA CC--- CA C GAGATGACA
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AGGCTCACATGACTCTAGAC GGTGGTTC AGATC ACACT GG GC
ACTTGGTGG AC TCAGT C- A ---------
GAM55330 634 CCACCGGGTATCTAGCCTGT A CC--- - ACCC GAGATGACA
GGCCACCCCGGAGATGACAC CCACCGGGT TCTAG TGTG GCC CG
GAGGCTCACATGACTCTAGA GGTGGTTCA AGATC ACAC CGG GC
CACTTGGTGG C TCAGT T A--- ---------
GAM55356 16908 CCACCTCTGCTGCCGCGCGC CT CCGC C CC A GCTT
CTACCGGAGCCGCTTGGCCC CCACCT GCTG GCGC TA GG GCC
TAGTGCTTTCCAGCGGGTGG GGTGGG CGAC CGTG AT CC CGG
-- CTTT - -- - ----
GAM55394 13935 CCACGACATCTCGGGAGATA AC - G - A A GGATTA
CTTCAGGGGATTACCGGAAG CCACG ATCT CGG AG AT CTTC GG
ATACTGCTGAAGATCTGTGG GGTGT TAGA GTC TC TA GAAG CC
C- A G A - G ------
GAM55423 11017 CCACGGCGGCGGCCCTGGGA A C G - A GG - TTAC AAAGATGAAA
GCAGAGGTGGAGCGACCCCA CC CGGCGG GGCCCT GGA GCAG GGT AGC GACCCCA GCT

TTACGCTAAAGATGAAAGGC GG GTCGTC CCGGGG TCT CGTC CCG TCG TTGGGGT CGG

TGGGGTTGGCTGGCCCTGCT - - G T - G- G ---- ----------
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GAM55424 13145 CCACGGCGGCGGCCTGGGAG A C -- A GG - TTAC AAAGATGAAA
CAGAGGTGGAGCGACCCCAT CC CGGCGG GGCCT GGGAGCAG GGT AGC GACCCCA GCT

TACGCTAAAGATGAAAGGCT GG GTCGTC CCGGG TCTTCGTC CCG TCG TTGGGGT CGG

GGGGTTGGCTGGCCCTGCTT - - GG - G- G ---- ----------
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GAM55437 185 CCACGTCCACTACTTGATCA AC GA T G- ACTTACCTTACGA
AGTGGCGGGACTTACCTTAC CCACGTCC TACTT TCAAG GGC GG
GATCAGGCTTCTTGGGAGAG GGTGTAGG GTGAG GGTTC TCG CT
TGAGGATGTGG A- AG T GA ----------
GAM55442 13463 CCACGTGAAGGGGCGTAAAG GTGAA G-- --- - ATT ACAAATCCTCC
GCCCTTATTCCCACAAATCC CCAC GGGGC TAAA GGCC CTT CCC
TCCGGGTAAAGTGGCCCCTT GGTG CCCCG ATTT CCGG GAA GGG
TTAGAAGCCCCAGAAAGTGG AAAGA AAG TCC T AT- ----------
GAM55444 5020 CCACGTGGCCGGCTTGGAGG C TG - T A G GA - G CACTGT
GCGTCCGCGGGACGGGGGCG CCA G GCC GGCT GG GGGC TCCGCGG CGGGG GCGCCG GAG

CCGGGAGCACTGTCTCACGG GGT C CGG CCGG TC CCCG AGGTGCT GCCCT CGCGGC CTC

CGCATCCCGGTCGTGGAAGC - GT A C - A G- A A ------
CCCTCGGCCAGGCTGCTGG

GAM55449 2002 CCACGTTAGCTGCCTTCCTT C TA - T T - GGAG - A TGTA
GAGCTCCCCAGGAGTCGGTT CCA GT GCTGC CTTCC TGAGC CC CCA TCGGTT TCCAC TC

TCCACATCTGTAGAGGTGGA GGT CG TGGCG GGGGG ACTCG GG GGT GGTCGG AGGTG AG

GGGCTGGTGTGGAGGTGCTC T -- T T T A GT-- G G ----
ATGGGGGTGCGGTGCTTGG
GAM55511 19692 CCACTCTCTTATCCTTTTAA -- T TC AA CCTTG CTTGTAGC
ATCCTTAATATCCTTGTCAC CCAC TCTCT ATCCTTTTAAA CTT TAT TCA
TTGTAGCTGAAATACATGCA GGTG GGGGG TAGGAAAGTTT GAA GTA AGT
AAGCCTTTGAAAGGATTGGG TC T CC AC CATAA --------
GGCTGTGG
GAM55544 17842 CCACTGCAGTGCTGATCCTC T A - ATCC AA CTCGA
AGAAACTCATCTCGAATGAG CCAC GC GTG CTG TCAG ACTCAT
TACTTGGCCCCGGTCACGCG GGTG CG CAC GGC GGTT TGAGTA
TGG - - T CCC- CA -----
GAM55576 14248 CCACTGGTGAATTCAACTGG GAA AC AAGCTC TATAGTCT
AAGCTCCTTCTATAGTCTGA CCACTGGT TTCA TGG CTTC
AGAATACCATCTGAAAGAAC GGTGATCA AAGT ACC GAAG
TAGTGG AGA CT ATAA-- --------
GAM55590 6925 CCACTTAAAGAATTTACAGG A ----- CC- GAGGTG
CCGGGCGAGGTGGCTCACAC CC CTTAAAGAATT TACAGG GGGC
CTGTAGTCCTAGTTCTTTGG GG GGGTTTCTTGA ATGTCC CTCG
GAGG A TCCTG ACA ------
GAM55607 2055 CCACTTCTTTGTGGAGAGAA C-- T G TATTTAAAATCCTTTTTT
TATTTAAAATCCTTTTTTTT CCA TTC TTGT GAGAGAA
TTTTTGGCAATGAATTCTGG GGT AAG AACG TTTTTTT
CTT T G ----------
GAM55616 16966 CCACTTGTAAATGACTATAA TG- -- TA-- CTATTAT- GATT
ACTATTATGTGATTGCTTTT CCACT TAAAT GAC TAAA GT
TTTTTTTAGAATGTCTTGTT GGTGA ATTTG CTG ATTT CG
TAAATAGTGG TAA TT TAAG TTTTTTTT ----
GAM55631 21823 CCACTTTGTTGGCCCTTCCA TGTT-- CC - TTATCGA GT TTTTTT
GTGGGATTATCGAGCATGTT CCACTT GGCCCTT AGTG GGA GCAT TG
GTTTTTTCATAGTGCCTTTT GGTGAG TTGGGAA TTAT CCT CGTG AC
TCCTTATTTCAAGGGTTGCT TCTTCG CT T TTTTC-- AT ------
TCTGAGTGG
GAM55682 21984 CCAGAAGAAACTGAGAAGCA AAACTGA A CG TACA----- TG ACCTGTCA
TGACGGACAAGTACAGGCTG CCAGAAG GAAGC TGA GACAAG GGC C
CACCTGTCAGTGGCCGACCT GGTCTTC CTTCG ACT CTGTTT CCG G
CCTCTTTGTCATCACGCTTC C------ C A- CTCCTCCAG GT --------
CCTTCTGG
GAM55735 7549 CCAGACAACCTTAGCCAAAC A--- C-- TA- AAACCA CCCAAA
CATTTACCCAAATAAAGTAT CCAG CAA CT GCC TTTA
AGGCGATAGAAATTGAGACC GGTC GTT GA CGG AAAT
TGG CAGA AAA TAG ATATG- ------
GAM55757 1391 CCAGACGAATGACATAAGCA - ----- AAG- CAATTTTTCTCCCGGGT
GACAATTTTTCTCCCGGGTT CCAGA CGAAT GACAT CAGA
CTGATAAGTGTTCAGAAATT GGTCT GTTTA TTGTG GTCT
TGATCTGG A AAGAC AATA ----------

GAM55769 389 CCAGACTGCATGTTATTGCG CT- TATT ----- - ACAAAGA
AGCAGGAACAAAGATCCTGA CCAGA GCATGT GC GAG CAGGA
CTTTTCTAGTTTTTATATGC GGTCT CGTATA TG TTC GTCCT
TCTTCTGG TCT TTTT ATCTT A -------
GAM55781 1846 CCAGAGAAAACTGTGGATTC AAA ATTCT T AAGACA
TGCAGTCAAAAGACATTGTC CCAGAG ACTGTGG GCAG CAA
TGTTATGCTATAGTGCTCTG GGTCTC TGATATC TGTC GTT
G G-- GTAT- T ------
GAM55823 21703 CCAGAGCTTGGCATTGTGCA A G AAGATGTTG G - C CACA
AGATGTTGGCCAGGCTAATC CCAG GCTT GCATTGTGC GCCA GCTA AT AGGGG
AGGGGCACATCCTTCATCTG GGTC CGAA CGTGATACG CGGT TGGT TA TTCCT
GTGTGGCGCATAGTGCAAAG - A --------- G C C ----
CCTGG
GAM55824 1855 CCAGAGCTTGGCATTGTGCA A G AAGATGTTG G - C CACA
AGATGTTGGCCAGGCTAATC CCAG GCTT GCATTGTGC GCCA GCTA AT AGGGG
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CCTGG
GAM55866 17004 CCAGATAGCCATGATGTTTG ATA G --- GAGGGG TGAGCAGAGGAAC
ACTTCTGAGGGGCATTGAGC CCAG GCCAT ATGT TTGACTTCT CAT
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GGTCAGAGTACATAATGGTG G-- A TGA AGGAAA ----------
CTGG
GAM55871 10248 CCAGATATCGGTGGGTGGCA - GG- CA AA- AAGACA
TTAACAGAAGACACTGAAGA CCAGATA TC TGGGTGG TT CAG
ACATTACCTAAGAGATTATC GGTCTAT AG ATCCATT AA GTC
TGG T AGA AC GAA ------
GAM55878 21885 CCAGATCCAGTGATTGACTT ATC A ACT C AAAA AAAA C ACAGAC
GGCATGAAAATGAGAAAATG CCAG CAGTG TTG TGG ATG TGAG TG AG
CAGACAGACCTCAACATTCA GGTC GTCAC GAC ACC TAC ACTT AC TC
ACAACATCCATACAGCACTG --- - AT- - AACA ACA- - ------
CTGG
GAM55907 2662 CCAGATTTCAGTCTTTTCCT ATTTC T CCTG G TTTGG
GTTTTTGTTAACTTTGGGTT CCAG AG CTTTT TTTTT TTAAC
AAAAAAAAAAAAAAAGTCTC GGTT TC GAAAA AAAAA AATTG
GTTGG GC--- T AAA- A -----
GAM55972 7446 CCAGCAGTAGCTGCGGCTGG C A T GGTACA--- T TTCT C - GA CG-
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CGTGG
AGCCAGCGGGAGCCGCGTGG GGTC TCA CG TGCCGGT GCCGTAG CG GTC GTC GCC CG
GCACC
CCTGGGTAAGCCACGACAGC - G C AGAAGAACA T ---- C T A- ACA
ACCGTCTGCCTGGCTGATGC CTGGGTAA
CGACAAGAAGATGGCCGTCG C
CGACTCTGG G

GAM56001 7090 CCAGCCAGACACCTCCAAGC AGACA CCA C A--- A- CGTGCAGA
GTTCAAAGTGAAGGCCGTGC CCAGCC CCT AG GTTCA AGTGA GGC
AGAGCTGGTCACTGAAATGA GGTCGG GGA TC CGAGT TCACT TCG
GCCTGATAGGATAGGCTGG ATA-- TAG - AAAG GG --------

GAM56006 7614 CCAGCCAGCTGACAGATTGA AG C A- ACTTCA A A ACAT
CTTCAGCACTATGACATCAA CC CCAG TGACAG TTG GC CT TG
AGAGCCCACCCAAGGCTGTT GG GGTC ATTGTC AAC CG GA AC
ACTGGAAGG AA - GG CCACC- A A ----
GAM56034 10722 CCAGCCCGGAACGCATCATA CC--- AC- TC CTTTT A CACT
GGTTAGCTTTTCAAGACACT CCAG CGGA GCA ATAGGTTAG CA GA
TCCTGCATCTCTGACCTGTT GGTT GTCT CGT TGTCCAGTC GT CT
GCACCTCTGTTATCTTGG CTATT CCA -- TCTAC C ----
GAM56057 284 CCAGCCTCTCCTCCAGCCTG C C G AGA ATGCCGTC
AGAAGCATGCCGTCGCTGGA CCAGC TCTC TCCA CCTG AGC
CGGGGTGGACGGGAAGCTGG GGTCG AGGG AGGT GGGC TCG
A C G AGG --------
GAM56087 15645 CCAGCGAACGGGTGGTGGTT GAA- GG CTACCAATAA G GACC
CTACCAATAAAAACCGCGGG CCAGC CGGGT TGGTT AAACCGC GG
GACCCCGGCGGTTTGACCAA GGTCG GCCCA ACCAG TTTGGCG CC
ACCCGAGGGGCTGG GGGA A- ---------- G ----
GAM56116 21912 CCAGCTATAGCAATTAATAA - AATTAATAATCC CTC
TCCATGTGTGCCTCGCACAT CC AGCTATAGC ATGTGTGC
ATTATGCAAACCCAGCTGTA GG TTGATGTCG TATACACG
GTTAGG A ACCCAAACGTAT ---
GAM56117 6751 CCAGCTATCCGGAGGGGTTT - ATCC-- - TT- G ATATAA
CCAGGTATATAAGCATGGTG CCA GCT GGAGGG GT CCA GT
TGCGCCTTCCTGCCACAGCA GGT CGA CCTTCC CG GGT CG
TGG A CACCGT G TGT A ------
GAM56149 7257 CCAGCTGAATTGAATTTTTG A GA TG ----- AAATAAGC
TAGGCAAATAAGCGTTTTAA CC GCTGAATT ATTTT TA GGC
GTATGAGAATGATTTAGTAG GG TGATTTAG TAAGA AT TTG
G A -- GT GAATT --------
GAM56183 6992 CCAGCTTCTAGATGACATAG -- TAGATGACATAGA A T TTTCAT
AATGACATGTAATGCTAAAT CC AGCTTC ATGAC TGTAA GCTAAA
TTCATTTTGGCTTTGCAAGT GG TCGAAG TACTG ACGTT CGGTTT
CATGAAGCTTAGG AT ---------- A T ------
GAM56196 10124 CCAGCTTTCCTGCCAGAGTT TC -- - TT T CGA CCCA
CTGCCGAGGCCCACCAGCTG CCAGCTT CT GCCA GAG C GC GG
GTCTTATGGTAAAGTTAAGC GGTCGAA GA TGGT TTC G CG CC
TGG TT AA A TG T A-- ----
GAM56209 13633 CCAGGAAATGAATGAGCTTG GAAAT---- A G AA GCTC
GGTAATGGAGCTCTCTGAAG CCAG GAATG GCTT GGT TGGA
CTGAGGCCATTTTTACAAGA GGTC TTTAC CGGA TCG GTCT
ACTGG AAGAACATT - G AA ----
GAM56214 4995 CCAGGAACCATTCAAGTAAA AA ATT---- AA-- CA GAGGA
TGGCCATGGAGGACAGCCAT CCAGG CC CAAGT ATGGC TG
CAAAACTTGTGAAGAGGGGA GGTCC GG GTTCA TACCG AC
CCTGG AG GAGAAGT AAAC -- -----
GAM56216 17856 CCAGGAACGCTGCAGAGGCG AA CAGA--- ---- GGG- C CAAGGCCCGA
GGTTGGCCGGGGGGGCGCTGC CCAGG CGCTG GGCGGGT TGGCCGG GCGCTGC GCC

CGCCCAAGGCCCGAGGCAGC GGTCT GCGGC CCGCCCA ACCGGCT CGCGGCG CGG

GGCGCGGGATCGGCCAAAGC GG TTGACCG CGAA AGGG A ----------

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          ACCCGCCGCCAGTTCGGCGG
          GTCTGG
GAM56234 7722   CCAGGACAGCATCGAGGCCG     ACA   C    CC-   G   G   C  AA   C  ATG    CGACA
          CCCGGGCCGTGCCAGAACTG CCAGG   GCAT GAGG   GCCC GGCC TGC AG  CTG GC   CTGGA

          CGCATGCTGGACGACATCCG GGTCC   CGTA CTCC   CGGG CCGG ACG TC  GGC CG   GGCCT

          GAGCCGGCTGCAGGCCGGGG     CCC   C    AGA   G   -  - --  - A--    -----
          CAGACCTCCATGCCCCCCTG
          G
GAM56266 17568  CCAGGAGCAGATCGGTGGAG   A  A   --   C      AT-   -  TGCCAGAT
          ATGCTGCTGCCAGATGCTAG CC GG GCA  GAT GGTGGAG   GCT GC
          CTTGCTCCGCCTATCCCTGC GG CC CGT  CTA CCGCCTC   CGA CG
          CCGG              -  -   CC   T      GTT   T --------
GAM56267 278    CCAGGAGCAGGAGAAGGTGG     AGCAGGAGA       C  C   GTCA
          AGCGGCGCCGTCAGGTCCCC CCAGG        AGGTGGAG GG GCC
          TTCCACCTGCACATCAACCT GGTCC        TCCACCTT CC TGG
          GG                  AACTACACG       C  C   ----
GAM56268 7543   CCAGGAGCCCGTGAGTGTGC    GA-    TG G    C    ACAC  ACTAG
          CCCAGACACTGACTAGCACG CCAG   GCCCG  A TGTGC CCAG    TG
          CTGGAGCACATTGTGGGCCA GGTC   CGGGT  T ACACG GGTC    AC
          GCTGGG              GAC     GT -    A    GC--  -----
GAM56278 11519  CCAGGAGGCAAGACCTTCAT    G   CAAGACCT   T  T     CCAGA
          TGTGGGAGACCAGATCTCCT CCAG AGG       TCA TG GGGAGA
          TCGCTGACTACAACCTGCTG GGTC TCC       AGT GC TCCTCT
          G                  G   AACATC--   C  T     -----
GAM56338 19430  CCAGGCATCCTGCCCCCCAG     CA     C-   -  G    C-    G    C  TCAG
          GTAAGCCCAGGCGTCCTCTC CCAGG  TCCTGC  CCC CA GTAAG  CCAG CGTC TC
          AGGAGATGCTGGTCCTTGCA GGTCC  GGGACG  GGG GT CGTTC  GGTC GTAG AG
          TGTGGGCAGCAGGGCTCCTG     TC     AC   T  A     CT    -    -  ----
          G
GAM56345 16268  CCAGGCATGGTGGTGCATGC     CAT-     GCAT-   G    --   TTAC
          CTGTAGTCCCAGTTACTTGG CCAGG    GGTGGT     GCCT TAGTC  CCAG
          AAGGCTGAGGCTGAGAATCA GGTCC    TCACTA     CGGA GTCGG  GGTT
          CTTGAACCTGG             AAGT     AGAGT    -    AA    ----
GAM56362 4860   CCAGGCCGGGCCACCGCCGG     ------       C   G     CCCCT       C  C  G  CCGA
          CCCCCTGGGCTGTCCGCGGG CCAG     GCCGGGC ACC CCGGC     GGGCTGT CG GG AG
          AGCCGACTGCCTGAACAGCT GGTC     CGGTCCG TGG GGCCG     TTCGACA GT CC TC
          TTACCGCCGGGGTGCCTGGC     GTGCTT     -   -     CCAT-      A  -  G  ----
          TTCGTGCTGG
GAM56397 16231  CCAGGCTGCGGGCCAACCAG   A        CCAACCAGA       A  T-   AACAC
          AGCTGGGAAGATTCGAACAC CC GGCTGCGGG        GCTGGGA GA  TCG
          CGACCTCGTCCCGGCCCCTG GG CTGACGTCC        CGGCCCT CT  AGC
          CAGTCCGG            C        C--------       G  CC   -----
GAM56398 4810   CCAGGCTGCTGGGACTGGGC        C-    ACT     G        TGAA   GTCAGGA
          TGGTTTTGTCCTTGAAGTGG CCAGGCTG  TGGG   GGGCTG TTTTGTCCT    GTG
          TCAGGATACAGGACAAGGGC GGTCCGAC  ACCC   CCCGAC GGAACAGGA    CAT
          AGCCCCACCCCATCCAGCCT        CT    CAC      G        ----   -------
          GG
GAM56410 5193   CCAGGCTGGAGTGCAGTGGC    ----     -  T    T-  C     CTTGGCTT
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GCGGTCTTGGCTTACTGCAC CCA GGCTGG AG GCAG GG GCGGT
CCTCTGCCTCCCAGTTCAAG GGT TTGACC TC CGTC CC CGTCA
TGG GAAC C - TC A --------
GAM56439 7052 CCAGGCTTATGGGACTTCTG - T GGGA---- G A- CAT
TTATCTGCATTAGAGAGAGA CCAG GC TAT CTTCT TT TCTG
GAAGACAACAAAATATGCAC GGTC CG ATA GAAGA AG AGAT
TGG A T AAACAACA G AG ---
GAM56477 2179 CCAGGGCAGGGGAGTAGGGG GG- GG A GGCTT TAA
CTTAGGTGTTTTAAAAACAC CCAG CAG GAGT GG AGGTGTTT
CTCTGGCTTTTCTGATGTTG GGTT GTC TTCG TC TCCACAAA
G GTA TT G ----- ---
GAM56482 14111 CCAGGGCCCAAGGACTCAGA GG AAG C GAAGAG CACCAAGACTG GGAA

AGAGGTGCCCACCAAGACTG CCA GCCC GA TCA GTGCC GAC
GACGGAAGTCGATGACGATG GGT CGGG CT AGT CACGG CTG
GCACAACGGTGACTCGCGGG A- GCG C GGCAA- TAGCAGTAG-- ----
GCATGG
GAM56508 102 CCAGGGGTGGGAATACAGGG - GGGAA AG G GAG A--- AAGAG
GGTGGGAGGTGTACATAAGA CC AGGGGT TAC GGG TGG GTGT CAT
GGTGATAGGCACAGGCCAGC GG TCCCCA ATG CCC ACC CACG GTG
CCGGTACAGACCCCTAGG A GAC-- G- G GGA GATA -----
GAM56529 16912 CCAGGGTTGCTGTGAACAGC T AACA T-- TATTTGTT
TTTAGATATTTGTTTTTGCA CCAGGGTTGC GTG GCT TAGA
CAGCCACACTGCGGCCTTGG GGTTCCGGCG CAC CGA GTTT
T AC-- CAC --------
GAM56562 12042 CCAGGTCTTGTAGCAGCGCC G - T A A --- C GAGAAGCCAACA
TCCTCGAGAAGCCAACAGAG CCA G TCT GT GC GCGC CT CTC
CAGTAAGCGCAGCAGCCGGA GGT T AGG CG CG CGCG GA GAG
GTGTGG G G C A A AAT C ----------
GAM56566 11654 CCAGGTGAATGGCTGGTTAG - GA G T - A T T TTACCAGACTCTT
AAAGTTCTTTGGCTCCTTAC CCA GGT AT GC GGT TAGAA GTTC TTGGC CC
CAGACTCTTGGGCCAGTGGG GGT CCA TG TG CCG GTCTT CGGG GACCG GG
CATTCTGTGCCTGTGGTGAC G G- G T T A T - ----------
CGTGG
GAM56593 17082 CCAGGTGTGACAGGATCCAG ---- A GC----- C A GTCAC AG - GT
CCCGCTGGCAGGAGGAAGGT CCAG GTGTG CAGGATCCA CCGCTGG AGG GGAAG GA CA
GGAG
CACGAAGCAGGAGGTAAGCC GGTC CGCGC GTTCTAGGT GGCGGCC TCC CCTTC CT GT
CCTT
CAACGGCCAATTCCATGATC ACGG G AAGCAAC - - GAACC A- A AA
CCAAGCTTCCCCTCCGGCGG AA CAAC
CAACGAATGGATCTTGGCGC GCC
GCGGCACTGG CGG
C- ----
GAM56594 10413 CCAGGTGTGGGTCCTCACAC G- T TCACAC CA- G CATAT
AAGCCAGGGGTCCATATGAG CCAGGT TGGG CC AAGC GGG TC
CCCGCAGCTTCATGGCCCAG GGTCTA ACCC GG TTCG CCC AG
AATCTGG AG - TAC--- ACG G -----
GAM56693 11783 CCAGTGAAGTGTCCAGACCA AA - C -- - TCTTCCAACCC
TTGTCTTCCAACCCCAGCTG CCAGTG GTGT C AGA CCA TTG

GCCTCTAGAACACCCACTGG GGTCAC CACA G TCT GGT GAC
C- A A CC C ----------
GAM56718 22113 CCAGTGCCCCTGGGGCAGCT CAGTGCCCC G - GTC- AT C - TC-- TT
GGTAGTGTCCAGAAGAATGG C TGGGGCAGCT G TAGT CAGAAGA GGA AC CTGC CAGAT
AGA
ACACCTGCTCCAGATTTAGA G ACCCTGTTGA T ATCG GTCTTCT CCT TG GGCG GTTTG
TTT
TGCCCATCTGGGCTTTTGTT AGA------ G G AAAT GT - C TTTA T-
TGATTTGCGGCGTTCCTGTC T ATCT
TTCTGTAAAGCTAGTGAGTT GCCC
GTCCCAAGAG CGGG
- ----
GAM56735 7971 CCAGTGGCGGCAGCAGGGGT T G CAGG- - AT GG GCTTTA
GGGCATCCGGGCTAAGGCTT CCAG GGC GCAG GGTG GGC CC GCTAAG
TACTTGGCGGCAGTCTCATC GGTC TCG CGTT CTAC CTG GG CGGTTC
GGATTTTGCAGCTTCTGG T A TTAGG T AC -- ------
GAM56785 13230 CCAGTTCGAGGCTGCTGCGC GA TG CGC- CT TAT
GCCCTGCGCTATGTGCTGGC CCAGTTC GGC CTG GCC GCGC
AAATCAGTGGTCAGAGCTGG GGTCGAG CTG GAC CGG CGTG
A- GT TAAA T- ---
GAM56804 16070 CCAGTTGTTCAATTTCCAGA T ATTT ACA A C--- AG ATTTTCACATCCCTCTG
GACAGCTTATATACCTCCAG CCAG TGTTCA CCAGAG GCTTAT TA CTCC GGCC
GGCCATTTTCACATCCCTCT GGTC ACGAGT GGTTTC TGAGTA GT GAGG TTGG
GGGTTTGGGAGACACTGCAT C GTCC C-- C CACA GT ----------
GAGTCCTTTGGCCTGTGAGC
ACCTGG
GAM56810 9922 CCAGTTTCAACCAGAGTTCC ------- A--- TCCAA AT CTCCA
AACCAATGGGCTCCATCCTC CCAG TTTCA CCAGAGT CCA GGG
TGGATTCTGGCCAATGAAAT GGTC AAAGT GGTCTTA GGT CCT
ATCTCCCTGG CCTCTAT AACC ----- CT -----
GAM56847 13340 CCATAAGGGTGTTCCGGGAC AAGGG ---------- AT G ACAA
CCCATTTTTTTGTTACAAGG CCAT TGTTCC GGGACCCC TTTTTT TT
GGGAAAACGGGGGTCCCCAA GGTA ATAGGG CCCTGGGG AAAAGG GG
AAGGGAGGGGATAAATGG A---- GAGGGAAAAC GC G ----
GAM56853 15275 CCATAATCTTCATAGCAAAC AATCTT--- - CTT- AT AAAAAAAA
TTGAAAATTGAAAAAAAAAA CCAT CATA GCAAA GAAA TGAA
TTCACATTTCCTTATTTGCT GGTA GTAT CGTTT CTTT ACTT
TATGTACTACCCCATGG CCCCATCAT T ATTC AC --------
GAM56962 1881 CCATCAGGAGAGGGGGGGTC - G T AG -- GTGTTA
AGAAGGGGACAGGGTGTTAC CCATCAG GAGAGG GGGG CAGA GGGACA GG
TGGTGTTTTAATTTGCTCCG GGTAGTC TTCTCC CCTC GTTT TTTTGT TC
CCTCTTGCTGATGG G G - AA GG ------
GAM56974 11246 CCATCATGGCTCAGATTGGC - TG - A -- C A- TCCT
TCCTATGTTCCTGCAGAAGA CCATC A G CTCAG TTG GCT CT TGT
AGCGACAATTGGGATTGTGG GGTAG T T GGGTT AAC CGA GA ACG
ATGG G GT A - AG A AG ----
GAM57025 2218 CCATCGCGGACGAGGAATGG CG C TGG C CATTATTT
GTCTTTGACATTATTTTCAA CCAT CGGA GAGGAA GT TTTGA
AACGTTTCTTCCTTCGTAGT GGTG GCTT CTTCTT CA AAACT
GG AT C TG- - --------

GAM57047 15067 CCATCTCTACTAAAAATTCA T TTACAGACAT GCAC
AAATTAGCTGGGATTACAGA CCATCTCTACTAAAAAT CAAAATTAGCTGGGA GTG
CATGTGGCACCACTCCCGGC GGTAGAGGTGATTTTTA GTTTTAATCGGCCCT CAC
TAATTTTGTATTTTTAGTGG T ---------- ----
AGATGG
GAM57050 13296 CCATCTCTGTGACTTCCTGG GTGACTTC GA CTAGATGA
AGACTCACTTCCTAGATGAG CCATCTCT CTGGA CTCACTTC
AAGTGAGCTTTCAGAAGAGG GGTGGAGA GACTT GAGTGAAG
TGG A------- TC --------
GAM57067 16184 CCATCTGTGGTCCGGCTCCT TCT TC---------- GTGA
GGTGACAGCTGGTGCCAGAC CCA GTGGTCCGGC CTG
CCATGGCGCTGGACCGCCCT GGT CGCCAGGTCG GAC
GG CC- CGGTACCCAGACCGTGGTC ----
GAM57070 1407 CCATCTTAAAATAAATGAGA AATAAAT A - T- TTGC
TTGTGTTTACTTTGCAGTAA CCATCTTAA GAG TTG TG TTACT
TTCATCAAGCTCTACTCTTA GGTAGGATT CTC AAC AC AATGA
GGATGG CTCAT-- G T TT ----
GAM57072 15484 CCATCTTACGTATGTGTTAA TTACGT GTTA C CTC TGATT
GTTTCTCTCTCTGTTGATTA CCATC ATGT AGTTT TCT TGT
CAAGGCAAGCTCCAAACATT GGTAG TACA TCGAA GGA ACA
AAAATGATGG TAAAAT AACC C --- -----
GAM57115 17614 CCATGAATTCTTCAAAACTT A ----- - TTTTT CTACTT
TTTACCTACTTGTTATCTGT CCATGA TTCT TCA AAAC AC
TTATGAAAAAAAGAATTATG GGTATT AAGA AGT TTTG TG
G - AAAAA A TCTAT ------
GAM57119 13335 CCATGACACAGTTCTGTCTT ACA---- G G - TG GGAC
GGCCAGGGACCTGGCTGGTG CCATG CA TTCT TC T GCCAG
GAGAGGTGGAAGTTGCATGG GGTAC GT GAGA GG G CGGTC
GTTGAAG G - T GT ----
GAM57130 7490 CCATGAGCACGGTGAAGCAG T CGG CA CAAGACATTCCATATACT
ACCCAAGACATTCCATATAC CCA GAGCA TGAAG GACC
TGGTCCCTTTAATTGCTCTG GGT CTCGT ATTTC CTGG
G - TA- C- ----------
GAM57131 10305 CCATGAGCGTCCCAAGATTT C---- A A-- - CCCAA
CCAGTCCCAAGCTGAGAGAC CCATGAG GTCCC AG TTTC CAGT
CCCTCGGGACCGTTCCTCAT GGTACTC CAGGG TC AGAG GTCG
GG CTTGC C CCC A -----
GAM57165 11688 CCATGCAGGCTACTCCATGT GCT ------- CG T CACCGT
TCGGGGCTGGCCTCACCGTA CCATGCAG ACTCCAT GTT GGGC GGCCT
GGCCTGTCTAACCTCTTCTG GGTGCGTC TGAGGTG CAA TCTG CCGGA
TGGAGTCTGCGTGG --- TCTTCTC -- T ------
GAM57178 21966 CCATGCCGTTAGTAACGAGG T - AG -- - A GA CAA CCTG
AACATCGAGCCAAGGCACCT CCA GC CGTT TAACG AGG AAC TC GC GGCA
GTGCCAGTCAGACGTTGCCT GGT CG GCGA ATTGC TCC TTG AG TG CCGT
AGCGTTAGAAGCGAGCTGG - A AG GA G C AC A-- ----
GAM57251 223 CCATGGTTGCTTTTAAAATC T GCT- AATC TT TATCTTG
TTGTATTTGGTATCTTGTCA CCA GGTT TTTAA TTGTA TGG
TTTACAATACCTTGAGTCTA GGT CCGG GAGTT AACAT ACT
GGCCTGG - ATCT CCAT TT -------
GAM57269 17297 CCATGTCATCAGCGTGGACC TCAG - - T AGACCAGAAGAA

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          CTTCAGACCAGAAGAAGACG CCATGTCA   CGTGG AC CC TC
          GCGTGCTATGACATTGACGT GGTGCAGT   GTATC TG GG AG
          GG                   TACA    G  C  C ------------
GAM57296 22510  CCATGTGTTCACATGTTCTC   TGTGT  A        --- TT   CTC
          ATCATTTAGCTCCTATTTGT CCA    TC CATGTTCTCAT   CA  TAG
          AAGTGAGAACATGCGGTATT GGT    GG GTACAAGAGTG   GT  ATC
          TGG                TTAT-  C         AAT  TT   ---
GAM57297 12065  CCATGTGTTCGAGTGTAATT   AT     -    A   AGAGA  AG-  TG   GTATCA
          TAGAGAGCAGCGTGGAGAGT CC  GTGTTCG AGTGT ATTT    GC   CG  GAGA
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          AATGGCATTACGGACATCAG   AC      A    G    AG---  GAA  CA   ------
          G
GAM57308 15330  CCATGTTGGATAAGGGATCA   TGTT   TAA--   TCAG  G    CCCAACC
          GCCGTTGATGCCCAACCCAT CCA    GGA    GGGA    CC TTGATG
          CAAAGGATTTTCCCATCGCT GGT    CCT    CCCT    GG AACTAC
          CCCTGG             C---   CGCTA   TTTA  A    -------
GAM57324 10568  CCATTAAGGCCCTGGTGTCC     AA   C   TGTCCCGC    -  CAAG
          CGCTGCCGGGCCAAGGCCAC CCATT  GGC CTGG       TGCCG GGC
          GGCATCTCAGTCCAGTGCCC GGTGA  CCG GACC       ACGGC CCG
          AGTGG                C-   T    TGACTCT-    A  ----
GAM57334 15960  CCATTAGTTAAATTCCTTCA   AT    T    T  TT   T    T   AATGCAGC
          TTCTCATTAGAATGCAGCCT CC  TAGT AAAT CC  CAT CTCA TAG
          GCTGAGTATGTGGGTTTCAC GG  GTCA TTTG GG  GTA GAGT GTC
          TGCCGG             CC    C    -  T-   T    C  --------
GAM57341 22852  CCATTATTCCAACGGCTTCT     AT----         --  GTACTG-    T   A    ATCGATG   AA-   -
          GTACTGTTTATGCTAAAACT CCATT      TCCAACGGCT  TCT       TTTA GCT AAACT      GGC   CAG A
          ATCGATGGGCAACAGACTAT GGTGA      AGGTTGCTGG  AGG       AAAT CGA TTTGA      CCG   GTT T
          TATTGCATGTATTGAAAGCC     GACTAG         TA   TCTTCAA    C   C    CCA----   AAA   A
          ACCAGTTTCAGCCTAAAAAC  TATTATTGCAT
          TTCTGGAATGGTCGTTGGAG C
          ATCAGAGTGG          G
                    -----------
GAM57366 22496  CCATTCCCGATACACCTTAC     TC     ------- A    A     G  T    GCC
          TTACTGTGTGTTGGCCCAGC CCAT  CCGAT       AC CCTT CTTACT TG GTTG
          CAGAGTGAGGAAGGAGTTGG GGTA  GGTTA       TG GGAA GAGTGA AC CGAC
          CCACATTGGAGATGG         GA     CACCGGT  A    G     G  -    ---
GAM57375 5229   CCATTCGTCAGAGCAAACAC    TTC       AAACA--   A  G    TAGC
          AGATCGCAGGTAGCCCTGGA CCA   GTCAGAGC      CAG TC CAGG
          GCTGAGGAATAGCTTTGATT GGT   TAGTTTCG      GTC AG GTCC
          TTTGG                TTT       ATAAGGA   G  -    ----
GAM57379 15562  CCATTCTATTCTCTTAGATT     CTATT       TTTTTTG--   TAATTTT
          TTTTGCTGTAATTTTTAGAA CCATT     CTCTTAGA        CTG
          CACTTCCTCTAGGAGTTTCT GGTAA     GAGGATCT        GAT
          AATGG                TCTTT       CCTTCACAA  -------
GAM57410 613    CCATTGATTATCCTCCTTGG     TG  TATCCT       GGAAATTTTGAAGGACA
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          CAGCCAAGGTACTTATTGGT GGTG  TA     GGAACCGAC
          GG                   GT  TTCAT-       -----------------
GAM57414 16086  CCATTGCCATTTCTACATGT    T    TT   ACA   T   C    TTACCCT
          TATTCGCTTGTTACCCTCAA CCA TGCCA  TCT   TGT ATT GCTTG
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GTTGATACAAGGTCTGGCAT GGT ACGGT GGA ACA TAG TGAAC
TGG T CT --- - T -------
GAM57415 15682 CCATTGCCCACGTCCTCCCA GCCCAC-- C------- - A GACC CCC TTTG
GCCCTGCACAAGGACCGGCC CCATT GTCCTC CAGCC CTGC CAAG GGC GT
CCGTTTTGACTTTGCCAATT GGTAG TAGGAG GTCGG GGCG GTTT CCG CA
TGGCGGTGGCTGCCACGCAA AATCCGCC AACGCACC T - AA-- TTT ----
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GAM57429 11848 CCATTGGTTGCTGTTCAGGT TG GC TT G - ----- ACAACAC
CAGCTTTGCTCCTAACAACA CCAT GTT TG CA GTCAGCT TTGC TCCTA
CTGGGAAAGAAGTAACAGTT GGTA TAG AC GT CAGTTGA AATG AGGGT
GACGTGCAAGATTGATGG GT A- -- G C AAGAA -------
GAM57453 22854 CCATTTATGCATAGAACCTT TTAT A C---- T CT TTAAAAATCT
GAACTCTAGTCTTTAAAAAT CCAT GC TAGAA CT GAACT AGTCT
CTAGGCTTTAGTTTCAGCTC GGTG CG ATTTT GA TTTGA TCGGA
TTTTTTAGCTGTGTGG TGT- - TTCTC C TT ----------
GAM57463 13817 CCATTTCCTTAGAGGGGAGT T AGA GTCTTCA ATTCCCC - GAAC
CTTCACCCAAATTCCCCGTG CCA TTCCTT GGGGA CCCAA GTGT CTT
TCTTGAACAAGTACACTTGG GGT GAGGGG CCCCT GGGTT CACA GAA
GTCCCCAGGGGAGCTGG C A-- ------- ------- T ----
GAM57480 259 CCATTTGAGGATGAGTCCGA GAGGATGAG G AGGCACAG
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GGCCCCTGGAGGAAGAAGAG GGTAGG AGG TCCCCGGGGA
GATGG AGAAGAAGG - --------
GAM57493 17099 CCATTTGGTTAGTCAAAAGG TT TTAGTC --- TAAATGTTGGT
GTTTTATTGCTAAATGTTGG CCA TGG AAAAGGGTTTTA TTGC
TGTAAAGTTGAGACCCTTTT GGT ACC TTTTCCCAGAGT AATG
CCATTTGG TT ------ TGA ----------
GAM57498 5309 CCATTTGTGTGTGTGTGTGT T TG TG TG TG GGTGT
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G T GT GT GT GT -----
GAM57522 19569 CCCAAAAATTATTATAGATG AATTATTATAGATG - GA TGA
AGAGAATTGAATGTGACATA CCCAAA AG AGAATT ATG
AGTTCTACTATACGCGTGAC GGGTTT TC TCTTGA TAC
TTCTTTGGG CTTCAGTGCGCATA A A- ---
GAM57533 10404 CCCAAACACCACGGATAACA AACA- C - AACACC- CCCTTTTTT
CCCCTCCCCCTTTTTTGGAG CCCA CCA GG AT CCTCC
GCTGACTGATACCTGGACTT GGGT GGT CC TA GGAGG
CTGGG CTTCA - A GTCAGTC ---------
GAM57548 14221 CCCAAAGCAGCTGGCAGAGA C AGCT- AC GACTTTTTTA
CTTAGGGGACTTTTTTATTT CC AAAGC GGCAGAG TTAGGG
TAATATTTTGCCTAACAGCT GG TTTCG CCGTTTT AATTTT
TTAGG A ACAAT AT ----------
GAM57553 5014 CCCAAAGGATGGCTGGAGGG AGGA -------- A - TGCG
CTCGGCTGCGGCGCGGGTCC CCCAA TGGCT GG GGGCTCG GC
CCGAAGACTTGGCCAGGTTG GGGTT ACCGG CC CCTGGGC CG
GG GG-- TTCAGAAG - G ----
GAM57576 6891 CCCAACAGCCTCCTGTGCCT A C TGT-- CT T GGGGT CA AGCTGA
GCTTCCCTGTGTGTCGGGGT CCC ACAG CTCC GCCTGCTTCC GTG GTC CCTC GGG
CCTCCAGGGAGCTGACCCAG GGG TGTC GGGG CGGACGGAGG CAC CGG GGAG CCC

AGGTGGAGGCCACGGAGGCA C A TCTCT -- - AGGT- A- ------
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G
GAM57592 5041 CCCAACGGGAGGCCTAACAT AACG G ACATAAA-------- ATGT
AAAGCATGTGCCAGGCCAAT CCC GGAG CCTA GC
GCCAACTAGGACTTCAGGGG GGG CTTC GGAT CG
GA-- A CAACCGTAACCGGAC ----
GAM57598 1654 CCCAACTGTTTGCACAGGGT C T T C G T AC - - A GTACAAGGGA
CATCCACAGGCTCCTGAGGG CC AAC GT TG ACAG G CATCC AGG CTC CTG GGG
GTACAAGGGACCCCAGTGAG GG TTG CA AC TGTC C GTGGG TCC GAG GAC CCC
ACCTCAGGGTGCACTGTTCA C T C T A - AC A T - ----------
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          CCCTCCCTTCGGGGGTGTGA GGGT GGTC    TCGT CCTCG   GGGG  GG   CGGA GG GAGG  AGT
TA

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          TCCATGCTCTGGATGGG

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                       CC  T      CCAACCCCC    ------
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TGAGG A - ACAC TCC ------
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G TA--- C T TT T- -------
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G ACCCCCCTACA - ----------
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        TCTGGAGCTGCTCTTCCCTG CCCG GGCCCCG GC  CAGGGCTC  GGAG
        GGCTCTGCAGCTTGGGGTCC GGGT CTGGGGT CG  GTCTCGGG  CCTT
        TGGG              C     T AC      TC   ------
GAM59058 2050   CCCGCGTATCATACACCTTC    C  T    CCT-  TAG-   ----   CAAGG
        CTAGGGGCGTGAGTCAAGGG CCCG GTA CATACA   TCC   GGGCG   TGAGT
        CTCAGGATTGCCCATGTGGA GGGC CGT GTGTGT   AGG   CCCGT   ACTCG
        TCACTGTGTGCTGCTCGGG    T  C    CACT  TGTA   TAGG   -----
GAM59088 12110  CCCGGAGCCCAGTCACAGCG      CC   CAC  G  G   - AGCACA
        GTGCCTGCCTAGCACAAGTG CCCGGAG  CAGT   AGC GT CCTGC CT
        TAGGACAGCTTTATTGATCT GGGTCTC  GTTA   TCG CA GGATG GA
        CTGGG               TA   TT-  A  -   T ------
GAM59093 13714  CCCGGAGGCCAAAGCAGATG   G   AAAGCAGATG  C   AGG
        CTGCACCAGAGGCTGGTCAG CCCG AGGCC        CTG ACCAG
        AACCCGGGAGGGCCTGCGGG GGGC TCCGG        GAC TGGTC
                  G   GAGGGCCCAA  -   ---
GAM59102 19422  CCCGGCCTCCACAGGTGCCA     C  A   T CAAA  AATCG     CCTAAAAA
        AAACTAATCGGGCAGACCCT CCCGGC TCC CAGG GC   ACT    GGCAGAC
        AAAAAGTCTGCCAGTCGCCC GGGCTG AGG GTCC CG   TGA    CCGTCTG
        TGGGAGTCGGG          -  -   - C---  -----      --------
GAM59104 13574  CCCGGCCTCGTTGCCCCCTG   G  -  C--      CTG   CCCTC  TCATC
        GCGACCCTCAGCTCATCGCT CCC GC CT   GTTGCCCC   GCGA    AGC
        ATCATCGTGGGGCAGCTCAA GGG CG GA   CGACGGGG   TGCT    TCG
        GAGCAGGG           A  A  ACT      ---   ACTA-  -----
GAM59135 4900   CCCGGGAGGAGGCAGTGCGA   GG   AG  AG   AGAG   GGAGATGG
        GAGCTGCAGGAGATGGTGCA CCC  GAGG  GC  TGCG   CTGCA
        GGCGCAGGCGGCCTCGGGGG GGG  CTCC  CG  ACGC   GACGT
                  GG   GG  G-   G---    --------
GAM59172 11198  CCCGGGATCCACGGGAGGCG     A---   C      G   C  AG  T  AGAT  CCAG
        GCGGCCGCAGCCTGGAGATT CCCGGG   TCCA GGGAGGCG CGGC GC  CC GG   TCC
        CCCCAGGGACCCCCCCGGAG GGGCCC   AGGT CCCTCTGC GCCG CG  GG CC   AGG
        CCGCCGCGTCTCCCATGGAC     GTTC   A      -   C  A-  C  CCCC  ----
        TTGCCCGGG
GAM59177 17505  CCCGGGCCAAGGCCGCCAGA      CAA  CC   G    CTT   TTTCCACACT
        GGGTCTTTTCTTTCCACACT CCCGGGC   GG  GCCA AGGGT   TTC
        GAGTTTGCTTTGTGGTTTCC GGGCCCG   CC  TGGT TTTCG   GAG
        ATGCCCGGG             TA-  TT   G    TTT  ----------
GAM59184 21993  CCCGGGGAAATAAGGCCCTC    G  AAATAA    - GA   CAA   GAATGGAAAGA
        GAATGCAAGGGGAATGGAAA CCCG GG     GGCCC TC  ATG   GGG
        GATCCCATAGGACGGGCCCA GGGC TC     CCGGG AG  TAC   CCT
        CACTGCGGG            G  ACAC--    C  GA   ---   -----------
GAM59201 10469  CCCGGTATCATTCCTCGAAT     ATCAT- C    TT    --  G-  A   AT  AGAC       G   TGG
        TTCAGTGCGGGAACCAATGC CCCGGT     TC TCGAA  TCAGT  GCG  GA CCA  GC    TGGCATTAAG
CTG
        AGACTGGCATTAAGGCTGTG GGGTCA     AG GGTTT  AGTCA  TGC  CT GGT  TG    ACCGTGGTTC
GAT

        GATAGCTTGGTGCCAATGGT     GACAGC  T    T-    AG   GA  -   GC  GTA-       -   ---
        CGTGGTCAGCGTGAACTGAT A
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TTTGGTGACGACAGACTGGG

-

GAM59243 7101 CCCGTTAAGTCCCCCAAAGA A- CCCCCAAA- TTACCTGTGAGAT
TGAGATTTACCTGTGAGATG CCCGTTA GT GATGAGAT
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TGATGGG CC TCTACAACC ----------
GAM59256 13802 CCCTAACATTGAGTTTCATG A TTCATG A A TACAAATTGTTACAATAT
TGACTATGACATATTCTACA CCCTAAC TTGAGT TG CTATG CATATTC
AATTGTTACAATATGAATAT GGGGTTG AATTTA AC GGTAT GTATAAG
GGTATGGACAAATTATTTAA A TTAA-- A G ----------
AGTTGGGG
GAM59267 21722 CCCTAATACCTGTCATCCTC TAATA CATCCT TA - G G- TTTACACAC
CATAGAACGGTGTGGGTTTT CCC CCTGT CCA GA AC GTGTG GTT
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ATCTGGCAATACAGGCGATG TAGC- TAAC-- -- A G AG ---------
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GAM59301 5138 CCCTAGAGACTATGTCTTTT GAGACT T AC-- TA G A- - TGGGCCTT
AACGCCGTGTACGACGTCGC CCCTA ATGTC TTTA GCCGTG CGAC TCGCC GCT AGA
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GGTGAGGTGAGTTGCCTGCG ------ T GGGA CC - AG C --------
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GAM59319 7949 CCCTAGGCTCAGTCGCTGCA T A CTG------ AAAGTCTACAC
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TCGGG C G TTTTTTCAA ----------
GAM59326 4606 CCCTAGTCCGCCTTCGTTCA C G TC A AGGAATGGA AGATGG
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CCTGAACAGGAGGGCTATGG T A -- C A-------- ------
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GCGAACCTTTAACAGAGTCC CCC T TCCAAT AAGG GA CT
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GGG CAAAATC GT A - GA -----
GAM59348 22991 CCCTCACAGCTGCTCTCTGG ---------- CT AGAGGTTGGCATA
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GAGGG CCACGTTAAC AT ----------
GAM59368 10538 CCCTCATACCAACTGTGGAC CATAC GA TGGAATA AGCA
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G AAAAT G- TGATG-- ----
GAM59388 11152 CCCTCCACGACAGGCTTGCT --- GC TG A A ACA -- CCAGT
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GTGGTGAACTGTGCCCGTGG CCG A- GT G - GGG GA -----
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GAM59389 16992 CCCTCCAGAACCTGTGCGAG AAC ------- GA AAGA TGAA
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AGGG AAA AGTCCAC AC AGA- ----
GAM59395 4957 CCCTCCAGTCCCCAAACCAG T -- CCAA T-- C CCTGCA
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GTGGG T GA TGAC TTT - ------
GAM59398 8001 CCCTCCCAAAGGCGGCAAGC T AAAG AA- - T CGGGAGAT
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CGGG C GAGA AGG C C --------
GAM59414 17350 CCCTCCCGGGTGCCCCGAGA CC CCCCGAGA GGCC-- TAACACTTCTT
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GAGGG TA -------- ACATCT ----------
GAM59429 596 CCCTCCGCCCCTATCATGGG CG TATCAT CACAGGC CAAGT
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GTAGAGGG AT ------ TAAA--- -----
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CCCCTGGCCCCGTCGCCCCG CCCTCTCC GCTC CCCCTGGCCCCGT GCCC GCCC
CCCTCGCCGGGCTGGGCTGC GGGAGAGG CGAG GGGGACTGGGGCG CGGG CGGG

GGGGTCAGGGGCCGAGCGGA --- CC--- T T -----
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GAM59512 19488 CCCTCTCTGTTTTTGGTCTG T TTTTT - A AT-- TCA
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G T ----- A G GGAT ---
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GAM59618 13360 CCCTGCCTTCCGTCGTGGTC CTTCC C T - GGCTCA
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T---- A - A ------
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G TTTTT TTG- ------
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GGG AA- AG ACAAGCA --------
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GACGTTCTCGCCAACTCAAC CC TGGT GAAGCT GTGGG
CCCATGAGCTTCCAGCCAAG GG ACCG CTTCGA TACCC
G A AC- G ----------
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GAM59792 10476 CCCTTCCGACTGCCACCTGG - - A GGAAGG TG T T TCTC ACCT
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G A ATC TCAC- ----
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GAM59837 11657 CCCTTGACTTAACTTTTTAA G AACTTTT TTGTTT AAGAGTG
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GTGGGGGG G ------- ------ -------
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ATCTTTGTAATCTTAATAAG TAAT AT TTCTAA TC - - ------

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GAM59861 363 CCCTTGGTAGATGGGTGCAC T A G ATGACGAC- G GAACAA
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GAM59864 22033 CCCTTGGTTCCAGCGTCATG --- -- -- TGTCTGCT
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AAGGG GTG CG AG --------
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ACCAGGG CCA - G G AA -------
GAM59927 11643 CCCTTTTTTTTTTTTTTTTA TTTTTTT AT- AAA TTA G A- GCTCCA
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GCCAGGGCCTCGGGGCCGCT GG TGTTCG GG GGCT CCGG GACCGG
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TTGCCCGG CCG G TG AGA ACC ---- ----
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AATTTACGG ATTTAACAA-- GAA ----------
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GG - - CACCACCCACCACC ACA ------
GAM59981 19749 CCGACGGCCCACGGGACATC GA C-- - A A---------- CAGACA
ACGTAAGCGCAGACACGCTG CC CGGCCCA GGGAC ATC CGT AGCG
ACCGTCAGGAACGGATGGTC GG GTTGGGT CCCTG TAG GCA TCGC
CCACATGGGTTGCAGG AC ACA G - AGGACTGCCAG ------
GAM59990 235 CCGAGAACTGAGCCTGGATG AAC A TG - CTG TG GCA- GAGTG
ATCCTGAGGTGGAGCAGGTG CCGAG TG GCC G ATGATC AGG GA GGT
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TGATCATGCTGGGCCCATTC --- C GT G TAG GT GGGG -----

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        GG
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        TGG             T   GAA        TTTACCC  -----
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GAM60011 7954  CCGAGGAAGCTAAGGCTGCG    GAA TAA   C  --     CCCTCA
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        CGCTCGG          G-- CCA   -   GG     ------
GAM60024 4928  CCGAGGCGCGCGTGGGGCCA       ---    - -  T---  T-     GCT-  CTCCTCACACTC
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        GG
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        TGGCTCATGCTCAACGAGAA CCG     GCA     CTGGC TC  CTC
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        TGG             GGTA--  GAAC---    G  GAA  ---
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        GTTTACTCGG           TTTG   A   T T-     --------
GAM60078 22110  CCGCACTCTTTTTCTTCAGG   C     TTCTTCAGGC     TT   GAAC
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        TTTGTGGTCGAAAGAGTCGG GGC TGAGAAA       GCTGGTG  TTTT
                -     ----------     T-   ----
GAM60094 562   CCGCAGGTCAGGAGGGAAAG   CAG-   GA-  GAAAG---     CA   - A  G    AGG   GTCCTA
        CAGGGCTCAGAGGGCATCGT CCG   GTCAG   GG      CAGGGCT  GAGG GC TC TGGCCC   CAGG

        GGCCCAGGCAGGGTCCTACC GGT   TAGTT   CT      GTTCTGG  TTCC CG AG ACTGGG   GTCC
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        GTCTTGATGATTGATCGGAT
        TGATAGAATGG
GAM60107 10457  CCGCCAAGATCAACCTGGAG    CA-  ATC-   C   GCTCT-   CCTCCTA
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        ACCTGTCCATGTTCTTACTA GGTG   TC    TTG ACCT     TTGC
        CTGTGG             TCA  ATTC   T   GTCCAT   -------
GAM60149 11794  CCGCCCTGGCCCACCGCTGT   G  ---    CA  --   TC    -   ----   CCGCC
        CAACATGGCCCGCGCCGCCC CC CCC   TGGCC  CC  GCTG  AACAT GGCC    CGCG
        GCGACCTGGCTGATGTTAGC GG GGG   GCCGG  GG  CGAC  TTGTA TCGG    GCGC
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        AGG
GAM60158 15211  CCGCCGCCGCCCGGCTCCGC         C-   TC   TC    - CCCTCT
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G CC T- GA T ------
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GCGGAGGGGCTGGCGG T - A A GAGG- -------
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TGG C AATAGGCAT -----
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CGTGGCCGTGG T - - -- T - -----
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GTG
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GG - AA- AC CCAA --------
GAM60275 13586 CCGCTGGTACCGGGGCATCC T C GCAT G - CG- A CGGT
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GGTTCGCAACCATGGCAGTC GGCG CCATG TCC GG TCCTGACG TAC CG CT
CTGGGCCTGTACCGCGG - - ---- G G CAA - ----

GAM60279 10165 CCGCTTAATTTTTTACCTGA C A- AAA GG ATT
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TGTG
GGCAGTCCTGGGTGTGGGGA GGCCTC TCCG ACCTC CCTCT TCGG ACCCC GTT GGGCT
ACAC
CACAGTCGGGTTGACCCCAG CC AAA ------- G G A - G ----
GGCTGTCTCCCTCCAAAAGC
CTCCCTCCGG
GAM60324 13511 CCGGAGCCCCCGCCCCCACG CC -- - - GCACACATTA ACAT
CACACATTACTCCAACATTG CCGGAGC CCG CC CC CAC CTCCA
GAGGCCAACGAGAGTGAGGA GGCCTTG GGC GG GG GTG GAGGT
GGTCCGGCAGTTCCGG AC CT A A AGAGCAACCG ----
GAM60327 17751 CCGGAGCGGAAGTGGCGATC - AA ATCGGA A TGGAG
GGAGCGGAAGTGGAGCTACC CCGGAG CGG GTGGCG GCGG AG
GCCACCGCCGCCGCCGATTC GGCCTT GCC CGCCGC CGCC TC
CGG A GC CAC--- A -----
GAM60334 7955 CCGGAGGTTGAGTGCAGTGG GG TG - TG G TG TT TTGGGT
GTTTGGTTGGTTGGGTCTGC CCGGA T AGTGCA G G TT G GG
CTGGGGTTGTGTGTATTGTT GGCCT G TTATGT T T GG C TC
TCCGG TT -- G GT G GT CG ------
GAM60335 22783 CCGGAGTAGGAGCAATGATC GAGTAGG A G TG ACAGACCA
AGATGGGTGCACAGACCAGT CCG AGCAATG TCAGAT GG C
GCCAATCTGAACATTGTTAA GGT TTGTTAC AGTCTA CC G
TGG AA----- A A GT --------
GAM60344 4865 CCGGATTGAGCATCCCCCTC TG CC- C - AGCACAGAGTCCCG
CACATCTGCAGCACAGAGTC CCGGAT AGCAT CCCT CAC ATCTGC
CCGGCGGGTGGTGTAGGGTA GGCTTA TTGTA GGGA GTG TGGGCG
AATGTTTGATTCGG GT AAT T G ----------
GAM60348 1618 CCGGCAAGTTGCTAACTGTG A GCTAACTGT C- CCTTCTTA
CGTTTCTCCCTTCTTAGAAT CCGGC AGTT GCGTTT TC
GAATGTCTCCCCCAAAACTG GGTCG TCAA TGTAAG AG
GCTGG G AACCCCCTC TA --------
GAM60353 2316 CCGGCAGATGGGCAAGGGTG - A CAAG G A ATCAC C GGAGG
GCAAGCATCACCTTGGCCTG CC GGCAG TGGG GGT GCA GC CTTGG CT
GAGGAGCCCAAGAAGCTGCG GG CCGTC ACCC CCA CGT CG GAACC GA
ACCACCCCACTGCCAGG A - CA-- G - AA--- C -----

GAM60354 14143 CCGGCAGTTCTTCAAGCAGC T TCAAGCA - A CC CTTCCTGCC
TGCCCAGCCCGCCCTTCCTG CCGGCAGT CT GCTG CCC GC GCC
CCGGCCGCCGGGACAGCAGA GGCCGTCA GA CGAC GGG CG CGG
CTGCCGG - ------- A C C- ---------
GAM60366 7091 CCGGCCCCCTTGGATGCCAT TT AT CCTTCAT TCAT
CCTTCATCTCTCATGGGCAG CCGGCCCCC GG GCCAT CTC
CCAGTGGTCCTGGGGGCCGG GGCCGGGGG CC TGGTG GGG
T- -- ACCGAC- ----
GAM60371 17693 CCGGCCCGCGGGTGGTTCAC -- - CATC G ----- CACACT
ATCGCGCCTTGTTGCCACAC CCGGCC CGCGG GTGGTTCA GC CC TTGTTGC
TGCAGCGGGAAATGGGGCTG GGCCGG GTGCC CACCGGGT CG GG GGCGACG
GGCCACTCCGTGAAGGCCGG AA T ---- G TAAAG ------
GAM60372 7469 CCGGCCCGGGGAGGACAAGT G GA A - T - CCTT
CGCTGCCACCTTTGTGCTGC CCG CCCGGGGAG CA GTCG C GC CA
CGACGTGATTCCCTGGGACG GGC GGGTCCCTT GT CAGC G CG GT
G A A- G C T T ----
GAM60400 13578 CCGGCGGAGAGCGACCTCGG AGA A TTAA G GA AGGA AAGAT
GGTTAAGGGGTGGGGCTGAC CCGGCGG GCG CCTCGGGG GGGGTG GGCT CGTC GCC

GTCAGGAGCCAAGATGGCGG GGCCGTT CGC GGAGTTCC TCTCAC CTGG GCGG CGG

CGGTGGTCGCACTCTCCTTG GGC - ---- G TG ---- -----
AGGCGCCGGTTGCCGG
GAM60428 5315 CCGGGACGTGGCTGGTCGGC ---------- TG -- ATTAACCCTCG
CTTCATTAACCCTCGGGGGG CCGGGAC GTGGC GTCGG CCTTC
TACCGGCTGGCCACTTCTTC GGTCCTG CACCG CGGCC GGGGG
CAAGGTCCTGG GAACCTTCTT GT AT ----------
GAM60434 7375 CCGGGAGCGGCCGGTGGCTG A G ------ - GC AAAGCGC
AGCAGTCCCAGAAAGCGCCT CCGGG GCG CCGG TGG CTGA AGTCCCAG
GGGACTTTAGACCAGTTAAC GGTCC CGC GGCC ACC GATT TCAGGGTC
CCGGCGCCCTGG - - CAATTG A -- -------
GAM60462 15017 CCGGGCATGGTGGCAGGTGC A TG- GT - CAG CTA
TGCAGTCCCAGCTACTGGGA CCGGGC TGG GCAG GC TG TCCCAG
GATCACGCCACTGCACTCCA GGTCCG ACC CGTC CG AC AGGGTC
GCCTGG - TCA AC C TAG ---
GAM60477 13576 CCGGGCGCCACAGAGCAGGG C- AAGTTCTCCC A-- CAGG
GGCAAAGTTCTCCCCAGCAG CCGGGCGC ACAGAGCAGGGGGCA CAGC GCCT
CCTCAGGAGGCCCCGCTGCT GGTCCGTG TGTCTTGTCTTCTGT GTCG CGGA
AATCCACTGTCTTCTGTTCT TC CACCTAATC- CCC ----
GTCTGTGCCTGG
GAM60492 5284 CCGGGCGTGGTGGCTCCTGT C---- GG AATCC ACTCGGAA
AATCCCAGCTACTCGGAAGG CCGGG GTGGT CTCCTGT CAGCT
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GAACCCGG AAGTT A- GA--- --------
GAM60510 21897 CCGGGGACTCAGGAGTGCCC GGG GA CCC - - GCTCA
GCGCCCTGAGCGCTCAGCTC CCG ACTCAG GTG GCGCC CTG AGC
CAGAGGCGTCATGGCTGAGT GGC TGAGTC TAC TGCGG GAC TCG
ACGG A-- GG --- A C -----
GAM60513 10636 CCGGGGAGATAGTGTACTTT GAGA ACTT G C AG-- ATAC
GTGGCCTCCGTAGCCGTGCT CCGGG TAGTGT TGT GCCTC GT CCGTGCT

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GAM60527 2565 CCGGGGCTCTGCGGGCGCCG G G - - GA CGGC
GGCAGAGACCTGCGGCCAGG CCGG GCTCT CGGGCGC CGGG CA GACCTG
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AGCGCCGG G - T T G- ----
GAM60545 13665 CCGGGTCTGACAGGAGCAGC CA ---- CC GTAGT AG AGAGGG
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GCGGG
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TGCCT
CGTAGCCGCGCCGCCCTGCC -- CCGC CC ----- GA ------
CCGCCATGGGCCTCCTGTCG
GACCCGG
GAM60565 2554 CCGGGTGTTGGCAGGGCTGT TG TG C ACATGG TCAGA CAGCT
ACATGGGCCGCTCAGACACC CCGGG T GCAGGG TGT GCCGC CACC
CAGCTGGTGGTGCGGCAGGC GGTCT A CGTCCC GCG CGGCG GTGG
GTCCCTGCATGTCTGG GT -- T GA---- TG--- -----
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CACCTGGGCAAAATTTCACT CCG GTTCC CCCTGTTA GGG AA
TCCCTTCCTAACAGGGAGGG GGC CGGGG GGGACAAT CCC TT
GCGCGG G A CCTT--- - --------
GAM60577 16004 CCGGGTTGGCCTGAACCTGC G- T T- A T T ACGGTATCAGATA
TTTATGCTCAGACGGTATCA CC GGT GGCC GA CC GCTT ATGCTCAG
GATATTGAGCGTGGGTGGAT GG CCA CTGG CT GG TGGG TGCGAGTT
CTTGGTCACCAAGG AA - TT A - - ----------
GAM60585 4672 CCGGTCCCGGTGCTCGCGGG T CT G GA - TCGGTT
GGAGCGGCCCAGGCTCGGTT CCGG CCCGGTG CGC GGG GCGGCCCAGG C
GTTCTGGGCCGTCGCCCGGT GGTC GGGCCAC GTG CCC TGCCGGGTCT G
GTTCACCGGGCTGG - TT G GC T ------
GAM60589 15218 CCGGTCCTCAGAATACGAAA G CC - GAAAAGT T- GAAGAAG
AGTGAACATGTGAAGAAGAC CC GT TCAG AATAC GAACA GT
TTTGTTTTTGAGTATTCCTG GG CG AGTC TTATG TTTGT CA
AAAGCAGG A AA C AGTT--- TT -------
GAM60598 16930 CCGGTGCTGCGCGCTGGGCT G G GAGGTTA T TTC
GAGGTTATGGCTCGCTTCGC CCGGT CTGCGCGCT GGCT TGGC CGC
GGCCAGGCTGGGCGCGCAGG GGCCG GACGCGCGG TCGG ACCG GCG
GCCGG G G ------- - ---
GAM60608 10340 CCGGTGTAAATGTTGAGCCT AA GA TTTTT G- TTGTTT
TTTTGGCCTGGCTTGTTTGC CCGGTGT ATGTT GCC GGCCT GC
AAAGGCCCTGGCAAACGTCA GGTTACA TGCAA CGG CCGGA CG
ACATTGG AC A- TC--- AA ------
GAM60631 13151 CCGTCACAGGCTTTGATTCT CACA TGAT AACT GG AAT
GATAACTCTTCTGGGGAATT CCGT GGCTT TCTGAT CTTCTG G
TTCAGAGGCAAATCAGAAAG GGCA CTGAA AGACTA GGAGAC T
TCACGG ---- ---- AAC- TT ---
GAM60658 1366 CCGTCTCGTACTGTCGCCGT CTC TGTC ACC C TCCG
CACCGCCGCGGCTCCGGCCC CCGT GTAC GCCGTC GCCG GGC
TGGCCCCGATGGCTCTGTGC GGCA CGTG CGGTAG CGGT CCG
AACGG A-- TCT- CCC C ----

GAM60659 17797 CCGTCTCTCTGCTTGGTTAG - C ----- G --- TA- CGCC
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CACTGAGATAGACTGG T T GTCAC G AGT CTA ----
GAM60663 17437 CCGTCTTTGTGCATCTATCC CTT A T T TCT CT GTTA
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GTTACCTTGTCAGATGGAAC GGTA GTATGTAGA AGGT AAG GTAGA TG CC
TGGAAGATGTATGTCATGG CT- - C - C-- TT ----
GAM60671 10321 CCGTGAGGCCAAGAATCCCC T G AGAATCCCCA AGAGAACA - GCCA TCT AA
C TG
AGGTCAGAGAACACGAGGCT CCG GA GCCA GGTC CGAG GCTT CCA TGG GTGG C
TGCCACCATCTTGGAAGTGG GGT CT CGGT CCAG GCTC CGAG GGT ACC CACC G
CCTGCCGCCATTTTGGAAGT - A CC-------- GAACGAG- T ---- TCT AC C GT
GGCCCACCACCATCTTGGGA CG ATTTT
GCTCTCGGAGCAAGGACCCC C CC
TGGCATCTGG G GG
AA -----
GAM60698 22713 CCGTGGAGAGTGACGAGACT G --- AC-- A CTCTC
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- AGT GGTC - -----
GAM60700 4561 CCGTGGCAGTTTTGTTTTGT G - ---- TG T TG TTGCACCC
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ATGCCCAGGG G C ATCA GT - GT --------
GAM60715 14208 CCGTGGTCCGGTTTCGCGTC GGTC G CG G GGTC
CCCGTTGGGGTCCCGAGGGG CCGT CG TTTCG TCCCC TTGG
GGTTCGGAGGCGTCTGGCGG GGCG GC GAGGC GGGGG AGCC
GTCT G TT G ----
GAM60734 7312 CCGTGTTTGAGGCAGGGCAG T TG A G A TG A- C- GTC CCTGA
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CATCTGTCTGGGTCCCTGAG GGC CAG TCCGTCCCG CG GGG CGAGGT GT CG GTAGA
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ACCCAAGATGCAGCAGTGTG C -- C G A GT GA AC --- -----
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CCTGACCCGG
GAM60737 11285 CCGTTATTGAATATCTATTA GAATATCT - A T AAGAG
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AATAATGG AAGCC--- C A - -----
GAM60748 2566 CCGTTGAAACAGGGAGGCAA GAAA AAGCACAAGAC CCAAATC
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TCCATGGTCTCTTTGGGCGG GGCGG GTTTCTCTG ACCT
---- GT--------- -------
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CCCCCACGTGCGCCGGGGCT GGGT CGGGGCCG CGT CC GA GG
GGG -- -- GCACC CT - -----
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          GTTAGG
GAM60846 13395  CCTAAGTATTGCTGCCTTGT  TA   T  T   T -   T  TTAGT
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          TACTACAGGTGCATACTCTG GG  TCATA CG TGGA CA CATGA ATG
          G              TC   - -   - T   C  -----
GAM60887 17518  CCTAATTGACTGAGGGAATG    ATT    GGGAAT-      GTTAGAA
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          CAGTGAAAGAATTAGTCTGG GGGT  CTGATT     TGACTATGA
          G               ---    AAGAAAG      -------
GAM60910 71    CCTACCAAGAATTCCCTGCC      A ATTCC  CCTTA   CC  A   -  ACATTTTTCC
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          AGG              CCTTCAA  A ----   C  A   ----
GAM60922 11470  CCTACCGCTGCCTCAATGGG   A-  CT  -   ATGG-------   TGCTT
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          CCCTGAGTGTGACGGGAAGG GGA  GGC  TG GAGT        CGAG
                    AG   AG  T   CCCAACGGGAA   -----
GAM60947 10671  CCTACTCCTCTGTCTCAAGA   A      - CAAG   AG  GATAACAATGA
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          ATCCTAGTATAGAGGAGGAG GGA GAGGAGATA GA   TCCT  GA
          G               G       T ----   A-  -----------
GAM60996 130   CCTAGACCTTTACATCACAT    ACCTT    ACATA  A    AACA  TTTCCATAAAATTCATT
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          CATAAAATTCATTCCACATT GGATC    ATGTAG    CT GATGTT   CC
          GTAGTCAACGGATGTATGAT    CTAGT    GCAA- -    ACA- ----------
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GAM61002 11931  CCTAGAGCATCCCTAAGGAC    A     TA  ACCC     -    TACC
          CCTGGTGGGGCAGGGTACCC CCTAG GCATCCC  AGG   TGGTGGG GCAGGG
          TCTGCTCCCACCACCTGGGA GGGTC TGTAGGG  TCC   ACCACCC CGTCTC
          TGTGCTGGG             G     --  ----     T    ----
GAM61055 14943  CCTAGGATACTGATGGTTGT      T   T  - -   A GT    T  TGG
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GAM61095 10450  CCTAGTTCTAAAGCCTGATT      C-- A      TTAGTA    AGTG
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          AGGCATTAGGCTCTATCAAG GGGTCGA   AT TCGGATTA     AACGG
          CTGGG                ACT  C      CGGAC-    ----
GAM61120 4895   CCTATCAGAGACATCTATTT    TC    ---  CTATTTTTCT    CCAACC     CCAC
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          AGTACGTTGTTCAGTGG     TG     TG  T    T    TT  A  ---  -----
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GAM61187 13496  CCTATTTGATGAAGATCAGC    A          -----   - ATCACAAATTACAAAA
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          GG                  A          TTTTA   T ----------------
GAM61226 13946  CCTCAAGCATCTCTGGAAGC          CTCT     -  G     AGGC
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GAM61248 17049  CCTCACAAAAGCAAGCCCCA     CAAAAGCAAGCCC     AG   CCGCTGA
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          AGGGCTGTCAACAATGAGCC GGAGT          GTCGGG  GGG
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          GCTGGCAGGCTGGCGCTGGC GGAG GCTGGAC GAC  TCGCGG TCG     CGGTCG
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          CAGTAGGG            GA    ATA     TT   C--  GT  -----------
GAM61328 21892  CCTCAGGAGGGGAGGGCTGG    AGGAGG      T      G     GAGAGG
          TAGGAGGGGGGGAGAGGTCT CCTC      GGAGGGC GGTAGGA GGGGG
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          GG                  A-----       -      G     ------
GAM61344 457    CCTCAGTACAGCTGTCTGTT     GTACAGCTG        A---   TTATTTTT
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                          ACAA-----        ATAA   --------
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          GACGTGGCTCCCAACTTTGA GGAGT        CGGTGC GGG CTCT
          GG                   TTCAACCCT     A  G    ------
GAM61383 2460   CCTCATGGGCTGATGGTTAT      G  -  G      TCGT---   TCTTTCCT
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          TCTTTAGCTATGGACCAGTG GGAGTG CC GG TATCGAT       CCG
          AGG                  A  A  -      TTCTCTT   --------
GAM61421 14178  CCTCCACATATGTACCCCTT    CACAT     CCC-  -        AAA  T  -   AAACCA
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          TTTAAACCAAGATGCCTCCA GGAG     TATATG    AAG AGGAGAAAGG   CT CC TAGA
          GGAAAGAGGACGAAATGAGT     ACACT     AGTA   C        AC-  -  G    ------
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ACAGCCCTGTGGTGCTTTGG GG GTGGTG CCGACA CC AGG
TTTC TC AGAG CT -----
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T C TCC - CG ---------
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GAM61702 17379  CCTCGGGTGGCTGGTGGCTG     G  GC  T   G---- G   GAGCTGGA
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         TTCACTTTACCTTCTGCCAA GGAGAG CG   AACCGTCT CCAT  TC  ACTTG
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GAM61781 16148  CCTCTCCAGATGCCTTGTCA   --   GATGCC       T  ---  AAAAAC
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         AGG                   C------------      -  G  ----
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         G                 -  GG    A    ------------
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         TTTCTCCCTCCTAATATGCA GGA ACG       CC TCTT AT CGG
         AGG               -  TATAATCCT  C   T  A  ------
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         CTTTCCCAGCAGGTGCACAG GGA GAC CG GGA  ACCCT  CGG   CGTC
         AAGG              A  A T  CG   TT  AGGA   ----
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         TTTATTTTATTTTATTTTAT GG AGA GTT TATTTT TTTTATTTTA  TA
         TTTGAGATGG         T  -  T    A       TT --------
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GAATTTAGG TTT T TATA T- - ----
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CTAGAGG TCAGCACC AGAGAAA ----------
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GG T TAA--- AT------ ----
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GGCCGAGGACGAGG G A AG G - A A- A ---
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CTGCAGG TCACC CTCTA- T TG- ------
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GG CG A G -------
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ATG GA--- - A --------
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CAGG TTTAA TC CACA ACCC ----
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GGCCAGG C T T TCC T TT ----
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G T G - A ACAG ----
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ATTGG T T T GA G - ---------
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GG TTTGT CG ---------- ----
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GG TTTGT GT ACAT ----
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GG CG TG-- G - - ----
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        TCG                A    GGAA    T  CGT     --------
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        CCGTCTCTACG          A  -     CCAA     ATAA     C  A   ----
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        TTTG                 CC     --      TTC---   --------
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        CCTTCAATGCTATCATTCTC GTTTC  TTACTA  TCGTAAC     CTG
        TTTG                 TC     --      TTC---   --------
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        AAAAAGAGGTCACCAAGGTG CGA   GCTG         AAAAAAG GG CAC
        CTGCTTTTTTCACAAATGAA GCT   CGAC         TTTTTTC TC GTG
        CCAGCTTGTCG          GTT    CAAGTAAACAC      G  -   ----
GAM63484 16060  CGACATCTCAGGGACCCATT  G   TC  AG G    ATTTGT       CGAA   - G     ACC     GAAG---
        TGTGAAGGCTGCGAAGGTGG C ACA  TC  G ACCC     GAAGGCTG    GGT G AGAGTT   GGTGTC
CG
        AGAGTTACCGGTGTCGAAGC G TGT  AG  T TGGG     CTTCCGGC    CCG C TCTTAG   CCACGG
GT
```

GCCTTCAAGCTCCTGGAGGT - C- AT G ------ ---- G G A-- AGAGCAA
GAACGAGAGGCACCAGATTC AGCTCC
TGCGGCCCGGCCTTCGGGTG CCTTCA
TTAGACTGTG GGAGGT

GAM63493 7424 CGACCCACGCTGTCGGACCC A -- T CGC CGTAC
ACGCTGTCGCCCACGCGTAC CG CCCACGCTGTC GGACCCACGC GT CCACG
TGTGGACGCGTGGGTCCTGG GC GGGTGCGGCAG CCTGGGTGCG CA GGTGT
ACGGCGTGGGCG - GT - --- -----
GAM63500 11846 CGACCTCAACGTCACCCGCC CAA- - ACCCG T- - C- GTACG
TGTCCCACTTTGAGTACGTC CGACCT CG TC CC GTCC CA TTTGA
AAGAATGAGGACCTGGAGAA GCTGGG GC AG GG CAGG GT GAACT
GATCGGCATGGGTCG TACG T AAGA- TC A AA -----
GAM63518 16243 CGACTAGAATGAAACACCTC C AAA CTCGAACAT - ACATT
GAACATCCAGCACATTGCCT CGA TAGAATG CAC CCAG C
GGCACACCGTGAACGTTCTA GTT ATCTTGC GTG GGTC G
TTG - AA- CCACAC--- C -----
GAM63550 15006 CGAGACGGACGGCTTCAGCA A C - TCA A TGTTCC
CTTGGGCGTGTTCCTGCTCA CG GA GGACG GCT GC CTTGGGCG
AGAGCGGCACGTCCATCCCG GC CT CCTGC CGG CG GAACTCGT
C A A --- A ------
GAM63551 16193 CGAGACTACTTACTTTCTCC A CTCC TGT - GAAC
AGTGTACCTAGGGAACCCTC CGAGACT CTTACTTT AG ACCT AGG
AGGTCTCTAGAGTGAGGGTC GTTCTGG GAGTGAGA TC TGGA TCC
TTG - ---- TC- C ----
GAM63591 17374 CGAGCCTGACTTGATGGTCT - TGAT-- ---- A TACT
GTCCAATGGCCATGATGTAC CGAG CCTGACT GGT CTGTCCAATGGCC TGATG
TCGTCAAGGTCATTGGACAG GTTC GGGCTGA CCA GACAGGTTACTGG ACTGC
CTGAACCTTGACCAGTCGGG T CCAGTT AGTC A ----
TCTTG
GAM63597 13561 CGAGCGGCGCGAGGCCCGGG CG - A G A- - G -- GTC
TTGAGCGGGAGGCGCGATCG CGAG GCG CG GGCCCGG TTG GCGGG AG CGC GATCG

GTCCGGTCAGGTGGCTCCCC GCTC TGC GC CCGGGCC GGC CGCCC TC GTG CTGGC

GCGGCGGGCCGGGCCCGACG -- A - G GG C G GA ---
TCTCG
GAM63599 76 CGAGCGTGGATGGCCTCTCG --- T TCT--- C- - TCCA
GCCGCGCTGGCTCCAGCACA CGAGCGT GGA GGCC CGGCCG GCTG GC
GCCTCGGCCGCACCGCGGCC GCTCGCG CCT CCGG GCCGGC CGAC CG
TCCCTCGCGCTCG CTC - CGCCAC TC A ----
GAM63612 4918 CGAGGAGACTCAACATGAAG ACTCAA AA TA ---- TTTCTTT
CTACCGGCCAGGGTTTTCTT CGAGGAG CATG GC CCGG CCAGGGT
TACTCTGGGGTCCCGGCTGC GCTCCTC GTGT CG GGCC GGTCTCA
CCTGTGGCCTCGCTCCTCG GCTCCG CC TC CTGG -------
GAM63620 17820 CGAGGCAAGTCTTGTAGCAG GCAA G AGG------ GCAAAGAAAGG
GGGGTGCAAAGAAAGGACCC CGAG GTCTT TAGC GGGT
AAGGCAGAAGCTGGGAGGCG GCTC CGGAG GTCG CCCA
GACTCG AGG- G AAGACGGAA ----------
GAM63641 22477 CGAGGGGAGCTCGTCCTCCT A C- TCCAT GCG

CCATGAGGCGCGGCTTCCGC CGAGGGG GCTCGT CTCC GAGGC
TTGGGGTTGCGGGCCTCCTC GCTCCTC CGGGCG GGGG CTTCG
G - TT TTCGC ---
GAM63658 7412 CGAGGTTGTGGTGTCTGGGA G T GTCT- AAA A--- - GAG AA GAAGTT
AACTCCGAGGACAGAGGGCT CGA GT GTGGT GGG CTCCG GGA CA GGCT ATCCAT
AAATCCATGAAGTTGTGGAT GTT CA CATCA CCC GAGGC CCT GT TCGG TAGGTG
GGCTGATGATCCACAGCGGA G T ATTGT A-- GACA A AG- -- ------
GACCCTGTTAACTACTACGT
TG
GAM63670 6708 CGAGTCCTGGCCTTGTCTGT TCCT - GG AC--- TTACACCT
GGAGACGGATTACACCTTCC CGAG GGCCTTG TCTGT AG GGA
ACTTGCTGAACAGGTCAAGG GTTC CCGGAAC GGACA TC CCT
CCTTCTTG TT-- T AG GTTCA --------
GAM63676 2485 CGAGTGACTAGCAAGGAAAG AC- GAAAG -- ACCAA
CAGGGCTCACCAAGAGATCC CGAGTG TAGCAAG CAGGG CTC
TTGACACTTGTTAAGGCATT GTTTAC ATTGTTC GTTCC GAG
TG GGA ACA-- TA -----
GAM63693 7507 CGAGTTGCTGGTTCACAAAC - TTC -- TCCTAAC TTAG
TCCTAACTGCCTTAGGGTAA CGAGTT GCTGG ACAA AC TGCC
AATTCTGTCCTTGTCTAGTG GCTCAA TGATC TGTT TG ATGG
AACTCG G --- CC TCTTAAA ----
GAM63695 17306 CGAGTTGGGAGGGGCGGAAG - G- GGAA-- G CCTCCAGC
GCTGAACCTCCAGCTTGAGC CGA GTTGGGAG GGC GGCT AA
CGGACAAGCCGATTCCCAGC GTT CGACCCTT CCG CCGA TT
GTTG G AG AACAGG G --------
GAM63704 21945 CGATAACTTTTTCACCAGTA AA CA GCACTT AAGCTCA AATG
TTGCACTTCTTGATAAGCTC CGAT CTTTTTCAC GTATT CTTGAT GTTC
AGTTCAATGGAACATCAGGC GCTA GAAAGAGTG CATGG GGACTA CAAG
AACAGGTACAGTGAGAAAGG G- A- ACAAC- ------- ----
ATCG
GAM63712 6780 CGATCCCTCGACGCGTTGTG CC C G --- TG TACCT
TTGCTGCGTACCTCGTGGCG CGAT CT GAC CGTT GTGTTGC CG
GCACGAAGACGGGTCAGCTA GCTA GA CTG GCAG CACGGCG GC
TCG TC - G AAG GT -----
GAM63724 22868 CGATGCCGTCACGGGGCTCA C A T GTG-- GC CCTG
GTGGCAGCGGGCCTGCCTAT CGATGC GTC CGGGGC CA GCA GGG
GCATTCATGGCTCTGGACGC GTTACG CAG GTCTCG GT CGT TCC
ATTG - - - ACTTA A- ----
GAM63726 22427 CGATGGCATGCCAGTGTGAA A A - - AACC GA- A C G T --------
CCACGCTGATTGAAGCGCTG CG TGGC TGC CAG TGTG ACGCT TTG AG GCTG AC GGGTCT
AACA
GACTGGGTCTAACAACAAGT GC GCTG GCG GTC ACAC TGCGG GAC TC CGGC TG TCCGGA
TTGT
GTTCAATGAAAAGGCCTTGT G C C G C--- GAG A T G T AAAGTAAC
GCGGCTCTACAGGAGGGCGT ACAAG
CCACAGCTGCGCGCGTCGGC
G

GAM63728 1876 CGATGGCTGGTGGCTGGGGC ATG GG G TG --- C CT T-- AGGAC
CAGCCCCGGGACTCCCGGGT CG GCT TG C GG GCCAGC CCGGGA CCCGGG GCAGG

GCAGGAGGACCCTGTGGTCC GC CGA AC G CC CGGTCG GGTCCT GGGCCC TGTCC
CGGGTCCTGGCGCTGGCATC GG- AA G GT CTA C -- TGG -----
CCTGGGCAAAAGCGGCG
GAM63740 14259 CGATTAGGCTCGACTATGTA A - TATGTAAATC G - - AAGATGAC
AATCAAGTGCTACCAAGAAG CG TTAGG CTCGAC AA TGC TAC CAAG
ATGACTTTGTGTATGCAGTT GC AGTCC GGGCTG TT ACG ATG GTTT
GTCGGGCCCTGAACG A C ---------- G T T --------
GAM63752 6772 CGATTTTCTTCTACATTCAT TT TCT--- TC T- CCC G A TTGCAT
TGATGCCCCTTGTAATGTTT CGA TTCT ACAT ATTGA GC TT TA TGT
GCATACACTAGAAAATGCCT GTT AAGA TGTG TAACT CG AA AT ACA
TCAATTTGTGTTTTACCAGA TT CCATTT TT TC TAA G C ------
ATTTTG
GAM63785 13393 CGCACGTGTACCGTTTCTCC GTA - CATAAA GTATCCGTGAA
TCATAAAGAGGTATCCGTGA CGCACGT CCGTTT CTCCT GAG
ACTCCAGGAGCAGGCGGATG GCGTGCG GGCGGA GAGGA CTC
GCGTGCG GTA C C----- ----------
GAM63813 14791 CGCAGCCATTGCCAATGCTT ------ AAT TTTC CGAAT
TTCGACGAATTCTGCTAGCT CGCAGCCAT TGCC GCT GA
GAGGTGCCAACTATGGCTGT GTGTCGGTA GTGG CGA CT
G TCAACC AGT TCGT -----
GAM63814 14267 CGCAGCCCCAGCCCGGCCCC A ----- C CCCC ACCCT TGTCCTTTCTGTTTAT

CCTGGGGACCCTAGAGAGGG CGC GCCCC AGC CGGCC TGGGG AGAGAGGG
TGTCCTTTCTGTTTATCCTT GCG CGGGG TCG GTCGG ACCTC TCTCTTCC
CTCTTTGCTCCAAATGGCTG - ATCTC C TAA- GTT-- ----------
CGCTCTCTAGGGGCGCG
GAM63819 372 CGCAGCGAGCTGGCTGCACT - GGC - G- GCGATACTA
TGCTCCGCAGCGATACTATG CGCAGCG AGCT TGCACT TGCTCC CA
GAGGAGCACGGTGCAAGCTG GCGTTGC TCGA ACGTGG ACGAGG GT
CGTTGCG G --- C AG ---------
GAM63820 6830 CGCAGCGCGGGCACACGGAG C GGCACA T GACG CA CCTG
CTGCTGACGGTGGAGCAGGC CG AGCGCG CGGAGC GCT GTGGAG GGC
CCTGGCCGACTTCGCAGAGC GC TCGCGC GCCTCG CGA CGCTTC CCG
TGCTCCGCGCGCTACG A ------ T GA-- AG ----
GAM63821 11751 CGCAGCGCGGGCACACGGAG C CACA AG T C - G GCC
CTGCTGACGGTGGAGCAGGC CG AGCGCGGG CGG CTGC GA GGT GGA CAG
CCTGTCCGACTTCGCAGAGC GC TCGCGCCC GTC GACG CT TCA CCT GTC
TGCTACCCGCGCTACG A ATC- GA - - G - ---
GAM63822 17370 CGCAGCGTCTCCACAATGGG CA T A ------- TTGATCTCCAGGTGCT
GTGGTCAGGGTTGATCTCCA CG GCG CTCCAC ATGGG GTGGTCAGGG
GGTGCTTTTTGGCCATCATA GC TGT GAGGTG TACCC TACCGGTTTT
TAGCCCATGGTGGAGTTGTC CC T G GATATAC ----------
CCG
GAM63833 212 CGCAGGGAATCGGGGGTGTA GG TC GTAGACAGAAA- GCGACTAA
GACAGAAAGAAAGCGACTAA CGCA GAA GGGGGT GAAA
TTTCCTCCAATTAAAAACCC GCGT TTT TCCCCA CTTT
CTTTTAGTGCG GA -- AAAATTAACCTC --------
GAM63834 22407 CGCAGGTAGGCCTCCTGCTC CCTCCT AC CC-- TCCTCCCCTTCCTCCT
CGACTCAGCCCGCTCCTCCC CGCAGGTAGG GCTCCG TCAG CGC
CTTCCTCCTGTGTTTTCTGA GTGTCTATCT CGAGGC AGTC GTG

CGGAGCTCTTCTATCTGTG TCT--- -- TTTT ----------
GAM63851 16041 CGCATTGGTCGATCTCTGCT ATTG G ACC T ATTG
ACCAGAAAGCTGTGCATTGG CGC GTC ATCTCTGCT AGAAAGC GTGC
TACCGCTTTCTCAGCAGAGA GCG CAG TAGAGACGA TCTTTCG CATG
TGACAGGCG GA-- - C-- C ----
GAM63860 6907 CGCCAATGTGTTCGCCACCG ATGTGTTC A - GGA TTTGTCC AGAT
GGTGGGAGAACGTCCGTTTG CGCCA GCC CC GGGTG GAACGTCCG CGGG
TCCCGGGAGATTCTGCTCCG GCGGT TGG GG CCCGC CTTGTAGGC GTCT
GATGTTCGACGCCCAGGGGT -------- - A AG- CTC---- ----
TGGCG
GAM63873 6843 CGCCACCCAGGAGTCCACAT C AG G ACAT G GTGCGAGG
TCCAGGAGCTGTGCGAGGGG CGCCA CC GA TCC TCCAG AGCT
CTGCTGGAGGAGTCGGATGG GTGGT GG CT AGG AGGTC TCGG
TG A -- G ---- G --------
GAM63890 15048 CGCCAGGTGCTTATTAGGCC - CTTATTAG CCAAAG - TTCTC
GTGCTCCAAAGTCATCGTCC CGCCAG GTG GCCGTGCT TCATCGTC CGGT
GGTTTCTCACTGTGATGATG GCGGTT CAT TGGTACGA AGTAGTAG GTCA
AAGCATGGTTACATTGGCG A -------- ------ T -----
GAM63906 13086 CGCCCACGTCCACCTCTGGT CC CACCTCT G AAGC
TTGGGGACAAAAGCTTGTCC CG CACGTC GGTTT GGGACAA
TGGAATTGTAAAGATGTGTC GC GTGTAG TTAAG TCCTGTT
G T- AAATG-- G ----
GAM63913 12061 CGCCCATGTCACAAGCAGCA CATG A A A ACAGCAACA AAAAAG
GACAACAGCAACAACAAAAA CGCC TCAC AGC GCAG CA AC
GGTGGAAGAGGTGCTGCAGC GTGG GGTG TCG CGTC GT TG
TGGTGGACGAGGTG AGCA G A - GGAGAAGG- ------
GAM63921 13074 CGCCCCCCGGGGGCCTGGCT - GC G- GAA ---- -- C T - CC
GGAACCGCCGGGGTCCGCAG CGCCCC CCGGGG CT GCTG CCG CC GGGGTC GCAGGGCC
CAGGC CGGC
GGCCTCAGGCCGGCCCTACT GCGGGG GGCCTC GA CGAT GGT GG CCCCAG CGTTCTGG
GTCCG GCTG

GTCGTGCCTGGGTCTTGCGA A A- GA AA- CAAA TA - - T --
CCCCATGGAAACTGGAATAG TACT
CAGAGACTCCGGAGGGGCG

GAM63923 13114 CGCCCCCGGGGAGGGAGCAG GGAGC ACT ATTCTGCA GGGA
CACTGGCCCATTCTGCAGAT CGCCCCCGGGGAG AGC GGCCC GATG
GGGGACATCGAGTCACGGGC GCGGGGGCTCCTC TCG TCGGG CTAC
TGGCTACGAACTCCTCGGGG AAGCA G-- CACTGAG- ----
GCG
GAM63941 13297 CGCCCCTGGCCCTCCCGGGC -- C T CTCT - CACAGT
TCTTCTCTGGCCCGGGGCTC CGCCCCTG GCCCT CCGGGC CTT GGCC CGGGGCT
ACAGTAGCTCCGAGGCCCCG GCGGGGGC CGGGG GGCCCG GAG CCGG GCCTCGA

AGGCCCGGCGGGGCGGCGGG GG C - CC-- A ------
GGCG
GAM63944 21791 CGCCCGACTGGCCCCATCAG A CCCCATC---- CCAACAAGACCTTC
CCCAACAAGACCTTCGCTTT CGCCCG CTGG AGC

```
          CATCTCCAACCAGCCGGGCG GCGGGC GACC          TCG
                              C    AACCTCTACTT  ----------
GAM63975 2491   CGCCGACGCCCCCGAGGAGG     A   C   A    G----------     CAC
          AGGACCACGTCCTGGTGCTG CGCCG CGCC CCG GGAG              AGGAC
          AGGAAAAGCAACTTCGCGGA GCGGT GCGG GGC CTTC              TCCTG
          GGCGCTGGCG             C   A   G    AACGAAAAGGAGTCGTGG    ---
GAM63984 4625   CGCCGCCCAGGCCCCTGCGT      CC--    CCC  C     -    ACGCG
          GGGCTGGACGCGTCAGCCCC CGCCGC    AGGC   TG GTGGG CTGG
          ACACATTAGCCTCGCTGCGG GCGGCG    TCCG   AC CACCC GACT
          CG                  TCGC    ATT  A     C    -----
GAM63992 19572  CGCCGCCGCCGCCGCCATCA    ---------     C--   --   ATCA     GAAATCGTG
          TGAGTGGAAATCGTGCACTT CGCC        GCCGC   GCC  GCC    TGAGTG
          GCAGGCCGGGCAGTGCGGCA GCGG        CGGCG   CGG  CGG    GTTCAC
          ACCAAATCGGCG           CTAAACCAA     TGA   GC   AC--      ---------
GAM64010 11521  CGCCGGGCAGGCGCTGGGCA    G-   A     TGG       --  C--    -    TGCAG
          GGGGGTAGCGGCCGCGGTGC CGCC  GGC GGCGC   GCAGGGGGT  AG   GGCC GCGG
          AGCTGCTGGTCACCCTGAGC GCGG  CTG CTGCG   CGTCCTTCG  TC   CTGG CGTC
          TTCCTGCGGCGCGTCGTCGA    AG   -    CGG       AG  CCA    T    -----
          GGCG
GAM64024 1355   CGCCTAGATCTCTTTCCCAG    C   AT    T-     -   CA   CGAAC
          GGCCATGGCGAACCCGAAGC CGC TAG  CTCT  TCCCAG GGC  TGG
          TGCTGGGACTGGAGCTAAGC GCG ATC  GAGG  AGGGTC TCG  GCC
          G                  A   --    TC     G   AA   -----
GAM64025 11030  CGCCTAGCAGCAGCTCCACC     A  A        CCTCCTAG  CAG  C        G --    CTAGACCACCA

          TCCTAGGCCAGGCCCTGTGG CGCCT GC GCAGCTCCA       GC   GC CTGTGGGAT C  GCCA
          GATGCGCCACTAGACCACCA GTGGA CG CGTCGAGGT       CG   CG GGCACCCTA G  CGGT
          TGGCACGGATCCCACGGCGC     A  G        --------  CGA  C        G CA    -----------
          AGCGCTGGAGCTGCGGCAAG
          GTG
GAM64027 7806   CGCCTCACGCGAAGTCTACA      A   GA     ACAAA   A   AGAAAGCGG
          AATGCATCAAGAAAGCGGTG CGCCTC CGC  AGTCT     TGC TCA
          AAGCAGAAGCAGATTCGGCG GTGGGG GCG  TTAGA     ACG AGT
          CGGGGTG                C   GC     CGAAG   A   ---------
GAM64034 15108  CGCCTCCCTGGTTTATAGTA     CCCT  T    A  A-  C--     CTTTTCT
          GACAAGACCTTTTCTGTTTT CGCCT    GG TTAT GT  GA   AAGAC
          TCATCCGACATAATCCTACA GTGGA    CC AATA CA  CT   TTTTG
          GGTG                 CAT-  T    -  GC  ACT    -------
GAM64035 11211  CGCCTCCTAAAAGAACACCA        AAAAGAACAC   G-  AA  AGAATGAAC
          GGCCAAGCAGAATGAACGCA CGCCTCCT         CAG  CC  GC
          AGGAGCTGCAGGAAAAGAGG GCGGAGGA         GTC  GG  CG
          AGGCG                  GAAAAGGAC-   GA  AA  ---------
GAM64051 2243   CGCCTCTTATCAAGTCAGCA     T  TAT      A   C  ACCTTT  CAAG
          CACACCTTTTCCAAGGATTT CGCC CT   CAAGTC GCA AC      TC
          TACGTTGCGGCTTGTTAGGG GTGG GA   GTTCGG CGT TG      AG
          TG                  -  TT-     -   -  CATTTT  ----
GAM64054 10409  CGCCTGAACCCAGGAGGTGG   -  A-      AGG     GC      AGC  AGAT
          AGGCTGCAGTGAGCCGAGAT CGC CTG  ACCCAGG   TGGAG  TGCAGTG   CG
          CGCACCACTGCACTCCAGCC GCG GAC  TGGGTCC   ACCTC  ACGTCAC   GC
          TGGGTGACAGAGCG         A   AG      G--     --      CAC  ----
```

GAM64062 15824 CGCCTGCCTGAGAGAAGTCG CC A GAA- C - C-- CCCCG
TCGCGGCCGACCCCGTCGCC CGCCTG TG GA GT GTCG CGG CGA
TCCGCCGGCTACCATGTCCG GCGGAC GC CT CA CGGC GCC GCT
CCCAGGCG CC - GTAC T C TCC -----
GAM64093 14110 CGCCTTGCAGCACATCCCCC - CACATCC T ----- G AGC--- A CCGCAC
TTTCGCCAGCTGGCGTAATA CGCC TTGCAG CCC TTCGCCA GCTG CGTAAT GAAG GGC

GCGAAGAGGCCCGCACCGAT GCGG GATGTC GGG AAGCGGT CGAC GCGTTG CTTC CCG

CGCCCTTCCCAACAGTTGCG C CCGCGCA T AAGTC - ACAACC - ------
CAGCCTGAATGGCGAATGGG CGATC
ACGCGCCCTGTAGCGGCG

GAM64101 11174 CGCGACCGGTATGCGGCGCA G TAT GA A --- --- T GTTA
GGATGAGCCTCAGGGCTTCT CGC ACCGG GCGGCGCAG TG GC CTCAG GGCT CT
GTTAAGAGTCTGTCTGAGAA GCG TGGCT TGTCGCGTC GC CG GAGTC CTGA GA
AGCCGGTCTGCGCTGTTCCT G CCT TG - AAA TGT - ----
CGGTGGCG
GAM64102 15093 CGCGACCTGTTCCATTGACC A GT- A GG ACG
GTGGGGCCCCACGGGGGCCG CGCG CCT TCCATTG CCGT GGCCCC
CGGGCAGTGGGCGGAGGCGC GCGC GGA GGGTGAC GGCG CCGGGG
G - GGC G -- ---
GAM64105 11712 CGCGACTTCTGGTGCGCACA G TT-- CACAAG - TA G C A ACGAAAACTAA
AGGGCAGGGATATTGGCCCA CGC AC CTGGTGCG GGCA GGGA TT GCC AG TTGTTC
GATTGTTCACGAAAACTAAG GTG TG GGCTACGT CCGT CTCT GA CGG TC GACAAG
AACAGCTTGGCGAGCCTCTC G TCCC CAACA- A CC G T - ----------
ATGCCACAACTGCATCGGCC
CTGTGGTG
GAM64158 7783 CGCGGATTTGACTCCATTTC - A- T CCA ATACG - CT TCTGTGTCCCTCC
AATACGGGTGGGAGTCCTGG CG CGG TT GACT TTTCA GGTG GGAGTC GGC
CTCTGTGTCCCTCCGCCTGG GC GCC AG CTGA GAAGT CCAC CCTCGG CCG
CTCCGCACCAGGTCTGAAGC T GG T CCC CTGGA G T- ----------
CCAGTCTGAGGCCGTCG
GAM64184 6871 CGCGGCTACTACAACCAGAG C A AGA GA C CTCAC
CGAGGACGGGTCTCACACCC CGCGGCTA TACA CC GC GGA GGGT
TCCAGTGGATGTATGGCTGC GCGTCGGT ATGT GG TG CCT CCCA
G - A --- A- - -----
GAM64185 15468 CGCGGCTACTACAACCAGAG C A AGA GA CC CTCAC
CGAGGCCGGGTCTCACACCC CGCGGCTA TACA CC GC GG GGGT
TCCAGTGGATGTATGGCTGC GCGTCGGT ATGT GG TG CC CCCA
G - A --- A- T- -----
GAM64190 4619 CGCGGGCCTACGGGGCGGGG - A G- GGG G GGCAGTGA
GCGGGGCGGCAGTGAGCTCG CGCGGG CCT CGG GC GGC GGGC
GCCGGCAACCGAGGGACCCG GCGCCC GGG GCC CG CCG CTCG
CG A A AA G-- G --------
GAM64192 6941 CGCGGGCGGGGGATATAGGG ---- GGG GG CGAAG A GTAA
GCGAAGCCGCACTCGTAAGG CGCGG GCGG ATATAG G CCGC CTC
GGTGGATTTTTCTATGTAGC GTGTT TGCC TGTATC T GGTG GGG
CGTTGAGTTGTG GAGT GA- TT TTA-- - ----

GAM64193 22841 CGCGGGCTAGGGAGCGTGGG - AG-- AG T ATT C G TAGTGCGTC
ATTCCGGACTGTGAGCGGCT CGCGGG CT GG CG GGG CCGGA TGT AGCGGCTGT
GTTAGTGCGTCGCAGCTGCT GCGCCC GG CC GC CCC GGCCT GCG TCGTCGACG
GGCGATCCGGCGACCCTCGG A ACGG G- T AGC A G ---------
CCGGCAGGACCCGCG
GAM64206 17461 CGCGTACAGGATCTGGTTAC TA AT- TG TTA T - TCAGTGTC
CTGTGCAGTTGTGAATACCC CGCG CAGG C G CCTGTGCAGTTGTGAATACCCAGAGGT GGGC
AGA
AGAGGTTGGGCAGATCAGTG GTGC GTCC G C GGACATGTCAACACTTATGGGTCTCCA CCTG
TCT
TCTCTAGTCCTACCTCTGGG TC ATT GT TA- T A --------
TATTCACAACTGTACAGGAT
CTGGTTACCTGCTCGTG
GAM64214 16281 CGCGTGACGACTCGATCTCA C T ATC CGC T GTTCGA TCATTCTT
GAGCGCAGTGATCAGTTCGA CGCGTGA GAC CG TCAGAG AGTGA CA GCC
GCCTCATTCTTGGTAACATA GTGCGCT CTG GC AGTCTC TCGCT GT TGG
TGTCGCTCTCTGACGCGCGT - C GC- --- - ATACAA --------
CTCGCGTG
GAM64215 7644 CGCGTGCCCCGCCCGCTGGA C- CC T -- CT-- ACC C ACTGCC C
GCACCTGCCACCGAGGCGCG CG GTGCCCCGC GC GGAGC AC GCC GAGGCG GCGTGGGGCC
GTGG
CGTGGGGCCACTGCCGTGGC GC CGCGGGGTG CG CCTCG TG CGG CTCCGC CGCGCCTCGG
CACT
GGCGGCTGCCCTCCTCACAC TC -- C CG CCAC C-- - CTCA-- -
TCGGCTCCGCGCCGCCTCCG C CTGC
GCCACCGTGCGCTCCCGCGT GG GG
GGGGCGCCTCG CC CC
T ----
GAM64227 4901 CGCGTTTTTTGAATCTCGAC TTTTT ATCT GTTT GCAACA
CCGTTTCGGTGGTGGCAACA CGCG TGA CGACCC CGGTGGTG
CACCACTGGGGTTGTCCGTC GTGC GCT GTTGGG GTCACCAC
GCCCCTCGTG TCCCC GCCT ---- ------
GAM64243 7729 CGCTCACTCTTCTATAGTGG T T A G C CA A-- TCAAG
GTCACCATTAGGTCAAGCCA CGC CACTCT CT TA TGGGT AC TT GG
CAGAGAGTTACCCGTACAGA GCG GTGAGA GA AT GCCCA TG AG CC
GAGTGTGCG T - C - T AG ACA -----
GAM64245 13413 CGCTCAGCTCCGACTGGGAC CAGC ACTG -- A ACC
GGCGAGCGCACCGCGCCGCA CGCT TCCG GGACG GCG GCGC
GTGTCTACTCCGGATCAAGC GCGA AGGC TCTGT CGC CGCG
G ACT- CTCA GA - ---
GAM64278 10531 CGCTCTTCCACCGAGGGTGG AC G G GTC TCCC- CGAA
CGTCATCTCCCCCCGAAGGT CGCTCTTCC CGAGG TG C ATC CC
CCTTGGTCAGCAGCCTCGAG GTGAGAAGG GCTCC AC G TGG GG
GAAGAGTG A- G - AC- TTCCT ----
GAM64308 2204 CGCTGGAGACCCTGCGCCCC T AG -- T ---- ACC TCCGT
TGCCCAGCACCTCCTCCGTG CGC GG ACCCTGC GCCCC GCCC AGC TCC
GGCAGCTCCTCGGGTGGGGC GCG CC TGGGGCG CGGGG TGGG TCG GGG
CTGCGGGGTTCCCTGCG T CT TC - CTCC AC- -----
GAM64311 15509 CGCTGGAGGGGATGGCCGCC TG ATG --- G - TGCT
ATGCTTTAGCTTGCTGGCTG CGC GAGGGG GCCGCC AT CT TTAGCT

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CCTCGCG -- AG- GTC G T ----
GAM64322 15069 CGCTGGCTGGGGTCGGGCTC G --- -- T TG TGGAT
CATGCTCTGGATGGGACTGG CGCTGGCTGG GT CG GGC CCA CTC
GCCGTCGCACACGCCAGCCG GTGGCCGACC CA GC CCG GGT GGG
GTG G CAC TG - CA -----
GAM64332 17316 CGCTGGGTTCGAGATGCAAG - G GCAA--- AAAGTACCACAATCCAAG
CCATAAAGTACCACAATCCA CGCT GGGTTCGA AT GCCAT
AGATGGCCGTTAGAATGTCG GTGA CTCGAGCT TA CGGTA
AGCTCGAGTG G G AGATTGC ----------
GAM64339 22168 CGCTGGTTCAGCGCGGGCTC - TT GG TC CAA CTGG
GCTTCCAACTCGAGCTGGCT CGC TGG CAGCGC GC GCTTC CTCGAG
CGGGAGAAGCAGGCGGCGTT GTG ACC GTTGCG CG CGAAG GGGCTC
GTCCATGTG T T- G- GA A-- ----
GAM64342 2664 CGCTGTCCTCGCGCTTCCGC C - G GG GGACA G ACGAGAA
CGGGTGGACATCGACGAATT CGCTGTC TCGC GCTTCC CC GT TC ACGAATTTG
TGACGAGAACAAATTTGTGG GCGGCGG GGCG CGGAGG GG CG AG TGTTTAAAC
ACGAGCAGGAGGAGGCGGCG C G A A- AGC-- G -------
GCGGCGGCG
GAM64348 22037 CGCTGTGGGGACGGTGAGGA GGG GAGGA GA AGGA
CGCTGTGGACGCGGTGAGGA CGCTGT GACGGT CGCTGTG CGCGGTG
CGCTGTGGACGCGGCGAGGG GTGGCG CTGTCG GCGGCGC GTGTCGC
AGCTGTCAGGGCGGTG GGA AGGGA AG ----
GAM64351 17699 CGCTGTTACTAGAACCTACT TACT A- TACCC- C ACA
ACCCTGCCTTTGAACATTAG CGCTGT AGA CCTAC TGC TTTGA
AGCATACTTTGTAGGACTCT GTGACG TCT GGATG ACG AGATT
GCAGTG ---- CA TTTCAT - ---
GAM64366 22702 CGCTTCCGCCGGGTGGACAT G GG GGACA G G ACGAGAA
CGACGAATTTGACGAGAACA CGCTTCC CC GT TC AC AATTTG
AATTGTGGACGAGCAGGAGG GCGGAGG GG CG AG TG TTAAAC
AGGCG A A- AGC-- G - -------
GAM64369 10814 CGCTTCTACCCTCCAGCAGA TCCA AGA GCCT CGACCC
CGCCCGCCTGAGCGACCCCT CGCTTCTACCC GC CGCCC GAG
CCCAGGGTGACGCGGGTGGA GTGGAGGTGGG CG GTGGG CTC
GGTG ---- CA- ACC- ------
GAM64398 21843 CGGAAAGTTTATATAGAGAA A- ATA A - GGCTTTAA TGAA
TTCTGGCTTTAACAGTGAAC CGGAA GTTT TAG GAA TTCT CAG
TGGAATAATGAGAGCTTCAC GTCTT TAAA GTC CTT GAGA GTC
TGGTAAAATGCTTCTG CG ATG A C GTAATAAG ----
GAM64405 2223 CGGAACGCGTGTTGTTGGGA TT - TGGGA TG T GA A CCGTA
CTCTGGGACTGCTCGTGCGA CGGAACGCGTG GTTGGG ACTC C C CGTGC GCA TCTGTT

GCAATCTGTTCCGTAAACGG GTTTTGCGTAC CAACTT TGAG G G GCACG CGT AGGCAA

ATGCAAGCACGGTGGGTTGA C- G TTG-- GT - AA - -----
GTGTTCAACCCATGCGTTTT
G
GAM64423 9941 CGGAATAGAGTCTGAGAAGC AATA C - AGAA----- T TG --- GCAGGA
AGAAGGAGGTCTGGGAGTCA CGG GAGT TGA GAAGC GGAGG C GGAG TCAT
TGCAGGAATGAATACTTCTG GTC CTCA ACT CTTTG TTTCC G CTTC AGTA

GTCCTTTGGGATATAGGTTT ---- A T GATATAGGG T GT ATA ------
CTTCAAACTCCTG
GAM64436 17035 CGGACAGGACAACGGCGGCG ACAG C C C CCG A CAAA
CCCGGAAATCCAAAGAATTC CGG GACAA GG GG GC GAA TC
GCTCCCCTTTGTCAAGGCCG GCC CTGTT CC CC CG CTT AG
GGAA T - T --- A ----
GAM64444 14106 CGGACGAGACGGGCCCTTGT C -- -- ------- A AGT
GGAGTTCGAGTCGAACCCAG CGGA GAGAC GGGC CCTTGT GG GTTCG
AAGAAACGAGGGAGCCCGGG GCCT CTCTG CCCG GGAGCA CC CAAGC
TCTCCTCCG C GG AG AAGAAGA - ---
GAM64447 6947 CGGACGGATCGTGCAAGGCG A ------ G TT GGGGCG
CTTTCGGGGCGGATTGTGAC CGGACGG TCGT GCAAG CGC TC
TTGTGGAGAGATGGCCGTCT GTCTGCC GGTA TGTTC GTG AG
G - GAGAGG A TT ------
GAM64461 14175 CGGAGACCTCACCCTGTACC A- - C ----- - AAT TC- G AC- G GCA
AGTCCAATACCATCCTGCGT CGGAG CCTC AC CTGT ACCA GTCC ACCA CTGC TC CTGG CC
CC
CACCTGGGCCGCACCCTTGG GCCTC GGAG TG GGCA TGGT CAGG TGGT GACG AG GACC
GG GG
GCTCTATGGGAAGGACCAGC CA G C GTAAG A --- CCC G GAC A AA-
AGGAGGCAGCCCTGGTGGAC T GCT
ATGGTGAATGACGGCGTGGA C TGG
GGACCTCCG G ATC
T ---
GAM64473 21898 CGGAGCGGAAGTGGAGCTAC A- AA A- T CG A CC CG ATTC
CGCCACCGCCGCCGCCGATT CGG GCGG GTGG GC AC CC CCG GC CCG
CCGGAGCCGGGGTAGTCGCC GCC CGCC CGCC CG TG GG GGC CG GGC
GCCGCCGCCGCCGCCG GC GC GC C AT - -- A- ----
GAM64497 14152 CGGAGGGGCCCGCTCCGGGG A C--- TC GTCT CCA - G G GCCC
ACAGTCTTGCCCACCCTGGG CGG GGGGC CGC CGGGGACA TGC CC CTGGGCTTT CG GG

CTTTGCGGGGGCCCTCGCGG GCC CCCCG GCG GCCCCTGT GCG GG GGCCCGGAA GC CT

AAGGCCCGGCGGCCGCGCTG - CACA T- GTC- CC- C G G ----
TGTCCCCGTGCGACACGCCC
CCCG
GAM64501 11444 CGGAGGGTGTCACAGAGAGG G TCAC- A- G TC TC T CA GCGC
TTCCCATCAGGTTCACAGGG CGGAGG TG AG GA GT CCA AGGT CA GG
CGCCCGCTGTACCTCTTGGA GTCTTC AC TC CT TA GGT TCCA GT CC
GATGTCAGCTTCAATCAGCT G TAACT GA G GA TC T CG ----
TCTG
GAM64509 7265 CGGAGTGTCGGTGGTGATGG -- AT - C A GTGCG
GCATCCCGAGCGTGCGGCGC CGGAGTGTCGGT GGTG GG GCATC CG GC
GAGGTGCACTCGTACCTGAC GTCTCACAGTCA CCAT TC CGTGG GC CG
TGACACTCTG GT GC A A G -----
GAM64510 9977 CGGAGTGTCGGTGGTGATGG -- AT C A TGCG
TGCATCCCGAGCGTGCGTGC CGGAGTGTCGGT GGTG GGTGCATC CG GCG
GCGAGGTGCACTCGTACCTG GTCTCACAGTCA CCAT TCACGTGG GC CGT
ACTGACACTCTG GT GC A G ----
GAM64518 4919 CGGATCGATACGAATAGGGA A- G AATA- G T- TTCATGAT

GTCTGGGTTCATGATCCCCT CGG TC ATACG GGGA TC GGG
GAATCCTGTGAGTGTGTGGA GTC AG TGTGT TCCT AG CCC
GACTG AG G GAGTG A TC --------
GAM64535 16927 CGGATTGAGTGTCATCGACC AT T T ACC AAGA T CT- TTTAA
CTGAAGATGTGGCCCTTCTC CGG TGAG G CATCG CTG TG GGCCCTT C
TTTAAGTCCGAGGGCCCCAA GCC ACTC C GTAGC GAC AC CCGGGAG G
CCCAGAACGATGCCTCATCC CT - - AA- CCA- C CCT -----
CG
GAM64604 14795 CGGCCCAGGGTTCACGCGGG - A G- CC AGA TCGA
CCGGGTAGAGGCTCGAGCCG CGGC CC GGGTTCACGC GG GGGT GGC
GGACCCCCGAGCGTGAACCC GCCG GG CCCAAGTGCG CC CCCA CCG
CGGAGCCG A C AG -- GGG ----
GAM64613 6798 CGGCCCCGCAGCAGCTCCAA CC CA TCCAA AA AAGAGACCGA
GAAGGAACCAAGAGACCGAG CGG CCG GCAGC GAAGG CC
GCCTTCCCGCTGCCCGGACC GCC GGC CGTCG CTTCC GG
CG CA C- CC--- -- ----------
GAM64619 14228 CGGCCCCTCGGACCCTGCGC C CCCT TG G CAG
TGAGCCCCGGAGGCCAGGCG CGGCCC TCGGA GCGC AGCCCCGGA GC
TCCGGGGCTGCGCCACTTCC GCCGGG AGCCT CGCG TCGGGGCCT CG
GAGGGCCG - TCAC -- G ---
GAM64623 10979 CGGCCCGCCGTTCTTCTGCT - CC T - ACC--- TGTCG
GCCACCGCTGTCGGCACCAT CGGCC CG GTTCT CT GCTGCC GC
GGGCAGTGAGCAGAGCTCCG GCCGG GC CGAGA GA TGACGG CG
AGGCCG A CT C G GTACCA -----
GAM64627 7973 CGGCCCGTAGGCGTCTGGCA GTC AGCCC CA TTCATC
GCCCGGCGCCATCTTCATCG CGGCCCGTAGGC TGGC GGCGC TC
AGCGCCATGGCCGCAGCCTG GCCGGGCGTCCG GCCG CCGCG AG
CGGGCCG AC- GTA-- -- ------
GAM64636 1702 CGGCCGCCGAGTTCCGCGGC G G G - GA AA C ACCT A- A CACCTCCT
TCCGGGAGCGAAGCGCGCAC CG CCGCC AGTTCC CGGC TCCGG GCG GCG GC GTG GGC
GACGG
CTGTGAGGCAGACGGCACCT GC GGCGG TCGGGG GCCG GGGCC CGC CGC CG CAC CCG
CTGCC

CCTGCGACCGTCGCCGCCAC G - A C GC -- - CCGC CG - --------
CGCCGCCGCCGCCGCCGGGC GCGA
GCCGAGGGGCTGGCGGGCG

GAM64644 17347 CGGCCGTGCCATCCATCTTC - A T AC GACCGAGAAGA
CACCTGACCGAGAAGAAGAG CGGCCGTG CC TCCA CTTCC CT
GGGGGCTGGAGGCCATGGCC GCCGGTAC GG AGGT GGGGG GA
G C - C GA ----------
GAM64655 22051 CGGCCTGCTTCTCCACCAGC GC TCT ACC CA C AA AGA TCGT
ACCGCCATCTGCAAGAAGAG CG CTGCT CC AG CCGC ATCTGC GA GC
CTCGTGTACGTCGCGGATGC GC GACGA GG TC GGCG TAGGCG CT TG
GGCTCTCCAGGCGCAGCAGT TT CGC ACC TC - -- GCA ----
TCG
GAM64663 17358 CGGCGACATTGTGGACTTGG G GTGG GG GTGA AGAAG
CTTCAGTGAGGTAGAAGACC CGGC ACATT ACTT CTTCA GGT

ATGATGGAGAAGGTGATGTG GTCG TGTAG TGGA GAGGT CCA
GCTG G ---- A- AGTA -----
GAM64664 17238 CGGCGACGCCAAGGACCAGG CGAC AA C AG- CCC GCCT
AGTAGGGGCACCCGCGGGCC CGG GCC GGAC AGGAGT GGGCA GCGG
TCCGCTGCCCGACGCTTCTG GCC CGG CTTG TCTTCG CCCGT CGCC
TTCGGCCCG ---- -- - CAG --- ----
GAM64681 2022 CGGCGCCCGCCGGGGATCCG - - AT- GA CAG-- A C A C TCGCA
GACGCAGGGCCGAGGCGGCA CGGC GC CCGCCGGGG CCG CG GGCCG GG GGC GCG GC

GCGCGCTCGCAGCCCGCGCC GCCG CG GGTGGCCCC GGC GC CCGGC CC CCG CGC CG

CCCGGCCGACCCCGACGGCA G A GAC A- CCCAG - - - C -----
GCCCCGGTGGAGCGGCCG
GAM64693 11573 CGGCGGAGAGCTATCGTCGC AGAGCTA C TACATC AAGATACAA
GAGCTACATCCGGCAAGATA CGGCGG TCGTCG GAGC CGGC
CAAGCCGCGTTTCGACGAAC GCCGCC AGCAGC TTTG GCCG
GCCGCCG GCA---- - C----- ---------
GAM64694 1670 CGGCGGCAAGATGGCAGTGC GGC- G--- - ATA AAGAAGA
AAATATCCAAGAAGAGGAAG CGGC AAGATG CAGTG CAA TCC
TTGTCGCTGATGGCATCTTC GTCG TTCTAC GTCGC GTT AGG
AAAGCTG AAAC GGTA T GA- -------
GAM64695 13895 CGGCGGCAAGATGGCAGTGC GGC- G--- - A AAGAAGA
AAATATCCAAGAAGAGGAAG CGGC AAGATG CAGTG CAAAT TCC
TTTGTCGCTGATGGCATCTT GTCG TTCTAC GTCGC GTTTG AGG
CAAAGCTG AAAC GGTA T A -------
GAM64733 10523 CGGCTAGGTACGCAGGCTGG AG A C CT T AG TG GA - C -- A
TGGCGCGGAGGCTGCGGCTG CGGCT GT CG AGG GG GGCGCGG GC CGGCTGC AGTA CGC
TGCGGA GTA C
CGAAGTACGCCTGCGGAGTA GCCGG CG GC TCC TC CCGCGCC TG GCCGGCG TCGT GCG
GTGCCT CGT G
ACTGCAAAGATGCTGTCCGT G- - - T- - -- GT -- T C GT A
GCGCGTTGCTGCGGCCGTGG GCAA
TCCGCGCCCTTCCTCGGCGG T
GCCG A

GAM64736 17448 CGGCTCACCTGCAAAACAAA - ----- AA AAAA - GCAATATCAGA
ACACCAGCAATATCAGATGG CGGCT CA CCTGCA AC CA CCA
ATGGCAGTGATGCAGGCACA GTCGA GT GGACGT TG GT GGT
ATGCAGCTG C AACAC AG ACG- A ----------
GAM64752 13069 CGGCTGCGAAGTACCGCCTG GA C C -- A GCAA
CGGAGTAACTGCAAAGATGC CGGCTGC AGTA CGC TGCGGA GTA CT
TGTCCGTGCGCGTTGCTGCG GCCGGCG TCGT GCG GTGCCT CGT GA
GCCG -- T C GT A ----
GAM64753 524 CGGCTGCGAAGTACCGCCTG GA C C -- - GCAA
CGGAGTACTGCAAAGATGCT CGGCTGC AGTA CGC TGCGGA GTA CT
GTCCGTGCGCGTTGCTGCGG GCCGGCG TCGT GCG GTGCCT CGT GA
CCG -- T C GT A ----
GAM64755 15417 CGGCTGCGGTACGGCGTGTG - GCGTGTGGT - GGTTCA
GTCCCAGCGGTTCAGCTGAG CGGC TGCGGTACG CC CAGC
GTAGGGACGTGCCGTAGGCC GCCG ATGCCGTGC GG GTCG

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        G                G       AGGGAT--- A   ------
GAM64758 4764   CGGCTGGGACGTCTCTATAT    T  A--  ----   A      GAATTCTGTTTAAA
        GTGTGAATTCTGTTTAAAAT CGGC GGG   CGT    CTCT TATGTGT
        ATATGAAGAGCCAAACGATA GCCG CTC   GCA    GAGA GTATATA
        CTCCGCCG            C   ATA   AACC    A      ----------
GAM64765 1822   CGGCTTAAAAGATGTGAGGT      AAAAGA   ----     GAA   GAGAA
        CTGAACATGAGAAATGAGGC CGGCTT     TGTG    AGGTCT   CAT
        TTAGGGCACAAAACTGGAGT GTTGAG     ACAC    TTCGGA   GTA
        TG                 GTCAAA    GGGA     ---   -----
GAM64794 22103  CGGGACAGGCCACGGCAGAG     CA  CCAC     A  ----     GTCACAGG
        GCTGAGTGTCACAGGACTCG CGGGA  GG    GGCAG GG    CTGAGT
        GGAGACCCTGCCTCCGTTCC GCCCT  CC    CCGTC CC    GGCTCA
        CG                 TG  T---     -  AGAG     --------
GAM64798 7714   CGGGACCCAGCTGACCGTCC     CC   C-     TCCTAC T     CAA
        TACGTCAGCCCAAGGCTGCC CGGGA  CAG  TGACCG     G CAGCC
        CCCTCGGTCACTCTGTTCCC GCCCT  GTC  ACTGGC     C GTCGG
        G                  T-   TC     TCCCC- -     ---
GAM64802 19473  CGGGACCGGGAGGGGCCGGG   GG  C    -   -      CTTCCCAC    AGACGTG
        TCTCTTCCCACGCGGCAGAC CG  AC GGGA GGGG CCGGGTCT       GCGGC
        GTGGTCGCACAATCCAAGGC GC  TG CCTT CCCC GGTCCGGA       CGCTG
        CTGGACCCCATTCCTGTTTC   TT  T    A    A       ACCTAACA    -------
        G
GAM64805 7001   CGGGACTCTAGAAACTTTTT     -   AGAAA  ----        AATTATA
        ATCAGAATTATACTGGTAAA CGGGA CTCT     CT    TTTTATCAG
        ACATTGGGGGGAGGGATCCT GTCCT GGGA     GG    AAAATGGTC
        G                  A    GGGG-  TTAC        -------
GAM64827 6943   CGGGAGTCAAGGGGATTCTC      TCAA    TTC   TG T    ACTCGA
        CTGGTGTTAACTCGATGACT CGGGAG    GGGGA   TCC  G GTTA
        TGGGGCTCCCTGCTCTCCCG GCCCTC    TCCCT   GGG  T CAGT
                          TCG-     C--   GT -    ------
GAM64829 13803  CGGGAGTCTTGGCCAGGGAT   GA   T-   C    A   --   GC     GCT  AA   TGCTCCAACCCCCT

        GGGGAGCGGGGAGGCTCCAA CGG  GTC  TGG CAGGG TGG  GGA  GGGGAG   CC  CTC
        CTCTGCTCCAACCCCCTGAG GCC  CGG  GCC GTCCC ACC  CCT  CCCCTC   GG  GAG
        GAGGTCACTCCCCATCCAGC   TC   CC   C    C   GA   A-     ACT  AG   ----------
        CACCCCTGCCCGCCGGCCTC
        CG
GAM64843 7835   CGGGCAAAGGCACCGTCACC    GCAAA   A    ACC    CAATCCT    C ACTTT
        TTTCCAATCCTTCATCGACT CGG     GGC CCGTC   TTTC       TCAT G
        TTCATGACTAGAGAGACGGG GCC     TCG GGCAG   AGAG       AGTA C
        CTGACACCG            ACAG-   -     ---    ATC----    - -----
GAM64845 7623   CGGGCAAGTCCACCACTACT      ----------     A---   -  AC-     AT  GA  TATAAATG     CA
        GGCCATCTGATCTATAAATG CGGGCA        AGTCC    CCA CT   TGGCC  CT  TC       CGGTGG  TC
        CGGTGGCATCGACAAAAGAA GTCCGT        TCGGG    GGT GA   GTCGG  GA  AG       GTTACC  AG
        CCATTGAAAAATTTGAGAAG      ATGAACTTCC     AAAG   A  GTC     AG  AG  TTTAAAAA     A-
        GAGGCTGCTGAGATGGGAAA GACAAAA
        GGGCTCCTTCAAGTATGCCT
        G
                    -------
GAM64847 21855  CGGGCACTGGAACTTGGTGC     CAC      T  T  G  AAAAGA     AGAACAA
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GGGAAAAGAAACGACAGAAC CGGG TGGAACT GG GC GG AACGAC
AAGTCGTTGTGCCGGCCTTA GCCT ACCTTGA TC CG CC TTGCTG
GTTCCAAATTCCG TAA T - G GTG--- -------
GAM64863 17231 CGGGCCAGGGGCTGTCTCGC - CTG ACA- GG A TAAAG
ACATCGGAGTACTAAAGGCA CGGG CCAGGGG TCTCGC TC AGT C
TTAGAGGAGGCGGGGGTCCC GTCC GGTCCCC GGGGCG AG TTA G
CTGGACCTG A TG- GAGG A- C -----
GAM64878 1629 CGGGCGAGCCCTGCAGGGCC CGAG GCA---- G GG GGAA
TCGGGCCTGGAAAGGCGGGG CGGG CCCT GG CCTC GCCT
ACCGGGAAGAAGGGAACCTG GTCC GGGA CC GGGG CGGA
AA-- AGAAGGG A -- ----
GAM64896 15766 CGGGCGGTGCGACAGCAGCT --- G- - A GGAG A - C GGG
GGAGGGCAGAGGAGGCGGCG CGGGC GGTGC AC AGC GCT GGC GAGGA GG GGCGC

CGGGGTGTCCTGTCCTCGCC GCCTG CCGCG TG TCG CGG CCG CTCCT TC CTGTG
ATGAGGCCGCTAGTAGGCGC TGG GA A C AGTA - G - ---
CGGTGTCCG
GAM64903 2148 CGGGCTACCACTGGGTACAC GGC CT------ ACA--- A CTTAC GCCCCACG
GTCACGGTCTTACACCTGTG CG TACCA GGGT CGTC CGGT ACCTGT
CCCCACGACGGGTCCACTAC GC ATGGT CCCA GCAG GCCA TGGGCA
CGGGACGACGACGACCCTTA AC- ACATCATT GCAGCA G TCACC --------
CTACATGGTACACG
GAM64906 17572 CGGGCTAGTAAGAAGTTATG GG AG A AT-- AA AAGAT
TGTAACTTCAAGATGAAGGG CG CT TAAGA GTT GTGT CTTC
CATTAGCAACCTCTTAGAAG GC GA ATTCT CAA TACG GAAG
ACG A- AG C CGAT G- -----
GAM64918 11927 CGGGCTGTTCGCCTGCGTCG T - G CTCC A G ACGGA
CTCCGGGAGCTGCCGACGGA CGGGC GTTCGC CT CGTCG GGG GCT CCG
CGGAGCGCCCCCGGCGAAGA GCCCG CGGGCG GA GCGGC CCC CGA GGC
GCGGGCGCCCG - A A C--- G - -----
GAM64921 17285 CGGGCTTGTAGGTGTCGGCT --- A G T CT - G A-- - G CTCTTA
TGCTGGCCCAGCAAGGCCTG CGGG CTTGT GGT TCGGCT G GGC CCAGCAA GCCTGAT AGC AT
AAG
ATAAGCATGAAGCTCTTATC GTCT GAACA CCG AGTCGA C CCG GGTCGTT TGGGCTG TCG TG
TTC

TTGGTGGCTGTGGTCGGGTG TGA A A - CC T G GTG G G ------
TTGCTGGTGCCCCCAGCTGA T
AGCCAACAAGAGTTCTG

-
GAM64940 10333 CGGGGAGGGTGGAGAAATCA AG TG CA TTA CATG ACCATTGAGAA
TCGTTACAGACATGGACACC CGGGG GG GAGAAAT TCG CAGA GAC
ATTGAGAAGTCAAATCTGAA GTCCC CC TTCTTTG AGC GTCT CTG
TCGACAGTTTCTTTTCCGGC GG TT AC TAA AAA- ----------
CCTG
GAM64942 4688 CGGGGATTATCTCACATGAT TTATC - T - AT AACAAGTG
GAGGCCTTATGGAACAAGTG CGGGGA TCACA TGA GAGGC CTT GG
CCGAGAGCCTCTCACTGTGG GTCCCT GGTGT ACT CTCCG GAG CC
TTCCCTG T---- C - A -- --------

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GAM64963 11799  CGGGGCTCTCCCGCCTGCCT       CCCGCCT   TC   G  CAGACGCAA
                TCTCGGGGCCCAGACGCAAG CGGGGCTCT     GCCT  TCGG GCC
                GCACCGATTGGGCCAACATC GTCCCGAGA     CGGG  AGCC CGG
                AGAGCCCTG              CTACAAC   TT   A  ---------
GAM64978 10714  CGGGGGGTGCTGGGGGCGGG   GG   TG   ----     --   AGGTGTA
                GCAGGGGCAGGTGTAGCCTC CGGG  GTGC  GGGG   CGGGGCA  GGGGC
                TGTGCCTCGTTGTCCCCTGG GCCC  CGCG  CCCC   GCTCCGT  CTCCG
                CGCTACCCG           AT   GT   TGTT     GT   -------
GAM64979 11420  CGGGGGTCGCACTAGGGTGT       A   G    -----   AACGAGGA
                CCCTAGAGAACGAGGACTCT CGGGGGTCGC CTAGG TGTCCC    TAGAG
                GAAGGCGGGACATTTGGGCG GCCCCCAGCG GGTTT ACAGGG    GTCTC
                ACCCCCG               -   -    CGGAA   --------
GAM64980 7615   CGGGGGTCGGGGCGCAATTG     T  G    ATTG-    ACA-         CTGCTTCT
                CCAGGGACATCTGGAGCCCG CGGGGG CG GGCGCA   CCAGGG   TCTGGAGCCCGGC

                GCCTGCTTCTGTCGGGCTCC GCTCCC GT TCGCGT   GGTCCC   GGACCTCGGGCTG
                AGGGTACCCCTGGATGGCTG    - G    CGGTA    CATG         --------
                CGCTGTGCCCTCG
GAM64997 156    CGGGGTTAACCACTGGCAGA  G   AA--     C--  AAAGAA    ACATT
                AAGAAGGGTGTACATTGCGC CG GGTT   CCACTGG  AG    GGGTGT
                CTGGACGCCTACCCCAGTGG GC CCAG   GGTGACC  TC    TCCGCG
                AAAAGACCGCG         G   AAAA     CCA  CGCAGG    -----
GAM65011 14856  CGGGTACTCAGGAGGCTGAG   -    AGGAG--     C  -   T   GAATCCGGG
                GCAGGAGGATCATTTGAATC CGG GTACTC      GCTGAGG AG GAGGA CATTT
                CGGGAGGTGTCCTCTCTACC GTC CATGAG      TGATTCC TC CTCCT GTGGA
                TTAGTAGGCACAGAGTACAC   A    ACACGGA     A  T   -   ---------
                TG
GAM65021 13881  CGGGTCTTCGCCAACATCCT   -     GCC    C ------     ACATCC
                CCTCTACATCCAGAGGACCA CG GGTCTTC   AACAT C     TCCTCT
                AGAGCATGTTCCAGAGGACC GC CCAGGAG   TTGTA G     AGGAGA
                ACG              A      ACC    C AGAACC     ------
GAM65022 16256  CGGGTGAAGGAGGAAGAGAT    -------   G   A---    C-   C  CCAA
                CCACTCTGCCAACAAGTGCC CGGGT     GAAG AGGA   GAGAT  CACT TG
                GTCTCAAGCTCCTGCTTCCT GCCCA     CTTC TCCT   CTCTG  GTGA AC
                GGGAAACCCG           AAGGGTC   G   CGAA   CC   -  ----
GAM65023 15457  CGGGTGAGGTACAGGCTCAG     A  ACAG   -  G    AGACTCC   TGCAA
                TCTGCGGCCAAGACTCCGTC CGGGTG GGT   GCTCA GTCT CGGCCA     GTCC
                CTGCAAGGATATTGTGGCTG GTCTAC CCA   CGAGT CAGA GTCGGT     TAGG
                GAGACATGAGCAAGACCCCA     C  GAA-   A   G    GTTA---   -----
                TCTG
GAM65055 22863  CGGTAAGCACGGCACTAGCT      C    ACTAGC  CGAT-     AGCCA
                CACGATGGCCAGTAGCCAAC CGGTAAG ACGGC    TCA    GGCCAGT
                TGGTCCCCCTTGAAACGGCT GCCGTTC TGTCG    AGT    CTGGTCA
                GTCTTGCCG              -   GCAA--  TCCCC     -----
GAM65073 7347   CGGTCATATCGAGACAGAAA       TC  GACAGAAAA   AT   A  CCA
                AAGACCATTCCTCATCCCAG CGGTCATA  GA       AGACC  TCCTC TC
                AAGAGGGGGTCTGATAAGCC GCCAGTAT  CT       TCTGG  GGGAG AG
                ATCCTATGACCG             C-  ACCGAATAG    --   A  ---
GAM65090 22032  CGGTCTGTTATCTCCTTTTG    --   - T   TT  C  C    CTCA
                CGCGACACGGTCTCAGCTGT CGGTC  TGTTA TC CCTT  GCG GA ACGGT
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TCCGCCTGAGGCGAGTGACG GCCGG GCAGT AG GGAG CGC CT TGTCG
CTGGCCG TC G C TC - - ----
GAM65099 10351 CGGTGAGGGTGGCTTTCTCC G - -- T A A - --- CAGATCAGA
GGCTTCCTTAGAAGGCTTGC CGGT AGGGTG GCTTTCTC CGGC TCCTT GA GGC TTGCCGA GG

CGAGGCAGATCAGACCCAGT GCCG TCCCAT TGAAAGGG GTCG AGGGG CT TCG AGCGGTT CC

TGGCGATGCTGTCGGGGATG - G TC T - G T GAC ---------
CTGCTGGGAAAGTGTACCCT
GCCG
GAM65114 13095 CGGTGCTCTGGTACGAAGAT C T GAAGATCCA TAAATTCCCCATCCT
CCATGCTAAATTCCCCATCC CGGTG TCTGG AC TGC
TGCAGCAGTGAGTCCCGGAT GCCAC AGGCC TG ACG
CACCG T C AGTGACG-- ----------
GAM65117 22615 CGGTGCTGTGTCCTGGAGCT T-- T AGCTT GA A GAATGG
TTATTTGGGGAGTTTCACCC CGGTGC GTG CCTGG TATTTGGG GTTTC CCCA
AGAATGGTGGGAGAAACCTC GCTACG CAT GGACC GTGGACCC CAAAG GGGT
CCAGGTGCCAGGTACCCCGC CCC - ----- TC A ------
ATCG
GAM65128 10883 CGGTGGCGCCCGCGGGCCCC - ---- C C- - ACTC
GGGCGACTCCGCCTCGGCCG CGGTGGC GC CCG GGGC CCG GGCG
CCCTGGACGAGCTGTCACTG GTCACTG CG GGT CCCG GGC CCGC
T AGCA - CC T ----
GAM65135 17902 CGGTGGCTCCACAAGCGCGT T TC C TAACA CCG CGCC
AACACGGCCGCGGCGGCGCC CGG GGC CACAAG GCG CGG CGGCGG
CTGCCGACCCGCGTCTTTGT GCC CCG GTGTTT TGC GCC GCCGTC
GGCCCCG - -- C ----- CA- ----
GAM65137 15373 CGGTGGCTGGGCTGACGCTG TG A TG- - TC GGTCTA
CTGGCTGTCGGGGTCTACTC CGGTGGC GGCTG CGC CT GGCTG GG
AGCCAAGAATGCGACAGCCG GTCACTG CCGAC GCG GA CCGAC TC
TCACTG -- A TAA A -- ------
GAM65156 11335 CGGTTACTGGTGACTCAAGT ACTG A CAAGTT GAA- GAAA
TGGGAGGGAAATGAAAATAC CGGTT GTG CT GGGAGG AT
AACTTCCCTGAAAGGCATAC GCCAG TAC GG CCCTTC TA
TGGACCG GTCA - AAAGT- AACA ----
GAM65167 22059 CGGTTGAACAACCCAATGAG G AACA AA A C GACTACGGG
GTCAGGCGACTACGGGGCCT CG TTG ACCC TG GGT AGGC
ATCACAGGGGTCAGCAAGCG GC AAC TGGG AC CTA TCCG
G GAC- G- A - ---------
GAM65171 13159 CGGTTGCCATGGACCAGCAG T C A--- C TCCTTGATCC
CACCTCCTTGATCCGGTCCT CGGT G CATGG CCAGCAG ACC
GCTGGAAGCCCATGTCACTG GTCA C GTACC GGTCGTC TGG
- T CGAA C ----------
GAM65205 12129 CGTACTGACTCGAACAAGCG TA AACAA AAA- AGCTCAAC
TTTAAAAGAGCTCAACCTGT CG CTGACTCG GCGTTT AG
AGAGACGTGCTCGCGAGTCA GC GACTGAGC TGCAGA TC
GCCG C- GCTCG GATG --------
GAM65212 7610 CGTAGATTGGCACAGTGTGG G- CAG GT C TCAC
GTGACCCCGTCACCGGAGTC CGTA ATTGGCA TGTGG GAC CCG
CATCACGATGCCAGTGGTAC GCAT TGACCGT GCACT CTG GGC

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        G                GG     A--    AC  A  ----
GAM65247 352   CGTCACTCGCCGAGGTTCCT   A   CC  -  - G--    T  GCCA
        TGGGTCATGGTGCCAGCCTG CGTC CTCG  GAG GTTC CTT  GGTCA GGT
        ACTGAGAAGAGGACGCTCCC GCAG GGGC  CTC CAGG GAA  TCAGT CCG
        GGGAGACG           A  C-  G  A  GAG   -  ----
GAM65258 13834  CGTCAGGTTACCATTGCTAA   CA   ACCA    A  CAAC-  TG  AGT
        GGCAACAGCTGGAAGTTTTG CGT  GGTT   TTGCTA GG    AGC  GA
        GCTCCTTTCCATAGCAACAA GCA  CTAA   AACGAT CC    TCG  TT
        TCCCACG           CC   C---    A  TTTCC  GT  ---
GAM65264 9908   CGTCCAAAACTCATCCTCTT  TC  A   CA-      -------  A  AAGC
        CCCCAAGGAAGCCCTCGGGC CG  CA AACT   TCCTCTTC     CCC AGG
        CCCAAAGAAGGGGAGACAGT GT  GT TTGA   AGGGGAAG     GGG TCC
        TCTGCTTG           TC  C   CAG      AAACCCC  C  ----
GAM65281 17257  CGTCCCTGACACTGCCCGCT   C   -  TG    ACTA--  AGAAACA
        ACTACAAGAAACATGGCATC CGTC CTGA CAC  CCCGCT    CA
        AGGTGGGTGGTGATCGGAGA GCAG GGCT GTG  GGGTGG    GT
        CG               A   A  GT    ACTACG  -------
GAM65293 7632   CGTCGATGGTGTTGATAGAT    A-----      A-  GA  --  CTTTT
        GGTGACTTTTTCAGCCCACA CGTCG    TGGTGTTG  TA  TGG  TGA
        TGAGCAACACCACCACAATG GTAGT    ACCACAAC  GT  ACC  ACT
        ATG              AACACC      GA  AC  CG  -----
GAM65299 13276  CGTCGGCGGCCGGCTGCAGG      GGCCG-  GC  T   -  AGC   G   --- T---    CCCCG
        TCGGCCAGGAGCTCCTGCTC CGTCGGC    GCT  AGG CGGCC AGG  TCCT CTCTA  CC   TGGCGC

        TACCTTGGCGCCCCCGGCGC GCAGCTG    CGG  TCC GCCGG TCC  AGGA GAGGT  GG
ACCGCG
        CATCTCGGACCTGGAGGAGG      ACAGAA  A-  -   G  ---  G   CCA  CTCT    -----
        ACCTGGGCCGCCTAGGCAAG
        ACAGTCGACG
GAM65305 5290   CGTCTAACTATGTGGGTTGG   CTA  ATG          ---  GGCGA
        CTTCAGGACTGGCGAGGAAC CGT  ACT  TGGGTTGGCTTCAGGA  CT
        TCCTGAAGTTAGCTCAGAAG GCA  TGA  ACTCGATTGAAGTCCT  GG
        TGCACG           CG-  AG-          CAA  -----
GAM65311 13326  CGTCTCAGTGGCTGCCCGCA   TCA    CCC   G   G TG  CCG
        TGCTCAAGGTGGCCCGGCTG CGTC  GTGGCTG  GCAT CTCAA G  GC
        CTTGAGGTGCCAGTCATGCT GCAG  TACTGAC  CGTG GAGTT C  CG
        GACG             TCG     ---   -   - GT  ---
GAM65316 14834  CGTCTCCGAGTTTGCGACTC  TC      - GA  -  GA  CGTCC
        GCGGACCGGCGTCCCCGGCG CG  TCCGAGTTT GC  CT CGCG  CCGG
        CGAAGAGGCTGGACTCGGAT GC  AGGCTCAGG CG  GA GCGC  GGCC
        TCG              TT      T  GA  A   --  -----
GAM65318 16314  CGTCTCCTGCGCGGCCCGCT   CT        GCTCC   A    ----  GGGA
        CCTGAGAACCCTGGCTCGGG CGT  CCTGCGCGGCCC    TGAG ACCCTG   GCTC
        AGAGCGACGCGGGGTCCTCG GCG  GGACGCGTCGGG    GCTC TGGGGC   CGAG
        GGGCTGCGCAGGCTGCG     TC        -----  C    GCAG   ----
GAM65335 6989   CGTCTGGGATGTGAGGAGCC  T    TGT   A  C   TG--   -  GCCC
        CCTCTGCCCGGCTGCCCAGT CG CTGGGA  GAGG GC CCTC   CCCGG CT
        CTGGGAAGTGAGGAGCGCCT GC GGCCCT  CTCC CG GGAG   GGGTC GA
        CTTCCCGGCCG        C    T--   G  A   TGAA   T  ----
GAM65355 15413  CGTGAAGAAGGCGGCCCGGG   AA   G --      CATCA  AAAAGTA
```

TCATCATAGAAAAGTACTAC CGTG GAAG CG GCCCGGGT TAG
ACGCGCCTGGGCAACGACTT GCAC CTTC GC CGGGTCCG ATC
CCACACG AC A AA CGCAC -------
GAM65365 404 CGTGACGCCGTCCGTGAGGA A CC T AA A ACAGC
ACACGAAGGACAGCTCTGCG CGTG CG GTCCG GAGG CACG AGG
TGCCTCCGGGCCCTGCCACG GCAC GT CGGGC CTCC GTGC TCT
C CC - -- G -----
GAM65368 10365 CGTGACTTGGGCAGTGGTAG G CAGTGGT C CAGAA AA TGATG
GCGGGTTCCAGAAGTTTAAA CGT ACTTGGG AGG GGGTTC GTTTA AG
AGTGATGCTGTGAGCAGGAC GTA TGGACCT TCC CCCAGG CGAGT TC
CCCCTTCCAGGTGATG G ------- - A---- G- -----
GAM65427 19447 CGTGCTCTCGGCCGACCTGG GCCGAC TGCA T TC -- A CCT - G
TGCACTACCTGCGCCTCAGC CGTGCTCTCG CTGG CTACC GCGCC AGCC GCG CTA GCGCG
CCT GC
CGCGACTACCTGCGCGCCTG GCACGAGGGC GACC GGTGG CGCGG TCGG CGC GGT
TGTGC GGA CG
GCACAGCGAGGACGTGTCTC ------ TGCA C -- TC G CTC A G
TGGGCGCCTGGCTGGCGCCG ACA
GTGGACGTCCAGCGGGAGCA
CG

GAM65441 7095 CGTGGAGCCCGGCGCCCCAG ---- CG CCAG T AACTG
GCCTGGGGAACTGCCTCCGG CGTGG AGCC GCGCC GCC GGGG
CAAAGGCGCGGTTTTCACCA GCACC TTGG CGCGG CGG CTCC
CG ACTT -- AAA- C -----
GAM65443 5029 CGTGGAGCTGGGCCGAACCA CT CGAACCACG A ACCCAGCCCAA
CGTGTACCAAGACCCAGCCC CGTGGAG GGGC TGT CCAAG
AACTTGGACAACTGCCCCTT GTACCTT CCCG ACA GGTTC
CCATG C- TCA------ - ----------
GAM65447 11752 CGTGGCAATTTCTTAGAGAT TG AA AG A ATAAAT --- CG AGGT
CAAGAATAAATTTCTAGCTC CG GC TTTCTTAG ATCA GA TTCT AGCT A
GAAGGTTTAAGCTCTTAGAA GC CG AAGGAGTT TGGT CT AAGA TCGA T
CAAGCTCTGGTGATTGAGGA GT AC AG - CGAAC- TTC AT ----
ACAGCTGCG
GAM65468 15164 CGTGGGACCACGCTGCTTGA CA ---- G CT CTGG- CTTAC
GGGTCTGGGCCTGGGTCTTA CGTGGGAC CGCT GCTTGA GGT GGGC GT
CACAAATCGTCCACTGTCAA GCACCCTG GCGG CGAACT TCA CCTG CA
GCCTTGGGCGCGTCCCACG C- GTTC G -- CTAAA -----
GAM65478 16091 CGTGGGGATCAGCGTAGGTG G TCA G G CTTT AGGTGC
AGCTGTGGCCTTTTGCGAGG CGTGG GA GCGTA GT AGCTGTGGC TGCG
TGCTGCAGCCATAGCTACGT GCATC CT TGCGT CA TCGATACCG ACGT
GCGTTCGCTACG G --- G - ---- ------
GAM65488 10738 CGTGGTCACCTTCGAGTAGA - C T A AGAGA CC- CCACC
GAGGCCCGCCCGCCCACCGT CGTG GTCA CT CG GT GGC GCCCGC
GGGCAGTGCCACCCGCAGAT GCGC CAGT GA GC CA CCG CGGGTG
GACACGCG A A C C ----- TGA -----
GAM65510 2526 CGTGTCACCACCGGCCTGCT CACCA CT A- - TGG -- ACGAC
GAGGGTTGGCGCTGTGGGCA CGTGT CCGGC GCTG GG GT CGCT GTGGGC
CGACGCTCACCAAGCGAACA GCACA GGCCG CGAC CC CA GCGA CACTCG
CGCCGCCAGCGCCGGAACAC A---- -- CG G CAA AC -----

G
GAM65513 11681 CGTGTCCACTAACTGGCCTT TCCA A - CCTTC AA G CTATACTAACAA
CTTCGCAAAACTCGCGCTAT CGTG CT AC TGG TTCGCAA CTC CG
ACTAACAACGAGAGCTTGTG GCAT GA TG GCC AAGTGTT GAG GC
AACACCGTGTAAGATCTACG CTA- A T AC--- C- A ----------
GAM65519 2032 CGTGTCGGACGCACCAGGTC GGA CCC- GA C GTGA
CCGCAGATGCCGGTGACGAC CGTGTC CGCACCAGGT GCA TG CG
AATGCCACTATCTGGTGTGG GCACAG GTGTGGTCTA CGT AC GC
ACACG --- TCAC A- A ----
GAM65521 13258 CGTGTCTTATGAGATCTAGA CT-- A T ACT TACTC TTCCTT
TACTGATACTCGCCATGTGT CGTGT TATG GA CTAGAT GA GCCATGTG
TCCTTCACATGGCTCTGGTC GTACG ATAC CT GGTCTG CT CGGTACAC
TGGTCACATATTCTGCATG TCTT A - GT- ----- ------
GAM65523 10828 CGTGTGAACAGCTACTACTC T GAA ACT--- T A- CAACTA
TTGGTATCGCAACTACGGGC CG GT CAGCT ACTCT GGT TCG
ACCTGGAGTTGATTCAGCTG GT CG GTCGA TGAGG CCA GGC
CAGCTG - AC- CTTAGT T CG ------
GAM65552 11145 CGTGTTCTTCAATGTCAACG CT ------- A- A TAATC
ATCGTAATCCGAATGTGAGA CGTGTT TCA ATGTC ACG TCG
CATGTCCTAATGATAACACG GCACAA AGT TACAG TGT AGC
T- AATCCTG AG A -----
GAM65557 2297 CGTGTTGTTTCCCCTCAACG T TT - -- C- TTCAG
CCTAACTTCAGGTTGCTGTG CG GTTGT CCCCT CA ACGC TAAC
TCTTGCGGGGGGGGCAACCC GC CAACG GGGGG GT TGTG GTTG
G C GG C TC TC -----
GAM65564 392 CGTTAACACTGCAACCAATC - A - CCAA - AAA CCCCCA
TGGGAAAAGCCCCCCAGCTG CG TTA CACTG CAA TCTG GG AGC
CCACAGAACACTTGACAGTG GC AAT GTGAC GTT AGAC CC TCG
CTAATCG T C A CACA A G-- ------
GAM65584 13932 CGTTCATTTTATGCTTCATG - T C-- AAAT TG CAGTGA
GTTGAAATTTTTCTGTCAGT CGTT CA TTTATG TTCATGGTTG TTTTC T
GAGTGGAAAATAACCATGAG GCGA GT AGATAC GAGTACCAAT AAAAG G
ATACATAGACTGTAGCG T C ATA ---- GT ------
GAM65594 11371 CGTTCTCTGAGTCGCTGCGC T GAGT C A--- A CACC A C TACGCT
GACAGGGGCAGCAGGCACAC CGT CTCT CGCTG GCGAC GGGGCAGC GGCA CAGG GCC GC

CCAGGAGCCCGCTACGCTGC GCG GAGG GCGGC CGTTG CTTCGTCG CCGT GTTC CGG CG

AGGCCTTGAAGCTGCCGCTG - ---- - GAGC - CGAA - A ------
CTTCCGAGGTTGCCGGCGGG
AGGCG
GAM65598 5076 CGTTGAAGCCACGCCCTCTT TT A G CTCTTTCCC--- ACCCTC
TCCCACCAACCCTCTGGTCT CG GA GCCAC CC ACCA
CATCCACACAGGGTGGCTCT GT CT CGGTG GG TGGT
TTG TT - - ACACACCTACTC ------
GAM65609 22994 CGTTGGAACCAGCTGGACCG T ACCA A G C A T ACTC A ACTCGGA
CTCCGACGTGGCGGTGCCGC CGT GGA GCTGG CC CT CG CG GGCGGTGCCGCTC TGC
CGGCT CCT
TCACTCTGCACGGCTACTCG GCG CCT CGACC GG GA GC GC CCGCCGCGGCGGG ACG
GCCGA GGA

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          GACCTCGACAGCGAGGAGCC   C  C---   - G  C  - T        C---  G   -------
          GGGCACGGGCGGCGCCGCCT  ACAG
          CGCGCAGGGGCCAGCCTCCC CG
          GCG             GC
                        ----
GAM65619 2300   CGTTGTCTCGTATCTTTTCA      CGT    TT  -  TAAA  CCAACCGC
          GTCTAAAGATCCAACCGCAT CGTTGTCT   ATCTT  CA GTC   GAT
          TGTGACTTGTTAAGATAGAC GCAACAGA   TAGAA  GT CAG   TTA
          AACG                  ---    TT  T   TG--  --------
GAM65663 16034  CGTTTTGGTTGCATTTCATT     TG    --     T  TG--  GAAC
          TTTGGAGAACTTAATTAACG CGTTT  GTTGC  ATTTCAT TT   GA
          TGAGATTGGCAATTGAAATG GTAAA  TAACG  TAGAGTG AA   TT
                        GT    GT     C  TTAA  ----
GAM65666 7556   CGTTTTTTAAACGTTAATAA        AC   A  AA   G    CAGT
          TGTGATTTTCAGTAAAGTGG CGTTTTTTAA  GTT AT  TGT ATTTT
          CAGGATCAGCATTGAAGAAT GTAAGAAGTT  CGA TA  ACG TGAAA
          G                     A-   C  GG   G    ----
GAM65667 17355  CTAAAAAAACAGATTGGCTT      AA---    ATT----  -    AA-  AAAACA
          CAAAGAAAACACTAAGGAAG CTAAAA     ACAG      GG CTTC   AG
          ACCCACAGAGCTGTATTAAT GATTTT     TGTC      CC GAAG   TC
          TTTAG                AATTA    GAGACAC  A    GAA  ------
GAM65700 16056  CTAAAAGCCAAACATGCGAC    AAAG-    ACAT      GAAAA  CTCATA
          AGGAAAAGACTCATATCAAC CTA     CCAA    GCGACAG     GA
          ATTGTCGTCATTGGACACGT GAT     GGTT    TGCTGTT     CT
          AG                GCACA    AC--      ACAA-  ------
GAM65734 17632  CTAAACCTTATTTAGACATT          TAG   TTGGT  C-     -   G  GAAA
          GGTACCAGTTACCCAGGTGA CTAAACCTTATT   ACA     AC  AGTTAC CCA GT
          AAATATGGAGTAACTTTGTT GATTTGGAATGG   TGT     TG  TCAATG GGT TA
          TTGTATGGTAAGGTTTAG            TA-   TT---  TT     A   A  ----
GAM65752 13564  CTAAAGCTGTATATTTATGA       TGTA---   T    AA-      T ATTGT
          AGAAAAGGTGATTGTCCCTT CTAAAGC      TAT TATG   GAAAAGG G
          TTTATGCATGTGTAGGATCT GATTTTG      ATG GTAC   TTTTTCC C
          TGTTTTAG               TTCTAGG   T    GTA      - -----
GAM65807 17460  CTAACAATCGCAGCCATGGT       -  ---      ATGGTAA       AATT  TTTTCACATGT
          AACAGCTCCAAATTGCTTTT CTAACAA TC   GCAGCC      CAGCTCCA    GC
          CACATGTGCCACATGGAGCT GGTTGTT AG   CGTCGG      GTCGAGGT    CG
          GAAGAGGCTGCCTTGACTTG       C  TTC     AGAA---       ACAC  -----------
          TTGG
GAM65830 21938  CTAACCCTGCTGTCCTTTTT       T---     CCTTTTTA    T       T  TTTT
          ATTGTTTTTAATTAATATTT CTAACCC    GCTGT       TTGTT TTAATTAA AT
          TTGTTTTAATTGATAGCAAA GGTTGGG    TGATA       AACGA AGTTAATT TG
          ATAGTTTATGGGTTGG          TATT     A-------     T       T  ----
GAM65835 11882  CTAACCTTCGTGTGCTTCGT     C  C   ---     GT   ATCCT  AAAA
          TCAATCCTGGAAAACCTGAG CTAAC TT GTG   TGCTTC  TCA     GG
          AAGCAAAATACAAAAGTTAG GATTG AA CAT   ACGAAG  AGT     CC
                        A  A   AAA     --   -----  ----
GAM65863 17130  CTAAGAGCAAAAGAGAATCA       CAAAAG--       AAATTC     AGTAG
          TAAATTCTGCAAAGTAGTTG CTAAGAG       AGAATCAT      TGCAA
          CACTCCATGATTTTAAAAAA GGTTCTC       TTTTAGTA      ACGTT
          ACCTCTTGG               CAAAAAAA       CCTC--     -----
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GAM65871 17737  CTAAGATGTTACCAGTTTCT   AG  TT  AG  CT   TT--  C   TTTTTAT   TCCCT
         TATTTTTACACATTCTTTTT CTA  ATG  ACC  TTT  TATT   TACA ATTC     TGAAG
         ATTGAAGTCCCTTTTTATGT GAT  TGT  TGG  AAA  GTAA   ATGT TAAG     ATTTT
         TGCTGAATTGTATATTAATG   GA  T-  AA  AT   TTAT   -   TCGTTGT   -----
         TAAAAAAGGTTTGTAGTAG
GAM65919 15287  CTAAGGTGCATTGTGACTCT     TGCATTGT   CT  ----    GG  AGAAGTTA
         GCAGTCGGGGGCTTAGAAGT CTAAGG      GACT  GCA   GTCGGG  CTT
         TAAAGAACTCGATTACTTGC GATTCT      CTGA  CGT   TAGCTC  GAA
         CAGTCTTATTTTTTCTTAG     TTTTTATT   C-  TCAT    AA  --------
GAM65923 15389  CTAAGTAGTAGATGAATTTT     GT-   --   T   C   CAAT  ACAAA      A    - TGT
         CAGCTATGCAATATGACAAA CTAAGTA   AGAT  GAAT TTCAG TATG   ATG    ACATGGGGA TTTGAA
GA
         ACATGGGGAATTTGAAGATG GGTTCAT   TCTA  TTTA AAGTT ATAC   TAC    TGTATCTCT GAGCTT
CT

         TCATTTTTCATTCGAGTCTC      GTT   TA   T   T   CT--  AAA--      -    A ---
         TATGTAAACATTCCATATTT CATTTT
         GAATATTTATATCTTTGTAC
         TTGG
                   ------
GAM65956 11577  CTAATAATTCACATTAAGGC     A  ACATTAAG     -  TATAAGTGG
         TTCTGGAGTATAAGTGGTTC CTAATA TTC      GCTTCTG GAG
         ACAGAAGTATGAAAAGGGGA GATTGT GGG      TGAAGAC CTT
         TGTTAG              A  GAAAAGTA     A  ---------
GAM65958 17802  CTAATACCTGAAATATGGAG     C     ATG    ACCA  AAC    TTTA
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         AAATTTAAAACTGATACTCA GGTTAT GACTTTA   CTCAT   TCA   TTTAA
         TTTCAGTTATTGG          T     ---    AG--  AAA    ----
GAM65976 15263  CTAATCCTGATTCACTGTTA      GAT  C   A   - AACTAAC--------  CACT
         CCTCGCAACTAACGGACACT CTAATCCT   TCA TGTT CCTC GC           GGA
         TCCTCGTGATGCCACAGCGC GGTTAGGG   AGT ACGA GGGG CG           CCT
         TGGGGCAGCAATGATAGGGA       AT-  A   C   T  CGACACCGTAGTGCT   ----
         TTGG
GAM65979 15106  CTAATCTTTTTTTTTTCACT   A  -     T  CT-     TATGTTGAAT
         TGGAATTATGTTGAATGTTT CTA TCT TTTTTTT TCA   TGGAAT
         CATTTTGACAAAAAAGTAGA GAT AGA GAAAAAA AGT   ACTTTG
         CTAG              C  T     C  TTT     ----------
GAM66011 1405   CTAATTTAGTTGGCCCTTCT    TT    GCCCTTC    CACTTCTATTAACATTTCT
         TTCAGCACTTCTATTAACAT CTAA  TAGTTG      TTTCAG
         TTCTCTGAAATAGCTATTTA GATT  ATCGAT      AAAGTC
         G                T-     -------     --------------------
GAM66050 17337  CTACACATTTAAAGGAACTG    AC    A-    C     A-  GAAAA
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         CAATTTTTGGTAAATCCGTA GATG  TAAAT  TTTTT ACAGTT  GA
         G                CC    GG    A     CA  -----
GAM66072 17418  CTACAGCAACAAGGGCTTCT     GCAACAAGGG    AT   TCTACAACT
         ATTCCATCTACAACTTGGAT CTACA        CTTCT  TCCA
         CGGGGGAAAAGGGAGATGTA GATGT        GGGGG  AGGT
         G                 AGAGGGAAAA    CT   ---------
GAM66075 16987  CTACAGCCTCTGCTCTCAAG       - TG    AA  AGCT   AT   GCAG-  AACA
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AAGCTCAGATCTGGGCAGGG CTACAGCC TC CTCTC GA CAG CTGG GG
AACATCACATACCAGGGCTG GGTGTCGG AG GGGGG CT GTC GACC CT
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TCGCTTCTGTCAACAGGTGG GGTGTG ACTTGG GGTGG ACTGT TCG
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AATACATGTGAGGCACATAG GAT GGAGTGT TTAACA ACT
ACAC ACATAA A- ----
GAM66173 7174 CTACGACAGAAACTCGCACA ACGACAGAAA - CACAA GAACA CTAACC AGAGACTAG

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GAM66188 11073 CTACGGGGATGATCGTCGTG GGATGA G G AGA A ATGATCGAGGC
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CGAGGCGGCTACCGGGGCCG GGTGCC AG GGCG CGCCG CC TCGG
CGGCGGGGACCGTGG ------ G G GGG A ----------
GAM66200 15590 CTACTAAAATAGAGTGTGTA AA------- AG T- GAACAGT
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CAGACTATTACAAAGACAAG GGTGA TTATC AC CGTTGTG
TGG ACAGAAACA AG TT -------
GAM66206 13304 CTACTAATGAGGCTAGTTAT CT CT TATT TA- G AACACTAA
TAGATATACTGTATTTTAAC CTA AATGAGG AGT AGATA CT TATTTT
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CTTCGTATTTATCTTATTTA AT AT TGCT TTC G --------
TAG
GAM66284 21809 CTACTTGAGCACGAGCATGG GAG GA ------ TCCT
CCTCTGTGCCATCCTTGGCG CTACTT CAC GCATGGCCTCTG TGCCA
GTCAAGTAGAGGCCATGTGT GATGGA GTG TGTACCGGAGAT GCGGT
GAGGTAG --- -- GAACTG ----
GAM66330 13862 CTAGAAGGAGAATCTGTGGT G AAT T- C --- TAGA
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GGCCAATCACCACAGCTTCT GAT TTCTTC GACACCA AA CGGG CC
TGTAG G --- CT C ACA ----
GAM66399 10708 CTAGAGTTCTTTCCCCTTCT AG- TTCCC TCT----- ATTTCC
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G ACA CTCC- TACTATAT ------
GAM66442 15124 CTAGCCAGAGAATTACCTTC AGAGA C AGT GAGATCAAG
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GGGGTTGG GG--- - --- ---------
GAM66502 22770 CTAGGAAGGTGATCCGGGAG T----- -- A T T CAA ACA
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GGGCCCAGGTGAAGAG GA - A TTT- TA --------
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G G A AT - AAACA ----------
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G TATG AA- AG ----------
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AACTGAATAG A ---- C ATTTTAC ----
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GGTACCAAAACAGAGATATA GATAT GA CC GTCAT GGT
G A GACAAAA ATG - --------
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AGCCCGGGGTTTAACCTGGT GAT TG TCC TTT GGCC AAGTA
TTAG T G AA GG CG ----------
GAM66762 14153 CTATCACTGAGTCTCATTCA A AGTC CCAA A T- -- GCAAATTCTTA
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TGTCTTCGATAACCTTGGAT - ---- C--- A CT GT ----------
GGTAGGATAG
GAM66764 5058 CTATCAGAATACCAATGACA CA ACCA CA CACAGAAATAGAAAA
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AAGAATCATGAAATTTATAT GGTA TTTA TACT AAGAA
GG TA AAG- -- ----------
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CCTGCAGAACCCAAATTGGC
GTTGTCATCAG

GAM66832 17491 CTATGACACCTATGTTCGCT CTATG CTA- GACTTCACGCA
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CGTCCGGAAATGTGTCATGG GGTACTGTG AGGC GACC
TAA-- CTGC ----------

GAM66844 5012 CTATGAGTCTTATGAGAAGA GAG AG GA- GACCTCAGATG
CCACCCGGACCTCAGATGTG CTAT TCTTATG AA CCACCCG
GGTGGCTATTACTATGAGAA GATA AGAGTAT TT GGTGGGT
GATAG GA- CA ATC ----------

GAM66859 2513 CTATGCAGTACAAAGTGGTT A --- - CC AAAT
GTCCCCAAAATTGGAAACAT CTATGC GTACAAAG TGGT TGT CCA
ATTAGATCTTTGTACAGCAT GATACG CATGTTTC ATTA ACA GGT
AG A TAG T AA ----

GAM66866 22158 CTATGCCTTAAACTGTGCAA CCTT ATC CC GAG CAAGAAA
TCTGCCACAAGTGAGCTCAA CTATG AAACTGTGCA TG ACAAGT CT
GAAAAGAAAACTTGTCACAT GATAC TTTGGTATGT AC TGTTCA GA
GTATGGTTTTCCCATAG CCT- --- AC AAA -------

GAM66892 22896 CTATGGGTGCGGTATCATCT T G -- T TAAG AA - T TATTC - TGT ATG
AAGAGAATAAGCATTCTTGA CTA GGGT C GGTA CATC AG TAAGCAT TCT GAA TGG ACA
GGC
ATATTCTGGACATGTGGCAT GGT CCCA G CCGT GTGG TC GTTCGTG AGA CTT ACC TGT
CCG

GGCCTTCTGTACCAACTCTT - G TA - ---- C- T T CTCA- A CTT ---
CTAGATGTGCTTGCCTGGTG
TGCCATGGACCCTGG

GAM66944 22750 CTATTAGAGGCTGAAACTAT TAGAGG ---- A ACAAGAA
TGAAGAACAAGAATCTCCAG CTAT CTGAAAC TATTG AGA
TGAACTGTTTTAGAAAATTA GGTA GATTTTG GTGAC TCT
TGG TTAAAA TCAA C -------

GAM66990 21700 CTATTGAGTACAAAGGCTGT T A A TTA AA ACA-- CT TGGTT
TACTTGAAAGAACACACTGC CTA TGAGT CA AGGCTG CTTGA GA CA GCT
TTGGTTGGTGATGGAATATT GAT ATTTA GT TCCGAC GGATT TT GT TGG
GCTTAGGCTCAGCCTCTGAT T - C TC- CG ATAAG AG -----
TTATTAG

GAM66998 1816 CTATTGGCCAAAAGATCCAT T - AAA C GT A G AGAGAC- GATGCA
GTGCCCAGTGGGGAAGAGAC CTA TGGC CA GATC AT GCCC GTGG GA TAC
TACGATGCAGTGCCTGAAGT GAT ACCG GT CTGG TG TGGG TACC CT GTG
CACCATGGGGTTGGTAGGTC T T AG- A GT G A GAAGTCC ------
GATGTGCCATTAG

GAM67028 19649 CTATTTCTCTATGTTTATTC T TGTTT TC TA A G AG CAAG
TAGTTAAGGAAATGTTGAGG C ATTTCTCTA AT TAGT AGG AAT TTG GG
GCAAGCCACCAAATTACCTA G TAGAGAGAT TG GTCG TCC TTA AAC CC
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GAM67261 2212 CTCACATCAAACGGAGCTGG A AA-- CT GT ---- TGTGTC
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CGCAGTTTGAAGTGTCCTCT GGGTG AGT GCCTC TCCT GTGAAG ACGC
CCGAAGGTGAAGTGGG A GGAA -- -- TTTG ------
GAM67297 17890 CTCACCTGGGCCTTGGGCTG ---- - ----- A- GT CTTGACCA
TTGGACAGTGTGCCTTGACC CTCACCT GG GCCTTG GGCTGTTGG CAGT GC
AGCCAGCTGGGCCAACGGTC GAGTGGA CC TGGAAC CTGGCAACC GTCG CG
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CTGAGGAAG AG GAAC CAG TA -------
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GGGGAGTGTTAGCCGTGTGT GAGTG CGA GAGGGGGG CGG C
GAG TGTGC TTGT CC G ----
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TTCTGAG AACACACTCAA TC --------
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GGGCTTGGGGTCTTAGAAGC CC TT T---- A --- T --- --------
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TCTAGATATTTGAGATTAGG GAGTTGGGA GAGT ATAGATCT CG
GTTGAG TTA TT TGT- ------
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CATCTTTCAGTCAAAGGTTC GGGTC TCG TCTTGGAA GACTT AC
TGGGGCTGACTGGG AG GGG- ACT TCT --------
GAM67523 230 CTCAGGAGGACTTGTTTGCA A CT ACAC --- TT G CTG- GTTTTG
CACAGAGCAATGTTAGGCAC CTCAGG GGA TGTTTGC AGAGCA ATG AG CA CT
TGCTGTTTTGGGAATTTGGC GGGTTC TCT ATAGACG TCTTGT TAC TC GT GG
TTTCATTAATGTTCTAAGGC A -- GAA- AAT TT G TTAA ------
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GTTCGGCCACAGAGTGTGTC CTC GGGGC CCT CCTAGAGT GGC CAC

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        ACCGAG            -  CT   GATGATCTATCT     ----
GAM67609 208    CTCAGTCCTCACAACAACCG   -- T   ACAA----    -   ---   G-   GGCAGTGA
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        GCTCCTGAACGATCCTTTAT GGGTCA GCGGT  TCCA ATTTCC       CTCGT TAT
        ACCTTCTGGCGTACTGGG       T    CT   T    TAGCAAGTC    A  ---
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        AAGGCGACGTGTGGGTTCTG      T  CTTT    C   TTG----    GC  C  AACA  -  -----
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        GGG
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        GATGAG                AG-   TTA-------      --------
GAM67710 11151  CTCATCGTCGTGGTGATTGT   ATCG---- G   GAT   GA   TGCTCAT
        GGGAGCCCTGCTCATGGGTC CTC      TC TGGT   TGTGG  GCCC
        TCCACATGAGCCAGAAACAC GAG      AG ACCG   ACACC  TGGG
        ACGGAG            GCACACAA  -   AGT    TC   -------
GAM67761 11765  CTCATGGCTTTGAGAAGCCC   A  G    GAAG-----  -   AGA   TG CATGA
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        TGAGGAGGATACCGATGTCA GAG AC GAGACT       GG GGA   GTC  G
        GAGGCAGGAG          G  G    GTAGCCATA  A   ---   GT -----
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        CACAGCCAGAAAGCCCAAGA GAG ACCCG    GACCG    AGGTTC C
        G                A    AAA-    ACAC     C -----
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        TGTTGAAGTATGCAG      C   G  G    A       TTTT     -------
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GAM67819 22725  CTCATTTATTTATCCGTGGT      A  TA  CG     -     TTTAAATGG-   TATCCCT
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G GGAGCG GTGG GG ---------
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GGAG - CTGAAA ATCTTA- --------
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CCTGGCTACCTGGGGATTCG CT G- C CCTTATTC GATT ----
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GGTAG T TAA - C ------
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CAGGGAG AC AACC AAAA- G A ----
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C
GATTCTGGCCCTGGCCCCGC GAGG GTC CGT GCCC CGCTG CG CA ACC CCG GACC GGC
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CTGTCGCTGCCCGCCTGCCC
TGAGGAG

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G A C--- CAAA- ----
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------- G G AG ----------
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GAM68218 13462 CTCCCGGTCATCATCTTCAC - CATCA- AC TT TG C CGCATC
CACGTTCTGGGGCCTCGTCG CTCC CGGT TCTTC CACG C GGGCCT GT
CATCGCCGGGCCCTGGTTCG GAGG GCCA GGAAG GTGC G CCCGGG CG
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GAM68228 25 CTCCCTATCCTCCCATCCTA C A - CCA ATGG AGGTG- GCAA
TGGTCCCAGGTGCAGCAATG CT CCT TC CTC TCCT TCCC CA
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GAAAGGAAG A A A A-- A--- GAGAGA ----
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TCTGCCCCTGACCCCTGGGC GAGGG GGTCGGG CC AGT CG CTCCA
TGGCCTGGGAG TCC-- TC C CCC T ----
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AG GT AAAATTCG AAAG -------
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GAG GACA A AG --- --------
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TAGAGGGAG

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G T T ----- ----------
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CGAG - GG-------- AC- ----
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          GAGGCACGAG
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          CCCGGG                TT   AAG GT AG-    G  ----
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          GAG               A    A-----  T   ACACCA  -------
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          TGGAG               A     ATTACAAGCTTA     ----------
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          TAATTATATATGGGCCTGCA GAGA GGTGA         GGTATATATTAAT A
          TACAGTGGAAGAG          A    CATACGTCCG          - ------
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          ATCAAGGGCAGCGGCACTGC       AGAC  C     A    A ------------   -  -----
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          GGAG                  C       ------  -    -------------
GAM68944 21930  CTCTCACCCCATTCTTCCAT      C   TT-     TAAT  -   CAGT   TC  TAGA
          AATGAGTCCCAGTTGGTCCC CTCTCA CCCA   CTTCCA    GA GTCC    TGG  CC
          TAGAGGTGCCAGGGCATCTG GAGGGT GGGT   GAAGGT    CT CGGG    ACC  GG
          GAAGTTCTGGGCTGGGAG       C    CTT     ----  A    ----   GT  ----
GAM68959 19624  CTCTCAGGAAGCGTGGTAAT   CT  -  A   G  -  A  CT   AAT-  CTGG
          CTCTCAATGGCTGGCCTCCG CT  CA GG AGC TG GT AT  CTC    GG
          GAGTTGTCACTCAGGCTCCC GA  GT CC TCG AC CA TG  GAG    CC
          TTGTAAG             AT  T  C   G  T  C  TT   GCCT  ----
GAM68966 13318  CTCTCAGTGTCCACCCTGTC    C   G    CC   T    T-   ----   T    GA--   ATAATG
          CCTGTATCTCCCATGGAAGA CTCT AGT TCCA  CTG CCCTG  ATCT    CCCA GGAA    TGA
          TGAATAATGTCAGGTGTTCT GAGA TCG AGGT  GAC GGGAC  TGGA    GGGT TCTT    ACT
          TTGGGTCAAAGGTCCCAGGG    T   G    CT   -    CC    AACT    T    GTGG  ------
          CAGTCTGGAGGCTTAGAG
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GAM69024 13253 CTCTCCTGGCGCTGATAGGT GCTGA- TG TC A AGTTGATCAGTCC
GGGTCCAAGCAGAGTTGATC CTCTCCTGGC TAGG GG CA GCAG
AGTCCCTGCCTGCCCTGCCT GAGGGGACCG ATCC CC GT CGTC
AGGTCTAGCCAGGGGAG ATCTGG GT C- C ----------
GAM69038 486 CTCTCGGGGGCGGAGGGGGT - GC- - C TGAGCTCT
GCCTGTGAGCTCTCAGCCAC CTC TCGGGG GGAGGGG GTG CTG
TTCCCTCCCAACCCTGGTGA GAG GGTCCC CCTCCCT CAC GAC
G T AAC T C --------
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CTGGAAGGCGTGAGCCACTT GGGAGCGC AAGA GGAGCC GGT CGC CT CACCGAG
CTTCCGCGAACTGGCCGAGG GA- - - CAAG CTT T ----------
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AATACTGTTTGGACTTGCTC CTC CTTTTTTTGTAA TGTT GGA CTTG
AACAAGACCTTATCTTAACA GAG GGAAAAGATATT ACAA TCT GAAC
AAAAGTAACTTATAGAAAAG - CAATGAAAA T ATTCCA -----
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GAM69152 10348 CTCTGACACTGAGGTAATTG GACA- G TAA A A- AGGAAATGATG
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GGAAGAAGAG AGAAG G CA- C AA ----------
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AGGAAATGGGAAGGG AG AA CGTGT AT ----------
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ACCTGGATTGGCTCATCAGA GAGACTAC GGTCC TACGG GT
G TCGGTTA ACCG ACC ----
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GTGTGCACCCAGCTGCAGGT GAGAC GT GTGG ACGTCGA AC GTGGA
GCTGACAGAG A C--- - CCC GT -----
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CTGGAATCCAGAG CTAAC A- - --- ----
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G G TGCG GA- A C -----
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CCTGTCACGGTCCGCGGAG C A- T C---- A GT ------

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CTGGGCCAAAGCAGAG AAACCG GACAGAA TG ---------
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AAAACCTTTCTCTTAGCCCC GAGAA CC GATT CTCT TCCA
AAAGAG AC C --- T- ----------
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CCTTCCAAATGTGGCTTTTC CTCTTCCC GT GAAT CTT AAT GTGG
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CATCCTAGAGATCCCCAGAG GAGA CTA GAG TCC CA ACC
CCC - A TACA- A ------
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TCACTCAAGTCAAAGCCTGG TCCAAA - C AC A CG-- - ------
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GGAG C ------ GAC G --------

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AGAG A TTACC--- -- -------
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TGTCTGTGTGATTGGGTTGT GAGAG TAGGAGTG GGT TGT TCTGTTA
TGTGAGGATTAAATGAGAG TAAAT TTGTTG TAG- G ---
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ATTTTCAG
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ACCGG CAG CA-- T-------- --------
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TATCGATGACCCTGGTAAAT G TTTGTAAA GTC AGT AGCT TGG
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TTTTCT G- T- ------
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CCTTTGG GT C GT TC T TT ------
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TAG G ------ T TTT ----
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GT AT CCC --------
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GTC G
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GCAG C

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G G TA C GT GG CCTG ---------
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CAG - GTTG A -- - ----
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CAG
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CAGCGCTCAG C TCA ---- - C G --------
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AG G AG GA C A ----------
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AG - CA-------- G ----
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GG - GGA C- C--- -----
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GCCCTGG TC TAAATAG T - T- ----
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CCAG - C GGGTGATTT- -------

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ACAG AT A TT - CA G ----
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TGTCTGCAG G G T A C G A- --------
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CAG AG GTAAATACTT GAT ----
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G - GCG---- ACAG --------
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GTC AC- C --------
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- AAGT --- A G ----
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TAGTGACCTGCAGGCCATTA CTGCACAGATGAGGCACTGATAGTG CCTGCAGG CA CTCATCT

TCAGTGCCTCATCTGTGCAG GACGTGTCTACTCCGTGACTATTAC GGACGTCC GT GAGTAGA

ATGAGTGACCTGCAGGCCAT C A ---------- ----
TATCAGTGCCTCATCTGTGC
AG
GAM70937 22594 CTGCAGACGGTGAGCAGTGA A G - A---- TCCGCT
GAAGGTCCGCTCCACTAATC CTGCAG CG TGAGCAGT GAGA GG
TCAACTGCTCAGTGATTGCG GGCGTT GT ACTCGTCA CTCT CC
G A G A AATCA ------
GAM70938 4 CTGCAGACTGAAGGGAGCAA G- - AA- AA-- AGAAAGAAG
CGGCAAGAAAGAAGTGCTGA CT CAG ACTG GGGAGC CGGCA
GCGGTTTCCAAGTGGTGCTG GA GTC TGGT CCTTTG GTCGT
GAAG AG G GAA GCGA ---------
GAM70951 9910 CTGCAGAGTACATCTCCACG A ACAT GTGAAGA - TCCA
GTGAAGACGCTGTCTCCAGA CTGCAG GT CTCCACG CGCTG TC
CCAGCGCGTGGAGCGCCTGC GACGTC CG GAGGTGC GCGAC AG
AG - C--- ------- C ----
GAM70963 14157 CTGCAGCAGCAATAATTTCC CA A AAT-- C- T TAG C CCATCATA
CAGATGCTCTGATTAGGGCA CTG GC GCAAT TTCC AGATGC CTGAT GGCA TG
CTGCCATCATACATGCCATT GAC CG CGTTA GAGG TCTACG GATTA CCGT AC
AGGCATCTTAGGAGCTCCCA AC A CCCTC AT - --- - --------
TTGCAGCCACAG
GAM70984 12055 CTGCAGGAAGAAGAAGATCT - GA CT- CCGT CT AA TCTTC
GATGGCCGTGGGTGTCTGGG CTGCA GGAAGAA AGAT GATGG GGGTGT GGG GC
AAGCTCTTCGTGGCCTCAAT GACGT TCTTCTT TCTA CTATT CCCGTA TCC TG
GCCCTCCTTTATCCTCATCT A -- CTC TCCT AC GG -----
TTCTTCTATGCAG
GAM70989 15653 CTGCAGGAGAAGATGGCGGT TG A G GTCTCCAC TTAAAG
CTCCACAGGAGTTAAAGTTC C CAGG GAAGAT GCG AGGAG
CTCGTAATTTTCGCTTGTGG G GTTC CTTTTA TGC TCCTT
GT G A -------- ------
GAM71012 13709 CTGCAGGTCTAGTCAGAGCC - AG--- CCTC G GATA
TCGTGCATGATAATGGATAC CTGCAGGT CTAGTC AG GT CAT
AACTATTTGGATTGGTACCT GACGTCCA GGTTAG TC TA GTA
GCAG T GTTTA AACA G ----
GAM71044 7218 CTGCATAGACAGGTATTCTT CAT A A C ATGCAG CT A AGAAAG
CCATGCAGGAATCTGGACCA CTG AG CAGGT TT TTCC GAAT GG CCA
AGAAAGTGGCCCCTATTCAG GAC TC GTCCG AA AAGG CTTA CC GGT
AGAAGGAAAAAGCCTGCTTC ACT - A - AAGAGA TC C ------

ACAG
GAM71046 17192 CTGCATAGATTTTAATGAGA T A AAT T - GAGC
GCGTCAGGCAGAGCTGTGCT CTGCA AG TTTT GAGAGCG CAG GCA
GTTGCTCTCCGGGACTTGCA GACGT TC AGGG CTCTCGT GTC TGT
G - - C-- T G ----
GAM71047 22917 CTGCATAGTATTTGGGCTCC AG- G T A C GATCTGAA
ACTTCACTGATCTGAAAGTT CTGCAT TATTT GGC CC CTT ACT
GAGGGTGTTGGAATAGAGGT GACGTG ATAAG TTG GG GAG TGA
GCAG GAG G T - T --------
GAM71091 2376 CTGCATTCTCTTGCGCCAGG CAT CTT CCA C- CCTCTGAC
CTCTGCTTCTCCTCTGACAG CTG TCT GCG GGCT TGCTTCT
GAGCATCAGCTGCCGCTCCA GAC AGA CGC TCGA ACGAGGA
GATCCAG CT- CCT CG- CT --------
GAM71101 7107 CTGCATTTTAAGATTTTCTG AT TT AC AT - ATGA
ACCTGGATTTAAAAGATATG CTGC TTTAAGATT CTG CTGG TTAA AAGAT
AGTCTTATTAATCCCAGCAG GACG AAATTCTGA GAC GACC AATT TTCTG
CAGTCTTAAAGCAG -- C- -- CT A ----
GAM71205 4840 CTGCCCAGGCTGCCCGCCAG CT CCGCC- C TTAT-- C AGTCTTCC
GTCCACTTATGCCGAGGAGT CTGCCCAGG GC AGGT CAC GC GAGG
CTTCCCCTTGCTTTACCGTG GACGGGTCT CG TCCA GTG CG TTCC
AACCTCCAGAAGCCATCTGG AC AAGACC A CCATTT - --------
GCAG
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TACAACCGTTCCTCTCAAGA CTG GGGC TCCT GTTC
ACTCATTAGGAAGCCCAAAC GAC CCCG AGGA CAAG
AG AAA A TTACT------- -------
GAM71297 29 CTGCCGTAGATTAAAAGCAA CG - AAAA T AAAA TAAAAT
TTATAAAATCATAAAATTGA CTGC TAG ATT GCAA TAT TCA
ATGTTTGCAGAATCCTGGAG GACG GTC TAA CGTT GTA AGT
CAG AG C GA-- T ---- ------
GAM71299 4977 CTGCCGTGATATCGTTAAAG --- A AAGAAGT C AATAA
AAGTTGCAAAAATAATTTAC CTG CCGTGAT TCGTTA TG AAA
ATAGTACATGACGAAGTTAC GAC GGCATTG AGCAGT AC TTT
GGATACAG ATA A ACATGAT A -----
GAM71340 13864 CTGCCTCCCAGTCTCCTCTT - A- CTT-- AC T CTGTTT
CCAACTCTGTCCTGTTTGAT CTGCC TCCC GTCTCCT CCA TC GTC
GATGGCCTCAGGGAGACAAG GACGG AGGG CAGAGGG GGT AG TAG
GGATGGCAG T AA ACTCC -- - ------
GAM71365 11986 CTGCCTCTTACCTACCCCAG C C CCCC --- TGA AAC TTA TC AAC CCA
AGGGATTTGGTGAAGCAAAC CTG CTCTTAC TA AGAGGGAT TTGG AGCA TG ATCT GAA GA

TGTTAATCTTCGAAAACGAC GAC GGGAATG AT TCTTCTTG GACC TCGT AC TAGG CTT CT

CATTTCACTTCTTGGATATC A T TTTT TAT CAA GA- TA- TT CA- ---
AAGTGCTAACCCAGTATGTT TT
CTTCTTTTTTATGTAAGGGA
CAG
--
GAM71374 6911 CTGCCTGACTAACTTCCATG TGACTAACTT ---------- ATCTTAC
GCATGGATCTTACCCGTGAC CTGCC CCATGG CATGG

AAAATGTGTTCCATGGTCAA GACGG GGTACC GTGCC
AAAATGGCAG TAAAAAACT- TTGTGTAAAACA -------
GAM71377 6807 CTGCCTGCCCCACACACGCA C C- C C ACAC--- TCGCTGC
CACGCCTGCTCGCTGCGCAG CTG CTG CCCA ACA GC GCCTGC
GCCACCACAGTCTGTCTGGG GAC GAC GGGT TGT TG CGGACG
CCCAGCCAG C CC C C ACACCAC -------
GAM71391 7577 CTGCCTGGATATATTTCTAC ---- TCTAC G CAAAGTTT
TCTTGACCAAAGTTTGTAAA CTGCCTGGA TATATT TCTT AC
GAACAATATAAGATTTCGGG GATGGGCTT ATATAA AGAA TG
TAG TAGA CA--- A --------
GAM71438 15913 CTGCCTTTTAATATTTGCAT CTTTTAAT CAT CT ATTTCTTC
TGAATTCTAGATAATTTCTT CTGC ATTTG TGAATT AGATA
CTATCTTTGGTTCACAAATT GGCG TAAAC ACTTGG TCTAT
CTCTCTGCGG TCTCTCT- --- TT --------
GAM71482 17585 CTGCGGCCCGTGCGCACCCG CC T - - CGC G ACGTA
CGAGCTCAGCACGTAGTTGG CTGCGG CG GCG C ACC GA CTCAGC
GGTCCAGGTCGTCGCCGCCC GACGTC GC CGC G TGG CT GGGTTG
TGCAG CC - T C AC- G -----
GAM71509 626 CTGCGTGGTGTTTCATCCAT - TG T ATCCATTCCTA TTC - ATCAA-- - G
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GGGAAGATCAAAGGCTGCAG GACG C CAC GAG CTACTCT AGTAGCT CTTC TCTG ACGT

CCCAGAAGGAGTGCACGTCT A GT T ACCCCC----- TAC T GGATCTC C G
CTCTAGGCTTCTTCGATGAC C AGAA
ATTCTCATCCCCCCAGAGTC CC
ACTGCAGCAG GG
A ----
GAM71538 17858 CTGCTAGGCCCCCGCTTTCA - C- T- AGTG T CAAT
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CTCCACTCAGAACCTGGACT GACGA TCC GGGGCG AGGTCC CTCACC CG
GCGGGGTCCCTGAGCAG G CT TC AAGA T ----
GAM71583 22020 CTGCTCCAGCTCCATAAGGA --- T TAAGGA A G TCGT
AGCACTCGATGTCGTCATAG CTGC TCCAGC CCA AGC CTC ATG
AGGCTGTTGGCGCTGGACAG GACG AGGTCG GGT TCG GAG TAC
GCAG GAC C TG---- - A ----
GAM71640 15537 CTGCTCTTCTTCAGCCATGG T ----- T AA- - GCAGCAG
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ACTTGTCCATGCTGGTCCTG GGCG GAAGAGGTC GGT CTGGTCGT TGT CA
GAGTCCCTGGAGAAGGCGG - CCTGA C ACC T -------
GAM71658 10106 CTGCTGACTTTATAGGAAAG CT TTTAT - TG- GAT A TATGT
CTGATGATATAAATGTGTGT CTG GAC AGGAAAG C AT ATA ATGTGTGTATA
ATATATGTTATATATACATA GAC CTG TTTTTTC G TA TAT TACATATATAT
TATTCAATACTGCCTTTTTT AT TTTTT C TCA ACT A -----
TTTTTGTCTACAG
GAM71659 22738 CTGCTGAGCAGAGCCATTTC A GA T- G - ATATCTGC
GTGGCCTATATCTGCAGGAC CTGCTG GCA GCCAT TC TGG CCT
CAGGACTGTGGCTGCCAGCA GACGAC CGT CGGTG AG ACC GGA
G - -- TC G A --------
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GAAGCCATTATAGCCACGGG CT CT CCTTG GATCT GAA GCC

TTGTTTTGGGATTGACAAGG GA GA GGAAC TTAGG TTT TGG
AGGAG G - AG GT GT ----------
GAM71734 10190 CTGCTGTCTGGTGCCCTGTG C ---- - TGA TGTG GCCTTT
AGCTGTGATTGATTGCCTTT CTG TGTCTGGTG C CCTG GC ATTGATT
GGTCAGTAATGCGTTCAGGA GAC ACGGACCAC G GGAC CG TGACTGG
GTCCACACCAGGCACAG - ACCT A TTG TAA- ------
GAM71744 10816 CTGCTGTGTCCTCGTAGGCC ------ T AG TG ACAGGCAA
CTGCACAGGCAAGTGGGGCG CTGCTGT GTCC CGT GCCC C
CGTGGACATCGTCACAGCAG GACGACA CAGG GCG CGGG G
CTGCTA T -- GT --------
GAM71748 13063 CTGCTGTTCTTGCCCAAGAG C----- CCA AG - TGACTAT
TGTGTCTGACTATGACGGCA CTGCTGTT TTGC AG TGT GTC
AACTGAGCAACTTCAAAACA GACGACAA AACG TC ACG CAG
GCAG AACTTC AG- AA G -------
GAM71755 10037 CTGCTTAGAGCCCCTTAAAA T A CCCTTAAA AA ACTG
AGACTTGAAAGTTCACTGGG CTGCT AG GC AAGACTTGA GTTC
ACTCAAGTTTTACCTTAATG GACGA TC CG TTTTGAACT CAGG
CCTTAGCAG T - TAATTCCA -- ----
GAM71761 15577 CTGCTTCAAGAATTCTTTCA --- A TTCTT TCAA- TGCCGT
TCAATCCTGCCGTGGACATA CTGCT TCA GAA TCA TCC
CTGACATCTTTCCTGAGAAA GACGA AGT CTT AGT AGG
GCAG AAG C TCTAC CATAC ------
GAM71768 630 CTGCTTCCAGAAATTTAAGG - CA -- - A ATTAGGCTG
ACTACTATTAGGCTGAGAGT CTG CTTC GAAATTT AAG GACT CT
CACTTTAAGGTTTTAAGAAG GAC GAAG TTTTGGA TTC CTGA GA
TCAG T AA AT A - ---------
GAM71807 15189 CTGCTTTCCTGGCTGAGGAT TTTCCTG- A --- A AGAAATTAA
TTCAATCCAGAAGAAATTAA CTGC GCTG GGATTT CA TCCAGA
TTTGGACTGCACAAATCCAC GACG TGGC CCTAAA GT AGGTTT
GGTACTTAGCTGCAG TCGATTCA A CAC C ---------
GAM71916 21838 CTGGAATCACGATAGATGAA CACGAT--- A AA- TGTCAT
GATACAATAGTGTCATCTAC CTGGAAT AGATGAAG TAC TAG
AGGTGCTTTATCTTTAAAAA GACCTTG TCTATTTC GTG ATC
AAGTTCCAG AAAAAAATT - GAC ------
GAM71951 15963 CTGGACCAGTCGAAACCCTT G CA A- TT- - TT AG GCCA
GGAGGCTTTTTTTGCAGTTG CT GAC GTCGA ACCC GG AGGCTTTT TGC TTG
GCCACAGGGGCGTTGGAGGC GA CTG TAGCT TGGG TC TCCGGAGG GCG GAC
CTGCTTATGGGTCCTCGATG G -- CC TAT G TT GG ----
TCGAG
GAM71964 7414 CTGGACGCTGATGGTGGACC C A --- CC- CAC C GCTG
CCTGCATACACGTTCTGGGC CTGGA GCTG TGGTGG AC CTGCATA GTT TGGGCAG
AGGCTGCTGCCCGCGACATT GACCT TGGC GCCATC TG GACGTGT CAG GCCCGTC
GTGCAGTTTGTACCCTACCG - - CCA TTT TA- C ----
CGGTTCCAG
GAM71965 10406 CTGGACGGCGTCGAAATGAC G GC GAA ---- ----- - T CGACCCTGAA
CCCGGCCACCGTGCTGGCGA CT GACG GTC ATGACC CCG GCCACCG TGC GG
CCCTGAACCGTATCGGTGGC GA CTGC CAG TGCTGG GGC CGGTGGC ATG CC
GAACACGGTATCGGTCGTCT G TA GTC CTAT ACAAG T - ----------
GGACATCGTCGAG
GAM71983 7472 CTGGACTGATCGGCTACCGC GA GATC ACC A---- CAAG

GCCAGGTCAAGGCCCTGGAG CTG CT GGCT GCGCC GGT
GCGCTTAAGCTCAAGGACAG GAC GA TCGA CGCGG CCG
AG AC-- ATT AGGTC ----
GAM71997 1848 CTGGAGAACTTAAAAAAATA A A A A GAC C CC - - A CC AGATCAG
AAGACTGCTGCCTGGGCCTC CTGG GA CTT AAAAAAT AA TG TG TGGGCCTCA C CCT GA AATT

ACCCTAGACCAATTAGATCA GACC CT GAA TTTTTTA TT AC AC GTCTGGAGT G GGA CT TTAA

GAATTTCCAGGAGTTGAGGT C C A A --- T AA T A C -- -------
CTGAACATCATTAATTTTTT
AAAGCTCCCCAG
GAM72014 15212 CTGGAGAGCATGATCAAGAA TG G AGAA C CC CTC AA-- AGTGATGTG
GCCCCGCCCCACTCGGGCTG C GA AGCATGATCA GC CCG CCA GGGCTG GGC
AAGGCAGTGATGTGGCCAAT G CT TCGTACTAGT CG GGT GGT CCTGAC CCG
GCAGTCCTGGATGGAGCCGA GT G CAGC A A- --- GTAA ---------
CTGATCATGCTGTCTGG
GAM72015 6990 CTGGAGAGCCTGCAGGACGG AGAG T C CGC- CAG--- --- - GCCTACA
CGCGGCAGAGTCCCCGTACG CTGG CC GCAGGA GG GG AGTC CCCGT AC
CCTACAGTAACGGGATCGAC GGCC GG CGTCCT CC CC TCAG GGGCA TG
TACAAGACCACCACCATCCT GGCA T A ACCA AGAACA CTA A -------
GCTGGACGGCCGG
GAM72033 22946 CTGGAGCAGCTGCGTAAAAC --- G AAAACATAC - G AT AAGA
ATACAGGCCGGAGCTTATCA CTGGA GCA CTGCGT AGGC C GAGCTT CA
AAGATGGCAAGTTTGGGGCC GACTT CGT GACGTA TCCG G TTTGAA GT
TACATGCAGGTGCACATTCA ACA G CA------- G G CG ----
G
GAM72034 15887 CTGGAGCAGCTGCGTAAAAC --- G AAAACATTAC - G AT AAGA
ATTACAGGCCGGAGCTTATC CTGGA GCA CTGCGT AGGC C GAGCTT CA
AAAGATGGCAAGTTTGGGGC GACTT CGT GACGTA TCCG G TTTGAA GT
CTACATGCAGGTGCACATTC ACA G CA-------- G G CG ----
AG
GAM72065 2139 CTGGAGGAGGAGAAGAAGCA - - A AGAAG- - GAG- TGAATCAGC
TCTGGAGTTTATGAATCAGC CT GGA GG GGAGA CATC TG TTTA
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ATTTCCCCATCCGAG G A - ACAGCA T AAAA ---------
GAM72067 16888 CTGGAGGATTTTTAACCCCT G TT CCTTGT A C CAAACT
TGTACAGTATTGCAGCAAAC CTGGA GA TTTAACC ACAGT TTG AG
TCTTTAAATTGTGGTTGAAT GACCT CT AAGTTGG TGTTA AAT TC
TCGTCCAG G T- ------ - T ------
GAM72075 7654 CTGGAGGCCCCTGAGCCAGG -- - AG AG- TGAT
GGTGGAAGTGATCTTCTATC CTGGA GGC CCCTG CC GGGTGGAAG
TGTCGGACAGGGAGCCCCTC GGCCT CCG GGGAC GG TCTATCTTC
CGG CC A A- CTG ----
GAM72092 7831 CTGGAGGGCTAGGCCAAGGC A- A CCA ----- T C CACCTA
TTCTCATGCCTCCACCTAGA CTGG GGGCT GG AGGCTTC TCA GC TC
AGCTGAATAGTGAAGCCTCC GACC CCCGA CC TCCGAAG AGT CG AG
CCCAAGCCCGACCAG AG A CCC TGATA - A ------
GAM72097 17275 CTGGAGGGTCCAGAGGGGCT GGA T GAGG A AG- C A GCC
TCAGGCAGAGAGGTCTCGAA CT GGG CCA GGCTTCAGGC GAG GTCT GA GGACG
GGACGGCCCGTCTATCCGGA GA TCC GGT CCGGAGTCCG TTC TAGG CT TCTGC

TAAACTTGGCCTGAGGCCAC GGG - AGCA G AAA C A ---
GATGGCCTGGGAG
GAM72104 16941 CTGGAGGTCTCCACTCTGGT A TC-- A- A---------- ACAAT
CAGCAAGTATCCAGACAATC CTGG GGTCTCCAC TGGTCAGCA GTATCC G
AGGGATGACCACATCGGGTG GACC CCAGGGGTG GTCGGTCGT CGTGGG C
CGCTGCTGGCTGTTGCGTGG C CGTT CG CTACACCAGTAGGGA -----
GGACCCCCAG
GAM72175 11184 CTGGATCTTTACGAAGTATT - ACGAAG A TTCA CTGGAA
CCGGACCCTTCATGTTCTGG CTGGA TCTTT TATTCCGG CCC TGTT
AAAGCAGGCCGGGCCTGGGA GACTT AGAAG ATAGGGTC GGG ACGA
TAGAAGAGTTCAG G ------ C CCGG ------
GAM72209 14996 CTGGATTGAAGGTATGAGTC ---------- A A CA CGCC
ACCACGCCTGGCCACACACA CTGG ATTGAAGGT TG GT CCA
CTTTTAATAATGCTTCATAA GACC TAATTTTCA AC CA GGT
ACCAG AAATACTTCGTAA C A CC ----
GAM72211 22691 CTGGATTGGGTTTTTCCTGT T GTTT - GT -- CCACT
CTTTTTGCCTGACCACTTCA CTGGA TGG TTCC T CTTTTTGC CTGA
GCTGCAGGAAGGTATGGGGC GACTT ACC GGGG A GAAGGACG GACT
CATTTCAG T ---- T TG TC -----
GAM72252 13269 CTGGCACTTCAGAACCTCTT TG CTT A C-- CTC-- TTTTG
CCTCTACACTTTTGGTGTGC C GCA CAGA CCT TTC TACAC
TTCTGAATCTAGGTCTGCAT G CGT GTCT GGA AAG GTGTG
GCTGG GT AC- - TCT TCTTC -----
GAM72266 529 CTGGCAGCATCACAACAGAG GC CACAAC G G TCA- ATGAGAC
GAAGTGCTTCAAATCAGGGA CTG AGCAT AGAG AAGT CTTCAAA GGG
TGAGACCCCAACTTTTGGAG GAC TCGTA TCTC TTCG GAGGTTT CCC
GCTTCTCTAGATAATGCTAA AA ATAGA- - - TCAA -------
CAG
GAM72290 149 CTGGCATGCTCATTCCAGCT TGCT TCCA--- C- ATTCCCA
CTAATTCTTTATATTCCCAG CTGGCA CAT GCTCTAATT TTTAT
TAAGCTAATTAGGGTCCTCA GACCGT GTG TGGGATTAA GAATG
ACGTGTTTTTGCCAG TTTT CAACTCC TC -------
GAM72293 5269 CTGGCATGGCTTCCGTGTCC C TTC- T - - AACGT
CCACTGCAACGTGTCAGTGG CTGG ATGGC CG GTCC CCACTG C
TGGACCTGACCTGCCGTCTA GATC TGCCG GT CAGG GGTGAC G
G - TCCA C T T -----
GAM72295 11710 CTGGCATTAAGGCTGTGGAT CA - GC --- T- -------- A- - G AGC
AGCTTGGTGCCAATTGGTCG CTGG TTAA G TGTGG ATAGC TGG TGCCA TTGGTCG T GCC
GT
TGGCCAGCGTGAACTGATTA GACC AATT C ACACC TATCG ACC GCGGT GACCAGC A TGG
TA
TTGGGTGACCGACCAGACTG C- A TA AGT TT TTCCAAAA CA C G GT-
GCGAAAACCTTCCATTGCTA ACTGA
TTGACCACAATCATTAACCC GA
AG TT

GAM72297 19475 CTGGCATTCACCTCCGCAAT ATTCA- T A --- TTCCCATTC
CCGGCTTTCCCATTCAGCCA CTGGC CC CCGCA TCC GGCT
GGGGGATGCGGCGGCCATAG GACTG GG GGCGT GGG CCGA
GTCAG GATACC C A GGA ---------

GAM72341 22888 CTGGCCCCGGGTTCCCGTGG - T GT ACCG CCGCCC
CTACCGGGCGCGGCCGCCCC CTGGCC CCGGG TCCC GGCT GGCGCGG
CGCGCCGCAGGCCGGGACCC GACCGG GGCCC AGGG CCGG CCGCGCC
CGGTGGCCAG T C -- ACG- ------
GAM72342 612 CTGGCCCCGGGTTCCCGTGG - T GT ACCG CGCCC
CTACCGGGCGCGGCGCCCCC CTGGCC CCGGG TCCC GGCT GGCGCGG
GCGCCGCAGGCCGGGACCCC GACCGG GGCCC AGGG CCGG CCGCGCC
GGTGGCCAG T C -- ACG- -----
GAM72344 17512 CTGGCCCTATACCTGGCAAC CTATA--- GGCA AG GCAC
AAAGTGAGCACTCAAATTGT CTGGCC CCT ACAA TGA
CAAAGGCACAAAAAGGCCAG GACCGG GGA TGTT ACT
AAAAACAC AAC- AA ----
GAM72345 1867 CTGGCCCTCCACTTCCCCCA CCTCCACT - CAACCAT C GAA G GCTC
CAACCATGGCGCACGAATCC CTGGC TCCCC CA GG GCAC TCCGAGA GA
GAGAGGAGCTCTCGTCTCGG GGCCG AGGGG GT CC CGTG GGGCTCT CT
GGTGCCCTGCGGGGAGCCGG -------- C ------- - --- G ----
GAM72346 15357 CTGGCCCTGAAGGATGGAGA GG- GAAG AGATG- GGTAGT
TGGTAGTGGTAGTGCTGCAA CT CCCT GATGG GTAGT
TGCACCATCAGAGGGATAAG GA GGGA CTACC CGTCG
ATA GA-- ACGTAA ------
GAM72376 7908 CTGGCCTGGTTCTCCTTGGA GC G- ------- G T TGGAGCT
GCTGTGATCACTGGAGCTGT CTG CTG TTCTCCT TG AGC GTGATCAC
GGTCGCTGCTGTGATGTGGC GAC GAC AGGAGGA GT TCG CGCTGGTG
AGGAGGAAACAGATCAG TA AA CGGTGTA G T -------
GAM72389 10928 CTGGCGATCATCCCCACCAT T-- C--- A ACGACAG G CAGG
GTACGACAGGCTGGCGGTCA CTGGCGA CATCCC ACC TGT GCTG CGGT
GGACCGACAGTGCAACAAGG GGCCGCT GTGGGG TGG ACA TGAC GCCA
TTCCAGGGGTGCTTTCGCCG TTC ACCT A ACG---- A ----
G
GAM72394 13132 CTGGCGGCTGGTCTACGATT -- CT------ TAC TGCACC
ACGGGTGCACCTCCATCGTC CTGG CGGCTGGT ACGAT GGG
ATGCTCAACCAGCTGAACCA GACC GTCGACCA TGCTA CCT
G AA ACTCGTAC --- ------
GAM72423 14200 CTGGCTCTAGCCTGCTTTTG ---- CT TT- GATC TG T C TCC
TTTGGATTTAGATCTTGGTG CTGGCTCT AGC GCTTTTGT GGATTTA T G GGAGAGGA TG
GAGAGGACTGTCCCACTCCT GACCGAGG TCG CGAAAACA TCTGAGT G C TCTCTCCT AC

CTCTTCTGGCTAGTGAGTCT ACCG C- CCT GATC GT T C ---
TCCACAAAAGCCGCTGCCAG
GAGCCAG
GAM72446 22956 CTGGCTGCTGACTGGGCAGG C - ACT- CA GAC TTATTTGCACCGTC
GACCTGGACCCCCTTTATTT CTGG TGC TG GGG GGGACCTG CCCCT
GCACCGTCAGGGGAAACGGG GACC ATG AT CCC CCTTGGGC GGGGA
TTCCCCCTTTGTATGTACCA - T GTTT -- AAA ----------
G
GAM72476 5249 CTGGCTTCAAGAACAATAAA CAAGAACAATAAA -- AGTCCTA
GGAGTGGCTGAAGTCCTATC CTGGCTT GGAGTGGC TGA
ACTGCCGCTCTGCCCCTCCC GACCGAG TCTCGCCG ACT
CATGAGCCAG TACCCCTCCCCG- TC -------
GAM72520 22043 CTGGGAATATAATGGCCTAT TATA T CACCA AGTTAAG

TCACCAGGCACCAGTTAAGG CTGGGAA ATGGCC ATT GGCACC
GTGCCACTAATTGGCCGTGA GACCCTT TGCCGG TAA CCGTGG
ACTTCCCAG CAAG T TCA-- -------
GAM72532 2138 CTGGGACCAGGGCTGGTGGT -- C GT ACTC C CT CTTC
AGAACTCAGCCCGGCGCTCC CTGGGACC AGGG TGGTG AGA AGCC GGCG CCT
TCTTCAGGGTTGCCGGCTAC GGCCCTGG TTCC ACTAC TCT TCGG CCGT GGA
ATCTGTCATCACCTTGAGGT AG - TG ACA- - TG ----
CCCGG
GAM72538 1982 CTGGGACTACAGGTGCATGC CT GGT T- CA AAAATTTTTTTTTTCTTAG
CACCCATTTAAAATTTTTTT CTGGGA ACA GCA GC CCCATTT
TTTCTTAGAGATGGGAGTCT GGCCCT TGT CGT TG GGGTAGA
TGCTATGTTTCCCGG T- AT- TC A- ----------
GAM72539 16045 CTGGGACTCAGGTGTTTAAA TG TG TA A- TG ATAGCTA
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TGTGGATAGCTTCTGATCCC G CTTGGGTCC AG TTC TAG GTGG
TGGGTTCTGG GT CT TC GA GT -------
GAM72564 17343 CTGGGAGCTGCGTGCTGCTG A T -- TG - C GGG CTGG
GCCCTGTGGGGGAGCCCTGG CTGGG GC GC GTGC CTG GCC TGTGG AGCC
GGCTGTACCACACGGCGCGG GACCC CG CG CACG GGC CGG ACACC TCGG
TGGCACCTGCGCGCCCAG G - TC GT G C ATG ----
GAM72583 2375 CTGGGAGTGAATCAGGCCGG A- CAG - ---- C ACACTC ATTTATGC
CTTCACCTTACACTCTGCAA CTGGG GTGAAT GC CG GCTTCAC TT TGCA
TTTATGCTGCACGCCCGGAC GACCC CACTTA CG GC TGAAGTG AG ACGT
GTGAAGTGCGTCGTGCACAT CA CA- T TGCG C GCCCGC --------
TCACACCCCAG
GAM72650 15543 CTGGGCATCGTGGCTGAGGT - A-- C - C CTGGT
GCTGGTGCTGGTCACCATCA CTGG GC TCGTGG TGA GGTG TGGTG
TCTTCATCTACGAGAAGCGC GGCC CG AGCATC ACT CTAC ACCAC
CGG G AAG T T T -----
GAM72685 16387 CTGGGCCCGGAGGTCACCAC TG - GGA- CA G A-- G G AATACC
GCAGTACGGCGGCCAATACC C GG CCC GGT CCAC CAGT CG CG CC
GGACGGTGCACACTGAGTGG G CC GGG CCA GGTG GTCA GT GC GG
ACCCAGAGGGACCTGG GT A AGAC -- A CAC G A ------
GAM72698 14828 CTGGGCCTGAGGGAGGGCTG - AG- GCT C- C TTGTCCTT
GAGTCGCACGCGCTTTGTCC CTGGG CCTG GGAGG GGAGT GCA GCGCT
TTAGCGCCTGTCTGCTCTCC GACCC GGAT TCTCC TCTCG TGT CGCGA
TCTAACTAGGACCCAG A CAA --- TC C --------
GAM72743 10137 CTGGGCTGGGCTAGGCATGG C GCTA CAT C CT GACC
GCGGCTCTGGGAGGACCCTT CTGGG TGG GG GGG GGCT GGGAG
CCTTAGTCCCCTCTCCCACC GACTC ACC CC CCC CTGA CCTTC
ACTCAG - AC-- TCT - TT ----
GAM72744 16264 CTGGGCTGGGGACTGGAGGG GGC ACT AC TG CTCC
GAACGTGGAGCTCCTTCTGC CTG TGGGG GGAGGGGA G GAG
CTCCTTTCCTGCCCCATGAC GAC ACCCC CCTTTCCT C CTT
AG AGT GT- C- GT ----
GAM72751 10697 CTGGGCTTCAAGGAAGGACA CAA G AAA A- AA G TCGGGAACAT
AACCATCAAGTTGTGTATCG CTGGGCTT GGAAG AC CC TC GTT TGTA
GGAACATTACAAACAAGAAA GACCCGAA TCTTC TG GG AG CAA ACAT
GGAGGTGCTTCTAAGCCCAG --- G GA- AA AA - ----------
GAM72769 17481 CTGGGGAACTCACACGCTGA A CACACG A CCC - CTTG

```
        CCCCCGAGGAGCCTTGGTTT CTGGGGA CT     CTG CC   GAGGAG C
        CCTCCCTGGCAGATAGTCCC GACCCCT GA     GAC GG   CTCCTT G
        CAG                  - TA----   -  TCC     T ----
GAM72836 1625   CTGGGGCTGGTGCTGAAAGA      C-----  TG   AAA   --  CCACA
        AGAGCCCACAGCTGACTTCA CTGGGG     TGG  CTG   GAAG  AGC
        TGGTGCTACAATAACCTCAG GACTCC     ATC  GGT   CTTC  TCG
                        AATAAC   GT   A--    AG   -----
GAM72841 17785  CTGGGGGAAGGAGGGTTGGG  TG   -  G-     ------   ATG   ATATTGA
        AATGTGTATATTGAACAAAA C  GGGG AAG  AGGGTT     GGGA   TGT
        TCCTCTAAATGATTCTGACT G  CTCC TTC  TCTTAG     TCCT   ACA
        TGCCTCTGG          GT    G   AG     TAAATC    AAA  -------
GAM72850 6711   CTGGGGGAGGGTAAAAAGGA    -    GTAAAAAGGATGG    TTAAT
        TGGAGGTTTAATACCTAAGA CTGG GGGAGG          AGGT
        ATTAATAGACTTCCCATCGG GGCT CCCTTC          TCCA
                        A     AGATAATTAAGAA   -----
GAM72852 10641  CTGGGGGATTTCTGACTTGA    G   TTT      GAGG   ATC     G-    - CT  -  CTTTGTAATATT
        GGCCCATCTCTCCAGCCAGC CTGG GGA   CTGACTT    CCC   TCTCCA  CCAGC CA  GC CTT
        CACTGCCTTCTTTGTAATAT GGCT TCT   GACTGGG    GGG   AGGGGT  GGTCG GT  CG GAA
        TAAGTGCCTTGAGCTGGAAT    G   ---      AACA   GGA     AA    A  TC  T  ------------
        GGGGAAGGGGGACAAGGGTC
        AGTCTGTCGG
GAM72864 10633  CTGGGGGGGGGGGGGCCAGC       GGGG----  G  --  AC    GTTGAAACGG
        ACCCTGGTTGAAACGGCAGG CTGGGGG       GGG CCA  GC  CCTG
        CGGCATTGGGTCCAGCAAGG GATCTCC       CCT GGT  CG  GGAC
        ACCTCTAG                AGGAACGA   G   TA  GC   ----------
GAM72893 5072   CTGGGGTGTTTATGGCAAGT    GG    T--   C     CTTGT    G     AT  GTGG
        CACTTGTGACAGACATTATT CTGG  TGTT   ATGG AAGTCA    GACA ACATT  TG
        GGTGGCAAATGTGTGTCTGA GACC  ACAA   TGTC TTCAGT    CTGT TGTAA  AC
        CTTACTGTTTCAACAAACCA    AA    CTT    A     -----    G     --  ----
        G
GAM72905 7266   CTGGGTAGAAGTATGGGTGG    -  AGAAGTAT     TT    TTCAAAATTATT
        TTATCATTTCAAAATTATTG CTG GGT       GGGTGG  ATCAT
        TGATTCTCACCTCCCTCCCC GAC CCA       TCCACT  TAGTG
        ACCTCAG             T  CCCCTCCC     CT    ------------
GAM72913 178    CTGGGTCAACCGAAACAGAG       A--  GAAACA    CA   CA    CC--  ACA
        CTCACTCCAGAGATCCGCAC CTGGGTCA   CC     GAGCT  CTC  GAGAT    GC
        AGCCCAAATCTCAGAGGCAG GACCCGGT   GG     CTCGA  GAG  CTCTA    CG
        CTCAAGCTGGGACCTGGCCC        CCA  GTCGAA    CG   A-    AACC  ---
        AG
GAM72926 16244  CTGGGTCTGCGACAGTGTGA     T   C    G   GA  GA    GGAGACAACAGCGACGA
        ACGACTGCGGAGACAACAGC CTGGG CTG GACA TGT  AC  CTGC
        GACGAGCAGGGGTGCAGTGT GACCC GGC CTGT ACG  TG  GACG
        CCGGCCCAG             -  -   G   --  GG   -----------------
GAM72938 17696  CTGGGTGCAACAAGTGATTG     T  AA       TGTGA  G     GAAAAGAAA
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        TTCTTGAAGTTACTTGAGCT GATCT CG  GTTCATTG     AA TTCTT
        TCTAG                T  A-       -----  G    ---------
GAM72942 1966   CTGGGTGCTGCATGGGTCCC      GCT  A  - GT    CA-     ACCACCTGCACCA
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        CCAGGCAGTCCCGAGGGGTC GACCCG   CG AC C  GGGAG   TGACGG
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ACAGGCTAGCCCAG AT- G A TG CCC ----------
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ATGGATTCCACTGAGACCAG GAC ACA TGC CCGA AGTCAC GT
CCCGTACAGGCAG GG --- - CCAG- CTTAG -----
GAM72971 4671 CTGGGTGTTAGAATGGTGAC GT TT AT G AG- AACCG
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TGGTGCCTATCTCCTGTCCA GACC T TCT CCG TGGT TCGA
G TG CC AT - GTG -----
GAM73000 16392 CTGGGTTTGTCATGTTGCCC - TT CAT CC- - CTCAAAC
AGGCTGGACTCAAACTCCTG CTG GGT GT GTTGC AGGCT GGA
GCCTCAAGCAATCGCCTGCC GAC CCG CG TAACG TCCGG CCT
TCAG T TC C-- AAC T -------
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ATATATGTACACCCATTATG GACT TTTGTATT ACC TGTA ATA CTT
TTTTCAG - -- CACA T A- -----
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AG C GC ACTC T G ----
GAM73070 22147 CTGGTCACGAACCCTCACAC CGAAC A G C - AACGAG
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GGCTTGGTGGAGGTGGCCAG GACCGGT GGAG GTG TT CGG ACC
----- - G - C ------
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TCTATACCGGGGCTCAATGT CTGG AG TGG GGG CTGTC AT CCGG GG TG
GCACACCACCACCGGCATGA GACC TC ACC CCT GGCAG TA GGCC CC AC
CGGACTCCACCATCTCCAG -- T A CA - C A ACC-- ----
GAM73079 379 CTGGTCATACAATTTGGACA CAT AT ACATAATTAGGAT C A CTTAA TAC GAAT

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TCTTAATAGTACATTCGGAA GACCA TGT AACC GGG TTCA CA GTT TAAGC CGTA
TGCATAGTATGCTACGAATC TT- C- C---------- T - ATAAG TTC AT--
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CCCAACTGTTTACCAG

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AG C CC ACCA ---------
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TAGTGTGTCCTCCCACGGAG GAC GC TGTCCTG TGC GGC CCCG TGG AC CGCGCA GAGG

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G

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AAAGG
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CAG - G TAAC CG TC -----
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CAGGCACCATCAG
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CCGG T-- ---- ACTG --------
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T TT G GGG ----
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CAAAACCAG AA - - T ---- -----
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GCTACCCCGAGCCGTGTTTC CTGGTGT CTGGGG CG CCCGA C GTG
CTTCCATCGTCGGGCGCCCC GACCACA GACCCC GC GGGCT G TAC
AGACACCAG -- - ------- - C --------
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TACATCAGAAAGCACATCAT GACCGG TACTA AGACT CGT
GGGCCAG G CACGAA ACATGAAGA ----------
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GACTTGTAAAGTGAAGAAGC AG TGA A-- T GA- - ----
CAG
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ACACCAG CA- - ------ - C --------
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GACACCAG CA-- - ------ - C --------
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GCTTGAACCTGAGAGGCGGA GACATTGG GG CGG GAGTCC TTCGTT
GGTTACAG A - A AAG--- -----
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TCAAAATCATAATAATAATG CTGT ATG AGG TCAT
GGTAAACTTTGCCTGGAGCG GACA TGC TCC GGTA
TGGACAG GG GAGG GTTTCAAATG- -------
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AG CAA C GTAAGCA - -----
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GATATCTACCTCACCCCCAC CTGTA GTA TAAT CTGA TCAC
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AG TCAGAG GT T C G- ----
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GTAATACAG TG TTA- AG- ---------
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ACA GGC
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TGT CCG
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CGCGGTGCTAGTCGCCGGGA C
TGAAGTGAGGG G

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AG CT T TTTT ----------
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GACAG AA-- TT AA G ---------
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G - GT GT CA ----
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ATCAG TA A ATT- AT ------
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CAG - GAAACACCA ----------
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CATGGAGCCTTTGATTAGTT ATATT T GT G TA- AA- ---------
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TCACAG A CGTT TC ----------
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- C ACAA CAA T --------
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GCACAG GG CTA CTT - - ------
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TCCAG
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CGCAG A TTTAC CTAGTA AC ----
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CCTTTGCAG GT CC C ACA G G A ----
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ACCTGATGCGTTCAGTGAGA GACATTT ACT AAC AG GAGTGA CT GC GTA
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CGTGG
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G TAACAAAA A AA --------
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CACAG
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AG GT A- TT AC ------
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TCGCATGGTTAGAGAG G A - T TGTACCTCATGT ------
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G TT T---- TT --- ----
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CACTTTCTTTGGTTTCAATG CTG CCCAG TAGAG ACT TTG
TAGTCTTTAGACTGGGTCCA GAC GGGTC ATTTC TGA AAC
G CT AG ----- TGT- ----
GAM74323 4600 CTGTTCCCATGCTTGAGCTT TC - AGCT- - T AGTGAG
CCATGGGGAGGATGCTGAGT CTGT CCATG CTTG TCCATGGGG AGGA GCTG
GAGCAGTTTCCTACCCCGTG GACA GGTAC GAAC AGGTGCCCC TCCT TGAC
GATCTAGCAAGCCATGGAGA GA C GATCT A T ------
CAG
GAM74378 10984 CTGTTGCCCAGGCTCACTGC TT C C- GCAACCT GCCTCCCA
AACCTCTGCCTCCCAAGTTC CTG GC CAGG TCACT CT
AAGTGATTCCTGTGCCTCAG GAC CG GTCC AGTGA GA
TC T TT ACTT--- --------
GAM74387 1912 CTGTTGCCTAGTTTTGTACA GCCTAG---- CAT - ATTTTACAA
TGGATCTCATTTTACAAGAG CTGTT TTTTGTA GGAT CTC
AATCTCTCTGCAAAAAAAAA GACAA AAAACGT TCTA GAG
AAAAAAACAG AAAAAAAAAA CTC A ---------
GAM74431 19536 CTGTTGTGGAAGAAAAGCAA GA AAA A - C---- AAAATGG
ATCGTGACGAGAAAATGGCT CTGTTGTG AGA GCA ATC GTGA GAG
CTGTTATCACAGGTCTGCAC GACAATAC TTT CGT TGG CACT CTC
GTTTACATAACAG A- GCA C A ATTGT -------
GAM74466 16015 CTGTTTCCTCTCGAATTCCA AT--- A----- GGAGA
TCCTGTTGGAGAAACAGGGA CTGTTTCCTCTCGA TCC TCCTGTT
GTCCAGGAGCCCGTTGGGAG GACAGAGGAGGGTT AGG GGGACAA
GAGACAG GCCCG ACCTGA -----
GAM74472 1393 CTGTTTCTCATTTCATCAGC TCTCA TCAGCCT --- AACAG
CTTGGGACTTGAACAGCAGG CTGTT TTTCA TGG GACTTG
TCACTCCATTTGAAAACTAG GACGA AAAGT ACC CTGGAC
CAG TCA-- TT----- TCA -----
GAM74485 22644 CTGTTTGATCTTTCTCCAGC A T CA- ACGAAA CA TCCA
ACACGAAAGCCAGGTCCACC CTGTTTG TCT TCTC GCAC GC GG
AGCAGTGCAATGAGACAGAC GACAGAC AGA AGAG CGTG CG CC
AGACAG - C TAA A----- A- ----
GAM74497 10524 CTGTTTGGTAGATGCATGTT TT-- T CA- TTTT T TTGTAAT

TTTTGTTACTTGTAATGTAC CTGT GG AGATG TG TTGT AC
AGTATTCAGTTCATTTTCTT GACG TC TTTAC AC GACA TG
TTTGCAG TTTT T TTG TTAT - -------
GAM74511 11907 CTGTTTTATATCTCTTTTTT C-- T ATA CT GGCG CCTACA
ATATCTCTTTGGCGTTTCCC CTGTTTTATAT TCT TTTT TCT TT TTTC
TACAGAAAAGAAATTGGACA GACGAAGTATA AGA AAGA AGG AA AAAG
GAACAGAATAATATGAAGCA ATA C C-- TT AGA- ------
G
GAM74523 17227 CTGTTTTGAGAAGATAGGGG GA A G TT TCA- CTCA
AATACTTTGTCAGCCTCAGC CTGTTTTGA AGAT GGG AATACT G GC
GTATTGGAGTATTGTTCATC GACAGAACT TCTA CTT TTATGA T CG
TTCAAGACAG -- - G GG TATG ----
GAM74567 15618 CTTAAAGAATCAATGTTCCC AT TCCCT TGAA TG TTTT
TTTTGTGAAGATGGCTTTTG CTTAAAGAATCA GT TTTG GA GC
TTGTCATTAGATTCTACTGA GGATTTTTTAGT CA AGAT CT TG
TTTTTTAGG -- TCTT- TA-- GT ----
GAM74574 19571 CTTAAAGTTTTGAAGAAGAC - TT-- AGA CT GCTTT
TGATGAGACTAGGTGCTTTG CTTAAA GTT GAAGA CTGATGAGA AGGT
CTTCCTTTCATCAGGTATCT GAGTTT CGG TTTCT GACTACTTT TTCG
TTCTGTGGCATTTGAG A TGTC ATG CC -----
GAM74583 22548 CTTAAATGGCCAATTGAAAC AAT C T ACAAACAG G GTT T A GATTAAA
AAACAGTTCTGAGACCGTTC CTTA GGC AA TGAA TTCTGA ACC CT CC CCACT
TTCCACCACTGATTAAAAGT GAGT CCG TT ACTT GGGATT TGG GG GG GGTGA
GGGGTGGCAGGTGTTAGGGA CTT A T ATAATA-- G AC- T - -------
TAATATTCATTTAGCCTTCT
GAG
GAM74601 14767 CTTAACCCAGAAGTGCGCTT TAACC -- G GT A CTGATTACTT
TGTGGTCATTCTACCTGATT CT CAGA AGT CGCTTT GGTC TTCTAC
ACTTGTGGGGGGCCTAAAAG GA GTCT TCG GTGAAA CCGG GGGGTG
TGGGCTTTTCTGATAG TA--- TT G AT - ----------
GAM74605 7305 CTTAACTAAACTTCGTTTCG CTA TTTC GA A TTTCACAAT
ATGAGACATTGTTTCACAAT CTTAA AACTTCG GAT GAC TTG
CAAAGTTAGTCCTTGAAGTT GAATT TTGAAGT CTG TTG AAC
TTAAG --- TC-- A- A ---------
GAM74630 15731 CTTAATAGGGAACATACATA - AC- ------ CTATGTAA
CAGCTATGTAACTGTGAATA CTTAAT AGGGA ATACA TACAG
ATTGTATATATCTCTAGTTA GAATTG TCTCT TATGT GTGTC
AG A ATA TAATAA --------
GAM74641 17538 CTTAATCTTGTGGATTTTGT AAT --- AT- TCAAAT
AGATGGTTTCAAATGACTGA CTT CTTGTGGATTT TGTAG GGTT
ACTGCATTCAGATTTACGAG GAA GAGCATTTAGA ACGTC TCAG
TGAAAG AGT CTT AAG ------
GAM74648 21716 CTTAATGCCTTATATTACTT CT T - CTTA A GAGTAGA
CCTTATCATAGTGAGTAGAG CTTAATGC TATA TAC TTC TCAT GT
CATGAGAGAATGTATTGTGT GAGTTACG GTGT ATG AAG AGTA CG
GCATTGAG T- T T AG-- - -------
GAM74661 2455 CTTAATTGAATACTTAGAAA GA--- AGAAAA A AGT
AAAATGGCCAGTGGCCGATT CTTAATT ATACTT AA TGGCC
GAAAGGTATATTAAAATTAA GAATTAA TATGGA TT GCCGG
G AATTA AAG--- A ---

GAM74697 19629 CTTACCTATCTAGATAGCGC CC AGA GC CCA AAGA CTCTCCC
TGCCCAGAGGAAGAGGCGCT CTTA TATCT TAGC TGC GAGG GGCG
CTCCCTGCCCCTCAGCAAGC GAAT ATAGG GTCG ACG CTCC CCGT
TGGGATAATAAG A- --- A- A-- ---- -------
GAM74791 19466 CTTAGGAACTGATGTGAACC AA- -------- C A AATCCCTTAC
TTTGGATAAATCCCTTACTA CTTAGG CTGAT GTGAA CTTTGG TA
ACCAAAGCTTTACTATTTAC GAATTC GACTG CATTT GAAACC AT
TGTCAGAAACTTAAG AAA TCATTTAT C A ----------
GAM74798 16092 CTTAGGAGAACACAGCTGAT AG- A A T- TTTTAACA TGAG
TTTAACATGTTCTGAGGAGC CTT GAG AC CAGC GA TGTTC
ACAATTTTTCTTGCTGGTAC GAA CTC TG GTCG CT ACGAG
TCATGAAG GTA A - TT TTTTAAC- ----
GAM74878 10172 CTTATCCCCATTCTACTCCC ATCCCC AC- T AT AAG CCC T C-- TCCC
CTGCTATGCAAGTGCCCCTG CTT ATTCT TCCCC GCT GC TG CTG GG TTG
TGGCTTGTCCCCAACCCCCT GAA TGAGA AGGGG CGA CG AC GAC CC AAC
CAGCAACAAAGCTCAGCTGG GTTTAA GCA T CT AA- AAC T CCC ----
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GAM74889 14910 CTTATCTTAACATCTACTCT A A- ACTCT G ------ ACTCT
GTGCCAAGCACTCTGCTATA CTT TCTTA CATCT GT CCA AGC
ATATGGGACCATAAAGATGA GAA AGAAT GTAGA CA GGT TCG
GTAAGACAAG C GA AATAC G ATAATA -----
GAM74909 580 CTTATGAGCAAAAGTTGGTA ATGA AA TG TTAAGA A GA G TATATTGAAT
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AAGGTTGTACCTTAAAGACA GAGG G- GT TTA--- - A- A ----------
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GG
GAM74914 22124 CTTATGAGTTAGCTTTCTTG AGTTA TTGCT - C--- CACCAA
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CAAACTAGTAACTAGTGGGG GAATAC TGGAAG TCGGGG GATCA TCA
CTTAATGAAGGTCATAAG ----- TAAT- T ATGA ------
GAM74944 10950 CTTATTCCCTAATAGAGTTA - AGA---- A A TATAC
AGAAGCTTATACAGCATCCT CTTATTCCC TAAT GTTA GA GCT
GGCCAAACAAGTTATGGGAG GGATGAGGG ATTG CGGT CT CGA
TAGG T AACAAAC C A -----
GAM74998 13384 CTTCAACAAGCTCCCTGTCT AC T TGTC CCAAA-- A TGAA
CGCCCAAAGGATCTGAAGGC CTTCA AAGC CCC TCGC GG TC
CGTTCCAAGCGAGGGTGCTT GGAGT TTCG GGG AGCG CC GG
CTGAGG C- T ---- AACCTTG - ----
GAM75002 2149 CTTCAACCAGGACCACTCGG ACCA - AC-- G C GATTTTTA
CATTCTCTGATTTTTAGGAA CTTCA GGA CC TC GCATT TCT
AATGCAGACTCCGGCTCCAC GAAGT CCT GG AG CGTAA AGG
AGTGAAG GACA C CCTC A A --------
GAM75003 13112 CTTCAACCCAAGGGGGGGGA A C G GAA- GT AGGATTGG
ATATCGGGTTGGAAGAGGAT CTTC ACC AAGGGG GG TATCGG TGGAAG
TGGCTTTTATCGATAATAAC GGGG TGG TTTTTC CC ATAGCT ATTTTC
CGCTTTTTTGGTAGGGG A T G AATA -- --------
GAM75009 2452 CTTCAAGAGTTCATGTTAAC T TGT TCTTTTCT AACT
TTCTTTTCTGGAAACTTCCT CTTCAAGAGT CA TAACT GGA
TTTCTTAGTTGTTGTATTCT GAAGTTCTTA GT GTTGA CCT

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        TGAAG                T  T--    TTCTTTT-  ----
GAM75012 16399  CTTCAAGCCGTGGCTGCACC    --- -   -      CGGA   AG -- T    AGCC
        CGGAGCAGAGCCCGTTGCCG CTTCA  AG CCGTG GCTGCACC   GCAG  CC  CG TGCCG
        AGCCTGGCGCTGTCGGAGCT GAGGT  TC GGCGT CGACGTGG   TGTC  GG  GT GCGGT
        GTCGGTGCAGCATGCGGACT    CAC  A   A      C---   GA  CT  C    ----
        CACTGGAG
GAM75027 13542  CTTCAATTATGTTTCTTTTA    AA  TG    TTTA     TCCAAATAATAT
        ATGGGTTTCCAAATAATATG CTTC  TTA  TTTCT   ATGGGTT
        ACTCATGTGGAAGTTTAAGA GAAG  AAT  GAAGG   TACTCAG
        AG               --  TT    TG--     ------------
GAM75033 10387  CTTCACACCTACACGAGGTG    ACA   CAC    --- C    -  GA  TAAA
        GTCCTCCATGGGAGCTAAAG CTTC   CCTA   GAGGTG   GT CTCCA TGG  GC
        CCTCCACTGGGGCGCATTTA GAGG   GGAT   CTCCAT   CG GGGGT ACC  CG
        CCTCCAATAGGGCGGAG      CG-   AAC    TTA  C    C   TC ----
GAM75045 12107  CTTCACCATCTGCACTACAT    A-   CT  ACTA  TT    TGATCCCAAT
        TTCTGGCTGATCCCAATGCC CTTC  CCAT  GC   CA  TCTGGC
        AGATTGCCCGCTAATGGAAG GAAG  GGTA  CG   GT  AGACCG
        AAG              AA   AT  CCC-  T-    ----------
GAM75063 15260  CTTCACTAGTGTTGCATCTG      A  TT  -  GG   A    AAGTGCTA
        GTACAAGGGGTTAAGTGCTA CTTCACT GTG  GCA TCT  TACA GGGGTT
        AACCCCTGTAGGATTGTCAC GAAGTGA CAC  TGT AGG  ATGT CCCCAA
        AGTGAAG              -  --  T  --   -    --------
GAM75115 11043  CTTCAGGCCCTGTCGATTGG   CAG     CGAT-     C   C  TGAACTCCTT
        GGAGCAGCTCACTGAACTCC CTT   GCCCTGT    TGGGGAG AGCT AC
        TTGTAGTTCTCTCCACCAGC GAA   TGGGGCA    ACCTCTC TTGA TG
        ACGGGGTACAAAG        ACA     CGACC     -   - ----------
GAM75124 2640   CTTCAGGTCCTCTTCCTTCT    A      ------   --   CA  A  ATGTCC
        GCATCAGAATGTCCTCAGAG CTTC GGTCCTCT    TCCT  TCTG  TC GA
        TCAGAACAGGATTAAAGAGA GAGG CCGGGAGA    AGGA  AGAC  AG CT
        GGGCCAGGAG           A      GAAATT   CA   TG  A ------
GAM75135 1972   CTTCAGTGATACAACAGACG      GA   ACAGACGTTTTC   A  T   ATCCAA
        TTTTCCCTTAGTTCCCCATC CTTCAGT  TACA         CCTT GT CCCC
        CAAGGGGACAGAGGTGTGCA GAAGTCG  GTGT         GGAG CA GGGG
        GCTGAAG              AC  ------------   A -   ------
GAM75139 13238  CTTCAGTTTGAGAAACTAAG       TGAGAA  AAG  T   - GT  G  GA  AGTG
        CAGTGGTCAGCGTCTGTGTG CTTCAGTT    ACT   CAG GGTCA GC  CT TGT  GCC
        AGCCAGTGGGTGATAGGGTG GGAGTCGA    TGA   GTC CCAGT CG  GG ATA  TGG
        GCATGACCCTGGAGAGTAGC       ------  GAG  -   A  GT  G  G-  ----
        TGAGG
GAM75154 2100   CTTCATCTAATGTAACAATT   C  TAA-   A  TT----      TTCCCTTTTTGATTATT
        ATATAATGTTTCCCTTTTTG CTT ATC   TGTA CAA    ATATAATGT
        ATTATTGCATTGTATTTTAA GAA TAG   ACGT GTT    TATGTTACG
        TTTGTGCAGAATGATAAAG    A  TAAG   -  TAATTT      -----------------
GAM75193 22377  CTTCCAACCTCTCCGGCCTC    CA-    - C  C    CTACA  G  ACAGCAGATTCTCAAC
        AGCCTACAGGAGGCACAGCA CTTC   ACCTC TC GG CTCAGC    GGA GC
        GATTCTCAACGTGTCCAAGC GAAG   TGGAG AG CC GAGTCG    CCT TG
        TGAGCCCTGAGGAGGTCCAG    ACC    G  T  C    AA---  G ----------
        AAG
GAM75215 2647   CTTCCAGAACAACCTGCAGC       CAA  G    AC  CACTCCACT    -- ATCAC
        AGACTCCACTCCACTTGGCT CTTCCAGAA   CCT CAGCAG  TC       TGGCTG  TG
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GTGATCACCAACCAGCCAGA GAGGGTCTT GGA GTCGTT AG ACCGAC AC
AATTGCTGAGGCACTTCTGG CAC - AA --------- CA -----
GAG
GAM75228 19462 CTTCCAGCCTGCGCTTCCTC - CT CT -- -- TCTTGT
TGGTGGTTCTTGTGCCTAGC CTTC CAGC GCG TCCTCT GGT GGT
CCAGGAGGGGACGCCGTTGA GAAG GTTG CGC GGGAGG CCG CCG
GAAG A C- AG AC AT ------
GAM75229 2340 CTTCCAGCCTTAAGGCATGT C A ATGTA-- TAAGGCAAAAT
ATTTGATAAGGCAAAATTCA CTTC AGCCTTA GGC TTTGA
AAGGTAAAGGTCATGAGGCT GAAG TCGGAGT CTG AAACT
GAAG - A GAAATGG ----------
GAM75263 4627 CTTCCCAGCAGGAGTCCTCA - C T CAGGAACA GGTG AGCA
GGAACAGTGGGTGTTCAGCA CTTC CCAG AGGAG CCT GTG TTC
GAAAAACACAGGCTCTTCTG GGAG GGTC TTCTC GGA CAC AAG
GTGAGG T - - -------- AAA- ----
GAM75299 14962 CTTCCCTCCCCAGGCCTCGC C - G CT -- GAAAGA
TTCCCCAGCCTTCTGAAAGA CTTC CTCC CCAG CCTCG TCCCC AGCCTTCT
AGGAGGTTTAGGGGATCGAG GAAG GGGG GGTC GGAGC AGGGG TTGGAGGA
GGCTGGCGGGGAGAAG A C G T- AT ------
GAM75314 16984 CTTCCCTTCCCAAGGACTCG T - AA- C GAC A CGCCAT
ACCTGAGAACCGCCATGTAC CT CCC TTCCC GGA TC CTGAG AC
TCGGAGATCCAGAGGGAGCG GA GGG GAGGG CCT AG GGCTC TG
GGCAG C C AGA - A-- A ------
GAM75319 15359 CTTCCCTTTCCTATTCAGTA ----- CA C TCTTTCT
CACACCAGTCTTTCTTTGGT CTTCCCTTT CCTATT GTA ACACCAG
GTTTACCTAATGGGCTGAGG GGAGGGAAG GGGTAA CAT TGTGGTT
AAGGGAGG GAGTC TC T -------
GAM75345 10565 CTTCCTCCCCGAGCCCATGG - CCC - A - AC CCAACAT
GCACGGCCAACATCCAGCTC CTTC CTC GAG CCC TGG GC GG
CACGGGCCTCCCAGAGTGAA GAAG GAG CTC GGG ACC CG CC
G T ACC C C T A- -------
GAM75353 11395 CTTCCTCCTCGGGACTCTAC - GGGAC TA AG A-------- - AATAG TT GTAC
TCAAGGCCGACCGGCGGAAT CTTCCT CCTC TC CTCA GCCG CCG GCGG AT TG
AGATTTTGGTACCATATAGC GAAGGG GGAG AG GGGT CGGC GGC CGCC TA AC
CGCTCGGAAAAAAAACCGGC C GGGGA GG CT CAAAAAAAA T GA--- T- ----
TCTGGGGGGAAGGGGGAGGC
GGGAAG
GAM75366 19493 CTTCCTGAGAGGGCCGTGTC AGGG---- - AGCAAGGTGACATATTCAG
TTGGGAGCAAGGTGACATAT CTTCCTGAG CCGTGT CTTGGG
TCAGTTCAGGCACGCGGAAC GAAGGACTC GGCGCA GGACTT
ATGAACTCAGGAAG AAGTACAA C ----------
GAM75367 10400 CTTCCTGAGCCCAATCACGT C A CAATCAC CA AC T A G ATCAA
CATGCTGAACCACCTATACG CTTC TG GCC GT TGCTGA CACC AT CGC CTGTCT
CGCTGTCTATCAAGGATGGA GAAG AC TGG CA GCGACT GTGG TA GTG GGTAGG
GTGATGGTGCTCAGCGCAAC A A CCACC-- AC C- - - A -----
CCACCGGTACAAGAAG
GAM75383 53 CTTCCTGTACTCCTGGCTCA TACT --- C T CTT - TCCCCA
GGCCCCTGGTGCCTTTGGGT CTTCCTG CCTGG CTCAGGCCC TGG GC TGG G
CCCCACGCCATCTGCCCATG GAGGGGT GGATC GAGTCCGGG ACC CG ACC C
GGCCTGAGGCCCTAGGCCTG CC-- CCG T - TCT G ------

GGGAG
GAM75387 16897 CTTCCTGTGGCCCTTCAAAT G CTTCAAA TG - CGA- AATGAAGAAAAAAGA
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ATTTGGTAGAAGGTGGAGAT A TCGTAGA GT T TTAC ----------
GCTGGCAACAGGGAG
GAM75391 6837 CTTCCTTCACCAACATGCAA T CA ACATGCAAGT T CT C-- CCAGC
GTTCTTTCCTTCCCTGCCAG CT CCTT CCA TCT TC TC CTG
CCAGATAGATAGACAGATGG GA GGAA GGT AGA AG AG GAC
GAAAGGCAG C AG ---------- C AT ATA -----
GAM75411 16988 CTTCGCACTAGTTTCTCGGT ACT TC A G ATGA AATATCAAA
ACTATGCATATGATCCAATA CTTCGC AGTT TCGGT CTAT CAT TCC
TCAAAGGAAATGATAGCATT GGAGTG TCAG AGTTA GATA GTA AGG
GAAGGACTCGTGAGG C-- GA C - A--- ---------
GAM75413 13641 CTTCGCATTAGTTTCTCGTG ATT TC - A G ATGA AATATCAAA
ACTATGCATATGATCCAATA CTTCGC AGTT TCG TG CTAT CAT TCC
TCAAAGGAAATGATAGCATT GGAGTG TCAG AGT AC GATA GTA AGG
GAAGGACTCGTGAGG C-- GA T - - A--- ---------
GAM75473 13357 CTTCTAGTAAGTAATTATTT TA ATTAT TT CT T TTTATATCTTTT
TCACTTGGTTGATTTATATC CTTCTAG AGTA T CA TGG TGA
TTTTTCATCTATCTGGGGCA GGAGGTT TCAT G GT ATC ACT
ACATACTGCTTGGAGG CG ACAAC GG CT T ----------
GAM75509 13702 CTTCTCCCAGGAGTCTATGG - --- - T- T GAAA A- A AAATA AACATCA
AATTGGAAACTTAATAGCTA CTTCT CCCA GGAGT C ATGGAA TG CTT ATAGCT CT CAGT
CTAAATACAGTAACATCATG GAAGA GGGT CTTCA G TACCTT AC GAA TATCGA GG GTCA

ACTGGGAGCTATGAAAGCAA C GAA A TT T AAAC AG - ----- -------
ACATTTCCATTTGAACTTCA TG
AGTGGGCAGAAG

--
GAM75525 16920 CTTCTCGTTCTGCCATCGTT TC CATCGTTT- AACA AGCA
TCCTGAACAGCAGCAGCGTC CTTC GTTCTGC CCTG GC
CCAGGCACCACCGCGCAGAA GGAG CAAGACG GGAC CG
CAGGAGG GA CGCCACCAC CCTG ----
GAM75566 19654 CTTCTGATCATGGACTTTCC TCA AC C - AAATTTAC
ACATGGCCAAAATTTACTGG CTTCTGA TGG TTTCCA ATGG CCA
ATCATTGGAAGAATCACTTT GGGGACT ACT GAAGGT TACT GGT
CAGGGG TTC AA - A --------
GAM75573 13712 CTTCTGCAATCCAAACGTTA GCAATCCAAACGTT TT CAAGCTACAAA ACCAA

CTTAGACTGCAAGCTACAAA CTTCT AC AGACTG GCC
GCCACCAAGGCCAGTCTTTG GAAGA TG TCTGAC CGG
TTAAAAGAAG AAAT---------- TT ---------- -----
GAM75613 4763 CTTCTGGGCGCCATAGAGAG ----- - A GG TA - CCT GTCC
CGTGGCGGTATCCCGGAGCC CTTCTGGGC GCCAT AGAG GCGT CGG TCCCGG AG GCC

TGCCGTCCGGCCCTACCGGG GAAGACCTG CGGTG TCTC CGTA GCC AGGGCC TC CGG

ACCGATGCCCTCTAGTGGCC TGATC A C -- -- A C-- ----

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GAM75648 22975 CTTCTTAGCTGTCACCTGCC - GT T- GA - TC - CA- - ACCCCT AGA
GAGGCTTCTGGGCACTCAGG CTTCTTA GCT CACC GCC GG CT TGGGCA CT GGCAGT GC
GGGC
CAGTGCACCCCTGGGCAGAG GGAGAGT CGG GTGG CGG CC GG ACCCGT GA CTGTCG CG
CCCG

CCCCTTAAAGCTGCTGTCGC G -- TC GA T T- A TCG T AAATTC ---
TAGATGCCCATGGTCCAGGG
CCTGGTGGGCGTGAGAGG

GAM75656 10355 CTTCTTCAGTGAAACGGGTG T AAC- G ----- G CCG
CTGGCAAGCATGTGCCCCGG CTTC TCAGTGA GGGT CTG GCAAGCAT TGCC
GCAGTGTTTGTAGACTTGGA GAAG AGTTACT CCCA GGT TGTTTGTG ACGG
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GAM75666 15852 CTTCTTCTTTGCCAGGGAGC T AGGGAG C AG AA-- ACTA
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TGATTAAGGGACCTAAGACA GGGGGAGGA CGG GA TC GG TAGTA
GGCAGGAGGGGG - ACA--- A CA GAAT ----
GAM75764 7425 CTTGAAGCCAGAAATTACAG A CA TTACA AAGAAG
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TACCCCTTTTCGTGTTCCGA GAGC TTG CTTT CATACTCTT
G C TG TCCC- ------
GAM75777 17145 CTTGAATCTTTGAATGACTA ATCTT T T CAA TTCAACAT
TTCCAAGTAAGATTCAACAT CTTGA TGAA GAC ATTC GTAAGA
TTTTACAGAATTGTTCTTCA GAATT ACTT TTG TAAG CATTTT
TCATTAAG ACT-- C T A-- --------
GAM75816 2077 CTTGAGACAGGCTCACGTGG ACA T- C-- G A-- CATC
AGGGAGGTGGCATCCTACCC CTTGAG GGC CA GT GAGGG GGTGG
AGCCCTCGGCCCTTGCTGCC GGACTC CCG GT CG CTCCC CCATC
CCACTCAGG ACC TC TCC G GAC ----
GAM75846 13099 CTTGAGGCACTTTTAATATA C --- -- TT TT-- CAT TATCCAT
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ATCCATTTGTTCAATTCTAT GAACTTT TGAAA GTTAT AT AGTA AAC TTGTT
GATTTATTTATTGTACAAAG T CAT TT TT TCTT --- -------
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CAGGTTGTGGCAGG GGT GAC-- TATTTG T ------
GAM75863 16096 CTTGAGTCCAGAAAGTGGCA GA-- AAAG C TT A GAGATCG
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CGCCACTGCTCTCCAGCCTG GAG TGGGTC ACC TC CGTCAC CGC
GGTGGCAGAG ACGG CG-- - T- - -------
GAM75885 10748 CTTGATCATGGGGTGGAATT G TGG T GGGCTTCATG
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GGATGCATAAAATTTTCCAG GAA TGGT CC TTTTAAAATACGTAGG
TTGGTAAG - TGA - ----------
GAM75914 14872 CTTGATTTGCTTGGTGACCG G - GAATTAC CTAGT

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CTAACTAGGTCATTCAAGGA GAACTGAA GAACT ACTGG ATCATT
AGTCAAG G T ATCA--- -----
GAM75963 22596 CTTGCCAGTTTCTCCCAGCA TTTCTCC AG C - TTGTTTT
GGACCCTCTTCTTGTTTTGA CTTGCCAG CAGC GACC TCTT C
AAGATGGTCGGCTGCTTTTG GGATGGTT GTCG CTGG AGAA G
GTAGG TTC---- G- T A -------
GAM75994 473 CTTGCGTTCCTTTCGTTGCT TTCCTTT T TCT TCTTTTTCT
TTCTTGAGGTCTTTTTCTTC CTTGCG CGT GCTT TGAGG
TCATACAGGCCATGTCTTGC GAACGT GTA CGGA ACTCT
AAG TCT---- C CAT ---------
GAM76029 11859 CTTGCTGCTGTGGTGACTCA C T GACTCAAAA-- A AGAA
AAAACAAACACAGAAGTGTT CTTG TGCTG GGT ACAA CAC
GTGCATACTTAAAGCTCAGT GAAC ATGAC TCG TGTT GTG
ACAAG - - AAATTCATACG - ----
GAM76042 7430 CTTGCTTCTCCAGGGACTGC CT- AC G TGGC C A G GGG G CCAG
GTCACAACCTGGCGCGGATT CTTGCTT CCAGGG TGC TCACAACC G GG TTGGG AC
CCATGTTG CC
GGGGACGGGCCATGTTGGCC GAACGAG GGTTCC ACG GGTGTTGG C CC AATCC TG
GGTGCAAC GG

CCAGGGACAACGTGGGTGCC CGC C- G ---- - A G --- A ----
TAAACCCGGTTGTGGGGCAC
CCTTGGCGCGAGCAAG

GAM76052 11010 CTTGCTTTGAGTTGGAAGCG TT - GC TT GCCT
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TGTAAG T- T A- T- ----
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TGAGATTACACATGGTTTTC GGGCGG CAAG TTTAA TGTTCTTTTG TTAG
TTGTTAATTTTGAACGTGGC TG--- T T GTACACA ---
GGG
GAM76062 10948 CTTGGAACGAACTAATCCTG AC AA--- GA-- AAGAACTA
AAAGAAGAACTACTTGTGAA CTTGGA GAACT TCCT AAG
GGGCAAACAGTTTAGTTCAA GAACTT TTTGA GGGA TTC
G GA CAAAC AGTG --------
GAM76092 17351 CTTGGAGCTGGAGAAGTTGA AGCT- T- A- T A CCAGGTC
CTTGTAGAGCCCTCCAGGTC CTTGG GGAGAAG TG CTTG AG GCCCT
AGGGCCTCAGGAACACCCTT GAACC CTTTTTC AC GGAC TC CGGGA
TTTCTCAAGCCAAG GAACT CC AA - - -------
GAM76104 15326 CTTGGATCCTCTAGAGCGGC A CTA--------- - GCTACTACTACTAAATTCG
CGGCTACTACTACTAAATTC CTTGG TCCT GA GCGGCCG
GCGGCCGCGTCGACGAAACA GAACC AGGA CT CGCCGGC
TTTAGGACCAAG - TTTACAAAGCAG G ----------
GAM76108 11487 CTTGGATGGTATCTATGTCT G -- TAT- - CCAGGAACT
CTGAACCCAGGAACTGTTCA CTTGGAT GTA TC GTCT CTGAAC
GCAGGCTGATGAACTACGAT GAATCTA CAT AG CGGA GACTTG

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        CTAAG                G  CA  TAGT   C    ---------
GAM76112 6960   CTTGGATTTTTCACTCGGGG    ATTTT--      GAA   CCGGCTTAAC
        AATGCTCCGGCTTAACAGCA CTTGG     TCACTCGGG  TGCT
        GATCCGGGTGGTCGCTGGCC GAACC     GGTGGGCCT  ACGA
        AAG                GGTCGCT      AG-   ----------
GAM76123 7069   CTTGGCAGGTGTATTTGGTG     A  T  T   GCG   CATTTTTCCAAACACC
        CGCTACCCATTTTTCCAAAC CTTGGC GG GTA TTGGT  CTACC
        ACCGGTAGAAATTAGTTGCC GAGCTG CC CGT GATTA  GATGG
        CAGTCGAG             A  -  T   AA-   ----------------
GAM76168 15128  CTTGGGACTCCCTGTAGCAG      CTC        -------  TGGAAAAT
        TGCCTGGAAAATGGTATGTT CTTGGGA  CCTGTAGCAGT     GCC
        TTGCTGCTGCAGGAATTCTC GAACTCT  GGACGTCGTCG     TGG
        AAG                TAA        TTTTGTA  --------
GAM76246 11327  CTTGGTGACCAGGGTACAAG    - A  AGGGTA  A     A  AG  G  AT   G  A  ACA
        CCCCTGATGAGCTTGCCATG CTTGG TG CC    CA GCCCCTG TG  CTT CC  GGCA CCA GG
        GCAGCCAAGGACACCTGGTG GAGCC AC GG     GT CGGGGAC GC  GGA GG  CCGT GGT CC

        CCGGAGGAACGACAGGGGCC    T  A  GGAAAC  C     A  AA  -  --   -  -  ---
        TGCAAAGGGGACATCCGAG
GAM76268 22537  CTTGGTTCTACAGCCATGGG   GG       CA   GATC  G    AGAG
        GATCCAGACATCAGAGGGTG CTT  TTCTACAGC  TGGG   CA ACATC
        TGTGCCTAGCTGTGGAGAAG GAG  GAGGTGTCG  ATCC   GT TGTGG
        AG                 AA       --   ----  G    ----
GAM76269 7461   CTTGGTTCTACAGCCATTGG   GG       CAT   ATC  G    AGAG
        GATCCAGACATCAGAGGGTG CTT  TTCTACAGC   TGGG   CA ACATC
        TGTGCCTAGCTGTGGAGAAG GAG  GAGGTGTCG   ATCC   GT TGTGG
        AG                 AA       ---   ---  G    ----
GAM76272 10639  CTTGGTTGTAGAGCTGTGTT    TTGTAG    G    TC-   TT  ---   GTTTT
        GAAATCCATTTTGGTGGTTG CTTGG     AGCTGT TTGAAA   CATT  GGT   GGTTG
        GTTTTTAACCCAAACTCAGT GAACC     TTGATA AATTTT   GTGA  TCA   CCAAT
        GCATTTTTAAAATAGTTAAG     TAAGAA     A     TAC   C-  AAC    -----
        AATCCAAG
GAM76293 10043  CTTGTAGCTCCACTCCGGGG       TC   -   GGAA---------  ACTCG
        AACGGACTCGCCGGGACTGA CTTGTAGC  CACT CCGG          CGG
        CAGTTGCCGGAAGTGAGGCT GGGCGTCG  GTGA GGCC          GCC
        GCGGG                GA   A   GTTGACAGTCAGG  -----
GAM76388 19659  CTTGTGCCAAAATCAGCATG     ----- CA   C   A   -      GCCT  GCCAGTTCTAA
        TTCTCCTATGCCTCAGCCAG CTTGT    GC  AAAT AGC TGT TCTCCTAT   CA
        TTCTAATGTAATAGGAGATG GAACG    CG  TTTA TTG ACG AGAGGATA   GT
        CAGTTTATTTAAGCTATTTG     TTTAT  AA   T   -   T      AT--  ----------
        CAAG
GAM76390 16336  CTTGTGCCAGAAGGCAGAGA     G  AGAAG-    -  GCC     A--  TG   ACAG   AA  A   TACAC
        GCCGGAAATATTTGGAGACA CTTGT CC     GCAGA GA   GGAAAT   TT  GAG    CACT  TG CTA
        GCACTAATGACTATACACTA GAGCA GG     CGTCT CT   CCTTTA   GA  TTC    GTGA  AC GAT
        GCCAAGTGACCTTTGAGCTC     G  GTAAAA    T  ---     CTC  GT   CA--    --  C   -----
        ATTTCCTCTTCTGCAAAATG
        GGGACGAG
GAM76406 193    CTTGTGGGAGAGATTATCAA    T     GA  ATC   --------    -  G   A    ATTCCG
        GCGTTTTGAGCAGAAAGGAT CTTG GGGAGA  TT   AAGC       GTTTT GA CAG AAGG
        TCCGCCTTGTTGGTCTGAAA GAAC TCTTCT  AA   TTCG       TAAAG CT GTT TTCC
```

TTCATGCAAGCTTCCGAAGA - AG GCC AACGTACT T G G ------
TCTTCTCAAG
GAM76428 17410 CTTGTTAAGAGTTATTTATA G A T TT CA ACAG
CCAAATCCTACAGGGGATTG CTT TT AGAGT AT ATAC AATCCT
TGTTTGTCACTCTAGAAGAG GAG AG TCTCA TG TGTG TTAGGG
A A C TT -- ----
GAM76432 17121 CTTGTTACACAGCACATACC ACAC ATACCAC--- T- ATTCTCA
ACAGGTTCTGGAATTCTCAT CTTGTT AGCAC AGGTTC GGA
CTTCGAACCTAGAGAAATAG GGACAA TCGTG TCCAAG TCT
GTGCTATAAACAGG ATA- GATAAAGAGA CT -------
GAM76479 17524 CTTGTTGTGGAGGCTGCTGC TG G G CT CGC GGCA
GGGCGCAAAGGGCACTTTTC CT TTGT GA GCTG GCGGG AAAG
TGTGATAGTGTCGACGGTGA GA GGCA CT TGAT TGTCT TTTC
G GT G G AG --- ----
GAM76481 10068 CTTGTTGTTGGCTGAATTGA T GT G T TCCCTAGG CACTT
TCCCTAGGGCACACTTTGCA CT GTT TGGCT AA TGA GCA
ATTTTACTTGAGCCACTGAC GA CAG ACCGA TT ATT CGT
TAG T TC G C TTAA---- -----
GAM76490 22023 CTTGTTTCGGACTATAGAGT A AG G G- CA --- TG AAC
GCTGATGGCAGAGATTGGTG CTTGTTTCGG CTAT AGT CT ATGG GAGATTGGTGAGGAT T GAT

AGGATTTGGATAACATCTGA GAACGGAGCC GGTA TTA GA TACT TTTTAATTACTCCTG A CTA

TGTGTCCTCATTAATTTTCC G CA G AG CC TGT GT ---
TCATGAAGGATTACATGGGC
CGAGGCAAG
GAM76517 15336 CTTTAAAAGTGCTTCAGTTA AAAA- TTCA--- ATT TGTA
CTAATTTCCACTGTAGTGGA CTTT GTGC GTTACTA TCCAC
TACTGGTAACGCATAATGCA GAAA TACG CAATGGT AGGTG
TGTAAGAAAG GAATG TAATACG CAT ----
GAM76547 13914 CTTTAAGGACAGACAAAAAT A-- AAAAATAAG C ATTTAA
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TCAGATATTGGTCTGTTTCA GAAAT TTTGTCTG CT TTGA
CTAAAG CAC GTTATAGA- - ------
GAM76556 12126 CTTTAATTCATTTAATTTTC AA T AA C-- CTT-- TTTT
ACAATAACCTTGTTTTTACT CTTT TTCA TT TTTTCA AATAAC GT
TCTAGTTGTTATATGAAAAA GAAA GAGT AA AAAAGT TTGTTG CA
ACTGAGGCAAAG CG C -- ATA ATCTT ----
GAM76601 14253 CTTTAGTAAATATTCAGTGC T TAT GTGCTC CT TG ATCATA
TCACGTCTGTGCATCATAGT CT TAGTAAA TCA ACGT G C
GCTTGCGTTTAATATGATTT GA GTTATTT AGT TGCG C G
ATTGTAG T --- ATAATT TT GT ------
GAM76620 4652 CTTTATCAAAAACATGATTA --- AA GATTA G TC - TGACTGTGCT
CAGGGACATCTCAGGCTGAC CTTTA TCA AACAT CAG GACA TCAGG C
TGTGCTGTCCTGATTGTTGC GAAGT AGT TTGTG GTC TTGT AGTCC G
TGCTGGTGTTGGTGAATTTG TTA GG GTC-- G T- T ----------
AAG
GAM76632 19689 CTTTATCTCTGGCTGTTCGT AT G- - CCATCG - G ACCA CCCTC
CCCATCGTCCACCGTGGCAC CTTT CTCTGGCT TTC GTC TCCA CC TGGC GCT
CAGCTCCCTCAGCCAGCCAG GAGA GAGACCGA GAG CAG GGGT GG ACCG CGA

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GAM76635 13663 CTTTATCTTTTTTTATACCA TCTTT CAT CCT CTTTAAC
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CAGAAAGTAAATATGTATAA GAAGT AAAATATG AAATG AAAGA
AATTTGAAG TT--- TAT --- -------
GAM76691 22941 CTTTCAGAAATAGCCATAAT - AG A TTT TA ATACAA
TTTGTATTACATACAAGTAA CTTTCA GAAAT CC TAA TG TTAC
GCCATTTTAAGGAGTTTCAT GAAAGT CTTTG GG ATT AC AATG
GAAAG A A- A TT- CG ------
GAM76793 22568 CTTTCCTTAAAAAAATTGGG TTAAAA GTACAC CACGGAAGCAT
TACACCCCCAACACGGAAGC CTTTCC AAATTGG CCCCAA
ATTTGGGGCCAATTTCTGGT GAAAGG TTTAACC GGGGTT
TGGAAAG TTGGTC ------ ----------
GAM76801 19433 CTTTCGAATCATGTTAATTA ATCA- T ---- G CCTTTA
AATGGTGGTCCTTTAACCAG CTTTCGA TG TAATTAAAT G TGGT
TAGCAGTTTGATTACCAATT GGAGGCT AC ATTAGTTTG T ACCA
ACTCGGAGG CATTA C ACGA G ------
GAM76805 6948 CTTTCGGATGTGAATCATAA TGTGAATCATAA CC- - - AGAAC
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CAGCCTATATGTACATGGAT GAAAGTCT TAGGT TG ATA CCGA
TCTGAAAG ---------- ACA T T -----
GAM76820 7271 CTTTCTATTACCAGACAGAA C-- A AAGT T TAGT
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TCCAATCTGACTTCAGTAAT GGAGGATAATG TC GTCT AACCT GGG
AGGAGG ACT A ---- T ----
GAM76822 16299 CTTTCTATTTCACTGGCCCA C GG---- GG GG GGAGA
GGTGGGGGGGCGGAGAGTAA CTTT TATTTCACTGGCCCA T GG GC
CTTTGAGTCTGTGGGCCAGT GAAA ATAAAGTGACCGGGT G TC TG
GAAATATAAAG T GTCTGA TT AA -----
GAM76836 21738 CTTTCTCTCCTGACTCATTA C------- CATTAATAA ACCATTCTCAACAAGTCA
ATAATGGATACCATTCTCAA CTTTCTCT CTGACT TGGAT
CAAGTCAATCCAAGTCAGCC GAAAGAGG GACTGA ACCTA
CGTTAAGGAGAAAG AATTGCCC --------- ----------
GAM76849 451 CTTTCTGCATTTAATAGGTT C - A GT AT TAAAG A AATA
AGAATGTAAATTAAAGTGTA CTTT TG CATTTA TAG TAGA GTAAAT TGT GC
GCAATAGCAACAAAATATTT GAAA AC GTAAAT GTC ATCT TATTTA ACA CG
ATTCTACTGTAAATGACAAA - A - -- -- TAAA- A ----
AG
GAM76853 4570 CTTTCTGGGCAGAAGATGGC AAGATGG - TT ATAAAACGAC
CACTGTTCAATAAAACGACT CTTTCTGGGCAG CCAC TG CA
GTCATGTGGAGCCCTGTCCA GAGAGACCTGTC GGTG AC GT
GAGAG CCGA--- T T- ----------
GAM76878 7664 CTTTCTTGATTAGTATCTAC G A A AG-------- CTTAA
AAGGCACTTAATGCACATTT CTTTCTT ATTAGT TCT CA GCA
TCAGTGAGGAAGCTGATGGA GAGAGAG TAGTCG AGG GT CGT
GAGAG G A A GACTTTTACA -----
GAM76941 2269 CTTTGAGAGGCTCACGGCCA CT CCATTCT- G C AA GT TGATTTCCTTAGT
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TGCGTTTCCTCTGATTTCCT GAAACTCTTT GTGTC CGA GATTT ACT TACG AAGGAG

TAGTGAGGAAGCATTCATTT TT AAATTTAC G - -- -- ----------
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TTTTCTCAAAG

GAM76970 571 CTTTGCAAGCACAGCAAGTC A ACA- AAGTC TAATA GCACAA
CCTGTAATAAGATAGGCACA CTTTGC AGC GC CCTG AGATAG
ACTGTCTGATCCAGGTAGGC GAAACG TTG CG GGAC TCTGTC
ACGAGTTGGCAAAG G AGCA GAT-- CTAG- ------
GAM76996 11191 CTTTGCCTCCCGAAGAGTTA G T CG - GATTAC T - CA ATACAG
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CATACAGGGCCCTACAGTTC GAAA GG GG TTCT CGATT TCCT GAC TC GG
CTTGATTAGCATCTTAAGGG - - AA A AGT--- T A CC ------
GAAAG
GAM77064 10159 CTTTGGGAGGTAATTAGGTG A --- AG G- TAGAG
ATGAGGGTAGAGCCCTCATG CTTTGGG GGTA ATT GT ATGAGGG
AATGGAATTTGTGCCCTTAA GAAATTC CCGT TAA TA TACTCCC
AG - GTT GG AG -----
GAM77079 22588 CTTTGGTAGACACAGGCATT AG A A TGA---- GCTGATCTCATAAATAA
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CATAAATAATTTGGGAACCA GAAATCA TG GTCTG AACCGT GGTTT
TTGCCAAGTCTGGTACTAAA -- - - TACCAAG ----------
G
GAM77131 1808 CTTTGTGCTCATAAGTTCTT TT - AA CATTT CTCCCA
ATCATTTAGCTCCCACTTAT CT GTGCT CAT GTTCTTAT AG
ACGTAAGAATATGCAGTATT GG TATGA GTA TAAGAATG TC
TGG TT C -- CATAT ------
GAM77132 11189 CTTTGTGCTCCAGTCGCTCC G TC TC T - TCCC GGCG
TAACGCTCCCTGGCCCGGCG CTTT TGC CAG GC CCTAAC GC TGGCCC
GGGCCGCGCAGTTAGGGCAT GAGG GCG GTC CG GGATTG CG GCCGGG
CTGAGGCGGGGAG G GA TA - A C--- ----
GAM77134 15213 CTTTGTGCTGCCCCTTGAGG TG - C- -- AGAGAGGA
AAGCAAAGAGAGGATTGCTT CTT TGCT GC CCTTGAG GAAGCAA
TTGCTTAAGGAAGCTGGTAT GAG ATGG CG GGAATTC TTTCGTT
GGAG GT T AA GT --------
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ACTGTCACTTTTTCCCTTAA CTTTTAAAA ATG TCACTTTTT
AAAGTGGATAAACCCATCTT GAAAGTTTT TAC GGTGAAAAA
TTGAAAG C--- CCAAATA- -----
GAM77196 22379 CTTTTAATAAATGAATTTTA GAA A ACAAACC
ATTGTTAACAAACCTAATAA CTTTTAATAAAT TTTTA TTGTTA
GTGGAAGAATTTGTTAAGAG GAGAATTGTTTA AAGGT AATAAT
AG- G -------
GAM77238 15826 CTTTTATATTTCTTTTCAAG TTTCTTTT CA CTCAT
ATTGGATCAGAGCTCATCTC CTTTTATA CAAGATTGGAT GAG
CATCCAGTCTTGTTTCTATG GGAAGTAT GTTCTGACCTA CTC
AAGG CTTT---- C- -----
GAM77242 15975 CTTTTATGCCCCGGAACTCC GC AC C TT- C A TAAA T TA AAT GC
TTTTCTTTGCTAAAAGGTAT CTTTTAT CCCGGA TC TT CTTTG TAA AGGTA GC GCTTT CAG
GTT

AAAGCTGCTTTTACAGAATG GGAAGTA GGGCTT AG AG GAAAC GTT TCCGT CG CGAAA GTC CGA

TTGCCAAGCTGCTGATAAAG -- CA T CTC C G C--- T TA GT- --
CTGCCTGCCTGTTGCCAAAG CA
CTCGATGAACTTCGGGATGA
AGG
--
GAM77253 7486 CTTTTATTTGAAGGCAGAAA A - CC AT G CACTCAT
ACACCCTATTTGGGGGTTCA CTTTT TTTGAAGGCAGA AAACA CT TTG GGGTT
CTCATAATCTGCAACAGTTT GAGAA AAATTTTTGTTT TTTGT GA AAC TCTAA
GTTTGTTTGTTTTTAAAAAA A G TT C- G -------
GAG
GAM77259 15220 CTTTTCAAGGATAGGCTTTA CA- C CTGCAAGCAATCAAAT
TTCTGCAAGCAATCAAATAA CTTTT AGGATAGG TTTATT
TAAATCTATTCTGCTAAGAG GAGAA TCTTATCT AAATAA
TCG - ----------
GAM77265 5227 CTTTTCAGCCAATGAGAGGC A CA-- A CT CACCA C AT CACAT
CTCGTCACCATCACGCTATG CTTTTC GC ATG GAGGC CGT TCA GCT GC
CCACATGCCAGCATGAACGT GAAAAG CG TAT TTCCG GCA AGT CGA CG
GCCTTATATCCCAGCAGAAA A ACCC A T- ----- A C- -----
AG
GAM77286 5251 CTTTTCCTGGAATCACGATA C CACGAT--- A AA- TGTCAT
GATGAAGATACAATAGTGTC CTTTTC TGGAAT AGATGAAG TAC TAG
ATCTACAGGTGCTTTATCTT GAAAAG ACCTTG TCTATTTC GTG ATC
TAAAAAAAGTTCCAGAAAAG - AAAAAAATT - GAC ------
GAM77299 22362 CTTTTCTGGTGGATTCATCA T ATTCAT---- TA CACACAC
TCTATGACACACACTCACTG CTTTTC GGTGG CATC TGA
ATGCATAAACTGGTCACCTG GAGAAG CCACT GTAG ACT
AAGAG T GGTCAAATAC TC -------
GAM77323 11600 CTTTTGAATAAAAGATCATT A-- AAAG ACTAA TTAAAATT
CAACTAAAAATATTAAAATT CTTTTGA TA ATCATTCA AAATA
TATTTCACTGGATGGTAATG GAAAATT AT TGGTAGGT TTTAT
TAACCTTAAAAG CCA GTAA CAC-- --------
GAM77330 17631 CTTTTGACCTTTTCTTCCTG T A T- CTGGA T CAA TGGAT
GACTATTGAAATCAAGCTTA CT TTG CCTTTTC TC CTAT GAAAT GCTTA
TGGATTAAGTGATATTTCTA GA AAC GGGAAAG AG GATA CTTTA TGAAT
TAGCGATTGAAAGGGCAATA T - TT C---- T TAG -----
G
GAM77334 5255 CTTTTGAGGTCAGAGGGTTT A T A- -- A - TCATTT
GTGTATCCATCATTTTGAGA CTTTTG GG CAG GGGT TTGTGT TC CA
AATGCAGCTGCTCGGCTGTC GAGGAT CC GTC CTCG GACGTA AG GT
CCTAGGAG C T GG TC A A ------
GAM77370 17322 CTTTTGTACCTTATTGAGCT T ACC AG TC - A TTC
CTGGAAACAGTTCCTGTATC CTT TGT TTATTG C TG GA ACAG
ACAATGTCCAATAAAACATA GAA ACA AATAAC G AC CT TGTC
AG T A-- CT TA A A ---
GAM77385 359 CTTTTGTTACATAGAGATTT C- AGATTTAA A A--- TA CTTAGTAT
AAAGAAAAAGAAAGTAGTAC CTTTTGTTA ATAG AG AAAAGAA G GTAC
CTTAGTATGTACCGCATCCT GAAGACAAT TATC TC TTTTCTT C CATG

TCTTTTCCTCAGCCACCCTA AC CCACCGAC C CCTA GC --------
TCATAACAGAAG
GAM77402 4556 CTTTTTAATAGTTGTAAAAC TA - AAAC T T- GA AA TTAAAAT
TGTGCCTATAAGACACACAA CTTTT ATAGTT GTA TG GCC ATAA CACACAAGG TTAT
GGAATTATTTAAAATGTAAA GAAAG TATCGA TAT AC CGG TATT GTGTGTTTT AATG
TTTTGTGTGATTATTTGGCC -- G AA-- - TT A- A- -------
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GAM77426 10767 CTTTTTCTCCAACTCCAACT - A - CT TTCCT AGA
CCTTCCTGCTGAGACAGCCT CTTT TTCTCC ACTC CAA CC GCTG
CTGGTTTGTGGGTGGAGAAC GAAA AAGAGG TGGG GTT GG CGAC
AAAG C - T T- TCTC- ---
GAM77456 22606 CTTTTTGTTTCATTTAATGA AT A AATTT T GAAC C - GTGT
AATTTTGATGTGTTGAACTG CTTTTTGTTTC TTA TGA TGATG GTT TG TTTC CTG
CTTTCCTGGTGTCAGAGAAA GAAAAATAAAG AAT ACT GCTAC CAG AC AAAG GAC
CATGAGACCATCGCTCAATA GT A C---- - AGT- - A ----
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GAM77463 2286 CTTTTTTACCCTTTTAATAT T C T- A CCACACAATATAATTA
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TTATTTTTAGAAATTTTGAA GAA AAATG GAAG TTA AGATTTTT
GAGTAAATAAG T A TT A ----------
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CCTAACTTAAGGCCATGACT GAG GATTTTC CGGA TTC TCCG
TTTAGGATATGAG TATAG AGTAC A AA-- ------
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GAATCAGAGGAATCAGAAGA GAGAAGA AAGGAGACTAAGG TC
G CT CTT-- -----
GAM77476 22522 CTTTTTTTAATTTGCATTTT TTAATTT ATTTTT T GCCAAAAG
TTTTCATTTGGGGCCAAAAG CTTTTT GC TTTCATT GGG
TCCAGTGAAATTGTAAGCTT GGAAAA CG AAAGTGA CCT
CAATAAAAGG TAACTT- AATGTT - --------
GAM77486 5142 CTTTTTTTTTTTTTTTGAAT T TT AA TCAG C TTTAT
GCTCAGTATCTATTTATTAA CTTT TTTTTTT TTG TGC TAT TA
ATGAATGCACAATTGAAAGA GAAG GAGAAAG AAC ACG GTA AT
GTGAAG T TT -- TAA- A -----
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TGTGTTGAAAAGCAAAAACA GAAA T T CTTTGTGTG GC
TGAGCCACACAGAGGATGAT CTTT A A GAGACACAC CG
TAATAATTTC AATAATT GT G ------- ----------
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TGGAAAAATGAAATTTAGTA GAA AAAATGT GA TTTGGAA TG AATT
GTTCCAAGTTTCAAAGAAAT CTT TTTTACA CT AAACTTT AC TTGA
GTCAACATTTTATTC A A GTAAAG GA- C ----
GAM77518 22821 GAAAAAATGTGAAGACTGAA TGTG CTGAAA T TTC CTCCTCCC
AGGTGTGATTTTTCAATTCT GAAAAAA AAGA GG GTGATTT AATT
CCTCCCAGTTACCGAATCAC CTTTTTT TTCT CC CACTAAG TTGA
CCTCTTATTTTTTTTTC TTTA ------ - CCA --------
GAM77526 17007 GAAAAACTTCTGAATTCTGC AAAC T- A - --- CATACCAT CC CAAACATATCATT
ATGTACAGCATACCATAAGT GAA TTC GA TTCT GCA TGTACAG AAGT CTA

CCCTACAAACATATCATTTA CTT AAG CT AAGA CGT ACGTGTT TTCA GAT
GTAACTTTTGTGCATTCTGC AAAA CT C A CTT -------- AT ----------
AAGAACTCTCGAAAAAATTC

GAM77529 10848 GAAAAAGAAGAAAACGAAAA AAA AA AAA AACAAAAGAAAG CATG
GAAGAAACAAAAGAAAGCAT GAA GAAGA ACGA GAAGA CAT
CATGATGAATAAAATGTCTT CTT TTTTT TGTT TTTCT GTA
TGCTTGTAATTTTTAAATTC AAA AA CG- GTAAAATAA--- ----

GAM77563 7220 GAAAAAGTTTGGCAAAGGCA AAAGTT --- C TGGCAGT
CAGGTTTTGGCAGTAGATCT GAA TGGCAA AGGCA AGGTTT
TGTTTTTCTTGCCATCCACT CTT ACCGTT TTTGT TCTAGA
TC CACCT- CTT - -------

GAM77600 21961 GAAAACAACATATAGAGAAA CA- ATA T AGAAACC TG T AACTAG AGCAA
TACTGTAGAAACCATTGCTA GAAAA ACAT GAGAAA ACTGT AT CTAG GTCTT GAAA GT
GTGTCTTAACTAGGAAAAGC CTTTT TGTG CTTTTT TGACA TA GATC CAGAA CTTT CA
AAGTAGACTCATCAACAATC AAC AC- - AA----- GA - CAAAA- CCTAA
CTTTCAAAACAAGACCTAGA A CTCA
GATAAACAGTTTTTTCCAGT GA
GTCAATTTTC CT
A ----

GAM77604 14918 GAAAACAAGGGGTTTATATC AACAAG - CT- T- CATTAA
TGAGTATATCATTAAATGTT GAA GGGT TTATAT GAG ATAT
TTTCTTCATATAGCACCCAA CTT CCCA GATATA CTT TGTA
ACTTC CAAA-- C CTT TT ------

GAM77615 378 GAAAACATAGTGTTTTTTGT A A--- TTT- ATCAACAAAAATC
GTTATCAACAAAAATCAGCA GAA ACAT GTGT TTGTGTT
CAATCCCACACAATAATGTC CTT TGTA CACA AACACGA
TTC C ATAA CCCT ----------

GAM77655 2398 GAAAAGAATGCAGCAGCCTA ATG CAGCCT C TTACCATATGT
ACTTAGTGTTACCATATGTT GAAAAGA CAG AA TTAGTG
ACTGAATTTGAAACTGACCT CTTTTTT GTC TT AGTCAT
TTTTTC CCA AAAGT- A ----------

GAM77746 16328 GAAAATCTGATGTTCTATTA AAA ATG - ATAT TATT
TAATATGCTATTGCTGAATA GA TCTG TTCTAT TATA GC
TGAATAGAAATACAGGGCAT CT GGAC AAGATA GTAT CG
C ACG ATA A AAGT ----

GAM77792 161 GAAAATTGCCTTAATATCAT AAATTG - T GG AATAGAA
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GGACATGCATATTAAGGAAA CT GGAATTATA GTA CAG GAT
AGGTC GGAAAA C - GG -------

GAM77804 6855 GAAACAAAAAAGATGCAAAA AAAAAA GCAAAA T AACAT
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TTGTTAAAATCCAGTGGTTT CTTTG CTA TTGTT GTAG
C GTGAC- AAA--- T -----

GAM77808 2641 GAAACAAACCTGCAAGAAAT A -- AAGAAAT AAA --- AT AG GAA GACTG
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GAGTATTCTGAACTTGACTG TTTTGT TGGA CG AAAG AGGTGTG TCA AC GTGGGA GAG

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TGAAGTGTGGAAGAAATGAA T
AGGGCGAAGGTGTGTTTT

-

GAM77811 9931 GAAACAAATGCTTCCAGGTG A - CCAG GA TCA ATATAG
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AGAGTCACTCAGTTTTTAAT CTT GTTTAC GGA TA TTTTTGACT TGA
AAAGGCCATTTGTTC - C AA-- A- CAC ------
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CTTACTTTTGACTTAGCTGC CTTTG TAAA GAC ACCTCGT GA TCA GTTTTCA
TCCAACAGTAAATCAGTTTC AC T A-- C T - ----
GAM77825 15115 GAAACAATACTATTCATCAT AA ATT- TTTCCTCAA CAA
TTCCTCAAGAGAAACAATTT GAAAC TACT CATCA GAGAAA
CTCTGGTGCTAAGGTAGGGT TTTTG ATGG GTGGT CTCTTT
TTT GG AATC --------- ---
GAM77838 22964 GAAACACGCTGAGCTCATGG A AC-- A CAT A CTTCTT
AGATGCAGCTTCTTCTGTAG GA AC GCTG GCT GGAG TGCAG
CTCCTAAAGCCCAGCTGAGG CT TG CGAC CGA CCTC ATGTC
TATC A GAGT C AAT G ------
GAM77849 13350 GAAACAGACTGGGCCAATGT C -- CACAAAGAA - TCA- ACCGATGTCCAAA
CCACAAAGAATTCCTGGTCA GAAACAGA TGGGCCA ATGTC TTCCT GG GCACC
GCACCACCGATGTCCAAAGG TTTTGTTT ATTCGGT TGCGG AAGGA CT CGTGG
TGCATTTTCAAGGAAGGGCA - AG ACGGG---- A TTTA ----------
GGCGTGATGGCTTATTTGTT
TT
GAM77865 13601 GAAACATAAATTCAACTTTG AA TC TT AAAA TTTGAAGCAT
TAAAAATCTTTTGAAGCATA GAAACAT AT AAC TGT ATCT
GATAATATTGTTTGGTAAAT CTTTGTA TG TTG ATA TAGA
GTTTC AA GT TT A--- ----------
GAM77882 22432 GAAACCAAGTAATTGCCAAT AC AA----- ATAT CACAAC
ATTCACACAACTGGTTTGTG GAA CAAGT TTGCCA TCA
GTAGAACCAAGACTTGAATT CTT GTTCA GATGGT GGT
C AA GAACCAA GTTT ------
GAM77969 10229 GAAACTGGTGATTGTTGGTG A GA T G-- CT GAAAGACA
ATGGAGCCTGTGGAAAGACA GAA CTGGT TTGTTGG GAT GAGC GTG
TGCTTGCTCATAGTCTTCAG CTT GACCA AACGACT CTG CTCG CGT
CAAGGACCAGTTC - GG T ATA TT --------
GAM77997 1655 GAAAGAAACATGTTCCATAC - TTCCATACAA TAT- TTCGATT
AAGGCTTATGGTGTTCGATT GAAAGAA ACATG GGCT GGTG
CGCCTTATAGCTCATGTATT CTTTCTT TGTAC TCGA CCGC
CTTTC A ---------- TATT -------
GAM78061 11758 GAAAGATATATTCGAATTGT TATATTC TTGT - TTT A TTGAAATTATACATTATT

AAAGATGCTTTTTCTCATGC GAAAGA GAA AAAG ATGC TTCTC TGCA
ATTGAAATTATACATTATTT CTTTTT TTT TTTC TACG AAGGG ATGT
GTAGGGAATTGCATGCTTTT ------- TTT- G TT- - ----------
TTTTTTTTTTC
GAM78075 19593 GAAAGATTGTGCAGATGACT GTGCA T - A G TCGAG
GAAGCAGAAGTTCGAGGCTT GAAAGATT GA GACT GA GCA AAGT
ATGTATCAAGTCTCGGGAGA CTTTCTAG CT CTGA CT TGT TTCG
TCTTTC AGGG- - A A A -----

GAM78100 16380 GAAAGCATGTAGAGCAGTTG GC- GCAG- G A AGAAAATAC
TGATTAGTAGAAAATACACT GAAA ATGTAGA TT TG TTAGT
GACAAGAAGATATTTGCATT CTTT TACGTTT AG AC AGTCA
TATTTC ATT ATAGA A - ---------
GAM78108 21960 GAAAGCCTACTGAATCCGCT A ACTGAA - G ------ CA TGTTTACT
CTGCAGAATCACAGTGTTTA GA AGCCT TCCGCT CT CA GAAT CAG
CTCTGAAATTCATTTAGTGA CT TCGGA AGGTGA GA GT CTTA GTC
AGTAGTGGAAGGCTATC A ------ T A GATTTA AA --------
GAM78109 22536 GAAAGCCTCTGAGAACTTGA CC G- A-- AG - TG TAACC
AGCATATTGTTAACCATGAT GAAAG TCT AGA CTTGA CAT AT T
GATGTCTCGAGGAATCTGAA CTTTC AGA TCT GAGCT GTA TA A
GAACTTTC A- AG AAG CT G GT -----
GAM78110 17515 GAAAGCCTGGTGGGACCACA CC G AC G TG TTC- -- C ATCATTGCTT
GGGGTTGCCATTCAGCTACT GAAAG TGGT GG CACAGGG T CCA AGCT ACTGA AAGGTCAGC

GACAAGGTCAGCATCATTGC CTTTC ACTA TC GTGTTCC A GGT TTGA TGATT TTCCGGTCG

TTTCAGCTGGCCTTTTAGTA AA G -- - GT CTTT CA - ----------
CAGTTTTTCTGGTGACCTTG TCA
TGCTGATCAAACTTTC

GAM78157 17658 GAAAGGATCAGGCTTCCCTA A AGG - TGA --- AA-- - AATGGA
TGAACTGCAGAAAATGCCTA GAAAGG TC CTTCC CTA ACTGCA GAA TGC CT
ATGGAAGTGCAGGAGTTCAG TTTTCC AG GAAGG GAT TGGCGT CTT ACG GA
GTGCGGTACTTAGAGGAAGA - AGA A TCA GGA GAGG T ------
GAGACCTTTT
GAM78161 6949 GAAAGGCAAGCGCTCCAAGG AA GC- - G TTG CC TTTG
ATTTTTTGATTCCTTTTGGC GAAAGGC GC TC CAA GATTTT ATT TTTTGGC
TTTGGCCAAGAAAATGAAAT CTTTCCG CG AG GTT TTAAAG TAA AGAACCG
TATTGAGAACAGCCAGCCTT AC ACA A A --- A- ----
TC
GAM78194 10292 GAAAGTAAGATTATCTCCAG A ATCTC CAAAATG CA AT TACA
CCAAAATGTCAACCAAGAAT GAAAGTA GATT CAGC TCAAC AGA TC
TCTACAGATCTAGTTGAATA TTTTCGT CTGA GTTG AGTTG TCT AG
TGTTGACAAGAGTCATGCTT A GAACA TATA--- A- -- ----
TT
GAM78215 7926 GAAAGTCTGGTGGTTTACTC T GGT CA-- - TCACAATC
AACAACGTTCACAATCACGA GAAAG CTGGT TTACT ACAA CGT
TTGTACATGGTAAATCAGTC CTTTC GACTA AATGG TGTT GCA
TTTC T --- TACA A --------
GAM78283 16165 GAAATACCTGGCACCTGATG T A A AGCA A- T TAACTT
GAGCATGGACTTTTGCTAAC GAAA ACCTGGC CCTG TGG TGG CT TTGC
TTGCAACAGAATCACCTAAT CTTT TGGACCG GGGT ATC ACT GA AACG
GGGGCCAGGTTTTC - - A C--- AA C ------
GAM78290 7785 GAAATAGAACAAAATAGTAT AA CA G CCGTA TTA A TCA
GTGCCGTAGGTAGCTTAAGA G ATAGAA AAATAGTAT TG GGTAGC AGAA GTC
AAGTCTCAGATATTTTGTTG C TGTTTT TTTGTCATA AC TCGTTG TTTT TAG
CTGATCAAATACTGTTTTTT GG -- A TAG-- --- A ---
TGTGGC

GAM78337 16200 GAAATCACTTAAACTAGCAA T TTAAACT TT TTATAA GATGATA
TTGCCCTTATAAAGTGGATG GAAA CAC AGCAA GCCC AGTG
ATACACTGGGCTTTTGCTTT TTTT GTG TCGTT CGGG TCAC
TGTGCTTTT C TTT---- TT ------ -------
GAM78351 142 GAAATCCTCTCGGAGTCCGC A TC--- - T--- ATATT
TTTCATATTGAGTCACGCGA GA ATCCTC GGAGTC CGC TTC
GACTCCCACTCGAGGATCTC CT TAGGAG CCTCAG GCG GAG
C CTCAC A CACT -----
GAM78369 264 GAAATCTTAAACTAAGCACA A A AAG AG- GAC-- A ATCA TACTGAGCC
GCTTCTCTGACACCAGTATC GAA TCTTAA CT CAC CTTCTCT ACC GT ATTTCAT
AATTTCATTACTGAGCCATG CTT AGAGTT GA GTG GAAGAGA TGG CG TAGAGTA
AGATAACAGCGGTTTACAAG A A AAA GTA ACATT - ACAA ---------
AGAAGATGGTGAAAAGATTG
AGAATTC
GAM78390 14770 GAAATGAGGTCGGGTTTATA A GG --- TATT ATTGGA
TGCACTTATTGGTATTGGAA GAA TGAGGTCG TTTATA TGCACT GGT
TTTCTGGTGCAACTTATAGG TTT ATTTTAGT GGATAT ACGTGG TTA
TTTGATTTTAATTT A TT TCA TCT- ------
GAM78426 7190 GAAATGGAATGCATAATGCC GGAA GC GTTCA TAAT
CGTTCAATGTTAATACATAA GAAAT TGCATAAT CC ATGT
TAAGGAAATTATGTAAAGTT CTTTG ATGTATTA GG TACA
TC AA-- AA AATAA ----
GAM78515 7118 GAAATTTAAAATATACATGA T TATA--- AGACACAATCACCAC
TAGACACAATCACCACGTTA GAAATT AAAA CATGAT
TGAATCCTTTTTTTAATTTC CTTTAA TTTT GTATTG
T TTCCTAA ----------
GAM78520 19681 GAAATTTCAGACCTTTGACA T ------ TTGAC TG GGTT
TCAGTGTGGTTGTGCTGATT GAAATT CA GACCT ATCAG T
GCCAGGTTCATAATTGTGAT CTTTAG GT TTGGA TAGTC G
TTC T TAATAC CCGT- GT ----
GAM78565 594 GAACAACTCTAGTGGAACCC ACTCT-- CC- AAATTTCATTAA
CACAAATTTCATTAAGTTAC GAACA AGTGGAACC AC
GGTTTCATTTTATTTCTGTT CTTGT TTACTTTGG TG
C CTTTATT CAT ----------
GAM78652 10078 GAACAGGCTGGCGCTCTAGG - CGC ACGC GTGT CTGA
ACGCTCTGTGTTCACTGATG GAACAGGCT GG TCTAGG TCT TCA
ATGAAGAAACCTAGAACTCC TTTGTCCGA CC AGATCC AGA AGT
AAGCCTGTTT A TCA AA-- AGT- ----
GAM78674 4929 GAACAGTTTTCGGGCATTAG A -- T G AAAAATAATAACACAT
GGAAAAATAATAACACATTT GAAC GTTTTCG GGCAT A GG
GTATGCTTTTGAGAATGGTT CTTG TAAGAGT TCGTA T TT
C G TT - G ----------
GAM78693 7586 GAACATCTAAGAGGTTGGAA TCTA TT AAC - CAT G --- ACGGAGCGGAA
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GGGAAGCCTACGGAGCGGAA CTTGT TCTCC CC TGGGCCC GGGGTGTG AC CTT CGGA

AGGCACATTCACACCGTGTG ---- -- GA- C CC- A ACA ----------
GGGCCCCGGGTAGCCCCTCT
TGTTC

GAM78697 411 GAACATCTTGTAAGATACTC C A-- T C-- - CT TTTA
CTGACATCTTGCTTTAGCAC GAACAT TTGT AGA ACT CTG ACAT TGC
ATGTACAGTACAGTTTCTAT TTTGTG AATA TCT TGA GAC TGTA ACG
GATAATGTGTTT T GTA T CAT A C- ----
GAM78708 17161 GAACATGTTGCTGGTAATCT AT G - AATCTTT G AGGCTTCACA
TTCCAGGGTAGGAGGCTTCA GAAC GTT CTG GT CCAGG TAGG
CACTTAGCCTGGCTCAGCAC CTTG CAA GAC CG GGTCC ATTC
AGGAACGTTC -- G A ACTC--- G ----------
GAM78714 22857 GAACATTCGTGCTGAGCCCT -- - G TTGA---- GATT
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TTATTTAAATGAGTGGGGCT TTTGTG GGTACG G TCGGGG TTTATTATG
GGGGCATGGTAGTGTTT AT G G TGAGTAAA ----
GAM78794 16986 GAACCTCCGTCACATGGCCC CC ACA- C--- GA G CAATGAGA
TGGATATGGGCAATGAGATC GAACCT GTC TGGC CTG TAT GG
GATACACAGAATCGCCAGAT CTTGGA CAG ACCG GAC ATA CT
CGACAGGTTC -- CTAG CTAA AC G --------
GAM78800 17156 GAACCTCTTGCTGGATGCCG C - T C A TCAAGAT
AGGCCAACATCAAGATTGCT GAAC TC TTGCTGGA GCCGAGG CA CA
GACTTTGGCTTCAGCAACGA CTTG AG AACGACTT CGGTTTC GT GT
GTTC - C - A C -------
GAM78812 11387 GAACCTTATTGTGCTCTTGT CTTAT T T T TATTAT---- ATTTT
TGGCTCCTATTATTGGATTT GAAC TGTGC CT GT GGCTCC TGG
TCCATCGTGCCGTTGGAGTT TTTG ACACG GA CG TTGAGG ACC
GCAGCGCACATTTTGTTT TTTT- C - - TTGCCGTGCT -----
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TTCCCGAGAAGGTAATTTCT GAAC TGTGAACA TC AGAAG
ATAGATGTTCGCAATGAGTT CTTG ACGCTTGT AG TCTTT
C AGTA- ---- ATA ----
GAM78820 1815 GAACGACCGTGCTCGTTATC CC TCGTTAT CCG GTTC
TTTATCCGTTCGTGTTCATG GAACGA GTGC CTTTAT TTCGT
AGAGTAAGGTCTCTGCACAT CTTGCT CACG GGAATG GAGTA
CGTTC A- TCTCT-- A-- ----
GAM78842 11588 GAACGTGCCCTGTGCTATGT - - --- TAT TC TG - ACACGT----- ATC GTG-
CGTGCCTGCAGGGACACGTC GAAC GTG CCCT GTGC G G C CTGCAGGG CGG CC
GGC
GGATCCCGTGGGCCTCACAT CTTG CGC GGGA CACG T C G GACGTCCC GCC GG CTG
GCCAGGTCACCAGGTCACCG T A CTG TGT GT GT T CACCTTCCTCT ACT ACCA
TCTCCTTCCACCCCTGCAGT CACATGCC
GTGCTGTTGTGCACGTCAGG CT
GACGCTGTTC GA

GAM78879 13051 GAACTATGTATTATCTTCGA - T TTCG CA AGCA
TTCATTTTCAGCAGAGAACA GAACTATGT AT ATC ATT TTTTC
AATAATTGGTTATAATATAG TTTGATATA TA TGG TAA AAGAG
TTT A T TTAA AC ----
GAM78947 14203 GAACTGGCAGGAAATGCATC C AAA TCAAAA TTAAA AGCGTA
AAAAGACTTAAAGGTAAAGC GAA TGGCAGG TGCA GAC GGTAA
GTATTACCCCTCGTCACTTG CTT ATCGTTC ACGT CTG CCATT
CAACTTGCTATTC - A-- TCA--- CTCC- ------
GAM78987 22485 GAACTTGGGGTTCTTGAAAA AC TG C AAACATT TC- AGACC

CATTGGAGATCTTCAAGACC GA T GGGTT TTGA GGAGA TTCA
TGAATGTTCTCCTCGTCAAA CT G CCCGA AACT CCTCT AAGT
GCCCTGGTC -- GT - GCT---- TGT -----
GAM79006 13089 GAACTTTTTTAAACAACAAC TTAAACAACAACAT TACACGTTCAT
ATTGTCTACACGTTCATGAC GAACTTTT TGTC
ACATTTCCTTCTAAAGGTTC CTTGGAAA ACAG
TCTTCCTTTAC--- ----------
GAM79008 7281 GAAGAAAAAGAAAACCCAGA AGAAAA AAAC ACAACA- AC AACAACCAG AAC

ACAACAGAACCAAAACAACC GA AGA CCAGA GA CAA TGG
AGTGGAACCCAAAAAACCTG CT TCT GGTCT CT GTT ACC
TTGAGTCAAAAAAATCTGGC AAAACG GAAC AAAAAAA GA GTCCAAAAA ---
AAGTCTGCAAAATC
GAM79012 7782 GAAGAAAAGAAATGGGAATA G TGGGA AA A-- CCCC GAAT
AATAATAGTACTCACCCCAT GAAGAAAA AAA ATA TAAT GTACTCA ATC
CGAATGATCATGAGTATCAA CTTTTTTT TTT TGT ATTA TATGAGT TAG
ATTAAATGTAAAACTTTGTT G CAAAA AA AAC AC-- ----
TTTTTC
GAM79032 10010 GAAGAAAGGAGAGATATGCC GAA A A AC---- AACCAGAATA
ATTTACTGTGCAAACCAGAA GAA AGG GAGAT TGCCATTT TGTGCA
TATGCATATGGCTCGGGTGG CTT TCC CTCTG ACGGTGGG ATACGT
CAGTCTCCCTAAATTC AAA - - CTCGGT ----------
GAM79035 11684 GAAGAAAGTCTGCCACTCTC AAG CACTCTCC A CA AACA
CGCTGGATCCACAAACATGC GAAGA TCTGC GCTGG TC CA
AGACCAGCTTCTGTTAGCAG CTTCT AGACG CGACC AG GT
AACTCTTC CA- ATTGTCTT - AC ----
GAM79041 4685 GAAGAAATGGACATTGACTA A GAC TG AG TAC AACACTATGCTAATCAA
CTGTCAAGAAGTTACCAAAA GAAG AATG ATTGACTAC TCA AAGT CAA
CACTATGCTAATCAATTGAT CTTC TTGC TAATTGGTG AGT TTCG GTT
GCTTTCTGAGTGGTTAATTG C AGT -- CT TA- ----------
ACGTTCCTTC
GAM79043 13119 GAAGAAATGGTCTGAATATT AATGGTC TA- G G TGAT- TTTTTT
GTTACTGCCGCTGATTTGTG GAAGA TGAA TT TTACT CCGC TTGTGTT
TTTTTTTTGACATAGTTTGT CTTCT ACTT GA AATGA GGTG GATACAG
GTGGAGTAAGAGAGTTTCAT ------- TGA G - TGTTT ------
CTTC
GAM79055 17450 GAAGAACGAGTAACCTGAAA AAC T C AAA AA A - AATCCCACC
TGAAGGAGCGAGAATCCCAC GAAG GAG AA CTG TG GG GC GAG
CCTCAGCCCCCCAACAGCTT CTTC CTC TT GAC AC CC CG CTC
CCTCAGCTTC GA- C C A-- CC - A ---------
GAM79095 11433 GAAGAAGTGTCACTGGAAGG GAA ----- A AAA- AAGCAGCC
AAATCAAGCAGCCGAAAAGC GAA GTG TC CTGGAAGG TC
CTTTCAGGAAGTTCCACCAT CTT CAC AG GACTTTCC AG
TC AC- CTTGA - GAAA --------
GAM79133 11762 GAAGACAGACCTGAAATCCA C TGAAAT A G TG GTTTTCT
ATGACTGATGTTTTCTGTTG GAAGA AGACC CCA T AC AT
GTGGTGGTGGTGGTTTTTTT TTTTT TTTGG GGT G TG TG
TT T TGGT-- - G GT -------
GAM79167 17113 GAAGACTCACCATGACAACT C ACCA C T GAACATAAA CAATTCA
GGCAGGAACATAAACAGCAA GAAGA TC TGA AAC GGCAG CAG

TTCACTGATGACCAACTGCT CTTCT AG ACT TTG TCGTC GTC
TGTTCTCACCGATCTTC - CC-- C T AACCAGTA- -------
GAM79183 4993 GAAGACTTTGTGATTCAGGC CTTTGT T AA- - G A - A AAC
AAAGGCTGACTGTTACTTCA GAAGA GA TCAGGC AGGCTG ACT TT CT TC CC
CCAACGGGACAGAAAAGGTG TTTCT CT AGTCTG TTTGAC TGG AA GA AG GG
CAGTTTGTGGTCTGATTCCT C----- T GTG G A A C - ---
CTTT
GAM79194 1369 GAAGAGAAGAAATGGGAGCA AA AAGAAA A CA C- GT GA- AG TG G --
GGCAGCCCTCGTCAGCAGAC G GAG TGGGAGC GG GCC TC CAGCA CCGGG CCGCG GGC
CGGA
CGGGAGCCGCGTGGGCGCGG C CTC GCCCTTG CC CGG AG GTCGT GGCTC GGTGC CTG
GCCT
AGCCATTTGCATTCCGGTCT CG GGTG-- G -- AC TG AGG GG GT - TA
GCGTGGGGCTCGGGGATGCT CATTT
GGTGACAGGCCCGGTTCCCG GC
GTGGCTCGCC CG

GAM79221 13483 GAAGAGATTGACTTGTCTAA AGAGATT--- - A C TAGC- T CC
AATAGATTGCAGAT
GCTCCTAGCAGTTAGAAGAA GA GACT TGTCTA G TCC AGT AGAAGAA AGA T
CCAGAAATAGATTGCAGATT CT TTGA GTAGAT C AGG TCA TCTTCTT TCT A
GCCAGATATCCAAAGAATCT AAGTAAATTT T - - TAATA - T- ----------
GGTATCTTTTCTTCTACTAT A CAAA
AATGGACTAGATGTAGTTTT GCCAGAT TC
TAAATGAATC TGGTCTA AG
- ----
GAM79246 2017 GAAGAGGAAGATTTGTGCAG AA TT C-- CCAA ACCA ACTACAA
ACCAAGAGCACCACAGACTA GAAGAGG GAT GTG AGA GAGC CAG
CAACTGCCCAGCTTCATCTA TTTCTCC TTG CAT TCT TTCG GTC
AATACTTGTTAACCTCTTT AA TT AAA AC-- ACCC -------
GAM79254 22102 GAAGAGGCTTTTGTGACCAT CTTTTG C T- - CCT TGTGT
AAGAATTCTGATTCAGTCCT GAAGAGG TGA CATAAGAA TCTGA TTCAGT AC
ACTGTGTGTACTGAACTTAG CTTCTTC GCT GTGTTCTT GGATT AAGTCA TG
GCTTTCTTGTGCTCGTCTTC T----- C TC C --- -----
TTC
GAM79265 2337 GAAGAGGTGGTGCTTCACCA - T TTCACC T ---- CGCCC
GCATGTCCCGGACGCCCTCC GAAGAG G GGTGC AGCA GTCCC GGA
TTCAGGGGCTGCTGCGCCTC CTTCTC C CCGCG TCGT CGGGG CCT
TCTCTTC T T ------ - ACTT -----
GAM79269 10099 GAAGAGTAGTGAGCAACTTA A GAG A AC CT -- CACGCT
CAGCTCTCCAACCACGCTGT GAAG GTAGT CA CTT AGCT C CAAC
TGCAGGAAGCTCCGAGATGA CTTC CATCA GT GAG TCGA G GTTG
AACTACCTTC - AA- A CC AG AC ------
GAM79273 151 GAAGAGTGAATGGCTTGACG G T - T - TAC TA T CA AT- TGGCT
TACTTGCAGTTAACTGTGCA GAA AG GAAT GGC TGA CG TTGCAGT AC GTG AA GGGC
AAATGGGCTGGCTGCCTCTG CTT TC CTTG CTG ACT GT AATGTCA TG CAT TT TCCG
TTCCTACTGTACTGTAACTT G - T T A TTC -- T CC GTC -----
TGATCATGTCTGTTCCTGTT
C
GAM79281 7194 GAAGAGTTAAAAATAGTACA TTA TAC T G T GG CTCTAAAT

GAAATGTGAAGTTTGGTATC GAAGAG AAAATAG AGAAA GT AAGT T TAT
TCTAAATGTGTTGTACTTGA TTTTTT TTTTATT TCTTT CA TTCA G GTG
CTTTCTTTTTTATTTTGTTT TTG TTT - G T TT --------
TTTTT
GAM79304 22817 GAAGATCCTCTGTAGAAGAA A GT A T GCCC GAACTCG
CTCGGTGCCCCTGCGAACTC GAAG TCCTCT AGA GAAC CGGT CTGC
GGCAGTTAACTGCGTTCCTC TTTC AGGAGG TCT CTTG GTCA GACG
TGGAGGACTTT - -- C C ATT- -------
GAM79320 22045 GAAGATGATACTGTTGTGGT GATACT A A TG ACTTAC T TATTC
AGCACTGGACTTACAAGGTG GAAGAT GTTGTGGT GC C G AAGGTG GG
TGGTATTCCCTTACTTTCCA CTTTTA TAACATCG CG G C TTTCAT CC
CGACTGGGGCGCTACAATCT ACTC-- - G GT AGCACC T -----
CAATTTTC
GAM79323 15566 GAAGATGATGTTTTTATTCC - -- TA- ------- GTATCCAA
TCTGTATCCAAAGAGTGCTG GAA GA TGATGTTTT TTC CTCT
TAGAAAACAAAACATCACCT CTT CT ACTACAAAA AAG GAGA
CATTC A CC CAA ATGTCGT --------
GAM79333 10220 GAAGATGGTTTAGAATTATG A ------- A T GTT --- A GTCCA
GTTAGTAACTTTGGAAAACA GAAG TGGT TT GAA TATG AGTAACTTTGG AA ACA
GTCCATGTATTACACCAGAG CTTC ACCA AG CTT ATAT TCGTTGAGACC TT TGT
TTGCTTCGTATATTTCAGAA - CTGTATA A T GCT ACA A -----
TATGTCACCACTTC
GAM79354 2270 GAAGCAAAAGGAACTACACA C CTA --- AT ATTAT
GCTCATGATTATCTAGGGTT GAAG AAAAGGAA CAC AGCTC G
TAAGTGCTTTTCTTTTTTCT TTTC TTTTTCTT GTG TTGGG C
TT T TTC AAT AT -----
GAM79369 1983 GAAGCAATTTCTCTACAGAT AATT--- T G AAAAT GGAA
GGTAAAATGCAAGGAATTGC GAAGC TCTC ACAGAT GT GCAA
CACAAGCAGTCTGTGAGATC CTTCG AGAG TGTCTG CG CGTT
CTTGGGCTTC GGTTCCT - A AACAC ----
GAM79376 11099 GAAGCACGTGGGGCCAGGTG C G - A-- CCTGT TG TAAT
TCCTGTCCATGGCTAATGCT GAAG AC TGGG GCC GGTGT CCA GC
GGTCCTAACACCAACGGCTC CTTC TG ACCC CGG CCACA GGT CG
CCAGTTCTTC T - T CAA ATCCT -- ----
GAM79401 6846 GAAGCAGCAGTGCCGACACT A A TG ------- - GCCTTTG
CGTGGATGCCTTTGATCCAC GA GC GCAG CCG ACAC TCGTGGAT
GATGTGTACGCTCCCGGTGT CT CG CGTT GGC TGTG AGCACCTA
TGCAGCATC A A GT CCTCGCA T -------
GAM79412 17944 GAAGCAGGAGCCGGTGAAAC AGGA GAAA AAGAAG AGAGATATG
CTGAAGAAGGCAGAGATATG GAAGC GCCGGT CCTG GC
GCAAACAGGATTGGCGCTTT TTTCG CGGTTA GGAC CG
---- ---- AAA--- ---------
GAM79427 2228 GAAGCAGTTTTAAGATTCTT TT - - AAGG- AAT
GAAGGCAAAATTTGAAAAAC GAAGCAGTT AAG ATTC TTG CAA
AGTGAATACTTCTAATTGTT CTTTGTTAA TTC TAAG GAC GTT
TC TC A T AAAAA ---
GAM79444 1852 GAAGCCAAGGGTGAGATCAA AA- T GATCA TA AGCCC
GGATAGCAGCCCGTCCTCCT GAAGCC GGG GA AGGA GC
CCCCATCCCCCAAGGGCTTC CTTCGG CCC CT TCCT TG
GAA C ACCCC CC -----

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GAM79464 13441  GAAGCCCCGGTGGCAAGAGT    CCCC  T    A A T    AGCA   AG    A   TA  CT-    TT  AC   AG
         CTGAAGCAGGAAGGATGACT GAAG    GG GGCA G G CTGA    GGA  GATG CTG  GC   GTGGA  GT
TGC  T
         GTAGCCTGTGGATTGTACTG CTTC    CC CTGT C C GACT    CCT  CTAC GAC  CG   CACCT  CG  ACG
A
         CAGTAGGAAACTGTCCTAGC    T---  T    - C -    CC--   CT    -   CC  TTT    --  GA   --
         AAGGCTCCACTTTGCCCCAG    AACTG
         CATCTCTCCCCTCAGCCCTG AGGA
         TCTCCTCTTC          TCCT
                        -----
GAM79467 13454  GAAGCCCTAGAGGTGTCTCT         ------    T   TC     ACTAGAAA
         AATCACTAGAAAGATTAATG GAAGCCCTA     GAGG GTC  TAATC
         ACCCTTTTGCTTTAGGGTTT TTTTGGGAT     TTCC CAG  ATTAG
         T                    TTCGTT    -   TA     --------
GAM79497 19421  GAAGCGCAGCGGAACTCGAC     -    GGAA  C    C   TCC   CCAGTTA
         CGGATCCAACCCAGTTAGTT GAAGC GCAGC    CT GAC GGA   AAC
         ACTTCCTGTCTAGAGTTGTA CTTCG TGTTG    GA CTG CCT   TTG
         GCTTC                A     A---  T   T   TCA   -------
GAM79500 85     GAAGCGGAGCAGGTGTGGGT        ------- A     GG     GA  A  AGACGGAGGAAGGAGCACA
         GTGGGAGTACGAGACGGAGG GAAGCGGA      GC GGTGT  GTGTGG  GT CG
         AAGGAGCACACGACCTCTAC CTTCGCCT      CG CCACA  TACATC  CA GC
         ATGGACACCGGCGAGGAGAT       AGAGGAG  G    GG     TC  -  ----------
         CCGCTTC
GAM79511 1831   GAAGCTAAGCAACTGCATCA       AGCA    CAT-  T   CCAC-    AATC
         TCAGCCACATTCAATCGAAT GAAGCTA    ACTG    CA CAG     ATTC
         TAATACTGTTGTCCCCAGTC TTTTGAT    TGAC    GT GTC     TAAG
         CGTAGTTTT              GCC-    CCCT  T   ATAAT    ----
GAM79535 1954   GAAGCTCTGTAGAACTTAGG   A  TCT    AA--     C--    A ACTACAAC
         CTACAAGACTACAACCTGTA GA GC   GTAG    CTTAGG   TACA G
         TCACTTAAGGAAGTTATTAT CT CG   TATT    GAATTC   ATGT C
         GCTC              - TAT    GAAG     ACT    - --------
GAM79545 2024   GAAGCTGACCGGCGCCCTCT     TG  C     C  CTA   CTT   CCTATCTGTTT
         AAACCTTTGCCCTATCTGTT GAAGC  AC GGCGC CT   AAC   TGC
         TGCACAAGTTGCAGTGTGCT CTTCG  TG TCGTG GA   TTG   ACG
         GTTGGCTTC             GT  -    T  CG-   AAC   ----------
GAM79567 179    GAAGCTGGCCCACCAATGAC       GG-      AA----------------    CCGG
         CCGGGTCAGCCTTGGGGAGA GAAGCT   CCCACC               TGAC
         CCTGGGGGGTGGGAATGGCT CTTCGG   GGGTGG               ACTG
         TC                   TAA     GGGGTCCAGAGGGGTTCCG    ----
GAM79597 21774  GAAGGAAATATGAAAATTAG        TAT    ATTA     TCA---        CATAAAAGATAAT
         GATTTCAGATGTTTGAACAT GAAGGAAA   GAAA    GGATT     GATGTTTGAA
         AAAAGATAATTTTAAACATT CTTTTTTT   CTTT    TCTAA     TTACAAATTT
         GTCAGTAATCTATTTCTTTT        TTT    A---     TGACTG        -------------
         TTTTTTC
GAM79612 17918  GAAGGAAGGGTGTTATTACG       A---   TGTTATTAC      GCT    GCACGA
         GAAAAAGCTAACGGCACGAC GAAGGA    GGG        GGAAAAA   AACG
         GTTTATTTTTCCCCCACAAT CTTTCT    CCC        CCTTTTT   TTGC
         CTTTC                 AACA  ---------       AT-    ------
GAM79615 13616  GAAGGAATAAAGGATCTTCT     --    A  AT-   C TG  AAAAAA   TTTAC
         TGGGAAAAAAGTGTTTACCA GAAGG  AATAA GG   CTT T  GG     GTG
```

CACCTGATAAGTTGCCATTG CTTCC TTGTT CC GAA A CC CAC
TTCACCTTC AC A GTT T GT A----- -----
GAM79627 2247 GAAGGACATATACATAATTA A AT-- A AG--- G TAGG
GCCTGAGCTAGGGTTGAGGA GAAGG CAT AC TAATT CCT AGC
AGAAAATTGAGTTGAAGTGC TTTCC GTG TG GTTAA GGA TTG
CTTT - AAGT A AAGAA G ----
GAM79657 13429 GAAGGAGGAGACCAAGGAGG GACCA- G ----- GAGGAGA
ATGCTGAGGAGAAGCAATAA GAAGGAGGA AGGA GA TGCT
ATCGTCTTATTTAATTTTCT CTTTCTTTT TTCT CT ACGA
TTC AATTTA G AAATA -------
GAM79658 15831 GAAGGAGGCACTATGGCCTT GAG AT G - T ATTT ACATC---- G ACAGC
GTCTGGGATCTCAGATTTTG GAAG GCACT GGCCTT TCT GGGATC CAG TGGCA TCA CC
GCAACATCTCAGCCACAGCG CTTC CGTGA CCGGGA GGA CCCTGG GTC GCTGT AGT GG

GGTGAAAACTACAGTGTCGT AA- -- - A - CTCT GACATCAAA G -----
CTCCTGGGTCCCAAGGAGGG
CCAGTGCAACTTC
GAM79665 21951 GAAGGAGGTTTTTTCACATT G -- ----- GTT - AGGC
TGGTTCACAACTAGGCAGTA GAAG AGGTTT TTTCA CATTTG CACA ACT
TGTGTGCAAGTGACAGCTGA CTTT TCCAAA AAAGT GTGAAC GTGT TGA
AAGCAAACCTGTTTC G CG CGACA GT- A ----
GAM79668 17717 GAAGGAGTCCCAGGAAGCCC A -- --- AG C A CAT AT C GA CCGA
CGTTGGCCACAGCCATGCCA GAAGG GT CC CAGGA CC CGTTGGCCAC GC GCC CGT GGT CC

TCGTCGGTGACCCCGAGGCA CTTCC CG GG GTCCT GG GCGACCGGTG TG TGG GCA TCG GG

GCTCACGCGGTTGTCGTGGC - CT CAC CA A C T-- C- C AC ----
CAGCGAGGACTCCTGCACGG
TCGCCCTTC
GAM79672 7239 GAAGGAGTTTCTTCCAAACT TT- TCCAAACTT TCTGGATAC
TCACCATCTGGATACTGGTG GAAGGAG TCT CACCA
TTTCTTTACAGATTCCTCCT CTTCCTC AGA GTGGT
TC CTT CATTTCTTT ---------
GAM79677 2419 GAAGGATATAAAAAGAAAAC AA AC- ----- CCCTCT
TTAAAGGCCCTCTTCTCATT GAAGGATATA AAGAAA TTAA AGG
ATTAACAGTTTCTTATGTAT CTTCCTATGT TTCTTT AATT TCT
CCTTC A- GAC ATTAC ------
GAM79705 10553 GAAGGCAGTGCCCCCAGTGC A CCCCCA AGTGA C AGAA
TAGTGATGCCCAGAAGGACA GA GGCAGTG GTGCT TG CC
AGGAAGCATCCCCACTACTG CT CCGTCAT TACGA AC GG
CCCTC C CACCCC AGGA- A ----
GAM79726 15133 GAAGGCGGGACCCGGCAGAA A --- GGCAGAA- G - GGAAG
TGGCTCCTGTGGAAGACAGG GA GGCGGGA CCC TG CT CCTGT
TGGGCAGAAGAAAAGGGGCG CT CCGTCTT GGG AC GG GGACA
TTCTGCCATC A GCG AAAAGAAG G T -----
GAM79727 250 GAAGGCGGGCCAAGTCAGCT AAG-- G- AA AGCTG AG AGGA
GGCACAGAGGCCAGGAGGTT G GCGG CC GTC GCACAG GCC
GCTGTGCAGGACAAGGAGCC C CGCC GG CAG CGTGTC TGG
GCAAGGAC AGGAA GA AA GA--- GT ----
GAM79739 424 GAAGGCTGAGGGCACCGTGT GAGGG A A ---- A T A -- AGCA

TCACCGAGGAAGACTTCCAG GAAGGCT CACCGTGTTC CCG GGA AG CT CC GAAGT TCC

AAGTTCCAGCAGGAATACTT CTTCCGG GTGGCACGGG GGT CCT TC GA GG CTTCA AGG

CGGCAGCTAGGCTCCCTGGA AGAA- A C CGGA - C - TA ----
GGGCACGGTGAAGAGGCCTT
C

GAM79750 10374 GAAGGGAAGAATTAACTTTG AG A- AG--- CTTATTTAATC
AGAGCTACTTATTTAATCTG GAAGGGA AATTA CTTTG AGCTA
GTTAAAGGCAAAGACTGGTT TTTTCCT TTGGT GAAAC TTGGT
TCTCCTTTT CT CA GGAAA ----------
GAM79777 10363 GAAGGGCTCAATAAAGTTTG AATAAAG GCCAAAAAAA
TGTTTTGCCAAAAAAAAAAA GAAGGGCTC TTTGTGTTTT
TACAAAAAAACCCGGGCCTT TTTTCCGGG AAACATAAAA
TT CCCAAAA ----------
GAM79778 7495 GAAGGGCTCCACCATGGAGC --------- A-------- G- GGGA
GCTGGGGACAGAAGCACATG GAAGGGCTC CACCATGG GC CTG
ACCGCCGTGGTGAAGCTGTT TTTCCCGGG GTGGTGCC CG GAC
CGGGCCCTTT CTTGTCGAA GCCAGTACA AA ----
GAM79783 22371 GAAGGGCTGCAGTGACCCCT CT GA--- - TG A- AGA ATTG
CCTGGCCAGCAGAGGTATTG GAAGGG GCAGT CCC CTCC GCC GC GGT
GCCCAGCCAGGCTGGGGGAG CTTCCC CGTCA GGG GGGG CGG CG CCG
GGCTGAAACTGCTTCCCTTC TT AAGTC A GT AC AC- ----
GAM79850 16068 GAAGGTGCTGACTTCCTTGG TGACTT GATG TAAAGCACC
GAGATGCCATAAAGCACCTG GAAGGTGC CCTTGGGA CCA
GATGATCTCAAGGGCACCTT TTTCCACG GGAACTCT GGT
T ------ AGTA ---------
GAM79858 13157 GAAGGTTAAGCTGGCTGGTC --- ---- GG- G TGAAATATTATAAGGT
CTGAAATATTATAAGGTGGA GAAGGT TAA GCT CT GTCC
TGAGAATGGCAAAATTAGTC CTTCCG ATT CGG GA TAGG
GCCTTC CTG AAAA TAA G ----------
GAM79859 22925 GAAGGTTAAGCTGGCTGTCC --- GCTG C GAAA ATAA
TGAAATATTATAAGGTGGAT GAAGGT TAA GCTGT CT TATT
GAGAATGGCAAAATTAGTCG CTTCCG ATT CGGTA GA GTGG
CCTTC CTG AAAA A GTAG ----
GAM79860 10257 GAAGGTTAAGCTGGCTGTCC --- GCTG --------- AAATATTATA
TGAAATATTATACAGGTGGA GAAGGT TAA GCTGT CCTG
TGAGAATGGCAAAATTAGTC CTTCCG ATT CGGTA GGAC
GCCTTC CTG AAAA AGAGTAGGT ----------
GAM79925 7124 GAAGTCAGAGGAGGAGATTG T- GAG G ACTTTCTT ATCCCAAAATC
ACTTTCTTCGTTCCAATCCC GAAG CA GAGGA ATTG CGTTCCA
AAAATCTGGAATGTTCATAG CTTC GT CTCCT TGAT GTAAGGT
TGTCCTCAATGTCCTTC CT AA- G ACTT---- ----------
GAM79935 2550 GAAGTCATTTTTTTTCTTGT TTT TT GTCAT TTTT- TAAG
CATTCCTTTTGTAGTAAGTT GAAGTCAT TT CTT TCC GTAG
GCTGTTTGGATAAAAGTTGA TTTTAGTG AG GAA AGG CGTT
TGTGTGATTTT TGT TT AAT-- TTTGT ----
GAM79943 16133 GAAGTCCGGGTTCAAATTCC ----- TT A - ATTCGGAA
CCGAATTCGGAATTGGCGGA GAAGT CCGGG CAA TTCC CCGA
AATTGGCCCCGGGAAGGGCT CTTCG GGCCC GTT AAGG GGTT

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        TC                GGAAG    CG  A   C   --------
GAM79962 10060  GAAGTCTGACTCTAAAGTTC  A T   C   AA     ---   T  ATA  -   AA   TGAATTTATTT
        ATATTCTTGATATAGATAGT GA G CTGA TCTA  GTTCATA   TTCT GAT   GAT AGTT  TCCC
        TAATCCCTGAATTTATTTGG CT C GGCT AGAT  CAGGTAT   AAGA TTG   CTA TCAA  AGGG
        GAAACTCATCAGTTTAGAAA  - -   A   AC     CCA   T  A--  C   --   -----------
        CCTATGGACCATAGAATCGG
        CTC
GAM79976 13378  GAAGTGAAGGACCCCGACGG     GAA  AC   GA  GCAA   G      CCCG
        CAAGGTGGTGCTGTCCCGGC GAAGT   GG  CCC  CG    GGT GTGCTGT
        AGTACGGCTCGGAGGGCCGC CTTCG   CC  GGG  GC    TCG CATGACG
        TTC               ---  --   AG  ----   G      ----
GAM80035 13243  GAAGTGTCTTCTTGAGTGGT    T  CTTCT      AA     CCCTGTAGTTATT
        AATGGGCACCCTGTAGTTAT GAAG GT    TGAGTGGT  TGGGCA
        TTGCTCAGAACCACTCACAC CTTC CA    ACTCACCA  ACTCGT
        ACCCTTC             C  CAC--      AG     -------------
GAM80070 7579   GAAGTTGAGAAATGTGACAG    TT     TGT  C    CATTT    ATGG
        AGGCATTTAGAGTATGGACT GAAG  GAGAAA   GA AGAGG    AGAGT
        TTTCTTTTCTTTTTCTTTTT CTTT  TTCTTT   CT TTTCT    TTTCA
        CTTTTTTTC           TT     TT- T    TTTCT    ----
GAM80071 13908  GAAGTTGAGGATGACGATGA      A-  A--   - GA    ATGA     CTTT
        TGATGAGCCAATCTTTGTTG GAAGTTG  GG   TGA C  TGATG    GCCAAT
        GCGAGATATCAAGTTCAAAA CTTTAAC  CC   ACT G  ACTAT    CGGTTG
        CCAGCAATTTC             GA  AAA   T A-    AGAG     ----
GAM80077 22920  GAAGTTGGAGCAGGGGTGGG      GA  A-   TG  CG-  GTCA   AA   ATCAA
        CGGAGGTCACCTAACCAATC GAAGTTG  GC  GGGG  GG   GAG    CCT  CCA
        AATGGAAGGCAACTCACACC TTTCGAC  CG  CCTC  CC   CTC    GGA  GGT
        TGCTCCAAGCCTCAGCTTT       TC  AA   GT  ACA   AAC-   A-   -----
GAM80079 21757  GAAGTTGTATGTATTCATAG     T   G     TAGTTA   GGAATCGGGTA
        TTAAAGGGAATCGGGTACTT GAAGT GTAT TATTCA     AAG
        GCTTGTTGAATAATGCACTT TTTCA CGTA ATAAGT     TTC
        T                 -   -     TGTTCG  -----------
GAM80089 7863   GAAGTTTATTGTCCATAGAG   A     T   CATA   ACTTA   -   AAAAC
        ACTTAAAGGCAGAAAACCTG GA GTTTAT GTC    GAG     AAG GCAG
        CTCTTGGATGCTTGATATGA CT CAAGTA TAG    TTC     TTC CGTC
        ACATC             A     -   ----   GTAGG   T   -----
GAM80163 6822   GAATAATTTGCAGTGTTCCA    AAT    GTG    ACAA     C   A  AA-  TTCTT
        CAAGTCCTTCCTGATCAAAG GAAT   TTGCA   TTCC    GTCCTT CTG TC   AG
        TTCTTCTCAGGACAGTAAGG TTTG   AATGT   AAGG    CAGGAA GAC AG   TC
        ACAAGGAAAGGTGTAACGGT    GC-    GGA    AA--     T   -  GAC  -----
        TT
GAM80193 17516  GAATAGAAGAGAAACCAGTA    AGAAG    C    AA-   T  GG----     TATGGCTT
        AATCTCTGGCATGGGTATGG GAAT    AGAAA CAGT   ATC CT     CATGGG
        CTTCTCATGAATTTAAGGAT CTTA    TTTTT GTCA   TAG GA     GTACTC
        GACACTGATTTTTAGGGATT    GGGA-    A   CAG   -  ATTTAA     --------
        C
GAM80200 22096  GAATAGATCTGTTTCTTTCT    A   T   TCTT    C-    TGAT
        GTCCACAATGATTTGTGTCA GAAT GATC GTT    TCTGT  CACAA
        TAGACATAATTGATCAATTT TTTA CTAG TAA    AGATA  GTGTT
                        A   T   TAC-    CT    ----
GAM80205 10901  GAATAGCTCCAAACCCTAAG     GCTCCAAAC   A--   AA   TTTT
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TGTAAATATTTTTGTCCACA GAATA CCTA GTGT ATA
CAAATAGGCACACATATATT CTTAT GGAT CACA TGT
C ATACACAC- AAA CC ----
GAM80218 11168 GAATAGTCAAGGTTTAATTT T C TA - ATCTAA
TGCTTTAATCTAATAAAGCC GAA AGT AAGGTT ATTTTG CTTTA
GAAGTGGGACTTTTATTTTT CTT TTA TTTCAG TGAAGC GAAAT
C T T GG C ------
GAM80317 7746 GAATCAGAAAGTTCTAATTA T A CTA AAA TATATT-- ATATT
GAAAATCAAATATATTGCAT GAA CAG AAGTT ATTAG ATCAAA GC
ATTGTTAAAACATTTTGGTA TTT GTC TTCAA TAGTC TGGTTT TG
CTGATCAACTTCCTGCTTT C C C-- A-- TACAAAAT -----
GAM80388 10835 GAATCGTCTCACCCGCAGTA TCTC- G GTAACCA ACGTCAA
ACCACTGAACGTCAATCAGC GAATCG ACCC CA CTGA
CCTCCATGGGGTTCTTTCGA TTTAGC TGGG GT GACT
TTT TTTCT - ACCTCCC -------
GAM80409 1894 GAATCTGAGTTTTTAATCAG - T- TTA TAAA TGAT TTGAT
TAAAGTCTGATGTTTTGATA GAA TC GAGTTT ATCAG GTC GTT
ACTTGATGTTTTGATGGTAG CTT AG CTCAGA TAGTT TAG CAA
ACTCTTGAGTTC G TT TGG TTG- TT-- -----
GAM80415 16348 GAATCTGGGGATTGGGAGCT AT A--- A TTACTCT - G- TGCGGT
GATGAGTCTTACTCTGTTGC GAATCTGGGG TGGG GCTG TGAGTC GTTGC CCA GC
CCAGGCTGCGGTGCAATGGC CTTGGGCCCT ACCT TGAC ACTCGG TAGCG GGT CG
GCGATCTTGGCTCACAGTAA CC CCAA - TTC---- C AA ------
CCTCCACCTCCCGGGTTC
GAM80466 7797 GAATGACAGGTAATTAATCT --- AATTA- ATACAAGAC
GTAGATATACAAGACATCTG GAATGAC AGGT ATCTGTAGAT
TAGATATACAAGCCTTTGGT TTTATTG TCCG TAGATGTCTA
TATTT GTT AACATA ---------
GAM80476 10312 GAATGACTGCAACTGCCTGC GA AC CT- C TG A ------- - TGC
ACGTGGTGGAGCCCATGCCA GAAT CTGCA TGC GCA G GTGG GCC CATG CCAG
GTGCCTGGCCATGACGTGGA CTTG GACGT GCG CGT C CATC CGG GTAC GGTC
GGCCTACTGCCTGCTGTGCG -- GA TGT C GT - AGGTGCA C ---
AGTGCAGGTTC
GAM80493 16973 GAATGAGGGTCTGGGCACTC T - GT GG A AGCT GGTAGG
CTGGGGACAGCTGAGTGGTA GAA GA GG CT GC CTCCTGGGGAC GAGT
GGACTCCTGGGTCCCCAGGG CTT CT CC GA CG GGGGACCCCTG CTCA
GGCAGGTCCATCTTC - A TG -- - GGTC ------
GAM80517 9968 GAATGCATAAGGAGTTGGGG ATAAGGA TG G A TAACTTT
CCTGTTAAGATAACTTTTCT GAATGC GT GGGCCT TT AGA
GGAGGGGCTTACGGGAAAGG CTTACG CA TTCGGG AG TCT
CATTC GAAAGGG -- G G -------
GAM80542 4904 GAATGCTAATACACCAACCA TAA--- A CA-- GG TG GTAAGTA
AGTGGGGTGGATAGTAAGTA GAATGC TAC CCAAC AGTG G GATA
TGTCTGCAATATTAACAGTT CTTATG GTG GGTTG TTAT C CTGT
GGGTGGAGACTGTATTC TCAGAG - ACAA AA GT -------
GAM80554 7079 GAATGCTTTTAAGAACCAAG A AAGAACCAAGGACAAA AGTATT
GACAAATTTTCAGTATTGAA GA TGCTTTT TTTTC
GAAGACAACATACATAAAAA CT ACGAAAA AGAAG
GCACTC C ATACATACAACAGA-- ------
GAM80567 7474 GAATGGATCTGTTTTCCAAG TCT GAGATT AAATTTTGTA

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          AGATTCTGAGAAATTTTGTA GAATGGA  GTTTTCCAA    CTGAG
          TTCAGCAGTTGGAAAGCTCT CTTATCT  CGAAAGGTT    GACTT
          CTATTC               CT-      GAC---    ----------
GAM80582 15276  GAATGGCTTCGGTTATTGCC     CTT  TT   CTTT--- TT--   ACTC
          TTTCCTTGGTGTACTCGCAC GAATGG  CGG ATTGC     CC   GGTGT
          TTCTTGGCTACCTTGCAGTT CTTACC  GCT TGACG     GG   TCACG
          CGTCCATTC            T--  --   TTCCATC TTCT    ----
GAM80600 16340  GAATGGTAAACAGTAAAAGA     --   -    ----   AATTACATGAAAA
          GTAATTACATGAAAAGCTCC GAATGGT AAACA GTAAAA   GAGT
          ATATTTTGCATGTTTCAACT CTTGTCA TTTGT CGTTTT   CTCG
          GTTC                 AC   A    ATAC   ----------
GAM80670 11673  GAATGTTGCTGTCAAAGGGC   G G   AAA  C   CCT-   TATAA
          TGCCCCCTACCTTATAAGGG GAAT TT CTGTC  GGG TGCCC   ACCT
          TTGCTGGGCATTTGAAGGCA TTTA AA GACGG  TTT ACGGG   TGGG
          GGAAGATTT            G G   AAG  -   TCGT   -----
GAM80683 13232  GAATGTTTTCTACCAGTGTG     TT----   C   T  TG G   CATGCAT
          CTTGGGTTTGCCATGCATGC GAATGT    TCTAC AGTG GCT  G TTTGC
          GAGGCTGAGTTGCTGTAGGC CTTACG    GGATG TCGT TGA  C GAGCG
          GTCTTGCATTC            TTCTGC   -   -  GT G   -------
GAM80705 6892   GAATTACAATTTGACATGAG      AA       AGAT  G  G-  GATA
          ATTTGGGTGTGGATACAGAG GAATTAC  TTTGACATG   TT GGT  TG
          CTGAACCATGTCAAGGGTAG CTTGATG  GAACTGTAC   AA TCG  AC
          TTC                  G-       C---  G   AG  ----
GAM80727 2609   GAATTATACAGGTAGAGATG     ----------    G -        --   T C--  TAT   CCA
          TATGCAGATGTGTCCATATA GAATTA          TACAG TA GAGATGTATGCA  GATG GT   CA   ATGT
          TGTCCATATTTACATTTTGA CTTAAT          ATGTC GT CTCTACGTATGT  TTAC CG   GT   TACA

          TAGCCATTGATGTATGCATC     TACACAAGAATATC    G  T        AG   - ATA  TT-   ---
          TCTTGGCTGTACTATAAGAA TATTT
          CACATTAATTC


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GAM80736 10898  GAATTATGGTTAGTAACTTT   T   GTT        --- A   GTCCA
          GGAAAACAGTCCATGTATTA GAA TATG   AGTAACTTTGG   AA ACA
          CACCAGAGTTGCTTCGTATA CTT ATAT   TCGTTGAGACC   TT TGT
          TTTC                 T   GCT        ACA  A   -----
GAM80778 15707  GAATTCTGATCATACCAGTT    -  A-------  T      CCAT-     TTA   GATC
          TCCATCAGGATTTATCAGAT GAATT CTG      TCA ACCAGTTT    CAGGAT   TCA
          CTGAAACATCCTGCAGATAA CTTGA GAC      AGT TGGTCGAA    GTCCTA   AGT
          GCTGGTTGACAATCCCACAG     C   ACCCTAAC  -      TAGAC     CAA  ----
          CAGTTC
GAM80816 15998  GAATTGGACACTTTGTCCTT     G   - T  -      A   ATATCAC
          CTTAGGTATATCACATCAAG GAATT GACA CT TGT CCTTCTT GGT
          AGGGCATATGGATGTTGGAT CTTAG TTGT GG ATA GGGAGAA CTA
          TC                   G   A T  C      -  -------
GAM80835 16238  GAATTGTGCATAACCCGGAT    T-   ATAACC    CT   A        CGGATGTTAT
          CTTGTATCTTTGTATAACGG GAAT  GTGC     CGGAT  TGT TCTTTGTATAA
          ATGTTATTTGTACGAAGGGC CTTG  CACG     GCTTG  ACG GGAAGCATGTT
          AGTTCGTAAACAGCACTTGT     TT   ACAAAT    --  -        ----------
          TC
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GAM80862 16924  GAATTTCAACTGGGTGAATC    TTCAA   GTGAA  G  AATATT  T  ATAA
                TGTAAAATATTTCCTGGATA GAAT    CTGG    TCT TAA    TCC GG
                ACTTGGATAAACTTGGAGAA CTTA    GACC    AGA GTT    AGG TC
                CCAGATTATATTC         TATTA   A----  G  CAAAT-  T ----
GAM80863 11553  GAATTTCAAGAACAGTTAGA      AA A  -  A  G CG    AGCTAAGAAG
                GTCAGCACGGAGAGAAGCTA GAATTTC  GA CAGT TAG GTCA CA  GAGAGA
                AGAAGTCTTTCAATGATGAT TTTGAAG  CT GTCG ATC TAGT GT  CTTTCT
                GCTATGCTGATCGAGAAGTT      AG A   T  G   A AA    ----------
                T
GAM80876 14188  GAATTTCCTGTACCGTTTTC  ATT     CC  TTT-    TTTGCCAAATTTCTACTT
                TGTTTTTGCCAAATTTCTAC GA  TCCTGTA  GT   CTGTT
                TTAACAGCATCACCTTATAG CT  AGGATAT  CA   GACAA
                GATTCTC           CTT     TC  CTAC    ------------------
GAM80885 1863   GAATTTGAGCTTGTCTTTTT   TTT     TCTTTTT  -  TT   TTCCT
                GCCCTTGGGCTTCCTGCCCT GAA  GAGCTTG     GC CC  GGGC
                GGAGTCCTCAGGCTTCTTTT CTT  TTCGGAC     TG GG  CCCG
                C                TTC     TCC----  A  T-   -----
GAM80893 10710  GAATTTGGGTCCCTTTGTGG  A      CC   GTGGTACG     ----------  G-  TT    GT  A-
                TACGTGCTTTCCTTCGTAGT G ATTTGGGT  CTTT      TGCTTTC        CTTC  TAG  CAACAA  GA
                TCAACAAGTGAAGGTTTATT T TAAATCCG  GAAG      GTGAAAG        GAAG  ATC  GTTGTT  CT
                ACTGAAGATTGATCCATTGT  G      TA   AAAAA---     AAGTAAAAAAT   AA  C-    AC  AG
                TGCCTAAAGAAGTAAAAAAT     ATTACTGA
                GAAGAAAGTGAAAAAGAAGA GGTTT
                TGCCTAAATGT        TTAGA
                        --------
GAM80964 10778  GACAAACTTCGTCACAGACG   AAACT    ACA  -  C       ACGCA   ACCCT
                CGCGGGTACACACGCACCGG GAC    TCGTC   GA CG GCGGGTACAC    CCGG
                ACCCTCCGGGAGAGTGTACC CTG    AGCAG   CT GC CGTCCATGTG    GGCC
                TGCCGATCATAGACGACGTC   C----    ATA  A  -       AGAG-   -----
GAM81008 2387   GACAACTGCCCCAACTGCTC     T    AA   TC-  ------- GCCCC
                TTCCCGCCCCGGTCACAGTG GACAAC GCCCC  CTGC   TTC     CC
                AAAATGTAGACGGGGTCGTT CTGTTG TGGGG  GATG   AAG     GG
                GTC                C    CA   TAA   TGACACT  -----
GAM81011 17054  GACAACTGTCCTTAGTGTGA      G  -----   T--      ATGTCCAGA
                GAAAATGTCCAGATTTCTCA GACAACT TCC    TTAG   GTGAGAAA
                TCCTCTGGCCAATGGAAGGT CTGTTGG AGG    GGTC   TACTCTTT
                TGTC                A   TAACC   TCC      ---------
GAM81014 443    GACAAGAAATAGTATCATTA     AAAT   A   TTA     ATT   AGATTCTA
                TTCACGCATTTGGAGATTCT GACAAG   AGT TCA   TTCACGC   TGG
                ACCAGTGTGAAGATTGACAC CTGTTC   TCA AGT   AAGTGTG   ACC
                TCGGACTTGTC           AGGC   C   TAG     ---  --------
GAM81021 13634  GACAAGAGAATGACAAGGAG    A  A-  A  A   AA   AAA-   GAGAATCA
                AACCTAAATTTGGAGAATCA GACA GAG  ATG CA GGAG  CCT    TTTG
                CAGGGACCAGGAGCTCCTGC CTGT CTT  TAC GT CCTC  GGA    GGAC
                ATGCTTCCTGTC          C   CG  -  -   GA   CCAG   --------
GAM81044 4705   GACAAGGTCATTGTGCCCTG   CA      G   C  GCCA   ACAACGTAAA
                CCACGGGACAACGTAAATCT GA  AGGTCATT TGC CT   CGGG
                GGAAAGAGCAGAATGGCTTC CT  TTCGGTAA ACG GA   GTCT
                CTC               CC      G   A  AAG-   ----------
GAM81055 17055  GACAAGTTTCAAAGGAAGAA    AGTT   -     AA   G    CTC    ACAAAA
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CATGTATGACTCATGGCCAC GACA TCA AAGGAAG CAT TATGA ATGGCC
AAAAGGCTATTTATAGATGG CTGT AGT TTTCTTC GTA ATATT TATCGG
CTTCTTTCTGATTATGTC ATT- C G- G --- ------
GAM81068 17548 GACAATCAGGATATCTCAGG AATCA TATCTC CAAGGTGGAACA
AGGTCCAAGGTGGAACAGAC GAC GGA AGGAGGTC
CTCTTTGCCTTTCCCAGCGT CTG CCT TTCTCCAG
C CGAC- TTCCGT ----------
GAM81069 7300 GACAATCCCACAGCAGTTCT C-- ACAGCA T TTTTCCTTTT TTTT
TTTTTTTTTCCTTTTTCTT GA AATCCC GTTCTTT TTT TCT
TTTAGATTTTTTTAAACAGA CT TTAGGG CAAGAGA AAA AGA
GAACAAAGGGATTCACTC CAC AAA--- C TTTTTTT--- ----
GAM81074 15215 GACAATGGCAGCATCTACAA A G CTACA-- GA TT- TT TATCA GAAA
CCCTGAAGTTGCTTGATATC GACA TGGCA CAT ACCCT AG GC GA CAGAG
ACAGAGGAAACTCTGCATTC CTGT ACCGT GTA TGGGA TC CG CT GTCTC
TCGCTTCCTGGAGGGTGTCC G - ACGCCTG GG CTT CT TAC-- ----
GCAATGTGCCAGTGTC
GAM81075 11141 GACAATGGCTCCGGGATGTG A C - -------- CTGG
CAAAGCTGGTTTTGCTGGGG GACA TGGCTC GGGA TGT GCAAAG
ACGACGCTCCCCGAGCCGTG TTGT GCCGAG CCCT GCA CGTTTT
TT - C C GCAGGGGT ----
GAM81113 22754 GACACACTTGGCTTGGGGCA C TG T----- AG G - TT TTTTTTTTTTTTT
GGTGTTGAGGTTTGATTTTT GACACA T GCT GGGGC GT TTG AGG TGA
TTTTTTTTTCACCCTACAAA TTGTGT G CGA CCCCG CA AAC TCC ACT
CAGGCCCCCTACACAGCTGG A GT CACATC GA - A C- ----------
ATGTGTT
GAM81132 4776 GACACAGTCTATTGACCCAA --- A C--- T AATACC
AACTTCAGGAATACCTCTGT GACAC AGTCT TTGACC AAAACT CAGG
AGTTTTAAGAGGTTAGAAGA TTGTG TCAGA GATTGG TTTTGA GTCT
CTTCCGTGTT CCT A AGAA T ------
GAM81154 11779 GACACCCAAGGAGGCTATTG ---- AG CTATTGA CCTACATTGACAAGAAA
AGGGCACCTACATTGACAAG GACAC CCA GAGG GGGCA
AAATGCCCCTTCACTGGTAA CTGTG GGT CTTC CCCGT
TGTGTC TAAT CA ------- ----------
GAM81156 2229 GACACCCACCGCAACTGTCT AC- -------- AAC T C ATATCAC
GTCTCATATCACGAACAGCA GAC CCACC GC TG CTGT TC
AAGCGACCCAAAGGTGGATA CTG GGTGG CG AC GACA AG
GTC ATA AAACCCAG AA- - - -------
GAM81159 423 GACACCCCCCCTAAGATGGC CCC A A G CTT CCCAA CACGT
TATCTCTTTGCTCCCAAACC GACACC CCT AG TG CTATCT TGCT AC
ACGTGTGATGAGGCAGGATG CTGTGG GGA TC AC GGTAGG ACGG TG
GGCAGCTCAGGTGGTGTC T-- C G G --- AGTAG -----
GAM81182 1389 GACACGGACCTACGACCCCG C A A C AGGG- AA -- GCGA
AGGGGTTCAAGAAGCGGGCG GACA GGACCT CG CC CG GTTC GAAGC GGGCG
GCGATGCCTGTGCTTCCGGA TTGT CCTGGA GC GG GC CGAG CTTCG TCCGT
GCGAGCGCGAGGACGAGGTC - - A A GCGAG GC TG ----
CTGTT
GAM81188 6775 GACACGTAGGCGCTACGCAG A GG- TACGC CC G GGTT
GACCGACGGGAAGGTTTTCC GAC CGTA CGC AGGA GAC GGAA
AGTTTCTTAATGCGAAATGC CTG GCGT GCG TTCT TTG CCTT
GAGTC A AAA TAA-- -- A ----

GAM81204 15737 GACACTCTGAGCAGTTGCTA - GA TG T A- CCA C GA T - GCGTA
GAAGTCCCACACTGATACCT GACAC TCT GCAGT C AG AGTC CA T TACCTAG CA TGTC
AGTCATGTCGCGTAGACACT TTGTG AGA TGTTA G TC TTAG GT G ATGGGTC GT ACAG
GTCTGGGTACTGTTGCAGAT C GA GT T GA AC- T TC T C -----
TAGCTTGTGATTGTAGAGAC
GTGTT
GAM81206 2084 GACACTCTTGATGACCTGAT T A AC T- C GAGT AGTGCCCA
AGCAGCTGTGAGTACCAGAG GACACTCT G TG CTGA AG AGCTGT ACCAG
TGCCCACTGGTTCCAACAGT CTGTGAGA C AC GACT TC TTGACA TGGTC
TCTTCTCAGACCACAGAGTG - - CA CT - ACCT --------
TC
GAM81226 17436 GACACTTAGGATCTACAGCT AG C GTTA A TTGACCT
GTTATCATGTTGACCTCAGA GACACTT GATCTA AGCT TC TG
AGTAAGCTTGGATTGAGTGT CTGTGAG TTAGGT TCGA AG AC
C -- - ATGA - -------
GAM81236 10433 GACACTTTTGGATTTTCCCG - G- TT C TCCAACACC
TCTTTTCCAACACCAAGGAT GACAC TTTT GAT TC CGTCTTT
GAGATTATCAAAAGATGTGT CTGTG AGAA CTA AG GTAGGAA
C T AA TT A ---------
GAM81265 13745 GACAGAGAGGCAGCCAAGAC AGGCA A A CT CCTCA -- ACACCCCCTTC
TCCTGCACATTTCCTCATCT GACAGAG GCC AG CTC GCACATTT TCTG TCTG
GTCTGACACCCCCTTCCAGA CTGTCTC CGG TC GAG CGTGTGAA AGAC AGAC
ACCAGAAAGTGTGCTGAGCT ----- C - T- ----- CA ----------
CGGCCTCTGTC
GAM81302 69 GACAGCACTAATTTAATGCC C A GCCGATAT - TAGAT
GATATACTCTAGATGAAGTT GACAGCA TA TTTAAT ACT C
TTACATTGTTGAGCTATTGC TTGTCGT AT GAGTTG TGA G
TGTT T C TTACATTT A -----
GAM81386 17624 GACAGGGTCTGGGTCCAGCG T--- --- T TGTC
GTAATTGGGCATGTCTGCCC GACAGGG CTGGGTCCAGC GGTAAT GGGCA
GTTGCCTAGGTTGGGCTCAG CTGTTCC GACTCGGGTTG CCGTTG CCCGT
TTTTCCTTGTC TTTT GAT - ----
GAM81464 11766 GACATACTACAAAGAGATTT ATACTAC--- TT TT - AAAAG
TTTTAAGTTTAAAAAAAGTT GAC AAAGAGA TTT AAG TTTAAA
TGGATCTTTTGGATTTCTTT CTG TTTTTCT AGG TTC AGGTTT
TTTTTTTTTTTGGTC GTTTTTTTTT TT TT T -----
GAM81472 17935 GACATATCCATTTACTCCAA ATATC TA CAA ATTTG GGCCAA
GCTATTTGAGGGGCCAACCT GAC CATT CTC GCT AGG
ATAGGAGTGTTGAGGGAATG CTG GTAA GAG TGA TCC
CGTC C---- GG TTG GGATA ------
GAM81488 13289 GACATCCCAGACCTTGGGCA CA CC TGG- A T CC ACCTCATCCCACCA
CCATGTCGGGAGGCCAAGCC GA TC AGACCT GC CCA GTCGGGAGG AAGCCC
CACCTCATCCCACCAGGGCT CT AG TCTGGG CG GGT CAGCCCTCC TTCGGG
TCTCCTCCCGACCTGGGCAA AC TC CGAA - C TC ----------
GCGGGTCTCTGACATC
GAM81504 14950 GACATCTGTCACCCCATTGA ACC TT-- - A TTGA
TCGCCAGGGTTGATTCGGCT GACATCTGTC CCA GATC GCC GGG
GATCTGGCTGGCTAGGCGGG CTGTGGGCGG GGT CTAG CGG CTT
TGTC ATC CGGT T - ----
GAM81508 7757 GACATCTTGATTATTGTGAC ATCT T C- CT--- C CT CTAAT

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        AACTCTAGACCTGCCTGCTT GAC   TGATTATTG GACAACT  TAGAC    GC TG  TTAT
        TATCTAATGTAATCATGCTC CTG   ACTAATAAT TTGTTGG  ATCTG    CG AC  AATG
        AATGTCTACAGGTTGTTTAA ----      -     AC    TAACT  T  T-   -----
        TAATCAGTC
GAM81572 17400  GACATTATTATATTACCAAT    -   A-  T   AAT-  TG    TTT   ATTCT
        AGCTGATTTTTTTTTCCATT GACAT TATT  TA TACC   AGC  ATTTT  TTCC
        CTGGGACCTAAAATGCTTAC CTGTA ATGA  AT ATGG   TCG  TAAAA  AGGG
        AGGTACTAGCAGTACATGTC    C   CG  C   ACAT  --   TCC   -----
GAM81638 2540   GACCAACAAGATGATTTTAG    AACA  ---    TAGC   ACT  -  C   AACCTAAGAA
        CGTGGACTAGGACACTTAAC GACC   AGA  TGATTT   GTGG  AG GA ACTT
        CTAAGAAGAGTTTCACTTAA CTGG   TCT  ACTAAA   TACT  TC CT TGAG
        TCATTCAAATCACTATCTGA   GAAG  ATC    CT--   AAT  A  T   ----------
        AGGGTC
GAM81654 15708  GACCAAGGCCAGCTTCTCTG    A  CC  TTC    GT    GGTGAA
        TGGTGGGGATGGTGAAGTCC GACCA GG  AGC  TCTGTG  GGGGAT
        CTGACGCGGAGCTCCATGGT CTGGT CC  TCG  AGGCGC  TCCCTG
        C                A  --  ---    AG    ------
GAM81668 13391  GACCAATTTGTTCTACCTAG   C-     TCTACCTA    T  -   TTTCTGCC
        CATTTTAACTAGTTTTTCTG GAC  AATTTGT      GCATTT AAC TAGTT
        CCAGCTATGTTGAATGCACA CTG  TTAAACA      CGTAAG TTG ATCGA
        AATTCTGTC          TC     --------    -  T    --------
GAM81682 10865  GACCACATACTGTATGATTC     AT-    ATGA  T  AA   A  GT-  GGAATA
        TATTAATATGAGATGTCCGG GACCAC   ACTGT   TTC ATT  TATG GAT   CC
        AATAGGTAAATCCATGGAGA TTGGTG   TGACA   AAG TAG  GTAC CTA   GG
        TGAAAAACAGTTGAGTGGTT     AGT    AA--  -  AG   -  AAT  ------
GAM81685 17530  GACCACCATATGTTCTTTGA  - A  TAT    TTGA    TTA   CAATAT
        CTATAATTATGGACAATATT GA CC CCA   GTTCT   CTATAA   TGGA
        TCACTTTGTGGGATAGGATT CT GG GGT   TAGGA   GGTGTT   ACTT
        GGCGGCTC          C  C  ---    TAG-    TC-   ------
GAM81704 22422  GACCAGATGTTGGCTGCTGT    GATG   CT  TG   TTAC    AGG
        ACTTACTCCCTGAGGTAGGG GACCA   TTGG  GC  TAC   TCCCTG
        AATGTGTGGTGATCGAGTGG CTGGT   AGCT  TG  GTG   AGGGAT
        TC                G---   AG  GT  TA--    ---
GAM81736 190   GACCATATGCATAGTACCGA   CCATAT   TA   - GAA   GTGCGAAG
        GAAACTAGTGCGAAGTAGTG GA     GCA  GTACC GA   ACTA
        ATCAGGTATGCTGTTAGATA CT     TGT  TATGG CT   TGAT
        TC               ATAGAT   CG    A  AG-   --------
GAM81803 22746  GACCCATCTGTGGTGATGTT   C     GTG   ATGTT   --   - T   ATGCG
        CCTGACAGCTCACAATGCGT GA CCATCT   GTG    CCT  GACA GC CACA
        GTGGCGTGTCTGAGGTGCAC CT GGTAGA   CAC    GGA  CTGT CG GTGT
        GAAGATGGCTC         C     AG-  GT---  GT   G  -   -----
GAM81805 7119   GACCCATCTTGGCAATGGAT     A--  T  AA    AT--     CAAA-  ACCA
        ATGACCCCCAAAGTCACCAG GACCC   TCT GGC  TGGAT   GACCCC    GTC
        ATCACGAGGGGTCCCAAGTC CTGGG   AGG CCG  ATCTG   CTGGGG    TAG
        TAGCCCGGACGAGGGTC       AGC  C  --   AACC     AGCAC   ----
GAM81884 10863  GACCCTTTCAGTGCCACGCT          ----------    GCT-   GG TGCAAGTT
        TGCAGGGTGCAAGTTTTATG GACCCTTTCAGT        GCCAC   TGCA  G
        CATATGGTGGCCACCTTCCC CTGGGAAGGTCG        CGGTG   ACGT  T
        TGCTGGAAGGGTC               TCCCTTCCAC    GTAT   AT --------
GAM81894 19645  GACCGCGTGGTTCTGGGGGA    C-     -    GG    -------   GTTCGCAATG
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GTTTGGGGTTCGCAATGTCC GACCG GTGGTT CTGGG AGTT TGGG
ATACTACTGACTTTCCCGGT TTGGC TATCAA GGCCC TCAG ACCT
AACTATTCCGGTT CT T TT TCATCAT ----------
GAM81898 658 GACCGGGGCAAGGGCACACA -- ----- CACAC GGCTTAAG
GGAACGGCTTAAGGTTCCTC GACCGG GG CAAGGG AGGAAC
CCCTTGTAGGACCAACCGGT CTGGCC CC GTTCCC TCCTTG
C AA AGGAT C---- --------
GAM81900 19696 GACCGGTGCGTGGCCTTCAT GTG TT GTCA GCGCTGA
CGGTCAGGCCCGCGCTGAGG GACCGGTGC GCC CATCG GGCCC
GCCGTGCGGTGTTGGTGCAC CTGGTCACG TGG GTGGC CCGGG
TGGTC --- TT GTG- -------
GAM81921 17263 GACCTCAAGTGATCTGCATG TCAA ATCTG- CACC AGTG
CCTCACCTCCCAGAGTGTTG GACC GTG CATGCCT TCCCAG
GGAATACAGGCATGAGCCAC CTGG CAC GTACGGA AGGGTT
CACACCCGGTC CCCA CACCGA CATA ----
GAM81935 7581 GACCTCATTGTTCCACAAAT CATT -- AATT C ------ ATTTTG
TGTGCCTCTATTTTTACCAT GACCT GTT CCACA GTG CTCTATT TTTACC
TTTGGGTAAACGTCAGGATA CTGGA CGA GGTGT CAT GAGATAG AAATGG
GAGATACCACATGTGGCAAG AAC- AC ACAC A GACTGC ------
CCAAAGGTC
GAM82038 303 GACCTTGATGACCAGCGTCA CT A AC ACGAC CG --- CCAAT
CGACAGAGCGCTGTGGGCCA GAC TG TG CAGCGTC AGAG CT GTGGG
ATCCCGCCATGGACCTCTCC CTG AC AC GTCGTAG TCTC GG CGCCC
CTCGATGCTGACCAGCACGT C- G CA CTCCC CA TAC -----
C
GAM82062 17013 GACCTTTCTGTCCTTGTCCA ---- TG A ACTCTGGGTCTC
CGGGCCTGCACTCTGGGTCT GACCTTT C TCCTTGTCC CGGGCCTGC
CGCAGGCCCGAGGGCAAGGG CTGGAAG G GGGAACGGG GCCCGGACG
TGGCCCTGAAGGTC TCCC GT A ----------
GAM82064 16301 GACCTTTGTGAGTTCCAGTG A GTGG TGG T A- --- AGCT
GTGTTCTTGGCACTCAGAGG GACCTTTGTG GTTCCA TGTTCT CAC CAG GG TTC
TTCAGCTGAAGTCCCGACTG CTGGGAACAC CGAGGT ACAGGA GTG GTC CC AAG
GTGAGGACAAGTGGAGCCAC - GA-- --- - AG CTG ----
AAGGGTC
GAM82073 13878 GACGAAAATGTAAGATTTAA GAAA AG AAG CA AGAATTAG
GAAAGACATATTAGAATTAG GAC ATGTA ATTT AAAGA TATT
AATATTTTTAAAAATTCTAT CTG TATAT TAAA TTTTT ATAA
ATGAGAGTC AGAG CT AA- -- --------
GAM82092 22676 GACGAGCTGAGGTTGGACTT C GT- AC- T- ATAATCCTGATACA
GTTGAAATAATCCTGATACA GA GAGCTGAG TGG TTGT GAA
TTCCTACAATGGCCACTGCT CT TTCGACTC ACC AACA CTT
CAGCTTTC - GTC GGT TC ----------
GAM82094 7600 GACGAGGAAGAGGAGGAGCA C AGGAG - TGG GAAT
GTTGGTTCTGGTGGAATTAT GA GAGGAAG GAG CAGT TTCTGGTG
CAGGAATTATTGATTCAGAC CT CTCCTTC CTT GTTA AGGACTAT
TTCCTCTC - AGA-- A TTA ----
GAM82113 10621 GACGCAACCAGGGCCGGCTG CG AA- - G---------- GGAG
GGAGCGGCGTTGTCAACACA GA C CC AGGGCC GCTG
CACCCTTGGCCCTCGGCAGG CT G GG TCCCGG CGGC
TATC AT GAC C TTCCCACACACAACTGTTG ----

GAM82123 13190 GACGCATTTAACATGCAAAT G TA AT-- - AA- CTCTCTC
GAGACAACGGAAAGGCACTC GAC CATT ACATGCAA GAGA CAACGGA GGCA
TCTCTGTTAACTTTGTTGAT CTG GTGA TGTATGTT CTCT GTTGTTT TTGT
CTCTATGTTGTATGTAGTGG - -- GTAT A CAA -------
TC
GAM82151 10187 GACGCTGGCCCTCACGAGTG TG CCC GA T TCAC G - CACCTAC GTCCA
ACTACATCACGCCTGCTGGC GACGC G TCAC GTGAC ACA GCCTGCTG CC TCAGG CTG

CTCAGGCACCTACCTGGTCC CTGCG C AGTG TACTG TGT CGGGCGGT GG GGTCC GAC

ACAGCCTACATCCTGGTGGT GT --- G- C CA-- - T TACATCC -----
GGCGGGCACTGTCGTCATGG
TGACTGGCGTC
GAM82176 391 GACGGCGCTACGCACGGACC GG TA-- CG CC G GGTT
GACGGGAAGGTTTTCCAGTT GAC CGC CGCA GA GAC GGAA
TCTTAATGCGAAATGCGAGT CTG GCG GCGT TT TTG CCTT
C A- TAAA AA CT A ----
GAM82177 17147 GACGGCGGCGGCTGTAGCGG C C CG TA C A A AGCC
CGTGACGAGGAGCCCCATGG GA GG GG GCTG GCGG GTG CG GG
CACCTGCCCAGCACCCACCT CT CC CC CGAC CGTC CAC GT CC
C - A CA C- - G A ----
GAM82179 2351 GACGGCGTGTCCATGGGGGG GTG- TGGG G C AATGGAG
GATCTCTCGTAGAATGGAGC GACGGC TCCA GGG ATCTCT GTAG
TGCAGGGGTGCTCAGCTTGG CTGCTG GGGT CTC TGGGGA CGTC
GAGTGGTCGTC GTGA TCGA G - -------
GAM82201 551 GACGGTGAGGATGGTCCCAA T-- T- CC--- A--- TA CACTG
GAGGCGCAGCTAGGGTCACT GACGG GAGGA GGT CAAGAGGCGC GC GGGT
GGCCCCGGTCCTGGTGCCTC CTGTT CTTCT CCG GTTCTCCGTG TG CCCG
TTGCCTTTGCCTTTCTTCTT CTT TT TTTCC GTCC GC -----
CTTGTC
GAM82204 265 GACGGTGGAATGTGCGGCGG G A TG G CTCA
TTTTTGGATCTCAGTTCAAA GACG TGGA TG CGGC GTTTTTGGAT
GGCGGCCGACCGGTTCAATG TTGT ACTT GC GCCG CGGAAACTTG
TT A G CA G ----
GAM82211 8004 GACGTACCGTGCGGACGAGT -- - CGGACG- AA GAAA
GGAAGGAGAAATTTGGCCAT GACGTA CC GTG AGTGG GGA
TACAAAGACACAGGAATATG TTGTAT GG CAC TTACC TTT
TT AA A AGAAACA GG ----
GAM82212 15659 GACGTACCGTGCGGACGAGT -- - - GACG- AA GAAA
GGAAGGAGAAATTTGGCCAT GACGTA CC GTG CG AGTGG GGA
TACAAATGACACAGGAATAT TTGTAT GG CAC GT TTACC TTT
GTT AA A A AAACA GG ----
GAM82223 2604 GACGTCCTCTCTACAAGAAT ---- ACAA T ---- TCTG
ATTGTCCTCTCTGGAGGTTC GACGTCC TCTCT GAATAT GT CCTC
AACCATGTTCAGGGACTTTG CTGCAGG AGGGA CTTGTA CA GGAG
GACGTC TTTC ---- C ACTT ----
GAM82250 1902 GACGTTCTCTTGCCAGTTTC CTT TTTCTC AG CC- TTGTTTT
TCCAGCAGGACCCCTTCTTG GACGTTCT GCCAG CAGC GACC TTC
TTTTGAAAATGGTCGGCTGC CTGCAGGA TGGTT GTCG CTGG AAG
TTTGGTAGGACGTC --- TC---- G- TAA -------

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GAM82266 6951   GACTAAGAACAAGACTGGAA   TAAGAA A     AAATA   AGAAAAG
          ATAGTTTAGAAAAGAAATGA GAC     CA GACTGG    GTTT
          AAACCGGTCGTGGAGATGTC CTG     GT CTGGCC    TAAA
                      TAGAG- G     AAAAG   -------
GAM82292 8024   GACTACCAATAACTTGTACA   -   AATAA---  GTA    A      TAAC
          TATATGAAAGATAACTCTTT GAC TACC       CTT   CATAT TGAAAGA
          TAGATGTGGAAAGCAACTGA CTG ATGG       GAA   GTGTA ATTTTCT
          AGGTATGTC            T   AAGTCAAC  AG-    G      ----
GAM82299 11001  GACTACGGCGGCCTCGTGGT    AC- CG   - -    TTCT     CTTTG  T--     GGCATG
          CTTCTGCATCTTCTTTGGCA GACT   GG  GCCT CG TGGTC    GCATCTT    GCA   CTCCTAC
          TCTCCTACGGCATGGTGGGG TTGA   CC  CGGG GC ACCGG    CGTGGAG    CGT   GGGGGTG

          GCCCTGCAGTTCGAGGTGCT    ACA CA   T T    TACT     CTTGA  CCC     ------
          CATGGCCATCGTGGGCACCC
          ACAAGTT
GAM82301 6880   GACTACTGAAAGGAAAAGCT   TA-     GGAAA-  C---    C    AGCC
          GGTGCTGGGGAGCCCTCCAC GAC   CTGAAA     AG    TGGTG TGGGG
          ACCACTGACTGATGAATTTC CTG   GACTTT     TC    ACCAC ACCTC
          AGCACGTC             CAC     AAGTAG  AGTC    -    ----
GAM82315 13215  GACTAGCCTTGCTGGTCTGA   T   TTGC        CT---    GT--  -   TTGACTCCT
          GCACTGGGGTGTGCTGCTGT GAC AGCC    TGGTCTGAGCA    GGGGT    GCT GCTG
          TGACTCCTCAGCTGGTTCCT CTG TCGG    ACTAGACTTGT    TCCCG    TGG CGAC
          GCCCTTTTGATGTTCAGATC    -   TT--         AGTTT    TCCT   T   ---------
          ATTGGCTGTC
GAM82336 7373   GACTATCCACCTTTGGGTCG    T      TTTG-    C   GC   CGTG
          CTTTGCTGTCGTGATATGAG GAC ATCCACC     GGTCG TTT  TGT
          ACCGACCGTTGCGGTGGGTG CTG TGGGTGG     CCAGC AGA  ATA
          TC                -      CGTTG    C   GT   ----
GAM82337 13128  GACTATCCAGTTGATGGGCT     T-       GG    C  GA    -   T    GGA  TCAT
          GCCAGATCTGGGGCATGCCC GACTA  CCAGTTGAT  GCTG CA  TCTGG GGCA GCCCA   CC

          AGGACCTCATGGATGGGCTG TTGGT  GGTCGACTA  CGAC GT  GGACC CCGT CGGGT   GG

          CCTCCAGGTGACAGCAATCA     CC        A-    A --     T    -    A--  ----
          GCTGGCCTGGTT
GAM82342 7662   GACTATGATGTGGAATGGGG     T  T    AT-    T-----   TTTTGATGT
          CTATGCTTTTGATGTGCATC GACTA GA GTGGA   GGGGC     ATGC
          TCAATGCTTTTTATCCACTC CTGGT CT CACCT   TTTCG     TACG
          CTGGTC               C  -    ATT     TAACTC   ---------
GAM82424 2472   GACTCCCAGGAGACCTGGCC     -      A   GG    CT-  AG    - -    GAC
AGAGGGACAAGAGAG
          AGCTGCAGCGGCCCCCGTGG GACTC CCAGGAG CCT  CCAG   GC  CGGC CC CCGTG   CAGC

          ACCAGCAGAGGGACAAGAGA CTGAG GGTCCTC GGG  GGTC   CG  GCCG GG GGTGC   GTCG

          GGAGCTGACGTGGAGGAGCC     A      -   --    ACC  GA    A  A     A--   ----------
          GAGGCCCACTGGGGGCTCCT GA
          GGAGAGTC

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GAM82459 21692  GACTCGTATCCACAACTGTA     G   - C-  TGTAGTATCAT      TGTTT
                GTATCATACAGAACATGTTT GACTC TATC CA  AAC         ACAGAACA
                TGTTTTGTTTTGTTTCTGAG CTGAG GTAG GT  TTG         TGTTTTGT
                ATGGAGTC             -   A CT  TTT--------      -----
GAM82511 21983  GACTGAACTGGCCTCTGTGT   TG   -   ---   T AAT-  TTGAG
                TCTAATGGTTGAGCCTCAGA GAC  AACTG GCCTC  TGTGT CT   GG
                GTACATATTTGGGGTGCGGT TTG  TTGGC TGGGG  ATACA GA   CC
                TTGGTT               GT   G   TTT   T GACT -----
GAM82539 22643  GACTGAGTAAGATGAAGATC  - G  A    AG   ----    GACA
                CAGTTTCAGACATGAGACTC GA CT AGT AGATGA  ATCCA   GTTTCA
                GTTGGGTGATCATTTCATTG CT GA TTA TTTACT  TGGGT   CAGAGT
                AGATC              A G  C    AG   TGCT   ----
GAM82546 15374  GACTGATAAACAGGGGCCAG    ATAAACA    AGAA   C  TTTA-- A  AGC
                AAACCTGCATTTTTAACATG GACTG     GGGGCC   ACCTG ATT    AC TGG
                GAGCCCAAGTGATTTTGATC TTGAC     CCCCGG   TGGAC TAG    TG ACC
                CAGGTGGCCCCCAAATCCAG    CTAAAC-    ----   C  TTTTAG A  ---
                TT
GAM82575 16051  GACTGCCTCAGGTGACGGGC  CT  TCA  A   CGTGA    C   CA AGCCTTC
                CGTGAGAGGGGACGGGTCAG GA  GCC  GGTG CGGGC   GAGGGGA GGGT GG
                GAGCCTTCCCAAGCCTTCTC CT  CGG  CCAC GCCCG   CTCCTCT TCCG CC
                CTCAGCCCGACACCCATGGC  AC  TAC  A   A----    -   AA -------
                CATC
GAM82576 15227  GACTGCCTCAGGTGACGGGC  CT  TCA  A   CGTGA    C G A AGCCTT
                CGTGAGAGGGGACGGGTCAG GA  GCC  GGTG CGGGC   GAGGGGA GG TC GG
                GAGCCTTCCCGAGCCTTCTC CT  CGG  CCAC GCCCG   CTCCTCT CC AG CC
                CTCAGCCCGACACCCATGGC  AC  TAC  A   A----    T G C ------
                CATC
GAM82617 10235  GACTGGATGGCTTGGGGATG    A       AT   A GG-  CTAGA
                CAGAATTGGATCTAGAATAA GACTGG TGGCTTGGGG  GCAGA TT  AT
                AGAATCTGTTACTTCGAGTT TTGATC GTTGAGCTTC  TGTCT AG  TA
                GCTAGTT              -       AT   A AAA -----
GAM82621 22853  GACTGGCACCTGTTCCCTTT    CACCT   -     TAGTT  GTTGA
                CGGTAGTTGAGGTTGACTCT GACTGG   GTTC CCTTTCGG   GAG
                TATCTGAGGGGCGAATTTCC CTGGCC   TAAG GGGGAGTC   CTC
                GGTC                 TT---  C     TATT-  -----
GAM82644 10887  GACTGGTGAGGTGGGACCCA  CT   A-      CAGCC   CTC   CACCT
                GCCCAGGCCTCGCTGGCACC GA  GGTG  GGTGGGACC   CAGGC  GCTGG
                TCCAGCTGCCTGCCTATGGT CT  TTAC  TCACCCTGG   GTCCG  CGACC
                CCCACTGGCATTGCTC     CG  GG      TATCC   T--   -----
GAM82676 14127  GACTGTGAGTCTTTGAGCAG    TG   TT-    --  -   GACCTG
                CTGCAGGACCTGCTGCAAGC GACTG  AGTC  TGAGCA  GCT GCAG
                CCTGCTCGTCTGGCTGCCAG CTGAC  TCGG  GCTCGT  CGA CGTC
                TC                CG   TCT    CC  A   ------
GAM82689 17927  GACTGTGTATACTCTACAAT    TGTAT    CA   ---------          CA   TG G   - --
                CTAAGAAGGATTTCAGCAAA GACTG   ACTCTA  ATCT       AAGAAGGATTTCAG  AATT  GA CAGG
GC
                TTTGGAGCAGGGCTGTTTGC CTGGT   TGAGGT  TAGA       TTTTTTTTGAAGTT  TTAG  CT GTCC
TG
                TCTTTTGTGGATATTGTGCC    -----    AA   GTGATAATT          C-   GA -   G  TT
                TGTCAGGATTCTTGAAGTTT    TG TCTTTT
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TTTTTTTAATAGTGAGATAA TGTT C
TGGAGTTGGTC ATAG G
GT ------
GAM82714 11760 GACTTACAAACTCTTCTTAA CAAAC TAAT T TCTCGGTTTTT
TCATTATCAATCTCGGTTTT GACTTA TCTTCT CATTA CAA
TTTGTGGTGCAGTGGAAGGA CTGGAT GGAAGG GTGGT GTT
AAAATAGGTC AAAAA TGAC - ----------
GAM82723 11629 GACTTAGAGGTTTTAACGTA T--- - TAA AAAATGGTTCCG
AAGAAAATGGTTCCGCTAAT GACT AGAGGTTTTA ACG AG
TGTATAGAACCTCTCAGCAG CTGA TCTCCAAGAT TGT TC
TC CGAC A TAA ----------
GAM82750 14774 GACTTCAGATCGCCGGGGAG C TC- -- AG CC--- A AACCTCCA
TGGCCTGTACAGCAACCTCC GA TTCAGA GCC GGGG TGG TGTAC GC
AGCAGTACGATCTCCCGTAC CT AAGTTT CGG CCCC GCC GCATG CG
CCCGAGGCATTTTTGAACTC C TTA AG AT CTCTA A --------
GAM82772 15625 GACTTCCTTGGTCCTTTTAG TT GTCCT ACT GATGGGTA
TATGAACTGGGATGGGTACT GAC CCTTG TTTAGTATGA GG
TCTTATGCTAGATAGGGTGT CTG GGGAT AGATCGTATT TC
C T- ----- CT- --------
GAM82775 416 GACTTCGCCGCCGCCTGGTG G C CC C- CCGCGACC
CCGGCTGGCCGCGACCTCAG GACTTC CCG CG TGGTG CGGCTGG
CCGCCCGCCGCCCGCCGGGG CTGAGG GGC GC GCCGC GCCGACT
AGTC - C CC CC --------
GAM82793 7382 GACTTGAGAGTTCTGACAGT TTCT G A-- T- A A - CTTAAATAAT
CTAAGAATTTTGAAAATACT GACTTGAGAG GACA TCTA GAATTT GAA AT CTGA TGTT
TTATT
GATGTTCTTAAATAATTTAT CTGAATTTTT TTGT GGAT CTTAGA CTT TA GACT ACAG
AATAG
TTTGCTTTAGAGGCTTGATA ---- - ATA TC A - T ----------
AGACATTCAGATATTCCTAG TT TTAGA
ATTCATATAGGTGTTTTTTT GCT
AAGTC CGG
TT -----
GAM82825 8005 GACTTGTTCATCTTGTTTTT - - C-- TTTTTCCTT- TCAAC
CCTTGGCTTCAACAGCCTCC GACTTG TT CAT TTG GGCT
AATTCTTCAATAAATGTAGC CTGAAC GA GTA AAC CCGA
CAAGTC C T AAT TTCTTAACCT -----
GAM82836 9926 GACTTTATGGTCCCTCAGAA C A - CTCAGA- ACA GGA TCAA
TCACAGTCACTGGATGTGTC GA TTT TG GTCC ATC GTCACT TGTG
AACGCAGGTGACACAGATAC CT AAA AC CAGG TAG CAGTGG ACGC
ACTCAGGACTCAAAAAATC A A T ACTCACA ACA --- ----
GAM82868 15022 GACTTTCTTCCTCAGTGGCG T TCA GC AG-- GTGCA
GAGAGAAGAAAGTGCATTTA GAC TTCTTCC GTG GGAGAGA AAA
TTGTCTTTCCACATATGGAG CTG AAGGAGG TAC CCTTTCT TTT
GAATGTC T TA- A- GTTA -----
GAM82885 10893 GACTTTGGTAGACACAGGCA A AG A A TGA---- GCTGATCTCATAAATAA
TTGGCATGACCAAAGCTGAT G CTTTGGT AC CAGGC TTGGCA CCAAA
CTCATAAATAATTTGGGAAC C GAAATCA TG GTCTG AACCGT GGTTT
CATTGCCAAGTCTGGTACTA - -- - - TACCAAG ----------
AAGC

GAM82891 1425 GACTTTTAAATATTTTGAAG T ---- TG C- TT - AATAA
CCCATTTCAGTTAAATAATG GAC TTTAAAT ATTT AAG CCAT CA GTTA
ACATGTCATGGTCCTTTGGA TTG AAATTTA TAAG TTC GGTA GT CAGT
ATCTTCATTTAAATGTT T CTTC GT CT CT A -----
GAM82937 5130 GAGAAAACTGGTTTTTCTGT T TTC - AAAGATAGTAAAG
TTCTAGCAAAGATAGTAAAG GAGAAAAC GGTTT TGTTTCTA GC
GCTTAGAAATAAAATCTGTT TTCTTTTG CTAAA ATAAAGAT CG
TTCTT T --- T ----------
GAM82943 21764 GAGAAAAGTCAGTGAAACTC CAG AA C C TAACAGAT
ATTTCTAAGAATAACAGATT GAGAAAAGT TGA CT ATTT TAAGAA
TCTTAAAATAGTCAAGTATT TTCTTTTTA ACT GA TAAA ATTCTT
TTTCTT TGA -- - - --------
GAM82958 1661 GAGAAACAGCAGCTGCGCCT AA G CC CT-- - ACT
GAAACTCGCCACTGGCCGTA GAG ACA CAGCTGCG TGAAA CG CC
CTTTTTATCTGCAGTTGTGT CTC TGT GTTGACGT ATTTT GC GG
CCCTC CC - CT TCAT C ---
GAM82960 19613 GAGAAACATACATGACTTAG A--- ATG AG AATAATTCTAGAAAAG
AGTGAAAAATAATTCTAGAA GAGAA CATAC ACTT AGTGAAA
AAGTTTCACTAGGTAAGTAT TTCTT GTATG TGGA TCACTTT
GCAAATTCTT AAAC AA- -- ----------
GAM82980 17718 GAGAAAGCAGTCTGGCCTTT - C T CCT-- AA- AA CTTG
GAGAAGGAAGCCTGGCTTGC GAGA AAG AG CTGG TTGAG GG GCCTGG
CAGGTGCCATCCTCAATGTA CTCT TTC TC GGCC AACTC CC TGGACC
TCCGGCCTCTTCTCTC C - C TATGT CTA G- ----
GAM83004 2527 GAGAAAGTTACTTTTATGCC A ACTTTT AT ATTTACTATTTACC
ATTGTATTTACTATTTACCA GAGAA GTT ATGCC TGT
CACAGGCATTGAACATTCTC CTCTT CAA TACGG ACA
A GT---- AC ----------
GAM83012 13715 GAGAAATAAGGCCTACTTCA AG TACTTCACA CT CCCCGTAAAT
CAAAGCGCCTTCCCCCGTAA GAGAAATA GCC AAGCGC TC
ATGATTGTGCTTAACTTGGT CTTTTTAT TGG TTCGTG AG
TGTATTTTTC GT TTCAA---- TT ----------
GAM83040 22855 GAGAAATTTTAGTTATAAAT A ATAAATT GTTAGGATTTAA
TAGTGAAGTGTTAGGATTTA GAGAA TTTTAGTT AGTGAAGT
AATTTTACTTAGAAATTAAA CTCTT AAAATTAA TCATTTTA
ACTTCTC C AGAT--- ----------
GAM83064 11714 GAGAACAGGTGAATCAGTTG A- TC T - G GTAA
AATTTGTGTGTAAACGGGGA GAGAAC GGTGAA AG TGA ATTT TGT
TATCGTCTTTCATCACGTTC CTCTTG CTACTT TC GCT TAGG GCA
TC CA -- T A G ----
GAM83070 13056 GAGAACATCAATGGTGTACC A- ATGG A TT ACATCCCT
GCCTCATTTGGGACATCCCT GAGAAC TCA TGT CCGCCTCA TGGG
TCCACTGGGGTGGGCATGAG TTCTTG AGT ACG GGTGGGGT ACCT
CGTTCTT CG ---- - C- --------
GAM83096 4585 GAGAACGACCGTGGCGTCTC GAC G - - A-- - -- T - CCTC
TTTTACCTTTGGAGCCGAGG GAGAAC CGTGGC TC TCTTTTACC TTTGG GC CG AGGTGG GG
CCAAGTT
TGGTGGCCAAGTTCCTCCAC TTCTTG GCATCG GG AGAAGATGG GGACC CG GC TCTACT CC
GGTTCAG

AAGCACGACTTGGACCTCAT A-- - C T ACA A CG - A ----
CTGCCGAGCACACCAGGTGG CACAAGCAC
TAGAAGACGGGCTACGAGTT
CTT

GAM83106 17070 GAGAACTCCTCCTGCATGAC AC CC--- A A - T CTCCTTT
AAACTTCTCTCCTTTAGCAG GAGA TCCT TGC TG CA AACT CT
TTCTGATAGCAACAACAGGA CTCT AGGA ACG AT GT TTGA GA
ATCTC A- CAACA - A C C -------
GAM83146 17107 GAGAAGAGGAGATGGCGTGA AGAT CG AT AA CAACAAAC
TACCAACGAGTCAACAAACA GAGAAGAGG GG TG ACC CGAGT
CTCGGGTCCTATACTTCAGC CTTTTCTCC TC AT TGG GCTCA
CTCTTTTC GACT AT CC -- --------
GAM83147 5192 GAGAAGAGTCTCCCGTGAAG A TCT GTGAAG GGAAA TG AGGAGCG
TGGCCGGAAAGTGGGAGGAG GAG AGAG CCC TGGCC G GG
CGTTTGTGGGGCCAAAGAGG CTC TCTC GGG ACCGG T TT
GTTCTCTCCTC C TT- AGAA-- GG--- GT -------
GAM83151 12106 GAGAAGATCAAAGGTGGAAT AT- T ATC A -- T AAGA G GA GTGT
CCACACAGCAGATACCAAGA GAGAAG CAAAGG GGA CACAC GCA GA ACC CA CAGG GT

CAGCAGGGAGTGTGTGCCTC CTCTTC GTTTCT CTT GTGTG CGT CT TGG GT GTTC CG
TTGATGCAGGTCTCAATGCC GTC - --- C AA C AC-- A TC ----
GTGTGTTCTCTTTGCTGCTT
CTC
GAM83173 11383 GAGAAGCGGTACTGATTAAT GA-- G- TTAATGG - AAACCC
GGTGCGCATGGGCAAAGAAA GA AGC GTACTGA TGCGCATGGGCAA AG
CCCCTGTTGCCCGTGTGTGA CT TCG CGTGGCT GTGTGTGCCCGTT TC
GACACTTCGGTGCAGGCTGA GAAG GA TCACAGA G ------
AGTC
GAM83177 12009 GAGAAGCTCCCTCACCCATC AAGC CACCCA- C-- --- AAG-- CACTCA
CCAACACCTCAAGTCACACT GAG TCCCT TCCCAA AC CTC TCA
CATGAAGATAGAGACAGTCA CTC AGGGA AGGGTT TG GAG AGT
TTTGGGAGATTTAAAGGGAT CTAT AATTTAG TAC ACA ATAGA ------
ATCCTC
GAM83209 15010 GAGAAGGGCTGGTAGGTTAA A - GGTAG AT CT TATTCT
ATTATCCTATTTTTTATTCT GAGA GGG CT GTTAA TATC ATTTTT
GAAAATGATATTAATAGAAA CTTT CCC GA TAATT ATAG TAAAAG
GTCCCGTTTC G T AAGA- -- -- ------
GAM83245 16922 GAGAATACACAAAAGAGAAT ATACACA --------- CTT AACC AA TTAT G-
AGATACTTGAAACCACTGGA GAGA AAAGAGA ATAGATA GA ACTGG TGACAGT CT
ATGACAGTTTATCTGGTGAT CTCT TTTCTCT TGTCTAT CT TGATC ATTGTTA GA
TTTCTTATAAAGTTCTATTG GTTTTAG TCGTTGTCA CTC CCTT -- TCTT AA
TTACTAGTTTCCTCCTCTAT TTTTC
CTGTACTGTTGCTTCTCTTT GTGA
GATTTTGTCTC TATT

GAM83271 17494 GAGAATCACTTGAACCCGGG ATCA TGA AGGCA GT A - AGAT
AGGCAGAGGTTGCAGTGAGC GAGA CT ACCCGGG GAG TGCAGTG GC CA
CAAGATTGTGCCACTGCACT CTCT GA TGGGTCC CTC ACGTCAC CG GT
CCAGCCTGGGTGACAGCCAA AACC CAG GAC-- -- - T ----

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        TCTC
GAM83276 13153  GAGAATCACTTGAACCGGAG   AA    GAA-- G  AGGC   GT     A  CAAAATCAT
        AGGCGGAGGTTGCAGTGAGC GAG  TCACTT    CC GAG   GGAG  TGCAGTG GC
        CAAAATCATGCCACTGCACT TTC  AGTGAG    GG TTC   CCTC  ACGTCAC CG
        CCAGCTTGGGAGACAGAGTG   AG    ACAGA  G  GA--   --     -  ---------
        AGACTT
GAM83331 2291   GAGAATGAAAAGAGTTGATT    TGA    GTTGAT    A  T  ACCTTG
        TTGGACCTCGGACCTTGCCG GAGAA   AAAGA    TTTGG CC CGG
        TGGCTAAATCTTTACCTTCT CTCTT   TTTCT     AAATC GG GCC
        C                CCA    ------    -  T   ------
GAM83337 17340  GAGAATGATGGTTCTCTGCT    TGA-  TTCTCT    TATC    --  AT-   CATTATTTAAC
        TTATATCTCCAACTGGAATA GAGAA   TGG    GCTTTA   TCCAAC  TGGA  AATG
        ATGCATTATTTAACCATTTT CTCTT   ACC    TGAGAT   AGGTTG  ACCT  TTAC
        CTCCATTGTTGGATCCTAGA    TTTG  TTTGT-    CCT-    TT   CTT   ----------
        GTTGTTTCCAGTTTTTCTC
GAM83372 15408  GAGAATGTTATCTAGACAGC     -  ATCTAGAC-    TGC  CCCCTA
        AGTGCACTCCCCTAAGTCTC GAGAAT GTT       AGCAG   ACT
        TGCTCAAAAAAAAAACAATT CTCTTA CAA       TCGTC   TGA
        CTC               A  AAAAAAAAC    TC-  ------
GAM83373 182   GAGAATGTTCGTGCCAAGTG   A  TT   CCA----    AC   GAGTG
        GTACCCGGAGTGCGGCACCA GAG ATG  CGTG     AGTGGT  CCG
        CTGCCCCCACACGCCCATCC CTC TAC  GCAC     TCACCA  GGC
        TC               C  CC   ACCCCCG    C-  -----
GAM83437 2273   GAGACAAGCCTGGAAGGGGC   A  A  TG   -   C  TAG    CCCTTC
        ACCTTAGGAAGCCCCTTCGC GAG CA GCC  GAAG GGGCA CT   GAAGC
        TTCAGTTGCTCGCTTCTGGG CTC GT TGG  CTTC CTCGT GA   CTTCG
        TGTGCTC           -  G  GT   G    T  ---    ------
GAM83445 2670   GAGACAATGATCATAGACAA    CAA  AT   AG   CT  T   GC-     C  AATC
        CTGCTGCATGCACTGGTGCA GAGA   TG  CAT  ACAA  GC GCAT   ACTGGTG AG
        GAATCCTTACCAGTTTGATG CTCT   AC  GTA  TGTT  CG TGTA   TGACCAT TC
        TGCTTGTGATGCCCAATCTC    A--  CC   G-   --  -   GTT     -  ----
GAM83459 16204  GAGACACATATTCCCAACGG    -  A   CAAC-   TT   ATGG
        ATTTGACGATGGTGTTCGGT GAGAC ACAT TTCC    GGAT  GACG
        CTTGAATGGAAATGTAGTCT TTCTG TGTA AAGG    TCTG  TTGT
        T                A   -  TAAGT   GC   ----
GAM83573 484   GAGACAGGGTTTCACTATGT   A   - TT  A  A  TT   A  CT   CTCAA
        TGCCCAGGCTGTTCTCAAAA GAG CAGG G  TC CT TG  GCCC GG  GTT
        CTCCAGGGCTCAAGGGATCC CTC GTCC C  AG GG AC  CGGG CC  CAA
        TCCTGCCTC           C   T CT  -  A  T-   A  T-  -----
GAM83640 5286   GAGACCCCCAAGGACCTGAA     C  AGGAC   AAT   AG   -   AAAAATATTAAACAACG

        TGATGAGAAACAGAAGAAAA GAGACC CCA    CTG   GATG  AAACA GAAG
        ATATTAAACAACGTTTCATG TTTTGG GGT    GAC   TTAC  TTTGT CTTT
        TTTAACATTGCAGATGGTGG     T  A----  G--   AA    A   ----------
        TTTT
GAM83641 15430  GAGACCCCCACGGACATGCC     CC-  A   ACAT      AAC-   --        AATT
        CATGAACTTGCCCTCGTGCC GAGAC   CC CGG   GCCCATG    TTGC  CCTCGTGCCG
        GAATTCGGCACGAGGCTGCG CTTTG   GG GCC   TGGGTGC    AGCG  GGAGCACGGC
        AACCACGTGGGTCCCGGGCG     CGC  -  C---      ACCA   TC        ----
        CGTTTC
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GAM83714 17204 GAGACGGAGTTTCACCATGT A A TTCAC TT C T CTCG
TGGCCAGGATGGTCTCGATC GAG CGG GT CATG GG CAGGA GGT
TCTTGACCTCATGATCCACC CTC GCC CA GTAC CC GTTCT CTA
CGCCTC C - CCTA- T- A - ----
GAM83722 15794 GAGACGGCCATGCTGGTCTG AC ATGCTG G - A- C- - -- ACT
CAAGTCAGAGTCCGTGCCAG GAG GGCC GTCT CA AGTCAG GTC GTGCCAG CT GTC
CTGTCACTGACTGGGCCTGG CTC CCGG CAGG GT TCAGTC TAG CATGGTC GG CAG
TACAAGATCACTGACTCTGA -- AA---- A C AC AA C GT ---
GGACAAGGCCCTC
GAM83725 4922 GAGACGGCTTCAAACACTCA GC- AACACTCAAG C TCTCCCTT
AGTTACGCTCTCCCTTGCTA GAGACG TTCA TTA GC
AATCCTCAGTGAACAACGTC CTCTGC AAGT AAT CG
TC AAC GACTCCTA-- - --------
GAM83733 5189 GAGACGGGCGGATCACGAGG CGGA GA---- GATCGAGACCA
TCAGGAGATCGAGACCATCT GAGACGGG TCAC GGTCAGGA
TGGCTAACACGGTGAAACCC CTTTGCCC AGTG TCGGTTCT
CGTTTC CAA- GCACAA ----------
GAM83757 22775 GAGACGGGGTTTCACCATGT ACG TTCAC TT CT CTCGA
TGGTTAGGCTGGTCTCGAAC GAG GGGT CATG GGTTAGG GGT
TCCTGACCTCATGATCCACC CTC CCCA GTAC CCAGTCC TCA
CACCTC CA- CCTA- T- -- -----
GAM83761 14893 GAGACGGGGTTTCACCGTGT GTTTCAC TT C T CTCA
TAGCCAGGATGGTCTCAATC GAGACGGG CGTG AG CAGGA GGT
TCCTGACTTCATGATCCGCC CTCTGCCC GTAC TC GTCCT CTA
CGTCTC GCCTA-- T- A - ----
GAM83796 7417 GAGACTATGACGAATCACTT - - AATCACT A- CCA TCA- AACA
TACAGCATCCAAGGTCATCA GAGACT ATGA CG TTAC GCAT AGG TC
ACAGAGAATTCTAAATGTCG CTTTGA TACT GC GATG TGTA TCT AG
GTAGCGTTCATCAGTTTC C T ------- GC AA- TAAG ----
GAM83836 10684 GAGACTGTTTCGAAACACCT T TC AA CCT- T ACCCAC
GTGTTAGGACCCACCCTACA GAGAC GTT GA CA GTGT AGG
CCTACTGGATCAGAATGTCT CTCTG TAA CT GT CACA TCC
C - GA AG CATC - ------
GAM83859 16050 GAGAGAAAACCTGGCCCCAG GAAAA- T A-- AC A G CTCCACAAATAAAAA
GACTGAGTGGCCGTGGCTTT GAGA CC GGCCCC GG TG GTG CCGTGGCTTTT
TCTCCACAAATAAAAAAAAG CTTT GG CTGGGG CC AC CGC GGCGCCGGAAA
GCCGCGGGCGCGCAAACCGG AACAAA T AGG AA G G ----------
AGGGGTCTGGAAACAATTTC
GAM83863 13111 GAGAGAAAGATGGTCGTCTC A AA T ---- GAAAGTGAACAGCA
CAGCAGAGAAAGTGAACAGC GAG GA GA GGTCGTC TCCAGCAGA
ATTTGTTGGAAGGTGATGGC CTC CT CT TCGGTAG AGGTTGTTT
TCTCCCTCCTC - CC C TGGA ----------
GAM83894 4875 GAGAGACACCATCCTGGCGA ACCA CT C TCAATAAAT
GGAGTTTCAATAAATGGCTC GAGAGAC TC GG GAGGAGTT
CTCTCCTGAGTTAGTCTCTT TTCTCTG AG CC CTCCTCGG
ATTG T- T ---------
GAM83941 5028 GAGAGAGGCCAGGTAGGCCT GTAG T TCC TTGTCT
CATCCTGCTGTTGTCTCAGC GAGAGAGGCCAG GCC CA TGCTG
ACTTGGGTCTGGTTTCTTTC CTTTCTTTGGTC TGG GT ACGAC
---- - TC- ------

GAM83960 15837 GAGAGAGTGAAGTGGGAGGG A AA- ---------- GCAA
CTGCAAGGCTTTTAAACAAC GAG GAGTG GTGGGA GGGCT
CAGATCCCACAAGCGCTCAC CTC CTCGC CACCCT TTCGG
TC A GAA AGACCAACAAATT ----
GAM83973 10364 GAGAGATGCATAGAAAACCA A ATAGAAAA GAA CAACTAGAACGAC
GGAACAATACAACTAGAACG GAG GATGC CCAG CAATA
ACTATTGCTGGGAAAGGCAT CTC TTACG GGTC GTTAT
TACTC A GAAAG--- --- ----------
GAM83987 15599 GAGAGCACGGTCTGAATCTG C AATCT AA-- G GAGT
CACAGAGCAAGATGCTGAGT GAGAGCA GGTCTG GCACAGAGC GAT CT
GGAGTCGGGGGCTTTGTGCT TTCTCGT CCGGGT CGTGTTTCG CTG GG
GGGCCTGCTCTT - ----- GGGG A ----
GAM83990 7506 GAGAGCAGATTGCCGCTGGC GCA -- C AGA- AGTACGG
AGAGGCAGTACGGGCCAAAA GAGA GATTGC CG TGGC GGC
GCCACCGTTGTAATCAATCT CTCT CTAATG GC ACCG CCG
C AA- TT C AAAA -------
GAM83998 2030 GAGAGCAGGCGCTGGGCAGT GGC GC T ---- - - T TTCC GTCACCA
GTGGAGGTCGTTGGAGTCAC GAGAGCA GCTGG AGTG GGAGG TCG TTGG AG CAC GC

TTCCGCGTCACCAGCTCCTG CTCTCGT CGACC TCGC CCTCC GGC GACC TC GTG CG
TGCCTGCCAGTCGGTGCCCC AC- -- - CCGT T G C TCCT -------
TCCCGCTCCAGCCATGCTCT
C
GAM84023 21929 GAGAGCGCTATAGGATCCCT GCT A CCTTTTACAA CACTAA
TTTACAAGGGCACTAATCCC GAGAGC AT GGATC GGG
ACTCATGATCTAATTAGCTC CTCTCG TA TCTAG CCT
TC AT- A TACTCAC--- ------
GAM84068 620 GAGAGGAGCAGGTGCAGTGA CA CA G T C - CTAA
TTCATACCCACTCTAAAGCT GAGAGGAG GGTG GT AT CATA CCA CT
GGCTGTGATGGCCACCCTTC TTCTCTTC CCAC CG TA GTGT GGT GA
TCTT -- -- G - C C ----
GAM84079 4582 GAGAGGCACCACTCAGAGGC CA CT A C CC CAAGT T-- TGCT
AGGCCCGGCTGCACAAGTCC GAGAGG CCA CAG GG AGG CGGCTGCA CC CCC
TCCCTGCTGGGCCTGGTCAC CTCTCC GGT GTC CC TCC GTCGACGT GG GGG
TGCAGCTGCCCCTCCCTGGC TC CG - - CC CACT- TCC ----
TGGCTCCTCTC
GAM84080 15492 GAGAGGCACCCTGGATCTTT AG CC GA T A GG ACGT
TGACGTGGTTCACGTGAAAG GAG GCA CTG TCT TTG CGT TTC
ATGCCAATGGACACAGTTTG CTC CGT GAC AGG AAC GTA AAG
CGACTC AG TT AC T C GA ----
GAM84109 11627 GAGAGGGGAATAGGAGAAGA GG --- -- - AAA TAG CCGAT
AATATGGGGTAAAATAATAG GAGAGG A ATAGGAGAAGAAA TATGG GGTA TAA AC
ACCCGATGTACTTAGGTACC CTTTTC T TATCTTTTTCTTT GTACC CCAT ATT TG
ACCATGGTTTTCTTTTTCTA TT TGA TG A GG- CA- -----
TAGTTTTCTTTTC
GAM84132 13202 GAGAGGTGCAGGCCCAGGGC A - CA AGG G A- AGC T -- - GTTTT
GTCGTCCGAGTGAGCAGCGG GAG GGT G GGCCC GC TCGTCCG GTG AGCGG GCT GG CC

TGCTGGCCGTTTTGGACCCG CTC CCA C TCGGG TG GGCAGGT CAC TCGCC CGG CC GG

GGCCCGCTTAGCACCATGGA - G AC --- G AC GAT - GC A -----
CGGGGTGGGCTCACGACCCT
C
GAM84174 1347 GAGAGTGACACACAGTGCTG GACACACA T CC ACATTT AAA
GCCCGGAGACATTTCCACAA GAGAGT GTGC GGC GGAG CCAC
AGTGGTCAACTCTGCCTGCA TTTTCA TACG CCG TCTC GGTG
TCCTAAAACTTTT AAATCC-- T -- AACT-- ---
GAM84190 14988 GAGAGTGTGTGTTATCTTCA - TATCTTCATAA G TAGCAC
TAACCCAGGGCTTTAGCACA GAGAGTGT GTGT CCCAGG CTT
GGGCCTGGGATTTATTACGC CTCTCACA CGCA GGGTCC GGA
AACACTCTC A TTATTTA---- G ------
GAM84219 15506 GAGATACACCTGCCATGTGC ACAC G GTG CA T GCCA
AGCATGAGGGTCTGCCAAGC GAGAT CT CCAT CAG TGAGGG CT
CCCTCACCCTGAGATGGGAG TTCTA GA GGTA GTC ACTCCC GA
CCATCTT CC-- G GA- CC C ----
GAM84263 10233 GAGATCACCGCGCTGGCACC ATCACC -- ACCCA - GAAGAGCAAG
CAGCATGATGAAGAGCAAGA GAG GCGCT GGC GC ATGAT
TCATCGCACCGCCGTAGCGC CTC CGCGA CCG CG TACTA
ACATACTC ATACA- TG CCA-- C ----------
GAM84265 5338 GAGATCACTTTACCCTCATC G A CT T C AAG TACCA-- CACAAC
AGCATTTACAAGGCTTACCA GA ATCACTTT CC CA CAG ATTTAC GCT AGA
AGACACAACTCTGAATTCTA CT TGGTGAAA GG GT GTC TGAGTG CGA TCT
GCAGTGAGTACTGTGTGGAA G A T- - A A-- TCTTAAG ------
AAGTGGTGTC
GAM84288 14900 GAGATCGGAGTCTCACTCTG ATC TC A C TT CT- -- C GATCTTG
TTGCCTAGGCTCGGAGTGCA GAG GGAG TC CT TG GCCTAGG CGGAG TGCAGTGG GC

GTGGCGCGATCTTGGCTCAC CTC CCTC AG GA AC TGGGTCT GCCTC ACGTCACT CG
TGCAACCTCCGCCTTCTGGG CGT TT C - T- TCC CA - -------
TTCAAGCGATTCTCCTGCCT
C
GAM84363 15156 GAGATGCTGTTTATTTATCA T TATCAA CA ACAAAATA
AGGTTTACATGTACAAAATA GAGATGC GTTTATT GGTTTA TGT
ATAATAAATCATAGTAATGA TTCTACG TAAGTAA CTAAAT ATA
ATTGCATCTT T TGATA- A- --------
GAM84434 22931 GAGATGGGATTTCACCATGT A ATT- CA TT C CCT CTTGA
TGGCCAGGCCTGTCTTGAAC GAG TGGG TCAC TG GG CAGG GT
TCTTGACCTCAAGTGATCCA CTC ACCC AGTG AC CC GTTC CA
CCCACCTC C ACCT A- T- A T-- -----
GAM84474 13638 GAGATGGGGTTTCACCCTGT A GTT- AC TT C CT CTCAA
TGGCCAGGCTAGTCTCAAAC GAG TGGG TC CCTG GG CAGG AGT
TCTTGACCTCAGGCGATTCA CTC ACCC AG GGAC CC GTTC TCA
CCCACCTC C ACTT C- T- A -- -----
GAM84485 17779 GAGATGGGGTTTCGCCGTGT GTT- CG CCA - GCCT
TAGCCAGGACGGCCTCGATC GAGATGGG TCGC TGTTAG GGA CG
TCCTGACGTCGTGATCCGCC CTCTGCCC AGTG GCAGTC TCT GC
CGTCTC GCCT CT C-- A ----
GAM84510 7263 GAGATGTATTTATTATACAT T TATA-------- G AATA ATA ACTTTATTCA
GGACTATAAATACTGCATAG GAGA GTATTTAT CAT GACTATA CTGC GCTG
CTGACTTTATTCACAGTCAA TTCT CATAGGTG GTG CTGATAT GACG TGAC

GCAGAGATATAGTCAGTGCC - TTTTATCCAACC A AGA- AAC ----------
AACCTATTTTGTGGATACTC
TT
GAM84513 22387 GAGATGTCCTCTATTCTTGA G TCTA G GCGTAT T- CTGATAC
AGAGCGTATTCTCGGAGCTG GA ATGTCC TTCTT AAGA TC CGGAG
ATACCTCTGTTGATCTTGAA CT TGCGGG AAGAA TTCT AG GTCTC
GAAACTGGGCGTGTC G TCA- G ------ TT -------
GAM84529 1642 GAGATTAATACAACTACTTA ATACAACT AAAATAT A---- GTTA
AAAAATATAGTCAATAGGTT GAGATTA ACTTAA AGTCA TAG
ACTAAGATATGGCTTAGCGT TTTTAAT TGAATT TCGGT ATC
TAAGTTTTTAACGTAATTTT GCAATTTT GCGAT-- ATAGA ----
GAM84534 21751 GAGATTACGAGGCGTCCCCT ATT GA- - - - TTTTAATTTAG
GGGTTTTAATTTAGTCACGA GAG AC GGCGTC CCCT G GG
GGGCGGCGTTACAGTTTACT TTC TG TTGCGG GGGA C CT
T ATT ACA C G A ----------
GAM84536 13757 GAGATTACTTACGTAAAGAA TTACTTACG TATTTGTCTTTT AA GCAATTTAAA

AATTATTTGTCTTTTGATTA GAGA TAAAGAAAAT GATT TAGT
ATAGTGCAATTTAAAACTGG CTCT ATTTCTTTTG CTGA GTCA
AAGTCGTTTTCTTTAAAAAT TACGTAAAA ---------- AG ----------
GCATTCTC
GAM84539 6916 GAGATTAGGGGTACTGGCTC T CTC GACAA T ATTCAAG
TGAAGACAAAGCTTAGATTC GAGATTAGGGG ACTGG TGAA AGCT AG
AAGCTCAGCTCACCATTTAT TTTTAGTCCCC TGACC ATTT TCGA TC
ACCAGTCCCCTGATTTT - AT- ACCAC C -------
GAM84554 13428 GAGATTCTGCATGTTGTAAG A T GTAAGGCTCGG - AGA - CTCC
GCTCGGTAGCCCATGGAGAC GAG TTCTGCA GTT TAGC CCATGG CTG ACTGG
TGACTGGCTCCCCGGTGTAG CTC GAGGCGT CAG GTCG GGTACC GAT TGGCC
CCCATGGTGCTGGACTGCGG G - ---------- T C-- G ----
AGGCTC
GAM84583 14272 GAGATTTGCAAATTTAAAAA GCAAA --- TCAAACTATATT
AATGAAGAATCAAACTATAT GAGATTT TTTAAAAAAAT GAAGAA
TTTCTTTTCTGTTTTTTTGA CTCTGAG AAGTTTTTTTG TTTCTT
AACAGAGTCTC ACA-- TCT ----------
GAM84629 22582 GAGCAAGAAAAGTGCTGGGC AAGTG CTC TTATTTTCTCCCT
TCCCACTTATTTTCTCCCTG GAGCAAGAA CTGGG CCAC
TGGTGTTCCGGAGTTCTTGC CTCGTTCTT GGCCT GGTG
TC GA--- TGT ----------
GAM84643 11284 GAGCAAGCGGGGCCCGCGCA C- G - GC- A AG G GCAA
GCTTCAGGGGCCGCAAGGGC GAG AAGC GG GCCC GC GCTTC GG CC
CGGGGCGCCAAGGGCATCGG CTC TTCG CT CGGG CG CGGGG CC GG
CTTTCCTC CT G A AAC - -- G ----
GAM84644 13 GAGCAAGCGGGGCCCGCGCA C G - GC- A AG GCAA
GCTTCAGGGTCCGCAAGGGC GAG AAGC GG GCCC GC GCTTC GGTCC
CGGGGCGCCAAGGGCATCGG CTC TTCG CT CGGG CG CGGGG CCGGG
CTTCCTC C G A AAC - -- ----
GAM84651 22729 GAGCAAGGGGCTTGCCAATC AGGG AAT--- C - GAGTAG
ACGGAATCGAGTAGGAATTC GAGCA GCTTGCC CA GGAAT C
CCTGTAGTCAGGCAGGCATG CTCGT CGGACGG GT CCTTA G
CTGCTC CGTA ACTGAT C A ------

GAM84658 15978 GAGCAATAGGCGTGGTCATG G AG - C CA - AATG
ACACCGCTACAAATGTGCTG GA CAAT GCG TGGT ATGA CCGCTA CA
GCGGCTTTATACCATCGCAC CT GTTG CGC ACCA TATT GGCGGT GT
GTTGGTC G CA T - TC C ----
GAM84661 5333 GAGCAATCAAAGCGTTATCT A A-- TATCT-- - TCGCTTCTT
GCAAAGCAATTCGCTTCTTA GAGC ATC AAGCGT GCAAAG CAAT
TTGATTTTGCCATAACCACG CTTG TAG TTCGCA CGTTTT GTTA
CTTGGAGATAGTTC A AGG CCAATAC A ---------
GAM84662 14984 GAGCAATCAAAGCGTTATCT - A-- TATC- T - TCCGCTTCTT
GTCAAAGCAATTCCGCTTCT GAGC AATC AAGCGT TG CAAAG CAAT
TATTGATTTTGCCATAACCA CTTG TTAG TTCGCA AC GTTTT GTTA
CGCTTGTAGATTAGTTC A ATG CCAAT C A ----------
GAM84663 360 GAGCAATCAAAGCGTTATCT - A-- TATC- T - TCGCTTCTT
GTCAAAGCAATTCGCTTCTT GAGC AATC AAGCGT TG CAAAG CAAT
ATTGATTTTGCCATAACCAC CTTG TTAG TTCGCA AC GTTTT GTTA
GCTTGTAGATTAGTTC A ATG CCAAT C A ---------
GAM84667 653 GAGCAATGAAATGGGTGACT - AAAT A- T CAGAT
GTGGAGGCAGATTCTCCCTA GAGCA ATG GGGTG CTG GGAGG
GCACATCTTCTCCGTCTGTT CTTGT TGC TCTAC GAT CCTCT
C C CTCT AC C -----
GAM84674 7603 GAGCACAAATCCACATTTAT - ACAAA A TTT -- TTTTC
TTATTGATTTTTCGTTAGTT GA GC TCC CA ATTT ATTGAT
TAAATCCTTGAGGGGTACAG CT CG GGG GT TAAA TGATTG
CATC A ACATG A TCC TT -----
GAM84747 11127 GAGCAGCAGGTCCCGCTGGT A CC C ----- AC GAC TG GCTC
GCTGTGGTCGAGTGACCGGG GAGC GCAGGTC GCTGGTG TGTGGTC GAGTG CGG TTG G

ACTTGTGGGCTCCTGCGGCC CTCG CGTTCAG CGACCAC ACACCGG CTCAC GCC GGC C

GACACTCATGAAGGCCACAT A -- T AAGTA A- --- GT ----
CACCAGCGACTTGCAGCTC
GAM84811 17245 GAGCATCACTACTCCGTGTG AT T - - T T A A T T AAACCC
TACCTGTTAGATGACATGTT GAGC CAC AC TC CGTG GTACC GTT GATG CA GT CAT
CATAAACCCATGTACCTGAT CTCG GTG TG AG GCGT CATGG TAG CTAT GT CA GTA
ATCGATCGGTACCTGCGAGA CT - T A C C - A C T ------
TGTGTGTCGCTC
GAM84815 10971 GAGCATCGCAGGCGGAGGGG CAT G - GCCTCTAG- CGTG
CAGCCTCTAGACCGTGGTAA GAG CGCAGGCG AGGGG CA AC
ATCCCAATGACCCCTCGCTT CTC GCGTTCGC TCCCC GT TG
GCGTTCCTC CTT - A AACCCTAAA ----
GAM84831 13609 GAGCATGCCGTATGCCAGGC T TG---- AG GAGGC GAGA
TGTGAGGCTCGAGAGACAAG GAGCA GCCGTA CC GCTGT TC
CAGTGGAAGAGTTGCGGCCT TTTGT CGGCGT GG TGACG AG
GTTT C TGAGAA -- AAC-- ----
GAM84833 14940 GAGCATGGAACGTTCTGCCA - GTT - TT TTT TCCTCTTT
TTTGTTTGTGTCCTCTTTTA GAGC ATGGAAC CTGC CA TG GTG
TTTCGTTGAGCAGTGGTTTC CTTG TGCTTTG GACG GT GC TAT
GTAGTTC A GT- A T- TT- --------
GAM84864 11937 GAGCATTTGTTGGAGTATTT TT - ATTTA AAT ACCATCC
AGGATTTAATCTCCAAGGCT GAGCAT GT TGGAGT GGATTT CTCCAAGGCT

ACCATCCAGTCTTGGAGTGG CTCGTG CA ACCTCA TTTGGG GAGGTTCTGA
GGTTTAGCCAACTCCACACT GT C ACCGA GT- -------
GGTGCTC
GAM84873 22848 GAGCCAAATATGAGTGACCA ATA AGTGA - G GTAA C CC AGAT
TGGCCTGTAACACAGCCCTC GAGCCAA TG CC AT GCCT CA AG CTCAGG
AGGAGATCCTGAGAACTATG TTTGGTT AC GG TG TGGA GT TC GAGTCC
CCCAAGGTGGTCGGGGTGCA CG- GTGG- C G ACCC A AA ----
GCTTGGTTT
GAM84878 2111 GAGCCACACGTTGCTTCTTC CA CTTC T TC CT - ACATGA CCT G
CCTGTGTTCCCAGCTGGAGG GAGCCA CGTTG TTCCCTG GT CCAG GG AGGG GTGTC
GGGCC TCG
GACATGAGTGTCCCTGGGCC TTTGGT GCAGC GAGGGGC CG GGTC TC TCCC CACAG
CCCGG GGC
GTCGTCTCCGGACGGGGCCC CC C--- - GA CG A ACCGG- T-- -
TGACACGGCCACCCTACTGC TCCG
CTGGAGGCCGGGGAGCCGAC TC
GCCTGGTTT AG

GAM84914 7006 GAGCCAGGCCCTTTTCCTCG C- CC TT G --- CCTTT
CGACAGGCCTTTCCTGAGCT GAGC AGGC TT CCTC CGA CAGG
CGGAGGGGAATTGCCTTTGC CTCG TCCG AA GGAG GCT GTCC
TC TT TT GG - CGA -----
GAM84915 22656 GAGCCAGGCTCCAGTCTGGT A T---- TC - A C GAAG
GTCCAGGACCCGTGTGAAGA GAGCC GGC CCAG TGGTGTCCA GG CC GTGT
CGCTGGCCATGGATACCATC CTTGG TCG GGTC ACCATAGGT CC GG CGCA
CTGGCCAATGCTAGGTTC A TAACC CT A - T ----
GAM84926 11628 GAGCCATCTTCTCATCTTGG ----- CATC TC AAGCA
TATCAGGAAAGCATCTTTAT GAGCCAT CTTCT TTGGTA AGGA
CAAAGAAGTTTGTATGGCTT TTCGGTA GAAGA AACTAT TTCT
TGTTT ---- -- -----
GAM84934 22670 GAGCCATTGTGGACGTTCCA TTG G-- G TG AGGA- T T GTAGTTG
GTTGGTGAGGAGCTGTGGGT GAGCCA TGGAC TTCCA T GTG GCTG GGG CGT
CGTGTAGTTGATGCCCTTGG CTTGGT ACCTG AAGGT A TAT TGGT CCC GTA
TAATGCTATTGATGGAAAGG TA- GGA - GT CGTAA T - -------
GTCCAATTGGTTC
GAM84935 583 GAGCCATTGTGGACGTTCCA TTG G-- GT- AGGA TT T GTAGTTG
GTTGGTGAGGAGCTGTTGGG GAGCCA TGGAC TTCCA TGGTG GCTG GGG CGT
TCGTGTAGTTGATGCCCTTG CTTGGT ACCTG AAGGT ATCGT TGGT CCC GTA
GTAATGCTATGATGGAAAGG TA- GGA AGT AA-- T- - -------
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GAM84936 10897 GAGCCATTGTGGACGTTCCA TTG G-- TG AGA-- TT T GTAGTTG
TTGGTGAGAGCTGTTGGGTC GAGCCA TGGAC TTCCAT GTG GCTG GGG CGT
GTGTAGTTGATGCCCTTGGT CTTGGT ACCTG AAGGTA TAT TGGT CCC GTA
AATGCTATTGATGGAAAGGG TA- GGA GT CGTAA T- - -------
TCCAATTGGTTC
GAM84943 267 GAGCCCACCAGAACACGTTG - A GA C T- TCCTCCCTTCT
GAAGTGTATCCTCCCTTCTT GAGC CC CCA ACA GTTGGAAG GTA
ATTTTTTCTAGCTGTTGGAG TTTG GG GGT TGT CGATCTTT TAT
GTGTTT T A -- - TT ----------
GAM84948 15489 GAGCCCAGAAGTGCTGAGGT A CAGAAG- T TG G GA CAA

GACGAGGAAGCCCAAGGCTG G GCC TGC GAGG AC AG AGCC
CTGTTCCTTCTGTGAACAAG C CGG GTG CTTC TG TC TCGG
AGGCCC C AGAACAA T CT - G- ---
GAM84954 433 GAGCCCAGCCAATCAGCGCC C CCA- - C CCCGGA -- GAGCCA
CCGGACTGCACCAGAGCCAT GAGCC AG ATCA G GC CTGC ACCA
GGTCGGCAGAAGAGCACTTG CTCGG TC TAGT C CG GACG TGGT
ATCGTACTGGCTC - ATGC T A AGAA-- GC ------
GAM84972 11086 GAGCCCCTCCACAGAAGGCC C T A G TCTT--- G - TCACCGCTTTTT
CCCCTCTTCCCCGACACGAG GAGCC C CC CAGAAG CCCCCC CCCC ACAC GAGG
GTCACCGCTTTTTTCTCTGT CTCGG G GG GTCTTC GGGGGG GGGG TGTG CTCT
GTGGGGCACATGTGGGGGGG C - - G TGTACAC - T ----------
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GAM84980 13208 GAGCCCGGCACGCCACAGGA CC-- ACA CCC G AT- C-- C AGC
CCCGTGGCACATTCCCGGTG GAGC GGCACGCC GGA GTG CAC TCC GGTGTGC TG
TGCCTGAGCCGTGCACGCCA CTCG CCGTGTGG CCT CAC GTG AGG CCGCACG GC
CAGGACCCGTGGCACATTCC AGTT C-- TA- G CCC ACA T ---
CGGTGTGCCTTGAGCTC
GAM84987 2469 GAGCCCTCCCTGCTAAGAGC - G A T -- G GT AGGCT TG TTT
TGTGTGCTGGGTAAGGCTGG GAGCCCT CCCT CTA GAGC GT GT CTGG A GG GCCC
TGGCCCTTTGGGCTCCCTGT TTCGGGA GGGA GGT CTCG CG TA GACC T CC CGGG
CCAGGATTTGCGCTCTGGAG T - - - TT G TG ----- CT ---
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GAM85040 4781 GAGCCTCTCCTGGCTCTGTC - - ------ TG G CTAG
TGCTGGTCTAGGCCAGGGGT GAGC CTCT CCT GGCTC TCT CTGGT
GGGGCTGATCAAGGGCAGAG CTCG GAGA GGG TCGGG GGG GACCG
AGCTC A C AACTAG GT - ----
GAM85043 13323 GAGCCTCTGGTGGCGCCCCC - G - T T C TTC- ------ GGAT
TTCTCCCCTTTTTTGGGTTC GAGCCTCT GGT GCGC CCCC TC CC CTTTTTTGGG CCCCAAT
TTTGA
CCCCAATTTTGAGGATGGTA TTTGGAGA CCG CGCG GGGG GG GG GAAGGGGCCC GGGGTTA
AAGCT

TCGAAGGCGCTATTGGGGTC A A A T T T TCCT TCGCGG ----
CTCCCGGGGAAGTGGTGGTG GGTA
GGGAGCGCAGCCAAGAGGTT
T

GAM85055 19760 GAGCCTGCCTGGTGCTGGCC TGC T - A-- CAGG G C T CTGGTGAT
TGAGTTCCCAGGAGCTGTCC GAGCC CTGG GCTGGCC TG GTTCC AGCT TC GG GGCC
GGTGGCCCTGGTGATGGCCC CTCGG GACC CGACCGG AC CGAGG TCGG AG CC CCGG

CTGAGGCTGGAGCCCCCATG TCC - T CCC ---- - T - --------
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GAM85056 17511 GAGCCTGCCTGGTGCTGGCC TGC T - A-- CAGG G T T CTGGTGAT
TGAGTTCCCAGGAGCTGTCT GAGCC CTGG GCTGGCC TG GTTCC AGCT TC GG GGCC
GGTGGCCCTGGTGATGGCCC CTCGG GACC CGACCGG AC CGAGG TCGG AG CC CCGG

CTGAGGCTGGAGCCCCCATG TCC - T CCC ---- - T - --------
GCCAGCCCAGCCTGGCTC
GAM85080 541 GAGCCTTCGTGCCCCCCCTT CCCCCCTTCCCCC TT CCCCCA

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          CCCCCTTTTTTGTCCCCCAA GAGCCTTCGTGC          TTTT  GT
          CTTGAGATGTATGAAGGCTT TTCGGAAGTATG          AGAG  CA
                               T------------   TT  ------
GAM85086 7339   GAGCCTTGTATCTCTTAAAT      TGTA    TA      ATTTTTTTTTAACGTGTG
          ATTTATTTTTTTTAACGTGT GAGCCT    TCTCT  AATATTT
          GAGATGTTCGAGAGAAGGTT CTTGGA    AGAGA  TTGTAGA
          C                    ----     GC      -----------------
GAM85108 7711   GAGCGATCTTATCTCTGTGC        T-       G     TGAA     C-       AATCCCA
          TTCGTGAAGCTAATCAAGCA GAGCGATCT  ATCTCTGT CTTCG    GCTAAT  AAGCAATT
          ATTAATCCCAAGTTGCTTCA CTTGCTGGA  TGGAGACA GAAGC    TGGTTG  TTCGTTGA
          GTTGGTCGAAGACAGAGGTT        CT      -    ----      AC       -------
          CAGGTCGTTC
GAM85119 13943  GAGCGCCCTGGAGCAGATGC     CCC     AGATG   A   T  TTTC     CGCA
          GCAAGTTCCTTTCGGACCCG GAGCG   TGGAGC     CGC AGT CC    GGACC
          CAGGTCCACACGGTGCTGGT CTCGC   ACCTCG     GTG TCG GG    CCTGG
          GGAGCGCTCCACGCTC         ---      CGAG-   G   T  CACA     ----
GAM85128 17536  GAGCGCGTAGTATCGGCCCG      - AG     ---- C   CA-  TC   --    AGGCT
          CCAGGTCGCCGTCCAGGCTG GAGCGC GT  TATCG    GC CGC   GG  GCC  GTCC
          GACAGGGCTTCCACCGCGAG CTCGCG CG  GTAGC    CG GCG   CC  CGG  CAGG
          CTTCTCGATGGCGCGGCGCT      G  CG     TCTT  A   CCA  TT   GA   -----
          C
GAM85138 22167  GAGCGGCACGAGGGTTACGG    C    CGA    TA       TT     TTTCCTTACAC
          CAGCACTTTTATTTTTCCTT GAG GGCA   GGGT  CGGCAGCAC  TTATT
          ACACAATGACGTGTTGCTGG CTC TTGT   TCCG  GTCGTTGTG  AGTAA
          GGCCTAATGTTCTC         -   AA-   GG        C-    ------------
GAM85139 8021   GAGCGGCAGCGCCGCGATGC     G  - -     T  C     C  ---   TACAGC
          CAGGCGCGTCCCTACAGCGG GAGCG CAG CG CCGCGA GC AGGCG GT   CCC
          GCCTGCCGCCTGCTCGTGGC CTCGC GTC GC GGTGCT CG TCCGC CG   GGG
          CGTCTGCGCTC            -  T  C     -  -     -  TCC   ------
GAM85149 13795  GAGCGGGGCCGGGCGGGAGG   C    C   C     GG G   AG   G  G    CT   CTC       TCACTTT
          GTGGGCAGGCCGCGGCGGCC GAG GGGGC GGG GGGAG  T GGC  GCC CG CGGC  GGG
GCGGGAGC
          TGGGCTCGCGGGAGCTCACT CTC CTCTG CCC CTCTC  G CCG  CGG GC GCCG  CCC   CGTCCTTG

          TTGTTCCTGCCCCGCCGGCG   T    -  -    TT G   AG   G  G    --   ---       -------
          GGGCGAGCCGGTTCTCTCCC
          CGTCTCTCTC
GAM85170 429    GAGCTAACAGCACGAGAAGC    TA    AC--   AAG--   TT    ACTGC
          CAGTTGGGGACTGCCCCCTC GAGC  ACAGC    GAG     CCAG  GGGG
          CTGGAGCAGCTCCTGGGCTG CTCG  TGTCG    CTC     GGTC  CCCC
          TGCTC                --    GGTC   GACGA    CT    -----
GAM85183 11767  GAGCTACGCTGGGCTTTGAG        TG  C   G  G    GG     GGTTTATGAA
          GTAGAGGTTGGGGGTTTATG GAGCTACGC  GG TTT AG TAGA  TTGGG
          AACCCAAATCTGGTTAAGAT CTCGGTGTG  TC AGA TT GTCT  AACCC
          CTTGGTGTGGCTC              GT  T   A  G    A-     ----------
GAM85243 11329  GAGCTCATATTTTATGCAGA        TT--  A     ATGATCA       ATAAGCAA
          TGATCAGTCAACACATAAGC GAGCTCATA    TT TGCAG      GTCAACAC
          AAGTGTTGACACTGTACAAT TTTGAGTAT    AA ATGTC      CAGTTGTG
          CCCTATGAGTTT              CCCT  C     A------       --------
GAM85244 21766  GAGCTCATTCTGAAGAGGCT          A--     C------   C   TTTACT
```

GACGATTTTACTATCTCATT GAGCTCATTCTG AGAGG TGA GAT
TTTTTCCTTTCTCCAGAATG CTTGGGTAAGAC TTTCC ACT CTA
GGTTC CTC TTTTTTT - ------
GAM85249 13124 GAGCTCCAGCACTTCAATTG C CACT---- TT--- TAATCCTCTAT
AATATAATCCTCTATTATTC GAGCT CAG TCAA GAATA
TTTTCTTGATTTAATTTCTG CTCGA GTC AGTT CTTAT
TAGCTC T TTTAATTT CTTTT ----------
GAM85266 14877 GAGCTCGAAGTGGGCCCCAG TCGAA CC CCCA T- CCCCCT
CCCAGACTGCCCCCCTGCCT GAGC GTGGGC CAG GAC GC
GTTGCCCCTGAGCCCACCTA CTCG CACCCG GTC TTG CG
CTGCTC TCATC A- CCCG TC ------
GAM85267 22995 GAGCTCGAGAGGCGGCTGCC - - C CC CTG-- GCGC
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TCTCCCTCCACCCTGCCTCC CTCGGGCTC TCCG CC AC CCC GTTC
TCGGGCTC C T C CT TCTCA ----
GAM85269 16294 GAGCTCGGACCGAATCGGCA - C AT G G- A GATGA
GGCACAGGATGACTGGCGAT GAGCTCGGA C GA C GCA GC CAG
GTGGGCTCTGTTTTGGGTTC CTTGGGTTT G CT G TGT CG GTC
T T CG G AG - -----
GAM85296 15158 GAGCTCTTTTTGGACTCCAA ----- TCCAAAA TCCC
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ACGTCTTAATAAGAAGGGGC TTCGGGGAAGA TCTG TATCAT
TT ATAAT CACG--- ----
GAM85328 15940 GAGCTGCGGCGCGGGCCATT T CC C- G ---- --- TCA AATCC
TCTGAGCAGTGGAGGTTTCA GAGC GCGGCGCGGG ATTT TGA CAG TGGA GGTT AGT
AGTAATCCACTAACAACCAG CTTG CGTCGTGTCC TAAA ACT GTC ACCT CCAA TCA
TTCCAAATTCTGTCATCAAA T -- CT - TTAA TGA CAA -----
TCCTGTGCTGCTGTTC
GAM85349 7332 GAGCTGGCCCTGCAGACCCT CC GCAGAC AAG A GCTA A CAC GCCT
GAAGTTCACTAAGGAGCTAG GAGCTGG CT CCTG TTCACT AGGA GGCA GTT TG
GCAAGTTCACTGGCCTCAAG TTTGACC GA GGAC AGGTGG TCCT CCGT CAG AC
ACTGCCCTGATCCTGGGTGG A- AGGTA- AG- G AGTC - A-- ----
AGACAGGATGGAAGACCAGT
TT
GAM85353 7336 GAGCTGGGAGTCCGGCCTGG GG- - -- A--- A TG GTAGA
AGGAGGCCCTGTCAGCGTAG GAGCTG AGTC CGGCC TGG GG GGCCC TCAGC
AGCTGGTGGGGCCCCGAAGC TTCGAC TCAG GTCGG ACC CC CCGGG GGTCG
CATCGGCTGAGACTACACAG ACA A CT GAAG - GT -----
CTT
GAM85365 15074 GAGCTGGTGTAACCATTGGG T CATT G A- CGCCC
CGGGCCGCTGAGGCCGCCCG GAGCTGGTG AAC GGGCGGGCC CTG GGC
CCGGTGGGGCCCGCTTGTTC TTTGGCCAC TTG TTCGCCCGG GGT CCG
ACCGGTTT - ---- - GG -----
GAM85381 7683 GAGCTGTGATCACTGCCACT CCC GA AGAGT
GCACTCCAGCCCGGGTGACA GAGCTGTGATCACTGCCACTGCACTCCAG GGGT C
GAGTGAGACCCTGTCTGGAG CTCGACACTAGTGACGGTGACGTGAGGTC CCCA G
TGCAGTGGCAGTGATCACAG TGT GA -----
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GAM85390 14113 GAGCTGTGGGAAAGAAGGTC GA G G CAAAGCA C - ATATCTC
AAAGCAGCCTCCAGCTATAT GAGCTGTGG AA AA GT GCCT CAG CT

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          CTCAGTCTGAAGGTCAAAGT CTCGATACT  TT TT CA      TGGA GTC GA
          CACGTTGTTCTTCATAGCTC        TC  G  G  CTGAAAC    A   T -------
GAM85409 13567  GAGCTTCCAGTACAGACCAC      CCAGTACAGACCAC   GC     GGGCA
          GAGGCCTTCCTGGGCAAGGA GAGCTT           GAG  CTTCCT
          GGACTCCAAGAACTTCGACG CTCGAG           CTC  GGAGGA
          AGCTC                CAGCTTCAAGAAC-   A-     -----
GAM85420 7567   GAGCTTCTCCTTGCCAGTTT    TTCTC      TTTCTCC    AG    C    - TTGTTTT
          CTCCCAGCAGGACCCTCTTC GAGC     CTTGCCAG      CAGC  GACC TCTT C
          TTGTTTTGAAAGATGGTCGG CTCG     GGATGGTT      GTCG  CTGG AGAA G
          CTGCTTTTGGTAGGCACGCT     CAC--       TTC----    G-    T    A -------
          C
GAM85425 7320   GAGCTTGAGTATCCTAAACT   GC        - AC     TC-     A   C     TTGAAA     G   CACGA
          GAAATCCAAAATACTGCAGA GA  TTGAGTATCCT AA  TGAAA   CAAAAT CTG AGAAT     CCTTTT AGC

          ATTTGAAACCTTTTGAGCCA CT  GACTCGTAGGA TT  ACTTT   GTTTTA GGT TCTTG     GGAAAA TCG

          CGAACATGATGCTAAAAGGA  --         A  AA     TAA     -   T     TAAA--      -   -----
          AATGTTCTTTGGATTTTGAA ACATGAT
          TTTTCAAATTAAGGATGCTC
          AGTC
                    -------
GAM85429 11759  GAGCTTGCCTAAGTTTTGGG        CTAA-    TG   -   -    TC   GA   TCTG
          CAGAGAACTCCTTGATGTTC GAGCTTGC     GTTT  GGC AGA GAAC  CTT  TGT
          TGGCAGAAAGTGTTTATCTG CTTGAACG     TAAA  CCG TCT TTTG  GAA  ACG
          GCCTGAAATGAGCAGCAAGT        ACGAG    GT   G   A    T-   AG   ----
          TC
GAM85439 15441  GAGCTTTCAAGGATAGGCTT   G     --       C     CTGCAAGCAATACAAAT
          TATTCTGCAAGCAATACAAA GA CTTTCA  AGGATAGG TTTATT
          TAATAAATCTATTCTGCTGA CT GAGAGT  TCTTATCT AAATAA
          GAGATC              A     CG      -     -----------------
GAM85451 4839   GAGCTTTTCACAAGATCGAG     TTTT      T     GC---      AA----    C    TATGTATT
          AGCCATATATAATCTCCCAG GAGC    CACAAGA CGAGA     CATATAT      TCTC CAGA
          ATATGTATTTTTGAGAGAGA CTCG    GTGTTCT GTTCT     GTATATA      AGAG GTTT
          GAGAATATATGCCACGTCTT    ----      -    GCACC      AGAGAG    A    --------
          GTCTTGTGGCTC
GAM85452 585    GAGCTTTTCCCCGGCAAACC     TTT  CC     ACCA     AT-   C   GAAACA
          ATGAGAATTTCCCCAGAAAC GAGCT   CC  GGCAA    TGAGA   TTC CCA
          ATGGAGAATTGTTTCAGTTG CTCGA   GG  CTGTT    ACTTT   AAG GGT
          TCCAGGTAGCTC           T--  AC     G---     GTT   A   ------
GAM85462 4700   GAGCTTTTTAGAGAAGTGTG       ---      AGTGT---   C  TG  CC  T  ATTTG
          AACGTTGGACCCTTGGATTT GAGCTTT   TTAGAGA       GAA GT   GA   CT GG
          GCCTGGTTTCTGATTTTCTT CTTGGAG   AATTTCT       CTT TA   CT   GG CC
          TTGTTGTCTTTAAGTGGAGG       GTG      GTTGTTTT   T  GT  TT  T  -----
          TTC
GAM85487 15919  GAGGAAACTGAGGCCTCAAG       CT    CCTCAA--   --    -      TGA      AACCCA   CTGAT
          CGTGGAGGGGTAGAGTGAAG GAGGAAA  GAGG       GCGT  GGAGG GGTAGAG   AGAGTAG     GGT

          AGTAGAACCCAGGTCTGATG CTTCTTT  CTCC       CGCA  CCTCC CCGTCTC   TTTCGTC     CCG
          CCAAAGCTGCTTTCTTCTCT       TC    ACACTCAA    CT    T      TTC      GAAA--   -----
          GCCTCCTCCTCACGCAACTC
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ACACCTCCTTTTCTTC
GAM85523 15162 GAGGAACGAGATGGCGGTTC - - ATGG TC A TGAGT TTTG
TCTGGAGGCTGAGTGCCGTT GAGG AAC GAG CGGT TCTGG GGC GCCG
TGCGGTGCCCTAGGAGGCCG CTTC TTG CTC GCCG GGATC CCG TGGC
AGCTCTGTTGCTTC G T GA-- GA - ----- ----
GAM85529 15596 GAGGAACTCCGCCGCCTGGC AA CGCCT TACCA ACCCCACAGAAGCCAC

GCCCATTACCAGCGACCCCA GAGG CTCCGC GGCGCCCAT GCG
CAGAAGCCACCGCCGTGGGT CTCC GAGGTG CCGTGGGTG CGC
GCCGTGGAGGCCTC G- ----- C---- ----------
GAM85557 7136 GAGGAAGGAGATTCTGCTAG A TTCT A AG GG AGAATG CA- GGAGA
TAAAAAGGAGTGGGGGAAGA GAGGAAGG GA GCTAGTAAA AGG TGG GA GC TTG
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AGCAGACTCAACCAGGCCTC - T--- C GG AA CAGA-- AAC -----
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GAM85576 15183 GAGGAAGTGAGAGAGAGAGG G ------ A-- TG GGGGA
TGTCGGGGAGGTGCCAGGCT GAGGAA TG AGAGAGAG GG TC
CTTTTTAACAAGCAGTTCTT CTTCTT AC TTTTTCTC CC GG
C G GAACAA GGA GT -----
GAM85595 10792 GAGGAATGTTGTTGCAGTAT ATG- G GTATT - TTTTGTGACT
TTGTCCTTTTGTGACTGGCA GAGGA TTGTT CA TGT CC
TATTTCATGGAGCAGAATGT CTCCT GACGA GT ATA GG
CCTC GTAA G ACTTT C ----------
GAM85607 567 GAGGACAAATGAACAAGACA AAATGAACAAGA T AGACA
GATGAGGGAGACATCCTCTC GAGGAC CAGA GAGGG
TGATATAAGATACAGTCCTC CTCCTG GTCT CTCCT
ACATAGAATATA - -----
GAM85608 13126 GAGGACAACAAGTGACCAGG A ACA TG CC C CCCTCCACCCTCACCCTC

GCTGCCCTCCACCCTCACCC GAGG CA AG A AGGG TG
TCCACCCTTTGCTGCTGACC CTCC GT TC T TCCC AC
TC A CG- GT -- - ----------
GAM85623 11682 GAGGACAGCAGGTGAAGTCA A GTGAAGT ---- AAAGCACAA
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CCTT G ------- AACT ---------
GAM85632 44 GAGGACATTCAAAACCCTCC TT - C----- CA CAGA
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TTTGGTTTGTGTTTGTTTTC CTTTTGT GT TTTGG AG CGGT
TT G TTTCAA AC ----
GAM85635 4622 GAGGACATTTTAAGGAAAAA GA TTT AAAAGGG---- AAAAAA
AAGGGCTTTAAAAAAATGGA GAG CAT AAGGAAA CTTTA
GAATAATAATAATTTCCTTT CTC GTG TTCCTTT GAGGT
GTGTGAACTC AA TGT AATAATAATAA ------
GAM85658 14793 GAGGACGGGGACTCGTTCCT ---- GA GTT G C- -- AAGAAAAGGCACTGAC
GCACTTGGCCATCATCCATG GAGGA CGGG CTC CCT CACTTGGC ATCA TCCATG
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GAAGTGATCCGCCAGGTGAA TCCG A- --- A CC GA ----------
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GAM85684 7377 GAGGAGAAAGTGCCATGTCA GAAAGT CA T G-- CAA TGC- TCG

CGTGTGTGGCAAGATGCTGA GAGGA GC TG CAC TGTGTGG GA TGAGC
GCTCGGCTTATATTTCGGAC CTCCT CG AC GTG GTACACC CT ATTCG
CACATGAAGGTGCACAGCCA GGAC-- AC - GAA AGG TTAT ---
GGTCCTC
GAM85687 11428 GAGGAGAAGTACTAAAACTT - A --- AA A A-- GTATC CGAGACTA
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TGGACGAGACTATCTAAAAG TTCCTTTT CA GA TT GAAA ATTTT AGACGA AATCT
GAGCAGACTATTTTAAAAAG A A AGT GC A ATC GGAA- --------
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T
GAM85710 13406 GAGGAGCAACTCATGGTGCC ACT- T CCGCTTT T TTCATCAAATTT
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CAAATTTCTACGACTCATTA CTTCTCGT GT TCACGGA CAG ATC
GGCACTTTGCCACTGCTCTT CACC T TTACT-- C ----------
C
GAM85739 13077 GAGGAGGAATTAGATGATCC - GAATTA TG AG---- C AAGA
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CCTTCACGAGCTTGGGGGTC CTT CTC CTACTGGGG T CTTCC CT
ATCGGAACTCATTC A AAGG-- GT CGAGCA - ----
GAM85776 2373 GAGGAGGGGAGATTCAGTGT ---- G - T GA GA TGTGG
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AGGGACTCCCCAGCAGTGAG CTCCTTCTCTCT GAGT AC ACC CCTC GG C
GGTCTCTCTCTTCCTC CTGG G G - AG A- -----
GAM85790 11746 GAGGAGGTGTACTTTGAGAA AG TTT AA TCA AG -- GAGCACTA
CCTCATGCAGCTGGTGGAGC GAGG GTGTAC GAG CC TGC CT GGTG
ACTACACCTCAGACGCAGAT CTCC CGCATG CTC GG ACG GA CCAC
GGACTCTGTACGCGCCTC G- T-- A- TAG CA CT --------
GAM85795 2090 GAGGAGTATAACCCGGAGGT T CC A - CTACTG GGAC
GGGCTACTGCAGGGACCTGA GAGGAG ATAA CGG GGTG GG CAG
ACCACATCGCCGCCTTGTCC CTCCTC TGTT GCC CTAC CC GTC
TCCTC C CC G A AA---- ----
GAM85802 11722 GAGGAGTGACTGGGAAGCCT - GA--- TG AA AT AAGGA
CCCATGCCAAGGAGGTGGGA GAGG AGT C GG GCCTCCC GCC
GGTGCCCTGGAAATAGCTGC CTCC TCG G CC TGGAGGG TGG
CTC G ATAAA GT CG -- -----
GAM85811 5341 GAGGATAAAGAAAAGACATT T TT AAG G AA TGGT
TTAAGTTTGTAGTAAAAGTG GAGGA AAAGAAAAGACA TT TTT TAGTA AG
GTCTCTGCTGGGGAAGGGTT CTTTT TTTCTTTTCTGT GG AGG GTCGT TC
TGTCTTTTCTTTTTTTC - TT GA- G C- ----
GAM85833 2225 GAGGATCCTCCGGAAGCCTT CTCC--- A AACCCTCCTTCCCCAAAC
AACCCTCCTTCCCCAAACAG GAGGATC GGA GCCTT
GGCTCTAAATCATGGTCCTC CTCCTGG TCT CGGGA
TACTAAA - ----------
GAM85839 15080 GAGGATCGCGCCCAGCACCA TC- ---- A C GAA GACA
GAAGGACGACAGTTTGCATG GAGGA GC GCCC GCA CA GGAC
ATGTAGGGCATGTGCAGTTC CTCCT CG CGGG TGT GT TTTG
CTC TGA TGTA A A ACG ----
GAM85851 1395 GAGGATGAGAGCAGCTTGCG TGA G CT C AT T GA GG T CGGGA TGT
GATCTTCCTGTGGGCAGAGG GAGGA GA CAG TG GG CTTCCTG GGGCA GGT TGG GAGGGC
CGC

TGGTGGTGAGGGCCGGGACG CTCCT CT GTC AC CC GAAGGGT CCCGT CCG ACC CTCCCG
GCG
CTGTGCGATGCCCTCCCAGC --- G AC - CG C -- -- - TA--- ---
CTGCCCCTGGGAAGGCCCCA
CACTGGTCTCCTC
GAM85939 4536 GAGGCACAATCTAAATACTA - - TAAAT- AAAAAT ATGA
AAAATGATTATGAAATCTTG GAGG CA CAATC ACT GATT
AGTTGAGCTGATTGATGCCC CTCC GT GTTAG TGA CTAA
TC C A TCGAGT GTT--- ----
GAM85942 4884 GAGGCACAGCCAGGGGCGGC ACA- GGC --- AG GGGGCA
AGCAGGGGGGGGCATCCGGG GAGGC GCCAGG GGC AGC GGG
CTAAGGCTTTACTTGGCGGC CTCTG CGGTTC TCG TCG CCT
AGTCTC ACGG ATT GAA GG ------
GAM85964 17865 GAGGCACTTTAGAGCAAATC AC AG A- ATGAAA G GATGAA
ATGAAAGATCGATGGATGAA GAGGC TTTAG CA ATC GATC ATG
TGTGGGTCACGAAGATGATG TTCCG AAATC GT TAG CTGG TGT
AACTAAAGCCTT -- AA AG AAGCA- G ------
GAM85992 7905 GAGGCAGAGAATTGCTTGAA AA GAAC-- AGGCA TT AGCCAAGATCACAC
CCCAGGAGGCAGAGTTTGCA GAGGCAGAG TTGCTT CCAGG GAGT GCAGTG
GTGAGCCAAGATCACACCAC CTCTGTCTC AGCGAG GGTTC CTCA CGTCAC
TGCACTCCAGCTTGGACGAC AG ACAGCA GAC-- -- ----------
AGAGCGAGACTCTGTCTC
GAM86075 16003 GAGGCAGGAGAATCACTTGA C AA GAA-- AGGC GT AGC AGAT
ACCCGGGAGGCGGAGGTTGC GAGG AGGAG TCACTT CCCGGG GGAG TGCAGTG CG

AGTGAGCCGAGATCGCACCA CTCT TCCTT AGTGAG GGGTCT CCTC ACGTTAC GC
TTGCACTCCAGTCTGGGCAA - AG ACAAC GA-- -- CAC ----
CAGAGTGAGATTCCTTCTC
GAM86313 4871 GAGGCAGGCGGATCACAAGG CGGA AA---- GATCGAGACCA
TCAGGAGATCGAGACCATCT GAGGCAGG TCAC GGTCAGGA
TGGCTAGCACGGTGAAACCC CTCTGTCC AGTG TCGGTTCT
TGTCTC CAA- GCACGA ----------
GAM86338 7925 GAGGCAGGTGGATCACCAAG TGGA A---- A-- CAA
TCAGGAGTTCAAGACCAGCC GAGGCAGG TCACCA GTCAGG GTT
TGGCAAAGATGGTGAAACCC CTCTGTCC AGTGGT CGGTCC CAG
TGTCTC CAA- AGAAA GAC ---
GAM86340 15190 GAGGCAGGTGGATCACCTGA A T A- - A- A- CAGG
GGTCAGGAGTTCAGGAGCAG GAGGC GG GG TCACC TG GGTCAGG GTT
CCTGGCCAACATGGTGAAAC CTCTG CC CC AGTGG AC CCGGTCC CGA
CCCGTCTC - - AA T AA GA ----
GAM86344 22106 GAGGCAGGTGGATCACGAGG TGG-- A- A GATCAAGACCA
TCAAGAGATCAAGACCATCC GAGGCAGG ATCACG GGTCA GA
TGACCAACGTGGTGAAACCC CTCTGTCC TGGTGC CCAGT CT
TGTCTC CAAAG AA C ----------
GAM86392 4872 GAGGCATGCGTGTTCGTGGC CATGC G G AC TCCTGGTTT
TGCACGGTTGCTCCTGGTTT GAGG GTGTTC TG CTGC GGTTGC
GTAGCCCAGCAGACAGGACA CTCC CACAGG AC GACG CCGATG
CTCCTC T---- - A AC ---------
GAM86411 17430 GAGGCCAGCATTCGTTCTAT - - TAT TG- G GC--- -- AATGTA
GTTTGTGTTAGGAGCAGCGG GAGG CCAGCA TTCGTTC GTTTG TTAG AGCA GGTCTC CAG

TCTCCAGAATGTATTGAAGG TTTC GGTCGT AGGTAGG TAAAT AATT TTGT CCGGGG GTT

GGCCACAAGTGTTATTAAAG A C --- TGA A GAACA AA ------
TTAAATGGATGGACTGCTGG
ACTTT

GAM86412 15216 GAGGCCAGCCCACTCGCCCC G CA ----- T CCCA C ATGAA
AGCCGCCGCCATGAAGGCCG GA GC GCCC AC CGC GCCGC GCC
TGGTGCAGCGCGTCACCCGG CT CG CGGG TG GCG TGGTG CGG
GCCAGCGTC G AC CCCAC C ACG- C -----

GAM86430 4729 GAGGCCCTCAAGAGCAGTAG A A GT AT----- AT TGAA
AATCAGTATATCCTGAAGGC GAGGCCCTC AG GCA AGA CAGTAT CC
AGTGCTGGAGGCAGTCTCAT CTTTGGGGG TC CGT TCT GTCGTG GG
GCACTAGGGGGTTTC A A AC GACGGAG AC ----

GAM86443 13352 GAGGCCGGGCCTGGGCCTGA CG- CTGATGC GC GCCC
TGCTGGTGTGGCAGGGCCCC GAGGC GGCCTGGGC TGGTGTG AGG
CTAGCACACCAGCCCGGGCC CTCCG CCGGGCCCG ACCACAC TCC
AGTGCCTC TGA ------- GA ----

GAM86446 15876 GAGGCCGTCAAAGTGCACAG AA ACAGC ACAC--- GTT T CCAGTGCCGA
CTTCCCCACACTCAAGTTCT GAGGCCGTCA GTGC TTCCCC TCAA CT TCCTG
TTCCTGCCAGTGCCGACAGG TTTTGGTAGT CACG AAGGGG AGTT GG AGGAC
ACGGTCATTGATTACAACGG CG C---- CAACATT ACT C ----------
GGAACGCACGCTGATGGTTT
T

GAM86455 13778 GAGGCCTCGTGCCAAGCCAC C- AA - CTT- CCTAAAA
CTCTTGGTCCTAAAAGCTCT GAGGCCT GTGCC GCCA CCT GGT
GCAGGATGGCCGGGCATATG CTCTGGG TACGG CGGT GGA TCG
GGTCTC TA GC A CGTC -------

GAM86470 10367 GAGGCGAGAGAATCGCTTGA G AA GA-- AGGG A T A AGCTAAGATCATAC
ACCAGGGAGGCAGGGGTTGC GAGGC AGAG TCGCTT ACC AGGC GGGGT GC GTG
AGTGAGCTAAGATCATACCA CTCTG TCTC AGCGAG TGG TCCG CCTCA CG CAC
CCGCACTCCAGCCTGGGTGA - AG ACAG G--- A - C ----------
CAGAGCGAGACTCTGTCTC

GAM86488 5206 GAGGCGGAGCTTGCAGTGAG - AG A- G AT----- CCAC
CCGAGATTGCACCACTGCAC GAGGCGGAG CTTGC TG GCC AG TGCA
TCCAGCCTGGGCGACAGAGC CTCTGCCTC GAACG AC CGG TC ACGT
AAGACTCCGTCTC A AG AG G CGACCTC ----

GAM86532 10181 GAGGCGGGCAGATCACAAGG GC CAGA AA---- GATCGAGACCA
TCAGGAGATCGAGACCATCC GAG GGG TCAC GGTCAGGA
TGGCTAACACAGTGAAACCC CTC CCC AGTG TCGGTCCT
CATCTC TA CAA- ACACAA ----------

GAM86542 348 GAGGCGGGCAGATCACGAGG G CAGA G GC GAGAT ACCATC
GCAGGAGATCCAGACCATCC GAG CGGG TCAC AGG AG CCAG
TGGCTAACTTGGTGAAACCC CTC GCCC AGTG TTC TC GGTC
CGGCTC G CAA- G AA ----- ------

GAM86564 13837 GAGGCGGGCGGATCACCGGA GC CGGA A GA-- AGT AGAC
GGTCGGGAGTTTGAGACCAG GAG GGG TC CCG GGTCGGG TTG
CCTGACCAACATGGAGAAAC CTC CCC AG GGT CCAGTCC GAC
CCCATCTC TA CAA- A ACAA --- ----

GAM86767 4951 GAGGGAAAGTATGCACAGTC GGAAAG A T-- GTG- AGAA
CGTGTCAGGGTTAGAAAACC GAG TATGC CAG CC TCAGGGTT

CTGAAAGAGGTACCTGAGTA CTC ATATG GTC GG AGTCCCAA
TAGAGAACTC AAGAG- A CAT AGAA ----
GAM86806 13555 GAGGGAGAGTGCGTGGGGAG A- G A---------- CTCAC
CCATGCTCACCGTGGCAAAC GAGGG GAGT CGTGGGG GCCATG
ACAGGAACCCCATGACTCGC CTCCC CTCA GTACCCC CGGTGC
CCCTC CG - AAGGACACAAA -----
GAM86821 12050 GAGGGAGGCCAGGCAGCTGG GCA --- --------- TGT
CTGGGCGGTTATGTTAACCG GAGGGAGGCCAG GCTG GCTG GGCGGTTA
CTGCACCATGACAGCATTTA CTTCCTTCGGTT CGAT CGAC TCGCCAAT
GCAGGTTGGCTTCCTTC GGA TTA AGTACCACG ---
GAM86847 10465 GAGGGATGCAGCTCCCAAAA - T AA---- ATA- AAGAAGG
TGTATAAGGAAGAAGGCCTA GAG GGA GCAGCTCCC AATGT AGG
AAAGCATTCTACAAGGGGGT CTC CCT CGTTGGGGG TTACG TCC
TGCTCCTCTC T - AACATC AAAA -------
GAM86848 13539 GAGGGATGCAGCTCCCAAAA - T CAA--- ATA- ACGAAG
TGTATAAGGCACGAAGGCCT GAG GGA GCAGCTCC AATGT AGGC
ACAAGCATTCTACAAGGGGT CTC CCT CGTTGGGG TTACG TCCG
TGCTCCTCTC T - AACATC AACA ------
GAM86965 4560 GAGGGGCCCATCACCATGTT CC TC T T TG TG ATGA
GACGCTGCTGGATGACTGGG GAGGGG CA ACCA GT GACGC C G
TGTCACTGGTATTGCCCCCC CTCCCC GT TGGT CA CTGTG G C
TC CC TA - - -- GT ----
GAM86992 10912 GAGGGGGCCGGTTATCCCCC GC TATCC T- GCGAC GCCC
AAGGTTTGCCGCGACCGGGG GAGGGG CGGT CCCAAGGT TGCC CGGGGGG
GGGCCCCCCTCCGGGCACCG TTCCCC GCCG GGGTTCCG ACGG GCCTCCC
CCTTGGGCGCGTGCCGACCC A- TGCGC CC ----- ----
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GAM87036 17509 GAGGGTCTCGAGGACGCCTA GG GAGGA C A T - ACCA CGAAC
GATCTCTTTCCCAGGGACCA GA GTCTC CGC TAG TCTC TTCCCAG GG TGG
TGGCGAACCCGAAGCTGCTG CT CGGAG GCG ATC GGGG AAGGGTC TC GCC
GGAATGGGGCTAAGCGAGGC AG GCGGA A - T G GAA- -----
GGAGGCGATC
GAM87040 7366 GAGGGTGAATGCTGCTGAGC T AT- GA CC- - AGGTTG
CCACCCAGAGGTTGTTGGAG GAGGG GA GCTGCT GC AC CCAG
TTCAGCGGGGCAGCTTGTCT TTCCC CT CGACGG CG TG GGTT
CCCTT T GTT GG ACT A ------
GAM87041 15628 GAGGGTGACATGCCATGCCG - ACA-- AT---- - - - C G GTCA
TGCCAACCATTCGTGGTCAC GAGG GTG TGCC GC CG TGCCA AC ATTC TG
AGAGTCGTCTGGCACCGAGC CTCC CGC ACGG CG GC ACGGT TG TGAG AC
TGACCGGGCAGGGGGCGCGC G GGGGG GCCAGT A C C C - ----
CTC
GAM87046 17151 GAGGGTGCACATGTCAAGTA ---- T AAG A AAAATC
CTTAGTAAAATCACAAAGTG GAGGGTG CACA GTC TACTT GT
AGGACTGTGAAGATACTTTC CTTTCAT GTGT CAG GTGAA CA
AGAA - GA- A ------
GAM87057 15945 GAGGGTGTACGCTCACTGAT TAC C GATTTTCA---- ACACA
TTTCAGCACACAGCGCCACT GAGGGTG GCT ACT GC
TGGCAAAGTCAGCACCATCC TTCCTAC CGA TGA CG
TT CA- C AACGGTTCACCG -----
GAM87062 19683 GAGGGTGTTATCTCCAATGT GG A- A- AATAAGA- A AGAA

CAATAAGAATTGATGAATAA GAG TGTT TCTCCA TGTC ATTGATG ATA
GAATGTATATCAATATGGAG TTT GCAG AGAGGT ATAG TAACTAT TGT
GAGATAGGTGGAGAAAGACG GT AA GG AGGAGGTA A ----
TGTTT
GAM87097 1700 GAGGTAAGGTTGGGCTGGTG G AAG TG ----- A G C CACT
CTCACAGCTGTAATCCCAGC GA GT GT GGCTGGT GCTC CAGCT TAATC CAG
ACTTTGAGATTGGGCTGGGA CT TA CG CCGACCA TGAG GTCGG GTTAG GTT
GTTCAAGACCAGCCTGGCAA G CAA GT GAACT G - A ----
CATGTC
GAM87104 15238 GAGGTACACTGAAGATAAAG C AA-- AAA ---- - AACAA
CAAAAGGCAACAAGCATTTT GAGGTA ACTG GAT GC AAAAG GC
TACAAGCAGATCATCCCAGT TTCCAT TGAC CTA CG TTTTT CG
TACCTT - CCTA GA- AACA A -----
GAM87125 17579 GAGTCCACTGGTGCCCAGTA A- TG TAAC C -- CA A GAAGCATGTG
ACACCCTCCGTGGGACCACC GAGTCC CTGG CCCAG ACCCTC GTGG GAC CC TGG
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AGTCCACCACAGGGGGTCCT AG CT C--- A AC A- C ----------
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GAM87170 10939 GAGTCGATAACTGTTGTCCT A TG T C CTCA- G GTTT
ACTCACCGGTGGTTTCAGTG GAGTCGATA C T GT CTA CCG TG
GCTAATTAGAACTGTGGTAT CTTAGTTAT G G CA GAT GGT AC
TGATTC - GT T A TAATC G ----
GAM87174 17405 GAGTCGCGACGGTCATCTTC T T T C CATCACA
TTGTCGGCATCACACCAGCA GAGTCGCGACGG CATC TC TGT GG
CGACGGTGCTGTCGTGGCTT TTCGGTGCTGTC GTGG AG ACG CC
- C C A -------
GAM87199 13363 GAGTCTATCCAAAATCACCA A AAAAT CA C G CTAAACATC
CCACCGTGGGCCTAAACATC GAGTCT TCC CAC CCAC GTG GC
GCGCACTGTGGATGTGGGAA CTCGGA AGG GTG GGTG CAC CG
AGGCTC A ----- TA T G ---------
GAM87228 11032 GAGTCTCCTCTGTTGTAACT CT -- T C GTGC--- T TTG
CGTGCTACTAGTAAATTGTT GAGT CCT CTGT GTAA TC TAC AGTAAA
TGCTGTAACTTGAAGATTTA CTTA GGA GGCA CATT AG ATG TCGTTT
CCACGGGAAGGGAATTC AG AG C T AAGTTCA - ---
GAM87261 6783 GAGTCTGAAGTTGTTACCAT A TT C GGT-- GTGCAAAA
GGTGAAATACTGTGCAAAAA GAGTCTG AG GTTA CAT GAAATACT
GTGTTTCTCAGAATGATGAT CTTAGAC TT TAGT GTA CTTTGTGA
GGTTCCAGATTC C GG A AGACT --------
GAM87306 22490 GAGTCTTGTTCTGTTGCCCA TC C TT C--- CT-- -- - TCA
GGCTGGAGTGCAGTGGCTCA GAG TTGTT TG GCC AGG GGAG TGCAGTG GC
GCTCACTGCAACCTCCTCCT CTC AACGA AC TGG TCC CCTC ACGTCAC CG
CCTCCCAGGTTCAAGCAATT TT - T- ACCC TCCT CA T ---
CTC
GAM87315 17446 GAGTGAAAAAGTGTGTTTTA - G T TTATGTCAATTG T AG AT TTAAACT
TGTCAATTGTGAAAGGAAAA GAGTGAAA AA TG GTT TGAAAGGAAAA GTT GAGT GGTTT
TGTTAGGAGTATGGTTTTTA TTCACTTT TT AC CAA ATTTTTTTTTT CAA TTTA TCGGG

AACTTGGGCTTCATTTTAAA A G C ---------- - AT CT -------
CTTTTTTTTTTAAACCCAGT T
TATTTCACTT

-

GAM87341 11721 GAGTGACCAGCCTGAGGGGC A ------- G GGG CTCTCA
CCAGGCTCTCACCTGGGAGA GAGTG CCAGC CT AG CCCAGG
CTGAGAAGCCGTGCTGGCAC CTCAC GGTCG GA TC GGGTCC
TC - TGCCGAA G AGA ------
GAM87409 14136 GAGTGCAGGGATGGTCCAGG C GGAT- AGGAC AAG- GATGG
AGGAGGACTGGAAGCTGCAG GAGTG AG GGTCCAGGAGG TGG CTGCAG
GATGGCTGCAGGGGGCCGTG CTCAC TC CCGGGTCCTCC GCC GACGTC
GACCCTCCTGGGCCTGAAGC - GAAGT CAGGT GGGG -----
TCACTC
GAM87459 5327 GAGTGGAAAGCCAGCCCCCT T AA A--- CCCTCCCAG TCATT
CCCAGGCACCTTCATTAGGT GAG GGA GCC GCC GCACCT
GCACGTGGCCCCAGGCCTCC CTC CCT CGG CGG CGTGGA
CTC - C- ACCC TGCA----- -----
GAM87466 11652 GAGTGGACTACGGTCATGGC A AC-- C G- A--- TCTAA
ACTTACCGAGGTCTAACCAA GAGTGG CT GGT ATG CACTTACCG GG
GCTGGTAGGTGGACATCGCC CTCACC GA CCG TAC GTGGATGGT CC
TTACAGGCCACTC G CATT C AG CGAA -----
GAM87484 11149 GAGTGGCCTGGTAGAAGGTT T G -- AGTGCAC - CCCTCT
GAGTGCACGTCTTTGTCCCC GAG GGCCTG TAGAA GGTTG GTCT TTGTC
TCTGGCAGCAGATTCTAGTA CTC CTGGAC ATTTT TCGAT TAGA GACGG
GCTGATTTTAGCAGGTCCTC - G AG GATCT-- C ------
GAM87485 9972 GAGTGGCGACGACGGTGGAG G GACGGTG AA TG GC--- GGAAA
TGGTATAATGTGGGCGCGGA GAGTGGC AC GAGTGGTAT TG G GC
AAGTATAGATTGCGGGGTGC CTCACTG TG CTTATCGTG GC T TG
TATTCAGGTGGTCACTC G GA----- GG GT AGATA -----
GAM87519 17645 GAGTGGGTGGCAGTGAGGTG - T A A GCC CC GCCATG
GCCCAGACCCTCGCCATGGA GAG TGGG GGC GTG GGTG CAGA CTC
GACTTTGCATCCACCGCCTC CTC ACCC CCG CAC CTAC GTTT GAG
CCAGCTC G T C - --- CA ------
GAM87541 17630 GAGTGTAAAATCTAACAGAA T A GAA AG AATCAATA
ATAAAGTAAATCAATATGAG GAGTG AAA TCTAACA ATAA TA
TTATGTGTTAGACTTTCATT CTTAC TTT AGATTGT TATT GT
C - C G-- GA --------
GAM87583 1621 GAGTGTGCTGCAGGTAGACA TG AG AGACAG GACCG - AGATGCA
GGCTGAGCGCGACCGTGACC GAGTG CTGC GT GCTGAGCGC TGA CC
AGATGCAGGATCAGAAAAGC TTTAC GATG CA CGACTCGCG ACT GG
GCTCAGCACACAGTAGTGCA GT A- CA---- AAAAG A -------
TTT
GAM87636 13200 GAGTTAATGTGTTTGGTGGG GTTT ---- GTGGACATGGTA
GACCAGGTGGACATGGTACT GAGTTAATGT GGTGGGG ACCAG
GGTAGGGCCCTATTTGACAT TTCGGTTACA TTATCCC TGGTC
TGGCTT GT-- GGGA ------------
GAM87639 16117 GAGTTAATTTTTGTATGTGG A TTTTGTAT TG AAA C GT- CTTCTTTACA CTAT

TGAAAGGAAGGGGTCCAGTT GAGTT AT G GTG GGAAGGGGT CA TTCAAT TGG CC
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ATCCAGTTAACCTGGCACCA C TTTTTGTT GT C-- A AAT TTC------- AC--
CTTGTTGAATAATGAATCCT TTAAC

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        TTCCCCATTGCTTGTTTTTG AG
        TCAACTT           TC
                    -----
GAM87642 6838   GAGTTACTAGCGACTAGTGG    TA       G   CAGC     CTTG
        TCAGCGGCCGCCTTGGTGGC GAGT  CTAGCGACTA TGGT    GGCCGC
        CCGCTATAGTCGTTAGCCGC CTCG  GATTGCTGAT ATCG    CCGGTG
        TC                CC       -   C---     ----
GAM87657 19471  GAGTTAGTGATGATGTTGTA       GATGATGTT   A   GA---     TAACT
        TATGCTGATGGTCTTAACTG GAGTTAGT       GTAT TGCT    TGGTCT
        GATTACAAAAAGCAAATACT CTCGATCG       CATA ACGA    ATTAGG
        AGAACAGCTAGCTC           ACAAGAT--   A   AAAAC     -----
GAM87699 7772   GAGTTCCCCTATTTCCATTG     ----  ATT-  A-  CA-  GAAA
        CATTTGAAAAAAACCCAACA GAGTTC   CCCT   TCC  TTG  TTT
        GGATCCAAGGGTTTTGAATT CTTAAG   GGGA   AGG  AAC  AAA
        C                 TTTT   ACCT  AC  CCA  ----
GAM87733 10791  GAGTTGACAATTTTATTTTC    T-    TTTTATTTT  CA   G  AATACAAA
        ACATTTGCCAATACAAAGGA GAGT  GACAA       CA  TTT CC
        AAACTGCATCTTTTTTGTCC TTCA  CTGTT       GT  AAA GG
        CACTT             CC    TTTTCTAC-  CA   -  --------
GAM87736 158    GAGTTGAGCCTTGGCCAGGG       CCT   CCA   TC   T   TCGC  GAAA
        GTCCGGTGCTGTCGCGGGAA GAGTTGAG   TGG   GGGG  CGG GCTG   GG
        ACCTCCAGCCTTGTTCTTCA CTCGACTC   ACC   CTTC  GTT CGAC   CC
        AACCACTCAGCTC           ---  AAA   TT   C   CT--  ----
GAM87765 15680  GAGTTGGCAGGGGGATGAGG    -   ---      -   T  TTGTGGTTTGTC
        ATGCATTGTGGTTTGTCTGC GAGTT GGCA   GGGGGATG AGGA GCA
        TCCTCCATCTCCTTCATGCC CTTAA CCGT   TCCTCTAC TCCT CGT
        TAATTC             T   ACT      C   -  ------------
GAM87772 7355   GAGTTGGGAGCTTGGATAGG   T    -----     ATA--   ACA    T  -  CCATTGAA
        CTACAACCCATTTGCCCCAT GAG TGGGA    GCTTGG    GGCT   ACCCA TTG CC
        TGAAGGTCGACTGGGTGGAG CTT ACCCT    CGGACT    CCGA   TGGGT AGC GG
        CCCGCACTCAGGCTGAATTC   C    TAAGT    CACGC   GG-    C   T --------
        CCACTTC
GAM87782 1799   GAGTTGGTGCCACTTATTGG    TG   C   A  G  -   TTATACAGATA  GAAA
        CCCCTTTATACAGATAAGGA GAGT  GTGC ACTT TT GC CCCT         AG
        AACTGGGGTGTAGAAAAGTG TTCA  TATG TGAA AG TG GGGG         TC
        TATTGACTT           GT   -   A  A  T   -----------  ----
GAM87798 17085  GAGTTGTTTTCATAACTGAC   TTG--      AAC   AGC-   TGAAT
        AGCATGGTGAATCCATTTGA GAG    TTTTCAT   TGAC   ATGG
        GTCAAAGTGAAGAATTTCCT CTC    AGAAGTG   ACTG   TACC
        C                 CTTTA      AA-   AGTT   -----
GAM87857 21879  GAGTTTGCTAGGCAGAATAG   T  CTA   G   A  AATGA   GTAA
        TAATGAGGATGTAAGTCCGT GAG TTG   GGCA AAT GT    GGAT
        GGGCGATTATGCCATTCAGC CTC GAC   CCGT TTA CG    CCTG
        CTC               C   TTA   A   G  GGTG-   ----
GAM87866 10439  GAGTTTGTTATCTGGGGTCG   TT   T  C   - TC  ---        CT---   GAATAAA
        TGTGATAAACTCTTGTGGAA GAG  TGT AT TGGG G  GT   GTGATAAACT    TGTG
        TAAACACGTTTACAGTTTAT CTC  ACA TG ACCC C  CA   TATTATTTGA    GCAC
        TATTTTACTCCTCCCATGTT    CT   T  T    T CT  TTT        CATTT   -------
        ACATCCTC
GAM87904 1991   GAGTTTTTTTTGTGTTTTTT      T   ----  T       CATTTGT  AGTTTATG
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          TCATTTGTGCAGTTTATGGC GAGTTT TTT    TG GTTTTTTT      GC
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          TAAGCTC              T   TCCT  -      TTT----  --------
GAM87941 7743   GATAAAGTTGAAGGCTACAA    AA   GA    AC   AAGACC    A  TGTTTT
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          TGCTCCTTAAGAAACTTAAA CTAT  TAA  TCCGA  TTC     TTCCT CG
          GCCTGGAATGATATC        AG   GG    AA   AAAGAA    -  ------
GAM88003 15580  GATAAGGACCTGTTTGGTGC   TA-   C       GCAGC     CAAAAT
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          TTAACAACCAAGCAGTTCCT CT   TCCT GACGAACCA    TTCCTC
          CATTC             TAC   T       ACAAT     ------
GAM88012 7235   GATAATAAATATGATATTTA    T    T  T    AA  G  GAAACTAA
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          AAAATCTCTTGTTTTTTATT TTATT TTTGT CT TAAA  TG TA
                        T    T  C    AG  G  --------
GAM88024 7349   GATAATCCTTGAAATTCTCA    AATCC    ATT-----   -  G    TGTAC
          CCTGGCTCTTGTACAGAGTG GAT     TTGAA       CTCA CCT GCTCT
          AGGCTGAGTCTACACCTTCA CTA     GACTT       GAGT GGA TGAGA
          GTCTTCATC           CTTCT    CCACATCT   C   G    -----
GAM88067 5291   GATACAGAAATGCTGCTATG    CAGA    T    -  TG----    GAGC
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          CTTTCAATAGCTGCATTGAT CTAT    TTACG CGATA CT     TGACC
          ATC                 AG--    T    A  TTCCAA    ----
GAM88069 2312   GATACAGCATTTGAATACAA    -  A  TG    CAATATGGTTTT      TC   TTC     CCC
CACACAC
          TATGGTTTTATGCAGATCAG GATAC AGC TT  AATA          ATGCAGA  AGG   AAAACA   AAGG
          GTTCAAAACACCCAAGGCAC TTATG TCG AA  TTAT          TGTGTCT  TCT   TTTTGT   TTCC

          ACACTTTATTTTTTTTCCTT     C   G  GT    T-----------      TT   TT-     ---    -------
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          TTATTTGAAGGCTCGTATT


                        ------------
GAM88091 7246   GATACATTTGGATTCTTCTC      TT  GA    CTCA---  TT  A     TTAGC
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          CAGTTCCATTGTATTATATA CTATGT  AC  AAGAA      TG  AC TTGACA
          AGAAGACACTGTATC          C-  AG    TATATTA  TT  C     -----
GAM88093 11584  GATACCAAGGTAATTTCTGG   TACCAA   AAT    GG   G-     ACC
          GCAGGTTTAAAACCTTTAAA GA     GGT   TTCTG  CAG  TTTAAA
          AGTTGATAGAATAACTGTTC CT     TCA   AAGAT  GTT  AAATTT
                        TG----   AT-    A-   GA     ---
GAM88096 15830  GATACCAGCCTCCCACTGTG     C    C  ACTGTG     -  GGAGAACTG
          GTGCCTGGTGGAGAACTGGC GATAC AGCCT CC     GTGCCT GGT
          CAAGGTACAAGGAAGGCTGT TTGTG TCGGA GG     CATGGA CCG
          GTT                  -    A  AA----      A  ---------
GAM88137 11755  GATACTTCCACGAAGCTGGC     T     AAGC    TAAGGA   G  GCCA
          TAAGGAGGTGTGGCCACAGG GATAC TCCACG    TGGC     GGT TG
          CCAGGTATGCCACGTGGACG CTGTG AGGTGC    ACCG     CCG AC
          TGTC                 C     ----    TATGGA   G  ----
GAM88148 22751  GATACTTTGATTACTGCAGG    C      A   CA---     ----    ACG        C    TTCAACAAGGTT
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        AGGAACAACGCTTATCCTTG GATA TTTGATT CTG    GGAGG   AACA   CTTATCCTTG AAATA
        CAAATATTCAACAAGGTTCT CTAT GAACTAA GAC    CCTTC   TTGT   GGATAGGGAC TTTGT

        GTTTCAGGGATAGGAACTGT   A     C  CACCG    ATAA   CAA       -   ----------
        TAATACTTCCGCCACCAGCA C
        ATCAAGATATC


                -
GAM88163 11489  GATAGACTAAAGGAAGCAGA    GA  AAA  AAG  GA     A  ATG
        GAGGGAAGTTATGGACCTCC GATA  CT   GG   CA  GAGGGA GTT
        TTCGTGAGGCCCAGGATGTC CTGT  GA   CC   GT  CTTCCT CAG
                      AG  C--  GGA  G-     C  ---
GAM88189 21772  GATAGCACTGATGAGAGCAA     CAC    AG-   AATCA-   A-  AG  GACAACA
        TCAGAGGAGCAGAGGACAAC GATAG   TGATG   AGC     GAGG  GC  AG
        ACTGGGCAGCCTCATTAAGG CTATC   ACTAC   TCG     CTCC  CG  TC
        CTACACATCACTATC         ---    ACA   GAATTA   GA  GG  -------
GAM88207 16234  GATAGCTTGGTGCCCATTGG     -  - G--   TTG--    GG  G    ACTGA
        TCGTGGTCAGCGTGAACTGA GATAGC TTG GT   CCCA    GTCGT  TCA CGTGA
        TTATGGTGAACGACAGACTT TTATCG AAC CA   GGGT    CAGCA  AGT GTATT
        GGGAAAACTCAATGCTATT      T  T  AAA   TCAGA   --  G    -----
GAM88218 13464  GATAGGCCACGTAGTCAACT     G  A-      A  CT  AGCCG     CCCTGAAA
        CTCAAGCCGTGTTCTCCCTG GATAG CC  CGTAGTCA CT  CA    TGTTCT
        AAAAGAGCAGTGTAAGTGAC TTGTT GG  GCATCAGT GA  GT    ACGAGA
        TACGACGGGTTGTT         G  CA      -  AT  G----     --------
GAM88220 6685   GATAGGCGAGTCTAAGAGCT      G-  C  ------   -----     CAG  CTTCA
        ACTGTCAGACCTTCAGTATA GATAGGC  AGT TAA     GAGC    TACTGT   AC
        CAGTAACCCTGTTCCCAAGA CTATCCG  TCA GTT     CTTG    ATGACA   TG
        TTGTACTAGGCCTATC         GA   T   AGAACC   TCCCA     TA-  -----
GAM88228 10171  GATAGGGCCCTCCAATCAGT      CCCTC      CTT   GCTCCCTTTCACTCA
        CTTCTGGCTCCCTTTCACTC GATAGGG    CAATCAGT   CTG
        ATAGTAACTGGTTGCTCTTC TTATCCT    GTTGGTCA   GAT
        CTATT                  TCTC-      AT-  ---------------
GAM88249 7455   GATAGTCTAATATTTACAAT   -    TAATATTTACA   T   T     T-  CCACATGT
        CATTTCTTGTTTTAGTGTTC GA TAGTC         ATCA TTCT GTTTTAG  GTT
        CACATGTAGCTTCTAGAACA CT ATTAG         TAGT AAGA CAAGATC  CGA
        GAACTGATGATTACTC      C   ----------   C   -      TT   --------
GAM88269 15306  GATATAAGAGGGCTAAGAAT          CTAAGAATTT      A    ATAT
        TTTTAAATTGAATCATATAT GATATAAGAGGG        TTAAATTG ATCAT
        ATGATATAATTTGATCCTTC CTATGTTCTTCC        AGTTTAAT TAGTA
        TTGTATC                  T---------      A    ----
GAM88286 12064  GATATATTAGAGTATAGACT   -   T    A   CTACAA--    CTG   -   TAAG
        ACAAGGAGAGCTGCTAATAT GAT ATAT AGAGT TAGA      GGAGAG   CTA ATAT
        TAAGATATATAGACTTCTCT CTA TATA TCTCA ATTT      TCTCTT   GAT TATA
        GCATGATATTTACACTCTAT   A   -   C   ATAGTACG    CA-  A   ----
        ATAATC
GAM88290 13467  GATATATTGTGCGCTCTCCT           TC---     ATAAAAAATATGA
        CTATAAAAAATATGAAGAGG GATATATTGTGCGC    TCCTCT
        ATGTGTGCGCGCAGTGTGTT TTGTGTGACGCGCG    AGGAGA
                             TGTGT     ----------
GAM88292 10943  GATATATTTATTGGAAAATA     TTTA     A  CCCAA  A     TCTATTATT
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          CCCAAATAATAAATTATCTA GATATA   TTGGAA ATA    ATA TAAATTA
          TTATTTAATTTAATATGACT CTGTAT   AATCTT TAT    TAT ATTTAAT
          TTATATTCTAAATTATGTC      TA--    A  TTCAG  A     ---------
GAM88300 15041  GATATCATTTGGGTCAGAGC  TA       T   G  CCCTCCCTT  GATTA
          TCCCCTCCCTTCAGATTATG GA  TCATTTGGG CAGA CTC       CA
          TTAACTCTGAGTCTGTCCAA CT  AGTAAACCT GTCT GAG       GT
          ATGAGTTC            TG      -   -  TCTCAATT-  -----
GAM88307 16346  GATATCTAACAGCAATACCT    ----  ACA  A--   T-  TC   CTTCGCAC
          GATCACTACTTCGCACTAGT GATAT   CTA  GCA  TACC  GA  ACTA
          TTCTCGGTACTATGCATATG CTATA   GGT  CGT  ATGG  CT  TGAT
          GTCCAATATC            ACCT  ATA  ATC   CT  T-   --------
GAM88320 13553  GATATGAATTGTTAATGTTT   T   TGTT    TAT  C     AAGT
          ATACTCAGGTAATAAGTGTT GATA GAAT   AATGTT   ACT AGGTAAT
          ACCTCAGTCATAGCATTTAA CTAT TTTA   TTACGA   TGA TCCATTG
          TATTTTATC           -  TAAT    TAC  C     ----
GAM88346 115   GATATGTGTCCATGTCAAGC      TC  G   C  CCCATTC     TGTT
          CTTCCCATTCAGATCATTGT GATATGTG  CAT TCAAG CTT      AGATCAT
          TATGATTTCCAAGTCTTGAA CTATGCAC  GTA AGTTC GAA      TTTAGTA
          TGTGCACGTATC            GT  -   T  CC-----      ----
GAM88347 10401  GATATGTGTGTAGTTTGTGG    -   TAGTTT    GTT     AG--  CAGA  -  ATTA
          CAGTTTTGGCCAAGGAGCAG GATAT GTGTG    GTGGCA  TTGGCCA   GAG   AGG AAG
          AAGGAAGATTACTTGCCTGT CTGTG CATAC     CATTGT  GACTGGT   CTC   TCC TTC
          TCTCAGTGTGGTCAGTGTTA    T   CTAC--    ---     GTGA  TTG-  G  ----
          CCATCCATACTGTGTC
GAM88368 17816  GATATTCGCTCTGGAGAAGT       CT---     AGTT  TGTAA   AATT
          TACATGTAAATAGAATTCTA GATATTCG    CTGGAGA   ACA    ATAG
          TAAATTGTTTTCCAGTTGAC CTATGAGC    GACCTTT   TGT    TATC
          CGAGTATC              CAGTT     ----  TAAA-   ----
GAM88372 21872  GATATTCTTCCAGAGTGATG   A   --   GA  A    - TCGCTGTC
          CGGCCGTCGCTGTCCGAGTC GAT TTCT  TCCA  GTG TGCGGC CG
          GTACATGTGGAACAGAAATC CTA AAGA  AGGT  TAC ATGCTG GC
                    -   CA   G-  -    A --------
GAM88380 22492  GATATTGCTTTCATAATTTA       TTTCATAATTTATACT   T--   TAATAT
          TACTAACATAAAATAATATT GATATTGC           AACA  AAAA
          TTTCACTGTTTTGCAATGTC CTGTAACG           TTGT  TTTT
                      TT----------   CAC   ------
GAM88382 13672  GATATTGTACATTGGTTTAC     GT-   TG TTTACTT    G  TT    TTAT
          TTTAGAAGAGTTTTTACTTA GATATT   ACAT  G     TAGAA AG  TTTAC
          TGTAAATTTTGTTCTGTTTT CTATAA   TGTG  T     GTCTT TT  AAATG
          GGTGTTTGAATATC          GTT   GT TT-----    G  TT    ----
GAM88462 17365  GATCAATTTTATCAATCTTT      TTTAT-  TCTTTTC       ACTTCTAGCTTTGC
          TCAGAGAATCAACTTCTAGC GATCAAT     CAA      AGAGAATCA
          TTTGCTGATTTTCTCTATTA TTAGTTA     GTT      TCTTTTAGT
          TTTGTCCTTTATTGATT        TTTCCT  TATTATC       ----------
GAM88472 4943   GATCACATCTTTGTCACTGG   C  TCTT   C--  A  ----   GAAGAGG
          ATGCTACTTGAAGAGGGAGT GAT ACA   TGTCA  TGG TGC   TACTT
          ACTTTGTAACCACTTTGATA CTA TGT   ATAGT  ACC ATG   ATGAG
          TGCTGTTATC          T  CGT-    TTC  A  TTTC    -------
GAM88474 4941   GATCACATTTTATTTCATTA  TC     ATTTCATTA  CTA    CATTT
          CACTAGATCACATTTTGATT GA  ACATTTT       CA   GATCA
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ACTGCATTTTGAAAATGTAT CT TGTAAAA GT TTAGT
TC TA GTTTTAC-- CA- -----
GAM88502 4961 GATCAGACTGAGGATGTCCT TC A ---------- CTG GCAA
GGAGGCTGTAGCTGCAAAGC GA AGACTGAGG TGTCC TGGAGG TAGCT
TGGATCTTCCAGATGACTTG CT TCTGATTTC ATAGG ACCTTC GTCGA
ATTGGATACTTTAGTCTATT TA - TTAGTTCAGTAG TAG ----
C
GAM88505 17404 GATCAGATAAGTGGAAAAAA TAA-- TG A- T CATTTCCTTATTCAA
TTGTCATTTCCTTATTCAAG GATCAGA G GAAAA AT GT
CCATGCTTTTCTGTGATATT CTAGTCT T CTTTT TA CG
CTGATC TATAG GT CG C ----------
GAM88530 22171 GATCATACAATTCAGAACTT AATTC CTT A GAC TCTC
TATCTAAAGACTGTTCTCAC GATCATAC AGAA TATCT AA TGT
AAATTAAGATATTCTAAAGT TTAGTATG TCTT ATAGA TT ACA
ATGATT AAA-- --- A AA- ----
GAM88556 10000 GATCATTAATTCATGACAGG AATTCAT TCACCATAGA GAAA
TCACCATAGAGAAGAAATTC GATCATT GACAGG GAA
CCTTGTCCTATACAGATGAT CTAGTAG CTGTTC CTT
C ACATATC C--------- ----
GAM88561 7505 GATCATTGTCCCCTCAATGA T CCTCAA - TC GA- TGATTCTAT
GCGAGGTTCGATGAAGCATG GATCAT GTCC TGAGCG AGGT GAT AGCA
ATTCTATTGCTGGAGTTGCC CTAGTG CAGG ATTCGC TCCG TTG TCGT
TGCGCTTAAGGACGTGATC - A----- G -- AGG ---------
GAM88565 6896 GATCCAAATCAAATCCACTG CA CAC TT - TCTCA TTTTTCAT
TTGAGGCCATCTCATGAATT GATCCAAAT AATC TG GAGGC CA TGAA
TTTCATTTTAGTTATTGTGC TTGGGTTTA TTAG AC CTTCG GT ATTT
TTCTTCACTTGATTCCATTT CC TTC TT T TATTG --------
GGGTT
GAM88567 4856 GATCCAAGCTGCCTGGAGGG CAAGCT C ACTGGCGGCA
GCTTTCACTGGCGGCAGAAA GATC GCCTGGAGGGG TTTC
TTCCTCCGGGTGAAGAGATC CTAG TGGGCCTCCTT AAAG
AGAAG- - ----------
GAM88568 15424 GATCCAATACTATTTAGTAA AATA -- CAAT-- CGG- A ATG
TCAATCCACACTCGGGCAGG GATCC CTATTT AGTAAT CCACACT GC GGTTC
TTCATGGAGCCAGCATAAAG TTAGG GGTAAA TCATTG GGTGTGA CG CCGAG
TGTGGTTCCTTGTTACTTGA C--- GT TTCCTT AATA A ---
AATGGCGGATT
GAM88596 285 GATCCATCTGTGTAGTTTCT CCATC TTT C CA TTCCAGGTTTTAAATAGT
GAACAGTCAGCGATTCCAGG GAT TGTGTAG CTGAA AGT GCGA
TTTTAAATAGTTTGTAAATT CTA ACACATC GACTT TTA TGTT
TTCAGTTTCTACACACTTTA TTTC- TTT - AA ----------
TC
GAM88612 6694 GATCCCCAGCCTTCTAGGAC C- C GACACTTAACT CACT
ACTTAACTGCAGGGCACTCC GATCCC AGCCTT TAG GCAGGG
CTGCCTGTAAGGCTTTGGGG CTGGGG TCGGAA GTC CGTCCC
TC TT T ---------- ----
GAM88623 15378 GATCCCTTTAAATTCAAATT TAA- AA C - - GTAT-- TTATT
TGAATCATTTGTCATGTATG GATCCCTT ATTCA TTTGAAT ATT TGT CAT GA
ATTATTTCTGTTAAGTGTAC CTGGGGGG TAGGT GAATTTA TGA ACA GTG CT
ACAGTATTTAAGATGGATAT TTTA A- - C T AATTGT -----

TTGGGGGGTC
GAM88658 12093 GATCGAGGCTCTCAAGGAGG GA CTCA AGGA- G- A AAGAAGAAC
AGCTGCTCTTCATGAAGAAG GATC GGCT AGG GCT CTCTTC TG
AACCACGAAGAGGAAGTAAA TTAG CCGA TCC TGA GAGAAG AC
GGCCTACAAGCCCAGATT AC ACA- GGAAA AG C ---------
GAM88662 10203 GATCGCCATGTTCATGGTGA C ATGG CCA CAA A ATCTCC
ACACCATTCAACAATCTATC GAT GCCATGTTC TGAACA TTCAA TCT TCC
CATCTCCGGAGGAACCTTGA CTA TGGTATAAG ACTTGT AAGTT AGG AGG
AGCTGTTCAGAATATGGTAT - ---- CG- CCA - ------
C
GAM88672 2614 GATCGTGGGGGGGTTGGTGG - - TG CACACC TTTTG
CACACCCACGGGGGTTTTGC GATCGTGGGGG GG T GTGG CACGGGGG
CCCCGTGTATTTTATTGGTC CTGGCGCTCCC CC G TATT GTGCCCCC
CGCCCTCGCGGTC G T GT TTAT-- -----
GAM88674 22034 GATCTAAAAATGAAAGCAAG C ---- AAGATA TTA TTGAT
ATATCTTATGTAGAAATATT GAT TAAAAAT GAAAGC TC TGTAGAAATATT
TTGATAATATTTTTACAGTG CTG ATTTTTG CTTTCG AG ACATTTTTATAA
AGCTTTCCCATGTTTTTATG T TACC ------ TG- -----
TC
GAM88700 10753 GATCTATTTTTTTTCAAACC TATT AAA GTGTCTGA TGAAT
AGGTGTCTGAGCTGGGTGAA GATC TTTTTTC CCAG GCTGGG
TTCCAGCCTGGGGAGAGGAC CTAG AGGAGAG GGTC CGACCT
TTTGATC TTTC G-- -------- -----
GAM88702 22038 GATCTCAAGGGCACCTTTTG AGG C TTG - C - TGAA
CCCAGCTGAGTGAACTGCAC GATCTCA GCA CTT CC CAG TG AG
TGTGGACAAGCTGCATGTGG CTAGGGT CGT GAA GG GTC AC TC
GATC GTA C CA- T - G ----
GAM88705 10587 GATCTCAGAAAAGGCCCTGA GA- CCCTGATT GAA CTGAGA
TTATGTGTGAAGCCTGAGAG GATCTCA AAAGG ATGTGT GC
TGGAACATATCCTTTGAATG CTAGAGT TTTCC TATACA TG
AGATC AAG -------- AGG ------
GAM88724 21802 GATCTCCTACTTTTCACCTC ACTTTTCAC AAGCT G AAGGAAAA
AGAAAGCTACAAATGTAAAA GATCTCCT CTCAGA ACAAAT TAA
GGAAAATTAAATTTGTTTTG CTAGAGGA GAGTTT TGTTTA ATT
AGAGGAGATC --------- ----- A --------
GAM88727 11997 GATCTCGGACACATCTGTGG A CATCT GA AACAGCGCTCCC
TGCTGTCCATGGACAAACAG GATCTCGG CA GTGGTGCTGTCCATG CA
CGCTCCCTGGACATGGACAG CTGGAGTC GT TACTACGACAGGTAC GT
CATCATTGCTGAGGTC - ----- AG ----------
GAM88728 13115 GATCTCGGACACATCTGTGG A CATCT GA ACAGCCGCTCCC
TGCTGTCCATGGACAACAGC GATCTCGG CA GTGGTGCTGTCCATG CA
CGCTCCCTGGACATGGACAG CTGGAGTC GT TACTACGACAGGTAC GT
CATCATTGCTGAGGTC - ----- AG ----------
GAM88743 11243 GATCTCTTGAGCCCAGGAGT T A C - GAG- G C T- GTGT
TTGAGGCTGCAGTCTCCCAA GA CTCTTG GC CAGG AGTTT GCT CAGTCTCCCAAGTAGCTGGG
ATTGT GT
GTAGCTGGGCATTGTTGTGT CT GAGGAC CG GTCC TTAAG TGA GTCGGAGGGTTCATCGACCC
TGACG CA

GTACCTGCAGTCCCAGCTAC T C A G AGTG A - TC ----

TTGGGAGGCTGAAGTGTGAG
AATTGCCTGAGCCCAGGAGT
TC

GAM88781 16915 GATCTGGCCTTATAGCAGGC - - A A AA-- GTT
GGAAGGCGTTGCCCACACTG GATCT GGC CTT TAGC GGCGG GGC
TCAGCTGAGGTGTCAAGGTC CTGGA CTG GGA GTCG CTGTC CCG
A T - A ACAC ---
GAM88788 10136 GATCTGTACCCGACACAGAC A GA- A G--- G- CAAG
GGGCCGAGGCAAGCCTGAGG GATCTGT CCC CAC GAC GGCC AGG
CTGACAGTTGGTGAGAGGGA TTAGGCA GGG GTG TTG TCGG TCC
CGGATT - AGA G ACAG AG ----
GAM88801 10882 GATCTTAGCAGAATCTTGAA A- AGAAT AA CCAGAGATCAAAGA
AAGCCCAGAGATCAAAGAGC GATCTT GC CTTGAA GC
CCTTCGAGCACACGCAGAAG CTAGAA CG GAGCTT CG
ATC GA CACAC CC ----------
GAM88866 13421 GATGAAAAAATTTAGACTGT A A AT ---- TAACC CACCATA
AACCGCACACCATATGTAAT G TG AAAA TTAGA CTG GCA
CCCAGCTTTTCTAATTTTAC C AC TTTT AATCT GAC TGT
AAC A A -- TTTC CCTAA -------
GAM88897 11492 GATGAACCAGCTTCGAGGCA AA -- A AAGAA T C ACGG
AGAAGTCCTGCGCACACGGG GATG CCAGCTT CG GGC G CCTGCG AC
TCGTAGGCAGGTCCGCTGGG CTAC GGTCGGG GC CTG C GGATGC TG
CTGGAACATC AA TC - GA--- - - ----
GAM88906 16017 GATGAAGAACATCTCCTTCT AACATCTCCTTCT CCATCCCCGCAA
GCGGCTGCCATCCCCGCAAC GATGAAG GCGGCTG
AGCTGCTATTTCGGCTTCAT CTACTTC CGTCGAC
C GGCTTTAT----- ----------
GAM88958 22815 GATGACCTAAGTTCTTGACC GA AA- ---- - A T AGTTGGCA
ACTCAAGTTGGCATGGCGGT GAT CCT GT TCTTGA CC C CA
TCAAGACATGATGAGAGGAA TTG GGA TA AGAACT GG G GT
GTT AA GAG GTAC T C - --------
GAM88963 22730 GATGACGTGCTGGAACTCAG TG G ACTCAGA G TTCCATCC
AGAGGTTGATGGTTCCATCC GA ACGT CTGGA GA GTTGATGG
CTGTCAATGTCAGACTCCTC CT TGTA GACCT CT TAACTGTC
CAGGATGTTGTC GT G CCTCAGA G --------
GAM88993 19510 GATGAGAATTTCCTCTTTTA A TCCT T T CACCACATAT
AATAATGTTATTTGAACACC GATG GAATT CTTTTAAATAA GT ATTTGAA
ACATATTTTAGATTATCTTA TTAC CTTGA GAAAGTTTATT TA TAGATTT
TTTGAAAGTATCAGTTCCAT - CTAT C T ----------
T
GAM89004 4751 GATGAGCCCCAGCCTAGCCT A CCA- CT C TCCAAAGCCACTGACACAT
GCTCCAAAGCCACTGACACA GATG GCC GC AGC TGC
TGCATGTTTAGCCCTTGGCC CTAC CGG CG TTG ACG
CATC C TTCC AT T ----------
GAM89012 2239 GATGAGCTTGCCATCATTGC CTT CA AA TCCT- CCAC ACAAGTTC
TGAATTTAAGTCCTGTCCAC GATGAG GCCAT TTGCTG TTTAAG GT TC
TCACAAGTTCGATCATACTG CTATTC CGGTA AACGAT AAATTC CA AG
CATCTTAAAGGTAGCAAATG TC- -- GG TACGT TACT --------
GCCTCTTATC

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GAM89029 13684  GATGAGGGGCCCCAGTGGTG    A   CCCC  TG   C     CC  TTCCCT
                GCAGCCTGCCTCTTCCCTGA GATG GGGG   AG  GTGG AGCCTG  TC
                TAGGTTTCCACTGCTCCTCC CTAC CTCC    TC  CACC TTGGAT  AG
                ATC                -   ----  GT   T     --  ------
GAM89031 10575  GATGAGGGGTTAGCATCGCT     G   TT  -       --  AG  C   -     CC--  CT-    CGCCA
                GAGTGAGGACGGAAGATCAC GATGA GGG  AG CATCGCTGA  GTG  GA GGA AGATCA    CAT
CCATC
                CCATCTCCATCCGCCAGATG CTATT TCT  TC GTGGTGACT  TAT  CT CCT TCTGGT    GTA   GGTAG

                GCCTATGTTTCTGGTCTCTC     G   CT  T       AC   GG  T   C     CTTT   TCC    -----
                CTTCGGTATCATCAGTGGTG
                TCTTCTCTGTTATC
GAM89057 15672  GATGATAATGGTGTTCCCTT    ATA   GT TT-    C    GAACCATCCA
                CGTCCGAACCATCCAGGATA GATG   ATG  G   CCCTT GTCC
                AGGGCATCGTCGTGGGCATC CTAC   TGC  C   GGGAA TAGG
                           GGG   TG TAC    -   ----------
GAM89070 11270  GATGATCCCCAAGTCTTAGC       CCAA    AGCTGT--     TC  G    GGAG
                TGTTGCTGCTCACGATGTTG GATGATCC    GTCTT       TGCTGC  AC ATGTT
                GAGAATATGTGCGGCATTAT CTACTGGG    CGGAG       ACGGCG  TG TATAA
                CCACGAGGCAAACGGGTCAT       CAAA    CACCTATT     --  -    ----
                C
GAM89088 14167  GATGATGGATGAGTTTGAGG       GA----  -    G    AACATACATGTCCCGG
                TGAACATACATGTCCCGGCA GATGATG     TG AGTTT AGGTG
                CCTGAGCTGCAGTCTGACAT CTACTAC     AC TCGAG TCCAC
                CATC                AGTCTG  G    -    -----------------
GAM89116 21841  GATGCAACTCTATCGTCACA      ACTCTA  GT A     AGAAAAATAAGAGACACA
                GTCAAGAAAAATAAGAGACA GATGCA     TC  C CAGTCA
                CATGGCTGAGGTGAATGCAT CTACGT     AG  G GTCGGT
                C                   A-----  TG A     ------------------
GAM89131 10966  GATGCAGAAAGAACTTGAGG   G  -  AGAA--       GA--  ATGACATAA
                TGACTAATGACATAATAGCA GAT CA GAA     CTTGAGGT    CTA
                AAACTTCAAGCCAAAGTTCA CTA GT CTT     GAACTTCA    GAT
                TGAATC              A  A   GAAACC       AAAC   ---------
GAM89135 14244  GATGCAGATCCAGGTGCCAT   T    ATCCA   G  ATG      ----    TG  GTAGCATTATTA
                GTCTCGTCCCTTTGGAGTAG GA GCAG    GGT CC   TCTCGTC    CCTT  GA
                CATTATTATTTGGAGGAGTT CT TGTC    CCA GG   AGAGTAG    GGAG  TT
                GATGAGAAAGGACCCCAGCT   T    GACC-   -  AA-      TTGA    GT  ------------
                GTTTC
GAM89178 9944   GATGCCGACTGGGAGCTACT     CGA-    GAGCTA    TGA     ACTA
                GGGTGAGCTGGACTACCAGC GATGC    CTGG     CTGGG   GCTGG
                CTTCAGGACCAGGACAGCGT CTGCG    GACC     GACTT   CGACC
                C                   ACAG    AG----     C--     ----
GAM89198 11866  GATGCCTTGCAGGGTGAGCC     CT   -      G-    C-  T    AGCT    CCTCACAC
                GGCGCTCTGCAGCTTGGTCC GATGC  TGC AGGGTGA  CCGG  GC CTGC    TGGT
                TCACACACCAGCGGGCCTCC CTACG  ACG TCCCACT  GGCC  CG GGCG    ACCA
                GGAATCACCCTGGCACGCAT     C-   G      AA    TC  -   ----    --------
                C
GAM89226 16982  GATGCTCTCCCCAGGGATCC      C  CCCA      G--   G     GGAGGCG
                GACGGCGCTGCGGAGGCGGC GATGCT TC    GGGATCC   ACG CGCTGC
                AGCGATGTATGGGATCCTAA CTACGA AG    TCCTAGG   TGT GCGACG
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        AGAAAGCATC            A  AAA-     GTA  A     -------
GAM89233 15665  GATGCTGAATGGAGATGCTA   G   AT  AGA-   ---   AGAC  TATA
        TCAAGACCCTATAGGATGAT GAT CTGA  GG   TGCT  ATCA   CC
        TACAGCACATACCTCTCAGA CTA GACT  CC   ACGA  TAGT   GG
        ATC              A   CT  ATAC   CAT   A---  ----
GAM89235 11352  GATGCTGAGCAGGAATTACT  TGC   CAG   ACTCT--     CGCT
        CTCAGATGACGCTTCATCTG GA  TGAG  GAATT     CAGATGA
        TTTCACAAATTCAGTCTCAA CT  ACTC  CTTAA     GTCTACT
        ACTC             CAA   TGA   ACACTTT     ----
GAM89247 11052  GATGCTGCTGTGAACGATGT     GCTG  AC      GAAAA   CT  TAGCT
        GGAGAAAAATGGCTTCTAGC GATGCT   TGA  GATGTGGA    ATGG  TC
        TGATACCATTCCACGTTATC TTACGA   ACT  TTGCACCT    TACC  AG
        AACAAGCATT            ACA-  A-      -----   AT  -----
GAM89256 17435  GATGCTGTCCGTGCGCGTTG    CTG   TGC    G  C-   GT    C   TTCCTCGGC
        CTGCGGCCGTGGTCCGCGCC GATG   TCCG   GCGTT CTG  GGCC  GGTCCG GCCC
        CTTCCTCGGCGGGCCGGACT CTAC   GGGT   CGTAA GAC  CTGG  TCAGGC CGGG
        GGTCTCCAGAAATGCTTTGG    TT-   TT-    A  CT   --    -   ---------
        GTTCATC
GAM89274 17378  GATGCTTTTGTATGCTTCTA  AT  -    A  C    TCATT      TTA
        TCATTTGGGGAGATTATTTC G  GC TTTTGT TG TTCTA    TGGGGAGA
        CTTACTTTCTAGAATAACAA C  TG AGAACA AT AAGAT    ATTCCTTT
        GATGTTCC          CT  T    -  -    CTTTC      ---
GAM89311 4563   GATGGACTCTTTCTTTTTAA        TT---  TTTT   TGTCC-  TCTT
        TGTGTCCAGCTCTTGTTCTT GATGGACTCT    CT   AATG    AGC
        TTTCATTTCTTAGCCTGCAG CTACTTGAGA    GA   TTAC    TTG
        AGTTCATC                CGTCC  TTCT   TTTTTC  ----
GAM89317 13444  GATGGAGCCCAGGCCTCTCC    A  CC-  -  T  CC    --       AG    ACCA  GATT
        GGAGCCGGATGGGGGAGTCG GATGG GC   AGG CC CT  GGAGC  CGGATGGGGG  TCGGC   GG

        GCACCAGGGATTCCAGCCGA CTACC CG   TCC GG GA  CCTCG  GCCTACCTTC  AGCCG   CC

        ACTTCCATCCGCAGCTCCCA    A  ACT   T  T  C-    AC       A-    A---  ----
        GTGGTCCTTCAGCACCATC
GAM89356 22831  GATGGCAGTGTTCTCCTCTG   T    T  TCTCCTC    CTGA  ACCT  ACACC
        GGGCCTGATCCACCTCTACA GA GGCAG GT      TGGGGC   TCC   CT
        CCAGCCCAGGAAGCCCCATC CT CCGTC CG      ACCCCG   AGG   GA
        TGTGCCTGCCCTC       C    -  TGTCT--     A---   ACCC  -----
GAM89370 13749  GATGGCCGTCACATCACTCA    CC   CA   --   T  A  CAA
        TATTCAGGCAACCAGACTAT GATGG  GTCA  TCAC  TCATA TC GG
        GACCGTGGCCTGACCTCCAT CTACC  CAGT  GGTG  AGTAT AG CC
        C                TC   CC   CC    C  A  ---
GAM89378 12091  GATGGCGGCTGCAGGGTTGC        ---   -  T  GC   CCATCT  TATT
        TGCCGCCCCATCTGCTATTG GATGGCGGCT   GCAG GGT GCT  CGCC     GC
        CCCGGCGAGGTCGCCGCTGC CTACCGTCGA   CGTC CCG TGG  GCGG     CG
        CTCAGCTGCCATC             CTC   G  C  A-   CC----  ----
GAM89380 10162  GATGGCGGTGGCCACCTCCT   G        C  C--   AGCACTTAACAC
        TGGAGCACTTAACACCCAGA GAT GCGGTGGCCAC TC   TTGG
        CCGACGTGGCCATTGTAGTC CTG TGTTACCGGTG AG   GACC
                    A        C  CCA   ----------
GAM89398 5084   GATGGCTTATTTAGAATGTA      TA     TGTATTC    T  TCCTTGCC
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          TTCAATGATTGTCCTTGCCC GATGGCT  TTTAGAA     AATGA TG
          ATTCATTTGTCCTTTTAAAG CTACCGA  AAATTTT     TTACT AC
          CAGCCATC             CG      CCTGT--    T --------
GAM89399 13565  GATGGCTTATTTGTTTTGTA      TATTT    TATT--  -     TCTTTCCC
          TTCAATGAGTGTCTTTCCCC GATGGCT    GTTTTG    CAA TGAGTG
          ATTCATTTGTCTTTTTAGAG CTACCGA    CGAGAT    GTT ACTTAC
          CAGCCATC             -----      TTTTCT   T     --------
GAM89400 11031  GATGGCTTATTTGTTTTGTA      TATTT    TATT--  -  T  CTTTCC
          TTCAATGATTGGCTTTCCCC GATGGCT    GTTTTG    CAA TGA TGG
          ATTCATTTGTCTTTTTAGAG CTACCGA    CGAGAT    GTT ACT ACC
          CAGCCATC             -----      TTTTCT   T  T  ------
GAM89401 21962  GATGGCTTATTTGTTTTGTA      TATTT    TATT--  -  T  TCTCTCCC
          TTCAATGATTGTCTCTCCCC GATGGCT    GTTTTG    CAA TGA TG
          ATTCATTTGTCTTTTTAGAG CTACCGA    CGAGAT    GTT ACT AC
          CAGCCATC             -----      TTTTCT   T  T  --------
GAM89436 7786   GATGGGGCCCTGGGAATGAA        -   AA  AACT  C  C  ACCCTC
          CTGGCTGCAGACCCTCCTCC GATGGGGCCC TGGG  TG   GG TG AG
          ATCCCACACCCCCAGGGGCT CTACCTCGGG ACCC  AC   CC AC TC
          CCATC                G   CC  AC--  T  C  ------
GAM89437 350    GATGGGGCTCATGGCTGTCT     G  C   CTG  -------     TTC  C    TCT
          GCCAAGGTTCATCCATGAAT GATGG GCT ATGG  TCT     GCCAAGG  ATC ATGAA
          CTTTTATTGATATCTTTTGG CTATC CGA TATC  AGA     CGGTTTT  TAG TATTT
          CTTAATTTAGAATACTATTA     A  T   ATA  TTTAATT     CTA  T   ---
          GCACTATC
GAM89486 17292  GATGGTGATCTGCTGTGCGG      ATC   GTG  G  GTGAA    CCAACC
          CCGTGAACTGCTCCAACCGG GATGGTG  TGCT  CG CC    CTGCT
          CAGGGAAAGGGCGAGAAGCG CTGCCGC  GCGA  GC GG    GACGG
          CGCCGTC              ---   AGA  G  AAAGG    ------
GAM89501 1649   GATGGTGTAAATGGTAAACG       AAA   AAACGT     T  ACA
          TGATATCATGAGACATTCCT GATGGTGT  TGGT    GATATCA GAG
          GATATCTCACACCAACACAT TTATTACA  ACCA    CTATAGT CTT
          TATT                 CA-   CACT--     C  ---
GAM89505 11446  GATGGTGTGAAATGTCCACT     T  GAAA  CCA     AATT    ATGAA
          TCTTAATTTTAAGATGAACT GATGG GT   TGT  CTTCTT   TTAAG
          TAGTCTAAAGAAGATACAGG CTACC CG   ACA  GAAGAA   GATTC
          CCCATC               - G---  TA-     ATCT    -----
GAM89506 5262   GATGGTGTTAAGCTGTACAC    G TG TAAGC      ----- CA     TTTATC
          CCCAGGACAGTTTATCCTGT GAT G  T    TGTACAC    CC  GGACAG
          CTGAGGAGTAAGTGTACAAT CTA T  A    ACATGTG    GG  TCTGTC
          GTGATC               G GT -----      AATGA  AG     ------
GAM89517 7553   GATGGTTTAGTGAGGCCCTC      T  GA   C  GGA    C--         GCCCA
          GGATCGGCCCCGCCGGGGTC GATGGTT AGT  GGCC TC   TCGGC   CCGCCGGGGTCG
          GGCCCACGGCCCTGGCGGAG CTATCAG TCA  CTGG AG   AGTCG   GGCGGTCCCGGC
          CGCTGAGAAGACGGTCGAAC      T  AG   C  AAG    CGA         -----
          TTGACTATC
GAM89567 15527  GATGTATTTTCGGTGTTTGA   TG ---      GTGT          CCA   GC     GTTT
          AAAATGAGCCCAGTTGCTCA GA  T   ATTTTCG   TTGAAAAATGAGC   GTT  TCAACT
          ACTGTTTGGTTGAAAACCTT CT  G   TGGAAGC   AATTTTTTACTCG   CAA  AGTTGG
          GCTCATTTTTTAATTGCGAA   GT AAT      GTT-          TTC   A-     ----
          GGTTAAGTGTC
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GAM89569 7159 GATGTCAAAGTTTTTACATG G A TTTT TA --- TTAT
CATATATTTCAGCTTATGCT GAT TCAA GT ACATGCA TA TTTCAGC
GAAGACCTACCTGTATGTTG CTA AGTT CA TGTATGT AT GAAGTCG
CACATTGAATC - A CGT- CC CCA ----
GAM89589 4978 GATGTCCTTCCCTCCCTAAT TGT CCC AA GTAA ATAA
AACTGTAAATATATAAATAT GA CCTT TCCCT TAACT ATAT
GTCAGGTTAAAGGGAAAAGG CT GGAA AGGGA ATTGG TATA
TGTTC TGT A-- A- ACTG ----
GAM89635 13426 GATGTGCCCTGGCCTGTGAA - GGCCTGT C C TCCTT
TTTCAACTCTCCTTGACTTA GATGT GCCCT GAATTT AA TC
AGTTCTCTTGAAGGGCAACA TTACA CGGGA CTTGAA TT AG
TT A AGTTCT- - C -----
GAM89643 373 GATGTGGACGGGTGATCCCC - GACG- GA CATC- CT - GAGGG
ATCGATCTGGCCCCTGAGGG GATG TG GGT TCCC GAT GGC CCCT
AGGGAGCTGTCAGCCAGGGA CTAC AC CCA AGGG CTG TCG GGGA
AAACCGAGAACACCATC C AAGAG AA ACCGA -- A -----
GAM89654 207 GATGTGGGCCGCATGTTCAA - C CAA AAT- AACA TTAA
GCAATTCAACAAGTTAACTG GATG TGGGC GCATGTT GC TC AG
AGGACAAGGCAGACGTGCAG CTAC ACCTG CGTGCAG CG AG TC
TCCATCATC T A A-- GAAC GAG- ----
GAM89664 2284 GATGTGGTTCCCAGAAAATA G ----- AAT TC CAAA
TAATCAAAATTCAAAGATTT GAT TGGTTCC CAGAA ATAA AAAATT
TTTTTGTTTCTGTAACTGGA CTA ATCAAGG GTCTT TGTT TTTTAG
ACTAAATC A TCAAT --- TT ----
GAM89666 4692 GATGTGTAAATGCCACATTT TG- C A--- GTAA AAGC
CGTAACAAGAAAGCTCTTGG GATG TAAATGC AC TTTC CAAGA
AGAAAAGAAGTTGTATTTGT CTAC GTTTATG TG AAAG GTTCT
TTCATC TTT T AAGA AG-- ----
GAM89798 15621 GATTAATGCAGGTGTTATAG - A------- T AAGCCAGAAGAGAAA
AAGCCAGAAGAGAAACTGTG GATTA ATGC GGTG TATAG
TCACCCTAAAGAAGCATATA CTAAT TACG CCAC GTGTC
ATC A AAGAAATC T ----------
GAM89818 15547 GATTACCTTAACGTCAGAAT TAA------- AG CTAATATTATGAA
TCCCTAATATTATGAAGGAA GATTACCT CGTC AATTCC
TTAGATGAATCAAGGCTAGG TTAGTGGA GTAG TTAAGG
TGATT TCGGAACTAA A- ----------
GAM89840 15177 GATTAGCTCATTTGAAGAAT C T G ------- AACA
ACCACAACAGTGGTTTTAAA GATTAG TCA TT AAGAAT ACCAC
CATTTTTGAATTGACTAGTC CTGATC AGT AA TTTTTA TGGTG
- T G CAAATTT ----
GAM89868 10205 GATTATCATTCTTGCCTCTC AT T C-- CC- TG C AGTGTT
CCTTTGTCACAGTGTTGTCG GATT CATTC TGC TCT CTT T AC
TGAAGATCAGATATGTATGA CTGA GTAAG ATG AGA GAA G TG
ATGCAGTC C- T TAT CTA GT C ------
GAM89889 4992 GATTATTTGGTCTTCTGGAT TA G T GGAT G G ATC G GCATGGAAGA
TTGGAGGCAATCAGCGGACA GAT TTT GTCT CT TT GAG CA AGCG ACA
GCATGGAAGATGTGTGCTCT CTA AGG TAGA GA AG CTC GT TCGT TGT
GGCTCGGATAAGAGATGGGA C- G - AT-- G G C-- G ----------
CATC
GAM89930 11944 GATTCATCATTGGACCCCCA C A C C CC CCCCA--- T ACCTTTGAA

GACCTCTCACCCAGGACCCC GATTCATCATTGGA CCCC GA CT TCA CAGGA AGTG GC
AAGTGTGCACCTTTGAAGCC CTGAGTGGTAACCT GGGG CT GA AGT GTCCT TTAC CG
ATTGTCTTCACTCCTGACTG A - A T CA CACTTCTG - ---------
ATAGATCGGGGATCCAATGG
TGAGTC
GAM89963 16061 GATTCCCCCAGGTGGGCGAA C T GCGA TG- GAAA GTTGG
GCGGTGGGAAGAAACCTTCG GATTCCCC AGG GG AGCGG GGAA CCTTCG
GTTGGTGGAGGCGGTTCCAG TTAAGGGG TCC CC TTGTC CCTT GGAGGT
TCTGTTGAAACCCCTTGGGG T - AAAG TGA GGC- -----
AATT
GAM89965 4707 GATTCCCCTGTCCATGGTGG T - T CAT T AA C AA-- TGCAAGT
TCGGAAACTGCGCATTGAAC GAT CC CC GTC GG GGTCGGA CTG GCATTG CAGGGTG
AGGGTGTGCAAGTCATCCTG CTA GG GG CAG TC TCGGCTT GAC CGTGAC GTCCTAC
GACCCAGTGCACAGCGTTCG C T T TT- - GC A CCAG -------
GCTCTTTGACTGGTGGCATC
GAM89991 15486 GATTCGGGCAAGTCCACCAC ---------- A--- - AC- AT GA TATAAATG
TACTGGCCATCTGATCTATA GATTCGGGCA AGTCC CCA CT TGGCC CT TC CGGTGG
AATGCGGTGGCATCGACAAA CTGGGTCCGT TCGGG GGT GA GTCGG GA AG GTTACC
AGAACCATTGAAAAATTTGA ATGAACTTCC AAAG A GTC AG AG TTTAAAAA
GAAGGAGGCTGCTGAGATGG CA GACAAAA
GAAAGGGCTCCTTCAAGTAT TC
GCCTGGGTC AG
A- -------
GAM89997 17728 GATTCTACATTATGGTGAGT --- GTGA AGAA- A- A AAA
TGTAGAATTATTTAATTATA GATTCT ACATTATG GTTGT TTATTT ATTAT TATTAC
TATTACAAAGTAATGATAGT CTAAGA TGTAATGT TAACA AATAAA TGATA GTAATG
AGAAATAAAGTACACAATAA TCG AAA- CATGA GA - ---
ATGTAATGTGCTAGAATC
GAM90025 556 GATTCTCTTTTCTCTCCCCA TCTTTT TCCCC CCCT- TTACCAACAC
CCCCCTGCCCTTTGTTACCA GATTC CTC ACCCCCTG TTG
ACACCAGTTTCCCAGGGGGT TTAAG GAG TGGGGGAC GAC
ACATGAGTTTCTGAATT TCTTT- TACA- CCTTT ----------
GAM90038 16947 GATTCTGGGGCAAATTGTGG TT G ATT-- GGA TA AACGTC
ACAAGTAGAAGAACGTCCTT GA CTGGG CAA GT CAAG GAAG
CCCCTTGGAAACTTTGGTTG CT GGCTC GTT CA GTTC CTTC
GCTCGGCTTC TC G GGTTT AAG CC ------
GAM90081 6740 GATTGACCTCCCTGAAGCCC T C AAG CCAATCT AGCTCC
AAGCCAATCTGTCCCAGCTC GAT GACCTCC TG CCCAAG GTCCC
CGGGATCACTTGGGACAGGA CTA CTGGAGG AC GGGTTC TAGGG
GGTCATC - - A-- AC----- ------
GAM90105 16293 GATTGATGCTCCTTCTTGAT - C TT TTTCTAC TG TCAAA
TTCTACTTTGCGGTGTCAAA GAT TGATG TCC CTTGA TT CGGTG
CATCGTGAATACCTCAAGGG CTA ACTAC AGG GAACT AA GCTAC
ATCATCATATC T T -- CCAT--- GT -----
GAM90116 13075 GATTGCAGCCAACCCTTAAG TG A CTTAA-- ----- GTG
GCCCTACCTTGTGAAGGTGC GAT CAGCC ACC GGCCC TACCTT
TTGTGGGCCACACCAAGGTG TTG GTTGG TGG CCGGG GTGGAA
GGTTGTGGTT GT G AACCACA TGTTC ---
GAM90122 10731 GATTGCCTTGCTGCAGAGGG CTT- GAGG CT- A TTAAAGAGAAAATATC
GAAACTGCACGTTTAAAGAG GATTGC GCTGCA GGAAA GC CGT

AAAATATCACGGGCCGCTTT CTGATG TGACGT CCTTT CG GCA
CCACAATGCAGTTGCTGTAG TCGT AACA CGC G ----------
TC
GAM90126 15687 GATTGCGGGCGTGAGCCACC GA T T TG TG - CT CA-
ACGCCTGGCCTAATTTTTGT GATTGCGGGCGT GCCACCACGCCTGGCC AATTTTTGTAT TT G GAG
C GGC AC
ATTTTTGGTGGAGCCTGGCC CTAATGTCCGCG CGGTGGTGCGGACCGG TTAAAAACGTA AA C
CTC G CCG TG
AACATGGTGAAGCCCTGTCT GG - C GT GT T TC AAG
CTGCTGAACATGCAAAAATT ATG
GGCCAGGCGTGGTGGCGGGC
GCCTGTAATC

GAM90138 10526 GATTGCTGGATGTGTGTGTG TG T- - TG TG TG TG GTGT
TGTGTGCATGCATGCGTGTG GAT C GGAT G TGTGTG TG CATGCATGCG T
TGTGTGTGTGTGTGTGTGTG CTG G TCTG C GCGCAC GT GTGTGTGTGT G
TGCACGCGTGCTGTCTCTGT GT TC T GT GT GT GT ----
GGTC
GAM90149 10168 GATTGGACTCTATCATATGT TG CTCT G CCAAGCTTAAACA
GTCAAATCCAAGCTTAAACA GAT GA ATCATAT TGTCAAAT
ATTTGACAGTGTGGTTCATC CTA CT TGGTGTG ACAGTTTA
TGATC GT ACT- - ----------
GAM90156 19575 GATTGGCAGACCCGGGACCT G ACCCG A CCCCCA TGTGGATCT
CTTACAGCCCCCAGGCATGT GATTG CAG GGACCTCTT CAG GGCA
GGATCTTGCCGAATCCTGAA CTGAC GTT CCTGGAGAA GTC CCGT
GAGGTCCATCTTGGCAGTC G CTA-- - CTAAG- ---------
GAM90200 22641 GATTGTGGGGAACCTGGGTG --- - TGAAGGCA A --- GGAGT
AAGGCACCTTTGGCAAGGTG GATTGTG GGG AACCTGGG CCTTTGGCA GGT GGT
GTGGAGTGCTTGGACCATGC CTAGCAC CCC TTGGACTC GGAGACCGT CCA TCG
CAGAGGGAAGTCTCAGGTTG AGT G TGAAG--- A GGT -----
CCCTGACACGATC
GAM90222 13228 GATTTAAATAATATGTGTCT T ATAATA TC G GCCCTGAA
TGTTTGCAGCCCTGAATGCA GA TTAA TGTG TT TTTGCA
AAGAATTCATAGCAGTTAAT CT AATT ATAC AA AAACGT
TC T GACG-- TT G --------
GAM90228 2593 GATTTAAGTGTATAACAATT A TG - A A AAA--- AA GAAACCGAGCCAG
AAGTGAAATCCGGAGAAATT GATTTA G TATAA CA TTA GTG TCCGGAG ATTGCACTG
GCACTGGAAACCGAGCCAGC CTGAAT C GTATT GT AAT CAC GGGTTTC TGACGTGAC
AGTGCAGTCACTTTGGGGAA - TG A C A GTAAAG AC ----------
ATGCACATAACTGATTATGG
TCTAAGTC
GAM90283 7303 GATTTCAAGCTCTCTTGTAA C T T- A AAATCCTAG
AAAGCAAAATCCTAGTGTAT GATTTCAAG TC CTTG AAAA GCA
TTTCTCAAGGACCTTGGAAT TTAAGGTTC AG GAAC TTTT TGT
T C - TC A ---------
GAM90296 10325 GATTTCATACTGGAGAGAAA CAT G AAACC AATGTGAAGAA
CCTTACAAATGTGAAGAATG GATTT ACTG AGAG TTACA
TGACAAAGCTTTCAGTTTCA CTAAA TGAC TTTC AGTGT
AATC CTT - GAAAC ----------
GAM90311 15937 GATTTCGCGTTGGGATTTAC TT GC-- TTTACCT- AG AGACCAAGAATG

CTGTTTAGAGAGTAAGACCA GAT C GTTGGGA GTTT AGAGTA
AGAATGTGCTCTGGAGATTT CTA G CGACCCT TAGA TCTCGT
AAATTTTCCCAGCTTAAGGG GG AATT TTTAAATT GG ----------
ATC
GAM90315 17469 GATTTCTCAAGACAAGAAGA TTC - C GA- AC GC CTGAAATTC
TAGGCACTTAATGGCAGCTG GAT TCAA GA AAGAA TAGGC TTAATG AG
AAATTCCTAATATTAAGCCT CTA AGTT CT TTCTT GTCCG AATTAT TC
GATATTCTTATCATTGAATC --- A A ATA -- AA ---------
GAM90317 10104 GATTTCTCTCTACCCCCCCT TTCT A C---- ATCTTCCC
CAGCATCTTCCCGCTGAGAG GAT CTCT CCCCC CTCAGC
TGTGGGGGAAGAGCCTTGTC CTG GAGA GGGGG GAGTCG
TTCC A TGTGA --------
GAM90333 2417 GATTTCTTTTTTAAATGCTA TC TT A T AAGT
GAAATGGATGTTGAAGTTAA GATT TTT TAAATGCT GAAA GGATGTTG
TATCCCTTTCAGTATTTATG CTAG AAG ATTTATGA CTTT CCTATAAT
GAAAGGATC GA GT - C ----
GAM90345 4713 GATTTGATATGTTCTTTGTC TAT-- -- CTTAA AGCC
TTAATCTTAGCCAAGAAAAC GATTTGA GTTCT TTGT TCTT
AAACAGGACCAACTTCAAAT CTAAACT CAGGA AACA AGAA
C TCAAC CA AA--- ----
GAM90347 21745 GATTTGATGATTATGTTGTG T ATT G- A T-- TGA CCATTGAT
ATAGAGTTGGCTTTCTGAGT GAT TGATG ATGTT TGAT GAG TGGCTTTC GTC
CCCATTGATGGCAGTGAAGG CTA ATTAC TACAA ACTG CTT ATCGGAAG CGG
CTATATTTCAGTCAAAAACA T C-- AA A TAT TGA --------
TCCATTATATC
GAM90379 13435 GATTTGGGTTTTGTTGGGGT TG TTT T TTTTG TTTAAATT
TTTTGTTACTGTTTTAAATT GATT GG TGT GGGGT TTACTGT
ACAGTAGGCTTCTATATATC TTAG CC ATA CTTCG GATGACA
CTGGATT GT TAT T ----- --------
GAM90400 15605 GATTTTAAGAAAACTGTAAA TGTAAAAGCAAAG A AATG
AGCAAAGATTTGTAGTAATG GATTTTAAGAAAAC ATTTGT GT
ACACAAATGTAACAAATAGA TTAAAATTCTTTTG TAAACA CA
TGTTTTCTTAAAATT TAGATAAACAATG - ----
GAM90401 15253 GATTTTAAGAACTAATAACA TTTAA AATA- --- TTTT
TCTTGAGTTATTTTTAATTC GAT GAACT ACATCT TGAGTTA
AGGGGGATGTGGAAAGGTTT CTG TTTGG TGTAGG ACTTAAT
GCAATGTC TAACG AAAGG GGG ----
GAM90426 22923 GATTTTATTAAAATTAAGTT TAAAAT CATCAATA A ATA
GAACATCAATAGCACATTAA GATTTTAT TAAGTTGAA GC CATTA
TATAATGGTAAAATTTAACT CTAAAATA ATTCAATTT TG GTAAT
TATCTGGTATAAAATC TGGTCT AAAA---- - ---
GAM90430 17392 GATTTTATTTGGACTTTACC A CCACACAG CATTTTAACAA
ACACAGTTATCCATTTTAAC GATTTT TTTGGACTTTA TTATC
AAGATAAAGAAATTGAAGTT TTAGAA AGACTTGAAGT AATAG
CAGAAAGATT - TAAAGA-- ----------
GAM90455 7852 GATTTTCTGGAGGTATGACA TTTT TA CAAT ATT TGCTCAGAT
ATAGTATTTTTTTATGCTCA GA CTGGAGG TGA AGT TTTTTA
GATTAAAAATCAGCTTTTCA CT GACCTCT ACT TCG AAAAAT
CCTCTCCAGTTTTTC TTTT CC TT-- ACT ---------
GAM90497 6888 GATTTTTATTATTTAAAAAA TTTTAT AAAA A- AAAA

ATGGAAAAACAAAAATGCAT GAT TATTTA AATGGAAAA CA
TTTTCATTCAATAAATGTTC CTA GTAAAT TTACTTTTT GT
CATC CCTT-- AAC- AC ----
GAM90572 1971 GCAAAAGAGTCTTGCCAAGG AGAG G AGAAAGCAG- GAAGGA
AAGAAAGCAGCTTGAAGGAA GCAAA TCTT CCAAGGA CTT
AGAAAGAGAAGATCCTTGGA CGTTT AGAA GGTTCCT GAA
AGAATTGTTTGC GTTA - AGAAGAGAAA ------
GAM90589 1665 GCAAAATCACTCGTTTTGTA A-- TT TG AAA CTTTGT
GGGAAAGGTTGCTTTGTTAA GCA AATCACTCG T TAGGG GGTTG
TCATGCCCTATGGTGGGTGA CGT TTAGTGGGT G ATCCC CTAAT
TTAACTGC CAA -- GT GTA ------
GAM90623 8018 GCAAACAGGGAAAAATATAT - TATATTTTT TAAAGTAC
TTTTTTCATAAAGTACTGAA GCAAACAGG GAAAAA TTCA
TGTTAACTTTTTTCATCTGT TGTTTGTCT CTTTTT AAGT
TTGT A TCAATTGT- --------
GAM90663 308 GCAAACTTGCATGCCATGTG CTT AT AT-- A -- CAAATC
ACCCGTGTGCAAATCCATAC GCAAA GC GCC GTG CCC GTGTG
AAGGGCATTGCCGGCGCTTA CGTTT CG CGG TAC GGG CATAC
TTTGC ATT -- CCGT - AA ------
GAM90694 4687 GCAAAGCGTTGCCTTCGAAC C T TC- A-- CC- TCCTTC
AGAACGCCCGTGGTCCTTCT GCAAAG GT GCCT GAAC GAACGC GTGG
CATTTAGCGTTCACAGTTCC CGTTTC CG CGGG CTTG CTTGCG TACT
CCGGGCGCCTTTGC - - CCC ACA ATT ------
GAM90729 453 GCAAAGTCTCTCTGTACCAC AG - T C--- C G - C C ----------
CCTGTGCCAGGTCGCTGCGC GCAA TCTC TC GTA CACC TGT CCAGGT CG TGCG TACA
TGTC
TACATGTCCTGAACGGGCAA CGTT GGAG AG CGT GTGG ACA GGTCCA GC ACGC ATGT
ACGG
AACACGGCGAATGTACCGCA -- T T TAAA C - T - C AAGCGGCACAAA
CGTACCTGGACACGGTGAAA TGAAC
TTGCTGATGAGGTTGC C
G

GAM90731 7433 GCAAAGTCTTCCCAGAGGTG AAAG---- T A - A GC A GGAA GCTGGATAA
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AACTCTGGCTGGATAATGGA CG AGA GGGTC CCATT TCA GGGTC AC AGA GAGGT
GAAGAGCAATCTGGGCACTG GTACAGTA C A G C TA G A--- ---------
TTACCACTGGGCAGAATGAC
ATGGC
GAM90789 21958 GCAAATGCTTCTAAACGGAC GC--- AAACG ---- GTA
TCAGCAGATGCGTAGCATTT GCAAAT TTCT GACT CAGCAGATGC
GCTGCATGGGTTAATTGAGA CGTTTA AAGA TTGG GTCGTTTACG
ATAGAAATTTGC AAGAT GTTAA GTAC ---
GAM90861 7747 GCAACAGACTCTTTATTTAA ACT---- T A- GTTTAAAA
TGTGGTTTAAAATACATCAA GCAACAG CTT ATTT ATGTG
AATCAAGTCCCTGGCTGTTG TGTTGTC GAA TAAA TACAT
T GGTCCCT C AC --------
GAM90864 5232 GCAACAGCATCACCTGGAAT ACA A CCTGGAAT A TT-- AACATA
GAATTCCTTTAGAACATACT GCA GC TCA GA TTCC TAG
GTCTTGGAAATCTGAAGCCT CGT CG AGT CT AAGG GTC

```
        GC              C-- A  -------- A   TTCT  ------
GAM90894 14098  GCAACCAGTGGTGAAGAAAA   - A-   GAAGAA     CTCTTTGC
        GGAATCTCTTTGCGTTCTTT GCAA CC  GTGGT    AAGGAAT
        GACATGGCTACAAGGTTTGC CGTT GG  CATCG    TTTCTTG
                        T  AA    GTACAG     --------
GAM90975 7166   GCAAGAAGGAAGGAGGGAGG   AGA   ---  -       - C  T   GAGCAACAA
        GCAGAGCGTTGTCTGAGCAA GCA   AGGA   AGG AGGGAGGGCAG AG GT GTCT
        CAAAGGCCGCCTGCTGCCTT CGT   TCCT   TCT TCTCTTCCGTC TC CG CGGA
        CTCTGTCTGTCTCCTGGTGC   GG-   CTG   G       G  -  C   ---------
GAM91005 10085  GCAAGAGCACCCGTAACTGT    AGC-  CGT  C   AA   A    A   GAGGAGA
        AACCTATCCTTTATCTGAGG GCAAG   ACC   AA TGT  CCT TCCTTT TCT
        AGAAGAAAAGGACAGGGCAT CGTTC   TGG   TT ATA  GGA AGGAAA AGA
        ACTTTCAGGTTCCGCTTGC     GCCT   ACT  C   CG   C    -  -------
GAM91027 10046  GCAAGATTGCAGCAAGATCA    ATT    AGAT   TG  TAC   TTCTTT
        TGTGCATACACAGTTCTTTT GCAAG   GCAGCA   CATG  CA   ACAG
        TGTTTTTGTGTGTGTGTGCT TGTTC   TGTCGT   GTGT  GT   TGTT
        GTCGCTTGT            GC-    GT--   GT  TTT   ------
GAM91047 22087  GCAAGCATTTCAGACAGGCA    C   C---   -   -    ---   AGAAA
        TTCCTTACATTAGAAAAATG GCAAG ATTT   AGACA GGCA TTCCTT   ACATT
        TGAAGAGGAGTTGCCATGTT CGTTT TAAG   TTTGT CCGT GAGGAG   TGTAA
        TATCAGAATTTTGC        -  ACTA   A   T    AAG   -----
GAM91068 604   GCAAGCGGCTCTCCTCTTCA   A   TCTC   TC   CAACTTTACTAAATTCTC
        TCTGCAACTTTACTAAATTC GCA GCGGC   CTCT  ATCTG
        TCCAGATAGAGCTCGCCGCC CGT CGCCG   GAGA  TAGAC
        TGC             C   CTC-   --   ------------------
GAM91092 6688   GCAAGGAAGATGCTGCCAAT     AA   ----- -    AACTA--   CGAG
        AACTATGCCCGAGGGCACTA GCAAGG  GATG    CT GCCAAT     TGCC
        CACCATTGGCAAGGAGATCA TGTTCC  TTAC    GA CGGTTA     ACGG
        TTGACCTTGT           AG   TAGAG  A    CCACATC   ----
GAM91095 42    GCAAGGACCCCTGCAAGTGT   A      GCAA--   TG -   -  CTCGA
        TGGTCGGGGGCCTCGAGCTG GCA GGACCCCT     GTGT  G TCGGG GGC
        CCTGAGCTGACACGAGGGGA TGT TCTGGGGA     CACA  C AGTCC TCG
        GGGGTCTGTGT          G      GGGGAG   GT G    G  -----
GAM91108 2236   GCAAGGCGAGGGGTCATTGG   AA   AGGG  CATT   TTTAC     AGA---      GTCCCC   A---
        GATTTACCAGGTTTAGAGGC GC  GGCG   GT   GGGA   CAGGTTT    GGCTGCCC    CTGG   TGC
        TGCCCGTCCCCCTGGATGCT CG  CCGC   CG   CCCT   GTCCGAG    CCGATGGG    GACC   ACG
        CAGCAGGCAGAACCCAGAAG   GA   CA-- AGT-   -----     ACACAC      AA----   CAAG
        GGTAGCCCACACAGAGCCTG  CAGCA
        TCCCTGAGCACCGCCAGGC  T
                    G
                    -----
GAM91170 9982   GCAAGTGAGGAAGGAATTCC   A   - AA  AAT   --    ATAAA
        CTATCAATAAATGGTGCTGG GCA GTGA GG  GG   TCCC  TATCA
        GATAACTGGCTATCACATGC CGT CACT TC  TC   AGGG  GTGGT
                    A   A  GG  AAT   TC    -----
GAM91178 7127   GCAAGTGCCTCCGGACATGT      CCTCC   A    ATCAC  GCTA
        GGATCACAGGCTACTAGAAA GCAAGTG    GGAC TGTGG    AG
        CCACGAGTTCCCTCCATTTG TGTTTAC    CTTG GCACC    TC
        T                  CTCC-   A    AAAGA  ----
GAM91182 15667  GCAAGTGGCCTACGTTAAAG      GCCTA    A-   ATAAACA   -  AAT
```

TTGATAAACAGCAGATTAAT GCAAGTG CGTTAA GTTG GCAG ATT
GATACTGCGCGACAACAATT TGTTCAC GCAATT CAAC CGTC TAG
AACGCACTTGT ----- AA AGCG--- A ---
GAM91198 15251 GCAAGTTCCGTGCCATCTGC AG- T GC CTCCA ATAAA
TCCTCCATAGATAAACTAGA GCA TTCCG GCCATCT TC TAG
CAAGATGGCTTGGAAAGATG TGT AAGGT CGGTAGA AG ATC
T AGA T AC ----- -----
GAM91286 22442 GCAATCGTGGCGCGTGTCCA A GC G A A C - TCGG
GTAGCGCAGGCGTATTCGGA GCA TCGTG GC TGTCC GT GCG AGGCG TAT
TGTCGTCTCGCATGGGACAG CGT AGCAC CG ACAGG TA CGC TCTGC GTA
GCACACGATGC - A- G G - - T ----
GAM91334 13926 GCAATGCTTTTAGATTAAAA AT ATG- G ACTTAAA
TGAAGGTGACTTAAACAGCT GCA GCTTTTAGATTAAA AAG TG
TAAAGTTTAGTTTAAAAGTT TGT TGAAAATTTGATTT TTC AC
GT -- GAAA G -------
GAM91350 7042 GCAATGTAATTTGAAATCAG A T T AATC TTT TTTTCTCTC
TTGAATTTCCTGTTTTTCTC GCA TG AA TTGA AGTTGAA CCTGT
TCATAGGTTCAACTACTCAA CGT AC TT AACT TCAACTT GGATA
TTTCATGC - - T CA-- --- ---------
GAM91423 2484 GCACAAAAAAGTGACATGTC CAAAAAA- A G-- G GAGGACCTAAGAA
CAGCTCAGAGGACCTAAGAA GCA GTG CAT TCCA CTCA
TGAGGTGGAAAAATGCACAA CGT CAC GTA AGGT GAGT
AATACATGC ACATAAAA - AAA G ----------
GAM91426 118 GCACAAAATGTAGGGTTATA AA T TA------ AACATG
ATAATGTTAACATGGACATG GCAC AA GTAGGGTTATAA ATGTT
ATCTTCTTTATAATTCTACT CGTG TT CATCTTAATATT TACAG
TTGAGTGC AG T TCTTCTAG ------
GAM91458 17164 GCACAATGGCAGGGCAGGTT A A-- G TTTG GA TGAG-- AGGGGTC
TGGCAGAGTGGTTGAGTGTC GC CAATGGC GGGCA G GCA GTGGT TGTC
AGGGGTCGACAAAGGACACC CG GTTGCTG CCCGT T TGT TACCA ACAG
ATGATGTAGCGTGTGCCCCA - GAC G GCGA AG CAGGAA -------
GGTCGTTGGC
GAM91472 17804 GCACACACAGTGAGTCGGGT CA-- GA C T - -- C ATGG
GTGGCTGTGCCTGTGGATGG GCACACA GT GT GGGTG GG CT GTGC TGTGG
CCACATGCACCTGGACCCAC CGTGTGT CA CG CCCAC CC GG CACG ACACC
CCAGCCAACGGATTGTGTGC TAGG AC A - A TC T ----
GAM91483 7171 GCACACATGTCCCCAGCATT ACACA TC ATTTTCTCAC - AA CCATAA
TTCTCACCTGGATAAAGCCC GC TG CCCAGC CTG GAT AGC
ATAAGCTGCGTCTCAGGCTG CG AC GGGTCG GAC CTG TCG
GGCTCAGC ----- TC ---------- T CG ------
GAM91502 17143 GCACACTCATGGACTTTAGG CT TTT--- T AAACCTC
TTTAGAAACCTCCTCAGCCT GCACA CATGGAC AGGTT AG
TCATTTGTTCGTGGATGTGT TGTGT GTGCTTG TCCGA TC
AG TTTACT C -------
GAM91506 19656 GCACACTCTAGTACCCCTTT CACTCT ACCCCTT CA ACAAACCA
GCATACCAACAAACCATGGT GCA AGT TG TACCA
ACCCACATCGCCACTTTTCC CGT TCA AC ATGGT
TGC CCTTT- CCGCTAC CC --------
GAM91531 510 GCACAGAGAAATGAGGTCCC ACAGA T - CCA C GAAG
CAGTCTACGTAGGAAGCTGC GC GAAA GAG GTCC GTCTA GTAG

TGGATGAGGACTCTTTTTTC CG CTTT TTC CAGG TAGGT CGTC
GAGCGGC GCGAG T T AG- - ----
GAM91562 11608 GCACAGCTCCGCCTATCCCT AG TA TCT G AGAAGGGACA
CTGCAGGGCAGAAGGGACAG GCAC CTCCGCC TCCC GCAG GC
TGCTGCGGGAGGCGGAGGTG CGTG GAGGCGG AGGG CGTC TG
C -- -- --- G ----------
GAM91633 7542 GCACATGCGGGATGCCCAGG G A -- T ACGA CGCG
GTACGGCTGGACGAGCACGC GCACATGC GG TGCCCAGG GTACGGC GG GCA
GTGTGGCCTGCTGTGCGGCC CGTGTGCG TC GCGGGTCC CGTGTCG CC TGT
TGGGCGCTGGCGTGTGC G - GG T GG-- ----
GAM91636 7650 GCACATGGCCACCATAGAAG --- AA CCTGCTGTCCCTACCAT
GCCCTGCTGTCCCTACCATG GCACAT GGCCACCATAG GGC
CCCCTGTGGTGGCCCTCGTG TGTGTG CCGGTGGTGTC CCG
TGT CTC C- ----------
GAM91683 11362 GCACCAGCTCTTGGGCCTCA A --- GC A T CTTC CTGTCC
ACCTCCTCTTCCTGCTGTCC GC CCAGCTCT TGG CTCA CC CCT CTG
CAGAACCGGGTGGCTGAGTT CG GGTTGAGG ACC GAGT GG GGG GAC
CCACACGGAGTTGGAGC A CAC TT C T CCAA ------
GAM91688 4994 GCACCAGGACGGCTGGAATT CCA A - GA- AT---- CTT
TCCATATGTGCTTCACATTG GCA GG CGGCT G ATTTCC ATGTG
TGAGGGGAGTGCACAAGCCG CGT CC GCCGA C TGAGGG TACAC
CCCATGC AC- - A ACG GAGTGT ---
GAM91706 10199 GCACCATTTTCTCCTAAGTC AC- TC A- GT TT AA TAA
TTATTCCAAGCTAAGCAGGC GC CATTTTC CT A CTTA CC GC
TTAAGGTTACAGTGGAAAGT CG GTGAAAG GA T GAAT GG CG
GAGAGC AGA GT CA TG TC A- ---
GAM91740 444 GCACCCCGAGATCTCGAAGA CC---- A T AGACCC AGCAC
CCCCGGAGCACCCGAGCATA GCA CCG GATC CGA CGG
TCGTGATCATGGAACATTTG CGT GGT CTAG GCT GCC
C TTACAA A T ATACGA -----
GAM91742 13720 GCACCCCGCCCCTCACTTGC C CG CACT GTA------ AGCT
TGGCTAGTATGCAGCTGCAG GCA CC CCCCT TGCTGGCTA TGC
AAACTTAATAGCCAGTATCA CGT GG GGGGA ATGACCGAT ACG
GGGGATGGCTGC C TA CT-- AATTCAAAG ----
GAM91750 7143 GCACCCCTTGCAGCTCCAGC C C CCA --- A-- - --- CCATGA
TCCAGCTCCAGCTCCAGCCA GCACCC TTG AGCT GCTCCAGCT CC GC TC CAG
TGACTGAAAGATGCACAGGT CGTGGG GAC TCGG TGGGGTCGA GG CG AG GTC
ACAGCTGGGGTCACGGCTAC A A CAC CAT ACA T AAA ------
AGAGGGTGC
GAM91755 4754 GCACCCGGGTTGTCAGCACC G TG AGC ATCATTTCTCCCTGCACA
CTCCATCATTTCTCCCTGCA GCACCC GGT TC ACCCTCC
CAGGAGGGTTGGAATACTGG TGTGGG TCA AG TGGGAGG
GGTGT G TA GT- ----------
GAM91767 10842 GCACCCTTGAAAAAAGCTTT C AAAAA --------- C CTTCATCAC
GCCTCCTTCATCACGAGCAA GCAC CTTGA GCT TTGC TC
TCTTCCGCCAGCAGTCAAGC CGTG GAACT CGA AACG AG
GTGC C GA--- CCGCCTTCT - ---------
GAM91775 485 GCACCGCAGCACCCTTGGGA C-- A- TG AGCT TGCCT
GCTCCCAGTGCCTCTGGGTG GCAC GC GCACCCT GG CCCAG
ACTTGGGGGTGCCAGCATTG CGTG CG CGTGGGG TC GGGTC

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        TGC              TTA  AC     GT  AGT-    -----
GAM91807 11338  GCACCTCTACTCCCTGCACA    TC     TG ACAT   CAACTGT   AGCATG -   ACAACCTCAA

        TCCCCAACTGTGACAAGCAT GCACC  TACTCCC  C    CCC     GACA     GC CTGT
        GGCCTGTACAACCTCAAACA TGTGG  GTGAGGG  G   GGG     CTGT     CG GACA
        GTGCAAGATGTCTCTGAACG    TC     GT CGAC   CAAGTCT   AGAA-- T   ----------
        GGCAGCGTGGGGAGTGCTGG
        TGT
GAM91809 6959   GCACCTGAATAAATGAAGCG   -   AATAA   AG -----       GATAAACAAGAACAGAAGA
        AAGGATGTCTGATAAACAAG GCA CCTG    ATGA  CG    AAGGATGTCT
        AACAGAAGAGGGCGTCTTTA CGT GGGT    TGCT  GT    TTTCTGCGGG
        ACAATGACTCGTAATGGTGG   T   GGTAA   CA  AACAA       ----------
        GTTGC
GAM91821 11533  GCACCTGGGGAAGTTTGGCG  A--      AGTTT   ---   TTGCTT  AAGA
        TCATTTGCTTGGAAGACCTC GC   CCTGGGGA    GGCG   TCAT    GG
        ATTCATGAAATTGCCTTCCC CG   GGACCCTT    CCGT   AGTA    CC
        AGGGAAGC          AAG      -----   TAA   CTTACT  ----
GAM91836 11963  GCACCTTCCTGTGGATCCGG        ---   A--       A---    TCAC T   -      - CTGCT
        GTGCAGCAGTTCACGTCTCG GCACCTTCCT   GTGG   TCCGGGTGC   GCAGT   G CTCG
GCGGGTGG AG
        GCGGGTGGAGCTGCTCATCT CGTGGAGGGG   CGCC   GGGTCCACG   CGTCA   C GAGC
CGTCCACC TC

        TCTCCCACCTGCACGAGCTC        ACA   GCG       GTCG    CTCT -   A      C -----
        TCACTGCGCTGGCACCTGGG CATCTT
        GCGCCGCACAGGGGAGGTGC

                ------
GAM91846 2081   GCACGACGACGGTCGCTGGT   C   A-    G  -  C    AGTCCGA    ACCG
        CGCTGCAGTCCGAGGCGCAC GCA GACG  CGGTC CT GGT GCTGC      GGCGC
        CGGCGCTACTTCGGCGGCAC CGT CTGT  GCCAG GA CCA CGGCG      TCGCG
        CGAGGACCGCCTGTCCTGC    C   CC    - G  -   GCTTCA-    ----
GAM91847 7134   GCACGAGAAATAACTCTGAT   C    ATA-  C   TT  -  GTTA----  CAC-  TAC        CATA
        TTTCACTGTTAGGACACTGT GCA GAGAA    ACT TGAT  TC ACT       GGA    TGT   AGAGAAGGAAA
        TACAGAGAAGGAAACATATT TGT TTCTT    TGA ACTA  AG TGA       CCT    ACA   TTTCTTCTTTT

        GCTCTTCTAACTTTTCTTCT   C    GGAA   T   TT  A   ACCTTACA   ATTT   TT-        ----
        TTTTACATTTATCCACATTC TTGCTCTTCTAAC
        CAAGTAGATTATCATAGTAA
        GGTTCTTCTGT
                ------------
GAM91848 16018  GCACGAGCTCTTCCTTCCCA  -  -   TCTT   C    ---   CT  TCTTT
        CAGCGTCTAATCTTTTTTTA GC AC GAGC    CCTT CCACA   GCGT  AA
        TGTTTTTGTGGCAAGGTCTC CG TG TTCG    GGAA GGTGT   TGTA  TT
        GCTTAGTCGC          C  A    CTCT   C    TTT    TT -----
GAM91871 15776  GCACGGATTCTTCTGGTAGA   A   ATTC    GT      GAGCACAT   -   GGTG   AAAAG
        GCACTGAGCACATACTCAGG GC CGG    TTCTG  AGAGCACT       ACT CAG    TCA
        GTGTCAAAAAGTGAAACTGA CG GTT    AGGAC  TCTTGTGA       TGA GTC    AGT
        AGTTTCTAGAAGTGTTCTCA   A  ----    AC      AGATCTT-   A   AA--   -----
        CAGGATTGAGC
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GAM91875 22406  GCACGGCCCGGGTTCTCCGT    G  C---    C---    TC- T  T-  GGCTA
                TCTCTTCCTGCAGGCTATGC GCAC GCC   GGGTT   TCCGT  TC TCC  GCA
                TTGGATGATCTACGGAATCT CGTG CGG   TCCAG   AGGCA  AG AGG  CGT
                GACCTTGGAGGCGGTGC      G  AGGT   TCTA    TCT  T  TT  -----
GAM91898 2048   GCACGTGGGTAATGGACGCT      GG  T  -   ACA  -  TCGACTCT
                ACAGCTCTCGACTCTGACGC GCACGTG  TAA GGA CGCT  GC TC
                GGTGATCCTTTAACACGTGC CGTGCAC  ATT CCT GTGG  CG AG
                          A-  T  A   --- C --------
GAM91930 17102  GCACTAGGCAGAGCCCACAG    A  A---  -  CCACAGT      CCAT
                TGGGGCTGCTCCATGGCAGC GCACT GGC   GA GC     GGGGCTGCT
                CCCTAGGAGCGCATCAGGAG CGTGA CCG   CT CG     CCCCGACGG
                CCAGTGC              -  AGGA  A  CGAGGAT      ----
GAM91940 21842  GCACTCAAAGTAGAATTATA    TC  A   AA    A  AGAT--  GTCC
                AAGAAGATCATGTCCATGTT GCAC  AA GTAG  TTATAA GA    CAT
                AACATTATTATAACCCTACA CGTG  TT CATC  AATATT TT    GTA
                TTTTGTGC             TT  A   CC    A  ACAATT  ----
GAM91978 7923   GCACTCTGTTCTTCCGCCGC  AC  G     CC  TCC   TC  TTTCTC
                TCCGCCGTCGCGTTTCTCTG GC  TCT TTCTTCCG  GC  GCCG  GCG
                CCGGTCGCAATGGAAGAAGA CG  AGA AAGAAGGT  CG  TGGC  CGT
                GATCGC             CT  G     AA  C--   --  ------
GAM92020 6791   GCACTGCTTCCATTGGCTCA   CT  TCCATT-    A  CAA  AAAAG
                TGTCAAAGAAAAGCTGCCAC GCA  GCT     GGCTC TGT  AG
                AGAGCCTCCATCCAGCTCTG CGT  CGA     CCGAG ACA  TC
                C               CT  CCTACCT   -  CCG -----
GAM92026 16343  GCACTGGAGGAGCGCAGTGC     G   CG      AGAAAC    CTACA
                TGAGAAACTCCGGGCTACAT GCACTG AGGAG  CAGTGCTG    TCCGGG
                TCGGAAATAGCACTGATTTC TGTGAT TCTTT  GTCACGAT    AGGCTT
                TTAGTGT              -   A-      AA----     -----
GAM92042 7953   GCACTGGGGGGCCCAGCCTA  ACT  GG  C     AC  G  AGACAGTTCCCA
                CCTGCCAGACAGTTCCCAGG GC  GG  GG CCAGCCT  CT CC
                AGTGAGGCTGGTCTTTCCTG CG  CC  TC GGTCGGA  GA GG
                GC               GT-  TT  T     GT  -  ------------
GAM92090 13682  GCACTTCCGTAGAGGTGGAC    T  TA  GGTGG  A   --------     TTTC
                ATGGCGTGCGGCTTTCGCCG GCACT CCG  GA    AC TGGC      GTGCGGC
                CGCTATTGCTTGCCAGGTAT CGTGA GGC  CT    TG ACCG      CGCGCCG
                GGATCCCGGAGTGC         -  C-  AGGTA  G   TTCGTTAT     ----
GAM92124 12115  GCACTTTCTACATGTATTTT    T   -   T  TCTCT  ATTCAC
                CTCTGGTATTCACATCTAAT GCACT TCTAC ATGTA TT    GGT
                AACTACATGGTAGATGGTGT TGTGG AGATG TACAT AA    CTA
                          T   G   C  TAAT-  ------
GAM92135 7618   GCACTTTTAGGAACTACATC  A  T   AA  ACA  TGGA-   AGGTTG
                ATGGACTTCCAGGTTGGGAA GC CT TTAGG  CT  TCA    CTTCC
                GGAGTTTGAGGAGGATCTGA CG GA AGTCT  GA  AGT    GAAGG
                CAGGC             -  C   AG  GG-  TTGAG   ------
GAM92149 5209   GCAGAAAAGCATGGATCCTT       GCAT GA  CT  A   T--  CAC-  A   C TG TATGTTCTT
                GCACTGCTTCACACGGAAGA GCAGAAAA   G  TC  TGC CTGC  TCA   GGA GATT T  G
                TTCTTGGTATGTTCTTTTGG TGTCTTTT   C  AG  ACG GATG  AGT   CCT CTAA G  T
                AAATCTCCTTACTGATCCGT       ACTT TC  C-  -   CCT  CATT  -   A GT ---------
                AGGCACGACTCTTCATTTTC
                TGT
```

GAM92265 13726 GCAGACACTGAACCACCAGC ------ ACCA C- TGCATTTT
CAGCTGCATTTTGTTGTCCT GCAGA CACTGA CCAG CAGC
GGGATGTCAGTGCCAATTTT CGTTT GTGACT GGTC GTTG
TGC TTAACC GTAG CT --------
GAM92267 2023 GCAGACAGAAATGTTTTTAA A A---- TA G TCA AGTAGAAA
AGCTGTTCATGATTTAGTAG GCAG CAGAA TGTTTT AAGCT T TGATTT
AAAGAATCAGGAGCTTGAAA CGTT GTCTT ACAAAG TTCGA G ACTAAG
CAATTACTTCTGTTGC - CATTA -- G --- --------
GAM92297 21840 GCAGACTCATGCAGCCCTAT CTCAT A - CCG AGACCAAGGCGCA
GGCCGCTCAGACCAAGGCGC GCAGA GC GCCCT ATGG CTC
AGAGAACTATCAGGGCAGCT CGTCT CG CGGGA TATC GAG
CTGC ----- A C AA- ----------
GAM92298 13254 GCAGACTCATGCAGCCCTAT CTCAT A - G AGACCAAGGCGCA
GGCCGCTCAGACCAAGGCGC GCAGA GC GCCCT ATGGCC CTC
AGAGAGGCTATCAGGGCGGC CGTCT CG CGGGA TATCGG GAG
TCTGC ----- G C A ----------
GAM92306 5042 GCAGACTGCCCCAGTGTCTC TG CCAG CCA GAG - CC- CACT
CATCGAGGCTGGGGGACAGC GCAGAC CC TGTCT TC GCTGGGGGACAG CTGCTG CC

TGCTGCCCCCACTGGAGACA CGTCTG GG ACAGA AG TGACTTCCTGTC GGCGAC GG
GCGGACTGTCCTTCAGTAGA GT ---- --- A-- A AGA ----
AGACAGGTGGTCTGC
GAM92322 12097 GCAGAGAAGAAAGAGAAAAG GAAGAA AAAA AT TAATCAATCC
TATTCTGCATAATCAATCCT GCAGA AGAG GT TCTGCA
GCAGACACAATTCTGTATAA TGTCT TCTT CA AGACGT
TCTGT AATATG AA-- C- ----------
GAM92325 5010 GCAGAGAAGGAGATCGGCTT AGAAG AT GGT AC TGAGGAACT
GTGGGTTCACCCTGAGGAAC GCAG GAG CGGCTTGTG TC CC
TGGTAGATTACACGAGCTGT CGTC CTC GTCGAGCAC AG GG
GCTCAGAACTGC AAGA- GT ATT AT ---------
GAM92353 22977 GCAGAGATCGTTACAGACAT AG C TAC- A- T C TCCCTTTCT
TTTTATCTCCTGGTTCCCTT GCAG AT GT AG CATTTT ATCTC TGGT
TCTACTATGAGATCAAGATG CGTC TG CG TC GTAGAA TAGAG ATCA
GCCTTCGTGCTGTGGCTGC GG T TGCT CG C T ---------
GAM92407 17240 GCAGAGGCTGGGAGGCGGCA AG TGGGA - AAT-- AGGAGGGCACAGG
GAATGCAGCCAGAGGAGGGC GCAG GC GG CGGCAG GCAGCCAG
ACAGGCTGGCTGCTGGAGCT CGTC CG CC GTCGTC CGTCGGTC
GCTGTCCGAGGTGCAGCTGC GA TGGAG T GAGGT ----------
GAM92440 17286 GCAGAGTCCAGGCGCGCCCG GA T - C G - TGGCG GCGC
GAGGCCGTGGCGCTCGCGCG GCA G CCAGGC G GCCCG AGGC CG CTC
GGACTTTCGAGCCTCGGGCC CGT C GGTCCG C CGGGC TCCG GC GGG
CGGCCTGGCATGC A- - G C - A TTTCA ----
GAM92461 17722 GCAGAGTTCCGAGAAGAGCT - T GAAGAG GT- AAGG
TCCCACGTGCAAGGGCTCAG GCAG AGT CCGA CTTCCCAC GC
TGGGAAGGATGGTCGGCACT CGTC TCA GGCT GAAGGGTG CG
GCTGC G C GGTAG- ACT ----
GAM92473 4803 GCAGATACAGAAGGTGGTCA AT--- A G GCAC GAGA
TGGCACTAGGAGACTACATG GCAG ACAG AGGTG TCATG TAG
GGCGCCTCCTGTCACGCCTG TGTC TGTC TCCGC GGTAC ATC
T CGCAC C G ---- ----

GAM92522 22009 GCAGATGTCCCTAAGGTAGA TC AA AG -- GGAACGGG
GGTGTTGGAACGGGAGCTGG GCAGATG CCT GGT AGGT GTT
CCTGGCTGAAGGAGCATCTG TGTCTAC GGA TCG TCCG CGA
T GA AG G- GT --------
GAM92524 12060 GCAGATGTGGATTAGCAAGC GA ATTAGCAAGC A TA CGAG
AGGAGTACGACGAGTCGGGC GCA TGTGG AGG G CGA
CCCTCCATCGTCCACCGCAA CGT ACGCC TCC C GCT
ATGC AA ACCTGCTACC C GG ----
GAM92543 21742 GCAGATTGGAAAAAGCACCG GGAAAA C ---- TG CCTTAATCT
AAGATGGGAACCTTAATCTT GCAGATT AGCA CGA AGA GGAA
TCTTTTCTAAAATTGATGCT CGTTTAA TCGT GTT TCT TCTT
ATGAAAATTTGC AAGTA- A AAAA TT ---------
GAM92551 1944 GCAGATTTTAAAATATAGTA - TAAA AG CA TTCCC A TGATTCT
ACATCCATTTTTTTCCCTTG GCA GATTT ATAT TAA TCCATTTTT TTG AAG
AAAGTGATTCTCTTATAAAA TGT CTAAA TATG ATT AGGTGAAAG AAT TTC
AATGAAAGTGGAGTTTAAGG G CTA- GA TG TAAAA A -------
TATATCAAATCGTGT
GAM92559 17252 GCAGCAACGAGAAGTGGACA - AACG GA CC - TT AACT AAG- TAT AAAAG
GAGCCGCAATGGTTACAACT GCA GC AGAAGTG CAGAG GCA ATGG AC GT AGGT TTCTT

GTAAGAGGTTATTTCTTAAA CGT CG TCTTTAC GTTTT CGT TACC TG CA TCCA AAGAA

AGAAAAAGAACACCTAAGGA A ACA- GA CA A C- AGT- GGAA C-- -----
CTGAGTCCCATATGCACTTT AAA
TGAGCATTTCTACAGCATGC

GAM92568 1679 GCAGCAAGGAGAGGATGCAG AA- GA-- T AACA TTGCA
AACAGCTTCTTGCAGAAGCA GCAGC GGA GGA GCAG GCTTC
CCTGCTCCGGCATCCAGCGC CGTCG CCT CCT CGTC CGAAG
TGC CGA ACGG - CA-- -----
GAM92582 632 GCAGCACCGTGAGGTCCAGT G ------ A - - C GCG--- - AGGC--
GCTTCGAGTGCGGCCACCTT GCA CACCG TG GGT CCA GTGCTT GAGT GCCAC CTTCCT
TACT
CCTAGGCTACTTCAAGTCTG CGT GTGGT AC CCA GGT CACGAA CTTA CGGTG GGAGGA
ATGA
GCCTGAAGTACAAGAAAGGA G GGAGCA - T G - GGACTA T AAGAAC
GGTGTGGCATCAGGATTCAA A TCTGG
GCACGTGGTACCCAACGAGG TCA G
TGGTGGTGC AGT C
C -----
GAM92585 22712 GCAGCACGTCATCTGCGACA AC- A GC AGG -- GCAGA
AGGTGGGGCTGCAGAAGATC GCAGC GTC TCT GACA TGGGG CT
CCCAAGGTGTCAGAGAAGAC CGTCG CAG AGA CTGT ACCCC GA
CAAGCTGC AAC A GA GGA TA -----
GAM92608 2035 GCAGCAGGAGAGTGTTAGGA C AGA TA GA AA GAGACATAGGCA
GATGAAATCTGAGACATAGG GCAG AGG GTGT GGA TGA TCT
CAAGAATCAGTCCACATAGG TGTT TCC TACA CCT ACT AGA
CCTTTGT - GGA -- G- A- ----------
GAM92615 22871 GCAGCAGGCCGCGGCCCACC AG C - ACC C CCCGC

TGCTGGGCCCGCCCCACCAC GC CAGGC GC GGCCC TG TGGG
CCGGGCCTGCCGCCTGAGGC CG GTCCG CG CCGGG AC ACCC
GA C T CCC C -----
GAM92624 22136 GCAGCAGGTGGCGCAGATGC ---- AGA GC- A ACTACA
AGCTGAAGTACTACAACTCC GCAGCA GGTGGCGC TGCA TG AGT
GACGTGCACCGCGCCGCCTT CGTCGT CCGCCGCG ACGT GC TCA
GGTGCTGC GGTT CC- GCA C ------
GAM92625 7231 GCAGCAGGTGGCGCAGATGC ---- AGA GC- A ACTACA
AGCTGAAGTACTACAACTCC GCAGCA GGTGGCGC TGCA TG AGT
GACGTGCACCGCGCCGCCTT CGTCGT CCGCCGCG ACGT GC TCA
TGTGCTGC GTTT CC- GCA C ------
GAM92637 13738 GCAGCATAGAAGATGCTCAG A AGATGC GTC-- ATTA
TGTCCTGGATTACCAGATTT GCAGCAT GA TCAGT CTGG
AATTGAAGAAAATCATGTTG TGTTGTA CT AGTTA GACC
T - AAAAGA ATTTA ----
GAM92648 2049 GCAGCATGAGCATCTTTCCG CAT CA -- CC ACAATTAGTACAGGAACC
CCTTGGACACAATTAGTACA GCAG GAG TCT TTCCG TTGGAC
GGAACCGTTTAGAACGGAAA CGTT CTC AGA AAGGC GATTTG
CAGAACCTCCAATTGC AAC CA CA AA ----------
GAM92668 17669 GCAGCCACCTACACAGAGTG AC- ACA GA T A- GAAAAAG
ATAGAGATTGAAAAAGAATC GCAGCC CT CA GTGA AG GATT
ACCTTTCACCATGGGCAGCG CGTCGG GA GT CACT TC CTAA
AGGCTGC AGC CGG AC T CA -------
GAM92679 19764 GCAGCCAGCATATGTGGAAG A - - G TAATACAAAGCTTTTTTTT
AATAATACAAAGCTTTTTTT GC GC CAG CATAT TGGAAGAA
TTTCTTCTAATATGTCTGTG CG CG GTC GTATA ATCTTCTT
CAGC A T T - ----------
GAM92703 4542 GCAGCCCCCCGGGCTCGGCG CCCCCC TG - - G -- G T- T CGG
CTGGCGGCAGTGGCGAGCGG GCAG GGGCTCGGCGC GCGGCAG TG GCGA CGG CGGA ACC
CT CC
CGGAGACCTCTTCCCGGGGC CGTC CCCGAGTCGCG CGTCGTC AC CGCT GTC GCCT TGG GA
GG
AGCCGGTGTCCGAACTGATC CCAT-- -- G G A AA G CC C ---
GCGCAGCTGCTGCGCGCTGA
GCCCTACCCTGC
GAM92715 11282 GCAGCCCTTTCTCAAGGACC CTC A CCGCA CTACATTCA
ACCGCATCTCTACATTCAAG GCAGCCCTTT AAGG CCA TCT
AACTGGCCCTTCTTGGAGGG CGTCGGGAGG TTCC GGT AGA
CTGC TTC C CA--- ---------
GAM92775 4589 GCAGCGAGGAATGTCAGGTA AG GAA G AG ATCA GTGA
GTGATCAGCCTGTGAAGGCA GC CGAG TGTCA GT TG GCCT
AACAGATGTGGCACCACTTG TG GTTC ACGGT TA AC CGGA
GGGT GG ACC G G- AAA- ----
GAM92776 11990 GCAGCGATCCATCAGCAACA CGATC CA AC-- C AA A GTGGAAA TT CTG
CCAAACTTGAAATTGATTTA GCAG CAT GCAAC CAAA TTGA TTG TTTAT AAC GGCTTGT
TGTGGAAAAACTTGGCTTGT CGTC GTG TGTTG GTTT AATT AAC GAATA TTG CCGAACA

CTGCCATCTAACAAGCCCTG T---- -- ATTA A CG - AAATGAG TC ---
TTGAGTAAAATAAGCAAGCT CCATCTA
TAAATTTGATTAGTTGTGTG

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          TCTGC
                    -------
GAM92778 14094  GCAGCGATTCAGCCAGCTGA   GCG      AG  AGAATTC   C   CGAGGCTT
          GAATTCGTCCCGCTCCGAGG GCA  ATTCAGCC  CTG     GTCC GCTC
          CTTGAGCAGGACCGGGGCTG CGT  TGAGTCGG  GGC     CAGG CGAG
          AGTAAATGC          AAA     --  -------   A  --------
GAM92783 11808  GCAGCGCGGAGCCTGGGCGG       A  T    ---  G   TCTCC
          CGGCTTTTCTCCGAAGGTGC GCAGCGCGG GCC GGGCG  GCG CTTT
          AGACGCCCGGCCCGTGCTGC CGTCGTGCC CGG CCCGC  CGT GAAG
                        -  -   AGA  G   -----
GAM92804 7873   GCAGCGTGTGCTTGACCCAG       TGCTT  CC-      CTT    TGTGCT
          TGTCGTCTTGTGCTCTGTGC GCAGCGTG    GAC  AGTGTCGT  GTGCTC
          TGGGTACTGCATGATGCTTC CGTCGTAC    CTG  TCGTAGTA  CATGGG
          TGTCTATCCATGCTGC          CTAT-  TCT      CGT    ------
GAM92828 15512  GCAGCTCCAGTATCCCAAAC  AG     ATCCCAAACT   G  --   ATCCTCC
          TTTCTAGTCCTGCTGATCCT GC  CTCCAGT        TTCTA TCC  TGCTG
          CCCAGCAACGGGGTGGAAAC CG  GAGGTCA        AAGGT GGG  ACGAC
          TGGAGGGC          G-     ----------    G  CA    -------
GAM92862 14102  GCAGCTGCGTAAAACATACA   G     AAAACATAC   - G     AT  AAGA
          GGCCGGAGCTTATCAAAGAT GCA CTGCGT       AGGC C GAGCTT  CA
          GGGAAGTTTGGGGCCTACAT CGT GACGTA       TCCG G TTTGAA  GT
          GCAGGTGC          G     CA-------   G G     GG  ----
GAM92885 11426  GCAGCTTAAGGTTTTTTTTT   G  TA---        TTTT-    AAAAAAAATAGGAATAC
          TTTCTTTAAAAAAAATAGGA GCA CT    AGGTTTTTTT    TCTTT
          ATACAAGGATTTACAAAAAA CGT GA    TCCAAAAAAA    AGGAA
          ACCTCACACAGTGC        -  CACAC        CATTT   ----------------
GAM92918 17592  GCAGGAACGGAGGTTCCTCA  A  AA  -  GT-    A  A   GCTGG
          TGAGAGTGCTGGACTCCTAC GC GG  CGG AG   TCCTC TG GAGT
          GGGGATGACTACCGGGCCAG CG CC  GCC TC   AGGGG AT CTCA
          C              A  GG   A  AGT    C  C   -----
GAM92958 15908  GCAGGAGAAGATCAAGAGTG   A-   AAG   A- -  --   A   CGAG
          AGGAGATCGAGATCACCTTC GC  GGAG   ATC  AG AGT  GAGG GAT
          AGCTACTGGGATGGCTCTGG CG  TCTC   TAG  TC TCG  TTCC CTA
          GC              GG   GG-  GG A  AC   A  ----
GAM92982 17218  GCAGGAGCGGGGGGGAATCA     A      GAATCA   AC  T      GC   ACCGATAC
          TTGACCTTGAGGCTGAGCGA GCAGG GCGGGGGG     TTG  CT GAGGCTGA  GAA
          AACCGATACTTCATCAGCCT CGTCC CGTCCTCC     GAC  GA TTCCGACT  CTT
          TCAGCAGCCTCCTGCCCCTG     C      ------  --  C      A-   --------
          C
GAM92990 17601  GCAGGAGGCAGGGAAACGGT       CA   AAC   CAG  ATACA  -  CTCCC
          CAGGCATACAGGTCCTCCCG GCAGGAGG  GGGA   GGT   GC    GG TC
          ATCCGCAGAGTAAACCTCCC CGTCCTCC  CCCT   CCA   TG    CC AG
          CCTCCTGC              --   ---   AA-  AGACG  T  -----
GAM93015 324   GCAGGATCTGCCCAACGTTG     TC   C  GTTG  GG  AG-   ATGG
          AAGGTCAGTGTGATGGCATA GCAGGA  TGCC AAC   AA  TC   TGTG
          AAAGAAATTAGAGTTGGCAC CGTCCT  ACGG TTG   TT  AG   ATAC
          TTCCTGC              TC   -  AGA-  AA  AAA   ----
GAM93055 11423  GCAGGCAGGGCTTTATCAAC     CA     ATCAACTA  C        AGC   CCCTGGT
          TACTCCAAGCTCCCCAGCCT GCAGG  GGGCTTT      CT CAAGCTCCCC   CTGC
          GCCCCTGGTGCAGGGGGAGC CGTCC  TCCGGAG      GA GTTCGAGGGG   GACG
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TTGTAGGAGGCCTCACCTGC AC -------- T --- -------
GAM93073 398 GCAGGCCGCCTGCACATTGA CC - GAG C CAG G GCAC
GCAGCAGCAGGGTGGGCGAG GCAGG GCCTGC ACATT CAG AG GGT GGCGA
CACTTGTCAGCCATCTCCTG CGTCC CGGATG TGTAG GTC TC CCG CTGTT
GAAGATGTAGTAGGCATCCT TA A AAG C TA- A ----
GC
GAM93084 15841 GCAGGCGCAGTGAGTCAGTG --- - AG GG TTGTG
CCGGTCGGTCTTGTGGGCTG GCAGGCGC AG TGAGTC TGCC TCGGTC
AGGGGCAGCGGCTTAGCTCC CGTCTGCG TC ATTCGG ACGG AGTCGG
GGCGTCTGC GCC G CG GG -----
GAM93095 10749 GCAGGCGTGGAAGCCATGAG - GAAG ---------- CCT
CAAGCCTCTTGCAGCTTGAT GCAGG CGTG CCATGA GCAAG
GGCGTTATGGAATGCGTTCT CGTCT GCGT GGTATT CGTTC
GC T AA-- GCGGTAGTTCGA ---
GAM93113 4948 GCAGGCTGGAATGTTATCCC CT TGTTATCCC- GTGCTTGG
TGGGGTGTGCTTGGACCCCA GCAGG GGAA TGGGGT
CCTGCTTTCTTTCTCTCCTG CGTCC TCTT ACCCCA
C TC TCTTTCGTCC --------
GAM93119 13581 GCAGGCTTCGTCGTTCAGTG - C - A G GGCA
ATTGTCGCTGGGCACAGGGG GCAG GCTTCGT GT TCAGTG TTGTC CTG
CGGCGCTGGTGCCACGGAGC CGTC CGAGGCA CG GGTCGC GGCGG GAC
ACTGC A C T - G ----
GAM93138 17098 GCAGGGACCCCTGAAGTGTT G GAA--- TG - - CTCGA
GGTCGGGGGCCTCGAGCTGC GCA GGACCCCT GTGT G TCGGG GGC
CTGAGCTGACACGAGGGGAG TGT TCTGGGGA CACA C AGTCC TCG
GGGTCTGTGT G GGGGAG GT G G -----
GAM93139 5101 GCAGGGACCCCTGCAAGTGT G GCAA-- TG - - CTCGA
TGGTCGGGGGCCTCGAGCTG GCA GGACCCCT GTGT G TCGGG GGC
CCTGAGCTGACACGAGGGGA TGT TCTGGGGA CACA C AGTCC TCG
GGGGTCTGTGT G GGGGAG GT G G -----
GAM93148 13786 GCAGGGAGAGGCCGTATTAA -- C A ATT CTCC
TTAGCCTGGCTCCCCAGGTT GCAGG GAGAGGC GT TTA AGCCTGG
CTGGAACAGCTTTTTGTCCT TGTCC TTTTTCG CA GGT TTGGACC
GT TG A A C-- ----
GAM93149 22945 GCAGGGAGAGGCGTCTCCAG G GT CCAGT C CT TCACT
TGGCAGCCTTGGGTCACTTC GCA GGAGAGGC CT GG AGC TGGG
CATAGCTCCCCCAGCGGCTT CGT TCTCTTCG GA CC TCG ACCT
CTCTGTGC G GC CCC-- - AT -----
GAM93166 22721 GCAGGGATCAACGAGGAGGA TCAACGA GAAA TG AATC
AAACATTGGGAATCTCTGAT GCAGGGA GGAG ACAT GG
GTCACTCCCCAGGTTCCCTG TGTCCCT CCTC TGTA CT
T TGGACC- AC-- GT ----
GAM93175 22619 GCAGGGCAAGTTCCAAGGCA A- CAA-- C GCAGCACACACA
GACCGCAGCACACACAGGTC GCAGGGCA GTTC GG AGACC
TACCAGAAAGAACAGTGCCC CGTCCCGT CAAG CC TCTGG
TGC GA AAAGA A ----------
GAM93188 13549 GCAGGGCCTGGTTTCTCTTC --- TG TTCTCTTCCTT CTTTTACAGATTTCA
CTTGAAGGCCTTTTACAGAT GCA GGGCC GT GAAGGC
TTCAGCTTTCACTGGGCCTC CGT TCCGG CA CTTTCG
CATGC ACC GT ---------- ----------

GAM93189 21946 GCAGGGCGATGTCCCCCTCA - A - TCAAA - CTCAT
AAATTGTAGGCTCATCCTGA GCAGGG CG TGTCC CCC ATTGT AGG
CGGTAGTCCGGGTGGACGCT CGTCCC GT GCAGG GGG TGGCA TCC
GACCCTGC A C T CCTGA G -----
GAM93230 14976 GCAGGGGGCAGGGGAGAGGG - AG CCACC CA- GTTTTCTTGA
CCACCAGGGCAGTGCCTGTT GCAGGGGGCA GGGGAG GG AGGG GTGCCT
TTCTTGAAGGCACCGACCCT CGTCCCTTGT CCCCTC CC TCCC CACGGA
CCTCCTCCCCATGTTCCCTG A CT ----- AGC ----------
C
GAM93232 16149 GCAGGGGGCATGTTCCCGTT G GCAT - ------ GCGA
TACTGAGCGCGAGTTCTCTT GCA GGG GTTCCCGTTT ACT GAGC
GGGGTGGAACGGGGACCACC CGT CCC CAGGGGCAAG TGG CTTG
CGTGC G AC-- G GGTTCT ----
GAM93254 6936 GCAGGGTGGTCAGGGTGGGA A GGTC-- GGG ACA TGTT
GACACAAGATGTTTTTATAG GC GGGT AGGGT AGAC AGA
TCTAGAGCCTTTAAAAAACC CG CCCA TTCCG TCTG TTT
CAGC A AAAAAT AGA ATA ----
GAM93256 22797 GCAGGGTTCTCTACCCTCGA A CTAC C- CAG
CGTGGTCCTGGCAGCCAGCT GC GGGTTCT CCTCGACGTGGT CTGG
GCCATGTCGAGGAACCAGAA CG CCCAAGA GGAGCTGTACCG GACC
CCCAGC A CCAA TC ---
GAM93270 13847 GCAGGTATGTGATGACATCA G TG A----- G G--- G CTGC
GCCGACGCCTGGCACTGCTG GCAGGTAT TGA AC TCAGCC AC CCTG CA
CAGGAACAGTGGGCTGGAGG TGTCCATA ACT TG GGTCGG TG GGAC GT
AAAGTTGTCAATACCTGT - GT AAAGGA G ACAA - ----
GAM93271 11696 GCAGGTATTTTCATAGACAA - AGACAAATTAAAG AAATAA
ATTAAAGATTAAATAAGATA GC AGGTATTTTCAT ATT
TCATGGCATAAGTGAAAATA CG TTTATAAAAGTG TAG
TTTAGC A AATACGGTACTA- ------
GAM93278 10870 GCAGGTCCCGCTGGTGCTGT CC C ----- AC GAC TG GCTC
GGTCGAGTGACCGGGACTTG GCAGGTC GCTGGTG TGTGGTC GAGTG CGG TTG G
TGGGCTCCTGCGGCCGACAC CGTTCAG CGACCAC ACACCGG CTCAC GCC GGC C
TCATGAAGGCCACATCACCA -- T AAGTA A- --- GT ----
GCGACTTGC
GAM93327 10813 GCAGGTTGGTGCACCAAGTG G ACCAAG- T TA TGTGGAAAGTGTT
TCGCCTAATTGTGGAAAGTG GCAGGTTG TGC TG CGCC AT
TTGTCGGGCGCAAGAAATGG TGTCCAGC ACG AC GCGG TG
CACGACCTGT - GTAAAGA - GC ----------
GAM93431 14977 GCAGTCGCCGGGCTGCCCGC ---- ---- - GCTTCA
GCTGGGCTTCACCGGCGCCG GCAGTCGCCG GGCTGC CCG CGCTGG
GCATCGCGGCCAACTCGGTG CGTCGGTGGC CCGGCG GGC GCGGCC
GCTGC TCAA CTAC C ------
GAM93435 2426 GCAGTCGGTGTGCAGTGTCC AG T- T CA TG A AGCCC
AGTGTGCAGAGAGCCCCTCG GC TCGGTG GCAG GTC GTG C GAG
TGTATGATCTTGCCTCACTG CG AGTCAC CGTT TAG TAT G CTC
AAAGC AA TC C -- GT - -----
GAM93440 211 GCAGTCTCCTCCCTTGTGGC AG - ---- CA TG C CT GCAG
CCAGACCCAGCTGGGTCCCT GC TCTCCT CCC TTGTGGCC GACCCAGC GGTCC TTCCTC AG

TCCTCCTAGGCAGCTGAGGG CG AGGGGA GGG GGCACCGG TTGGGTCG TCAGG AGGGAG TC

AAGGACTGCTGGGTTGGCCA A- A TCCG -- -- A -- ----
CGGGCCTGGGAAGGGGAAGC
GAM93446 7500 GCAGTCTGAGTTTACTTATG AG TG TTT T T-- TA- CT ACTGA
CCTGCTTTTGTTAGACTATC GC TC AG ACTTA GCCTGCTT TGT GA ATCTTG
TTGACTGACAGGATTATTGG CG AG TT TGGGT CGGACGGG ACA TT TAGGAC
TACATTTGGGCAGGCTGGGT A- GT --- - TTT TGG AT -----
TTTGGAAGC
GAM93467 10803 GCAGTGAATCTTTGCTGGTC -- TT C AAAGAA TGCCT
ATAGAAAGAAGTGAGATGCC GCAGTG AATC TGCTGGT ATAG GTGAGA
TTTTCACATAAAGTTATTAC CGTCAC TTGG ATGATCA TATT CACTTT
TAGTATCGGTTACCACTGC CA CT T GAAATA -----
GAM93496 329 GCAGTGCCCTCACTGTCCAT T A GTC AA ------ CC- AAAT
AAACACAAACACCCTAAATA GCAG GCCCTC CT CAT ACACA AACA CT
GTTCTGTTCTCTCCTGTGTA CGTC CGGGGG GA GTA TGTGT TTGT GA
TGAAGGGGGGCCCTGC C - A-- -- CCTCTC CTT ----
GAM93498 16914 GCAGTGCCGAAGGCTGGACA T- CGA G- CA- T ATCGA
GCATGGCCATCGAGGCCCTG GCAG GC AG CTGGA GCA GGCC
CCCTTCCAGGACTGCCTCTG CGTC CG TC GACCT CGT CCGG
C TC --- AG TCC C -----
GAM93514 22966 GCAGTGGAGGGGGCAGGACC GA A--- C GG CACCA
TCCTCTGGTGCAGCACCACT GCAGTG GGGGGC GGACCT CTCT TGCAG
GTAGGAGCAGGTCCACCGGC CGTTAC TCCCCG CCTGGA GAGG ATGTC
CCCTACATTGC A- GCCA C -- -----
GAM93515 129 GCAGTGGAGGGGGCAGGACC GA A ACCT GGT ACCA
TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GG CCTGCT GCAGC
CTGCTGGAGCAGGTCCACCG CGTTAC TCCCCG CC GGACGA CGTCG
GCCCCTACATTGC A- G ACCT GGT ----
GAM93518 15060 GCAGTGGCAAGAGGGGTTCA AA GG T AG GGATGATGAGGGAACA
GGTAGGGGGATGATGAGGGA GCAGTGGC GA GGT CAGGT GG
ACACCAGACTTGGCTAGTTG CGTCACCG TT TCG GTTCA CC
GGCCACTGC GG GA - GA ----------
GAM93565 14821 GCAGTGTCGAAGATAGCAAC G GAAG CA CATCA G ATAGC
TTCATCAGGGTGTCTATAGC GCA TGTC ATAG ACTT GGGT TCT
GGAACCCATCCAGAGTACCT TGT ACAG TATC TGAG CCCA AGG
ATGGAAGACAATGT A AAGG CA ACCTA - -----
GAM93566 13746 GCAGTGTCGACCCCCGATTT A- CCCC T-- C- TGCCACAAC
GTCCGCTGCCACAACGCCAG GC GTGTCGAC GAT TGTC GC
ACACCCATCGTCGATATGGG CG TATAGCTG CTA ACAG CG
C GG ---- CCC AC ---------
GAM93569 19668 GCAGTGTGAGACCTAGTTGC -------- CC ACCCCAAG
ATTACCCCAAGAGTGTAGCT GCAGT GTGAGA TAGTTGCATT
GTTTTCGCTTTTATGTACTG CGTCA CGCTTT GTCGATGTGA
C TGTATTTT T- --------
GAM93600 7605 GCAGTTAGGTTCCGTTTGCA - G GCAAAGGG AAAGGA
AAGGGCCAAAGGAGGAATAA GCAGTT AG TTCCGTTT CC
AAAAACGGGGGTTAAACTGC CGTCAA TT GGGGCAAA GG
A G AAAATAA- ------
GAM93605 9953 GCAGTTATTTTTAAAACTTT T T ATTTTA T AGCAT
ATTTTAAAAATATGAGCATC GCAGT ATT TTAAAACTTT AAAATA G
TATTTTAAAAGTTTTGATAA CGTTA TAA AGTTTTGAAA TTTTAT C

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        TTATTGC              T  T       A-----     - -----
GAM93629 2146   GCAGTTGCAGAAAGGAATGT     -----     AA----     T   -  GAAA
        CAGTCAGAAATGAATTGTGT GCAGT    TGCAGA     GGAATG CAGT CA
        TTCAGTCACTCTGCATGGTT CGTCG    ACGTCT     CTTTGT GTTA GT
        GCTGC                TTGGT     CACTGA    -   A ----
GAM93639 7214   GCAGTTGTCTATAATCTATC      G   T  --------  CCT   ATCA
        CTGCCATCAGGCTAAGTATA GCAGTT TCTA AATC       TAT   GCC
        TTTTGTGATTTAGAAACTGC CGTCAA AGAT TTAG       ATG   CGG
                        -   -   TGTTTTAT   AAT   ----
GAM93640 15291  GCAGTTGTTGATTAAATGTA     TG---     AA  G  TTA  -      G       GCAA
        TTAGCAAATTTTGAATGAAA GCAGT    TTGATT  AT TA   GC AAATTTT AATGAAAT
        TGCAAATTTCATTAGAAATT TGTCA    GACTGA  TA AT   CG TTTAAAG TTACTTTA
        TAGCCATTAGATAAAGTCAG     TGAAA     AA  G  TAC  A      A       ----
        AAAGTACTGT
GAM93659 4787   GCAGTTTTAATTCTGAAGAC        ATTCT    ---      ----  TCAT
        AAATATCTTCATGGAAATCT GCAGTTTTA    GAAG   ACAAATA    TCT
        ATTTGTAAGCTTCTGAGATT CGTTAGAGT    CTTC   TGTTTAT    AGG
        GC                   -----    GAA      CTAA   ----
GAM93664 14989  GCAGTTTTGTCTAAACTGTT         CTAAA----      AAAAAAAAACTA
        CAAAAAAAAAACTATGAACA GCAGTTTTGT        CTGTTCA
        GAGTTCAAATACAGGACTGT TGTCAGGACA        GACAAGT
                            TAAACTTGA      ------------
GAM93679 15626  GCATAAATGTTTTTTATGAA       TGTTTTTT    AGATA      TAAA   AAAA
        GATAACTTTTCTAAAGCAAA GCATAAA       ATGA    ACTTTTC    GCA
        AATGTGAGAAGTGCCATCAT CGTATTT       TACT    TGAAGAG    TGT
        TTTATGC              --------    ACCG-      ----  ----
GAM93707 21830  GCATAATTTGCTATAAAATG     A  G    AAA   A--     GGAATA    TTAT
        TACTTATTGGAATACTATTT GCATA TTT CTATA   TGT   CTTATT     CTAT
        ATATAGGAGGTAAGAGAACA CGTAT AAG GGTGT   ACA   GAATGG     GATA
        CTGTGGGGAATATGC         -  G    C--   AGA     AG----    ----
GAM93725 15353  GCATACCTGCTGGTGTGTAA    TA-       T-------   TAA   -   ACTAAC
        GTGTGGACTAACCCGCCGCC GCA   CCTGCTGG       GTG   GTG TGG
        ACCACCCTCTGTTCCAGCAG CGT   GGACGACC       CAC   CGC GCC
        GCTCTGC              CTC       TTGTCTCC   CAC   C   ------
GAM93793 10817  GCATATATTTAACTTTAAGG      ATTTAACTTTAAG     TA       AATATTACA
        GCCATAGGAATGTTTAATAT GCATAT           GGCCA  GGAATGTTT
        TACAAGATGTTCTTGGCCAC CGTATA           CCGGT  TCTTGTAGA
        GATATGC              GCA----------    --        ---------
GAM93806 10602  GCATATGAGGACGGCCATTA   A   AGGA    ATTA    TG     AATGGAAA
        TTGTTGGGGGCAAATGGAAA GC TATG    CGGCC    TTGT  GGGGCA
        TGCTCTAGGCGGGGCCGCGT CG ATGC    GCCGG    GGCG  TCTCGT
        AGC                  -   ----    ----   GA     --------
GAM93820 19711  GCATATTCATGGCTTAGATT   ATATTCAT       TTTTAAA  A    TACA
        TTAAATCACATTTACAGATG GC       GGCTTAGA       TC CATT
        AGGGAAAACTTCTAGGCCTA TG       CCGGATCT       GG GTAG
        AACAGGT              GACAAAT-       TCAAAAG  A   ----
GAM93822 13931  GCATATTCTTACATATATTA      TCTTACAT    AA   -    ACATGCTTAAAACCTTA
        ACAGTATTTTACATGCTTAA GCATAT       ATATT  CAGT ATTTT
        AACCTTAAAAATAATTGAAA CGTATA       TGTAA  GTTA TAAAA
        ATGTCAAAATTATATGC        TTAAAAC-    AA   A    -----------------
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GAM93846 21706 GCATCAATAGCAACAGAAAT AAT- ACA AT CCACC-- T AACT
GGGCCCCACCAGTGCAACTG GCATC AGCA GAA GGGCC AG GC
CCTTCATCAAGGCCTTCTTC TGTAG TCGT CTT TCCGG TC CG
TGCTTAAGGATGT GAAT --- CT AACTACT - ----
GAM93849 21844 GCATCACCCTCAAGAGCTGC CAC AAGA TG -- A- CAACT
CGGAGACAGTTTGACAACTT GCAT CCTC GC CC GGAGAC GTTTGA
TAAACGGGTCTTCAAGGTGG CGTA GGAG TG GG CTTCTG CAAATT
TAGAGGAAATGC AA- A--- GT AA GG -----
GAM93861 19586 GCATCAGAGTAATCTTCAGT G ATCTT-- - AAAT
GTGGAATGTTAAATAACGCT GCATCA AGTA CAGTGTGGAA TGTT
TTTATACTGTATTTTGTACT TGTAGT TCAT GTCATATTTT GCAA
ATGATGT A GTTTTAT C ----
GAM93865 11203 GCATCAGCAAGTAGTCGCAG GCAA CA-- -- CTT GAGAGTCTAGG
GTAGGTAGTCTTGGTTCGGA GCATCA GTAGTCG GGTA GGTAGT GGTTCG
GAGTCTAGGCGAATTTCGCT CGTGGT CGTTAGC CCGT TCATCG TTAAGC
ACTGGTGCCCGTTCGATTGC A--- TTGC GG CT- ----------
ATGGTGC
GAM93873 7833 GCATCAGGGGCTAGGCTCTG GCT- TC - G CGGA
GCTGGGCCCGGAGGCTGAGA GCATCAGGG AGGC TGG CT GGCC
CTAAGGCTTTCGACCCTGGT CGTGGTCCC TTCG ATC GA TCGG
GC AGCT GA A G ----
GAM93890 1973 GCATCATGGGAGTGACAGGG AT--- T A C- ACTT
CCACTGGCAAGACTTTTTGC GCATC GGGAG GAC GGGC ACTGGCAAG
CAGTCAGCCTAGTTCTTCTT CGTAG TCTTC TTG TCCG TGACCGTTT
TTAAGATGC AATTT - A AC ----
GAM93914 7805 GCATCCAGGACTGCGGGACA CCA- A ----- - TG CCAC
AGATTCTTGGTGCCACCATT GCAT GG CTGCGGGACAA GA TTCT GTG
GAGAACTCCAGGATTGTCCT CGTA CT GACGTCCTGTT CT AAGA TAC
GCAGATCGACAATGC ACAG A AGGAC C GT ----
GAM93917 7592 GCATCCAGTCGGTTTTAGCA TCC TCGGT C T ---- TA CGAAGA
GTACCCTCAGGTAGTCTCCG GCA AG TTTAG AG ACCC TCAGG GTCTC
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GGGTCTCCTAGATTTTCTAA TAA TTTT- C - TAAT GG ------
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GAM93937 7902 GCATCCTAGGCCTATTAATA C GC TAATA CG TATAC G CTAACGTTAACAA
TTCCGGAGTATACGTAGCCG GCAT CTAG CTAT TTC GAG GTA CCGG
GCTAACGTTAACAACCGGTA CGTA GATC GATA AAG CTC CAT GGCC
CCTCTAGAACTATAGCTAGC C -- TC--- AT ----- - ----------
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GAM93953 2355 GCATCCTTGAGCCATTTCTC A T TTCT---- TAATA - T TTATATT
TGTGTAATACAGGCTTTAGA GC TCCT GAGCCAT CTGTG CAG GCTTTAGATTAG GCC
TTAGTGCCTTATATTGGTTT CG AGGA TTTGGTA GACGC GTC CGGGGTTTGGTT TGG
TGGTTTGGGGCACTGGATGT G C TCGTCATC TGTAG A T -------
CGCAGCTACTGCTATGGTTT
CAGGAGGC
GAM93958 17679 GCATCGCAGTAAGCCTGGCA A - GTAAG C GTA--- TGAC
GGCCTGTAACTGTGACCAGT GC TCG CA CCTGG AGGCCT ACTG
ACCTAAAGGTCTCCAGGGAC CG AGT GT GGACC TCTGGA TGAC
ATGATGAAGC A A ACAG- - AATCCA ----
GAM93967 2120 GCATCGTGCTGGCTTCTTAA - - ---- ATA- TG TGG

TAGGTGATGGTTGCCGGTGT GC ATCGTGCTG GCT TCTTA GG A
AGGGACCAGGCACGGCACGA CG TAGCACGGC CGG GGGAT CC T
TAGC A A ACCA GTGG GT ---
GAM93968 5191 GCATCGTGGCCTCAGCTGGC CGT G A T GAGG CCGAAGAA
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AGAAGCGGCTGGTGCAGAGC CGTG T GGAG CG CCGAGACGT TCGGCG
CGCGAGGGTGTGC --- G - - GG-- --------
GAM94027 13695 GCATCTTAATCTGTATCTGC C- CT CT A T ATGG
TAAGTTACTTATGGAGGTAC GCAT TTAAT GTAT GCTA GT ACTT
TGGTGAATACCCATTAGACA CGTA GATTA CATA TGGT CA TGGA
TGC CA CC AG - - ----
GAM94037 10653 GCATCTTCTACTAGTGTGTT TCT AGTG GTA T CACA
AGTAGATGGATTCACAGATC GCA TCTACT TGTTA GA GGATT
CTTCAAATAACAAAAGTAGA CGT AGATGA ACAAT CT CCTAG
TTCTGC CTT AA-- AAA T ----
GAM94044 4710 GCATCTTTCTAAGCTCTCCA A T A -- ACA- TCCT
GACAACATTTCCTGATGTCT GC TCT TCT AGCTCT CCAG ACATT
CCCTGGGCAGAGCTAGGACA CG GGA AGG TCGAGA GGTC TGTAG
GGGC - C A CG CCTC ----
GAM94085 13431 GCATGAGCCACTGTGACTTG TG CACT C CCAG A T CTACCCTA
CCCAGATCACATTTCTACTA GCA AGC GTGA TTGC ATC CATT CTA
CCCTATAGAATGGATGTAAA CGT TCG CATT AATG TAG GTAA GAT
TTACCTGCTTGTGC GT TC-- A ---- - - --------
GAM94087 1680 GCATGAGGAAGATAATCCTT T GATA TTG- C AATTGA
TGAAACATCATTAATTGAAG GCA GAGGAA ATCCT AAA ATCATT
TGATTTTAAATAGGATTTCC TGT TTCCTT TAGGA TTT TAGTGA
TTTTGT T ---- TAAA - ------
GAM94141 22092 GCATGCCTGTGCCCTGCTGG CT TG CTGCTG - G - ATGAT
CATTGGAGTGCCTACATGAT GCATGC G CC GCATTGG AGT CCT AC
GTGAGGAGCTGCCAATGTGG CGTGCG C GG TGTAACC TCG GGA TG
TGCCTGCGTGC TC GT ------ G A G -----
GAM94185 13247 GCATGGAGGTGTGCAACCCT TG AAC AAAA C GACA
AAAAAATCTTCGGGTGACAA GCA GAGGTGTGC CCT AAT TTCGGGT
CCTGGACATTGTCAGGAGCA CGT TTCCACACG GGA TTA AGGTCCA
CACCTTTGTGC GT A-- CTG- C ----
GAM94252 13719 GCATGTATGTCTTTGTCTCT TGTA T- C C-- T AATATA
CTTGTCTAATATAAGCCAGT GCA TGTCTT GT TCT TTG CT
TAAGATGCTTGAGACGATCT CGT GCAGAG CG AGA GAC GA
TGC TCTA TT T ATT C ------
GAM94271 11176 GCATGTGACTGGGGTTCTGT T GA - T-- AA C GCTC
TAAAAGGGCAGGCTCCTCCC GCA GT CTGGGGTT C GTTA AGGG AG
TCCTAGCCCTGAAGCCCCAG CGT CA GACCCCGA G CGAT TCCC TC
GAACCTGC C AG A TCC CC - ----
GAM94275 11283 GCATGTGATCTTCACATTCA ATCT C A TCAACTAAT- ACAATTA
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TTTACAATTAAAAAGTCATT CGTATAT AGT TGAG ATGTCAAAG GAAAA
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GAM94281 201 GCATGTGCATTGAGAGCATT GCA A--- TTAG CT TCAA
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CTTTTCTTACTGCGGACCTT CGTATA GATTC CGT TTCTT CCGG
AGAGATATGC GA- CAGG CA-- TT ----
GAM94312 5170 GCATGTTCATTCATTGCTAC A TCA TT- TTTG TTCTG
ATAATTTGGTTCTTCTGGAA GC TGT TTCA GCTACATAA GTTC
TATTTTTATGTAGCTCTTGG CG ACA AGGT CGATGTATT TAAG
AGTACAGC - TG- TCT TTTA -----
GAM94319 280 GCATGTTTAATTGTCCAGGA TAA-- CA A - TAAA--- GAAA
TTTGCAGATGTAAACATGAA GCATGTT TTGTC GG TTTGC AGATG CAT
AATGAATCTTTCATTTGGTA CGTACAA AACAG CC AGATG TTTAC GTA
GACCGACAAACTGTAACATG TGTCA -- - G TTTCTAA ----
C
GAM94339 22067 GCATTAATTAGTTTTGGTCA TAAT TT TCATC TTCACATCTT
TCGTATTTTTTCACATCTTG GCAT TAG TTGG GTATTTT
AAGTATTTCATTCAACTCTG TGTA GTC AACT TATGAAG
CTATGT TC-- TC TACTT ----------
GAM94363 248 GCATTATATTCTACAAGTAT ATTCT A C- AA TACCT
CACAGTAACATACCTTGACT GCATTAT AC AGTATCA AGT CA
TTTGATACTGGTTTCTCATA CGTAATA TG TCATAGT TCA GT
ATGC CTCTT G TT -- -----
GAM94375 21869 GCATTATTTTATCCTATATC - A-- TA--- C-- ATTTTAAGAAATAACA
TCACTGAATTTTAAGAAATA GCATT ATTTT TCCTA TCT ACTGA
ACATTAGTATTAGAAAAACT CGTAA TAGAA AGGAT AGA TGATT
AGGAAAAAAGATAAATGC A AAA CAAAA TTA ----------
GAM94473 7647 GCATTGTGAGTAAATCAGAT T T TA AGAT - GCC
GTTGAATTCTTTTGCCAAGG GCA TG GAG AATC GTTG AATTCTTTT
GAATTATAGCTGCAGGTTCT CGT AC CTC TTGG CGAT TTAAGGGAA
CTCTCACTGC C T TC ACGT A ---
GAM94495 13482 GCATTTATAATTATCTCATT --- CAT T TGAGAAGGTT
TGTTAAGGCTGAGAAGGTTG GCATTT ATAATTATCT TTGT AAGGC
TTTTTATAATAGGTAATTAT CGTAAG TATTAATGGA AATA TTTTG
ATTGAATGC TTA T-- T ----------
GAM94521 17323 GCATTTCTATGTGATGTGGT T GT T -- AA- TTAT
CAGTAAAATTTATATTGCAA GCAT TCTAT GA GTG GTCAGT AAT
CTGATAGTACTCCGGTGGAT CGTA AGGTG CT CAT TAGTCA TTA
ATGC T GC - GA ACG ----
GAM94549 11780 GCATTTGTCTTTCTGACCTC GTCTT C--- C TCCT GAAA
ATGCAATTCCTAGGAAACTC GCATTT TCTGAC TCATG AAT AG
TGTGTTCTGTGATTTAGTCA CGTAAA GGACTG AGTGT TTG TC
GGCAATAAAATGC ATAAC ATTT C TGTC ----
GAM94611 4602 GCCAAAATCAGCATGTTCTC CA C A - GCCT GCCAGTTCTAA
CTATGCCTCAGCCAGTTCTA GC AAAT AGC TGT TCTCCTAT CA
ATGTAATAGGAGATGCAGTT CG TTTA TTG ACG AGAGGATA GT
TATTTAAGC AA T - T AT-- ----------
GAM94615 11340 GCCAAAATGTCTGTCAATGT AAAA GTCAATG GCA T CAGTTC GCTACAA
CAACCGCAGCGTGTCAGACC GCC TGTCT TCAACC GCG GTCAGAC TATC
AGTTCTATCGCTACAAGATG CGG ACGGG AGTTGG CGT TAGTCTG GTAG
CCCCGTCTGATTGCCAAGGT AA-- ------- AAC - CCCC-- -------
TGAGGGCAAAGGC
GAM94627 11106 GCCAAAGAAGAAGACAAGTC AA AA- AA CGCATGT--- GT AAACGG- TCCTTG

GCATGTTCCAGACGTCCAAA GCC AG GAAGAC GT TCCAGAC CCA GG
ACGGGGTCCTTGTCATAACC TGG TC CTTTTG CA GGGTCTG GGT CT
ATGGGAGTCTGGGTTCTTCT GC CTG AA TACTCTTCTT AG ACCAATA ------
CATACAAGTTTTCGTCCTCG
GGT
GAM94634 7720 GCCAAAGGATTCCCAGCTCA -- TTCCC TCAAAG- AATTTAAAACTGCAACA
AGTCAAAGTGAAATTTAAAA GCC AAAGGA AGCTCAAG TGA
CTGCAACATCAAAATCATCT TGG TTTCCT TTGAGTTC ACT
TGAGTTACTCCTTTAAGGT AA CA--- TACTAAA ----------
GAM94658 22663 GCCAAATGTGGAACTAAGGT - A A AAGGT TT G A AGGGAA
GGGTTCAGTGGGGACCAGGG GC CAA TGTGGA CT GGG CA TGGGG CC
AAGGCCTCATGGCCCCAGTC CG GTT ACACCT GA CCC GT ACTCC GG
CACAATTGTGC T A - ----- CG - - ------
GAM94693 11403 GCCAACCTTGAAGCCAGTGG A - TG - G - ATCCACAAAC
GGCACCAATCCACAAACTGG GCCA CC T AAGCCA GTG GGCA CCA
ATGCTGCGCTTGGTTTTGAT CGGT GG A TTTGGT CGC TCGT GGT
GGTGGC - T GT T G A ----------
GAM94702 22930 GCCAACTCACATGAAGGGGA C C AG-- T--- - CACGACTCACTTC
CTGACTGTGGGCACGACTCA GCCAA TCA ATGA GGGAC GACT GTGGG
CTTCTCCACTGGTCTGCTGT CGGTT AGT TACT TCTTG CTGG CACCT
TCTGAAATCATCTGATTGGC - C AAAG TCGT T ----------
GAM94712 14869 GCCAACTGCACCAACGAACT ACC AACT ACA ATGAT G TGGCAT
GTACATGATGATGAGGGACT GCCAACTGC AACG GT TG GAGG ACTGT
GTTGGCATGCAGTGCCTCCC TGGTTGACG TTGC CA AC CTCC TGACG
AGAGACCAACGTTCAAGCAG AAC AAC- GAG C---- G ------
TTGGT
GAM94735 10357 GCCAAGAGGATGACCTGGGG AGA CC TC ------- TG ATCT
CAAGGTCACCAGCTTGCTCA GCCA GGATGA TGGGGCAAGG ACCAGC T CTC
TCTGGGTGATATCCCTGCTG CGGT TCTATT ACCCCGTTCC TGGTCG A GGG
GTTTCCTTGCCCCAAATTAT A-- AA TT TCCCTAT GT ----
CTATGGC
GAM94742 17094 GCCAAGATCTTGATGAAAAA CA A G AAAAATA - AGAAA
ATAGTGATGAGAAACATTGA GC AG TCTT ATGA GT GATG
CCGGACAATCATGAAGGCTC CG TC GGAA TACT CA TTAC
TGC TC - G AACAGGC G -----
GAM94748 10170 GCCAAGCAGAGGCTTCAGTC AG - TTCA CTC- ATCC
TCCACGCATCCGTGTGTTCA GCCA CAG AGGC GT CACGC
GCAAATGTCTACTGAATGGC CGGT GTC TCTG CG GTGTG
AA A TAAA ACTT ----
GAM94762 7719 GCCAAGGAACAGAGTAGATT C GAACAG -- ACAGCAT GTAA
CAACAGCATATTAAAGTAAT GC AAG AGTAG ATTCA ATTAAA
TTAGTTAACCCTGAGTAATT CG TTC TCATT TGAGT TGATTT
ACTAACTTGC - AA---- AA CCCAAT- ----
GAM94786 13556 GCCAAGGCTCTGAGTTTGAG AA--- C A T - TC GACCCTACAAGAT - - A
GTGTCCTGTGCCCTGACCCT GCC GGCT TG GT TGAG GTG CTGTGCCCT GCCA AGA
GAAG
ACAAGATGCCAAGAGAAGAT CGG TCGG AC CA ATTC CAC GGCACGGGG TGGT TCT
CTTC

GCTCACTTCATCTATGGTTA AGAAG C - C T C- AAGAACCCCAT-- A A -

CCCCAAGAAGGGGCACGGCC TGCTCA
ACTCTTACACCACGGCTGAA
GAGGC

GAM94791 4825 GCCAAGGGAGAGCCGGGCTT AA-- GG-- GAGG - G ATAC
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GGAGAGATTGGCTTTCCTGG CAGG TAGA AACA C G ----
ACGGC
GAM94798 22381 GCCAAGGTCCCCACCACGGG AAG CCA GTCC T A - C - AGAAGA-- C
GGTCCCCAGTGCACCCCAGC GCC GTCCCCA CGGGG CCAG GC CCC CAGCT CGGG GC
GGCAGC
TCCGGGGCAGAAGAGGCAGC CGG CAGGGGT GCCTC GGTC TG GGG GTTGA GTCC CG
CCGTCG
CTGCAGATCTCTGCTGCCGG GA- C-- A--- - - T A T AGAAAGGG -
GAAAGAGCTCCTGAAGTTGT TGC ATCT
GGGGTCTGGACTCCGCTGGG AG
GACAGGGC TC
--- ----
GAM94814 7397 GCCAAGTGAGTCAAAGTGAT --- CAAA GC T - - TGGGAT
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ATGTAGACGCTCTGGGAATT CGGT TTGCTCG CACTATT GGG CTCG AG TG
ATCACCTGCTCGTTCCATGG ACC TC-- AA T C A ------
C
GAM94822 22578 GCCAAGTTTCGTCCCGTTTT AAGTT G T AAGGG AAGGG
GCAAGGGCCCAAGGGGGGAT GCC TC TCCCGTTT GC CCC
ATAGCAAGCGGGGGGTAAGG CGG GG GGGGCGAA CG GGG
C AAT-- - - ATATA -----
GAM94844 16259 GCCAATCCCATGCCAACAAA CAA - A CAACAAA - CTCA
CCACGGAGCTCACTCCAGTG GC TC CC TGC CCAC GGAG
GGTCAGACGTAGGTGACAAG CG AG GG ATG GGTG CCTC
C AAC T - CAGACTG A ----
GAM94862 17407 GCCAATTAGAGGTTAAATAA A--- A T TTAA GTTCTCAAA
ATTGCTTAAAAGTGTTCTCA GCCAATT GAGGTT AA AAATTGC AAGT
AAACTTGCAGTTTCTTCAAT CGGTTAA TTCTAA TT TTTGACG TTCA
CTTATGAAATTGGC AGTA C C ---- ---------
GAM94907 22357 GCCACACTGTCGGTGCACCA ACAC CCAG-- G GGAGAATACAG
GCTGGTGGAGAATACAGACG GCC TGTCGGTGCA CT GT
AGACCTACTGCATCGACAAC CGG ACAGCTACGT GA CA
GAGGC AGCA CATCCA G ----------
GAM94936 14154 GCCACATAATCTCAAACAAA ACA CAAACAAATTA T AAATTACA
TTATTTATTATCTAAAATTA GCC TAATCT TTTA TATCTA
CATAGATATTAAAAGGTTAG CGG ATTGGA AAAT ATAGAT
GC --- ---------- T --------
GAM94973 7639 GCCACCAGAGTCAAAATGTA CA CAAAAT TTTTTATTTTTGGCGACC
AGTTTTTTATTTTTGGCGAC GCCAC GAGT GTAAGT
CACTTACTTGAACACTTGAG CGGTG TTCA CATTCA
TGGC AG CAAGTT ----------
GAM94976 1622 GCCACCATAAGTTTCAGGTA C ATA - ACAG-- T AAA
CAGCCAATGCAAAGCCTTGG GC ACC AGTT TCAGGT CCAA GC

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GTTGT T CC- C CCTAAA C ---
GAM95000 2226 GCCACCCGTCACTGTCTTCT ---------- GT - CTTC CCTAT GACA
CTTCATCCCTATCGTCGACA GCCA CCC CACTGTCTT CT ATC CGTC
GACGCATCGATTCGCGGTAA CGGT GGG GTGACAGAA GG TAG GCAG
GACAGTGGAGGGAAGGTCGT AATGCTGGAA AG T CGCT CTAC- ----
AATGGC
GAM95001 22467 GCCACCCTACGCCGTAGCCG - AC--------- TA GT AGA
TCCAGAGACTGGCAGGCCTC GC CACCCT GCCG GCC CCAG
GGCTAAAGGTCTGGAGGGTG CG GTGGGA CGGC CGG GGTC
AGC A GGTCTGGAAAT TC AC ---
GAM95008 1862 GCCACCGAGAAGCAGAAGAA G AAG AAGAA G -- GCTCCCG
GGCCCTGGAGAAGTTGCTCC GCCACC AG CAG GGCCCT GAGA AGTT
CGGACTCCTCTTGAGGGCTG CGGTGG TC GTC TCGGGA TTCT TCAG
CCTGAGCTGGTGGC - GA- CG--- G CC -------
GAM95009 10456 GCCACCGAGAGCTACAGCGT C---- CA G GA GACTCAGTGA
GTGATGGACTCAGTGACGGA GCCA CGAGAGCTA GC TGT TG
CAGGTTAGCTCTCGCCTCTT CGGT GCTCTCGAT TG ACA GC
GGC TCTCC -- G G- ----------
GAM95017 21693 GCCACCGGGTTCTTTGAAGT C GG- GA-- TGG CGGGAA
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TTCACTCTAAGAAGAAAGGC CGGT GC AAGAAG TCACT GTTG
GATGGC A GGA AATC TA- ------
GAM95027 16382 GCCACCTATGACGCAGCCAC TA- AC- C CCCA A T ATA
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GCCCCACGCTGACTGCCACC CGGTGG AC CGTC GT CC CGA CAC
AAATGGTGGC TAA CAC A CGCA C - ---
GAM95036 22626 GCCACCTGGAGGCCCCTGGC A- CT C T CCTCGA
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GTGGC AC -- T C ------
GAM95039 10837 GCCACCTTCCTGTCTCTCTG C-- T CTCT-- G AAACATTC
TGCTAAACATTCAGGACAGT GCCA CT CCTGT CTGT CT
GTTCCACAGGCAGATCTGGC CGGT GA GGACA GACA GA
CTA C CCTTGT G --------
GAM95051 454 GCCACGCGCAGGTCGGGGCG --- - - GTAC TCTT
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GTGGC AGT G G ACTA ----
GAM95059 22021 GCCACGGGACAGGTGGCGGG - - ACA GAA-------- ACTAA
AACCACTAAGGAAGGGAAGC GC CACG GG GGTGGCGG CC
CGCTGCCGCCCCACGTGCGC CG GTGC CC CCGCCGTC GG
C A --- GCCGAAGGGAA -----
GAM95063 538 GCCACGGTGATGGGCAGCCC - T - C -- GTATGT AAGCT
AAAGGCTACGTATGTGCAAG GCCAC GGTGA GGGC AGC CAA AGGCTAC GC
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AGCTGGTTCTTCACCTGTGG T T G A CC ACTC-- -----
C
GAM95070 2054 GCCACGTGTTGCTCAGACAG C G T ACAG T G - T A GAAG
GGTGTGCTGGGCATCAAGGT GCCA GT TTGC CAG GG GT CT GGGCA CA GGT

GAAGATCATGCTGCCCTGGG CGGT TA AATG GTC CC CA GG CCCGT GT CTA
ACCCAACTGGTAAGATTGGC - G - AA-- - G T C A ----
GAM95071 13873 GCCACGTGTTGCTCAGACAG G T ACAG GTG - T A GAAG
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GAAGATCATGCTGCCCTGGG CGGTGTA AATG GTC CCA GG CCCGT GT CTA
GAACCAACTGGTAAGATGTG G - AA-- AGG T C A ----
GC
GAM95095 10843 GCCACTGAGGTGAGTGGGGG A------- --- - CTCCAGCACCT
TCTCCAGCACCTGCCCCCAG GCCACTG GGTGA G TGGGGGT
CCCATCACCCTGTGTACCAG CGGTGAC CCACT C ACCCCCG
TGGC CATGTGTC ACC G ----------
GAM95099 1936 GCCACTGCACACAGTCAGGC C CA A G GC T G GCAGC-- GTG
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GCGGGCAGCTCCAGGTGCTG CGGT ACGTGT CAGTTCG GTGTC GA GTGTC CTC GTC AGGTC

GAACAGACACTGGCTCTCTG - AC - G -- T G ACAGACA ---
TGAGGCTGTGGCTTGACCAT
GTGCATGGC
GAM95131 13731 GCCACTGTCACAGGATCCTT - --- TTAG TCACTT
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GC C CAG TCGA ------
GAM95143 19459 GCCACTTAGCTGAGCCAGCC AG A CTCT - CCTCCCCAAA
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AGAGTGCTTTTGGCTGGCCA CGGTGGG GAC CGGTCGGTT CG GAG
GAGGGTGGC A- - TT-- T ----------
GAM95149 5263 GCCACTTGACTCGTGTCACA TGA G ACAA ATGG-- TAAA
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ACTCTGAAAGACAAGAGGGT CGGTGG GAG ACAG TCT TC
GGC --- A AAAG CAACAA ----
GAM95158 11314 GCCACTTTCCCGAGCGGAAG C TC AAGTCAG - CTCGGACT
TCAGCCCGCGGCTCGGACTC GCCA TT CCGAGCGG CCCGC GG
CGGCGGGACCTGCTCGGAGG CGGT AG GGCTCGTC GGGCG CC
AATGGC A GA CA----- G --------
GAM95167 11412 GCCAGAAATTCCACACAGCA AAATT A- CA ------ ATCAT
TTGTTATCCATCATGGGCAT GCCAG CCAC CAG TTGTTA TCC
TACTAGCAACACTGGAGTGG TGGTC GGTG GTC AACGAT GGG
CTGGT ----- AG AC CATTAC -----
GAM95245 356 GCCAGCAAAGACTGCCTCTT A A A G CCATC AA AAAGT
CGCCATCGTGGGGAACAAAG GCC GC AAG CT CCTCTTCG GTGGGG C
TGGACCTCACTGAGGAGGGG CGG CG TTC GG GGAGGAGT CACTCC G
GCCTTGGCGGGC G G C G ----- AG -----
GAM95260 2429 GCCAGCAGGGGCTGGCACTG AG GC A TG TGGGCA AAGGG
ATGGGCAAGGGGAGGAAGGG GCC CAGGG TGGC C A AGGGGAGG
CCTCCCTTAAAAACTTGGGC CGG GTCCC ACCG G T TTCCCTCC
CAAACCCTGGGC -- AA - GT CAAAAA -----
GAM95283 21911 GCCAGCCGAGCACCTGCAGC A- AG- G-- ----- - GAAG
TGCTGGAGGAAGCTGCCAAG GCC GCCG CACCT CAGCTGCT GG AG
GAGGTAGCTGATGAGGTGAC CGG CGGC GTGGA GTCGATGG CC TC

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        CCGGCCCGGC          CC   CCA    GTA      AGGAA  G ----
GAM95289 15872  GCCAGCCTGTCTACCAGCAG     CTG    C  A  G  -      ----      AAG    TGGT
        GGCCGGGCCTGCACCAGCAC GCCAGC   TCTAC AGC GG CCG GGCCTGCA   CCAGCACC   TGCC

        CAAGTGCCTGGTGGTGGGTG CGGTCG   AGGTG TCG CT GGC TCGGGCGT   GGTCGTGG   GTGG

        CTGGACCTTGCGGGCTGCGG     ---    -  - G  G      TCCA      ---   ----
        GTCGCTGTGGAGCTGGC
GAM95333 14751  GCCAGGAAGGCGCCTCCTAC  -     G  CC--  TACA      CAGGCT
        AGGTGTCCCAGGCTGGACAC GC CAGGAA GCG    TCC    GGTGTCC
        TGGACTCACGTATTCCTGAG CG GTCCTT TGC    AGG    TCACAGG
        C               A     A  ACTC  ----      ------
GAM95347 13109  GCCAGGAGCCCAGGTGAGCC     GA      T   CG- GT     C    --  GCTG
        GGAGTGCTCTGCCCAGCCTG GCCAG  GCCCAGG GAGC   GA  GCTCTG CCAGC  CTG
        GCTGCAGTTGTTGGCCAGAG CGGTC  CGGGTCC CTCG   CT  CGAGAC GGTTG  GAC
        CTCAGAGCTCTCCTGGGCCT     --      T    AGA --     C     TT  ----
        GGC
GAM95355 1806   GCCAGGAGGGCTTGTAGGTC       GG T      CT  -  -    -  CA-  GCTA
        TGTGTGCAGTCTCGTCATCG GCCAGGAG  C TGTAGGT  GTG TGC AGTCT CGT   TCG
        GCTACGAACTACGTGGATTG CGGTTCTC  G GCGTCCG  CGC GCG TTAGG GCA   AGC
        GCGCCGCCGCCTGCGTGTAC       AT T      C-  C  G    T  TCA  ----
        TCTTGGC
GAM95390 22960  GCCAGGCAACCCTGTTCAAT   A-   ACCCT    A  G    -  GT  CCTGGT
        CGCCCCAGCAGTGACCTGGT GCC  GGCA    GTTCA TC CCCCA GCA  GA
        TCTATGTGTGGGGGAGTGAA CGG  TCGT    CAAGT AG GGGGT TGT  CT
        CTGCTGCGGC          CG   -----    G  -    G   AT  ------
GAM95391 13277  GCCAGGCAAGTGGCAGAGCG     GCA  --  C    C   CC  G  CTTC
        AACCTGGGTCTTCACACACT GCCAG   AGT  GG AGAG GAA  TG GT
        TTCCTCTTCTTGACTGTACT CGGTC   TCA  TC TCTC CTT  AC CA
        GGC                 ATG   GT  T    -  TC  A  ----
GAM95456 11549  GCCAGGGCAGGGTGTGGGGA      G    ------------      GA   CCACA
        CTGCCACACAGCCCACGTAC GCCAGG CAGGG          TGTGGG  CTG
        ATCTCTCCTCCTTGCTTGGC CGGTTC GTTCC          GCACCC  GAC
                        -    TCCTCTCTACAT     --  -----
GAM95458 17866  GCCAGGGCCATCAGGTTCCG    -   CAT   G   GTT  GG     CA    -   --  ATTCCATA
        TTTGGGGCCCGTCAGCAGGT GCCA GGGC   CAG TTCC   TG  GCCCGT  GCAG GTTG  GCC
        TGGCCATTCCATAGGTGACG CGGT CCCG   GTT GAGG   AC  TGGGTA  CGTT CAGC  TGG
        ACTTTGCCCATGGGTTTCAG    T   AT-  G   --- TT     CC    T   AG  --------
        GAGGTTGTAGCCCTTGGC
GAM95463 4565   GCCAGGGCTGTTCAACATCG    A-   CT-    AACATCGCCAG    AAGACACA
        CCAGGCAGAAGACACATTGC GCC  GGG   GTTC         GCAG
        ACACCAACAGAACCAACCCG CGG  CCC   CAAG         CGTT
        CGGC                CG   AAC    ACAACCACA--   --------
GAM95470 2551   GCCAGGGTCTGTTTCTCCAT       T    TTCT  A     --  AAGTAA
        ATTCATCCAAGTAAGGAGCT GCCAGGG CTGT    CC TATTCA  TCC
        GGATAGGCACAGCCTCTGGC CGGTCTC GACA    GG ATAGGT  AGG
                          C    C---  -     CG   ------
GAM95501 2124   GCCAGTACAACCCGGTCAAA        AAC-      AA        A   CGTT  -  CCACCA
        CAGCAGCTAGTGCGTTACGC GCCAGTAC    CCGGTC  ACAGCAGCT GTG    AC GC
        CCACCAGCTGTTACAGCTGT TGGTCGTG    GGTCAG  TGTTGTCGA CAT    TG CG
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          TGTCGGACTGGCTCGGTGCT       GCTC     GC       -  ----  T  ------
          GGT
GAM95508 10055  GCCAGTATGAGAGCCTGGAA     TAT  -  -  ----     CA  ACCCT
          CACATGACCCTCACCTGTTC GCCAG   GAG AG CCT    GGAACA  TG
          CTCCAAGGTCTGCTCTTTTG CGGTT   CTC TC GGA    CCTTGT  AC
          GC                 TT-  G  T   ACCT     CC  -----
GAM95526 13237  GCCAGTCTGGCTCTGCTGCT    A     CT   CT-  TCCTCA    TGATCT
          CCTCATACTTGATCTGGTAC GCC GTCTGG  CTG   GC     TACT
          ATGCTCTCAGTCTCAGACCG CGG CAGACT  GAC   CG     ATGG
          GC               C     CT   TCT  TAC---    ------
GAM95530 5215   GCCAGTGACTCCTTCCTCAC     T-   TCCT-----     CGGGT   -    CCA
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          GCGGACTGAGGACCCCCTTG CGGTC  CTG        AGGAGT    CAGG GAAAG
          TGTCCCCTGGC            CC   TGTTCCCCC     -----   C    ---
GAM95547 2274   GCCAGTGTCTTTGGGGGCTG     -  TCTTT      G -      GCC
          TGGCAAGGGCCCCTTGCCTG GCCAG TG    GGGGGCT T GGCAAGG
          GGGTTCCCTTACTCATCTGG TGGTC AC    CCCTTGG G CCGTTCC
          T                T  TCATT      G T      ---
GAM95555 1345   GCCAGTTCTTTGTGACCCTC    G   T    CCC    CCCAC  A   G      G  AACACA   TTTT
          GCCCCCACCCAGTGGCTTGA GCCA TTCT TGTGA   TCGCC    CC GTG CTTGACG CA     CCA
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          AATGGT
GAM95559 5220   GCCAGTTTGCTTTTATTTTT   -   TTGCTTT   TT       AA-    CA   TGTAATGTT
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          GTAATGTTACAGAGAGTGTG CG GTTA      ATAG  GTTGGTTTA   TGAG  ACA
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          TATTGTGC
GAM95569 6901   GCCATAAAGTCCTAGAGTTC     AAAG  CTA     TT-     - AG     TTCTT
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          TATTTGAAAGTTGAATTATG TGGTA    AG   TTCGAG   TAAGT G  AGTTTA
          AGCTTGAAGATGGT          GA--  ---      TAT     T AA      -----
GAM95593 17915  GCCATAGCTCCTGGAGTTGG       CTCCTGGA   G-         ACTT
          ATTTTCAGTGACTTCATTGA GCCATAG       GTT  GATTTTCAGTG
          AAATTAAAACGTTTCTATGG CGGTATC       CAA  TTAAAAGTTAC
          C                    TTTG----   AA         ----
GAM95614 15100  GCCATCAATGTCAATGACTC      A   TCAAT     - CA   -    CAA   TGAC
          CGTCACCAAGAGCAAGTTTG GCCATC ATG     GACTCC GT  CCA AGAG   GTT
          ACAACCTCTATGGCTGCGGG CGGTAG TAC     CTGAGG CG  GGT TCTC   CAA
          AGTCCTCATAGATGGC          A  TC---     G  TC   A    ---   ----
GAM95615 6769   GCCATCAATTTCAACTAGAA      AAT    AC   AAAG-     AAA--  C   GAGACAA
          AGGAGCTAAAGCCATAGAGA GCCATC   TTCA  TAG     GAGCT     GC ATA
          CAATATAGCCAGAGGGCTCA CGGTGG   GAGT  ATC     CTCGG     CG TAT
          ACAACTAATGAGTTGGGTGG      GTT    A-   AACAA     GAGAC  A   -------
          C
GAM95629 17851  GCCATCCACACCTGCCAGTT    TCC----      -   TTCC   CATCCTTT
          CCCTGCATCCTTTCAGCCCC GCCA      ACACCTG CCAG    CTG
          TGGCCAGGTGTCACCTCCTG CGGT      TGTGGAC GGTC    GAC
          GC                 CCTCCAC      C    CCC-   --------
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GAM95641 15040 GCCATCCTCTCCTGTACCTG CCTCTCC - C - TCTG
GGTACAGGGTCTGCTCTGTG GCCAT TG TAC TGGG TACAGGG
TCCCGTGTGTCAACCAATGG CGGTA AC GTG GCCC GTGTCTC
C ACCA--- T T T ----
GAM95644 14240 GCCATCGAGGGCCTGAGAAA AT G C------- AACCA- TCCTT
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TCATAAACCAAGTCCTGGGA CGG G TCCTG ACTCT GT
GGC AG G AACCAAAT GTCAAC -----
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TGTTGGCTGAAAAGGTGGTC CGGT GTA TGGTGG GTCGGTT TCG
TATGTTGGC T TC-- AAAA G -------
GAM95670 7292 GCCATCTTGGCTCCTGTGGA A T ----- G- - CTGGGAA
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GAM95682 479 GCCATGAGCGCGCTGCTGCG A- - T G G ACG G TGCGTGCCT
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TGGGGACCAGTGCAGGACCG CG C C - G A-- - ---------
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GAM95691 2573 GCCATGCATGCTCCTCTCAG ATG CT C A ACTC GCCA---------- ACCA
GGACTCTGGCTGGGCCAGGA GCC CATG CCT TC GGG TGGCTGG GG
CCACCAGCACACACACGTGT CGG GTAC GGA AG CCC ACCGATC CC
CTAGCCACCCAGACAGGGCC AAA CG C A ---- TGTGCACACACACGA ----
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TGGC
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GCACTGGC - CA G TAGG GA -------
GAM95773 13185 GCCATTAGACTTATAGGTGA AGA-- - - GCAA AT AAGAG
TGCAAGCATCTAAGAGAGGG GCCATT CTT ATAG GTGAT GC CT
GTTAATCACACTATAGAGGC TGGTGA GAG TATC CACTA TG GA
ATAAGTGGT ATACG A A AT-- GG -----
GAM95776 15958 GCCATTATCTGTCTTTTTTG TTAT- TT TTC TTTTAGGATTGGT
GTTTCATATAAATTTTAGGA GCCA CTGTCTTT TGGT ATATAAA
TTGGTTTTATATTACTGTGA CGGT GGCAGAAG GTCA TATATTT
AGACGGTTATTTGGC TTATT T- T-- ----------
GAM95830 10429 GCCATTTGATTTTTTTCATT GA------- - ATTTA
TTCTATTTAAGAAATATGAA GCCATTT TTTTTTTCAT TTTCT
GAAAAAATACACCAAGATGG TGGTAGA AAAAGAAGTA AAAGA
T ACCACATAA T -----

GAM95849 22742 GCCCAAAGCCAGGCTGAGAC CA- C--- G C--- TATCCTCT
AGTCCTCATATCCTCTTGAG GCC AAGC AGGCT AGACAGT CTCA
CCAAACTGTTTGGGTCTCGT TGG TTCG TCTGG TTTGTCA GAGT
TGCTTCATGGT TAC TTGC G AACC --------
GAM95881 222 GCCCAAGCCCTAGCTGATTG - -- AG AT- ---- GCCCCA
GTACAGCCCCATGTGATCCC GCC CA AGCCCT CTG TGG TACA
CGTAACAGACAGGGTTCCTG TGG GT TTGGGA GAC GCC GTGT
TGGT T CC CA AAT CCTA ------
GAM95898 15714 GCCCAAGTGTTTGTTGCGGG A T - - AC- GGGGA
AACCTTTCCGGGGAGGAGGG GCCCA G GTTTGT TGC GGGA CTTTCC
CGGTCTCAGCATATAGACCC TGGGT C CAGATA ACG CTCT GGGAGG
TGGGT - C T A GGC -----
GAM95915 12083 GCCCACAGACTACAGAAAGC AC- C AAA ---- CAGTATCC
AGTTGCAGTATCCCAACCCA GCCC AGA TACAG GCA GTTG
TTGCCTGTGCTCTCCGGGGC CGGG TCT GTGTC CGT CAAC
GCC C --- TACC --------
GAM95945 1623 GCCCACGTGGTATCAAATAT ------ AT ATTGA C GTG TATAAATCTGT
TGAAATGCATCCGTGTAACA GCCCACGTG GT CAAAT AATG ATCC TAACA
TATAAATCTGTTGTTAAAGG CGGGTGTAT CG GTTTA TTGT TAGG ATTGT
ATTGTTGTGATTTGGCGCAT AAAGTA CG GTG-- - AA- ----------
GAAATATGTGGGC
GAM95986 14148 GCCCAGAGCTGTGGTATAAA - G- AAATTT ATAGGC
TTTTTTTAATAGGCTGAAAT GCCCAGA GCTGT GTAT TTTTA
AGAAATATGAATAGCATTTG TGGGTTT CGATA TATA AAAGT
GGT A AG AAGAT- ------
GAM96070 17615 GCCCAGGCAGAGTCTCTGCG - - AG TA A-- CTAG
TTACAAACTCCTAGGAGGGC GC CCA GGCAG TCTCTGCGT CAA CTC
TTGCTGTGCGGAGGGCCTGC TG GGT TCGTC GGAGGCGTG GTT GAG
TATGGTGT T A CG TC CGG ----
GAM96173 16901 GCCCAGGGCGATGTGATCGA C G - GAA G AACTACATGGC
AGTGGTGGGCAACTACATGG GC CAG GCGATGT GATC GTG TGGGC
CGCCCGGCATGGAGATCGAT CG GTC CGCTGTA CTAG TAC GCCCG
GTCGCGCTGCGC C G G AGG G ----------
GAM96180 21732 GCCCAGGGTCCCAGAACCTT CA TC CCTTGAGTCA AG AGCTGACCTATC

GAGTCAGGGCTTAGCTGGGA GCC GGG CCAGAA GGGCTT CTGGG
GCTGACCTATCTCCAGAGAG CGG TCC GGTCTT CCTGAG GACCT
TCCATTCTGGTCCCTCAGGC AC CT A--------- A- ----------
GAM96186 17211 GCCCAGGTCAGGAGTGTTTT T- GAGT TTCT T TCCA
CTTGGTGGTTCCAGCCCCCA GCCCAGG CAG GTT TGG GGT
TCAATTGAACTGTTTCTGGG CGGGTCT GTC TAA ACC CCG
C TT AAGT CT-- C ----
GAM96191 22986 GCCCAGGTGGTGCAGTGGGT G CAG TGA T C ATTC
GAGCTTTGCTGATTCCGATA GCCCAGGTG TG TGGG GCT TG TG
TAGTGCCCCCAGCCAGTACC TGGGTCCAT AC ACCC TGA AT GC
TGGGT G CG- CCG T A ----
GAM96197 14901 GCCCAGTACTAGGAGTACAA AGTA ACAATA ATCACAGCTCAC
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GCAGCCTCAAACTCCTGGGG CGGG GGTCCTCA GACGT
GC ---- AACTCC ----------

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CGGCGGAGCTGGCCCGCGGT CGGGT GCGCCCG GTCG GG GGCC GC
GGGC G - A- C CC- ----
GAM96235 21701 GCCCATCACAGCAGCCAGGA CA --- GATG C A CGGGA
GATGTCCTCTGAGTACCGGG GCCCATCA GCA GCCAGGA TC TCTG GTAC
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CAAGTGCCCTGGTGGGC CC GAA G--- C G -----
GAM96249 383 GCCCATGCTGATTAAAATTT - TG TAAAATTTT --- AGAAG- - GCCTTTGTACCAA
TGCTACCAAGAAGTGGGATG GCCCAT GC AT GCTA CCA TGGG AT
CCTTTGTACCAAATACCTAA TGGGTA TG TG CGGT GGT ATCC TA
AAATGTGGAAATGGCTTTGT A GT TCAATGTTT AAA GTAAAA A ----------
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GAM96253 16242 GCCCATGGGAAACAGCTGTT - -- AA GC- T T A AACA CTTTCAGCTTCGTA
CCTCATCACCAACAGTCCTT GC CCA TGGGA CA TGT CC CATC CC GTC
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ATGCGGCACATGGTGGGTCC C TA GG GGT C C - GAA- ----------
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GAM96254 6697 GCCCATGGGAAACAGCTGTT - -- AA GC- T T - AACA CTTTCAGCTTCGTA
CCTCATCACCAACAGTCCTT GC CCA TGGGA CA TGT CC CATC ACC GTC
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GATGCGGCACATGGTGGGTC C TA GG GGT C C G AA-- ----------
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GAM96276 2391 GCCCCAACCTCCTGGCTTGG - CCT T CT - TTGTT
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A CC- T TC T -----
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CGAAACAACAGCACGCTTAG CGGG TTCG ACG GCAC
GGC A C ACAACAAAGCAC ------
GAM96288 7232 GCCCCACCCTCTCCTTGATC C CTCCTT C TC ----- TCTCAACCTC
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GACATTCGGAGCTGGATAAT A TTTC-- A TC TTACA ----------
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GAM96314 11102 GCCCCAGCTGTGTGGCCTCA CCCA --- ---- C CTTCC
AGCAGCCTTCCGCTCCTTGA GC GCTGTGTGG CC TCAAG AGC
AGCTGGTCTCCACACAGTGC CG TGACACACC GG AGTTC TCG
---- TCT TCGA C -----
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GGGTTTCCTGGGCTGC TC G CAT - ACTC -----
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AATAGATTAATCCAATCACC CGGG ACTA TAATTAGATA GTT
TCTTAAGGGC AATTCTCC ACC-- A ---
GAM96363 16362 GCCCCCACTCAGCCACAACG A G CAAC C CTCACC- TACGT
GCGTGCTCACCGGCTACGTG GCCCCC CTCA CCA GG GTG GGC

CTCTCCTACCACCCCCTGGA CGGGGG GAGT GGT CC CAC TCG
TGAGGGGGGC - A CC-- - CATCCTC -----
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CTACCGTGTTACTGAATGTG CGGG GGTGTAAGTC TGTGC
GCATCAGGGC ACTAC- AT ----------
GAM96392 16103 GCCCCCCTACTTCCGCTTCC - TACT TGAC CA CT- G- CCTCCAA
TGACACTCATGGCCTTCCAC GCCCC CC TCCGCTTCC ACT TGGC TCCAC TCTT
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GGACCTGCCACTGGTGGAGG C TTAC ---- TC TCC GA -------
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GAM96397 17839 GCCCCCCTTTTATATGAGAT - CCCC GAGAT CCAATAAT TA-
ACCCCAATGAA
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ACTTGTATTAAAAGGATTTT A ACCA AGACC -------- TTA ----------
GTTCCCAGAATATAAAAACC
AGGAC
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AATTTCCAGTGCGGGAACCA GCC CCCGGT TCAT CCT A CCAGT GCG
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TGTGGATAAGCTGGGTGGC T AATA TC AT AC-- GA --------
GAM96416 15222 GCCCCCTCTCGGCTTCCCCC C- -- CCCC- T CCT GGGAT
TCTCCCCCTCCCCCTGCGGG GCC CCTCTC GGCTTC TCTCCCCC CCC GC
ATGTTCAGGGTGGGGGAGAA TGG GGAGAG TCGAGG AGAGGGGG GGG TG
TTGAGGAGCTCGGAGAGGCA AC GC AGTTA T ACT -----
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CCTGTTCACCATAGGCCAGA GCCCC TTTTT TGG CCTG CACC AGGCCA TTGGG
ATTGGGCCCACCCAAATGGC CGGGG AAAAG ATT GGGC GTGG TCCGGT AACCC
CTCATGGGTGGCCGGGTTAG ----- G - CG GTAC A-- ----
GAAAAGGGGC
GAM96467 10996 GCCCCGGTATCTTCCTCGAA C - CGAATTC GACCATGCA
TTCAGGCCGGACCATGCACG GCCC GGT ATCTTCCT AGGCCG
GCTTAAGGGGGATAACTTGG CGGG TCA TAGGGGGA TTCGGC
GC T A A------ ---------
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AGGATCTTCTTCCACCTCCC GCCC GTCCT TAA CAGGA
TTCTGTTTTAAGGATCCGGG CGGG TAGGA ATT GTCTT
C CC -- TT-- ----------
GAM96476 12080 GCCCCGTTCAGCCATGTCGT C- CAG- T T ATCCATGTAGC
CCGGCATCCATGTAGCGCTG GCCC GTT CCA GTCG CCGGC
GTGACTGGAGGCAACAAGGG CGGG CAA GGT CAGT GGTCG
C AA CGGA - - ----------
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TTAAATTGACTGAATTTGTC CGG TGT TTAAG AGT AAATTAA
TGGC TC---- - TC T ---------
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AGGAGCTGGCCGTGTTCCGG GCCC TC GTCGG TG AG TGGCC TTC

GAGAAGGTCACTGAGCAGCA CGGG AG CGGCC AC TC ACTGG GAG
CCGGCAGATGGGC T A- ACG GAG- - AA- ---
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GTATTCCTGCCACCTCTCCC CGGGG GGTG GGG GGGA CTCCCTCTCC TCC
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CAATTGAGGACTCCATCAGA GCCCC TGT TGGAT TGTG TTGA GG
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TGGGGC TGA ACA T CTA A ---
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CTGCACAGGCGCATCAAGAA CGGG GG CTACG CGGA GTCCTG
GGCGGGC C AAGAA --- CAC ---------
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GGACAGTACTGAAGACTCTG CG GGGAGGCT CCC GGG TCC GAC TCT GTC ATGACA
CAGCCCTCGGGACCCATCGG T A A C C G CAGAA - -----
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ACAGCCTTCGTCACCCAGCC GC CC GACC CTCAC GGC TGAC
TGTGAGGGTCCTGACTGGAG CG GG CTGG GAGTG CCG ACTG
C A TCAGTC - T ACCC -------
GAM96593 2627 GCCCGAGGTGCACGCTTCTT - ----- - TTG C C CATG
GAAGCCCACTCCATGGATGC GCCCGAGG TGCAC GC TTC AAGC CA TC
GCTTGTGAATGTTGATGGTG TGGGCTCT ATGTG TG AAG TTCG GT AG
TATTCTCGGGT T GTAGT T TG- C - ----
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GCGGCGGGAGCAACAGCAGC GCC GC GCC CGA CGCC CGG GG GC
AACAAAGGCGGCCCCGAAGG CGG CG CGG GCT GCGG GCC CC CG
CGTCGCGGCGCAGGC A - C - AA - GGCGGAAACAACGA ----
GAM96603 13120 GCCCGCAGGATCAGGGGTCA GCA C GT AGT CTTC
GAGTTAGGGGGCTTCCCTCC GCCC GGAT AGGG CAG TAGGGGG
TGCTGCACCCTCATCTCAGG CGGG TCTA TCCC GTC GTCCTCC
GC AC- C AC --- ----
GAM96606 22135 GCCCGCATTTTAGAGACTTT TTA-- CTTT C TTCTTCTTCTT
GGTCATGCTTCTTCTTCTTG GCCCGCATT GAGA GGT ATGC
CGTTACTCATTCTTGGGATA TGGGTGTGA TTCT TCA TGCG
GTGTGGGT TAGGG TAC- T ----------
GAM96610 7293 GCCCGCCCAGGCCGACAACG G A CC AA CT AT TTT - A GCTCT
ACTCCCGGCATGCAGTGCTT GCCC CCC GG GAC CGA CCCGGC GCAGTGC GCGC CGGGC C

TGCGCCGGGCACGCTCTGCG TGGG GGG CC TTG GCT GGGTCG CGTCGCG CGTG GTCCG G

CCTGCGTGCTGCGCGCTGCC A - -- AA CG CC CGT C C -----
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GGAGGGT
GAM96611 570 GCCCGCCCGCCGCCCCGCAG CCC GCCC- ----- GACGGCCCG
CGCCAGGGACGGCCCGCCTG GCCCG GCC CGCAGC GCCAGG
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CCCGGGC C-- AAGTC AAGAA ---------
GAM96613 10682 GCCCGCCCGGGGTCCCTGAC CG CCCT-- C T TCTTCCCC
CGTGGCTTCTTCCCCGGCCT GCCCGCC GGGT GA CG GGCT
GATCTGCGCAGCCCGGCGGG CGGGCGG CCCG CT GT CCGG
C -- ACGCGT A - --------
GAM96615 19543 GCCCGCCGCCGGTCTAGCCG GC GG A- -- CTTC GAG GCCAG
CCGCCTCCTTCGCTCCCTGA GCCCGCC C TCT GCCGC CGCCTC GCTCCCT CGC
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AGGAGAAAAGAGAACTAGTG CGGG GTC TGATC AGAGG CGT
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CCATGGCTAGGGTTATAGAT GCC CGCTCAT TGGCCAT GGCTA
AGTTGGGTGGTTGGGGTAAA CGG GTGAGTA GTTGGTG TTGAT
TGAGTGAGGC A AATGGG- GG ----------
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ACCCCCGGGGCTTCAAGGGC CGGG CGGCTC TCCGCGGG GGGCCCCC
GCCTCCCTCGGCCGAGGGC AGC- CC---- AACTTCG -----
GAM96657 11522 GCCCGGCGGTTGGTTAGCTC - -- TTA- TC- GTACG ACG CCAAAGCCC
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GCCCCAGGGCGACTGCCCCT C AG TCCC TCA GA--- AG- ---------
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GAACACGGACTGGGCAAGGC TGG GGTG CGG GGGTC GCACAAG GG
GGTGGTGGT T G AAC AG ----- ------
GAM96723 10569 GCCCTACCCTTGTTAGTTAT CCCTT--- -- ----- ACAGT
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ATTTATGGGGT ATTTAACT AA ACGAA -----
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ATTGGGGC TAT- - - ACGA- --------
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GGC T AGTCA--- TCC ------

GAM96749 17324 GCCCTATTACCTGAACCTGA T ACCTGAAC C- TCCTGC
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TCCTATCAGACTGAGATTGG CGGG TAG GACTA CTTGAGA
GC T AGTCA--- TC ------
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TGGC
GAM96812 10624 GCCCTCCTTCTTGAGGGGGC CT CCAGCC A TT- GCCATCA
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TCGTAAAACATCTCCTTAAG TC ACAAA- G TCT -------
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AATCTAAATGGGTCCAGGTG CG GGAC CTGGG ATCT TCAT
C T -- TAA-- AAT-- ----
GAM96859 15380 GCCCTGAGTGTCTCTTTTGA CCT G GATT A G ATG
TTCCAAATTGATAGATGCTA GC GA TGTCTCTTTT CCA ATT ATAG
TGAGTGTGGCGAAAAAAGGG CG CT ACAGGGAAAA GGT TGA TATC
ACATCTATGC TAT - AAGC G G ---
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CCTTCAGGAGAACCCAGAGT GCC CTGA CA CCCTTC AAC
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C T --------- A ATA-- -----
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AAAATGAGTGCAACGAACCA GCCCTG GG GAG AGA ATGA
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GACAGGGC AG A CTT AC--- ----------
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T A TCTA CATTCCAA ----
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T GTAGT G TTC ---
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        GGGC                AGG-   GAC-     ----
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        T                  CGACC     -   - ----------
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        TGGGGC                A---  C    CC-- GT   -----
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        C                 CCAA       C ----------    ----
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TCG

        TCCAAATGCTGGCACTTCAG    -- G   A  -         A--    -   GTGGAC----     G--  ----
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        GGCGCAGTGGGTGGGC

                  --
GAM96998 17875  GCCCTTGGCCTGCTCTCCAG      -  T   T  A-  -     -  ATGG
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        GGGCCGTCCGGGGCGAGTGG TGGGGGC CGG TGAG GG  CCT CCGGGT GGG
        CACGGGGGT             A  -  C GG  G    T  ----
GAM97002 7213   GCCCTTGTGCCAGTTGCTCT        C- TT-  CTT-  --   TA    GCGACA
        TGCAGGTGTAGGAGGTGCGA GCCCTTGTGC  AG   GCT   GCA  GGTG  GGAGGT
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GAM97004 15639 GCCCTTGTGGTGCGGCCCCC TG--- ------ -- GTCC
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C CTAGA GTGGAT TC ----
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GGGC T C CAACA G C --------
GAM97033 4784 GCCCTTTTTTTTTTTTTTTC TTTT G GAAA T ATT ATAAAAA
TGTAGCAATGAAAATTTTTA GCCCTTTTTTTTT TTCT TAGCAAT AT TTTA TGA
ATTTGAATAAAAATCACGTA CGGGAAGGAAAGG AAGG GTTGTTG TA GAAT ACT
AGCATGAGGTTGTTGGGGAA CAC- G GAG- C GC- -------
CACGGAAAGGAAGGGC
GAM97037 2005 GCCGAAATGAAGAGAGGGTT - T G GTTA C C GA-- GG AT ATCAG
ATGGGGCAGCAGGAGGTGGG GCCGA AA GAA AGAGG TGGGG AG AG GGTGG CCA C
GCCAATCATCAGGGCTGGAC TGGTT TT CTT TCTCC ACCCC TC TC CCACC GGT G
CACCCAGACTCCTCCCCAGA C C G AGAG - C AGAC A- CG -----
GACCTCTGTTCCTTCTTGGT
GAM97050 11574 GCCGACGCCGGCCCGCTCTG A C - G-- - CG-- TG - TA G GCC
CGCCGCCTGCCGTATGGCTG GCCG CGC GGC CC CTCT GCGC CC C CG TGGCT CGG
CGGGCCCCGAGCCGCCCGAG CGGC GCG TCG GG GAGG CGCG GG G GC GCCGA GCC

TGGGAACCGCGCTGGAGGAA - - C AAG T CCAA GT A CC - ---
GGCGCTGCGCGGC
GAM97106 17702 GCCGAGTCGCGCGGAGGCGG GAG C GGA A CT-- C- CAAGATTC
AGGCTTGGGTGCGTTCAAGA GCC TCG GC GGCGG GG TGGGTG GTT
TTCAGCTTCACCCGTAACCC CGG AGC CG CCGCC CC GCCCAC CGA
ACCGCCATGGCCGAGAAGGC AAG - GTA A CAAT TT --------
GAM97110 15981 GCCGAGTGTGTGCACATCTT - A CACA AAAC CCCTTGT
ATGTGTGTAAAACCATGTGT GC CG GTGTGTG TCTTATGTGTGTA CATGTGTGTGTGCGC

GTGTGCGCCCCTTGTGTGCG TG GC CACACAC AGAGTGTACACAT GTGCGCACACGCGTG

CACACGCGTGTATACACATG T G A--- AT-- -------
TGAGAACACACACGCGTGT
GAM97119 13053 GCCGCAAGTTCTTCCCCAGG AA CC GTG AAA CCTAAC
TGGCAAATGTATACCTAACT GCCGC GTTCTT CCAG GC TGTATA
ATACGGTGGACTGGCTAAGG CGGCG CAGGAA GGTC TG GCATAT
ACGGCGGC G- TC AGG --- ------
GAM97133 15923 GCCGCAGGCCCGGGCATGCA C - - A- GCC CTCCACC - T CACAC
CATTGGCCCCATTCTCCACC GCCG AGGCC CGG GC TGCACATTG CCATT AGGAG CT CA

AGGAGCTTCACACACTGCAG TGGC TCCGG GTC CG ACGTGTAGC GGTAA TCCTC GA GT

ACTCCTCTTCTCAATGGCGA - T G AG --- CTCTTC- A C -----
TGTGCAGAGCGCTGTGGCCT
CGGT

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GAM97145 2103   GCCGCCACTTGGCTCATTAC     AC G   AT    AG   AGTATGGGGGTGGGAGG
                AGCAGTACTAGTATGGGGGT GCCGCC  TT GCTC  TACAGC  TACT
                GGGAGGGGTGAGGCTGTGGA CGGCGG  AA TGAG  GTGTCG  GTGG
                GTGAAGGCGGC           -- G   --    GA  -----------------
GAM97146 19458  GCCGCCATTTTGAAGCCTGG  CG    ----    C      ---  ------  AGAAA
                CAAACCGAAGCAAGAAATGC GC  CCATTT   TGAAG CTGGCAAA  CCGA    AGCA
                TGCCGTGTTGGATCTTTGCC CG  GGTAAG   GCTTC GACCGTTT  GGTT    TCGT
                AGCCTTCGTGCCGAATGGGA  AG    CCGT   C     CTA   GTGCCG  -----
                GC
GAM97153 16115  GCCGCCCCGAGGTTAATCCA  -----   GA   AATCC      AGACCAC
                CTTACACAGACCACGTGTGA GCC    GCCCC  GGTT    ACTTACAC
                GTTACAGCCGGGGTATTCAG CGG    TGGGG  CCGA    TGAGTGTG
                GC              ACTTA   --  CAT--      -------
GAM97158 10332  GCCGCCCGCCATCCTCTGGC       CCATC   -  CTC  CCGAAAGCACCT
                TCTCACCCCGAAAGCACCTG GCCGCCCG    CTCT GGCT  ACC
                GTCTCAGCCAAGAGCAATGG CGGCGGGT    GAGA CCGA  TGG
                GCGGC                AAC--   A   CTC  ------------
GAM97179 13603  GCCGCCGGGAGTGGATTCGG     G  G   TT   T   GGTGGA
                TTTCGGTGGTGGAGCCGGCA GCCGCC GGA TGGA  CGGT TCGGT
                TCGGCTTCGGTCTGGGTGGT TGGTGG TCT GCTT  GCTA GGCCG
                          G  G   CG   C   ------
GAM97188 273    GCCGCCTCGTCACCTCCAGT      CGT   T  G    ---  TC  GTTC
                TGGGTGCCTCTGGGTTCCCA GCCGCCT   CACC CCA TTGGGT  GCC  TGG
                CTGGCTCTGCCCAGGTGGGG CGGTGGG   GTGG GGT GACCCG  CGG  ACC
                TGGGGTGGC             ---   -  G    TCT  TC  ----
GAM97247 20677  AAAATTTCCTTGACTTATAG  AATTT   A   T     TCTTCTCCAAT   --    C   ---  --
                AAAGAATCTTCTCCAATGAA AA    CCTTG CTTA AGAAAGAA       GAACA  ATAAAA AGAAG  TCA  G
                CAATAAAACAGAAGTCAGGA TT    GGGAC GAGT TTTTTTTT       CTTGT  TATTTT TTTTC  AGT  T
                TGGGATTCTCTTGTCTTATG  GTTCT   A   T     T----------   TT    A   ATT  AT
                ATTACTTTTATTTTATTTTG  TG  ATTCT
                TTCTTTTTTTTTTTGAGACA GA  GG
                GGGTCTTGTT        CT  TC
                          GT  -----
GAM97259 20036  AAACAAAGTTCACTTTATTA     A  TCA  T   A   TA-     CACAC
                CATTAATTTTACACACTAAA AAACAA GT   CT TATT CAT   ATTTTA
                ATAATATGAAATGCAGACTT TTTGTT CA   GA GTAA GTA   TAAAAT
                GTTT                - ---  C   A   TAA     -----
GAM97315 6777   GCCGCGTCATCTTCAGGGGG      CATCTTC-     TC   C  TTCT
                TCCCTCGATTCTTCAGGAGT GCCGCGT      AGGGGG  CCT GA
                CCTTTTTCACTCCGCGTGGC CGGTGCG      TTTCCT  GGA CT
                          CCTCACTT     GA  -  ----
GAM97318 7965   GCCGCGTGACGCACCATGAT   G  G  C   A  AT    GA    AG   AAGC
                TCTCGCGACCTGCAGGAGAA GCC CGT ACG ACC TG  TCTCGC  CCTGC  GAG
                GCCTCGAGCGGGGCGAGGGC CGG GCA TGC TGG GC  GGAGCG  GGGCG  CTC
                CGAGGTCGTGACGGGC      -  G  -  A  CG    --    AG   ----
GAM97333 16308  GCCGCTGCCAGTCGGGACTT   -  C   C  AC--    C  CCGGC
                GGTCGCCCGGCGCTGCCAGA GCCG CTG CAGT GGG   TTGGT GC
                ATGCTCCACTGCCAGCCGGC CGGC GAC GTCA CTC   GACCG CG
                          C   C   C  GTAA   T  -----
GAM97356 21927  GCCGGACCCCAGAGCCTGAG   -   CCC  A  C    T   AGTG   C  GTCC
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GTGGGCAGTGTGCCAGGTCC GCC GGAC AG GC TGAGG GGGC TGC AG
CTTGCGGCCTCCTCAAGCCC CGG CCTG TC CG ACTCC TCCG GCG TC
TGTCCAGGC A --- C A - ---- T ----
GAM97365 15677 GCCGGAGCTGAGCGGAGGCA AGC A CT CG -- TTCCC- CCT
CTGGGCCGAGCCTGCTTCCC GCCGG TG GCGGAGGCA GGGC AGCCT GC GGG
GGGCCTTCCTACCATGCCAG CGGTC AC CGCCTCCGT CTCG TCGGG CG CCT
GGCTGCTCCCTGCCTCCGCC CC- - CC -- AC TACCAT ---
ACCCTGGC
GAM97381 2543 GCCGGCGCAGCCAGCTGCTG CAGCT C AGAA AATGCTG
CGGGAGAATGCCAATGCTGG GCCGGCGCAGC GCTG GGG TGCC
GCACCCCCCAGCGCTGCGTC CGGCTGCGTCG CGAC CCC ACGG
GGC ----- - CC-- -------
GAM97390 15936 GCCGGCGGCCCAGCGGCGGC C GG CC CGG GGCCT
CGGAGCCGGTCGGCCTGGCC GCCGG GGCCCAGC CGG GGAGC TCGGCCT
TGGGCTGAAGCTCCTCCCGA CGGCC CCGGGTCG GCC CCTCG AGTCGGG
GCTGGGCCCCGGC - A- CT A-- -----
GAM97393 15231 GCCGGCGGCGGGAGGCCAAG C G G CCA T CGC CACC
GCTCCGCGCATGGGCACCTT GC GGCG CGG AGG AGGC CCG ATGGG
CATCGGCGTCTACCTGCCGT CG CCGT GCC TCC TCTG GGC TACTT
GCCTGC T - G A-- C --- ----
GAM97399 17566 GCCGGCTGCCATCTAGTTTG - C AGT CGC C-- G CAATTTCGCT
ACGCGGATTCTCTTGCCCAC GC CGG TGCCATCT TTGA GGATT TCTT CCCA
AATTTCGCTTGGGAAGACCA CG GCT ACGGTAGG AACT CCTGA AGAA GGGT
AGTCCTCAAGGATGGCATCG T - --- --- ACC - ----------
TGC
GAM97449 13575 GCCGGGGCCTCATTTCCAGG G TCA T A - - CCT GCGT
TCAGCCCCGGGCCTGACGCG GCCG GGCC TT CC GGT CAGC CCCGGG GACGCG
GCGTTGCGTCCCCCGGGAGC CGGC TCGG AG GG TCG GTCG GGGCCC CTGCGT
TGCGCTAGGCGAACGGCTGC G CA- C A C A C-- ----
GGC
GAM97458 22949 GCCGGGTCACCTTCGAGGCG CA AG ACGAGAA GAACA
GACGAGAATGAGAACATCAC GCCGGGT CCTTCG GCGG TGA
CGTGGTGAAGGGCATCCGGC CGGCCTA GGAAGT TGCC ACT
CG GG ------- -----
GAM97466 5213 GCCGGGTGGGGCCCTCAGGG C T C--- TT ACTGA
TTCTGGTACTGAGCCGGGGT GC GGG GGGGCCCT AGGG CTGGT
CCTTTTTAGGGCCCCTCCTT CG TCC CCCCGGGA TCCT GGCCG
GC T T TTTT GG -----
GAM97484 7813 GCCGGTGGGGCTGAGAGTGC TG G--- T CTCT AGAG
GCTCTCCGAGAGCGGCCCTC GCCGG G GCTGAGAG GCG CCG
GCCTCTTAGTATTGTTGCCG CGGCC T TGATTCTC CGC GGC
GC GT GTTA - TCCC ----
GAM97491 7215 GCCGTAAGTTGCCATTGGCC CG ATT- T GAGATTGGAA
TTTGGGAGATTGGAACCAGG GC TAAGTTGCC GGCCTT GG
GCTCCACGGCAATTTGTAGC CG GTTTAACGG TCGGGA CC
AT CACC - ----------
GAM97492 2368 GCCGTACTGCCGGCCGCCGA A TG CG GAG TG C GCCT
GCTGGTGCAGGCCTGCCGCC GCCGT C CCGGC CC C GTGCAGGC TGCC
TGGTGTGCCTGCGCTGGAAG CGGCA G GGTCG GG G CGCGTCCG GTGG
GAGCTGGTGGACGGC - GT A- AA- GT T ----

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GAM97515 10576  GCCGTGACTCTAGCACTCTC      ACT     CTC-   T     A    TT   T TGT   TGAAC
                AGTCGCTGTACAGTTTCTAT GCCGTG   CTAGCA    TCAG CGCTGT CAGT  CTA GG   GAA
                GGTGTGAATGAACTTCCCTC CGGTAC   GGTCGT    GGTC GCGGTA GTCG  GAT CC   CTT
                CTAGTTGCTGATGGCGCTGG      CC-     CCAT   -     -    TT   - TCC  -----
                TACCTGCTGGCCCATGGC
GAM97523 10723  GCCGTGGAGTGGGAGAGCAA   CG    TG   --   AA-   ---   -   A ACAACTACAAGACCACGCC

                TGGGCAGCCGGAGAACAACT GC  TGGAG  GGA  GAGC   TGGG   CAGC CGG GA
                ACAAGACCACGCCTCCCGTG CG  ATCTC  TCT  CTCG   GCCT   GTCG GCC CT
                CTGGACTCCGACGGCTCCTT  AT    CT   TC    GCA    CAG    T   - ----------
                CTTCCTCTATAGC
GAM97524 17106  GCCGTGGCCAGCCAACCAGC     - -  ---  AACCA   C-     AAACATG
                GCGCCTACAAACATGGTGGG GCCGT GG CCA   GCC     GCG  GCCTAC
                CACTGCGACCGGCCGATGGA CGGTA CC GGT   CGG     CGT  CGGGTG
                CCAATGGC              A  A   AGC   CCAG-   CA     -------
GAM97527 11796  GCCGTGGCTGGCATCAAGGG    T      AT  A    -  AAG     AAGGC
                CGACAAGGCTGACAAGGCGT GCCG GGCTGGC  CA GGGC GAC   GCTGAC
                CGGCGTCGGCCCCTGCGCCG CGGC CCGGCCG  GT CCCG CTG   CGGCTG
                GCCTCGGC              T      C- C    G   ---     -----
GAM97528 21708  GCCGTGGGAGAAGTGTAAAG   -   GA    T AAA    AGGAT   CCAAG
                ATGCAGGATTGGGCCAAGTC GCC GTGG  GAAG GT   GATGC    TGGG
                CATCGGGGTGTTCCAACTTT CGG CGCC  CTTT CA   TTGTG    ACCT
                CAACCGCAGGC           A   AA   - ACC    GGGCT   -----
GAM97584 10035  GCCTAATCCAATGTCTAGAA    --   CAATG---       GTTTTTCCAATGTTA
                GAGTTTTTCCAATGTTATCT GCCT  AATC       TCTAGAAGA
                TCTAGAATTTTTATGATTTC TGGA  TTAG       AGATCTTCT
                AGGT                  CT    TATTTTTA       ----------
GAM97632 13473  GCCTAGCCTGGCCTCTTCTA   -      G  T   CTAC    TA-   -   TAGAGATCACGCC
                CGTGGTAGAGTGCTTAGAGA GCC TAGCCTG CC CTT    GTGG   GAG TGCT
                TCACGCCAGCACCTCCATCC CGG GTCGGGC GG GAA    CACC   CTC ACGA
                ACTCTAAGTGGGCGGGCTGT   T      G  T   TCT-    TAC   C   ----------
                GGC
GAM97643 11635  GCCTAGGATTCTGGAGCCAC      G              C  TTAA    CCAA   A  TCCA
                GTACACTGTTAAATATTCCA GCCTAG ATTCTGGAGCCACGTACA TG    ATATT    GAA AG
                AGAAAAGTCCACTGTTCCTA TGGATC TAAGACCTCGGTGTATGT AC    TGTAA    CTT TC
                TAATGTGTCATTGTATGTGG      A              T  TG--     TATC   G  ----
                CTCCAGAATACTAGGT
GAM97660 13889  GCCTAGGTCTCTTAGATGAT    A    CTTAGAT- TT    -    GGCCAAGCACTTCAA
                TACCTGGAGGTGGCCAAGCA GCCT GGTCT       GA  ACCTG GAGGT
                CTTCAAACCTCATGGGTTCT CGGA TCGGA       CT  TGGGT CTCCA
                CCAGCGACAAGGCTAAGGC     A    ACAGCGAC  CT    A    ----------
GAM97661 11230  GCCTAGGTGAGTCTCACTCT    TA-  TG  ---    -----    AC TATGA
                GACCTATGAGAGCGGAGAAC GCC   GG  AG   TCTCA    CTCTG  C
                ACTGAGATATCTTGCCCATG CGG   CC  TC   AGAGT    GAGGC  G
                GC                TAC  GT  TAT    CACAA    GA -----
GAM97682 8014   GCCTATGATCTCTAAGCTTG         TC     T    C-    TT  -  AA-  G       TGGACTCAGC
                GGTTCCGTGTTGCCAAAGCG GCCTATGATC  TAAGCT GGGTT  CGTG  GC CA   GC CCTTCTGG

                CCTTCTGGTGGACTCAGCCC CGGGTACTGG  GTTCGG TCCGG  GCAC  CG GT   CG GGAGGACC
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AGGAGGAGCCCATGTGCCCC T- - TC CC T ACC A ----------
ACGCTGGCCTGGCTTGTGGT
CATGGGC
GAM97726 16180 GCCTCAAGGACTTTCTCATG AAG - CATG A AAAGAAAAA
TAATTCTATGATTAAAGAAA GCCTC GACTTT CT TAATTCT TGATT
AAGGTCGAGGGTTAAGCAAG TGGAG CTGGAA GA ATTGGGA GCTGG
GTCGAGGT --- C ---- - ---------
GAM97781 7104 GCCTCAGGTGGGTCTCCTGT - A GT GGTC T C CT C- ATA T T ---
TCCCAGTGCTACCCTGCATA G CCTC G G TCCTGT CC AGTG AC CTGC GCGGCC CCT CCCAG
GCTC
GCGGCCTCCTTCCCAGGCTC C GGAG C C AGGACG GG TCAC TG GACG CGTCGG GGA
GGGTC TGGG
TGGGGCAGCGCAGGAGGGGT A A TG ---- - T T- TC C-- - - GGA
AGGCTGGGAGGGGCTGCCGC GGG- AGC
AGCTGTTCACTTGGGCAGGA T GC
CGTCAGAGGAC G CG
AGGA ---
GAM97820 7463 GCCTCCAAGGCCTCACTCCA CCAA T CT C AA TG GCCCCCA
CTCCGGAACCTGGGCCCCCA GCCT GGCC CA CCA TCCGG CC G
CTGGGCTGGACTGGGCTGGG CGGA TCGG GT GGT AGGTC GG C
CTAGGC ---- - CG C -- GT -------
GAM97869 1886 GCCTCCCCACTTCCCACATC C- CACTTCCCA GA TCTTC
CCCTGAATTCTTCGTGAAGG GC TCCC CATCCCCT AT
GGATGGCCTAATATGGGAAT CG AGGG GTAGGGGA TG
GC TA TATAATCCG AG -----
GAM97875 17373 GCCTCCCCGGCAAAAACTGG T G AAACT - CT---- AA GGG
GCCCCCGCCCTGTAATCCCC GCC CCCCG CAA GGGCCCC CGCC GT TCCCCCCC
CCCGGGGGGGGGGGGGGGCTT CGG GGGGC GTT TCCGGGG GCGG CG GGGGGGGG

CTCCGGCGAGGGGCCTTTGG - G ----- A CCTCTT GG ---
CGGGGGGC
GAM97881 13644 GCCTCCCCTTCCCCTGAAGC - -- C CTGAA C A GGAC
CGGCAGCGGGACCGTAGCCT GC C TCCC TTCCC GC GGC GCG
GCGAGGGAACGGGACAGAGC CG G AGGG AAGGG CG CCG TGC
A AC C AG--- T A ----
GAM97898 16885 GCCTCCCTCGAGGAAGCCCA C- A ----- C - AAC
CACATAACATGTTGTTGGTA GCCTCC TCG GGAA GCC ACA CAT
ATCTTTCCACGGTAGGAGGC CGGAGG GGC CCTT TGG TGT GTA
AT A TCTAA T T ---
GAM97927 10547 GCCTCCTCCCTTGTTGAGAC CC C- T A C --- AGAC
ATCGTTTGAAGACTCATACA GCCT TCC TTG TGAG CAT GTT TGA
ACTGTGATTCACCAACTGGA CGGA AGG AAC ACTT GTG CAA ACT
CAAGGC AC TC C A T CAT ----
GAM97930 10015 GCCTCCTCCTGAATCCTCTC TCC CCTCT CAG C CAACACTACCAA
TCAGTCCTCCAACACTACCA GCC TCCTGAAT CT TC TC
AGAAGAAAAGCAATTATTCA CGG AGGACTTA GA AG AG
GGATGGC T-- TTAAC AA- A ----------
GAM97932 6923 GCCTCCTCCTTCCTGCCTGT -- C---------- T CTC
GATGCTCCGTCTCAAACAGC GCCTCCTCCTTCC TGC TG GATG
CGAAACCTGTCTTGCAATGG CGGGGGAGGGGGG ACG AC CTGC

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        GGGGAGGGGGC                TA  TTCTGTCCAAAGCCGACAA  T   ---
GAM98056 15204  GCCTCTGAGAGAAGCAGCTG   - TG    A  ------- T  GGCCCTCA
        GGGGCCCTCACCCTGCATCG GCCT C  AGAGA GCA      GC GGG
        TCTTGCGTCTCTTGGCAGGC CGGA G  TCTCT CGT      CG CCC
                        C GT    G   TCTGCTA  T  --------
GAM98064 11723  GCCTCTGCCGCTCCGCCGTC    T C      G   -   T   C  --  CGTTC
        GCCTCCTCCGCCCGGGCCGT GCCTC GC GCTCCGCC TCGC CTCC CCGC CGG  GC
        TCGCTGCTGCGCGGGGAGAG CGGGG CG CGGGGCGG AGCG GAGG GGCG GTC  CG

        CGAGGCGGGGCGCCGGGGC     C -      -   A   -   C  GT  -----
GAM98085 21886  GCCTCTGGGTGGACAAGTAT   CT TG   GGACAA    -   ---       G  CG CTGGA
        CGGCCCTGCTCCTTGGGACG GC  C  GGT     GTATC GGCCC   TGCTCCTTG GA  G
        GCTGGACTATCACAAGGAGC CG  G  CCA     CGTAG CCGGG   ACGAGGAAC CT  C
        AGGCGGGCCAGATGCGGAAC   T- GT   AGG---    A    CGG       A  AT -----
        CTGGTGC
GAM98087 16022  GCCTCTGGGTTACCCCCTAC     T-   TACCC   A  C     CCTTCGAAT
        CCGGGAGCCCTTCGAATGCT GCCTC  GGGT     CCT CC GGGAGC
        TCCTGGAAGGACCCCCGAGG CGGAG  CCCA     GGA GG CCTTCG
        C                  CC   -----  A  T     ---------
GAM98095 4983   GCCTCTGTCTTTGAAAAATA   T   -  TGAAAAATA    AAT   AAGAAGA
        CTTCCAATTCCAAGAAGAGG GCC CTGT CTT        CTTCC   TCC
        GCAAGGAAGGAGAGAACAGG CGG GACA GAG        GAAGG   GGG
        GC                 -   A  AG-------     AAC   -------
GAM98138 22787  GCCTCTTTGGGCGGAAGACA   -----   TG-    ------   CAGG   GCCC
        GGTCAGGCCCCTGGATACTC GCC    TCTT   GGCGG     AAGA   TCAG
        TTACACAGCCGCCAATAAGA CGG    AGAA   CCGCC     TTCT   GGTC
        ACAAAGGC            AAACA   TAA    GACACA   CATA   ----
GAM98158 22436  GCCTGAAGAGCCGAGAGAGA     AA-  GC   GAG   AC  C    AGAGAAGAG
        ACTACTACAGAGAGAAGAGC GCCTG   GA  CGA   AGA  TA TACAG
        TGTGCTAACTTTAATTGATT CGGAC   CT  GTT   TTT  AT GTGTC
        CCTACAGGC              ATC  TA   AA-   CA  C    ---------
GAM98168 2006   GCCTGACAGAGCAGGTGGCC     ACA---    -   G  ATGA   ---  CTCG
        ATGACGCTGGCCTCGGCCAT GCCTG     GAGCA GGTG CC    CGCT   GGC
        CAGCGAGGGCACTGTGCTTG CGGGC     TTCGT TCAC GG    GCGA   CCG
        CCGCCCGGGC             CCGCCG    G   G  A---   CTA   ----
GAM98259 7484   GCCTGCCAAGAGGTCACGAC   CT       - ACGAC      ----  GCCT   -  GGGC
        TTCCCTCCTGCCTGCAGCCT GC  GCCAAGAGG TC     TTCCCTC    CT    GCAG CCT
        GGGCAGGACTGCTCTGAGAT CG  CGGTTTTCC AG     AAGGGAG    GA    CGTC GGA
        TTGAGGGAAACATGGACCCT   TC       C  GTACA      TTTA  GTCT    A   ----
        TTTGGCCTGC
GAM98269 13410  GCCTGCCCATTTTGTAGTGC    G    TTTGTAGT    TGAG-  G    CAGG
        AGTTGAGGAGAGCTCAGGGG GCCT CCCAT       GCAGT    GA AGCT
        CTGTCAGAATGCTGTGTGGG TGGA GGGTG       TGTCG    CT TCGG
        AAGGT               A   --------    TAAGA  G   ----
GAM98276 7944   GCCTGCCGCGCTGGCCCCGA    ---       -- G      GA  ---------  -    CATG
        GGAGGTGGGCGTTGCCATGG GCCT   GCCGCGCT  G CCCCGAG  GGT       GGGC GTTGC
        CGACAGCCTCTCCCTGCTGC CGGG   CGGCGTGG  C GGGGTTC  TCG       TCCG CAGCG
        TGACTTGGGGGCGGGGTGCG    TCC       GG G      AG   TCGTCCCTC    A    ----
        GCCCTGGGC
GAM98286 7270   GCCTGCCTGCGCCTTTCGCA      T --   -    A-   C-   - C  TGCGT
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          ACCTCCTCGGCCCTGCGTGG GCCTGCC GC  GCCT TTCGC  ACCT  CTCG G CC
          TCTCGAGCTGGGTGAGCGAG CGGATGG CG  CGGG GAGCG  TGGG  GAGC C GG
          CGGGCGGGCTGGTAGGC         T  GG    C     AG    TC    T T -----
GAM98324 427    GCCTGCTGCATAATGGTTAC        CAT      TACCACAC---      C----      CAACA
          CACACATAGGGCATTTCACA GCCTGCTG   AATGGT         ATAGGG     ATTTCA
          ACATGGAATTTTCACCCTAT TGGACGAT   TTATCA         TATCCC     TAAGGT
          CATATTTTCTCACTATTTCT        CT-      CTCTTTTATAC      ACTTT      -----
          AGCAGGT
GAM98357 22390  GCCTGGACTTGCAACTGGTG    -  - TG  ACTG    GATG    AG    GGGC
          GGGATGAGGGCAGTCTGGGG GCCT GGA CT  CA    GTGGG    AGGGC  TCTG
          CCAGAGCCCTCCCACTGTGG CGGA TCT GG  GT    CACCC    TCCCG  AGAC
          GATCTGAGGC            G   A  GT ----     ----     --    ----
GAM98358 6900   GCCTGGAGAAGGCCTCCCCT      GA  A      CCC  A  T      T   TATC
          GACCTGCTCTCTCAGTATCC GCCTG  GA GGCCTC   TG CC GCTCTC CAG
          TGGAGAGCTGGCCAGAGGCC CGGAC  CT CCGGAG   AC GG CGAGAG GTC
          ATCACAGGC              A-  A      ---  C  T      -   ----
GAM98396 17428  GCCTGGCCAACATGGTGAAA      GC  A      GAAACCCTGTCT      AAAAATACAAAA
          CCCTGTCTCTACTAAAAATA GCCTG  CA CATGGT          CTACT
          CAAAAAGTAGCCAGCCGTGA CGGAC  GT GTGCCG          GATGA
          TGACAGGC               A-  A      ACC---------     ------------
GAM98402 579    GCCTGGCCAATTTTTTTTTT          TTTTTTTTT  G      TAGTA
          TTGTATTTTTAGTAGAGATG GCCTGGCCAAT        TT TATTTT
          GGGTTTCATCATATTGGTCA CGGACTGGTTA        GG GTAGAG
          GGC                       TACTACTTT  G      -----
GAM98420 22685  GCCTGGCGTGTTAAGTTGTG    T  CG  TTAA-   G      - A  TGTCATT
          TCCTCACCTGTCATTGGCGA GCC GG  TG     GTT TGTCCT C CC
          AGGGCAGGGCGATCTCAAAC CGG TC  AC     CGG ACGGGA G GG
          TTGGC                T  AA  TCTAG   G      A C  -------
GAM98435 11613  GCCTGGCTAATTTTTTTTTC   C       TTTTTTTT-    T   T     TTTT    TTTTTT
          TTCTTCTTTTTTTTTTTTTT GC TGGCTAAT        CTTC TCT TTTTT    TTTT
          TTTTTTTGGAATTTTAAGAA CG ACTGGTTG        GGGG AGA AAGAA    AAGG
          TAGACGGGGTTTCACCATGT   A       TACCACTTT    C   T     TTTT    ------
          TGGTCAAGC
GAM98460 4853   GCCTGGGAGAGCTGAAGGGG          GCTGAAG   A       GC----   GCTGA
          ACGCCGGCTGCGGCGCTGAG GCCTGGGAGA       GGG CGCCGGCT      GGC
          CCCCCCAGAGCCGGCGCCCT CGGGCCCTCT       CCC GCGGCCGA      CCG
          CTCCCGGGC                  -------  -       GACCCC   -----
GAM98481 21726  GCCTGGGCCAGCTGCTTGGA       CC  C    T  AG    C    A-  G  TGCA
          GAGACCCCGCAGAGCCTGCA GCCTGGG  AG TGCT GG  AGAC CCGC  GA CC
          GGATCCGGCGGTGTCTGCCC TGGACCT  TC GCGA CC  TCTG GGCG  CT GG
          AGCGTCTCCTCCAGGT          CC  T    C  G-   T    GC  A  ----
GAM98482 15917  GCCTGGGCCATGAAGAGCTT   CT      T  A    -----     TA  TT TG  C  TGAA
          GCCTAAGTTTTGGGCAGTGA GC  GGGCCA GA GAGC     TTGCC  AG  T  GG AG
          ACTCCTTGATGTTCTGGCAG CG  TCCGGT CT TTTG     GACGG  TT  A  TC TC
          TAAGTGTTTATCTGGCCTGC  --     -  A    TGAAT     TC  GT GT  C  ----
GAM98485 33     GCCTGGGCCCCCGCTGCAGG     ----  C   C     CA   A       CCC     CCTCAAAACCA  GCCCCCC
          GACTGGCGCCCCGAGGCCTC GCCT    GGG CCC GCTG  GGG CTGGCGC   GAGG          GC
          AAAACCAGCGCCCCCCGCCC CGGA    CCC GGG CGAC  CCC GACCGTG   CTCC          CG
          TCCGTGCCAGCCCCAGCCGG     ACAC   A   C    --   -      C--    ----------- -------
          GACCCCACAAGGC
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GAM98523 11253 GCCTGGTGAAGATCAGCAAG - A CA- AA- TC AC CC GTACCA
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GTACCAGGGCTTCAGTGTCT CGGGCCA CT CTA CG C GC CTGTG CTTCGGG
CCGTGCAGGGCATCATCATC T A CTA GGA GT CT A- ------
TACCGGGC
GAM98580 10932 GCCTGTCCTTACCTCCGCCT - - TCC CT - AG ACAGCAA
GCGAGAGCCACAGCAAGGAG GC CTGT CCTTACC GC GC GAG CC
CTCAGCCAGCCGTGGTGGGG TG GACG GGGGTGG CG CG CTC GG
TGCAGAGT A T TGC AC A GA -------
GAM98593 17584 GCCTGTGAACCAAAGCTTCG T CAA TTCGT - T- TAAAGGTT
TGCACATGTGTTCCCCTAAA GCCTG GAAC AGC GCACA TG GTTCCCC
GGTTGGGGAGCCTCGCTGTG CGGAC CTTG TCG TGTGT GC CGAGGGG
TCTTGCTGTTCCCAGGC C --- TTC-- C TC --------
GAM98608 10057 GCCTGTGATGCTCACGACTG GTGA ACGA GTATGG ACGCAG
GCGTATGGTTGTCACGCAGG GCCT TGCTC CTGGC TTGTC
GCAAGCCAGAGAGAGCAGAG CGGA ACGAG GACCG AACGG
AAGGC AGAG AGA- ------ ------
GAM98609 14184 GCCTGTGCAGGGCCCGGCCG --- TG G C C TC- GGC
CCCTCCATCTGGGCCGGGTG GCCT G CA GGCC GGC GCCC CATCTG
ACTGGGCGCCGGCTGTGTGC CGGA C GT TCGG CCG CGGG GTGGGC
CCGAGGC GCC GT G - - TCA ---
GAM98623 40 GCCTGTGGGATGATTTTTTG GA A--- TG G TAA TACGG AGG
GGACTTGGTAGTTCATAAAG GCCTGTGGGAT TTTTTTGGG CT GTA TTCA AGGT GATAC
GTTACGGGATACAGGGTATC TGGACGCCCTA GGAAAACTT GG TAT AGGT TCTA CTATG

ATCTTGGAGTATTGGGAATA -- ATAA GT G --- ----- ---
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TGTGTTTTTTACTGTTAGTA GCC AATAAGAT ATTT TG TTTTAC
GAATTTAGAAATTATTTTAT CGG TTATTTTA TAAA AT AAGATG
TTCCTGGC TCCT T--- G TT -----
GAM98664 7539 GCCTTACTAGTCTTCTGTTT CT ----- CTTCT CT ATTATT C T TTATT
CCTTACTATTATTCTCTCTT GC TAC TAGT GTTTC TACT CT TCT GT
GTTTATTACAGAAAGTGGAG CG ATG ATCA TAAAG ATGA GA AGA CA
TATTGAAATTCCCTACTATA TT TTAAT TCCCT TT GGT--- A - -----
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GAM98691 460 GCCTTCAAATCCCTGTCTTG CAAA GTCT-- T TGTATAGCTGAAATT
CTGGTGTATAGCTGAAATTC GCCTT TCCCT TGC GG
TTGCATAAAAAAGGGAGCGA CGGAG AGGGA ACG TC
GGC CG-- AAAAAT T ----------
GAM98750 2029 GCCTTCGGCCTACAAGGAAC C CTACAAGGAA G AA CCTA
CGCCCAAGGCCTACCGGGAG GCCTT GGC CC CCC GG
GACAAGACCGAGCCTAAGGC CGGAA CCG GG GGG CC
T AGCCAGAACA A -- ----
GAM98769 11185 GCCTTCTGGTAACTGAATAT TAA GAATA- -- TGTAG
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GGAAAATAAGCATCTAGAAG TGGAAGATC GA GGTGGA AG
GT TAC ATAAAA AA -----
GAM98789 10402 GCCTTGACTTTAATCCAGAA CTTTAATCCA A AA- TTGAAGTT
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C ---------- C AAC --------
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TTAGCCTCGATTCTCTTCCT CGGA CCG CCT CTTCGGG AGTC TCTCTT
GAGGGGCTTCTTAACTTTTC - AA TTTCAATT G CT- ----------
CAAGCCAGGC
GAM98839 22002 GCCTTGGGCCAGCGATATTC G----- AGC TCTTA - TTCT
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CCCTCTTATATCAGGGGCCA CGGAA CCGG CTATA CCAA TGG
TCGGAAAGGC AGGCTA GGA TTCTC A ----
GAM98856 4759 GCCTTGTATTTCTGCAGGTT TT - TG -- A TG - CACT GGGAGA
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TGCAGTGGGAGAGCTGTGCC CGG CGTAGA G GTTCAAG AGT TC TG GGTCC GTGTCG
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TGCACGTGGGAGAGCTGTGC CGG CGTAGA G GTTCAAG AGT TC TG GTCCC CGTG CG
CCCTGAGTTGCTGTGATAGA -- C GT AT G GT A ---- T ------
ACTTGTGGCAGATGCGGC
GAM98866 163 GCCTTGTGGACTACCTGCGG TG TACCT - T- -- T AG TGG
TCTAGGGGTCGGTCAGTGCT GCCTTG GAC GCG G CT AGGGG CGGTC TGC
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GAM98917 272 GCCTTTGAAATGGCTTTGCT AAA TG AAAATGC --- - AAGT
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GCTGGATTTGGTCGCAAAGG CT TAG T T ---------
T
GAM99002 10280 GCGACAGGGGAGCCAGGGGC GAG AG ---- GA CGAGGA
CGCGGGGAAGCGAGGACTGG GCGACAGGG CC GGGCC GCGGG AG
CCTGCGCTGGGCTCGGGAGC CGCTGTCTC GG CTCGG CGTCC TC
TCTGTCGC GA- G- GTCG GG ------
GAM99014 11195 GCGACCCCTTCCCAGCTTCC CCTTCCCA--- G- TC C G ATT CGG ATT
CGTCCGCTCCGCCGCAGCGA GCGACC GCTTCCC TCCGC CGC GCA CG GTCT TGGGTTG
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TTGTCTCGGTGGGTTGATTC CGCTGG CGAAGGG AGGTG GCG CGT GC CGGG ACCCAGC
GC
GGCACAAACCGCCCGACCCA TGCTCCCCTCA GA T- - G --- --- CC-
GGGCCGGTGCGCGTGTGGAA CACAAA
GGGGAAGCACTCCCCTCGTG G
GTCGC C

GAM99017 15801 GCGACCGGGACCATATGATA A GA - AGA AATAGGAGGAAGA

GACCAATAGGAGGAAGAGGG GCG CCGG CCATA TGAT CC
GGTTATTATGGAGCTGGGCG TGC GGTC GGTAT ATTG GG
T G GA T GG- ----------
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CTTCTGCTACATAACGCTGC GCGAC TACG GAGAC GC
TTGTGTCTTTTTCGTATGTG TGCTG ATGC TTCTG CG
TCGT TGT TTT--- TGTT ----------
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CGTATCCAATGATTCGTTGC TAG---- A C AA TT --------
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TT AA GG AAG GTA ------
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GGTATGTTT T- T A CC TT T ----
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TTAAGATGAAATTAGTTT ATTA A ATT AATTT- TT ----------
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AGGTTT ATATA TATT CAC ---------
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AATATGGTATTTGGGAGAAA TTTGGGT CATTAG ATTCA AGAG GGTT
ATATACTTAGGATTACCCCT CCC- G---- TATAAA - --------
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GGCGTCGCCTGCGCGTCTCG GCGAGA AACG CTGGT CGTC GCCTGCGC GGCTG GCT

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GCCAGGCGTTTCTCGC
GAM99146 4745 GCGAGAGGAGGGCCTACAGC GAGA A T ----- A TG - CCCA
AACCTTGGGGAACGCCCACG GC GG GGGCC AC AGCA CCT GGGA ACG
TCTTCCTGGGGCTGCTTTGA TG CC TCCGG TG TCGT GGG CCTT TGC
CGTGGCCTGCCGAGT AG-- G - CAGTT C GT C ----
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CACGTAGCACAGAGCATGCC GCG CGGG ACGT GCA

ACGTACAAGCAAAGACCCGA TGC GCCC TGCA CGT
CGT A-- AGAAACGAACA C -------
GAM99176 17932 GCGAGGAGGATCACCCCCAA GA CCCCCAA T CCAA TGC
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ACAATTCACTGACCCAACTG CGCTCCTT AGT CAG CAC CACG
AATTCCTCGC A- CAACC-- T TTAA ---
GAM99202 5236 GCGAGGTGGACGGGCTCCTG GGAC- CT- C AGGGGACA
CGGCAAGGGGACATGCTTCG GCGAGGT GGG CCTG GGCA
GGCATTCCATGCAGCCTTGC CGTTCCG CCT GGGC TCGT
ACGTA TAC T --------
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GGCAAGGTGGTGGAGTGCTT CGC TACT AA CCC TTGGACTC GGAGACCGT CCA TCG
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ATCCGC
GAM99218 19707 GCGATCCCGCCCGTGGCGGG GAT T C G CCA CCCGAA
GTGCCAGCCCCCCGAAGGGC GC CCCGCCCG GG GG GTG GCCC
GTCACGCCACCCGGGCGGGC CG GGGCGGGC CC CC CAC CGGG
GAGC AGC - A G TG- ------
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CTATCCACTAGCGTTCGGAC CGC AGG TTGCG ACC CTTTCCG
CGC C C-- ATC TAT ---
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GTTATACCAGAAGATCAGGG CGCT AGA ACTCTG CT GACC TTG
TCTCACAGACTCGC C C--- GGA AGAA ATA ------
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CAGCTTGCGCAGCTCGATCA GCGAT TCC GCAGCT AGCT TGC CAGCTCG GGCCAT
GGCCATCCCCTGCAGTGGCC CGCTG AGG CGTCGA TCGA ACG GTTGAGT CCGGTG
AGTGAGTTGGCAATCAGCTC - TTC C-- CTA - GA-- --------
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GGATCCGTTTTTCTATTTCT GCGATT CTATCAATTT TCCGTTTTTCT
GCAAGAGGAATGGAAAAGAT CGTTAG GATAGTTAGA AGGTAAGGAGA
TGATAGAGATTGC A- AA--- ---------
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TAGGGGGGATGGGGGAAGCC CG CACCG GGT GG TGTGA
ACAGACAGC ACAGA AAGGG AGGGG A ------
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GAM99285 1817 GCGCAGAGTTACTTCCAGTA G A----- A GC - ATTCCAC
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TAGGCGACTCTGGGC G CGGATA A AA G -------

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                GCACCATCGACTTCCGGGAG CGCGTC    TGAG GGC     AGCT     GC
                TTCATCTGCGC             TACT   -  CTTC-    ACCACG  ----
GAM99289 19487  GCGCAGCAGTCAGTGAGTCT      AG     A  -------     TCCCT
                CTTCTTCCCTAGGAGACGTC GCGCAGC  TCAGTG GTC      TCTTCT
                CGTGGCCACTGAAGCTGCGC CGCGTCG  AGTCAC CGG      AGAGGA
                           A-     -  TGCCTGC     -----
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                AAGCCCAGAGAGAGACGTGG GCGC  CGGGTG  GCT       CAG GA AGACGT
                AGAGGGACGTCTTCCTGTAT CGCG  GTCCAT  CGA       GTC CT TCTGCA
                AGAGCGTACCTGGCGC        --     G-   GATAT---  -  -     --------
GAM99313 13626  GCGCATCATTCCCACCCTTT    CA-      C  CCTTTC   -   TTCCT
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                ACTCCCTGTGGAATGAAACC CGC   AGTAAGG TG     AGTT ACT
                GC                CAA      -  TCCCTC   C  -----
GAM99317 13364  GCGCATCGTCGAGGGCATCC   G      ---  --  -     CAA     TC   ACGAG
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                CAGCGGCTGTACAAGGATGA CG GTAGTAG   CTC  CC GTAGGA   TGTCGG  GAC
                CCAACTCTTGGATGATGGC   -      GTT   AA  A     ACA     C-  -----
GAM99331 13517  GCGCCAGAGGTGACCTATGA   G   -    A    G-   -  AA   -   ----  TTGT
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                GGACGTTGCTACTCACTAGC CG GGTC TCCAC GGGTA  TTCG TC  CTC TCG    AGG
                TTGGATGGGCACCTGCTGGA  A   G    -    GG   A  A-   A   TTGC   ----
                GC
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                TGCAGGCATAAATATACGCC GCGCC     TCC         GC GGC
                GCCCGATATATAGGAGAGAG CGCGG     AGG         CG CCG
                GGCGC                GAGAG   ATATATAGCC  -   ----------
GAM99357 13824  GCGCCCCCCGGCCCGCGACA      C------    ---     ACAAA-   ACGACAC
                AAAGCACGACACGCTAGCAC GCGCCC      CCGGC   CCGCG     AGC
                ACGCGGCGCGCCGGCACAAC CGCGGG      GGCCG   GGCGC     TCG
                CGGGCGC               CCAACAC    CGC     ACACGA   -------
GAM99370 21941  GCGCCCGGGCGCTACTGGAA         GCTA  GGAAGA    AA  C       GC   G  -  TGA
                GAGGTCAAGGCGCTGCTCGG GCGCCCGGGC    CT     GGTC  GG GCTGCTCG  CCT CG CC
                CCCTGCGCCTGAGGACGAGG CGTGGGCCCG    GG     CCGG  TC CGGCGAGT  GGA GC GG

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                GACAGCCCGGGTGC
GAM99391 11568  GCGCCGGCCCTGACCCCGAC    -      ----  CCCC  C  T   CCCG
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                GATCCCCGAGGGCTGCGTGC CGTG GTCGGGA    CT    CT CG GAC
                           C      GCCC  AGAA  A  -   ----
GAM99396 13801  GCGCCGGGCGGCCATGGACT  -  GGGC           A   ACCCCGGCCGCTGC
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                GCGCTGGACAGGTTCGTGGC CG CGG    CCGGTGCTTGGACA GTCG
                CAGAAGGCTGC          T   AAGA           G   ----------
GAM99399 22174  GCGCCGTCCTGGTCACGGCC       -  G   -        --   A    TGCC
                CCGCGGGGCAGCCATGCCTG GCGCCGTC CTG TCAC GGCCCCGCGG  GGC GCCA
                GCCGTCTGCTGCGGGGCCTG CGCGGTAG GAC GGTG CCGGGGCGTC  CTG CGGT
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CGCGAGCGCGCGCGCCCTCT T T TC TC- C- C AT --- ------
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ATGGACGCCAGCGATTCCCA GCG CCTGGC GAGG CC TG ACGCC GCG CCC
GGAGGGTGTGCGGCGTGCAC TGC GGGCTG TTTC GG AC TGCGG CGT GGG
TGGACTTTGCCGTCGGGACG A CCG A TC G - GT- ----
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CAAGAAGGTCGCCTGAGACC CGTGGAC GGGAG AGAGT CCG TGGAAG
CTCCTGAGGGGCAGGTGC G TCCTCCC --- C-- ---
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CGAGCCAGTGTAGTAAACAC GCGCG CCCCTC GCCA TG CACTTCA
ACTTCAGAAACGTGAGGTGC CGCGC GGGGAG TGGT GC GTGGAGT
CGGTGGTCACGAGGGGAGCG GA------- CAC G C-------- ------
CGC
GAM99430 5278 GCGCGAGCCGCCTGGCAACT - G AACTC ACTACTACCTGCCCTA
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ACGCGCTGGGCCGGGGGCTA CGTGC TCGG GGGCCG GCGC
CGTGC A - GGTC- ----------
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GCGAAGACTGGCTACAACGT TGTGC TTTTT GAC AGTGCAA TC GGTCA
GAAGCAGCTTTTTCGACGTG AGC C GA-- CA--- - ------
T
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GAGAAAAAGCCTTTCTCTTA GCGCGCC TCGGG CTCT GAGAAA
AGAGCCACTCTCTCGGTTGG CGCGCGG GGCTC GAGA CTCTTT
CGCGC TT TCTCACC ATT -----
GAM99460 2221 GCGCGCTCTCCCTGCTCATC C-- TG AGAGA-- ATGG
CCGAGGAGAGAGACTGATGG GCGCGCTCT CC CTCATCCCGAGGAG CTG
CGGGACAGGGCTTCTTGGGG CGCGTGGGG GG GGGTGGGGTTCTTC GGC
TGGGTGGGAAAGGGGTGCGC AAA GT GGGACAG ----
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ACTCAGCAACGACCCATACC GC GCG CCGGGGCGGG CTC GC CG CC
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CGGAGCGCGCCCTGCCCTGG A - CGCGC G AG CC ----------
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CCGCTCCGGACGCCGACCAT GC GCGG CAG CCGCCC CC GCCGCT GG CGC CC GAGCAG
TG
GAGCAGCCATGGCAACAGCC CG CGTC GTC GGTGGG GG CGGCGA CC GCG GG CTTGTC
AC

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CTGGCTGCAGC
GAM99480 11313 GCGCGGGGACACTGGGCAGA G CA TG C CG T GAA----- TCTCG
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GCCCCCTCTTCTGGATTCCG
GCGC
GAM99487 22912 GCGCGTCTGGGACATCGTGC GTCTGG T - A A ACACACCACT
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CGTGC ------ C T - - ----------
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GCGCAGACGGTGTCCCCCGC CG GGTGAAG GCCG CCTG TGG CAG ACG
CGAGAAGTGGAGC A A- CCC-- - - - -----
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AGATGCCGCCCGCCACCAGA GCGCT AGC GGCA TGGC TGCCGC GCC
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GGCCACTGCCACAGCTAGCG - ACA C GGTCCAC CACCA ------
C
GAM99529 15870 GCGCTGCCTCGGAGTCTGTG - TCGG T CCGTCGCG CC- TTGAGTTTT
CCCGTCGCGTCCCCTGCTTG GCGC TGCC AGTC GTGC TCC TGC
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CCTGCACCGGCTGGCGTGTG T ---- C TCCCAAGA TTC ---------
C
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CGAGTACGTCTGATGCTGCC CGTGAC CCG TAGTC TGC GAG AGT
ACAGTGC A TCG ------- AT C ----
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GAGGGCGT GA - C A C GT AGA --------
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        AGGCTCATGTTATCTTCCTT CG CTTA ATT  TTCTATTGTAC  TCGGA  G
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        CCAGAAAAAGGCGCTGGAAA TGCTTT   TGAA    GTCGCGGA    GACC
        AAGTGAATTTCGT          AAG   AAAG-      AAAA--   -----
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        GGTAGCCACGCCAGAGCGGG TGTCTCCGG TC  TCCG   CTGG    GGCGAG CCGC
        GTCGCCTCTGGGCCTCTGT        G --   ---   -----    A   -------
GAM99625 7839   GCGGAGGCGATCGGTGCTGA  -  G  GA--  -  G   AT-    - GATATTGAGGA
        TTCGGCGCGATATTGAGGAG GC GGA GC    TCG GT CTG   TCGGC GC
        CTGCTGATGACAGGACTCGA CG CCT CG    AGC CA GAC   AGTCG CG
        AGGAGCATCCAGC        A   A  AGGA   T  G   AGT    T ----------
GAM99627 374    GCGGAGGGACCAAGCTGACC    AG   CCA  C     TCCTAA T    CAA
        GTCCTAAGTCAGCCCAAGGC GCGG  GGA   AG TGACCG     G CAGCC
        TGCCCCCTCGGTCACTCTCT CGCC  TCT   TC ACTGGC     C GTCGG
        TCCCGC              CT   C-- -    TCCCC- -    ---
GAM99634 520    GCGGAGTGTCGGTGGTGATG          --  -- -  G   AT-   AGCGTG
        GGCCATCCCGAGCGTGCGGG GCGGAGTGTCGGT  GGT  GA TG GCC   CCCG
        CGAGGTGCACTCGTACCTGA CGTCTCACAGTCA  CCA  CT AC TGG   GGGC
        CTGACACTCTGC               GT   TG  C  G   AGC   ------
GAM99641 17197  GCGGATCCTCTCTGGCGTGG     CC   T   T     CAA    AAGATGCAGAGGAC
        TGACCAAGATGAAGATGCAG GCGGAT  TCTC GGCG GGTGAC   GATG
        AGGACCATTGTCATCCGCCG CGTCTA  AGAG CCGC CTACTG   TTAC
        AGACTATCTGC            TC   -   -    ---   ----------
GAM99663 16869  AAACTAAAGCAGCACCTTTA    TAAA-    ----   T-----       ATACAAACA
        TTTTATACATACAAACAGTA AAAC    GCAGC    ACCT     TATTTTATAC
        TAAAATGTTTATTAGGTAAG TTTG    TGTCG    TGGA     GTAAAATATG
        AGCTGTGTTTTGTTT       TTTTG    AGAA    TTATTT       ---------
GAM99723 9577   AAACTTAACAATGAAGGCAG    ---    ----    GCA   AA   CATA--   AAACAATTA
        AAGAAGAACATAGTAGAAAC AAACT   TAACA   ATGAAG   GAAG  GAA     GTAG
        AATTACTACAAACATTTTAG TTTGA   ATTGT   TACTTT   CTTC  TTT     CATC
        CTTCCAATTTCATATAATGT    CAT    AATA     AAC   GA   TACAAA   ---------
        TATACAGTTT
GAM99733 11821  GCGGCACACAAGGCAGAAGA    A   A  AGAAGACTT     TG  ACTGA
        CTTTCCCTGTGGCACTGAGC GCGGC CACA GGC       TCCCTG  GC
        TGCGGGGACATGAGGGCCCT CGTCG GTGT CCG       AGGGGC  CG
        GTGAGCTGC            A   C  GGAGTAC--    GT -----
GAM99741 10745  GCGGCACTGCACCATGCGCA   CA   ACCA-  G-    TGTCTC-  CTT
        GGAATGTCTCGACCTTGTCC GCGG  CTGC    TGC  CAGGAA     GAC
        ATGTCCTTCCTGAAGCAGTA TGCC  GACG    ACG  GTCCTT     CTG
        GAGCAGCCCGT          C-   AGATG   AA    CCTGTAC   ---
GAM99747 15233  GCGGCAGCCGCCGGGGCGCA   -  CCG      CAATGC  C  C    TA  TTGGTGGACT
        ATGCGAGCGGCTGGCGTAGG GCGG CAG   CCGGGGCG     GAG GG TGGCG  GGC
```

CTTGGTGGACTGTCACTGCC CGCC GTT GGCCCCGC CTC CC ACCGT CTG
ACCTCTCCGCCCCGGACTTT A TCA ------ T - CA ----------
GACCGC
GAM99749 1956 GCGGCAGCTCCTGTGAGCGC - - TG - A--- - G AAT
GGACCTGGACAATGTGCATG GCGG CAGC TCCTG AG CGCGG CC TG AC
GACTGCTGCGTCTTGCAGGG CGCC GTCG GGGAC TC GCGTC GG AC TG
CGCTGACCGC A C GT T GTCA T G ---
GAM99755 7094 GCGGCATCGTAGGTAGGTCT A AG- CT T GC TTC CTAGG
TGTTGGGCCGGGTTTCTGAG GCGGCATCGT GGT GT TGT GG CGGGT TGAGGG
GGCTAGGTTCTCGTTTACTT CGCCGTAGCA CCG TA ACA CC GTTCA GCTCTT
GTTCCACATCATAGAGCCAC - AGA CT - TT TTT -----
GATGCCGC
GAM99767 6932 GCGGCCCCACACCGCTCCGT - CACC CCGT- ACATGAG
TAGCCGACATGAGCGGCTAT GCGGCC CCA GCT TAGCCG
TCCCAGCCCCCTGGAGGCCG CGCCGG GGT CGA ATCGGC
C A CCCC CCCTT -------
GAM99768 10461 GCGGCCCCACGCTGGGCGAC CCCACG- G - C A TC T ATGC
AGAGCCTCCAGTTCCCCTTC GCGGC CT GGCGA CAGAGC TCC GT CCC TCA
AATGCTGGCGGGTCGCCGGA CGCCG GG CCGCT GTCTCG AGG CG GGG GGT
GCTCTGATCGCCGGGAACCC TTCCCAA G A - C CT C ----
TTGCCGC
GAM99770 17388 GCGGCCCGAATTCGAGCTCA CG-------- G T--- CAATTC
CTTGGCCAATTCGCCCTATA GCGGCC AATTCGA CTCACT GGC
GTGAGTCGGATTACAATTCA TGCCGG TTAGGCT GAGTGA CCG
CTGGCCGT TCACTTAACA - TATC ------
GAM99787 337 GCGGCCGCTGCTACCGACTA - - AC--- A A C - CCGGAAAAA
GCACCGCGGCCAGTCTGCTC GCG GC CGCTGCT CG CTAGC CCG GGC CAGTCTGCT
CGGAAAAAGGCGGACTGCGC CGC CG GCGGCGG GC GGTCG GGC CCG GTCAGGCGG

CCGGCGCTGGCGACTGAGGC G A AGTCA - C - C ---------
GGCGAGCGCGC
GAM99795 10539 GCGGCCTCCTTCCCAGGCTC C- G - G GCAGCGCAGA
TGGGGCAGCGCAGACCGGGT GCGGC TCCTTCCCAG CT CT GG
AGGCTGGGAGGGGCTGCCGC CGCCG GGGGAGGGTC GA GG CC
TC G T G ----------
GAM99807 5146 GCGGCGCCCCCAGCCCAGCC C---- CC-- C CCCAGTCCCC
CGGCCCAGTCCCCCCGCGCT GCGGCG CCCCAG CAGC CGG
GTGACCTGGGGCCTCTCGCC CGCCGC GGGGTC GTCG GCC
GC TCTCC CAGT C ----------
GAM99812 7962 GCGGCGCCTGTGGGCAGGCT C GTGG A GC CAACC G A AGAGGGCA
GGTGGACGGGGCCGCCAACC GCGG GCCT GCAGGCTGGTGG CGGG CGC GGTT CC CC

GGTTGCCACCAGAGGGCAGG CGCC CGGG TGTTCGGCCACC GCCC GCG CCGG GG GG

GGGGGCCAAGCGTTCCCGCC - AGAG - TT AA--- G - --------
ACCGGCTTGTGAGAGGGCCC
GC
GAM99847 10913 GCGGCGTCAGCTCAGCCTTG T C A CT- AGACCCCAG CCCG
CAAGACCCCAGGCGCCCGCG GCGGCG CAG TC GC TGCA GCG
CTGCACCTGCGACTGTCGCC CGCCGC GTC AG CG ACGT CGC

GC T - - TCC --------- ----
GAM99856 1921 GCGGCTCATCCAGATGGCTG G CA T ---- TAAAGTACA
TGGGGTAAAGTACATCCCAG GC GCT TCCAGA GGCTG TGGGG
TCGTGGCCTCTGGACAAGTG CG TGA AGGTCT CCGGT ACCCT
GC G AC - GCTG ---------
GAM99875 7843 GCGGCTGCATCTTCCTGTCA GCA TC T CCCT T- G- AC GTCACGCA
GCCCTGGTTTCCATGGTGAC GCGGCT TCT CTG CAG GGTT CCATG TG TGGC
TGGCGTCACGCAGCCACCCG CGCCGA AGA GAC GTC CCAG GGTAT GC ACCG
AGTATGGCTGACCTTCCTGC GG- GA - CTT- TC GA CC --------
AGAGAGAGGAGCCGC
GAM99880 7937 GCGGCTGCTGTGGACCCTGG T A -- A- GT--- GGG CTG
AATCCCTGGTGACTGGGCGG GCGGCTGCTG GG CC CTGGA TCCCTG GACT CGGG
GCTGTTCGAGAGGTTCGAGA CGTCGACGAC CC GG GACCT AGGGGC TTGG GCTT
CGGGGACGTCCAGCTGGCCC - - TC GC AGAGC AGA ---
AGCAGCTGC
GAM99885 5033 GCGGCTGTGTCCCAGGAAAT G GTG ---- - GTTGG AGTG
CTGGGTTGGTTCCAGTGGGA GC GCT TC CCAGGAAAT CTGG TTCC
AATACCAGTATTTCTTGGTT CG TGA GG GGTTCTTTA GACC AAGG
CTGGAAAGTAGC A AA- TCTT T ATA-- ----
GAM99890 7327 GCGGCTTCTACGCTCCGGCA C C-- CC CTC TTCAT CAA CCTG
CTCTGAGTTCATCAGCAAAC GCGG TTCTA GCT GGCA TGAG CAG ACGC
GCCCTGGCGTCTGTCCTCAC CGCC AGGGT CGA CCGT ACTC GTC TGCG
CATGCCTAGCCTTTGGGACC - TTC T- ACC CT--- --- ----
GC
GAM99933 17493 GCGGGATTACTGTCTTCTAC AT ----- A----- - - GGAA
CTGGCCTGTGGGGAACTACG GCGGG TACT GTCTTCT CC TG GCCTGTGG
GGCTCATGGAATACGAGAGG CGCCT ATGA CGGGAGA GG AC CGGGCATC
GCCTTAAAGTACGTCCGC GC AATTC GCATAA T T ----
GAM99939 7828 GCGGGCAACCTGGCCTCCGG CAAC C--- - GCC C CCTCCC
CGGTGCGGCCGGCGCGACCT GCGGG CTGGC TCCGGCGG TGCG GGCG GA
CCCTCTGCTTCGTGTACCCG CGCCC GACCG AGGTCGCC ATGT TCGT CT
CTGGATTTCGCCAGAACCCG AA-- CTTT C GCT - ------
C
GAM99944 10856 GCGGGCAGCCACAGTTACCA G C- -- AA- ---- - TATG
AGAAGACTTATGAGATCTGG GC GGCAGCCA AGTTA CC GA AGA CT
CATCGACGGCATGACTACTG CG TCGTCGGT TCAGT GG CT TCT GA
GCTGCTAGC A CA AC CAG ACGG A ----
GAM99948 17045 GCGGGCAGGCCTTCACTGCA CA -- TG A - G AA- GCTCT
GCACTGAGCCTCAAATCCGC GCGGG GGCCTT CAC C GCA CT AGCCTCA TCC
TCTGGAGCATGAGGCTGGAT CGCCC CCGGAG GTG G CGT GG TCGGAGT AGG
GCAGTGGTGGTGAGGCCGCC CG TG GT A A - ACG -----
CCGC
GAM99950 550 GCGGGCAGGGGCTACAGGGC G ACA G C A TGGT
ATCCAGAATGTGGTCAATCT GCGG CAGGGGCT GG CATC AGA TG
TGGTGACCAGTTCCTGCCGC CGCC GTCCTTGA CC GTGG TCT AC
- --- A T A ----
GAM99962 16158 GCGGGCGAATAACCCCGTCT AACCC TT ATTATAACTCTTCC
TTTTCCATTATAACTCTTCC GCGGGCGAAT CGTCTTT CC
GGCAAAGGCGCGTTTGCCCG CGCCCGTTTG GCGGAAA GG
C C---- C- ----------

GAM99965 8026 GCGGGCGCGGGGATATAGGG - G --- TCGAA- ACTCGTAAC
TCGAAGCCCCACTCGTAACG GCG GGC CGGGG ATATAGGG GCCCC
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CCCTTGGGTTGTGC G G CGA TTTAGG ---------
GAM99966 4736 GCGGGCGCGGTTCAAATATT TCAAATA TC GCCGCCCGTTCA
TCCAGGGGCCGCCCGTTCAC GCGGGCGCGGT TT CAGGG
CTTGATGAGACCATTGCCGC CGTTTGCGCCG AG GTTCC
GTTTGC TTACCAG TA ----------
GAM99969 14894 GCGGGCGGCAGCCCGGCTGG AG G G G AAGGG GGTCG
GGTCTCGGGAAGGGGCGGGT GCGGGCGGC CCC GCT GG TCTCGGG GCG
CGCGCAGGGACCTGGGAGCC CGCTCGCCG GGG CGG CC AGGGTCC CGC
GGGCAGGGGCCGCTCGC -- A G G AGGGA -----
GAM99972 13152 GCGGGCGGCGCGGTGCAACC - - --------- -- A- CTTCCTA
TCGGCCGAGGCCTTCCTAGC GCGG GCG GCGCGGTGCA ACCTCG GCCG GGC
CGCCGGCTACGGGGTCCCTG CGTC CGC CGCGCTATGT TGGGGC CGGC CCG
TTCTTGTATCGCGCTCGCTC T T TCTTGTCCC AT CG -------
TGC
GAM99973 13377 GCGGGCGGCGCGGTGCAACC - - -------- C- A- CTTCCTA
TCGGCCGAGGCCTTCCTAGC GCGG GCG GCGCGGTGCA ACCT GGCCG GGC
CGCCGGCTACGGGTCCTGTT CGTC CGC CGCGCTATGT TGGG TCGGC CCG
CTTGTATCGCGCTCGCTCTG T T TCTTGTCC CA CG -------
C
GAM99977 4533 GCGGGCGTTTTCGTGGCGGA --- TT C AA --- C ACT
ATGGCGTCCTCACTGAGCGC GCGGGCGT T CGTGG GG TGGC GT CTC
TCAGCCACCACCGCGGGACT CGCTCGCG A GCGCC CC ACCG CG GAG
CGCGCTCGC CTC GG A -- ACT C ---
GAM99995 19453 GCGGGGAGGATTTATAAAGG AGGA ATAAA AG C C-- - TCTC
CGAGGCCGGGACCGGCGCGC GCGGGG TTT GGCG GCCGGGAC GGCG GCG C
GCTCTCGTCGCCCCCGCTGT CGCCCC AAG CCGC CGGCCCTG TCGC CGC G
CCCGGCGGCGCCAACCGAAG GCG- CCAA- GG - CCC T ----
CGCCCCGC
GAM10000 2045 GCGGGGCCCCCGAACGGGGC C- A - G AGACA CGGG
0 GGGAGACACGGCGGGCCGGC GCGGGG CCCCGA CGGG GC GG CGG
GCCGGCGCCCGATCGGGGCC CGCCCC GGGGCT GCCC CG CC GCC
CCCCGC CC A G G GCG-- ----
GAM10000 4786 GCGGGGCCCGGGCGGCGGCG G G GG--- - AGCAG AGC
4 CTAGCAGATCCAGCGGATAA GCG GGCCCGG C CGGC GCT ATCC
AAGCGGTCGAAGAAGCCGGG CGC TTGGGCC G GCTG CGA TAGG
TTGCGC G - AAGAA G AAA-- ---
GAM10001 17715 GCGGGGCTCCCGGGCGCGCG - - G C- G TCTG
6 TGCCCGGGGTCTGCTGTGCA GCGGG GCT CCCGGGC CGCGTGC CG GG
GCGCGCGGCCCGGGCAGCTC CGCCC CGA GGGCCCG GCGCGCG GT TC
CCGC T C - AC G ----
GAM10001 9930 GCGGGGCTCCCGGGCGCGCG - - G - C GGTCTG
7 TGCCCGGGGTCTGCTGTGCA GCGGG GCT CCCGG CGCGCG TGC CGG
GCGCGCGGCCGGGCAGCTCC CGCCC CGA GGGCC GCGCGC ACG GTC
CGC T C G G T ------
GAM10003 15503 GCGGGGGAGCAGAGATGATC G - - AT- TCCG C CCGC
0 CGAGCCGCGCCGCCGCCGCT GCGG GG AGCAG AG GA AGC GCG
GTTCCTGCTGCTGCTGCTGC CGTC TC TCGTC TC CT TCG CGC

TGC G G G GTC TG-- C ----
GAM10004 16940 GCGGGGGGGCCCCCAGGACG ---------- AGGAC-- AC TGAGA
4 GTCACGGTGAGACCTAGGCC GCGGGG GGGCCCCC GGTC GG
CACAAAGGGGGGTCCAAAAA CGCCTC CCTGGGGG CCGG CC
GAGAAAACTCCGC AAAAGAGAAAAA GAAACAC AT -----
GAM10004 7936 GCGGGGGGGGCCGCGGCGCG - - - G G-- A CGGCAGGA
5 GGCCCAGGGCGGCAGGACTC GCGGG GGGGG CCG C GCGC GGCCC GGG
GGGCCGGAGCGTGGCCGGAC CGCCC CCCCC GGC G TGCG CCGGG CTC
CCCCACCCGC A A C G AGG - --------
GAM10006 13255 GCGGGTCTCAGGAATACTTG T - ATACTT---------- AGAAAC
3 TTAAAAGAAACTTTAATTTA GCGGGTC CA GGA GTTAAA
TCACCATACTTTTCTCCTTG TGTCCAG GT CCT TAATTT
CGACCTGT C T CTTTTCATACCACTATT ------
GAM10008 12017 GCGGTAGGACTCCTGTCGCT G A TCGCTCCAACACT A TCAGCTTC
0 CCAACACTGCCTTGAGCTCA GC GT GGACTCCTG GCCTTG GCTCAG
GTCAGCTTCTTGAGCACAGG CG CA CTTGAGGAC CGGGAC CGAGTT
GCCCAGGAGTTCACGGC G - C---------- A --------
GAM10009 7269 GCGGTCGCGACGCTGGGTCT G C C T T ATT C GAAC
5 ACTATTGCCTGGTGAACATC GCG TCG GA GC GGGTC ACT GC TGGT
ACGCTGAGTGACCTGCTCAC CGC GGC CT CG TCCAG TGA CG ACTA
GGGCGC G A - - - GT- C ----
GAM10010 7007 GCGGTGAAGACCTGGCGACG GAAGA GAC A AAAGTACGAGGAGAA
1 CATCGGAAAGTACGAGGAGA GCGGT CCTGGC GC TCGG
ACCGACGCACAGCTAGGAAT CGCCA GGATCG CG AGCC
GACCGC GTAA- ACA C ----------
GAM10010 183 GCGGTGCAGGCGGGCCTCAC A-- TC CTT TGA GCAGC - TGTT
8 CTTGTCGTTGATGAGCAGCT GCGGTGC GGCGGGCC AC GTCGT TGA TCGA TGGGGT

CGATGGGGTTGTTGCCCCAC CGCCACG CCGTCCGG TG TAGCA ACT AGCT ACCCCG
TCGATCAGCACGATCTCGTT GTC T- CTC CG- ----- C ----
GGCCTGCCCTGGCACCGC
GAM10011 2630 GCGGTGCTGGCCGACTTCGC G - A C T CCT CGA G ACTTCCACTACGA
2 GTCGCCCTTCCACGAGCGCC GCG TGCTG GCCG CTTCG G CGC TCCA GC CC
ACTTCCACTACGAGGAGCAC CGC ACGAC CGGC GAAGT C GCG AGGT CG GG
CTGGAGCGCATGAAGCGGCG G G - A - --- CCA A ----------
CAGCAGCGC
GAM10011 10900 GCGGTGGAAGTTAAGGGAGT AA TAAGG- --- TATC
3 CAGGGGCTATCGCTCCTCGA GCGGTGG GT GAGTC AGGGGC
GACTCGCAGTCGCGGCCACT CGTCACC CG CTCAG TCCTCG
GC GG CTGACG AGC ----
GAM10011 13193 GCGGTGGCTGTAGGTTGTGC G AG G G G C CTCTT
7 GGCTGCAGCGGCTCTTCCCT GCG TGGCTGT GTTGT CG CT CAG GG
GGGCGGACGATGGACAGCCA CGT ACCGACA TAGCA GC GG GTC CC
GTGC G GG G - - - -----
GAM10014 7841 GCGTAACTGTTGTGCTAATT CT TG G TA-- G A ATCG
9 ACTGGTACCTATCGAGGACA GCGTAA GT T CTAAT CT GT CCT
AGAATTATTAGAGTGGCTAT TGTATT CG G GATTA GA CA GGA
TATGT AT GT A TTAA A - ----
GAM10015 10103 GCGTAATAGTAGTAGATTGT GTAA AT - G- - - G GGTGGTA
1 CGTCCTAGTTAGTCGCTGGT GC TAGTAGTAG TG TC TC CT AGTTA TCGCT

GGTAAGCGATAGCTCAGAGA TG ATCATCATC AC GG AG GA TCGAT AGCGA
GAGGTCACTACTACTAGTTA ATTG -- T AG A C - -------
GT
GAM10015 7920 GCGTACAACTCCTCCTCCAG ACA CC- C CA CCCGA C GCACCA
3 CTCCAGCTCCCGAGTCTCCC GCGT ACT TCCTC AGCTC GCT GTCT CC
GCACCAGGAAGATGTCCTGG CGCA TGG AGGAG TCGAG CGG TAGA GG
CAGAGCTTGAGGATGCGGTC CC- CGT T A- TCCTG A ------
CACGC
GAM10018 7942 GCGTCCAGCCTGCATGCCGT CAG - - C - AC CACC AGCA
3 GCGGACTGCACCCACCAGCA GCGTC CCTG CA TGC GT GCGG TG CACC
GGTGATCACGACCCGCTACC CGCAG GGAC GT ACG CA CGCC GC GTGG
GCATTGTCAGGAAGACGC AA- T T C T CA ACTA ----
GAM10019 2341 GCGTCCGGGGAGAAGAGCGG TCCG- A C C GTGA GTAC
5 AGCGTGTGAGCAGTACTGCG GCG GGGAGA GAG GGAG GT GCA
GCCTCCTCTCCTCTCCTAAC CGC TCCTCT CTC CCTC CG CGT
CTCGC TCCAA C T - G--- ----
GAM10020 5339 GCGTCGACAAGCTGTTAATG C-- AA-- T T T TTAA
0 ATTGTTTCTTTTTTTAAAAA GCGT GAC GC GTTAA GATTG TTCTTTTT
AAGGATTAGTTCTTGATCGC CGTA CTG CG TAGTT TTGAT AGGAAAAA
ACCAGTCCAAATGC AAC ACCA C C T ----
GAM10020 15600 GCGTCGCCGCGACTGGTGTT C -- A TG G CGAG--- TGAC
4 GTTGGAGAGCGAGCAGTTCC GCGT GCC GCG CTGG TT TTGGAGAG CAGTTCC
TGACGGAGCTGACCAGACTT TGCG CGG TGC GGCC GA GACCTTTT GTCGAGG
TTCCAGAAGTGCCGGACGTC A GC A GT A CAGACCA ----
GGGCAGCGT
GAM10020 297 GCGTCGCGGTTTTGTTGGCT G G T GG-- TG - AA GATC
8 TGGGCAACAGGGATCCCTGG GCGTC CG TTT GTT CT G GC CAGG
GGCACTGGGGAAAAACTAAA CGTAG GT AAA CAA GG C CG GTCC
TGGATGC - - T AAAG GT A GG ----
GAM10020 6726 GCGTCGGGATCTCGGCCCCG GA T- CC--- - AG CGTC
9 GGAGGCGTTCCGTCGGGCGC GCGTCGG TC CGGC CG GG GCGTTC
AGCCGCGAAGATGCCGTTGG CGCAGTC GG GCCG GC CC CGCGGG
AACTGACGC AA TT TAGAA G GA ----
GAM10021 10380 GCGTCGTCCTTGGGTCGGGG C GGGT A- A CC T ATCGTAC
1 AGCATGCCCTTTGGCGTATC GCGTCGTC TT CGGGG GC TGC TT GGCGT
GTACACGCCCGAGTAAGCCG CGTAGTAG AG GCCCC CG ATG AG CCGCA
CCCCGTAGATGATGATGC T AT-- GC A -- C -------
GAM10021 16889 GCGTCTCAGCTGTCCTAGAA G AG TC AAA CA AA GA-- A CCA
5 AAGTGCTGTCAGCAAGTCTG GC TCTC CTG CTAGA GTGCTGT GC GTCT AG GTTTC
AAGAGTTTCCCAGAAGCCCT CG AGAG GAC GATTT TACGATA CG CAGG TC CGAAG
GAAAGGACGCAATAGCATCA G A- -- AC- A- -- AAAG C ---
TTTAGCAGAGAGAGGC
GAM10022 326 GCGTCTGAGGCACCGGGTGG G - CA--- G G G ATAGAC
0 TCGGGCTGTGATAGACCAAG GC TCT GAGG CCG GTGGTCGG CT TG
GCTGATCACGCGGCACCACC CG AGA CTCC GGC CACTAGTC GA AC
TCAAGAAGC A A ACCAC G G - ------
GAM10022 13770 GCGTCTTGGGCACGCCCCTG TC G A CC G ------ AGTGC
6 CCGGCGGACAGTGCGTCCTC GCG TT GGC CGC CT CCGGC GGAC
TAGGGCCGGGAGCTGCGGGC CGC GA CCG GCG GA GGCCG CCTG
CGAGTTCGC TT G G TC G GGATCT -----

GAM10023 19464 GCGTGAACCCAGAAGAAGCA AACCC A ACTCA TTCAGCCTCCT
0 GACTCAGCCTTCAGCCTCCT GCGTG AGAAG AGCAG GCC
GGCCACCTGCTCCTTCTATG CGTAC TCTTC TCGTC CGG
ACCATGC CAGTA C CAC-- ----------
GAM10024 17917 GCGTGACCTGGCAGCTGTAG A T T--- TT---------- ACT
6 CTTTTGTGGGACTTCCACTG GCGTG CC GGCAGCTG AGCTT GTGGG
CTCAGGCGTCAGGCTCAGGT TGCGC GG TCGTCGAT TCGGA CACCT
AGCTGCTGGCCGCGT C - GGAC CTGCGGACTCGT ---
GAM10024 17612 GCGTGAGATCCTACCCCTCT TG CTACCCC TT GG - TGG- TC GGCCA CGTG

9 CTTTGGGCTCCTGCTGGGTT GCG AGATC TCTC TG CTC CTGC GTT CT GCA
TCCTGGCCAGCACGTGTGCA CGT TCTAG AGGG AC GAG GACG CAA GA CGT
GATAAGAGAACGATTGCAGC GT ------- TT AA C TTAG GA ATAGA ----
GAGAACATTGGGAGATCTTG
TGC
GAM10025 234 GCGTGATATGAGTTAGGATT ATG GA- TG -- --- AATTTAA
5 GGAGGCAGGAATTTAACCAT GCGTGAT AGTTAG T GA GGCA GG
ATGCTCTTTTGGGAACTGAC TGCACTG TCAGTC G TT TCGT CC
TGTCACGT --- AAG GT TC ATA -------
GAM10026 5115 GCGTGCCCTTCTGGCTTACA -- TTCTG- -- TAGG-- GTGAG
5 CGATCATAGGTGTGTGAGAT GCG TGCCC GCTTACAC GATCA TGT
AATTAATTGGTCTGGTGTGA CGC ATGGG CGAGTGTG CTGGT ATA
GCATAACTGGGTATTCGC TT TCAATA GT TAATTA -----
GAM10027 11863 GCGTGGAGAGGACCCGTTCG AGGACCC C--- GTA GA ACT
5 CTCAGCGTATCGACCCGACT GCGTGGAG GTTCG TCAGC TC CCCG
CGGGAGAAGCTGACACCCGA CGTACCTT CGAGC AGTCG AG GGGC
GCAACTGCATTCCATGC ACGTCAA CCAC A-- A- ---
GAM10027 5117 GCGTGGAGGCTTCGTTTTCT T C TCTATTTATTTA- TTAT
7 ATTTATTTACATTATTGGGC GCG GGAGG TTCGTTT CA
TTTCTTTTGTGAGCGGACCT TGT TTTCC AGGCGAG GT
TTTGT - - TGTTTTCTTTCGG ----
GAM10029 10637 GCGTGGTTCTGATGAAGTTG T- ---- A GAACT TT- TTG GG TCTC
8 AACTGGTTTGTGTTGCAGGT GCG GGTTC TGATG AGTT GG TGTG CA TCTC
CTCTCTCGAGAATGGGTACG CGC CCAAG ACTAC TTAG CC GCAT GT AGAG
TGTCCTAAAGGATTCCATCA TT TGAA C GAAAT TGT GG- A- ----
AAGTGAACCTTCGC
GAM10030 15397 GCGTGTCTTGGGCAGGGTCC G C ------ C - ----- CACAGCCT
5 GAGGGCTGTAGCCACAGCCT GC TGT TTGGGCA GGGT CGA GGGCT GTAGC
GCTGCTCCTGAGCCCATCGT CG ACA GACCCGT CCCA GCT CCCGA CGTCG
ACCCAGCCTCTGCCCAGCAC G C CTCCGA T A GTCCT --------
AGGC
GAM10032 7660 GCGTTATGTCACCATGCAGT CA CA GTG- ATT ---- TAGG
2 TGCCAGTGTGATTAGTGCCT GCGTTATGTCAC TG GTTGCCA TG AGTG CC
AGGGGTCTCCATTTAGCAGA CGTAATATAGTG AC TAATGGT AC TTAC GG
AATGGTAATGACAGTGATAT -- AG AAAG GAT CTCT ----
AATGC
GAM10032 15390 GCGTTCGCAAAGTCTGTAGT GCA AGTCA AG CCCTATT
8 CATCACAGGCTTCCCTATTG GCGTTC AAGTCTGT TCAC GCTT
AGCTCGTGGACAGGCTTAGA TGCGAG TTCGGACA GGTG CGAG
GCGT A-- ----- CT -------

GAM10033 21775 GCGTTCGCGCCCGGCGGCGC --- - ---- G CAG- TGACA
0 TCCAGGTGCTGACAGCGCGA GCGTTCGC GC CC GGC GCGCTC GTGC
GAGAGCGCGGCCCTCAGGAG TGTAAGCG CG GG CCG CGCGAG CGCG
CAAGGCGAATGT GAA A ACTC G AGAG -----
GAM10033 2530 GCGTTCTGCGTCATGGGGGA ------- G TG-- G G- GATCAACTAAAAG
4 GTGCTGATCAACTAAAAGAG GCGTT CTGC TCA GG GA TGCT
CAGATCGCCAAACTGAGGCA CGCAA GACG AGT CC CT ACGA
GCAACTACAACGC CATCAAC G CAAA G AG ----------
GAM10034 1361 GCGTTGCCCGCCAGCTCCAG T CCAG C - ATCTCG AGATACTCGAG
0 GATCTCGGCGGTCAGATACT GCGT GCCCG CT CA GG GCGGTC
CGAGGACCGCAGCCATGTAG CGCG CGGGC GA GT CC CGCCAG
ACGGGCGCGC - A--- T A GA---- ----------
GAM10034 17183 GCGTTGCTGCGGACGTGGTC G C G C TTCCTCGGC
5 CGCGCCCTTCCTCGGCGGGC GCGTT CTG GGAC TGGTCCG GCCC
CGGACTGGTCTCCAGAAATG CGTAA GAC TCTG GTCAGGC CGGG
C A C - - ---------
GAM10035 15638 GCGTTGGGCTGTAGGTCGCT C - GT T- T- GA-- CC GCCAT C TA G
1 GTGCTGTGTGATCCCCCAGA G GTTGG GCTGTAG CGC GTGC GTGT TCC CAGA GCC GAGA
GT GA
GCCATGCCCGAGATAGTGGA T CAGCT CGACGTC GCG CACG CACG AGG GTCT CGG CTCT
CG TT
TACCTGTTCGTTGGCCTCTC - G -- TC TC AACC CC GCCTT C C- G
CGGCTTCCGTCTGCCGGACC ACCTGTTC
AAGCACCTGCACCTGCGCTG T
CAGCGTCGACT G

GAM10035 21900 GCGTTGTTAACAGACTCCTG - TAACAG C AC CAC- ATTC
3 ACGCCCACACATTCGTTCCT GC GTTGT ACT CTG GCC AC
GGCCAGAAGTAAAAGCACAG CG CGACA TGA GAC CGG TG
CTGC T CGAAAA A -- TCCT ----
GAM10042 17662 GCTAAATTAACCTTAAGACC TT CT -- T TTAA TT- TAGT
3 AGTCATAGTTAATACAGGTT GCTAAA AAC TAAGAC CAG CATAG TACAGGT AC
TACTAGTGTCATGCCTGTGG TGATTT TTG GTTTTG GTT GTGTT GTGTCCG TG
TTTTGTGTTTGTTGTTTTGT TT T- TT T TTG- TAC ----
GTTTTTTTAGT
GAM10044 13528 GCTAACTTTAATGGTTTTAC AAC- TG TA - T C AA CCCCTTA
5 AACTCGAGTCTGCCTTGAAA GCT TTTAA GTTT CAACTC GAGTC G CTTG ATGT
TGTCCCCTTAACATGCCAAG CGA AGATT TAGG GTTGGG CTTAG C GAAC TACA
TCGATTCAGGGTTGGGGGAT AATA CT GG A - T CG -------
TCTTAGAATAAAGC
GAM10045 7062 GCTAAGATAGTTCAAATTGA AG -- ATCT AATGGTAA
5 TCTTAGGTCAATGGTAAGAC GCTAAGAT TTCA AATTG TAGGTC
CTATGTAGTTCATGAAGTCT CGGTTCTG AAGT TTGAT ATCCAG
TGGC -- AC GT-- --------
GAM10046 2615 GCTAAGCCCTTACTAGACCA A CCTT- ACCAA-- ACTTAAA
3 ATGGGACTTAAACCCACAAA GCT AGC ACTAG TGGG
CACTTAGTTAACAGCTAAGC CGA TCG TGATT ACCC
A ACAAT CACAAAC -------
GAM10047 13491 GCTAAGGATCTGGGATTGGC ATCT CACAAGACTC TACCA
6 ACAAGACTCTGCTACCAGCA GCTAAGG GGGATTGG TGC

CAAAGAGCCCAATCCTTCTT CGGTTCT TCCTAACC ACG
GGC ---- CGAGAAAC-- -----
GAM10052 10391 GCTAATTACAAAGTATTTAT -- AA TTTA C TT CCACTT CAA GC-- TATA
5 GACTCTTGTGAGGACCACTT GCTAAT TAC AGTA TGA TC GTGAGGA GA GGTT TATA
GACAAGGTTGCTATATATAT CGATTA ATG TCAT ATT AG TACTCCT CT CCAA ATGT
GTAAAAAAACCCTCTGCACT AA AG C--- C TT TCACGT C-- AAAA ----
TCCTCATTTGACTTACTACT
GAGTAAAATTAGC
GAM10056 13059 GCTACACAGAGAGAAAACCC A AGAGAGAAA--- ACGG GCAAAAA
6 ACGGCGGCAAAAATGAGGGG GCT CAC ACCC CG
TAGAGAGAGAAAGGTGGAGC CGA GTG TGGG GT
G GAAAGAGAGAGA GA-- -------
GAM10059 21922 GCTACATCCGTCGTAACGTG TACA GT --- CC CGAA
2 TGTCCTCCGAAGAAATACAA GC TCCGTC AACGT GTGT TC
AGCGTTCGGGCGGAAAATGC CG AGGCGG TTGCG CATA AG
TAAA GC AAA A- ----
GAM10059 22370 GCTACATTTTTTTAAAAAGG ATTTTTTTA A A- TTTCCCCGT
5 ACACAGTAAGAACTTTCCCC GCTAC AAAAGGAC CAGT AGAAC
GTGTTTTCAGCTGAGTTCTT TGGTG TTTTCTTG GTCG TTTTG
TTGTAACAGTGGT ACAATG--- A AC ---------
GAM10061 186 GCTACCGTGTATGAGGAACT A T GAGGAA- -- -- G CACCAT
1 TTGATCCTTGCGGGCACCAT GCT CCG GTAT CTTTGA TC CTT CGGG
TCCGGAAGTAGAATTTAGAG TGA GGC CATA GAGATT AG GAA GCCT
GAAGAAAATACCGGAGT - - AAAGAAG TA AT G ------
GAM10061 22505 GCTACCTCTGCTGCCACCCT T - C---------- - CTGCC
7 CAGCTGCCTTGGGGAGTGCC GC AC CTCTGCTG CAC CCTCAG
TCAACTTGTTACAGCAGAGT CG TG GAGACGAC GTG GGGGTT
GTGC - T ATTGTTCAACTCC A -----
GAM10061 7315 GCTACCTGAATAAACTACCA - GAATAA GAAAAGC ATATCCC
9 GTGAAAAGCGAATATCCCTC GCTAC CT ACTACCAGT GA
TATAAAACTGGTGGTGGAGT CGGTG GG TGGTGGTCA CT
GGC A ------ AAATAT- -------
GAM10062 7441 GCTACCTGTGCACTTCTACG CACT GG G GA A AGCCA
2 GCCATGTGGAGCACACCAGC GCTACCTGTG TCTAC CCAT TG GCAC CC
CAGGGTGCCAAGTGGGTGGA TGGTGGACAC AGGTG GGTG AC CGTG GG
CACACAGGTGGT AC-- -- A -- - -----
GAM10063 2519 GCTACGGTTGCCTGTGTGGC ACG- GT-- G -- TGT
6 GACTGTGCTTCAAGCGGTGT GCT GTTGCCT GTG CGACTGTGCTTCA AGCGG
CTGCTTATGGGGCACAGTTG CGA TAGCGGA TAC GTTGACACGGGGT TCGTC
ACATCGGGAGGCGATGCAGA GACG GGGC A AT ---
GC
GAM10065 15511 GCTACTATTTTATTGCAGGA ACTA T AGGA GG- TATG
4 GGTGGGGGTGTATGCACCGC GCT TTTTAT GC GGTG GGTG
ACACCGGGGCTATGAGAAGC CGA AGAGTA CG CCAC CCAC
---- T GGG- ACG ----
GAM10067 5081 GCTACTCTTTGGCCTGACCT TG - -- C T ATAA --- TT G CAGA
3 GATTCAATAAGTCCTCACGT GCTACTCTT GC CTG AC TGAT CA GTCCTC ACGT GC CTTT
TTGCGCTTTCAGAAGAGGTA CGATGAGAG TG GAT TG GCTA GT CAGGAG TGCA TG GAGA

CGTCCAGAGGACCACTGTAT -- A AA T T CAC- ACC -- - ----

CGTGTAATAGAGTGAGAGTA
GC
GAM10068 14899 GCTACTTCCGACAGTCGCTC TT- A A -- G - TA ---- - ACGG
8 AGCTACCTGGAGGCTTACAA GCTAC CCG CAGTCGCTC GC TACCTG AGG CT CAACC CCAG
TG
CCCCAGTGACGGCACCTGGC TGGTG GGC GTCGGCGAG CG GTGGAC TCC GG GTTGG GGTC
AC
TCCGGTTGGCGGACCTGCAG CGT G G CC G A CG CCTC C ----
GTGCCGCGGAGCGGCTGGCG
GTGCGTGGT
GAM10072 2234 GCTAGAGCCGAGCGAAGCGA CC ----- TG- AAATCAA
6 TGCCTAAATCAAAGGAACTT GCTAGAG GAGC GAAGCGA CCT
GTTTCTTCAAGCTCTTCTGG CGGTCTT CTCG CTTTGTT GGA
C -- AACTT CAA -------
GAM10075 15098 GCTAGCCAGGAACATGGACT A- A A ATG GTA CGCTCA
3 GAAGTATCCAGCGCTCATTG GCT GCC GG AC GACTGAA TCCAG
GGAATTTAGTTAAGTGCCAG CGA TGG CC TG TTGATTT GGGTT
GTGGAGC GG A G AA- AA- ------
GAM10079 17905 GCTAGGTTTAGCCTACTATG TTT- ACTAT- T TAAATTTTTT
7 GGTGTTAAATTTTTTACTCT GCTAGG AGCCT GGG GT
CTCTACAAGGTTTTTTCCTA TGATCC TTGGA CTC CA
GT TTTT ACATCT T ----------
GAM10080 22546 GCTAGTCATTAACCCCCACC AG TT CC - - C- T G A- G GATTG
9 AGCAGCACATGGATGCATTC GCT TCA AA CCCACCAG C AG ACA GGAT CATTCT TT GGT
TATTGGGTGATTGACTGGGA CGA AGT TT GGGTGGTC G TC TGT TCTA GTAGGG GG TCA

AGGGATGATCTCTGTCTCTA AA TC CA C A TC C - AA G -----
GCCTGGTGGGACTTCTTGAA
AAGC
GAM10083 7055 GCTATAAACATGAATGTACA A - G A C T T - ATTT G ATAT
9 CATCTGTGTCCCTGCTTTCA GCT TAAACAT GAAT TAC CAT TG GTCCC GC TTTC CTTT GGGT

TTTCTTTGGGGTATATACCC CGG ATTTGTG CTTG ATG GTA AC TAGGG CG AAAG GAAG CCCA

GGAAGTAGAAATGCTGGGAT - T - - T - T T AT-- G ----
CATATGGTAGTTCTGTGTTT
AGGC
GAM10084 10415 GCTATAAAGGAACAAGGATT T AA- CA A- TGCTATTATCATCTC
1 CCGTGCTATTATCATCTCTG GC ATA GGAA AGG TTCCG
GAGGACCTAATTCTGTGTAT CG TAT TCTT TCC GAGGT
GC - GTG AA AG ----------
GAM10085 11233 GCTATAGAACAAATGTTTCG T C TG- C A A-- AGG
7 TCTTAAAATATATTTAGGAA GC ATAGAA AAA TTT GTCTT AA TATATTT
ATGTAAAATTAAAGATTAAA CG TATCTT TTT AAA TAGAA TT ATGTAAA
AATTTTATTCTATGC - A TAA T A AAA ---
GAM10088 13365 GCTATCATGTTCTTAAATGG TATC AATGGA TATAATTTATAACTCACT
5 AGAACTATAATTTATAACTC GC ATGTTCTTA GAAC
ACTGTTCGTAGCATAAGAGC CG TACGAGAAT CTTG
ATTTGC TT-- ACGATG ----------
GAM10090 10201 GCTATCTCAGGGTCCATAAT C C AATT TG AAATC

0 TTGTGTAGAAATCCTGTGCA GCTAT TCAGGGT CAT TG TAG
TTACATGAACTTTGAAATAG CGATA AGTTTCA GTA AC GTC
C A A CATT GT -----
GAM10091 1689 GCTATGAATTTGTGCTATTG T TTT - C T CCTTTC
2 TCTGTGGGCTCCTTTCAGTT GCTA GAA GT GCTATTGT TG GGGCT
CTCAAACAGTAGCTGCCACT CGAT CTT CG CGATGACA AC CTTGA
TCTAGC - CAC T A T ------
GAM10091 21780 GCTATGACACAATCATTAAC ATGACACAA TAAC AA CAAT
3 CAGAAACGTTCAATGATGGA GCT TCAT CAGA CGTT
TCTGATGAAAAGAAAAAAGC CGA AGTA GTCT GTAG
AAAAAGAAA ---- AG ----
GAM10092 215 GCTATGCCAGCCCGGAGATG A- GC- A- -- GTTTA
4 TGCTTCGTGTTTAGCGACAG GCT TGCCA CCGGAG TGTGCT TCGT
GTATAAATTCCGGACATGGC CGA GCGGT GGCCTT ATATGG AGCG
GGCAGC CG ACA AA AC -----
GAM10093 16335 GCTATGGCGGATATGATTAT GGC ATA AT A- GG A GAA
8 ACTGGGTATAACTATGGGAA GCTAT GG TG TAT CTG TATA CTATGG
CTATGGATATGGACAGGGAT CGGTG TC AC ATA GAC GTAT GGTATC
ATGCAGACTACAGTGGC ACA AG- GT GG AG A ---
GAM10095 13146 GCTATGTTAACTTTTACAGA A - TTTACAG CA A ---- GACC
2 AAAAATATCATTGAGTTAGG GCT TGTT AACT AAAAAATAT TTG GT TAG
ACCCTATGGCACATAAGAAT CGA ACAA TTGA TTTTTTATA AAT CA ATC
ATTTTTTACAACAGTTAAAC A A CAACA-- AG A CGGT ----
AAAGC
GAM10095 15669 GCTATGTTCAGAAAGTACAG GT-- -- AGTT C AACTT
5 TTCTCTCCAACTTGCAGAGG GCTAT TCA GAAAGTAC CTCT C
TACTTTTCTTGATTAAATAG CGATA AGT TTTTCATG GAGA G
C AATT TC ---- C -----
GAM10096 13014 AAACTTTGCCGGATTCTTTT GC TCTT AA TTTTCC
9 GAAATTCGATCTTTTTCCAG AAACTTT CGGAT TTGA TTCGATCT
ATTGAAATTAGTAATATCTG TTTGAAG GTCTA GATT AAGTTAGA
TAGAAGTTT AT TAAT A- ------
GAM10101 979 AAAGAAGCCAATGAAATCCC G- AT- AATC --- AATCCTA
5 ATTATAGCAAATCCTATGCT AAAGAA CCA GA CCAT TATAGCA
GTAGCCATGGCCATCTACTG TTTCTT GGT CT GGTA ATGTCGT
GAATTCTTT AA CAT ACC- CCG -------
GAM10102 20518 AAAGAAGTATGAGGAATACT A-- G CT CAATAACCAAAGTATA
4 TGACCAATAACCAAAGTATA AAAGAAGT TGA GAATA TGAC
GTTATTTATTTGTTAATGAC TTTCTTCA ATT TTTAT ATTG
TTCTTT GTA G TT ----------
GAM10103 14639 AAAGAATAGTTTGGTTCTTC ---------- CAAATCTTAA
2 AAATCTTAAGAGAATCCACA AAAGAATAGTTT GGTTCTT
TAAAAGAAGAAACTATTTTT TTTTTTATCAAA CTAAGAG
T GAAGAAAATACAC ----------
GAM10105 17454 GCTATTCCAAGAACATGAAT AAGAA A TG AGGA GGCCGAATTA
7 GGAGGAATGTTGGGCCGAAT GCTATTCC CATG A G ATGTTG
TACAGCGTGGTTGTGCATGG TGGTGAGG GTAC T T TGCGAC
GAGTGGT ----- G GT GG-- ----------
GAM10106 22701 GCTATTGACACAATCATTAA A GACACAA TAAC AA TCAAT
7 CCAGAAACGTTTCAATGATG GCT TT TCAT CAGA CGTT

GATCTGATGAAAAGAAAAAG CGA AA AGTA GTCT GTAG
C A AGAAA-- ---- AG -----
GAM10108 14788 GCTATTTATTGAGGAAACCC TA G ACC --- A TCCAGACT
2 ACAGTCTAAAATCCAGACTT GCTATT TTGAG AA CACAGT CT AAA
TTCAGTGTACTGTGTTGCTT CGATAA AATTC TT GTGTCA GA TTT
AACAATAGC C- G --- TGT C --------
GAM10109 2162 GCTCAAAAAATTTAGCCGCT AAAAATTTAG G AA-- ATGAT
8 GCGTTAAGCCATGATGGTAA GCTCA CCGCTGC TT GCC
CGGAGGCAGTGGAACCAATC CGAGT GGTGACG AG TGG
GTGAGC GCTAACCAA- G GCAA -----
GAM10110 15787 GCTCAAAGGATCTGTGGTGC CAAA- TC T ---- - -- C- TCAG
6 TGGAGGTCTACACGCCTCTC GCT GGA TGTGG GCTG GAGGT CT ACACGC TC
AGGACAGCGTGTCAGGAACC CGA TCT ACACT CGAC CTCCA GG TGTGCG AG
TCAGAGCAGCTTCACATCTG AACCG -- T GAGA A AC AC ----
CCAAAGC
GAM10111 1352 GCTCAAATGATACTTTTCCC CAA T CC-- - GCAC
2 ACAGCAATGCACATTGCTGC GCT ATGA ACTTTT CA CAGCAAT
TGCAATAGAAGTTCATGAAG TGA TACT TGAAGA GT GTCGTTA
T AG- - TAAC C ----
GAM10111 17703 GCTCAAATTGCTGCTAGGAA AATT AAGATTTATA C GT G ----------
4 GATTTATAGGCAAAGAAGTG GCTCA GCTGCTAGG GG AAAGAA GT GGAGT GGGA
TGGGAGTGGGAGGCCAAGAG CGAGT TGACGATTC CC TTTCTT CG CCTCA TCTT
CTGCCTTCTTCACATCAACA CTCT ---------- C GT A AAGACAACTACACT
GAAACTCCAGCTGTTCTTTC CAAGAGCT
CCCTTAGCAGTTCTCTGAGC GGC
CCG

GAM10116 5108 GCTCACAGTGTCTGTGGCCA - G - ACCA A CAC- C C T AGAGCCCC
6 CCATGAAGGGCACCCTGCAA GCT CACA TGTCTGT GGCC TGA GGG CCTG AAG TG ACC

GCTGTACCAGAGCCCCGGTC CGA GTGT GCGGACA TCGG GCT CCT GGAC TTC AC TGG

ATCTTCAGGACATTCCTCGG C - A ---- - TACA - T - --------
GCTAACAGGCGTGTGCAGC
GAM10122 14242 GCTCAGAAGAAGCCAGCTGA CAGA- CTGA - AAAAATAGAGCG
1 ATCTCAAAAAATAGAGCGTG GCT AGAAGCCAG ATCT CA
AAGATGCCCTGGCTTTTAAT CGA TTTTCGGTC TAGA GT
TCAGC CTTAA CCG- A ----------
GAM10124 6979 GCTCAGCCAGCCCTTGGAGG A- CAG C TCA AGCT CCAG
4 CTCAGAGCAGCTGGCCCAGG GCTC GC CC TTGGAGGC GAGC GGC
CTCCAGCTCGCCTCCAGTGG CGAG CG GG GACCTCCG CTCG TCG
AAGCCCGAGC CC AA- T --- ACC- ----
GAM10126 2412 GCTCAGGAATGTTAAGTGGC T GTTAAGTGGCT - GGACA
3 TTCAGGAGTCGTGTGGACAG GC CAGGAAT TCAGG AGTCGTGT
CACGATTACCTGGGTTCCTG CG GTCCTTG GGTCC TTAGCACG
GC - ---------- A -----
GAM10127 7126 GCTCAGGCACAATTGTCACC GCACAATT A A G AAA- - TCAAT
4 AAGGAGTTAAAAGCTTCTTC GCTCAG GTC CCA GGA TT AGC TTCTTCT
TTCAATAGAGGAATGTTCTG CGAGTT CAG GGT CCT GG TTG AAGGAGA
GGGGTCCTGGAGACTTACCA ACCATT-- A - G GGTC T -----

TTGAGC
GAM10130 17393 GCTCAGTGCTTTATTGAACC CA TTAT ACCA AACA TGAC
7 AAGGCCCTAACAGATGACTC GCT GTGCT TGA AGGCCCT GA
AGCAGGGCCTTCAAGCACAG CGA CACGA ACT TCCGGGA CT
C -- ---- ---- CGA- ----
GAM10133 10153 GCTCATCATCTCCAGTGGGT A AGTGG-- CACATGTCTC
9 GCGGCACATGTCTCTCGCAC GCTCATC TCTCC GTGCGG
AAAAGAGGGGGAGGATGGGC CGGGTAG AGGGG CACGCT
G GAGAAAA ----------
GAM10134 2465 GCTCATCCTCCGTCCTGTCG C-- TG G CT A T- GAG TAT
3 TTCTGAAACTTGCTGAGGAA GCTCATCCT CGTCC TC TT GAA CT GCT GAACTC
CTCTATGAGTTTGGCCTGGT CGGGTAGGA GTAGG AG AG CTT GG CGG TTTGAG
TCTTGAGGAGGATGTCTAGG TCT -- G TT - TC --- ---
ATGGGC
GAM10134 13630 GCTCATCTGCTCCTGCTTCT A-- CT- CTACACA CG--- - ATA-- - TACCA
8 ACACACAGCCGCACCCCAAT GCTC TCTG CCTGCTT CAGC CACC CCA CCGT C
ACCGTCTACCAGTACGGGGA CGAG GGAC GGGCGAA GTCG GTGG GGT GGCA G
CATGGAGGTGAAGCAGCTGG ACC TCC CAG---- ACGAA A ACAGG T -----
ACAAGCGGGCCTCAGGCCAG
AGC
GAM10139 2056 GCTCCAACATCAGACCTTGA A A--- T AAC CGAG AAAATATCGATCAAAAAA
4 AAACACCGAGGACAAAATAT GCTCCA CATC GACCT GAA AC GAC
CGATCAAAAAAGTCATGTTG TGAGGT GTAG CTGGA CTT TG CTG
TTCCAGGTCCCAAGATGATG A AACC C GT- TA-- ----------
GAGT
GAM10142 10163 GCTCCAGCAGCGAGGGGTTC A C- TCGC--- A TAGGAAC
4 GCGTTACTTAGGAACAGCAG GCTCC GCAG GAGGGGT GTT CT
CTCTTTTTGCCCTTCTTCTG CGAGG TGTC CTTCCCG CGA GA
TAGGAGC A TT TTTTTCT C -------
GAM10149 7178 GCTCCCAGCAGCACCTCGGG - -- A AC--- -- CGG
0 AAGTTACGGTAGCAGTTCTC GCT CCCA GC GC CTCGGGAA GTTA
GAGAGCAAGCAGCTATGGGC CGA GGGT CG CG GAGCTCTT CGAT
AGC C AT A AACGA GA ---
GAM10152 5001 GCTCCCCTGGGCTCCTTCCC TGG CA G CTCCACGCA
4 ATGGCTGCCTCCACGCAGCA GCTCCCC GCTCCTTCC TG CTGC
GGCAGAGGAGGGGGCGGGGG CGGGGGG CGGGGGAGG AC GACG
GC --- AG G ---------
GAM10155 2651 GCTCCCTGCTCTACGGTTCC CCCT- T- G TC CAA GGCC
0 ATCCCCAAGGCGGCCGTCAG GCT GCTC ACG TTCCA CC GGC
GTTTGGAATGTTCGAGTTCC CGA TGAG TGT AAGGT GG CTG
TCAGC CTCCT CT - TT A-- ----
GAM10157 11842 GCTCCGCCCGGTGCCCAGCG C- T CGTTTTC - A AGGAA GCCTTG
8 TTTTCGCGCCCCAAGAGCAG GCTC GCCCGG GCCCAG GCGCC CCAAG GC TACCAGCAG

GAATACCAGCAGGCCTTGTT CGAG CGGGTT CGGGTC CGTGG GGTTC CG GTGGTCGTT

GCTGGTGGCGGCCTTGGCGG TC - ------- C - GCG-- ------
TGCCTGGGCTTGGGCCTGAG
C
GAM10158 4975 GCTCCGGCGGCCCCCGGCGC TC C - - - - - CG AG G GTGCA

8 CCGGCTGTTGCGGCTCCCGG GC CGGCGGCCC CGGCGCC CGG CT GTTG CG GCTCC GGG CG
GGCC
GGAGCGGGGCCGTGCAGGCC CG GCCGCCGGG GTCGCGG GCC GG CGGC GC CGAGG CCC GC
CCGG
GCGAGCCCGGAGCGCGCCGG GT C A A T C G -- GA G -----
CTGGACCGAGGCGCTGCGGG
CCGCCGTGGC
GAM10159 12069 GCTCCGGGGACGCTTTGGCT - ------- T T CGGC
5 TATTTTGGAGACGGCTTTCC GCTCCGG GGA CGCTT GGCTTATTT GGAGA
GAGTGGGCTTAGGCGAGAAT CGAGGTC CCT GCGGA TCGGGTGAG CCTTT
TCTCCTCTGGAGC T CTTAAGA T - ----
GAM10159 22980 GCTCCGGGGGAAAGATCAAC G GGA G AA CCC- AG- GAAGA
7 CGGCCCCGAACGGAGCTGAA GCTCC GG AA ATC CCGGC GAACGG CT
GAAGAAGCTGTTCAAACGCC CGAGG CT TT TGG GGCCG CTTGTC GA
GGCGGGTGTTGAATCGGGAG G AAG G GC CAAA GAA -----
C
GAM10161 19528 GCTCCTACCAACGAGGATAT T CA AG AATAT GTGA
0 GAATATATCGTGAGATTGCA GCTCC AC ACG GATATG ATC
CATGTCATGTGAGTTGGAGC CGAGG TG TGT CTGTAC TAG
T AG A- ACGT- ----
GAM10162 17626 GCTCCTCATCATCTTTCTGC TCATCA TTT - ATCAT CT ATCCTC
2 TGGAGATCATCGCTGGTATC GCTCC TC CTGCTGG AG CG GGT
CTCGCCTACGCCTACTACCA CGAGG AG GACGACC TC GC CCG
GCAGCTGAACACGGAGC CACA-- TC- A ATCC- AT ------
GAM10162 21827 GCTCCTCCAGTCACCCCACA CC CAC AG G CACCAAGA
4 GATGCCATTTCACCAAGAAA GCTCCT AGT CCCAC AT CCATTT
ATGGGGTGGTGGGAAGCTTG CGAGGG TCG GGGTG TG GGTAAA
GGAGC T- AA- G- G --------
GAM10162 10955 GCTCCTCCATTTCCTTGAAA C C T- AAC ACG ATTAAA
6 ACTGAACGATTATTAAAAAT GCT CTC ATTTCC TGAA TGA ATT
AGATTAAACTTCGCTGGAAA CGA GAG TAAAGG GCTT ATT TAA
TGAGTAGC T - TC CAA AGA ------
GAM10165 11596 GCTCCTGGCCGTTTGGGCTG C TT T A --- GTTGTA
6 CTATCAGATGTCAGGTTGTA GCTC TGGCCG TGGGC GCTATC GATG TCAG
CTGGGACCATCCGGTGGTGT TGAG GTCGGC ATTTG TGGTGG CTAC GGTC
TTACCGGCTGTGAGT T C- - C CAG ------
GAM10166 7064 GCTCCTGGTGGACCCATGTG CC GA CATGT-- AAA - CT TCCCAT
0 GAAATGGGACCTCCAGATCC GCT TGGTG CC GG TGG GAC CCAGA
CATTCTGGGAGTCACTGAAG CGA ACCAC GG CC GTC CTG GGTCT
CCTTTAAGAGGGACACCAAT TA AG AGAATTT GAA A AG ------
AGC
GAM10166 7709 GCTCCTGTCCCTCTTGCTTT TC- CC T A G AGC C- GGA
4 ATAGCTAGCTGCCCGGGGAC GC CTGT C CTTGCTTT TA CT TGCC GG
CAAGGTACAGGTGAAAGCAA CG GACG G GAACGAAA GT GA ATGG CC
GGTAGCAGCTTGC TTC AT - - G C-- AA ---
GAM10167 10972 GCTCCTTCATCTGTCCTGCA T TCT - AAGGT AAAAGCT
2 GAAGGTTGTGGGAAAAGCTT GC CCTTCA GTC CTGCAG TGTGGG
CTATGTGCTGCAGAGGCTGA CG GGAAGT CGG GACGTC GTATCT
AGGTGC T --- A GT--- -------
GAM10168 17803 GCTCCTTTTGCATTTCTTGT TTT TTTCT TCC A - ATGGA

6 TTCCACTCTATGGTGATGGA GCTCCT GCA TGTT ACTCT TG GTG
CATACAGAGAGTCCAGCATT CGAGGA CGT ACGA TGAGA AC TAC
CTGCAGGAGC --- CTT-- CC- G A -----
GAM10171 11471 GCTCGCGCTGCTTCTCCCGC T - TCTCCC CTT- TCA ATGG GCCT
5 TTCTTCATCAGGTGCATGGC GC CGC GCTGCT GCTT CA GGTGC CGCGGGCG
GCGGGCGGCCTCGCTCGCGG CG GCG CGACGG CGAG GT CCGCG GCGCTCGC
CGCCCTTGTATTGAGCCATG T G TAC--- TTAT TC- ---- ----
GCAGCGGCGTGC
GAM10174 21801 GCTCGGGGCTGCAGCTTGGC GG CA -- - TTCGAC TT- TCTCTGGT
4 TGGTGGCTTCTTCGACTCCT GCTC GGCTG GCTTGGCT GGT GGCTTC TCCT CTCTGGAC

TTCTCTGGACTCTCTGGTGT CGAG CCGAC TGAACCGG CCG CCGAGG AGGA GGGACTTG

TCAGGGCTCAGGAAGCTGGA A- C- TA T TCGA-- CTC --------
GCCTGCCATGGCCAAGTCCA
GCCAGAGC
GAM10176 17390 GCTCGTGTGGGGTCTCCGGT G GGT--- T ---- G A - GTCCTG
6 CCAGGGCGCGGCATGGGCGT GCTCGT TGG CTCCGG CCAGG GCGC GC TG GGC
CCTGGCCGCAGCGGCGCTCT CGAGTA GCC GGGGCC GGTCC CGCG CG AC CCG
GCCTGGTCCGGGGTGCGGAC A AGGCGT T GTCT G - G ------
CGAATGAGC
GAM10177 15815 GCTCTAAGGATGATGAGTAG --- ATGAGTAGCA GAATTTGAGA
8 CACTTGGAATTTGAGACAAG GCTCT AAGGATG CTTG
GAAAGACATTCTTTAAAGAG TGAGA TTCTTAC GAAC
T AAT AGAAAG---- ----------
GAM10181 2585 GCTCTAGGGGAATCCTGTGG AGGG A G- TG - A TCCAT
1 TTATGTAGAGACTCCATGTC GCTCT GA TCCTGT GTTA T AG GAC
CTGGTGTGATGAGCAGGATC TGAGA CT AGGACG TAGT G TC CTG
AGAGT ---- - AG GT G - -----
GAM10183 4557 GCTCTCACTGAGCCCAGGTG TCAC C AA-- G GGAA T- ACT
6 AAGGGGCCCGGAACACCTGT GCTC TGAGCC AGGTG GGG CCC CACCTG CTC
CTCACTGAGCCCAGGTGAAG CGAG ACTCGG TCCAC CCC GGG GTGGAC GAG
GGGCCCGGAACACCTGGCTC TCC- - AAGG G AA-- CC ---
ACCTGAGC
GAM10184 14204 GCTCTCCCAGGCTGGGTTAG T CA ---- T- CT CCCGCTGAAT
8 GACTAGGTCCCGCTGAATAC GC CTCC GGCT GGGT AGGA AGGT
CTCATCCTCCGCCCTCCAAG CG GAGG CCGA CCCG TCCT TCCA
CCCAGGAGTGC T AC ACCT CC AC ----------
GAM10185 12047 GCTCTCCGCGCAGCTTCAGC CC TC--- CC-- GGCCA
5 ACCTCGGCCAGAACAATGCT GCTCT GCGCAGCT AGCA TC
AAAGTAGCTGTGCTAGGGGC CGGGG CGTGTCGA TCGT AG
AT TGAAA AACA -----
GAM10189 14947 GCTCTGAAATAGTGATGTGA T AAA --- ---- TAGATT
8 AAAGGTAGATTTCTTTTGTG GC CTG TAGT GATGTG AAAAGG
CTATATTTGTGCTAAGCAGT CG GAC ATCG TTATAT TTTTCT
GC T GA- TGT CGTG ------
GAM10191 11886 GCTCTGAGCAGGCAGCAGGG TC C CA CAGCTCT C - ATGT
1 AGCAGCTCTGGTGACGCTTC GC TGAG AGG GCAGGGAG GGTGA GCT TC
ATGTGGTAGCCTCACTCTCC CG GCTC TCC CGTCTCTT TCACT CGA GG
ATTCTCTGCCCCTCTCGTGC T- - C- ACCTC-- C T ----

GAM10191 10509 GCTCTGATGTCATAATGATC - ATAATGAT AAAAAA CTAAA
9 GGAAAAAATGATCTAAAATC GCTCTGATGT C CGG TGAT
ACCGTAACTTCAGAACATCA TGAGACTACA G GCC ACTA
GAGT A ACTTCAAT ------ -----
GAM10195 14744 GCTCTGCTCTAGGACTGCCT T --- G C A GCGG TCA- ACTT
5 CCCACTGCGGCCCCTCACCT GC CTGCTCT AG ACTG CTCCC CT CCCC CCTG
GACTTCAGGGTATGGGGAGG CG GACGGGA TC TGAC GAGGG GG GGGG GGAC
GAGGGAGCCAGTGCTCCAAG - ACC G C A GA-- TATG ----
GGCAGGC
GAM10196 15924 GCTCTGGAGCCGCTCCCTCA T- -- C---- AG- -- AG - AA - ---
9 GGGCATCCAGGAGTCTCTAA GCTC GGAG CCGCT CCTC GGCATC CAGG TC TCT ACAACT
CTTC
ACAACTCTTCCCCTGGGGAT CGAG TCTT GGTGA GGAG TCGTAG GTCC GG AGA TGTTGA
GGAG
TTAGAGGAAGTTGTCAAGAT TT TA CTAAA ACA AA AA T AC A ATT
GGAACCTGAAGATGCTACAG -- CTGG
AGGAAATCAGTGGATTTCTT CC
TGAGC GG
TA ----
GAM10197 10716 GCTCTGGCGCATGCCGTGGC G A G G TTT CGTTG
8 TGCCGGTGTTTTTGTCGTTG GCTCTG CGC TGCCGT GCTGCCG TGT TGT
GCGGCGGCGGCGGCGGCGGC CGAGGC GCG ACGGCG CGGCGGC GCG GCG
AGCGGCGGAGC G - G G --- -----
GAM10199 11388 GCTCTGGGTGCATCTGCCCA T - CT-- CTGTCTAT - - G G TGAGAGGC
3 TCTGTCTATGGGCCTGTGTG GC CT GGGTGCAT GCCCAT GG GC CT TGTGT TG
TGTGTGAGAGGCCAAACACA CG GA CCTATGTG TGGGTG CC CG GA ACACA AC
GAGAGCTCCGTGGGTCTGTG T A TGTC -------- T A G A --------
TGTATCCAAGTGC
GAM10199 22116 GCTCTGGTTGCTTCGAATAC GGTT C- AT TT- GC CT ACTCATCACA
7 TTTGGCTTGATCTTTCTGAA GCTCT GCTT GA AC TG TTGATCTTT GA
CTCATCACATCTCGAGGATC CGGGA CGGA CT TG AC AACTAGGAG CT
AATTCATATGTTGTCAAAGG ATT- AA GT TAT TT CT ----------
CTTAAGGGC
GAM10200 10397 GCTCTGTAACTTAGGACATC GTAA CACTT----- AAATTA
2 ACTTGATTAAAATTATAGTC GCTCT CTTAGGACAT GATTA
TCCAAATATAGTGTTTTAGG CGGGA GGATTTTGTG CTGAT
AAAAGGGC AAA- ATATAAACCT ------
GAM10200 14796 GCTCTGTATGCTTTCACTGT T CTTTCAC T CATG
6 AATGAATCTTACTCATGGGT GCTC GTATG TG AATGAATCTTACT
AAGATTCATTCATATGCTGA TGAG CGTAT AC TTACTTAGAATGG
GT T ------- - ----
GAM10206 22736 GCTCTGTTTTCAGGAAAGTT TG TTTCAG CT- CTTCTTCCTTT
9 ATCTGGAGGCTCTTCTTCCT GCTC T GAAAGTTAT GGAGGCT
TTAGCCTCTCCCATGGCTTT CGGG G CTTTCGGTA TCTCCGA
CAATGTGGGGC GT TAA--- CCC ----------
GAM10208 19495 GCTCTTCACCATCCCGCACA - CA ----- A CAGGAG - CACC AAGAGTATGAAG
9 CTCAGGAGGCCTTCCGCACC GCTCTT CAC TCC CGC CACT GCCTT CCG CGGG
CGGGAAGAGTATGAAGCCCG TGAGAA GTG AGG GCG GTGA TGGAA GGT GCCC
CTTGGAAAGGTACAGTGAGC C C- TTTAC A CA---- A TC-- ----------
GCATTTGGACGTGCAAGAGT

GAM10210 22898 GCTCTTCTGTGATCTTGGCC T TCT T---- - CAGTTC
4 TCCCGGAGCAGTTCCTCCTG GCTCT CTGTGA TGGCC CCC GGAG
GGTTAGTGGCCGCTCACAGT CGGGG GACACT GCCGG GGG CCTC
GGGGC T C-- TGATT T ------
GAM10210 15450 GCTCTTGACGCGTCCGGGCT CT C GTCC TAT TGT TT TACACTT
8 ATAGCAGTGTGGATTTTGGA GCT TGA GC GGGC AGCAG GGA TTGGA
TACACTTTCCGATTCCCCTG CGG ATT CG CTCG TCGTC CCT AGCCT
CTCGCTCATTAGCCTTATGG T- C ATTA C-- C-- T- -------
C
GAM10217 7285 GCTGAAACAGGAGCTGTCCC CA AGC TCCCT T- C TAAC
2 TGCTGCCCCTAACGGAGCCT GCTGAAA GG TG GC GC CC
GCTATCACCGCCAATTTTAG CGATTTT CC AC CG CG GG
C AA GCC TAT-- TC A ----
GAM10219 13490 GCTGAACTGCGAATGATACT CT AA AT- A GAT- TA- AGTACAATAT -- GT
3 TTATGAAGATGATTCAGTAC GCTGAA GCG TG ACTTT TGAA GATTCAG CA GTTG ATG
AAGTACAATATGTTGATGGT CGACTT TGT AC TGAAA GTTT TTAAGTC GT CAAC TAC

TCCACATTGCAACTTTCTCC -- CC CAC A ATTT TCG GTCCCTCTTT GT --
CTGTGGCTCTGAATTTTTAT TCCA
TTGAAAAGTCACCACCTGTT
TCAGC

GAM10223 14160 GCTGAATATATTCTATATAT GA TC--- - TAAAT
1 TATATATATATAAATTATAT GCT ATATAT TATATAT TATATATATA
ATATATATATATACATATAT CGG TGTATA ATATATA ATATATATAT
ATGTCTGGC TC TATAC T -----
GAM10224 16118 GCTGAATGAGTATGTGGCTA AA--- AT TAA - ACCGA
1 AGGGTCTGACCGACAGCATC GCTG TGAGT GTGGC GGGT CTG
CACCGTTACCACTCAGACAA CGAT ACTCA CATTG CCTA GAC
TAGC AACAG C- CCA C -----
GAM10224 10238 GCTGAATTATAATTAGCCAC ATTATAATT CAC T T GTTTTA
6 ACAAATAATGAGAGTTTTAT GCTGA AGCCA AAA AA GAGA
TTTTTTTTTTCTGGCTCACT CGACT TCGGT TTT TT TTTT
CCAAATCAGC AAACCTCAC C-- T T ------
GAM10225 13900 GCTGAATTTGGGTCCCTTTG TGAATT C-- - CGT - C AGTTCA
4 TGGTACGTGCTTTCCTTCGT GC TGGGTC CTTT GTGGTA GCTTTC CTT GT
AGTTCAACAAGTGAAGGTTT CG ACCTAG GAAG CATTAT TGGAAG GAA CA
ATTACTGAAGATTGATCCAT TTGTT- TTA T T-- T - ------
TGTTGC
GAM10228 526 GCTGACCGTCACTGCCTATG CCG GCCTATGA GAACGAAAAGAG
7 ACTGTGGGAACGAAAAGAGC GCTGA TCACT CTGTGG
CACAGAAGATGTTGGTGAAG CGACT AGTGG GACACC
ATCAGC AGA TTGTAGAA ----------
GAM10228 15318 GCTGACCGTCACTGCCTATG CCG --- CTATGA GAAGAAAAGAG
8 ACTGTGGGAAGAAAAGAGCC GCTGA TCACT GC CTGTGG
ACAGAAGATGTTTTGGTGAA CGACT AGTGG TG GACACC
GATCAGC AGA TTT TAGAA- ----------
GAM10230 11811 GCTGACGTGGGTGTGATCGC G T- TG T CAG T AGAT
0 TAGCAGCTTCGAGATCGGGA GCT ACG GGG TGA CGCTAG CT CG
ACCTGGCGCTCATCCTCTTC CGA TGC CTC ACT GCGGTC GG GC

GTGAGC G TT CT C CAA - ----
GAM10232 4944 GCTGAGAAGTCCAAGGTTGA T A AA--- T- ACATCAGGTCAG
0 GGGCCACATCAGGTCAGGGT GC GAGA GTCC GGT GAGGGCC
CTTCTTGCTGGTAGGGACTC CG CTCT CAGG TCG CTTCTGG
TCTGC T - GATGG TT ----------
GAM10233 22895 GCTGAGACTTGAACCTTCCT AGA AACC ACC G T CCAA
3 TTCACCGCGGGACTGGGCCA GCTG CTTG TTCCTTTC GCGG AC GGG
ACTCTGTCTGTCCGAAGGGG CGAC GAAC AGGGGAAG TGTC TG CTC
ATACACAAGACAGC A-- ACAT CC- - T ----
GAM10234 11918 GCTGAGATGTGCCGAGACCT GAGA - A--- CT CC AG TG AGAAA
5 GGCCCCAGAGGTGGAGAAAC GCT TGTGC CG GAC GGC CAG G G
TGCTCCTGCAGCCCAGTCCC CGG ACGCG GC CTG CCG GTC C C
TACGTGCGCAAGAAGGC AAGA T ATCC AC AC CT GT -----
GAM10236 12063 GCTGAGCCCCGATGGCCCGC T- CC- G CCGC- T TCTCTCC
7 GCTGCTCTCTCCGCCGCCCC GC GAGCC GAT GC GC GC
CAGCAATCCCCGGCTCCTGC CG CTCGG CTA CG CG CG
TC CCC A ACCCC C -------
GAM10249 19425 GCTGAGTGGTCTTCAGGGTC TG T CAG- CC-- GTGCAA
0 CCCAGTGTGCAAACTGGTGC GC AG GGTCTT GGT CCAGT
CACCACACGAGACCTTTGGC CG TT CCAGAG CCA GGTCA
GT - CACA CCGT ------
GAM10249 13419 GCTGAGTGTATGATGGCATG T T T CA A AT CT- AACCTTGA
1 ACTATAGCTCACTGTAACCT GCTGAG GTA GA GG TG CT AGCTCA GT
TGAACTCCTGGGCTCAAGCA CGACTC CAT CT CC AC GA TCGGGT CA
ATCCTCCTACCTCAGC - C - TA - AC CCT --------
GAM10251 15864 GCTGATATTTTAAAATGGCT -- A G TA TGTTTT
2 GGTAATTATGTTTTTAATAT GCTGA TATTTTA AATG CTGG ATTA
CCGGCATTATGAAATATCTC CGACT ATAAAGT TTAC GGCC TAAT
AGC CT A - TA ------
GAM10252 13808 GCTGATCTTCACCAAAACAT T CAAAACATCTT CTCTTTTCTTC
6 CTTCTGTGGCTCTTTTCTTC GCTGATC TCAC CTGTGG
CCACAGTCATAGGCAGTGAC CGACTGG AGTG GACACC
GGTCAGC C ACGGATACT-- ----------
GAM10254 19446 GCTGATGGGGTACACACGGT T A-- --- GG-- - AA AGG
2 GGAGCCAACGGAGGCCGGGG GCTGA GGGGT CA CACGGT AG CC CGG
ACTACAAGCTGTGCTTTGAC CGACT CCTCA GT GTGTCG TC GG GCC
AACTCCTTCAGC T ACA TTC AACA A G- ---
GAM10254 22737 GCTGATGGTCCAATAAGGGG TG-- ATA G A --- GCAG
4 GGTGTGAGCCCCGCAGGGAC GCTGA GTCCA AGG GGGTGTG GCC CC
TGGCCCGCACCTGCCTTGGA CGACT TAGGT TCC TCCACGC CGG GG
TGTTTTCAGC TTTG --- G C TCA ----
GAM10254 2262 GCTGATGTCCAGCACCAAGG ATGT - CAA- TACTCAGACACT
7 GGCTCTACTCAGACACTGAG GCTG CCAG CAC GGGGCTC
CTCCAGCAGTGCCTGGCTGC CGGC GGTC GTG CCTCGAG
GGC GTC- C ACGA ----------
GAM10256 13701 GCTGATTTCCTCAGTTCCAT TTTCCT GA----- GGAAGG
5 TTTGAGGAATGGGGAAGGCT GCTGA CAGTTCCATTTT GGAATGG
ATTCTAAAGAAAAAAATGGG CGGCT GTTAGGGTAAAA TCTTATC
ATTGTTTTCTCGGC CTTTT- AAAGAAA ------
GAM10256 13484 GCTGATTTCGAATGGTAAAC A TGGTA TCATACATATT GCTTTGA

6 AAATCATACATATTAATGTT GCTG TTTCGAA AACAAA AATGTT
GCTTTGAAACATTTTTTTGT CGGC AGAGTTT TTGTTT TTACAA
TGTTGTTTTGAGACGGC - TGTTG TT--------- -------
GAM10257 7838 GCTGATTTTGGGTCCCTTTG T TT C-- - CGT - C AGTTCA
1 TGGTACGTGCTTTCCTTCGT GC GAT TGGGTC CTTT GTGGTA GCTTTC CTT GT
AGTTCAACAAGTGAAGGTTT CG TTG ACCTAG GAAG CATTAT TGGAAG GAA CA
ATTACTGAAGATTGATCCAT - TT TTA T T-- T - ------
TGTTGC
GAM10258 10020 GCTGCAAGGAACTTCCATGC G ACTTCC CTCTAACACTCA AAGACT
TGCTGAGAT
4 CTCTAACACTCATCTTCAAA GCT CAAGGA ATGC TCTTCAA GGGAC
AGACTGGGACTGCTGAGATG CGA GTTCTT TGCG AGAAGTT TCCTG
TCCTCTATTCTTGAAGAGCG G A----- ---------- CTTATC ---------
TATTCTTGGAGC
GAM10259 15614 GCTGCACAACTCCCTCATTG AA CTCAT CACCAA CCGTCTGA
4 GCACCAAGGGCCGTCTGATC GCTGCAC CTCC TGG GGG
CGCTCCATCATGGAGGAGTG CGGCGTG GAGG ACC CCT
CGGC AG TACT- TCG--- --------
GAM10261 146 GCTGCAGAAGTACCGCCTGC AAGT - CT -- - GCAA
8 GGAGTACTGCAAAGATGCTG GCTGCAG AC CGC GCGGA GTA CT
TCCGTGCGCGTTGCTGCGGC CGGCGTC TG GCG TGCCT CGT GA
GT-- C -- GT A ----
GAM10262 16304 GCTGCAGAGGGGAAACTGCA GAGG CT- A TTAAAGAGAAAATATC
4 CGTTTAAAGAGAAAATATCA GCTGCA GGAAA GC CGT
CGGGCCGCTTTCCACAATGC TGACGT CCTTT CG GCA
AGT AACA CGC G ----------
GAM10265 2488 GCTGCAGGTTGCCCCACCGA - GG A A---------- CATTTT
9 GGGCATTTTTCCGCACCGAG GC TGCA TTGCCCC CCG GGG
GGGGCGGGGGGCAGAATGCA CG ACGT GACGGGG GGC CCT
CGC C AA - GGGGGAGCCACG ------
GAM10267 14925 GCTGCATCAAAGGTAGACTT AA - TTTC- AGGT GGTTGGAG
1 TCGCACAGGTTGTGAGGTTG GCTGCATCA GGTA GAC GCAC TGTGA
GAGTCACAGTGTTATTTGTT TGATGTAGT CCAT TTG TGTG ACACT
GTACCTGATGTAGT -- G TTTAT ---- --------
GAM10268 13611 GCTGCATGTACAGTCTTTGC GTACA T CTGC TTTCCTCTCC
5 CCGCTGCTGATTTTCCTCTC GCTGCAT GTC TTGCCCG TGAT
CATCGTGAACGGGCAGCGAC CGACGTG CAG GACGGGC GCTA
GAGTGCAGC AG--- C AAGT ----------
GAM10269 19592 GCTGCCAAAGGGCTGGTTCA AA - CA G AACC CACAATGAA
2 GGGAGCTAACCATGGCCACA GCTGCC AGG GCTGGTT GGGA CT ATGGC
ATGAAGTCATCAGGTCCCAT CGACGG TCC CGACTAG CCCT GA TACTG
GATCAGCACCTGGGCAGC G- A TA G C--- ---------
GAM10269 5048 GCTGCCAAGGGGATGCCGCA C--- GGAT CG G AGGA
5 CTGCAGGAGGACCTGGGGTG GCTGC AAGG GC CACT CAGG
GTGCTATACCTTCACAGCAG CGACG TTCC CG GTGG GTCC
C ACAC ATAT TG G ----
GAM10270 17354 GCTGCCAGAAATTATTCCCT G- T TCCCTC CCTCTAGAA
4 CTAATAACCCTCTAGAAGTT GCT CCAGAAAT AT TAATAAC
ATTAAAAATGTTATTTTTGG CGA GGTTTTTA TG ATTATTG
AAAGC AA T TAAAA- ---------

GAM10270 13366 GCTGCCAGAAGGGGGCGGGG AGAA G- C G GGCAG
6 CTTCCGGTGGGGCAGCCATA GCTGCC GGG GCGGGG TTCC GTGG
GGGACCTCGCGGCCCAGGGC CGACGG CCC CGCTCC AGGG TACC
AGC GA-- GG - A -----
GAM10271 22984 GCTGCCATCTTCCCAGTATT CCA C--- ATT G A C GAAC
5 TCTTGGACAGTCCCAGGAAC GCTG TCTTCC AGT TCTTG AC GTC CAG
TTGAGGCGGTGCAGGGTGGC CGAC AGGAGG TCG GGGAC TG CGG GTT
TCCCAGGAGGACATCAGC TAC ACCC GT- G G A ----
GAM10272 13780 GCTGCCCAGCTGGAGTACAA - CTG-- ACA- AT GATCAA
2 GTATGCGATCAAGCTCACTG GCTG CCCAG GAGT AGT GC
GAAACTCACCTCCTGGGTCA TGAC GGGTC CTCA TCA CG
GT T CTCCA AAGG CT ------
GAM10273 13376 GCTGCCCCATGGCTAAGCTT CCA CTA -- GT---- AAATTTATACAC
5 TATGGGTGTTAATTGAAATT GCTGCC TGG AGCTT TATGG GTTAATTG
TATACACCAATTGATTTTAA TGACGG ACC TCGAA ATACC TAGTTAAC
ACCATAAAAAGCTGACCACA AC- AG- AA AAATTT ----------
GGCAGT
GAM10274 2157 GCTGCCCCTTCAGAGCAGGG - GA - ACA -- CTTTCTTCACCT
4 AAACACGGGCTGGTGCCTTT GCTGCCC CTTCA GC AGGGAA CGGGCTG GTGC
CTTCACCTGCATGGCAGCTT CGACGGG GAGGT CG TCCCTT GTTCGAC TACG
GCTTCCCTGGCAGTGGAGAG A GA G C-- GG ----------
GGCAGC
GAM10275 19619 GCTGCCGAGGCTCGGGGCGC T GA C-- C -- TCTGCCAG
0 GCGCAGTTGGCGTCTGCCAG GC GCC GGCT GGGGCG GCGCAGT TGGCG
TGCCAAGACTGTGCCGCCCC CG CGG CCGA CCCCGC CGTGTCA ACCGT
CACAGCCGAGGCGC - AG CAC - GA --------
GAM10276 7496 GCTGCCGGTGGCTCTGGCCC T T- CC--- C GTT
3 CGCCGGGCCGTTGGCCCAGC GCTGCCGG GGCTC GGCC GC GGGCC
CCGCCGGCCCTGAGCTCCGG CGATGGCC TCGAG CCGG CG CCCGG
TAGC - TC CCGCC A ---
GAM10278 12087 GCTGCCTGGTCCCAGAGTGG CCT - AGT CACCACTT TTTATT
5 CTGCACCACTTCCAGGGTTT GCTG GGTCC CAG GGCTG CCAGGG
ATTCCCTGGTGCCACCAGCC CGAT CCGGG GTC CCGAC GGTCCC
TTCCTGTGGGCCCCTTAGC TCC T CTT CACCGT-- ------
GAM10281 17299 GCTGCGCCCTTACTGCGGGG ---- TACTG G A- AAACCCTC
0 CCAAGAAACCCTCCTAGGGG GCTG CGCCCT CGGG CC AG
CCCGATGGGGCGTACACAGC CGAC GCGGGG GCCC GG TC
ACAT TA--- G GA --------
GAM10282 11663 GCTGCGGGGACTCGCTGAGC G CTGAGCAGC G C GAG- G CCT- A T
6 AGCGGAAGGGGAGCGTGCAG GCTGCGGG ACTCG GGAA GGGAG GTGCA CC CTGCGGC
CAC G CC
AGCCGCTGCGGCCCTCACAG CGACGCCC TGAGC CCTT CCTTT CACGT GG GATGCCG
GTG C GG
TCCGGAGCCCGGCCGTGCCG - CAAAGC--- A T ACAA - TGCC C -
TGCCGTAGGGAACATGCACT AGC
TTTCCATTCCCGAAACCGAG GG
TCCCGCAGC CC

GAM10283 5313 GCTGCGTGAGTGCTTAGAGC GAG TT A- T GAAGA
1 TTTTCGGTGGAAGATGCCGG GCTGCGT TGC AG GCT TTCGGTG

ACAGTAACTTCGCAGAGCGC CGACGCG ACG TC TGA AGGCCGT
AGC AG- CT AA C -----
GAM10283 11275 GCTGCGTTTATAAACCATGA CG ATAA -- T C ATTG
6 TTGCAGACCTAATTGTAAGT GCTG TTT ACCA TGAT GCAGAC TA
TTGTGTCAACTGGTCGAGAT CGAC AGA TGGT ACTG TGTTTG AT
ACAGC AT GC-- CA - A ----
GAM10284 19628 GCTGCTAATCATAGTGGTAT --- G TTT TGGGAATG TGGAG
3 TTGGTTGGGAATGACTTGTG GCTGCTAA TCATAGT GTA GGT ACTTG
GAGCAGGTAGTACCTTTACG CGACGGTT GGTGTCG CAT CCA TGGAC
GCTGTGGCTTTTGGCAGC TTC G TT- TGA----- -----
GAM10286 11693 GCTGCTCAAGAAGGAGATTG AAG- GAGA-- ACAAAT AA- A AGGTCA
0 ACAAATCCAAGGACAAGAAG GCTGCTC AAG TTG CCAAGGAC GA GG
GAGGTCACCATCGTGGTCCT CGACGAG TTC AAC GGTTCCTG CT CC
TGGCAACAAGTGTGACTTAC GACA AGTGTG AAC--- GTG A ------
AGGAGCAGC
GAM10286 22114 GCTGCTCACTCAGGTTGGCT CACTC TT TC T T AACACC
3 CTATCCAGTCGAACACCCGC GCTGCT AGG GGC TA CCAG CG
TGGTTACTGCTGCCCTCCTT CGACGA TCC TCG AT GGTC GC
CAGCAGC CTTCC CG TC T - ------
GAM10286 10125 GCTGCTCCAGTCGGACTCTG CT C T- AT A ATTT - GAGT ACCTGAC
6 GGGATTTGGAGGATTTGTGG GCTG CCAGT GGAC CTGGGG TTGG GG GTG GTCG TGCTG

TCGGAGTTGCTGACCTGACT CGAC GGTCG CCTG GACCTC GGCC CC CAC CGGC ACGAT

AGCACGGCTCACTTGGCCCC CG T CT GT C GGTT T ---- -------
CGGTGCTCCAGTCGTCCTGC
TGGGCCAGC
GAM10291 7043 GCTGCTGGCCCCAAGGAGCC G AA A A G GA-- - AA GGGGCTTG
9 ACGGGGTGAGGCTGGTCAAA GCTGCT GCCCC GG GCC CGGG T GGCT GGTC ACCAAG

CCAAGGGGGCTTGTTTGGTG CGACGG CGGGG CC CGG GCCC G CTGG CTAG TGGTTT

GGATCTGGTCGTGTGGCCCG G C- - G G TGTG T GG --------
GGGCCCCGGGGCGGGCAGC
GAM10292 11680 GCTGCTGGGATTGTTGGGAA GGGA AAC TG C- GGAG
4 CCTGAGGTCTGCAGGAGTGC GCTGCT TTGTTGGG C AGGT TGCA
GATGCTTTGGCCCAACAGCA CGGCGA GACAACCC G TTCG GCGT
GAAGCGGC AGAC --- GT TA ----
GAM10293 5247 GCTGCTGGTCAGCGCTGCAT G T - GCA - TT A CAGTCC
2 GGCTCTTTCAACAGCAGTCC GCT CTGG CAGC GCT TGGCT CT CA CAG
TTGTGGGAGAAGCCAAGAAG CGA GACC GTCG TGA ACCGA GA GT GTT
TGGCTGCCAGAGC - - G AGA A GG - ------
GAM10293 11299 GCTGCTGTACGACATGTTTG C CGAC TTG A- - G GCCGG
4 TGAATTTCCCAGACCAGCCG GCTG TGTA ATGT TGA TTTC CCA ACCA
GTGGTGTGGAGAGAAATCAG CGAC ACAT TACG ACT AGAG GGT TGGT
CATTATTACATCAGC T TAT- --- AA A G -----
GAM10294 16935 GCTGCTGTCTATGTTGATGA TGCT TGAT C G ------ TAATATT
0 CCATAACTGGGATGTATAAT GC GTCTATGT GA CATAACT GGA TGTA
ATTTACAGACAACTCTAAGT TG TAGGTACA CT GTATTGA TCT ACAT
TATGTTCACATGGATTATGT TAT- ---- T A CAACAG -------

GAM10295 15031 GCTGCTTCTGAACATTGATG A A A GTG GG --- ATTAGGAG
9 CTTCGTGTCTCTTGCGGGGG GCTGCTTCTG AC TTG TGCTTC TCTCTTGCGG GT GGGGC

TGGGGCATTAGGAGGCCTCT CGGCGGGGAC TG AGC ACGAGG GGGGGGCGCC CG CTCCG

TGGCGACCGCGGGGGGAGGG C A - GA- AG GTT --------
AGCACGAAGTCCAGGGGCGG
C
GAM10300 10458 GCTGGAACTGAAGCTGGGGC AA TG - TG CA T TT TTTGAT
8 TGCAGCCTGGGCCTTGGTTT GCTGG C AAG C GGGCTG GCC GGGCC GG
GATCCTTGGCCTTGGCCTTG CGGCC G TTC G TCCGGT CGG TCCGG CC
GCCTTGGCCTTTGGCCGGC -- GT C GT TC T TT ------
GAM10304 1380 GCTGGACATCGCGCTGCTGA ACA GCG- TG T AA - GTCCCA
7 TGGCCAACGCGTCCCAGCTG GCTGG TC C C GATGGCC C GC
AAGGCCGTCGTGGAACAGGG CGACC GG G G CTGCCGG G CG
ACCCAGC CAG ACAA GT - AA T ------
GAM10305 17432 GCTGGACGAGCTGACCTTGG TG G C C - A G G- CCG ACAT
1 AAGGGGTGGCCCGGTACATG GC GAC AG TGAC TTG GA GG GT GC GT
CAGAGCGAACGCTGTCGCAG TG TTG TC ACTG GAC CT TC CA CG CG
AGTCATCTGTTTGGT GT - T A G G G AG AGA ----
GAM10305 15900 GCTGGACTGGACGTGGACTT T GGA G T---- G- AGCC
6 CACGCTGGAGAGCCCTCAGG GC GGACT CGT GACT CACGCT GAG
GCGTGCTGTTGGTCAGCGAG CG CCTGA GCG CTGG GTGCGG CTC
TCCCGC C --- A TTGTC GA ----
GAM10305 13303 GCTGGACTTGTCTTGGTTCC - GGTTC CCT AC- GCGA
7 AGAACCTGACGACCCGGCGA GCTGGAC TTGTCTT CAGAA GACG CCG
CGGCGACGTCTCTTTTGACT TGACCTG GACAGAA GTTTT CTGC GGC
AAAAGACAGTGTCCAGT T AATCA CT- AGC ----
GAM10306 15902 GCTGGAGACTCTGAGCTGCC GAGAC GCT--- G AACAACCAACA
3 GGCGCGCGGCAACAACCAAC GCTG TCTGA GCCGGCGCGC GC
AGCGGCGCGCCGGCCCAACA CGAC AGGCT CGGCCGCGCG CG
TCGGATGCAGC GT--- ACAACC G ----------
GAM10307 9909 GCTGGAGCCACAGAATTCGT CCAC A C AGGAAT C ATC
1 CCTGCAGGAATCACGGCGGG GCTGGAG AGA TTCGTC TGC CACGG GGGAC
ACATCGTCTCCTGTGTGGCA CGGCCTC TCT AGGTAG ACG GTGTC CTCTG
GATGGATCTCTCCGGC ---- - - GT---- - ---
GAM10307 15601 GCTGGAGCCGGAGGCCGGGC - C A- -- - TTGGT
2 GCGGAGTTGGTCTCCGCCGC GC TGGAGC GG GGCC GGGCG CGGAG
CCGAGGTCAGCCGCTCCGCG CG GCCTCG CC CTGG CCCGC GCCTC
C C - GA AG C -----
GAM10307 17714 GCTGGAGCCGTCTACATCTG A CTACAT C---------- ACGC
3 CACGGAAGACGCCTTCCCGC GCTGG GCCGT CTGCA GGAAG
ACAAGCGCCTGCAGCAGCTC CGACC CGGTA GACGT CCTTC
ATGGCCCAGC - CTCGAC CCGCGAACACGC ----
GAM10307 4634 GCTGGAGCGAGGGTGCACCA GAGC- - ACCATAAC AAGT
4 TAACGTTCCAAGTGGGACAG GCTG GAGGGT GC GTTCC
ATACTGGCGATCCTTAACGA CGAT TTCCTA CG CAGGG
TAGC AGCAA G GTCATAGA ----
GAM10312 7276 GCTGGATATGCAAACCCTAA A CA CTA--- AA GAGA
6 GGGAATTATGAGAATAACCC GCTGGAT TG AACC AGGG TTAT

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          TGTCCACGGTTACAATCCAG CGACCTA AC  TTGG     TCCC  AATA
          C                  - A-   CACCTG   --   ----
GAM10313 2112   GCTGGATCTCCCCCGCTGTT  ----     CCCCC-- T  T  TC   TCAAA
4          GATCATACTCAAAGTGTTTC GC   TGGATCT     GC GT GA  ATAC
          ACCGCCCTGCCTAGATCTAT CG   ATCTAGA     CG CA CT  TGTG
          ACCGC             CCAT     TCCGTCC  C  -  T-   -----
GAM10314 1644   GCTGGATTTTCAGACAAATT      TTTTC    AATTCAAAA  -  TCAA
9          CAAAAGCAGTTTCAAAACTT GCTGGA    AGACA       GCA GTT
          GCACCTTCGTGTTTCCATTT TGACCT    TTTGT       CGT CAA
          CCAGT               TTACC    GCTTCCA--  T  ----
GAM10315 6767   GCTGGCAGGAGCATCCCTGA    -   -   T   GA  TG  ----  GGGA
9          GCTGGACCGGGAGGCCTCTC GCTGG CAGG AGCA CCCT  GC  GA   CC
          TGGCCTGGGGCTGCTCCCTG CGGCC GTCC TCGT GGGG  CG  CT   GG
          CCCGGC              C   C   C   TC  GT  CTCC  ----
GAM10319 14150  GCTGGCGGCCGAGCGGGGGG   -  G      G  GCT  A  G  CTTC   AGCA
7          CTCTACTGGTCTTCGCGGAG GCTG GCG CCGAGCGG GG   CT CT GT   GCGG
          CACCGCTACTACGGGAAGTC TGAC CGT GGCTTGCC TC   GA GG CA   CGCC
          GCTGCCGTTCGGTGCGCAGT    G  -      G  GCT  A  G  TCAT   ----
GAM10320 10443  GCTGGCGGTGGGAGAGACAG   G     -    CAGTAA    GGAGGTGA
0          TAAAAAGCTGGAGGTGAAGC GCT GCGGTGG GAGAGA     AAAGCT
          TTTGGAACTCTTTTATCACT TGG TGTCACT TTTTCT     TTTCGA
          GTGGGT              G      A     CAAGG-     --------
GAM10322 5250   GCTGGCTGTTCCTGTCTCTG     TGTTCC    TCTGT     CCTCT  TTAGCT
6          TATGGATCCTCTGCTTAGCT GCTGGC     TGTC     ATGGAT    GC
          GTTCTGTTCATTTTGACACG CGATCG     ACAG     TACTTG    TG
          TTTGCTAGC             TTTGC-   TTT--     TCT--  ------
GAM10323 10093  GCTGGGAAGAGCAGAACCGG      AAGA  AGAACCG    GGA  A    AGGC
8          GGGCGGAGCACCTGCAGGCG GCTGGG    GC      GGGGC   GC CCTGC
          CGGGCGCGGGCCCCACCAGG CGGCTT    CG      CCCCG   CG GGGCG
          GCGATTCGGC             AG--  GGACCA-    GG-  C    ----
GAM10327 2571   GCTGGGATTACAGACATGAG      ATTACAGACAT      ---  C  CCG
1          CCACCGCGCCCGGCCTGATT GCTGGG         GAGCCAC   CG GC
          GTGGTTCTTAAGACCCTCCC CGACCC         CTTGGTG   GT CG
          CAGC                CTCCCAGAATT      TTA  C  ---
GAM10329 22170  GCTGGGCACTAAGATCTGCT      C    AGA-    T  C--  T   TGGT
1          GTCCATCAGTGGTCTGTGCA GCTGGG ACTA    TCTGC GT   CA CAG
          TACTGTAGAATGGTAGTACC CGGCCC TGAT    AGATG CA   GT GTC
          CGGC                A    GGTA    T  TAC  -   ----
GAM10330 9940   GCTGGGCCGGTCGAGCTGTG   T    - GT G   -  --         T  GGGACGCA
9          CGGTGCCCTCCGGGACGCAG GC GGGCC G  C AGC TG  TGCGGTGCCC CC
          GGGGCGCTGCAGCCACGCTG CG CTCGG C  G TCG AC  ACGTCGCGGG GG
          GGTCAGGCTCCGC         C     A TG G   C  CG         -  --------
GAM10331 22589  GCTGGGCGAGTATCTCTTTC       G-  TAT-    TCGAAA    ACTCTCAAGCAC
3          GAAAGGTCACTCTCAAGCAC GCTGGGC  AG    CTCTT     GGTC
          GACTAAGAGCCTTCTGAGCC CGACCCG  TC    GAGAA     TCAG
          CAGC                AG  TTCC     ------    ------------
GAM10332 14932  GCTGGGCTCAGAAGGCTCTT       ----------  AG      TTAG   TGCT
6          AGTCGTGCTTGAGAGTGAGC GCTGGGC         TC  AAGGCTC    TCG
          CTTTCGAAGAGATACTCGCC CGACCCG         AG  TTCCGAG    AGT
          CAGC                CTCATAGAGA  CT      TGAG   ----
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GAM10332 1617 GCTGGGCTCAGTAGAAGCAG T - C - T C AC - TG AGAAAG
7 ACGGTGTGCAGAAAGGTGCG GC GG G TC AG AGAAG AG GGT G C
GCCACTCTTCTCCTCGAACT CG CC C AG TC TCTTC TC CCG C G
CCTGC T T A C C - A- G GT ------
GAM10333 15918 GCTGGGCTGAGCTTCTACCT G A TCTA - - AA CT CCGC
1 ACGAGTGAAACTCTGTCCTC GCTGG CTG GCT CCT ACG AGTGA CT GTCCTC
CCGCGAGGACCAGGCATCGC CGACC GGC CGG GGA TGT TCGCT GG CAGGAG
TGTGTGAGGACGGCACGGCC - A CA-- G G AC AC ----
AGC
GAM10333 13916 GCTGGGCTGGGCGAGTATCT G C TA CT- AAAA CACTCTCA
4 CTTCGAAAAGCTCACTCTCA GCTGGGCT GG GAG TCT TCG GCT
AGCACGACTAAGAGCCTTCT CGACCCGA TC TTC AGA AGC CGA
GAGCCCAGC G - CG ATC A--- --------
GAM10333 11582 GCTGGGCTGGGCGAGTATCT G C TA CT- AAAG- TCACTC
5 CTTCGAAAGGGTCACTCTCA GCTGGGCT GG GAG TCT TCG GG
AGCACGACTAAGAGCCTTCT CGACCCGA TC TTC AGA AGC CT
GAGCCCAGC G - CG ATC ACGAA ------
GAM10334 7348 GCTGGGGATGAGAAAGAGCC A G AGA- -- TG ACGT
9 CTGTGGCTACGTGGTGTCAG GCTGGGG TGA AA GC CCTG GCT
GAAGTGGGATTGTCAGCCTC CGACTCC ACT TT TG GGAC TGG
AGC G G AGGG AA TG ----
GAM10337 15500 GCTGGGTACAGCCCTGCCAG G ACA - CAT AGCAGG A CCAGAT
8 CCCATCCCTGAGCAGGGCAC GCT GGT GCCCTGCC AGCC CCCTG GC CCC
CCCCAGATGGGGCAGAGCAG CGG TCG CGGGACGG TCGG GGGAC CG GGG
GGTATGGCTGGGCAGGGCAA G GAA G TAT GAGA-- - ------
GGCTGGGC
GAM10339 10360 GCTGGGTGGCTTGGCTCAAG G C CTCA TT-- TAAGCT
3 ACCATTTGTAAGCTCATTCC GCTGG TGG TTGG AGACCA TG
TGGTTTGACACCGATTGGTC CGGCT GTT AGCC TTTGGT AC
GGC G - ACAG CCTT ------
GAM10341 16384 GCTGGTAAACATGACCTGGG T CCT - T AG TATAT
0 ACATTGTAAGAATATATTTA GCTGG AAACATGA GGG ACAT GTA AA
ATATATGTACCCCCATTATG TGGCC TTTGTATT CCC TGTA TAT TT
TTTTCCGGT T ACC A - AA -----
GAM10341 16876 GCTGGTACCAGCAGAAGCCA ------- GC AGC - GCCC
8 GGACAGGCCCCTGTACTTGT GCTGGT ACCA AGA CAGG ACAG
CATCTATGGTAAAAACAACC CGGCCA TGGT TCT GTTC TGTC
GGC ACAAAAA A- ACT A ----
GAM10341 1893 GCTGGTACGCCTGCAGGTAC --------- C CA AC GT AATTC
9 CGGTCCGGAATTCCCGGGTC GCTGGT ACGC TG GGT CG CCGG
GACCCACGCGTCCGACAGCA CGACCA TGCG AC CCA GC GGCC
ACCAGC ACGACAGCC C -- -- TG -----
GAM10342 11485 GCTGGTAGCTTTTCACTTTC T CT CTTT---------- G CCAAG
2 CATGGGGCCAAGTGTTATGG GCTGG AG TTTCA CCATGG G
TTTTCTGCTTCATTTTCTTG TGACC TC AAAGT GGTATT T
AAATTCTCCAGT - TT TCTTTTACTTCGTCTTTT G -----
GAM10344 4644 GCTGGTCGAACAGCTACACC C-- TACACCATCC A-- TCATTTATTCT
4 ATCCGCAGAGTGAGTCATTT GCTGGTCGAA AGC GCAG GTGAG
ATTCTCTCATCCCTTGCGCT CGACTAGCTT TCG CGTT TACTC
TCCTTCGATCAGC CCT ---------- CCC ----------

GAM10346 19741 GCTGGTGACGGCGGCGGGCA AC C C C - CT - AC AAA
1 CTGCTGAGTCACGTGAAACA GCTGGTG GG GG GGG AC TG GAG TC GTG
CAGGATCTTCCACGTTCCCC CGGCCGC CC CC CCC TG AC TTC AG CAC
CCACCCCCGCCGGC CC A C T C C- T GA ---
GAM10346 14755 GCTGGTGCAGCGCTCGCCCT AGC- TC - T GGATGG
8 GGCTGATGATGCGGATGGGC GCTGGTGC GC GCCC TGGCTGA GATGC
ATCCTCGGCCGTGGGCTGCA CGACCATG CG CGGG GCCGGCT CTACG
GGAGTACCAGC AGGA T- T C ------
GAM10347 14849 GCTGGTGCTCATGGCACTTC ----- C T CT- - T CACCCCT
3 CTCCTTGCTTCCCACCCCTG GCTGG TG TCA GGCA TCCT CCTTGCT CC
GCAGCAGGGAAGGGCTTTGC CGACC AC AGT CCGT GGGA GGGACGA GG
CTGACAACACCCCAGC CCACA - - TTC A C -------
GAM10348 22499 GCTGGTGGTCGGGGTGGAGG T --- T AG TCGCT- - TTGCGCTTCC
4 AGCCGGCGTCGCTGTCTCGC GCTGG GG TCGGGG GGAGG CCGGCG GTC TCGC
TTGCGCTTCCGTGATGATTT CGACC CC AGCTTC CCTCC GGCCGT TAG AGTG
CTTCTGCCGGACCTCCTCTT T TCT T A- CTTCTT T ----------
CGATCTCCTCCAGC
GAM10349 11716 GCTGGTTCAGGTAAGGGGTC T AA----- G CGCC C ATTCA
7 CCCGCCTACCAGATTCACTG GC GGTTCAGGT GG GTCCC TAC AG
TACACTGGGACGTCAGCAAA TG CCAAGTCCA CT CAGGG ATG TC
CACCTGAACCTGT T CAAACGA G TCAC - -----
GAM10354 5228 GCTGTACATTGTTGCTTGAG ATTGT- TTGA-- T ATTTA
1 AGTCTGTACATTTAGTCCAG GCTGTAC TGC GAGTCTG AC
ATTTGTATTTGCACTGTCAG CGGTATG ACG TTTAGAC TG
TATGGC ACTGTC TTTATG C -----
GAM10355 11235 GCTGTAGTTCAGATGAGGTT TG AG- - G T - AGAG
9 TGGCTTTCCAGAGGGCAGTG GC T TTCAG ATGAGGTTT GC TT CC
TAGAGCTTTATGCTGAAAAG CG G AAGTC TATTTCGAG TG GA GG
GTGGC GT GAA G A T C ----
GAM10358 91 GCTGTCAAAGAACCTCTGGG TCAA C ----- A GTAGACAA
1 TCCATGGGTAGACAACCAGG GCTG AGAA CTCTGGG TCC TGG
AGCCTTCCCAGGGTTTCTCC CGAC TCTT GGGACCC AGG ACC
TCCAGC CTCC T TTCCG - --------
GAM10363 1923 GCTGTCTAGCGAAAACTAGT T-- GCGAAAACTAG- TAA CT - G ACC TTTCCT A
5 CACTAAGTCCTGGCCTGAGA GC GTCTA TCAC GTC GGC CT AGAGAT CACA TTAG
GATACCCACATTTCCTTTAG CG CAGAT AGTG TAG CCG GA TCTTTA GTGT AATC

AACAAACAGAACTAATACCT TTC GTAAAATTCCTG TG- T- A G CAT CCAT-- -
GTGTACATTTCTGAGAGCCT ACAAACAGAA
GATGTGTGAGTCCTTAAAAT
GTAGACCTTGC

GAM10365 22752 GCTGTCTGGTGTTGCATTAG CT -- - T GAAGATACT- TACAACTACAT
4 TGAAGATACTCCCTACAACT GCTGT GGTG TTG CAT AGT CCC
ACATGGGTACCCCAGAGACT CGACA TCAC AGC GTA TCA GGG
ATGACGAATCACTTTACAGC TT TA A - GAGACCCCAT ----------
GAM10369 7646 GCTGTGATGTGGAAGCTTCT T TGT TCT-- AAGAAACA
7 GATATTTGAAGAAACACGAA GC GTGA GGAAGCT GATATTTG
TGTCTCTGTAGCTTCCTCTT CG CACT CCTTCGA CTGTAAGC
CACTGC T TCT TGTCT --------

GAM10370 10516 GCTGTGCACCTCAACACGCT G AACAC - AGAGCGG
5 GCTGGGAGAGCGGCCTGTGC GCT TGCACCTC GCTGC TGGG
AGCACCGCGAGGTGCAGGGC CGG ACGTGGAG CGACG GTCC
G CGCCA T -------
GAM10373 345 GCTGTGCTTAATTCAAATCC TT T AATCC - C T------ TGAA
4 ATGTGTGTGCCTGCATTACA GCTGTGC AAT CA ATGTGTGTG C TGCAT ACATGTG
TGTGTGAACACGTGTTTCTG CGATACG TTG GT TACACGTAC G GTGTG TGTGCAC
TCGTGTGTGTCATGCACATC -- T GTC-- T T CTGTCTT ----
TGTGTGTTGCATAGC
GAM10374 13219 GCTGTGGATGATTTCATCGA G TTCATC GAA- TG - TTGT
4 GAAATTGGTACCATTGTTGG GCTGT GATGAT GA AT GTA CCA
ATACTGGTGACATCATCATT CGGCA TTACTA CT TG CAT GGT
GACGGC G ------ ACAG GT A ----
GAM10374 19423 GCTGTGGCAGGCGCCAGCAC CA CG ACC CACC GAACAGCA
6 CAGACCTGAAGCACCCCGAA GCTGTGG GG CCAGCACCAG TGAAG CC
CAGCAGGACCTCTTCAACTG CGACACC CC GGTCGTGGTC ACTTC GG
GTGCTGGTACCCCCACAGC C- AT A-- TCCA --------
GAM10376 11748 GCTGTGGGCAAGGTCATCCC T - ---- G - C- GAACGGGA
2 TGAGCTGAACGGGAAGCTCA GC GTGGG CA AG TCAT CC TGAGCT
CTGGCATGGGCTTTCGTGTC CG CACCC GT TC GGTA GG ACTCGA
CCACTGC T T GCTT G C TC --------
GAM10377 14081 GCTGTGGTGGTCCCAGCAGC - CC- -- G G CT- C T-- GTG
3 CGCGGCGCTCGGCGCTCTGC GCTG TGGTGGT CAGCA GCCGCG CGCTCG CGCT GCTT GTCG
GGCC
TTCGTCGTGGCCGTGGGCCT CGAC ACCACCA GTCGT CGGTGC GCGGGC GCGG CGGA CGGT
CCGG
CGTGGCAGGCTGTGGCGCGG G ACT CA G - TGT - GCT ---
GCGGCGTGGCACTGCTGTCA
ACCACCAGCAGC
GAM10378 10872 GCTGTGTCTGAGATGCTGTA G - T ---- AG CGGCA
4 GGTATCGGCAGTATTAACAA GCT TGT CTGAGA GCT GT GTAT
TAGGCCTCTCAGTGCAAAGC CGA ACG GACTCT CGG CA TATG
A T C ATAA AT -----
GAM10381 11828 GCTGTGTTTCGCTGGCTCAG - TC - T C-- TATGCT
4 CACTGTCTATGCTGGCAGTA GCTG TGTT GC TGGC CAG ACTGTC
ATCTGGCCATGCAGGACACC CGAC ACAG CG ACCG GTC TGACGG
AGC C GA T - TAA ------
GAM10383 13354 GCTGTTAATTTTTATGATTT AATTTTTA T ACA CTCATCTA
0 TCCTACTACAAAGATACTCA GCTGTT TGATTTTCC ACT AAGATA
TCTATATTTTGAGGGTGGAA CGATAA ATTAAAAGG TGG TTTTAT
AATTAAAATAGC A------- - GAG --------
GAM10387 11091 GCTGTTGCATTGTAACTTGT - AA TG CATTAA - TTGCGAAC
9 GGTGTGCATTAAGATGTGCT GCTGTT GCATTGT CT TGGTGTG GATGTGCTG AGGA
GAGGATTGCGAACTCCTGCA CGACAG CGTGGCA GG GTCATAT TTATACGAC TCCT
GCATATTTATACTGTGGGAC G -- GT ------ G --------
GGTGCGGACAGC
GAM10390 7131 GCTGTTTCATCCTCATGCTC T C CA - AGT C GCAAAATCCTCATCCACA
7 TGAGTAGGGCTGTGTTGCAA GC GTTT ATCCT TGCT CTG AGGG TGTGTT
AATCCTCATCCACAAACATA CG CAGA TGGGA ATGA GAT TCCT ATACAA
TCCTCGATAGAAGTAAGGGT - C -- A AGC - ----------

CAGACGC
GAM10390 13478 GCTGTTTCTCTTGTCTTTTT G - TT------ TAGC GAAAA
9 ACTTAGCAAAGGAAAACTTT GCT TTTCT CTTGTC TTTACT AAAG
AGTGAATGCTACTTGACAAG TGA AAAGA GAACAG AAGTGA TTTC
AAGAAAAGT - A TTCATCGT ---- -----
GAM10393 13696 GCTGTTTTGGTTACTATAGC TTTT T A T TAG TAATTT
4 TCTGTAGTTTAATTTGAAGT GCTG GGTTAC AT GC CTG TT
CAGGTAATGTGATTCCTCCA TGAC TTAGTG TA TG GAC AG
GT CTCC - A - TGA ------
GAM10394 6919 GCTTAAAACACTTCTTAGGG TCTTAG TATA GTAATTTTTCAAA
6 ATTAAATATAGATGTAATTT GCTTAAAACACT GGATTAAA GAT
TTCAAAATCGTTTTTAATTT TGGATTTTGTGG TTTAATTT CTA
AAACGGTGTTTTAGGT CAAA-- TTG- ----------
GAM10396 11850 GCTTAACCCATTTTCAAGCA A- ATTTT G AA G TCAG
5 AAACAGTTCTCAGGAAATGT GCTT ACCC CAA CA ACA TTC
CATGATTGCCGGGGTGAAGG CGGA TGGG GTT GT TGT AAG
C AG GCC-- A AC A ----
GAM10398 7590 GCTTAATGATTAAGGAGGAG GATTAA AG GGAA ACA AATT
9 GAAGTGGAACAAGAATTCTG GCTTAAT GG GA GTGGA AG
AATTTACGATCACCAAAGTT CGGGTTG CC CT CATTT TC
GGGC AAA--- A- AG-- AAG ----
GAM10400 17732 GCTTACAGTAGTTCCCCTTA A T CCCTTA-- C GATACA
6 TCTTCGGGAGATACATTCCA GCTT CAG AGTTC TCTT GGGA
AGGCCCCCAGTGAACTCCTG CGAA GTC TCAAG GGAA CCTT
AAAGC A C TGACCCCC - ------
GAM10401 11356 GCTTACGGGGCATTTGGCAT ACGG- AT TG G- TG AATG- AACTGTC
6 TGTTGGAAATGCAAAACTGT GCTT GGC T GCATT T GA CAA
CTTGACTACTCTGGGAGATG CGAA CCG G CGTAG G CT GTT
CTGGTAGCCAAAACAAGC CAAAA AT GT AG GT CATCA -------
GAM10402 13869 GCTTACTCGTAATGATCTAG C - ATGATCT - ACATGA
1 TGGGGAAACATGATTCATTC GCTTA TC GTA AGTGGG GAA
ACTTAAAATACTGATTAAGC CGAAT AG CAT TCACTT CTT
T T AAAAT-- A ------
GAM10408 7328 GCTTATAGGATGGTATCTTA TAGG - ---- CT TTCA
9 GTCTGCTTCAGCTGCTAAAA GCTTA ATGGTAT CT TAGT GC
CAGAATACCATAAATTAGGT TGGAT TACCATA GA ATCG CG
TAAA A CAAA T- ----
GAM10409 10079 GCTTATATCTAGCATGCCTG TT ATGCCT TTT-- TTGTGGGATT
1 TTTTGGGGTGGTCCCTGGGG GC ATATCTAGC GT GGGGTGGTCCCTGGGG
TTGTGGGATTTCCCAGGGGC CG TATAGATCG CG TCCCATCGGGGACCCT
TACCCTTTCCTGCTCTTGGC TC GTTCT- TCCTT ----------
TAGATATCTGC
GAM10413 5066 GCTTATTCTCTCCCCAACAT T CCCAACATT TTCGTTTTCATTTTCT
2 TTCTAATTTCGTTTTCATTT GC TATTCTCTC TCTAAT
TCTGTTAGAGAGAGGATATG TG ATAGGAGAG AGATTG
T T --------- ----------
GAM10415 17307 GCTTCAACCTTAGCTGGGGC TCAA TA GG TG A ACAGGGAGCA
1 TGCAGCAGCACAGGGAGCAG GCT CCT GCTG GC C GCAGC
CTGTGGTGGCAGCAGCACAG CGA GGA CGAC CG G TGTCG
GGGCAGC CGG- CA GA GT G ----------

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GAM10418 19424  GCTTCAGCAAGACTCATGTC     GCAA C    T  CAAAAAC AG    C--  ---  AATT  GTCCCT
6          TCCAAAAACCGAGCTCCCCG GCTTCA   GA TCATG CTC     CG  CTCCC  GAGT  GAGC   CCT
           AGTGAGCAATTCCTGTCCCT CGAGGT   CT AGTGC GGG     GC  GGGGG  CTCA  CTCG   GGA

           TTAAGGGCTCACAACTCTAA     AG-- -    T  AGAGTAC CT    AAT   ACA   ----  ------
           GGGGGTCCGCATGAGAGGGT TTA
           CGTGATCGATGGAGC

                        ---
GAM10422 10557  GCTTCATTCTTTTAGAGGAA   -  T   -     AAA   C   AAAA
9          AAAGTACATAGAAAACTGTT GCT TCAT CTTT TAGAGGA  AGTA ATAG
           GCTGTTCTCTACAAAGATGA CGG AGTA GAAA ATCTCTT  TCGT TGTC
           CGGC              C   -   C     G--   -   ----
GAM10426 7282   GCTTCCCACTGGCACCCTGA      ACT-  A    AAACCT  C    ---   C  CAGC
2          AACCTGCCCAGGCTGGGCCG GCTTCCC   GGC CCCTG    GCC AGGCT  GGGC GC
           CCAGCGTCGTCCACAGGCCT CGAAGGG   CCG GGGGC    CGG TCCGG  CCTG TG
           TGGCCAGCGGGGGCCCTCAG      ACTC  -   GAC---  T    ACA   C ----
           GGAAGC
GAM10427 10107  GCTTCCCTCTGCTGTGGTTG  TT    T----  G  TT  -  GA  CTGCT
7          GAGGAGACACCTGCTGTGGA GC  CCCTC    GCT TGG  GGA GGA  CAC
           TCCGTCTCTCTAGGCTTGTC CG  GGGAG    CGG ATC  TCT CCT  GTG
           GAGGGCTGC          TC    CTGTT  -  TC  G  AG  -----
GAM10428 14944  GCTTCCCTGTAACTTCCCTG       GTAACTTCC   AA-      GTCCCTTGTAG
2          TAATTCTGTGGGTCCCTTGT GCTTCCCT      CTGT  TTCTGTGG
           AGCCACAGAGAAGGCAGCAA TGAAGGGG      GACG  GAGACACC
           TCAGTAGGGGAAGT           ATGACTAAC   GAA      ----------
GAM10429 22539  GCTTCCGTCCCGCGAGGCCC    C  CCC    CC   GG-  TTT  G-  CAGC
2          ATCGGCGTTTTGGGGCCGCA GCTTC GT  GCGAGG  CATC  CGT  GGG  CCG
           GCCGGGACCCTCACGGAAGA CGAAG CA  TGTTCC  GTAG  GCA  CCC  GGC
           TGACCTTGTACAGAAGC      A ---    A-   AAG  CT-  AG  ----
GAM10433 2582   GCTTCGTTAGTAGTGGGATC    GTT  AGT--     - TG  ------    TATTG
7          GGTTGCCATTGTGTGTATTG GCTTC  AGT   GGGATCG GT  CCAT    TGTGTG
           CACGCAGCTATGATGGAGAC CGAAG  TCA   TTCTGGT CA  GGTA    ACGCAC
           TTGGTCTTTGATGACTCAGA    AC-  GTAGT     T  GA   GTATCG    -----
           AGC
GAM10434 22008  GCTTCTACATCCATCCTTTG  T-   A  CATC    AGAC   AGACC
5          AAGACACCAAGACCTGGTCT GC  TCTAC TC   CTTTGA   ACCA
           CAGGGCCACGAGTGGATTGC CG  AGGTG AG   GGGACT   TGGT
                       TT   - CACC    C---   -----
GAM10435 16222  GCTTCTATTTTATTGCAGGA     ATTT  T  AGGA   GG-   TATG
8          GGTGGGGGTGTATGCACCGC GCTTCT   TAT GC   GGTG   GGTG
           ACACCGGGGCTATGAGAAGC CGAAGA   GTA CG   CCAC   CCAC
                         ----  T  GGG-   ACG   ----
GAM10437 14183  GCTTCTCCCTGCGCCTGGGA   T   T-    G-- A   GGCGCCTCTCTAAATA
3          CTGCGGCGCCTCTCTAAATA GCT CTCCC  GCGCCT  GG CTGC
           GCAGCCATGAGGCGCCTGGG TGA GGGGG  CGCGGA  CC GACG
           GGCAGT             C    TC    GTA  -  ----------------
GAM10437 258   GCTTCTCCTCGGCCAATTCG     CC-    AATTC   AA  A   C  ACGCCTTCCA
6          CGGAAGAAGTGGCTCACGCC GCTTCT  TCGGCC    GCGG  GA GTGG TC
           TTCCAGAACCACATCATCGC CGAAGA  AGCTGG    CGCT  CT CACC AG
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GGTCGAAATAGAAGC TAA ----- A- A A ----------
GAM10440 22069 GCTTCTGCTAGGGGCTGTGT CT - GCTGT - T AAAT C ATTTAC
2 ACAGAGTGCAAATGTCTGAT GCTT GC TAGGG GTACAG AG GC GT TG
TTACCACACTAAAGTTCTAT CGAA TG ATCCC TATGTT TC TG CA AC
TGTATCCCTATGTGAAAGC AG T ----- A T AAAT C ------
GAM10442 17234 GCTTCTGGTGACACACAGCT A C ATTA- A T A - GA-- -
0 GGGATTAGCCCAGGGCTTGT GCTTCTGGTGAC CA AGCTGGG GCCC GGGCTTG GCGA ACCC TG
CTTCCG G
GCGAAACCCTGGACTTCCGG CGGGGACCACTG GT TCGACTC TGGG CCCGGGC CGTT TGGG AC
GAAGGC C
CCAGGAAGGCACGGAAGAGG - T GGGGG - - G T GGGA A
GCATGGGTGTTGCCGGGCCC AGGAA
GGGTGGGGGCTCAGCTTTGG CC
TCACCAGGGGC GG

GAM10445 22954 GCTTGAAACCCAGGGATGGT CCC----- ATG- T- GTTT
8 CCATCTGTGTTTACGGCTTG GCTTGAAA AGGG GTCCA CTGT
GACAACACCCTCATATTTTT CGAACTTT TCCC CAGGT GGCA
TTCAAGC TTTTATAC ACAA TC ----
GAM10447 2562 GCTTGAACCCAGGAGTGAGG GAACCCA AGGCT TAAGCTATAAT
5 CTGCAGTAAGCTATAATCTG GCTT GGAGTG GCAG
CCATGCACTCCAGCCTGAGC CGAG CCTCAC CGTC
TCCGA-- GTAC- ----------
GAM10461 15469 GCTTGGACTCTGAAACCAGC CTGAAACCA GTAT A AATAGCCC
2 AGTATGGAATTATGGAATAG GCTTGGACT GCA GGAATT TGG
CCCCCAAGTTCCTAAATGCC TGAACCTGG CGT CCTTGA ACC
TCTACTCGGTCCAAGT CTCATCTC- AAAT - --------
GAM10461 22011 GCTTGGAGAGGACAAGTGCA -- CA G - TGT-- -- A CA TAAATCATC
4 GCCTGTCAGTTTTAGAAGCA GC TTGGAGAGGA A TGCA GCC CA GTTTT GAAG AG
AGTAAATCATCCTCTTTTCA CG AACCTCTCCT T ACGT TGG GT CGAGA CTTT TC
AGAGCAGTGTCCGTGGTGTG TT -- G G TGCCT GA A TC ---------
CAGTTCCTCTCCAATTGC
GAM10463 15148 GCTTGGCATCGTGCGCGACC AT - A GCT T - GGGGA
0 TGTGCCGGCTGTTCTCGGGG GCTTGGC CGTG CGCG CCTGTGCCG GT CT CG
GACGTGGTGCTCACGGCGCG CGGACCG GCGC GTGC GGGCGCGGC CG GG GC
GGACGTGACGCGGGGCCAGG GG A A ACT T T -----
C
GAM10465 11792 GCTTGGGCACCTGGGTGCTG T CTG--- CT-- CT TGCCC
6 GTCACTGCTGCCCGCCCTGG GCT GGGCAC GGTG GGTCA GC
CTTCCTCACCAACTCTGTGC CGG CCCGTG CCAC TCGGT CG
CCTGGC T TCTCAA TCCT CC -----
GAM10469 5260 GCTTGGTGGTGCATGTCTGT T- ---- ATGT A A AAACT GCATGAGGA
1 AATCTCAGCTACCTGGGAAA GC TGGTGGT GC CTGTAATCTC GCT CCTGGG GAG
CTGAGGCATGAGGATTCTTG CG ACCATCA CG GACGTTGGAG CGG GGGCCC CTT
AACCCGGGAGGCGGAGGTTG TT GAGC AGT- G A AAGTT ---------
CAGTGAGCCGAGACTACCAT
TGC
GAM10474 13904 GCTTGTGTTAGTTTCAGGGA T GTTTCA GA- TTTTG AAAAATACTTGAC
7 GGGGTGTATATTTTGATAAA GCTTG GTTA GG GGGGTGTATA ATAAA
AAAAATACTTGACTTTGTAA CGGGC CGAT CC TCTTATATGT TGTTT

TTCTGTATATTCTATACCAA - ATTTAA ATA CTTAA ----------
TTTATAGCCGGGC
GAM10476 6961 GCTTGTTGATCTCTCTGTGT TCTCTCT- TC TT- TTACGATTT
5 CGTTCTTTGGTTACGATTTC GCTTGTTGA GTG GTTCT GG
CTCTAGGACCTCGCCATCTC CGAATAATT CGC CAGGA CC
CCTTAATAAGC CCCTCTAC TC TCT ---------
GAM10476 5219 GCTTGTTGTCCTTTTTTAAA -- TCCTTTTTT- CACAATTAA
8 GTTGGAAGCACAATTAATTT GCTT GTTG AAAGTTGGAAG
TCAGCTTTTCTTCTTTTTCA CGAG TAAC TTTCGACTTTT
ATATGAGC TA TTTTTCTTCT ---------
GAM10480 6733 GCTTTACTCCAGCCTCCTTG TT- T - - AAA GCTC T- CCCAGTGA
5 TGGAAACCCAGCTCTCCTGT GCT AC CCAGCCT CCTTG TGG CCCA TCC GTCT
CTCCCAGTGAAGACTTGGAT CGA TG GGTCGGA GGGAC ACC GGGT AGG CAGA
GGGCAGCCATCAGGGAAGGC CCC - A T GAC ---- TT --------
TGGGTCCCAGC
GAM10484 17402 GCTTTATTATGGCTGCTGTT TT -- C - AA GA AC- TTTGAATT
4 GTCCAACAGAACGACCTAGT GCT ATTAT GGCTG TGTT GTCC CA ACG CTAGTA
ATTTGAATTTGCTAGTAACG CGA TAGTG TCGAC GCAA TAGG GT TGC GATCGT
TCATGGAGGATGAACGACAG CC GT A G AG AC AAT --------
CTTGGTGATCCAGC
GAM10484 13093 GCTTTATTGCCTTGCATTCT TG-- TTG T AG T GTAACTCG
8 AATGCAGTTTGTTCTGTAAC GCTTTAT CC CA TCTAATGC TT GTTCT
TCGAGAGCCAGTAGCATTGG TGGGATG GG GT AGGTTACG GA CGAGA
ATTGATGGAAGTGTAGGGT TGAA TA- T AT C --------
GAM10486 10372 GCTTTCACCAAACCTGAAGA CA A---- C G CATTTT
5 AGCCTGCAGCTTCATTTTGA GCTTTCAC AACCTGA GAAG CTGCA CTT
GTGCAGACTTCCCTGCTTAG CGGAAGTG TTGGATT CTTC GACGT GAG
GTTGTGAAGGC -- CGTCC A - ------
GAM10494 4959 GCTTTCTTCGAGGAGTCAGC ----- AG-- C CTCC T -------- TA ATCC
8 CAGTCTCCTTCAGCTGAAGC GCTTTC TTCG GAGTCAG CAGT TTCAGC GAA GCG ACC
GTAACCATCCAGAGCAGGTC CGAGAG GAGC TTCGGTC GTCG AAGTCG CTT CGT TGG

GTGCAAACACTATTCTGCTG TCGTA GAAA A T--- T ATCACAAA GC ----
AATGCTGACTGGCTTAAAGC AGAGCA
GAGATGCTGAGAGC

GAM10495 4569 GCTTTCTTGTCACTGCTTTT CAC CTTT T CCA- GCAA
2 GATGACACCACGGCAACGGT GCTTTCTTGT TG TGA GACA CG
TCTGTCTCATATCACGAACA CGAAAGAACA AC ACT CTGT GC
AGAAAGC AGC TAT- - CTTG ----
GAM10496 22088 GCTTTGAACGTACTGTTGAA -- T-------- G TGTACAAGTTT
4 GCACTGTACAAGTTTGTGGT GCTTTGAACGT ACTGT GAA CAC
TCCTAAGCCCCGCAGTGAAT CGAAACTTGTA TGACG CTT GTG
GTTCAAAGC AG CCCCGAATC G ----------
GAM10499 1693 GCTTTGCGACCTGGTTTCTT GCGACC TTTCTTA CT -- CAACAGAC
9 ATCCACTTTTGCCCTTGCAA GCTTT TGG TCCA TTTGC CCTTG
CAGACCAAGGAAGCAAACTT TGAAA ACC AGGT AAACG GGAAC
GGACTTTCCAAAAATAAAAG ATAAAA TTTC--- TC AA --------
T

GAM10502 17777 GCTTTGGGCCCTCGGCGACT G CGA TC CA - - A- T AGTGTGCAG
6 TTCCCAGGCAGTGCAGGCTA GCTTT GGCCCTCGG CTT CCAGG GTG CAG GCT GCCCAG
CCAGG
GCCCAGTCCAGGAGTGTGCA TGAGA TCGGGGGTC GAA GGTCT CAC GTC CGA TGGGTT
GGTCC
GCCTGGCTTGGGTCGAGCTC G AAC TA A- T T GC C ---------
TGTCACATCTGGATAAGCAA
CTGGGGGCTGAGAGT
GAM10507 10213 GCTTTGTTTCTGTTGAGTGT TT-- GT--- TG TTTTCTTAATATCTGCCT
4 GGGTTTTCTTAATATCTGCC GCTTTGT CT TGAGTG GG
TCCTCCACTCAGTATAAGTT CGGAACA GA ACTCAC CC
CCACAAGGC CCTT ATATG CT ----------
GAM10507 22452 GCTTTTAAAAGTTGTTTTGA TTTA- TTTT TCATTTT
8 AAAGACAATCATTTTTTGTT GCT AAAGTTG GAAAAGACAA
TTTTTTTTAACTTTCTTGTG CGG TTTCAAT TTTTTTTGTT
GC TGTTC TT-- -------
GAM10507 4676 GCTTTTAACACTGTTTGGGA T C- AAAAAAAG G ATTG
9 AAAAAAGTTGTTCACATTGG GCT TTAACA TGTTTGGG TT TTCAC
TGAAGGGAAGCAGTCCGAAC TGA AATTGT ACAAGCCT GG AAGTG
ATATGTTAACAGT C AT GACGAA-- G ----
GAM10508 16376 GCTTTTAATAGAGATTCTAG T TAGAGA-- A TATTTG ACAAAAAA
1 TTTATAGAATATTTGTCTAC GCTTT AA TTCTAGTTT TAGAA TCT
AAAAAAAGAATTTTCTAAGA CGAAA TT AAGGTCAAG ATCTT AGA
ACTGGAAAAGCATTTTTCAA C TTTACGAA A TTA--- --------
AGC
GAM10508 2325 GCTTTTAATGCCAGAAGAAA T CA TTAC T- AATTTATA
2 AGTTACCAGAATTTATAATT GCTTTTAA GC GAAGAAAAG CAGAA TTAT
TATAGTAATTTTTTGATCTT TGAGAATT CG TTTTTTTTC GTTTT AATG
TTTTTTGCCTTAAGAGT C -- TA-- TT --------
GAM10509 15967 GCTTTTACCTATGGGAGTAA TT C AT CCG A TT-- CA ATGCTA
0 ATCCGTGGAAGAAGTTTTGC GCT TA CT GGGAGTAAAT TGGAAG AG TTGCT ATGT
TCAATGTATGCTAACATGAA TGA AT GA CCCTTATTTG ACTTTT TC GACGA TACA
GCAGCTTTCTGTTTTCAGTT TT A CT --- G TTTC AG ------
TATTCCCTCAGATATTAGT
GAM10509 13239 GCTTTTAGAGCAGGTGTATG AGA GG GA GA GGAGGATGAA
5 ATCTTTGGAGGAGGAGGATG GCTTTT GCA TGTAT TCTTTG GGA
AATTTGATAGAGAGGTACGT CGAGGG CGT GCATG AGAGAT TTT
TTGCGGGAGC --- TT G- AG ----------
GAM10510 535 GCTTTTCACGGGAGGTTTAA TT -- GGTTTA- TCA--- AGCAAG
7 AGTCAGCCAGAGCAAGCTGG GC TTCAC GGGA AAG GCCAG
CCCTTCTCTTCATCAAATCC CG AAGTG CCCT TTC CGGTC
CAGGTGAACTGC TC GA AAACTAC TCTTCC ------
GAM10511 13880 GCTTTTCATGTGCATAAGTT -------- T ATA- TT TCATTT
0 GACTCATTTGTTTCCTGTTA GCT TTTCA GTGC AG GAC
GCATTTGAAACACCATATAG CGA AAAGT TACG TC TTG
C TATACCAC T ATTG CT ------
GAM10511 16127 GCTTTTCCTGGCTACCACTT -------- T- A T T ACCTTA
9 GCTTGTGACCTTATACATGT GCTTTTCCT GGC ACC CT GC TGTG
CGGGGTTTGCTCTTAAGAGA CGAAGAGGA TCG TGG GG TG ACAT
GGAGAAGC GAGAATTC TT - C T ------

GAM10521 4985 GGAAAAAAAGATTTGTATTA -- TG A---- A GGGC
7 GAAGGAGGGGCCTTCTCTAA GGAAAAAAA GATT T TTAGA GGAG
AAGTAATGAATCCTTTTTTT CCTTTTTTT CTAA A AATCT CTTC
TCC TC GT ATGAA - ----
GAM10521 17108 GGAAAAAACAGGGGCTAGTT A CTAG TTT CCT- AAA-- ATCTCC
9 GAATTTAGCCTTGGAAAAAT GGAA AAACAGGGG TTGAA AG TGGA ATCC
CCATCTCCGGATGTTGATCC TCTT TTTGTCCTC GACTT TC ACCT TAGG
ATGAACTTCTTCAGAATCTC C TAA- CT- AAGT AGTTG ------
CTGTTTCTTCT
GAM10522 9295 GGAAAAAATGCAGATGTATT AAAAAAT T TCACT C- CA T---- CAG
6 TCACTCTCCCCGGTCAGCTC GG GCAGATG ATT CTCCC GGT GCTC GCAT
TGCATCAGGTGTTTTCTGAG CC TGTCTAC TGA GGGGG CCA CGAG TGTG
CAAACCAAGGGGGTTTATAG GTTACGC - TATTT AA AA TCTTT ---
TCATCTGTCGCATTGCC
GAM10523 314 GGAAAAACCACCGGGGGGGG AAA-- A GG GGGGG TG AGCCA
2 GCTGGGGGTTGGGAAAAGCC GGA ACC CCGGGG GGGCT T GGAAA
ATTTCCTGAAAAGGGTCCGG CCT TGG GGCCTC CCTGG A CCTTT
CTCCGGGGTCTAACTCC CAATC - GG GAAA- GT -----
GAM10524 43 GGAAAAAGGTTTCTTCTCGG TT --- --- TTAA
2 AAGGCTTTTTTAAAGGGGCG GGAAAAAGGT CT TCTCGGAAG GCTTTT
GGTTTTTGGGAAGCGGGGGC CCTTTTTCCG GG AGGGTTTTT CGGGGA
CTTTTTCC GG CGA GGG ----
GAM10524 7896 GGAAAAATATTTTTCTGTTG CT TT G AG GA -- AAAGTA
7 GATTGTAGGAAGAGAAGATA GGAAAAATATTTTT G G ATTGT GAA GAAGATA AAC
AACAAAGTAGTTAGTATCTT CTTTTTTATAAAGG T T TAATA TTT CTTCTAT TTG
CCATTTTAATAATTGGTTTG TT GG - AT AC GA ------
GAAATATTTTTTC
GAM10525 1950 GGAAAAATGGACAGTTTATT AATG AGTTTAT CACAG AACACAGCAG
5 ACTCACAGGGAACACAGCAG GGAAA GAC TACT GG
CCAAAACAGTATCTTTAGTC CCTTT CTG ATGA CC
ACTTTCC CA-- ATTTCT- CAAAA ----------
GAM10527 14222 GGAAAACCGGTGAATCTGGG AAACC- - GC ATACAGCTGGACAAGAAGA

1 CTTATGGGATACAGCTGGAC GGA GGTG AATCTGG TTATGGG
AAGAAGATTCATGACCAGAT CCT CCGC TTAGACC AGTACTT
TACGCCCCCTAATCC AATCCC A -- ----------
GAM10530 16094 GGAAAAGGATGACAATGTGC G GA-- GCTTTTA CTTGTT
1 TTTTATTTTTTTTCTTGTTA GGAAAA GAT CAATGT TTTTTTTT
AAAAAAAACAACATTGGTAA CCTTTT CTA GTTACA AAAAAAAA
ATCGTTTTCC G AATG ACA---- ------
GAM10531 11719 GGAAAAGTATTTGAAACTAA AAAG C GACATTAAAATTAA
5 ATTGACATTAAAATTAAGAT GGA TATTTGAAA TAAATT
TTGTTTTCAAGTGGATGTCC CCT GTGAACTTT GTTTAG
GTAG T ----------
GAM10535 7132 GGAAAATGAACACTTAAATT AAATGAAC AAA A CACAC
7 GTGGTATACTCACACAGAAT GGA ACTT TTGTGGTAT CT
ACTATAGAGCAAGTAAACCA CCT TGAA GATATCATA GA
TCC ACCAAA-- CGA A -----
GAM10537 22403 GGAAAATTAAACTTTAATTT TA- TT TTTA - A TAGC GTAA
3 ATTGACATTGACATAGCTCT GGAAAAT AAC TAA TTGACA TTG CA TCTGT

GTGTAAATAGAATTGCAACT CCTTTTG TTG GTT GACTGT AAC GT AGATA
GTCAGGTTTTGTGTTCTTGT TTC T- TTG- C - TA-- ----
TTTCC
GAM10537 14979 GGAAAATTGCAATGATCAAG AA- TGAT A - TTTTTTTTTTACT
6 TTTCTTTTTTATTTTTTTTT GGA ATTGCAA CA GTTT CTTTTTTA
TACTTAGAAAAGCAAATATG CCT TAATGTT GT TAAA GAAAAGAT
TGTTTTGTAATAAATCC AAA TTGT A C ----------
GAM10544 2396 GGAAACTGGAAAAAGGCTTC AA AAA T GA AAT GAGT
2 TTGAAGTAAATGTTCTGAGT GGA CTGGA AGGC TCTT AGTA GTTCT
GGAGCTACTAGGATGTCTTC CCT GACCT TCTG AGGA TCAT CGAGG
CAGCCTCC CC --- T -- --- ----
GAM10544 342 GGAAACTTAAACCAAAGTCT CT A CAAA C T- GGTGCAG
4 ATTTTCCTATTTAAGAAAAC GGAAA TA AC GT TA TTTCCTATTTAAGAAAACTGGACTCTGGGCCA

TGGACTCTGGGCCAGGTGCA CCTTT AT TG CA AT
AAAGGGTAAATTCTTTTGACCTGAGACTCGGT
GTGGCTCAGAGTCCAGTTTT T- C AAAC A TC -------
CTTAAATGGGAAACTTAAAC
CAAAGTCTATTTTCC
GAM10545 22884 GGAAAGAAGGAAAAAAGGAA AAAA ---------- A- - AATATTGTG
7 GGAAAGAAGTAATATTGTGA GGAAAGAAGGA AGG AAGG AAGAA GT
CTTTCTTGCTCTTTAAAAAA CTTTTCTTCCT TCC TTCT TTCTT CA
ATCCCTGTCTCCTTCTTTTC CTG- CTAAAAAAAT CG T ---------
GAM10550 7963 GGAAAGCCACTGAAGGAGGC A ---- AC- AAATT
1 ACATGGAGAAATTCTCTATT GGA AGCCACT GAAGGAGGC ATGGAG
CCGCCTTTTTCCTAGAGTGG TCT TTGGTGA CTTTTTCCG TATCTC
TTCTCT C GATC CCT -----
GAM10550 6937 GGAAAGCCTACTGAATCCGC A ACTGAA - G ------ CA TGTTTACT
7 TCTGCAGAATCACAGTGTTT GGA AGCCT TCCGCT CT CA GAAT CAG
ACTCTGAAATTCATTTAGTG TCT TCGGA AGGTGA GA GT CTTA GTC
AAGTAGTGGAAGGCTATCT A ------ T A GATTTA AA --------
GAM10553 5320 GGAAAGGCCAGTTAGCTATC AGG TT TCCAACCAC CTACCCCT
9 CAACCACCGTCTACCCCTAC GGAA CCAG AGCTA CGT
GCTTCATCCTGGCTCCTGGA CCTT GGTC TCGGT GCA
TTCC A-- C- CCTACTTC- --------
GAM10555 15360 GGAAAGGTGGTTTTTATTCA AA TATTCACA A- TACA
6 CAGAAAGTTACAACTAATCC GGA GGTGGTTTT GA AGT
AAACCTTAGGATCATCAGTC TCT CTACTAGGA CT TCA
T GA TTCCAAAC AA ----
GAM10558 15365 GGAAAGTGTATTTAACAGAA TT - AAAAA AAAT
3 GATTAAAAATATAAATGTAG GGAAAGTGTAT AACAGA AGATT TAT
AAGATCTGTTTGTTTATATA CTTTTTATATA TTGTTT TCTAG ATG
TTTTTC T- G AAG-- ----
GAM10558 15112 GGAAAGTTAGATCTGTATGT T C T TT TTTTAA C ATTTTTTA
9 TTTTAATTTTAAAGAAATTA GGAAAG TAGAT TGTA GTTT AA AGAAATTA AT
CATATTTTTTAATTTAATTT CTTTTC ATTTA ACGT CAAA TT TTTTTAAT TA
TTATTTTTTTAAACTGCACA C C - TT TTTA-- T --------
TTTACCTTTTC
GAM10562 12040 GGAAATATCACGCTGCGTCT ATA - ------- AG ACAC
2 CTAGTCTACACAGGTCGGAG GGAA TCA CGCTGC GTCTCT TCT

GCATTGGGTGCGGTGCTGAG CCTT AGT GTGGCG CGGAGG GGA
CGTTCC GCG C TGGGTTA CT ----
GAM10562 15609 GGAAATATGTTATCTTCTGC AA TT- CA TC ATAGG
4 AATTCCAGAAATAGGTTCTG GGA TATG ATCTTCTG AT CAGAA
TTGTCCGGAAGGTTCTTATA CCT ATAT TGGAAGGC TG GTCTT
CATCC AC TCT C- TT -----
GAM10569 17766 GGAAATTAGGAGAAGGAATT ATT A TTC G G CA GCTAG CCCAACA
2 TCAGGTGGGTTTAAGTCAGA GGAA AGGAGAAGG AT AG TGG TTTAAGT GA TTC
GCTAGTTCCCCAACAGAAAG CCTT TTCTCTTCC TA TT ACC AAGTTTA CT AAG
ATCATTTGAAACCAGTTTTT CCT C TTT G A -- AGA-- -------
ATCCCTTCTCTTTCCTTCC
GAM10570 4902 GGAAATTGACGAGGAGGGAA AA AC GG A --- A ATAC AA----- TCA
5 GGTCTTTTATTGGAGAGTAT GG ATTG GAGGAG A GGTCTTTTA TTGG GAGT AGTAC
GCAGA
ACAGTACAAGCAGATCATTC CC TGAC CTTTTC T CCAGAAGAT AGCC CTTA TCGTG CGTCT

TGCCTTAGAGGTGCTAATTC AA -- TT C TAA - A--- GAGATTC ---
CCGAAATTAGAAGACCCTTT T
CTTTTCCAGTAACC

-
GAM10576 7651 GGAACAGCGGTGGAGGCCGA A C G - C AGTC CCTCCT
8 GCAGTCCCCACCTCCTTGGG GGA CAG GGT GAGG C GAGC CCCA
TGGCTCAGTCCTCAGCCTCT CCT GTC CCG CTCC G CTCG GGGT
GGTCC G T A T A GT-- ------
GAM10577 16890 GGAACAGGATGTTTAACTCT G GTTTAACTCT CGAACATTGAAT
5 TTTATCTCCGAACATTGAAT GGAACAG AT TTTATCTC
GAGATAAATTTCCAGATGCT TCTTGTC TA AAATAGAG
GTTCT G GACCTTT--- ----------
GAM10579 17539 GGAACATGACAGCAGGCACA ACAT- CA CACACT T AATGG
9 CTCATGGAATACAATGGGTT GGA GA GCAGG CATGGAA AC
TTCCATGCACCCTGTCATCC CCT CT TGTCC GTACCTT TG
TCAGTCC GACTC AC CAC--- T -----
GAM10586 15973 GGAACGAGGAAGGAGAGGGT C A A TTAAAC GCCCGGA
7 TAAACCTAGCCCGGATAGAG GGAA GAGGA GG GAGGG CTA
CCTCCCTCACCATCCTCTTT CCTT CTCCT CC CTCCC GAT
CC T A A TCCGA- -------
GAM10587 2217 GGAACGGGAAACGTGTTGGC GAAAC GCT C TGT TTCTCT
7 TGGCTCTGTGGAGTTCTCTC GGAACGG GTGTTG GG TC GGAG
TCTTCTGATCCCACAGCATC CCTTGTC TACGAC CC AG TCTC
TGTTCC ----- AC- T TCT ------
GAM10588 10009 GGAACTAAAAGGGATCCAGC AACTAAAA CA - ATTCTGGTGTCTC
7 TTTGAATTCTGGTGTCTCTC GG GGGATC GCTTT GA
AAAAGCCTGATCCTGCCAAA CC TCCTAG CGAAA CT
ACC AAAACCG- TC A ----------
GAM10595 14816 GGAACTTGTAACTTTATGCA C A TA----- CA TGTTCTT
6 AGAGTCTGTTCTTGACTTTG GGAA TTGTA CTT TG AGAGTC
ACAAACCTTCAAGTGCAATT CCTT AACGT GAA AC TTTCAG
CC - - CTTCCAA AG -------
GAM10604 5172 GGAAGAGAGATGGAGTCACA GA AT GTC A TTTT- -- CATTAT

5 TGGATTTTTGGTGGGCATTA GGAA GAG GGA AC TGGAT GGT GGG
TTCTGAACTTTCGTATCCAA CCTT TTC CCT TG ACCTA TCA TCT
GTTAGTCCCCCTTATTCC A- CC GAT A TGCTT AG ------
GAM10605 17774 GGAAGAGGAAGATGAGGAAG ATGAGGAAGAAGATGAGGA GA---- GGA AGAT

5 AAGATGAGGACAGTGACTCT GGAAGAGGAAG CAGT CTCT TC
GGATCAGATGAGGAAGAGGG CCTTCTCCTTC GTCG GAGA AG
AGAAGCTGAGGCTTCCTCTT GGA---------- AAGAGG AGG ----
CC
GAM10609 11280 GGAAGATAACTGTTCTAGAT A ACT AGCTCTTTT TT AT GATT
4 AGCTCTTTTTTTCCAAAATT GGA GATA GTTCTAGAT T CCAAA TCTT
CTTGATTAAGGTTTGGGGAA CCT CTAT TAAGATTTA A GGTTT GGAA
TTTAGAATTATCTCC - --- --------- GG -- ----
GAM10612 13627 GGAAGATTCTGCTTCTGTTT GAT-- CT TTC TCATT
0 TTTCACCATCATTTGGTCTG GGAA TCTG TCTGTTTT ACCA
AAACAGACAGATAAAGTTCC CCTT AGAC AGACAAAG TGGT
GAAAT -- TC- -----
GAM10616 434 GGAAGCCCCTTCCTAGGTCG AA TAG CG G TT ACC CCTC
3 GAGGGACTTTGTCTACCCTT GG GCCCCTTCC GT GAGG ACT GTCT CTT
CCTCAAGCCGAGACCTAGTG CC CGGGGGAGG CA CTCC TGA CAGA GAA
CCTCTAACGGAGGGGGCAGC GA --- AT G TC GCC ----
C
GAM10617 15387 GGAAGCCTTAGGGTATGGGG A AG A AA G TTACC
4 AAAGGCTGTTATTACCTAGA GG AGCCTT GGT TGGGG AGGCT TTA
GTTTACTCCCAGGCCAGGGG CC TCGGGG CCG ACCCT TTTGA GAT
GCTGCC G GA G CA - -----
GAM10617 7229 GGAAGCCTTCCCCACACTGC A C - T- AAAGCC A AG TGTGG
5 CAAAGCCGCACACAGGAGCT GG AGCCTTCC CA CAC GCC GC CACAGG C
GTGGGAGCCTGTGGCCACAA CC TCGGGAGG GT GTG TGG CG GTGTCC G
GGTCTGTGTTGAGGAGGGCT G A T TC AACAC- - GA -----
GCC
GAM10620 13049 GGAAGCTCTTTGCCCCACAG AA T ---- A ---- AT AAT
1 CAGATTCTGCAATGCAGGCC GG GC CTTTGC CCC CAG CAG TCTGC
TGACAACTGAGGGAACTGCG CC CG GGAGCG GGG GTC GTC GGACG
AGGGCCGCC GC - TCAA A AACA C- ---
GAM10622 15020 GGAAGCTTGCCGACAAAGCC C TG G AAA CC AA CCAG
3 CTGAAAAACCTTCCAGGAGG GGAAG T CC AC GC TGAAA CCTT
AGTTTCATTGCCAGTGGGAG TCTTC A GG TG CG ACTTT GGAG
ACCTTCT C GA G AC- TT GA ----
GAM10626 17206 GGAAGGAGTCTTTTCCTAAT AA - - CT TAG - CA CATT TTTATTATTCC
3 TAGACAGTCAGAGCCTCATT GG GGAG TCTTT TC AAT ACA GT GAGCCT CCAGA
CCAGATTTATTATTCCTTTG CC CCTC AGAGA AG TTA TGT CG CTTGGG GGTTT
GTAGGGTTCCAGCATGTATA -- G T TT TA- A AC AT-- ----------
TTTTGATAGAGAGCTCCCC
GAM10628 11938 GGAAGGCACCCCACTAGGGG AG A- A CCCT CA-- AGC
5 CCCTGTCCCCACCAGAGCCT GGA GCACCCC CT GGGG GTCCC CCAG
GGACATGGGACTCTCTCCCA CCT TGTGGGG GA CCCT CAGGG GGTC
AGCAGGGGTGTTGTCC GT AC A CTCT TACA ---
GAM10629 7049 GGAAGGCGGCCGAGCGCGGC C- C ---- - -- TCCC
8 CCCCTCTCCTCCCGGGCCGG GGAAGGCGG CGAG GC GGCCC CCTC TCC

GGCGGGCCCGAGGCCTCGAT CCTTCCGCC GCTC CG CCGGG GGGG GGG
CCGCCTTCC TA - GAGC C CC ----
GAM10630 10772 GGAAGGCTGGCAGGGGTCTT GC - TCTATTGCGTAACT
5 TTTTTCTATTGCGTAACTGG GGAAGGCTG AGG GGTCTTTTTT
AGGAGGCCACCTCGGTCTTC CCTTCTGGC TCC CCGGAGGAGG
C -- A ----------
GAM10631 22856 GGAAGGGATGTTACGGTACA AG T- T A- T TT-- TG TG TGTG
6 AACGTATATTTATGTGTGTG GGA GGA GTTACGG ACA ACG ATA TA TGTGTGTGTG TA
TGTGTGTATGTGTGTGCGCG CCT CCT CAGTGTC TGT TGT TAT GT GCGCGCGCGC GT
CGCGCGTGTGCATTTATTTG CT CC - AG T TTAC GT GT ----
TGATGTCTGTGACCCTCCTC
TCC
GAM10631 17138 GGAAGGGCAGGCGTGATGGG GC CTTATTTGTTT TT TGA
9 CTTATTTGTTTGGAATTCAA GGAAGGGCAG GTGATGGG GGAA CAA
TGATTGTCTTTCCCCATCAT TTTTCCTGTT TACTACCC CTTT GTT
TTGTCCTTTT -- ---------- CT ---
GAM10635 16175 GGAAGGTGCTGATGAAGACA AA G A ACA - G G T T CA- GCTTCA
0 GGCCTGGTGCTGGTGGTGCT GG GGTGCT ATG AG GGC CTG TGCTG TGG GC GGGC TGTGA

GGGCCATGTGAGCTTCATCA CC CCACGG TGC TC TCG GAC ACGGT ACC TG CCCG ACACT

CAGCTGCCCTGTTCCATGGC -- G A GCG T - - T T TCG ------
ACAGTGCTGCGCTACGTGGG
CACCCC
GAM10645 17824 GGAATAAAAATAACAACTCT AA T AA G G CGTT
6 TTGTGGGCGCGGCGTTTTGG GG TAAAAA AAC CTCTTT TGGGC CGG
GCCCGAGAAGAGGTTTTTTT CC ATTTTT TTG GAGAAG GCCCG GTT
AAACC AA - -- A G ----
GAM10648 13875 GGAATAGAGAAATGACAAAT A- AA-- CAAA C A ACAG
6 AATATATCATATAGATCACA GGAAT GAG ATGA TAATATAT ATAT GATC
GGATCATATATGTGTTACTC CCTTG CTC TACT ATTGTGTA TATA CTAG
ATATAGCTCAGGTTCC GA GATA C--- - - ----
GAM10653 11509 GGAATCGAAGCGACCACGTC A AC-- T C-- TTTCTGAT
9 TGGAACAGGTTTCTGATCCT GGAATCG AGCG CACG CTGGAA AGG
CATTTCCAGCGTGTCAGTGC CTTTGGC TCGT GTGC GACCTT TCC
TGCGGTTTC G GACT - TAC --------
GAM10655 10239 GGAATCTCGAAGCTGCTAAA GAAG AA TTCCACG- A T CCAATTAAA
1 TGAGTTCCACGAAGAACTTG GGAATCTC CTGCT ATGAG AAG AC TGCCT
CCTCCAATTAAAAGGCGCGT TTTTAGAG GGCGG TACTT TTT TG GCGGA
ATTTATATACCTTTCATAGG GGG- GA TCCATATA A C ---------
GCGGGGGGAGATTTT
GAM10656 11360 GGAATCTTGCTCTGTCGCCC ATC C TC C-- -- - G ATCT
1 AGGCTGGAGTGCAGTGGCGC GGA TTGCT TG GCCCAGG TGGAG TGCAGTG GC CA
AATCTTGGCTCACTGCAGCC CCT AACGA AC TGGGTCC GTCTC ACGTCAC CG GT
TCTGCCTCCTGGGTTCAAGC CTT - T- TCC CG T - ----
AATTCTCC
GAM10656 1639 GGAATCTTGGCGTTCAGCAG AA -------- ---- - - C GATG C TATATGATCC
3 AGTCAGGGATGGGTCCATTA GG TCTT GGCGTT CAGCA GA GT AGG GGT CAT
TATGATCCATGAACCAGAAC CC AGAA CCGCGG GTCGT CT CA TCC CCA GTA
CTCACATCTTGCTGTTCCGG AA CCCATCAC CCTT T A C AAGA A ----------

CGCCCACTACCCAAGAAACC
GAM10656 7775 GGAATCTTTTTGTTTAAAGT T TTTAAAG C GT TACAG
7 GTTTTTCTATTCGTTGCTAC GGAATCTTT TG TGTTTTT TATTC TGC
AGGTACAGAGTAAAAAAATA TCTTGGAAA AC ATAAAAA ATGAG ATG
ATAATCACAAAGGTTCT C TAATA-- A AC -----
GAM10657 14241 GGAATGACCTGTCACTATAA TGACC ATAA TGTATGT- C TATTT
9 TATACTGTATGTTTACATTT GGAA TGTCACT TATAC TTA ATTT
TATTTAAATTTAATCTCTTA CCTT ATAGTGG ATATG AAT TAAA
TGTATAGGGGTGATAACCTT CCA-- GG-- TATTCTCT T -----
CC
GAM10658 4883 GGAATGAGAATACCTGAAAC AAT - GA -- A- AACAAGG
4 CAAACCGTTAACAAGGAATG GGAATGAG AC CT AAC CA ACCGTT
GTAGTGAAGTTAAGGAGTTA TCTTACTC TG GG TTG GT TGGTAA
GCTCATTCT GAT A AA AA GA -------
GAM10660 21924 GGAATGCGGTAAAACTGTCC T GTAAAACT C GG CCCCCGCCCAAA
4 TGGGGCCGGACCCCCCGCCC GGAA GCG GTC TGG CCGGAC
AAAGTCCGGACCGCGACCCC CCTT CGC CAG GCC GGCCTG
AAAAACGCTTCC - AAAAACCC C A- ----------
GAM10660 11814 GGAATGCTCCTGGCAACTAT CTCC TAT AATAC CCTGA CCAT
7 GGGAATACGGGGTGCCTGAA GGAATG TGGCAAC GGG GGGGTG AAGG
AGGCCATCCTTGAAACACCT CCTTAC GCCGTTG CCC TTCCAC TTCC
TAACCCTGTTGCCGCCATTC C--- T-- AA--- AAAG- ----
C
GAM10661 553 GGAATGGAAGCGGAGAACGC --- C -- A- ATTCCCTTC
8 GGGCAGCTATTCCCTTCAGC GGAATGGAAGCG GAGAA GC GGGC GCT
AAGCTCAAGCTTTTTATACG CTTTACCTTTGC TTTTT CG CTCG CGA
TTTCCATTTC ATA - AA AA ---------
GAM10665 22556 GGAATGTTCGTTGTACCTGA A CGT TA ATACTGT A CTAAGAT
2 TACTGTTGACATGACTAAGA GGA TGTT TG CCTG TG CATGA
TTCATGCATTGATCACAGGC CCT ACAG AC GGAC AC GTACT
CCATTTGACACTCC C TTT CC ACTAGTT - -------
GAM10666 2628 GGAATTAGAAGTCCTGAGAG AA CC-- AGAT ATGTTG
8 ATGAAGAATGTTGTCTTCCA GG TTAGAAGT TGAG GAAGA
ACTCAAACCATTTCTGAAGC CC AGTCTTTA ACTC CTTCT
C GA CCAA AAC- ------
GAM10668 4723 GGAATTCATCATATGAAGGA - A A-- A AA ATG AAAA
6 ATGAAGATGTTCAAAAGAAA GGAAT TC TC TATGA GG TGAAG TTC
ACCTTCAACCTCATGCCAGA CCTTG AG AG GTACT CC ACTTC AAG
AGATGTTCC T A ACC - A- CAA ----
GAM10668 2642 GGAATTCCCGGGTCGACCCA A GTCGACC - AGAAGGCGACGATGA
9 CGCGTCCGGAGAAGGCGACG GGA TTCCCGG CACGC GTCCGG
ATGACCGGACTGTGTGCCGG CCT GAGGGCC GTGTG CAGGCC
GAGATCC A ------- T ----------
GAM10670 10959 GGAATTGGTGGGTTCTTGGT ATT T GG T CT A C ATGAA GG C ACGAT
8 CTCACTGACTTCAAGAATGA GGA GG G TTCT GGT CACTG CTT AAGA GCTGT AC CTC
AGCTGTGGACCCTCACGATG CCT TC C GAGA CCG GTGAT GAA TTCT TGACA TG GAG
AGTGTGACAGTTCTTAAAGA --- - TT C T- A A ----- G- T -----
TAGTGTGCCCAGAGTTCCTT
CC
GAM10673 4964 GGAATTTGGCTGAGGAGCAG CT AGCT TA- A GACTAA

5 CTTTAGGTATGGATTGATGA GGAATTTGG GAGGAGC TTAGG TGG TTGAT
CTAAGTCAAGCTACTTCCTG CCTTAGACT CTCTTCG AGTCC ATC AACTG
AGCTTCTCTCAGATTCC -- ---- TTC G ------
GAM10673 14907 GGAATTTGGCTGAGGAGCAG TTTGG G C T TA- A GACTAA
6 CTTTAGGTATGGATTGATGA GGAA CTGAG AG AGCTT AGG TGG TTGAT
CTAAGTCAAGCTACTTCCTG CCTT GACTC TC TCGAG TCC ATC AACTG
AGCTTCTCTCAGATTTCC TA--- - T - TTC G ------
GAM10675 5230 GGACAAAGAACGGAGGACAG AA --- - --- C GACCA
7 GCGAGACCATCCCCCGTTGT GGAC AGA ACG GAGGACA GG GA
CTTCGCGTGTGTCTGAGTCC CCTG TCT TGC CTTCTGT CC CT
AG GTG G TGC C -----
GAM10677 10770 GGACAAGAGATACTGGATGC AA A-- GAT--- AAAAA
9 TTTGCAAAAAGCAGAGCCTA GGAC GAGAT CTG GCTTTGC
GAACAGAGGATCTCAAGTCT TCTG CTCTA GAC CGAGACG
AA GGA AAGATC -----
GAM10678 11838 GGACAAGGAATGGGGCAAGC CAA- A - CAA TGG-- AGC A A TTTTCA A -
9 TGGGGCAGCGCGGAAGGCAG GGA GGA TG GGG GC GGC GCGG AGGC GTGCTG GG
GGC CTG
TGCTGTTTTCAGGAGGCCTG CCT CCT AC CCC CG CCG CGTC TTCG CACGAC CC CTG
GAC
ACCTCTGTGGCCAGAGTCCC AAGA C A TC- TAGAA GA- A C TG---- C A
CGTCAGCACCGCTTACTGCA A TCTGT
GGCCAAGATGCCTCCCACAC CC
TCCAGAATCC GG
C -----
GAM10681 17449 GGACAATTACAAATGTTGTA A- AATGT C- - ATTAA
4 ATATGCATATGGTGGAAATA GGACAATT CA TGTAATATG ATATGGTGG AAAT
TTAAATTTCCCATTATATAA CCTGTTAA GT ACATTATAT TATATTACC TTTA
TATATTACATGGGAATTGTC GG ----- AA C -----
C
GAM10682 13205 GGACACACGCTATAAGCTAT C A AG-- ----- C TT AAGAA
3 GGGGGACCTTTCAAGAAGGG GGACACA GCT TA CTATGG GGGAC T C
ATGTCTCTTTGACCATAGAA TCTGTGT CGA AT GATACC CTCTG A G
AATACAGCTGTGTCT - C AAAA AGTTT T GG -----
GAM10683 21959 GGACACAGCCTCCTTTGCTG CAC C- TTT--- C - ATAT C TATC
2 CTAGTGTCGATATCTTCTTT GGA AG CTCC GCTG TAGTG TCG CTT TT
ATCAACAAGTTTACGATCAC CCT TC GAGG TGAC GTCAC AGC GAA AA
TGTCAGTTTCCCTGGAGTAC AAT AT TCCCTT T T ATTT C ----
TTAATCC
GAM10684 4721 GGACACCATCTTTATAAAAG CA - TTA-- A- TC TC AAA TACTA
5 TAAAACTTCTAGATCCTGAA GGA CCA TCT TAAAAGT AAACT TAGA CTG TG
ATGTACTACAGTAGAGTCTA CTT GGT AGA ATTTTCA TTTGA ATCT GAT AC
TAGTTTACACTTTTAATCAC AA T CACTA CA T- GA G-- -----
AGATTGGAATTC
GAM10691 16892 GGACAGCCATTCACTAATTT C ATTCACTAATTT T CCATTCCTTC
0 ACTTAATTCCATTCCTTCAA GGA AGCC AC TAATT
TTATGTTTCTTTTAATGGGT CCT TTGG TG ATTAA
TTTCC T GTAATTTTCTT- T ----------
GAM10693 4794 GGACAGGCTCTGCCAGAAGA T- AGAA --- C-- TCCT
5 GCTGCCGCCTCCTGGCACAG GGACAGGCTC GCC GAGC TGC GCC

CAAACGCTCCAGGCCTGGGC CTTGTCCGGG CGG CTCG ACG CGG
CTGTTC TC AC-- CAA ACA ----
GAM10694 17444 GGACAGTAATACCTGGCTTT AAT - CT - T-- CTGACA
7 ATCATATGCCTGACAGCATT GGACAGT AC CTGG TTAT CA ATGC
GCTGCATAGTACCAGAGTTA CCTGTCG TG GACC GATA GT TACG
AGCTGTCC AAT A AT C CGT ------
GAM10695 16223 GGACAGTGACTCTGGGGCTG GAC- ---- TG G TGACTT
3 GGATGTGACTTCGTGCTGGG GGACAGT TCTGGGG C G ATG
CCCCCCCAGGTGAAGCTGTT CTTGTCG GGACCCC G C TGC
C AAGT CCCG GT G ------
GAM10695 17832 GGACAGTGTGGTGGCAACAT GT TG --- C AAA TCGTACCCT
9 TGAAAGCCTCGTACCCTGGC GGACA G GTGG CAA ATTG GCC
CTGCAGTTTGAAATCATTGC CCTGT C TACT GTT TGAC CGG
TATGTCC AT GT AAA - GTC ---------
GAM10696 2420 GGACATACCAGTGCAGTATG - A GTA T TCTGTTTCT TTCCT
8 TTGAATGTCTGTTTCTTCGT GGACATA CC GTGCA TGT GAATG TCG
TCCTCGGTTCTCTCATTCCA TCTGTAT GG TACGT ACA CTTAC GGC
CAAGTGCATAGGTTATGTCT T A GA- C TCTCTT--- -----
GAM10697 16403 GGACATACCCTATAGAATTA A CTAT C ACC A CCCCT - GTATTA
0 CTAACCTTACTGCCCCTTGT GGACAT CC AGAATTA TA TT CTG TGTAGAAT AT
AGAATATGTATTAATCATTC TCTGTA GG TCTTGGT AT AA GAC ACATCTTA TA
TACATTAACAGAAAATAATG A TCAT A AA- - AATT- C ------
GTTCTTACTGGAATGTCT
GAM10698 10138 GGACATCTAACAGCATACTG ATCTAACA A-- TC CTTCGCAC
5 ATCACTACTTCGCACTAGTT GGAC GC TACTGA ACTA
CTCGGTACTAGCATATGGTC CCTG CG ATGGCT TGAT
C GTATA--- ATC CT --------
GAM10699 17253 GGACATGAACGTGGGGAAGA C AAC GA A G GC TAT A G TC GACACGG
4 CGTCGCTGCTGCAGCGGTAT GGA ATG GTGGG AG CGTCGCTGCT CA GGTA GG GCG CGCT
CCG
ATGGAGCGGCGCTTCCCGGA CCT TAC CATCC TC GCGGTGACGA GT CCAT TC CGC GCGG
GGC

CACGGTCAGCACGGTGGGCG C AA- -- - A -- CT- - G GT -------
GCGCCTTCTACCTGAAGCAG TCAGCA
TGGCGCTCCTACAACATCTC
C

GAM10700 65 GGACATTCAGCTGGTGGCCG C AGCT-- TG -- - CACCCTGGGCCTCTTT
9 CGCTCTCTGTCACCCTGGGC GGA ATTC GG GCCGC GCTCT CTGT
CTCTTTGCAGTGGAGCTGGC CCT TGAG CC TGGCG CGAGG GACG
GGTTTCCTCTCAGGAGTCTC C GACTCT TT GT T ----------
C
GAM10701 17475 GGACATTGGAAATGAAATTA A T AATTAATATCT GATTAGAAA
7 ATATCTTCTACTTGATTAGA GG CATTGGAAA GA TCTACTT
AAAAGTGGATCTTTTCCAAT CC GTAACCTTT CT AGGTGAA
GCC - T ---------- ---------
GAM10704 4590 GGACCACTGTTCTGGAGTTA CCA- - GAGTTA AAACACTGGAC
0 TGCAATTAAACACTGGACAA GGA CTGTTC TG TGCAATT
TTGCAATTAAACATGGACAG CCT GACAGG AC ACGTTAA

AAAATCC AAAA T AAATTA ----------
GAM10704 15147 GGACCAGACTGTACTGTGGC AC- - TAC C- ACACAAAG
4 CATGTACACAAAGGCATGCA GG CAGA CTG TGTGG CATGT
CCACATCCCAGCTCTGCTGC CC GTCT GAC ACACC GTACG
C GTC C CCT AC --------
GAM10705 11815 GGACCAGTGGGCCAGAGATG - GT GA-- CCT TTCTT
9 ACCCTGCTTTCTTGGTCCTG GGAC CA GGGCCAGA TGAC GCT
TTAAGTATCTGGCTCTGTGT CCTG GT CTCGGTCT ATTG TGG
GTCC T GT ATGA TCC -----
GAM10706 15466 GGACCATATGCATAGTACCG CCATAT - - GAA GTGCGAAG
3 AGAAACTAGTGCGAAGTAGT GGA GCA TAGTACC GA ACTA
GATCAGGTATTGCTGTTAGA CCT TGT GTTATGG CT TGAT
TATCC ATAGAT C A AG- --------
GAM10710 11204 GGACCCCTGCAAGTGTTGGT GCAA--- TG - -- CCTCGA
2 CGGGGGCCTCGACCTGCCTG GGACCCCT GTGT G TCGGG GG
AGCTGACACGAGGGGAGGGG TCTGGGGG CACA C AGTCC CC
GTCT AGGGGAG GT G GT ------
GAM10710 6720 GGACCCCTGTCAGATTGATG - CAGA GAT - CCCTCTC
3 GAAGCACCCTCTCTGCATTC GGA CCCCTGT TT GGAA GCA
CCAGAGGAAACAGGGGCTCT TCT GGGGACA AG CCTT CGT
C AAGG AC- A -------
GAM10713 17023 GGACCGGAAGCCTGGAACTT A AAG - ACT AGA GAG A- AGAGG
5 GGAGAGCTGAGGCAACAGAG GG CCGG CCTG GA TGG GCT GCA CAG
AGGCTGCGTGCAGAAGTGAG CC GGCC GGAC CT ACC TGA CGT GTC
CCATCATCGCAGGAAGCCGG - GAA G ACT GAG AGA GC -----
CC
GAM10714 7359 GGACCTAAACCCTTTTACGC --- CCT AC --- ---- -- ATTC
3 CTCTTGTAGGCATTCGGATT GGACCT AAAC TTT GCC TCTTGTA GGCAT TCGG
CCTGATCATGCTTTTATGCA CCTGGG TTTG AGA CGG AGAACGT TCGTA AGTC
AGACTTGGCTCAGATGTTTG CAG T-- CT TTC ATTT CT ----
ACGGGTCC
GAM10716 6953 GGACCTCATTAGTCTTAGGA CATT- CT--- T C GTTC
1 GTAATACGCGTTCGCTGTTC GGACCT AGT TAGGAG AATA GC
TTCTACATTCATTTCACTAG TCTGGA TTA ATCTTC TTGT CG
GTCT TCACT CTTAC - - ----
GAM10719 7595 GGACCTGTGGGAGCTCTCAG A GA - CA-- GCTCAGACT
2 CAGCCTTGCTCAGACTGAGG GG CCTGTGG GCT CTCAG GCCTT
TGACCCTGGGCGGTACCATG CC GGGTACC TGG GGGTC TGGAG
GGCC - A- C CCAG ---------
GAM10720 15381 GGACCTTTCTCTTTATAGGA - - ----- AAC GCTAGA
5 ACGATGCTAGAATCACCTAT GGACC TTTC TCTTTA TAGG GAT
TTAATAAAGACGAAAGGGTT CTTGG AAAG AGAAAT ATCC CTA
C G C AATTT A-- ------
GAM10720 10688 GGACCTTTGTAGGAGAGGCT CCTT---------- A-- CT T TA- AAGATA
9 AATATGTTTAAGTAGAAGAT GGA TGTAGGAG GG AA ATGTT AGTAG
ATTACTGATAGCATTTTCCC CCT ACATCCTC CC TT TACGA TCATT
CATGCTCCTACATAAAAAAT TTATAAATAAAAAAT GTA CC T TAG ------
AAATATTTCC
GAM10721 4708 GGACGAGAAGAATGGCCCCC GAAGAA CCCC CCAACATGACCACCAACGA

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8          CTCCTCCCAACATGACCACC GGACGA     TGGC   CTCCTC
           AACGAGAGGAGAGTCATCGT CCTGCT     ACTG   GAGGAG
           CC                  ------   A---     ------------------
GAM10722 21857  GGACGAGCAAGCGGGGCCCG  AC  C   G -   GC- A    AG  G  GCAA
0          CGCAGCTTCAGGGGCCGCAA GG  GAG AAGC GG GCCC   GC GCTTC  GG CC
           GGGCCGGGGCGCCAAGGGCA CC  CTC TTCG CT CGGG   CG CGGGG  CC GG
           TCGGCTTCCTCACC       A-  C   G  A   AAC  -    -- G ----
GAM10722 17555  GGACGCAGCCTCCAGATGAA   C        A  AA---  ACT  CAT      TCCAGC
8          TGTACTCCCCATGCAGTTCT GGA GCAGCCTCCAG TG    TGT  CCC  GCAGTTCT
           TCCAGCAGAGCTGTGGGCCA CCT CGTCGGAGGTC AC    ACG  GGG  TGTCGAGA
           GCAGCCAGCACTGGAGGCTG   -        - GACCG  ACC  ---      ------
           CTCC
GAM10722 15655  GGACGCAGCCTCCTGACCTA   C   C-  C -  TA--   CG   A  CC---     GAATGGGAA
9          TGGCCGCCGCATCCCCCTGG GGA GCAG  CTC TG ACC    TGGC  CCGC TCC     CTGGCT
           CTGAATGGGAAAGCCGGATT CCT CGTC  GAG GC TGG    ACCG  GGTG AGG     GGCCGA
           GCGGAGGTGGATGCCAGTGT   -   TA  T  A   TGTG   TA   G   CGTTA    ---------
           GGTACGTGAGATCTGCTCC
GAM10724 7279   GGACGCCTTTACAGTCTAGC      CTTTACAG   AG     T   AA   ATCA
2          ACATGTATCAAGACATCAGT GGACGC       TCT  CACATG ATC  GAC
           CAGGATCATGTGAAGAAAAC CTTGTG       AGA  GTGTAC TAG  CTG
           AGTGTTC              ACAAA---  A-     -   GA   ----
GAM10724 5318   GGACGCTCTCCAGAAATTAC     ----     AGAAA    A  G-   TG    GCA
7          ATCGGTGTGCGTGGGCACTA GGACG    CTCTCC     TTAC TC  GTG  CGTGG
           CGTGTGCAAGAGTGAACCGG CCTGC    GGGAGG     AGTG AG  CGT  GCATC
           GAGGGACAACGTCC          AACA     GCCA-   -  AA   GT    ---
GAM10726 16285  GGACGGCAACGTGACCTGCG    G   AC     T   G  -  AG--    -   CCC--   TGCC
1          AGCGCGAGGTGCCCGGTCCC GGAC GCA  GTGACC GCGA CG CG    GTGCC CGGT    GAC

           GACTGCCGTTTCCTCATCGT CCTG CGT  CGCTGG CGCT GC GC    CGCGG GCTA    TTG
           GGCGCACGACGACGGTCGCT    A  --     T   G  A  AGCA    T   CTCCT   ----
           GGTCGCTGCAGTCC
GAM10726 509    GGACGGCGTGCTGGCTGACT    C      -  CT     --    CGGAT
4          TCGAGGGCGGATTCCTCAGG GGA GGCGTGC TGG  GACTTC  GAGGG
           AAGTTCCGCGCGCGCTTTCC CCT TCGCGCG GCC  TTGAAG  CTCCT
                               T      C  --     GA    -----
GAM10726 19757  GGACGGCTTCCAGGTGAAAC   C    TCCA    AAA   C     CCTG      GCT
5          GGCCTGGGGACCTGAGTGTG GGA GGCT    GGTG   CGGC TGGGGA    AGTGTGC
           CGCTGCACGCTGCTCCTCAT CCT CCGA    CCAT   GTCG ACTCCT    TCGCACG
           GCTGGACTACCAGCCTCC    -  ----    CAG    T     CG--      ---
GAM10730 11481  GGACTACACTCCCGGAGGAC    T    C-     GA  A   GTC    CAAA    CTGT       TTCGTT
5          AAGCGGTCTCTGCAAATTGG GGAC ACACT  CCGGAG  CA GCG   TCTG    TTGG    GGCGCTGCC

           CTGTGGCGCTGCCTTCGTTG CCTG TGTGA  GGTTTC  GT CGT   AGAC    AGCC    CTGTGACGG

           GCAGTGTCTCCGACAGATGC    -    TC     G-  -   ---    ----    T---       ------
           TGGCTTTGGCTAGTGTGTCC
GAM10731 15608  GGACTACCGGTAGACGGTGG      CC---     AC  TG       -  AACAGC     ACGCCA
0          TACACCCCCAACAGCTAGTG GGACTA     GGTAG  GG  GTACACCC CC      TAGTG
           ACGCCATACTAACGGAGGGT CCTGAT     CCATC  CC  TATGTGGG GG      ATCAT
           GTATTGCCCCTACCCACCAT      ACCAC     C-  GT       A  CA----    ------
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AGTCC
GAM10733 14897 GGACTATTTGCATCTGTTGC TATTTGC T G CACTCA C T GCCTT
3 AGGCTGCGGCCCAGGCACTC GGAC ATCTG TGCAG CTGCGGCCCAGG ATC GC AG
AATCCGCTAGGCCTTCTGCA CCTG TAGAC GTGTC GGCGTCGGGTCC TAG CG TC
GATGTTTAACCTGGGCTGCG TAATCTT T - AATTTG A - -----
GCTGTGTCAGATTTCTAATG
TCC
GAM10734 5297 GGACTCAGGGGATGAAATAT A- ---- GA AAT A AA ATTTATTG
7 GAATATAAGTTCATTTATTG GG CTCA GGG TGA ATGA TAT GTTC
GAACAATACTCATTCAAACC CC GAGT CCC ACT TACT ATA CAAG
CACTTTGAGAACC AA TTCA AA --- C A- --------
GAM10735 1995 GGACTCAGTGGCCTTGAGGA - TGAGGATG CT AACTT
1 TGTGGCTGTGAACTTCACCC GGACTCAGTG GCCT TGG GTG
AGGAGGAGTGGGCTTGCTGA CCTGAGTCGT CGGG ACC CAC
GTCC T TGAGGAGG -- -----
GAM10735 7419 GGACTCAGTGGCCTTTGAGG -- TTGAGGATG CT AACTT
2 ATGTGGCTGTGAACTTCACC GGACTCAGT GGCCT TGG GTG
CAGGAGGAGTGGGCTTTGCT CCTGAGTCG TCGGG ACC CAC
GAGTCC TT TGAGGAGG- -- -----
GAM10738 11309 GGACTCTACACTTATCATGC A - A --- A TAATCTGACAC
0 AGGGGGTTACGTGATAATCT GG CTCTACACT TATC TGCAG GGGGTT CGTGA
GACACTTATGGACTTCAGAC CC GAGATGTGG GTGG GCGTC CTTCAG GTATT
TGCGGGTGCGGTGTAGAGCC - C - AGA - ----------
GAM10739 15254 GGACTCTTTGATTGAGCCGT T TG CCGTATAAA TTATT
4 ATAAACCAAATTTATTGTTT GGAC CTTTGAT AG CCAAAT
GGCTTCCACTTGGTTAAAGT CTTG GAAATTG TC GGTTTG
GTTC T GT ACCTTC--- -----
GAM10739 13203 GGACTGAACGGGTGCGGAAC AA- GT- AAC CCT-- CTCCAA
6 TGCTCAAGCCCTGAGTTCTC GGACTG CGG GCGG TGCTCAAGC GAGTT
CAAGACTCTACATGCTTGAG CCTGAC GTT CGCC ATGAGTTCG CTCAG
TACCGCTTATTGAGACAGTC AGA ATT --- TACAT ------
C
GAM10743 13883 GGACTGGGTGTGAGGGTCTG A - -- G G GACCTGG
5 GGCCAGGGTGCTTGACCTGG GG CTG GGTGTGAGGG TCTGGGCCA G TGCTT
GAGCAGCTGGTTCAGAGTCC CC GAC CCACACTTCC AGACTTGGT C ACGAG
TTCACACCGCAGCC - G TG - G -------
GAM10744 17569 GGACTGTCCCCTGGGAGGTG G CC GT- A ACG- ACAGAAG
3 CAGCAAAAATCAGAACGGAG GGACT TCC TGGGAG GCAGC AAAATCAGA GAG
ACAGAAGCTCACAGTCTGGT CCTGA AGG ATCCTC CGTCG TTTTGGTCT CTC
TTTAGCTGCCAACTCCTATG - T- AAC A GACA -------
GAAGTCC
GAM10745 206 GGACTTAGATATCGCATACA GATA-- --- AAA GGAA
4 AAATTTGGAAAAATGTGGTG GGACTTA TCGCA TAC ATTT
AGCTGTGAAGGCTATGAGTC CCTGAGT AGTGT GTG TAAA
C ATCGGA CGA GTG ----
GAM10748 14794 GGACTTGGATATGGGGTGCT A TG TAT C CG CTA T CA AACT
2 GGGATCGATTCCTAGCTTTA GG CT GA GGGGTG TGGGAT ATTC GCT TAC CT
CCACTAACTAGCTGTGTGGC CC GA CT CTCCAT GCCCTA TGAG CGG GTG GA
CTTGAGTAAATCCCGTTACC - GT --- T AA TTC T TC ----
TCTCTGAGCC

GAM10748 9985 GGACTTGTCTTGGTTCCAGA - GGTTC CCT AC- GCGA
8 ACCTGACGACCCGGCGACGG GGAC TTGTCTT CAGAA GACG CCG
CGACGTCTCTTTTGACTAAA CCTG GACAGAA GTTTT CTGC GGC
AGACAGTGTCC T AATCA CT- AGC ----
GAM10751 4660 GGAGAAAAAAAAAGAAGGGG AAAAAAAA G AAAAAAAAACCCCCC
2 GGGCGCCCTAAAAAAAAACC GGAGA GAAGGGGGGGC CCCT
CCCCGGGGGGCCCCCCTTTT CCTCT TTTTCCCCCCG GGGG
TCTCC -------- G ----------
GAM10754 78 GGAGAAAGAGGAGGAGGAAT AGG-- A TT---- TGCTTT
4 GCTTGCCATGCTTTTGGTGC GGAGAAAG AGGAGGA TGC GCCA
TTGTGCATCTTTTTATGAGC CTTCTTTC TTTTTCT ACG TGGT
TTTCTTC GAGTA - TGTTCG ------
GAM10758 7825 GGAGAACTGAGATCCTGTTT AC A CC T A GCAAGTTAA
2 TTTGAATGCAAGTTAAATAC GGAGA TG GAT TGT TTTTG AT
AAAATACAAAATCCACTCTC CCTCT AC CTA ACA AAAAC TA
C C- - AA T A ---------
GAM10759 4921 GGAGAAGAAGAATTGGCCAT A AGAATTGGC AAAG AAAAA
3 CTTAAAAAGCGGGTAAAAAA GG GAAGA CATCTTAA CGGGT
CCTGGGTTAGGGTGTGGTTT CC CTTTT GTGGGATT GTCCA
TCACC A GGT------ GG-- -----
GAM10759 5086 GGAGAAGAATGAAGTGGACC - AATGA ACCT G CTCCT
5 TGGTTGTTCACTCCTTGAAG GGAG AAG AGTGG GGTT TTCA
GACCTGCCCACTGTGCTTCC CCTC TTC TCACC CCAG AAGT
TCC C GTG-- CGT- G -----
GAM10760 7363 GGAGAAGCGCGAGGGCTACG A AGG A------- CCTGA
9 AGCGTCTCCTGAAGATGCAA GGAGA GCGCG GCTACG GCGTCT
AACCAGCGTGGCGGCCGCGC TCTCT CGCGC CGGTGC CGTAGA
TCTCT - CGG GACCAAAA -----
GAM10761 4667 GGAGAAGCTAGAGGAGGAGG AGCTAGA GA AAG-- GAAC
2 CCAAGCTAAAGGAACTTTTA GGAGA GGAG GGCC CTAAAG
GAGAAAGGCTGATTCCAATC CCTCT CCTT TCGG GATTTT
TCTCC CTAA--- AG AAAGA ----
GAM10761 15969 GGAGAAGCTGAAGAGAGATG AAG GA GA- GTT CA-- A ATCATGGA
4 TGGAGTTTCTAGTGCAGCTG GGAG CTGAA GA TGTGGA TCTAGTG GCTG AG
AAGATCATGGACTACAGCCT TCTC GGCTT CT GCACCT GGATCGT CGAC TC
TCTGCTAGGCATCCACGACA GG- A- ACA AC- CTTC A --------
TCATTCGGGGCTCT
GAM10762 7321 GGAGAAGGCCTGGATGACTT AA CT G TT T AGAGAGA
5 GGGATGGGGAGAGAGACCCC GGAG GGC GGAT AC GGGA GGGG
TCCCCTGTGATCCTGCCGCT CCTC CCG CCTA TG CCCT CCCC
CC G- T- G TC - -------
GAM10762 14759 GGAGAAGGGGGAGATGTTGA -- - AT- T - CAGC
9 GCATGTTCAGCAACGTGGCT GGAGA AGG GGGAG GT GAGC ATGTT
TCGCTGGCTCCCACTTTGTC CCTCT TTC CCCTC CG TTCG TGCAA
TCC GT A GGT C G ----
GAM10763 15488 GGAGAAGGGGGAGATGTTGA G - AT- T - TCAGCA
0 GCATGTTCAGCAGCGTGGCT GGA AAGG GGGAG GT GAGC ATGT
TCGCTGGCTCCCACTTTGTC TCT TTTC CCCTC CG TTCG TGCG
T G A GGT C G ------
GAM10763 11097 GGAGAAGGGGGAGATGTTGA -- - AT- T - TCAGCA

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1          GCATGTTCAGCAGCGTGGCT GGAGA  AGG GGGAG   GT GAGC ATGT
           TCGCTGGCTCCCACTTTGTC CCTCT  TTC CCCTC   CG TTCG TGCG
           TCC                GT  A    GGT  C    G   ------
GAM10763 2058   GGAGAAGGGGGGGAGATGTTG   G   G    AT-  T   -   TCAGCA
3          AGCATGTTCAGCAGCGTGGC GGA AAGG GGGAG   GT GAGC ATGT
           TTCGCTGGCTCCCACTTTGT TCT TTTC CCCTC   CG TTCG TGCG
           CT               G   A    GGT  C    G   ------
GAM10766 15479  GGAGAATCACTTAAATCCAG    AA     A----     AA  C  GGTT     A  CAAGATCAC
8          AAGGCAGAGGTTGCAGTGAG GGAG  TCACTTA    ATCCAG  GG AGA   GCAGTG GC
           CCAAGATCACGCCACTGCTC CCTC  AGTGAGT    TGGGTC  CC TCT   CGTCAC CG
           TCCAGCTGGGTGACAGTGAG    AG     GACAG    GA  -  ----    -  ---------
           TGAGACTCC
GAM10767 14823  GGAGAATCACTTGAACCCAG    AA  A   GAA   ----   -   AG      GGGCCAAG
5          GAGGCAGAGGTTGCAGTGGG GGAG  TC CTT   CCCA   GGAG GCAG  GTTGCAGT
           CCAAGATTGCAACACTGCAC CCTC  AG GAG   GGGT   CCTC CGTC  CAACGTTA
           TCCAGCCTGGGCAAGAGCGA    AG  C   AAC    CCGA   A   A-      --------
           GACTCC
GAM10794 17303  GGAGAATTGCTTGAACCCAG    AA     GA--  CAGG   GG   T     A-  TGAGATC
2          GAGGCGGAGATTGCAGTGAG GGAG  TTGCTT    ACC    AGGC  AGA TGCAGTG  GC
           CTGAGATCGCACCACTGCAC CCTC  AATGAG    TGG    TCCG  TCT ACGTCAC  CG
           TCTAGCCTGGTGACAGAGTA    AG     ACAG  ----   A-   C      CA  -------
           AGACTCC
GAM10799 1821   GGAGAATTGGAGAGCTGGTA   AGAA   GA-    G-   -    --   AAGAAAGAATG
7          CATTATTTGAAGAAAGAATG GG    TTG   GAGCT  GTAC ATTAT  TTG
           CAACAGTGGTGGTACAGAGC CC    AAC   CTCGA  CATG TGGTG  AAC
           TCGAACAAAACC         AA--  AAG    GA   G    AC  -----------
GAM10800 22109  GGAGACAAAGTGGGAGCAGT     CAA     ----------------     AAGTCA
5          GAAGTCACGCTGCTGAACAT GGAGA   AGTGGGA            GCAGTG
           GCTCAATATCTCCCGCTTCT CCTCT   TCGCCCT            CGTCGC
           CC                 ---      CTATAACTCGTACAAGT     ------
GAM10801 15447  GGAGACAGGGAGAGGCTCTT  - A    A   GC     G    AG  GTT    GAGCCTCA
4          CTGCGTGTAGTGGTTGTGCA GG AG CAGGG GAG  TCTTCT CGTGT  TG   GTGCA
           GAGCCTCATGCATCACGGAG CC TC GTCCC CTT  AGAAGA GTACG  GC   TACGT
           CATGAGAAGACGTTCCCCTG  G  -    -  GC    -    AG  AC-    --------
           CTGCC
GAM10802 2130   GGAGACATTGTGCATCTTAG      A   TG  TCTTAGTTTG      ATAATTACAAAG
1          TTTGGGGTTATATAATTACA GGAGAC TTG  CA        GGGTTAT
           AAGATGACCCTGTGCAAGTT CTTTTG AAC  GT        CCCAGTA
           TTC                  -  GT  ----------      ------------
GAM10806 13922  GGAGACTGATCCCCTCTGAG    A   A       GAG    - TG       A  A-  CTAA
2          TCCTCTGCCCTTCCAAGGAC GGAG CTG TCCCCTCT   TCCT C  CCCTTCCA GG  CA
           ACTAATGAGCCTGGGAGGGT CTTC GAC AGGGGAGG   GGGA G  GGGAGGGT CC  GT
           GGCAGGGAGGAGGGGACAGC    -  -       A--    C GT       -  GA  ----
           TTC
GAM10807 22915  GGAGAGAAAAGAAAGCCAAA      AAAAGAAAG   AAC    CCC      AAAAATA
0          CCGTTCCCTGGGTGGAAAAA GGAGAG       CCA   CGTT   TGGGTGG
           TATCGCCCAAATGTGTGGAT CCTTTC       GGT   GTAA   ACCCGCT
           GAAGTTGCTTTCC            GTTGAAGTA   GT-    ---      -------
GAM10810 1984   GGAGAGAGCCAGAAAACAGA      GCC    -    T TG AG--  A         TGGAATTGC
5          TCTGGAGGCAGCAGTGCTGG GGAGAGA   AGAAA ACAGA C  G    GC GCAGTGCTGGA
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ATGGAATTGCTCTAGCGCTG CCTCTTT TCTTT TGTTT G T CG TGTCGCGATCT
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GAM10812 17039 GGAGAGCACGGTCTGAATCT C AATCT AA-- G GAGT
2 GCACAGAGCAAGATGCTGAG GGAGAGCA GGTCTG GCACAGAGC GAT CT
TGGAGTCGGGGGCTTTGTGC CTTCTCGT CCGGGT CGTGTTTCG CTG GG
TGGGCCTGCTCTTC - ----- GGGG A ----
GAM10812 10310 GGAGAGCATCTTTATTGTGG AGAGCA AT G ----- CCG
9 GGAGGGGCCCGGCCCCCAAA GG TCTTT TGT GGGA GGGGC
GTTCTGACACCAAAGACAGA CC AGAAA ACA TCTT CCCCG
CACC ACAGAC CC G GAAAC ---
GAM10816 5144 GGAGAGGCGAGGACCGGTAT A CC TATC GA GGACG A GGGGA
4 CTGGAGACTGGGGACGGAAG GG GAGGCGAGGA GG TGGA CTGG GA GC
CGGGGAGCTCAGACCGGGAT CC CTCCGCTCCT TC ACCT GGCC CT CG
CCATTCTCTCCTCGCCTCCC - C- TT-- AG AGA-- - -----
GAM10817 15481 GGAGAGGGCAATCTTGGCCT CAATCTT TCTCGT CTA T---------- TCC
3 TTATCTCGTGAGGCTAGGGA GGAGAGGG GGCCTTTA GAGG GGGAGGG CC
GGGTCCTCCTCCATCTTTCT CCTCTTCC TCGGAGGT CTCC CCCTCCC GG
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TTAATGACATTCCCCTCCCA TCC TCTACA
CCTCTCCTTTGGAGGCTTCT ATCTT
CCTTCTCC TAGAG
AT- ------
GAM10819 2921 AAAGACTCGTTTTGTCTTCT T T CTCTTCCCC GTAA
0 CTTCCCCTGAAGTAATTTAA AAAGACTCGT TTG CTT TGAA
ACTCCCAAAGCAGCACGAGT TTTTTGAGCA GAC GAA ATTT
TTTT C - ACCCTCAA- ----
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7 TTATTCCTTCTGTAGGGTAG AAAGAG TTA TGTTTA GT GGGTAGA
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TACACTAAACATGTATGTAG - GTATGT- CACATTCT A ------
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2 ATGTAATGTGCATACCATAA AAAGA A GC TATTGA TGTGCAT TAAATT
ATTCTTTGATTTAAAGTGTA TTTCT T TG GTGACT ACATGTG ATTTAG
CAATTCAGTGTTGTTGTTTC T GT TT TA----- AA-- ----
TTT
GAM10824 8984 AAAGATGCTGTCCGTGCGCG CTG T CGTG C- G C TTCCTCGGC
2 TGCTGCGGCGTGGTCCGCGC AAAGATG TCCG GCG CTG GGC TGGTCCG GCCC
CCTTCCTCGGCGGGCCGGAC TTTCTAC GGGT CGT GAC CTG GTCAGGC CGGG
TGGTCTCCAGAAATGCTTGG TT- T AAA- CT - - ---------
GTTCATCTTT
GAM10824 8908 AAAGATGCTGTCCGTGCGCG CTG TGC G C- GT C TTCCTCGGC
3 TTGCTGCGGCCGTGGTCCGC AAAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC
GCCCTTCCTCGGCGGGCCGG TTTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG
ACTGGTCTCCAGAAATGCTT TT- TT- A CT -- - ---------
TGGGTTCATCTTT
GAM10825 20672 AAAGATTTACGTTTGTATAT A TT ATTA AA CAT
4 TAGTAACTAGTGCATTACTA AAAGATTT CG TGTAT GT CTAGTG
GAGCAGGTGCAGGTGAGGTC TTTCTGGA GT ACGTG CG GATCAT

```
          TTT                  - GG    GA-- A-     ---
GAM10827 2671   GGAGAGGTGGAGGGCACCCT             C  TT GG  AGGACC
0          TTGTGGAGGAGGACCCCTAA GGAGAGGTGGAGGGCA CCT GT AGG
          ACAGGATGCCCTCCACCTCT CCTCTCCACCTCCCGT GGA CA TCC
          CC                        A  -- AA  ------
GAM10829 7102   GGAGAGTTTGCTTACACTTA      -    ACA   GCTGCCA-------- TATGA
9          CGCTGCCATGTATGACAAAG GGAGAGT TTGCTT  CTTAC           TG
          GACCCTTCCGGAGTAAGAAG CCTTTCG GACGGA  GAATG           AC
          GCAGTGCTTTCC           T    A--   AGGCCTTCCCAGGAA -----
GAM10832 6725   GGAGATCATTGACCTTGTGT       TT -   TGTT    AATTC AA   CTGA
3          TGGACCGAATTCGCAAGCTG GGAGATCA GA CCTTG   GGACCG   GC GCTGG
          GCTGACCAGTGCACCGGTCT CTTTTGGT TT GGGAC   TCTGGC   CG TGACC
          TCAGGGCTTCTTGGTTTTC        TC C   T---    CA--- --    ----
GAM10840 14830  GGAGCAACAATCGTCATGCT    AACAATCG  TGCTAT  TA   TCCA
1          ATCCTTAGACATCCATGTTC GGAGC      TCA    CCT GACA
          TAGGTACTCTGAATAGCTCC CCTCG      AGT    GGA TTGT
                        ATA-----  CTCAT-  TC   ----
GAM10842 7395   GGAGCACTGTCATGCCTGCT      T   GC  -  ---   ATAGA
6          TGGGTGATAGATACCCTCTG GGAGCAC GTCAT CTG CTT  GGGTG
          GGACAGCAATGACGTGCTTC CTTCGTG CAGTA GAC GGG  CCCAT
                        -   AC  A  TCT   -----
GAM10844 480   GGAGCAGATACGGTATTTAC   G  G  A   ATTT   G   AA   C  AGT-    TCAGCT
4          ATGAGGAATTCCAGAGTCCT GGA CA AT CGGT   ACAT AGG  TTC AG   CCTGG
          GGTCAGCTCCAGGTTGGCTG CCT GT TA GTCA   TGTA TTC  AAG TC   GGACC
          AAGGCTTGATGTCGACTGAT   A  G  -   GC--   G   GG  - GGTT   ------
          GTGATCC
GAM10845 17077  GGAGCAGCGGCGGCTTGAGG       ---   G   - ACCC--------  GAGA
5          ACCCGGGGAGACCCTCAAGA GGAGCAGC  GGCG CTTGA GG         GGG
          ATCGACCCATCAGGACGCCA CTTCGTCG  CCGC GGACT CC         CCC
          GAGCTGCTTC              AGA   A    A  CAGCTAAGAACT  ----
GAM10847 16229  GGAGCAGTGAGCACAGCAGT      T   A   --       T TG   AAGCATGGGATTC
7          TCTGGCTTGCTGTCCAAAGC GGAGCAG GAGC CAGCA  GTTCTGGCT GC  TCCA
          ATGGGATTCTGGAGTGCAGC CTTCGTC CTTG GTCGT  CGAGACCGA CG  AGGT
          CAGAGCCCTGCTGAGTTCCT     -   A    CC       - TG   ----------
          GCTTC
GAM10851 7011   GGAGCCACCACGGGGCTGCT    CACCACG        CTC  TTTGCCTCTTCC
3          GGCTCAGTTTGCCTCTTCCC GGAGC     GGGCTGCTGG   AG
          TCCCCCAGCAGTCCAAGCTC TCTCG     CCTGACGACC   TC
          T                AA-----        CCC  ------------
GAM10852 7929   GGAGCCAGGACAGGGCGAGG   A    ACA---    A ----   GGA   TCGGGGAT
4          GGCCGGAGGCTCGGGGATGC GG GCCAGG    GGGCG GG   GGCC   GGC
          CGAGGTCAGTACCACGCCCG CC CGGTCC    CCCGC CC   CTGG   CCG
          ACCCGCCTGGCACC       A    GCCCAG    A ATGA   AG-  --------
GAM10853 16176  GGAGCCATTGTGGACGTTCC      TTG   G--   G TG  AGGA-   TT  T  GTAGTTG
3          AGTTGGTGAGGAGCTGTTGG GGAGCCA  TGGAC  TTCCA T  GTG   GCTG  GGG CGT
          GTCGTGTAGTTGATGCCCTT CCTTGGT  ACCTG  AAGGT A  TAT    TGGT  CCC GTA
          GGTAATGCTATTGATGGAAA      TA-   GGA   - GT  CGTAA   T-  -  -------
          GGGTCCAATTGGTTCC
GAM10854 244   GGAGCCCGCAGCGGAGGAGG  AG      GGAGGAGGGG  C   G  A    GCGA
8          GGCCGCGGGCGGGAGGCGCT GG  CCCGCAGC        CCG GGGC GG GGCGCT
```

GCGAGGCGCTGCTGGCCCTC CC GGGCGTCG GGC CCCG TC TCGCGG
GGGCTGCGGGAGCC GA ---------- T G G ----
GAM10856 2303 GGAGCCGGGGGCGGGGCCGA - CG - C - CG- - - C AGA CA CA
7 GGCCGCTGACGCGGCGGCGG GGAG C GGGGCGG GG CGAGGCCGCTG ACG GC GGC GG GGC
GT CCCGGG
CGGCAGAGTCACCCGGGCAG CCTC G CTCCGCC CC GCTCCGGCGAC TGC CG CCG CC CTG CA
GGGCTC

CCTCGGGACCGGTCACCGGC C AT A A C CAA G G A GC- -- --
CGGCAACCGTCCAGCGGCCT GC
CGACCACCGCCTCTAGCCTC
C
--
GAM10858 11454 GGAGCCTGGGTCCGGATAGG T T TA TACTCA GGCAGCGA
5 TACTCAAAGCTGGCAGCGAA GGAGCC GGG CCGGA GG AAGCT
GCTTCCTCTGGCTCGGCTCC CCTCGG CTC GGTCT CC TTCGA
- - -- ------ --------
GAM10860 12124 GGAGCGAGGCAGCGCGCCCG AGG --- T-- - G GCGG
0 GCTCCCGCGCCATGGGGCGG GGAGCG CAGCGCG CCCGGC CCCGC GCCAT GG
CTGGTGGCTGTGGGCTTGCT CCTCGC GTCGCGC GGGTCG GGGTG CGGTG TC
GGGGATCGCGCTGGCGCTCC G-- TAG TTC T G ----
GAM10860 21874 GGAGCGCACCGAGCGCACCG A- C CG C GA AC CAGGC
3 CCCGGGGACTACTGCTGCGC GG GCGCAC GAG CAC GCCCGGG CT TGCTGCG
AGGCTGCGGCGCCGGGACTC CC CGCGTG TTC GTG CGGGCTC GG GCGGCGT
GGGCGTGTACTTGTGCGCCG GC - AT - AG CC -----
CC
GAM10860 22997 GGAGCGCCGCCCTCCTCCCG C G C AAACC G GA TG GCAAGA
9 AAACCGGCCGGGGCGAGTGG GGAG GCC CCCTC TCCCG GGCCGGG C G GCT
CTGCAAGAAGCTGCGGTTTG CCTT CGG GGGAG AGGGC CCGGTTT G C CGA
GCCCGCGGGAGAGGGGGGCT - G - GC--- G -- GT ------
TCC
GAM10861 10468 GGAGCGCCTGGTCGGAGCCT CCT TCG ----- TGT -- TGAC
0 GTGTCGCTGCTGACGCCTAG GGAGCG GG GAG CC GTCGCT GC
CGACCTGGACCCCCTCATCC TCTCGC CC CTC GG CAGCGA CG
TGACGCTCT AGT TA- CCCCA TC- TC ----
GAM10861 10308 GGAGCGCTGGATGAAAGAAG CGC GAAA - -------- TGCATTT
4 ACTGCACTCACTGCATTTGT GGAG TGGAT GAAGACT GCA CTCAC
GAGGTTTGTGCTGCGAGTTT CCTC ACCTG CTTTTGA CGT GAGTG
TCCAGTCCAACTCC A-- AC-- G CGTGTTTG -------
GAM10861 17209 GGAGCGGATGGGCGGCGCGG ATGG -- C - GCAG ACGA
8 GCGGCGAGGGCAGCGACGAC GGAGCGG GCGGCGC GGG G GCGAGG CG
GACACCTCGCTCACCTGAGC CTTCGCC CGCCGCG TCC C CGCTCC GC
GCCGCACCGCTTC A--- AG A T ACA- ----
GAM10862 475 GGAGCGGCGGCGCCCGCAGC G- - C AA G - TG G GTC
2 AATCACAGCAGTGCCGACGT GGAGC GCGGCG C CGCAGC TCACA CA G CC AC
CGTGGGTGTTTGGTGTGAGG TCTTG CGCCGC G GCGTCG AGTGT GT T GG TG
CTGCGAGCCGCCGCGAGTTC AG C A G- G T GT G ---
T
GAM10862 17801 GGAGCGGGGAAGCGAAGTGC A -- C - GAGAGACCCCGGACCCCA
6 GAGAGACCCCGGACCCCAGC GG GCGG GGAAG GA AGTGC

GCTGTCTCTTCCCGCCGCCC CC CGCC CCTTC CT TCGCG
- GC T G ----------
GAM10862 14883 GGAGCGGGGGAAGGAGTTAA CG GTTAATGAAACT GCAC
9 TGAAACTGTATTGCACAATG GGAG GGGGAAGGA GTATT
CTCTGATCAATCCTTCTTTT TCTC TTTCTTCCT CGTAA
TCTCT TT AACTAGTCT--- ----
GAM10863 5063 GGAGCGTGCTCGACCTTTCT T TCG TTTC -- AGAT CCAACCTGCCCAA
5 CTCCAGTGGAGATTTGCCAA GGAGCG GC ACC TCTCCAGT GG TTG
CCTGCCCAACAATGCCAAGC CTTCGC CG TGG AGAGGTCG CC AAC
TGGAGATGGTGCCCGCTTC C --- T--- AA GT-- ----------
GAM10865 13557 GGAGCTCAACCCTCGGCGGC A C GGCCT TTCCC - CCAA
3 CTGATTCCCAGGGGTCCAAG GG GCTCAACCCT GGC GA AGGG GT
CACCCTCATTCTCTGAGTCA CC CGGGTTGGGA CTG CT TCCC CG
GGGTTGGGCACC A - AGTCT TAC-- A ----
GAM10867 6735 GGAGCTCGAGGCCCCTGGAG TC---- CCC AATT -- CCCCA
1 GAATTGCTACACCCCCAGTG GGAGC GAGGC TGGAGG GCT ACAC
TATGGTCAGCTTCTAGCTTT CCTCG TTTCG ATCTTC TGG TGTG
ATATTTGCTCC TTTATA --- GAC- TA -----
GAM10868 2310 GGAGCTGACCGGGAGCTGGG CT C A G CG - A A ACCCT G TAAG
4 GGCCACGGGCCTAGGAGCAC GGAG GAC GGG GCTGG GGCCA GGC CT GG GC GGTCA GGC

CCTGGTCAGGGCTAAGGCCA CCTC CTG CCC CGACC TCGGT CCG GA CC CG CCGGT CCG

TGGCCCCGCCCCCAGCGCCA CT C A G CA C C C CC--- A ----
CTGGCTGCCAGCACCCCGTC
TCCTCC
GAM10868 13841 GGAGCTGACTGGGTGTTGCT A ACT CTG CAA T TTGTGTTAGAT
5 GAAGCAAATGTTGGACTTTG GG GCTG GGGTGTTG AAG ATGT GGACT
TGTTAGATAGTCTTGCATAT CC CGAC CTTACAGC TTC TACG TCTGA
CTTAATCGACATTCCCAGCC - C-- TAA TA- T ----------
C
GAM10872 2080 GGAGCTGGTTCAGGAGCTGG A TT-- CT C G T TCCCTC
3 CCAGATTAGATCCCTCTCTA GG GCTGG CAGGAG GG CA AT AGA
TGTGACCCTCTTGCTTCCCA CC CGACC GTTCTC CC GT TA TCT
GCCC - CTTC -- A G - ------
GAM10873 15718 GGAGCTGTGTCTACTCTGCG TC TCT G C CCCACCC
0 GGCCTGAGCCCACCCCTCAG GGAGCTGTG TAC GC GGC TGAG
CCAGTTGTATCCACAGCTTC CTTCGACAC ATG TG CCG ACTC
CT T-- A - -------
GAM10873 10207 GGAGCTGTTGGGTCGTGTAG - GT G AGTTGA C TG ATGC
2 TTGATGCCCTTGGTAATGCT GGAGCTG TTGG C TGT TGCC T GTA
ATTGATGGCAACAGGGTCCA CCTTGGT AACC G ACA ACGG A TAT
ATTGGTTCC T TG G ------ T GT ----
GAM10874 4848 GGAGCTTCTTACTGCCTTTT ---------- T TC TCCCC
5 CCTGTCCCCTAGTCAACGGC GGAGCTTCTTACT GCC TT CTG
ATCCATCTTCCTGGTAGGAG CTTCGGAGGATGG CGG AA GAT
GCTTC TCCTTCTACCTA C CT -----
GAM10875 7203 GGAGCTTGTGTCGTCTAAGG A TG C AA CG G CAAGAGAT
3 TGTCGGGGGCCCAAGAGATG GG GCT TGT GTCT GGTGT GG GCC
GTGTCTAGCGCCAAGGACAC CC CGG GCA CAGG CCGCG CT TGG

GGTGGCACC A TG - AA AT G --------
GAM10878 22010 GGAGGAACCCTGGCTTGAAG CC CTT GC CTGGC
0 GCTGGGGGGCTGGCCCCCCC GGAGGAA CTGG GAAG TGGGGGG
AAACTTCCCCCCAGTTTCCT CCTCCTT GACC CTTC ACCCCCC
CC T- CCC AA -----
GAM10879 19713 GGAGGAAGCACCCCTGCCCC AA - C- TCCCGAA - CCAGA
5 AGGGTCCCGAAGGCCCCAGA GGAGG GCA CC CTGCCCCAGGG GG CC
GGACCCATATCCCCCTGGGG CCTCC CGT GG GACGGGGTCCC CC GG
CAGTTGGTTGCCCCTCC C- T TT CCTATAC A -----
GAM10880 476 GGAGGACAATGACACATTTT -- A- AC- T TG GGTCTTGTA
9 CTCTGGTGGTCTTGTAATTG GGA GGAC ATG ACATT TCTC GT
GGGATGATGTAAACATGAGT TCT TCTG TAC TGTAG AGGG TA
CTAATCT AA AG AAA T GT ---------
GAM10884 15564 GGAGGAGCATTTCCTGCAGG A -- ATT---- G AG AAGAAGGAGGAGG
5 AGGCTAAGAAGGAGGAGGGG GG GG AGC TCCT CAGG GCT
CTCCCTGAGGACGAGCTGGC CC CC TCG AGGA GTCC CGG
TGACCCC - AG GTCGAGC - CT ----------
GAM10885 15579 GGAGGAGCTTTGCTTTAGTT TTGC TT TTA AAGTT - TT AAATAAA
8 AGATGTCTTATTATTAAAGT GGAGGAGCT TTTAG AGATGTC TTATTA ACCTAT TA GTTGG

TACCTATTATTGTTGGAAAT TTTCCTTGG AAGTT TTTACGG AATGGT TGGGTA GT TAATC
AAACTAATTTTGTATGGGTT TTAT -- TAC AGATT T TT -------
TAGATGGTAACATGGCATTT
TTGAATATTGGTTCCTTT
GAM10887 21928 GGAGGAGGGCACTGGGGCTG AG AC- CTGT G AC- TT-- ATG
6 TGCTGCAGGACGGGCTTCCG GG GAGGGC TGGGG GCT CAGG GGGC CCGGG
GGATGCCCGGCCGCGCCTTT CC CTTTCG GCCCC CGA GTCC TCCG GGCCC
CCCTGAGCCCCCGCCGGCTT CT GCC ---- - CTT CGCC ---
TCTCCC
GAM10888 15370 GGAGGAGTCGGACGAGGATA AG C ACGAGGATA - T TCTTT
2 TGGGATTTGGTCTCTTTGAC GG GAGT GG TGG GATT GGTC
TAATCACCAGAAAGCAACCA CC TTCA CC ACC CTAA TCAG
ACTTAGCC GA A AACGAAAG- A - -----
GAM10896 10855 GGAGGCAGACAGGTGAATGA GAC- - GTACTT A GCA
1 GTACTTAAAAATATCAGGGG GGAGGCA AGGTGAA TGA AAAAAT TCAGGG
CATCTTGACATTTTTTCACG CTTCTGT TTTATTT ACT TTTTTA AGTTCT
ATCACTTTATTTCCAATGTC AACC C AGCACT C ---
TTC
GAM10899 11264 GGAGGCATTTCCCATCCCAA CAT- CATC AA GA TG CTA AATA
4 ATCTGACCTGACTAATTCAA GGAGG TTCC CCA TCT CC A ATTC
TAGAATTTGGGGAAGAGCTG CTTCC AAGG GGT AGA GG T TAAG
GCAGGAATATACCTTC ATAT AC-- CG AG GT --- ----
GAM10901 2289 GGAGGCCATGGGGCTCTTTT CATGG TG CTG CCTTTCTCATCCTCT
2 GTCTGATGGTAGCCTTTCTC GGAGGC GGCTCTTT T ATGGTAG
ATCCTCTTTGCCATGTGAAG CCTCTG CCGAGGAA G TACCGTT
GAGCCGTCTCC ----- GT --- ----------
GAM10901 10326 GGAGGCCCAGGTCCTCACCC - CAG C CC C CTCATAA C AACCATGA
5 TGGCCCAGCGACTCATAAAG GGAGG CC GT CTCAC TGGCCCAG GA AGT ATGC
TCATGCAACCATGAGCATCA TCTCC GG CA GAGTG ACCGGGTC CT TCA TACG
CTGCCTCCTGGGCCAAAGTG T AAA C AA - CCG---- C --------

AGCACAAAGGTCCTCT
GAM10904 9918 GGAGGCGAGACCCCCTAGTA - CCTAGTAAC A G TG TACT
0 ACAGAGGCGGTGGCTACTGC GGAGGC GAGACCC AG GGC G GC
TGCGGCCACTGGGTTTCGGC TCTCCG CTTTGGG TC CCG C CG
CTCT G --------- A G GT ----
GAM10911 19704 GGAGGCTGCCCGAATTTGTG ------ - A G ATAAGTACA
2 CCAATAAGTACATGGTAAAA GGAGGCT GCC CGA TTT TGCCA
AGTTGTGGCAAAGATGGCTT CCTTCGG CGG GTT AAA ATGGT
CC TAGAAA T G A ---------
GAM10911 13840 GGAGGCTGCCCGAATTTGTG ------ - G- ATAAGTACA
3 CCAATAAGTACATGGTAAAA GGAGGCT GCCCG AATTT TGCCA
AGTTGTGGGCAAAGATGGCT CCTTCGG CGGGT TTGAA ATGGT
TCC TAGAAA G AA ---------
GAM10914 16406 GGAGGGAAATGGATGAATCT A- T GAATCTGGC TT CAC
1 GGCTCGTTTTAAAATCACGT GGAGGG AA GGAT TCGTT AAAAT
TTTCTGACGAATCCTTTGCC CTTCCC TT CCTA AGCAG TTTTG
CCTTC CG T --------- TC ---
GAM10917 2150 GGAGGGAGGGTTTCTGGTGA GG- G - G A- A- GAGAAGAG
3 CTACCCGAGAAGAGGGGGGG GGA GAG G TTTCTG TG CT CCC
GGGCGGCGGAGAGTGCTTGC TCT TTC T AGAGGC GC GG GGG
ATCT ACG G G G GG GG --------
GAM10917 11935 GGAGGGATACAATTGGTGTC TACAATT-- ---------- -- AATG A TTT-----
7 ATGATCGGAATGTGGTTACC GGAGGGA GGTGTCA TGAT CGG TGGTT CCAT C
ATTTTCAGTGCACCCAATTA CCTTCCT TCACAGT ACTA GTC ACCAA GGTG G
CTGTTATCGTTGTGGGAACC TATAAAATT AGATTAAGGT TC GG-- G TTGCTATT
AGGCTGCTATCATGGAATTA CACCCAAT
GATGACACTTTAAAATATTC AGTG
CTTCC TCAT

GAM10919 13651 GGAGGGCCAGGGTTTCCCCG CC ---- CC-- C CTTATCT
4 GGCGCGGGGCTTATCTTCCT GGAGGG AGGGT TTC CGGGCG GGGG
TTGCCTGCTATGAAAAACAT CCTTCC TCTTA AAG GTCCGT TCCT
TCTCACCTTCC AC CAAA TATC T -------
GAM10919 1376 GGAGGGCCCGCATCATCAGG A -- ATC A --------- CCA
5 AAAGCCCCAGGCTTCACATT GG GGGCCC GC ATC GGA AAGCC
TGATCCCGGTTTGGCGGGGG CC CCCGGG CG TGG CCT TTCGG
CCCCC - GG GTT C AGTTTACAC ---
GAM10921 10122 GGAGGGCTGGGGCGGTGCAG C---- T AG GA CAGG
1 GCTCTGGGACCCAGGGGCCA GGAGGGCTGGGG GG GC GCTCTGG CC
GGGTGGCTCTTCTCTCCCCA CCTCCCGACCCC TC CG TGGGACC GG
GCCCTCC TCTCT T G- -- ----
GAM10922 6695 GGAGGGGAGTGCCCTCTGGC - CC CC- CTTCCGA
2 CAGGGGCTTCCGACTCCTCT GGAGG GGAGTG CTCTGG AGGGG
CCCAGGGTATACTCCACCTT CTTCC CCTCAT GGGACC TCCTC
C A AT CTC -------
GAM10922 2345 GGAGGGGAGTTTGTTTTTTT A A G CCC GCCCCCCC
3 TTTTTTCCCCCCCCGGCCCCC GG GGGG GTTT TTTTTTTTTTTTTCCCC G
CCCCCGGGGAAAAAAAAAAA CC CCCC CAAA AAAAAAAAAAAAAGGGG C
AAGAAACCCCCCCC - C G CC- --------
GAM10922 22177 GGAGGGGCCATCCACAGTCT - -- TCTGG G GTGA

9 TCTGGGTGGCAGTGATGGCA GGAGGGGC CAT CCACAGTCT GTG CA
TGGACTGTGGTCATGAGTCC CCTTCCTG GTA GGTGTCAGG TAC GT
TTCC A CT ----- G ----
GAM10923 15838 GGAGGGGGCCCTCAGGGCTT A ---- C- T TTG
7 CCTGGTTCCTTGGGCACCGG GG GGGGGCCCT CAGGG TTCCTGGT CC
GGGCTCCTTGTTCCAGGGCC CC CCCCCGGGA GTTCC GGGGGCCA GG
CCCCC - CCTT TC C ---
GAM10924 5197 GGAGGGGGCTGCCCACGTTT GG CA----- - AC TTGT
1 TAGTAACACTTTGTGGTCCT GGAGG GCTGCC CGTT TTAGTA ACT
GCTGGCAACGGAATCGCGGC CCTCC CGGCGG GCAA GGTCGT TGG
GGCACCTCC A- CGCTAAG C CC ----
GAM10924 7386 GGAGGGGGTTTGCTGGGGAA A -- ----- AA CCAT
6 CTGGCGCCATCGCCGGGACT GG GGGGGTT TGC TGGGG CTGGCG
CCAGAACCGCAGAAGCCTCC CC CCTCCGA ACG ACCTC GGCCGC
CC - AG CCAAG AG ----
GAM10924 12114 GGAGGGGTCCCTGCAGAAGC TCCCT A ---- TG TGGAA
7 GTGGCATTGTGGAACAATGC GGAGGGG GCAGA GC G GCATTG
TGTACCAGCATCTGCTCCCT TCTCCCT CGTCT CG T CGTAAC
CT ----- A ACCA GT -----
GAM10925 4630 GGAGGGTACCGGGGCACCCC TA ------- CCC GCCCAT
6 CAGCTGCCCATGGCTGGACT GGAGGG CC GGGGCA CCAGCT
TGCCCTTTGACAAGGGGCCC CCTCCC GG TCCCGT GGTCGG
TCC GG AACAGTT TCA ------
GAM10926 10734 GGAGGGTGTGTTTAAGGTGC T A - TT- TTCCAATT CACTCT
9 TTTTGTCCTTCCAATTGGGC GGAGGGTG GTTT AG GTGCT TGTCC GGG
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ATACAGCACTCTCAGATCAC - C T CAT TTCCTCTC ------
TTTTT
GAM10927 10054 GGAGGTAATAAAGTCAAAGA TAATAA T AA TCCTTC TTTAG
9 ATCCTTCGGTTGAATTTTAG GGAGG AG CA GAA GGTTGAAT
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CCTTCCCTCT CTTCC- - GG CTT--- -----
GAM10930 2166 GGAGGTCATGAAACCGCCGT - T- GAAA CGTA - CTTG
2 AGCGCTTGTCCTTGGGCGGG GGA GG CAT CCGC GC GCTTGTC
CTGCCCCAGCGGAAGTGCTC CCT CC GTG GGCG CG CGGGCGG
CATCC A TC AA-- ACCC T ----
GAM10930 1958 GGAGGTCCCCTTCTATTGGG ----- T TT TT TG T CTTTT -- TGA TCA--
3 GCTTGTGATTCCTTTTGACG GGAGGTC CCC TCTA GGGGC G A TC GAC GGGGCT GGTCC

GGGCTTGAGGTCCTCAGGGG CCTCCGG GGG GGGT CCCTG T T AG TTG CCCCGG TCGGG

TTTTCTTCCCATTACCGGGC TATGA C -- TT GT T CCTT- TC --- CCATT
TGGCCCCCTGTTTTCCGATT - TTTTCT
TGTTTGTCCCTGGGCGGGAG GGGG
TATGGCCTCC CCCT
A ------
GAM10931 6962 GGAGGTCTCATAGGGCTACT ------- C T GT T--- C CTCTGCC
0 CAGTCCTCTGGCACCACTCT GGAGGTCTCATAG GG TAC CA CCTC GGCA CA
GCCTGATGCCCCCCGAGGGT CCTCTAGAGTGTC CC ATG GT GGAG CCGT GT
TGCGTACCATCTGGTCTGTG TGGTCTA - C TG CCCC A -------

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GAM10932 4737 GGAGGTGATGACTGTAGAAG CT - A- GT AT-- ATGTATGTAGGA
7 GAGTCTATGATTACCTGATG GGAGGTGATGA GT AG AGGA CT GATTACCTG
TATGTAGGACGGGTAGTTTT TCTCTACTACT CG TC TCCT GA TTGATGGGC
CCAGGTTCCTGACTGGCTTC T- G AG TG CCTT ----------
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GAM10935 10452 GGAGGTGGGAGGGGAGGGCC TGG CACACGAT TGCT
1 ACACGATGCGTTGCTGCGCC GGAGG GAGGGGAGGGC GCGT
CCCCGCCTTCCTCTCACTCC TCTCC CTCTCCTTCCG CGCG
TCT TCA CCCCC--- ----
GAM10936 10267 GGAGGTGGTGGACCTTGTTG A T TTGTTGC C CCTTGT TGGT
0 CTGCTGGCCTCCTTGTCGGG GG GGTGG GGACC TG TGGCCT CGGGG
GTGGTCCCTGTCTGAGGGCC CC CCACC CTTGG AC ACCGGG GTCCC
ATCATTCTGGTTCCCACCAC A - TCTT--- T AGTCT- ----
C
GAM10938 17092 GGAGGTTTGGGGACTTCCTT A A TT CCCC TAAA
9 CAGACCCCCAGTAAACTTGT GG GGTTTGGGG CTTCC CAGAC AG
TTGTGGAGGCCTTCAGACCC CC CCAGACTTC GGAGG GTTTG TC
CC C C T- T--- ----
GAM10941 1705 GGAGTAGCTGGGATTGCAGG --- G ATTG T G CC C TG TTTTTGTATTTTT A
5 TGTGCGCCACCACGCCTGGC GGAG TA CTGGG CAGG GT CG ACCA GCCTGGC A
CGTGG
TGATTTTTGTATTTTTCGTG CCTC GT GACTC GTCC CA GC TGGT CGGACCG T GTACC
GAGACCGAGTTTCACCATGT CTA G CA-- T A TC - GT ---------- A
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TCCTGACCTCAGGTGATCCT GA
CC CT

GAM10943 7762 GGAGTATTTACACTGAGGAC TTTA AC AT-- CT CTTC
4 TAATCTGCTATCTTCATTCC GGAGTA CACTGAGG TA CTG AT
AGTCCCTACCCCTCAGTGCC TCTCGT GTGACTCC AT GAC TA
TGCTCT CC-- CC CCCT CT ----
GAM10943 6703 GGAGTCAAGCACGGGGCAGG GGGG - GA- CAG A T ATAGT ATTT
8 GGCTCATGAGTCCAGTTCTT GGAGTCAAGCAC CAGG GGCTCAT GTC TTCTTT CA GATG
GAG
TACATGATGATAGTGAGATT TCTCAGTTTGTG GTTT CCGAGTA TAG GAGGAG GT CTAC TTC

TCTTTGAGGCATCTGAGAGG GTG- A AAC A-- A - GGAGT ----
AGAGATCAAATGAGCCATTT
GGTGGTGTTTGACTCT
GAM10945 11122 GGAGTCAGGAACTACGGATT G ---- CT ATT GG AAA A- TATGATGTTT
3 TTGGGATAAAGATAAAAGCA GGA TCAGG AA ACGG TTG AT GAT AAAGCAGA
GATATGATGTTTTCTGTTTT CCT AGTCT TT TGCC AAC TA CTA TTTTGTCT
ACATCCAATTTCAATGGCCG - ATCA TT GGT TT AC- CA ----------
TTTTTACTATCTGATCC
GAM10960 10261 GGAGTCTCGCTCTTTTTGCC TC CTTTT CC- T-- G T AGTCTTG
2 CAGGCTGGTGTGCAGTGGTG GGAG TCGCT TGC AGGC GGT TGCAGTGG GC
CAGTCTTGGCTCACTGCAAC TCTC AGTGA GCG TCCG CCA ACGTCACT CG
CTCTGCCTCCTGCGTTCAAG TT ACTT- TCC TCT - - -------
TGATTCTCT

GAM10964 7100 GGAGTCTTCTGCTGGAGGTT AGT TG A TTCC C GCTG
7 CCTTCACTGTGCGTGCTGAC GG CTTCTGC G GG TTCACTGTG GT
CATGGTGAGCCCATTGGCAG CC GGGGACG T CC GAGTGGTAC CA
GGGTACC AT- GT A C--- - ----
GAM10971 5198 GGAGTGACTGGCAGGATCAG --- G -- CA ATTTGTGAAGTTCTCTA
6 ATTTGGGCATTTGTGAAGTT GGA GTGACT GCA GGAT GATTTGGGC
CTCTAGCTCAGGTTCCATTC CCT CACTGA CGT CTTA TTGGACTCG
AATGCAAGTCACAATTCC TAA A AA CC ----------
GAM10971 2178 GGAGTGAGGATGGAGTGTTC TG G --- TC CCCATTTCT
9 AGTGCCCATTTCTCATTTTA GGAG A GAT GGAGTGT AGTG
CATTTTAAAGTCGTTCCTCC CCTC T CTG TTTTACA TTAC
CT G AAA TT ---------
GAM10972 13107 GGAGTGCAAGTAGCTGATGA A CA GCTG G--- CATTTTTTA
7 AGTATGTCGCATTTTTTATG GG GTG AGTA ATGAA TATGTCG
ACATGAAAGTTCGTAAATGC CC CAC TCGT TGCTT GTACAGT
TCCACACC A C- AAA- GAAA ---------
GAM10974 13866 GGAGTGCAGTGGCGTGATCT T T T TCTC GC GC CGCCTCCT
8 CGGCTCACTGCAGCCTCGCC GGAG GCAG GGCG GA G TCACT AGCCT
TCCTGGGCTCAAGTGATTCT CCTC CGTC CCGT CT C AGTGA TCGGG
CCTGCCTCTGCCTCC - T C ---- TT AC --------
GAM10979 7823 GGAGTGGGGCTAGGGGCTGG TG AGG T GG C - CTCA
6 GCGGGGTGGTGGGGGAGCGG GGAG GGGCT GGCTGGGCGGGG GGTG GGAG GGA TG

ATGCTCACATTTCTCTTTTT TCTC TCCGG TCGACCCGTCTC CCAC TTTC CTT AC
CACCCTCTGCCCAGCTGGGC GT G-- - TT T T ----
CTTGCTCT
GAM10983 15661 GGAGTTACATTCCTTGGGAA TT TTCCTT AA C- TTTTACCTT
5 GTTTCTGTTTTTACCTTGCA GGAG ACA GGG GTTT TGT
TCAAACACCCCTCTGTTGTT CCTC TGT CCC CAAA ACG
CTCC T- TGTCT- CA CT ---------
GAM10987 13631 GGAGTTGAAGCCAAACAGCC AG AA------ CAA - - AGGA
6 AAATTCTGCCATTAGGAAGT GG TTGAAGCCA CAGC ATTCT GC CATT
GTGTAAGGGTCCAGCTGATC CT AATTTCGGT GTCG TGGGA TG GTGA
AAGAATGGCTTTAAAATC AA AAGAACTA ACC A T ----
GAM10987 17056 GGAGTTGAATGGTGCATACA A GAATGGT ACAA C CC CCCAGGACCTG GCG
G GA
7 AGGCCATCCCCGTTGCCCAG GG GTT GCAT GG CATCC GTTG AAC CCTTCT ATGG
GACCTGAACGCGCCTTCTGA CC CAA CGTG CC GTAGG CGAC TTG GGAAGG TGCC

TGGGACAGCCGTGGGAAGGA - AGT---- AGA- A T- TGAGCAAAGTA ACA G --
CAGTTATGAAACGAGTCAGC CAG
TGGATGACCAGAGTGCTGAA
ACCC

GAM10988 2326 GGAGTTGCCAGCGTCCCTGG TT GCG - AA- CCTGCAGCCTCTC
3 TGAATGGCCTGCAGCCTCTC GGAG GCCA TC CCTGGTG TGG
CCAGCACACCAGGAGAATGG CCTC CGGT AG GGACCAC ACC
CTTCTCC TT A-- A ACG ----------
GAM10988 2579 GGAGTTGCTCAGAGGCTCAC A CT AG ACCCCCATTG
5 ATGGGCACCCCCATTGGTTC GG GTTG CAG GCTCACATGGGC

GTGTGAGCAGCTGCCCAGCC CC CGAC GTC CGAGTGTGCTTG
C - CC GA ----------
GAM10989 22127 GGAGTTGTATATGTCAAGTC -- GTCAAGT -- --- AGGATA
4 ATTTCCTCAGTCCAGGAAGG GGA GTTGTATAT CATTTC CTCAGTC CAGGA
ATATTTTGAAAGATTGGGTA CCT CAACGTGTG GTAAAG GGGTTAG GTTTT
GAAATGTGCCGTGGTGTGCA AA GTGCCGT AT AAA ------
ACAATCC
GAM10993 22907 GGAGTTTCACTGTTGTTGCC TT GTTGTT AGGT T CA- CTCAGCTC
7 CAGGTTGGAGTGCAGGGGCA GGAG TCACT GCCC TGGAG GCAGGGG CAAT
CAATCTCAGCTCATTGCAAC CCTC AGTGA TGGG GCCTC CGTCTCC GTTA
CTCTGCCTCCGGGGTTCAAG TT ACT--- ---- - AAC --------
TGATTCTCC
GAM10999 6757 GGAGTTTTGCACTATCACCA TT ACTATC ---- C -- A T GATCTCG
3 GGCTGGAGTGCAGTGGTGCG GGAG TTGC ACC AGG TGGAG TGC GTGG GC
ATCTCGGCTCACCGCAACCT CCTC AACG TGG TCC ACCTC ACG CACT CG
CCACCTCCCAGGTTCAAGCA TT AACT-- ACCC - CA C - -------
ATTCTCC
GAM11004 16130 GGATAACAGCAATGTTCAGG ATA A A T AAC GAGATAA
8 GAACAAAGGAGATAACTTTA GG AC GCA TGT CAGGG AAAG
AACTCTGACGTGCCGTGAGC CC TG CGT GCA GTCTC TTTC
C GAG C - - AAA -------
GAM11005 16261 GGATAACTTTTGTTCCACCA AACT TCCAC--- CC TTCA
6 CCCATAGGTTCACCTGTGTC GGAT TTTGT CA CATAGG
TGTCCTCACTGCGAATGATC CCTA AAGCG GT GTGTCC
C GT-- TCACTCCT CT ----
GAM11008 5095 GGATACAAGTGGGGCCATGC A G- CC -- CCCTGACT
8 CTCCCTGGCCCTGACTCCAG GGATACA GT GGG ATGCCTC CCTGG
GCTGGGGTATCCTGAACTGT CCTATGT CA TCC TATGGGG GGACC
ATCC - AG -- TC --------
GAM11009 7859 GGATACAGAGCTGGACTTGC A- ---------- - G----------
4 ATGGGTATTAGGAGATGCTG GGAT CAGAGCT GGACTTG CAT GGTATT
AAGAACTGCCTTTGATGATG CCTA GTTTCGG TTTGAAC GTA TCGTAG
ACAAGTTTTGATATTTACAC GG TTAACCACATTTATAGT A GTAGTTTCCGTCAAGAAG
CAATTGGCTTTGGGATCC AGGA

GAM11010 17941 GGATACCCTCTATAAAGCAT A CTC GCATTT TC AAATC
5 TTGTGTTCTTTTACAAATCG GG TACC TATAAA GTGT TTTTAC
TAAGAAGACGCTTATTTGTA CC ATGG ATGTTT CGCA AGAATG
TTGGTACC - TT- ATT--- GA -----
GAM11010 1818 GGATACCTTAGGAAGCAGTA CTTAG G A- CATAATC GAGGG
8 CAAATCTTCATAATCACTCT GGATAC GAAGCA TACAA TCTT ACTCT
GAGGGAGAGTATATTCCAGG CCTGTG CTTCGT ATGTT AGGA TGAGA
AGCTTGTAGTGCTTCAAGTG AA--- G CG CCTTATA -----
TCC
GAM11010 7984 GGATACGCCAGCCAACTAAG A G ACTAA A AC G CCAT
9 AGAGGTGGCACGTACGAAAC GG TAC CCAGCCA GAG GGTGGC GTAC AAA
CATTTTGGTACCGTCGCCCT CC ATG GGTCGGT CTC CCGCTG CATG TTT
CCTGGCTGGGGTACC - G C---- - C- G ----

GAM11012 319 GGATACTTATAGACAGACTT TACTT ATTGGACAATTA TGCAGAGAACC
1 ATTGGACAATTATGATTTTT GGA ATAGACAGACTT TGATTTT
GCAGAGAACCAGAATCAGGG CCT TATTTGTCTGGG ACTAAGA
TCTGTTTATTCC ----- ---------- ----------
GAM11014 11098 GGATAGGGAGTGCTGTTGGG AG T --------- GA GA CTAG
9 ATTTTTGAGTTGCTAGCAGC GGAT GGAG GCTGT TGG TTTTT GTTG
AGAAGAGACCACCTTGAGAG CCTG CCTC CGACA ACC AGAAG CGAC
ACAGCCTCCAGGTCC GA - GAGAGTTCC AG A- ----
GAM11015 5268 GGATAGGTGGCTGAGACCCA A GG - T- CCTG TACTAGT
2 CTGCCCTGAGCTACTACTAG GGAT GGT CT GAGACCCAC GC AGCTAC
TGTGGCTGTGCCTGTGGGTC TCTA CCA GA CTCTGGGTG CG TCGGTG
TCTAGAACCATCT - A- T TC TG-- -------
GAM11016 15136 GGATAGTTTGATTGTAGAAA A -- T AA A- C --- CTGCCAATGTGATA
5 TCACATCCCTTCAGTCTGCC GGAT GTT TGA TGTAG ATCAC TC CTT CAGT
AATGTGATAACTGCCCAAGA CCTA TAG ACT ACATC TAGTG AG GAA GTCA
GAAAGTGATGCCTACATTCA A AT T CG AA A CCC ----------
TAGATAATCC
GAM11018 15126 GGATATCATCACTCAGATTA A- ---- GA CTTCTGGACT
2 AAGCAGCTTCTGGACTTTGT GGAT TCATCACT CA TTAAAGCAG
TTTGAAATGTAAAAGTGATG CCTA AGTAGTGA GT AGTTTTGTT
AAAATCC AA AAAT AA ----------
GAM11018 575 GGATATCTTAATCCTTCCAC T - - AGG
4 ATACAGATATCCTTATATCC GGA ATCTTAATCCTTCCACATACAGATATCCTTATAT CCACA GG

ACAGGAGGCCATGTGGAATA CCT TAGAATTAGGAAGGTGTATGTCTATAGGAATATA GGTGT CC

TAAGGATATCTGTATGTGGA C A A ---
AGGATTAAGATCTCC
GAM11023 10922 GGATCACTGCTGGCCTACTC CAC C CTC TA G A ACGCC
2 TGGTTACGGGGACACTGACG GGAT TGCTGGC TA TGGT CGG GAC CTG
CCCGGGTCACCGCTGCCATA TCTA ATGACCG AT ACCG GCC CTG GGC
GCCAGTAACATCT CA- - --- TC A - -----
GAM11025 14107 GGATCATACGAAATCAATTT A AATCAATTTAC C TGTAATT
8 ACACACGGTCTGTAATTGAC GGATCAT CGA ACA GGTC
CCTGTTCCTGCACCAGTTGG CTTAGTG GTT TGT CCAG
TGATTC - GACCACGTCCT C -------
GAM11027 14197 GGATCATTTTATTCTCATTT TTTAT CAT ------ AAA TACAAT
0 ATGCTTAAAATAAAGATACA GGATCAT TCT TTATGCT TAAAAT GA
ATTCAAGTTTTACAATTCAG TTTAGTG AGA AGTATGA ATTTTG CT
TATGATTAGACGTGATTT C---- TT- CTTAAC AA- ------
GAM11028 505 GGATCCCAGCGAGCGCAGGT AG A ------ ATA AGAAGG
3 ATCATACGAGAAGGCGAGAT GGATCCC CG GCGCA GGTATC CG
ACCGGACTGTGTGCCGGGGG CCTAGGG GC CGTGT CCATAG GC
ATCC G- - GTCAGG A-- ------
GAM11029 2037 GGATCCTACCAACAGGCCCT TACCAAC AGG T GCCAAA
6 CCAGGCCGTGGGGTTTTGCC GGATCC AGGCCCTCC CCG GGGGTTTT
AAAAGAACCCTTTGGGGGGG CCTGGG TCCGGGGGG GGT TCCCAAGA
GCCTGGGTCC ------- --- T ------
GAM11030 5137 GGATCCTCTCTTGGACTTTA TCC CT TAG C CTCT TG T AAGGTATTTG
5 GCTCTCCATCTCTGCTGAGG GGA TCT TGGACTT CTCT CAT GC AGGGGA ATG

GGATATGAAGGTATTTGCAT CCT AGA ACTTGAA GGGA GTA TG TCCTCT TAC
TTCTCCTGTTAATGAAGGGA T-- AT TTA A AT-- -- T ----------
TTAAGTTCATAAGATTCC
GAM11031 5154 GGATCGACTTTGTTACCTGA - TTTG CTGA AAGATATTGCATGG
7 AAGAGCAGGAAGATATTGCA GGATCGA C TTAC AAGAGCAGG
TGGTCTGCTCTTGTGAAGTT CCTAGTT G AGTG TTCTCGTCT
GTTTGATCC T TTGA ---- ----------
GAM11033 7067 GGATCGTGCCGCCCGCCTTT -- T - CCC- CTTTCTT- CC TCGTT
3 CTTGACCGTCATCGTTTGGC GGAT CG GC CG GC GA GTCA
TCTCCACATTTTGCTTACCG CCTG GC CG GC CG CT CGGT
TGCTCGCTGTCC TC T T CATT TTTTACAC CT -----
GAM11036 13262 GGATCTGGGCCCTGCACATA - GC---- G ATACCA GCTC
0 TACCATCTCTGGCTCCAGGG GGATC TGG CCT CACAT TCTCTG
AATGTGAGGTATGAACCATG CCTAG ACC GGA GTGTA AGGGAC
ATCC T AAGTAT - ------ ----
GAM11037 11430 GGATCTTCCAATTCTTCTGA - TTCT TTTT AAATT TT CTAACCTTGAACA
2 TTTTAGGAAATTCTGTTGCG GGATCTT CCAA TCTGA AGG CTG GCGTG
TGCTAACCTTGAACACATGC TCTAGAA GGTT AGACT TCC GAT CGTAC
TAGCCTCCCTTTCTCAGATT A T--- CTT- CTCC- -- ----------
TGGAAAGATCT
GAM11041 13448 GGATGACCTTGACATTATGC AT C ATG GGCAATAAAAAGAAGAAA
8 TTGGCAATAAAAAGAAGAAA GG GA CTTGACATT CTT
AAGAAGAATGTTAAGTTCCC CC CT GAATTGTAA GAA
-- T GAA ----------
GAM11048 4842 GGATGCCGTCTGGAGCCCTG T TCT A - A - ACCAT
1 GATGCCCCACCATGGTGGCG GGA GCCG GG GCCC TGG TGCC CC
CCCATGGGCCCCCCGTGGCT CCT CGGT CC CGGG ACC GCGG GG
CC - GCC C T C T -----
GAM11052 14273 GGATGGACCTCTTTATAAAG T TT T --------- CAAAATC
3 TTGGTTGCTGCAAAATCCAG GGATGGACC CT ATAAAGT GGTT GCTG
TTCTTCCAAAAGCCACTTTA CTTATTTGG GA TATTTCA CCGA TGAC
TTTAGGGTTTATTC - TT - AAACCTTCT -------
GAM11054 19761 GGATGGCATAGTCAATCCAA - ---- AA ACAATA AAAGA
4 CAATAAGAAAAGATTTGAAA GGATGGCA TAG TC TCCA AGA
ACTGGACCGAAATTCTACTG CCTGTCGT ATC AG AGGT TTT
CTGTCC C TTAA CC CAAAAG -----
GAM11062 2115 GGATGTAGATGATTTCTTGA --- ATT G A AACGAACAT TTTG
6 GCACGAACGAACATTTCTTT GGAT GTAGATG TCTT AGC CG TTC
GGAATATCATAACCGAGTTA TCTA CGTCTAC AGGA TTG GC AAG
AGGATGCATCTGCTAAATCT AAT GT- A A CAATACTAT ----
GAM11063 22157 GGATGTCATGACCACCCCGG TC---- TG C AACACA AGCCA
8 AACACACCAGCCAGGAACAA GGATG A ACCACCC GG CC
CCGGGTGGTTGTCCTTGTTA CCTAT T TGGTGGG CC GG
TCC TGTTCC GT - AACAA- -----
GAM11064 11805 GGATGTCCTCCGAGAGGAAG TC GGA GA GAT GATGAAA
0 TGAGTGAGATCTTAGATGAA GGATG CTCCGAGA AGT GTGA CTTA
ATGAGTCACAAACTGCGTCT CTTAC GAGGTTCT TCA CACT GAGT
TGGAGCCATTC C- GCG AA --- -------
GAM11065 7251 GGATGTGGAGTACCGTCCCC A A CGTC A- GA ACTA GTGG
8 TGACCTTGACTGCACTATGG GG TGTGG GTAC CCCTG CCTT CTGC TGGGCT

GCTGTGGGGCCTGGGGCAGG CC ATGCC CGTG GGGAC GGAG GACG GTCCGG
AGAGGCCCAGGGCGTGCCCG C - C--- CC AG GG-- ----
TACCC
GAM11067 7396 GGATGTGTTTAAAATCTGTC TAAA T TTG T TTGCCT
2 ATTTGCTTATTTGCCTGTTA GGATGTGTT ATC GTCAT CT AT
GACATGACTGATGACATATC TCTATACAG TAG CAGTA GA TG
T ---- T CA- T ------
GAM11070 7075 GGATTAAGTACATAGGTCTT ACATAG- CTT CACTGATTTTTTT
2 TATTTAAACACTGATTTTTT GGATTAAGT GT TATTTAAA
TTTTAAATATATACACACAA CTTGATTCA CA ATAAATTT
AACTTAGTTC AAACACA TAT ----------
GAM11073 1363 GGATTAGTTTACAAAAAGGG AG- ----- TATACAAAAT
3 AAGTCCTTTATACAAAATAA GGATT TTTACAAA AAGGGAAGTCCTT
GGATTTTTTTTTTCAATTTG CCTAA AAATGTTT TTTTTTTTAGGAA
TAAAGAGAATCC GAG AACTT ----------
GAM11073 10736 GGATTAGTTTACAAAAAGGG AG- ----- TATACAAAAT
4 AAGTCCTTTATACAAAATAA GGATT TTTACAAA AAGGGAAGTCCTT
GGATTTTTTTTTTCCATTTG CCTAA AAATGTTT TTTTTTTTAGGAA
TAAAGAGAATCC GAG ACCTT ----------
GAM11073 7365 GGATTATCTGCTGGGCGACA C-- G GC AGTACA AG- AAAAAGG
8 GTACACTTAGGGAAAAAGGT GGATTAT TGCT G GAC CTT GG
CAAGGAGGAAAAGTCATCAG TTTGATA ACGG C CTG GAG CT
GCATTTATAGTTT TTT A TA AAAAG- GAA -------
GAM11076 15861 GGATTCAGCTTTCAGTTAAA C C - AA- TG AAAGAGAAA
1 AAAGAAGAAGAAGAAATGGC GGATTCAG TTT AGTTAAAAAAGAA GAAG GAAA GC
AAAGAGAAAGTTTTTTCAAA CTTGAGTT AGA TTAATTTTTTCTT CTTC CTTT TG
CTTCTTTCTTTTTTAATTTA - T T AAA TT ---------
GATTGAGTTC
GAM11078 2567 GGATTCTCACTGGAATACCC TC GGAATA CACCATTA TTACAT
2 CACCATTAGTTTACATGCAT GGAT TCACT CCC GT
TATCCAGGGACCGAAGTGAC TCTG AGTGA GGG CG
TGTCT TC AGCCA- ACCTATTA ------
GAM11079 9902 GGATTCTTTTTGCATGACCT --- -- A TGTGTATGGG
1 GAGGTGTGTATGGGTCCAGG GGATTCTT TTTGCA TGACCTG GG
TCATATGTAGACATGAGGGT CCTGGGAG AGATGT ACTGGAC CT
CC TAC AT - ----------
GAM11081 1663 GGATTGGAAAGGGGACAGAG T AA- G A-- - - AAGCAA
7 AGGTGGACAAGCAAGTCCAG GGAT GGA GGG AC GAGA GG TGGAC
CCTTCTCCAGGTGCTCATCT CCTA CCT CTC TG CTCT CC ACCTG
CCATCC - CTA G GAC T G ------
GAM11082 10732 GGATTGGAACTGTGTTTGGG TT A - G CCTCATCA TTATG
0 AGCCTCATCATTGGTTATGC GGA GGA CTGT GTTT GGAG TTGG
CAGGAACCCTTCTCTGAAGC CCT TCT GACA CGAA TCTC GACC
AACAGCTCTTCTCC CT C A G TTCCCAAG -----
GAM11084 7437 GGATTGTGGGGGCAATGAAT G AAT G CAGATT
4 GAAGCGAACAGATTTTCGTT GGATT TGGGGGC GAATGAA CGAA
CATTTTGGTTCTCAGGGTTT TTTGG ACTCTTG TTTACTT GCTT
G GT- - ------
GAM11084 13813 GGATTGTTGAACTGTTACCA A- ---- C A A AT TTCAGCAACATTTC
7 GCACCATGCTTTCAGCAACA GG TTGTTG AA TGTT CCAGC CC GCT

TTTCAGCGGAGTTGGAAACA CC AACGAC TT ACAA GGTTG GG CGA
TTTTTTACAGCAAAACC AA ATTT T A A -- ----------
GAM11085 7225 GGATTTACAGCACCAAAGAG CAGCACCAA TCC---------- AGC AACTCAGA
7 GTCCAGACTGGAACAGCGAA GGATTTA AGAGG AGACTGGAAC GA
ACTCAGATCTGGTTTCAGTC CCTAAGT TCTCC TCTGACTTTG CT
TCTTGAAATTTTACTCCTCT ACACTACGG TCATTTTAAAGTTC GT- --------
GGCATCACATGAATCC
GAM11086 7851 GGATTTACTTCGGATTTATT TT TC TC-- ATTTT ATATCTGGAA
1 CCCTTTTAAAGAATTTTTGC GGAT ACT GGATTTAT CCTTTTAAAGA TGCCC
CCATATCTGGAAGGGCACTA CCTA TGG CTTAGATA GGAGGGTTTTT ACGGG
TATTTTTGGGAGGAGCCATA T- TC CCGA ATATC ----------
GATTCCTGGTTATCC
GAM11088 17221 GGATTTCCACAAGACGGCAC TTTC -- - TG CGTC GCAGCGTAGATCAAA
2 CCTATGTCGTCACTGGCAGC GGA CACAA GACGGCAC CCTA T ACTG
GTAGATCAAACAGTAAAAGT CCT GTGTT TTGCCGTG GGGT G TGAC
GTGGGAGTGCCGTTGATTGT CT-- AG A GT AAAA ----------
GTCTCC
GAM11092 1637 GGATTTTAGTAAACCCATCC TTT AA - A -- AA G ATT
7 AGGAAGTGCTCATTGAGATG GGA TAGT AC CC TCCA GG GT CTC
ACCGATGGAGGAGTGGACTA CCT ATCA TG GG AGGT CC TA GAG
TTCC T-- GG A - AG AG - ---
GAM11098 19608 GGCAAAATATGGTGTGAATC A AT--- A GAA AAAAAACCAC
8 TGAATGAAAAAACCACCAGA GGCA AAT GGTGTG ATCT TG
GGGTACACACTCTTACATTG TCGT TTA TCACAC TGGG AC
TGCT G CATTC A AG- ----------
GAM11102 4800 GGCAAAGCTGGGGATTGGCC AAA T T C CA- CAGGA
6 AGCTGACATGCTCAGGAAGT GGC GC GGGGAT GGC AGCTGA TGCT
AAAATCGGCTTGTTATCTCC CCG TG CCTCTA TTG TCGGCT ATGA
GTGGGCC GG- - - T AAA -----
GAM11103 2041 GGCAAAGGTGCCCTTGAGAT -- ------ A TCATCCA TTAT
2 CATCCAGGTGCTTTATGGCA GGCAA AGGTGC CCTTG GA GGTGCT
TCTCCCAAGGAAGTCAGCAC CCGTT TCCACG GGAAC CT CTACGG
CTTCTTGCC CT ACTGAA C ------- ----
GAM11106 4744 GGCAACAAGTTGTTTTCATT C -- TT AT--- TTTTTCAGACATT
1 ATGCCATTTTTTCAGACATT GG AACAAG TTGTT CATT GCCAT
GTGGCTCATGAATGCTAATA CC TTGTTT GATAA GTAA CGGTG
GATTTTGTTCC - TA TC GTACT ----------
GAM11112 19445 GGCAAGAGGCTCAGTGGTAT A CTCA AT G GA- GGCA
8 CTGGAGGACAGGGCACTGGC GGCA GAGG GTGGT CTG AG CAG
ACTGCAGTCACCATCTTCTG CCGT CTTC TACCA GAC TC GTC
CC - ---- CT G ACG ----
GAM11114 15798 GGCAAGGAAAGCTCCAAATC CA AG - AAA A C-- C AGTC
5 CATGACAGTCGAAGTCTCTG GG AGGAA C TCC TCC TGA AGT GA
CTCCTTCAGGAATAGGACGT CC TCCTT G AGG AGG ACT TCG CT
CTTCCTCTCC TC CT C ATA - TCC T ----
GAM11115 17742 GGCAAGGATTGAAGCCAGAG A TTGA C A--- AAAA- CAAAC
9 GCTTGGGAAAAAGAGCAAAC GGC AGGA AGC AG GGCTTGGG AGAG
CTCTGATACTCCAAGTTCAA TCG TCCT TCG TC TTGAACCT TCTC
ACTGCTTCCTAGCT A ---- - AAAC CATAG -----
GAM11119 11134 GGCAATACTGTGCTGTTTTG T TGCT TT ATA TAGTATAATTT

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2          GTTACCATAGATTTCTAGTA GGCAA ACTG   GTT  GGTTACC  GATTTC
           TAATTTGAAGTTAGGTGATT TTGTT TGAC   TAG  TTAGTGG  TTGAAG
           TGATTCTCCAGTTTTGTT     T  CTCT  T-    A--   ----------
GAM11123 4923  GGCAATTGGGGCGGGGGAGG  AAT      GAG  T--   AAGT  CAGA  ATT  ACG  A  TC
3          CTTGACAGAAGTGCCAGAGC GGC  TGGGGCGGGG  GCT  GACAG  GC  GCAG  CCA  TC CATC
TCC
           AGATTCCAACGTCACATCTC CCG  ACCCCGTCTT  CGG  CTGTC  CG  TGTC  GGT  AG GTGG
AGG
           TCCTTGGCTGGAATGGTGAG  AGT      AA-  TTC   GAGT  C---  AC-  GGA  A   TA
           AAGGTGGCACTGTCGCTGAG TTGGCT
           CTGTCCTTGGCAATTCTGCC
           CCATGAGCC
                      ------
GAM11123 6844  GGCAATTGTTGATGTTCCCA  A-     AT   CAA  T  TGG     AG-  A-  CCCG
4          AAGTCCTTGGGGCAGTGCAG GGC  ATTGTTG  GTTCC  AG CCT  GGCAGTGC  CC  GCC
           CCAGCCCCCGGGCAAGGACA CCG  TGACAAC  CGAGG  TC GGA  CCGTTACG  GG  CGG
           GCATTGCCACTAGGCTGGAG  AG     C-   --- -  TCA     ACA  AA  ----
           CCCAACAGTGAGCC
GAM11124 6796  GGCAGGGTGTACACCTGGGG     T-   CCT---       GGCT     -  ----     TGGTT
5          TTTTCGGGGCTGCCCTTTTG GGCAGGG  GTACA    GGGGTTTTCGG   GCCCTTTT GTT   TTGGAAA

           TTTTGGAAATGGTTTTTTCG CCGTTTC  CATGT    TTCCAAAGGTT   CGGGAGGG CGG   AGCTTTT

           ATGGGGGCTGGGAGGGCTTT     TT   TCTAGT       GTTT     T  GGGT     -----
           GTTGGAAACCTTTGATCTTG
           TACTTCTTTGCC
GAM11124 10931  GGCAGGGTGTACACCTGTGG     T   CC  --  CT  GGCT   - TG    ---   TGGTTT
6          TTCTCGGGGCTGCCCTTTGG GGCAGGG GTACA  TGT  GGTT  CGG   GCCCT T  GCTTTG  GAGA

           CTTTGGAGATGGTTTTCTCG CCGTTCC CATGT  ACG  CCAG  GTT   CGGGA G  CGGGGC  CTCT

           ATCGGGGCTGGGAGGGCTTT     T   TC  TT   AG  GTTT   G GT    TAG   ------
           GTTGGAGACCTTGCACTTGT
           ACTCCTTGCC
GAM11126 22104  GGCAGGTGAGAGTGTTGTGT     GA   TTGT  CG  G   GTG  TACT
6          CCGGTGATCTGTGGCTACTG GGCAGGT  GAGTG   GTC  GT ATCT   GC
           TAGAAGGTGTTAGATTTCTC TCGTCCG  CTCAC   TAG  TG TGGA   TG
           ACTCAGGCCTGCT          GA    TCTT  AT  -   AGA  ----
GAM11126 2635  GGCAGGTGCCCCCATCCCCC     --  C     CCCCCGCA    G CTAG
8          CCGCATTCTGGCCTAGGCAG GGCAGG  TGC CCCATCC      TTCTG C
           GAGAGGATGGGCGCAGCCCT CCGTCC  ACG GGGTAGG      AGGAC G
           GCC                CG  C     AG------    - ----
GAM11129 10038  GGCAGTCATTTGGTCTATAT   A---  A    CT   TT    AT-  A   GAGA    TACATAT
2          TGTTTGAATGCACTAGGAGA GGC   GTC TTTGGT  ATA  GTTTGA  GC CTAG   CATTG
           CATTGTACATATTAATGAAA CCG   TAG AGATCG  TGT  CGAATT  TG GATT   GTAAT
           TTAGGTTTGTTAAGCTTGTT   AATG  -    TT  T-    GTT  -  AAA-   -------
           TGCTAGAGATGTAAGCC
GAM11131 17618  GGCAGTGCCTGCCTGCGCCT   AG   T    G  T   A-   C-   - C  TGCGT
0          TTCGCAACCTCCTCGGCCCT GGC  TGCC GCCTGC CC TTCGC  ACCT  CTCG G CC
           GCGTGGTCTCGAGCTGGGTG TCG  ATGG CGGGCG GG GAGCG  TGGG  GAGC C GG
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AGCGAGCGGGCGGGCTGGTA G- T - C AG TC T T -----
GGCT
GAM11131 11798 GGCAGTGCTGGGTCCTTTCC G G TC CCACCATG ACCTAAGAAA
3 ACCATGGCACCTAAGAAAGC GGCAGT CT GG CTTT GC
AAAGAAGAGAGCCGGGGGCT CCGTCG GG CC GAGA CG
GCC G G GA AGAAA--- ----------
GAM11133 7988 GGCAGTTCGGCGGTCCCGCG A C-- -------- G C TG C AGT
8 GGTCTGTCTCTTGCTTCAAC GGC GTT GGC GGTCCC CGGGTCTGT TCT CTT AAC
AGTGTTAGGACGGAACAGAT CCG CAG CCG TCAGGG GCCTAGACA AGG GGA TTG
CCGGGGACTCTCTTCCAGCC C CCT ACCTTCTC - - CA - ---
TCCGACCGCC
GAM11133 1873 GGCAGTTCGGCGGTCCCGCG A C-- -------- G C T C AGT
9 GGTCTGTCTCTTGCTTCAAC GGC GTT GGC GGTCCC CGGGTCTGT TCT G TTCAAC
AGTGTTGGACGGAACAGATC CCG CAG CCG TCAGGG GCCTAGACA AGG C AGGTTG
CGGGGACTCTCTTCCAGCCT C CCT ACCTTCTC - - - - --
CCGACCGCC
GAM11134 10177 GGCAGTTCGGCGGTCCCGCG AGTTC C G C T C CAGTGT
0 GGTCTGTCTCTTGCTTCAAC GGC GG GGTCCC CGGGTCTGT TCT G TTCAA
AGTGTTTGGACGGAACAGAT CCG CT TCAGGG GCCTAGACA AGG C AGGTT
CCGGGGACTCTCTTCCAGCC ACCTT C - - - - ------
GAM11138 14416 GGCATATAAACCTTGGCTTT ATA - TT CTCTA G -- CCA
3 TCATAAGCTCTACCTGCCTA GGC TAAACCTT GGCT TCATAAG CCT CCTA TCC
TCCCCAGGAGTTAGGGAGGA TCG ATTTGGGA CCGG AGTGTTT GGA GGAT AGG
TCTATTTGTGATGGCCTAGG AGA T T- ATCTA G TG ---
GTTTAAGAGCT
GAM11140 19457 GGCATCATATGGTGGGGGCG ATCATAT--- G ATGCTA
5 CTGAGCATGCTAGCTCAGGT GGC GGTGGGGGC CTGAGC
CTTCATCTTCTTACAAAGCC CCG CTACTTCTG GACTCG
AAACATTCTT - ------
GAM11140 11849 GGCATCATCCCAGGAGGAGG G T GGAGGA A A AT- GCAT
7 AGGGCCCATCATTGGCATCA G CA CATCCCA GG GGGCCC TC TG
TGGGAGGGCCCCCCATATGG C GT GTGGGGT CC CCCGGG AG AC
GGTGCTGGC G C ATAC-- - - GGT ----
GAM11144 7652 GGCATCTCTGAGCGAGACCA C C GA CGAC G T - ACC TACAA
4 CGACTGGGGTCCACAACCTC GGCATCT TGAG GA CCA TG GG CCA CA TC
TACAAGATGATGGCCACATG CCGTGGA ACTC CT GGT AC CC GGT GT AG
GGATCCTCACAGGTGCC C - AG ---- A - A --- -----
GAM11145 7764 GGCATCTTCTGGCTTGACTG TTCTG T AT ----- GAGA
7 GATGGAAGGAGACTTAGGAA GGCATC GCT GACTGG GG AAG
CCTACCAGTTGGCATGATGT CTGTAG CGG TTGACC CC TTC
C TA--- - AT AAGGA ----
GAM11145 15351 GGCATCTTGGTGATGATGCA T --- T CACCC GAG
8 GCACCCTGGGGAGCCCACCT GGCATCT GGT GA GATGCAG TGGG
GTATTCTCTTGGCCAGGTGC CCGTGGA CCG CT TTATGTC ACCC
C - GTT C C---- ---
GAM11146 15606 GGCATGAAGACCAAGAACAT AAGACCAAGA CCAG-- GAAT
6 CCCAGTTTATGAATGTGAAA GGCATG ACATC TTTAT
GATCTGATGTGCAAATACAC CCGTGC TGTAG AAGTG
GTGCC ACATAAACG- TCTAGA ----
GAM11149 104 GGCATGAGCCTGCCAGATTG T GC CCA T CAATTC CACCTTCA

4 CCAATTCCATCCTCCACCTT GGCA GA CTG GAT GC CATCCTC
CAGAGGATGCCGCCATCCAG CCGT TT GAC CTA CG GTAGGAG
AATTTTGCC T AA --- C CC---- --------
GAM11152 21688 GGCATGGCACTGAGCAGCTT - - A A-- TCTT- AGAACA
0 CTTTTAAGAACATAATTTGT GGCATG GC ACTG GC GCT TTA
AGCCAGGCGCAGTGGCTTAT CCGTAT CG TGAC CG CGA AAT
GCC T G G GAC TGTTT ------
GAM11152 22480 GGCATGGGCAAGGGGGGTCC - CAA GT - -- -- AAACT - GTGGG
8 CCAGGTAGTAAACTCCCCAG GGCA TGGG GGGGG CC CC AGGT AGT CCC CAG
GTGGGCTGAGGGCTAGGGCT TCGT ACCC TCCTC GG GG TCCG TCG GGG GTC
GAGCCTCAGGTGGGTCTCCT G TTG TG T AC AG GGATC A -----
GTTCCCAGTGCT
GAM11156 15299 GGCATGTCATCCGAAAAGTC - CATCC--- A CA--- CCCAGACTC
2 AGGACTCCCAGACTCAGTCC GGCAT GT GA AAGT GGACT
CTCACACTTCTCCGCCGCCT CCGTA CA CT TTCA CCTGA
ACAATGCC A TCCGCCGC C CACTC ---------
GAM11157 7388 GGCATGTGGCAGGTCCATAT AGGTC AC AGAGACTGAAAAATA
4 GACATGAAAGAGACTGAAAA GGCATGTGGC CATATG ATGAA
ATATTTATACTATGTGGCCA CCGTACACCG GTGTAT TATTT
CATGCC ----- CA ----------
GAM11158 110 GGCATTAAAGACCAGCCTGG ACC TGGG AACT TTCGAAT
5 GGACTTTAACTGCACTTCGA GGCATTAAAG AGCC GACTTT GCAC
ATGTGTTACCAAGGTTATGG TCGTAGTTTC TTGG TTGGAA TGTG
TTACCCTTTGATGCT CCA TA-- CCAT -------
GAM11161 1800 GGCATTCCCGGAGACACTGA TT G ACA- - T GAAAAAAAA
0 GCTGTGAAAAAAAAACTGCT GGCA CCC GAG CTG AGC GT
GCAGCTAACTTGGGGTCTGC CCGT GGG TTC GAC TCG CA
C CT G AATC G T ---------
GAM11161 16391 GGCATTCCCGGCTTCACCAA CC TCACCAATAGC C TTCCTTCC
1 TAGCATGTCAAGTTCCTTCC GGCATTC GGCT ATGT AAG
CTTACATCCCGTTCACAGCT CCGTGAG TCGA TACA TTC
CGAGTGCC C- CACTTGCCC-- - --------
GAM11161 13134 GGCATTCTTTTGGGGCTGAC CTTTTG - ------- CCAGCCAA
8 TCTGTGCCAGCCAACACAGA GGCATT GGGCT GAC TCTGTG
AAACGAAGTTGAGCCTGTTG CCGTAG TCCGA TTG AGACAC
ATGCC TTG--- G AAGCAAA --------
GAM11162 15009 GGCATTGAAGATCCATAACT GA CA- A GAATTATCACAGAA
1 ATCTTCTGAATTATCACAGA GGCATTGAA TC TAACT TCTTCT
AAGAAGAAAGTTAGAAGAGT TTGTAATTT AG ATTGA AGAAGA
TTAATGTT G- AAG A ----------
GAM11169 10155 GGCCAACATGACATAACCCC CA GA A - TCTCT CAAGTATAAAAAT
3 ATCTCTGCTACAAGTATAAA GGC ACAT CAT AC CCCA GCTA
AATTAGCTGGGTGTAGTGGT CCG TGTG GTG TG GGGT CGAT
GTGTGCC -- TG A T ----- ----------
GAM11172 9992 GGCCAAGCGAACCCCGTCGG AA- AA ------ CC-- CAAC
9 CCCTGCGGACAACTCCGCGC GGCC GCG CCCCGT CGGC TGCGGA
GCAGCCGGAGCACATGGGGG CCGG TGC GGGGTA GCCG GCGCCT
GCGTCAAGGCC AAC GG CACGAG ACGC ----
GAM11177 15807 GGCCAATACTTTATAAGCAA T AAG GT CAACTAA
7 AGTTTAAACAACTAATTTAA GGCCAA ACTTTAT CAAA TTAAA

TATTTGATAAGGTTTTGGTT TTGGTT TGGAATA GTTT AATTT
T --- AT -------
GAM11179 16198 GGCCAATTGAAACAAACAGT C T ACAAACAG G GTT T A GATTAAG
1 TCTGAGACCGTTCTTCCACC GGC AA TGAA TTCTGA ACC CT CC CCACT
ACTGATTAAGAGTGGGGTGG CCG TT ACTT GGGATT TGG GG GG GGTGA
CAGGTATTAGGGATAATTAT A T ATTAATA- A AC- T - -------
TCATTTAGCC
GAM11181 13502 GGCCACAGTGTGGGCTCAGG T G C- AA-- CT AG - GTTCTG
6 GAACATTCTGGCAGCCGTGG GGCCACAG GT GGCT AGGG CATT GGC CCG TGGG
GGTTCTGTTCAGTGGGCCTG CCGGTGTC CA CCGA TCCC GTGG CCG GGT ACTT
GTGGAGACCCTCTAGCCGAC - G TC AGAG T- -- G ------
CTGTGGCC
GAM11182 10298 GGCCACCAAGACCTGGGAAC ACC A GTCAAA AA- G T - - GGAGTG
7 AAGTCAAATCAACAGGCGGT GGCCACCAAG TGGGA CAA TC CAGGC G CC TTCGG GTC

CCTTCGGGTCGGAGTGGACA TCGGTGGTTT GTCCT GTT AG GTCCG T GG AGGCT CAG

TCGGATGGTGGCCTGGAAGA --- A AACAG- AAG G - T A ------
GACAATTGATCCTGTTTGGT
GGCT
GAM11184 23010 GGCCACCTCCTGGTCCAGTC AC GG ACCT- CCT CA T AG CA TCGGA
8 ACCACCTGCAGCCTCGGCAG GGCC CTCCT TCCAGTCACC GCAG CGG GGGCAGG AC GGGC
CC
GGCAGGTACAGGGGCCACCT CCGG GAGGA GGGTCGGTGG CGTC GCC TCCGTCC TG TCCG
GG

CGGATGGGAGCCTGGGTCCC A- -- GTCCC TC- -- C GG AG -----
TGCCTCCGCTCTGCCCCTGG T
GTGGCTGGGAGGAGAGGCC

-
GAM11185 17655 GGCCACGCAACACTTCCTCC C AA T - --- AA- AAGG TATCA
8 CCAAGCCAAGGAGAAGTATC GG CACGC CACT CCT CC CC GCC AGAAG
ACTTTTAGAGGCAGAGGAGC CC GTGTG GTGA GGA GG GG CGG TTTTC
GGAAGGCAGTGGGTGTGACC A G- C A CGA AGA AGA- -----
GAM11187 10446 GGCCACTCCTGCATCTTTAC CT CT C A CTTC- TTG
3 CGTCTCAGGGACTTCCAGTT GGCCA CCTGCAT TTAC GTCTC GGGA CAG
GCTGCCCCTTCCCAGAGGCC CCGGT GGGCGTA GGTG CGGAG CCCT GTC
GTGGCATGCGGGGATGGCC AG C- C A TCCCC ---
GAM11188 15460 GGCCACTTTCAAGAACAGAG - C CAAGAAC TCTTT TAGG
4 TGTCATCTTTAATGTAGGCG GGC CA TTT AGAGTGTCA AATG
TTCTTGGCATTCTCCAAAAC CCG GT AGA TCTTACGGT TTGC
AGAATGAGCC A A CAAAACC TC--- ----
GAM11188 17380 GGCCACTTTTATGCTAAATA C TA-- AATAA C ATA- ATTTCC
6 AAGACACTGAGATAATAAAT GGCCA TTT TGCTA AGACA TGAG ATAA
TTCCTTGTACAGTTTATTGT CCGGT AAA ACGAT TCTGT ATTT TGTT
CTAATACTAGCAAATCAAAT T CTAA CATAA T GACA ------
TGGCC
GAM11189 6681 GGCCAGACAGACAATGGGGC CA AG A GGG T - TTTGAT
9 TTATGCATCTTTGATGATGT GGC GAC ACA TG CT ATG CATC

CATAGAACACTGTAAGTCCA CCG CTG TGT AC GA TAC GTAG
GCC AC AA C AA- - T ------
GAM11193 22793 GGCCAGCTAATTTTTGTAAT AATTTTTGTAATTT A GGTTTCA
7 TTTGGTAGAGATGGGGTTTC GGCCAGCT TGGT GAGATGG
ACCATTTTGGCCAGGCTGGT CTGGTCGG ACCG TTTTACC
C ---------- G -------
GAM11195 2264 GGCCAGGAGAAGGGAGTCCG - AGAA GTCCGAC ACACGGGGGGC
9 ACACGGCACTGGGTCACACA GGC CAGG GGGA ACGGCACTGGGTCAC
CGGGGGGCGTGACCCGGTGC CCG GTCC CCCT TGTCGTGGCCCAGTG
TGTTAGCTTATCCCCCTGCG C ---- ATTCGAT ----------
CC
GAM11196 22973 GGCCAGGAGACGCCACTGGA GACG-- CT- - CAT- TGTTC
0 GAACATGCTGTTCGCCTCCT GGCCAGGA CCA GG AGAA GC
TCTACCTTCTGGATTTTATC TCGGTCCT GGT CC TCTT CG
CTGGCT ATTTTA CTT A CCTC -----
GAM11199 5310 GGCCAGGCGCAGTGGCTCAC A C C A --- CCTCAA
2 GCCTGTAATCCCAGCACTTT GGCCAGGCGC GTGGCTCACGCCTGTAAT CCAG ACTTTGGGA
GCTGAGGC TGG
GGGAAGCTGAGGCTGGCCTC CCGGTCCGTG CACCGAGTGTGGATATTA GGTC TGAAACCCT
CGACTCCG ACC

AAGCAATCCATGTGCCTCAG C T A C TGT ------
CCTCCCAAAGTACTGGTATT GCAAT
ATAGGTGTGAGCCACCGTGC
CTGGCC

GAM11200 6818 GGCCAGGCGTGGTGGCTCAT C ---- - GT -- AG- GAGG
1 GCTTGTAATCCCAGCACTTT GGCCAGG GTGGT GGCTCATG CTT AAT CCC CACTTTGG

GGGAGGCCGAGGTGGGCGGG CCGGTCT CACCA TTGAGTAC GGA TTA GGG GTGGAGCC

TCATTTGAGGTCATGAGTTC - GAAC T GT CT CGG ----
AAGACCACTCTGGCC
GAM11203 17780 GGCCAGGCTGGTCTCGAACT ---- T AACTC ACCCACC CCTC
6 CCTTGTGATCCACCCACCTT GGCCAGGCT GG CTCG CTTGTGATCC TTGG
GGCCTCCCAAAATTCTAGGA CCGGTCCGA CC GAGT GGACATTAGG AACC
TTACAGGCATGAGCCACTGA GTCA - AC--- ATCTTAA ----
GCCTGGCC
GAM11205 22457 GGCCAGGGACACGTGGTCTT GA TGG CG TA TA- G - T A ATAGAA
6 AATTCGGTACGGTACTTGGT GGCCAGG CACG TCTTAATT G CGG CTTG TTT CCC TCAAA GT

TTCCCTTCAAAAGTATAGAA CCGGTTC GTGT GGGGTTGA C GTT GAAC AGA GGG GGTTT CG

GCTTTGGCGGGCAGAGCAAG G- GG- -- GG TGC G C C - ------
CGTTTGGGCAGTTGGGGGGT
GTGGCTTGGCC
GAM11206 11960 GGCCAGGGCGTTGAGAAAAG G- --- GA--- TCCT
7 GTGACTCTCCTGAGGCCAAA GGCCAGGGC TTGAGA AAAGGT CTC
CCTTTGCATCTCAGAAGCCC TCGGTCCCG GACTCT TTTCCA GAG
TGGCT AA ACG AACCG ----

GAM11206 22398 GGCCAGGGGACCAAGCTGGA CAG CCA C TAAACGAACT CTGCA
9 GATTAAACGAACTGTGGCTG GGC GGGA AG TGGAGAT GTGG
CACCATCTGTCTTCATCTTC CCG CCCT TC ACTTCTG TACC
CCGCC --- --- T TC-------- -----
GAM11213 17591 GGCCATCACCATGCAGTTCA - T G A TGC GCCC
5 CTTTTGCAGTGCCCACTTTA GGCCATC ACCA GCA TTC CTTT AGT
AAGGAGTGCTGGTGGATGGT CTGGTAG TGGT CGT GAG GAAA TCA
C G - - - TT- ----
GAM11214 4981 GGCCATCGCTACTACAATTT G CTACAATTTT TGG
1 TAGAATTGCTGGGCAATTTT GGCCATC CTA AGAATTGC
TTCTGCACACTGGGATGGCT TCGGTAG GGT TTTTAACG
- CACACGTCTT ---
GAM11215 10938 GGCCATGCTTAATACAGTTT CA AAT--- G- A ATAT A TTTCT
5 TATAACAAAATATTTCACCT GGC TGCTT ACA TTTTAT ACAAA TTC CCT
TTTCTGGGCGAATTTGTAGT CCG ATGAA TGT AAAATG TGTTT AAG GGG
AAAAAATGTTTAACCAAGTA -- CCAATT AA A ---- C -----
GCC
GAM11215 5002 GGCCATGGATAGCCCTCTCC - A TA C-- C - A-- AA TGAA
9 AACAAGCTGAAGCTGAAGCG GG CC TGGA GC CTCT CA AC AGCTG GC
ACAGCTGGAGTATGAAGAGC CC GG ACCT CG GAGA GT TG TCGAC CG
AAGCCTTCCAGGACC A - TC AAC A A AGG AG ----
GAM11216 10727 GGCCATGGCGCTGCAGCTCT CGCTGCA T GGA AATCA
1 CCCGGGAGCAGGGAATCACC GGCCATGG GC CTCCCG GCAGGG
CTGCGCGGGAGCGCCGAAAT CCGGTGCT CG GAGGGC CGTCCC
CGTGGCC AAAGC-- C G-- -----
GAM11216 17750 GGCCATGGCTGCTCCCGTCA TG----- -- C C----- TCCT
2 TCTGCTCCTGCATCATTCGT GGCCA GCTGCT CC GTCAT TGC
GATTGGTCAGCGGCATTATC CCGGT CGGCGA GG TAGTG ACG
TTGGCC TCTATTA CT T CTTACT ----
GAM11216 22060 GGCCATGTGAGCCACCGCTG GTG C CC CCA - A- TCCCCCT GACTAG
8 CCAGCACAGAGCGTCCTTCC GGCCAT AG CA GCTG GCA CAG GCGTCCT GTA
CCCTGTAGACTAGTGCCCGT CCGGTG TC GT CGAC CGT GTC TGCAGGA CGT
AGGACGTACCTGTTGCCCCA --- A -- CC- T CA TGCC--- ------
GCTGACTGTGGCC
GAM11218 15649 GGCCATTCTGGGCGTGCCTG - TTC --- GAGGGCCTAGATAAA
0 TCCCTGAGGGCCTAGATAAA GG CCA TGGGCGT GCCTGTCCCT
GGGGACAGGCCGCACGCCTA CC GGT ATCCGCA CGGACAGGGG
TTTTGGACC A TTT CGC ----------
GAM11218 7516 GGCCATTGAATAAGGGCTGT -- - AGGG--- T GAAAGAGGTA
1 TAAATGAAAGAGGTAATTTG GGCCAT TG AATA CTGT AAAT
CAGAAAAATGTGTTACAATA CCGGTA AC TTGT GACG TTTA
TGGCC TA A GTAAAAA - ----------
GAM11218 15464 GGCCATTGTTCCGCGCCGAT A- TT C AT - TCC CCTCA
7 GGCGAGATCCTTGTTCCTCA GGCC TTG CCGCG CG GGCGA GA TTGTT
GATAGCGTTCATCGCCCGTC CCGG AAC GGTGC GC CCGCT CT GATAG
GTGGTCAACGGGCC GC T- T -- A TGC -----
GAM11219 4722 GGCCCAACCACAAAGGCAGA CAA ACAAAGG AGAA CCCAGAAA
7 GAAGTTAGCCCCAGAAAGCT GGCC CC CAG GTTAGC
GACAGCTGAAGGCGGGGAGG TCGG GG GTC CAGTCG
CT AG- GCGGAA- GA-- --------

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GAM11221 14230  GGCCCACCTTCTAGTCGTTT   C-     --   -   C    GAAT---  TCT
0          CCTGGTGAATGGCTCTGCTG GGC  CACCTTC  TAGTC GTTT CTGGT     GGC
           AAGATGGCCGGAAAGCAGAT CCG  GTGGAAG  ATTAG CGAA GGCCG     TCG
           TAATGAAGGTGCTGCC      TC     TA    A   A    GTAGAAG  ---
GAM11221 17656  GGCCCACTTCATCCTGCCCT      T  TCC    T  C- GT   GC   ---- G    TGGGAG
6          TCTGCGGTCACAGCTGCCTG GGCCCACT CA  TGCCCT CTG  G  CACA  TGCC   T CTGGG
           CTGGGTGGGAGTCCGGGGGA TCGGGTGA GT   ACGGGA GAC  C  GTGT  ATGG   G GGCCT

           ATGGTATGTGTGGTCACCAG      - C--    -  CA TG   GT   TAAG G   ------
           AGGGCACTGAGTGGGCT
GAM11222 4768   GGCCCAGACGCTGCGGCACT   C-   G     A  AT   ACTTG   TT A     GTG  TG  TC  GA
5          ATGGCTACTTGCGCTTTGAT GGC  CAGAC CTGCGGC CT  GGCT    CGCT  G TGCCTGT   GCT  ACT
CCA
           GCCTGTGTGGCTTGACTTCC CCG  GTCTG GACGTCG GA  TCGA    GTGA  C ACGGGCG   CGA  TGG
 GGT
           CAGAAAAGGACTGTCCTGTG   TC   -     - C-   -----   -- A     ---  GT   TT   G-
           GTTGGTTGAGCGCGGGCAAC AA   ACTGT
           AGTGAGCTCAGGCTGCAGGT   AGG
           CTGCTGCC           TCC
                      --   -----
GAM11223 17181  GGCCCAGCAGTATTGCTCAC      CA   TT    C      CCA   GCC
1          GGGGGCTCCAGCCGCCGGCG GGCCCAG  GTA  GCTCA GGGGGCT   GCC
           TAGGCCCTCATGAGCTACGC CTGGGTC  CAT  CGAGT CTCCCGG   CGG
           CTGGGTC               CG  --    A      ATG  ---
GAM11223 2271   GGCCCAGCAGTATTGCTCAC      CA   TT    C      CCA   GCC
2          GGGGGCTCCAGCCGCCGGCG GGCCCAG  GTA  GCTCA GGGGGCT   GCC
           TGGCCCTCATGAGCTACGCC CTGGGTC  CAT  CGAGT CTCCCGG   CGG
           TGGGTC                CG  --    A      TG-  ---
GAM11223 2272   GGCCCAGCAGTATTGCTCAC      CA   TT    C      CCA   CCGG
3          GGGGGCTCCAGCGCCGGCGT GGCCCAG  GTA  GCTCA GGGGGCT   GCG
           GGCCCTCATGAGCTACGCCT CTGGGTC  CAT  CGAGT CTCCCGG   TGC
           GGGTC                 CG  --    A      ---  ----
GAM11228 15344  GGCCCCACCAGGTTGCGCCC    CC- C  -   G    GT ATCATCGCAG
6          GGGTCATCATCGCAGGGTCC GGCC   AC AGG TTGC CCCGG  C
           GGGGGCAGTCCTAGTAGCGG CCGG   TG TCC GACG GGGCC  G
           CC                 CGA  A   T   G    TG ----------
GAM11228 14960  GGCCCCACCTGAGGCACAGC     CA      A    CTGA  C    GG--   A  G   TCA   --   GA
8          GCTGACTCATCACGGTGGTA GGCCC  CCTGAGGC CAGCG    CT ATCAC    TGGT CCA TAGG   GCCA
 TCTG
           CCAGTAGGTCAGCCATCTGG CCGGG  GGACTCCG GTCGC    GA TGGTG    ACCG GGT ATCC
CGGT  AGAC

           AAACAGAAGTGGCCCTAATG     AC      -    TCA- A    TAAA   -  A   ---   GA   --
           GGCCAAAATGTGGTAAGACT AA
           CGCTGGCCTCAGGCAGGGCC

                      --
GAM11229 22988  GGCCCCAGAAAAATATGTAC     -    A-----   T  ACTA   C      ---   TTTATTTT
4          TAGGTACGAGCCTGGCTTGT GGCCC CAGAA     AATA GT    GGTA GAGCCTGG   CTTG
           TTATTTTCGAGTCACCGGGC TCGGG GTCTT     TTGT CA    TCGT CTCGGGCC   GAGC
```

TCTGCTGTCGACTGTTCAAC T CACAAC - GCTG - ACT --------
ACTTCTGTGGGCT
GAM11230 10962 GGCCCCAGCTGCCCTATAGA CCA AT------- A GCCCCC
0 AGATGGCCCCCCAGCTTCTC GGCC GCTGCCCT AGAAG TG
CTCAATAAGGGGCAGCCCGG CCGG CGACGGGG TCTTC AC
CC CC- AATAACTCC G ------
GAM11239 11641 GGCCCGAGTTCTTAGATAGC C-- - TT A CCTA TTCTCCCATGCT
3 CTACATCTTTCTCCCATGCT GG CCGA GTTC AG TAG CATCT
GGATGCTTCCTGCCTTTGAA CC GGCT CAAG TC GTC GTAGG
CATCGGACTCC TCA A TT C CTTC ----------
GAM11239 13104 GGCCCGCGACTGCTGGGCAC - C-- GG A T CCCTG-- TCTCGT
8 CTTCATCCAGCCCTGGGGTT GGC CCGCGA TGCT GC CC TCATCCAG GGGT
CTCGTGCCTACGTGACCTGG CCG GGTGTT ACGG CG GG AGTAGGTC TCCG
ATGACGGGCGGCATCTTTGT C TCT -- - C CAGTGCA ------
GGCGCC
GAM11240 7861 GGCCCGCGTTTGCGACGGCG C- TT----- A C AGGC
1 CACGCACGCAGGCGCGTATG GGC CGCGT GCGACGGCGC CG ACGC
GTGCCGTCGCCTATGCCGCG CCG GCGCG CGCTGCCGTG GT TGCG
CGTCGCC CT CCGTATC - A ----
GAM11240 77 GGCCCGGGGGACCGGGGCTT G-- G CAA CAGG
9 CGGACAACCCAGGGGCTCCG GGCCCG GGGACCG GGCTTCGGA CC
GGGCCACGGTCCTAAACGGG CCGGGC TCCTGGC CCGGGGCCT GG
CC AAA A C-- ----
GAM11243 4940 GGCCCTCCCAGACAAGGCGG C AG C AG CA--- CAAAGAC
9 GAAGCCAAGCCCAAAGACGG GGCC TCCC ACAAGG GGGA C AGCC
CTCCGATGTCTCCCTCTTGT CCGG AGGG TGTTCT CCCT G TCGG
AGGGAAGGCC A A- - CT TAGCC -------
GAM11244 14231 GGCCCTCGGGCTGCGGGAGC CT GAGC CT GA GAGC
4 CGGGCTAGGACGCCGAGCGG GGCCCTCGGG GCGG CGGG AG CGCC
TGACTCCCCGCCGCTCCCGG CCGGGGGCCC CGCC GCCC TC GTGG
GGGCC T- ---- C- A- ----
GAM11245 15699 GGCCCTGACTTGAATCTCAA ACTTGAATC A C- CA CAGTACCT
4 TCACATTTCTGCACACAGTA GGCCCTG TCA TCA ATTTCTG CA
CCTTGGACAGAAGTCATGAT CCGGGGT AGT AGT TGAAGAC GT
GATGGGGCC --------- - AC AG --------
GAM11248 2653 GGCCCTGGACCCGCCAAACA T ACCC A CTA A --------- AAG-- CCCACAAGTACA
1 GCTACTCAGCTGCTTAAGCT GGCCC GG GCCAA CAG CTC GCT GCTT CTGG
GGCCCACAAGTACAGACCAG CCGGG CC CGGTT GTC GAG CGA CGAA GACC

AGACAAAGCAAGAGAAGAAG - ---- - A-- A AGAAGAGAA ACAGA ----------
CAGAGACTGTTGGCCCGGGC GA
C

--
GAM11249 2094 GGCCCTGGGCGTGGCTGTCA CC G G A CA G ----- CAGTTTT
2 TAGGCATCGACGAGGGGCAG GGC TGG CGTGGCT TC TAGG TC ACGA GGGG
TTTTTCCCTGACATCGTGGA CCG ACC GTACCGG AG GTCT AG TGCT CCCT
GTTCTGCGAGGCCATGGCCA CA G - C TG G ACAGT -------
ACGCC
GAM11249 7217 GGCCCTGGTAGGCCCACAAC T- C AACTTC- A CAA CCCCA

6 TTCCCTAAGCCAAGCTCCCC GGCCCTGG AGGCC AC CCT AGC GCT
AGGCCCAGCTCAGGCCTCGC CTGGGACC TCCGG TG GGA TCG CGG
GGTGGCCTCTCCAGGGTC TC - GCGCTCC C ACC -----
GAM11249 10517 GGCCCTGTACTTCTCAGATT TACT CA TGT GTG-- GA ATTTGG
7 TCGTGTGCCAGTGCCCCGAA GGCCCTG TCT GATTTCG GCCA CCCC AGG
GGATTTGGCCTGGGGAAAGG CCGGGAC AGA TTAAAGT CGGT GGGG TCC
TGGCTGGTGAAATTAGATTA CATT -- GGT GGAAA -- ------
CCAGGGCC
GAM11250 7818 GGCCCTGTGGGATGAAAAGC CC A GA CAAAA- A TGCTT CTCTGATAC
7 AGGTATCCAAAAGAACTCTG GG CTGTGGG T AAAGCAGGTATC GA CTC GGCC
CTTGGCCCTCTGATACGGCC CC GACACCC G TTTCGTCCGTGG CT GAG CCGG
TTGAGGTCAACCCTGGTGCC A- G TC TCCCAA G TT--- ---------
TGCTTTCTGGCCCACAGACC
GAM11252 11730 GGCCCTTGAGCACCTGGGCA - GAGCACC-- CA - TCCAT
0 GTCTGATCCATTCATGGCGA GGCCC TT TGGG GTC TGA
CCCGCACACGAAAGATGGGC CCGGG AG GCCC CGG ACT
C T AAAGCACAC AG T -----
GAM11253 17664 GGCCGAAGTTGGGGTGTATA AAGT GGG ATAA- - A TTGT
4 AGGGCCGCGGGACCTTTGTG GGCCG TG TGT GGGCCGCG GG CCT
GGACCGCGTGGTCTCGAGGG CCGGC AC GCG TCTGGTGC CC GGG
CGAACATTGGCGGCC GGTT AA- GGAGC G A ----
GAM11253 10154 GGCCGACGGGCTGCAAAAGA AC AA- A CCCCT- T ACAA AACCCCAA
8 TGGTGCCCCTGCTCAACAAG GGCCG GGGCTGCA AG TGGTG GC CA GAAC
AACAACCCCAAGTTCCTGGC CCGGT CTCGACGT TC GCCAC CG GT CTTG
CATCACCACCGACTGCCTGC C- CCG A CACTAC - C--- --------
AGCTCCTGGCC
GAM11260 13774 GGCCGATCCTGGTTTATTTG AT- G ATTT TT CAGCCAA
7 GTTTTCTTCTCAGCCAAGGG GGCCG CCTG TTT GGTT CTTCT
AGGGGACCCGCAGGGCAGGC CCGGC GGAC GGA CCAG GAGGG
GCCGGCC CGC G CGC- GG -------
GAM11262 22638 GGCCGCATGCTGGAGGTAAA ATGCT GTAAAG- - G- CT CCCGT
1 GTCCATGGTTCCCTGGCCCC GGCCGC GGAG TC CATG TTCC GGC
GTGCTGGAAAACGTGAGAGG CCGGTG CCTC AG GTGC AAGG TCG
TCAGACTCCTAAGGTGGCC GAAT- AGACTGG A AA -- -----
GAM11264 11276 GGCCGCCTTCCTGCTGGGGA C CTTCC - GA T TT CCTC
3 TCCTGTTTGCCCTCGTCTGC GGC GC TGC TGGG TCC GT GC
CGGAGCCCGCGCGCCCAGCC CCG CG GCG GCCC AGG CG TG
GCC C ACCC- C G- C TC ----
GAM11267 14746 GGCCGCTTTAAATGTTTAAT G TTAAATGTTT GGG- TGT
3 AGGGGGTCCCGATGTTTGGG GGCC CT AATAG GTCCCGA
GCAAGATTGTTTTGGGGGCC CCGG GG TTGTT CGGGGTT
G TT-------- AGAA ---
GAM11267 15769 GGCCGGAAAGGGTCAGCTCG AAA TC- T GG - - ACCTGCGAG
4 GGGGAACTGTGGGGACCTGC GGCCGG GGG AGC CGG GA ACT GTGGGG
GAGCCCCGCAAGTGTTGACC CCGGCC CCC TCG GCC TT TGA CGCCCC
GGCTTCTCCCGCCCCGGCC CCG TCT - AG G A ---------
GAM11269 13911 GGCCGGCTGAGGGCGAAATC CC T GAAA AGACT CA TGCG
3 AAGACTGGAGCCAAGTGCGC GG GGC GAGGGC TCA GGAGC AG
TGAGCTCTCACATGAGGTCC CC TCG TTCCTG AGT TCTCG TC
TTTGCTCC -- T G--- ACAC- AG ----

GAM11272 13929 GGCCGGGCGCGGTGGCTTAC C C AAGTGC
1 GCCTGTAATCCCAAAGTGCT GGCCGGGCG GGTGGCTTA GCCTGTAATCCCA
GGGATTACAGGCATGAGCCA CCGGTTCGT CCACCGAGT CGGACATTAGGGT
CCATGCTTGGCC A A ------
GAM11272 19442 GGCCGGGCTCGGTGGCTCAC C ---- A - --- C AA- AGAAAGC
3 GCCTGTCATCCAACACCTTG GGCCGGGCT GGT GGCTC CG CCT GT ATCC CACCTTG
AGAAAGCCGAGGTGGGCGGA CCGGTCCGA CCA TTGAG GC GGA CA TAGG GTGGAGC

TCACTTGAGGTCGGGAGTTT - GAGT G T GTT C CGG -------
GAGACCAGCCTGGCC
GAM11273 22621 GGCCGGTCAGTGTGCACGTG AG TGC G ----- CTTC
9 AGGTTCGCTTCTGAACCTAA GGCCGGTC TG AC TG AGGTTCG
GAGCAGGTCCTCGAGGGCCG CTGGCCGG GC TG AC TCCAAGT
GTC GA TCC G GAGAA ----
GAM11274 15845 GGCCGGTGATCCCTCCAAAG G TC AA AC- GA C TGGG
0 AACCAGAAGCGGGTGGGTTC GGCC GTGA CCTCC AGA CA AG GGG
ACTATGAGATCTGAGGAGGC TCGG TGCT GGAGG TCT GT TC CTT
TTCGTGGGCT G TC AG AGA A- A ----
GAM11275 2330 GGCCGTGACGCAGACGGTCC C C GA G AGC AGCAGAG
6 GCGTTGTAGCGTTGGAGCAG GGC GTGA GCA CGGTCC CGTTGT GTTGG
AGCCGACAGCAGCGGGGCTG CCG CACT TGT GTCGGG GCGACG CAGCC
GGTGTTCACGCC - - GG - A-- -------
GAM11276 12041 GGCCGTGGGGGCGGGCAGGG GT - G A C C A ACAGC
2 GGCGGGGCCGGGCCTGACCA GGCC GGG GGCG GC GGGGGCGGGGC GGGC TG CC

CAGCGGCCGAGTTCAGTCCT CCGG TCC CCGC CG CTCTCGTCCTG CTTG GC GG
GCTCTCCGCACGCCACCTTA AT A A C A A C -----
GGCC
GAM11278 7637 GGCCTACACCCCGGTCGTGG T CC- - TGAC-- G C CC GAGC
0 TGACCCTGTGGTACCGCGCC GGCC ACA CCG GTCGTGG CCT TGGTACCG GC CA
CCAGAGCTGCTGCTTGGTGC CTGG TGT GGT CGGCACC GGA ACCGTGGT CG GT
CAAGGAATACTCCACGGCGT - ACA G TCATAA - T TC ----
GGACATGTGGTC
GAM11281 11160 GGCCTATTGAAGACACCTGC ATT---- ACACCT TATGACGCTT
3 TCAGTATGACGCTTCTGAGC GGCCT GAAG GCTCAG
TAAAAGCTTCCATGAAGGGG TCGGG CTTC CGAGTC
CT GAAGTAC GAAAAT ----------
GAM11285 6866 GGCCTCCAACCACAAAGGCA AA- ACAAAGG AGAA CCCAGAAA
1 GAGAAGTTAGCCCCAGAAAG GGCCTCC CC CAG GTTAGC
CTGACAGCTGAAGGCGGGGA TCGGAGG GG GTC CAGTCG
GGCT GGC AA----- GA-- --------
GAM11285 17244 GGCCTCCAGTGGAAGTGCAC CC ------ TGC - CTCC ATGT
8 AGGCACTCCCAATGTTGTTA GG TCCAG TGGAAG ACAG GCA CA
ATGCTCTGTCTTCCATTTGT CC AGGTC ACCTTC TGTC CGT GT
TCTGGAATCC TA TTGTTT --- T AATT ----
GAM11290 9934 GGCCTCCTGGCTCCCTCTGC TCCT- TC- TCT G TG GCCGG
1 TGGTGTTGTTGGGGCCTGGC GGCC GGC CC GCTGGT TTGT GGGCCTG
CGGCGGGTCCAGGCGGGACC CCGG CCG GG CGGCCA GGCG CCTGGGC
GGCTGTGGTGTGCCTTCGTG TGCTT TGT TGT G GA -----
GCC

GAM11291 16143 GGCCTCGGTGACTGCCTGGT C ACT GG GA - AATC
2 TAAGATCTACAAATCTGATG GGCCT GGTG GCCT TTAA TCTA CA
GGATTAAGGGCCTGTACCAA TCGGA CCAT CGGG AATT GGGT GT
GGCT A GTC -- A- A ----
GAM11291 21953 GGCCTCTAAATCTTTAGGTT TAAAT T GT G G TTGCCC
7 GGGGCTGCATTGCCCTGGAG GGCCTC CTT AG TG GGCT CA
CCGCACTCTTGAGTCCGAGG CCGGAG GAG TC AC CCGA GT
CC CCT-- T TC G G ------
GAM11295 16894 GGCCTGAACCGGGTGCTGGG GAAC- T CT CC GCT G CCTCAC
4 CCTGGGCCTGGGCTGCCTGC GGCCT CGGGTGC GGGC GGG TGG GCCT CG
GCCTCACCGAGGCCGACTAC CCGGG GTCCACG CTCG TCC ATC CGGA GC
CTGAGCTCGCACCTGACCGA AGCCA - AG -- AGC - ------
GGGCC
GAM11298 7161 GGCCTGCAGGAGCTTCTGCT A A TTCT GA -- GAGT
4 GCTGACCCCATGCTGAGTGG GGCCTGC GG GC GCTGCT CCCCAT GCT
CCAGTGGGGAGCGGCGCCCG TCGGACG CC CG CGGCGA GGGGTG CGG
GCAGGCT G - ---- -- AC ----
GAM11298 15640 GGCCTGCATCTTGGACCCCC TCTTG A T TA---- GCC- ACCTCTCTCTACCCA
6 GTTCTTATCCGGGGTTGGCC GGCCTGCA G CCCCCG TCT TCCGGGGTTG CTG
CTGACCTCTCTCTACCCACA CTGGACGT C GGGGGC AGA AGGTCCCAGC GAC
GAACACGACCCTGGACCTCC ----- - C TCCTCC ACAA ----------
TAGACCGGGGGCTGCAGGTC
GAM11298 7872 GGCCTGCATCTTGGACCCCC TCTTG A T TA--- GC-- ACTCTCTCTACCCA
7 GTTCTTATCCGGGGTTGGCC GGCCTGCA G CCCCCG TCT TCCGGGGTTG CTG
TGACTCTCTCTACCCACAGA CTGGACGT C GGGGGC AGA AGGTCCCAGC GAC
ACACGACCCTGGACTCCTAG ----- - C TCCTC ACAA ----------
ACCGGGGGCTGCAGGTC
GAM11299 16398 GGCCTGCCATCACTGTGCAC TG A----- A ACCCAC- CCACCAGC
0 CCACACACCACCAGCTGTAA GGCC CC TC CTGTGC ACA
CCCAGGCACAGGACCTCAAG CCGG GG AG GACACG TGT
GTGGGCC GT AACTCC - GACCCAA --------
GAM11300 10721 GGCCTGCTGAGGTTTTTGTA TG A TT GG----- G TTTTT
2 TGGTTGTGTTTTTTTTTTTG GGCC CTG GGTT TGTAT TT TGTTTTTT
AAAGACAGGAAGAGTCGGTA CCGG GAC CCGG GCATG AG ACAGAAAG
CGTGGCCCAGGGCC -- - T- GCTGAGA G -----
GAM11301 6993 GGCCTGGACTGTTACCAGTT G TTA TA GT CA TTC
1 ACGTCTTCCTCAAGTTCCTC GGCCTG ACTG CCAGT C CTTCCT AG
CAGGGGGGTGGCACTGGCAG TCGGAC TGAC GGTCA G GGGGGA TC
TACAGGCT A --- CG TG CC ---
GAM11306 22794 GGCCTGTGCCGCGACCGGCC CGA CCCC CT CTG CCGC
4 CCCCTGGGCGGGGCTCGGGG GGCCTGTGCCG CCGGCC TGGGCGGGG CGGGG CCGCGTC

CTGCCGCGTCCCGCGACGCG CCGGGCGCGGC GGCCGG GCTCGCCCC GCTCC GGCGCAG

GGACCTCGCCCCCCGCTCGT CCC T--- CC AG- ----
GGCCGGCCCCGGCGCGGGCC
GAM11307 1804 GGCCTGTGGTGCGGTTTGGT T - GTTT - AT CACCACCTC
1 GGATTTGGGGCGCACCACCT GGCCTG GG TGCG GGT GG TTGGGGCG
CCGCCCTAACCCCAACCCCA CCGGAC CC GTGC CCA CC AATCCCGC
ACGTGTCCCCAGGCC C T AACC A CC ---------

GAM11307 10486 GGCCTGTTATCTCCTTTTGC -- - T TT C C CTCA
6 GCGACACGGTCTCAGCTGTT GGCC TGTTA TC CCTT GCG GA ACGGT
CCGCCTGAGGCGAGTGACGC CCGG GCAGT AG GGAG CGC CT TGTCG
TGGCC TC G C TC - - ----
GAM11307 17934 GGCCTGTTCTGGGATTCCAA TGT GG TCCAAGAA - C AAAA
7 GAATGAGCTGCGCAAAAGCC GGCC TCTG AT TGAGCT G GC
AAGTTCAGCACTGTTTCAGA CCGG AGAC TG ACTTGA C CG
GGCC --- TT TCACG--- A - ----
GAM11309 17473 GGCCTTAGCATGTGTTAAGA GCA AA--- -- A TTC A GACTG
3 TGTGAGATTTCAGGTTAGTT GGCCTTA TGTGTT GATG TG GAT AGGTT GTT
GACTGAGCAAACTTCTTATT CCGGGAT ACACGG CTAC AC TTA TTCAA CGA
ACAACCATCGAAGGGGCACA AC- GGAAG CA A TTC A -----
CATAGGGCC
GAM11311 15145 GGCCTTCTCTGTAATACACT T GTAATACAC A CTTCACTAAATCTA
9 TTCTTTTAAAAGACTTCACT GGCCT CTCT TTTCTTTT AAAGA
AAATCTATCTTTAAAAGGAA TTGGA GAGG AAAGGAAA TTTCT
AAACAAAAAGGAGAGGTT - AAAAACAA- A ----------
GAM11312 22957 GGCCTTCTTCTCAACGGACT CAA ACT CA- TCT--- TT GTCA
3 GTGCAATCCTCTTGGGGTTG GGCCTTCTTCT CGG GTG ATCC TGGGG GGTGACT
GTGACTGTCAAGTCATCCCC CTGGAGGAAGG GCC CAC TAGG ACCCC CTACTGA
CACAATCTGGATGTTCACCC AGA CC- TTG TCTAAC -- ----
CCGAGAGGAAGGAGGTC
GAM11313 11405 GGCCTTGCAGGGCGCTGTGA ---- C GTGA - CCGGT
5 GGTCCAGGCCGGTCTTGGCG GGCCT TGCAGGG GCT GGT CCAGG
CCGAGAGCCCCTGCACTCAA CCGGA ACGTCCC CGA CCG GGTTC
GGCC ACTC - GAG- C -----
GAM11318 320 GGCCTTTGGACATCTCTTCA A- TCTCTTCA- G AATT- TCTT
5 GGCCTGACAATTTCATCTTT GGCCTTTGG CA GGCCT AC TCA
GGTCAGAGTGGGGCCGGCAA CTGGGAACC GT CCGGG TG GGT
CAACTGGGCCAAGGGTC GG CAACAACGG G AGACT ----
GAM11320 4633 GGCGAAGTGGAATGTCGGGA AG AATGT TA- TCCAC
8 GGTAGGCTCCACGCTGCGTC GGCGA TGG CGGGAGG GGC
TCCTGCCCTACCAAGTCGCC CCGCT ACC GTCCTCT TCG
GA ATCCC GCG -----
GAM11321 22036 GGCGAATTCGGCACGAGGCT G ATTC- A A TG AAGT - CT -- A GCAA
1 GCGGCTGCAGAAGTACCGCC G CGA GGC CG GGC CGGCTGCAG AC CGC GCGGA GTA CT

TGCGGAGTAACTGCAAAGAT C GCT CCG GC CTG GCCGGCGTC TG GCG TGCCT CGT GA

GCTGTCCGTGCGCGTTGCTG G CCTTC C - GT GT-- C -- GT A ----
CGGCCGTGGTCCGCGCCCTT
CCTCGGC
GAM11321 11279 GGCGACACCCGGAAGTTAGA ACA- A AGA GACTAGGGAG
6 CTTGCGACTAGGGAGGCAGG GGCG CCCGGA GTT CTTGC
ATAGACATCCGGGGAGGCGC CCGC GGGCCT CAG GGACG
C GGAG A ATA ----------
GAM11322 11764 GGCGACCTTGTACATGCCAG CC TA CA---------- ACCGT
8 GCACCGTGCTAGACACTTCA GGCGA TTG CATGC GGC
TACCCAACCGCATGCTTAAT CCGTT AAT GTACG TCG
CTTGCC CT TC CCAACCCATACTTCACAGA -----

GAM11323 15617 GGCGACGGGTTTGTCAGAGC ACG AGA------- AAC
1 ACCATAACATGGTGTGGGAA GGCG GGTTTGTC GCACCAT
GTGAAGACAAATCAGATGCC CCGT CTAAACAG TGTGGTA
AGA AAGTGAAGGG ---
GAM11323 10800 GGCGAGAAGGTGTTCCGTGT G AAG TTCC C TGAA GAAA
8 TAACGTTGAAGATGAAAATC GGC AG GTG GTGTTAA GT GAT
ACATTAACATAATCCGCGAG CCG TT CGC TACAATT CA CTA
TTGGCC G GAG CTAA A ---- ----
GAM11324 22525 GGCGAGAGGCCCAAGGCGCA AGAGG CGCAGCA - G CGGT
3 GCAGTGGTGGCCCTCGGTAG GGCG CCCAAGG GTG GT GCCCT
GGCGACACACCTTTGGGAAA CCGT GGGTTTC CAC CA CGGGA
TGCC AAA-- ------- A G ----
GAM11325 10747 GGCGAGCCGCAGGTGGATTG G AG TG----- - AA TCAACAGACAT
1 TCTGAAAAGCTCTCAACAGA GGCGA CCGC GTGGAT TC TG AAGCTC
CATGGGCTTAGCACGAACCA CCGCT GGCG TACCTA AG AC TTCGGG
TATATCCATTGGCGGATCGC A GT TATACCA C GA ----------
C
GAM11328 11228 GGCGATCCGGAGCCTGGGGT ATC- A G A C C C CGCC
0 AGTCGCCGCCGCCGCCGCCG GGCG CGG GCCTG GGT GT GC GC GC
CTGCAGCCACTGCAGGCACC CCGC GCC CGGAC TCA CG CG CG CG
GCTGCCGCC CGTC A G C A T C ----
GAM11328 2253 GGCGATGCCTGGTGTCCTGC A CT - CTTTCTCCA GCTTGA
5 CTTTCTCCAAGGCTTGACTG GGCG TGC GGTGT CCTGC AG
ACTTCTTGCAGGCACACCGC CCGC ACG CCACA GGACG TC
ACGCC - -- C TTCTTCAG- ------
GAM11328 2601 GGCGATGTGCCCGCTGTTGT ATGTG TT- C - TTAGGTTTC
8 TGGCCCACACGGTTCTTTAG GGCG CCCGCTG GTTGGCC ACACG GTTCT
GTTTCGGAACATGTGTCGGC CCGC GGGCGGC TAATCGG TGTGT CAAGG
TAATTACCGGCGGGGGAGGC GGAGG CAT C A ---------
GCC
GAM11329 15892 GGCGCAAAAGACAAAGCCAG AAAA CAAA --- ACTC- - CATT
4 CCCACTCCCTGCCATTGTCA GGCGC GA GCCA GCCC CCTG C
GGTACTGGGGCCCATGGCAA CTGCG CT CGGT CGGG GGAC G
TTCAGCGTC A--- TAA- ACC GTCAT T ----
GAM11330 31 GGCGCACGACTCGACCAACC CACGA GACCAACCACA --------- - A ACTCTAA
1 ACACTCCTGCCGAGAGACAC GGCG CTC CTCCT GC CGAG GAC
TCTAAGTCACTCGCGCGCAT CCGC GAG GAGGA CG GCTC CTG
ACCCAAGGAGACCAAGAAAC A---- ACAAAGAACCA ACCCATACG C A -------
AGAGACGCC
GAM11331 12015 GGCGCAGCTGGCCTGAGCTG A CCT CT--- GAGA- TG G GTCA
0 GGCGAGAGGTGGCAGAGGGC GGCGC GCTGG GAG GGGC GG GCAGAGG CA
AGTCATGGCCTCTGCTGCCC CCGCG CGACC CTC TCCG CC CGTCTCC GT
AATAGCCTTCCTTCTCCACC G AC- TTCCT ATAAC GT G ----
AGCGGCGCC
GAM11332 16292 GGCGCCAAACTATTGCGGGC C CT- - ATGACG TACCCCT
8 TGATGACGCCGTACCCCTCG GGCG CAAA ATTGC GGGCTG CCG
GAAGCAGCCCTGCGGTCCCT CCGC GTTT TGGCG CCCGAC GGC
TTGCCGCC C CCC T GAA--- -------
GAM11333 21933 GGCGCCAAGGTCTCACTATG C A A ATG CA- TAATCC
1 CTCACACCTGTAATCCCAGG GG GCC AGGTCTC CT CTCA CCTG

CTTTGAGGAAGAGGGATCTG CC CGG TCTAGGG GA GAGT GGAC
GGCACC A G A AG- TTC ------
GAM11333 13449 GGCGCCATGGTGCTGTTGCA - T-- - A- GTTTG
7 CGTGCTGTTTGAGCACGCGG GGCGCCA TGGTGC GTTG C CGTGCT
TCGGCTACGCGCTGCTGGCG TCGCGGT GTCGCG CGGC G GCACGA
CT C CAT T GC -----
GAM11335 14949 GGCGCCGCCCCACTCGCCCC C- C---- T CCCA C ATGAA
2 AGCCGCCGCCATGAAGGCCG GGCGC GCCC AC CGC GCCGC GCC
TGGTGCAGCGCGTCACCCGG CTGCG CGGG TG GCG TGGTG CGG
GCCAGCGTC AC CCCAC C ACG- C -----
GAM11336 14215 GGCGCCGTGGGCGCGGAGGC - ----- ----- TC- TCC
1 GCCGTCGGGCACAGTCCCTG GGCGCCG TGG GCGCGGAGGC GCCG GGGCACAG

TGCTCTTCTGGTTCTCAGTC CCGTGGC GCT CGCGCTTCTG TGGT CTCGTGTC
TTCGCGCGACCCTCGTCGGT T CCCAG ACTCT CTT ---
GCC
GAM11338 7219 GGCGCGGCGCGGACGGTAGT GCG G TTG - C - TCGCA
6 TGCTGTGGTTTCCGTTCTGA GGCGCGGC GACG TAG CTGTGGTTT C GTTC TGAGC
GCTCGCAGCTTAGGAGCTGA CTGCGCCG TTGC ATT GGCGCTAGA G CGAG ATTCG
AGATCGCGGACTTAGCGTTG --- G CA- A T G -----
CCGCGTC
GAM11339 13566 GGCGCGTACATGGGTAATTA C TG AATTA AAAATATGCGC
6 AGGTTTAAAAATATGCGCTA GG GCGTACA GGT AGGTTTA
GGCCTCTGGCTTGTGTGCGC TC CGCGTGT TCG TCCGGAT
CT - GT GTC-- ----------
GAM11340 11085 GGCGCTATTACGGGGGAACG TATT--- AA ACAACAGGAGAGCAAAG
2 GACAACAGGAGAGCAAAGCC GGCGC ACGGGGG CGG
GCCCCCTGTCGCACTCGCGC CCGCG TGTCCCC GCC
C CTCACGC C- ----------
GAM11340 5040 GGCGCTCCGAGGCCGCTGGT CT - G GC G T GAGGACGGCA
9 GTGGTGCGAGGACGGCAGCC GGCG CC GA GCC TGGT TGG GC
CGGGCCGAGGCGTCAGGTCG CCGC GG CT CGG GCCG GCC CG
CC T- A G A- G - ----------
GAM11341 6913 GGCGCTCGGTTACATTGGAG G - ---- GA GG TGGT
0 AACTGGAGTGGTCTGGAGTT GGC CTC GGTT ACATTG GAACT AG
CCACGGTGTAGTGGACCAGA CCG GAG CCAG TGTGGC CTTGA TC
GGCC - A GTGA AC GG ----
GAM11341 6750 GGCGCTCTTGAAAAGGGGAT C A TTA TT ACT
1 TATCATTGTTCCACTGGGAC GGCGCT TTGA AAGGGGA TCA GTTCC
TTGAGCTTCTCCTTCTCAAA CCGCGA AACT TTCCTCT AGT CAGGG
GCGCC - C TCG T- ---
GAM11342 10505 GGCGCTGTAGCCAGCGGCTG C TA CTGAC C A GAAAG
6 ACAGGCGCAGCGAAAGGCAG GG GCTG GCCAGCGG AGG GC GC
CCCTCTGCTGGTCCCAGCAC CC CGAC TGGTCGTC TCC CG CG
C A CC ----- - A -----
GAM11342 12053 GGCGCTGTCTACCTCCTCTG T - -- CT- C GGG C CTGG
7 GTCCAGGGGTACTGCTGGCA GGCGC GTCT AC CTC CTGGTC AG TA TG
TTAAAACTAGACCAGTCAGA TTGTG CAGA TG GAG GACCAG TC AT AC
GAAGTCAGACGTGTT - C AA ACT A AAA T ----
GAM11342 22169 GGCGCTGTCTACCTCCTCTG T AC C TCCAGG A GGCATTAGA

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8           GTCCAGGGGTACTGGTGGCA GGCGC GTCT  CT CTCTGG     GGT CTGGT
            TTAGAACTAGACCAGTCAGA TTGTG CAGA  GA GAGACT     CCA GATCA
            GAAGTCAGACGTGTT        -   CT  A     GA----  -    ---------
GAM11343 15744  GGCGCTTGGAGAAGGAGAAG       G-      A  AGC   AG--  CAGT
1           CTCAAGTCCCAGTGGAACAA GGCGCTT  GAGAAGG GA   TCA    TCC
            TGATAATCCCCTTTTCAAGA CCGCGAG  CTTTTCC CT   AGT    AGG
            GCGCC                 AA      C  AAT   AACA  ----
GAM11347 10410  GGCGGATCACCTGAGGTCAG     A---    TGA--      AGT   AGAC
7           GAGTTTGAGACCAGCCTGAC GGCGG    TCACC    GGTCAGG   TTG
            CAATGTGGTGAAACCCCGTC CTGCC    AGTGG    CCAGTCC   GAC
                          CCAA     TGTAA      ---   ----
GAM11350 1694   GGCGGCCAATAGTGTCTCTG    G   ATA    CTC-   T  TT   A--   TCACC
6           GTAGTTAGCAGCTTCACCGG GGCG CCA   GTGT    TGG AG  AGC   GCT
            CAAAGTTCTCTTCCATTTCA CTGC GGT   CGCA    ACC TC  TTG   CGG
            CGCATCTGGCGTC          -  CTA    CTTT   T  TC   AAA  -----
GAM11351 9913   GGCGGCCCGGCCTTCGGCCG      -          - -    GGGGCG     GCACG
2           CCCGGGGCGCGCGGGGCACG GGCGGC CCGGCCTTCGG C CGCCC     CGCGGG
            CCCGCGAGGGGGCGAGCCCG CCGTCG GGTCGGGGGCC G GCGGG     GCGCCC
            GGGGCTGGAGCTGCC          A         C A     GGA---      -----
GAM11352 22587  GGCGGCGCCCCCTCCGGAGG     C     T    AG    T GGGCG   AA   A    CAG
3           GACTGGGGCGCCGAACTCAC GGCGG GCCCCC CCGG  GGAC G    CCG  CTC CCCC
            CCCCAGGGGGGGGGGCCGGAA CCGCC CGGGGG GGCC  CCTG C    GGC  GGG GGGG
            CGTCCCCGGGGGGGGCCCGCC     -    -   --   - AA---   CG   -    ---
GAM11354 14923  GGCGGCTGAGGCGGCATGGA     - G       -  A  ----------  CGAG
6           TCTCAGCGAGCTGGAGAGAG GGCGG CT AGGCGGCA TGG TCT           CAG
            ACAATACAGGCCGCTGTCGC CCGCT GA TCCGCTGT GCC GGA           GTC
            CTGAGTTCGCC            T  G       C  -  CATAACAGAGAGAG  ----
GAM11355 22824  GGCGGCTGTGATACAGGTAC  G   -   A  A   CTT    CCTTTC
1           TTGGACACCTTTCTGTCCTG G CGGC TGTG TAC GGTA   GGACA
            ATGCTGGTGGCATAGGCTGG C GTCG ATAC GTG TCGT   CCTGT
            C               G   G   G   G   AGT    ------
GAM11357 14971  GGCGGGAGTGAGTCAACTGA          GTCAACT--     -----     GGGA
3           CAAGCGCTGGGGACAGTGGC GGCGGGAGTGA       GACAAG    CGCTG
            GTCCTTGTCTTGCCTTTGTC CCGCCCTCGCT       CTGTTC    GTGAC
            GCTCCCGCC                 GTTTCCGTT     CTGCG    ----
GAM11358 16151  GGCGGGCCTTTTTCCTTGCG   -----      TTTCCT  C       CT--  AC  TTCG
6           TCCCAAGCTGCACCCTTCGG GGC    GGGCCTT     TG GTCCCAAG    GC  CC
            GCCGTCTCTCTTGGGACCAC CCG    TCCGGGG     AC CAGGGTTC    TG  GG
            CTGTTGGGGCCTGGGGAGCC   AGGGG      TTGTCC  -      TCTC  CC  ----
GAM11360 13505  GGCGGGGCCGGGGGCCCGGG   -   C          G   GCCTGGCTA
4           GAGCGGCCTGGCTACGCTGC GGC GGGG CGGGGGCCCGGG AGCG
            CCGGGCTCCCGCCCTCAGCC CCG CTCC GCCCTCGGGCCC TCGC
                          A   C          G   ---------
GAM11361 11587  GGCGGGGGATATAGGGTCGA     GGG       TCGAAG    A   GTAA
6           AGCCGCACTCGTAAGGGGTG GGCGG   ATATAGGG     CCGC CTC
            GATTTTTCTATGTAGCCGTT TTGCC   TGTATCTT     GGTG GGG
                          GA-       TTTA--    -   ----
GAM11361 13906  GGCGGGGGCCTCCCTAGTGA   -   G   -     GT      -      GTAGAGAGGG
8           GGGGTCCTCCCCGTAGAGAG GG CGGG GCC TCCCTA  GAGGGGT CCTCCCC
            GGGGGGGGGGTGCCCTTCTGT CC GCCC CGG GGGGGT  CTTCCCG GGGGGGG
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GGGGGTGGCGCCCGACC A G T GT T ----------
GAM11362 15257 GGCGGGGGGTCTTGGGGGCC CT- GC - CTC--- CAT - TGAT
0 TCTCAGCTCCCGCCCATGCC GGCGGGGGGT TGGGG CTC TCAG CCGCC GCCT CCC

TCCCTGATGGGTGGGCCCAG TCGCTCCTCA ACTCC GAG AGTC GGCGG CGGG GGG
GCGGCTCTCTCTGAGGAGAC CCC A- G TCTCTC ACC T ----
CTCACCCACTCCTCGCT
GAM11362 10036 GGCGGGTCATACTCCTTAAG CATA - A AG TCAGA ATGAT
8 AGCAGTTCAGATGATGATCA GGCGGGT CTC CTT AG CAGT TG
AGCCTATTGACTGAAGAGAG CCGCTCA GAG GAA TC GTTA AC
ACACTCGCC CA-- A G A- TCCGA -----
GAM11363 17279 GGCGGGTGCTGGTGGTCGGG C -- T --- T AG TCGCT- - TTGCGCTTCC
5 GTGGAGGAGCCGGCGTCGCT GG GGGT GCTGG GG TCGGGG GGAGG CCGGCG GTC TCGC

GTCTCGCTTGCGCTTCCGTG CC CCCG CGACC CC AGCTTC CCTCC GGCCGT TAG AGTG

ATGATTTCTTCTGCCGGACC T TG T TCT T A- CTTCTT T ----------
TCCTCTTCGATCTCCTCCAG
CGTGCCCTCC
GAM11364 5281 GGCGGTCCCGCGGGTCTGTC C G C T C AGT
2 TCTTGCTTCAACAGTGTTGG GG GGTCCC CGGGTCTGT TCT G TTCAAC
ACGGAACAGATCCGGGGACT CT TCAGGG GCCTAGACA AGG C AGGTTG
CTC C - - - - ---
GAM11365 7255 GGCGGTTCTCTGGAGGCTGA - CT -- TGCCGTTT - --- - A GC - TCTGT
6 GTGCCGTTTGCGGTGCCCTA GG CGGTTCT GGAG GCTGAG GC GGT GCC CT GGAG CGA
GC
GGAGGCCGAGCTCTGTTGCT CC GCCAGGA TCTT CGACTC CG CCA TGG GA CCTC GCT CG

TCGAACTCCAGTGGTCAGAC A CT TA TATACT-- T GAC T - AA T -----
CTGCTCATATCTCAGCATTT T
CTTCAGGACCGACC

-
GAM11366 13582 GGCGTAAGGATCCTAATTCT GTA CCTAA GAT AGATCA -- C C GCCCC
1 GGATGGTTATGAGATCAGTG GGC AGGAT TTCTG GGTTATG GTGTC CCACC TG TGGA
TCCCACCCTGCTGGAGCCCC TCG TCCTA AAGAT CCAGTAC CGTAG GGTGG AC ACTT
TTCACATGGTGGATGATGCA --- AGTTC GTC CCA--- TA T - -----
CCCATGACCCTGTAGAACTT
GAATCCTGCT
GAM11366 17149 GGCGTAGACGAGTTAAGTCC G G TTAA - CG GTCGACGA
4 TGGTCTGCGTGGAGGTCGAC GGC TAGAC AG GTCC TGGTCTG TGGAG
GACTCCGTCCAGACTACGGA CTG GTCTG TC CAGG ATCAGAC GCCTC
CCTGTCTGGGTC G - ---- C CT --------
GAM11369 5050 GGCGTCTGTTCTTGCCTGGT CTG CCT TG GGTG- -- TG ACTTG
7 GTCGGTGGTTAGTTTCTGCG GGCGT TTCTTG GG TC GTTAGT TTC CG
ACTTGTGTGGGACTGCTGAT TCGTA AAGGAC CT AG TAGTCG AGG GT
AGGAAGATGTCTTCAGGAAA --- TT- GT AAGGA TC GT -----
TGCT
GAM11370 13775 GGCGTGCAAGGCGATGGGCT GCAA --- T- -- A----- GAGTTGGATGTG
8 GCTTCCTCAGCTGAGAGCCG GGCGT GGCGA TGGGC GCTTCC TCAGCTG GAGCC

AGTTGGATGTGGGCTCCTTC CCGTA TCGTT ACCCG TGAGGG AGTCGAC CTCGG
AGCAGCTGACAGGGAGTCTG ATAG GAA TC AC GACTTC ----------
CCCAAAGTTGCTGATAATGC
C
GAM11373 17314 GGCGTGGTGGCTCACGCCTG TG AA----- TACT
7 TAATCCCAGTACTTTGGGAG GGCG GTGGCTCACGCCTGT TCCCAG
GCCGAGGCAGGCGTGAGCCA CCGT CACCGAGTGCGGACG AGGGTT
CTGTGCC GT GAGCCGG ----
GAM11373 7898 GGCGTGGTGGGCGTGGCCCC - T TG C- T TCCCAGC
8 CACTGGCATCCCAGCTGCTG GGCG TGG GGGCG GCC CCAC GGCA
TGGAAGGTATCGTCCCCAGC CCGC ACC CCTGC TGG GGTG TCGT
GCC G - TA AA - -------
GAM11381 22402 GGCTAAGTCCAAGGCATATT TAA CAA C CA A ACTAAGAACCA
3 CATTTGAGGGAACTAAGAAC GGC GTC GG ATATT TTTG GGGA
CATCCTATAAAAGTATACCC CCG CAG CC TATGA AAAT TCCT
AGACACTGCC TCA AC- A -- A ----------
GAM11388 6682 GGCTAGATGGTATTGGGAAT TAGA TA ATA---- - CAGTTC
2 AATACCTCACAGTTCTGAAG GGC TGG TTGGGAATA CCT CA
GACCACACTATTTCCAAGCC TCG ACC AACCTTTAT GGA GT
CAGAATGCT TAAG CG CACACCA A ------
GAM11388 17368 GGCTAGCACAGTTCCAGATC AGC--- TCC TCAC TTTCT
4 ACTGTAATTTCTTTACAATT GGCT ACAGT AGA TGTAA
TTCTATACTGTTTAAAAGGT CTGG TGTCA TCT ACATT
C AAAATT TA- TTTA -----
GAM11388 507 GGCTAGCGGGAGCCGGCACA --- A C AAGA--------- G GAG
7 AGAGGGTCGAGGAGCCAGGA GGCTAGCG GG GCCGG AC GG TC
ACCCCAAACGTCCGGCGCCA CCGATCGC CC CGGCC TG CC AG
GGCGCTAGCC GGA G - CAAACCCCAAGGA G ---
GAM11388 11897 GGCTAGCGTCCCTGTCGGAG A TCGGA GC - GTGGACGA
8 CGGGCCTCGCGTTGTGGACG GGCT GCGTCCCTG GCGG CTC GCGTT
AGGCGCAGAGACCGCGTCAG CCGA CGCAGGGAC CGCC GAG CGCGG
GGACGCAGCC - TG--- A- A --------
GAM11389 22516 GGCTAGCTTTTCTTACTTCA CT- T - TTTTTA AACACCAA
0 GTTTTTATAGAACACCAACT GGCTAG TTTC TACTT CAG TAG
AAATTTGAAAGTATGAAGTC CCGATC GAAG ATGAA GTT ATC
TCTAGCC TCT T A TAA--- --------
GAM11389 14101 GGCTAGGATGCCAGACACAG A CC ACA C - AGAAATCAG
2 CCATTTGCAGAAATCAGGCA GGCT GGATG AG CAG CATT TGC
CAGTGACTGCAGCTCACGTC CCGA CCTGC TC GTC GTGA ACG
CAGCC - AC GAC A C ---------
GAM11389 2414 GGCTAGGTACGAGGCTGGGT A TA A CT ------ T TCTGT
9 TGTGCAGCTCTGTGCTGCCA GGCT GG CG GG GGGT TG GCAGC
GTCGGTGCCCCTCCCGCTCC CCGA CC GC CC CCCG AC CGTCG
AGCC - TC - TC TGGCTG - -----
GAM11390 11911 GGCTAGTAAGAGCAGGAAGC G GA --- ---- AATTAG
6 TAACAGTGAATTAGCGCCAA GGCTA TAAGAGCAG AGCTAA CA GTG
GTGAGTTTAGTTATTGCTCT CCGAT ATTCTCGTT TTGATT GT CGC
TATAGCC - A- TGA GAAC ------
GAM11390 2643 GGCTAGTGCCAGCCTGTGCA CCAG T GTC C-- C CTGGTT
9 TACCCAGTCCAGCCTGTCCA GGCTAGTG CCTG GCATACCCA CAG CTGT CAG

GCTGGTTCTGCACAGATACT CCGGTCAT GGGC TGTGTGGGT GTC GACA GTC
GAATGGGTGTGTCGGGGACA ACAG - AA- ATA C ------
TACTGGCC
GAM11391 10192 GGCTAGTTTAGGCGTTGTCC AG A C G - T--- AGACAG
3 CTTTGCCGAGACAGCGGTTT GGCT TTT GG GTT TCC CTT GCCG
GCGAGAGGAAAATTCCAAGT CCGG GAA CC TAA AGG GAG TGGC
AGGCC AT - T A A CGTT ------
GAM11393 15903 GGCTATGCAGGATGGCTGCA T CT-- - ------ CTG C TCAT
1 GCCTAGGAGCTGGTGGAGGC GGC ATGCAGGATGG GCA GCC TAGGAG GTGGAGGCT GGC

TCGGCTCATGCTAGCCTCTA CCG TATGTCCTATC TGT CGG GTCTTC CATCTCCGA TCG
CGTCTTCTGAGATCTGGCGT - ATGC G TCTAGA TG- - ----
GTCGTACTATCCTGTATGCC
GAM11393 13625 GGCTATGGGAGGTGCTATGG T GGT TAT AA- AACAGAG
7 GCATAAACAACAGAGGTGCC GGC ATGGGA GC GGGCAT AC
ATGCCCCCTGCTCCTGTGCC CCG TGTCCT CG CCCGTA TG
- --- TCC CCG -------
GAM11397 16049 GGCTCAATGAAATGAAAGTG T A- TG A-- G CC- CTTTACT
1 AAAAGAACCTGACTTTACTT GGCTCAA GA A A AGT AAAAGAA TGA
CATCTTTCTTTTGATTAACT CCGAGTT CT T T TTA TTTTCTT ACT
TGTGATCTTGAGCC - AG GT CAA G TCT -------
GAM11397 17308 GGCTCAATGAAGGTTTCACC - A A T A- AT -- CA CTCCACC
2 ATGTACGCCCAGAGGAGGAT GG CTCA TG AGGT TC CC GT ACGCC GAGGAGGAT
CTCCACCATCCTCTTTGGCG CC GAGT AT TCCA AG GG CA TGCGG TTTCTCCTA
TTGACCCGGACGACACCTAT A A A C CA CC GT -- -------
AATGAGACC
GAM11398 13807 GGCTCACATGATTCTAGACA CA -------- AGA GGTGGA
4 CTTGGTGGAAAGTGAGGGGA GGCTCA TGAT TCT CACTT
GAAAAACAATCACTTGGGCC CCGGGT ACTA AGG GTGAA
TC ACAAAAAG GGA ------
GAM11402 15740 GGCTCACTTTGAGGGCAAGC -- - ------- CTCGGATC
0 CTTCTCGGATCGAGGCTTCT GGCTCAC TTTGAG GGC AAGCCTT
TCATGGCCGCTCAGATCGTG CCGAGTG AGACTC CCG TTCGGAG
AGCC CT G GTACTTC --------
GAM11403 13600 GGCTCAGATTCATAGCCCCT C C---- C AA GTCC TAGTCCC
4 GAATAGTCCCTCATAGTCCC GGCT AGATT ATAGCC CTG TA CTCA
TGAGTTCATAAGTAGTGGTT TCGA TCTAA TATTGG GAT AT GAGT
ATAGTACAATCTAAGCT A CATGA T GA ACTT -------
GAM11407 22806 GGCTCATGAGGATGCGGAGT ATGA ---- --- AAG
1 GTGAGAAGCTCATGGAGCTC GGCTC GGATGC GGAGT GTGAG
TACGAGCGTCTGGAGGAGCT TCGAG TCTGCG TCTCG TACTC
GAGG AGCA AGG ---
GAM11408 19666 GGCTCATGGAGTGTTAAAGT CT A TTAAA G T AGGAG ACC
3 GCATCCACAGGAGGATGGCC GG CATGG GTG GT CA CCAC GATGGCC
ACCGGCCATCACGTGGTGAG CC GTACC TAC CG GT GGTG CTACCGG
CCAATCATACCATGGACC AG A TAAC- A - CA--- ---
GAM11409 22557 GGCTCCACCCAGCAAGGCCT CT CA- AA T TG AG- CTATG
7 CTGGCAGGGGCTATGTTTAA GG CCACC GC GGCC C GC GGG
GGCTGGGGTCAGGCAGAGGT CC GGTGG CG CTGG G CG TTT
GGGACC AG AGA GA - GT GAA -----

GAM11410 561 GGCTCCAGCTGCCCTCTCAG CA-- CCCTCTC A AG - ACG- - GAGG
7 GTACATCAGGGCCTGGACGT GGCTC GCTG AGGTAC TC GGCCT GG TCCTCTG GG
CCTCTGGGGAGGCCACAGAG CCGGG CGAC TCCGTG AG TCGGA CC AGGAGAC CC
GAAGGGCCTAGGCTAGGAGG CCCA TTACCTC G GA T GGGA A ----
TGCCTCTCCATTCAGCACCC
GGGCC
GAM11412 4695 GGCTCCCAATGTTGACGTTG CTCCC CG---- AG CT CAAA
3 GCCAGGGCCTTTGCAAACAA GG AATGTTGA TTGGCC GGC TTG
GCCAGGCCAAAAAAGCTCAA CC TTACAACT AACCGG CCG AAC
CATTTACACC ACAT- CGAAAA A- -- ----
GAM11412 10371 GGCTCCCAATGTTGACGTTG CTCCC CG---- AG GTTTGCAAACAA
4 GCCAGGGCGTTTGCAAACAA GG AATGTTGA TTGGCC GGC
GCCAGGCCAAAAAGGCTCAA CC TTACAACT AACCGG CCG
CATTTACACC ACAT- CGGAAA A- ----------
GAM11412 21870 GGCTCCCAATGTTGACGTTG CTCCC CG---- AG TTGCAAAC
5 GCCAGGGCTTTTGCAAACAA GG AATGTTGA TTGGCC GGCTT
GCCAGGCCAAAAAGGCTCAA CC TTACAACT AACCGG CCGAA
CATTTACACC ACAT- CGGAAA A- --------
GAM11414 15070 GGCTCCGCTCCACCATGCGG C TCC A CCAG---------- CCCG
8 CCCAGGGCCCGCCGCAGCTC GGCTC GC ACC TGCGGC GG
CTTCAGCAGCCGCACGGTAC CTGAG CG TGG ACGCCG CC
GCGAGTC - CA- C ACGACTTCCTCGACG ----
GAM11415 2381 GGCTCCGGCTCCACACTGGC CC ACA G- C A G GATCG
2 ACGTAGTGGGCGGATCGCGC GGCT GGCTCC CTG CA GT GT GGCG
CGGCGCTGAGTAGGAAGGAG CCGA TCGAGG GAT GT CG CG CCGC
CTTCAGCC CT AAG GA - - G -----
GAM11416 7964 GGCTCCTCATTTACCACCTT C--- TT C CCTTTTCCCAC G TT TAACT
4 TTCCCACTGTCTGCATTGGT GGCTC TCA TA CA TGTCT CA GG
AACTCTTTTGAAGACACCCC CCGGG AGT AT GT ACAGA GT TC
TTTAATTGCTATTTGAACCT TCCA TT C TAATTTCCCC- A TT -----
GGGCC
GAM11417 86 GGCTCCTGCACGACAGCGCA - A ACA ACTTT T ACGC
2 CTTTCCTTCCGGACGCCCGG GGC TCCTGC CG GCGC CCT CCGG
CAGGCAGCGCCCCGGCAGGG CCG GGGACG GC CGCG GGA GGCC
TGCC T - CC- AC--- C ----
GAM11419 10762 GGCTCGATCACAGCTCACCA C TC C---- CACC T ACCTCC
5 CCGCCTCAACCTCCTGGGCT GGCT GA ACAG TCAC GCC CA
CAAGTGATCTTCCTGTCTCA CCGA CT TGTC AGTG CGG GT
GCC - C- CTTCT AACT - ------
GAM11421 17065 GGCTCGTCTCCTTGAAATCA - C GAAATCA G T- CAAGAT
2 ACGCGCGTACCAAGATGTTT GGCT CGTCT CTT AC CGCG AC
CGTGAGTAACTAGAGAGCAG CCGA GCAGA GAG TG GTGC TG
ACGCAGCC C C AGATCAA A TT ------
GAM11422 5119 GGCTCTATTCCGTTCGCTGG CT-- TC G-- G ACCTCA
5 TTCGCCACCTCAGGGGAACG GGCT ATTCCGT GCT GTTC CC
ATGGCCATGGAGTCCACAGC CCGA TGAGGTA CGG CAAG GG
C CACC C- TAG G ------
GAM11424 11070 GGCTCTCGGCCTTGGCAACG T - AAC---- - CG CATG
0 GCCGTCGTCATGGTTACTGG GGC CTCGGCC TTGGC GGCC GT T
CCCCTATGCGCCGATGGCCG CCG GAGCCGG AGCCG CCGG CA G

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          AGGCC              -     T    CGTATCC   T  TT ----
GAM11425 7528   GGCTCTGAAGGGTGTTTGTT      GA-   TGTTTGTT   GCT   -      CC    G-----     C  A
6           CTGGGCTGGGCTAGGCTGGG GGCTCT   AGGG       CTGG   GGGCT AGGCTGGG  TAGCT
TAGAGA AC
          CCTAGCTGTAGAGACACACC CCGAGA   TCCC       GACC   CCTGA TCCGACCC  GTCGG     GTCTCT
TG

          TAAGTTCCGTTCTCTGTTTG      ACC    CT------   ACC    G      AC     AGGTTT     - -
          GAGGCTGCACCCAGCCTGAG CCTAAGTTCC
          TCCCCACCAGTCCCCTCCAA
          GAGCC
                     ----------
GAM11427 7492   GGCTCTGCTCCGAGGTGTGT   -  ----       T       --  TGCT
3           TTGTAGTTGCTGCTAAGCGA GGC TCT    GCTCCGAGG GTGTTTGT  AGT
          ACGCCCTTTGGAGCTTACGG CCG AGG    CGAGGTTTC CGCAAGCG  TCG
          AGGCC              G   CATT       C       AA   ----
GAM11429 13231  GGCTCTGTGCAATATCCCAT    T    CAATAT   A     AA  CCAGAGA
9           CACAAAGCCCAGAGAGCCCT GGC CTGTG      CCC TCACA  GC
          GTGGGGGCCAGAACACAGTG CCG GACAC      GGG GGTGT  CG
          CC                 T    AAGACC   -    CC  -------
GAM11435 22781  GGCTGAAGGAAAATTTGTAT         AAA     AT    TCAATTATTTTT      GAAAACTCAACAG
7           TATTTCAATTATTTTTATGT GGCTGAAGG   ATTTGT  TATT          ATGTACA
          ACAGAAAACTCAACAGTGTA CCGATTTCT   TGAACG  GTGA          TACATGT
          CATTTAACCCAGTTTAGTGG         ---     --    TTTGACCCAATT      -------------
          CAAGTTCTTTAGCC
GAM11437 14133  GGCTGACACCAGCTGTCGCC    T     A   G     A  AGCC  --      GACGGTAA
4           AGGAGCCGGACCACAGACGG GGC GACACC GCT TCGCC GG    GG  ACCACA
          TAATGTGGTGATCACAGCCA CCG CTGTGG CGA GGTGG CC    CT  TGGTGT
          GGTGGAGCGGTGTCTGCC     T     -   -     A  GACA  AG      --------
GAM11437 19731  GGCTGACAGGGACCGCCGGC   CT     -    - ---      CGCCC  GCTC
5           CGCCCCGGCTCCGCTTTGCC GG  GACAG GGAC C   GCCGGC     CG
          GGCAGTGAGTCCGCTGTCTT CC  CTGTC CCTG G   CGGCCG     GC
          CC                 TT     G    A TGA      TTTC-  ----
GAM11441 7352   GGCTGAGCCGATGGAACTCG   CT        GA----     GG   GGCAGAAAG
7           GGGTCGGCAGAAAGGATTAT GG  GAGCCGATG      ACTCG  GTC
          GGGTGGAAAACATTGGCTCT CC  CTCGGTTAC      TGGGT  TAG
          TCC                TT       AAAAGG     AT  ---------
GAM11442 7730   GGCTGAGCTGTGCGTGGGCT    G   T-   -  TG   T   G  C  A      TGTTCCT  TTGCCC
5           GCTGCGCGGAGTGTGCTGTT GGCT AGC  GTG CG  GGC GCT CG GG GTGTGC       GC
          CCTGCTTGCCCGCCCTGCAC CCGG TCG  CGC GT  CCG CGA GT CC CACACG       CG
          ACCCCTGAGCTGCCTGTGCC    G   TC   C  GT   T   -  C  -     TCC----  ------
          GCCTGCTGGGCC
GAM11456 11210  GGCTGCACCACCAGCTCTCC         A  A        G     TGCG
8           CAGTGGGGTGCGTTCTGGTG GGCTGCACC CC GCTCTCCCA TGGGG
          GGAGGGTAGGAGGTGCAGCC CCGACGTGG GG TGGGAGGGT GTCTT
                              A  A        G     ----
GAM11457 17588  GGCTGCACCCAGTCATTTTG    T     AG  ATTTTG  C  CA     ACAG
0           GCCTCCATTGTGGACAGCTA GGC GCACCC  TC      GC TC  TTGTGG
          CGAGAGACGCAACGAGGGTG CCG CGTGGG  AG      CG AG  AGCATC
          CTGCC              T     --  CAA---  C  AG     ----
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GAM11459 7629 GGCTGCAGGCTTCGGCGTTC C - --- T A G GGCA
0 AGTGATTGTCGCTGGGCACA GG TGCAGGCT TC GGCGT CAGTG TTGTC CTG
GGGGCGGCGCTGATGCCCAC CC ACGTCCGA GG CCGTA GTCGC GGCGG GAC
GGCAGCCTGCACC - C CAC - - G ----
GAM11462 11616 GGCTGCCTAATTAACTGCTT --- AAT G T TG A - TATCT
0 TGTGCATGTTCCTATCTGGA GGCT GCCT TAACT CTT G C TGT TCC
GACAGTGCTGAGGGGTTAGG CCGA CGGG ATTGG GAG C G ACA AGG
GCCAGAGCC GAC --- G T GT - G -----
GAM11463 75 GGCTGCGGCAGCACGCCTAT CAC A- A A - G CAA TTCGA
3 GAGCACTCGCTGGGCAAGCT GGCTGCGGCAG GCCT TG GC CTC GCT GG GC
TCGAGCCACCAAGCAGAGGG TCGACGTCGTC CGGA AC CG GAG CGA CC CG
CACAGGAGGCTCTGCTGCAG T-- GG A G A A AC- -----
CT
GAM11466 7470 GGCTGCTGTGCAGGGGTGTG TG G GT A G C CT A ATGCA GTCTGCA
4 GAGTAGGGAGCTGGCTCCCC GGC CTGT CAGGG GTGG GTAGGGAGCTG CT CC GAG GCC
GGGC
TGAGAGCCATGCAGGGCGTC CCG GACA GTTTC TACC CGTTTCTCGAC GA GG CTC CGG
CCCG
TGCAGCCCAGGCCTCTGGCA GT G TC - - C T- - A---- -------
GCAGCTCTTTGCCCATCTCT
TTGGACAGTGGCC
GAM11470 10659 GGCTGGAGGAGTGCAGTCGT CT AG T T TACA T CACTGA
6 ACAGTCATGGCTCACTGAAG GG GG GAG GCAG CG GTCA GGCT
TCTTGACCCCGCTGCCTCAG CC CC CTC CGTC GC CAGT CTGA
CCTCCC CT GA - - CC-- T ------
GAM11472 21728 GGCTGGAGTGCAGATCTTGT -- CAGATC CAAAAAATAAAAATAAAA
9 CAAAAAATAAAAATAAAAAC GGCT GGAGTG TTGT
AACAAACATACTCCTCAGCC CCGA CCTCAT AACA
CT ACAAAC ----------
GAM11476 15563 GGCTGGCACCTTGTTTCGGG G C TT G------- ATTCCGTG
6 GAAGGATTCCGTGCCTTTGT GGCTG CAC TTGT CGG GAAGG
GACAGACCGGGACAAAGTGA CCGAC GTG AACA GCC TTTCC
CAGCC A A GG AGACAGTG --------
GAM11477 5148 GGCTGGCATTCCCTGAGCAT TG- GA A- T- ATT TGTGGGGAAAGAGGTT
3 ATTCTGAATTGCACTGTGGG GGC GCATTCCCT GC TAT CTGA GCAC
GAAAGAGGTTGTGCTCAGTT CCG CGTAGGGGG TG ATG GACT CGTG
GTAGGGTGGGGGGATGCACT TCA G- GG TT --- ----------
GCC
GAM11477 21711 GGCTGGCCAGGGAGGGTGTC GG - GG -- -- A AAC AGTT TTCCTTGGT
8 TGGCAGCTGCAGAAACAGCA GGCT CC AGGGA GTGTCT GGCA GCTGC GA AGC CCTC

GTTCCTCTTCCTTGGTGAGG CCGG GG TTCCT CATAGA CCGT CGACG CT TCG GGAG
CTCAGCTCCCTCAGCAGCTC AG C A- CA CT A CCC ACTC ---------
TGCCACAGATACATCCTTCG
GGAGGCC
GAM11479 6884 GGCTGGGAAGGCGAGTATTC G G GAG- T T GA- GTCCA
8 TCTTCCGAAGAGGTCCACTC GGCT G AAGGC TATTC CT CC AGAG
TCAAGGCAGGAATAAAGAGC CCGA T TTTCG ATAAG GA GG TCTC
TTTTGAGCC G - AGAA - C AAC -----
GAM11481 11668 GGCTGGGATTGGAACTGTGT - TT A - G- CCTCATCA TTATG

1 TGGGAGCCTCATCATTGGTT GGC TGGGA GGA CTGT GTT GGAG TTGG
ATGCCAGGAACCCTTCTCTG CCG ATCCT TCT GACA CGA TCTC GACC
AAGCAACAGCTCTTCTCCTA C CT C A AG TTCCCAAG -----
CGCC
GAM11481 17361 GGCTGGGCCAAGCCAGGGAT CAAGCCA A CAC--- CC CCCTAC
8 GGGGCCACAGCCAGAACCCC GGCTGGGC GGG TGGGGC AGCCAGAACC GAG
GAGCCCTACTTCCAGGTTCT TCGACCCG CCC ACCCCG TTGGTCTTGG CTT
GGTTAGCTCAGCCCCAGCCC A------ G ACTCGA AC ------
AGCCCAGCT
GAM11483 1916 GGCTGGGGCAGGTGGCCGCC TG - GC TTCCACACACTT AACCCTCC
3 TTCCACACACTTGAGGAACC GGC GGGCA GGTG CGCC GAGG
CTCCCCTCTCCCTCGGTGAC CCG CCCGT CTAC GTGG CTCC
ATCTTGCCCGCC -- T A- CTCCCT------ --------
GAM11483 15691 GGCTGGGGGGGCGCGGGGAGG ---- - AC--- TCAG T C TCAAG
9 ACGGGGTTCAGGCCGGTGTC GGCTGGGGGGGC GCG GGGAGG GGGGT GCCGG GT GCTC

GCTCTCAAGGGGCAGCCCTG CCGGCCTTCCG CGC CCCTCC CCCCA TGGTC CG CGGG

GTGTCACCCCCACCCCCTCC AAGT A CCCAC CTG- C A -----
CACGCTGAAGCCTTCCGGCC
GAM11487 5179 GGCTGGTCCCAGTCTGTTGG - AGT GG- G CAGGGTAA
1 GGTGGTGCTCAGGGTAAAGG GG CTGGTCCC CTGTTG GTGGT CT
GCTATGGGCAACAGGGGACC CC GACCAGGG GACAAC TATCG GA
AGACC A --- GGG G --------
GAM11489 22660 GGCTGGTCTTGAACTCCTTA TCTTGAACTC - ACC C CCTC
9 CGTCGTGATCCACCTGCTTC GGCTGG CTTACGTC GTGATCC TGCTT GG
GGCCTCCCAAAGTGCTGGGA TCGACC GAGTGCGG CATTAGG GTGAA CC
TTACAGGCGTGAGCCACTGT CGTGTCACC- A GTC A ----
GCCCAGCT
GAM11491 15294 GGCTGGTGTGGAAGTCCTGG G GGA- TG - CTAGCAACCCTCCCAA
3 CCTCTAGCAACCCTCCCAAA GGCT GTGT AGTCC GC CT
GTGCTGGGATTACAGACATA CCGA TACA TTAGG CG GA
AGCC A GACA GT T ----------
GAM11491 22164 GGCTGGTTAACATCAGATCC GTTA AG---- - GAAA-- A G TAAA
4 CAGAAAACAGTGTTCTAAAG GGCTG ACATC ATC CCA AC GT TTC
AAGACGGTGGTGGATGGTGG CCGAC TGTAG TGG GGT TG CA AAG
TATAATAGATGTCATGCAGC GTAC ATAATA T AGGTGG G G ----
C
GAM11492 17250 GGCTGGTTGCCTCAAGCTCT --- T TCA T CC ATAAACG
1 TCTCTGCCTCATAAACGGAT GGCT GGT GCC AGC CTTCTCTG TC
CCAGAGAAGGCTGGTTGCCT TCGA CCG TGG TCG GAAGAGAC AG
TAAGCT ATT T --- - CT -------
GAM11492 10535 GGCTGGTTTCCACATGTGCC TT ---- ATG C T CATGGAA
5 CAGAGTTTGCTTCATGGAAA GGCTGGT CC AC TGC CAGAGTT GCTT
GGCCAGCTCTGCGCAAAGGT CTGACCA GG TG ACG GTCTCGA CGGA
CCAGGGGGACCAGTC GG GACC GAA C C -------
GAM11499 14257 GGCTGTGGAGTCGAGTTGAG TGTG TC - C TTCCGGGTCT
7 CTCCCTTTCCGGGTCTGGGG GGC GAG GAG TTGAG TCCCT
AACTCAACCTCACCTTATGC CCG TTC CTC AACTC AGGGG
C TA-- CA C A ----------

GAM11499 17904 GGCTGTGGATAGCTTGGTGC GC G- TT---- G--- A G T G - ACTGA
8 CAATTGGTCGTGGTCAGCGT G TGTG ATAGC GGT CCA TT GTCG GGTCA CG TGA
GAACTGATTATTGGTGACCC C ACAC TATCG CCA GGT AG CAGC CCAGT GT ATT
GACAGACTGGGAAAACCTCA TA AG TTAACT AAAG C A - G T -----
ATTGCTATGACACAATC
GAM11500 1682 GGCTGTGGCTGGAATGCCGA TG G TG A- ACATGTG CC- - TGCTTGATTT
1 CATGTGGCCTTTCCTTGTAG GGC TG C G ATGCCG GCCTTT TTGT AGA
ATGCTTGATTTTCTCACAAC CTG GC G C TACGGT CGGAGG AACA TCT
TTGGAGGCATCCTCGTGGCA GT - GT GG GCTCCTA TTC C ----------
TGGCTGGCGTGGTC
GAM11500 4738 GGCTGTGGGTGGGGCCGTGG T- T C A TCATACTTATCTCCC
6 CTGCGCATCTCATACTTATC GGCTGTGGG GGGGCCG GGCTG GC TC
TCCCGGGCACAGCTCGGCCC CCGACGCCC CCCCGGC TCGAC CG GG
CCTCCCGCAGCC TC - A - ----------
GAM11500 19559 GGCTGTGTGGATGTCTGACA GTG-- G ACA- T C - AC GAAG
8 GGTGAGGCGGGGGACGCAGA GGCT TGGAT TCTG GG GAGG GGG GG GCA
AGTGCAGCCGCCCTCTCCCA CCGG ACCTG AGGC CC CTCT CCC CC CGT
CAGCGGAGTCCAAAACAGGC ACAAA - GACA - - G GA ----
C
GAM11501 10623 GGCTGTGTGTGTGTGTGTGT T TG G TG G TG GTGT
1 GTGTGTGTGTGTGTGTATGT GGCTG GTGTGTG T TG T TGTGTG T
ATATGGGTGTGGGTGCACAC CCGGT TACACAC G GT G GTATAT A
ATTTGGCC T GT G GT G GT ----
GAM11503 5075 GGCTGTTTCACAGGCCTGGC - C CC C ------ TC GGA - GCAT
4 CACGCTCTCACGGAACCACT GG CTGTTT ACAGG TGGC AC GC TCAC ACCA CTG
GGCATCAGATGGTGAAGTGA TC GACAAG TGTCT ACCG TG CG AGTG TGGT GAC
CTGCTACCCGGTTGCCATCT A T -- T GCCCAT TC AAG A ----
GTTGAACAGACT
GAM11503 11592 GGCTGTTTCGCTCCCTATAC CG--- ATACAGAA TTTC
5 AGAAGTGTTTCCATGCCACC GGCTGTTT CTCCCT GTG
TAAGGGAGACTCAGGACAGC CCGACAGG GAGGGA TAC
C ACTCA ATCCACCG ----
GAM11504 15993 GGCTTAAACTTGGTTTCGTC TAA TG TTTC TTC CTTTGGTTTTT
9 ACTTCGGGCACTTTGGTTTT GGCT ACT G GTCAC GGGCA
TTGTTCCGTGACCTTCTGAG TCGG TGA C CAGTG CTTGT
TGGCT --- GT TTC- C-- ----------
GAM11505 2019 GGCTTAAAGGGTATGTCCTT AAAGGGTA GA- TGGAA- GACAAT G GTTGGAA

0 GAACTTGGAACCTGACAATG GGCTT TGTCCTT ACT CCT GTTGGT TTGTCGT
TTGGTGTTGTCGTGTTGGAA CCGAG ACAGGAG TGA GGA TAATCA AATAGTA
ATGATAAACTAATTAAGGAA G------- AAG TATAGA AGGAAT - -------
GGAGATATAGTGAAGAGGAC
AGGAGCC
GAM11506 2105 GGCTTACAGTAGTTCCCCCT A T CCCCTTA- C GATACA
1 TATCTTCGGGAGATACATTC GGCTT CAG AGTTC TCTT GGGA
CAAGGCCCCCAGTGAACTCC TCGAA GTC TCAAG GGAA CCTT
TGAAAGCT A C TGACCCCC - ------
GAM11506 390 GGCTTACCCGGGCTCCGACA TACC GAC GTCTCCAAG
4 GCGGCTGCAGGTCTCCAAGT GGCT CGGGCTCC AGCGGCTGCAG
TGCGGCCGCTGGAGCCCGAG CCGA GCCCGAGG TCGCCGGCGTT

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          CC                ----      ---       ---------
GAM11509 11630  GGCTTATGTAATAGCTTATT    A  AA---   TT--    --  ACATAAAAAGCGAGATA
7          TGATCCACATAAAAAGCGAG GGCTT TGT    TAGC   ATTTGA  TCC
          ATAGGAAATCAAGTTTCTGC TCGAA ACA    ATCG   TGAACT  AGG
          TAGTTAGACAAAAGCT       A  GATTG   TCTT    AA  -----------------
GAM11510 22474  GGCTTATTAGTTATATAAGT    A      ATAAGT  ATTTCTA    AGAGCAG
0          GAAATTTCTAGGGAGCAGAG GGCTT TTAGTTAT     GAA     GGGAGC
          CAGGCTTCTCACACAATTCC CCGAG GATCAGTA     CTT     TCTTCG
          AGAATGACTAGAGAGCC       A      AGAC--  AACACAC    -------
GAM11512 16319  GGCTTCATACGCTATGTCCT     ATACG  T-   ------      AGAGCAGCC
5          GCCCGTTAGAGCAGCCAGCG GGCTTC    CTA  GTCC     TGCCCGTT
          GGTACAGAATGGATTTTGGA CTGAGG    GGT  TAGG     ATGGGCGA
          AGAGGGAGTC             GAGAA  TT   TAAGAC      ---------
GAM11512 9984   GGCTTCATATATATTATATA     A-     T--          ATGT
6          TATGTATATGTATACATATA GGCTTC  TATATA  TATATATATGTAT
          TATACACTATATAACGAGGC CCGGAG  ATATAT  ATATATATACATA
          C                  CA     CAC          ----
GAM11512 15542  GGCTTCATGTGTTTGGCAGG      T  TTTG-  G   -   GAAT  TGAACT
9          ACCTTGCGAATGATGAACTT GGCTTCA GTG    GCA GACC TTGC    GA
          CTCTGGCAAGGGTTGTGCAA CTGGGGT CAC    CGT TTGG AACG    CT
          ATCCACTTGGGGTC          T  CTAAA  G   G   GTCT  ------
GAM11517 13160  GGCTTCGTGTGGAATATCAC    T  TGT   -------   -   C  TG  TACCCAGT
7          TGTCGCTGAGTACCCAGTCT GGCT CG   GGAA      TATCA CTGT GC  AG
          TGGCACAGTTGATGCTGACT TCGA GC   CCTT      GTAGT GACA CG  TC
          TTTCCTCCGAGCT         - CT-   TTCAGTC    T   - GT  --------
GAM11520 11351  GGCTTCTTTGACACTGCTGT   T    ACA    G  T  CCC  C    ACTGTC
7          GATGACCCTGCCGCAACTGT GGC TCTTTG   CTGCT TGA GA   TG CGCA
          CTGTGTCATTTCTCGAGCAG CCG AGGAAT   GACGA GCT CT   AC GTGT
          CTAAGGACGCC          C     C--    -   - TT-  T   ------
GAM11522 245    GGCTTGAGGCAGGAGTCTGA     GA  CA     TGA---     CA    CCGA
4          CGGCAGCAGCTCCCGAGAGC GGCTT  GG  GGAGTC     CGGCAG  GCTC
          CCTTGCCGATGCCTGGCTCC CCGAG  CC  CCTCGG     GCCGTT  CGAG
          ATCCAGAGCC             A-  TA     TCCGTA     CC    ----
GAM11522 58     GGCTTGATACCAACAGCCTG      ATA  AACA   T       C  AAGCCAG
7          GCAGTGGTCAGAAGCCAGCT GGCTTG   CC    GCC GGCAGTGGT AG
          TATCATTGCCTGGTCAAGGA CCGGAC   GG    TGG CCGTTACTA TC
          AGCAGGCC               GAA  AAC-   T       T  -------
GAM11522 10185  GGCTTGATTTGCTTGGTGAC         G    -   GAATTAC     CTAGT
9          CGAATTACTAGTGACTAGTT GGCTTGATTT CTTGG TGACC       TAGTGA
          TACTAACTAGGTCATTCAAG TTGAACTGAA GAACT ACTGG       ATCATT
          GAAGTCAAGTT               G    T    ATCA---      -----
GAM11523 16337  GGCTTGCACAGGCTCCACTG    TG A    -  -   T      TGG   - TG  CGTG
0          CCTGTGTGGAGTTTGCTCGT GGCT  C CAGGC TC CAC GCCTGTG   AGT T  CT
          GGGTGACGCTGTCACAGGCC CCGA  G GTCCG GG GTG CGGACAC   TCG A  GG
          GTGAGGTGCCTGGTGAGCC     GT -    T  A   C      TG-   C GT  ----
GAM11523 2053   GGCTTGCCTAAGGCCCCGCA   TT   AAG      AAA   --   GAAA
6          AAAGTCCCTGAAAAGGCAGG GGC  GCCT   GCCCCGCA   GTC  CCT
          CCTGCGGGGCAGGGGGCTGT CTG  CGGG   CGGGGCGT   CGG  GGA
          C                  T-    GGA      C--   AC   ----
GAM11523 15172  GGCTTGCGTGCGGCTCGCTA    T  T    TC--   AA-  CTAT   GTCCGG
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7          AGACTATGGCGTCCGGGCCT GGCT GCG GCGGC   GCT  GA   GGC
           CATTCGACAGCTACTGCTGC CCGA CGC CGTCG   CGA  CT   CCG
           CGCAGCC            - -   TCAT  CAG  TACT  ------
GAM11524 15611  GGCTTGGACCTATATGGCCA       CTATAT      T   C-  TA----  CTTG
4          TGCTCTGGCTCTACCCTTGG GGCTTGGAC    GGCCATGC CTGG  TC    CC
           GAAGCCTGATCCCGGTGTGT CCGGACTTG    CCGGTGTG GGCC  AG    GG
           GGCCCAGCTTGTTCAGGCC        TTCGAC      T   CT  TCCGAA  ----
GAM11525 7209   GGCTTGGGCCTGACGCAGCT    G -   C   CT-  AC   CCTTTCTCCCC
7          GGGACGGCTCCTTTCTCCCC GGCTT GG CCTGA GCAG   GGG  GGCT
           GGCCACCTCTTTCTGCATCG TCGAG TC GGGCT CGTC   CTC  CCGG
           GGACTGGAGCT          G A   A   TTT  CA  ----------
GAM11526 5113   GGCTTGGTGCCCCCCGGGTG    GGT   CC      -     --   CC--   C  TCTC
9          GGGGTCCCCGGGGGCCCCCT GGCTT  GCCCC  GGGTGGGGGT CCCCGGG  GGCCC   TCCT AG

           CCTCAGTCTCCTTGGGACCC CCGAA  CGGGG  TTTACCCCCA GGGGCTC  CCGGG   AGGG TC

           TGGGCCTTCTCGGGGCACCC    AC-    TT      C     TT    TCCC   T  ----
           CCATTTTTGGGGCCAAAGCC
GAM11529 7379   GGCTTTAAGAAACCTGGCTT      AGAAACCTG--   GT--     GTTTA
9          GTGCATGTGGTTTACACATG GGCTTTA        GCTT   GCATGTG
           TTGAAAAGTATGAAGATTAA CCGAAGT        TGAA   TGTACAC
           TGAAGCC              AATTAGAAGTA   AAGT     -----
GAM11535 4591   GGCTTTGAGCTAGTTGGCAA       CTA  -  G    GGAG   -   GCTG
9          CTTGGAGGGCACTGTGCTGA GGCTTTGAG  GT TG CAACTT   GGCA CTGT
           CAGATGCTGGGTTGGCAGGC CCGGGACTT  CG AC GTTGGG   TCGT GACA
           ACTTTCAGGGCC            TCA  G  G    ----   A   ----
GAM11537 10411  GGCTTTGGAGGGGCCCGCAG     GA   CCC   G   G   G   AGGAC
7          AGCGCTGGCATAGGACATGG GGCTTTG  GGGG   GCA AGC CTG CAT
           CGGGCTTGCCCCCCCGCAGAG TCGAGAC  CCCC   CGT TCG GGC GTA
           CT                G-   C--  -  -  G  -----
GAM11538 21795  GGCTTTGGCTACTCTCCTGC      CT   TCCTGC    -  ACCT  CCT  A-  CTCCA
2          GCCCACGGTACCTGGACCTG GGCTTTGG  ACTC    GCCCAC GGT   GGA  GCT  GT
           CTAGTCTCCAGCCCAGCTTT CCGAGACC  TGAG    TGGGTG CCA   CCT  CGA  CG
           TCCCCAACCAGTGGGTTCCC      --   TCCCT-    A  ACC-  TTT  CC  -----
           TGAGTCCAGAGCC
GAM11539 4599   GGCTTTTAAGGTATATTTTG    T  A     TTT-----    ---    -  AAT   AGCAT
9          TAGCATGGGTTGGCAATCTA GGCTT TA GGTATAT     GTAGCA  TGGGTT GGC  CTAC
           CAGCATGTGGGCCAAATCCA TCGAA GT CCATATA     CGTCGT  ACCTAA CCG  GGTG
           GCCTGCTGCCTGTTTTTATA    T  C     TTTTTGTC    CCG    A  ---  -----
           TACCCTGTAAGCT
GAM11540 22731  GGCTTTTATGTTTTTGTTGC     TAT--   T   --   TA  TT--  TG  GTCAA
6          ATTTATGTTTTTGCAGTCAA GGCTTT    GTTT TGTTG  CATT  TG   TT  CA
           TGTGAATTCTTACGAATGTA CCGAAG    CAAA ACAAC  GTAA  AT   AA  GT
           CAACACAAACTGTATGAAGC     TATGT   C   AT   GC  TCTT  GT  -----
           C
GAM11540 6869   GGCTTTTCCATACCACCTTC    T  CATACCA  TCAAC  AA  TG TTCA
9          AACGCTAACCTGCTTCAGTG GGCT TTC     CCT   GCT  CC  C
           GGAGAGTAAAGTAGGCAAGA CCGA GAG     GGA   TGA  GG  G
           ATGAGCAGCC          C  TAAGAAC  TGAAA  GA  GT ----
GAM11541 2072   GGCTTTTCCATTCAAACTTT  CT    TTCAAAC-    ATTTG    TAAGTTC
```

0 GTCATTTGTTTCTTTAAGTT GG TTTCCA TTTGTC TTTCTT
CAAGAAAGACAAAATCTACA CC AAAGGT AAACAG AAAGAA
CTGGAAATCCC CT CACATCTA ----- -------
GAM11543 10407 GGCTTTTTTGGGGGGATGAC TT --- GA G C-- ATGCCAGTTA
6 CAGTACAGACATGCCAGTTA GGCT TTTGGG GGGAT CCA TA AGAC
GTTTTACTAGTGGGATCCCA TTGA AAACCT CCCTA GGT AT TTTG
AATCCAAATCAGTT CT AAA G- G CAT ----------
GAM11547 218 GGGAAAAGGGTATGAACGGC AAAA ATGAACGG C-- GTTCCGA
7 CCTGGCCATGGGTTCCGACC GGG GGGT CCCTGGC ATGG
ATTTTGTCAGGGAAACCCGG CCC CCCA GGGACTG TACC
CCC GG-- AA------ TTT -------
GAM11550 22881 GGGAAACGCGAGCGCAGGCG C A-- CA--- A-- AGGC
0 GCAGAGAGGCCTCAACGCCG GGGAAA GCG GCG GGCGGC GAG
TCCCTTTCGCCACCGCCTTT CCTTTT CGC CGC CTGCCG CTC
TCC C CAC TTTCC CAA ----
GAM11550 22454 GGGAAACTCCCCCCGGCCCC AAA --- CC- C T- - A GTC
3 TGCCCCCCTGGCTCCCTATG GGG CTCCCCCC GG CCTGCCC CC GGC TCCCT TGAG
AGGTCCTTGGGGGATGCCCT CCC GAGGGGGG CC GGGCGGG GG CCG AGGGG GTTC

GGAGGGCGGGCTTCCAGTGG GA- TGA TTC A TC T - ---
GGGGAGAGCCC
GAM11553 11132 GGGAAAGCCTGGAGGCAGAG AA G - A AAGC ---- - A-- CCT
6 GGAAGCTCCGCGCGTTTCAG GGG AGCCT GAGGC AG GGG TCC GC GCGTTTC GGG
GGCCTCCCACAGAAACGCAG CCC TCGGA TTCCG TC CCC AGG CG CGCAAAG CCC
CCGAAGGAACCCCGCTGGCC CA G G G CA-- AAGC A ACA ---
TTGAGGCTACCCC
GAM11553 7023 GGGAAAGCTGGTACGCCTGC GG C- T C CA AC GT AATTC
9 AGGTACCGGTCCGGAATTCC G AAAG TGG ACGC TG GGT CG CCGG
CGGGTCGACCCACGCGTCCG C TTTC GCC TGCG AC CCA GC GGCC
ACCTTTTTC TT CA - C -- -- TG -----
GAM11554 7224 GGGAAAGGAATGCCTGGGAG AAT AGT CA CAGCACTGAGGGAC
5 TGGGGGTGCAGGCGGGCAGC GGGAAAGG GCCTGGG GGGGGTG GGCGGG
ACTGAGGGACCCTGCCCCGC CCCTTTCC CGGACCC TCCCCGC CCGTCC
CCCTCCCCCCAGGCCCCTTT C-- CCC C- ----------
CCC
GAM11555 20 GGGAAAGGGAAAATTAGAAG AAG TAGAA GG G -- AAAA
0 GGGAAGGGAAGAGAGAAAAA GGGA GGAAAAT GGGGAAG AA AG AGA
TCTGCCTGTTGGCTTCTCTG CCCT CCTTTTA TCTCTTC TT TC TCT
AAGTATTTTCCAACTCCC CAA TGAAG GG G CG ----
GAM11560 11055 GGGAAATTTTCTTCATTTTT -- TC - - ACAGCAGAAA
0 AATTTACAGCAGAAAGAATA GGGAAAT TTTCT AT TTTTA ATTT
TAAAGCATTCAGAAAACATT CCTTTTA AAAGA TA GAAAT TAAG
TTCC CA CT C A ----------
GAM11562 17066 GGGAACCAAAGTGCAAATCA ACCAAA CAAA TCCA--- CATG
3 TCCACCCCCCATGGGGGGGC GGGA GTG TCA CCCCC
CATCCTGAACCCCACATCAT CCCT CAC AGT GGGGG
CCC ACTA-- CCCA CCTACCG ----
GAM11564 7501 GGGAACTCCCTCGGAGTGCC ACTC GT ---- A T- GTCA
8 AGGAAAGGTCTGTCAGGCTC GGGA CCTCGGA GCCA GGA AGG CT
CTCTCCGAAGTGGCCATCCG CCCT GGAGCCT CGGT CCT TCC GG

AGGTCCC ---- AC GAAG C TC ----
GAM11568 10241 GGGAAGAAGATTTTCCTAGT GG G GA TAG--- ATACAATGA
2 CTAAGAGAATACAATGATTT G AA AA TTTTCC TCTAAGAGA
CTTGGAAGAAGTGGAAGAAA C TT TT AGAAGG AGGTTCTTT
TTGTTTTC TT G AA TGAAGA ---------
GAM11569 7456 GGGAAGACACCTGGTGACTT AAGAC GA--- - ATGCCTATCAAA
1 TAGCTATGCCTATCAAAAGC GGG ACCTGGT CTTTAG CT
CTGAGGAAACAACCAGGTCC CCC TGGACCA GGAGTC GA
CC C---- ACAAA C ------------
GAM11576 13164 GGGAAGGGGCTAGAGCCCAC AG A- A A- G A- GCAA
7 AATCAGACATGGGCAACTAG GGGA GGGCT GAGCCC CA TCA AC TGG
AGTGTGGGGTGGGGGCTCCC CCCT TTTGA CTCGGG GT GGT TG ATC
AGTTTGTCCC G- CC G GG G AG ----
GAM11578 2296 GGGAAGGTCAGGCTGAGCGT GCT TCCTT CACC
0 CCTTTCCTCTGTGCACCCAC GGGAAGGTCAG GAGCG TCCTCTGTG
GGAGGGTGCTCCCATTGGCT CTCTTTCGGTT CTCGT GGGAGGCAC
TTCTC ACC ----- ----
GAM11579 16121 GGGAAGTATGAGAAGGTGCT AT A- - GTGGA CCG
1 TGTGGAAGGGGGCCCGGCTC GGGAAGT GAGA GG TGCTT AGGGGGC
CCTAGGCGTCCCATCTCGCT TCCTTCG CTCT CC GCGGA TCCCTCG
TCCT -- AC T ----- ---
GAM11579 11173 GGGAAGTATGAGAAGGTGCT AT A- - GTG CCG
2 TGTGGGGGGGCCCGGCTCCC GGGAAGT GAGA GG TGCTT GGGGGGC
TAGGCGTCCCATCTCGCTTC TCCTTCG CTCT CC GCGGA TCCCTCG
CT -- AC T --- ---
GAM11580 22081 GGGAAGTGCAGTACAGTCGT A C TA TC A CTCC - CCCCCCG
4 GATGCTCCTCTGCCCCCCCG GGGA GTG AG CAG GTG TG TCT GC
GCAAGACCTCAACGCCCCTG CCCT TAT TC GTC CGC AC AGA CG
ACCTCTATATCCC A C CA CC A TCC- A -------
GAM11581 22494 GGGAATAAAAATCCATATTT TAAAAAT T TCT A A- CCCAACTT
4 CTTAATAATTTATGTATAGC GGGAA CCA ATT TAATA TTTATGT TAG
CCAACTTTTAGAACATAGAA CCCTT GGT TAA ATTAT AGATACA ATT
TATTATCAATTTGGCTTCCC C------ T CT- A AG --------
GAM11584 2493 GGGAATCCATGACCACAGTA TCCA A --- AA ACCAAA CGATCTCCT
4 AGGACCAAATTGCCGATCTC GGGAA TG CC ACAGT GG TTGC
CTGCAACAAAAACTAAACTG CCCTT AC GG TGTCA TC AACG
TCAAGGCAGTTTCCC TG-- - AAC AA AAAAAC ---------
GAM11585 16265 GGGAATGATAGCATTGAAGG TGA CAT GAC--- GATATCTAACAGCAATA
7 ACTCGGGGATATCTAACAGC GGGAA TAG TGAAG TCGGG
AATACCTGATCACTACTTCA CTCTT ATC ACTTC AGTCC
CACTAGTTTCTC TG- AC- ATCACT ------------------
GAM11587 19479 GGGAATGTGTCTTATTCATA G TAT AT AATA - ACC GTGTA
5 TCTTGAATAACGTTGGACCC GGGAAT TGTCT TCAT CTTG AC GTTGG CTCACT
TCACTGTGTAGGTGGGATTA CCTTTA GTAGG AGTG GGAC TG CGATT GGGTGG
GCTGTACCAGGGTGATTGGA G TT- -- CA-- T A-- -----
TGGATTTCC
GAM11595 13784 GGGACAGGTGGATTTATTTT GGT--- ATTT--- AGTTACAA
0 TTTAAGTTACAATAAAATGC GGGACA GGATTT TTTTA
TCTCAAGTCCTTTGAATGTT CCTTGT CCTGAA AAAAT
CC AAGTTT CTCTCGT --------

GAM11596 17818 GGGACATGGTGGGGATCCCT AT -- CC CCTAGGT A GTGG
4 GGCCTAGGTGTTCAAGGTGG GGGAC GGT GGGGAT CTGG GTTCA GGTG
TGGCATCCTGAACTTCCAGC CCTTG CCG CCCTTG GACC CAAGT CTAC
AGTTCCCTAGCCCGGTTCC GC AT AC TT----- C ----
GAM11598 11450 GGGACCAGAGAGTAGGCGAG CAGA A AGAA ATAA- A TCCTAAACCATAT

1 AGAACCCATAAGAAGATTCC GGGAC GAGT GGCGAG CCC GA GAT
TAAACCATATATCTCGAGAG CCTTG CTCA CCGCTC GGG CT CTA
GGGGGCTCGCCACTCGTTCC ---- - GG-- GAGAG - ----------
GAM11599 11506 GGGACCCACATGTACTGCTG -- CA TGCT-- G CCCTTT
4 CCATGTCCCCTTTGAGGTGG GGGACC CA TGTAC GCCAT TC
CCTCTGTGTGCACCTGCTGG TCCTGG GT ACGTG CGGTG AG
TCCT TC CC TGTCTC G ------
GAM11603 17489 GGGACGATGGACCAGACGAA ---- A A G AA- AGACCTATGACG
4 GCAGACCTATGACGGCAGAC GGG ACG TGG CCA ACG GC
GTGTGGCCAACGTAAGACCC CCC TGC ACC GGT TGC CG
AGAA A - G AGA ----------
GAM11604 10479 GGGACGGAGACAGGACCGGG C- ----- C G A- CTGG
5 CGAGCCCTGGGGCGGCGGCC GGGA GGAGA CAGGA CGG CG GCC
GCTCCTGCACTTTCTCCCCT CCCT CCTCT GTCCT GCC GC CGG
CCC CC TTCAC C G GG ----
GAM11606 19499 GGGACTAGTTAGCTTTAAGC ---------- C TAAGC AGGA
4 ACCCTAGAGGACTAGGGTAA GGGACT AGTTAG TT ACCCTAG
TCTGACTTCTCACTTCCTAA CCTTGA TCAGTC AA TGGGATC
GTTCC ATCCTTCACTCT T ----- ----
GAM11607 1429 GGGACTCGCCGCCATCTCAG AC C CCA- A CT- TTT
8 GTCTCTTGGCTTTGCCAGGC GGG TCG CG TCTC GGT CTTGGC
CCACCGGAGAAAACTGACGA CCC AGC GT AGAG CCA GGACCG
CCC -- A CAAA G CCC ---
GAM11608 431 GGGACTCGCGGTACCTCAGA A GGTACCT TG A - G --- GGCTCT
0 GCTGCCGAGCGGGCGTGTGG GGG CTCGC CAGAGC CCG GCGGGC GTGT GGGC CCT

GGCCCTGGCTCTGGGGAAGC CCC GGGCG GTCTCG GGC CGCTCG CGCG TTCG GGG

TTGGCGCTGCTCGCCGGTGG C ------- GT - T G AAG ------
CTCTGGCGGGCCCC
GAM11609 22918 GGGACTGCAAGGGCGGGCTG G A G TGTAT A AT- CT GTGATGA
3 TATTGAGAAGGATGGCCCCC GGGACT CA GGGCG GC TGAG AGG GGCCCC GGT
TGGTGTGATGAGCTTGGGGC TCCTGA GT CCCGC CG ACTC TCT CCGGGG TCG
CTCATCTGCTCACCGTGCAC G - A TGCC- G ACT T- -------
GCCCTGGAGTCCT
GAM11609 10703 GGGACTGCAGGGACTGCGGC A AG ACT -- A CT T -- CGGC
4 TGGGACAGGCTGCTGCGCCA GGG CTGC GG GCGGCT GGG CAGG GC GCG CCAGG

GGCGGCCCTGGACCGCCGCT CCC GACG CC CGCCGA CCC GTCT CG CGC GGTCC
TCTGCCCCTAAGCCGCCCTC - CT --- AT C T- C CA ----
GCAGCCC
GAM11610 6764 GGGACTGGGTGTGGCCGTGT ---- G G -- CT C CT C TGT
4 ATGCAGCGGCTGTGCTGCTG GGGACTG GGT TGGCCGT TATG CAGCGG GTG TG GGGTG
TGGC

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          GGTGCTGGCTGTGCCACCAT CCCTGGC   CCA GCCGGCA GTAC  GTCGCT  CAC GC  CCTAC ACCG

          CCTCGTCACCTCGCTGGCCA      TACT  -     -   CG     C-  T  T-    C    ---
          TGACGGCCGACCTCATCGGT
          CCC
GAM11610 11123  GGGACTGTTTAACTTTAGAG    --------   TTAAC----      AC-    A   TACGAT
7          ACACTTTAAGTTACGATACT GGGA      CTGT       TTTAGAG   ACTTT AGT
          GGAGGTCTACTTTGAAACCG CCCT      GACA       AAGTTTC   TGGAG TCA
          ATATTACAGATTATTTTTCC    TTTTATTA   TTATAGCCA      ATC    G  ------
          C
GAM11611 2010   GGGACTTCCTCCACCCTCAC       CCTCCACCCT  -    C  TCTTTCCATCTCTT
4          CAGGACATTCTTTCCATCTC GGGACTT        CAC CAGGA AT
          TTGTCTCCTGTGTGCAAGTC CCCTGAA        GTG GTCCT TG
          CC                  C---------  T    C  ----------
GAM11611 10795  GGGACTTGGAGAAGCCTGCC     ---      CC   CCT   A-  CT   GGCACA
9          CTGCCAGGCCTGGAGGCACA GGGACT   TGGAGAAG  TGC   GCC  GGC  GGA
          TCCCTGCCAAGGCTCAGCAT TCCTGG   ACCTCTTC  ACG   CGG  CCG  CCT
          CTTCTCCAGCAGGTCCT        ACG       T-  ACT   AA   TC   ------
GAM11612 5060   GGGACTTTATTTTGTAACAT    CTTTATTT    A  TA---   TT      TTG
8          ATCAATTATAAATATTGTAT GGGA       TGTA CA    TCAA  ATAAATA
          TTATCTTTGAAATTTTGTAC CCCT       ACAT GT    AGTT  TATTTAT
          ATTGCTTTTCCC          TTTCGTT-   -  TTTAA    TC      ---
GAM11613 192    GGGACTTTTTCTTTGGGGAT    CTTT    TT    TT   TC-      TTTCT  CTTGGT
8          TCGGTCCGGGTGGTTTCTCC GGGA    TTCT  GGGGA  CGG   CGGGTGG    CC
          CTTGGTGGTTTGTTCACTCG CCCT    AGGG  TCCCT  GTT   GCTCACT    GG
          TTTTTGTTTCCCTTTGGGAT    TTT-    TT    TT   TTT      TGTTT  ------
          TTTCCC
GAM11615 1346   GGGAGAAGGGCTTGATGCCT      --     T---   G  TT    T   AGGAGAGAC
7          TGGGGTGGGAGGAGAGACCC GGGAGA  AGGGCT    GAT CC   GGGG GGG
          CTCCCCTGGGATCCTGCAGC CCCTCT  TCTCGA    CTA GG  CCCC CCC
          TCTAGTCTCCC             GA     CGTC   G  T-    T  ---------
GAM11623 530    GGGAGAGGGAGGGCGTGGGC    G    --   G   --       CCA  T  CA     GCT
0          CAGGCCCCATGTGACACCAG GGGA AGGGA  GGGC TGG  GCCAGGCC   TG GA  CCAGGG

          GGGCTCCTTGGCATCCAGGC CCCT TCCCT  CCTG ATC  CGGTTCGG   AC CT  GGTTCC
          TTGGCGTCTAGTCCTTTCCC    -    TT    -   TG       ---  -  AC      ---
          TTCCC
GAM11625 7297   GGGAGATGCTGATGGCACGA     AT  TGAT  CAC      ---    TA  GAGC
1          AGGGCCCAGTAGGGAGCCTC GGGAG  GC    GG   GAAGGGC   CCAG  GG
          TCTGGGAAGCTCTTCCTCCT CCCTC  CG    CC   CTTCTCG   GGTC  TC
          GCCCCTCCC              CC  T---  TC-      AAG    TC  ----
GAM11632 4958   GGGAGCGGCGTCTGAGGCAC   GA  G-  G   -    CA---   G      G G  G  ATAGAC
6          CGGGTGGTCGGGGCTGTGAT GG  GC  GC TCT GAGG     CCG GTGGTCG G CT TG
          AGACCAAGGGCTGATCACGC CC  CG  CG AGA CTCC     GGC CACTAGT C GG AC
          GGCACCACCTCAAGAAGCGG   TG  GG  A   A    ACCAC   G      - G  A  ------
          GCGTCC
GAM11635 10358  GGGAGCTGGAAGGCGTGATC   GA    AA  CGT-  T    G-     AGGA
7          CTGGAGCTGCAGGAGCAGCT GG  GCTGG  GG    GA CCTG  AGCTGC
          GACAGGTCTGATCCCCAGTG CC  TGACC  CC    CT GGAC  TCGACG
          ACC                AG    --  TAGT  -    AG      ----
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GAM11640 7616 GGGAGGAAGTGAAGGGCACC AGGAA GA CA AAG GGACC G TCAG CAT
1 TAAGGGCTGGACCGCTGGGG GGG GT AGGG CCT GGCT GCTGGGGG CAG GGCCTG
GGCCTTT
GGCAGTCAGGGCCTGCATGG CCC CG TTCC GGA TCGA CGACCCCC GTC CCGGAC
TTGGGGG
CCTTTTGTGTGGACACAGGG AGAA- AG AG G-- ----- - CCCA C--
GGTTCCAGGCCACCCCTGCC TGGA
CCCAGCAGCTGAGGGACCTT TGTG
GAGCAAGACCC ACAC

GAM11643 22692 GGGAGGAGCTAGCTCTCTGC GA CTCT TCTCAG-- AT AAAT
1 CTTCTCAGCCAATTGAAATC GGGAG GCTAGCT GCCT CCA TG
GTGGAAACCAATGGGCTTCA CCCTC CGATCGA CGGG GGT GC
GCTAGCCTCTCCC TC CTT- TAACCAAA -- ----
GAM11644 2152 GGGAGGAGTTCTGGGAGATG A G ATGTTTGA - - CCACAAGC
2 TTTGATGGCTCCTTGTACCA GGGAGG GTTCTGG AG TGGCT C CTTGTA
CAAGCTGCGAGAGAAGCTGG CCTTCC CAGGACC TT GTCGA G GAGCGT
GTTGCCAGGACGCCTTCC G G GG------ A A --------
GAM11644 12078 GGGAGGATCACCTGAGCCCT A- AC- - ---- A GA A TG ACCATAA
6 GGAAGTGGAGGTTGCAGTGA GGGAGG TC CTG AGCCC TGGA GTG GGTTGC G A
ACCATAATTGCGCAACCACA CCTTCC AG GAC TCGGG ACCT CAC CCAACG C T
CTCCAGCCTGGGCTACAGAG AA CGA A TCCG - A- - GT -------
CGAAACCTTCC
GAM11647 2360 GGGAGGCATTGATCATGGGC ATTGA TG-- CCA T- TTTGA
7 CCAGAAGACACCTGCTTTGA GGGAGGC TCA GGC GAAGACACC GC
GTTTGGTGTTTTTCCTGCCA CCCTTTG AGT CCG TTTTTGTGG TG
TCCTGAGTTTCCC ----- CCTA TCC TT -----
GAM11647 7580 GGGAGGCATTTCTCTGTACA TTTCT ACAC A A CACATA
8 CATAGACTTAAGTACACATA GGGAGGCA CTGT ATAG CTTA GTA
TACTAAGCTGTAAATAGTCT CCTTCCGT GATA TGTC GAAT CAT
GCCTTCC CT--- AA-- - - ------
GAM11647 17896 GGGAGGCCAACTTGAAAAAG AA GAAAAA CC---- AAAAA
9 GCCCCACCAAAAAGGTAGCG GGGAGGCC CTT GGCC ACC
CTGGCCACCAAAGAGGGCCT CCTTCCGG GAA CCGG TGG
TCC GA ACCA-- TCGCGA -----
GAM11649 2578 GGGAGGCCGCAGGTCCTCGC G C -- G TG GACTA TG A A- CTGGG
0 TGGTCCCGGAGACTATGCTG GGGA GC GCAGG TCCTC C GTCCCGGA TGC GTC GGCC GGG

GTCAGGCCAGGGCTGGGTCC CCCT CG CGTCC AGGAG G CGGGGTCT ACG CGG CCGG CCT

GGGGCCAGGCTGGCAGCTGT A C CG G GT GTCG- GT A GG -----
CTGGGGCTGGGGAGGAGCCC
TGCCGCATCCC
GAM11651 7893 GGGAGGCTGGAGCCAGGTGA G C A G CA CAGA
3 GTGTGACAGGTCACAGATGG GGGAG CTGGAG CAGGTG GT TGA GGTCA
CTCTCAGGCCACCTGCCTTC TCCTC GACTTC GTCCAC CG ACT TCGGT
AGCTCCT - C - G C- ----
GAM11652 11728 GGGAGGGAAGCAGGGTTTGG -- AAGCA T GA -- CAGGCC
2 CGACCAGGTTTAGCAGGCCT GGGA GGG GGGTT GGC CCAGG TTTAG
TGGAATCCTGGAGCCCAGCC CCCT CCC CCCGA CCG GGTCC AGGTT

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          CCCAACCCCATTCCC        TA  CAACC    C  A-    TA    ------
GAM11652 15736  GGGAGGGACTGTTAGGACTG      A- G-  G CT      GGTATTA
8          GGGGGGTGGTATTAACCCCT GGGAGGG  CT  TTA GA  GGGGGGGT
          TTTTTTGTGGAGAGAGTCTT CCCTTCT  GA  GGT TT  TTTCCCCA
          CCC                 GA  GA   G  TT      -------
GAM11653 17749  GGGAGGGCATGTTGCTGCAG     GC   TT   G  G-    -  ATGTGAGCTTG
9          TCTGGGGCATGTGAGCTTGG GGGAGG  ATG  GCT CA  TCTGG GGC
          CCTCCAGAGATGAGCTCATC CCCTCC  TAC  CGA GT  AGACC CCG
          CTCCC               --  T-  - AG    T  -----------
GAM11654 4892   GGGAGGGCGCGCCGGAGGGA   GA  G   G    AGGGATATA        C   TTTCCAGAGAGCACATT

4          TATACCCGGGGGCACAGATT GG  GG CGC CCGG       CCCGGGGGCA AGA
          TCCAGAGAGCACATTTTTTT CC  CT GCG GGCC       GGGCCCTTGT TTT
          GTTCCCGGGGCCCGGGGCGG   AA  G   G    CG-------        T  -----------------
          TCAACC
GAM11654 125    GGGAGGGCTGGGGGCTCTTC           GC   TCC      AA    C  C  TTC
7          CCTGGAGGAAGCGGCCTCCG GGGAGGGCTGGGG  TCT   CTGGAGG  GCGGC TC GC
          CTTCGCTGGCGCCGCCTTTT CCCTCCTGACTTC  AGG   GATTTTC  CGCCG GG CG
          AGCTTGGACTTCAGTCCTCC           --  TTC      --    C  T  ---
          C
GAM11655 5036   GGGAGGGGCGGGGGGCCTGG     - C  -   C     CA        GCGGGAT
3          CCCCAGGGCGGTGGTGCGGG GGGAGG GG GGG GGGC TGGCCC  GGGCGGTGGT

          ATGCCGCCGCCTCCGGGCCG CCTTCC CC CTT CCTG GCCGGG  TCCGCCGCCG
          CGTCCGTTCTCCACCTTCC       A  T   G    C     CC        -------
GAM11655 2314   GGGAGGGGGCAGGCACATGC       GG    CACAT-   -  GTAGAACAA
6          TCCTCGTAGAACAAGAGTGG GGGAGGG  CAGG     GCTC CTC
          GTTTCTTCCCTGACCCTCCC CCCTCCC  GTCC     TGGG GAG
                              A-    CTTCTT    T  ---------
GAM11656 11974  GGGAGGGTCACTTGAGCCCA   G     A-    A--     GA-   GTGA
7          GGAATTGTGAGATCAACTGG GG AGGGTC  CTTG   GCCCAG   ATT
          GCATATAGGGAGATCCTGTC CT TCCTAG  GGAT   CGGGTC   TAG
                          G     AG    ATA      AAC   ----
GAM11657 4807   GGGAGGGTGGGGTGGGGGGC    A--           G AGACT  -    AACAAA   AATGTGTG
3          AGACTGGGGCTCAACAAATG GGG   GGGTGGGGTGGGGG C     GG GGCTC      TGG
          GAATGTGTGCCGGGAAGGGC CCC   CCCACCTCACCCCC G     CC CCGGG      GCC
          CACCTGGAAGCCCCCACTCC    ACC           - AAGGT  A    AAGG--  --------
          ACCCCCACCC
GAM11659 13640  GGGAGGTGAAGAATAAAAGG     G   AGAATAA       -  -  TAAT
6          ATGGGAGGTAATTCATCACT GGGAG TGA      AAGGATGG GA GG
          GTCCTTCCACTAATCACTCC CCCTC ACT      TTCCTGTC CT CT
          C                   -  AATCACC       A  A  ----
GAM11660 2267   GGGAGGTGAGGACTTCATCT      T    CTTCA-   AAC     TGGTG
0          CAACATCGGCTGGTGGTTGG GGGAGG GAGGA     TCTC   ATCGGC
          TAGGGGAGCTTTTTCTTTTC CCTTTC TTTCT     AGGG   TGGTTG
          TTTCC                T    TTTTCG   GA-     -----
GAM11662 15726  GGGAGTAAGGCAGGGCAGTG    T-   -     GTG   ACCC-  TGCAAGAT
1          TGCCACCCCCTGCAAGATGG GGGAG  AAGG CAGGGCA   TGCC    CC
          ACCCAGGCAGAGTGCCCTGA TCCTC  TTCT GTCCCGT   ACGG    GG
          TCTTCCCTCCT           CC   A     GAG    ACCCA --------
```

GAM11663 15081 GGGAGTATATGCTATCAACA TAT A ---- T- AT AAC A ACCT
5 TGACTTGATGATATTAACTT GGGAGTA GCT TCA ACA GACTTG GATATT TTTG CC
TGACCACCTGGCCAAGACAG CTCTCAT TGA AGT TGT TTGGAC TTGTGA GAAC GG
TGTTTCCAGGTTTCTGTACT --- - ATCA CT CT CA- C ----
ATGAAGTTACTCTC
GAM11664 17038 GGGAGTCAAAAATTTTTAGC AAAAA TT ACACTAAAGTCAAAC
0 TACTTTAACACTAAAGTCAA GGGAGTC TTT AGCTACTTTA
ACTAAAGTAGCTTCAAAAAG TCTTCAG AAA TCGATGAAAT
ACTTCT AA--- CT ----------
GAM11664 180 GGGAGTCCAGGAGCCAAGGT AG-- AGC ----- CC TGTCT
6 TGCCGCGGTGTCTCCGTCAG GGG TCCAGG CA AGGTTG GCGG
CCTCACCATGAACCTGGAAC CCC AGGTCC GT TCCGAC TGCC
CGCCC GCCA AA- ACCAC -- -----
GAM11665 13057 GGGAGTCTTCCTCTGTCGCC TCT C TC --- GA - - - GATC
4 CAGGCTGGAGTGCGGTGGCA GGGAG TC TCTG GCCCAGG CTG GT GCGGTG GC AT
TGATCGTGGCTCACTGCAAC CCCTC AG GGAC CGGGTCT GAC CA CGTCAC CG TG
CTCAGACTTCTGGGCTCAGG TT- T T- TCA TC A T G ----
TGATTCTCCC
GAM11666 17295 GGGAGTGAGCTGGGGGTGCC AGC GT-- CT- CTTCCACT
2 TGCAGGCTTCCACTCCTGCC GGGAGTG TGGGG GC GCAGG
CCGCCTCACCCCAAATGCTC CCCTCGT ACCCC CG CGTCC
CC AA- ACTC CCC --------
GAM11668 14892 GGGAGTGTCTCACTCATCAT A -- A AT TC C-- A GAT
2 TCTGCTCACCGATGGCGACC GGG GT GTCTC CTC CAT TG TC CC
CCACTGTGGAGGAGACTAAC CCC CA CAGAG GAG GTG AC AG GG
CCC - AT - -- TC CCC C ---
GAM11668 13750 GGGAGTGTTGCTCCCAGTCC GA GCT---- ---- GCCTGA
6 AGAGGCCTGATTCTGTTCGG GG GTGTT CCCAGTCC AGAG
ACTGGGTTCTCAAGACACGA CC CACAG GGGTCAGG TCTT
CC AG AACTCTT CTTG ------
GAM11675 7407 GGGATAGTTTTGGCTCCCTT GGC TT -- ATGTA
6 GGAGGCTATGTAGGCTTGTC GGGATAGTTTT TCCC GGA GGCT
CCGGGAAAGAGAACTGTCCT TCCTGTCAAGA AGGG CCT TCGG
GAA C- GT -----
GAM11676 11294 GGGATATGTCTTTTCTGGTT ATGTCTT G - T- CATTTATTAA
4 TGTTGTTGGCATTTATTAAC GGGAT TTCTG TTTG TTGT GG
CTTACAGTCAAACAGAAATC CTCTA AAGAC AAAC GACA CC
TC ------- - T TT ----------
GAM11678 10016 GGGATCCACAGTGTCAAGGA C A CA G AA - A-- A CAACCCAAGTAAACCAA
4 ACTTAAATATAATGTATCAT GGGATC AC GTGT AG AACTT ATAT AATGT TC TAC
ACCAACCCAAGTAAACCAAG TCCTGG TG CACA TT TTGAA TATA TTATA AG ATG
TACGAAAAATATTCATATAA A - C- G A- C AAA C ----------
AGTTGTTCACACGTAGGTCC
T
GAM11678 22473 GGGATCCCCCAGAACTTACG CC AACTTAC CCA TTTAC
8 GCCATCTTTTTTTACAAAAG GGGAT CCCAG GG TCTTTT
AATCCAAGATACCTGGGAAA CCTTA GGGTC CC AGAAAA
TTCC AA CATAGAA TA- -----
GAM11679 11707 GGGATCCCGGCCGCGGCTGC A CCGG- -- GA GTCGAA
0 TGGAAGCGTCGAAGCTCAGC GGG TC CCGCGGCT GCTG AGC

GGGGCCGCGGACACTGACCT TCC AG GGCGCCGG CGAC TCG
- TCACA GG -- ------
GAM11679 16025 GGGATCCTCGTGGATATGAA - GGAT AAA AGA AG- AACAA
2 AGATAGAGCAGGCAACAAGC GGGATCC TCGT ATG GAT GC GC
AAGGCAGTTGACGTTAACGA CCCTGGG AGCA TGC TTG CG CG
CGGGTCCC C AT-- AG- A-- GAA -----
GAM11680 4987 GGGATCGGCGGCTTTCGGTT G - CTT A C---- TCAGT
3 TATCCTCATCAGTTGACCAT GG ATCG GCGG TCGGTTT TC TCA
AGAAGAGCTGACGACCGCTC TC TAGC CGCC AGTCGAG AG AGT
GATGCT G T AGC A ATACC -----
GAM11681 14179 GGGATCTGTGAGGTGCTGTA GA G G CGCT CT ATCT
6 CGCTGCCTCCTGTATCTGCG GG TCTGT AGGTGCT TA GC CCTGT
GGGAGTTCTTAGAGCATCTG CC GGACG TCTACGA AT TG GGGCG
CAGGAACC AA - G TCT- AG ----
GAM11682 7402 GGGATGAAACAGTAACTTGA ATGAA AAC TG G G CTGAT
5 TTTAAAGTTTGTCCTGATGA GGG ACAGT T ATTTAAA TTT TC
AAGAGTTTGAGTTGAAGACT TCC TGTCA A TGAGTTT AGA AG
GTACCT A---- GA- GT G A -----
GAM11683 15823 GGGATGAGCTCAGCTAGGCA T TCA TA AACAA GAGAGC ACTGGG
8 AACAAGTCCAGAGAGAGCAG GGGA GAGC GC GGCA GTCCAGA AGC
CACTGGGGCTATACATCTGG CCCT CTCG CG CCGT CGGGTCT TCG
GCCTAATGCCGCCCTGCTCC C TCC -- AATC- ACATA- ------
TCCC
GAM11684 19712 GGGATGAGTACTTAAATAAA AT CTTAA TAT CAA AAGCTC
3 TCTATGAAGCAATCTAAGCT GGG GAGTA ATAAATC GAAG TCT
CAGAAATTTTCTTGATTTGT CCC TTTAT TGTTTAG CTTT AGA
ATATTTTCCCC CT A---- TT- TAA ------
GAM11688 11876 GGGATGGGGGCCTGCACTGT AT--- TG A C GC GAGAG GA T GAA TTCC
5 TTCGCGGCTGGGGAGAGGGA GGG GGGGGCC C CTGTTT GCG TGGG G GCTCA CC GTC

GCTCATCCGAAGTCTTCCGA CCC CCTCTGG G GGCGAG CGC GCCC C CGGGT GG CAG

CAGAGGTGGGCGTCATGCCC GAGCT GT A T A- GTA-- TG - AGA ----
GACGCTGAGCGGAGTGGGTC
TCCTCGAGCCC
GAM11688 22455 GGGATGGGGGTCAAGGAGTC G G AAG GTCA -- AAGGTGA
6 ACCTGTAATCAAGGTGAGAT GG ATGGGG TC GA CCTGTA ATC
TCTGCAGGACGATCATGGAG CC TGCTCC AG CT GGACGT TAG
CCTCGTGCC G G GTA AGCA CT -------
GAM11690 13402 GGGATGTCAGTGGCGCTGAG A AGT T CA- A- TTTA CCC GCC
0 CAGTAGCTTTAAGTCCCAGA GGG TGTC GGCGC GAG GT GC AGT AGAAAA
AAAGCCTTTTCTTACTATGC CCC GTAG CCGTG CTC CA CG TCA TCTTTT
AAACCCACTCGTGCCTGGAT - GT- - ACC AA TA-- T-- ---
GCCC
GAM11692 13117 GGGATTACAGGCGTTGAGTC AC- - TCACC CCC CCAGTA
7 ACCGTGCCCGGCCAGTACCC GGGATT AG GCGTTGAG GTG GG
ACTTCTCTTAATGCTCTATG CCTTGA TC CGTAATTC CAC CC
AGTTCC GTA T TCTT- --- ------
GAM11695 10824 GGGATTGACGAGTAAGGTAT GA CG AAGGTA AG GGGTCA
6 AAAGGAGTTTGGGGTCACAG GG TTGA AGT TAAAGG TTTG

GAATCTTTAATTTATCAACA CC AACT TTA ATTTCT GGAC
CC AC AT ------ AA ------
GAM11703 578 GGGCAACTGTGTGAGCCTGC CA ---------- CCT TCCCC CC A GTGA
8 TGTCCCCAAGCCCCGAGGGT GGG ACTGTGT GAG GCTG AAGC CG GG
GACCCGCGCTTCAGCTTCCT CCC TGACACA CTC CGAC TTCG GC CC
CCTCCACTTCTACACAGTAC A- TCTTCACCTC CTT ----- C- - ----
CC
GAM11705 7520 GGGCAAGGAGGGCCCCTGGG A C A--------- T TCTATAT
1 GAATCGTGGTCTATATCCCC GGGCAAGG GGGCCC TGGGG ATCG GG
GATAAATATTCTGCCTCACG CTTGTTCC TCTGGG ACTCC TAGC CC
GGTCTACCTTGTTC A C GTCTTATAAA C -------
GAM11707 11164 GGGCAATGGCTCACACCTGT AAT A-- --- A AGCA TG GAGA
6 AATCCCAGCACTTTGGGAGA GGGC GGCTC CACCT GT ATCCC CTT G
CTGAGGCAGAGGGATCACTT CCTG TTGAG GTGGA CA TAGGG GGA C
GAGGTGAAAGAGTTCAAGTC AAC AAA GTT C AGAC GT ----
C
GAM11710 16211 GGGCACATGGATTGGGATAA AT TG- ATAAATT AG GGTC
6 ATTCATCAGCAGCTTGGTCA GGGCAC GGAT GG CATC CAGCTT
GGCTGGGATGCCAATGTTCT CCCGTG CTTG CC GTAG GTCGGA
CGTGCCC CT TAA ------- G- ----
GAM11715 14926 GGGCACTGGGGGGCAGAGCT CT A - C- - TGCCAT
7 GTGCGCAGCCGGCGTGCCAT GGGCA GGGGGGCAG GCT GTG GCAGC CGGCG
CGCTGTGCTGTCCCGCTGGC TCCGT CCTTCCGTT CGG CGC TGTCG GTCGC
CTTGCCTTCCCTGCCT C- C T CC T ------
GAM11719 13658 GGGCAGATCTCGCGAGCAAC ATC-- A- AA-- C AAATA
6 GCGGTAAAAATATTGCTTCG GGGCAG TCGCG GC CG GGTAA
GTGGGTGACGCGGTACAGCT CCCGTC GGCGC TG GC TCGTT
GCCC GACAT AG GGTG T -----
GAM11720 16085 GGGCAGCAAGGAGAGGATGC AA- GA-- T AACA TTGCA
0 AGAACAGCTTCTTGCAGAAG GGGCAGC GGA GGA GCAG GCTTC
CACCTGCTCCGGCATCCAGC TCCGTCG CCT CCT CGTC CGAAG
GCTGCCT CGA ACGG - CA-- -----
GAM11722 13368 GGGCAGCTGAGCGATGCCAG G AGCGAT A- A A- AAC AACC
2 GAACAAAGAGAACCTGCAAC GGGCA CTG GCC GGA CA AGAG CTGC
CGCAGAGCTCTGGTGTCCAA CCCGT GAC TGG CCT GT TCTC GACG
GGTCAGGTGCCC G ------ AA - GG GA- ----
GAM11722 2261 GGGCAGCTGGTGGTACATGA T - A GAA TT TC - G TTCA
6 ACTCTTTTCCAGTGTCCTTC GGGCAGC GGT GGT CAT CTC T CAG T TCC
AGGAGATCTGTGATGAGGTG CTCGTCG CCG CCA GTG GAG A GTC A AGG
AACCTGCCGCTGCTC - T A --- T- GT T G ----
GAM11723 1981 GGGCAGGAAGGCGGGCTCGA AGG - - A TT T TTTTGCC
3 CTTTCTCTTTTTGCCAGCGG GGGC AAGG CGGGCT CG CT C CT
GAGCTGAAGCCCGTCCTTAG CCCG TTCC GCCCGA GT GA G GA
CGCCC CGA T A C GG C -------
GAM11727 1851 GGGCAGGTGCCTGGTCAATC - T TG TCAATCA TC A --- AA ---- G TCC
8 AGTCCTCGGGATGGCAGCCA GGGCA GG GCC G GTCC GGG TGGCAGC CATC CCCG TGG
CC
TCAACCCGTGGGCCTCCTGG CCTGT TC CGG C CGGG CCC GTTGTCG GTAG GGGT ACC
GG
GGTGACCTTACGGACCAATC G T GT CTC---- TA A AAA G- TCTA A CAT

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          TTGGGGGATGAAAGCTGTTG T   GTGA
          ACCCATGGGCCTCCTGGGCT  GGG
          CTGTGTCC           TCC
                      -  ----
GAM11729 22447  GGGCAGTGGGCCACGAAGGA   -  T -     AAGGA  CATACG    GACAGAG
5          CTCCATACGTGGGCGACAGA GGG CAG GG GCCACG    CTC     TGGGC
          GGCCCAGAGACAAGCGTGGC CCC GTC CT CGGTGC    GAG     ACCCG
          ATCCTGACCC          A  - A     GAACA  ------    -------
GAM11730 7109   GGGCAGTTCACGTTCTGGAG       CACG     ---- TC    A  CCACC
2          TCGTTCAGCACCACCTGCGA GGGCAGTT    TTCTGG    AG  GTTC GCA
          ACTCTTTGACCGGAGAAGGC TCCGTCGG    GAGGCC    TC  CAAG CGT
          TGCCT                AA--     AGTT  T-    -  -----
GAM11731 2502   GGGCATCAAGGCTTCAAACA   G  -  AA      AACA    GAGG          AG ACGG
9          CAGCAGAGGTGTTCTTTGAT GG CA TC  GGCTTCA    CAGCA    TGTTCTTTGATGG  T
          GGAGTACGGGTGCCATCGGA TC GT AG  TTGGAGT    GTCGT    GCAAGAGGCTACC  G
          GAACGTGCTGGGTGAGGTTG   G  G  GG      GG--     ----          GT ----
          GGAGTGGCT
GAM11735 2078   GGGCATGGGGAAGGCACTGA     ---      GGCACT  AACA    CTATAAAACA
8          AACAGAGGACTATAAAACAT GGGCA   TGGGGAA     GA    GAGGA
          CCTTCTCTTATTCTCCATAC TCTGT   ACCTCTT     CT    TTCCT
          TGTCT               CAT      ATT---  C---     ----------
GAM11737 19685  GGGCATTCCTGAAGCTGACA      TCCTGA     CA  ATT   GC    ATGT
7          GCATTCGGGCCGAGATGTCT GGGCAT     AGCTGA  GC   CGG  CGAG
          CGCTCCGTGGCCTTAGCTGT CTCGTG     TCGATT  CG   GCC  GCTC
          GCTC                ------     C-  GT-   TC    ----
GAM11738 19721  GGGCATTCTGCACACTCGTG      TCTG   CTC    TC   ACCAATATAAAATCC
0          GTCCAGACCAATATAAAATC GGGCAT    CACA   GTGG  CAG
          CCTGCCATCTGTGACATGCC CCCGTA    GTGT   TACC  GTC
          C                   CA--    C--    --  ---------------
GAM11738 10741  GGGCCAAAATTGTTTCCTGG    CCAAAAT    TCC      AA   TTACCCCTT
9          GGAAAATTGTTACCCCTTCA GGG      TGTT   TGGGGAA  TTG
          AAATTCCCCACAACATACAA CCC      ACAA   ACCCCTT  AAC
          CCC                 AACAT--    C--      AA   ---------
GAM11739 21918  GGGCCAAAGAGCAGCACCAG     AAAGA  -     AGAAC    GGGGAAGA
2          AACGCTGTGGGGAAGAGCAG GGGCC     GC AGCACC     GCTGT
          CTGGGTGCTCGCCAGGGCCC CCCGG     CG TCGTGG     CGACG
                             GAC--  C     GT---     --------
GAM11740 14076  GGGCCAATGTCAAGGATGAC     AA--    AA    ACTACAT    GCTTCAGG
5          TACATTAAATGCTTCAGGAT GGGCC    TGTC  GGATG      TAAAT
          TTATTTATTGCATCTAGGAC CCTGG    ACAG  TCTAC      ATTTA
          AAGGAGGTCC            AGGA   GA    GTTATTT    --------
GAM11740 7854   GGGCCAATGTCCACAAAGAA     AA    ACAAAGAA    -  CA-    ACCGATGTCCAAA
6          TTCCTGGTCAGCACCACCGA GGGCC  TGTCC       TTCCT GGT   GCACC
          TGTCCAAAGGTGCAATATCA TCCGG  ACGGG       AAGGA CTA   CGTGG
          AGGAAGGGCAGGCCT         --   --------    A  TAA    -------------
GAM11742 13174  GGGCCACTAATAGATGAATT     CACTAAT     AT--------     CACTCC
1          TCTTGCACTCCCAAGAACAA GGGC      AGATGA        TTCTTG
          GCCTCTCTCGTCTTCCAAAT TTCG      TCTGCT        AAGAAC
          GCTT                TAAACCT     CTCTCCGAAC     ------
GAM11742 2572   GGGCCAGAGAAAGCACAAAC    -  A  A-   CAAACA    CCAGAA
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6 ATGGATCCAGAAGTCCAAAG GGGC CAG GAA GCA TGGAT
AAATGCAGTTCGTTGCGCCC CCCG GTT CTT CGT ACCTG
C G GA AAAGAA ------
GAM11744 2394 GGGCCAGGCTGCAGGGAAAT G AAA AGAA AAGGAGC
9 GAGAAGAGAAGGAGCCTCAG GGGCCAGGCT CAGGG TG GAG
GGCAGACTCCTGAGCCTGGT CCTGGTCCGA GTCCT AC CTC
CC - CAG GGGA -------
GAM11746 343 GGGCCAGTTTATATACTGCT TT ACT TACACTATTTATTTCT
0 ATTACACTATTTATTTCTAT GGGCCAG TATAT GCTAT
AGCTACATGTGCTTTGGCCC CCCGGTT GTGTA CGATA
TC CAT ----------
GAM11746 6765 GGGCCATCTTCAAGTTCAGT T AGT T A T TCTCATTTCT
5 CCATGTGTCCTCTCATTTCT GGGCCA CTTCA TCAG CC TG GTCC
GGACCTAGGCTGATGGAGTG CCCGGT GAGGT AGTC GG AT CAGG
GCCC - --- - - C ----------
GAM11747 7997 GGGCCCACAGTAGGTACTCC CCACA- TACTCCT CAGCTC
5 TCCAGGGGCAGCTCTTCTTG GGGC GTAGG CCAGGGG
GTCCATATCCTGCCCATCTG CTCG CGTCC GGTTCTT
CTC TCTACC TATACCT ------
GAM11747 11541 GGGCCCACCTTTGGTATCAT C-- T T -- T- GCAC
9 TGTGAAGCACTTCCCCAAGC GGGCC ACCTT GGTA CA TTG GAA
TGCTGCCCAAGGTCCTGGTC CCTGG TGGAA CCGT GT AAC CTT
C TCC C C CG CC ----
GAM11748 15282 GGGCCCAGAAGAAAATGTAG AGAAGAAAATG TA - TA- CAG GTCA
1 GTAGTCTTAGGGTTAGGTAG GGGCCC TAGG GTCTTA GGGT GGTAG CT
CAGCTGTCAGGAACTTGCCC CCCGGG ATCC TAGAAT CCCG CCGTT GG
CTGCCCATAAGATCCTAAAG AA--------- -- A TCC CAA ----
GGCCC
GAM11749 10573 GGGCCCATTCTTGCTTCTCA T CTTC-- CACCTTCC TTATTAATT
0 GGCACCTTCCGTTTATTAAT GGGCCCAT CTTG TCAGG GT
TGCCATTGCTCCTGACATCA CCTGGGTA GAAT AGTCC CG
CTAAGATGGGTCC - CACTAC TCGTTAC- ---------
GAM11754 15120 GGGCCGACGGGGGAGACGGA CC C AC CC----- AGTGTTGAAG
3 GCCCCAGGAGTGTTGAAGCC GGG GA GGGGGAG GGAG CCAGG
TGGAAATCCCCTCCCCTTCC CCC CT CCCCCTT CCTC GGTCC
CCCTCCCCCC CC - CC CCCTAAA ----------
GAM11757 15207 GGGCCGTCTCCTCAAACAGC - CC AACA CCG --- T AT CCT
0 CCGAAGATCAGGATCTTGTT GGGCCG TCT TCA GC AAGATC AGGA CTTGTTCTTC GC
CTTCATGCCCTGCTGGAAGG CCCGGC AGG AGT CG TTCTGG TCCT GAGCAGGAAG CG

ACGAGTTCCTCCGGGTCTTG T CT AGA- --- GCC T GT ---
CAGATGATCGGATCGGCCC
GAM11758 13599 GGGCCTCCAATCCTAGTAAA GC A TAAAC-- CGAA
8 CAGGGGCGCGAATGCCCTTT GG CTCC ATCCTAG AGGGGCG
TTCCTCCTAGGGTAGGGGAC CC GGGG TGGGATC TTCCCGT
C A- A CTCCTTT ----
GAM11763 2548 GGGCCTGCGCGCTGGCCGTG T ------- CTGG-- - GT - C TTTTTGATTT TTCC
0 GGAGTCTGCTACACCATTTT GGGCC GC GCG CCGT GGGA C TGCTACA CA GGGC
TGATTTGGGCTTCCGCTTTG CCTGG TG CGC GGCA TCCT G ACGGTGT GT TTCG

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          ATGTGGCATGGTTCCTGACG    - TACTTCC  TTCAGA   G   TG T     A ----------   ----
          GAGACTTCGCCCTTCATGTG
          GTCC


GAM11768 10699  GGGCGACTACGCGTGCGGCC    ACTAC  T   CCC  A   TAC  CGCCAT
1         CGCACGGCTACGGCGCCATC GGGCG    GCG GCGG   GC CGGC   GG
          CCCGCCGCGCCCCCGCCGCC CCCGC    CGC CGCC   CG GCCG   CC
          GCCC              -----  -   CC-  C   CC-  ------
GAM11773 7656   GGGCGCTGCGAGGCAGGAAG    C  GAGGCAGGA   G   AG  AGGCC
8         GGGGCCACAGGCAGGCCGCA GGGCG TGC       AGGGG CCAC  GC
          GTGGGCCCCTAGAGAGAGCA CCCGT ACG       TCCCC GGTG  CG
          TTGCCC              T  AGAGAGA--    G   A-  -----
GAM11774 4954   GGGCGCTTGGGCTGGGGGGC      TGG    GGGC    -   GCATCA
2         CCTTGTTGCGGCATCACGTG GGGCGCT   GCTGGG   CCTTGT TGCG
          CATAAGGTGAACTCGGTGGC CCCGCGG   TGGCTC   GGAATA GTGC
          GCCC                ---     AAGT    C   ------
GAM11776 16191  GGGCGGCATTGACAAGCTGG   C  CAT  ACA     CG   ACATGGAGAA
7         GCGAGTACATGGAGAAGCTG GGG GG   TG   AGCTGGG  AGT
          TCCCGGCTGGCGTACCACCC CCC CC   GC   TCGGCCC  TCG
                        A  AT-  GG-     TG  ----------
GAM11781 14902  GGGCGGGGGACGATGGCGAG       GACGA   G  A GG    -  -   AGTT
1         AGGGGAGGGGGAGCGAGTTC GGGCGGGG    TGGC AG G  GAGGGG GA GCG
          GCATCTCTCCTTTTCCTGGT CTTGTCTC    ATTG TC C  TTCCTC CT CGC
          TAGACTCTGTTC             AG---   G  - TT    T  A   ----
GAM11783 13098  GGGCGTGCTAGCAGTTCGCC    -   G  TT   -   GT CA  TA  AC   AGCTCA
3         CGGTGGTTCACGTACTACTG GGGCG TGCTA CAG  CGCC CGGTG  T  CG  CT  TGG
          GAGCTCACCAAGATCGCAGT CCCGT ATGAT GTC  GCGG GCCAC  A  GC  GA  ACC
          CACCGTGGCGGTCTGTAGTA    G   -  TG   T   TG C-  TA  --  ------
          GTGCCC
GAM11783 15004  GGGCGTGGGCAGCAAACAGG   CG   AG    - CTT  CGT   C    GAAGAAG
4         TCTTTCCGTGGGCTGTGTGA GGG  TGGGC  CAAACAG GT   TC   GGG TGTGT
          AGAAGACACACCTTTTGACA CCC  ACCCG  GTTTGTC CA   AG   TCC ACACA
          ACACTGTTTGGGCCCAACCC   CA   G-     A  AC-  TTT  -    -------
          C
GAM11784 13618  GGGCGTTCGTAACGGGAATG    GT   AA-  GGAA-    AA  GTGGGAAAAAGGGA
3         CCGAAGCGTGGGAAAAAGGG GGGC  TCGT   CG    TGCCG  GC
          AGCGGTGGCGGAAGACGGGG CTCG  AGTA   GC    GCGGT  CG
          ATGAGCTC             --   GGG  AGAAG    GG  ----------
GAM11786 10805  GGGCTACTTCCTGACCAAGA    T  TTCC   - A   TT----------   CCGAAC
4         TCTTCCACCCGAACGTGGGC GGGC AC    TGAC CA GATC          CCAC
          GCCAATGGCGAGATCTGCGT CTCG TG    ACTG GT CTAG          GGTG
          CAACGTGCTC           - CA--    C  -   AGCGGTAACCGCG   ------
GAM11787 10475  GGGCTAGGCTGGGCCTAGCT    -      CC    G-----     C  ACCTAAGTTCC
2         GTAGAGACACACCTAAGTTC GGGCT AGGCTGGG  TAGCT     TAGAGA AC
          CGTTCTCTGTTTGGAGGCTG CCTGA TCCGACCC  GTCGG     GTCTCT TG
          CACCCAGCCTGAGTCC       G      AC    AGGTTT    - ----------
GAM11789 4785   GGGCTCACACATTTCAAGGT     A  ATTTC      TACCATTAA    -    TTG
2         GGCTACCATTAAGGGGGCAC GGGCTC CAC    AAGGTGGC       GGGGG CACCC
          CCTTGGGGTGATCCCCGTGC CCCGGG GTG    TTCCACCG       CCCCT GTGGG
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CACCTTTAGTGGGGCCC - AT--- TG------- A ---
GAM11793 293 GGGCTCCTGCGGCATCGGGG T G ATCG CATC -- TCCA
5 GCGGCATCGGGGGCGGCTCC GGGC CCT CGGC GGGGCGG GGGG GCGGC
AGCCGCATCTCCTCCGTCCT CCTG GGA GCCG TCCTGCC CCTC CGCCG
GGCCGGAGGGTCC - G G--- T--- TA ----
GAM11793 10244 GGGCTCCTGGGGTGGGGGCC GCTCCT TG - A CCGTTGCT
7 GCCTGAGGCTGCCCGTTGCT GG GGGG GGGGCCG CCTG GGCTGC
GCAGTCCGGGTCGGCCTTTG CC TTCC TTCCGGC GGGC CTGACG
CCTTCTTCACC ACTTC- GT T - --------
GAM11797 11575 GGGCTCTTTGCTAGTATCTC T TAT-- CATATC GA- TTAGATGAT
3 CATATCTAGACGATGGTTTT GGGC CTTTGCTAG CTC TAGAC TGGTT
AGATGATAACCACAGGTCTA TCCG GAAATGATT GAG ATCTG ACCAA
CAAGAGCGTTTTTAGTAAAG T TTTGC AAC--- GAC ---------
TGCCT
GAM11797 22649 GGGCTGAAATACACCCGTGG C AA G CC--- AGC CAG AAGATGGGGAAAC
5 TCTCCGGAAGCGCCTCAGGG GGG TGA TACACCC TGGTCT GGA GCCT GGTTGGG
TTGGGAAGATGGGGAAACTC CCC ACT GTGTGGG GCCAGA CCT CGGG CCGACCT
CAGCCGGGCATCCACTCCAG A CG G CCTCA A-- --- ----------
ACCGGGGGTGTGGCTCAACC
C
GAM11797 10825 GGGCTGAAATTCCGAGCTGC ATTCC- C GT AT ATAC-- CTTCGT
6 GGTTGTTCATGAGAATACAC GGGCTGAA GAGCTG G TGTTC GAGA ACC
CCTTCGTGGTACCCCATCTC CCTGACTT CTCGGC C GCAGG CTCT TGG
CGGGACGTTCTCGGCTCTGT GCGTGT T TT GC ACCCCA ------
GCGTTCAGTCC
GAM11801 16100 GGGCTGCCGGGGCTGGCGCA C - GC- TCAA-- GCCGCGAG
7 GCTCAAGAGCCGCGAGTCGT GGG TGC CGGG TGGCGCAGC GA
ACGTGCTGTGCTACGACCCG CCC ACG GCCC ATCGTGTCG CT
CGCACCC - C AGC TGCATG --------
GAM11801 15734 GGGCTGCCTGGGGCGTGCAA GG- AAAAGCTGCT G AAAC T GAAGACA A
C
9 AAGCTGCTGTGTGAGCAAAA GGGCTGCCTG GCGTGC GTGT AGCA GC GCCGT TTCC
GG
CGCTGCCGTGAAGACATTCC TCTGACGGAC TGTACG CACA TCGT TG CGGCG AAGG
CC

AGGCGGCTTCCAGGAAGCGG AGG ---------- G GTA- T ------- A -
CTGTATGTGCTGACACGCAT GGCTT
GTGGACAGGCAGTCT

GAM11805 17062 GGGCTGGAGGGGCCGAGGCA GAGG G A - AG-- - A TCCGAGGT
6 CCCCGCAGGCTCCAAGGTCC GGGCTG GGCC AGGC CC CCGC GCT CC AGG
GAGGTCCTGGGTGGCATCAG CTCGAC TCGG TCCG GG GGTG CGG GG TCC
TGGTGGCGCCTGGGCTCAGC ---- G C T ACTA T G --------
TC
GAM11806 7570 GGGCTGGATAACTTGGGCAT --- TAACTT --- AGAGACCC
0 GGGGAGAGAGACCCCTCCCC GGG CTGGA GGG CATGGGGAG
GTGGGATCCTGCAGCTCCAG CCC GACCT CCT GTGCCCCTC
GCTCCC TCG CGACGT AGG --------

GAM11806 19476 GGGCTGGATTACTTGGGATG G TTA - ---- AGATACCC
2 GGGAGAGATACCCCTCCCCT GG CTGGA CT TGGGAT GGGGAG
GGGATCCTGCAGCTCCAGGC TC GACCT GA GTCCTA CCCCTC
T G C-- C GGGT --------
GAM11806 10346 GGGCTGGATTGTGGCGGGCC - TTG G- G -- ---- CGTGAT
3 AGGGCCGCCTGCGTGATCGG GGGC TGGA TG CG GCCAGGG CCG CCTG
GACTCTGGATTCCTGGTGTG CCCG ACCT GC GT TGGTCCT GGT GGGC
GACGACTTCCATGCCC T TCA AG G TA CTCA ------
GAM11809 22091 GGGCTGGGGTGGGGTGGGTG --- TG T- - T T AGA- TTAGCTGTCCT
5 GGGTCGGGTGGTGGAGAGGC GGGCT GGGG GGGTGGG GGGGTC GGG GG GG GGCC

CTTAGCTGTCCTGGCTGGTG TCCGG CCCC CCCACTT CCTCGG CCC CC CC TCGG
CCCCTCCCAGGCTCCTTTTC GTC GT TT A T - GTGG ----------
ACCCTGCCCCCTGGGCCT
GAM11814 7074 GGGCTTAAATAAATGGACAG TAAATAAA A G A- ATG AGAA A A ---- -
1 GGGGCAAGGGATGTAGCGAG GGGCT TGG CAGG GGCA GGG TAGCG CAG GGGTG CT
GTCC G
AACAGAGGGTGACTGTCCGG CCCGG ACC GTCC CCGT CCC GTCGT GTC CCCGC GG
CGGG C
CCAGCAGCCTGGGCCTCTGG TGTC---- C A GG CCA AC-- - - TCTC T
CGCCCCTGCATGCTGACCCC CAGCA
CGGTGCCACCTGCCCACTGT GC
GGCCC CG

GAM11814 17359 GGGCTTAGACAAATGTATGA TT-- AAA-- GA CTACAATT
4 TGATATCTACAATTATAGAA GGGC AGAC TGTATGAT TAT
TCATACAGAATAGTTTCACT CCCG TTTG ACATACTA ATA
GCCC TCAC ATAAG AG --------
GAM11816 492 GGGCTTCTTGGGCGCAGGTC TTCT- CA --- TG TG CTCC
7 GGAGCTGGGTGGGCCGGCTC GGGC TGGGCG GGTCG GAGC GG GGCCGG
CCCGGCCCCTGGCTTGGGCG CCCG GCCTGT CCAGC TTCG CC CCGGCC
ACCATGTCCGCATCCGCCC CCTAC A- GGG GT -- ----
GAM11817 17879 GGGCTTGCAGCCCCACATGC TT CCCCACAT T ---- TTTGTT
1 TCCTTCTAACATTTTGTTAT GGGC GCAG GCTCC TCT AACAT
GTTTTAGAGATGGAGTCTCG CCCG TGTC TGAGG AGA TTGTA
CTCTGTCGCCC C- TCGCTC-- T GATT ------
GAM11818 1906 GGGCTTGTTGCTGCTCGGAG G TGC - A C AC TG AGGCA
6 CCGGTGGACCTGGCTGAGGC GG CTTGTTGC TC GG GC GGTGG C GCTG
ACGGCTGGCGCCGCCTGTAC TC GAGCGACG AG CC TG CCGCC G CGGC
CTGAAATGCAGCGAGGCT G TAA T A T GC GT -----
GAM11823 16938 GGGGAAAAGCCCGGGAAAAA AAAAG AAAAA---- G CTAAAA
1 ACCGGGTGCTAAAACGCGTG GGGG CCCGGG ACCG GTG
GTGAGAAAGTCCCCGGGAGG CCTC GGGCCC TGGT CGC
TGCTCC GTGGA CTGAAAGAG G ------
GAM11825 253 GGGGAAAGCCTGGTTTTGGC AA-- T TTTTGG AG- ATT
1 TGCTTTGAGGCTTTCATTGA GGGGA GCC GG CTGCTTTG GCTTTC
AAGCAAATGAGGCAGAAATT CCCCT TGG CC GACGGAGT CGAAAG
CCCCGGTCGCATCCCC ACGC C CTTAAA AAA ---
GAM11827 16019 GGGGAACCGCGGTGGCTTCC GAA GGTGGCT G AG-- G AGT A G GG G G
4 GCGGAGGTTTCGGCAGTGGC GGG CCGC TCC CGG GTTTC GC GGC TCCG GGCC GGTC
CGGCC

ATCCGGGGCCGGGGTCGCGG CCC GGTG AGG GCC CGGAG CG TCG AGGC CCGG CCGG GCCGG

CCGTGGACGGGGCCGGGGCC GTA AGGAAT- A GGAA G C-- - G AG G -
GAGGCCGCGGAGCTCGCGGA TGGACGG
GGCAAGGCCGAGGATAAGGA
GTGGATGCCC

GAM11830 286 GGGGAAGGGCATGGGTTAAG GGC GTTA TTA T CAT
9 GTTAAGGCTGTACCATGTAC GGGGAAG ATGG AGG AGGC GTAC
TGCTTCTCCTCACTATTACT TCCCTTC TATC TCC TTCG CATG
TCCCT AT- AC-- TC- T ---
GAM11833 12044 GGGGAATCTGCAGTAGGTCT CT GGTCT CGA CTAG
2 GCCGGCGATGGAGTGGTGGG GGGGAAT GCAGTA GCCGG TGGAGTGGTGGG
CTAGCTCGCCGCTTCGGCTC CTCCTTG TGTCGT CGGTC GCTTCGCCGCTC
TGGCTGCTGTTGTTCCTC T- ----- TCG ----
GAM11838 426 GGGGACCAGTTAGGCGACAC CCAG - C - - CCCCT ACACGAA--- CCCAGC
4 GCCCGCCCCTCTGAGGAGAC GGGGA TTAG G GA CAC GCCCG CTGAGGAG GGTGGTTC

ACGAAGGTGGTTCCCCAGCC CTCCT GATC C CT GTG CGGGT GACTCCTC CCACCAGG

GCTCAAATTTCCGGACCACC AA-- T T C T CC--- CCCTTTCGCG ------
GCGCTTTCCCCTCCTCAGCC CGCTCAAATTTCC
TGGGCTGTGCTCTCTCTAGA
ATCCTC

GAM11839 21793 GGGGACCTCGGGAGCCTCAC C- GAG- T C AGC ACAC
5 TGGTCCCAGCAGACACCTCA GGGGA CTCGG CCTCAC GGT CC AG
GGAACCGTGGGGACAACCGG CCCCT GGGCC GGGGTG CCA GG TC
GATTCCCC TA AACA - A AC- ----
GAM11841 5102 GGGGACTACAATGGCCACGT TACA CCACGTC T TTAAGT A - GCAC
0 CGGTCTGGGTGTTAAGTGCT GGGGAC ATGG GGTC GGGTG GCTCCA GGA GGTG
CCAAGGAGGTGGCACCGCCA CCCCTG TACC CCGG CCTAC CGGGGT CCT CCGC
TCCGTGGGGCCATCATCCTG C--- TCTCGAA T TAC--- G A ----
GCCAAGCTCTCCATCGTCCC
C
GAM11841 22076 GGGGACTATTGCTGTGGGAA ACTAT- -- - A CC ATCTT
4 GAAGGGCCTGATCTTCATAC GGGG TGCT GTG GGAAGA GGG TG
TCATCTTCCTCATTGAGTAC CCCC ATGA TAC CCTTCT CTC AC
CATGACCCC AGTACC GT T A AT -----
GAM11841 11973 GGGGACTCAGAAAGGGAAGC G AGAA- A AGAGT TGTTGAT
5 AGAGTGGGCTGTTGATGTCT GGG ACTC AGGGA GC GGGC
GGAAAGCTCCCTCACCAGAG CCC TGAG TCCCT CG TCTG
TGCCC G ACCAC - AAAGG -------
GAM11843 6852 GGGGAGAACCACCTCTCGCT CCACC- G A GG AACTC
7 TACCTTGGGGAACTCTTTCG GGGGAGAA TCTC CTT CCTTG G
GGGAGAGGGAGACCCTTTTT CTCTTCTT AGAG GAG GGGGC T
CTTCTC TTTCCC G A TT -----
GAM11844 17924 GGGGAGAAGGAAGGGGAGCG AAG- - A AGCTCTCTC
1 AGGAGAGGAAGCTCTCTCTC GGGGAG GAAGGGGA GCG GGAGAGGA

CTCTCCCTGCTTCCCCTTCA CCCCTT CTTCCCCT CGT CCTCTCCT
CCATTCCCC ACCA T C ---------
GAM11844 2322 GGGGAGAATAGAAAGAAAAC AA AA AA-- A CAAAATCC
3 AATTGACAAAATCCTCAAAT GGGGAG TAGA GA ACA TTGA
GTAAACTCAATTTGCCTCCC TCCCTC GTTT CT TGT AACT
T C- AA CAAA A --------
GAM11845 16169 GGGGAGAGCTTGTTCAGCTT - AG--- TT TCCTTTTCCC
9 TTCATCCTCCTTTTCCCGGA GGGGAGAGCTTGT TC CT TCATCC
TGGTAGAACCGGGTACAAGC CTCCTTTCGAACA GG GA GGTAGG
TTTCCTC T GCCAA T- ----------
GAM11847 7464 GGGGAGCAATTCCAGAGAAG T- ---------- AA- TCCAAC
8 GCCTAACTTCCAACAGCCCA GGGGAGCAAT CCAGA GAAGGCCT CT
GGCTTTTCATGAACTATTCT CTCTTTGTTG GGTCT TTTTCGGA GA
GGTCGTTGTTTCTC CT TATCAAGTAC CCC ------
GAM11849 4598 GGGGAGCCATAATCTGCAAC CC---- C---- AA CA CCCCATAGAA
0 TTCATTTTCCCCCATAGAAG GGGGAG ATAAT TGC CTT TTTTC
AGAAAAAAGAGCACCACCAT CCCCTC TATTA ACG GAA AAGAG
TATTACCACCTCCCC CACCAT CCACC A- AA ----------
GAM11849 15470 GGGGAGCCCCTCCCCAGGGG A T CA - AGA GGCA
2 GAGGCAGAGGGGCACCGCCT GGGG GCCCC CCC GG GGGAGGC GG
TCCACCAAGGGGGGGCCCCC CCCC CGGGG GGG CC CCTTCCG CC
- - AA A --- ----
GAM11849 16934 GGGGAGCCGCCTGCCCCTGG -- C G -------- CCCA
3 CGCTGCCCCCGGCCTCCCAG GGGGAGCCGCC TGCC CTG CGCTGCCCC CGGCCT

GGTTGCTCTTCATGGGGCGG CTCCTCGGCGG GCGG GGC GCGGCGGGG GTTGGG

CGGCGGCGGCGGCGGCGGCT CG C G TACTTCTC ----
CCTC
GAM11852 5107 GGGGAGGAGGTGGGTCGCAG - TCG GGGCT GGAGG
1 AATGGGCTGACTCGGAGGGA GGGGAGG AGGTGGG CAGAAT GACTC
GTTTTTAATTTTGGCTTTAC CCTCTTC TCCATTT GTTTTA TTGAG
CTGCTTCTCC G CG- ATTT- -----
GAM11853 22813 GGGGAGGGCCATTCATCATA TCATCATACTCC CG TGCACTCAATTT
9 CTCCATGTCGTATTGCACTC GGGGAGGGCCAT ATGT TAT
AATTTATAAAACATTTTCAC CCCTTTCCGGTA TACA ATA
ACTATGGCCTTTCCC TCACACTTT--- AA ----------
GAM11854 8019 GGGGAGGGGCCTGTGCCCTA -------- CCTA AGGTTACAG
5 GAGCCAGGTTACAGGGCTCA GGGGAGGGGCC TGTGC GAGCC
CCCGTATATTCAGTCTGGTC CCCCTCTCTGG ATATG CTCGG
TCTCCCC TCTGACTT CCCA ---------
GAM11855 21810 GGGGAGGTAGGCTCGGACCG TAG TC CC CC -- CTG
5 GCCCGCGGAGCTGCTGCAGT GGGGAGG GC GGA GGC GCGGAG CTG
CCTTCGCGCCCTCCTCGCCC CCCCTCC CG CCT CCG CGCTTC GAC
TCCCC --- CT C- -- CT ---
GAM11856 13347 GGGGAGGTGGGGGTACACAT GG G- A CAA GTTG GCTA
0 CAATTTGAGTTGTTCAGGCT G GAG TGGGGGT CACAT TTTGA TTCAG
ACTGAAACATTAAAATGTGA C TTC ACCCTTA GTGTA AAATT AAGTC
ATTCCCAAACTTTTC TT AA A --- ACA- ----
GAM11856 22610 GGGGAGTATGGGGAGCATTA GTA-- G CATTA AG AA GGGA

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4          TCAAGGAGTAAGGGGGACCC GGGGA    TG GGAG    TCA  GAGT  GG
           ATTCGATGAAACACTTCTGC CCCCT    AC TCTT    AGT  CTTA  CC
           AACAAATCCCC           AAACA  G   CACAA  AG   C-  ----
GAM11857 57    GGGGAGTTCTCGGGCGCGCA     TT ----   G   C  AG        T  CCT
8          CAGGCAGCTCGGTTTGCCCT GGGGAG  C   TCGG CGCG AC  GCAGCTCGGTT GC
           GCGATTGAGCTGCGGGTCGC CCTCTC  G   GGCC GCGC TG  CGTCGAGTTAG CG
           GGCCGGCGCCGGCCTCTCC      CG CCGC   G   -  GG        -  ---
GAM11860 13953  GGGGATCCCCTAAGTCTTTT    A   C  G      CAGT   AGGA
0          CTGCAGTGTCCAGGAGGACC GGGG TCCC TAA TCTTTTCTG   GTCC
           AGGAAGGAGTTGAGGGAACC TTCC AGGG GTT AGGAAGGAC   CAGG
           TT               A   A  G      ----   ----
GAM11860 11671  GGGGATCCTCTTGGTGTATG    TC   T     A-   ACCAA  GC    TTTGA   CATCGA
2          ACATCACCAACCGCTGGTCC GGGGA  CTCT GGTGTATG  CATC   CC  TGGTCC   CGG
           TTTGACGGCATCGACCGCTG CCCCT  GAGG CCACGTAC  GTAG   GG  ACTAGG   GCC
           GATCAAGGAGATCGATGAGC    --  C      GA   CTAGA  A-    TC---  ------
           ATGCACCCGGAGTCCCC
GAM11861 2616   GGGGATGATGCCTCTACTCT        C--  TACT  CTA   ACTTC
1          CTAATCTACTTCAGATCTTG GGGGATGATG   CTC   CT   ATCT
           GCACTGAGTCACATCATTCC CCCTTACTAC   GAG   GG   TAGA
           C                    ACT   TCAC  TTC   -----
GAM11862 488    GGGGATGGTTAAAAGGGGCC     G TT A   GG-    A--    AAA---           AAAAAACAA
7          TTTATTTTAAAATTCCCCCC GGGGAT G  A AAGG   CCTTT   TTTTA    TTCCCCCCCCTTTTGGGG

           CCTTTTGGGGAAAAAACAAA TTTTTG T  T TTTT   GGAAA   AAAAT    GGGGGGGGGGGGGGGCCCC

           TCCCCCCGGGGGGGGGGGGG     G GG G   AAA    AAA    ATCTGG           ---------
           GGGTCTATAAAAAAAAAAGG ATCC
           AAATTTTGTGGTGGTTTTT

                      ----
GAM11864 364    GGGGATTGTGGGGATATAGT    A  GT-  GG    -   GC   GTGC
5          GGGCGAGGTGCCTTTACTAC GGGG TT   GG  ATATA GTGG  GAG
           ATGTGTGATCTGAAAACCCT TCCC AA   CT  TGTGT CATC  TTC
                          A  AGT  AG    A    AT  ----
GAM11866 13725  GGGGCAAGGTGAATGTGGAA     A  GAA  G  GAT   GA    A -    AAGGC  -  TTGTCTAC
5          GATGCTGGAGGAGAAACCCT GGGGCA GGT   TGT GAA   GCTG  GGAGAA CC CTGGG    TCC TGG

           GGGAAGGCTCCTGGTTGTCT TCCTGT CCA   ACG TTT   CGAC  TTTCTT GG GACCC    AGG ACC

           ACCCATGGACCCAGAGGTTC     -  ---  G  ---   AG    - A    -----  T  --------
           TTTGACAGCTTTGGCAACCT
           GTCCT
GAM11866 10388  GGGGCAAGGTGAATGTGGAA     A  GAA  G  GAT   GA    A -    TAAG C  -  TTGTCTAC
6          GATGCTGGAGGAGAAACCCT GGGGCA GGT   TGT GAA   GCTG  GGAGAA CC CTGG   G TCC TGG

           GGTAAGGCTCCTGGTTGTCT TCCTGT CCA   ACG TTT   CGAC  TTTCTT GG GACC   C AGG ACC

           ACCCATGGACCCAGAGGTTC     -  ---  G  ---   AG    - A    ---- -  T  --------
           TTTGACAGCTTTGGCAACCT
           GTCCT
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GAM11866 19751 GGGGCAATCTAAAGCAGCAC ---- TAA- A CACA CTCGTCCT
8 ACAATCCTCGTCCTGATACT GGGGCA ATC AGC GCA ATC
GCGCTCCACGATGCCATGCC CCCCGT TAG TCG CGT TAG
CC ACCG CACC - CA-- --------
GAM11868 2333 GGGGCACTGGCCACTGAGCC C TG AG CTTGG A-- G AGAAGG
8 CCCTTGGAGAAGTCAGAGGG GGGG AC GCCACTG CCCC AGAAGTCAG GGG AGTGG

GAGTGGAGAAGGCCACTGTC CCCC TG CGGTGAC GGGG TCTTCGGTC CCT TCACC
CGGCCTGGCTTCTGGGGACA - GT A- ----- CGG G ------
GTGGCTGGTCCCC
GAM11870 15896 GGGGCAGCCTCAGAGTCACC A AGA A G ACA GGG
5 CGTGGGGGGCACAGGGGGGG GGGGC GCCTC GTC CCCGTGGG GGC GGGG
CCCCGGAGTCACCCGTGGGC CTCTG CGGGG CGG GGGTGCCC CTG CCCC
GGCACGGGGGCGGTCTC G GCA C A AGG ---
GAM11872 16969 GGGGCAGGGAGGAAAAAGCG G AAA CGA A AA ACAGAG
0 AAAACACGGAATTACAGAGA GGG CAGGGAGG AAG AAAC CGG TT
AAGTCGGTTTCTTCTTAATC CCC GTTCCTCT TTC TTTG GCT AA
TCCTTGGCCC G AA- TTC - GA ------
GAM11872 14904 GGGGCAGGGCTTTGGGGCTG TTGG TGAT AA GCTT GGGTCTACAG
3 TGATGCTCTGGGAAGCCAGC GGGGCAGGGCT GGCTG GCTCTGGG GCCA GGGTCCT

TTGGGTCCTGGGTCTACAGA CTCCGTCTCGA CCGAC CGAGGCCC CGGT CCCGGGA
GGGCCCTGGCCCCGGAGCCC ---- C--- -- ---- ----------
AGCCAGCTCTGCCTC
GAM11874 22430 GGGGCATGGAACACTTGGGT T A A TG TC TT AA T- AATG T GG GAAGG
6 TCTGAGTTCAAGATTTGGCA GGGGCA GG AC CT GGT TGAG C GATT GGC TCT GACCTG TTG

ATGTCTTGACCTGGGTTGGA CCTCGT CC TG GA TTA ACTT G CTGG TCG AGG CTGGGT GAT

AGGTAGGGTGGGTCTGGAAA T G A GT GA GG AC TT AAA- T GG -----
AGCTTTGGTCCAGGGTTCAA
GATTTGAGAGTGCCTTGCTC
C
GAM11875 205 GGGGCCAACGGCAGCACGCT CAACG G AGACCTGT CAAGACGT
6 CTGGGAGAGACCTGTGGCCC GGGGC GCAGCACGCTCTG GAG GGCC
AAGACGTGGCCCTCGTGGAG CCCCG TGTCGTGTGAGGT CTC CCGG
TGTGCTGTGCCCC ----- G -------- --------
GAM11876 19579 GGGGCCAGAGAGCAAGGGAG CCA--- AG T- AGAAT ATCTGTAA
6 CTTGAGAATCAGATCTGTAA GGGG GAGAGCA GGAGC TG CAG
CTGCCCAGCACCGTTTCTCT CCTC TTCTCGT CTTTG AC GTC
GCTCTTGTTTCACTCC ACTTTG CT CC GACCC --------
GAM11877 10300 GGGGCCAGCGGCATGGGAGG - - A- GA ATC- CGCA
0 CATCACCGCAGTTACGGTCA GGGGC CAGC GGC TGG GGC AC
ACCAGAGCCTGCTGAGCCCC CCCCG GTCG CCG ACC CTG TG
A T AG AA GCAT ----
GAM11878 17185 GGGGCCCAGATGTGAGGCGG - A GA- - C GCC-- AGAG
5 CGGCGCCCCCGGCCCGAGAG GGG GCCCAG TGT GGCG GCGG GCCCCCG CG
CGCACGATGGGGGCCCCGCT CCC CGGGTC GCG CCGC CGCC CGGGGGT GC
CGCCGTAGCGCTGGGCGCCC G - ATG T C AGCAC ----
GAM11878 13645 GGGGCCCCAACGCGGGCTTA CCAA--- - TTA - -- CTTG

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7          GCCTCCCGCCTTGGCTCGGG GGGGCC      CG CGGGC  GCCT CCC  GC
           CAGGCGCCCGTCGACCCTTC CCCCGG      GC GCCCG  CGGA GGG  CG
           GGCCCC                CTTCCCA T    ---   C  CT ----
GAM11880 17483  GGGGCCGGAGAAGTGCGCCT      - -------            GCGC
6          GGGTGCGCACCCAGGCGCAC GGGGCC GG      AGAAGTGCGCCTGGGT
           TTCTGCATTGACCAGGTCCC CCCTGG CC      TCTTCACGCGGACCCA
                        A  AGTTACG            ----
GAM11882 19633  GGGGCCTCCCTCCAGCGCTC      TCC-     C    -         TTT
1          TGGGGAGCCAGGCTTTGCTT GGGGCC    CTCCAG GCTCTG GGGAGCCAGGC
           GGCTTCCTCAGGGCCTGGGG TCCCGG    GGGGTC CGGGAC CCTTCGGTTCG
           ATCTGGCCCT             TCTA    -    T         ---
GAM11882 13506  GGGGCCTCTGGTGCCACTGG     C  GG   AC    ---------   ATAT
6          CATAGTATATACTAACATCA GGGGC TCT  TGCC  TGGCA        TAGT
           TTCTGCCAGGTAGGAAGCCC CCCCG AGG  ATGG  ACCGT        ATCA
           C                  A  --   --    CTTACTACA   ----
GAM11885 12082  GGGGCGAGTCCACTGGTGCC    C     A-   TG    TAAC         --  CA  T  GAAGCATGTG
4          CAGTAACACCCTCCGTGGGA GGGG GAGTCC  CTGG  CCCAG   ACCCTCCGTGG  GAC  CC TGG

           CCACCTTGGGAAGCATGTGC CTTC CTCGGG  GGCC  GGGTC   TGGGGGGCACC  CTG  GG GCC

           CGCGGAGTCCACCACGGGGG    -    AG   CT    C---         AC   A-  C  ----------
           GTCCTGGGTCCCGGGAGGGC
           TCCTTC
GAM11885 17456  GGGGCGATAACTTCCAAAAC      ATAA     AAACTT     A-   C     AGCTC
5          TTTCCCGGAAGGGCCAGGGA GGGGCG    CTTCCA     TCCCGG  AGGG CAGGG
           GCTCCTCTGACCCTAGCTGG CCCCGC    GGAGGT     GGGGTC  TCCC GTCTC
           GGCTGGAGGGGGCGCCCC        GGG-     C-----     GA   A    -----
GAM11885 6687   GGGGCGCAGGTGCGCGGGTG       ----     GC-    --- GT   GCCAC   GTGA
8          CGTGGTGCCACTGGGTGACC GGGGCGC    AGGTGC   GGGT   GC  GGT    TGG
           GACTTAGCCTGGCCAGACTC CCCCGCG    TCCACG   CTCA   CG  CCG    GCC
           TCAGCACCTGGAAGCGCCCC       AAGG     ACT    GAC  GT   ATTCA  ----
GAM11886 15907  GGGGCGCTGTCCTCCATCTG      -    T   TC  A      C   CT--     -  T  C   CT   GGTC
5          ACGGTGACCTTGCCTGATTG GGGGCG CTGTCC CCA  TG CGGTGAC TTGC    GATTGA AGC GG
CAG  GTG
           AAGCTGGCCAGCTGTGGGTC CCCCGT GACAGG GGT  GC GCCACTG GGCG    TTGGCT TCG CC
GTC  CGC
           CGCCTGACCGCTCTCGGTTC      T     -   T- -      T    CCCC     C   - A   --   ----
           CCCGCGGTGTCACCGCGTTG
           GGGACAGTTGCCCC
GAM11886 14123  GGGGCGGAGATGTGCCCTGT       A   G     TG   -     - CTCCT  GTGA
7          GGGTTGGACCTCCTGGGTGA GGGGCGG GAT TGCCC  TGG GTTGG AC     GG
           CCCCGTACCAGCTCCGTGGG CCCTGTC CTG GTGGG  GCC CGACC TG     CC
           GTGGTCCCTGTCCC            C   -    GT   T     A  CC---  ----
GAM11888 16896  GGGGCGGGGCCGAGGCCGCT      - C         -  CG-  -   - C   AGA  CA      CAGC
5          GACGCGGCGGCGGCGGCAGA GGGGCGG GG CGAGGCCGCTG ACG   GC GGC GG GGC   GT
CCCGGG
           GTCACCCGGGCAGCCTCGGG CTCCGCC CC GCTCCGGCGAC TGC   CG CCG CC CTG   CA
GGGCTC
           ACCGGTCACCGGCCGGCAAC       A  A         C   CAA  G   G  A   GC-  --      ----
           CGTCCAGCGGCCTCGACCAC
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CGCCTC
GAM11889 22928 GGGGCGGGTGCTAGTGACCC G CT- TGA CT TCTCA
7 TGGGCCTGGCTCTCAGCCGC GGGGC GGTG AG CCCTGGGC GGC
CCAGGGCCCCTCCACACCAG CCCCG CCAC TC GGGACCCG CCG
CCCC A ACC CCC -- -----
GAM11890 17057 GGGGCGTAAGGGCTGGGTTT TA- CT--- T TACAAGGT
0 GGCCATACAAGGTTGGCTAC GGGGCG AGGG GGGT TGGCCA
GCCCTCAATCCCTGACCGTT CCTTGC TCCC CCCG ATCGGT
CC CAG TAACT C --------
GAM11890 22122 GGGGCGTCCCGGGCACACCA - T - ACACCAC T GGAGCACAA
1 CGGTCTCCTGGAGCACAAAG GGGG CG CCCG GGC GGTC CCT
GCGGCCAAAACAGCCGCGGG CCCC GC GGGC CCG CCGG GGA
CGACCCC A - G ACAAAA- C ---------
GAM11890 2574 GGGGCTAGCAGGACTTCTCG AG G TTCTCG A- AACTTTG
9 GCGAGGGAGTTTTTAACTTT GGGGCT CAG AC GCG GGGAGTTTTT
GGAGAACTCCTCATGCACCC CCCTGA GTC TG CGT TCCTCAAGAG
TGTGCTGGAGTCCC G- G TCCCA- AC -------
GAM11891 11254 GGGGCTAGGGTTTCGCTATG TA T------ A TT CT TCA
2 TTGCTCAGGCTAGTTTCAAA GGGGC GGGT TCGCT TG GCTCAGG AGTT
CTCCTGGGTTCAAGTGATTT CTCCG TCCA AGTGA AC TGGGTCC TCAA
TTCTACCTCTGCCTC TC TCTTTTT - T- -- ---
GAM11893 21995 GGGGCTCTGGTTCCCGGATC - CT T TC ACCAGCTTCA
8 TCCGTGTCCCGCTCCACCAG GG GGCT GGTTCCCGGATC CCGTG CCGCTCC
CTTCAGGGGCGGCATGGGGT CC CCGG CCGGGGGCCTGG GGTAC GGCGGGG
CCGGGGGCCTGGCCACC A T- - -- ----------
GAM11896 17283 GGGGCTGCCTGGACGTGTTA T - G C AAGA - A- GGAC
3 CGGAAGAGCCGCACGGGACC GGGGC GCCTG GACGT TTA GG GCC GC CG
GGGGCTGGTGGACCATGAAA CCCTG TGGAC CTGTA AGT CC TGG CG GC
TGTCTCAGGTTGTCCC T T A A AGG- T GG ----
GAM11896 2473 GGGGCTGCTGAGATATCCTG T GATA T GCCC AGTTTA
6 TGCCCTGGGCAGTTTAGCCC GGGGC GCTGA TCC GT TGGGC
AAGAAGCGGATTAGTGCCCC CCCCG TGATT AGG CG ACCCG
- ---- - AAGA ------
GAM11899 2478 GGGGCTTGGGGCTGGGGCCT CT - CC A-- GAAGTG
9 GCAGCAGAAGTGTGCCCAGC GGGG TGGG GCTGGGG TGC GCA
GTCTCTCAGCTCCCGCACCC CCCC GCCC CGACTCT GCG CGT
C AC T CT ACC ------
GAM11902 425 GGGGGAACGTGGTCATCAGT ACGT - C GGTC T TTCCAAGATTA
3 GGTCAGTGGGGTTCCAAGAT GGGGGA GGTC AT AGT AG GGGG
TATCCCCTAAAACTCATAGA CCCTCT CCAG TA TCA TC CCCT
CCCAGGTCTCCC GGAC A C AAA- - ----------
GAM11902 6727 GGGGGAACTGGAGCAGGCTC AA GCAGG- C GGAATAAA
5 TGATAAGGGAATAAACTTGT GGGGG CTGGA CT TGATAAG
TAAAGGAAACATCCAGGGCC TCCCC GACCT GA ATTGTTC
CCT GG ACAAAG A --------
GAM11902 2250 GGGGGAACTGGTTCTGGGGT AA - TC- TC T CA AC CTC GTGATTA
7 CACTCCTGCTCATGGAACGT GGGGG CT GGT TGGGG ACTCC GCT TGGA GT TCA
CTCTCAGTGATTATGGCAAG CCCCC GA CCA ACCTC TGAGG CGA ACCT CG GGT
CAGTCCAAGCGGAGTCTCCA GC A TTT -- - -- GA AAC -------
TTTACCAAGCGCCCCC

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GAM11904 4650  GGGGGACCAGAAGTAGTGAG     CC  AA   TGAGAGA    GGG  T     TTTGACAGGT
7          AGAAGGAAGGGGATAGGCAG GGGGGA  AG  GTAG     AGGAA   GA AGGCAGC
           CTTTGACAGGTGCTGCTTTC CCCCCT  TC  CGTC     TCCTT   CT TTCGTCG
           AATTCCTCTGCAACTCCTCC      CC  AA   -------    AA- -     ----------
           CCC
GAM11906 11819  GGGGGAGCGAGGGAAGGAGT      C        GTTAATGAAACT    GCAC
6          TAATGAAACTGTATTGCACA GGGGGAG GAGGGAAGGA         GTATT
           ATGCTCTGATCAATCCTTCT TTTTCTC TTTTCTTCCT         CGTAA
           TTTTCTCTTTT            T       AACTAGTCT---    ----
GAM11908 22090  GGGGGAGGCCTGTCCTCTCT    -  CT------    TCT    CCATTGGTCAC
7          GGGATCCATTGGTCACATCC GGGGG AGGC      GTCCTC   GGGAT
           CCCTGAGGATTCCCGAATGC CCTCC TCCG      TAGGAG   CCCTA
           CTACCTCC             A   TAAGCCCT    TCC    ----------
GAM11908 16088  GGGGGAGGGCGGAGGACTTG      G-    GGA- TG    GGACAG     CA  AGGACG
9          AGCAGGGACAGGAGTTACCA GGGGGAG  GCGGA   CT  AGCAG     GAGTTAC  CTG
           CTGAGGACGCAGAAGTGACT CCTCCTC  CGTCT    GA  TCGTC     TTCAGTG  GAC
           TCTGCTTGAGGACGTCTGCA      GA    GCAG  GT    ------     AA  ------
           GCTCCTCC
GAM11910 21806  GGGGGATATTTTGAACTTTA  GG       --   T  A    AGTGATCA
6          ATATTAGTGATCAAATGTAA G  GGATATTTT  GAAC TT ATATT
           ATGTTTTGAGGATATTTTTC C  TTTATAGGA  TTTG AA TGTAA
                      TT       GT   T  A    --------
GAM11911 12099  GGGGGATCTGGCTGGTGGGG     ATCTG   ---     AA    TGGAC
0          AACCGGGTGGACCTTGGCCC GGGGG    GCTG   GTGGGG  CCGGG
           CCATCCTCAGCACCTGCCCC CCCCC    CGAC   TACCCC  GGTTC
           C                  GTCCA   TCC     C-    -----
GAM11912 10626  GGGGGCACGGATGCGGATGA       GGA      AG   GAG     TG-----    TAAG
0          GGGCGAGTGGCCCTGGCAGG GGGGGCAC   TGCGGATG  GGC   TGGCCC      GCAGG
           TAAGCCTGCATGCTCTGGGC CCTTCGTG   GCGTCTAC  CCG   ACCGGG      CGTCC
           CAGGGCCACATCTGCGGTGC       ---       A-   GG-     TCTCGTA    ----
           TTCC
GAM11913 11564  GGGGGCATGGGAGTTGGGGG    G-   GGGA    -----    G    -  GA   A   TGAA
7          GTGCACCCCAGGATTTGAGG GGGG  CAT    GTTGG    GGGGT CACCC CAG  TTTG GGGG
           GGTGAACTCCCGGAGGCTGA CCCC  GTA    CAGCC    CCCCA GTGGG GTC  AGGC CCTC
           GGGTGGACCCCAGGAGCCGA    AG   GG--    GAGGA    G    A   GG   -   ----
           CGGATGGACCCC
GAM11915 7012   GGGGGCCCGGTCTGCCAACT       G  T   AA   AG     G    AAAAG   G-       GG    TCTC
0          CAGCTCCTCTGCTGCAAAAG GGGGGCCCG TC GCC  CTC  CTCCTCT CTGC    CGGG  TGCTTGTTG
GCCA
           CGGGGTGCTTGTTGGGGCCA CCCCTGGGT GG CGG  GAG  GGGGAGA GACG    GTCT
GTGAACGGT  CGGT

           TCTCCTGGCAATGGCAAGTG       G  T   G-   A-      -    AG---   GA       AA   ----
           AGTCTGGAGCAGAGAGGGGA C
           GAGGGGCTGGGTGGGTCCCC

                      -
GAM11915 2164   GGGGGCGCCTGAGTACTCCC   -     GA  ACTCCCC    T-    G  C--    ACACCCCC
9          CATAGTTTGCCAGCTCGTTT GGG GGCGCCT  GT      ATAGT  TGCCA CT   GTTTG
           GACACCCCCTAGATCACAGA CCC CCGCGGA  CA      TGTCG  ATGGT GA   TAGAT
```

TGGTATCGCTGTACACGACA A GA GCACA-- CT A CAC --------
GAGGCGCCACCC
GAM11918 22555 GGGGGCTGCTCCCGCCGCAG - --- AG TGACTG
5 CTCGGTGACTGTTGAGGAGC GGGGGC TGCTCCCG CCGC CTCGG
GGGCCCGGGAGCGCGTTCCC CCCTTG GCGAGGGC GGCG GAGTT
C CCG AG ------
GAM11920 16040 GGGGGGACAAGGGAACGAGG G AGGGAA GCT G GA--- T ACCAC
6 CTGCAGTGGGGACCTGTAGA GGGG GACA CGAG GCAGT GG CC GTAG
CCACCTACCGGCATGGCCAG CCCC TTGT GCTC TGTCG CC GG CATC
CTGTCTACTCGGGTGTTGCC G GG---- ATC A GGTAC C -----
CC
GAM11921 22397 GGGGGGAGTGATGCATGGAA A GA ---------- AA AAAAGCCA
5 GGAAAAGCCACCGGCCATGG GGGGGG GT TG CATGG GG
AAATTAGTACAGAACCCCCC CCCCCC CA AC GTACC CC
C - AG ATGATTAAAG GG --------
GAM11922 10746 GGGGGGCAAGATCTACAAAG - AAGA A - - CACTG CT- CTTG
1 TGCCGTCCACTGAGACTGAG GGGGG GC TCT CAAA GTGCC GTC AGA GAGGC
GCCTTGGCTTCCAATCTGAT CCTTC CG AGA GTTT TACGG TAG TCT CTTCG
GGGCATGTTTGAGAAACGGC G GCAA - G G ----- AAC ----
GCTTCC
GAM11923 17892 GGGGGGCGGCGGGAAGCTGG GG C AAG GG A A G AGAGCC
4 GAAGGCTAGTGCTTGGAGAG GGG G GGCGGG CTG A GGCT GT CTTGG
CCCTAGGGACAGGCCATTTC CCC T CCGTCC GAC T CCGG CA GGATC
AGGGCCTGCCTTTCCC TT - GG- TT A A G ------
GAM11924 17115 GGGGGGGGAGGGTCCAGAGG G A G A G ---- CTTAACA
3 GGCGGCTTAACACCACGGGT G GGGGGG GG TCC GAGG GC GG
GCCTCGGGAGCCCCCTCCGC C CCTCCC CC AGG CTCC TG CC
G - G G G GGCA -------
GAM11924 17819 GGGGGGGGGAAAATTTTTTT TTT-- CTCTCTCCGCC
5 TTTTTCTCTCTCCGCCAAAA GGGGGGGGGAAAA TTTTTTTTT
AAAAATTTTTTTTTCCCCCC CCCCCCCCCTTTT AAAAAAAAA
CCC TTTTT ----------
GAM11924 6978 GGGGGGGGGACCCCCCGGGC A CGG GC T TTTACCAT
6 GCCCCTGGGTTTACCATCCC GGGGGGGGG CCCCC GC CCC GGG
TGGGAGGCGGGGGCCCCCCT CCTCCCCCC GGGGG CG GGG CCC
CC - --- GA T --------
GAM11924 11498 GGGGGGGGGGAAACCCCCCC AAC C C---------- CCCG
7 CCCCCCCCCCCGGCGGGGGG GGGGGGGGGGA CCCCCCCCCCCC CCCCGG
GGGGGGGGG
GGGCCCGCCCCCTCCCTTTT CCCCCCCCCCT GGGGGGGGGGGG GGGGCC CCCTCCCCC

TTACTTCCGGGGCGGGGGGG C-- C TTCATTTTTT ----
GGGGGCTCCCCCCCCCC
GAM11924 7906 GGGGGGGTCAGTGGGCATGT T -- T---- CC G TCAT
9 ACACCCTGACGTCATCGTGG GGGGGGG CAGTG GGCATG ACA CT ACG
GCCTGTTCCTCCATGCCGGC CCCTTCC GTTAC CCGTAC TGT GG TGC
ATTGTCCTTCCC T GG CTCCT CC G ----
GAM11926 1365 GGGGGTACGGCTGGCTGCAC AC T C TT G GCCGAAATA
3 TTTTATGCAGAGCCGAAATA GGGGGT GGC GG TGCAC TTAT CAGA
TCTGATAGTTGTGCGACCTG CCTCCA TCG CC GCGTG GATA GTCT

CTCCACCTCC CC T A TT - ---------
GAM11929 17413 GGGGGTGCATTCAACTTCGC GG G A CG AAAGGG------- AGA
3 ACAAAGGGGTCAGAGACAAG GGG T CATTC ACTT CAC GTC
GGATATTCCTGTGTAAAGTG CCC G GTAAG TGAA GTG CAG
GAATGGTTCCC TT - G AT TCCTTATAGGGAA ---
GAM11929 13797 GGGGGTGCGGTGCGCCGGCG G C- GGA TT GACTCTAGATA
8 GACTTTGGTGACTCTAGATA GGGGGTGCG TGCG CGGC CT GGT
ACCTCGGGCCGATCGCACGC CCCCCACGC ACGC GCCG GG CCA
ACCCCC - TA --- CT -----------
GAM11930 11781 GGGGGTGGAGTTCGATGTGC - A CG T TGCCT- G CTG
1 TGCCTGCCTTTGATGCCCTG GGGGGT GG GTT ATG GCTGCC TTGAT CC
GGATCAGTTGACTGGCGGCT CCCCCA TC CAA TAT CGGCGG GACTA GG
ATAAACCTAACCCCC A - A- - TCAGTT - ---
GAM11930 11539 GGGGGTGGGCTTTGGCAGTG GCTTT --- -- AGCA
7 GCGGGGGTAGCAGCTCCAGC GGGGGTGG GGCAG TGGCG GGGGT
GTCAAATTTGTCTCCACCAC CCTCCACC CTGTT ACTGC CCTCG
CTCC ACCT- TAA GA ----
GAM11931 10890 GGGGGTGGTAGGGATAGGGC TG AG AG CAT TCA-- GG CCA
2 ATGATCAAAGGGGCCATTTC GGGGG GT GGAT GG GA AAG G
TTGCTTTTCTTTCCTCATCT CCCCC CA TCTA CC CT TTC T
TCACTGCCCCC GT CT CT TTT TTTCG TT ---
GAM11932 2043 GGGGGTTGGAGCTACCGCCA G T A- T CG A CC G ATTC
9 CCGCCGCGCCGATTCCGGAG GG GGT GG GC AC CC CCG GC CCG
CCGGGGTAGTCGCCGCCGCC CC CCG CC CG TG GG GGC CG GGC
GCC G - GC C AT - -- A ----
GAM11934 16255 GGGGGTTTTGTGAAGACCTT GG TT GA ---- CT CCACAT
0 TCCTGTCCCACATGACTAGA GG GT TGTGAA CCTT TC GTC
CGATGAGGCATTCACATTAT CC TA ACACTT GGAG AG CAG
TTCC TT TT AC TAGC AT ------
GAM11934 10667 GGGGTAAGGAGCAAATGGAA - ------ A T GGATAAAG
8 TAGGGGATAAAGCCTTTTCA GGG GTAAG GAGCA ATGGAA AGG
TCTGTTTAGTCATTTTACAC CCC CATTT TTTGT TACTTT TCC
CC A TACTGA C - --------
GAM11934 15138 GGGGTAAGGGAATACTTCAA -- ATA CC- A AACTTAG
9 CCTGTAGGTAACTTAGGCTG GGGGTAA GGGA CTTCAA TGT GGT
GCATTTTTGAGGATCCTTAT TCCTATT TCCT GGAGTT ACG TCG
TATCCT AT A-- TTT G -------
GAM11941 428 GGGGTCTCCCTGGCAAGGGG CT CA TCC CCGAGG G C CACAGCATC
7 TCCCAGGGCCTGGAGCCCGA GGGGT CCCTGG AGGGG CAGGGCCTGGAGC CCCA C
AAAAGCA
GGCCCAGCCAAAAGCACACA CTCCG GGGGCC TCCCC GTCCCGGACCTCG GGGT G TTTTTGT

GCATCAAAACATGTTTTTAG -- CC --- AA---- - A ---------
TGGGAAGCTCCAGGCCCTGC AAAACA
CCCTCCCCGGGGGCCTC

GAM11945 11092 GGGGTGAATTTTGCAGGTCT AATTT GTCTCAT AACGTCG
5 CATTCAGGAACGTCGCCTGA GGGGTG TGCAG TCAGG
TAACACTGCACCACCACCTC CTCCAC ACGTC AGTCC

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                          CACC-    ACAAT--    -------
GAM11946 13938  GGGGTGAGCTGGGGAGGCTT    GA       G  TCT  G   -   AGTC
5               CTGCGGTTCTGGAGTCCCGG GGGGT  GCTGGGGAG CT   GC GTT CTGG
                CAATGGCCCCAGTTCCCCAG CCCCA  CGACCCCTT GA   CG TAA GGCC
                CAAACCCC             AA       -  CCC  G   C    ----
GAM11946 7422   GGGGTGAGCTGGGGAGGCTT    GA       G  TC   G   -   AGTC
6               CTGCGGTTCTGGAGTCCCGG GGGGT  GCTGGGGAG CT  TGC GTT CTGG
                CGATGGCGCCAGTTCCCCAG CCCCA  CGACCCCTT GA  GCG TAG GGCC
                CAAACCCC             AA       -  CC   G   C    ----
GAM11948 13703  GGGGTGCTCCCCACGGAGCG        CCCAC        GTTTCA    GGCGCAATA
7               GGTGGTTTCAGTCTGGGCGC GGGGTGCTC    GGAGCGGGTG     GTCTG
                AATACGGGCCATGGACACCC CTTCACGGG    TCTTGCCCAC     CGGGC
                GTTCTTCTCTGGGCACTTC        TCTCT        AGGTAC    ---------
GAM11949 13495  GGGGTGGAAGGATACGGTGA   G  AAG  TAC   A   -   CC   -   G  CC   GTATCCGA
3               CCTGGTGACCTGTCTTGTGA GGG TGG   GA   GGTG CCTG GTGA  TGT CTTGT AGG  CACG
                GGCCCACGGTATCCGACGTG CCC ACT   CT   CCAC GGAC CATT  ACA GAACG TCC  GTGC
                TCCTGCAAGCACAAATTACT   G  GAA  TC-   G   T   AA   C   -  T-   --------
                CAGGGCACCCTTCAAGTCAG
                CCC
GAM11950 94     GGGGTGGAGGGGGTGGTGCT      A    --  G   T--       CTGGGCTGAC
1               GGTGCTGCACTGGGCTGACT GGGGTGG GGGGG  TG TGC   GGTGCTGCA
                GCGGCGCTGACGCAGCGTTT CCCTACC CCCCT  GC ACG   TCGCGGCGT
                CCCCCCATCCC              -    TT  G   CAG       ----------
GAM11950 155    GGGGTGGATGAAGCGCATGG     GA  AG  CA   -  A   T     TCCAAGAC
3               CCTACAGTGGACCACTCCAA GGGGTG  TGA  CG  TGGC CT CAG GGACCAC
                GACGTGGTTCCCTGGGTGCC CTCTAC  ACT  GC  ACCG GG GTC CTTGGTG
                ACGGGTCACACATCTC         AC   GG  --   T  -  C      --------
GAM11951 14805  GGGGTGGCTGCCAGCTCCCA    T   T C   -   A  TT  -   TGAAG
1               CATTCACCCTGAAGGGGCTG GGGG GGC G CAGC TCCC CA  CA CCC
                TTGGGGATGCTGACGCCTCC CCCC CCG C GTCG AGGG GT  GT GGG
                CC                 T   - A   T   - T-  C   -----
GAM11954 15173  GGGGTGGGGGGCCCAATAAG       -   -  ATAAG  CTT    AAA  ACAGGTG
0               GCCTTAGGGAAAGGACAGGT GGGGTGGG GGGC CCA    GC   AGGG   GG
                GCCGAGCCCTGCATGTGGAG CCCCACCC CCCG GGT    CG   TCCC   CC
                CCCTCCCACCCC             T   A  GTA-- ---   GAG  -------
GAM11954 6833   GGGGTGGGGGGTCTGTTTGG    -    TCTG  TG   ACT    T  A   ATTG
1               CAACTGGGGTGAAGGGATTG GGGGT GGGGGG   TT  GCA   GGGG GA GGG
                CCCTCCCCCTGCTGGGATCC CCCCA CCCCCC   GG  CGT   CCCC CT CCC
                CCCCAACCCC           A    TA-- GT   ---   -  -   ----
GAM11954 1819   GGGGTGGGTACGCTCCAACC          C----   AC      CA   AAC
5               CTATTTCAGGCAACGCTCAA GGGGTGGGTACG    TCCA  CCTATTT  GGC
                AGTAGGTGGACCCGATGTAT CCCCACCTATGT    AGGT  GGATGAA  TCG
                CCACCCC                  AGCCC   --      AC   ---
GAM11955 7979   GGGGTGGTTCTAGGACTGGA   GG   TC   A TG  TTT   G  A  T   AG -   - TGTT
1               TTTCCTGGTGAGGTCCAAGC GG  TGGT  TAGG C  GA   CCTG TG GG CCA  C TGTTG C
                TGTTGCTGTTGTCAACATGT CC  GTCG  GTCC G  CT   GGAC AC CC GGT  G ACAAC G
                CTGGCCCAGCAGGCTCTGGA  AA   TC   A GT  C--   G  -  -   CT T    T ----
                CCTGCTGCTGAACC
GAM11955 2349   GGGGTGTATGGTAAGCAAAA   G  -----    A-    ATAAATTG-       ATCCTTG
5               TAAATTGTATTTTTCCATCC GGG TGT    ATGGTA  GCAAA       TATTTTTCC
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TTGGGGAGGATAAAGGAACT CCC ACA TATCGT CGTTT ATAGGAGGG
CTTTGCACTGCTATAATAAA G AATAA CA CTCAAGGAA -------
CAGCCC
GAM11958 6770 GGGGTTGCCATGGACTCTCT GCCA-- A T C CATC
7 GTCTCCTCCCATCGGAGAAG GGGGTT TGG CTCTCTG CT CTCC
CAGAGAGCCAGACCAAAGCT CCTCGA ACC GAGAGAC GA GAGG
CC AACCAG - - A ----
GAM11959 16315 GGGGTTGGAAATGTCCACCT AAA CCAC AAATTT ATGAA
1 TCTTAAATTTTTAAGATGAA GGGGTTGG TGT CTTCTT TTAAG
CTTAGTTCTAAAAGAAGATA TCCTAACC ACA GAAGAA GATTC
ACAGGCCAATCCT GG- ATA- AATCTT -----
GAM11959 19617 GGGGTTGGATTAGGGTTCTA TT G TCT G ATTATA
5 GGCCTATAATTATATATAGG GGGG GGATTA GGT AG CCTATA
GCTCACTATAGTTCTTCTCC CCTC CTTGAT TCA TC GGATAT
TT A C-- G ------
GAM11963 7668 GGGGTTTCATGTAATGACTA TTT AATG C AA CT- TCAATCAT
6 CATCAGAAAGTTCTAGCTTA GGGG CATGT ACTACAT AGA GTTCTAG TA
TCAATCATTATCTTTAGAAT CCCT GTATA TGGTGTA TCT TAAGATT AT
TCTAATGTGGTACACATATG --- CACA A -- TCT --------
TCCC
GAM11969 7548 GGGTAATAGGGGTGTCAGAA AAT G - GAAATAGTAC TTATG
0 ATAGTACCAGGTTATGCCTG GGGT AGGG TGT CA CAGG
TTCAATATGTACAGTCCTCG CCCG TCCT ACA GT GTCC
AGCCC AGC G T ATAACTT--- -----
GAM11969 1362 GGGTAATATTGTCATGCTCT -- CA T CATCTTCACAACAA
2 TAGTTCATCTTCACAACAAA GGGT AATATTGT TGCTC TAGTT
ACTATGAGTAAGCGGTATTA CTCG TTATGGCG ATGAG ATCAA
GGCTC GA A- T ----------
GAM11969 19631 GGGTAATCAGGGAAGTGGTA AAT-- GAA GTA GC---- GGAC
3 TTTCAGCAGGGACCTAAAGG GGGT CAGG GTG TTTCA AG
ATGAGAAGACACAAACCTGC CCCA GTCC CAC AGAGT TC
AAAGACCC GAAAC AAA AGA AGGAAA ----
GAM11970 14181 GGGTAATTAACTTAATCTCC AATT AATCTC TCT --- GTGAA
1 AGCCCCTCTCCCCTCCGTGA GGGT AACTT CAGCCCC CCCCT CC
AGGTTAAGGGGTGGGGCTGA CCCA TTGAA GTCGGGG GGGGA GG
AAGTTCCAACCC ACC- A----- T-- ATT -----
GAM11972 22450 GGGTACCTGCCAAGCTTTTT T CT AA TTT AA- AAAAGC
6 TTTGCAACCGGAAAAGCCCG GGG AC GCC GC TTTTTGC CCGG
GGGAGCGGGGGTTTGCCGGC CCC TG CGG CG GGGGGCG GGCC
CGTCCC - C- C- TTT AGG ------
GAM11972 15432 GGGTACGTGCCAAGCATCCT C---- ----- TC G GA AGAGCC
7 CGCGCGACCCGAGAGCCTGG GGGTA GTGCCA AGCA CTC CGC CCCG
GGAGCGGGGGTTTGCTGGCC CCCAT CACGGT TCGT GGG GCG GGGT
GTGGCACTCATTTACCC TTACT GCCGG TT G AG ------
GAM11976 22654 GGGTAGCGAAGGGGTCGCCC G A------- C TT- GCTG
0 TTGTCGCTGGACTCTGGGCC GG TAGCGA GGGGT GCCC GTC
ACCCCAGTTATACTCGCTGG CC GTCGCT CCCCA CGGG CAG
CC G CATATTGA C TCT ----
GAM11978 17862 GGGTAGTGGCTAACGGGTGG A CT CG AGATCTGG
5 GACGGCACAGATCTGGGTGT GGGT GTGG AACGGGTGGGA GCAC

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          TCTCATTTGTTCTCCACGCC CCCG CACC  TTGTTTACTCT  TGTG
          C                -   TC       --   --------
GAM11979 4757   GGGTATCATTCACAAAGTCA   T   T ACAA    ------    TT      ATC   AAGA
6          TAGCTATTTATGAGGTATCT GGG ATCA TC    AGTCAT     AGCTA  TATGAGGT   TGT
          GTAAGAATATGACTTCATAT CCC TGGT AG    TTAGTG     TCGGT  ATACTTCA   ATA
          GGCTCACAATGTGATTATCG   T   T CTA-    TAACAC    --      GT-  ----
          ATTGGTTCCC
GAM11980 17558  GGGTATCTGGTCTCAATAGT   GT   TG    C --    TAAGT    TTACAATATAACGC
0          TTAAGTAACATTACAATATA GG  ATC  GTCT AA  TAGTT    AACA
          ACGCTGTTTTGACTAATTTT CC  TGG  TAGA TT  ATCAG    TTGT
          AGATTGGGTGTCC        TG   GT   T TA    TT---   ----------
GAM11981 1358   GGGTATGGAATCTGGCGGCA  -    AA  G-   CA-    AG   C   ACTCCATCA
1          TCCACGAGACACCTTCAACT GG GTATGG  TCT  GCGG   TCCACG  ACAC TTCA
          CCATCATGAAGTGTGACGTG CC CATGCC  AGA  CGCC   AGGTGC  TGTG AAGT
          GACATCCGCAAAGACCGTAC  G    --  AA   TAC     AG   -   ---------
          GCC
GAM11981 465    GGGTATGGAATCTTGCGGCA  -    AA   -   CA-    AGAC   -    ACTCCATCA
2          TCCACGAGACCACCTTCAAC GG GTATGG  TCTT GCGG   TCCACG    CAC CTTCA
          TCCATCATGAAGTGTGACGT CC CATGTC  AGAA CGCC   AGGTGC    GTG GAAGT
          GGACATCCGCAAAGACCTGT  G    C-   A   TAC     A---   T    ---------
          ACGCC
GAM11982 4890   GGGTATTGCTGCGAGTTATC    A    GCGAG---     AAACA     GCAGA
8          TAAACAAATGTTTGCAGAAG GGGT TTGCT       TTATCT     AATGTTT
          GCGTTACAGATAAAAAAACA TCCA AACGA       AATAGA     TTGCGGA
          AAGCAAAACCT          A    AACAAAAA     CA---      -----
GAM11983 11510  GGGTCAAGCTGAAAAGGCAA   TC   T   -  CAA-    -    AC    TGAG
9          GGTTTCTTCAACTGGCTTGA GGG  AAGC GAAA AGG    GGTTT CTTCA  TGGCT
          GAGCTATGAGGTAGGCTGTT CCT  TTCG CTTT TCC    TCGGA GGAGT  ATCGA
          TCCTCTTTCGCTTTGTCC     GT   -   C  TTTG    T    --    ----
GAM11995 435    GGGTCCTTTTAAGCATCTTT       TTTA         C--  TC   ACGATGTTAA
5          TACAGTCAGCACGATGTTAA GGGTCCT    AGCATCTTTTA   AG  AGC
          GCTCTCTCCATAGGGGGTGC CCCGGGG    TCGTGGGGGAT   TC  TCG
          TGTTGGGGCCC             TTG-         ACC  TC   ----------
GAM11997 2531   GGGTCGGTTCTTATCTACTT    C     TATCTA    AAT   --   TTGTTAC
3          CCAATTCCTCCTTGTTACGG GGGT GGTTCT     CTTCC   TCC  TCC
          AAAGGACCAGGAAGAACTAG CTCA TCGGGA     GAAGG   AGG  AGG
          GGCTACTC             -     TCAA--    ACC   AA   -------
GAM11997 642    GGGTCGTACACCGTTGGTTG    C       --------      ACCC     TAG
5          ACCCGTTGGTAGCCGATAAC GGGT GTACACCG       TTGGTTG    GTTGG
          GACCAGTTTAGCTCCGGTGT TCCA CGTGTGGC       GACCAGC    TAGCC
          GCACCT               -     CTCGATTT      AA--     ---
GAM12002 11455  GGGTCTCTGAAACTTCTCTA        GAAA  T   TA     AT-  --------    TTTT
1          AGGGAAATGGTCCATTTTTG GGGTCTCT    CT CTC  AGGGAA   GG       TCCA
          GAAATTTATTCCTTATTCCC CTCGGGGA    GA GGG  TCCCTT   CC       AGGT
          TCTGGGCAGCTAAGGGGCTC         ATC-  C   TC     ATT  TTATTTAA    ----
GAM12004 16248  GGGTCTGGGTAGGAAGGAAA    C-             T  GGAAAG  GAAAGG
9          GTGGGGAAAGGTGAAAGGAC GGGT  TGGGTAGGAAGGAAAG GG     GT
          AGGGAATCTTTTCCTTTCTG TCCA  ATTCGTCTTTCCTTTT CT     CA
          CTTACAACCT           AC            - AAGGGA  ------
GAM12005 327    GGGTCTGTCACTTGATTATG  GG         A--     ACTGG     AAGAT
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3          AACTGGTTGACCAAGATGGT G  TCTGTCACTTG   TTATGA    TTGACC
           CGGATCTCATGACGCTGAGT C  GGACAGTGAGT   AGTACT    GGCTGG
           GACAGGAAC          AA        CGC     CTA--     -----
GAM12008 17398  GGGTCTTTTGCGGCTGCAGC   T   TGCG   GCAG       A  T T    TTT
0          GGGCTTGTAGGTGTCCGGCT GGG CTTT    GCT    CGGGCTTGT GG G CCGGC
           TTGCTGGCCCAGCAAGCCTG CTC GAAG    CGA    GTCCGAACG CC C GGTCG
           ATAAGCATGAAGCTC       -   TA--   ATA-       A  -  -    ---
GAM12008 11970  GGGTGAACACCATGCGTTGG     ACA   TGC    GTGTGAAG    TAGGAT
5          GTGTGAAGGTGGCTAGGATG GGGTGA   CCA   GTTGG      GTGGC
           CCATAATGAACCAACTGGGA CCCACT   GGT   CAACC      TACCG
           CTCACCC               CAG   ---    AAGTAA--    ------
GAM12011 22093  GGGTGACATGTGATCGTTTA     C  -  A   TTTAAA      AA--  AATAAAGCA
1          AATGGCATTAAGTGAATAAA GGGTGA AT GTG TCG     TGGCATT    GTG
           GCACACAAACAGTGCTACTC CCCATT TA CAC AGT     ATCGTGA    CAC
           TTGAACACTATTTTACCC       T  T   A   TCTC--      CAAA  ---------
GAM12012 16147  GGGTGAGAGGCTGGTGGTTG   T      -    ----     CT  C  CCTGG
8          CCTCCCGTCCTGGGCAGGCT GGG GAGAGGC TGGT    GGTTGC  CC GT
           GCAGCCTCATGCCATGTCTC CCC CTCTCTG ACCG    CCGACG  GG CG
           TCTCCC              T      T    TACT     TC  A  -----
GAM12013 17719  GGGTGAGCCCCAGGATTCCC        CCA   TT     AACCC    GGCC
4          CCTAACCCCGGGGGCCCCCG GGGTGAGCC   GGA  CCCCCT    CGGG
           AAGGGGGTTCTCAAGGTTCA CCCACTTGG   TCT  GGGGGA    GCCC
           CCC                    AAC   T-     A----    ----
GAM12015 13252  GGGTGATGTACTCCACAGTG     AT  ACT   C   G    GTCCTCCACAGTCAG
9          ACCGGGTCCTCCACAGTCAG GGGTG  GT   CCA AGT ACCGG
           CCGGTGGCTCTGGCACTCCA CCCAC  CA   GGT TCG TGGCC
           CCC                CT  C--   C   G    ----------------
GAM12016 13697  GGGTGATGTACTTCACAGTG      T  ACT   C   GA     --   CCAC
0          ACCGGGTCCTCCACAGGTAG GGGTGA GT   TCA AGT  CCGGGT  CCT
           CTCGGGCTATGGCACTTCAC CCCACT CA   GGT TCG  GGCTCG  GGA
           CC                  T  C--   A   --     AT   ----
GAM12016 22027  GGGTGATTGCCGGCCGGCCA     A     GC---  -----     C  A     TTG     A-   A  CCAG
5          GGGCTGAAGGGCTTTGCCAG GGGTG TTGCCG     CGG     CCAGGG TG AGGGCT   CCAGGG  CTT
AA
           GGACTTAAACCAGTTGAAGC CCTAC GGCGGT     GCC     GGTCCC AT TTCCGG   GGTTCC  GAA TT

           ACCTTGGGGCCTTGTAACCC     G     AATTT   ATGAG     A  G     ---     AC   G ----
           TGGGAGTACCGTTTAATGGC
           GGGCATCC
GAM12017 565    GGGTGCAGCACACCAACATG       ---     CCAAC   -   CA--    T  ATAT
9          GCACATGTATACATATGTTA GGGTGCA   GCACA     ATG GCA    TGTA AC
           CAAACCTGCACGTTGTGCAC CCCATGT   CGTGT     TGC CGT    ACAT TG
           ATGTACCC               ACA     -----  A   CCAA    -  ----
GAM12020 11268  GGGTGCGCTTGAGCCGGTCG     C  TT  GCC    ---     CAAACCAGCGCT
4          AAGACAAACCAGCGCTTCTT GGGTG GC  GA   GGTC   GAAGA
           CCATGATTTAATCTTGCCGC CCCGC CG  CT   TTAG   CTTCT
           CC                 -  TT  AAT    TAC     ------------
GAM12020 16331  GGGTGCGGGACTTAAACACA    G   G    AAACACA-    GA  TCGT
5          ACCTGGACCTCGTGGGGCGG GGGT CGG ACTT       ACCTG  CC
           GTGCCCACTAAAGTGCTGGA CCCA GTC TGAA       TGGGC  GG
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          CCC                G  G   ATCACCCG    GG ----
GAM12022 19469  GGGTGCTGGTGGTCGGGGTG   --   T ---    T   AG    TCGCT-  -  TTGCGCTTCC
0          GAGGAGCCGGCGTCGCTGTC GGGT  GCTGG GG  TCGGGG GGAGG  CCGGCG    GTC TCGC

          TCGCTTGCGCTTCCGTGATG CCCG  CGACC CC  AGCTTC CCTCC  GGCCGT    TAG AGTG
          ATTTCTTCTGCCGGACCTCC    TG    T TCT    T   A-    CTTCTT  T  ----------
          TCTTCGATCTCCTCCAGCGT
          GCCC
GAM12023 17907  GGGTGGACCCGGTCAACTTC     A  -   A  T-  A  TCCTAAGCCATT
4          AAGCTCCTAAGCCATTGCCT GGGTGG CCC GGTCA CT  CA GC
          GCTGGTGACCTGGGCCGCCC CCCGCC GGG CCAGT GG  GT CG
                        -  T   - TC  C ------------
GAM12024 14813  GGGTGGAGGTGGGAGGTTGA   TG  --      TT   AACTAAACTTTATTGAC
7          GAAACTAAACTTTATTGACT GGG  GAG  GTGGGAGG  GAGA
          CTTTTCCTCCTATAGCTTTT CCC  TTC  TATCCTCC  TTCT
          CCC                TT  GA      TT  -----------------
GAM12027 7869   GGGTGGCAGCACCAGGGGAC      - C-      ACACA  G  AACCCACCAGA
1          ACACCTGCCAAACCCACCAG GGGTGGC AG  ACCAGGGG    CCT CCA
          ATGGAGGGGCCCTCCCTGGT CCCACCG TC  TGGTCCCT    GGA GGT
          CTCTGGCCACCC             G  TC      CCCGG  -  -----------
GAM12028 19574  GGGTGGCCCCAGGAGGAGAG     CCCCA      GGCT   TCT AGTTT
0          GCTGGAGTCTCAGTTTGTAT GGGTGG    GGAGGAGA   GGAG  C
          CTCTTATCTCCTCCCACCAC CCCACC    CCTCCTCT   TCTC  G
          CC                 AC---      AT--   TAT -----
GAM12028 1978   GGGTGGCGAAGGTGGCATAC      GAA    ATACCCC   G  TG ---       TGTTCATCTATGT
4          CCCCTGGGGCTGTGTGTGGG GGGTGGC   GGTGGC     CTGG GC  T  GTGTGGGCG
          CGTGTTCATCTATGTTGCCT CCCACCG   CCACCG     GGCC CG  G  TACATCCGT
          ACATCAAGTGGCACCGGGCC      ---     -------   A  GT AAC       -------------
          ACCGCCACCC
GAM12030 1403   GGGTGGGAAGAATCAATATC     GAA-    A   C   AAA   A ATACT
0          ATGAAATGGACATACTGCCC GGGTGG   GAATC ATAT ATG   TGG C
          AAGGTATATATAGATTCAAT CCTACC    CTTAG TATA TAT   ACC G
          GCCATCC               GTAA    A   -  GGA   C -----
GAM12035 12085  GGGTGGTGAAGAGTGCATGC    TG TG A-    -  T  T   AG  AGTTTCGA
8          TCCGAGGCAGTTTCGAGTTC GGG  G  A  GAGTG CA GC CCG  GC
          TGGTGCTGCCACTTACTTGC TCC  C  T  TTCAC GT CG GGT  TG
          TGCCT              GT GT CA    C  -  T   CT  --------
GAM12035 13858  GGGTGGTGAATCGGCCGAGG    T  TGAA-     G  GT AT   ATGTGCAG
9          TGATCTCATGTGCAGGAGGC GGG GG    TCGGCC AG  G  CTC
          TGTCTGGGCTGACAGGTCCT CCC CC    AGTCGG TC  T  GAG
          CCC                T  TGGAC     G  TG CG   --------
GAM12036 10833  GGGTGGTGGACGAGAGCTTT        A  AGA   TT    ACAC    CCCACA
4          GTTGACACGTCCCCCACAGG GGGTGGTGG CG   GCT  GTTG    GTCC
          GCCCAGCTCAGCAGATGCCA TTCACCACC GT   CGA  CGAC    CGGG
          CCACTT                  -  AGA   CT    C---    ------
GAM12036 1415   GGGTGGTGGAGGTCAGAGTC      GG  - T      ATAACAGA    GC  G    G    GCAGCACG
5          ATAACAGACACAGGCGTGGA GGGTGGT  AG G CAGAGTC       CACAG  GT GAGTC CCCGG
          GTCGCCCGGGCAGCACGTCG TCTACCG  TC C GTCTCAG       GTGTC  CG CTCGG GGGCT
          GGGGCTCGGCATCTGTGGAC       GG  G -      --------    TA  G    -    --------
          TCTGCGCTGGGCCATCT
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GAM12039 4903   GGGTGTCCACCTGTGCCCCC   T  CCAC   T   CCCA     -- CCTAT
5          ACCTGGGTGCCCTATGCTGA GGG GT   CTG GCC   CCTGGGT  GC
           CCCAGGAAAGGCCAGACCTG CCC CG   GAC CGG   GGACCCA  CG
           CCCC              - TCCA  -  AAA-     GT -----
GAM12041 4549   GGGTGTGAGCAGCTTTCATT   TG A    TTT-   TTTA   GAACAATATG
0          TTTATCTGGAACAATATGCA GGG  TG GCAGC   CATT   TCTG
           GGGATGTCTTGCTGCCGTGT TCT  GC CGTCG   GTAG   GGAC
           CT               GT -    TTCT   ----  ----------
GAM12041 4665   GGGTGTGAGCCGCCTCTCGG      A-  ---  C  G   -   CTCCGTGTATCTCCC
1          AGAAGTGTCTCCGTGTATCT GGGTGTG  GCCG   CCT TC GAGA AGTGT
           CCCACACTATCTCGGAAGGT CCCACAC  TGGC   GGA AG CTCT TCACA
           CTCGGTAACACACCC          AA   TCT  - G   A   ---------------
GAM12044 5098   GGGTGTTGAGAACTTGTACC   G    AAC   A  T  ACTTCAG  -  CT-    CGTAT
6          ATGGACTTCAGACCGCCTTG GGGT TTGAG   TTGT CCA GG     AC CGC   TGCAGC
           CAGCCGTATGCTGCACAAGC CCCA AACTC   GACG GGT CC     TG GCG   ACGTCG
           GTGTACACCCCCTGGGCAGC    A    C--   -   C  CCACA-- T   AAC     -----
           CTCAAAACCC
GAM12051 10498  GGGTTCAAGTGATCCTCCCA    TCA   ATCCTCC   TTAGCC    AGTAGC
5          CCTTAGCCTCCCAAGTAGCT GGGT   AGTG     CACC     TCCCA
           GGGACCATTGGTGCATGCCA TCCG   TCAC     GTGG     AGGGT
           CTATGCCT            TA-   CGTAC--   TTACC-    ------
GAM12055 14218  GGGTTCGGGTGATGATGGTT    CG     A  TT  AC   -   -  TCCGCCTCTT
2          CCACGTCAGCGGCCCTCCGC GGGTT  GGTGATG TGG  CC  GTCA GCGG CCC
           CTCTTGGGTTTGCGTGACGG CCCAG  CCACTGC ACC  GG  CAGT CGTT GGG
           TTCCACGTCACCGACCC       --     -  TT --   G   T  ----------
GAM12055 15518  GGGTTCTCCGGGGAACTCCT              TCC     GTCAG
7          CCAGCTTGGTCAGCAAGTTC GGGTTCTCCGGGGAACTCC   AGCTTG
           TCGGGGTTCTCCGGGGAATC CCTAAGGGGCCTCTTGGGG   TTGAAC
           C                        CTC     -----
GAM12056 22401  GGGTTCTGATTTGGTCATTA    TC-    -   -------      TCCAGTCAC
5          CCACATCCAGTCACTGTGGT GGGT   TGATTT GGTCA      TTACCACA
           GAGCGAGAATGACCTGAGTC TCCG   ACTGAG CCAGT      AGTGGTGT
           AAATGCCT            TAA    T    AAGAGCG      ---------
GAM12056 13524  GGGTTCTGGCTGTCGTACAG   TT      GTAC-----  T  -  TG       CTGCTCGTT
9          TCCGCTCTGCCGGCGCGCCT GGG  CTGGCTGTC       AG CCG CTC  CCGGCGCGC
           GCTCGTTGCGTGCTGGGAGC CTC  GACCGACAG       TC GGC GAG  GGTCGTGCG
           CGGCCTTCAACCTCAGACAG   CG       ACTCCAACT  C   C  --       ---------
           CCAGGCCTC
GAM12061 22055  GGGTTGGATCAGAGTGGACA     GATC-  GT-   C---  TT  AAC   AAACC
7          GTTTGAACGATAAACCATTT GGGTTG    AGA   GGA   AG  TG   GAT
           TGCATTCTTCATTCCCTATC CCCAAC    TCT   CCT   TC  AC   TTA
           TTTTAACAACCC           AATTT   ATC   TACT  TT  GTT  -----
GAM12062 22449  GGGTTGGCCAGGCGTGGTCT   TT   -   T  CTC  ACT   ACCT
3          CGAACTCCTGACCTCAGGCA GGG  GGCCA GGCG GGT   GA   CCTG
           ATCCACCCGCCTTGGCCTCC CCC  CCGGT CCGC CCA   CT   GGAC
           C                T-    T   -  C--  AAC   ----
GAM12064 11421  GGGTTGGTGAGAGCTTCACA     GG    AGCTT     - AGC-   GAGTTGA
0          GTGCAGCGGCGAGTTGAGCC GGGTT  TGAG     CACAGT GC    GGC
           TAAGGTGACTGTGTATCCTT CCCAG  ACTT     GTGTCA TG    CCG
           CAAAGACCC              AA   CCTAT     G  GAAT  -------
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GAM12070 10072 GGGTTTCACCGTGTTAGCCA TTTC TGTT C AT T -- TCCT
0 GGATGGTCTTGATCTCCTGA GGG ACCG AG CAGG GGTC TGA TC
CCTCATGATCCGCCTGCCTC CCC TGGC TC GTCC CTAG ACT AG
GGTCTCCC TC-- ---- C GC T CC ----
GAM12073 21979 GGGTTTCTTGGCACATGGGG - T C GGGTG-- G ACTGT
5 GTGCAAGCACTGTGGTTGAA GG GT TCTTGG ACATGG CAA C
ATTGGCCATGTCCAAGGCAC CC CA GGAACC TGTACC GTT G
ACC A C - GGTTAAA G -----
GAM12074 17385 GGGTTTGATCATCGGGACAG TTT T ACA AAGTG TTCAA
5 CAAAGTGTCTCTTCAAGAGA GGG GATCA CGGG GCA TCTC
AAAACTGTGAACCTGTGGTT CCC TTGGT GTCC TGT AGAG
CCC --- - AAG CAAAA -----
GAM12079 17514 GGGTTTTTGTGGCTTTGTTC TTTT CT AA - ACTCTAG
7 AATGCTTCCACTCTAGGGCA GGG TGTGG TTGTTC TGCTT CC
GGCAGAGCAGTCTATACTCT CCC ATATC GACGAG ACGGA GG
CCC TCTC T- -- C -------
GAM12086 16078 GGTAAATTTCCCCAACAGTG AAA TC - TG GTTA TTCA TGATGCCAGGT
8 TGTAGTTAGAATTCCTTCAG GGT TT CCCAA CAG TGTA GAATTCC GGG
GGTGATGCCAGGTTCTATTT CCG AG GGGTT GTC ACAT TTTAAGG TCT
GGAATTTATATACAACCTGC AAG GT C CA ATA- TTTA ----------
TTGGGTGGAGAAGCC
GAM12088 10405 GGTAACATGCAAATAATGTG A A-- -------- A AAAGAG
2 ATAAAGTTAAAGAGGACTTG GGTA CATGCA ATAATGT GATAA GTT
TCAATAGCAAACATTATAAA TCAT GTATGT TATTACA CTGTT CAG
TGTATGCTACT C AAA AACGATAA - ------
GAM12091 15859 GGTAAGCAGGAAATTAGATG A AA - TCATTAAGACTCCAT
8 ATCTTCATTAAGACTCCATG GGTA GCAGGA TTAGATG ATCT
GGTGTATCTGAGCTCCTGCT CCGT CGTCCT AGTCTAT TGGG
GCC - CG G ----------
GAM12092 1833 GGTAAGGAATTTTGCATCAA GGA -- TCA- G TC GAGA
8 AGAGTCTGGAGACATCCTGT GGTAA ATTTT GCA AA AG TG
TGGCTTGCTCAAGATAATTG CCGTT TAGAA CGT TT TC AC
CC AA- CT TCGG G CT ----
GAM12095 4817 GGTAATACTCTCGACCCCAT TA A TC TCTTCTA AC- AACT
3 TCTTCTAACACAGAAAACTT GG AT CTC GACCCCAT AC AGAA
TCTCAGGTAAACTGTGGGGT CC TA GAG TTGGGGTG TG TCTT
TATGAGAATCCCC CC A TA TCAAA-- GAC ----
GAM12098 22545 GGTAATTAAGAATCCAGTAT TAATT T-- TA- GAT CTT AGTT
1 CAGATCACTTTCCAGTTGGA GG AAGAA CCAG TCA CA TCC
TGTATGAAAGTTGGCACTTC CC TTCTT GGTT AGT GT AGG
TTTTTCC TTT-- CAC GAA AT- --- ----
GAM12099 7727 GGTAATTGTAGACTCCAAGC T TAGA CAA- -------- -- CCCA
1 TCAGGATTACTACTCCCAAG GG AATTG CTC GCTCAGGA TTAC TACT
TAATGTGAATCAAGCATTCT CC TTAAC GAG TGAGTCTT AGTG ATGA
GAGTCCATGAGGTCAATTCC - TG-- TACC ACGAACTA TA ----
GAM12100 2066 GGTAATTTTAAATTGTCCCT AAA TG CGTA TT CC T TTT----- ATGTCTCC
1 CGTATTATTTCTCCACGTCT GGTAATTTT T TCCCT TTA TCT ACG CTGT AGTTTA
GTTTTAGTTTAATGTCTCCT CCGTTAGAA G AGGGA GAT AGA TGC GATA TCGAAT
AAGCTTTTCTCTCATAGCGT G-- GT AGG- CC -- - CTCTCTTT --------
AGACCTAGGGAAGGGATGGG

AAGATTGCC
GAM12100 41 GGTAATTTTATCAGCTATAT ATTTTAT TAT GAGA
2 ATATATATATGAGAATATAT GGTA CAGC ATATATATATAT
ATATATTTTGTTGTTTTGTA CCAT GTTG TATATATATATA
CC GTTTT-- TTT ----
GAM12102 17296 GGTACAGATTATTTTAAATA CAG-- AAA-- CTACAATA
6 AAAACTACAATATTTTTAGC GGTA ATTATTTT TAAAAA
AACAAAATAATAGGAATGCC CCGT TAATAAAA ATTTTT
AAGGA CAACG --------
GAM12103 11307 GGTACAGTCCTGTCCCATTG GTCCTG TTG --- TTTAT
7 GCATGGATATTTATTGTTCC GGTACA TCCCA GCATG GATA
ACATGTTGGGAAAACCATGT CCGTGT AGGGT TGTAC TTGT
GCC ACCAAA --- ACC -----
GAM12111 14144 GGTACTGCAACAAGTGAGCA CAACAAG ATCAT G ACCT
8 TCATTCACTGCAACCTTGAA GGTACTG TGAGC TCACT CA
GTGGTCAGGTTCAACCAGTA TCATGAC ACTTG GGTGA GT
CT CA----- GACT- A ----
GAM12113 13614 GGTACTTGGTGCTACAGTCA A TG T -- --- A AG AAGGCGCA
0 GTCTCCCTGCAAGAGGGTTA GGT CT GTGCTACAG CAGT CTCC CTGCA G GGTT
AGGCGCAGACTACCTGCAGT CCG GA TACGATGTT GTCA GAGG GACGT C TCAG
GAGGAGGTACTGCTTGTAGC A TA C TG AGT - CA --------
ATATAGAGCC
GAM12115 13453 GGTAGAAGACCCGGCTCTCG A A CC C- CCC CT A A G- GTCC
0 GCGTCCCCGGCCTCCTTGAT GGT GA GAC GGCTCT GGCGT CGGC CCTTG TG GGT GCT

GAGGTGGCTGTCCAGCAGGC CCA CT CTG TCGAGG CCGCA GCTG GGAAC AC CCG CGA

CCAGCAAGGTGTCGCACACG C - AC TC CAC T- G - GA ----
CCCTGGAGCTCAGTCTCCAC
C
GAM12121 11844 GGTAGCACATTCTCAATACG CATT- - - - - AGA AAGA CTTTT A A
5 TTTACAGAGGGTGCAAGAGA GGTAGCA CT CAA TACG TTT AC GGGTGC GACATTG GGA
GCC TG
CATTGCTTTTGGAAGCCATG CCATTGT GA GTT ATGC AAA TG CCCACG TTGTAAT CCT CGG
AT
TCTGAATATAAGGCCTCCTT TTTCC T C C C GTG GG-- TTTT- C A
TTTAATGTTGGGCACCCGTG CTGAAT
GTCAAACCGTACTTGTAGCC T
TTTTGTTACC A

GAM12122 7850 GGTAGCATCGAGTCTCTGCG C GA C G TC AACCTAT-- ACA
7 AACATTCCTTTTAACCTATG GGTAG ATC GT TCT CGAACAT CTTTT GTCTT
TCTTACAAAGGCCCAACCTT TCATC TAG CA AGG GCTTGTA GAAAA CGGAA
CAAAAGTATGTTCGGGAACA T A- - - T- CTTCCAACC ---
GATTCTACT
GAM12123 15303 GGTAGCGGGGCAAGACTTGG AG GG AAGA-- TG ATAGT
9 GGCTGCCTGATAGTCAGGGC GGT CG GC CTTGGGGC CCTG
CTCAAGAATGAGGCTACGAA CCA GC CG GAACTCCG GGAC
ACC AA AT GAGTAA -- -----
GAM12124 15056 GGTAGCTGAAGACCTTTTAG CT- CCT ----- --- CT - TTTTTCTGCCT

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8          ACAGTTCCATCTTTTTTTTT GGTAG  GAAGA  TTTAG   ACA  GTTCCAT  TTT TTTTTAAAT
           AAATTTTTTCTGCCTATTTA CCATT  CTTTT  GAGTC   TGT  CAGGGTA  AAA AGAAATTTA

           AAGACAAATTATGGGACGTT   TTT   TAT   CAAGA  TTG    TT  C      ----------
           TGTAGAACCTGAGTATTTTT
           CTTTTTACC


GAM12127 16974  GGTAGGCGGTGGCTGGCGGT  AG     T   TCC  -  CCA  -  GCCA
7          CCGCCCGAGCCCAGCGCAGT GGT  GCGGTGGC GGCGG  GCCC GAGC  GCGC AGT
           GCCAGCTGGTGCGAGCTTAG CCG  CGCCACCG TTGTC  CGGG TTCG  CGTG TCG
           GGCCTGTTGCCACCGCAGGC  GA     -   ---  A  AG-  G  ----
           C
GAM12129 13585  GGTAGGTGGATCACCTGAGG  T  TG A---   - A-     AGT  AGAC
9          TCAGGAGTTTGAGACCAGCC GG AGG  G   TCACC TG  GGTCAGG  TTG
           TGACCAACATGGTGAAACCC CC TCT  C   AGTGG AC  CCAGTCC  GAC
           TGTCTCC          -  GT CCAA   T  AA     ---  ----
GAM12131 16194  GGTAGTCGATATTCTTGTAC     C  T   T   ATG  -  ACC  GATTCCA
4          ATGTATTCTACCTCTAGATT GGTAGT GA ATTC TGTAC  TA TTCT  TCTA
           CCATAGAAAGAACTAAAAGT CCATCA CT TAAG ACATG  AT AAGA  AGAT
           ACATGAATTTCACTACC       - T   T   AAA  C   A--  -------
GAM12131 11474  GGTAGTGCAGCTGTGGCGTG     -  -    CGT   G   GGG  T  GCACG
6          GGAGGCTGGGGGTGTCTTGC GGTAGTG CAG CTGTGG  GGGA GCTGG  TG CTT
           ACGAAGTCAGGCCAGCGTCC CCGTCAC GTC GACACC  TCCT CGACC  AC GAA
           TCCTCCACAGCCTGTCACTG      T  C    TCC   G   GG-  T  -----
           CC
GAM12132 17309  GGTAGTGTTGGGGAAGGGTA   G-  T   -   TATGA  T  ATGC
0          TGAGGTCCTATGCAGGCTGG GGTA  TGT GGGG AAGGG   GG CCT
           CCTCTTATCCCACAGATGCC CCGT  ACA CCCT TTCTC   TC GGA
                        AG  -  A   CGG-- -  ----
GAM12132 21720  GGTAGTTGCCCATTGTAACT      GC   -----  AAC--     TTGACTAT
7          ATTAAATTGACTATTTTAAT GGTAGTT  CCAT    TGT    TATTAAA
           AACAAAGCATATTCATGGAG CCGTCAG  GGTA    ACG    ATAATTT
           ACTGCC               A-   CTTAT   AAACA     --------
GAM12133 14772  GGTATAACATTATCTTACCT   ATA-    A  T    TGC-   TTTAGAC
6          TGCTAGATTTAGACTCTATC GGT    ACATT TC TACCT    TAGA
           TTAGGTATGGAAATGTATGG CCA    TGTAA GG ATGGA    ATCT
           ACC              GGTA    A  T    TTCT   -------
GAM12136 22772  GGTATATGATTGAGATGGGG     ATGA   G  GG  G  AG    G  ATGT
4          GCTAGTTTTTGTCATGTGAG GGTAT    TTGA AT  GG CT  TTTTT TC
           AAGAAGCAGGCCGGATGTCA CCGTG    GACT TA  CC GA  AAGAA AG
           GAGGGGTGCC            GGGA   G  GG  G  CG    G  ----
GAM12137 6704   GGTATCACAGCATCACTTAG     C    ATC   --  TA  C   AATCTTA
0          TAGACAGAAATCTTATCTTC GGTAT ACAGC   ACTT  AG  GA AGA
           CCCTTAAAGTAGTTGTCATG CCGTA TGTTG   TGAA  TC  CT TCT
           CC                C    A--   AT  CC  -  -------
GAM12138 21936  GGTATCGTGTGTCTGGAATA  T     GTC    TATC   A    GTTA
6          TCTGATATAGGGGTTATCTT GG ATCGTGT   TGGAA    TGAT TAGGG
           AATCATCTTTTTATAACACG CT TGGCACA   ATTTT    ACTA ATTCT
           GTTTC             T     AT-    TCT-   -    ----
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GAM12140 6713 GGTATGAGAACTCCTATGGG AGAA TA - ---- T ATCC
0 TCCCCCAATGGGGATCCCCC GGTATG CTCC TGG GTCCC CCAA GGGG
CTTGGAAGAGGGACTCCAAT CCGTAC GGGG ACC CAGGG GGTT CCCC
GGGGCATGCC ---- TA T AGAA - ----
GAM12140 13322 GGTATGAGCTGCCATGCCCA A - C CCCAGC-- T TTTA
2 GCTTCATTCTTTTTAAAGAC GGTATG GC TGC ATG TTCA TCTT
TGAATAATATTCCATTGTAT CCGTAT CG ATG TAC AAGT AGAA
GCGTATGCC G T T CTTATAAT C ----
GAM12142 6797 GGTATGTCGGGGGAAGCAAC TC AACAAA---------- ATGG
8 AAAGCATGGGCAACTGGCTT GGTATG GGGGGAAGC GC
AATGACGCCTGCTTTCCTTC CCGTGT TTCCTTTCG CG
CTGTGCC CC TCCGCAGTAATTCGGTCAA ----
GAM12148 17176 GGTATTTGCTGACCTGTTTG ATT GACC ACCCTGTG AGAGCGACACAA
4 ACCCTGTGATCCAAGAGCGA GGT TGCT TGTTTG ATCCA
CACAATGGATATGACCCCCG CCA ACGA ACAGGC TAGGT
GACAATGAAGCACACC C-- AGTA CCCCAGTA ----------
GAM12148 15141 GGTATTTTAAATATACAGTA TTT- ACAG ACATTTATTTTAACAC
7 GGAACATTTATTTTAACACT GGTAT AAATAT TAGGA
TCTAAAAGATATTTCTCCAT CCGTA TTTATA ATCTT
GCC CCTC GAAA ----------
GAM12156 22373 GGTCACACTACAGGATCCCG CA CAGGA G G AGATGA TAGG
3 TCGGTTGTAGATGAGATATT GGTCA CTA TCCC TC GTTGT GATAT
AGGATGTCGAACAATAGAGG CTAGT GAT GGGG AG TAACA CTGTA
GGGAAATAGAATGATC AA AAA-- G A AG---- ----
GAM12158 10127 GGTCACCACGCTGCTGGCGT CA CTGCT C--- CT - - - TGGCTCT
2 CGGCGCTCGGAGTGGGCTTG GGT CCACG GGCGT GGCG CGGAG TGG GCTTGGC GC

GCGCTGGCTCTGCAGCCGGG CCG GGTGC CCGCA CCGC GCCTC GCC CGGGCCG CG

CGCCGCCTCCGCCGCCATCA AG CT--- ACTA C- C G A -------
ACGCCTCCGTGGGAGCC
GAM12159 9960 GGTCACCTGCGGGGACCAGG - G GA ATCCG---- CCAC
5 TATCCGAGGGCCACCCCTAG GGTCA CCT CGGG CCAGGT AGGG
ACAGTCAGCCTGGCCCGAAG CCAGT GGA GCCC GGTCCG TCCC
GATGACC A A -- ACTGACAGA ----
GAM12162 2127 GGTCAGAAAAGCCCCAAAGA - AA- CAAA AAAA TTT - AGATA
5 AAAAGGCTTTTTCAGTAGAT GGTC AG AAGCCC GA GGCTT CA GT
AACATGTTGGGCCGATCAGG CTAG TT TTCGGG CT CCGGG GT CA
GCTTCAGTTAGATC A GAC A--- AG-- TT- A -----
GAM12165 15119 GGTCAGCAGCTTTACCGCCC AG ACC C-- GC ACTGC
2 GCTCTGCTCTCCACTGCGGA GGTC CAGCTTT GCC GCTCT TCTCC
GACTGGGGCTCCGGCAGAGG CCAG GTCGGAG CGG CGGGG AGAGG
CTGGACC -- A-- CCT TC -----
GAM12166 15295 GGTCAGGAGGATGCTGCAGG T - ---- ATG T GCCTG
6 ATGGTTGCGCCTGGCTGCAG GG CAG GAGGA TGCTGCAGG GT GC
ACTTGCGGCAGTTTTTCTCA CC GTC CTCTT ACGGCGTTC CG CG
CTGCC - A TTTG AGA T -----
GAM12167 14764 GGTCAGGCAGGCTGGTCCGT CAGG-- T T AA ATCAG
2 GGAACTTAATCAGTGGGGGC GGTCAGG CTGG CCG GG CTTA
CTGGTCAGAGAGGACTTGAT CTAGTTC GACT GGT CC GGGT

C AGGAGA - - GG -----
GAM12170 7063 GGTCAGTGAGAGGGGGGCAG T A --- G CCCCAC
4 CAGGGGTGCTCCCCACGGCA GGTCAG GAG GGGGGGC AGCAGGG TGCT
GTCCTGCTGCGGCCTTCCCT CCGGTC CTC CCTTCCG TCGTCCT ACGG
CCTGGCC - - GCG G ------
GAM12171 11891 GGTCAGTTGCTAGCCTCTAA GT TA- C--- ATA GTTT
6 TATGATTTGTTTAAATTACA G CAGTTGC GC TCTA TGATTT
GTGGACTCAGCCCTGCAACT C GTCAACG CG AGGT ATTAAA
GCTC TC TCC ACTC GAC ----
GAM12172 13168 GGTCATACAGGATACAGTAT TCA AT GTA CAAACA TGAC
2 GGGACAAACAGCTGACGCAG GG TACAGG ACA TGGGA GC
AAAATCCCAGATGTCTCTGT CC ATGTCT TGT ACCCT CG
AGGTCC TGG C- AG- AAAAGA ----
GAM12177 9945 GGTCATTGTGCCCTGCCAAG T TTG G- A A G G - GAATG
2 GCACAGCGTAGATCTGGAAA GG CA TGCCCT CCA GGC CAGC TA ATCTGGAAAG AGCA

GAGCAGAATGTGTTCCTTTT CC GT ACGGGG GGT CTG GTCG GT TAGACTTTTC TTGT
CAGATGTGGCTGGTCATGGA T TG- AA A - - G C -----
AGGGGCAGTTGTCC
GAM12178 17420 GGTCCAACGCTCATTGTGAG ACGC AGTTGA A TTA---------- CACAT
6 TTGAACAGATGCTTAACCCC GGTCCA TCATTGTG ACAG TGC ACCC
ACATGGGTATCAGATGATTT CCGGGT GGTAATAT TGTC ATG TGGG
CTGTGTACTGTGTGTATAAT ---- GTG--- - TGTCTTTAGTAGACTA -----
GGTGGGCC
GAM12179 13217 GGTCCACATAGCTATATGAT CACATA ------- T--- CCACCGCAA
2 AGACAGCCACCGCAACTGTC GGTC GCT ATATGA AGACAG
TCGTCTCATATCACGAACAG CCAG CGA TATACT TCTGTC
CAAAGCGACC CGAAA- CAAGCAC CTGC ---------
GAM12179 13383 GGTCCAGATTTACAAGTGTC T --- AG GT - GGGTACATG
7 CTCTGGGTACATGAGAGAGG GG CCAGA TTTACA T C CTCT
TGTCTGTGAAGTTTTTGGCC CC GGTTT AAGTGT G G GAGA
- TTG CT TG A ---------
GAM12183 1668 GGTCCCAGTCCTGAAATATA T --- -- AATATACAA CGCCTC
4 CAAAGTGGCGCCTCCCACTG GG CC CAGTCC TGA AGTGG
GGCAGTGGTCACTGGGCTGC CC GG GTCGGG ACT TCACC
ACGGTCC T CAC TC GGTGACGGG ------
GAM12184 16925 GGTCCCCAGAGCAGAAAGTA - AG GAAA ACA ACTCATAA
2 CAGGAGAGACTCATAACTCT GGT CCCC AGCA GT GGAGAG
CCAGGCCCAGTGCTGGGGGG CCA GGGG TCGT CG CCTCTC
AACC A GG GACC GA- --------
GAM12186 13349 GGTCCCGGTCTCGGTCCAGG C GT C TCCA G- CCCCAGTGTCCAA
0 AGTCCTCCCCCAGTGTCCAA GGTC CG CT GG GGA TCCTC
GAGGGAATCCAAATCCAGGT CTAG GC GA CC CCT GGGAG
CGCGATC C TG - TAAA AA ----------
GAM12188 10039 GGTCCGAGCGCAGGCAGAAC GA G GAA TG T C G - GCTGG
8 TTGCCCTGGCCCTGGGTCTA GGTCC GC CAGGCA CT CCC GGC CT GGTCT AGGGC
GGGCGCTGGGCTCTGAGGCT CCGGG CG GTCCGT GG GGG TCG GA TCGGA TCTCG
GAGAGCTGGGTGGGAAGTGC G- - GAA GT - A G G -----
CTGGCGGGGCC
GAM12190 1868 GGTCCGGGGAGCAGCCCAGA GG GC- A - ACCAGC - GCAGA

0 GGCGGGGGGCCCACCAGCTC GGTCC GGA AGCCC GAGGCGGG GGGCCC TC TGA
TGAGCAGATCATGAAGACAG CTAGG CCT TTGGG CTTCGTTT CCCGGG AG ACT
GGGCCCTTTTGCTTCAGGGT A- ACT A T GACAGA T -----
TTCATCCAGGATC
GAM12190 13615 GGTCCGGGGCTACGACTTCA - TACGA ACC AATTACCG
2 ACCGCGGTGTGAATTACCGC GGTCCGG GGC CTTCA GCGGTGTG
GCACTGCTGGAGGCCTTCGG CCAGGCT CCG GAGGT CGTCACGC
ACC T ----- --- --------
GAM12190 2362 GGTCCGTCTTCTTCCTGCTG G- CTGCT- C ACCT
6 CTGCCGGGACCTTCTGCGGC GGTCC TCTTCTTC GCTGC GGG
CGATGAGAAGAAGAAGGGGC CCGGG AGAAGAAG CGGCG TCT
C GA AGTAGC - ----
GAM12198 13791 GGTCGACAGGGTGACGTCTC GACAGGG GTCTC - TAAATGCCGT
5 TGCTCATGATGTAAATGCCG GGTC TGAC TGCTC ATGATG
TCGTTATGGAGCGCACAAGT CCAG ACTG GCGAG TATTGC
CAAGTTAAGACC AATTGA- AACAC G ----------
GAM12200 7038 GGTCGATGAGCTTGCGGTAC T--- T-- TACCCCTC CTTCAGCC
4 CCCTCCTCATCTTCAGCCAT GGTCGA GAGC TGCGG CTCAT
GAGCCTCCGCATGCGCTCCT CTAGCT CTCG ACGCC GAGTA
TCTCGATC CTTC CGT TCC----- --------
GAM12200 13394 GGTCGCCGACTGCTCTGGGG -------- GCTCT - GA - - GGGATG
9 AAGGAGAAGTCCTGCAGGGA GGTC GCCGACT GGGG AAG GAAGTC CTG CA
TGTGACAGTGGCTTTGGTTT CCAG CGGCTGG CCTC TTT TTTCGG GAC GT
GCTCCTTGGTCGGCCCCAGC TCCGACCC TT--- G GG T A ------
CTGACC
GAM12201 7275 GGTCGCGGGAACAAGAGGAC C-- AC C- C CGCAAAATTC
5 ATCTGGGCGCAAAATTCCCC GGTCG GGGA AAGAGGA AT TGGG
ACGTTTTCCTCTTCTCCTCT CCGGC TCCT TTCTCCT TG ACCC
TCGGCC TTC C- TT C ----------
GAM12203 15315 GGTCGGCTGCCAGGTACAGG C CA-- -- - AAGACAAAAAAAAA
0 TTTCCTAAAGACAAAAAAAA GGT GGCTGC GGT ACAGGTTTC CTA
ATGGAGGAATCTGTAAACCA TCA CCGACG CCA TGTCTAAGG GGT
AATGCAGCCACT - TAAA AA A --------------
GAM12204 388 GGTCGGTACCTACTCTCGGG -- AC A- ---- G GTTC
2 GCCGTTAGTTCTAAGGTCCT GGTC GGT CT CTC TCGGGGCC TTA
GATCCTGAGGAAGTCACTGG CCAG TCA GA GAG AGTCCTGG AAT
GACC GG CT AG TCCT - ----
GAM12204 224 GGTCGTATGGGCGCCGGTCA ATG- C CA GGC TTTAACTCT
6 CCAGGCTGCTTTTAACTCTG GGTCGT GGCG CGGT CCA TGCT
GTAAAGTGGATATTGTTGCC CCAGTA CCGT GTTA GGT ATGG
ATCAATGACC ACTA T TA GAA ---------
GAM12211 22745 GGTCTCATCCGAACCCTGCG -------- CC-- GC A TATTTTT
3 GATGTATTTTTCACCCAAGA GGTCTC ATCCGAA CT GG TG
AATTTCGGATTTCAACAAGA CCAGAG TAGGCTT GA CC AC
GACC AACAACTT TAAA A- C -------
GAM12212 7853 GGTCTCCAATGGTGCAGGGA AAT C ACCATG - TC TCGT
1 CCATGTCCGTCTCCCTCGTG GGTCTCC GGTG AGGG TC CGTC CC
GCTGATGAGAACCCCTTCGC CCGGGGG CCGC TCCC AG GTAG GG
CCAGGGGGCC AC- T CA---- A TC ----
GAM12212 1884 GGTCTCCATGATGATACGGG CT GATGATAC TCT T AAAGAAGAG

6 GTCTCTATAGTCAAAGAAGA GGT CCAT GGGG CTA AGTC
GGACTTGGCTCCCCTGAGTG CCA GGTG CCCC GGT TCAG
GGAACC AG AGT----- TC- - ---------
GAM12216 7640 GGTCTCTCCCCTCACAGTGT T CC--- - C---- TTAA TTTTC
5 CTCTTTAACAATTTTCTTGG GGTC CT CCTCACAG TGT TCT CAA
CACAGATAATCGCATCTGTG CCAG GA GGAGTGTC ACG AGA GTT
AGGTCATCAGTGACC T CTACT T CTAAT CACG -----
GAM12217 11319 GGTCTCTGGCTCTGCTGCGG TC-- - C G----------- CGGG
5 GGAGCCGGGGTTCCCTCGCA GGTC TG GCT TGCTGC GGGAGC
CAGCGCATTGCAGCAAGCAC CCAG AC CGA ACGACG CCCTTG
ACATTGACC TTAC A - TTACGCGACACGCT ----
GAM12218 7713 GGTCTCTTCAGAGCTGCTGG CT -------- G T - GT TCAACGT
2 TGCCCAGTGGTGCTTCAACG GGTCT TCA GAGCT CTGG GCC CA GGTGCT
TGGTATCTATGAGGCCCTAG TCAGA AGT CTCGA GATC CGG GT CTATGG
AGCTCCGGGACAATGATAAG AT AACAGGGC - C A AT -------
ACT
GAM12218 21907 GGTCTCTTCAGAGCTGCTGT CT -------- G T- - GT TCAACT
3 GCCCAGTGGTGCTTCAACTG GGTCT TCA GAGCT CTG GCC CA GGTGCT
GTATCTATGAGGCCCTAGAG TCAGA AGT CTCGA GAT CGG GT CTATGG
CTCCGGGACAATGATAAGAC AT AACAGGGC - CC A AT ------
T
GAM12220 11301 GGTCTGAGGGTGTGATGGGG GA- G TG GGG-- TG AGGTAGTGGTG
5 TTGGATAGGTAGTGGTGGTC GGTCT GG TG ATG T GAT
TGGAAGGATGTTGCAGTCAT CCAGG CT AC TGT G CTG
AGGACC ATA G GT AGGAA GT ----------
GAM12224 17561 GGTCTGGGGCAAGATCACTC GT T A T --------- CAGGAT
1 GATCTCCAGGATGAGGTCGT G C GGGGCA GA CACT CGATCTC
CACCTTCCAGTGTCATGTCC C G TCCTGT CT GTGA GCTGGAG
TTGGTC TG T A - CCTTCCACT ------
GAM12224 10607 GGTCTGGGTCTCATCAACCA - G ACCAA C GG-- AAGTAG
6 AGCTCTTTGTTCGGGAAAGT GGTC TGG TCTCATCA GCT TTTGTTC GA
AGTCATGAGGATAAAAGCTG TCGG ACC AGGGTGGT CGA AAATAGG CT
GTGGGAGCCATGGCT T G ----- - AGTA ------
GAM12227 7186 GGTCTGTTTACAGAGTGTGG GTTTA--- AG AA G -- GCA
5 TAATTTCGTTCTTTAGATTT GGTCT CAG TGTGGT TTTC TTCTTTA GATTT
GCAGAATTTATAAAGAAAGA CCAGA GTC ACATTA AAAG AAGAAAT TTAAG
AAATTACAGCCTGCACACCC ACCCACAC CG -- A AT ---
AAGACC
GAM12232 10417 GGTCTTGGGAGCACGGTTCA - CA- CAAGAAA ATTTAA
5 AGAAACTGATTTAACAGGTG GGTCTT GGGAG CGGTT CTG
TAAAACTGGTACTTCCAAAG CCAGAA CCTTC GTCAA GAC
ACC A ATG AATGTG- ------
GAM12235 14994 GGTCTTTCTTGGTCAAGTGG TT TG CAA TG CCA A C C - ACAA
4 TCCAGCATCCTGGCGTCTAC GGTCT CT GT G GT GC TC TGG GT CT
AAGGCACTCCATGAAGTAGC CCGGA GG CA C CG TG AG ACC CA GG
TGCGGTACTGGGGGAGGCC GG GT TGG GT A-- A T T C ----
GAM12240 15201 GGTGAAATGAGGGTAGCAGT AA--- AG G ACGC TCTCCAC
0 AGTGACGCCCATCTCCACTG GGTGA TGAGGGT CAGTA TG CCA
GCAGTGCTGATCCTCAGAAA CTACT ACTCCTA GTCGT AC GGT
CTCATC CAAAG -- G ---- -------

GAM12240 2004 GGTGAACAACATGCTGGAGC ACAA- G G- T TAACAT
8 CAAGTGCTAACATGCCTTGG GGTGA CAT CT GAGCCAAG GC
TTCAAGGGATGGAAAGTCAC CCACT GTA GG CTTGGTTC CG
C GAAAG G AA - ------
GAM12241 10878 GGTGAACATCATCTCCCAGA - ATCA CCC TATT - TTTTA
3 ATATTCAGCTTTTAGCTTGT GGT GAAC TCT AGAA CA GC
TTTTTCTTTTGGACCAGTTC CCA CTTG AGG TCTT GT CG
AACC A ACC- TTT TTTT T -----
GAM12243 6710 GGTGAAGATCCGAGACTGGT GA- A - ACT GAA ATGGG
3 ACCAGAAGCATGGGGCCTGT GGT AG TC CGAG GGTACCA GC
GGTGCCTCGCTCGCGACTAC CCG TC AG GCTC CCGTGGT CG
AGCC ACA - C GCT GTC -----
GAM12243 13785 GGTGAAGCAATGGAAAAGAA CAA-- AA- - - ACTAA
4 CAGACAACTAATGATTTGCT GGTGAAG TGGA AGAA CAGA CA
TCTATGTCCAGAATATTTTA CCATTTT ACCT TCTT GTTT GT
CC ATAAG GTA C A -----
GAM12244 14945 GGTGAAGGAGGCCGCGATGT GA - CGA GA GTAGGGCA
1 CGGTGAGCACGTAGGGCAGT GGT AGGAG GCCG TGTCGGT GCAC
GCGCTGGCACGGCTCTCCTC CCG TCCTC CGGC ACGGTCG CGTG
TGCC TC T --- -- --------
GAM12244 15018 GGTGAAGGCAGACAGCGAGT AG A-- C T GACGATGATCAAAG
2 GGCGACGATGATCAAAGGCT GGTGA GCAG CAG GAG GGC
TCTCCTGAGACTGCGTCACT TCACT CGTC GTC CTC TCG
G- AGA - T ----------
GAM12244 2125 GGTGAAGGGTTTTCTCAGCA A G CA CCAG CCACAT C ACAGTTTCAAA
6 GCCAGTTACCACATGGAGCA GGTG AG GTTTTCT GCAG TTA GGAG ATTTC
TTTCACAGTTTCAAAGAAGT TCAC TC TAAAAGA CGTC AAT CCTT TGAAG
TTTCCTCATTTTAAAACTGC A G A- AA-- TTTACT T ----------
AAGAAAATGCTACACT
GAM12244 15268 GGTGAAGGTGCCTGAGGAGC G TG TG-- G AT CTGCTTGC
7 CTGTGTTACTCATCACTGCT GGTGAA G CC AGGAGCCTGT TTACTC CA
TGCTGGGGGGTGGAGCAGGT CCACTT C GG TCTTTGGACG GGTGGG GT
TTCTAATTGGTGCTTCACC - GT TTAA A GG --------
GAM12244 16263 GGTGAAGGTGCTGAGGAAAG -- G ---- AAA ATGAG
8 CTCCCAGGATGAGCCTGGGA GGT GAAG TG CTGAGG GCTCCCAGG
GTGCTTCAGGTATCAGCTTC CCG CTTC AC GACTTC TGAGGGTCC
CAGCC AC G TATG G-- -----
GAM12246 14889 GGTGAATCCCCTGTTTGAGA GAATCC- TG GAAAAG TAAGAATTTT
4 AAAGGCCTAAGAATTTTGGC GGT CCTGTT A GCC
ATTGGACAGGACATCCAGCC CCG GGACAG T CGG
ACCTACA GT A----- ----------
GAM12247 22833 GGTGAATTTGTTAAAATGAG ----- AAA-- T GAT
5 TAACTTTGATAAAGTTTTTC GGTGAAT TTGTT ATGAG AACTTT
ATGCACAGGCAAAATGTATT TCACTTA AACGG TACTT TTGAAA
CACT TGTAA ACACG T ---
GAM12247 7494 GGTGACAACATGCTGAGAGC AA--- G GA A T AACAT
9 CAAGTGCTAACATGGCCTGG GGTGAC CAT CT GAGCCA G GCT
CTCCAGGGATGGCAAAGTCA CCACTG GTA GG CTCGGT C CGG
CC AAACG G AC - - -----
GAM12248 17015 GGTGACAACATGCTGGAGCC AA--- G - A T TAACAT

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0          AAGTGCTAACATGCCTGGTT GGTGAC    CAT CTG GAGCCA G GC
           CACAGGATGGGACAGTCACC CCACTG    GTA GAC CTTGGT C CG
                          ACAGG  G  A     - -  ------
GAM12248 7306   GGTGACAACATGCTGGAGCC      AA--  G  G-     - T  TAACAT
1          AAGTGCTAACATGCCTGTGG GGTGAC    CAT CT  GAGCCA AG GC
           TTCAAGGGATGGAAAGTCAC CCACTG    GTA GG  CTTGGT TC CG
           C                   AAAG  G  AA     G  -  ------
GAM12248 17920  GGTGACAACATGCTGGAGCC      AA--  G  G     - T  TAACAT
2          AAGTGCTAACATGCCTGTGG GGTGAC    CAT CT GAGCCA AG GC
           TTCAGGGATGGAAAGTCACC CCACTG    GTA GG CTTGGT TC CG
                          AAAG  G  A     G  -  ------
GAM12248 22360  GGTGACAACATGCTGGAGCC      AA--  G -  -  G    T  TAACAT
3          AAGTGCTAACATGCCTTGGG GGTGAC    CAT C TG GA CCAAG GC
           TCACAGGGATGGAAAGTCAC CCACTG    GTA G AC CT GGTTC CG
           C                   AAAG  G G  A  G    -  ------
GAM12248 19604  GGTGACAACATGCTGGAGCC      AA--  G  --  G    T  TAACAT
4          AAGTGCTAACATGCCTTGGT GGTGAC    CAT CT  GGA CCAAG GC
           CCAAGGGATGGAAAGTCACC CCACTG    GTA GG  CCT GGTTC CG
                          AAAG  G  AA  -    -  ------
GAM12248 10871  GGTGACAACATGCTGGAGCC      AA--  G-  G-      T  TAACAT
5          AAGTGCTAACATGCCTTGGT GGTGAC    CAT  CT  GAGCCAAG GC
           TCAAGGGAATGGAAAGTCAC CCACTG    GTA  GG  CTTGGTTC CG
           C                   AAAG  AG  AA      -  ------
GAM12248 13292  GGTGACAACATGCTGGAGCC      AA--  G  G-      T  TAACAT
6          AAGTGCTAACATGCCTTGGT GGTGAC    CAT CT  GAGCCAAG GC
           TCAAGGGATGGAAAGTCACC CCACTG    GTA GG  CTTGGTTC CG
                          AAAG  G  AA      -  ------
GAM12248 10551  GGTGACAACATGCTGGAGCC      AA--     G--      T  TAACAT
7          AAGTGCTAACATGCCTTGGT GGTGAC    CATGCT   GAGCCAAG GC
           TCAAGGGTATGGAAAGTCAC CCACTG    GTATGG   CTTGGTTC CG
           C                   AAAG     GAA      -  ------
GAM12248 14810  GGTGACAACATGCTGGAGCC      AA---       --      T  TAACAT
8          AAGTGCTAACATGCCTTGGT GGTGAC    CATGCTGG  AGCCAAG GC
           TCACCGGCATGGACAAGTCA CCACTG    GTACGGCC  TTGGTTC CG
           CC                   AACAG       AC      -  ------
GAM12248 22384  GGTGACAACATGCTGGAGCC      AA--  G  --       T  TAACAT
9          AAGTGCTAACATGCCTTGGT GGTGAC    CAT CT  GGAGCCAAG GC
           TTCAAGGGATGGAAAGTCAC CCACTG    GTA GG  CTTTGGTTC CG
           C                   AAAG  G  AA      -  ------
GAM12249 11    GGTGACAACATGCTGGAGCC      AA----  G  G       GCTAACAT
0          AAGTGCTAACATGCTTGGTT GGTGAC     CAT CT GAGCCAAGT
           CAGGGATGGCACACGTCACC CCACTG     GTA GG CTTGGTTCG
                          CACACG  G  A     --------
GAM12249 19578  GGTGACAACATGCTGGGAGC      AA-  -  G  G    T  TAACAT
1          CAAGTGCTAACATGCCTTGG GGTGAC    CAT GCT GGA CCAAG GC
           GTTCAAGCGATGGAAGTCAC CCACTG    GTA CGA CTT GGTTC CG
           C                   AAG  G  A  G    -  ------
GAM12249 15670  GGTGACAACCATGCTGGAGC      AA-   G  G-      T  TAACAT
4          CAAGTGCTAACATGCCTTGG GGTGAC    CCAT CT  GAGCCAAG GC
           TTCAAGGGATGGAAAGTCAC CCACTG    GGTA GG  CTTGGTTC CG
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          C                  AAA   G  AA      - ------
GAM12252 17730  GGTGACCCCGAGGCAGCTCA      CCG-   C  CT A   -   GTCGT
6          CGCGGTTGTCGTGGCCAGCG GGTGACC    AGG AG  C CGC GGTT
          AGGACTCCTGCACGGTCGCC CCGCTGG    TCC TC  G GCG CCGG
                          CACG   - AG A   A    -----
GAM12253 13944  GGTGACGCTGCGGGGCGGGC      CT   - C   -   CAG  T    A   CG- TG    TGGGAC
8          GGACAGACTGCGGGACGGAC GGTGACG  GCGG GG GGG CGGA   AC GCGGG CGGA   G  GACGC

          GGTGGACGCTGGGACGCGTT CCGCTGC  CGCC CC CCC GCCT   TG CGCCC GCCT   T  TTGCG

          TGTAGCTCCGCCCCGCCGTT      --   G  -  A   --- C    C   CGA GT    ------
          CCGACCCCCGCCGCCGTCGC
          C
GAM12254 19723  GGTGACTCAGGACCACGCTG   T   T     -- C   GAC      CCTTCAA
7          ACTAGGGCTCCTTCAAGGCC GG GAC CAGGAC  CA GCT   TAGGGCT
          CTGAGCTGATGTCCTGTGTC TC CTG GTCCTG  GT CGA   GTCCCGG
          CT               -  T     TA  -   ---      -------
GAM12255 13755  GGTGACTGAGATGTCGTCCA   G  TG  A   G   AT   GCTTTTTACCTTCTCTCTA
5          TGCGGCTTTTTACCTTCTCT GGT AC  AG TGTC TCC  GCG
          CTACGCTAGGAGGATACTTG CCA TG  TC ATAG AGG  CGC
          GTGACC             G  GT  -   G   AT   --------------------
GAM12258 22908  GGTGAGATGTAGCAGTAATC      A   A  -   AAT    T     G  GTGT
8          AGCTCCCAGCGACGTGTGTA GGTGAG TGT GC AGT   CAGC CCCAGC AC
          GCTGGGGCTGCCGCTCGCAA TCACTT ATA CG TCG   GTCG GGGTCG TG
          TATTCACT               -  A  C   CC-   -     A  ----
GAM12261 10807  GGTGAGGACATTGCGGGAGG      -   TGCG    CCG    GAGCCT      G  CCA
6          CCGGCTGGGAGCCTTTTGTG GGTGAG GACAT    GGAGG   GCTGG     TTTGTGCG CC
          CGGCCCCAGGACGCGCAAAT CCACTC CTGTA    CCTCC   TGACC     AAACGCGC GG
          TCTGACCAGTCCTCCATGTC      T    ----    ---    AGTCTT      A  ---
          TCTCACC
GAM12261 23008  GGTGAGGACTCTGCCTGGGG   --   -   GC  G     C   GGTTCCGA
7          CTCTGCTGATGGTTCCGAAT GGT  GAGGA CTCT  CTG GGCTCTG TGAT
          CATGGAGCTGCAGAGAGCTC CCG  CTCCT GAGA  GAC TCGAGGT ACTA
          CTCCAGCC             AC    C   --  G     -   --------
GAM12262 10311  GGTGAGGCAGACGCCTGAAC    A  AGAC   GAACAG    GAGTGG   GA--  AT  TT  GGAG

2          AGGGACTTGAGTGGATTGGA GGTG GGC    GCCT     GGACTT     ATTG    TGG  TT  CCT
          TGGATTTTTCCTGGAGAGGG TCAC CCG    CGGG     CTTGAA     TAAC    GTC  GA  GGA
          GAGTACTGAATACAATGAGA    A  GGA-   AA----     GAG---   ATAA   AT  GG   ----
          AGTTCAAGGGCAGGGCCACA
          CT
GAM12265 1953   GGTGAGTTTTGGGGGAAAAA        --------   --   AA    TAAAAAT
0          TTTTTAAAAATAAAGTACTT GGTGAGTTT       TGGG  GGAA  ATTTT
          CCAGTCTATATATTGTAAAC CCACTCAAA       ATCT  CCTT  TGAAA
          TCACC                  TGTTATAT   GA   CA    -------
GAM12269 346    GGTGATGCTGCTGCGCGGAC         C--  G  GACCGA-    ACGC
9          CGACCGCGACGCTGCGGGAA GGTGATGCTG   TGC CG      CCGCG
          ACGATGGGCACAACAGCATT TTATTACGAC   ACG GT      GGCGT
          ATT                    AAC   G  AGCAAAG    ----
GAM12271 7916   GGTGATGTCCAAACACTGCA   TG      A---    GCA-      GTTGG
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3          GGGGTTTGTTGGGGACCCCA GG  ATGTCCA   ACACT   GGGGTTT
           AGGAGTGTAAAATGGGCGTT CT  TGCGGGT   TGTGA   CCCCAGG
           GTC              GT     AAAA   GGAA     -----
GAM12271 10960  GGTGATTAAGGAAGATGGAC     TAA  A   GA  AT  CACT  -  GACA
7          ACATGGTCACTGCCCGACAG GGTGAT   GGA GATG  CAC  GGT   GC CC
           GAGCCTCGCCTCGTGCTCAT TTACTA   CCT CTAC  GTG  CCG   CG GG
           CTCCATCATT           ---  -   TC  CT  CTC-  A  ----
GAM12272 21997  GGTGATTCATGGACCCAGCC   --  T    CCC  C   TCT-   GC---  TTT
2          TCCTTCTGCCTTGCGGCTTT GGT  GAT CATGGA  AGC TCCT   GCCTT   GGC
           GCCTTTTAAAGGTCCTCAGG CCG  CTA GTACCT   TCG GGGA   TGGAA   CCG
           GTGCTCTCCATGTATCTTGC   TT  T    C--  T   CTCC   ATTTT  ---
           C
GAM12273 5034   GGTGATTTGCCCTCATTTAA   A   CC  CATT  C  AG-  GA  AAGTCAA
6          CGGTAGCTGGAGTAAGTCAA GGTG TTTG  CT   TAA GGT  CTG  GT
           ACCACAGAGAGCCCTTACAA CCAC GAAT  GA   ATT CCG  GAC  CA
           AGACTAAGCACC          -   CA  AAC-  C   AGA  AC  -------
GAM12276 15765  GGTGCACTGTGGTCTTGCCC    ---   T  -  GCCC--    ACTG
7          CTTGGCACTGGCCAAGAGAA GGTGC   ACTG GGT CTT    CTTGGC
           TGAAGCACCCAGTCTCGTAC CCATG   TGAC CCA GAA    GAACCG
           C                CTC   -  C  GTAAGA    ----
GAM12277 13263  GGTGCAGCGGGAGATTCACC    A  G  A   CAC-  GA-----   GCTAA
2          AGGACTGGGCTAACCGGGAG GGTGC GC GG GATT   CAG     CTGG
           TACATTGAGATAATCACCAG CTACG CG CC CTAA   GTT     GGCC
           CAGCATC             A  A  A   TAGA  ACATGAG   -----
GAM12278 5207   GGTGCAGTGGTTCACGCCTG   G-  -      --   GTAA-    CACT
8          TAATCCCAGCACTTTGGGAG GGT  CAG TGGTTCAC  GCCT    TCCCAG
           GCCAAGGCGGGTGGATCACC CCG  GTC ACTAGGTG  CGGA    AGGGTT
           TGAGGCC             GA  C      GG   ACCGG    ----
GAM12282 17044  GGTGCCATCAACATTGAAAA   G  TC  A-   AA-    AG  -  ACTCCG
2          CGGCAAGGCCAACTCCGTGC GGT CCA  AAC  TTGA  ACGGCA  GC CA
           GCAATGCCGTCACTCAGGAG CCA GGT  TTG  GACT  TGCCGT  CG GT
           TTTGGACC            -  --  AG   CAC    AA  C  ------
GAM12284 16132  GGTGCCCTCAATAGCCTCCT    CCT  T  C  C--    T  CTTGAA
7          TGGGTGTCTTGAAGCCCCAG GGTGC   CAA AGC TC   TTGGG GT
           ACCGATGTTCTTGTAGTACC CCATG   GTT TTG AG   GACCC CG
                        AT-  C  T  CCA   -  ------
GAM12285 10042  GGTGCCGCAGCATCTGCAGC    C  AGCA   -    TACTCGC  T  ACAG
5          TCATACTCGCAGTTGGCACA GGTGC GC   TCTGC AGCTCA     AGT GGC
           GGCCTGCTTGAGCTCGTAGA CCACG CG   AGATG TCGAGT     TCG CCG
           GCAGCACC             A  ----   C    -------  T  ----
GAM12287 15186  GGTGCCTGGAGCCGCCAGAG  T   G   G  AGAGTTT   ---  GGGA
7          TTTCCGCACCCGGGAGGGAG GG GCCTG AGCC CC     CCGCA  CCC
           ATGCGGCCGGGGCTCAGGCT CC CGGAC TCGG GG     GGCGT  GGG
           CC               T   -  - CC-----   AGA  ----
GAM12295 437    GGTGCTGCTGGTACCAAATG  TG      -  AAA  TGATTTTA   CATTCA
4          TGATTTTAGCTCCATTCAGG GG  CTGCTGGT ACC  TG      GCTC
           GCCCAGGGGTAACCAGCAGT CC  GACGACCA TGG  AC      CGGG
           GCC              GT      A  GG-  C-------   ------
GAM12295 10522  GGTGCTGCTGTGCTGGGCCA   -  T---  -   C-  C   -  GAA  AGA
6          CGCGCCTGGAAGGAGACCAA GGTG CTGC   GTG CTGGG  CA GCGCC TG   GG
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CATGGCGCTGCACCCAGATA CCAC GACG CAT GACCC GT CGCGG AC CC
CCTCTGCAGCCACC C TCTC A AC - T AA- ---
GAM12296 5162 GGTGCTGGCGGGCGGTACCA - ---- A---- ACCA GGG TTGC
6 CCATGTATCCGGGCATTGCT GGTGCTGG C GGGCGGT CC TGTATCC CA
GACAGGATGCAGAAGGAGAT CCACGACC G CCCGCCA GG ACGTAGG GT
CACCGCCCTGGCGCCCAGCA C CGGT CTAGA AAG- ACA ----
CC
GAM12297 15053 GGTGCTGGGTCATAATATGA - TC- - G - CT ATT- TGT
4 TGGTGACTCTGATTTCCTGT GGTGCTGG G ATAA TATGATG TGA CT G TCC
GGATCTGTGAAGTTCAGTAT CCATGACC C TATT ATATTAT ACT GA T AGG
TATACTTATTTTCTCCAGTA T TTT C G T AG GTCT ---
CC
GAM12297 12004 GGTGCTGGTCTGTGTTCTGG TGC CT TTGC CCAT- ATCTCATTGCCTT C
5 TTGCGCTGGCCATTGTCTAT GG TGGT GTGTTCTGG GCTGG TGTCT GGCTGTCTGT
AG
CTCATTGCCTTGGCTGTCTG CC ACCA CATAGGGCC CGACC ACAGG TCGACGGGCA
TC
TCAGTGCCGCCGAAAGAACT T-- TC ---- TTTCT ---------- -
ACGGGCAGCTGGACATCTTT GCCGCCGAAAGA
CCAGCCCGGGATACCTACCA T
TCC A

GAM12300 22572 GGTGGAAGCCACACACAGCC GC CACA CCGGT - CAG
8 CGGTTGGCCTGCAGCAGCTG GGTGGAA CA CAGC TGGC CTGCAG
CAGAGCTGTCACGCTGAACT CCACCTT GT GTCG GTCG GACGTC
GATTCCACC A- CAA- CACT- A ---
GAM12301 15337 GGTGGAAGTGACGTTGGAGA GA TT AGAG A CTTAAGCC
4 GTTCTAGACTTAAGCCTCAA GGTGGAAGT CG GG TTCT GA
GAAGCCTTGCAGCTTCCACC CCACCTTCG GT CC AAGA CT
AC T- G--- A --------
GAM12302 17261 GGTGGACAAGTCAGACTATG GGA T A ATGA GG ATCTG
2 ACATGGTGGATTATCTGAAT GGT CAAG CAG CT CATGGT ATT
GAGCTATGGGAAAGCTGCTT CCG GTTC GTC GA GTATCG TAA
GGAAGCC AAG - - AAGG AG -----
GAM12302 10543 GGTGGACACCTGCTGGAGCC CA-- TG-- T CTAACAT
5 AGTGCCTAACATGCCTTGGT GGTGGA CC CTGGAGCCAG GC
TCCAGGGATGGAAGATCCAC CCACCT GG GACCTTGGTT CG
C AGAA TAGG C -------
GAM12303 11556 GGTGGACTTGAAGTCCCCGC A- C--- G GAG GGCAG
8 CAGGAGGGCCTTGGCAGAAG GGTGG CTTGAAGTC CC CCAG GGCCTT
GCCAGACTGGGGACAAGACT CCACC GGATTTCAG GG GGTC CCGGAA
TTAGGGACCACC AG AACA - AGA -----
GAM12310 11609 GGTGGATGGTATTTGACACG AT T- C T CCA CATA
6 TGTATCCACGGGTCATAACC GGTGG GGTA TTGA ACG GTAT CGGGT
TGAAGTGCTGTATCAATTTA CCACC CCAT AACT TGT CGTG GTCCA
CCCCACC -- TT A - AA- ----
GAM12313 16044 GGTGGCAGCAGGGGAACGTC CA-- GAACGTCT TCCGTGAT
6 TTCTCATGCTCCGTGATGCA GGTGG GCAGGG TCTCATGC
TGAGGCTCTGCACAACCACT TCACC CGTCTC GGAGTACG
AACA -------- --------

GAM12315 10432 GGTGGCATTGCTGGATGGCC - A T GGGACTGC AG C ATCCTGAA
7 GGGACTGCACAGTGGAGATG GGTG GC TTGC GGATGGCC ACAGTGG ATG CC
CCCATCCTGAAGGACGTGGC CTAC CG AGCG TCTGTCGG TGTCACC TGC GG
CACTGTGGCTGTCTGCGACG G C - -------- GG A --------
CGCATC
GAM12318 7114 GGTGGCCTCAGCCCCGAGTC AG - A T A AAGAT ACA CCTCAAGAA
5 CAAGAAGATCCTGACACCCG GGTGGCCTC CCC CG G CCA G CCTG CCCGC
CCCTCAAGAAGCGGGCCCGG CCACCGGAG GGG GC C GGT C GGGC GGGCG
GCTGGCCGTGGGGAGGCCAC -- T - - - ----- CC- ---------
C
GAM12319 11394 GGTGGCGCGGAAAAAAAAGG CGC AAAAAA TG A--- CCGT
5 GGATTGAATGGGCCCCCGTG GGTGG GG AAGGGGAT A TGGGCCC
GGCCCAAAGCTTGGTTCCCT CCACC CC TTCCCTTG T ACCCGGG
TGAACCCCACC --- AAG--- GT CGAA ----
GAM12320 5187 GGTGGCGTCGGGCTGGTTGT G G TTGTT G CGT
3 TCCAGGGCGCGTCGCGCTGG GGTGGC TC GGCTGG CCAG GCG
CCGTTCCAGCCGGGGTCACC CCACTG GG CCGACC GGTC CGC
- G TTGCC G ---
GAM12320 195 GGTGGCGTCTGCCTTCTCAT ---- CTCAT TTT T GGTC
4 ATGGATTTGTCCGTGGGTCC GGTGGCGTC TGCCTT ATGGA G CCGTG
GCGGCTTCGTTCTTAAGGCA CCGCCGCGG ACGGAA TGCTT C GGCGC
TGATGGCGCCGCC TAGT TTCT- --- - ----
GAM12321 7671 GGTGGCTACTAGTCCACGGT TA TCCACGGTT ACT A GTTGG
0 TGGCTACTAGTCCACGGTTG GGTGGC CTAG GGCT AGTCC CG
GCGGGACTTGAGCTCTGGCT CCACCG GGTC TCGA TCAGG GC
GCCACC TC --------- GT- - -----
GAM12334 22155 GGTGGGATTGCTTGGTGGCC TG A T -- TTG GG- T ---------- TTT
3 TTGGTCGTGGTCGGTGACTG GG GG TTGCT GGT GGCC GTCGT TCGG GACT GG
GGGGCCGG
GTTTGGGGCCGGCGCCGGAA CC CC AACGG TCG TTGG CGGCA AGTT CTGG CC
CTCCGGTT
CCCCTGGTTTGGCCTCTTTC GT - T GT --- AAA - TGCCTTGAAG TTT
CGAAGTTCCGTGGTCTTGAA C AACCC
AAACGGCGGTTTGGCTTGGC GCCGG
AACCTGCC TGGTC
- -----
GAM12334 10188 GGTGGGCACTGCAGCGTTGG -- --- CGT ACGTGA TC ATTT
7 AACGTGAGCCTCGGATTTCC GGT GGGCAC TGCAG TGGA GCC GG
TGGCCCCTCTACTGTAAATG CCG TCCGTG ATGTC ATCT CGG CC
TGCCTTAGCC AT TAA --- CCC--- T- ----
GAM12337 16113 GGTGGGCGTGAGAGGATAGG T G A A T AG AAAC C - GA ATAGCAG
7 TGGCAGGGCAGAAACTGGGC GG GGGC TG GAGG TAGG GGC GGCAG TGGG AGC CCT CTTG

AGCCCTGACTTGATAGCAGC CC TCCG AC CTCC GTCC CCG CCGTC ACCC TCG GGG GGAC

AGGGGGAGCTCCCAAGCTGC T - - - - AA GA-- - A -- -------
CAAGCCCCTGCCTCCAGCCT
TCC
GAM12338 17008 GGTGGGCTCTTCGGGGGCCG G CG TACCTGT
2 GCCGGCGCGGCCTACCTGTG GGTGGGCTCTTC GGGGCCGGC GCGCGGCC

GCCGCGCACGTTGGCCCCGG TCGCCCGGGGGG CCCCGGTTG CGCGCCGG
GGGGGCCCGCT G CA -------
GAM12343 15398 GGTGGGTCCCCTGGGTGGTG T ---- C G CTCTGCT T ACCCGAC
4 GCTCTGCTAGTGAATCTGAC GG GGGTC CC TGGGT GTGG AG GAATCTG
CCGACTGGATTCCTCCATGA CC CTCAG GG ACTCA TACC TC CTTAGGT
CTCAAGGCACAGACTCTCC T ACAC A G ------- - -------
GAM12344 10273 GGTGGGTGCCTGAGTCTGCA TG A-- G--- C CTGACCCA
0 CGCTGGCTTCTGACCCAAGG GG GGTGCCTG GTCT CACG TGGCTT
CCATGTGAAAGAGGCCCACA TC TCATGGAC CGGA GTGT ACCGGA
GGTACTTGCT GT ACC GAAA - --------
GAM12344 132 GGTGGGTGGATCACCTGAGG TGGA - A- A-- CGA
3 TCAGGAGTTCGAGACCAGCC GGTGGG TCACC TG GGTCAGG GTT
TGGCCAACACGGTGAAACCC CTACCC AGTGG AC CCGGTCC CAG
CATC CAA- C AA GAC ---
GAM12344 13499 GGTGGGTGGATGGAGAGAGG - A A G CCC AAGGACCC
6 CCCCAGCCTAAGGACCCAGG GG TGGGTGG TGG GA AGGC AGCCT
CTCCTGCCTTCCCACCACCC CC GCCCACC ACC CT TCCG TCGGA
GTCC T - - - TCC --------
GAM12344 10725 GGTGGGTGGGGCAGTTTGGT TG T GG TGTT TGGTCT
7 TTAGTGTTATACTTTGGTCT GG GG GGGGCAGTTT TTTAG ATACTT
AAGTATTTGAGTTAAACTGC TC TT TTTCGTCAAA GAGTT TATGAA
TTTTTTGCT GT - TT ---- ------
GAM12350 15165 GGTGGTGATATGATCAAGGT TA - AAGG - AACA
1 TCACACAGTTAACAAACTGT GGTGGTGA TGA TC TTCAC ACAGTT
AGTGAGGATTCAACTCATCA CCACTACT ACT AG GAGTG TGTCAA
CC CA T ---- A ----
GAM12351 14753 GGTGGTGGTAGCATTTGGGT TA ATTTG- - ATC- C GACTGAA
9 CTGAGATCGGCCCAGCTCTG GGTGGTGG GC GGT CTGAG GGCC AGCTCT
ACTGAAGGGGCTTGGCTTCC CCACCACT CG CTA GACTC TCGG TCGGGG
ACTCAGCATCAGCGTGGCAG GA GTGCGA C ACCT T -------
TCACCACC
GAM12353 12054 GGTGGTGTTAATTGGTGTCT GG- ATT T CCCTGT CCT TGCCCT
0 GTTTTTGCCCTGTGGCCTTA GGT TGTTA GGTG CTGTTTTTG GG TAGGG
GGGTGCCCTTCCTGTCCCTT TCG ATAAT TTAC GACAAAGAC CC GTCCT
CTTTCAGAAACAGTCATTCT ATA GTC T TTTCTT CT- ------
GTAATAATAGCT
GAM12356 5326 GGTGTAAATGTTGAGCCTTT GTA- ---- TTTTT G- TTGTTT
4 TTGGCCTGGCTTGTTTGCAA GGT AATGTTGA GCC GGCCT GC
AGGCCCTGGCAACGTCAACA CCG TTACAACT CGG CCGGA CG
TTGGGAGCC AGGG GCAA TC--- AA ------
GAM12358 10993 GGTGTAGCCCGAACCAAGGG ---- C CC ---- - TCA--- GAAG TCACCT
6 TCAGGGGGGTCATGGGCGAA GGTGTA GC CGAA AAGG GTCAGGGG GG TGGGC GGACT

GGGACTTCACCTGGTCCGGA TTACAT TG GCTT TTTT TAGTCCCC CC ACCTG CCTGG
GTCCACGTTTTCCACCCCTG TTTT T TA AATT A TTTTGC AGG- ------
ATTTAATTTTATTTCGTGTT
TTTTACATT
GAM12362 15732 GGTGTCCTGGAGCCTCTGTA T C TCT-- C- T - AAAT
6 CCTGTGCCCAAATGGTGCCC GG GTC TGGAGCC GTAC TG GC CC
GCTGTGCCACCTGGTTTCAA CC CAG ACTTTGG CGTG GC CG GG

GACCC - A TCCAC TC C T ----
GAM12363 1952 GGTGTCGTTTAGATCAGGGT ----- TC T CA C GTGT
5 AAGGCAGTCAGGCGGGTGTT GGTGT CGTTTAGA AGGG AAGGCAGT GG GG
CACCACTGCCTTTTCTTCCT TCACA GCGAGTCT TTCT TTCCGTCA CC CT
CTGAGCGTGAGAACACT AGAGT CC T -- A ----
GAM12364 19531 GGTGTCTGAGTCATAATATT T T - AT TTATAAAATC AAACT
3 TTATAAAATCTGGAAACTCC GG GTC GA GTCATA ATT TGG
AAATTCTATGACATCTGGCC CC CGG CT CAGTAT TAA ACC
C - T A CT ---------- -----
GAM12366 7930 GGTGTCTTAGCTGCTGTTCT T CT G CATCACAACT A GATCTG
1 TGCATCACAACTTCTATTCC GGTGTCT AG GCT TTCTTG TCT TTCCCA
CAGATCTGTGGGGAAAGATA CTACGGA TT CGA AAGAAT AGA AGGGGT
AGAAAGCTATTCAGGCATC C AT - ---------- A ------
GAM12366 4806 GGTGTCTTTAGTTCAAGCAT G TT G TA-- AATCC- T CTTA
8 GTTAGGAAATCCTCTTTATT GGT TCT AGTTCAA CATGT GGA TCT TATT
CTTAAATATAGATACATGTC CCG AGA TTAAGTT GTATA TCT AGA ATAA
TGCATATATGATTGAATTTT - TT A TACG GTACAT T ----
AGAGCC
GAM12367 70 GGTGTGACCCTCGCCATGGT TGT C-- AAT T TTGCT
6 AAATACATGGCTTGCTGCCT GG GACC TCGCCATGGTA ACA GGC
GTTATACCGTGGTGACGTGG CC TTGG AGTGGTGCCAT TGT CCG
TTCCC C-- TGC AT- - -----
GAM12368 2489 GGTGTGAGAGCGGTAAGATG T A C AA- C GG-- - G G TCC GCCCAG
0 GCGGCGGCGGCGGTGGTGGA GG GTG GAG GGT GATGG GGC CGG CGGTG TG AGT AGAGA

GTTCCAGAGAGCCCAGTCTC CC CAC CTC CTA CTACC CCG GCC GCCAC AC TCA TCTCT

TACTCAGCACCGACCGGGAG T - - CAG T GAGG A G - --- ------
GCCTCCATCGACATCCTCCA
CTCC
GAM12372 11155 GGTGTGGACCCCACCCAAGT A-- - CCA- TT- CTCCCTGTCCCCT
1 TTCCTCCTCCCTGTCCCCTG GGTGTGG CC CCAC AGT CCTC
AGGCACACTGACCGTGGAGG CCGTACC GG GGTG TCA GGAG
CCCCCATGCC CCC A CCAG CAC ----------
GAM12374 10131 GGTGTGGGGAAGCATTAAAG TGT AGCATTAA - - AA-- A GA---- TG CATG
0 GACTGACTGAAGGCCTGCAT GG GGGGA AGGAC TG ACTG GGCCTGC TG TTCCA TT
GGATTCCATGTTCATGAGTT CC CTCCT TCCTG AC TGAC TCGGACG AC GAGGT GA
TGGAGATAATACAGCAGGCT TAT AATTTCAC G G CATG - ATAATA TT ----
GTACCAGTGCAGGTCCTCAC
TTTAATCCTCTATCC
GAM12374 7325 GGTGTGGGGTGTGGGGTGTT T - GG CCC ATCAGCACA
2 CCCCGGCATCAGCACAGCTA GGTG GGGGT GT GGTGTTC GGC
TGAACATTGAACAACCTCTC CCAC CTCCA CA TTACAAG TCG
ACC T A AG TA- ---------
GAM12379 14118 GGTGTTAACTAATGCACTCA - AAT - AATA A ACAAA
6 ATAGTGATCACAAAGAATAC GGTGTT AACT GCACT C GTG TC
AGGAAGTGCCAAGTTCAATG CCGTAA TTGA CGTGA G CAT AG
CC C AC- A GA-- A -----
GAM12380 16891 GGTGTTAAGTGCTCCAAGGA TTA T --- A - A G ATCC
0 GGTGGCCACCGACATCCGTG GGTG AG GCT CCA GGA GGTGGCC CC AC

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          GGGCCATCATCCTGGCCAAG CTAC   TC CGA   GGT CCT CTACCGG GG TG
          CTCTCCATC            C--  T   ACC   -   A      -  -  ----
GAM12382 16970  GGTGTTCCTGCAGCGTCCAC      C- TG    G     CAGA   AG--  GC  TAAT
3          ACAGAGGCAGCAGCTCTAAT GGTGTT  C  CAGC TCCACA    GGC    CA  TC
          GAATGATTAGCTTGTGGAGT CCATAA  G  GTTG AGGTGT    TCG    GT  AG
          TGTGGCAAATACC           AC GT   -     ----   ATTA  A-  ----
GAM12383 10073  GGTGTTGCAAAGACATTACC  T    AAA   A    TTTAAAC   --   A-   TGCT    AATGAA   CTAA
4          TTTAAACATTAGGTAAGTGT GG GTTGC   GAC TTACC      ATTA  GGTA  GTGT    GTCTA     ATA
          TGCTGTCTAAATGAAATACT TC CAATG   TTG AATGG      TAAT  CCAT  CACA    CAGAT     TAT

          AAAACCCAAATAACTATGTT  -    ACA  -    TACCTCC    TC    CG    CCAC    GTTG--  ----
          GTAGACCACCACACGCTACC AACCCAAATAAC
          CTTAATCCTCCATGGTAAGT
          TACAGTAACCT
                     ------------
GAM12384 11157  GGTGTTGCTGTTGATTTGAT    TT--     TG  TT-     ---  TG  T   GAACT
1          TCTTCTGTTTCGTGAACTGC GGTG    GCTGT  AT   GATTCT   TC  TT CGT
          GAGTGGAACAGGAATCTCTG TCGC    CGACA  TG   CTAAGG   AG  GA GCG
          TTGACAGCTTTTCGCT        TTTT    GT  TCT     ACA  GT  -   -----
GAM12384 10926  GGTGTTGTACGGCTGTGGGA   T    T   GCT     CC     CAAA   CCTG
8          CCGGCGTCAAAGGGCCTGCC GG GTTG ACG   GTGGGA  GGCGT    GGG
          TGCACGCCTTCCCGCTGACG CC CAGC TGC   CGCCCT  CCGCA    TCC
          TCGACTCC            T   -  AGT     T-     CG--  ----
GAM12389 19564  GGTTAAAATGATCCTAACTA         TCCT   TA-    GGA   GG   TC   GAA   GTAAA
0          ATGGAGGAAGGGGGAGTCCC GGTTAAAATGA    AAC   ATGGA   AGG  GAG  CCT   TTG
          TGAATTGGTAAACAAAGAAG TCAATTTTATT    TTG   TGTCT   TTC  CTC  GGA   AAC
          GCTCACTTGATCTGTAATGT          TATT   TAA     AG-   A-   --   AGA   -----
          TTTATTTATTTTAACT
GAM12391 22152  GGTTAAGTTGGCTGTGCTGA   TT        ----   GAAA-----   ATAA
8          AATACTATAAGGTGGATGAA GG  AAGTTGGCTG    TGCT        TACT
          AATGGCAAAATTAGCCGACT CT  TTCAGCCGAT    ACGG        GTGG
          TCGTC              GC        TAAA    TAAAAGTAG    ----
GAM12392 16048  GGTTAATCTTTTTCCTTCCA       CTTTTT    C---  CA        CTTCTTCTCCACTTCATTT
6          CAGTTTTTTACCTTCTTCTC GGTTAAT     CCTT    CA  GTTTTTTAC
          CACTTCATTTGTAAAAAATC CCGATTG     GGAA    GT  TAAAAAATG
          ATGAATTAAGGTTTTCGTTA       CTTTT-    TTAA  AC        ------------------
          GCC
GAM12396 52    GGTTAGAGACTTCAAGGAGA     GAGACT   AG-   GTCACC    TCATTTAATT
6          GTCACCTTGCTCATTTAATT GGTTA     TCA   GAGA     TTGC
          GCGAATCCATCTCATCTGAT CCAAT     AGT   CTCT     AGCG
          TGAAATAACC            AAAGTT   CTA    ACCTA-   ----------
GAM12397 2613   GGTTAGCTTTGTGCTACTAA     -     -----   ACTAAAAG      CT    CTTCA
7          AAGTTTTCTTCTAAAATCTT GGTTA GCTTTG     TGCT       TTTTCTT  AAAAT
          CAGTTTTCTGGGAAAAAAAG TCAAT TGAAAC     ACGG       AAAAGGG  TTTTG
          GCAAAATTCAAAGTATAACT     A     TTAAA    AAA-----      TC    -----
GAM12400 9979   GGTTATCTAGCTTACAAAAG    -  -     ACAAAA---     ATGTTA
2          ATTTTATGTTAAAGATCATC GGTT ATC TAGCTT        GATTTT
          GAAATAAAGCTATGATAAAC CCAA TAG ATCGAA        CTAGAA
          C                  A   T     ATAAAGCTA     ------
GAM12400 11820  GGTTATGAGCCGGAAGGGCC       A    GA   GC  G      AG  GCA     GGA  TGGCG
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8 CGGCTCCTGAGCTGCAAGGT GGTTATG GCCG AGG CC GCTCCTG CT AGGTGT AG
GTGGAAGTGGCGCTGGCGCC CCAGTAC CGGT TCC GG CGAGGGT GA TCCGCG TC
TGAAGAGTGGGAGCGGGATC - A- TA G GA AG- G-- -----
CTATGGCCATGACC
GAM12410 131 GGTTCATGGGGAAAAACATT CAT GA A AATTAA T A- AATTATA
2 AAAATTAAAAAGTCCAATCA GGTT GGG AAAAC TTAA AAAG CCA TC
ATTATAGAGGTGGCTTTAAC CCAA CCC TTTTG AATT TTTC GGT AG
ACTTAAAGTTTTCTCCCTCA ACT TC A CACAA- - GG -------
AACC
GAM12410 6924 GGTTCATGGTCACAGTGCAC TCACA CCCTT GCTAAACAACG
3 CCCTTCATGCTAAACAACGA GGTTCATGG GTGCAC CAT
TGTGTGTGTACACTTTCATG TCAAGTACT CATGTG GTA
AACT TTCA- TGT-- ----------
GAM12412 6872 GGTTCCAGAACTGGTTCATG GAA- --------- A-- - CTAAACTAATAATC
9 TTATCTATTCTAAACTAATA GGTTCCA CTGG TTC TGTT ATCTATT
ATCAATAGATGGACAAAAGA CCAGGGT GACC AAG ACAG TAGATAA
AACAACAACCCCAGGAGATG AGAG CCAACAACA AAA G ----------
GGACC
GAM12415 482 GGTTCCGGTTCTGTGGTGAT TT TCT G -- GACTGT GACT
8 CTGGACTGTCCCGACTGGGT GG CCGGT GTG TGA TCTG CCC
CCTGGCAGAAATCAGCACGC CC GGTCG CAC ACT AGAC GGG
TGGCC -- --- G AA GGTCCT ----
GAM12416 19546 GGTTCCTAATAGGCCATGGA ATA CA ACCC A--- TACTAG
0 CCCCCACAGACGGGTACTAG GGTTCCTA GGC TGG CCACAG CGGG
TCTGCAGCCTGTGGACCCCA CCGGGGAT CCG ACC GGTGTC GTCT
GCCCTAGGGGCC C-- -- CCA- CGAC ------
GAM12417 5203 GGTTCCTTGTGAGGCTCCGA CT GA GCA CT AAGA
2 GCAGGGCTGGGAAGACCCCC GGTTC TGT GGCTCCGA GGG GGG
CCATCGGGGCTGAGCAGAGC TCGAG ACG TCGGGGCT CCC CCC
T -- AG AC- -- ----
GAM12417 11093 GGTTCGGATATGGGTAGTAT TATGG A ----- GGGGGA
8 GACGGCGGGGGAGTTGTAAC GGTTCGGA GTAGT TG ACGGC
AGCACACTGCATTCCGGGCC CCGGGCCT CGTCA AC TGTTG
TA--- C GACAA ------
GAM12426 17885 GGTTGAAGATAACGAGGCAG G AAC- - T C C- GAAA
2 TGGGCTGACTGGTGAAAACT GGTT AAGAT GAGG CAG GGG TGA TGGT
AAATCATCTTTTGTCCTTCA CCGG TTCTG TTCC GTT TCT ACT ATCA
AAGTCTTGGGCC G AAAC T T - AA ----
GAM12427 13465 GGTTGACTAAGGTCGGCTTT AC--- T - C - ATGC GTTCCCCATTATGA
3 GTTCCTGGAAATGCAGTTGA GGTTG TAAGG CG GCTTTGTT CTG GAA AGTTGAAA
AAGTTCCCCATTATGATTTT CCGAT GTTTC GC CGAAACGA GAC CTT TCAATTTT
AACTCTTCTCAGAAGCAAAG AAATA - A A T C--- ----------
CACGCTTTGATAAATAGCC
GAM12433 1387 GGTTGCCAGAGGCCCTGGAG T A- A---------- AGGACAG
6 GGAAGGACAGTCCCTGCTGG GGT GCCAG GGCCCTGG GGGA
GGAAGAACAGCCCCGGGGCC CCA TGGTC CCGGGGCC CCCT
CCCTGGTCACC C CC CCGACAAGAAGGGGTCGT -------
GAM12434 559 GGTTGCCTCTTTGATCAAAC TT C - AAAC ATCA ATCCAAAA
0 GGGTATCAGAAATCCAAAAT GG GC TCTTTG ATC GGGT GAA
TCCAAAATCCACAGATCCAA CC CG AGAAAC TAG CCTA CTT

AGAGCTCC T- - C ACA- AAAC --------
GAM12435 1929 GGTTGCTCTTCGTCGCTCTC C-- CTCTCCACCT- TCATCGT
5 CACCTCGATGTCATCGTTAT GGTTGCTCTT GTCG CGATG
CGCTCATTTCCTACGGCCCA CCGGCGAGGG CGGC GCTAT
GGGAGCGGCC ACC ATCCTTTACTC -------
GAM12437 1356 GGTTGGAATTCGGCCGAGGC AATTC - CAGAT ACCG GGTACA
1 AGATGGCACACCGGCGGTAC GGTTGG GGCCG AGG GGCAC GC
AGTAAGTGCTCCTCCGGCCA CCAACC CCGGC TCC TCGTG TG
CGCCAACC GCA-- C ----- AA-- ------
GAM12439 19614 GGTTGGCCAAGGCTGGCCTC TT A CT- C-- AACT ACCG
0 AAACTCCTGACCGCAGGTGA GG GGCC AGG GGC TCA CCTG
TCTGCCCCTCCTCGGCCTCC CC CCGG TCC CCG AGT GGAC
C CT C TCC TCT ---- ----
GAM12439 14182 GGTTGGCCACACAGCAGCGA CCA-- AG GCGA- G AGGAGG
1 GAGGCGAGAGGAGGCTGCCT GGTTGG CAC CA GAGGC AG
CGAGGATGAAGTGCAAACCC CCAACC GTG GT CTCCG TC
AACC CAAAC AA AGGAG - ------
GAM12439 11300 GGTTGGCTCTTTCTACATCC T TCTA C T G TATT CTCAGT
7 CTGGGGGCTATTTCAGCTCA GGT GGCTCTT CAT CC GG GGC TCAG
GTCTGGTCTGTCGTCGGCAT CCG CCGGGGA GTA GG CT CTG GGTC
GATAGGGGCCGCC - TA-- C - G TCT- ------
GAM12441 6721 GGTTGGGGATTATGGCTTCA T A- GCT A TGCC CACA
3 GCACTCTGCCGGAGCACATT GGT GGGG TTATG TCAGC CTC GGAG
CCTGAGCGCTGACAACGTGG CCA TCCC GGTGC AGTCG GAG CCTT
AGCCCTCACC C GA AAC C T--- ----
GAM12441 13206 GGTTGGGGGTGCCCGGCTGG - -- TG A A GA - CTGAGCCT
5 CAGCTCCGAGGGACCCAGAG GGTTGG GGGT GCCCGGC GC GCTCCG GG CC CAGAGT

TCTGAGCCTGCTCTGAGGCA CCAACC CCCG CGGGTCG TG CGGGGC CC GG GTCTCG

CCCGGGGCAGTTGGCTGGGC A AC GT A - AC A --------
CAGCCCACCAACC
GAM12442 13310 GGTTGGGTTGTCCCTGGGCG G GTCC G A AAGAGAAGCGGGCAATGA
6 GCCACCTCCAGAAGAGAAGC GGTT GGTT CTGGGCG CC CCTCCAG
GGGCAATGACTGGGGGGGAC TCAG TCGA GACCTGC GG GGGGGTC
GTCCAGAATGAGCTGGACT G GTAA A - ----------
GAM12443 22461 GGTTGGTTTGCGGAGGGGGT TT G GT - T GT -- GTTC
9 CTGTACTTAGGTCCAGGTTC GGTTGGT GCG AGGGG CTG TAC TAG CC AG
CTGAGGGTCTGTGTGCCAGC CCGACCA CGC TCCTC GAC GTG GTC GG TC
TCTCCTACGCTCACCAGCC CT A TC C T TG AG ----
GAM12444 1974 GGTTGTACTTGGCCAAGCGC ACTT CAA --- -- AA GGCA
5 TCAGATCGGCAAGGGGCACC GGTTGT GGC GCGCT CAGATC GGC GG
AGTCTTGATCTGCCCAGTGC CCAACA CCG CGTGA GTCTAG CTG CC
ACAGCCCCACAACC CC-- ACA CCC TT A- ----
GAM12446 341 GGTTGTGACTGCGAGTCGTC TG CGA G ACTTGTT
5 TGGGGGAGGGGGACTTGTTT GGTTG ACTG GTC TCTGGGGGAGGGGG
TCTTTCCTCTAGAGACCTCG TCAAC TGGC CAG AGATCTCCTTTCTT
GTTGCAACT GT TC- - -------
GAM12446 22435 GGTTGTGCGTGGAAAATGCT G GAAAAT CA---- C TAACT
9 CAGACCTCTTAACTAGAAGT GGTTGT CGTG GCT GAC TCT

CATCTCCGGCTAGCATGACA CCAACA GTAC CGG CTG AGA
ACC - GAT--- CCTCTA A -----
GAM12447 105 GGTTGTGGCAGGACACTAGG T G A ACA A TT CCCCACTT- CCCCA GGCT
TCT
5 GGTTCTCCCCACTTGGGTGG GG TGT GC GG CT GGGG CT GGGTGG GGAGGAGA
GGAG
CCCCAGGAGGAGAGGCTGGA CC GCG CG CC GA CCCC GA CCCACC CCTCCTCT TCTC

GTCTCAGTTTGTATCTCTTA C A A AAG - CT CCCACCCTT AC--- AT-- TAT
TCTCCTCCCACCACCCTTCC AGTTT
CACCCAGTCCCCCAGGAACC C
AGCAGCGCCC G

GAM12447 21957 GGTTGTGGGGGTACAGCGTA ------- G G AGATG- AGTG GAGA
7 GATGCCAGTGTGGAGACAGG GGTTGT GGGG TACA CGT CC TG
AAGGATGATAACGTGTGGTC CCGACG CCCT GTGT GCA GG AC
CCACTAAGAGCAGCC AGAATCA G - ATAGTA AAGG ----
GAM12448 21819 GGTTGTGGTGTAATTGGGAT T AA TG CG CATTAA CCTG
0 CGCCATTAAAATTCCCTGGG GGTTG GGTGT T GGAT C AATTC
ATTGTAGTCTTGAGGCACTT CTAAT TCACG A TCTG G TTAGG
AATC - G- GT AT ------ ----
GAM12449 17269 GGTTGTTGAGTTTGTTTTTA G - TTTTAAACA AAGTTC
2 AACATTTTTATAAGTTCATG GGTT TT GAGTTTGT TTTTTAT
AGAAAAAATATATAAATTCT CCAA AA CTTAAATA AAGAGTA
AAGAACC G T TATAAAA-- ------
GAM12450 13130 GGTTTAAAATGGTATTAGGT AA- A TT -- G G GAGAATG
6 TGGAGGGATTTGGGCGGTAA GGTTT AATGGT TTAGG GGAGGGAT TT GGC GTAA
GAGAATGTTATAGCTGAATT CCAGG TTATCA GGTTC TTTCCCTA AA TCG TATT
ATCCCTTTTCTTGGACTATT AGG - T- TT G A -------
GGAGGACC
GAM12452 15530 GGTTTAATGCAGTCAATGAA T- --- CAA AACAAGATG ACACAAAGAG
0 ACAAGATGCCACACAAAGAG GGT TAAT GCAGT TGA CC
GGAACCAATGTCAGCTGCTA CCA ATTA CGTCG ACT GG
TATTACTACC TC TAT --- GTAACCAA- ----------
GAM12454 5141 GGTTTAGGTTATGCTGATGT TT - A A- AC CCA AAACCAGAG
7 TGAGAACCGTGTACCATGTA GGT AGG TT TGCTGATGTTG GA CGTGTA TGT
AACCAGAGACAGTTATGCGA CCA TCT AA ACGACTACGAT TT GCGTAT ACA
ATTGCTAGCATCAGCAAAAG C- G A CG AA TG- ---------
TCTCACC
GAM12458 7031 GGTTTCAGCATGTCCTTCTC T TCCTT CTG A AATACTT TACTT
7 TGAATGATGAATACTTTTAC GGT TCAGCATG CT AATG TG TTAC
TACTTGTGACAACATTAACG CCA AGTCGTAC GG TTAC AC AGTG
GTCCTCATGCTGATACC T TCCT- CAA A ------- -----
GAM12461 17241 GGTTTCCCTCCCGAGAGCAA CTCC A ACTACCTCT G - ATAAGATCA
0 CTACCTCTTTCTGGGGGACT GGTTTCC CG GAGCA TTCT GGGG ACT
ATAAGATCAAGTACCCCGAG CCAAGGG GC CTCGT AAGA CCCC TGA
AACTTCTTCCTGCTCCGTGG T--- - CCTTCTTC- G A ---------
GAACC
GAM12461 14108 GGTTTCCGAACACCGAAATT CC CA AAA T A- TAAA
2 TGGTCGGAAGTAAACTGGCC GGTTT GAA CCG TTTGG CGG AG

GTCTAAAACGGGCTTCACAA CCAAA CTT GGC AAATC GCC TC
ACC CA CG A-- T GG ----
GAM12464 1383 GGTTTCTCTGTGGCAGTGCT TTCT G CT- TGC TCAGTTTAT
0 TGTTGCTTGTCAGTTTATCA GGT CTGTG CAGTG TGT TTG
ATTGCATTTTACTGCATAGT CCA GATAC GTCAT ACG AAC
CTACC TCT- - TTT TT- ---------
GAM12465 10470 GGTTTCTTGAAGACCTAGAA - AGACCTAG--- A AAGAATGC
3 CATAGAAGAATGCCTAGTTA GGTTTC TTGA AAC TAG
AAAAAAAAAATCAATGAAAC TCAAAG AACT TTG ATC
T T AAAAAAAAAAA - --------
GAM12471 10983 GGTTTGTATGTCAAGGAGGA - TGTC A TT CCTTTCCGACCA
9 GTTTAAGGCCTTTCCGACCA GGTT TGTA AAGG GGAG TAAGG
CCTTGTGTTCCCCTTTTCTG CCGA GCGT TTCC CCTT GTTCC
CGCAGCC C CTT- - GT ----------
GAM12472 6918 GGTTTGTGCTAAAGCCCCAG AAG--- GAG AGG GGAGGTA
8 AGAGAGGGTGGAGGTAACAA GGTTTGTGCTA CCCCA AG GT
GCTATATGGGGAGGCAATGG CCGGACATGGT GGGGT TC CA
TACAGGCC AACGGA ATA GAA -------
GAM12477 10755 GGTTTTCACATGCCATCATC TT A- G --- TAATTCT GCAA
8 TTTAATTCTCCCAGCAATGG GGT TC CAT CCAT CATCTT CCCA
GTCCACGGGGTGGCCATGGG CCA AG GTA GGTA GTGGGG GGGT
ATGGGGATTACC TT GG G CCG CACCT-- ----
GAM12479 6742 GGTTTTCTAGATACAGGAAC T T C - AC T- CAGAGA
0 ATGTCATCTGCAGAGACAGT GGT TTC AGATA AG GA ATGTCA CTG
TTGACGTCATCTCTTTGTCT TCA AAG TCTGT TC CT TGCAGT GAC
TGAATACT T T T T AC TT ------
GAM12481 1943 GGTTTTGAGTATCAGCAGGT TTT GTA CA T CTT CCCTCCATACTTA
2 GGCCTTTCAGCCCTCCATAC GG TGA TCAG GG GGC TCAG
TTACTGAGCCTCCCACTGAG CT ACT AGTC CC CCG AGTC
GATCATCTTC TCT AGG AC T --- ----------
GAM12483 2129 GGTTTTGTGGGGGATAGGAG GT- A -- AAAGGTCG
0 GGAGGAAAAGGTCGTCTTCC GGTTTT GGGGGAT GGA GGGAGGA
CCATTCAGTCCCCTTTGGAA TCGAAG TCCCCTG CTT CCCTTCT
GCT GTT A AC --------
GAM12484 11015 GGTTTTTATACAATTCTTTA - TCTTTATTTAG AAGTTG
5 TTTAGGTAACAAGTTGGTTA GGT TTTTATACAAT GTAAC
TGTTCACTGCATTGTATGAA CTA AAAGTATGTTA TATTG
ACATC C CGTCACTTG-- ------
GAM12484 4988 GGTTTTTATTTATTCACAAA TT---------- CA TT CATTAAAAT
7 GTTGTTAACATTAAAATTTG GGTTTTTA TATT CAAAG GTTAA
ACCTTTGGAAATATAAGGAA CTAAAGAT ATAA GTTTC CAGTT
ATATTTTAGAAATC TTTATAAAGGAAT AG -- ---------
GAM12485 7447 GGTTTTTCTATGAGATGAGA T- AG GAGAAT- CAC
6 ATTATGAACACTTCATATAG GGTTT TCTATG AT TATGAA
GTAAATTCCATAGGTTGAGC TCGAG GGATAC TA ATACTT
T TT CT AATGGAT ---
GAM12487 22047 GGTTTTTTTCATATGACGCC TTTTC C CTATA CT TCCT AAG-- GAGTCAA
5 CTATAAAGCTGAAGTCCTGG GGTTT ATATGA GCC AAG GAAG GGATT ATGTTTC
ATTAAGATGTTTCGAGTCAA TCAAA TATACT CGG TTC CTTT TCTAA TACAAAG
GAAACATAGAAGAATCTTGC ----- - AC--- CT CCGT GAAGA -------

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          CTTTCTCCTTCAGGCTCATA
          TAAACT
GAM12488 21691  GGTTTTTTTTTTTTTGGCTCA    TT-   TT   GCTCAT   TT     TT-    T   AAT   -     GAATATT
0          TGAATTTTTCTGTTTGACAT GGTT   TTTT  TTG     GAA  TTTCTG   TGACA GGA   GAC AGAGTG
          GGAAATGACAGAGTGGAATA CCGG   AAAA  AAC     TTT  AAGGAC   ACTGT CTT   TTG TTTTAC

          TTAATACATTTTAGTTTAGT    TAC    TT   ATACT-  TT     CGT    -   GAT   A     -------
          TCTGTCATGCCAGGAATTTT AATA
          TTCATACAATTAAAACATGG
          CC
                      ----
GAM12489 22374  GTAAAAACAAGTGAACTTTG      A     AACTTT--    A--  AAA-     TCCAT
0          CATGAGGAAAGAGGCTCCAT GTAAAA CAAGTG       GCATG   GG    GAGGC
          GTCTCACAGCCAGCTATGCC CGTTTT GTTCAC       CGTAT   CC    CTCTG
          CACATTGCACTTGCTTTTGC      C     GTTACACC     CGA  GACA    -----
GAM12491 4821   GTAAAAGCTCTGTCTTGACT   AAAAG    G   TG    CA   -   CCAAA
6          GCAGAGGCTCCAAAAGCATT GT     CTCT TCT  ACTG  GAG GCT
          CACAGTTGAGGGGGAGAAAG CA     GAGG GGA  TGAC  CTT CGA
          AC                GAAA-    G   GT    A-   A   -----
GAM12497 22825  GTAAACCTTAGTAGAGATGC      CT   T     GCG-   CAC  AGA
4          GACTCACGGAGACCAAAAGT GTAAAC  TAG AGAGAT    ACT   GG
          AAAAATCTCTTTACCGTTTA CATTTG  ATT TCTCTA    TGA   CC
          C                   CC   -     AAAA   AAA  ---
GAM12499 17034  GTAAAGCAATGTCTGCCTAG      C-    CTGCC     ATTG    TT     AG  ACCTTTTAA     GCATT
8          TTTATTGTCCAGTTAACTTT GTAAAG  AATGT    TAGTTT    TCCAG  AACTTT  TG       AAGTTG
          AGTGACCTTTTAAAAGTTGG TATTTC  TTATA    ATTAAG    AGGTC  TTGAAA  AC       TTCAAC

          CATTGTAAATAAAACAACTT      TA    AAACA     ATA-    TT     AA  G--------     -----
          GCAAAAAAGTTTTCTGGAAT GTAAATAAAA
          AGAATTAACAAAATATTATC
          TTTAT
                      ----------
GAM12501 10541  GTAAAGGCCCCATTGTAACG        CCCATT    ---  CAAG    CATTCCC
4          CAAGGTGCCATTCCCGCATA GTAAAGGC     GTAA   CG    GTGC
          CTCGACATTACTCTTGCCTT CGTTTCCG     CATT   GC    TACG
          TGC                   TTCT--    ACA  TCA-    -------
GAM12503 22565  GTAAATAAAACAACCAGCAT    ATA    AA   ---------       AATCA
3          GAGCAATCAGCTTATGTCAG GTAA   AAAC  CCA       GCATGAGC
          ATTCCATGGGTTTGTATTAC CATT   TTTG  GGT       TGTATTCG
                        ATG    --   ACCTTAGAC       -----
GAM12503 6716   GTAAATAACAACTGGTCATT    A    ACTG    TAC   ATT     AGA
5          ACCTTATTGAGTTTAGAAAA GTAA TAACA    GTCAT   CTT   GAGTTT
          CTTTCAAGTTCGTGACATAT CGTT ATTGT    CAGTG   GAA   TTCAAA
          GTTAATTGC            A    ATA-    CTT   CT-     ---
GAM12505 22364  GTAAATATTTAACAAATATG       TTTAACA      TT--     -  C   TTTT
5          TTTGTATTCTTCTATTTTTA GTAAATA      AATATGT    GTATTC TT TAT
          TACAATGAATATTAATACAT TATTTAT      TTATACA    TATAAG AA ATA
          ATTGCATTTATTTAT          TTACG--      TAAT     T  C   ----
GAM12510 15703  GTAACAATTTTACTGGTGTT         TACT  T  TCTTGA       TTGTATC
5          CTTGAAAAGCAAATTGTATC GTAACAATTT    GG GT     AAAGCAAA
```

TTTGCTTTATTCCCCTGAAT CATTGTTAAG CC TA TTTCGTTT
TGTTAC TCC- T ------ -------
GAM12510 14131 GTAACACAACTTTTATAATT AAC T AACCAC AG- TTAA
6 AACCACTGAAGTTGTCTTTA GTAACAC TTTTA AATT TGA TTGTCT
AGGACAAAACTTAAATTTTA CATTGTG AAAAT TTAA ATT AACAGG
AAATGGGTGTTAC GGT T ------ CAA ----
GAM12511 15796 GTAACAGCAGTGGAAATAAG A TGGAAA GAA CA TTGGC
9 AATCGTCCTTTCATTTCCTG GTAAC GCAG TAA TCGTCCTTT TTTCCTGAG
AGTTGGCCTCAGGAAAGGAG CATTG CGTT ATT AGTAGGAGG AAAGGACTC
GATGAAATTAGATTTGCAGT A TAG--- AA- -- -----
TAC
GAM12512 15979 GTAACAGGTACATAGGTAAC C- TACAT A- GTATATAGCTTA
3 CAAAGTATATAGCTTATTTG GTAA AGG AGGT ACCAAA
GTGAATCTTCATCCTCATTA CATT TCC TCTA TGGTTT
C AC TACT- AG ----------
GAM12515 496 GTAACGTAAAGTGTATTCTG ------- A C-- CATAATT
1 TACATAATTTACAAATAAAA GTAAC GTAAAGTGT TT TGTA
CATTTTATTTTAATTGTTAC CATTG TATTTTACA AA ACAT
TTAATTT A TAA -------
GAM12516 116 GTAACTGCAAAGATGCTGTC C C CTG TGC G C- GT C TTCCTCGGC
4 CGTGCGCGTTGCTGCGGCCG GTAA TG AAAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC

TGGTCCGCGCCCTTCCTCGG CGTT AC TTTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG

CGGGCCGGACTGGTCTCCAG - - TT- TT- A CT -- - ---------
AAATGCTTTGGGTTCATCTT
TCATTGC
GAM12517 22080 GTAACTTGTACTCTGGAAGA AA AC GAAGACAAGAA AGAA
7 CAAGAAGTTAGAAAACGAGG GT CTTGT TCTG GTT
GAAAGACAGAAAACAAGGGC CG GAACA AGAC CAA
G- AA AGAAAGGGAG- ----
GAM12519 17814 GTAAGAAGCATCCTCAAGCT - A ------ C C TT-- ACTTGAC
2 CCCAGTTAAGTAACTTGACT GTAAGA AGC TC CT AAG TCCCAG AAGTA
ACTTTTATTTGGGAATTTCA TATTCT TCG AG GA TTT AGGGTT TTCAT
GACTATAGAAGCTCTCTTAT C A ATATCA C A TATT -------
GAM12527 7162 GTAAGGCTGTCATTGTGTCA GC T T TCA----- A GCAC
7 GGGCACAGCACTGCGCCCCA GTAAG TG CA TGTG GGGC CA
TCAAGTCACACTGTCAAATT CGTTT AC GT ACAC CCCG GT
TGC AA T C TGAACTAC C ----
GAM12532 21812 GTAAGTGTCTTGCATAGGGG A G A G- AG-- GACCTTCTTGATGA
8 TAGAGGGACCTTCTTGATGA GTA GT TCTTGC TAG GGT AGG
CCTACAGACTGACTAAGTAG CAT CG GGGATG ATC TCA TCC
GGGGCGTAC G G A AG GACA ----------
GAM12535 13186 GTAATACACAACATACTTTT - CAT- GTTTCTTTTA ATCT
2 ATGTTTCTTTTATAGGTATC GTA ATACACAA ACTTTTAT TAGGT
TATCTAATAAAAGTTTATTT CGT TATGTGTT TGAAAATA ATCTA
GTGTATGTGC G TATT ---------- ----
GAM12536 16099 GTAATAGTTATTTCTCTAAA GT-- TTCTC CATATA
3 ATGAAACATATATTTCATTT GTAATA TAT TAAAATGAAA
TATATATATATATATATTAC CATTAT ATA ATTTTACTTT

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                          ATAT  TATAT       ------
GAM12537 22759  GTAATATTGACAAAAGAGAA     TT    AA----------       ATTCTTAGT    GGAA   TATTT
2          GGCAATTCTTAGTTGGGGGG GTAATA  GACAA         GAGAAGGCA       TGGGG   AATA
           AAAATATATTTTATTAACTC CGTTGT  CTGTT         TTCTTTTGT       ACCTC   TTAT
           CATGTTTTCTTGTAAAATGG     CT   GTAGGTAAAATG       ---------    AA--  -----
           ATGTTGTCTCTGTTGC
GAM12538 4613   GTAATCCCAGCACTTTGGGA     CC      G        C  T    G--  GTCAGGAG
8          GGCCAAGGCGGGTGGATCAG GTAATC  AGCACTTT GGAGGCCAAGG GGG GGATCA   GAG

           GAGGTCAGGAGTTCAAGTGA CATTAG  TCGTGAAA CCTCTGGTTCC CCC CCTAGT   CTT
           TCCTCCCTCCTTGGTCTCCA      TT      A        T  T    GAA  --------
           AAAGTGCTTTGATTAC
GAM12539 13401  GTAATCCCTTGCGGGTAACT    -     --  T   AAG TT  TTCAT
7          AAGTTTCTTTCATGGGGAAG GTAAT CCCTTGC  GGG AACT   T  CT
           GGGTTTCCTGAGTAAGGGCG CATTG GGGAATG  TCC TTGG   A  GG
           TTAC               C      AG   T   GGA GG  -----
GAM12542 11325  GTAATGATCTCAGAGACTGC   AA-  T   - GACT   G      ATATACC
2          GGTTTATTGAATATACCTTA GT   TGA CTCA GA    GCG TTTATTGA
           GTAGGCGTTGATCATGAGTC CG   ACT GAGT CT    TGC GGATGATT
           AGGAGC             AGG   -   A  AGT-   -       -------
GAM12547 99    GTAATTCTATCATAGTACGA      CTA--   A   CGA      C     TCCAAT
5          TCTTTCACTACTTTCCAATG GTAATT     TCAT GTA   TCTTTCA TACTT
           GGTATGAGAGATACATGAAT CATTAA     AGTA CAT   AGAGAGT ATGGG
           TCCAATTAC             CCTTA   -  ---      -    ------
GAM12549 15555  GTAATTTAGTTTAAATGAAG   AT-  GT    A    GG  A--      AAAT  T   ACAA
5          GGAAATCTTTTTAAATGTTA GTA   TTA  TTAA TGAAG  AA   TCTTTTT    GT ATG
           TGACAACATACTCCCAAGAA CAT   AAT  AATT ACTTC  TT   AGAAGAA    CA TAC
           GAACCTTTTCTTCAGTTAAG    ATT   TG    G     TT  CCA      CCCT  -  ----
           TTAATTATAC
GAM12550 7901   GTAATTTTCTCATCAACAGA     TTT   A  ----------      TC   CTCT
5          ATCTGGCTCTCTATTTTCTG GTAAT   CTC TCA        ACAGAA  TGG
           TAAGTCCTTCATGAGAGTCT CGTTG   GAG AGT        TGTCTT  ATC
           GTTGC               TCT   -  ACTTCCTGAA     TT   ----
GAM12558 309    GTACAGAGAAAACTGGGAAA      AG--         AAGT    AGAAG      GATTG
1          GTTTGAAGAAGATTGATGGA GTACAG    AAAACTGGGA    TTGA    ATTGATG
           TTGTATCAATGTCAATATCC CATGTT    TTTTGATCCT    AACT    TAACTAT
           TAGTTTTGGTATTGTAC         ATGG         AT--    G----       -----
GAM12558 21805  GTACAGATTTTTATAAAATC    C     --        ---------      ATAC
8          ATCTATACAGATGAAGTACA GTA AGATT  TTTATAAAA        TCATCT
           AATTTTTATAAAATAATCTA CAT TCTAA  AAATATTTT        AGTAGA
           TAC                A     TA       TAAACATGA     ----
GAM12560 17776  GTACAGGTGATAAGAATTAT    AG-  G    GAATT    AAA   AG    TTAT
3          GATAAAGTACAGTGTTATTA GTAC   GT ATAA    ATGAT   GTAC  TGTTA
           TTGATAAAGTACAGGTTATT CATG   TA TATT    TATTG   CATG  ATAGT
           GAATTATGATAAAGTAC       AAA  G   AAGT-    GA-   AA    ----
GAM12564 11128  GTACATGGGCTGAGGAATGT    AT----  G       TG   AAG  GAAGAAA
0          TCAAGCAGAAGAAATGGTAG GTAC     GG CTGAGGAA  TTC   CA
           AGTTTTCTTCAGGCTTAAAG TATG     TC GACTTCTT  GAG   GT
           GGTAT               GGAAAT  G      TT   ATG  -------
GAM12566 17438  GTACCAGGCAATGCTGAGTG   A   G--       A   TG    A-  G    GGA     GCTC
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7 TGGATGACTGCTTTGGGATG GT CCA GCAATGCTG GTG GATG CT CTTTG TGGGCC
GGCCGCTCGGCCTACAATGA CG GGT TGTTGTGGC TAC TTAT GG GAAGT ATCCGG
AGGGGACTATTATCATACGG A AGG A TA CA G AAC ----
TGTTGTGGATGGAGC
GAM12566 22431 GTACCAGGCCAGTTATAACC CC - TT AACCA- T A C-- C
ACCAAGTAGAACAAACA
8 AGAGCTTTTCTAGTCAGCCT GTA AG GCCAG AT GAGCT TTCT GT AGC TC
CACCAAGTAGAACAAACAGA CAT TC CGGTT TG TTCGA AAGA CG TCG AG
GCTTCAGCAAGAACAGCTTC -- A GG ACAAAC C A ACT - ----------
AAACAGTGGTTGGCACTTAC
GAM12566 7876 GTACCAGTACCAGGCTATTT GTA--- ATTTTGGT GCTT
9 TGGTTACTATAGCTTTGTAG GTACCA CCAGGCT TACTATA
TATAATTTGAGTTTGGGTAA TATGGT GGTTTGA ATGATGT
TATGGTAT ATAATG GTTTAAT- ----
GAM12568 22358 GTACCCATCTCATACCCAAG CATCTCATACCCAA C TCGAATTATAT
4 GTGTGACACATCGAATTATA GTACC GGTGTGA ACA
TTGTCTTACATCACTTGGTA CATGG CTACATT TGT
C TTCA---------- C ----------
GAM12568 1408 GTACCCGAGCCTGGCAACCA A GAG AACCA AGGA-- - GGGTGAA
8 TGCAGGAGTCGCTGCGGGTG GT CCC CCTGGC TGC GTC GCTGC
AAGCAGCTGGCCGAAGAGCA CG GGG GGGCTG ACG CGG CGACG
GAAGCGTCGGGAGAGGGAGC A AGA CGAAG AGAAGC T -------
GAM12569 10549 GTACCCTTCTGCTGAGCAGT CCCTT C CTAACCCC CCTG
1 CTAACCCCTATGCCTGTATA GTA CTG TGAGCAGT TATG
TGCTCACTGTTCACCAGTAC CAT GAC ACTTGTCA ATAT
CTAC CCAT- C CTCGT--- ----
GAM12569 10685 GTACCGAGACCTCTTCCAGC AC AC---- - GGGACC CTG
4 AGGGGACCTGAGGGCTGTCC GT CGAG CTCTTC CAGCAG TGAGGG
TCGCTGCTGAGAAGAGCCAT CA GCTC GAGAAG GTCGTC GCTCCT
AACTCGTGAC GT AATACC A ------ ---
GAM12569 5087 GTACCGCAGCAGCGGGCAGG C A G C AC--- G GAAGA
8 ACGCGCTGGAGAAGATCCGG GTAC GC GCA CGGG AGG GC CTGGA
GCAGGGGCCTCCCTGGTGCA CATG CG CGT GTCC TCC CG GGCCT
GCTGTAC T A G C GGGGA - -----
GAM12570 22838 GTACCTCAGTGTGCAAAAGT A C AAAAGT TGAA TTGT
7 GCTTTGAAGGTTGTCCAGGT GT CCT AGTGTGC GCTT GG
GAGCCAGGCATACTAAGGCA CA GGA TCATACG CGAG CC
C C A GAC--- TGGA ----
GAM12571 17457 GTACCTGAGCCCTGACCTCT ACC - CCTCT ---- CTGTTTT
2 GGAGGGACTGTTTTTCCCAT GT TGAGC CCTGA GGA GGGA
GTTCCTATCAGGAGTTCATG CA ACTTG GGACT CCT CCCT
AC GT- A AT--- TGTA -------
GAM12571 4822 GTACCTGGTATCCTGACTGC CT C CT TTCT GAAACCCGT
6 TTCTGGCGTTGAAACCCGTG GTAC GGTATC TGA GC GGCGTT
GCGCCGCTCAGATGCCGTGC CGTG CCGTAG ACT CG CCGCGG
-- - -- ---- ---------
GAM12572 17036 GTACCTGTGCATCGCGGCCA C C- CCAAC GCAACGACTCCA
0 ACGCGGGCGGCAACGACTCC GTA CTGTGCAT GCGG GCGGGCG
ATGCCCGCCCACCTGCATGT CAT GACGCGTG CGTC CGCCCGT
GCGCAGCTAC C TA CACC- ----------

GAM12579 11626 GTACTGCTCCCTTGAGCGGT TGCT AG C CT-- T- CCA
9 CGTATTCTTCGCTGTTTCCA GTAC CCCTTG CGGT GTATT TCGC GTTT
GAACTCGTGATTGTAGTACC CGTG GGGGAC GCTA CATGA AGTG CAAG
ATCGTCCAGGGGTTGTGC TT-- CT C TGTT CT ---
GAM12580 2189 GTACTGGAGAGACATTAAGA GA GACATT A ACT T T GTGC
1 AGACTGGAGTGGTGTTTGGT GTACTG GA AAG AG GGAGTGG GTT G
GCCAGCCTATTCCTGCTGCT TATGAC TT TTC TC CCTTATC CGA C
TTCATTGACAGTAT AG ACT--- G GT- - - ----
GAM12581 1976 GTACTGTAGCGTGCGCGGCT CGT TCAA--- TCC - CCGCCCGT
5 CAATCATCTCCAGGGGCCGC GTACTGTAG GCGCGGC TCATC AGG GG
CCGTTCACCTTGATGAGACC CGTGACGTT TGCGCCG AGTAG TCC CT
ATTGCCGCGTTTGCAGTGC --- TTACCAG T-- A --------
GAM12582 22095 GTACTTAATCTTAAATACGC AT T CGC-- AAAA
6 TGAGTACTAAAAAGTGTTTA GTACTTA CT AAATA TGAGTACT
TTTCTTATTTCAGTAAGTGC CGTGAAT GA TTTAT ATTTGTGA
-- C TCTTT ----
GAM12584 11761 GTACTTGTATTTCCTGATTA G CTGAT AAGTAACGTC
0 AAACAAAGTAACGTCTGTTT GTACTT TATTTC TAAAACA
TACTATTGAAGTAAGAGTAC CATGAG ATGAAG ATTTTGT
A TTATC ----------
GAM12592 19524 GTAGAATGTCATTGTTTTTA GA CATT --- -- C - C- TAAAGT
2 AAACTGTTTTATATCTTAAG GTA ATGT GTTTTTAAAA CTGTT TTATAT TTAAGA GTGC TTAT
AGTGCCTTATTAAAGTATAG CGT TATA TAGAAATTTT GATAG GGTGTA AATTCT TATG GATA

ATGTATGTCTTAAAATGTGG AA TT-- AAG TG A G TA ------
GTGATAGGAATTTTAAAGAT
TTATATAATGC
GAM12598 13216 GTAGAGACGAGGTTTCACTA G- TCACTATGTT AGGCT
1 TGTTGGCCAGGCTGGTCTCG GTAGA ACGAGGTT GGCC
AACTCCTGACCTTGTGATCT CGTCT TGTTCCAG CTGG
GC AG TCCTCAAGCT -----
GAM12599 21729 GTAGAGACGGGGTTTCACCA G- TCACCATGTT AGGAT
1 TGTTGGCCAGGATGGTCTCA GTAGA ACGGGGTT GGCC
ATCTCTTGACCTCGTGATCT CGTCT TGCTCCAG CTGG
GC AG TTCTCTAACT -----
GAM12605 1807 GTAGAGATTGCATTAGTTCC G TT AGTTCCAT - C AGTT
4 ATATCTCCGCAGAGTTCTCT GTA AGA GCATT ATCT CCG AG
GGTAGATTAAATGTTCTCTG CGT TCT TGTAA TAGA GGT TC
TGC G CT AT------ T C ----
GAM12606 15508 GTAGAGGAAGATGAGCTTGG A- A ATGA TG ACA CC- C CA CCCGA C
GCAC
2 CGTACAACTCCTCCTCCAGC GT GAGGA G GCT GCGT ACT TCCTC AGCTC GCT GTCT CC

TCCAGCTCCCGAGTCTCCCG CA CTCCT C CGG CGCA TGG AGGAG TCGAG CGG TAGA GG

CACCAGGAAGATGTCCTGGC AG - GA-- CA CC- CGT T A- TCCTG A ----
AGAGCTTGAGGATGCGGTCC CA
ACGCACGGCAGCTCCTCGAA
C
--

GAM12606 11993 GTAGAGGATGATCACTGCAG GG A GCAGTAC AA ACAGG
5 TACTTGGTTTGGAATTGCCA GTAGA ATGATC CT TTGGTTTGG TTGCC
CAGGGGTAGCTAAACCAAAG CGTCT TATTGG GA AACCAAATC GATGG
GAGGGTTATATCTGC A- - GGA---- -- -----
GAM12607 5212 GTAGAGGTGAGAACAAAGCT G AACAA- GC TG TG AAAT
5 GCGTGTGTGCAAATGTGTGT GTAGAG TGAG AGCT G TG C
GCTGGGCTCAGGGACTCACT CGTCTC ACTC TCGG C GT G
CTGC - AGGGAC GT GT GT ----
GAM12608 17452 GTAGAGGTTGTCTTTTTCGA AGG G ATG- ATCGGACCC
2 TGGCAAATCGGACCCTTGCA GTAG TT TCTTTTTCG GCAA
GGCTGAGGGAGAGAAAGCTA CATC AA AGAGGGAGT CGTT
C GA- G CGGA ---------
GAM12608 11795 GTAGAGTACATAATCAGTGC GA AT TG - CA- T CTG AGA
3 CACACAGAGGCAGGGCGTGT GTA GTACATA CAG C CA CAGAGGCAGGGCG GT AG
CTGAGAGACTAATGCCTGTC CAT CATGTGT GTC G GT GTCTCCGTCCTGT CG TC
CTGCCTCTGGCCTGTGTCCT AC GG CT T CCG C TAA ---
GGGTGTGTACCATAC
GAM12608 10092 GTAGAGTAGTTACTGGGGAG A T TG AAG T GTGAGACAAGTTAAA
4 TGCTGAAGGCTCCATGTGAG GTAGAGT GT ACTGGGGAG CTG GC CCAT
ACAAGTTAAAATGGGTATGT CGTCTTA CA TGACCTCTT GAT TG GGTA
AGGTTTCTCCAGTTACATTC - T TG GTA - ----------
TGC
GAM12611 11202 GTAGATGGCTGCTCTAAAAA A GCTCTAAAAAGACA-- A GGGAAAGA
7 GACAAATGAATGGGGAAAGA GT GATGGCT AATGA TG
CAATCATTGAATACAAAACA CA CTACCGA TTACT AC
AATAAGCCATCAC - ATAAACAAAACATAAG A --------
GAM12618 13548 GTAGCCGCTGGCCGGCGCGC C C CAG GA GTCCGTG
9 AGCAGGAGCGTCCGTGGCCA GTAG CGCTGGC GGCGCG CAG GC
CTGAACTGCGCTGCCAGTGC CGTT GTGACCG TCGCGT GTC CG
TTGC C - CAA AC -------
GAM12621 15593 GTAGCTAAGAGTTACAGGAC AAG-- C GGATAATATATA
1 AGAAGGATAATATATATTCT GTAGCT AGTTA AGGACAGAA
GTTTTATAATTAGTAAAGTT CATTGA TTAAT TTTTGTCTT
AC AATGA A ----------
GAM12625 7620 GTAGCTTCCTTAGAGGACTC TCCTTA AC ACAAAA GGCTCA
1 CAAAACAAAACGGGGCTCAC GTAGCT GAGG TCCAAA CGG
CGGCTTTGGGAATCTCGTCA CGTCGA CTCT GGGTTT GCC
GCTGC CTG--- AA CG---- ------
GAM12626 7871 GTAGGAAGGAAAATTTGTTT GA AAAAT TGTATA TACA
9 GTATAGTACCATACATGGTA GTAG AGG TTGTT GTACCA
TAATTAACAACCCTGTCTAT TATC TCC AACAA TATGGT
TG C---- TTAA-- ----
GAM12627 466 GTAGGAATCCAGTCAATACC AAT ---- TA AAG G GAG TTAG
3 AAGCTTGGCTTCCTGGAGTC GTAGG CCA GTCAA CC CTTG CTTCCTG TC
TTAGGAGATAGGAAGATAGG CGTCC GGT CAGTT GG GGAT GAAGGAT AG
AGGGCCTTGACCCATTGGCC --- TACC CC GA- A AG- ----
TGC
GAM12628 1997 GTAGGAGCAGCAGAATGACC CAGC A CC GCA CTTTA
7 AGGCAGCAGAGCTTTATTCC GTAGGAG AGA TGA AGGCA GAG
ATGTCTTCATCTCCATTCCT CATCCTT TCT ACT TCTGT CTT

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          AC                  ACC-  -  --   AC-  -----
GAM12630 6771   GTAGGATGAGAACATAGCAC      G  A  -  A TCGAA  CTAGGA
4          ATCGAAACCCTAGGAGGTCA GTAGGAT AGA CAT AGC CA    ACC
          CTGAGCTAATGATCTAATCC CATCCTA TCT GTA TCG GT    TGG
          TAC                 A  A  A  A CAC--  ------
GAM12630 11888  GTAGGATTAGATCATTAGCT      T  T  T  T GT--   CCTA
6          CAGTGACCTCCTAGGGTTTC GTAGGAT AGA CAT AGC CA   GACCT
          GATGTGCTATGTTCTCATCC CATCCTA TCT GTA TCG GT   TTGGG
          TAC                 C  T  -  T AGCT   ----
GAM12632 10482  GTAGGCCGCCGCCGAACGAG    C  -  -  A    C  C   C---  C--   TT   TCGTC
0          CCGCCTAGTCGACCGTGATT GTAGG CG CCG CCG ACGAGC GC TAGT   GAC  GTGA  GGAG

          GGAGTCGTCCTCCCTCATCC CGTCC GC GGC GGC TGCTCG CG ATCG   CTG  TACT  CCTC

          CGTCAGCAGCTAGCGCTCGT    T  T  T  G    -  -   ACGA  CCC   C-   -----
          GCGGTCGGTCGTCCTGC
GAM12640 10609  GTAGGTTCTCTGCAGGGCCC      -  -------       -  TCAA-  AACATTCCAGG
9          AAGGTCAACGGAACATTCCA GTAGGTTC TCT     GCAGGGCCCA AGG    CGG
          GGCCGACTTTCCTCTGGGCC CATCCAAG AGG     CGTCCCGGGT TCC    GCC
          CTGCCACCCACGGAGGAACC       G  CACCCAC       C  TTTCA  ----------
          TAC
GAM12641 13901  GTAGGTTTAAAATTTTTATA      TAAAATTT   TTA    T  TAAACT
3          TTATTGTTTAATAAACTTTT GTAGGTT      TTATA  TTGTT AA
          AATAAGGCTGTGACTCTCCT CATCTAG      AGTGT  AATAA TT
          TGATCTAC              TTCCTCTC    CGG    T  ------
GAM12643 7459   GTAGTACTGCAAAGATGCTG     C  C     CTG   TGC   G  C-   GT    C   TTCCTCGGC
4          TCCGTGCGCGTTGCTGCGGC GTAGTA TG AAAGATG  TCCG  GCGTT CTG  GGCC  GGTCCG
GCCC
          CGTGGTCCGCGCCCTTCCTC CGTCGT AC TTTCTAC  GGGT  CGTAA GAC  CTGG  TCAGGC CGGG

          GGCGGGCCGGACTGGTCTCC     T  -     TT-   TT-    A  CT   --    -   ---------
          AGAAATGCTTTGGGTTCATC
          TTTCATTGCTGC
GAM12645 17733  GTAGTATGGCATCGAGGAGA    T   CATC    AATG--    CAAACCTGTGATAACCT
6          ATGGAGACCAAACCTGTGAT GTAG ATGG   GAGGAG    GAGAC
          AACCTGTCTCAAAACCCTCC CATC TACT   CTCCTC    CTCTG
          TCATCATCTAC          -  A---    CCAAAA    ----------------
GAM12646 15032  GTAGTATTTGGATAGTTAGA    -   G  A    A   TTACTT   TTTT
0          TGTTTTACTTAGATTTTTGT GTAG TATTT GAT GTTAG TGTT    AGAT
          TTCATTAGCAACTAATGGTT TATC GTGGA TTG TAATC ACGA    TTTG
          GAGGTGTCTAT          T   G  G   A   TTAC--   ----
GAM12649 16968  GTAGTCTTTCCTTAGTAAAA   G   C  AGTAAA    CCTTTATGTAT
3          CTTTTCCTTTATGTATAAAA GTA TCTTT CTT    ACTTTT
          GTGAAATGAAGCAGAGAGTA TAT AGAGA GAA    TGAAAA
          T               G   C  GTAAAG    ----------
GAM12649 12096  GTAGTGAACTTGCTTTACCC     A   C  TACCCCGAA   -  CAATCCACA
6          CGAAACCCACCAATCCACAG GTAGTG ACTTG TT       ACCC AC
          TAGGGTCAACCGATTAAGTC CGTCAC TGAAT AG       TGGG TG
          CACTGC               C   T  CCAAC----   A  ---------
GAM12650 283    GTAGTGATTCTCAAAGTCTT    T  T       CTT-  T  G  TTCCAAC
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4          GGTACGCATTCCAACTGGTC GTAG GA TCTCAAAGT   GG AC CA
           CTTTCACTTTGAGATTCTTT CATT CT AGAGTTTCA   CC TG GT
           AC                T T      CTTT  -  - -------
GAM12650 10245  GTAGTGCCTCCGCGGGCGCT    G  -    G  TT  C   TCG-   CCCCT
8          TGGCAGCGTCGCCGGCCCCT GTAGT CCT CCGCGG CGC  GG AGCG   CCGG
           CCGGACCTTGCTCCCCGCGC CGTCG GGG GGCGCC GCG  CC TCGT   GGCC
           CGCGGCGGGAGCTGC        A  C    -  CC  -   TCCA   -----
GAM12650 15296  GTAGTGCGCAGAGAACTGCT      --- A  AACT  T    A  TCGGATTT
9          TGTCAATGTCGGATTTCATG GTAGTGC   GC GAG   GC TGTCA TG
           ATGTGCTCCTCCGCGATGCG CGTCGCG   CG CTC   CG GTAGT AC
           CTGC                 TAG  C   CT--  T    -  --------
GAM12658 21985  GTAGTTTCTAACATTGTGAG       AAC     G  A   GT  AAAG-  T     CTT
0          AGAATGGTCAAAAGACTGCT GTAGTTTCT   ATTGTGA AG ATG  CA    AC GCTATGT
           ATGTCTTATATAGTGTAAAT CATTAAGGA   TGACATT TC TAC  GT    TG TGATATA
           GTGTACATACTTTACAGTTA        AAT     -  A   AT  GTAAA  -     ---
           AAGGAATTAC
GAM12659 2622   GTATAAAACCTCCTTTATGG    A    -  TTTA--     --      CACA   AGG
1          GTTTGTTGTGAACACAGTGC GTAT AAACCT CC     TGGGTTT  GTTGTGAA   GTGC
           AGGGCACATTTATAATAAGA CGTA TTTGGA GG     ACTCGAG  TAATATTT   CACG
           GCTCAGTCAATGGTAGGTTT    C     T  TAACTG      AA      A---   ---
           CATGC
GAM12660 2173   GTATAAATGTGTGTGTGATA     AA-   TG  TG      TG GTGGT
3          TATATGTGTGGTGTGTATGT GTATA   TGTG  TG  ATATATA  T
           GTAGTGTGTATAGTGTGTGC CGTGT   ATAT  GT  TGTGTAT  G
                        GTG   GT  GA     GT -----
GAM12670 16276  GTATATCTAATAAGTGTTTT     TCTAAT-     TTTCATA      ACGTAAG
2          TCATATTATTTCCACGTAAG GTATA     AAGTGTT     TTATTTCC
           GGAAATAAGGTAGTACTTTT TATAT     TTCATGA     AATAAAGG
           CTTTTTATAT            TTTTCTT     TGG----      -------
GAM12672 14822  GTATATTCCAACGCATCCCT   TA   AAC    --  C-   CCAGAAT
5          GCTGATCCAGAATGTCACCC GTA  TTCC   GCATCC  CTG  TGAT
           GGAAGGATGCAGGAACCTAC CAT  AAGG   CGTAGG  GGC  ACTG
                        CC   A--     AA   CC   -------
GAM12676 5322   GTATCATATATGATCTATCT   TC     A  A     AT  TCCATGT
9          TAGATGTTCCATGTGCTGTT GTA  ATATATG TCT TCTTAG  GT
           GAGAAGAATATGTATTCTGC CGT  TATGTAT AGA AGAGTT  CG
                        CT     A  -     GT  -------
GAM12677 10866  GTATCATGCTGTTTTGTTTA         -------  TG  -     GCCC
3          CTGCAGCCCTGTAGTATAGT GTATCATGCTG      TTT  TT TACTGCA
           GGGGAGTTAGGTAGTGTGAT CGTAGTGTGAT      GGG  GA ATGATGT
           GC                      GGATTGA   GT  T     ----
GAM12677 11028  GTATCATTTCTGATATAAAG       TC--    T       AAAAAAA   AG   CT   GGAATTCACAAA
8          TTACTTAAAAAAATCCAGGG GTATCATT    TGATA AAAGTTACTT      TCC  GGT  TGG
           TCTTGGGGAATTCACAAATC CATGGTAA    ATTAT TTTCAATGGA      AGG  TCA  ACT
           ATAACTAGGAAGGTAACTTT       TTTA    -       -------  A-   AT   ------------
           TATTAATTTAATGGTAC
GAM12678 13241  GTATCCACAGTCACTGTAAG     CA   TCA   AAG      AG-- AG   ATGG
2          CATCCAGTAGGCAGGAAGAT GTATC  CAG   CTGT   CATCCAGT   GC  GAAG
           GGCTTTGGGCAGTGGCTGGA CATAG  GTT   GACG   GTAGGTCG   CG  TTTC
           TGAAAGCAGATTTGAGATAC     A-   TA-    AAA      GTGA  GG   ----
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GAM12678 15379 GTATCCCTTAGCGGGCTTGG - G CTTGGTA G GGAAT
9 TAACCCATCGGGTTGGAATG GTATC CCTTA CGGG ACCCATCGG TT
GGCCGATGGGTCCCGTGGGG TATGG GGGGT GCCC TGGGTAGCC GG
TGGTAT T - ------- G -----
GAM12679 13266 GTATCCTTGAAATCAAAACC - ----- T C TGTG
7 AGGCAATATGTGTGTTTTTG GTAT CCT TGAAA CAAAACCAGG AATA
GTTTTGTTTTACAAAAAGGC CATA GGA ATTTT GTTTTGGTTT TTGT
ATAC C AAAAC - - ----
GAM12680 15693 GTATCGGAACCAAGGAGATG G A AA AAGGCAC ATAGATA
6 AAAAAGGCACAGAGATAGAT GTATC GA CC GGAGATGAAA AGAG
ACTCTACAGTTTCGTCTCCA CGTAG CT GG CCTCTGCTTT TCTC
GGTCAGATGC A - A- GACA--- -------
GAM12680 4681 GTATCGGCTAAACATCCACT - AACA AC CTCC -- AGTTA
7 GAGCACCTCCTCTTGCAGTT GTATCGG CTA TCC TGAGCAC TCT TGC
AGCATTAGACTAAGTGCTTA CGTAGTT GAT AGG ATTCGTG AGA ACG
AGGACAAGTAGTTTGATGC T GAAC A- AATC TT -----
GAM12683 17157 GTATCTGCAGCCATCCTGAA C GC ------ GA C A GGC GTGAGA
0 CCCCAGTTGCCAGGCCTGCG GTAT TGCA CA TCCT AC CC GTTGCCA CTGC
TGAGAGCAGTGGCAGCGGCG CATG GCGT GT AGGA TG GG CGACGGT GACG
TGGAGGAAGACCATGAATGC T AA ACCAGA GG C - --- ------
GTGTAC
GAM12683 22732 GTATCTGGGGATGAAAAAGG A GATGAAA TA TT --- GTTTAA
4 AGTAGTTTTCTGTTACTGGT GT TCTGGG AAGGAG GTT CTGTTA CTG
TTAACAGAAATGACAGCCAG CA GGACCC TTTCTC CGA GACAGT GAC
CACCTCTTTATAGAACCCAG - AAGATA- CA CC AAA ------
GAC
GAM12684 10436 GTATCTTTCTTCTTTCCCCT A TT TTCCC- CT AAACA
2 TTCTTTTTCTAAACAAGAGA GT TCT CTTCT CTTT TTTTCT
AGAAAAGCGTAATAGAGGGG CA AGA GGAGA GAAA AAGAGA
AGAAC - GG TAATGC AG -----
GAM12685 9936 GTATGAATTGGCCCCGTCCA ATT- CCC A-- A - TGGATGATGT
7 AGTTAGAAGAGGAAGTGGAT GTATGA GGC GTCC AGTT GAA GAGGAAG
GATGTCTTTCTCATTCGAGC CGTACT CCG CAGG TCGA CTT CTCTTTC
TCAAGGACTGCCCTGGTCAT GGTC T-- AAC G A ----------
GC
GAM12689 22173 GTATGCAATTCCTGTCTTCA GCA GTC- - A TAC AGGTA
0 AAAAAGTTACCTCATCAGGT GTAT ATTCCT TTCA AA AAGT CTCATC
AGATGAGACTTATTATGAAT CATA TAAGGA AAGT TT TTCA GAGTAG
AAAAGGAATCAATAC AC- AAAT A A --- -----
GAM12690 22672 GTATGCCTGTGAGATTAAAG T A AAA C AA AGTT- T - GATTT
3 GCAGAGAAGTGAGTTGGGCC GTA GCCTGTG GATT GG AGAG GTG GGGCCAC TCTGGG CCTG

ACTTCTGGGCCTGGATTTTA CGT CGGATAC CTGA CC TTTC CAC CCCGGTG GGATTC GGAT

GGACTTAGGTGTGGCCCTTC - - --- C CC ACCTT T A -----
CACACCCCTTTCCCAGTCCA
TAGGCTGC
GAM12692 11624 GTATGGCTTCCATTTGCTTC T C T AATTTGCCAGCT CTTT
5 AAATTTGCCAGCTTCTCCTT GTA GG TTCCATT GCTTCA TCTC
TGAGATATGAGGTAATGGAA CAT TC AAGGTAA TGGAGT AGAG

TCTCTAC C T - AT---------- ----
GAM12692 17848 GTATGGGAGGCCATGGCCTT A - TG CCTTCG ATCTATAA
8 CGCCAGCATCTATAAGCTGG GT TGGGA GGCCA G CCAGC
ACAACCTTGTGGCCATTCTA CA ATCTT CCGGT T GGTCG
GAC G A GT CCAACA --------
GAM12693 10453 GTATGGTACAGAGGAGGCCA -- TA GG ACAGAAGCAAGCACCAA
5 TTACAGAAGCAAGCACCAAG GTAT GG CAGAGGA CCATT
ATGGAATTTTCTGGGCCGAA CATA CC GTCTTTT GGTAG
TAC AG GG AA ----------
GAM12693 4885 GTATGGTCCTTGAGGAGCGA AG GCGAA TAGTGAAGCTGAATAAAAT
7 AGGCTAGTGAAGCTGAATAA GTATGGTCCTTG GA GGC
AATGCCGAATATCGACGAGG CGTGCCAGGAGC CT CCG
ACCGTGC AG ATAAG ----------
GAM12695 17817 GTATGTATAAGCATCAGCCC A -- C --- A AAG TCAAGGAAA
2 AAGCAAAGGGTCAAGGAAAT GTATGT TA AGCAT AGCC CA GCA GG
TAGTGCATGAAAGGCTAATG CATATA AT TCGTA TCGG GT CGT TT
CTCATAAATATAC A AC A AAA A GA- ---------
GAM12697 2319 GTATGTGCTTCCATTCAGCA -- T TCA- A CT --- C TCCCG
3 TGGGTCCTGTGGGCTCCCCG GTATGT GCT CCAT GC TGGGTC GTGGGCT CCCCG TG

CTGTCCCGCATCGGGGTGCA CGTACG CGG GGTG CG ACTCAG CACTCGA GGGGC AC

GCTCACTGACTCAGCCTATG AA T TATC - T- CGT T -----
TGGTGGCAAGCATGC
GAM12698 22651 GTATGTTTTATAAGGTGGGT TTATAAG ----- AG TTGTT
7 GAGGGAGGTTGTTTTGCCCT GTATGTT GTGGGTG AGGG G
GAAAACATCTACAAATGCTA TATACGA CATCTAC TCCC T
GCATAT TCGTAAA AAAAG GT -----
GAM12700 12105 GTATTAATTTGATTCTTATG TAA - TAT- T AAGTGAGA
3 TCTTTTGTAAGTGAGAACAA GTAT TTTG ATTCT GTCT TTGT
TAGACTTTCAGGATACAAAA CGTA AAAC TAGGA CAGA AACA
CATGC CA- A CTTT T --------
GAM12701 12119 GTATTAGTTCTTGCAGCTGG AG G- G -- TG---- G TGAG
6 TGGTGGCGGCTGAGGCGGCA GTATT TTCTT CAGCT GT GG GC GC
TGGATCTCAGCGAGCTGGAG CATAA GAGAG GTCGA CG TC CG CG
AGAGACAATAC CA AG G AC TAGGTA G ----
GAM12707 15800 GTATTCTTGGAGCTGATACC TCT A T TC TT - A A TGGGC
0 TCTGTTGATCTTGAAGAAAC GTAT TGG GC GATACC TG GAT CTTGA GA AC
TGGGCGTGTCTTAAGTATTG CATG GCC CG TTATGG GT TTA GAATT CT TG
GTGATGGTATTGCCCGCGTA C-- - - TA GG T - G -----
C
GAM12708 10564 GTATTGGAGAAGGCATTTGA A A A T AAT AAAGC
7 AGATGAAATGAAAAAGCTTC GT TTGGAGAAGGC TTTGA GA GA GAA
TCCTCTTCCTTAAAGCCTTT CA AGCCTTTTCCG AAATT CT CT CTT
TCCGAAAC A - C T CCT -----
GAM12708 18 GTATTGGATGAAGGCGAAGG T GAA- GA TG GA --- CCTT
9 CTGGGAGTGTCTTTCCCACC GTAT GGAT GGC AGGC G GTGTCTTTCCCACCA GC
AGCCCTTGCCCATGGTGGGG CGTG TCTA CTG TCTG C TACAGGAGGGGTGGT CG
AGGACATCTGGTCTGAGTCA - GAGA AG GT -- ACC ----
GAGATCTGTGC

GAM12712 11607 GTATTTATAATCATTTACTT TTTATAATCATTT TT AGCG GTTTAA
4 GTAGCGAACTGTTTAAAGTT GTA AC GT AACT
AACACTTGTTTAAATTTTTT CAT TG CA TTGA
TAC TTTTTTAAATT-- TT CAA- ------
GAM12714 15109 GTATTTCCAGCTGTTTTTCA TTCC GTTTTTC GC CA-- CACAC
7 ATAAGCACCATCCACACGAG GTAT AGCT AATAA AC TC
TCAGTATTATTTTCAAAAGG CATA TCGG TTATT TG AG
CTTCTATAC TCT- AAAACTT A- ACTG -----
GAM12718 19708 GTATTTGGAGAAGGCATTTG A A A T AAT AAAGC
4 AAGATGAAATGAAAAAGCTT GT TTTGGAGAAGGC TTTGA GA GA GAA
CTCCTCTTCCTTAAAGCCTT CA AAGCCTTTTCCG AAATT CT CT CTT
TTCCGAAAC - - C T CCT -----
GAM12723 17641 GTATTTTGTTTGCTTCTACA --- C-- A- A TTCT
3 TAAATTTCTATTCATGAGAG GTATTT TGTTTG TTCT CAT AAT
AATAACAAATATTAAAATAC CATAAA ATAAAC AAGA GTA TTA
ATT AAT GA C ----
GAM12724 13678 GTATTTTTAGTAGAGACGGG T-- A A GTT- A TT C CT CTCGA
4 GTTTCACCATGTTGGCCAGG GTATTTT AGT GAG CGGG TCACC TG GG CAGG GGT
CTGGTCTCGAACTCCTGACC CATGAAA TCG TTC GTCC AGTGG AC CC GTCC TCA
TCAGGTGATCTACCTGCCTT CCC G C ATCT - T- A -- -----
GGCTCCCAAAGTAC
GAM12726 2453 GTATTTTTCAGCATTCTTGG T ATTCT AAG G T AAATT
4 ATAAAGCAGTTCTGCATTTT GTATTTT CAGC TGGATA CA TTCTGCA TTTT
TAAATTGGGACTGCAGAAGT CATAAAG GTTG ATCTGT GT AAGACGT AGGG
GACTGTCTATAGTTGTGAAA T AT--- CA- G C -----
TAC
GAM12731 672 GTCAAAGCTGTCCAGACCTT TGTCC TGCTT-- TTTGTCCAATTT
1 GCTTGCTTTTGTCCAATTTG GTCAAAGC AGACCT GCT
GCTTTCTCTGGGTCTCTGTG CGGTTTCG TCTGGG CGG
CTTTGGC TGTC- TCTCTTT ----------
GAM12735 17726 GTCAACGCTGCCAAGCTCCC AA - A - TCCA ATTA - - GTGG
6 CATGTCCATCATTATCGTCG GTC CGCTG CCA GCTCC CCATG TC TC GTC GGC
GCGTGGGCCAGGCAGAGTTC CAG GCGGT GGT CGAGG GGTAC AG AG CGG CCG
GACGCCATGGTGGAGCTGGA CA A - T CGC- CTTG A A ----
TGGCGACGAC
GAM12736 7153 GTCAAGAACACGCCGGCATG AA- GCCG---- A T A AAAAGA
6 GTACACCAAAAGAGGAGTCC GTCAAG CAC GC TGG AC CC
AGCAAATTTAAGTGCCGCTT CAGTTC GTG CG ACC TG GG
GAC GCC AATTTAAA - - A ------
GAM12737 6868 GTCAAGAGAATCAAATTTGC T AATCAAA C T AGGT TCAAAGTCTT
4 TCTTTACAGGTGCTGGGTCA G CAAGAG TTTG TCTT AC GCTGGG
AAGTCTTCCCGGTTGGAGTC C GTTCTC AGAC AGAA TG TGGCCC
AAGATCAGAATAGCTCCTCT - CTCGATA T C AGGT ----------
TGC
GAM12742 128 GTCAATGCTGACTTGGGGAG CAA ACT G CATGT TTTC
8 CTGGTGTGAACATGTCCGTT GT TGCTG TGGG AGCTGGTGTGAA CCG
TCCGGTGCTTTCATGCCGGT CA GCGAC ACCC TTGGCCGTACTT GGC
TGCCCATGACAGCGGAAC AG- AGT G TCGT- ----
GAM12743 22048 GTCAATGTAGGTGCCCTCAA AA A CCT T C C-- GTCTTGAA
3 TAGCCTCCTTGGGTGTCTTG GTC TGT GGTGC CAA AGC TC TTGGGT

AAGCCCAGACCGATGTTCTT CAG GCG CCATG GTT TTG AG GACCCG
GTAGTACCGCGGGAC G- - AT- C T CCA --------
GAM12743 6981 GTCAATTTCGGTTGATTCCA C TT TT TCAATTC G TTTGCTAT
8 TCAATTCCATCGTTTACGTT GTCAATTT GG GA CCA CATC TTTACG
TGCTATTGTGAAGGGTGCTT CGGTTAAA CT TT GGT GTGG AAGTGT
GGTTTTTTCAAAATTGGC A T- TT TC----- G --------
GAM12744 2095 GTCAATTTTTATTCTTTTCA AA A TTCATAAAAC CT A TAC TTCTTCC CAAAA
2 TAAAACCTCTTTGTAAACAT GTC TTTTT TTCTT CT TTGTAA CATG CTT CAT
GTACCTTTTCTTCCCATCAA CAG AAAAA AAGAA GA GATATT GTAC GAA GTA
AAATGCATTAACAAGATCAT C- - CACGACT--- TT C TA- CAATTAC -----
GCTTATAGTTAGTCAGCACA
AGAAAAAAACGAC
GAM12745 4715 GTCACACAGGTTTTAAGACT CACA ACTTTGC-- AAT CAA
8 TTGCAAGAATTGTCATCAAA GTCA GGTTTTAAG AAG TGTCAT
TGATATGCTTTTACTTCAAC CAGT TCAAGATTC TTC ATAGTA
TTAGAACTGGAATGAC AAGG AACTTCATT GT- ---
GAM12752 10853 GTCACCCAGGCTGGAGTGCA - --- T -- C- A ATCC
2 GTCGCACAATCCTGGCTCAC GTCA CCC AGGC GGAG TGCAGT GC CA
TGCAACCTCCGCCTCCCGGG CAGT GGG TCCG CCTC ACGTCA CG GT
TTGAC T CCC - CA CT - ----
GAM12753 13382 GTCACCCGCTATCCTGCCAA T GCT CA TCTATC TG GTAGGA
3 CTCTATCGTGGTCGTAGGAG G CACCC ATCCTGC AC G GTC
GCTGTCCTGTCTGCAGGGTT C GTGGG TGGGACG TG T CGG
GGGGTGC - GT- TC TCC--- GT ------
GAM12756 1421 GTCACGCAGGGCAAAAAAGC CGCA A AAA TC -- TCGTT TCCTCT
2 TCCGTTTTAGCTCGTTCCTC GTCA GGGC AA GC CGTTTT AGC CC
CTCTGGCGCTCCAAGACGTT CAGT TCCG TT TG GCAGAA TCG GG
GTGTGTTCGCCTCTTGAC TC-- C GTG TT CC C---- ------
GAM12761 11437 GTCACTTAAATTTGTTCTTT CTTA T T TTT - AACC
3 GTTTAGCCTGAAAACCTTTA GTCA AATTTG TCTT G AGCC TGAA
TGGCTCAAGATCAGATTCCT CAGT TTAGAC AGAA C TCGG ATTT
GAC CC-- T - --- T ----
GAM12761 13188 GTCACTTCAGCCCAGCCCAG TCA A CTGCCC AAGCCTCA ACAGTA
9 GGAGCCCCTGCCCAGCACAA GTCACT GCCCAGCCCAGGG GCCC AGCAC TGC
GCCTCATGCACAGTAGCAGT CGGTGA TGGGTCGGGTTCC CGGG TTGTG ACG
GTTAAGATGGGCCCTTGGGC CG- - TAGAA- -------- ------
TGGGTGCAGTGGC
GAM12762 7059 GTCACTTCCGCCCGGGCCTG CC G --- - TTCGGGCT
3 GCCGAGGTTCGGGCTCCGTT GTCACTTCCG CGG CCT GGCCGA GG
GGCCGAGGGGGCCGTACGGA CGGTGGAGGC GCC GGG CCGGTT CC
GGTGGC AT G GAG G --------
GAM12768 14249 GTCAGAGTACGGCTCCTGGG A A CT GG C TT TTATTTTTT
7 ACGCTTTTGCTTATTTTTTG GTC GAGT CGGCTC G A GCT TGC
TACGGGCTTTTCGAGTTGGC CGG TTCG GTTGAG C T CGG ATG
TTAGGC A - -- TT T GC ---------
GAM12773 173 GTCAGCCCCCCCCGACCCCG T CCC C C-- CT GATGAAGG
0 CCTCCTTGATGAAGGAAGGT G CAGCC CC GACC CGC CCTT
TGTGATTGGTCCGGAGAGGC C GTCGG GG CTGG GTG GGAA
TGC - AGA C TTA TT --------
GAM12775 22669 GTCAGCTTGTACAATTCCGA A T ACAA AAGCAT A TTTG

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9          AAGCATTCACCGTTTGCGGC GTC GCT GT   TTCCGA    TC CCG
           GATTGGAAAGACCAGCCGAC CAG CGA CA   AAGGTT    AG GGC
                      C  C  GA--     ------ C   ----
GAM12776 6991  GTCAGGACTTGCCAGAGGTG   A     C-  AG--   A  T GAGA
6          AATGTTGGAGACACAGTCGC GTC GGACTTG  CAG   GTGA TGT G
           GATGCTGCCCAAGTCCCGGC CGG CCTGAAC  GTC   CGCT ACA C
                      C     CC  GTAG   G  - ----
GAM12780 11250 GTCAGGTAAGCAGCTGTAAA   GGTAAG  G   AA  A   TAAAT  TTTG
8          GTTATGTCTAAATCATTTGT GTCA    CA CTGTA  GTT TGTC    CA
           GCACATGATAAAATCATATA CAGT    GT GATAT  TAA ATAG    GT
           GGTGAGCGATGAC         AGCGA- G   AC  A   TACAC  ----
GAM12782 17909 GTCAGGTTAATACTATCTTA    TTAAT-  A  TAA  C  GTCAGAAAATCA
4          AACACTGAGTCAGAAAATCA GTCAGG    ACT TCT  ACA TGA
           TTACTGTATAGAAGTTGCTT TAGTCC    TGA AGA  TGT ATT
           TCCTGAT              TTTCGT  -  TA-  C  ------------
GAM12782 14096 GTCAGGTTGGATTCCAGGAG        AT  AG  G    A A    ATGAGA
5          GAATGTGATGATTGCCATGA GTCAGGTTGG  TCC  GAG AATGTG TG TTGCC
           GAGGCAAACACACATTATTT TAGTCCAACC  AGG  TTT TTACAC AC AACGG
           TAGGAGCCCAACCTGAT          CG  AT  A    - A    ------
GAM12788 7002  GTCATAAGATTGGGTGGGCA       AT  G -   A A-  C  TGAGTCC
5          ATGACCACACATGAGTCCTG GTCATAAG  TGG TG GGCA TG  CCA ACA
           TATGGAGCAGTGTCTCAGCC CAGTGTTC  ACC AC CTGT AC  GGT TGT
           ACTTGTGAC              --  G  T   G  GA  A  -------
GAM12788 15272 GTCATAATTTGTTAAAATGA    A   G    AT--   -   TAAC  TC  TGAT
9          CTTCATTTAACATTCACTGA GTCAT ATTT TTAAA   GACTT CATT   AT  AC
           TGTAGATTAATAATGTAAGT CGGTG TAAG AATTT   TTGAA GTAA   TA  TG
           TCTGATTTAAAGAATGGTGG    G   A    AGTC   T   TAAT  GA  ----
           C
GAM12791 17773 GTCATATTCCTAAGTGGAAG      TCCTAAG   AG  GC   CTAA  TATA
0          AAGCCAGTCTAAAGCTATAG GTCATAT     TGGA  AA  CAGT   AGC
           CTACACACTGTATTGATCCA CAGTATA     ACCT  TT  GTCA   TCG
           AGTATATGAC             TGA----   AG  AT   CACA  ----
GAM12791 10223 GTCATATTTCCACAATTAAG    ATTTCCA    AA  A    GGA  GAAGAAA   CCTG
2          CAGCCCTAGGATCCGAAGAA GTCAT     CAATT  GC GCCCTA  TCC     GGTCT
           AGGTCTCCTGAGGCCGGACT CAGTA     GTTAA  TG CGGGAT  AGG     CCGGA
           ATAGGGCGTGAAATTGATGA    -------    AG  -    ATC  -------   ----
           C
GAM12792 6758  GTCATCCAGGAGGCGGCAAC   T  A   -- --  A   GACAGGTACCCA
6          ACGACAGGTACCCAGTGTGG GTCA CC GGAG  GC  GGC ACAC
           CCAGGCAGCTCCCGGCTGAC CAGT GG CCTC  CG  CCG TGTG
                      C  C   GA  GA  G   ------------
GAM12793 6801  GTCATCCATTTATTTATTAA  T    AT      TA-------    TT  T  -  A    TTAA  -   ACATAC
0          GAATTTACTAGGCACTGTAT G CATCC  TTATTTAT       AGAAT  AC AG GC CTGTA   ACA TTTT
           TAAACATTTTACATACTTAA C GTGGG  AGTAGATA       TCTTA  TG TC CG GGTAT   TGT GAAA
           TTTCATTTAATCCTTATCAA  -   --      TTTCACTTG    C-  -  A  G    TAC-  C   CTATTC
           AGCTGTCATTATGGGGCACT --   TTTCAT
           GTCATTCTGTTCACTTTATA   TTAA
           GATGAGGGTGC          AATT
                      CT   ------
GAM12793 2101  GTCATCCCAGATGGCTGTGG    C---    T    ----    TCAAGTACAT
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3          GGTCAAGTACATCCCCAGTC GTCAT   CCAGA GGCTG   TGGGG
           GTGGCCCTCTGGACAAGTGG CGGTG   GGTCT CCGGT   ACCCC
           C                AACA   C   GCTG   ----------
GAM12796 10819  GTCATCTTTGGCTTGCAACA       GG- T AA   GC  G T   CAAGATGGT
2          TTGCCCTGGATGCTGTCAAG GTCATCTTT  CT GC  CATT  CCT GA GCTGT
           ATGGTACAGTTTGAGGAGAA CGGTAGAGA  GG TG  GTAA  GGA TT TGACA
           TGGTCGGAAAAGAGATGGC        AAA  C --   GA  G -   ---------
GAM12804 10622  GTCATTGTTATAAAAAATCA       TATAAAAAA--     A A    CCATGC
5          GTTATCACTATACCATGCTA GTCATTGT        TCAGTT TC CTATA
           TAGGAGACTGGGCAAAACCT CAGTAACA        GGTCAG AG GATAT
           GTACAATGAC              TGTCCAAAACG    - -   ------
GAM12805 22972  GTCATTTCTGTGTGTGGCGT       T GT-   -   ---      TCAAGAGTCATT
7          GAAATAGGGTCAAGAGTCAT GTCATTTC GT  GTGG CGTG  AAATAGGG
           TTTTTGTTTTCACATGATCA CAGTAAAG CG  TACT GTAC  TTTGTTTT
           TCCAGCCGAAATGAC          C ACC   A   ACT      ----------
GAM12809 4732   GTCCAAGCAACTGGGCTGAG    AGCA  G      AAAT    GGTTCTG
1          GTAAATGGACCGGTTCTGGG GTCCA   ACTG GCTGAGGT   GGACC
           TTCCTGACTTCAGTATAGTA CGGGT   TGAT TGACTTCA   CTTGG
           TGTGGGC              GTA-   A      GTC-    -------
GAM12810 11520  GTCCAAGGTTCACTCGTTAG       TTC  T  TTA  C    GTCAGCTCAA
5          CCCCTCAGCGTCAGCTCAAG GTCCAAGG   AC CG   GCC CTCAGC
           CTGGGTGGTCCGGTCCCCTT CAGGTTCC   TG GC   TGG GGGTCG
           GGAC                   CC- - C--  T    ----------
GAM12810 61    GTCCAAGTTTTAATAACAAG   -    TTAATAAC    TAA--   C TG  AATA
8          AATAAACAACTTTGTGAAAT GTC CAAGTT       AAGAA    ACAA TT  TGA
           ATCATGGATTGTATGGTTTC CAG GTTCAA       TTCTT    TGTT AG  ACT
           TTAAAATATAACTTGAGAC    A    TATAAAA-    TGGTA   - GT   ----
GAM12811 10373  GTCCACAAAGAATTCCTGGT    ACAAAGAA    -  CA-    ACCGATGTCCAAA
6          CAGCACCACCGATGTCCAAA GTCC       TTCCT GGT   GCACC
           GGTGCAATATCAAGGAAGGG CGGG       AAGGA CTA   CGTGG
           C                --------    A   TAA    -------------
GAM12812 5057   GTCCACACTGAAGGCCCCAC   C  CTGAA  -  ACC-----      TGAT
0          CGCCAATATGATTATTGGTT GTC ACA    GGC CCC       GCCAATA
           TTCAGAAGGGAGCCTGTTGA CAG TGT    CCG GGG       TGGTTAT
           C                T  -----  A  AAGACTTT      ----
GAM12812 15055  GTCCACAGACTCCTTTGTGC    - A      TT  G   AAC    CTCC
3          TGGAACCTGGGCTCCTCCAG GTCC AC GACTCCT  GT CTGG   CTGGG
           CTGCCAGGCAGGAGTCGGTA CAGG TG CTGAGGA  CG GACC   GACCT
           GGAC                A  G     --  -   GTC    ----
GAM12813 13485  GTCCACCTTCCAGCAGATGT    ACCTTCC   GA    ATTAGCAAGC   A TA   CGAG
2          GGATTAGCAAGCAGGAGTAC GTCC      AGCA  TGTGG        AGG G  CGA
           GACGAGTCGGGCCCCTCCAT CAGG      TCGT  ACGCC        TCC C  GCT
           CGTCCACCGCAAATGCTTCT    CAAATCT    AA    ACCTGCTACC   C GG   ----
           AAACGGAC
GAM12817 14085  GTCCAGCCTGGGCCATAGAG         GG-------  ATAGAG     TCT
0          TGAGACTCTGTCTCAAAAAA GTCCAGCCTG        CC     TGAGAC
           GGAAAGAAAAATAGGCTGGG CGGGTCGGAT        GG     ACTCTG
           C                    AAAAAGAAA  AAAAA-     ---
GAM12818 4701   GTCCAGGAGGATGAGGCCTG  TC      A      T    GGACCA    C   TGT   A  -  AAACA
5          GCCTGGACCAGTTCCTCCTG G  CAGGAGG TGAGGCC GGCCT     GTTC TCC   TCC CC TG
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TTCCACCTGAAACACATGGG C GTCCTTC GTTCCGG TCGGG CAAG AGG AGG GG AC
GATGGAGAACCAGGGCTGGC TC - - AC---- - T-- - T -----
CTTGCTTCCTGCTC
GAM12818 19440 GTCCAGGCCATGTATATCTG CCATGTATA A GATG C G AAGGA
8 GATCGATGGTACTGGAGAAG GTCCAGG TCTGG TC GTA TG AG
GACTGCGCTGCAAGACCCGG CAGGTCC AGGCC AG CGT GC TC
ACCCTGGAC C-------- C AA-- C G -----
GAM12820 21789 GTCCAGGTCTGCAGAACCCA - CT AA- G TC - CTCC
0 GCATCTGGGCCTCCGCCTCA GTCCAG GT GCAG CCCA CA TG GGC
TCTGTGGGCACCTGCTGCTC CAGGTC CG CGTC GGGT GT AC CCG
TGGAC T T- CAC - CT T ----
GAM12824 11853 GTCCATGAGTGGAGACCCGT T ACCCGTCAGA C G G - - C CCCA
1 CAGAGCCCAGGAGCCGGAAA G CCATGAGTGGAG GCC AGGA CC GA AAGCAG C TTGCT

GCAGCCTTGCTCCCAGGCAA C GGTGCTTACTTC TGG TCCT GG CT TTCGTC G AACGG
CGTCTGCTTCTCGGGGTCCT - GAC------- C G G C T C ----
CGGTCAGCTTCATTCGTGGC
GAM12824 6759 GTCCATGCAGCGCGCACCTG C CA C - AC-- ATTCTC
2 TCACGACATTCTCGTCACCA GTC ATG GCG GCACC TGTC GAC
GATGCGGTGCACGTACGTTG CAG TGC TGC CGTGG GTAG CTG
AC T A- A C ACCA ------
GAM12825 10451 GTCCATTTGGGGTATTCCAT TT TAT--- T CT CAATGA
8 CTTCCTGGTCACAATGATGA GTCCA TGGGG TCCA CTTC GGTCA
CTTGAGGCTGGATACCATCC CAGGT GCTCC AGGT GGAG TCAGT
TCGTCTGGAC CT TACCAT C T- ------
GAM12827 16046 GTCCCACCAACAGTGTAAAA CCAC-- - AAA TGTTCC TTTCTCC
0 GTGTTCCTGTTTTCTCCACA GTC CAACAG TGT AG TGT
TCCTCTCCAGCACCTGTTGT CAG GTTGTC ACG TC ACA
TTCCTGAC TCCTTT C ACC TCCT-- -------
GAM12828 19573 GTCCCACTTAGTTTTTGTTT CACTT------ CTTTAAAA
0 TTTCTTTAAAAAAAAAACAA GTCC AGTTTTTGTTTTTT
AAGCTCACAAACAATAGGAC CAGG TCGAAAACAAAAAA
ATAACAAACAC --------
GAM12830 16964 GTCCCAGTGGGTACAATGTA AG- TACAATGTAGA AA- GAG--- CAAA A AATGT

8 GAGGAAAATGGCCGAGACTG GTCCC TGGG GGAA TGGCC ACTGT GG TC
TCAAAGGATCAATGTGACCA CAGGG ACCC CCTT ACTGG TGACG CC AG
CAGCAGTATCAGAGGTCAGT AAA ---------- GTG AGACTA ACA- - -----
GTTCCCCCAAAAGGGAC
GAM12834 19452 GTCCCCCAGGCCCCGCCGTC C - CC C AGCTA ATGCAAC
9 CTATAGCTAGTATGCAACAC GTC CCCAGG C CGCCGT CTAT GT
GATGGTAGTATGGCGTCGCC TAG GGGTCC G GCGGTA GATG CA
CTGGGCGAT C C CT T GTAG- -------
GAM12835 22504 GTCCCCCCCCCTCGCCACGG CCCTC C CAA AGCAAAAAA
0 CAAACATAGCAAAAAAATGT GTCCCCCC GCCA GG ACAT
CCCTCTTGGCCCCCGGGGGGG CAGGGGGG CGGT CT TGTA
AC CCCC- T CCC ---------
GAM12835 16077 GTCCCCCTGCCCCGTTCACA CC CCC - AA-- CCTGCTT
1 ATGCAGCCTGCTTCTGCAAA GTCCC TG CGT TCAC TGCAG
AGGTGGTACGATCGAAGGGA CAGGG GC GCA GGTG ACGTC

C AA TA- T GAAA -------
GAM12835 10502 GTCCCCGCGCTGCAGCCGCA G - AG CAGAG C G GA AAAGT
6 GAGGCCCCCCAGGCCGCGGT GTCCCCGC CT GC CCG GCCCCC AGGCCGC GTTCCCG
GCGGG
TCCCGGAGCGGGAAAGTCCC CGGGGGCG GG CG GGC CGGGGG TCCGGTG CGGGGGC
CGCCC
GCGCGGGGGCGGTGGCCTCG G G G- AGGG- C G G- -----
GGGGCGGGACGGGGCGGGGG
CGGGGGC
GAM12835 13629 GTCCCCGGCGGGGTTGGCCA - G GG- AG-- AAAA TATATC
8 GTGAAAAACCTTATATCAGG GTC CCCG CGG TTGGCC TG ACCT
TAGAACAAATAGGTCGGACA CGG GGGC GCC GGCTGG AC TGGA
CCGGCGGGAGGC A G ACA ATAA AAGA ------
GAM12838 4982 GTCCCCTGTGTGAGGGGGCC TG T - - GAAGGCA
0 GGGGTTTGAAGGCAGGGCCC GTCCCC TG GAGGG GGC CGGGGTTT
CGTGCCACCCTCCGTGGGGG CAGGGG GC CTCCC CCG GCCCCGGG
AC GT - A T -------
GAM12840 7904 GTCCCTCAAGCTCCGCAGGC CTCAAGCT G - T G CCAT CTGT
4 CCCTCTACGCACACCATGGC GTCC CCGCAG CC CC CTAC CACA GGC
CTGTGCCTTCCTGTGGGTGG CAGG GGTGTC GG GG GGTG GTGT CCG
TGGTGGCTGTGGCCATGGAC TACC---- - T T G CCTT ----
GAM12841 7434 GTCCCTCTCCACGTTCTGGG T ACGTT TG TAT T TGAGGCTAT
9 TATGATGGAGTTTGAGGCTA GTCCC CTCC C GG GA GGAGTT
TGACTCCTCTCTGGTTTAGG CAGGG GGGG G CT CT CCTCAG
GGGTGGGAC T GATTT GT --- - ---------
GAM12842 7384 GTCCCTGACACTGCCCGCTA C - TG ACTA-- AGAAACA
5 CTACAAGAAACATGGCATCA GTC CTGA CAC CCCGCT CA
GGTGGGTGGTGATCGGAGAC CAG GGCT GTG GGGTGG GT
A A GT ACTACG -------
GAM12843 11713 GTCCCTGATCTATGCTGCAT T - ATCCAG CAAA GGTC
4 CCAGTTTGCAAAGTGGGGTC GTCCC GATCTA TGCTGC TTTG GTGG
CCATCAAAGTTCAGCGGCAG CAGGG CTAGGT ACGGCG AAAC TACC
TGGATCTGGGAC T G ACTTG- ---- ----
GAM12843 2424 GTCCCTGCAGGGCCGCCCGC CA CC CG---- CAGTG
7 GGCGGGGCAGTGTCCACTCA GTCCCTG GGGCCG CGCGG GGG
CTCGTGCTCGGCCCCAGGGA CAGGGAC CCCGGC GTGCT CCT
C -- TC CACTCA -----
GAM12844 22054 GTCCCTGCTTCCCGACACCA T C- AGCCTCA AATA ACAACTCC
5 GCCTCATGGAATATGCAACA GTCCCTGCT CC GACACC TGG TGCA
ACTCCTGTACCCCAGTCCAC CAGGGACGA GG TTGTGG ACC ATGT
GGTGTTCTGGCAGCAGGGAC C TC CACCTG- CC-- --------
GAM12848 15421 GTCCGCTTCTTCTGGGCGGA T CGG - A CAAAACAT TGCT
8 CGCTCTGGAGGCAAAACATT G CCGCTTCTTCTGGG ACGCTC TGG GG TTCCC
TCCCTGCTGGGGGCGGCGAC C GGCGGGGAAGGCCC TGCGAG GCC CC GGGGG
CACCGTGAGCGTCCCGGAAG - --- T A AGCGGC-- ----
GGGCGGC
GAM12850 19547 GTCCGTGAATTTTAAACTAG TG TTTAA TAG ACCG- CCATTA G TTTG
9 GGTACCGCCGCCCATTATAG GTCCG AAT AC GGT CCGC TAGG GCT
GGGCTTTTGGGCGCCTAAAG CGGGC TTG TG CCA GGCG ATCC CGG
CGGATTGAACCATGTGTTAC CA ----- TA- AGTTA AA---- G ----

CGGGC
GAM12851 4793 GTCCGTGGTGGGGGTGACCC - - TG - TG C GA AAT
0 TTGGACCAATGGCTCAGGGC GT CCG TGG GGG G A CCTTG CC
TTGCTCTCTGCCAGCGGTAC CA GGC ACC CTC C T GGGAC GG
T G GT T GT C TC ---
GAM12857 10735 GTCCTCCAGTGACCCAGGTG G ACCCAG G CCC ACTCA
4 GCCAACCCAGGCCTGACTCA GTCCTCCA TG GT GCCAA AGGCCTG
CGGGTTTTTGGCGACATAGT TAGGAGGT AT CA CGGTT TTTGGGC
GGAGGAT G A----- G --- -----
GAM12857 11943 GTCCTCCCTGACAGCTCTGA ----- A -- ACCT CTCC
9 CCTGGACTCCTCCCTTGCAG GTCC TCCCTG CAG CTCTG GGA
AGGCCTGCAGGGAAGAAGGG CAGG AGGGAC GTC GAGAC CCT
AC GAAGA - CG GTTC ----
GAM12858 13667 GTCCTCGAGGTTGCACAGGG - A T ACA CT- - CTTG
6 ACTGCTCTGCTTGTAGAAGC GTCC TCG GGT GC GGGA GCT CTG
TTCTCCCGCGGCACTGTGAT CAGG AGT TCA CG CCCT CGA GAT
GGAC T G - GCG CTT A ----
GAM12860 14993 GTCCTGAAAAAATAAGCAAT C- AAATA CAAT - AATTT
9 TATCATAACAATTTGTTATT GTC TGAAA AG TATCA TAAC
GATACTGGAGGTTTCATTGA CAG ACTTT TC ATAGT ATTG
C TT GGAGG ---- T -----
GAM12863 1678 GTCCTGCAAGGCTTCTGGCT GCA-- T G A TCACA ATGATATA
3 ACATCTTCACAAGTTATGAT GTCCT AGGC TCTG CT CATCT AGTT
ATAGACTGGGTGAGGCAGAC CAGGG TCCG AGAC GA GTGGG TCAG
GCCTGAACAGGGAC ACAAG C G - ----- --------
GAM12864 22870 GTCCTGCATTGTGGCTGTTT CC T---- TT TTT-- TCCG
0 TCTGCTTTCATCCGTGTCAG GT TGCATTG GGCTGTT CTGC CA
TGCAGCAGCAGCTTCATCCA CA ACGTGAC TCGACGA GACG GT
GTGCACAAC AC CTACT C- TGACT ----
GAM12866 13213 GTCCTGGATGCCTCATCCCT T T T ---- CTT ACACC TT- T TT- C TT
4 TAGTTTCAACACCAGATTGA G CCTGGA GCC CA TCC AGTTTCA AGA GAAA GG TGCCAT
TGC
AATGGTTTGCCATCTGCTTC C GGGCCT CGG GT AGG TCAAGGT TCT CTTT CT GCGGTG
ATG

GTATGTGGCGTTTTCTTTTC - T T CGTT --- ----- TAT T TTT T --
TATTCTTGGAACTGGATTGC C
TGTGGCTTCCGGGC

-
GAM12872 5324 GTCCTTCCAGTGGTCGAGGA T GGTC CATGTCC TCCACAT
4 AGACATGTCCAGTGTGTCCA GTCCT CCAGT GAGGAAGA AGTGTG
CATCATACTTCTTCTTCAGC TAGGG GGTCG CTTCTTCT TCATAC
TGGGGGAT - A--- ------- -------
GAM12873 10463 GTCCTTCTTCACCGACGATG TC - A-- GA---------- CAAGA - AGCTG
9 ACAAGCAAGACCACCTCAGC G CTTC TTC CCGAC TGACAAG CCAC CTC
TGGGGAGTGGAACCTTGTCG C GAAG AAG GGTTG GCTGTTC GGTG GGG
ATTAAGAACGGAGTTGGACA GT T ACA AGGCAAGAATTA CAA-- A -----
GAATGAAGTGC
GAM12874 1628 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT G GTTTGGAA

2 ACAATGTTGGTGTGTCGTGT GTCCTT ACT CCT GTTGGT TGTCGT
TTGGAAATGATAAACTAATT CAGGAG TGA GGA TAATCA ATAGTA
AAGGAAGGAGATATAGTGAA AAG TATAGA AGGAAT A --------
GAGGAC
GAM12874 15096 GTCCTTGAACTTGGAACCTG GA- TGGAA GACAAT G GTTTGGAA
3 ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT TTGTCGT
TTTGGAAATGATAAACTAAT CAGGAG TGA GGA TAATCA AATAGTA
TAAGGAAGGAGATAGTGAAG AAG TAGA- AGGAAT - --------
AGGAC
GAM12874 279 GTCCTTGATTACACGATGGA A C T ---- - TTTTTG
5 ATTTGCTGTTTTTGTAGCCA GTCCTTG TTACA GA GGA ATTTG CTG
AATCCTTTCTCTCCTGTAGC CGGGAAT GATGT CT TCT TAAAC GAT
TAAGGGC C C C TTCC C ------
GAM12876 11946 GTCCTTTGTGGTAGACTACA TT-- ---------- TGTCATTT
4 TGTCATTTTGTAGTTTAACA GTCCT GTGG TAGACTACA
TATCATTTTTCCATTTATAG TAGGA TACC ATTTGATGT
GAT TATT TTTTTACTATACA --------
GAM12877 4623 GTCGAACAGCCTGGTCAATT C---- TG TCAATTT CC C CCGT
3 TGTACCTGCAGGCCGTCCTA GTCGAA AGCC G GTA TG AGG
CACCTACCTCTCTCTGGGCT CAGCTT TCGG C CAT AC TCC
TCTATTTCGAC TATCT GT TCTCTC- CC A ----
GAM12877 21730 GTCGACGATCAGACAAGGTT GACGA - G- T- - G- G CCA- AGCT
7 GGCTTGTGCGCAGTCTGGCC GTC TCAG ACAAGGTT GC TG TGC CA TCTGGC TG
CATGAGCTCAGTCAGCCAGA CAG AGTC TGTTCCAG CG AC ACG GT AGACCG AC
GTGAAGCAGCATCGCAGGAC AC--- G GA CT G AA G ACTG ----
CTTGTGCTGACAGAC
GAM12878 11047 GTCGACTTTTTTTTTTTTT G TTTTTTTT - CCAAA TG AATAAA
0 TTTTCTGGCCCAAATTGAGT GTC ACTTTTTTTTT TCTG GC T AGTTT
TTAATAAAGAGCTTGAGTGA CAG TGAGGGAGGGA AGAC CG A TCGAG
TGCTCAGATTAGGGAGGGAG - TT------ T TAGTG GT ------
TGAC
GAM12878 14922 GTCGAGCAGCAGCGGCGACT CGA AG GA A CG G- GATGGT
2 CGAGGCCGCCCGGGGGCTGA GT GCAGC CGGC CTCG GGC CCCG GGGCT
TGGTGGCCCGACGGGAAGCC CG TGTCG GTCG GAGC CCG GGGC CCCGG
CGAGAAGCTGAGGCTGTGGT TGG GA AA - AA AG ------
GC
GAM12879 10589 GTCGAGTTATACCATTTTTC C A- CC CG TAAT GCTTA- ATATAGG
1 CAGATGCGTATTAATACTGC GT GAGTT TACCATTTTT AGATG TAT ACT AGAAGTT
TTAAGAAGTTATATAGGAAT CG CTCAA ATGGTAGGGG TTTAC ATA TGA TCTTTAA
TTCTGCGACAAGTCATAACA T GA CA A- C--- ACAGCG -------
TTTACGGGGATGGTAAGAAC
TCTGC
GAM12880 10571 GTCGCAGCAGCTCAGACACC A A- -- AG-- AG ACC GGG GTAT
0 AGGCCACCCGCGGGGGCGCT GTCGC GC GC TC ACACC GCC CGCG GCGCT
GTATGGCGTGGGCGCGCCGG CGGCG CG CG AG TGTGG TGG GCGC TGCGG
GTTCGGTGTAATAGAACGCA G GA CA ATAA CT GCC GGG ----
GGCGGCGGC
GAM12880 468 GTCGCAGGAGATGATGGAGG G AGA AGGAAGAA AG CCTG
3 AAGAACATGAGCTGCCTGTG GTC CAGG TGATGG CATG CTG
GACATGGAAACCATCAACCT CAG GTCC ACTACC GTAC GGT

GGAC - A-- AAAG---- A- ----
GAM12881 15648 GTCGCCCACGCGTCCGGTGG - CAC G TG CAAGA - TCCA
2 CCAAGAAGGATGTCCACATG GTC GCC GC TCCGG GC AGG ATG
CCTAAGCACCCGGAGCTGGC CAG CGG CG AGGCC CG TCC TAC
AGAC A T-- - CA AA--- G ----
GAM12881 14873 GTCGCCCAGGCTGGAGTGCA C-- T -- C - CGATCTC
3 GTGGCACGATCTCTGCTCAC GTCGCC AGGC GGAG TG AGTG GCA
TACAACCTCCGCCTCCTGGC TAGCGG TCCG CCTC AC TCAC CGT
GAT TCC - CA A T -------
GAM12882 412 GTCGCCGCCACGGGGGGCGT G CCA T A CCGA ATCTAGAGTCACCAA
1 GCGATCGGCCCGAGGTTATC GTC CCG CGGGGGGCG GCG TCGGC GGTT
TAGAGTCACCAAAGCCGCCG CGG GGC GCCCCCCGC CGC GGCCG CCGA
GCGCCCGCCCCCCGGCCGGG - CG- C - ---- ----------
GC
GAM12882 10338 GTCGCCGCGGACGCCTGGGC - C CC CTC G AAC-- ACAT
2 TCTCAGCTGCTGAACAATGA GTC GCCG GGACG TGGG TCAGCT CTG AATG
CATCGTTTTCTCCAGGGGTT CAG CGGT CCTGT ACCT AGTTGG GAC TTGC
GAAATCCATGTCCATGGCTG T A -- AA- G CTCTT ----
AC
GAM12884 15762 GTCGGACCCCAGCCCTCCGG ACCCCA- CC ----- - C AGCC
4 GGCCTCGAGGGCCTGCAGCA GTCGG GC TCCGGGG CC TCGAGGG CTGCAGC
GCCGCTGCAGCCTCTTGATG TAGCT CG AGGTCCT GG AGTTCTC GACGTCG
GAGATGTCCTGGAAAGCCAC GAAACAC AA GTAGA T C ----
AAAGTCGAT
GAM12885 10219 GTCGGATTAATGAACTGCGG C TAAT C CA- TTGT TCT T CCT
2 AACAAGAGGTTGTGAGAATC GT GGAT GAA TGCGGAA AGAGG GAGAA AAGA GGAA
TAAGATGGAACCTTTCTTTC CA CCTA TTT ATGTTTT TTTTT TTCTT TTCT TCTT
TTTCTTTCTTTTTTTTTAAA A CC-- T AAA TT-- TCT T ---
TTTTGTATTTTCCATCCAAC
GAM12885 10521 GTCGGATTACAAATAAGGCC A- A-- TC ATTT AGTAGACA
3 TCTCATTTGCAGTAGACAGC GTCGG TTACAA TAAGGCC TC GC
CAGGGAAGGGTCTTAGAATT CGGCT AGTGTT ATTCTGG AG CG
GTGAAATCGGC AA AAG GA GGAC --------
GAM12885 22350 GTCGGCACTGCAGCAAATTG C CA AATT GCTC---- ACCATGA
6 GCGGCTCCTGTACCATGAAC GT GGCACTG GCA GGCG CTGT
AGCAAAATGATGCCTGAGTG CA CCGTGAC CGT CCGT GACA
CCAGTGCCCAC C -- GAGT AGTAAAAC -------
GAM12886 19767 GTCGGCTTCCCAGGCTGCGT - TC- ---------- TG G ACC
7 GGTCACCGACGGCGTGGTTA GTCGG CT CCAGG C CGT GTC
ACTTCTTCCTGGCGCGGACT CAGTC GG GGTCC G GCG CAG
GAC A CGC TTCTTCAATT GT G ---
GAM12887 13669 GTCGGGACTGCCCCCGCGCG A CC- C CGGC G CA A- GGGG
1 GCCCGGCGCGCGGCCCCAGG GTCGGG CTGC CCGCG GGCC GCGC GCCC GGC CTG

CACTGGGGGCAGAGGCCAGG CGGCCC GGCG GGCGC CCGG CGCG CGGG CCG GAC

GCGGCGCGGCCCCGCGGCCA - ACC C ---- G A- GA ----
GCGGCCCGGC
GAM12887 22412 GTCGGGCTTGTGCGTATGGG - GG G G T GATG GGG - -- GCAC
7 TGGTGTGATGTCTGGGGCTG GTC G CTT TGC TATGGG GGTGT TCT GCTGTC CCT GCT

TCCCTGCTGCACAGCCCAGG CAG C GAA GCG ATACCC CTATA AGA TGGCGG GGA CGA

AGGCGGTGGAAGAAGATATC G AA A - - GA-- AGG A CC ----
CCCATAGCGAAAGAACGGAC
GAM12888 4888 GTCGGGGCTGCTTGCTAACT C G GCTAACTC AGGTTTAA
1 CCAGGAACAGGTTTAAGTTT GT GGG CTGCTT CAGGAAC
TTGAAACTGAAGTAGGCCTA CA TCC GATGAA GTTTTTG
C - G GTCAAA-- --------
GAM12888 10033 GTCGGGGGCCCGCACCTTCC CG CC A CT C - GCCC
2 GTCTGGCGCCCTGCCCAGTG GT GGGGC GC CCTTCCGT GG GCC CT
GTTCCTACGGGAGGGCCTGC CA TCTCG CG GGAGGGCA CC TGG GA
TCTTCAC CT TC - T- T T ----
GAM12888 1949 GTCGGTAGGGGGCAGTCTTG GGGG - TT CATCC TC- AAAAT
8 CTTTATTCATCCTCCATCTC GTCGGTA GCA GTCTTGC TATT TCCA TC
AAAATGAACTTGGAATTAAA CGGTCGT TGT TAGAATG ATAA AGGT AG
TATTGTAAGATATGTATAAT AATA A TT ATTA- TCA -----
GCTGGC
GAM12888 11615 GTCGGTAGTCAGGGTACTGG - GG - T TG C ATGTT
9 GTACACGGATGTTCTTTGTA GT C TAG TCAGGG AC GGTACA GG
CTGTTCTTTGGTCTGTTGCG CG G GTC GGTTTC TG TCATGT TC
C C TT T T -- T -----
GAM12891 15132 GTCGTGTGCGTCCCTCGGTG G GT - T ----- AAC
8 CCACATGCACGCAACGTGTG GTCGT TGC C CC CGGTG CCACATGCACGC
TGTGTGGGAGATCACTGCGG CAGCG ACG G GG GTCAC GGTGTGTGTGTG
CGGAGCAAGCGAC A AG C C TAGAG ---
GAM12896 10070 GTCTACCCGCCAACACCTCA CC CAA- CACACAC GACAGA
1 CACACCTGACAGAAGAGAAC GTCTAC GC CACCT CT
AAGGGTGATACGCAGTGGAC CAGGTG CG GTGGG GA
A- CATA AACAAGA ------
GAM12896 17791 GTCTACGATGGGGCTGCCGT TA A - T--- GTTAC- T C--- G A CC C
7 TACAGCCTTCCTCCCGGGGC GTC CG TGGG GC GCC AGCCT CCTC CGGGGCTCTG AG
CGCG AG
TCTGGAGACGCGCCAGCTCT CAG GC ACCC CG CGG TTGGA GGAG GCCCTGGGGC TC
GCGT TC

TTGACACCTCTCCTGCGCTC -- - G CGTC AACTTC - CACC - - CC -
GGGGTCCCGCCACGAGGAGG TCTTTGACACCT
TTCTTCAAGGCCTGCGCGCC
CACGGAC

GAM12900 15576 GTCTAGCTTTACTTGCTCCC ACT TCCC- CC A TCGG
3 CGCCGGCTCAGGCGCTCGGG GTCTAGCTTT TGC CG GGCTC GGCGC
CGCTGGGGCTTTCGCCGCTG TAGGTCGAAG ACG GC TCGGG TCGCG
CAGAAGCTGGAT --- TCGCC TT G ----
GAM12906 7426 GTCTCAAAAGGGGAAAAAAA A--- AAAAAATTGC T GA ATGAA
8 AAATTGCTGATGTGACCCAT GTCTCAAA GGGGAAAA TGA GT CCC
GAAGGGAACTCATTTTCCTC CAGGGTTT CTCCTTTT ACT CA GGG
GTAATTTGGGAC AATG ---------- - A- -----
GAM12908 7197 GTCTCACACATGACATGTGA CT AT AATCTGAC AG TCTTT
9 AAATCTGACTCAAAGTTCTT GT CACAC GACATGTGAA TCAA T

TATCTTGAAGCTGTGTTTAT CA GTGTG TTGTATATTT AGTT A
ATGTTCCGTGTGCAC C- CC GTGTCGA- CT -----
GAM12916 7627 GTCTCCACGTATGATGTATC G AT--- - --- CGGTT
0 TGAGCCGGTTGCTCCACAGG GTCTCCAC TATG GT ATCT GAGC
TAGCTCTAGCATGGGTGGGG CAGGGGTG GTAC CG TGGA CTCG
AC G GATCT A CAC -----
GAM12919 13250 GTCTCCGACAGCTCGCGCCT GACAG G T G CAGGGACA GGAGAGA
3 TTTGGACCAGCTCAGGGACA GTCTCC CTC CGCCT TTG ACCAGCT GCC
GCCGGAGAGAGGCAGAGAGG CGGAGG GAG GCGGA GGC TGGTCGG CGG
CTGGTGCGGCAGGCGGGAGG AGGAG G C G AGAGA--- -------
AGGAGGAGGC
GAM12922 7889 GTCTCGAAGGAGATCTAAAC AA C- AG GAAACTA
7 AGGCTTTGGAAACTACAAAG GTCTCG GGAGAT TAAAC GCTTTG
CGGTTTAAAGTCTCCCCGGG TAGGGC CCTCTG ATTTG CGAAAC
AT C- AA G- -------
GAM12923 16226 GTCTCGCTTCTGCCGAGGTG CGC GA T CCT CAAGATTC
4 TCCCTGATGCCAAGATTCGC GTCT TTCTGCC GG GTC GATGC
ATTTTTGACCTGGGGCGGAA CGGA AAGGCGG TC CAG TTACG
AAAGGC AA- GG - TTT --------
GAM12923 6793 GTCTCGGAGTAATTTTTTCA TC- AAT AAACATA AGCGG
6 AACATATAAACAGCGGGTTT GTC GGAGT TTTTTC TAAAC
ACTACAGAAAGATCCATTCC CGG CCTTA AGAAAG ATTTG
TTTGGC TTT CCT ACATC-- -----
GAM12924 15192 GTCTCGGGCAAAGCGTTATG - A---- TTA AG GA TTGG
1 AGAAGCTGGACTTCCTTGGG GTCTCG GGC AAGCG TG AAGCTG CTTCC
GAGGGACAGTTTGCCACCGT TAGAGT CCG TTTGC AC TTTGAC GGAGG
TTACAAGGCCATGAGAT A GAACA C-- CG AG ----
GAM12927 11216 GTCTCTCAAGCTGACCAGCG TCAA TG A G TCAA CATCAA
8 AGCTCAAGTTCCATCAAGAA GTCTC GC ACC GCGA C GTTC
TGCTGTCGCCGGTGTGCGCG CAGAG CG TGG CGCT G TAAG
AGAC CG-- TG C - TCG- ------
GAM12930 7409 GTCTCTGAACCATGTCTTAA - - C TCTTAA CT CCCATAACTGTATA
0 AATGCCTCTGGACCCATAAC GTCT CTGA AC ATG AATGCCT GGA
TGTATATCCAGGCATTCATT CAGA GATT TG TAC TTACGGA CCT
GTCTTAGCAGAC C C T ------ -- ----------
GAM12931 15307 GTCTCTGCCCTCCTCCCCTG CTG C-- GAC C-- T CAATGAC
4 ACTTTGGCAGTTCATCAATG GTCT CCCTCCTCC CT TTTGG AG TCAT
ACATGATCTCAACCAGAAAA CAGG GGGGGGAGG GA AGACC TC AGTA
GCACGGAGGGGGGAAAGGAC AAA CAC AA- AAC T -------
GAM12931 649 GTCTCTGGCAGCTAAAGGAG G A AAAG GAA A AGGAGC
7 AAGGAAGACGAGGAGCTGTT GTCTCTG C GCT GA GG AGACG
TCCCGAGTCAGAGCGGCAGA TAGAGAC G CGA CT CC TTTGT
GAT - G GA-- GAG C ------
GAM12933 407 GTCTCTTCAGAGCTGCTTGT TTCA G TGT - GT TCAACT
0 GCCCAGTGGTGCTTCAACTG GTCTC GAGCT CT GCC CA GGTGCT
GTATCTATGAGGCCCTAGAG CAGGG CTCGA GA CGG GT CTATGG
CTCCGGGAC C--- - TCC A AT ------
GAM12934 11212 GTCTCTTTGGGCGGAAGACA C TG- ------ CAGG GCCC
8 GGTCAGGCCCCTGGATACTC GT TCTT GGCGG AAGA TCAG
TTACACAGCCGCCAATAAGA CA AGAA CCGCC TTCT GGTC

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          AC              -  TAA   GACACA   CATA   ----
GAM12935 14105  GTCTGAAAGCCCCCGGTATC    G A  CCCG-   CA-    C ATTTCAG
4          ATTCCTCCAATTTCAGTGCG GTCT AA GCC    GTAT   TTCCT CA
           GGAACCAATGCAGACTGGCA CGGA TT CGG    CGTA   AAGGG GT
           TTAAGGC             A A  TCAGA   ACC    C -------
GAM12935 7798   GTCTGAAATGGAAAATTGGG     AA  AAA     TGA      A ATAGACCCAC
8          TTGATTATGTTAATGATAGA GTCTGA  TGG   ATTGGGT   TTATGTTA TG
           CCCACCAATGACATGAGATA CAGACT  GCC   TAACCCA   AGTACAGT AC
           CCCAATGCCGTCAGAC        --  G--     TAG      A ----------
GAM12936 10952  GTCTGAAGAGAGTTCAGAGT          TTC    TATAAATGCTT    GACTTTTTAA
4          TATAAATGCTTACAATGACT GTCTGAAGAGAG   AGAGT        ACAAT
           TTTTAAATTGTACTCTTTCT CGGATTTTTCTT   TCTCA         TGTTA
           TTTTAGGC                  ---    -----------    ----------
GAM12941 2521   GTCTGAGTCTGGGATTATCG   C- A    GG     CA     TA    TGGT
3          CATGTATTTAGTGCTTGGTA GT  TG GTCTG  ATTATCG  TGTATT  GTGCT
           GTACAATATGGTTGGTAGTA CA  AC CAGAC  TGATGGT  GTATAA  CATGA
           ACAGACCACAAC        AC -    AA      TG     --    ----
GAM12943 11839  GTCTGCAGCAGCATGGCCTG    G-  C  AT    G  - A-    CCTA     TG-     ACCTT
3          CCTGCACAAACCCTAGGTGC GTCT  CAG AGC  GGCCT CCT GC  CAAAC    GGTGCAA   TCCTAAT

           AATGTCCTAATACCTTGTTA CGGG  GTC TCG  CCGGG GGG CG  GTTTG    TTATGTT   GGGATTG

           GGGTCTTTGTATTCAAGTTT    AA  A  GT    A  T  AA    AAC-     TCT     -----
           GAAGCTGGGAGGGCCTGGCT
           ACTGAAGGGC
GAM12944 13664  GTCTGCAGTGTGCCTGGGCA    TGCA  G        CA-------     GGGCA
1          CAGCTCACGGGCAGTGGGTG GTC    GT TGCCTGGGCA        GCTCAC
           GACCTAACTGCCCAGGCAGG CAG    CG ACGGACCCGT        TGGGTG
           CGATGAC             TAG-  G        CAATCCAGG     -----
GAM12945 13486  GTCTGCCCCCACCATAAAGA    G  CC  -   AAAG   A   TGACAAAATATAT
1          TTATGATGACAAAATATATT GTCT CC  CA CCAT    ATT TGA
           TAAGATACATGGCTGAGGAG TAGA GG  GT GGTA    TAG ATT
           AT                  - A-  C    CA--   A  -------------
GAM12945 14799  GTCTGCCTCTGCCTCTTGCT    TGC       CT--  CTC    T  TG CTC
7          CACCCTGCTGGCTCCTGGTG GTC   CTCTGCCT    TG   ACCC GC  G
           GGTTTCATCCCAGGCAGAGT CAG   GAGACGGA    AC   TGGG TG  C
           TGAC                TT-       CCCT  TT-    -  GT ---
GAM12946 15723  GTCTGCGAATGACTGCAGAT      GAA  A  G     AAT    -     GA-  -  CTG
1          TAATTTCACTGACTGACAGG GTCTGC   TG CT CAGATT   TTCA CTGACT   CA GG
           CTGCCGTGGGAAGTCAGCTG CAGACG   AC GA GTCTAG   AGGT GACTGA   GT CC
           GAGATCTGGAGACAGCAGAC      --- A  G     ---    C     AGG  G  ---
GAM12948 7167   GTCTGCTTTCACTTCAGCTT   C     CACTT  GC     TT-    T   GTGATCT
4          TCATTTGAATACTGTGATCT GT TGCTTT     CA  TTTCA   TGAA ACT
           GGTTTTTATTTTGAAATGTA CA ACGAAA     GT  AAAGT   ATTT TGG
           TAAAAAGCAAAC         A     AATAT --     TTT    T  -------
GAM12950 4835   GTCTGGAGGGTGAGCGACCT     G  ------- G   GA   GCGAGA   ACAA
1          GCGAGACTCACAAGAGGGGA GTCTG AGG      GT AGC  CCT     CTC
           AGCTGACAGAGATACCTACA CAGAC TCC      CA TCG  GGG     GAG
           GAC                  A   ATAGAGA  G   AA   ------   ----
GAM12950 10693  GTCTGGATCATTCAATTTAG   -    TCATTCA      GTT    TCCACCACCT
```

5 TAGTTACATATCCACCACCT GT CTGGA ATTTAGTA ACATA
TATGTTGCTAAATAACTGTT CA GATCT TAAATCGT TGTAT
TCTAGCAC C TTGTCAA --- ----------
GAM12952 17729 GTCTGGGAACTTTGATGATG ACT- GA - TTCGA -- TCCAAACCAT
7 ATTTGCTTCGACTAGAAACT GTCTGGGA TTGAT TGATT TGC CTAGA AAC
CCAAACCATGTTACTCTAGG CGGACTCT AACTG GCTAA ACG GATCT TTG
CACAATCGGTGTCAATCGCT CGCT TG C ----- CA ----------
CTCAGGC
GAM12953 17375 GTCTGGGGACCACGCTTGGG GG A A--------- G AACGCC
6 GGGCAACGCCGTTCCGCAAG GTCT GG CC CGCTTG GGGGC
TGGACAGTTAAAGGCCAAGG CAGG CC GG GTGAAC CCTTG
AC AA - AAATTGACAG G ------
GAM12954 13560 GTCTGGGTGGGTGTGAGAGT C T GAGA G G GTGTGTGAA
1 GGACGGTATGTGTGTGAAGT GT TGGG GGGTGT GTG ACG TAT
GGTGTATATGGAAGCATCCC CA ATCC CCTACG TAT TGT GTG
CTACAC C - AAGG A G ---------
GAM12957 16977 GTCTGTCCCCGAGGGTACGT CCCGA AC CCCGC AGACT
8 CGCCCGCCACAGACTGTGTC GTCTGTC GGGT GTCG CAC
CATGACCCACCCCAGCAGAT CAGATAG CCCA CAGT GTG
AGAC ACGAC CC ACCT- -----
GAM12958 14841 GTCTGTCTAGCCCCAAAGAG CT - AA ---- TTTCTCAGT
1 CCTGGTTTTCTCAGTATCAG GTCTGT AG CCCCA GAGC CTGGT
TGTAGCTCCTGGGGACTTCA CGGATA TC GGGGT CTCG GACTA
TAGGC CT A C- ATGT ---------
GAM12962 10051 GTCTGTTAATGTCATTGTAA TGTTAAT TC TA T TTGTT
3 AAGTAGTAGTTGTTTTACTC GTC G ATTG AAAG AGTAG
TTTAGTAATAGCCATTCTGA CAG C TAAT TTTC TCATT
C TCTTAC- GA GA - -----
GAM12965 11555 GTCTTAAGATAGATCTTCAA ATA---- TCAAAAT- CTTA C CGT ATTT
0 AATCACCTTAGCATATGCTA GTCTTAAG GATCT CAC GCATATG TA GAT
CGTGATATTTATCTCTACAT CAGAATTT TTAGA GTG CGTATAC AT CTA
ATGCCCCAGTGCCACAATTA CCAGAAC TTAACACC ACCC - CT- ----
GATTCAAGACCTTTAAGAC
GAM12967 17262 GTCTTAGGTAAATAATGTAC C AAA GTAC TTAA- GTTA
9 TCTCTTAATATGTTAATACT GT TTAGGT TAAT TCTC TAT
CATGAGAATTGGGATCTGAT CG AGTCTA GTTA AGAG ATA
GC T GG- ---- TACTC ----
GAM12971 7735 GTCTTCATCAGTATTATCCA CA- ATTA T AACGA GACAGAAA
1 TATTTAAAACGAGGTGACAG GTCTT TCAGT TCCATA TTAA GGT
AAAGCCAAAGTTAATTATGG CAGGG GGTCG GGGTAT AATT CCG
GGCTGGACAGGGAC ACA ---- T GAAA- --------
GAM12972 7598 GTCTTCCCATAAAAAATGTG T T AAAAA- CTA TTCCCCCC
3 GCTACATTTTCCCCCCAATG G CT CCCAT ATGTGG CATT
ACTACATACATAGATGGGTA C GA GGGTA TACATC GTAA
GC - T GATACA A-- --------
GAM12972 22509 GTCTTCCCCCAAGCGCATGG CC- AGC T - A- AA A AAAG
6 TTGTGGGACTAAGCACCTCA GTCTT CCCA GCA GGTTG TGGG CT GC CCTC
AAGGAGGGCACAGACCCCGC CGGAA GGGT CGT CCGAC GCCC GA CG GGAG
CAGCCTGCTGGGAAAAAGGC AAA --- - C CA CA - ----
GAM12973 10601 GTCTTCCGGCATATAGTAGA - G TAT A --- AGTATTACCAA

2 TTTCTCGCAGTATTACCAAG GTCTTC CG CA AGT GA TTTCTCGC
CGAGGAGGTTTCAATTCTCT CAGAAG GC GT TTA CT GAGGAGCG
GGCGTGAAGAC T G CTC A TTG ----------
GAM12973 17067 GTCTTCCTGCTCTGTTCTGA CTG G CTGA TT TACTC
8 ATACTTCATACTCTGCTGTA GTCTTC CTCT TT ATAC CA
TAAATGAGAGAGAACGAAGA CAGAAG GAGA AG TATG GT
C CAA G TAAA TC -----
GAM12975 11841 GTCTTCTCTAAGAAATTTTA AAG TAGA A GAAC
1 GAATGGACATTGAACAAAGT GTCTTCTCT AAATTT ATGGAC TT
TTATACAAATTTGAGGGAGA TAGAAGAGG TTTAAA TATTTG AA
AGAT GAG CA-- A ----
GAM12977 17857 GTCTTGAACCCATCTTTCTA CT A C TCT -- CC- CACA
1 TGGCATGCCTGGGCACACCC GT TGA CC ATCTT ATGG CATG TGGG
ACACCATGATCCATGAGATT CG ACT GG TAGAG TACC GTAC ACCC
GGTCACAGC AC - T --- TA CAC ----
GAM12979 13860 GTCTTGCCTCCTGTCTGCAG T CTC TCT T GA ATTT
0 CTGTGAATAGTCATTTGACT GTCT GC CTG GCAGC GT ATAGTC
GTGACTGTTGCCCTTAGCCA TAGA CG GAT CGTTG CA TGTCAG
GCCAGAT C ACC TCC T G- ----
GAM12982 2461 GTCTTGGGTTGAGCCCCAAA GAG - AA---- GG TTGTGTG
4 CCGGGTTGTGTGTTAGGGTA GTCTTGGGTT CCC CA CC G
TTGTGTGGGAAAACCCAAGA TAGAACCCAA GGG GT GG T
T AA- T GTTATG AT -------
GAM12984 15400 GTCTTTAAAACCACAGAACA AC---- ---- TAAT ATCT
4 TTTAATATACATGAACATCT GTCTTTAAA CACAGAA CATT ATACATGAAC
GTTTATGTGTTTAGTGCTAC CGGAGATTT GTGTCTT GTGA TGTGTATTTG
TTCTGTGAATTCATTTAGAG ACTTAA CATC TT-- ----
GC
GAM12985 7569 GTCTTTAGTGGAGCCTCTCC - G- GGC GAGAAGA
6 TGGCTCAGGGAGAAGACCTG GTCTT TAGTGGA CCTCTCCT TCAGG
GAAAGGGAGGGGGATTCACT CAGGA ATCACTT GGGGAGGG GGTCC
ACAGGAC C AG AAA -------
GAM12986 5145 GTCTTTCACGCCTGTCTCAC TT C TCTC CCACA TG CGACCCCA
7 TCCACACGGTGCCCCGACCC GTCT CA GCCTG ACT CGG CCC
CAGGGTCCCGAAAGTCCCAG CAGG GT CGGAC TGA GCC GGG
GCTGTTGGAC TT - CC-- AA--- CT --------
GAM12988 2327 GTCTTTCTCTGTCGCCCGGG TTT C CCG ATG--- TA ACTT
3 CTGTAATGCAGTGGTATGAC GTC CT TGTCGC GGCTGTA CAGTGG TG
TTCGGCTCACTGATGTTGTA CGG GA ACAGTG CCGACAT GTCACT GC
CAGCCATTGTGACAAAGTTT TTT A TTA GTTGTA CG ----
GGC
GAM12990 4930 GTCTTTGGCGCTGTACTTGA T - TACTTG A --- CCATG
3 GGAGGGGGCTGTCCATGGCA GTC TTGGCG CTG AGG GGGGGCT GT
TTGGTCCCCACCTGTTCGTA CGG AACTGT GAT TCC CCCCTGG CG
GATGTCAATGGC T A GCTTG- A TTA -----
GAM12994 6700 GTCTTTTTTTTTCTTCTTTT C---- TCCTTTAATAAT
2 TTTCCTTTAATAATAAAAAA GTCTTTTTTTTT TTCTTTTTT
GAAAACCAAAAAAAAAGGAC CAGGAAAAAAAA AAGAAAAAA
ACCAA ----------
GAM13002 16333 GTGAAATGAGGGTAGCAGTA GAAA AG G ACGC TCTCCAC

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9          GTGACGCCCATCTCCACTGG GT   TGAGGGT  CAGTA TG   CCA
           CAGTGCTGATCCTCAGAAAC CA   ACTCCTA  GTCGT AC   GGT
                      AAG-     --    G ----  -------
GAM13007 4629  GTGAACCCGGGAGGCAGAGC  GA     AGGCA  CT     A  CAAGATCAT
7          TTGCAGTGAGCCAAGATCAT GT  ACCCGGG    GAG  TGCAGTG GC
           GCCACTGCACTCCAGCCTGG CA  TGGGTCC    CTC  ACGTCAC CG
           GTGAC             G-     GAC--  --     -  ---------
GAM13008 4955  GTGAACCTCGCCTGGAGCAT   AACCTC-    -   T  CTCCC  CTAGCC
3          CTCTCCCTACCTAGCCGTGC GTG     GCCTGG AGCA CT    TAC
           AGCTGCTGCCAGGTTTAAGA CAC     TGGACC TCGT GA    GTG
           ACAC              AAGAATT    G   C  C----  ------
GAM13010 16146  GTGAAGAACTCGCAGTCCTT   A  AC    GTC     CT--------    TTTG
9          CTTCTCTGGCCTCTTTGGAG GTG AGA  TCGCA  CTTCTTCT       GGCCTC
           GCTCATCCAAAATAGAGGAA CGC TCT  AGCGT  GAAGGAGA       TCGGAG
           GCATGCGAAATCTACGC     A  AA   AC-     TAAAACCTAC    ----
GAM13011 15462  GTGAAGAATGGCATTCCTTC      AT-  AT     AAC   TTAT  GGGA
3          TAACAGAATTATTTCGGGAG GTGAAGA   GGC  TCCTTCT  AGAA   TTC
           GGTTTTCTCAGGGAGGAGCT TATTTCT   TCG  AGGAGGG  TCTT   GGG
           TTATCTTTAT             ATT  --     AC-   TT--  ----
GAM13013 22962  GTGAAGATTTAATGGATATT       TTAAT--  T  -------      CCCCA
2          TATTAGTTCCCCAAATTAAT GTGAAGAT     GGA ATT     TATTAGTT
           ACTTTTATAATTTCTTACGC CATTTCTG     TCT TAA     ATAATTAA
           CTGTCTTTAC             TCCGCAT  T  TATTTTC     -----
GAM13013 5235  GTGAAGATTTCATGGACACT      TT-  -  CACTTATCACTTC   TCAATACCC
3          TATCACTTCCCCAATCAATA GTGAAGAT  CAT GGA         CCCAA
           CCCTTGGGATTTCCTATGCC CATTTCTG  GTA CCT         GGGTT
           TGTCTTTAC              TCC  T  TTA----------   ---------
GAM13014 17796  GTGAAGCCGACGAAGAGACC     CCG   ---------    CG-  GTCCA
3          GCCGTCCAGGATCGTCTTTA GTGAAG   ACGA      AGAGAC   CC
           ATGAGCCCTTGTATTTTCAC CACTTT   TGTT      TTTCTG   GG
                      TA-   CCCGAGTAA    CTA  -----
GAM13022 15849  GTGAATCCTGGCAGAGTCTC  GAA  C   AGAG----  GGA   GAT
2          GGATCCCCGATGGGGAGAGG GT   TC TGGC      TCTC   TCCCC
           AGAAAGCACAAGCCAAGACA CA   AG ACCG      AGAG   AGGGG
           AC              AC- A   AACACGAA   GAG    ---
GAM13022 15012  GTGAATGAAAAAAGGTATCC   AA     AG  TC-   ATGAAACTTCCAGAAA
9          GTTATGAAACTTCCAGAAAA GTG  TGAAAAA  GTA  CGTT
           ACGAACTACATTTTTCAGCC CGC  ACTTTTT  CAT  GCAA
           GC               CG     A-  CAA   ----------------
GAM13023 17123  GTGAATGAGTAACTTATTTT   AA-    AACTT  TTT      ATG
6          GTATCAGGAATGTTTTGGTA GTG   TGAGT    AT   GTATCAGGA
           CTGTGTTTTCACTCAAACCA CAC   ACTCA    TG   CATGGTTTT
           C                CAA    CTTT-  TGT      ---
GAM13025 4838  GTGAATTAATGAGCAATCGG     TT     AATC   AAG  TCAAAGCATTTT
5          AAAGACTCAAAGCATTTTGT GTGAA  AATGAGC    GGA   AC
           ACTCCACAGTTCATTTCTTC CACTT  TTACTTG    CCT   TG
           AC               CT      ACA-  CA-  ------------
GAM13027 23011  GTGACAAAAGGCAAAGAACG    C   --  AAAGAAC   -    CCA  CT   AGGA
8          CACGGAACCCAGCCTGTGGA GTGA AAAA  GGC      GCAC GGAAC   GC  GTGG
           GGACCACCAGCGTTCCTGTG CGCT TTTT  CCG      CGTG CCTTG   CG  CACC
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CCCCCCGCCATTTTTCTCGC C TA CCCCC-- T --- AC ----
GAM13028 7604 GTGACAACATGCTGGAGCCA AA--- G -- T TAACAT
3 AGTGCTAACATGCCTTGGTT GTGAC CAT CT GGAGCCAAG GC
TCAAGGGATGGAAAAGTCAC CACTG GTA GG CTTTGGTTC CG
AAAAG G AA - ------
GAM13032 7952 GTGACAGTGCTGGCTAGTGA --- C AG A- - CTCCACTC
2 CGGCAGCTCCACTCCTGCTC GTGACA GTG TGGCT TG CG GCAG
GAGCAACGGTTACCATCAAT CACTGT TAC ATTGG AC GC CGTC
GTCAC AAC C CA GA T --------
GAM13034 2172 GTGACATTAAAACAAGGGGA AA AAGGGG A AAAGGGG
0 TATTACCCAAAAGGGGTGGG GTGACATT AAC AT TTACCCA
TGAAGTGATGGTTCGAATGT CACTGTAA TTG TG AGTGGGT
CAC GC GTAG-- A -------
GAM13034 22121 GTGACATTGACATCGTGGTA T---- A- GT ---- CAAGC
4 GGCTTCAAGCAAGCCTCAGT GTGACA TGAC TC GGT AGGCTT
GCCCAGAAGGTCATGTTCTG CATTGT ACTG AG CCG TCCGAA
TTAC CTTGT GA AC TGAC -----
GAM13060 7070 GTGAGATTCTATTTAACCAT A AACC CATGTACCTG TCCTTCCCATAT
1 AGAGACATGTACCTGAAAAA GTGAGATTCT TTT ATAGAGA AAAAAG
GTCCTTCCCATATCTTTTTT CGCTCTGAGA AGA TGTTTCT TTTTTC
CTTTGTCGAGACAGAGTCTC C GC-- ---------- ----------
GC
GAM13062 1634 GTGAGCCACCACGGCCGGCC G C CACG GG T AG TA TG AA- TG CCAATCAT
TTT
3 TATACAAAGTTTCTTATTGA GT AGC AC GCC CCTA ACAA TTTCT T AGA AG GTT GT
GAAAAGTGGTTCCAATCATG CA TCG TG TGG GGAT TGTT AAAGA A TCT TC CGA CG

TTTTTTGCCCCCTTTAGCTG G T AAAA AA - GA CA GT CTA GT TTTCCCC- ---
CTATCTCTTGAACAGAAAAG TT
TTGTTAGGAAGGTAAAAGTT
GCTGAC
--
GAM13065 19622 GTGAGCTAGCAGCTTTTTAA CTAG TTTAA AC TG T- - CAAAAATTATCA
7 TCTACCTGGAACTAAGGCCA GTGAG CAGCTT TCT C GAAC AAGG C
AAAATTATCAGCCCTTTCGT TACTC GTCGAG AGG G CTTG TTCC G
TCTGGAAGGAGAGCTGATCT TA-- ----- AA GT CT C ----------
CAT
GAM13067 2259 GTGAGGAACATAACCTCTTA T - - ATT A AAATAT-- GATTTTCACTCTG
7 CAATTGAAATATTTAGAAAT GTGAGGAACA AACCT CTTA CA GAAAT TTTAG AATCCT
ATAATCCTGATTTTCACTCT CATTTTTTGT TTGGA GGGT GT TTTTA AAGTT TTAGGA

GCCTAAGGATTTCCACGAAT - A A CAT A AAGCACCT ----------
TGAAAATTTTTACTGATGGG CCTA
AAGGTTTGTTTTTTAC

GAM13068 15382 GTGAGGACATTGCCATGAAC ACA TG A A------ TT CTCCCACATC
2 TTCCTTGTCTCCCACATCAC GTGAGG T CC TGA CTTCC GT
TCGGAAGCCCCCCATCAAGG CACTCC A GG ACT GAAGG CA
TGACCTCAC --- GT A ACCCCCC CT ----------

GAM13070 15300 GTGAGGAGTTTTTTTAAAGT GA---- -- AG AAAAAAA
1 TTTCTTTTTTAAAAAAAAAA GTGAG GTT TTTTTAA TTTTCTTTTTT
AAAGAAAGTTAAGGACAAAC CACTC CAA AGGAATT GAAAGAAAAAA
GGCAAACTCAC AAACGG AC -- -------
GAM13071 10316 GTGAGGCAGTTCACCAGCCG G T CA - - CTC- CAAGG T ATCAAAGTC
1 GCTCAGGTCTTCTCTGTTCA GTGA GCAGT CAC GCCGG C TCAGGTCTT TGTT TTCCG CATC

AGGTTCCGTCATCATCAAAG CACT TGTCG GTG CGGTC G AGTTCAGGG ACGG AAGGC GTAG

TCAAAGATGCGGAAGGCATA G - -- T T TAAT ----- - ---------
ATGGGACTTGATGTCTGGCG AAA
TGGCTGTGTCAC

GAM13084 13804 GTGAGTTCTCTGCCCGCTCT A C CCG T - CCGCGTC TCCCCCT
2 TTGCCCACCCGCGTCAGGCC GTG GTT TCTGC C CTTTGC CCAC AGGCCGG
GGTCCCCCTCCGGCCTCTTC CAC CAA AGGCG G GGAGCG GGTG TCCGGCC
TGTGGCGCGAGGGACAGCGG - - ACA - C TCTTC-- -------
AAACCAC
GAM13087 15262 GTGATACTGAGGGTTTATCA TACT- TTTA- C AACATCC CAAGAACC
8 ACTGAAACATCCGTTCCAAG GTGA GAGGG TCAA TGA GTTC
AACCGAGCCCAAAAATCATT CACT CTCCT AGTT ACT CGAG
GAACATTTCCTCCAAATTCA TAAAC TTACA - AAAAACC --------
C
GAM13092 10874 GTGATCACCCCGGACGGGCG TCA A GT - C G - ATGGCCAAAA
0 TCCAGGACCCTGAGGGCCAT GTGA CCCCGG CGGGC CCAGG AC CT AGG GCC
GGCCAAAAGGCTCCTGAGTG CACT GGGGTC GTCTG GGTCC TG GA TCC CGG
TGCCTGGTGGTCTGGCTGGG C-- G GT G T G T ----------
GCTCAC
GAM13096 608 GTGATCTGAGTCTGGCTTCT CT CT - TTT-- TGTTTATTTTGTTT
5 TTCATTTACATGTTTATTTT GTGAT GAGT GGCTTC TTTCA ACA
GTTTTGTTTTTTTGAAATGG CACTG CTCA CTGAGG AAAGT TGT
AGTCTCACTCTGTCAC T- CT T TTTTT ----------
GAM13098 1796 GTGATGAACTGGGTCCCCTG - - GGTCCCC C C CTTATTTT
4 CGGCCACTCTTATTTTGGTG GTG ATGAA CTG TG GGC ACT
CCACACTTAATAGCTTCATC CAC TACTT GAT AC CCG TGG
CAC C C AATTC-- A - --------
GAM13100 17019 GTGATGCCAGAATGTATTTT T GCCAGA C- CT AG -- --- C A G - -
3 CGTACTGTTAGGCCCTTGGA G GAT ATGTATTTT GTA GTT GC CCTTG GAA AG TACC GT GC
TTT
ACAGATACCGGTGCTTTCTG C CTG TACGTAAGA CAT CAA CG GGAAC CTT TC GTGG TA CG
AAA
AAAGATGAAAGAAATGCAAT T ATAA-- AC C- A- TT GTA C - G A T
GGGTGCTCTTCATGCAAGGT GAAAGATGAA
TGCAAACCTACCAAGAATGC CT
ATAATAGTCTC GA

GAM13100 17313 GTGATGCGGTTGTGAGGACC TT GA ACCATG A - GC GGAG
7 ATGGAGAGTGACCTGCGAGG GTGATGCGG GT GG GAG GTGA CCT GAG
GAGCTTAGGGATCACCTCAG CATTACGTC CA CC CTC CACT GGG TTC

CCAACTCTGCATTAC T- A- GA---- - A A- ----
GAM13101 17716 GTGATGCTCGAGCAATTGGC AT-- - GA TT CTT GAGGG
1 TCTGCTTCAGAGGGTGCCCA GTG GCT C GCAA GGCTCTG CA
GAGCTCCTTGCAAGAAGTTT CAC TGA G CGTT TCGAGAC GT
ACCAC CATT A AA CC CC- -----
GAM13101 4641 GTGATGGAACTGCTCTGTAT A AA CT --- CTA A -- ATACA
5 CTTGACTATGATGGTCGATA GTG TGG CTG C TGTATCTTGA TG TGG TCG
CATGAACCCACACTCAGGAT CAC ATC GAT G ACATAGGACT AC ACC AGT
ACAATTGGATAGAACTAACA A AA AG TTA C-- - CA -----
C
GAM13103 2389 GTGATGTCCTATGCCTTATG C - TATGCAAA TTC- GACAA
8 CAAAGATTCTAGAGGACAAC GTGATGTC TATG CCT GA TAGAG
TCTATACCTCAGGTCATAGA TACTACAG ATAC GGA CT ATCTC
CATCAT - T -------- CCAT -----
GAM13108 2338 GTGATTCATCAACTTAATGC A- ACTTAA CC-- G GATTCG
3 CCCTTTGTGGCAGATTCGTG GTGATTC TCA TGC CTTTGTG CA
GTACAGAGAAAAGCAGCGTG CATTGAG AGT ACG GAGACAT GT
AGGGAGTTAC GG GCG--- AAAA G ------
GAM13116 16921 GTGATTTTTTTGGTCTTATT ATTT- TT - GTATTTC AACTTCCATATA
9 ATGTATTTCCTGAAATAATT GTG TT GGT CTTATTAT CTGAAATAATT
AACTTCCATATAAGTTGTTT CGC AA TCA GAATAATA GATTTTGTTGA
TAGCTAAATAATAAGCACTT GAGTT TT C AATC--- ----------
TAATTGAGCGC
GAM13123 2076 GTGCACCATTTGATAATACC - TTG A G- CAAG GCTA
4 CTGGACCAAGTTGGCTACAA GTGCAC CAT ATA TACCCT GAC TTG
GTCAGGGGGTGATATGTGTG CACGTG GTG TAT GTGGGG CTG AAC
TGCAC T --- A GA ---- ----
GAM13123 22774 GTGCACCCGCTGCCTCATCA A GCC CACCTT AGAT AAGTTCCA
5 CCTTCGCAGATTCCAAGTTC GTGC CCCGCT TCAT CGC TCC
CAGGAGCGTCACATGAAGCG CACG GGGCGA AGTA GCG AGG
GGAGCAC A --- CACT-- ---- --------
GAM13123 13893 GTGCACCGACTGAGTTCTGT CC C - TT GTCCCA TT TC AACA
8 CCCATGTTGCTTTCTGCTGT GTGCA GA TG AG CT TG GCTT TGCTGT
AACAGCAGCACTGAGTTCCA CACGT CT AC TC GA AC TGAG ACGACG
ACGCAAAGTCCTACAATCAC CA A A CT AACGCA CT TC ----
TGCAC
GAM13124 17580 GTGCACCTGAGCCGTGGAGG C C-- GG T TCCAGAT
0 GGCTGAAGTCCAGATCTTTG GTGCA CTGAG CGT AGGGGC GAAG
CTCCTGACGTCCCTCAGATG CACGT GACTC GCA TCCTCG TTTC
CAC A CCT G- - -------
GAM13124 15782 GTGCACCTGTGTGCGCAGGC C - CGC CATC GT- A CGTGC
2 ATCCGAGTCCATGTCACGTG GTG ACCTGT GTG AGG CGA CC TGTCA
CTGGCACGGCAATCGCCATC CAC TGGACA CAC TCC GCT GG ACGGT
CTTTCACAACAGGTCAC - A TT- TACC AAC C -----
GAM13124 17581 GTGCACGAGATCACCCGCTC G AT ACC - A ACGGA
3 CACCATCACGGAGATGGCGG GT CACGAG C CGCT CC CCATC
CGGCGCAGGGCCTCGTGGAC CA GTGCTC G GCGG GG GGTAG
G CG GAC C C -----
GAM13124 22735 GTGCACGCCAATGTGTTCGG AC - ATG TCAA G TG GTGA ACAAGATC
4 CATCAAGGACTGGGTGACGC GTGC GC CA TGTTCGGCA G AC G CGCCGT

CGTACAAGATCGCGGTGCTG CACG CG GT GCAAGTCGT C TG C GTGGCG
GTGCTGCTGAACGAGATGAG C- A AGA ---- G GT ---- --------
CCGCAC
GAM13124 531 GTGCACGCTTGGCCACCCTT T C CCCTT--- AT--- CTCC
7 GCCATTTCTGCTCCCAGAGT GTGCACGCT GG CA GCC TTCTG
CTCAGGCTCCCCTTCTGACC CGCGTGTGA CC GT CGG GAGAC
CAGTGTGCGC C A CTTCCCCT ACTCT ----
GAM13126 112 GTGCAGAAAAGGGGTAAAAA C T AAT TG C C ATTTT
4 TGGCAGTGGGAGTCTACCAT GTG AGAAAAGGGG AAA GGCAG GGAGT TA C
TTTGTTAAATTCTTTCTGCT TAC TTTTTTTCCC TTT TCGTC TCTTA AT G
TTTCCCTTTTTTTTCAT T - --- TT A T -----
GAM13126 10556 GTGCAGAAGGTCAACGCCGC C AAC G A TC TCTCCT
5 AGGCACAGATCCCAGCTCTC GTG AGAAGGTC GCC CAGGCAC GA CCAGC
CTGTTGGCTTCGTGCTTGGG CAC TCTTCTAG TGG GTTCGTG CT GGTTG
GTAGATCTTCTTCAC T A-- G - TC ------
GAM13126 13103 GTGCAGACTGGTGCTTAAAA ACT AAAA AG- G ATTGA
9 TGGAAGTCGATATTGAATGG GTGCAG GGTGCTT TGGA TC AT
AGAGTCTAGAAGTACCCTGT CATGTC CCATGAA ATCT AG TA
AC --- G--- GAG G -----
GAM13127 1793 GTGCAGATACAGCTCCTACC C C- TC A AG G AGATAAAGCA
7 ACAGTAGGGGTGGTCTCAGA GTG AGATA AGC CT CCAC TAGGGGT GTCTC
TAAAGCAGGGATGGCTTCTG CAC TCTGT TCG GA GGTG GTCTTCG TAGGG
GAGTGGAAGTGGCTCCTGTC - CC GT A AG G ----------
TCAC
GAM13130 13905 GTGCAGCTAATGGTCGTCGT TG A- T -- T- G TACCT
0 CGGCATCCTCCTGGCCTACC G CAGCTA TGG CGTCG TCGGCATCC CCTG CC
TGGCAGGCTGGGTGCTGGAG C GTCGGT GTC GCGGT GGTCGTGGG GGAC GG
TGGCGCTGGCTGGCTGTGC GT CG - GA TC - -----
GAM13131 4805 GTGCAGGCCTGCTTTGGCCG GCC TG C- C A GAATAC- CAACGACTC
3 CTCAAGGGAATACCAGCTCA GTGCAG TGCTT G CG TCA GG CAGCT
ACGACTCAGCTGCCTACTAC CACGTT GCGAG C GC AGT CC GTCGA
CTGAACGACCTGGAGCGTAT AT- GT CA A - ATCATCC ---------
TGCAC
GAM13133 15259 GTGCAGTCTTTGGGCTAAGG CTTT AAG-- GA---- GCAA
8 CAGGGCAGGATATGCAAGTG GTGCAGT GGGCT GCAGGGCAG TAT
GAGATATTGCCTTGCACAGA TATGTCA TTTGA CGTTCCGTT GTG
AGTTTTTACTGTAT TT-- AGACA ATAGAG ----
GAM13134 11804 GTGCAGTTATGAATTGTTAA TTAT ACAT T---- G CTTTATTT
6 CATGTTAATACACAGTTGCT GTGCAG GAATTGTTA GTTAA ACACA TTG
TTATTTCAGATGTGTTTGTC TACGTC CTTGACAAT CAGTT TGTGT GAC
TTGACTCACTAACAGTTCCT TTC- CACT CTGTT A --------
TCTGCAT
GAM13137 2116 GTGCATCTGCCTCCTGTGCG TG CC- TC CACGCT - AT AGTC
6 TCTCTGTGCACACGCTTGTA G CATCTGCCT TGTGCG TCTGTGCA TGTAT CTGG GCAG

TCTGGATGCAGAGTCCTGTG C GTAGATGGG ACGCGT AGACACGT ACATG GACC TGTC

CCCAGTGTACATGCACAGAT GT TCT GT ------ T CG ----
GTGCGCATCTGGGTAGATGT
GC

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GAM13146 13589  GTGCCAGGAAAGGCGGGATT  G     A ---     ACTT-       TT  CCGG
7          ACTTCTTTTTTCTTTTTTCA GT CCAGGAA GG  CGGGATT    CTTTTTTCTT  TTCA
           CCGGTGGATTGGGGAGAGGG TA GGTCTTT CC  GCCCTGG    GGGAGAGGGG  AGGT
           TCCGGGGTCCCGAAACCCTT  G     C  AAA     GGCCT       TT  ----
           TCTGGGAT
GAM13146 4836   GTGCCAGGCTCTTTTTCACA   C  G-    TTCACAACCAG  T   GAAC
9          ACCAGCTCTCAGGGGAACTC GTGC AG  CTCTTT        CTC CAGGG
           TTGTGGGAACTCACAGAGAG CACG TC  GAGAGA        GGG GTTCT
           GACTGCAC           - AG     CACTCAA----  T    ----
GAM13148 15990  GTGCCATGCTTTGCCATGTC   C    TTT   T  ------    -   TCCACCC
8          CCAGGTGTACTGTCCACCCC GTG CATGC  GCCA GTCC     CAGGTG TACTG
           AGTAGTATCTGCCGTTTGGA TAC GTACG  CGGT TAGG     GTCTAT ATGAC
           TTGGCTGCATGACAT       A    T--   -   TTTGCC     G    -------
GAM13150 10827  GTGCCCAATCAATTCTTGGT    CCAATCA  C     TATT--    CCA
0          TTATTCTTTTCCAAAAAGTA GTGC      ATT TTGGTT     CTTTT
           AAATAACCAAAGTCTTAAAA CATG      TGA AACCAA     GAAAA
           GTAC               AAAATTC  -     TAAAAT    ---
GAM13150 7504   GTGCCCACCCTGCAGTCTTC      CCCT  GT    TCCTTC  TCCAGCT
7          ATCCTTCACTCCAGCTGTTG GTGCCCA    GCA  CTTCA     AC
           CCTCTGAAGGTTGCCTTTGG CACGGGT    CGT  GAAGT     TG
           GCAC                TTC-  TG    CTCCGT  -------
GAM13152 13740  GTGCCCCCTGCTGAAGCCCT   - -    TGA   CT-  CC  GA    -  ACGGCGA   TG     - T
8          GGGCCCTGACCTTCTCCTAC GTGC CC CCTGC   AGCC   GGG  CT  CCTTCT CCT     GCCC
CAGGCCT C
           GGCGAGCCCTGCAGGCCTCT TATG GG GGACG   TCGG   TCC  GA  GGAAGA GGG     CGGG
GTCCGGA G

           GCCCTGAAGGCCTGGGGCGG    A  A    CG-   AAG   AA --     A  -------   --     A -
           GAAGAAGGAGAACCTGAAGG GCCCT
           CTGCGCAGGAGGAGTAT

                        -----
GAM13154 4538   GTGCCCTAAGCCCAGCTTTT        GCCCA---   TTT   C  TAAACT
4          AACCACTAAACTGTAGTTTC GTGCCCTAA       GCT   AAC AC
           TGGCATCAAGTATTAGGGCA CACGGGATT       CGG   TTG TG
           C                    ATGAACTA   TCT   A  ------
GAM13154 14145  GTGCCCTAAGGCCCCTAACT      TA   - C       T   -  CT   TCTT
5          CTTGCTGGCTGTTTCTTGAC GTGCCC  AGG C CCTAACTCT GCT GG  GTT
           CCCAAGCCAGGGTTGGGAGT TACGGG  TCC G GGGTTGGGA CGA CC  CAG
           CCTCTGGGCAT             TC   T A       C   A  C-   ----
GAM13155 17526  GTGCCCTGGGGCTTTCCAAA    CC      TTCCAA    A  TC   TGCC
5          GGCACCTCGCATGCCTGTTT GTGC  TGGGGCT     AGGC CC  GCA
           GGAGCCTGTCAGCCCCAGCA CACG  ACCCCGA     TCCG GG  TGT
           C                  --      CTG---    A  TT   ----
GAM13161 6894   GTGCCTGCTTCTCCTTCGCC   GCC      CCTTC-    GT--   ATGATTGTAA
8          TTGTAACATGATTGTAAGTT GT   TGCTTCT     GCCTT    AAC
           TCCTGAGGCCTTCCTAGAAG CG   ACGAAGA     CGGAG    TTG
           CAAAAGC             AAA      TCCTTC     TCCT   ----------
GAM13163 7010   GTGCCTGTTGGACATCCTGG    C  --   ACA    G  AC   CGG---  AGGA
8          ATACCGCCGGCCAGGAGGAG GTGC TGT  TGG   TCCTG AT  CGC     CC
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TACAGCGCCATGCGGGACCA CGCG ACA ACC AGGGC TA GCG GG
GTACATGCGC T TG --- G CC ACATGA ----
GAM13164 17752 GTGCCTTCAGAGCCCTGTGC GA- - - CAC- -- CGAG
2 TGTGCTCACCCGGTGCCGAG GTGCCTTCA GC CC TGTGCTGTGCT CCG GTGC
GCATGGCGGACCTGGCGCAG CATGGAGGT CG GG ACACGACGCGG GGC TACG
CACACGGAGCCGATGGAGGT AGC A C TCCA GG ----
AC
GAM13165 4989 GTGCCTTGCAGGGCGCTGTG - ---- C GTGA - CCGGT
0 AGGTCCAGGCCGGTCTTGGC GTG CCT TGCAGGG GCT GGT CCAGG
GCCGAGAGCCCCTGCACTCC CAC GGA ACGTCCC CGA CCG GGTTC
AGGCCAC C CCTC - GAG- C -----
GAM13166 162 GTGCGACGGACGCTCCAGAG C- CT AA- AACTATTACC
3 AAGAAACTATTACCTCCGAC GTGCGA GGACG CCAGAG GA
TCTGGCACGTTCACTCGCGC CGCGCT CTTGC GGTCTC CT
CA AC AGC ----------
GAM13167 7846 GTGCGATCTCGGCTCACTGC G AGAA G A - AC
0 AATCTCCGCCTCCCAGAATC GTGC ATCTCGGCTCACTGCAATCTCCGCCTCCC TCAAGCGA TCTC
TGCCTCAG CT
AAGCGAGTCTCATGCCTCAG CGCG TAGAGCCGAGTGACGTTGGAGGCGGAGGG AGTTCGTT
AGAG ACGGAGTT GA

CTACTTGGGAGATTGAGGCA G CCCA A - A --
GAGAATTGCTTGAACCCGGG TTGGG
AGGCGGAGGTTGCAGTGAGC
CGAGATGGCGC

GAM13170 11567 GTGCGGCGTGCACTGGACTT C GA TT- - T GA-- ACAAAGCCAGCAACGACA

0 TGCCGTCGGCGAGTACAACA GTG GGCGTGCACTG CT GC CG CGGC GTACA
AAGCCAGCAACGACATGTAC CGC CCGCGCGTGGT GA CG GC GCCG CATGT
CACAGCCGCGCGCTGCAGGT - G- CGT C - ACAC ----------
GGTGCGCGCCCGC
GAM13170 22645 GTGCGGGTGCTGCAGATGCC C--- - GC T- C AATGC
8 CGCGGCAATGCGCCTGGGCC GTG GGGTG CT AGA GCCCG GGC
TTCTAAGTCACTCATATCAC CAC CTCAC GA TCT CGGGT CCG
TATA T A- TC - -----
GAM13171 595 GTGCGGGTTTGTTACATAGG C T A AAAC- GTCCCAT GTTTGCTG
0 TAAACGTGTCCCATGGTGGT GTG GGGTTTG TAC TAGGT GT GGTG
TTGCTGCACCTATCAACCTA CAC CCCGAAT ATG ATCCA CA CCAC
TCACCTAGGTATTAAGCCCC - T G CTATC ACTAT-- --------
AC
GAM13175 17574 GTGCTACTTGGAGTGCAGGC TA-- T - CA -- CA AACA
5 ATCACAAACATGGAGTCCGC GTGC CT GGAG TG GGC AT CA
CATCATCTCCTGGAACTGCG CGCG GG CCTC AC CCG TG GT
C TCAA T T TA CC AG ----
GAM13180 11906 GTGCTCCCGTAGAGCCCGTT CCC AGAG CG TT GTA -- TTC
1 GAGGTTGGCGTAGTGGCAGT GTGCT GT CC TTGAGG GGC GTGG CAG
TCCTGTACCACCAGGCCCCT CGCGA CA GG GGCTCC CCG CACC GTC
CGGTAGGAGACAGCGC --- GA-- AT -- GAC AT ---
GAM13181 22847 GTGCTCGTAGGGAGGTACAC G - A - T - ATA T-- T G AA AGGCG

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1          ATAGTCGGTTGCTCCCGGCA GT CT CGT GGGA GG AC AC   GTCGGT   GC CCC GCACC  GGCCGC

           CCAAGGCCGCAGGCGGCGGT CA GA GCG CCCT CC TG TG   CGGTCG   CG GGG CGTGG  CTGGCG

           CGGTGCAGGGCGCCCCGCTG  - C  -   A - A ATG     CCC  C   A    --     -----
           GCGTAGTAGTCCATCCCGCG
           CAGAC
GAM13184 13636  GTGCTGAGGTACAAGCCCCC        TA  A    CC  CGAGCGA    AC    C    ACGAC
4          GCCGAGCGAATGTAACCCGG GTGCTGAGG  CA GCCC  GC      ATGTA  CCGGC TTGG
           CCTTGGACGACCCGACGCCG TACGACTTC  GT CGGG  CG      TACAT  GGCCG AGCC
           GACTACATGAACCTGCTGGG        TA  A    T-  TCCAAG-    CA    C    -----
           CATGATCTTCAGCAT
GAM13186 2402   GTGCTGCTGCTGCTCGGCCT     GCT    TC   - GTT-      CCCCC    TCT
6          GTTTCGGCCGCCCCCCGCGC GTGCT   GCTGC  GGC CT    TCGGCCGC    GCGC
           TCTGCGCGCGGCCGGTAAAG CGCGA   CGGCG  CCG GG    GGCCGGCG    CGCG
           GAGCCCCGCGGCCTAAGCGC     ATC    CC   A  AAAT      -----   ---
GAM13186 11056  GTGCTGCTGGAAAGGATCTT    CT    G    AT     CT--   ---     CTAGTT
7          TGGCTAGGTGGATGACTAGT GTG  GCTG AAAGG  CTTTGG    AGGT   GGATGA
           TTTATTCAAAGCCTTTTCTC CAC  TGAC TTTCC  GAAACT    TCCG   CTTATT
           AAAGCCCTTTCAGTTACAC    AT   -    C-     CTTT    AAA     ------
GAM13187 13105  GTGCTGGAATCCACAGTTTC     --  AA  CACA    C      G   ATGCAA
4          TCCGGAGGGCTATGCAAGGC GTGCT  GG  TC    GTTT TCCGGAG GCT
           GCTTTGGAAAGGCGAAGCCT CGCGG  CC  AG    CGGA AGGTTTC CGG
           GGGCGC                GT  GA ----   A      G   ------
GAM13190 7672   GTGCTGGGGCTGACAGGCTC    -      GACAGGC    AC     GCGAG
1          CAAACAGGCATGCGAGGTGC GTGC TGGGGCT      TCCAA  AGGCAT
           CTTTGGAAAGCCCCAGGCAC CACG ACCCCGA      AGGTT  TCCGTG
                          G      A------     --      -----
GAM13190 12002  GTGCTGGGTCTCCTCCTGGT          CC  --   TG   GCA-------     TACCC
3          GAGGGCAGGAATCTACCCGG GTGCTGGGTCT  TC  CTGG  AGG        GGAATC
           TTCCGTTTCTGAGACTTTGC TATGATTCAGG  AG  GACC  TTC        CCTTGG
           CAGCTGAAAGGACTTAGTAT          AA  TC   GT   AGAGTCTTTG     -----
GAM13192 16016  GTGCTGTGGCTCTAGACGAC       G    A  CGACTAAAGGACC    A   GAACT
1          TAAAGGACCTGAGATCCGAA GTGCTGT GCTCT GA           TGAG TCC
           CTGGGCTCATCAAGGGCAGC CACGGCG CGGGA CT           ACTC GGG
           GGCAC                 A    A -------------    -   -----
GAM13192 16000  GTGCTGTGTGTCACCAACTG    TG G   CA     GG  T  T   TT     AG  GGAA
4          GTCTTCTAATTTGGAAGGAG GTGC  T TGT  CCAACT  TC TC AAT  GGAAGG  TT
           TTGGAAAGGCCTTTTTGTTG CACG  G ACA  GGTTGA  AG AG TTG  TTTTCC  GA
           ATGAAAAGTTGGAAACAGTG    GT -   AA     AA  T  -   T-     G-  ----
           GCAC
GAM13192 15641  GTGCTGTTAGCCCGCTCCTT        AG     TCCT---       A--  CA  TGAAGAAT
7          GGAAGTTAGACATATGAAGA GTGCTGTT  CCCGC      TGGAAGTT   GA  TA
           ATTGGATCAGAGATTTCTAT CACGACGA  GGGCG      ATCTTTAG   CT  GT
           GACAGTGCGGGAAAGCAGCA        AA     TGACAGT       AGA  AG  --------
           C
GAM13193 136    GTGCTTAAGGGCTTCCGGAA     TTA    CT     ACGG    GTCTATGG
3          CGGGGCTGTCTATGGAGCCA GTGC   AGGG  TCCGGA    GGCT
           AAATCCGGGCCCCTCACGCG CGCG   TCCC  GGGCCT    CCGA
           C                  CAC    C-     AAAA    --------
```

GAM13194 9921 GTGCTTCAGGAGCTGGGTGC AGGAG GT G AA CACAT
6 TGGGGAAGCCACATGCACTG GTGCTTC CTGG GCTG GG GC
CGGCGTCCAGAGGCAGAAGC CACGAAG GACC CGGC TC CG
AC ACGGA TG G A- -----
GAM13196 448 GTGCTTCGTCAACGTTCTGT C--- AAC T TG CT GTGTCA
0 GGCCTTGGAGCTCTGTGTCA GTGCTT GTC GTTCTG GGCCT GAG CT
AGGCCTTTGAGGCCCAGAAC CGCGAA CAG CAAGAC CCGGA TTC GA
CCAGACCCCAAAGCGC ACCC ACC - GT CG ------
GAM13196 17396 GTGCTTCTGAGGTTTGACCA -- AG-- A - T GGTTGTTA
7 GCTTCTGGTTGTTAAGGTGC GTGCT TCTG GTTTG CC AGC TCT
TCGGCAGATACGACAGGTGG CACGG GGAC TAGAC GG TCG GGA
GCAC GT AGCA - C T --------
GAM13197 16926 GTGCTTGAGGTCTCCCTGCT CTT C- C G G A G A A AACA
4 CTTGGTGGCAGTGGTAGCAG GTG GAGGTCTC CTGCT TTG TG C GT GT GC GC
CAACAGCAGCAGCAGCAGCA CAC CTCCAGAG GACGA GAC AC G CG CG CG CG
GCAGCAGCAGCAGAGACCTC CT- AC C G - A A A A ----
TCCAC
GAM13199 16249 GTGCTTTCCGGAAGTTAGAT TTTCC TTAGATGA CG- A ------ TAAAGC
3 GAATTGTACGGCACTTGGCG GTGC GGAAG ATTGTA GC CTTG GCG
TAAAGCCGCTTCCCTCAAGA CACG CCTTC TAACAT TG GAAC CGC
GTAACTACAATCTTCCCATG TAC-- -------- CAA A TCCCTT ------
CAC
GAM13203 7068 GTGGAAACTGTGTGGATGGA ACT - T T A AAGG GGGGTTGAAG
6 ATAGTATTATGTACAAGGCA GTGGAA GTGTGGATG GAA AG ATT TGTAC CA
GGGGTTGAAGTGATAGGTAC CACTTT CACATTTAT CTT TC TGA ACATG GT
AAGTTCTTTCATATTTACAC AT- A - T - GATA ----------
TATTTCAC
GAM13204 15008 GTGGAAAGTACGGGCAGTTC A AC-- CA CA - GAACCCTGG
5 AGTGGCCTGAACCCTGGAGG GTGGAA GT GGG GTT GT GGCCT
CCGACCCAATAACCCACCCG CGCCTT CG CCC TAA CA CCGGA
CATTCCGC A CCCA AA CC G ---------
GAM13208 2074 GTGGAAGCTTGTTTAATATC GA T- A C T AC TCATCC
2 GCTCTACCATCATCCTGAAA GTG AGCTTG TTA TAT GC CT CA
GGCATAATAATTTGAGTTAC CAC TTGAGT AAT ATA CG GA GT
AC A- TT A - - AA ------
GAM13210 22919 GTGGAATATCAAAGGTAGAG - CAAAG A T TTCTG CTG GCCTGA
1 GGGTGATTCTGTGAGACTGA GTG GAATAT GTAG GGGG GA TGAGA ATAG
TAGGCCTGACTATTCTCAAT CGC CTTGTG CGTC CCCC CT ACTCT TATC
TCTCCCCACTGCAGTGTTCA A A---- A T TA--- --- ------
CGC
GAM13214 16990 GTGGACCAGGCTGTTGAAGT TG A ---- - TC A CTTCTA
5 CTGGATGCTTCTACAACCAC G G CCAGGCT GTTG AAG TGG TG
TCTTCCGATGAAAAGCCTGG C C GGTCCGA TAGC TTC ACC AC
GCTGC GT G AAAG C TC A ------
GAM13215 17846 GTGGACGAATATGATCCAAC G C TGA CAATAG A - - GAA AAGTA
3 AATAGAGGATTCCTACAGGA GT GA GAATA TCCAA AGG TTC CTA CAG GC
AGCAAGTAGTAATTGATGGA CA CT CTTAT AGGTT TCC AAG GGT GTT TG
GAAACCTGTCTCTTGGATAT G - --- CTCTG- A A A AA- -----
TCTCGAC
GAM13217 22703 GTGGAGAAACCTGACCGGGC AAA GA C - A GTAC- TGGG

9 GTGGGCACATGTACCTAGTG GTGGAG CCT CCGGG GTGG GC CAT CTAG
GGCTAGTGAAGGTGGGCGCC CATCTC GGG GGCCC CACC CG GTG GATC
ACCCCGGGGGCTCTAC --- -- - G G GAAGT ----
GAM13219 16993 GTGGAGACGGGGTTTCACCA -- --- TCACCATGTT AGGAT
9 TGTTGGCCAGGATGGTCTCA GTGG AGA CGGGGTT GGCC
ATCTCCTGACCCTGCGATCT CACC TCT GTCCCAG CTGG
GCCCAC CG AGC TCCTCTAACT -----
GAM13222 14939 GTGGAGCAGCAGGGGGCTGA AG - - A - ATCC
3 TGCCTTTGATCCCGAGGAGT GTGG CA GCAGG GGGCTG TGC CTTTG
ACCAGTTCACTTGCTTGACC CATC GT CGTTC CTTGAC ATG GGAGC
TAC CA T A C A ----
GAM13222 11088 GTGGAGCCCAGACGCTCTCG CAGACGC ACT CCCCG
7 GCTCACTGGGTCCCCGGCCC GTGGAGCC TCTCGGCTC GGGT
CCCGAGCTGAGGAGGCTTCG CGCTTCGG GGAGTCGAG CCCG
C A------ CCC -----
GAM13223 17207 GTGGAGCTGCTCACTCTGCC - -- T C T CC - TGA- AG ATGGCAG
7 ATGTGCTCCCTGACCTGAAG GTG GAGCT GC CACT TGCCA GTGCT CTG ACC AGG GAGG

GAGGAGGATGGCAGCCTCAG CAC CTCGA CG GTGG GCGGT CACGA GAC TGG TCC CTCC

CCTGGATGGTGCAGACAGCA T AC - T - CA G TAGG GA -------
CTGGCGTGGTGGCCAAGCTC
TCAC
GAM13225 13790 GTGGAGGCCACTGAGGGGGT AG- A G T AACT- AGG
7 GGCAACTGCTGGAGGCCAGT GTGG GCC CT AGGGGG GGC GCTGG
TCCTGGCTCCCCCTGGGGCA CATC CGG GG TCCCCC TCG TGACC
TACTAC ATA - - - GTCCT ---
GAM13225 22502 GTGGAGGCGCTGTGTCTCCT A- - GTCT AC A GAGGGCT
9 ACGCAACTTCTGAGGGCTGG GTGG GGC GCTGT CCT GCA CTTCT
AGGGTGCCAAGGGCAGCTGC CGCC TCG CGACG GGA CGT GGAGG
TGACCGC AG T ---- AC G -------
GAM13226 16170 GTGGAGGCTGTGGAGCTGCT CT GA TAATTCGC ATTT
4 AATTCGCAATCATTTGGTTA GTGGAGG GTG GCTGC AATC
ATATGCAGCAGTATGATCTT CACTTCT TAT CGACG TTGG
CAC AG GA TATAA--- ----
GAM13226 7907 GTGGAGGGAACATTCTGCTT AACAT C GCACCA GAAGAAGAAACCA
6 TTCAGGCACCAGCTGTGAAG GTGGAGGG TCTGCTTTT AG GCTGT
AAGAAACCAACAGTAACTAA TATCTTCT AGACGGAAA TC TGACA
AGGCAGATCTTCTAT ----- - AA---- ----------
GAM13227 6746 GTGGAGGGTCCACCCACCCC G CACCCACCC TA- TGAGGCC
5 AGGTAGCCCAGGTGAGGCCC GTGGA GGTC CAGG GCCCAGG
CTGGGTCCCCCTGTCACTCA CACCT TCGG GTCC TGGGTCC
GGCTGTCCAC G ACTCACT-- CCC -------
GAM13228 11621 GTGGAGGTGGTGATATGGGA G G A GGATA AG C- ATA AAG G T GAAG
0 TAGGAGGTTTCTCATATACT GTGGAG TG TGAT TG GG GTTT TCAT CTCTGGAG AGAG CTA
GT
CTGGAGAAGAGAGGCTATGT CATCTC AC GCTG AC CC CAAG AGTG GAGACTTC TCTC GGT
CG

GAAGGCTGGGCTCTGGACTT A G G GCAGA CA AT GCG AGG G - ----

CAGAGGCGGTGATAGAACAC
CCAGACGCAGGTCGGCAACT
CTAC

GAM13230 19665 GTGGATACTGGCAGCAGCAA TG GCA---- AG TAGGA AGTAT
3 GGGGCTAGGAGTCAGTATGA GTGGATAC GCA GCA GGGC GTC
TGGGTGTCTGTGCAAAACAA CGCCTGTG CGT CGT TCTG TAG
TGCTGGTGTCCGC GT AACAAAA G- TGGG- -----
GAM13230 72 GTGGATAGCTTGGTGCCAAT G- TT---- G--- A G T G - ACTGA
6 TGGTCGTGGTCAGCGTGAAC GTG ATAGC GGT CCA TT GTCG GGTCA CG TGA
TGATTATTGGTGACCCGACA CAC TATCG CCA GGT AG CAGC CCAGT GT ATT
GACTGGGAAAACCTCAATTG AG TTAACT AAAG C A - G T -----
CTATGACAC
GAM13232 13939 GTGGATCCTGCATGAAGACA CC ATGAA CTGAC CC GACGTA
3 GTGGCTGACGGTGCCTGGAC GTGGAT TGC GACAGTGG GGTG TG
GTACAATACCACTTCCGCTG CGCCTG ATG CTGTCGCC CCAT AC
TCACGGTAAAGTCCGC AA GCA-- TTCA- A- ------
GAM13235 16216 GTGGATTCCCACTTTAGCCA ATT TTTA - GTGCC ATAAATACA
4 TCTGTGCCTGGATAAATACA GTGG CCCAC GCCAT CT TGG
CCAAGAAAGAATGGTGGTTG CACC GGGTG TGGTA GA ACC
TGGGCCAC --- TTGG A AAGA- ---------
GAM13235 7054 GTGGATTGGTGGAGTTTGGG T T A G -- TAATGTATGAC
8 AGCATTAATGTATGACATGC GTGGAT GG GG GTTT GG AGCAT
TGACTGGAGCACCCCCATTC CACTTA CC CC CGAG TC TCGTA
AC C - A G AG ----------
GAM13236 11291 GTGGCAAAAATAATATTGTG AAAA- T T TTC TT A ATGT
8 AAGTTCAATTTCAACATGTA GTGGCA TAA ATTG GAAG AA TCA CATGT
TGTATATGATGATTTTTTTC CATCGT GTT TAAC CTTT TT AGT GTATA
TCAATTTTGAATTATGCTAC ATTAA T T --- TT A ----
GAM13237 19759 GTGGCAACAAGGAACGTTTG CAA ACGTT- TTGAAGTT
7 GCTGGAATTTGAAGTTATTT GTGG CAAGGA TGGCTGGAAT
CAGTCATCTTTGTCTTTGGC TACC GTTTCT ACTGACTTTA
TCCAT TCG GTTTCT --------
GAM13238 1406 GTGGCACAGAGTGGAAGGCT ACA--- GGAA- TACC TT AAGTCA
8 ACCTGAATTCAAAGTCATGT GTGGC GAGT GGC TGAA CA
TTTCACTATGCCATGAAGCT TACCG CTCG CCG ACTT GT
CATTAAAGCCAT AAATTA AAGTA TATC TT ------
GAM13238 13192 GTGGCACAGCTGGAGAGTGG TG C- --- -- A - TTGA- CCAG
9 GGAGCTGGGACTTGAGCCCA G GCACAG TGGAG AGT GGGG GCTGGG AC GC
GGTAGTGTGTCCCCAGCACC C CGTGTC ACCTC TCA TTCC CGACCC TG TG
TTCAACTAAACTCCATTCTG GT TT AAA AC A C TGTGA ----
TGCTGC
GAM13239 15328 GTGGCACCCTGTGGGAGCCC C- G GA CCA-- CG AT-- CCCTG
7 CAAATGGCGCTATTGACTTC GTGG ACCCT TGG GCC AATGG CT TGACTT
CCTGGAGTCATAGGAGAACC CACT TGGGA ACC TGG TTGCC GA ACTGAG
GTTATACAGGTCACCAAGGG TC - AC ACATA AA GGAT -----
TCTTCAC
GAM13246 13460 GTGGCCAAAGGGAAGTTCAA CA- - TCAA CC AC GACAGCAAGAA
9 CTCCTTTGTGACTTCTGACA GTGGC AAGG GAAGT CT TTTGTG TTCT
GCAAGAAAGAACCATAAAAG CACCG TTCC CTTCA GA AAATAC AAGA

CACTTCTCCTTCCTGCCAC TCC T C--- -- C- ----------
GAM13249 5167 GTGGCCATGGCTAGAGGGGT TG A A - AAAAATTCA ACAT
2 AAAAAATTCAGGACATCCCC G GCC TGGCT GAGG GGTA GG
CAGGTGCTGCCTCAGCCAGG C CGG ACCGA CTCC TCGT CC
GCTGC GT G - G GGACCC--- ----
GAM13252 7487 GTGGCCGGGGCGCGGCCTGG GG GCGGC T GT-- GTAAGA
9 TCTCGGCGGTGGCCTGTAAG GTGGCCG GC CTGGTC CGGCG GGCCT
AAGGCCTGTATGCTGGGCCA CGCCGGT CG GACCGG GTCGT CCGGA
GTGAGAGCAGTGGCCGC GA AGAGT - ATGT ------
GAM13253 16202 GTGGCCTCCCGCTGAAAGCC CCG- GAAA A CTGGCA
9 TCACTTGCCCTGGCAGGCAG GTGGCCTC CT GCCTC CTTGCC
GGGAGGTAAAGGACACGAGG TACTGGAG GG TGGAG GGACGG
TCAT CACA AAA- G ------
GAM13256 4886 GTGGCGACCTAGAGGATCCC GA A--- C TAG G T ACAAT TGAATCAT
1 TTAGCTGTGTATTACAGGAC GTGGC CCT GAGGATC CT CT TG ATTACAGG CAC
AATCACTGAATCATGTGCTC CACCG GGA CTTCTAG GA GA AC TAATGTCT GTG
TGTAATCAAGATAGTGATCT A- AGAC T TA- - - C---- --------
TCCAGAAGGAGCCAC
GAM13257 21976 GTGGCGCTCTGGGTCGCCTG T C -- GG T GACCCT
1 GCTGTGGAATGACCCTGTTC GTGGCGC CTGGGT GC CT CTG GGAAT
TCAGGAAGAAGTACCCGGGT TACTGTG GGCCCA TG GA GAC TCTTG
GTCAT - - AA AG - ------
GAM13257 19444 GTGGCGGACACCGGCGACGG G GACA G A- AC AAAAACATCG
4 GACCGGCGAAAAACATCGCG GT GCG CC GCG CGGG CGGCG
CCGCCCGGGCGTGGGGCGTA CA TGC GG TGC GCCC GCCGC
AC A G--- G GG -- ----------
GAM13258 17328 GTGGCGGTTGAGACTTGAAG G C A CA AAACC G C CATGAAACT
0 AGCCAAGAAACCCACGTTAC GTGGCG TTGAGA TTGAAG GC AG CAC TTA CG
CGCATGAAACTCGTTAAGTG CACCGC GATTTT AGCTTC CG TC GTG AAT GC
ATAGCTCGCCTTCGAATTTT - A - C- GATA- - T ---------
AGCGCCAC
GAM13259 6851 GTGGCTACTCCTATGAGACC - A CT GAC T AAC- AGACCCCTGAAGA
0 ATTGGGAAAACTACCAAGAC GTGG CT CTC ATGA CAT GGGAA TACCA
CCCTGAAGATGGTGACTATT CACC GA GAG TATT GTA TCCTT GTGGT
CCTATGAAATTATTGAGAAG A A T- AAA - ATCA ----------
ACCAC
GAM13268 22018 GTGGCTCTGTTCATCTTATT G G A TT CAG- AAAGTA
0 CGCCAGCCAAAGTAGGAACA GTG CTCT TTC TCTTA CGC CC
GCGTAAGAGGAGAGAGACAC CAC GAGA AGG AGAAT GCG GG
A G - -- ACAA ------
GAM13270 12013 GTGGCTGGGACAAGCTGGTC C GACA- ------- A ATGG
8 AAGGTTATGGAACCCTGGCT GTGG TGG AGCT GGTCA GGTT
AACTGCAAGCTGAAGACCAA CACC ACC TCGA TCGGT CCAA
CCAC A AGAAG ACGTCAA C ----
GAM13278 2611 GTGGGAAGGAATAAAAATGT AA ATAAAAA GT GT---- GTGA
1 GTGCGAGGTCTCTGGTGACA GTGGG GGA TGT GCGAG CTCTG
GAGTAATGGCTCGCCGACAT CACCC CCT ACA CGCTC GAGAC
CCACCCAC A- ------- GC GGTAAT ----
GAM13282 17091 GTGGGAGGAGAAGGGGAAGT AGGAGA A T-- TG - CCTGTCT
3 ATGTTTTGGGGGGCTGCTTC GTGGG AGGGGA GTA GTTT GGGGGCT GCTT

CTGTCTGAGTAAGCCCTCAG CACCC TCCCCT CGT CGAG CTCCCGA TGAG
GAGCCTCTGCTCCCCTGTGA AAGTG- - CTC GA A -------
ACCCAC
GAM13286 7799 GTGGGATGGTGACCACTATG G TGACCACTAT - C GACTG
2 ATGCCCTGAGGGACTGCCTC GTGG ATGG GATG CC TGAGG
AAGGCCATCTCCCTAAACCC CACC TACC CTAC GG ACTCC
ATGCCAC G CAAATCCCT- C A -----
GAM13288 4725 GTGGGCACCCTGCCACCAGA ACCC CAC- A CCA T CCG- CCAACC
5 AGCCAGCTGACGCCGCATCC GTGGGC TGC CAGA G GC GACG CAT
AACCATGAAATCGTCCGCCC CACCCG ACG GTCT C CG CTGC GTA
TCTGCCCCGCAGCCCAC ---- CCCC - C-- C TAAA ------
GAM13289 10117 GTGGGCAGGGGTGGCAGAGG A--- T C AC-- A CCA
7 ACACGAGCAGCCACTGCCCG GTGGGC GGGG GG AGAGG ACG GCAG
TACCCCCTCTCCTCTCTGTA TACCCG TCTC CC TCTCC TGC CGTC
AGCCCAT AATG T - CCCA C ---
GAM13292 11892 GTGGGCGACTAGGCCCATAG G TAG CATA- --- G A CTGACCCT
8 CAAGCGTGGCATCCTGACCC GT GGCGAC GCC GCAA GCGTG C TC
TGAAGTACGCCCATTGCAGC CA CCGCTG CGG CGTT CGCAT G AG
ATGGCATCGTCGCCGAC G CTA TACGA ACC - A --------
GAM13292 22944 GTGGGCGAGAGAGGCACAGC T AGA- A- A CTCC- TAGGTT
9 ACAGTCCTCCGGCTTGGTAG G GGGCGAG GGC CAGC CAGTC GGCTTGG
GTTTCAAGCTCTTTTGACTG C CCCGTTT TCG GTCG GTCAG TCGAACT
GGCTGGCGCTGACATTTGCC T ACAG CG G TTTTC ------
CTC
GAM13293 15035 GTGGGCGGATCACTTGAGGT TG A--- - A- AGTT AGA
3 TAGGAGTTGGAGACCTGCCT G GGCGG TCACT TG GGTTAGG GG
GGCCAACATAGTGAAACCCT T CTGTC AGTGA AC CCGGTCC CC
GTCTGT GT CCAA T AA GT-- ---
GAM13295 21851 GTGGGCTGGTAGCGGGTGTA - TG TA TAG TTGTTGTTGT TGTT
4 GTGCTCTGTTGTTGTTGTCG GTG GGC G GCGGGTG TGCTCTG CGGGC
GGCTGTTGCCTGTCTTGGAG CAC CTG T TGCCCGC GTGAGGT GTCCG
TGGTCCGCCCGTTTGGTCGC G GT -- CTG TCT------- ----
AC
GAM13296 11357 GTGGGGACAGAGTCTCACTA A - TC A A TC C-- -- A - A ATCT
7 TGTCACCCAGGCTGGAGTGC GTGGGG CAG AG TC CT TG ACCCAGG TGGAG TGCA TG GC TG

AATGGCATGATCTCAGCTCA CGCCTC GTC TC AG GA AC TGGGTCC GCTTC ACGT AC CG AC

CTGCAACCTTCGCCTCCTGG C C TT C - T- TCC CA C T - ----
GTTCAAGCGATTCTCCTGCC
TCCGC
GAM13298 11439 GTGGGGAGGGGGCAATCTCT G GG- T G- GT GTAT TAAA
8 GTGTGTCTCAGTATACCTAA GTG GGAGG GCAA CTCTGT T CTCA ACC
AGGTTGGGGTGGGGCGGAGT CAT TCTCT TGTT GAGGCG G GGGT TGG
TGTGTGTCTCTGTAC G GTG - GG TG ---- ----
GAM13302 21835 GTGGGGCGGCGTGGGTGGGG G G-- TG A- - - T T T CTCCTA
1 CGCAGCTGGATATGCACGTG GTGGGGCG CGT GG GGGCGC GCTGGA TATGCA CG GG GA GT

GTGATGTCTCCTAGCTCCCC CACCCTGT GCA CC CTCGTG TGGCCT GTATGT GC CC CT CG

CCGCTGTATGCTCCGGTCAG - GTA GT AC C C C C - ------
TGCTCTGCCATGACGTGTCC
CAC
GAM13305 10812 GTGGGGTAAAACCCCAGACG - - AC AG- TG T- C AGAAAAAGCTGAA
9 CATGAAAGCTGCATGGCCCT GTG GGGTA AAACCCCAG GCATGAA C CA GG CCTGG
GGAGAAAAAGCTGAACCAGG CAC CCCGT TTTGGGGTC CGTACTT G GT CC GGACC
CCCTTTGTGGATCTTCATGC G C C- CTA GT TT C ----------
CCTGGGGTTTCTGCCCGCAC
GAM13306 13405 GTGGGGTAGCAGATGGAGTA TG GT-- AGAT AAT ACGAGGTCCA
1 ATGGTCACGAGGTCCAGACC G GG AGC GGAGT GGTC
CACTCCCAAAGCTCAGACTT C TC TCG CCTCA CCAG
GC GT AGAC AAAC C-- ----------
GAM13306 7106 GTGGGGTCGCATGGCTGCAG GGTCGCAT C C -- T A G GGCA
8 GCTTCGGCGTTCAGTGATTG GTGG GG TG AGGCTTC GGCGT CAGTG TTGTC CTG
TCGCTGGGCACAGAGGCGAC CACC CC AC TCCGAGG CCGTA GTCGC AGCGG GAC
GCTGATGCCACGGAGCCTAC ACTT---- - A CA - - A ----
ACCTTCACCAC
GAM13308 4837 GTGGGTACAAGGAAGCCTGG - -- GT- TTTTCC GGC T TTCA
8 TTGAAGTCTTTTCCTTGAGA GTG GGTACA AGGAAGCCTG TGAAGTC TTGAGA CTGGAT TG

GGCCTGGATTTGTTCACATA TAC CCGTGT TCCTTTGGAC ATTTCGG AACTTT GACTTA AC

TTCAGATTTCAACTGGCTTT T AT AAT TC---- A-- T ----
ATAACAGGTTTCCTTATGTG
CCTCAT
GAM13310 5136 GTGGGTATTAACATTGGCTG G TAACATT GGA G AACACTA
3 GAGTAGCAAGGATCTTCAAC GTG GTAT GGCT GTAGCAAG ATCTTC
ACTAGAAGATATTTGCTGCA CAT CATA CCGA CGTCGTTT TAGAAG
GCCTTTAGGTATACGTAC G TGGATTT --- A -------
GAM13310 10319 GTGGGTCACACAGCATCATG CACACAG T A- CT- - A CTGTAT
5 GGGGATGAGCTGGGGCTGGA GTGGGT CATCA GGGGG TGAG GGGG CTGG GTCGG

GTCGGCTGTATCTGACACCA CACCCG GTAGT CCCTC ACTT TCCC GACC CAGTC
GACCCTCCATTCAAGCTCCC CAAA--- T GA ACC A A ------
TTGATGAAACGCCCAC
GAM13312 10846 GTGGGTGAACACTGGAAGGC AACA CCCCC--------- C AAGATC
3 CCCCGGCTGAAGATCCACCA GTGGGTG CTGGAAGG GG TG
ACGACATCAAGAACCTTCCA CACTCAC GACCTTCC CC AC
GCGCACTCAC GC-- AAGAACTACAGCAA - ------
GAM13313 7974 GTGGGTGCTGCGCCACATGA G CCACA A GG------ GGGGGA
0 CGCAGGCGGGGGGACGAACA GT GGTGCTGCG TG CGCA CG
CACATGCGCGACGCAGCGCC CA CCGCGACGC GC GCGT GC
GAC G A---- - ACACACAA ------
GAM13317 19682 GTGGGTTTTAGTGCAGTCCT TG T CA----- - A TT - TTC
0 TCAAGCCACAATTTAGATTG G GGTTTTAG GCAGTCCTT AGCCA CAATTT GA GC CC
CCCTTCGGTGTGCTCCAGAT C TTAGAATT TGTCAGGAA TTGGT GTTAGA CT TG GG
TGTTGGTTCATATTAAAGGA GT T ATTATAC T C CG T ---
CTGTTTTAAGATTTGC
GAM13317 11496 GTGGTAAACAGACAGATGAA ACA- C - T AGATTATAG
3 ATCAAGAGATTATAGCTTGT GTGGTAA GA AGA TGAAA CAAG

TTTCACTCTCTCCCAATTAC TATCATT CT TCT ACTTT GTTC
TAT AACC C C T ---------
GAM13317 17822 GTGGTAAATATAAATGAGTT G TATAAATG AAG - TT GTGG
4 TCATTTTAAGTAAACTCATT GTG TAAA AGTTTCATTTT TAAA CTCA TT
TTGTGGGATTTGAGATTTAA CAC GTTT TTAAAGTAAAA ATTT GAGT AG
AAATGAAATTAATTTTGCAC - TAA----- --- A TT ----
GAM13327 22540 GTGGTCTGGCTGTCGGCGAG - G G GAGG T G AC GCCCC
4 GGGTAGAGGTGGGTGCAGGA GTGGTCTG GCT TC GC GG AGAGGT GGTGCAGG TG
CTGGCCCCCGAGTCTGCACC TACCAGAC CGA GG CG CT TCTCCA CCACGTCT GC
GACCTCTTCAGGGCAGGGAG T G A GGA- - G GA -----
CTCAGACCAT
GAM13330 10179 GTGGTGCAATCGTAGCTCAC ATCGTAGCT CTC CTTCTGTGTA
1 CTCTCATGCCAGCCTTCTGT GTGGTGCA CACCT ATGCCAGC
GTAGCTGGTGTTATAGGTGT CACCACGT GTGGA TGTGGTCG
GCACCAC --------- TAT ----------
GAM13331 7432 GTGGTGCTCAGGCTGGGTCA G CA - G G TGGG
3 GGACTTAGTATGGGGGAGAT GTGGT CT GGCTGGG TCAGGACTTA TATGGG GAGA
GGGTCTCACCTATGATAGGT CACCA GA CCGATCT AGTCTTGGAT GTATCC CTCT
TCTGAGTCTAGCCAGGACCA G -- G A A ----
C
GAM13331 10183 GTGGTGGACAGATCGAGCAT AGATC - CAAGTCCC A AATACTTGCACAAC

9 TCAAGTCCCTCCGATTCAAT GTGGTGGAC GA GCATT TCCG TTC
ACTTGCACAACGAACTGGAA CACCGCTTG CT CGTGA AGGT AAG
GTGCGTCACAGGGTTCGCCA GGACA G -------- C ----------
C
GAM13332 11620 GTGGTGGCCGATACGGGGCG CGATAC GA TCCA CCATCGA
7 AGTTCCACGCCATCGACGAG GTGGTGGC GGGGC GT CG
TACAAGCCCCAGGATGCTAC CACCATCG CCCCG CA GC
CAC TAGGA- AA TGA- -------
GAM13335 1364 GTGGTGGTACCGGTGCCCGC TG A C C AG G GAAAG --- GGGGGCGG
4 AGGGGAGCCGCAGAAAGGCG GTGG GT CCGGTGCC G AGGGG CC CA GCGGCGGGGC
GGGCGGC
GCGGGGCGGGCGGCGGGGGC CGCC CG GGCCGCGG C TCCCC GG GT CGTCGCCCCG
TCCGCCG

GGAGCCGCCTCGGGCCCCGC CT - - - CA - ----- GGC --------
TGCTGGGACCCCCTCGGCGC A
CGGGCTCCCGC

-
GAM13337 11016 GTGGTGTGGCACTGGGAGCT T CAC GC AAGGAAGCA
8 GCTCCTAAGGAAGCAGGGAG GTGG GTGG TGGGA TGCTCCT
CAAATCCCACCTTTACCCCA CACC CATT ACCCT ACGAGGG
C C TCC AA ---------
GAM13338 19565 GTGGTGTTGTTTTGGTCCTG - TTTT CCT- A - TGAA
7 ATAAGAAGCTGAAGCTGTCT GTGGT GTTG GGT GATA GA AGC
ATCCTCTACCCAGCTACCAC CACCA CGAC CCA CTAT CT TCG
T ---- TCTC - G ----
GAM13339 7164 GTGGTTACATGGAGTATATA TA G G - TCACAATTCAT

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3          TTTGTCACAATTCATCAAAC GTGGT  CAT GA TATATA TTTG
           TGTATGGTTAATGAGGCTAC CATCG  GTA TT GTATGT AAAC
                        GA  A G    C  ----------
GAM13340 16322  GTGGTTCCCAGTATTAACAG  TG    C    TA  AGT-    A  GGCC
6          TCGTGCAGTTGGCCAACGTA G  GTTCC AGTAT  AC   CGTGC GTT
           CGTGAGGTGTGCTTGGGACT T  CAGGG TCGTG  TG   GCATG CAA
           GT              GT    T    -- GAGT   -  ----
GAM13340 11298  GTGGTTCGGTTTGTCTTTCA    TC--    TCTTT  TT     AGTA    TCACC
9          TTTATGTGTAGTATAGAAAT GTGGT   GGTTTG   CA  TATGTGT   TAGAAA
           CACCTTTCTAATATGTGTTG CACCG   TCAAAC   GT  GTGTATA   ATCTTT
           CCAAACTATTTGCCAC       TTTA    C---- T-     ----    -----
GAM13342 22413  GTGGTTGGGGCTAGTCACCA  G  TG --  A-  A  AAGAA  GAATT
8          AAGAATGGAATTCAGCACGT GT GT  GG  GCT  GTC CCA    TG
           GGGGACAGAGCATCCTGACA CA CA  CC  CGA  CAG GGT    AC
           AC              A  GT  TA  GA  G  GCACG -----
GAM13351 2347   GTGTACATGTGGTTTGCGGT    CA  T    C  TAACACCA  CAAA
2          AACACCACCCAAAGGCAAAA GTGTA  TG GGTTTG GG      CC
           ATTCCCAAACCCAGTTACAC CACAT  AC CCAAAC CC      GG
                        TG  -    -  TTAAAAAC  ----
GAM13353 17677  GTGTAGACGGTACAAGTGAC    AGAC    A-  ACAATA  ATATAGAAAA
7          AATAGCAATATAGAAAATGT GTGT   GGTACA  GTG    GCA
           AAATCCACAATGTACCATAG CACG   CCATGT  CAC    TGT
           CAC               ATA-    AA  CTAAA-  ----------
GAM13359 14911  GTGTATACATGTTTTATTTT    ---------       ATT    GTACGAAAGGGGA
5          AAATGTACGAAAGGGGAATT GTGTA      TACATGTTTT  TTAAAT
           TAAAAAATATGTAACTGCTG CATAT      ATGTATAAAA  AATTTA
           TTTATAC             TTGTCGTCA       ---    -------------
GAM13362 13328  GTGTATGTTCTGGGGGCGCT      T  G   -----   --  AGTCA
6          GGTGCAGTCAGCGGTCCAGT GTGTATGT CTG GGGC   GCTGG  TGC
           CTCCAGCCTGCAGGCGTGCA CACGTGCG GAC TCCG   TGACC  GCG
           C                  -  G   ACCTC   TG  -----
GAM13362 15751  GTGTATGTTTTTTTGTGTCT   AT--     --  CT     C   AAA   GCTG   ATGGA
9          TGGGGAAGCTTTGAAATACT GTGT   GTTTTTTT  GTGT  TGGGGAAG TTTG   TACTT   ATTT
           TGCTGATTTATGGAGAGTGA CACA   CAAAAAGA  TACA  ACTCTTTC AGAC   GTGAA   TGAG
           AAAGTGAACCAGACTTTCTC   GACT     TT   AG     -   CAA   AAG-   -----
           AGAACATTTAGAAAAACTCA
           GACAC
GAM13363 2467   GTGTATTTACAACCTGGAGA    ATT   ACCTG  AT  T    CC  T    ACCTT
6          TAGCTGACAGCCCATACTTC GTGT   TACA    GAG  AGC GACAG  CA ACTTC
           ACCTTGAAGTTTGACTTGTC CACA   GTGT    CTC  TTG CTGTT  GT TGAAG
           TGTTCCCTCAAATGTGTCGA    GCT   AAA--  CC   T    CA  T    -----
           CAC
GAM13364 7058   GTGTATTTGAATGACTATTT    TTT    AC    TATTC    TAAAAT
1          TATTCGTATTTAAAATAATA GTGTA   GAATG  TATTT    GTATT
           CTATTAAGTAAGCATTTTGC CACGT   TTTAC  ATGAA    CATAA
           AC                 ---    GA    TTAT-    ------
GAM13365 13831  GTGTCACACTAAAGGATTCG      - AAAG    GG   TAG   TGCCCATTATT
3          GATGTAGCTTTGCCCATTAT GTGTCACA CT    GATTC  ATG   CTT
           TGAGAATTATAAGGATCGGT CACGGTGT GG    CTAGG  TAT   GAG
           TGTGGCAC               T ----    AA   TAA  ----------
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GAM13366 17061 GTGTCACTGTAGACCCCAAA TC- AGA AAATACCA AAGATTATC
6 TACCATCCCAAGATTATCGG GTG ACTGT CCCC TCCC
GAGAAAGGGGGCAGTAATTA CAT TGACG GGGG AGGG
C TAA --- AAAG---- ---------
GAM13377 21942 GTGTCGATCCCCTCTTCTCA ATC CA A GCT TG ATTGA CCGGGAAT
4 TCACTGCTGCTCCAACTGGA GTGTCG CCCTCTTCT TC CT GCTCCAAC G TGACT
TTGATGACTCCGGGAATGGT CGCGGC GGGAGGAGG AG GA CGAGGTTG T ACTGG
CAGAGCCTTGGTTGGAGCCT --- TA A ATC GT CCGAG --------
AAGAGAATGGAGGAGGGCGG
CGC
GAM13377 4666 GTGTCGCCCGGTCAGGTGGT - -- G G CG TCA
7 GCGCTCCCGGTCACTAGGGG GTGT CGCCCGG TCA GTG TGCGCTCC G
TGTACACGTGAAGTTGGGTG CACA GTGGGTT AGT CAC ATGTGGGG C
AACAC A GA G - AT ---
GAM13385 3119 AAAGCTGGTACGCCTGCAGG T T C CA AC GT AATTC
0 TACCGGTCCGGAATTCCCGG AAAGC GG ACGC TG GGT CG CCGG
GTCGACCCACGCGTCCGTTT TTTTG CC TGCG AC CCA GC GGCC
T - - C -- -- TG -----
GAM13387 10977 GTGTCTAGATTTGAAACTTT T GA C TTT GATGT
5 TTAATTAAGGATGTCTTAAT GTG CTA TTTGAAA TT AATTAAG
TTTTGACTTTTAAAAATGGT TAT GGT AAATTTT AG TTAATTC
TAT T AA C TTT -----
GAM13388 12088 GTGTCTCACTGAACTAGTAA T TGAACTA- - -- T AAAC TCTCA
1 TGCTTATCTTTGGCAAACCC GTGTC CAC GTAAT GCT TA CTTTGGC CCTTT
TTTTCTCAGGAGGAAGGCCA CACAG GTG CGTTA CGA AT GAAACCG GGAGG
AAGCTAACAGCAATTGCATT - CCCATTTA A CA C GAA- -----
TACCCGTGGACAC
GAM13389 10467 GTGTCTGACAAAAATGTAAA - A AAT - TATAAA GAAC
9 CTGTATAAACTGAGGAACCT GTG TCTG CAAA GTAA ACTG CTGAG
CAGCTAATCAGTATTACTTT CAC AGAT GTTT CATT TGAC GACTC
GTAGATCAC T - --- A TAATC- ----
GAM13390 15427 GTGTCTGCAACGGGCCACTC G A- CCAGAA A- AGAT- - GGAAAA
4 CAGAACAGTACCAGATCCTG GTGTCT CA CGGGCCACT CAGT CC CCTG AA
AAGGAAAATTACGGGCAGAA CGCGGA GT GCCCGGTGA GTCG GG GGGC TT
GGAGGCTGAGAAAGTGGCCC A GG AAGA-- GA AAGAC A ------
GGGTGAAGGCGC
GAM13393 11103 GTGTCTTCGGCCGCCGGAAG T CG T- TGACGTGCGGA
7 GGTGGGTGACGTGCGGATCT GTGTCT CGGCCGC GAAGGG GGG
TCTTCTTTTTGTGGCTGTGG CACAGG GTCGGTG TTTCTT TCT
ACAC T TT CT ----------
GAM13398 15629 GTGTGACAGTGGCCGGGCTC T T C-- --- - T TCC
3 CCTGCGTCCCGCTGGTGACC GTG GACAG GGC GGGC TC CC GCG
TGCCCACCGTCCCTGTCCAT TAC CTGTC CTG CCCG AG GG CGC
- C CCA TCC T T ---
GAM13398 5018 GTGTGACCCATGGCAAGGGC A G G TAATAACCACCAAAATCTC
8 AGTAATAACCACCAAAATCT GTGTG CCCAT GCAAG GCAG
CCTGCATTTGCAATGGGTAC CACAT GGGTA CGTTT CGTC
AC - A A ----------
GAM13400 2541 GTGTGAGGACCGAAATTTGC GA CGAAAT - T ATA CCCTCTAA
0 CCTATGTCTATATCCCCTCT GTGT GGAC TTGC CCTA GTCT TC

AAGACGGACCTGGGTGCAGC CGCG CCTG GACG GGGT CAGG AG
CGCACGTCCAAGCGC AA CACGCC T C C-- --------
GAM13404 17736 GTGTGCAGCGGGCTGGCCTG G - C - --- CC------ GAAA
3 GGGTCCCCCGAAAGGCCGCC GT TGCAG CGGG TGG CCTGGG GTC CC
GAAGACAAGCCCAGGATCAC CG ACGTC GCCC ACT GGACCC CAG GG
CCCGTCTGCAGC - T C A GAA AAGCCGCC ----
GAM13404 11861 GTGTGCAGTGTAAATAGTGT C- TAAATA AA TATA
9 AATTGTGCATATATATGTGT GTGTG AGTG GTGT TTGTGCATA
ATAGCAGCATGGACTTACTT CACAC TCAT TACG GATATGTGT
TCACAC TT TCAGG- AC ----
GAM13406 15943 GTGTGCGCTGCCTCTGGCAT T C TG TC C AGA C GA A AGCTAG
1 CCTAGAGACCCGGATTTACT G GTG GC CC TGG ATCCT GA CCG TTT CTC
CAGCTAGGAGAGAGGATGGA C TAC CG GG ATC TGGGA CT GGT GAG GAG
TCACAGGGTCTAAGGGTGGC T - GT GA - CA- A AG A ------
CATTC
GAM13408 10231 GTGTGGAAAGAGCTTCCGGG ---- AA - CC A GCACTG
3 AGTCGGGTGCACTGACCCGG GTGT GG AGAG CTT GGG GTCGGGT
CACCTCAAGTCTCTCACCCC CACG CC TCTC GAA TCC CGGCCCA
CTGCAC TCCC AC T C- A ------
GAM13409 15333 GTGTGGAGACTGAGAGGTTA G A GG A-- C CCA-- GCAA
6 ACTGTCTTGCCCAGCGCAAG GTGT GAG CTGAGA TTA CTGT TTGC GC
TCAACAGCAAAACGGAACTA CACA CTC GACTTT AAT GGCA AACG TG
AAATTTCAGGCTCGACAC G G AA CAA A ACAAC ----
GAM13410 13674 GTGTGGATTATAATACAAAG ATAATACAAAG-- TGGCAAC
8 CTGCAATGGCAACTTGCAGA GTGTGGATT CTGCAA
CACATAGTTCGAAGTTCACA TACACTTGA GACGTT
T AGCTTGATACACA -------
GAM13411 2411 GTGTGGCAAGTAAGGTTTAT G- T TTT GA GTGTT
2 ATTTGTGAGTTGTGTTGGCG GTGTG CAAG AAGG ATATTTGT GTT
GGCAGATGTTTTTTTTCTTG TATAT GTTC TTTT TGTAGACG CGG
GATATAT AG - TTT GG -----
GAM13414 19698 GTGTGGGCACAAGAGGCAGC T CACA C C T A ATCTCCAGCA
6 ACTCAGGACAATCTCCAGCA G GTGGG AGAGG AG AC CAGG CA
TGGCCTGGTCTCCTCTCCTC C CACTC TCTCC TC TG GTCC GT
CTCACTC T CTCC - - - G ----------
GAM13416 22058 GTGTGGTAGGTTTTTTTTT G TTTTTTTTTTTAAT TTT
5 TTTTTAATCTGCTTTGTAGC GT TGGTAGGTTTT CTGC
TCCTCACATCTTCGAAACCT CA ACCGTCCAAAG GATG
GCCAAAC A CTTCTACACTCCTC ---
GAM13424 10262 GTGTGTGCAGACAGAGAAGA C C A GAA AAAGA GA - AAGACTTA
7 AGCCTTTAAAGAAAAAGATG GTGTGTG AGA AG GAA GCCTTT AAAA TGTT CA
TTCAAAGACTTATGCGACAG CACACAT TTT TC CTT TGGAAG TTTT ACAG GT
ATTTTAGAAGGTGTTCACTT - - A G-- A---- AG C --------
TTTACACAC
GAM13434 19667 GTGTGTTGTATTTCCATGTG G G TT A GTATA T GTGT TG GTGT
7 TATATGTGAGTGTGTGTGTG GTGT TT TA TCC TGT TGTGAG GT GTG TATGT
TGTATGTGTGTGCGTGTGTA CACA AA GT AGG ACA ATACTC CG TAT GTGCG
TCTAGCCCTCATAAACAGGA G - TC - A---- C ATC- GT ----
CTTGAAGACAC
GAM13435 5225 GTGTGTTTCCCGCCATGTAT TCCC ATG - TT C--- T TTTT

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3          TTATTCTTCATGCTTGGTTT GTGTGTT   GCC  TATT TA  CTT   ATGCT GG
           TCTAGCATTTTCAAGTTTGC CACATAA   TGG  ATGA GT  GAA   TACGA TC
           AGTAAAAGGTTCAATACAC       CT--  AAA  C TT  CTTT   - ----
GAM13436 5231  GTGTTAAAGGAAGGTTCTGA    AAAGGA  T  A   A  AAAA    TCAA
3          ATATAGAGTCAAAATTCACT GTGTT    AGGT CTGA TATAG GTC   TTCACT
           TCAAAGTGAACAGGGATATT CATAA    TCCG GACT GTGTT TAG   AAGTGA
           GTGTCAGGCCTGAAATAC       AG----  -  -   A  GGAC    ----
GAM13437 1413  GTGTTAAGTGCTCCAAGGAG   TTA T  ---  A  -   - A G ATCC
3          GTGGCCACCGACATCCGTGG GTG  AG GCT  CCA GGA GGTGG CC CC AC
           GGCCCATCATCCTGGCCAAG TAC  TC CGA  GGT CCT CTACC GG GG TG
           CTCTCCAT           C--  T  ACC  -  A   C  -  - ----
GAM13442 6974  GTGTTATTTTTATTTTCTTT    ATTT   TTCT   -------- C  ACAAAAAAACCA
2          GCTTTGGTCTATACAAAAAA GTGTT   TTATT   TTGCTT      TGGT TAT
           ACCAATAACCAAAAACATAA CACAA   AATAA   AGCGAA      ACCA ATA
           AGCGATAATAATAAAACAC     ----  TAAT    ATACAAAA  -  ----------
GAM13450 12125 GTGTTGATCGACCACGCGGA    GA  A A   A  A   T-  AAATTATGG
6          TGAATTTTCTGCAAATTATG GTGTT  TCG CC CGCGG TGA TTTTC  GC
           GGTCCGAAAGTCACCGTGGG CACAA  GGC GG GTGCC ACT GAAAG  TG
           ACGGGAACAC           G-  A -   -  -   CC ---------
GAM13451 21725 GTGTTGCAATTTTACTGTAA   TT     AC   G  GAAACTGTCAATACAA
1          GTTTGAAACTGTCAATACAA GTG  GCAATTTT  TGTAA TTT
           AAAGTTACAAAGAATTGTTT TAT  TGTTAAGA  ACATT AAA
           AT               T-      A-   G  ----------------
GAM13452 15013 GTGTTGCTCATTCTGTGGGT   T  C     ------  TT  C  A   GAAGGACA
6          TTTGCTAAATACAGAAGGAC GTGT GCT ATTCTGTG    GGT  TG TA ATACA
           ATGTATCTGCCATTACCACA CACG TGA TAAGACAC    CCA  AC GT TATGT
           TCTCACAGAATAGTTGCAC    T  -     TCTACA  TT  C  C   --------
GAM13452 15806 GTGTTGCTGAGGTGTATCTA   TG  GA    ---  -  -  A--   G  GA  GTCT
7          GAGGATCCCGGTAAGAGCGT GTGT  CT  GGTGTA  TCT AG AGG  TCCCG TAA  GC
           CTGTGATTACGGGACAGCCT CGTA  GA  TCACGT  AGA TC TCC  AGGGC ATT  TG
           GCTGAGAAATTGCACTGAAG   GA  AG    TAA  G  G  GAC   -  AG ----
           AGATGC
GAM13452 15310 GTGTTGCTGTGAGAGGTGCA      G   A  G-   TA-------  ACAGA
8          GCGTAACCACAGAGGTGAAC GTGTTGCT TGAG GGT  CAGCG       ACC
           ATCAGTGCTGGGACCATTTG TACAACGA GTTT CCA  GTCGT       TGG
           GAGCAACAT              G   A  GG   GACTACAAG  -----
GAM13455 19492 GTGTTGTAGCGTGTATCCAA     A-   TATC  ATTTCAT    TTAAGGCT
8          ATTTCATTTATTTTTAAGGC GTGTTGT  GCGTG   CAA     TTATTT
           TGAATAATATCCCATTGTAC CACAATA  TGCAT   GTT     AATAAG
           GTACATAACAC            CA    ----  ACCCTAT    --------
GAM13460 13647 GTGTTTCTAAACCTAAAACC  G    AA  AAA   A-----     ----      CTCATTGCT
0          TATCTTCTTTCATATCTCTC GT TTTCTA  CCT  ACCT    TCTTCTT   TCATATCT
           ATTGCTAGGTGTGAATATAA CA AAGGAT  GGA  TGGA    AGAAGAA   AGTGTGGA
           GAAGAACTTAAAGGTAGAGG  G    AC  GA-   AATTCA    TATA     ---------
           CATAGGAAGAC
GAM13461 2334  GTGTTTGATACTAGTTTGTT  G   ATACTAG     ATGTA   CACCA
3          TATGTACCCCCACCAGGGGA GT TTTG     TTTGTTT    CCCC
           AAAACAAAACCCACCAAAAA CA AAAC     AAACAAA    GGGG
           C              A   CACCCA-     AA---   -----
GAM13461 51    GTGTTTGCAGCGGCCGTCAC   TT   C  --   ACTTAA   GA  GATC
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5 TTAACGTAGGACCAGATCTG GTGT GCAG GGC CGTC CGTAG CCA
GGGTTATGGACGATGCCTTG CACA CGTT CCG GCAG GTATT GGT
CTACAC T- - TA ------ GG ----
GAM13462 17093 GTGTTTGCTGATGGTTTCCC TT - GG CAT GATAG-- CATCAAA
2 ATTTTAGGATAGGGCTCATC GTGT G CTGAT TTTCC TTTAG GGCT
AAAAGCCAGTCAGACTAAAG CGTA T GATTA GAAGG AAATC CCGA
GAAGAATTAGATGGATGC GG A A- --- AGACTGA -------
GAM13462 4678 GTGTTTGCTTGTTTGCCCAC T- TT T-- C--- CTGATAC
4 CTTTGGCTGATACCCAGAGA GTGTT GC GT TGCCCA CTTTGG
ACCTGGGCACTTGCTGCCTG CGTAG CG CG ACGGGT GAGACC
ATGC TC T- TTC CCAA -------
GAM13463 22563 GTGTTTGGGTAACATATGCA A A - A- AAAAGAATCCACA
0 CCAAAAAGAATCCACATGGA GTGTTTGGGT AC TAT GC CCA
AGCAATAAGTGACCCAAACA TACAAACCCA TG ATA CG GGT
T G A A AA ----------
GAM13464 7922 GTGTTTTATTATTATCGCTT TTATTATTATCGC G G A TTTTGTAT
4 TATGTTTTTGGTTATTGGTT GTGTT TTTAT TTTTT GTT TTGGTTT
TTTTTGTATAGACCAAAGCA CACAA AAATA AAGAA CGA AACCAGA
AAGAAAATAAAAATAACAC TAA---------- A A - --------
GAM13467 17794 GTGTTTTTGCACATAATCCA ATAATCCATA G A-- A C ATTTATTCAA
2 TATTTGCTGTTCAAGTTAAT GTGTTTTTGCAC TTTGCT TTCA GTT AT TAGAA
CTAGAAATTTATTCAATTCT CATAAAAACGTG AAACGA AGGT CAA TA GTCTT
GTATGAACACCTGGAAGCAA ATACTA---- - CCA G T ----------
AATCATAGTGCAAAAATAC
GAM13467 13319 GTTAAAAAAGAAGAAAAAAG - AAA TG ACAAAGAAA
9 AAATGGCACAAAGAAAGTTT GTTAAAAAAGAA GAAA GAAA GC
TTTCAAATTTCTTTCTTTTT TAATTTTTTCTT CTTT CTTT TG
TAAT T AAA TT ---------
GAM13468 11467 GTTAAAAAAGAAGAAGAAGA - AA- TG AAAGAGAAA
0 AATGGCAAAGAGAAAGTTTT GTTAAAAAAGAA GAAG GAAA GC
TTCAAATTTCTTTCTTTTTT TAATTTTTTCTT CTTT CTTT TG
AAT T AAA TT ---------
GAM13470 4618 GTTAAAGAGGAAAAAGCAAG AA AAAA A TT CA AA--- AAAGAAACAAAAG
8 TTGCTCCAGAAAAACCTGTA GTT AGAGGA GCA G GCTC GAA ACCTGT
AAGAAACAAAAGACAGGTGA CAA TCTTCT TGT C CGAG CTT TGGACA
GACTTCGAGAGCTCTGTCAT A- AC-- - T- AG CAGAG ----------
CTTCTAAAC
GAM13472 22700 GTTAAAGTCTGGGTTATTGG AAAG TATTG C T ----- G ATTGT
0 GCCATATTCGAATGGCGGTT GTT TCTGGGT GGC ATA TCGAA TGGCG TT
ATTGTGGGCGCCAAGTTTTT CAA AGACCCA TCG TAT AGCTT ACCGC GG
CGATTATAGCTATACCCAGA CGA- TA--- A T TTTGA G -----
AGCAAC
GAM13472 17847 GTTAAATCAGAAGCCATTTG AA GAAG T TG A CTAGAA
6 TGCTGAGCTTTGTCTAGAAA GTT ATCA CCATT G CTG GCTTTGT
TAAAGCATAGTGTAGTGGAG CGA TAGT GGTGA T GAT CGAAATA
ATGATCAAGC AC AGA- - GT A ------
GAM13475 11067 GTTAACACAAGATTTTTTTT AACAC- T - ACACTAAAATGAAA
1 TTTAAGATACACTAAAATGA GTT AAGAT TTTTTTTTTA AGAT
AAATCTCTAAGAGAAAATGT CAG TTCTG AAAAGAGAAT TCTA
CTTCTTTAGGAC GATTTC T C ----------

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GAM13477 1913   GTTAAGAAGCATGGTTCTGA     GA-  AT-     - CT    TAAACT
9               CTTTCCTAAACTGGGGTTTC GTTAA  AGC  GGTTCT GA  TTCC
                TAGAGCCCAAGCTCCATTAG CGATT  TCG  CCGAGA CT  GGGG
                C                   ACC  AAC     T  TT    ------
GAM13482 16910  GTTAATATTTCTTACTGGTT      A     -   GT -- G    G TCTGTG
7               CTGCAGGGGTCTGTGTGCCT GTTAAT TTTCTT ACTG  T  CT CAGG G
                GGAGTAGGTCAGTAAAGAAA CGATTG AAAGAA TGAC  G  GA GTCC T
                GGTTAGC               G     A    TG AT  G    G ------
GAM13486 16324  GTTAATTGAATACGATGCTA       GAATA--      AATGATAGGA    ACAAATG
2               ATGATAGGAGCATACAAATG GTTAATT      CGATGCT        GCAT
                ATGCGAGCATTGGACCATAA CGGTTAA      GTTACGA        CGTA
                ATTGGC                ATACCAG      G---------    -------
GAM13488 13272  GTTACACGTTTTCCTCCAAG     A    --     CAAG  G       GTTGTCACGG
9               GAGCCTCGGACGTTGTCACG GTTAC CGTTT  TCCTC    GA CCTCGGAC
                GGTTTGGGGTCGGGGACAGA CAGTG GCGAG  AGGGG    CT GGGGTTTG
                GCGGTGAC              -    AC     ---- -       ----------
GAM13492 7465   GTTACCAGGCCGGGGCCGTG   T     C    GC    TT   AAGACGCCTCATCC
5               TTGGCAAGACGCCTCATCCG GT ACCAGG CGGG  CGTG  GGC
                CCTCGTGTTCCTGTCCTGGT CG TGGTCC GTCC  GTGC  CCG
                CGC                C     T    TT    T-  ----------
GAM13494 21850  GTTACCTGTGCATGACAGAT   A    G   G  AGATGA   TTCTCTGAGTATGT
3               GAGTGGTTCTCTGAGTATGT GTT CCTGT CAT AC     GTGG
                CTACGAAGTGGTGGTGGACA CGA GGACA GTG TG     CATC
                GGAAGC              A    G   G  GTGAAG   ----------
GAM13494 10751  GTTACCTTATTATAGCACTT       TATTATA     CTCAAT     C   GGC
5               CTCAATGCCACACCTGGGCC GTTACCT      GCACTT     GCCACA CTG
                AGATGTGGTTAAAAAGTGCA CGATGGA      CGTGAA     TGGTGT GAC
                ACCAGGTAGC              CCAA---     AAAT--     A  ---
GAM13501 15964  GTTAGAATTGATTTCCAAGA     AA    TT  C    TCGG  T    ACTTA
8               ATCGGCATGTATACTTAATA GTTAG  TTGA  TC AAGAA    CA GTAT
                CTGAATTTCTTTGATTTAAC CAGTC  AATT  AG TTCTT    GT CATA
                TGAC                --   T-  T    TAA-  -    -----
GAM13503 2197   GTTAGATGTGGTGTTTATTC       GTG------       TCA   T   TG   CAT
8               AAGTTTGTTGAATCATGTTT GTTAGAT       GTGTTTAT   AGT TGT  AAT
                GACATACTGTAAATACGTTA CGATCTG       CATAAATG   TCA ACA  TTG
                TTTGAGTCTAGC            AGTTTATTG       ---  T   GT   ---
GAM13511 10067  GTTAGTGAGTGTCTTAGTCA    AG    G       ------       CTGTTCT
1               GTTTGTTCTGTTCTAACAAA GTT  TGAGT TCTTAGTC     AGTTTGTT
                TTCTCATAGACTGGGAAACT CAA  ATTCA AGGGTCAG     TTAAACAA
                TAAAAC              A-    A       ATACTC       -------
GAM13511 17608  GTTAGTTACTCGGACAATAT       ACTCG   AATA     -  CCTTAGAAAATAT
9               TATTCACTCCTTAGAAAATA GTTAGTT     GAC    TTATTC ACT
                TAGTAGGATAACAAGTCACA CGGTCGA     CTG    AATAGG TGA
                GCTGGC                CA---   AAC-     A  ----------
GAM13518 11408  GTTATCATGGAAATTCTTGT   T   AT-    TTCTT TG  -   CATGAAAA
2               GAGGGTCATGAAAAACCACT GT ATC   GGAAA    G  AG GGT
                TGCTACTTTCCTCAGATCGC CG TAG   CCTTT    C  TC CCA
                              C   ACT    CAT-- GT  A  --------
GAM13518 7199   GTTATCATGGCTCTATCTTA    TC  GG    C     AATT-   ---   TGTG
3               ATTAATTAGAAAATATGTGT GTTA  AT  CTCTAT TTAATT    AGAA   AATA
```

GTTTAATTCTTTGAGAATTA CAAT TA GAGATA AATTAA TCTT TTGT
AAATAGAGAATATTAAC TA A- A GAGTT AAT ----
GAM13524 13812 GTTATGTCTGGGCTGTAGCT TC - AG- G ACGTGAA
3 GTGGTCACGTGAAGATGACA GTTATG TGGGCT GT CTGT GTC
GACGATGAGCTTGTGTATAA CAATAT GTTCGA TA GACA TAG
C GT G GCA G -------
GAM13524 21881 GTTATGTGAATTTGAGTTTG TG - GAGTTT TTTT T TTCT
5 CTGTTTTAAATTGCATTTCT GTTATG A ATTT GCTG AAAT GCAT
ATGCCATTTTTAGTTTAAAA CGGTAC T TAAA TGAT TTTA CGTA
TCTTGCATGGC GT C ATT--- T--- C ----
GAM13534 15779 GTTCAAGTATCAACACTACA AAGTA AC- TTTTTAAA AATGAA
8 TTTTTAAAGCAATGAAGCAG GTTC TCAAC TACA GC
GTCTTGTAAGGGTTGAAAAG CAAG AGTTG ATGT CG
GAAC GAAA- GGA TCTGGA-- ------
GAM13535 6985 GTTCAATATCATCGCCTCTC -- A AT C -- ACTACAAC AACC
1 TCTTATGACTACAACCCAAA GTTCA AT TC CGC TCTCT CTTATG CCA
CCTGGAAGCTACATGAGCCA CAGGT TG AG GTG AGAGA GAGTAC GGT
GAGATGTGGGGAAGTGCTGG CG A GG T CC ATCGAA-- ----
AC
GAM13535 5078 GTTCAATCCAGCTTGTTGCT AA AG T TA A C - TTAAT
3 AATATTAGTTACCCTTGTTT GTTC TCC CT GTTGC AT TTAGTTAC CT TGTT
TAATGACAGAGAGTGGCTGG CGGG AGG GA CGATG TA GGTCGGTG GA ACAG
AATCTGTAGCTAGGGGAGGG G- G- T TC A A G -----
GC
GAM13536 22532 GTTCACACATTTTTTTTTTT CACA TT TT ACTT TTATT
4 GCTTTTGTACTTTGGATTAT GTTCA TTTT TTTTTGCT TGT TGGA
TTTCAACATCAGCAGAAATT CAAGT AAAA AAAGACGA ACA ACTT
AAAACTAATGAAC AATC TT CT ---- -----
GAM13537 13295 GTTCACCAACAGGAAGAAGG CCAA ----- - GAT ATTGA
5 CCTGATTAGCATTGAGCTGT GTTCA CAGGA AGAAGGC CT TAGC
AAGCGCCTTCTAATTATCTT CGAGT GTTCT TCTTCCG GA GTCG
GATGAGC A--- ATTAA C AT- -----
GAM13538 15163 GTTGAAAAGTACACAAACAA T CACAAAC T A-- - TAAATATT
8 GGTATACATGGTTAAATATT GT GAAAAGTA AAGG ATAC TG GT
ACACAAAAGTATCCCTTTAC CA CTTTTCAT TTCC TATG AC CA
TTTTCAC - ------- C AAA A --------
GAM13542 7621 GTTGAAGTTCTGATGAAGAA TCTG-- A AACACAAT TTT
1 ACACAATTTGAAATTTTTTC GTTGAAGT ATG AGA TTGAAA
AGTGATAAAATCTGCATATT CAACTTTA TAC TCT GACTTT
TGTATTTCAAC TGTTTA G AAAATAGT ---
GAM13542 15673 GTTGAATCCGTTGACAGTGA - AAT G A - - T G A G - T
4 GCGGTTGCAATCCGCTTGAC G TTG CCGTT AC GT GAGCGG TTGCAA CCGCTT AC GT AGCGG
TTGCAA CCGCT
AGTGAGCGGTTGCAATCCGC C AAC GGCGA TG CA TTCGCC AACGTT GGCGAG TG CA TTGCC
AACGTT GGCGA
TTGACAGTGAGCGGTTGCAA T GTT G A G T - - A G T -
TCCGTTGACAGTGAGCGGTT GACAGT
GCAATCCGCTTGACAGTGAG T
CGGTTGCAATC G

GAM13543 4597 GTTGAATTGAACTTTCTGAA - A TC TT TTTCCTAT
4 GTTTCTGGTTTCCTATTTAG GT TGA TTGAACTT TGAAGT CTGG
TTACTTCAAAGTTCAGTCAT CA ACT GACTTGAA ACTTCA GATT
AC T - -- TT --------
GAM13544 7766 GTTGACACTCATCTCTTTTG GAC CA GT ------ AGCC AA AA- ATAG
4 TCTTATGCTTAGCCATATTT GTT ACT TCTCTTTT CTTAT GCTT ATATTTA TCTT ATTTA
AAATCTTAAATTTAATAGAG CAA TGA AGGGAAAA GAATA TGAA TATAAGT AGAA TGAGT
TCTAGTGAAAAAATGAGTGG A-- A- AG TAATAA AA-- A- GGG AAAA
GAAGAATGAATATAAAAGTA AG TAGT
ATAATATAAGGAAAAAGGGA TC
AAGTAAAC AG
A- ----
GAM13545 4718 GTTGACCCACAAGCTCTAAA A- A C AAA- AA AATTTTTTTGTCACAC
5 AAGGAAAAGGCTAATTTTTT GTTG CCC CAAG TCTA AGGA AGGCT
TGTCACACAGCCTGGTTCTG CGAC GGG GTTC AGGT TCTT TCCGA
ATATGGACTTGGGGACCAGC CA - - ATAG GG ----------
GAM13545 7565 GTTGACCTAAACTGTGAATG CTAAAC GAATGA CATTTTTACCTACAC
8 AGCTATCCATTTTTACCTAC GTTGAC TGT GCTATC
ACGATAGTATTGAGCAAGTC CAACTG ACG TGATAG
AAC A----- AGTTA- ----------
GAM13545 2209 GTTGACCTCCACGGTGATGC A AC GATGCT C - - ACAAATC
9 TGTGGCTGCAGACCAACAAA GTTG CCTCC GGT GTGG TGC AGA CCA
TCTGGCTCTGGCACCATGAA CGAC GGAGG CCA TACC ACG TCT GGT
CCTCGGAGGCAGC - CT AG---- - G C -------
GAM13553 16373 GTTGATCTCCAGTGAACTCA - C T A C ATACTT ACGTCCA
7 GATACTTGTTTCCACGTCCA GTTGAT CT CAG GA CT AG GTTTCC
GGAAACCACAAACTAAGCTC CGACTA GA GTT CT GA TC CAAAGG
TTTGAAGCATCAGC C A T C A AAACAC -------
GAM13554 10618 GTTGATGCCAACCTTGAAGC A A - TG - G - ATCCACAAAC
6 CAGTGGGGCACCAATCCACA GTTG TGCCA CC T AAGCCA GTG GGCA CCA
AACTGGATGCTGCGCTTGGT CGGT ACGGT GG A TTTGGT CGC TCGT GGT
TTTGATGGTGGCAATGGC A - T GT T G A ----------
GAM13554 11259 GTTGATGCCGCTGAGCTCCC AT AG CCC ACGC CC- CACC
7 CCAACGCCGCCGCCACCGCC GTTG GCCGCTG CT CCA CG GC
TCCGACATGGACAAGAACAG CAAC CGGCGAC GA GGT GC CG
CGGCTCCAAC CT AA ACA ACA- CTC ----
GAM13554 13698 GTTGATGCCGTGGCAAACTG T C CAA GTACTT- AACTT
8 GTACTTTGGGAACTTCCTAT GT GATG CGTGG ACTG TGGG
GCAAGGCAGTCCATGTCATC CA CTAC GTACC TGAC ATCC
TAC T T --- GGAACGT -----
GAM13562 13334 GTTGCATTTGTAGTTTCTAT - G TC CC A AATTGTC
6 CCCATATGAATTGTCCAATG GTTGCATTT GTA TT TAT CAT TG
TTGTGCTAGGTATGAAATGC CAGCGTAAA TAT GA GTG GTA AC
GAC G G TC TT - -------
GAM13564 21895 GTTGCCAGTCTCCTTATCCA G TC- - GTA TGCTGATC
3 TGTATGCAATGCTGATCTTG GTT CCAG TC CTTATCCAT TGCAA
CAGTGGGTAGGTGATGTCTG CGA GGTC AG GGATGGGTG ACGTT
GAAGC A TGT T --- --------
GAM13566 10580 GTTGCCCAGGCTGGAGTGCA --- --- T -- A ATCT
5 GTGGCATGATCTCGGGTCAC GTT GCCC AGGC GGAG TGCAGTGGC TG

TGCAACCTCTGCCTCTCGGG CAA TGGG TCCG TCTC ACGTCACTG GC
TTCAAAC ACT CTC - CA G ----
GAM13568 11928 GTTGCCGCGCAGGTAGAGGC GCGCA AG TAGAAGT GAAA
3 TTACTAGAAGTGTGAAAACG GTTGCC GGT AGGCTTAC GT
TAGGCTTGGATTAAGGCGAC CAGCGG TTA TTCGGATG CA
AA--- GG ------- ----
GAM13569 14974 GTTGCCTCCTCGTCTCTCAA CCT CA---- A AGA GAGAA
1 AGAACAGATCGAGAAGAGCG GTTGCCT CGTCTCT AAG AC TC
TACTTGAAGAAAGAGATGTA TAATGGA GTAGAGA TTC TG AG
GGTAAT T-- AAGAAG A CG- -----
GAM13570 7912 GTTGCGGGCTCCGCGCGGTC C- C G CACTTCCC TCCCTTC
7 CCACTTCCCGGCTCCCTTCG GTTG GGGCTC GCGCG TCC GGC
CCTGCAGGATGCGCTGAGCC CAAC CCCGAG CGCGT AGG CCG
CTACAAC AT T - ACGT---- -------
GAM13575 13787 GTTGCTTATTGCATCTCTTT ATT-- CT GAG TAGC
8 GGAGCCATTGTAGCCGGTGG GTTGCTT GCAT CTTTG CCATTG
GCAGAGGAATGCTTTGCAAG TAACGAA CGTA GAGAC GGTGGC
CAAT CGTTT AG G-- ----
GAM13576 2372 GTTGCTTGACGGGCACCCAC T T - AC C CC CACAA
8 GGCCAGCCCACAAGGCTATC GT GCT GA CGGGC CCA GG AGCC
CTGGCCGCCCGCTCCAGCTA CA CGA CT GCCCG GGT CC TCGG
C T C C CC - TA -----
GAM13583 2317 GTTGGCAATACCCTGGCTCT AATA-- T C - TTCATCC
7 GTGGCTTTTCATCCGAGACC GTTGGC CCC GGCT TGTGG CTT
ACAAGTCCGGGACCCCGGCC CAACCG GGG CTGA ACACC GAG
AAC GCCCCA C - A -------
GAM13590 14140 GTTGGGAGCTTCTTGCAATG TG GCTTC A G -- T A- TGG
7 TGGACTCCTGGAGATGACTG GT GGA TTGC ATGT GAC TCC GGAG TGAC
GGTCAAGCTCCTGGATAGTT CG TCT AGCG TGCA TTG AGG CCTC ACTG
AACGTAGCGATCTTGGC GT ----- A A AT T GA ---
GAM13593 17417 GTTGGGGGGACTGTGGAGGC TG CTG - TAC TTTACA
3 AATTACAGATTTTTACAGAT GT GGGGGA TGGAGG CAAT AGATT
TTTTGTTGATTTCTATCCCC TA TCCCCT ATCTTT GTTG TTTAG
TTGAT GT --- A TT- ------
GAM13593 10768 GTTGGGGTGTGAGAGGTTTT G - ------ T- GCTCTA
8 CTCGCTCTAGGGAGATTCTT GTTGG GT GTGA GAGG TTTCTC
CAAGCAATCACTATGTCAAC CAACT TA CACT CTTC AGAGGG
G T AACGAA TT ------
GAM13593 22719 GTTGGGGTGTGAGAGGTTTT G - ------ TTT TCTA
9 CTCGCTCTAGTGAGATTCTT GTTGG GT GTGA GAGG TCTCGC
CAAGCAATCACTATGTCAAC CAACT TA CACT CTTC AGAGTG
G T AACGAA TT- ----
GAM13594 15761 GTTGGGTATCTGTATGAAAA - TCT TG AAATGAAAAATTGA- AGCT
4 TGAAAAATTGAACTCGAATT GTTGG GTA GTA A ACTCGAATTCG
CGAGCTCGAATTCGAGTCCC CGACC CGT CAT T TGAGCTTAAGC
TATTAAGCCTAGTTGTACTG A --- GT GATCCGAATTATCCC ----
CACCAGC
GAM13595 17372 GTTGGGTTTCTCTTTCAGAG GT T CTACCCC GCATTCA
2 CTACCCCTAAAGGCATTCAC GTTGG TTCTCTT CAGAG TAAAG
TTTATATTCTCTGAAGAGAA CGACC AAGAGAA GTCTC ATTTC

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        CCAGC              --     -   TTAT---   -------
GAM13597 17346  GTTGGTCTGAAAGCCCCCGG  TG   AAAGCC--     C---  CTC
4        TATCATTCCTCGAATTTCAG GT  GTCTG     CCCGGTAT   ATTC
        TGCCGGGAACCAATGCAGAC CG  CAGAC     GGGCCGTG   TAAG
        TGGC             GT   GTAACCAA     ACTT   ---
GAM13597 19552  GTTGGTCTGAAAGCCCCCGG  TG   AAAGCC--  G  C---  CTC
5        TATCATTCCTCGAATTTCAG GT  GTCTG     CCCG TAT   ATTC
        TGCGGGAACCAATGCAGACT CG  CAGAC     GGGC GTG   TAAG
        GGC              GT   GTAACCAA  -  ACTT   ---
GAM13597 10167  GTTGGTCTGAAAGCCCCCGG  TG   AAAGCC-  G  C---  CTC
6        TATCATTCCTCGAATTTCAG GT  GTCTG     CCCG TAT   ATTC
        TGCGGGAACCATGCAGACTG CG  CAGAC     GGGC GTG   TAAG
        GC               GT   GTACCAA  -  ACTT   ---
GAM13600 19671  GTTGGTTCCGCAGGACCCAC     T    G  CAC  C--   TTACTGTCT
5        GGTCACAGTTACTGTCTCTG GTTGGT CCGCAG ACC  GGT  ACAG
        TCATACCCAGGTGCTGTGGC CAATCA GGTGTC TGG  CCA  TGTC
        ACTAAC             C    G  AC-  TAC   ---------
GAM13603 16071  GTTGTAGCAGTAAAATACAT    AG   AAAATACA     AC  TGAATCTT
7        TTTGTTACCATGAATCTTTG GTTGT  CAGT      TTTTGTT  CA
        AAAACAAAAGAACTTCACTG TAACA  GTCA      AAAACAA  GT
        AGACAAT            GA   CTTCAAG-     AA --------
GAM13605 22074  GTTGTATAACTCGGCCGTGA    ATAAC    CGT   AG----   CGCG
3        CCAGTGCCCCGCGGGGCGTA GTTGT    TCGGC   GACC     TGCCC
        ATCAGGTTCAGCCGAACGAC CAGCA    AGCCG   TTGG     GCGGG
                  -----    AC-   ACTAAT    ----
GAM13608 11524  GTTGTCGTGCAGGTAGAGGC      GCA  AG      TAGAAGT  GAAA
7        TTACTAGAAGTGTGAAAACG GTTGTCGT   GGT  AGGCTTAC     GT
        TAGGCTTGGATTAAGGCGAC CGACAGCG   TTA  TTCGGATG     CA
        AGC                GAA  GG      ------- ----
GAM13611 2535   GTTGTGCACCGCCGGCCTCG        -  C   TCGT----------   ACCAA
5        TTTGAACCAATCAGCCGTCC GTTGTGCACC GC GGCC           TTGA
        AGCGGGACTGGCCCGCGGGT TAACACGTGG CG CCGG           GACT
        GCACAAT              G  C   TCAGGGCGACCTGCC   -----
GAM13612 276   GTTGTGGTCAAAGACTCCTC   TG   CAA  ACT    AAG  ACTCAAGACCA
6        AAAGCTACTCAAGACCAAGA GT  TGGT   AG   CCTCA   CT
        CTGAGGCACCTACAACCATG CA  ACCA   TC   GGAGT   GA
        AC               GT   ACA  CAC    CA-  ----------
GAM13614 13225  GTTGTGTTTACAAGCATCCA    T   A   C-----      AATCATCTCCAAAAAAA
0        TTTAATCATCTCCAAAAAAA GTTG GTTT CAAG     ATCCATTT
        GGATGGATTTATTATTTGAA CAAT CAAA GTTT     TAGGTAGG
        ACTAAC             -   -   ATTATT      -----------------
GAM13615 14225  GTTGTTCCACTAGTAGGCAA      -----  A  -  TAGGCAAATT   GAAA
6        ATTAAAGAAATTTTACGAAT GTTGTT     CC CT AG        AAA
        TTTCTCAGAGGTTAGAAGCA CGACGA     GG GA TC        TTT
        GC                 AGATT  A  C  TTTTAAGCAT   ----
GAM13616 16236  GTTGTTCGTTTGCTTGTTTT    TTCG   GCTTG    G     C---       AAAAATTTCAAATACA
0        TGTTTTTGCAGCTAAAATAA GTTG    TTT     TTTTT TTTTTG    AGCTAAAAT
        AAATTTCAAATACAATTTTA CAGC    AAA     AAAAA AAAAAC    TTGATTTTA
        GTTCTTACAAAAAAAAAAAA     TGA-   AAAAA    A     ATTC       ----------------
        AAAAAAAAGTCGAC
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GAM13617 10864 GTTGTTGCTTTTAAATGTAA TG TTTAA AAAT- T ATTT
6 ATATAATCTGGATTTCCAGT GT TTGCT ATGT ATAA CTGG
TATTACTGATATCTTCAGCA CA GACGA TATA TATT GACC
GTCAC CT CTTC- GTCAT - ----
GAM13623 22040 GTTTAAAACTTTGCTGCTTT TT C CT T A - - G C- CTAGAAAGTTA GTA
4 TTTTACATAAAGCCTGTGCC GTTTAAAAC TG TG TT TTT CATAA AG CCT TG CTTTC AGAT
TTTCCTAGAAAGTTAAGATG TAAATTTTG AC AC AG AAA GTATT TC GGG AC GAAAG TTTA
TAAATGTATTCTCACATGTA T- - AT T - A T G TT ---------- AAT
AATTTGAAAGTTCAGGGGTC A ATTCTC
TATTATGAAATGATACACAT ATGT
GTTTTAAAT TACA
G ------
GAM13626 17290 GTTTAACATCATTAGAGCCC TTA - T CC - AA CAGCCTTTTT
1 TGTAGAATGACAGCCTTTTT GT ACAT CAT AGAG CTG TAG TGA
TCAAGTTGCCAGTCTTCTCA CG TGTA GTA TCTT GAC GTT ACT
TGCATGTATGC TA- C C CT C GA ----------
GAM13626 6737 GTTTAACTTTATTTTAAGCT TATTTTAAGCTTCT- ATT
8 TCTATTACATTGTAATTAAT GTTTAACTT ATTAC
AATAATATACTAAGTTAAGC CGAATTGAA TAATG
TCATATAATAATAAT ---
GAM13628 11660 GTTTAATCGACCTCTTCCTT TC- TCCTTTTC TTGTAC
7 TTCACTCTCCTTTTGTACAG GTTTAA GACCTCT ACTCTCCTT
GGGGAGTCTGGGGGTTTTCT TAAGTT TTGGGGG TGAGGGGGA
TGAAT CTT TC------ ------
GAM13628 2268 GTTTAATGGAGAAATCGTTG AAT AATC AAAACAATCAGTCAAAAA
9 TTTAAAACAATCAGTCAAAA GTTT GGAGA GTTGTTT
AGAACAGCTCTTTTACAAAC CAAA TTTCT CGACAAG
CAT ---- ----------
GAM13629 19513 GTTTAATGTCTGCTTTTAGG AA GCT G- - TCT TGGTAATAAT GC - TAG
0 GAGTCTGCCATCTGCCTGGT GTTT TGTCT TTTA GGAGTCTGC CA GCC GGCT AGCTC CT

AATAATGGCTGCAGCTCCTT CAGA ATAGA AAAT CCTTAGACG GT CGG CCGA TCGAG GG

AGTCACCGGTGAGCTAGAGC CA AT- GA T --- T--------- GA T ---
CTGGCTGTGCAGATTCCAGT TCACC
AAATAAGATAACAGAC

GAM13632 15491 GTTTAGAAAACTTGTTTAGC A - CCA AAGA AAACTTTGTATTTTAA
4 TCCATAGAGGAAAGAATGTT GTTT GAAAACT TGTTTAGCT TAGAGGA ATGTT
AAACTTTGTATTTTAAAACA TAAA CTTTTGG ACAAATTGG GTCTCTT TACAA
TGATTCTCTGAGGTTAAACA - T A-- AG-- ----------
TGGTTTTCAAAT
GAM13636 7739 GTTTAGTCATATCTATCTAA A - T ATCTA TTTG
0 TCAGATCTTCTTTTGGGAGG GTTT GTCA TA CT ATCAGATCTTCT
ATTTGATGTAAGTTACTGAC CGAA CAGT AT GA TAGTTTAGGAGG
AAGC - C T ATG-- ----
GAM13638 2557 GTTTATAGCAATGTAGTTTG A -- GTT A A TTCCT T- TACT
2 TAGAAAGGATTCCTGGGATG GTTT TAGCAAT GTA TGT GAA GGA GGGA GTTT
TTTTACTAAGCCTTTCCTCC CAAG ATTGTTA TAT ACA CTT CCT CCTT CGAA

TCCATTCAACATTATATGAA A AG ATT A A CCT-- TC ----
TTGTTAAGAAC
GAM13643 10427 GTTTATTATCTATCTTCACA T- TCTTCAC A TAC-- A TATTTTATTTCT
2 GTTTATATTTACTGAATTAT GTTTA TATCTA AGTTT TATT TGAATT TA
ATATTTTATTTCTTAAAATT CAAAT ATAGAT TCAAA ATAA ACTTAA AT
CACATTTAATACAAACTTTC TT TCTT--- C TTTAC A ----------
TTAGATATTTAAAC
GAM13645 5008 GTTTATTTAGTTTTACATTT TT TTTTACA T C TTC ACACTTCA
3 GTTTACAATTTCTTATAAAC GT ATTTAG TTTGT TA AAT TTATAA
ACTTCATTATAATTGTTTTA CA TAAATT AAACA AT TTG AATATT
TACAAACAACAGTTTAAATT TT TGACAAC T T TT- --------
TAC
GAM13645 15710 GTTTATTTCTGGAATTTTCT TA GGA TT AA - AC------- GTTGACCA
8 GTTTAATATTTTGGGACCTC GTT TTTCT ATT CTGTTT TATTTTG GG CTCA
AGTTGACCATGAGTAACACA CAG AGAGA TAG GACAAA GTAAGAC CC GAGT
AACCACAGAATGCGAAACAG GG A-- GT GC A AAACACAAT --------
TGGATAAGAGAGGGAC
GAM13648 22706 GTTTCAATATTTTGGTTTAT A -- TTTC-- AGATTGAAA
7 TTTTTCTTCCAGATTGAAAG GTTTC ATATTTTGGT TTATTT TTCC
GAGCAATTTAAATAATTATC CAAAG TATAGGACTA AATAAA GAGG
AGGATATAGAAAC A TT TTTAAC ---------
GAM13652 17639 GTTTCAGAGCCCAGAGTTTT TCAG --- - ACAAGGC
0 CTGTTACAAGGCAACATGAA GTT AGCC CAGAGTTTTC TGTT
GACTTTGTGTGGCTACATGA CAG TCGG GTTTCAGAAG ACAA
C TACA TGT T -------
GAM13655 15772 GTTTCATTCCAATGAGAGTT C T T AC TT TTGT
3 GCACACTGTCAGCTTGGTTT GTTTCATT CAA GAGAGT GC ACTGTCAGC GGTT
TGTGGCTGCTGATAGTCGTA TAAGGTAA GTT CTTTCA TG TGATAGTCG TCGG
CTTTCTTGAAATGGAAT A - - C- -- ----
GAM13657 16195 GTTTCCACCCTGGAGGTTGC -- -- TG --- CCT
2 TGACACCCTGTGCCCTCGGT GTT TCCACC CTGGAGGT CTGA CAC
GACTTCCAGCCGGTGGACAG CAG AGGTGG GACCTTCA GGCT GTG
AC AC CC GT CCC ---
GAM13661 13381 GTTTCCGTGATTTTTTGAGT CGT---- ---- TTA TATTTTTTAATCAT
0 TATTTTAAAACTTATTTTTT GTTTC GATTTTT TGAG TTTTAAAACT
AATCATGGTTTTAAAACTTC CAAAG TTAAAAG ACTC AAAATTTTGG
TCATACTGAAAATTTTTATT ATTATTT TCAT TTC ----------
AGAAAC
GAM13662 6874 GTTTCCTCTCTGGCAAAATG - GG A TGAT GATTAA
2 GTGATTGTGATGATTAAGTT GTTTCCTC TCT CAAA TGG TGTGAT
ATATCCATTTGAGAGATGAG CAAAGGAG AGA GTTT ACC ATATTG
GAAAC T GA - T--- ------
GAM13663 5270 GTTTCCTTCATTGTTTTTGG T CATTGT AAT ------- TATAAAACATAGAAAT
9 AAATTTTGTTTTGGTTTATA GTT CCTT TTTTGGA TTTGTTT TGGTT
AAACATAGAAATAGCCAACA CAG GGAA AAAACTT AAACGAA ACCGA
CTTAAAGCAAACATTCAAAA T CCCC-- AC- ATTCACA ----------
CCCCAAGGTGAC
GAM13664 15014 GTTTCCTTTCTTAGCTGATG T- TT --- - T CCAGAACA
5 TCTTTGGCCAGAACACCGTG GTTTCC TTC AGC TGAT GTCT TGG
GGCTGTTACTTGCTTTGAGT CGAAGG GAG TCG ATTG CGGG GCC

TGGAAGC TT TT TTC T T --------
GAM13666 16287 GTTTCTAAAGAAAAACTCCA A- AA TA CCAA AAAAA
3 TTATCCCAAGCAAAAAGCAC GTTTCT AAG AAACTCCAT TC GC
AGAAGGTGGAGTTTGGCTTC TAGAGA TTC TTTGAGGTG AG CG
AAGAGAT AC GG GA ACA- -----
GAM13672 10294 GTTTCTGTATACAGCTGTGT -- G-- TT GTTGT
2 GCTTTGATGTTGTGTTACTG GTTTC TGTATACA CTGTGTGC TGAT
TACACAGAAGTGTGTGCACT CGGAG ACGTGTGT GACACATG ATTG
GAGGC TC GAA TC -----
GAM13674 11370 GTTTCTTTCCAACTTTTTGC TTGCTTTCT CT CTTATAA
5 TTTCTCCCTTTTCTCCTGTC GTTTCTTTCCAACTTT CCCTTTTCTC GT
TTATAAACTAGGGAAAAGGG CAAAGAGAGGTTGGAG GGGAAAAGGG CA
GAGGTTGGAGAGAAAC --------- AT -------
GAM13676 7183 GTTTGAACGTGGTGAAACAG T ACGT A AGTTCTTTTCC
9 GGTGTAGTTCTTTTCCACAT GT TGA GGTGA ACAGGGTGT
TCTGTGTCATCTAGTCGTGC CG GCT CTACT TGTCTTACA
T GAT- G ----------
GAM13677 19669 GTTTGAAGGAAGGGATTTCA A ATTTC TT TG CTGTAAAA
9 ATTTCTGGCTGTAAAATTGG GTTTGA GGAAGGG AAT C G
GGGTTCTTGTTCTTCCTTAG CAGATT CCTTCTT TTG G T
AC - GTTC- GG GT --------
GAM13683 14871 GTTTGATTTTTATAACTTTC GA ATA C--- A GGA
9 CTGTGATCTGGGATAGAATA GTTT TTTTT ACTTTC TGTG TCTG
CAAAAAGAAAGTAAAAAAAA CGAA AAAAA TGAAAG ACAT AGAT
AAAAGC AA AAA AAAA A ---
GAM13684 2282 GTTTGCAAACTAATTCAACC G AA - ATTTTACA CA TTTTTTTT
1 ATTTTACACAGCATTAATTT GTTT CA CTAAT TCAACC CAG TTAA
TTTTTTTAACTGGGTTGACA CAAA GT GGTTA AGTTGG GTC AATT
TTGGGCTGAAAC - CG C -------- -- --------
GAM13685 16145 GTTTGCCACATGTAGCCAGG - AC-- AG T TGTG C A GAGT
7 GGTCCTTGTGGATCACTATC GTTT GCC ATGTAGCC GGG CCT GAT ACT TCTG
TGGAGTCAGAGGTAATCAGG CAAG CGG TGCGTCGG CCC GGA CTA TGG AGAC
CCCAGGCTGCGTTGAAGGCT T AAGT A- - ---- A - ----
GAAC
GAM13688 6856 GTTTGCTTTCTAAAAGAACT G AA CT C T T - TGTGGGT
8 AATGAATCTGTATATTGTAA GTTT CTTTCTA AGAA AATGAAT TG ATAT GTAAA C
ACTGTGGGTGTTTTACATGT TAAA GAAAGGT TTTT TTACTTA AC TGTA CATTT G
CAATTCATTTTTTTAATGGA A AA T- - - - T -------
AAGAAAAT
GAM13694 16027 GTTTGGGGTTTCCTAGCCGC T- CTAG CT TGTTACTTTTGTT
1 TACATCTGTTACTTTTGTTG GT TGGGGTTTC CCG ACATC
GTGTTATGGGAATGAGATCC CA ATCCTAGAG GGT TGTGG
TACTAC TC TAAG AT ----------
GAM13697 4828 GTTTGTACTCTAAGGAGCCC ----- A CC ATCAT AGT
4 AGATCATAATGCAGTGCATT GTTTGT ACTCTAAGG GC AG AATGC
TCCTTAGCCCTTAGAGTTTC CAAACG TGAGATTCC CG TC TTACG
TTGCAAAC TTCTT - AT CT--- ---
GAM13701 7718 GTTTGTTACTGCAACAGACT TACTGC GG ACTGC
4 GGAGTTTGTTACTGCAACAG GTTTGT AACAGACT AGTTTGTT
ACTGGAGTTTGTTACTGCAA CAAACG TTGTTTGA TCAGACAA

AC TCA--- GG -----
GAM13704 9976 GTTTGTTTTATAGTACAGTG TG ATAGT--- - CATGT
3 TATGCGGCCATGTGCTGCAT GTT TTTT ACAGTGT ATGCGGC
AACACTGTTTCAGTCAAGAA CAA AAGA TGTCACA TACGTCG
TGAAC GT ACTGACTT A -----
GAM13709 7443 GTTTTACAGAGGTGACAGGA T GA G TTTTGGG TT TGTTCTTCTTCCTT
7 TTTTGGGGTGTTGTTTTTTT GTT TACA GGTGACA GA GTGTTGTTTT TC
CTGTTCTTCTTCCTTGACTG TAA ATGT TCATTGT TT CATAACGGAG AG
AGGCAATACATTTTGTGTTA T -- G TTA---- TC ----------
CTTGTATAAT
GAM13711 2494 GTTTTACTACTGTGTGATTT ACTAC TG- -- TCTG TAGAG
0 TTGTTTGGACATCTGAAGTA GTTTT TGTG ATTTTTGTTTG GACA AAG
GAGCTTGTTTTGTTTTTAAA CAAAA ACAC TAAGAATAAAT TTGT TTC
TAAGAATATTCACAAATTAA ATTAA TTA TT TTTG -----
AAAC
GAM13719 16950 GTTTTCATAAGTAGGACAGC ATA-- - CAC TTATTTTTTCAC
3 ACCAGTCATTATTTTTTCAC GTTTTC AGTAGGAC AG CAGTCA
TGACTGCTCCTGGTCCTATT CGAAGG TTATCCTG TC GTCAGT
GTTTAGGAAGC ATTTG G CTC ----------
GAM13719 10132 GTTTTCATCTCAGTTACTGA TCT-- ACT TT- ACTCTTAAA
6 TTAAACTACTCTTAAAAGTT GTTTTCA CAGTT GA AAACT
TTCCTCTAGATTGTATATTG TAAAAGT GTTAG CT TTTGA
AAAAT TATAT AT- CCT ---------
GAM13725 16886 GTTTTCTTGGCCGCCTGTTC CC ---- T T - ATGATG
9 CAGGATGCTCAAGATGATGC GTTTTCTTGG GC CTGT CCAGGA GCTCA AG
TGTGGGCCTCCTGGCATAGC CGAAAGGACC CG GATA GGTCCT CGGGT TC
TCAGCACCCAGGAAAGC CA ACTC C C G ------
GAM13728 14824 GTTTTGATTACGAGGCCCAT T AC--- A ACAGGTGACC
4 CAGCGACAGGTGACCCGCTG GTTT GATT GAGGCCC TCAGCG
AGGGCTTCCTCAAAGTCTGA CGAG CTGA CTTCGGG AGTCGC
GC T AACTC - ----------
GAM13729 17912 GTTTTGCCCCAGGATGTGGG - - GAT---- C-- ATTGTCAAG
6 CCGCATTGTCAAGGCGAATT GTTTTG CCC CAG GTGGG CGC
CCACTAGTTAACTGAGGGAC CGGAAC GGG GTC CACCT GCG
AAGGC A A AATTGAT TAA ---------
GAM13731 9912 GTTTTGGCCAGGGGCGGTCC T CA G - - C AA A - GACTCACTCAA
2 CCAGAAGGATGCCAGGGAGA GT TTGGC GG GC GG TCC CAG GG TG CCAGGGA
CTCACTCAATCCTTGGTCAG CG AACCG CC CG CC AGG GTC CC AC GGTTCCT
CCCTGCGGATCCTGCGCCGA T AG G T T C -- G T ----------
GCCAATGC
GAM13734 15523 GTTTTGTTCATTCATTTGGC TTC TTGG AA ACGTGTAG
5 CCAAAATCACGTGTAGGATT GTTTTG ATTCAT CCC AATC
GGGGATGTGGATATTTAAGA CAGAAT TAGGTG GGG TTAG
C TTA TA-- G- --------
GAM13736 11302 GTTTTGTTTTGTTTTTTTTT G G G TTAA
1 TTTTGGAGACTTAAGTCTCA GTTTT TTTT TTTTTTTTTTTTTG AGAC
AGAAAAAGGGGGAAAAAAAA CAAAA AAAA GGGGGAAAAAGAAC TCTG
AAC A A - ----
GAM13739 6698 GTTTTTATTCACTTGAACAC TC GAACAC - TATTACAATTTCCT
5 TGTACAAATATTACAATTTC GTTTTTAT ACTT TGTA CAAA

CTTTTGCTGCAAAAAGTATA TAAAAATA TGAA ACGT GTTT
AAAAT -- AA---- C ----------
GAM13740 6903 GTTTTTATTTTTCAATTTTT ATT---- C A TG TT AAG ACATTTTCCA
1 ATTTTGGTTTTCTTACAAAG GTTTTT TTT AATTTTT TTT G TTCTTACA GTTG
GTTGACATTTTCCATAACAG CGAGGG AAA TTAAAAA AAA T GAGAATGT CAAT
GTGTAAGAGTGTTGAAAAAA GGTTTTT C A GT GT GGA ----------
AAATTCAAATTTTTGGGGGA
GC
GAM13741 7191 GTTTTTCGATGTTTAGATAT T - TATTTTTCT AG CA TTTCTT
2 TTTTCTTCGGGGAAGCACAA GT TTTCGA TGTTTAGA TCGGGGA CA AG
GTTTCTTTTCATGGTCCCTG CA AAGGTT ACAAATTT AGTCCCT GT TT
ATCAATTTTAAACAGTTGGA C G TAACT---- G- AC ------
ACAC
GAM13746 17063 GTTTTTGTTTTTTTGGTCAT TTTTT AAA CAGA T TCGTGTCTAC
5 AAATCCAGATGAGATGAAGT GTTTTTGTT GGTCAT TC TGAGA GAAGTA
ATCGTGTCTACTATTTCCTT CGAGAGCAA CTAGTG AG ACTTT CTTTAT
TCAGAGCCGTGATCTTCCTA TCCTT CCG ---- C ----------
ACGAGAGC
GAM13747 22963 GTTTTTTAGATACAAAAAAT T ACAAAAAAT T GTAGA
0 ATGATTGTCATGTAGAATGA GTTTTT AGAT ATGAT GTCAT
TATTATTAACATCTTAAAAA TAAAAA TCTA TATTA TAGTA
T T CAAT----- - -----
GAM13756 15780 TAAAAATCAATTTATGTTGC TTT G TG G ACAAGAAAAAGAAAC
8 TGAAAACAAAAAGTTATACA TAAAAATCAA AT TTGC AAAACAAAAA TTAT
AGAAAAAGAAACATGGTTTT ATTTTTAGTT TA AACG TTTTGTTTTT GGTA
TGTTTTGCAAGATTTTTGAT TT- G -- - ----------
TTTTA
GAM13757 7827 TAAAAATGCCCATTATCAAG GCCCA T GTTG ATTCCCTTTTA
5 TTGAGGAAATTCCCTTTTAT TAAAAAT TTA CAA AGGAA
TCCTAGATTGTTGAGAGTTT GTTTTTG AGT GTT TCCTT
TTG AG--- T AGA- ----------
GAM13758 16939 TAAAAATTCCAAATAATTAT -- AA- TCTC- AAATCCTT TAGTT
3 CTCTAAAGCAAATCCTTTGT TAAAAAT TCCA TAATTA TAAAGC TGT
TAGTTACATGGCTTTACATA GTTTTTG AGGT ATTAAT ATTTCG ACA
TTAATTACTCTGGAAAGTTT AA CTC TATAC GT------ -----
TTG
GAM13759 19616 TAAAACCAAACACTCATTTA AACACTCATTTA AG TA- ATG
8 AAAGTAGGTTAAGTGATCAT TAAAACCA AAAGT GT AGTGATC
GGATCATTGTTATTAGCTTT GTTTTGGT TTTCG TA TTACTAG
GTGGTTTTG G---------- AT TTG ---
GAM13761 19691 TAAAAGATTTCACCAGAAAA TCA A-- TC ATAAAA
5 CCTTCATATAAAAATTCAGG TAAAAGATT CCAGAAA CCT AT
CCCTTTTTGGACAATTTTTT ATTTTTTAA GGTTTTT GGA TA
A CA- CCC CT ------
GAM13763 12034 TAAAAGTGCCCATGATGAAT GCC-- G TA-- AAGAA TACC
9 AGCAAGAAAGTACCCTGTGG TAAAAGT CAT ATGAA GC AG
CCCATTTCATGTGACCAAAC GTTTTCA GTG TACTT CG TC
TTTTG AACCA - TACC GTG-- ----
GAM13765 16030 TAAAATACTTTTACTCTGCC A TA- AA CAGA
7 TACAGAACTTCAGAAAGACT TAAA TACTTTTACTCTGCC CAG CTT

TGGTTGGTAGGGTGGGAGTG ATTT GTGAGGGTGGGATGG GTT GAA
GTTTA G TTG CA ----
GAM13768 351 TAAAATGTAAACGTGAAAAA AA-- AAAAA- A TAA CCCT
0 AAGGATGGAATAAAAGTCCC TAAAATGT ACGTGA AGG TGGAA AAGT
TACTTATTTCTACTTAAGAT ATTTTATA TGTACT TTC ATCTT TTCA
GTCATGTGATAATATTTTA ATAG GTAGAA - TA- ----
GAM13769 534 TAAAATTATAAACACAATTC AA AT AATTCC TCAC-- ATAAA C - - A
0 CTAGCTCACAGGCCATAAAA T AATT AAACAC TAGC AGGCC AAG AGGCAGC AGC ATGG
TTT
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GGA
TGATCCACAGGCCATAGTTG CC AC AAACGT CATATT ACAAA - G A -
GCTGTCTCTTAAACAGGCTT ATCCA
TTATACGTTATGCAAAGTGT G
TTCAAATTCCA C

GAM13769 22409 TAAAATTCAAGCTGATTACT A A GATTACT A T GTAAAAACTG
3 GAAGATGTTCAGGGTAAAAA TAA ATTCA GCT GAAG TG TCAGG
CTGCCTGACTAACTTCCATG ATT TAGGT CGG CTTC AT AGTCC
GCATGGATCTTA C A TAC---- A C ----------
GAM13771 16282 TAAACATGATGTTGAGATTA GAT- ---- TTATT ACT
3 TTATATACTGTATTTTCTTC TAAACAT GTTG AGA ATAT
TAAATTAACCCTAATGTTTA ATTTGTA CAAT TCT TATG
ATCC TAAA TCTTT ---
GAM13780 16253 TAAAGATTGGCTTGATTTGC T CTTGA ACAT TTTATCC
1 ACATGTATTTATCCTACCCA TAAAGA TGG TTTGC GTA
GGCAAAAACTCCATTCTTTG GTTTCT ACC AAACG CAT
T TCAA- GACC -------
GAM13781 15501 TAAAGCGTTTTAATTCCTTT GTTTT TCCTT T - CTG
4 CTCTGTTCAGCTGTTGATGC TAAAGC AAT TCTC GT TCAG
TGAGATCCATATTTAGTTTT ATTTTG TTA AGAG CG AGTT
A AT--- TACCT T T ---
GAM13784 11895 TAAAGTACAAAAACGCCACC CAAA G A TTTATTG TCTTATTTCT
9 TTTTATTGTCCTGTCTTATT TAAAGTA AAC CC CCT TCCTG
TCTCGGGAAGGAGGGTTCTA ATTTCAT TTG GG GGA AGGGC
CTTTA C--- - A ------- ----------
GAM13788 1631 TAAATAAGTCATATAGGTAA T T-- ATTATTG- --- -- GTAAAGTATATGATA
5 TTATTGTCCAACACATGTTT TAAATAAG CA ATAGGTA TCCA ACACATG TTTAA
AAGTAAAGTATATGATAATT GTTTATTT GT TGTCCAT GGGT TGTGTAC AGGTT

GGATCCATGTGTATGTGGGA - TTT GTCGAAAA GTA CT ----------
AAAGCTGTACCTGTTTTTGT A
TTATTTG

-
GAM13798 15320 TAAATTCAGATCAGCATGAG T - T GGCAGTAT AAC
1 GCAGTATTTCATTAATAAAA TAAAT CAG ATCAGCA GA TTCATTAATAA
CTTATTAATGGATTTAATCT ATTTA GTT TAGTCGT CT AGGTAATTATT
GCTGATATTGTATTTA T A - AATTT--- ---
GAM13798 17490 TAAATTCAGCAGCATGTGGT C CATG ----- AAAT CCCACAAGATAAGAACA

2 TTTTGGAAATCAGCCCACAA TAAATT AGCAG TGGTT TTTGG CAG
GATAAGAACACTGCAACCAA ATTTAA TCGTC ATCAA AAACC GTC
ACTCATAACTAATACTGCTA - ATA- TACTC AAC- ----------
ATTTA
GAM13799 16168 TAAATTTCAACTAATGCAAT C ATGCA---- A TAAAATAT
3 AGACTTAAAATATAGCCTAT TAAATTTCAA TA ATAG CT
GGAATACTGTGATTGAAGTT GTTTGAAGTT GT TATC GA
TG A GTCATAAGG C --------
GAM13803 4716 TAACAGGACCCATTCCAAGG CCCATT AG TGTGT TTCC CTGT C - C
6 AGTGTGTGTGGGTTTTCCCC TAACAGGA CCAAGG TG GGGTT CCCTCCC GTC TC
TGTCAC TT
CTCCCCTGTGTCCTCTGTCA GTTGTCCT GGTTCC AC CCCAA GGGAGGG CAG AG
GTAGTG GA
CCTTGGTGATGAGGCCAGAG TT---- AG TGGAT ---- T--- A T A
TGATGTGAAGACTGGGAGGG GATGAG
AACCCTAGGTCAGACCTTGG GGT
TTTCCTGTTG CCG

GAM13808 10040 TAACCCTACAATTGATAAAT ACA--- AAA--- TACCA AATG
8 CTTATACCATTTTAGGTATT TAACCCT ATTGAT TCTTA TTTTAGGTATTT
TAATGAGATACTTAGAAATA ATTGGGA TGACTA AGAAT AAGATTCATAGA
CTAAGAAAAAAAATCAGTAT AACTTA AAAAAA CATA- ----
TCAAAGGGTTA
GAM13815 7840 TAACTGTAGTTTTAATAAGC T TTTAATAAGC CAT TT A AGTATA
3 ATGACATTATTTGATAAGTA TAAC GTAGT ATGA TA TG TA
TATAACATTTACATCATTTC ATTG CGTCA TACT AT AC AT
AAAAAATACTGCCGTTA C TAAAAAACTT AC- TT A ------
GAM13821 11836 TAAGAATCTGTCATGCAGAG A CT A - GGC G AATTT
9 GCTCCAGGGGCAATTTGCAC TAAG AT GTC TGC AGA TCCAGG GC
TTGGAAAATCTCGCAGACTA ATTC TG CAG ACG TCT AGGTTC CG
GTACTTA A AT - C AAA A -----
GAM13823 2377 TAAGACTTGAAATGTTGAAA T- - GTT--- TT TG AT CTCCTA
3 GTTGAGTGGAATTATTTCCC TAAGAC TG AAAT GAAAG GAG GAATT TTCC
TCCTAGGAGTGAGTTTTTTT ATTCTG AC TTTG CTTTT TTT TTTGA GAGG
TTTTTTTCTATAAAGTTTAC TT A AAATAT TT TT GT ------
ATTGTCTTA
GAM13824 15619 TAAGAGATTCTGTTGTGATT C GTGA- TG GCTTTA
1 ATTTGAATAGCTTTATATTA TAAGAGATT TGTT TTATT AATA
ATAAAAGAAGACAAAATTTT ATTTTTTAA ACAG AATAA TTAT
TTA A AAGAA -- ------
GAM13829 22140 TAAGATTTTAGCAATACTTC T AA- C- ATA ATTTCCTTAC
1 CAATATTGATTTCCTTACCA TAAGA TTTAGC TA TTCCA TTG
AATGGAATCTAGAAGCTAAA ATTTT AAATCG AT AAGGT AAC
TTTTTA T AAG CT A-- ----------
GAM13830 7394 TAAGCAGCATCATGGAGGTT GC TGGAGGT T C- TT -- TGAAT
7 TGAAGATGCCGCATTTGGAT TAAGCA ATCA TTGAAGA GC GCA TGGA TTGGA
TGGATGAATTCCAAATTCTG ATTCGT TAGT AATTTTT CG CGT GTCT AACCT
CTTGCTTGCTTTTTAATATT A- TAT---- - TT TC TA -----
GATATGCTTA
GAM13839 14983 TAAGGCTTGAAGTTGCACAG AA GCACA A CATTTGTC

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2          GAGTTTTCATTTGTCAAAAC TAAGGCTTG  GTT    GG GTTTT
           CCAGAAAACCATAAGCTTTA ATTTCGAAT  CAA    CC CAAAA
                              AC  AAGA- -    --------
GAM13840 22438  TAAGGGGCAAACTGCAAATT        AAC  -  AAT-  -    CATGATTA
5          TCTGCAGCATGATTACTGTA TAAGGGGCA  TG CA   TTC TGCAG
           TGAATGAATGACATCATGTT ATTCCTTGT  AC GT   AAG ATGTC
           CCTTA                ACT  A  AAGT  T    --------
GAM13844 7260   TAAGTAGATGGGAGAATATG    TA  GG      -   AAATATTAGGAATCC
1          TCTAAAATATTAGGAATCCT TAAG  GAT  GAGAATATG TCTA
           AGACCATATTTTCAAGTCGT ATTC  CTG  CTTTTATAC AGAT
           CTTA               TG  AA      C   ----------------
GAM13846 4724   TAAGTCAACACCGTTCTTCA    CA   GTTCTTCATGT   -   -- AGCTT
1          TGTAGTACTTCTCCAGCTTG TAAGT  ACACC        AGTAC TTCT  CC
           GCCAGAATGTGCTTGCCATA ATTCA  TGTGG        TCGTG AAGA  GG
           GGTGTACTTA           --    ATACCGT----    T   CC  -----
GAM13854 2020   TAATAAAAATTTAATTCACA            -    CAA   AAAAAAAAACAATA
0          TTCAATTAAAAAAAAAACAA TAATAAAAATTTAATT CACATT   TTA
           TATGAGTAATGTGAAATTGA ATTGTTTTTGAGTTAA GTGTAA   AGT
           GTTTTTGTTA                  A    TG-  ----------------
GAM13856 4611   TAATACAAAATCCTTGTCAG   T     CCTTGTC    G  ----   T  TCAATTT
8          TTTTGCTAGATGTTTATCAA TAA ACAAAAT     AGTTTT CTA   GATGT TA
           TTTTATACATTCTTTTAGAA ATT TGTTTTA     TCAGAA GAT   TTACA AT
           GACTTTATTTTATTTTGTTT   T     TTTTATT    -  TTTC   T -------
           TA
GAM13858 10265  TAATAGAATATGTTTATTAG       T    TATTA  ACT  A  G      ATAT
3          GAACTACATGTGTAATTTTC TAATAGAA ATGTT    GGA  AC TGT TAATTTTC
           ATATGGAGATTGAACGGTTA GTTATTTT TACGA    CCT  TG GCA GTTAGAGG
           TCCATAGCATTTTTTATTG       T    TA---  AT- -  A      ----
GAM13868 10645  TAATCCTGTATATAAAATAA     TGTATA     AAAA   A  TGAGT
2          AAAGTCCACAATGAGTTTGG TAATCC    TAAAATA   GTCC CAA
           GGCATATTTTAATGGATGGA ATTAGG    ATTTTAT   CGGG GTT
           TTA                TAGGTA     A---   -  -----
GAM13871 12090  TAATGAAGGAAAAGAAATGA   TG   A   AAA----------    ATGCTAGCTTTTAAA
5          TCATGCTAGCTTTTAAAGAT TAA  AAGG AAAG          TGATC
           CAGAAACACTTAACGCTTTG ATT  TTCC TTTC          ACTAG
           CCTTTGTTA           GT   G   GCAATTCACAAAG   ----------------
GAM13872 11071  TAATGACCATCTTCAACTTT     -- ----   TCA    TG AGAAGTC
2          CTGCAGAAGTCGTGGAAGGT TAATGA  CC   ATCT  ACTTTC  C
           AGTAGATACCAGGAATCATT ATTACT  GG   TAGA  TGGAAG  G
           A                  AA  ACCA   TGA    GT -------
GAM13875 16182  TAATGGGAACGGACAGTATC   G   GGA  TA   GAAA-  ----  G   AATG
6          TATGAAAAGCGGCGTTCAAA TAAT GGAAC  CAG  TCTAT   AGC   GGC TTCA
           TGTGAGGGCCACGTGTTAAG ATTG CCTTG  GTT  AGATG   TTG   CCG GAGT
           AAGTAGAATTTGAGTTCCAG   A   A--  TA   AAGAA  TGCA  G   ----
           TTA
GAM13878 17174  TAATGTGTTTGCTCTAACTT     GTT  - AA   CC  CTTCT        TCCA   CCTCT
2          CCCTGGCTTCTCCTTCAGCC TAATGT  TGCT CT  CTTC  TGG   CCTTCAGCCCA   CTCT
           CATCCACTCTCCTCTAGAGC GTTACA  ACGA GA  GGAG  ACT   GGAGGTTGGGT   GAGA
           AGTTGGGTTGGAGGCTCATT     ---   C  AC   TT  C----        TGAC   -----
           GAGGCAAGCAGCAACATTG
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GAM13881 17424 TAATTATTTTAAATGTGTTA ATT TT T CTTTGAT --- TTAAAGTT
7 ATACTGTGCCTTTGATAAGT TAATT TTAAATGTG AATACTG GC AAGTT AGCT
TAGCTTTAAAGTTAGTTTAA ATTAA GGTTTACAC TTATGAC CG TTCAG TTGA
GACTTTTACACTGCCAGTAT AGT C- - TCACATT AAT --------
TCCACATTTGGTGAAATTA
GAM13886 5064 TAATTGTGGTTTCCAACCCA G--- ACCCA G TCTTACGT
6 GTGGACATTCTTACGTATGT TAATT TGGTTTCCA GTG ACAT
TACCTGGAAACTAAGTGGAT ATTAG ATCAAAGGT CAT TGTA
TA GTGA C---- - --------
GAM13887 22420 TAATTTAAATTAGTGGCATA AAATTA C T T TCATCT TG ACAAACATCTTATTACA

3 TAAAGTCATCATCTTGCTTG TAATTT GTGG ATA AAAG CA TGCT A
AACAAACATCTTATTACATT ATTAAA TACC TAT TTTC GT ACGA T
GAGCATGTCTTTTATCCCAT GTAAAG C - T ------ GT ----------
GAAATGAAATTA
GAM13887 5013 TAATTTATTGAAAGGAGATG TAT - ----- AACAGTTCTTGATTTA
9 CTGCAACAGTTCTTGATTTA TAATT TGAA AGGAGA TGCTGC
GCAGCAGTTATTCTCTTGTT ATTGA ATTT TTCTCT ACGACG
TACATAGTTA TAC G TATTG ----------
GAM13890 11215 TAATTTGTAAAATGTCTAAA CT----- A TT---- AC TGTT
0 AGTTTAATGATACTTCTGAT TAATTTGTAAAATGT AA AGT AATGAT TTCTGA
GTTTCGGAACAGTCATTTCA GTTAAACGTTTTATA TT TCA TTACTG AAGGCT
CCTACTATTTCTGAATATAT TAAGTCT A TCCACT AC ----
TTTGCAAATTG
GAM13891 6828 TAATTTTGCATTCATTCTGT TT CATTC CT T TT AA-- TCAC
3 TGGTTTTGAAGAAAAGTCAC TAAT TG ATT GT GGT TGAAGA AG
CTGTAATCTTTAACCACTTA ATTA AC TAA CA CCA ATTTCT TC
ATATAACCACTATTA TC CAATA TT - -- AATG ----
GAM13892 13519 TAATTTTTCTGTATGTTTCT TCTGTATGTTTCT - C T AAGC
1 TCAGTTACTTTTTTCAAGCG TAATTTT TCAG TTA TT TTTC
AAATAATTAATCTGATTTCT ATTAAAA AGTC AAT AA AAAG
ATTCTTTTAAAATTA TTTTCTTATCTTT T T T ----
GAM13892 17429 TAATTTTTGTATTTTTAGTA TT T--- A ATT- CCA TT CT CTCAA
9 GAGATGGGATTTCACCATGT TAATTT GTATTTT AGT GAGATGGG TCA TG GGTCAGG GGT

TGGTCAGGCTGGTCTCAAAC ATTAGG CGTGAAA TCG CTCTGTCC AGT AC CCAGTCC TCA

TCCTGACCTCAGTTGACCTG GT CCCT A GTCC TG- T- -- -----
CCTGTCTCAGCTTCCCAAAG
TGCTGGGATTA
GAM13893 22664 TACAAAAAAGATTCAGTTAG AAA AGT TCT AAACC
9 AATCTGTAAACTAAACCAGT TACA AAGATTC TAGAA GTAAACT
TTATTTTTATGGGATCTTCA ATGT TTCTAGG ATTTT TATTTGA
TGTA AC- GT- --- -----
GAM13895 10849 TACAAAGCAAATAAGATATA CAAATA T A CCTCAA ATTGC
8 CTGAGCCTCAACAGATTGCC TACAAAG AGA AT CTGAG CAG
TGCTCCTCAGAGTCTCTCCT ATGTTTT TCT TG GACTC GTC
ATTTTTGTA TATCC- C A CTC--- -----
GAM13896 9952 TACAAAGGTAATATTGTATT ATAT T-- - TT ATAGCTG
2 AAAATCATGTTTAAGATAGC TACAAAGGTA TGTA TAAAAT CATGT AAG

TGCTTTTATGTGTATTTTAT ATGTTTTCGT ACGT ATTTTA GTGTA TTC
ATTGCATGCTTTTGTA ---- TAT T TT -------
GAM13896 7236 TACAAAGTAATACGCTTTCC A ATACGC CTC- -- AAAAAAA
3 TCTCTCCCTAAAAAAAATAG TACA AGTA TTTC TCTCC CTA
CTGGAGACCTTGAAAACATT GTGT TCAT AAAG AGAGG GAT
GTACTATGTG A GTTACA TTCC TC -------
GAM13898 13761 TACAACACCTCACACTGGTC C CT- AC A TTTCTACT T T TTTTT
6 AGCTGGTTTCTACTTGGTGT TACAA AC CAC TGGTC GCTGG TGG GTT GG
TTGGTTTTTCCCAGCCCCAT GTGTT TG GTG GCCGG CGACT ACC CGA CC
TTTATCTTCAGCGGCCGCGG T TTT GC - TCTATTTT C C -----
TGTTTGTTTTGTG
GAM13898 7026 TACAACAGAGATGAAGTTCA A A GT- A CCCCG G CTA
8 GCTGCCCCGGGGACCTAGTG TAC ACAGAG TGAA TC GCTG GG AC
CCACACCAGTAGATTGTTCA ATG TGTCTC ACTT AG TGAC CC TG
CTCTGTGGTA G - GTT A CACA- G ---
GAM13908 6781 TACACCAATTAATGTAGCTG CC T C -- - A CCTC
0 CTAGCTATTGGCCTCCCAAA TACA AATTAA GTAG TGCT AG CT TTGG
AGACTCCAGTACTATTTTAA ATGT TTAATT TATC ATGA TC GA AACC
TTTGTA -- T - CC A A ----
GAM13908 7110 TACACCTGAAAGAAACTTCA C GAAAGAAA CTTGTG TTCCCCATCT
4 TACTTGTGTGTTCTGTTCCC TA ACCT CTTCATA TGTTCTG
CATCTCAGAGCAAGATTATG AT TGGA GAAGTAT ACGAGAC
AAGAGAAGGTCTA C AGA----- TAGA-- ----------
GAM13912 11956 TACAGACAATACCCAGAGAT A ATACC AGA AATAC AGTTGC
4 GTGAATACAGCTGTGATGGA TACAG CA CAG TGTG AGCTGTGATGG
GTTGCTCATCATGGCTTACG GTGTC GT GTC ACGC TCGGTACTACT
CACTGAAGACTGCCTGTG C CAGAA --- AT--- ------
GAM13913 22708 TACAGACTGTATCGACAATA CTGTATC ATA TTGAGTAT
1 ATGGTTATGCTTGAGTATGC TACAGA GACA ATGGTTATGC
ATGATCATGTGTCATCTGTA ATGTCT CTGT TACTAGTACG
A------ G-- --------
GAM13915 16372 TACAGATTCTATTCATGAAC GA-- - A ACAA-- ATTTCAA
7 AATGCTATTTCAAAGCAATA TACA TTCTATT C TGA TGCT
TCATCAAGAAATAGAGGAAT ATGT GAGATAA G ACT ACGA
TGTA TAAG A A ACTATA -------
GAM13918 5316 TACAGGAGCTTTTGTGTGCC CTTTT--- C -- CTA
3 TGGTAGAAACTATTTCTGTT TACAGGAG GTGTG CTGG TAGAAA
CCAGTCACATTGCCATCACT ATGTTCTC TACAC GACC GTCTTT
CTTGTA ACTACCGT T TT ---
GAM13919 21746 TACAGGCGTGAGCCACGGTG CA TA AGAC
4 CCAGACCCTAAATTAAGACT TACAGGCGTGAGCCACGGTGC GACCC AATTA
GATTGGGTTGAGCACCGTGG ATGTCCGCACTCGGTGCCACG TTGGG TTAGT
CTCACGCCTGTA AG -- ----
GAM13923 147 TACAGTTAAAAACTTTTCAA AA -- AATA T TTAAT
6 AATTAATACATTGTTAATTA TACAGTTAAA CT TTTCAAAATT CA TG
TTGGACCAGTTTTGAAGTTG ATGTCAATTT GG GAAGTTTTGA GT AT
GGGTTTAACTGTA GG TT CCAG T -----
GAM13932 17416 TACATGGCATCATTTTTATA CATT-- TAT AGTA
0 AAATATGTTAGTAAACCTTT TACATGGCAT TTTATAAAA GTT
TTGTAAGCCTTAAATGTTAT GTGTATTGTA GAATGTTTT CAA

GTG AATTCC TC- ----
GAM13934 11271 TACATTATTTACACCAAAAG TT- AAA CAG CG--- TG TGAACAG
7 CACAGGGCTCGTGTGGGTGA TACATTAT ACACC AGCA GGCT TG GG
ACAGTCTGCAGTCAAAGCCG ATGTGATG TGTGG TCGT CCGA AC CT
ATGCTGGGTGTCCTGTAGTG TCC G-- AG- AACTG GT -------
TA
GAM13941 6823 TACCACCAACTCGTCCAACT ACT----- AACT CA- CTTG
7 GACAAGGCCTTGGCCTGCCT TACCACCA CGTCC GA AGGC
CTCCAGGATGTCTACAAATG ATGGTGGT GTAGG CT TCCG
GTGGTA AAACATCT ACCT CCG ----
GAM13943 7360 TACCAGGGAATTCATCCGGT AG C-- AC- GAAG GTGT TGTGTT
8 GACTTAGGGTGAAGTTGGTG TACC GGAATT ATCCGGTG TTAGGGT TTG ACC
TACCTGTGTTGGTTAACAGA ATGG CCTTGA TAGGTCAT AATCCTA GAC TGG
TTAATCCTAATGGTACTGGA -- AAT GGT ATTA AAT- ------
TTAAAGTTCCGGTA
GAM13944 13794 TACCAGTCCAATACCATCCT TCCAATA A -- A-- --- CCCT
2 GCGTCACCTGGGCCGCACCC TACCAG CC TCCTGC GTC CCT GGGCCGCA
TTGTGGCTCTATGGGAAGGA GTGGTC GG AGGACG CAG GGG CTCGGTGT
CCAGCAGGAGGCAGCCCTGG CCGAC-- - AC GAA TAT ----
TG
GAM13947 7222 TACCCAGACTTAATGGTATT TAATGGTAT TGC ---- T TTTT
8 GTTCTTGCATTGGCCAAAGT TACCCAGACT TGTTCT ATTGG CCAAAG GAAAA
GAAAATTTTTTTTTCTTTGG GTGGGTCTGA ATAAGG TGATC GGTTTC TTTTT
AAATCTAGTTTGGAATAAGT --------- TT- TAAA - ----
CTGGGTG
GAM13951 7295 TACCCTTTTTTTTTTTTCAA TTTTTTTTTTCA A T AGGACTTTA
1 GAAAGTAGCTAGGACTTTAG TACCCTT AGA AG AGCT
GCTCTCTCTGTTCAGGGGTG GTGGGGA TCT TC TCGG
CTTG-------- C - ---------
GAM13952 15719 TACCGTTTACAGTTTAGTGA ACA TTAG - G C ATTCTC
3 GGTGGTCTGCATTCTCGCAA TACCGTTT GT TG AGGT GT TGC
ACGACTTACAAAGTACAAGA GTGGTAAA CA AC TTCA CA ACG
AATGGTG GAA TGAA A G A ------
GAM13957 17187 TACCTGGTGCTAACATCCCA CT CTAA ATGC - C- CAC CA ACCGCCCTGA
0 TGCCGCTCCCTCCTCACGAT TAC GGTG CATCCC CGC TCC TCCT GATG CCC
GCACCCACCGCCCTGAGGGC ATG TCGC GTAGGG GTG AGG AGGA CTGC GGG
CCGTCCTAGGAATGGATGTG TT TG-- ---- T TA TC- CC ----------
GGGATGGTCGCTTTGTA
GAM13957 16159 TACCTGTTCTGGATGAGATT TG -- A CCC TT ATTGTGA
7 CCCCTCTTTTTTTATTGTGA TACC TTCTG GATG GATTC TCTTT TT
AGTTGAAGATAAGAGTCCGT ATGG GGGGC TTGC CTGAG AGAAG GA
TTTCGGGGTGGGTA GT TT - AAT TT -------
GAM13958 17304 TACCTTCTGAAAGAAAAAAG T A--- AAAAA A T GACATAACAGA
7 CATATCTTCATTGACATAAC TACC TCTG AAGA GC TATCT CATT
AGAAGTGAGATGGCCCAGTC ATGG AGAC TTCT CG GTAGA GTGA
TTGATACAGATGGTA T ATAG GACC- - - ----------
GAM13963 6683 TACGGGAAATACATAAATCA TAA ATACTA A AGCCCAGAAG
1 TACTATATGACGATAGCCCA TACGGGAAATACA ATC TATG CGAT
GAAGATTGCATGGAGGATCT ATGTCCTTTGTGT TAG GTAC GTTA
TTGTGTTTCCTGTA TTC GAG--- - ----------

GAM13963 16404 TACGGGGATGGTCCGGCTAC GG TCCG T CAAT GG GG-- CCA
4 CACAATCCGGTTGGTCTCTG TACGG ATGG GC ACCA CC TT TCTCTGC
CCCAGCAGGGAAAAAGAGAG GTGCC TACC CG TGGT GG AG AGGGACG
GTATTGGTGCCCATTTCCGT TT ---- - TAT- AG AAAA ---
G
GAM13968 22885 TACTAATGATGAGCATTTAG AT - TTTA C TG- AA T ACTAT
3 CACAATTTGAGACTGAAATT TACTA GATG AGCA GCA AATT AGACTGA TTTAG AC
TAGTACACTATGTTCTAGGT ATGAT TTAT TCGT CGT TTGA TCTGACT GGATC TG
CAGTCTAACAGTTTGCCTGC AT G C--- - CAA -- T -----
TGTATTTATAGTA
GAM13968 2476 TACTAATTTTACATAAACTG TAC--- ACTG C AAAATA
7 TTTATGTCCAAAAATATGCA TACTAATTT ATAA TTTATGT CA
TATAAAACACTTATACAGAT GTGATTAAA TATT AAATATA GT
AAATTAGTG TAGACA CACA C ------
GAM13970 5096 TACTAGATTATAAACTCCAT - ATT AACTCCAT ACCAT
7 GAGGGCAGAGACCATCTCTG TACT AG ATA GAGGGCAGAG
CCTTTTTTACCACTATTAGC ATGA TC TAT TTTCCGTCTC
TCAGTA C GAT CACCATTT -----
GAM13971 11163 TACTAGTCCACGGTTGGCTA C C G T C C G T C C G T C T C
3 CTAGTCCACGGTTGGCTACT TA TAGTC AC GT GGCTA TAGTC AC GT GGCTA TAGTC AC GT
GGCTA TAG CCA
AGTCCACGGTTGGCTACTAG AT ATCGG TG CA CTGAT ATCGG TG CA CTGAT ATCGG TG CA
CTGAT ATC GGT

TCCACGGTTGGCTACTAGTC C T G C C T G C C T G C C - -
CACGGTTGGCTACTAGTCCA GGT
CGGTTGGCTACTAGTCCACG
GTTGGCTACTA

GAM13973 14847 TACTATGGTTTTGCAATATG A TTTG TGATGGTAAAAGAGTGAT
1 ATTGATGGTAAAAGAGTGAT TACT TGGT CAATATGAT
GTCATATTGATACTAGAGTA ATGA ATCA GTTATACTG
G TA-- ----------
GAM13973 7606 TACTATTATCACATACAACT ATC TACAACTA--- TGGTGCTTTAT
7 AACAAAAATGGTGCTTTATT TACTATT ACA ACAAAAA
TTTTGTCATTCTTCCCTTGT ATGATGA TGT TGTTTTT
ACAGTAGTA CA- TCCCTTCTTAC ----------
GAM13975 10045 TACTCACCTCTTCCCATAAT CACC TC-- - ---------- ACTGCA
4 CCCTTTCCAACTGCATGGGA TACT TCT CCATAAT CC CTTTCCA
GGTTCTAAGACTGGAATTAT ATGA AGA GGTATTA GG GGAGGGT
GGTGCTAGATTAGTA TT-- TCGT A TCAGAATCTT ------
GAM13980 5067 TACTCTGCCCCGGACTGAGC T GG - TA-------- TCTT
1 TTAGCATCTTTGTGGTTCAC TAC CTGCCCC ACT GAGCT GCA
CTTGGCTTGAGTAGGGGGCA ATG GACGGGG TGA TTCGG TGT
GGTA - GA G TTCCACTTGG ----
GAM13982 17126 TACTGAGAGACAAACATCTT TGA - ---- A C TGTTT
8 GTCATTTTCACTGTTTGTAA TAC GAGACAAACA TCT TGTC TTTT AC
AAGATAATTCAGATTGTTTG GTG CTCTGTTTGT AGA ATAG AAAA TG
TCTCCTTGTG TTC T CTTA - - -----
GAM13983 7445 TACTGAGGCAGCCACTTGAT AGGCA C GA GT AATGTG ATGGA

1 TGAACGGTGTTGCAATGTGG TACTG GCCA TTGATT ACG GTTGC GAGAC
AGACATGGAGTTTTATTGAG GTGAC TGGT AATTAG TGC CGATG TTTTG
GTAGCTACGTGATTAAATGG GTTA- A -- AT GAGTTA -----
TATTGCAGTG
GAM13985 10652 TACTGCCGGAGGCGCTGCCT C C GCCTGAAG - AA ACCGCAA
0 GAAGCCGAGGCAACAGCACC TACTG CGGAGG GCT CCGAG GC CAGC
GCAAGCTGCAGCTCTCGGGG ATGGC GTCTCC CGG GGCTC CG GTCG
CCCTCTGACGGTA A - -------- T AC -------
GAM13986 10200 TACTGGATGCTAGACATTGT G G - TT A TTT- CT C - TATTT
4 ACATTTTACCTTCTTGGGCA TACTG AT CTA GACA GT CA TACCTT TGGG ACTG AA
CTGAATATTTTTGTAGTCCC GTGAC TA GAT CTGT CG GT ATGGAG ACCC TGAT TT
AGAGGTACTTTTGAGCTTTG G G C TT A TTTC -- - G -----
TCCTAGGATGCAGTG
GAM13986 671 TACTGGCTATTAATATTCAG GC T AT- G AAATAG TCA
7 GGTAAATAGGAATCATTCAG TACTG TA TA ATTCAG GT GAA
AAATGTTGAGTCTGTACTAA ATGAC AT AT TGAGTT TA CTT
ACAGTA AA C GTC G AAGA-- ---
GAM13988 4953 TACTGGTTTATTTCAGGAAA AT--- - A CTCGGCC
0 GCTATCTCGGCCATGGCTTC TACTGGTTT TTCAG G AAGCTAT
CTCTGAACACACAAACCAGT GTGACCAAA AAGTC C TTCGGTA
G CACAC T C -------
GAM13988 7697 TACTGTACCTTTTCTGTGTT TTTT- TT AT--- CAC
5 TAGATACACAAACACTTTGT TACTGTACC CTGTG TAG ACACAAA
GTTACAATTGTCTACAGTAT ATGACATGG GACAT GTT TGTGTTT
TCGGTACAGTA CTTAT CT AACAT ---
GAM13990 1922 TACTGTGCCTTTAGGTTGCC G C- G G GGAGAA ACGA
0 TGGAGAAATTACGAAATGAT TACT TGC TTTAG TT CCT ATT
ACAAGGAAGTTAGAAAGCAG GTGA ACG AGATT AA GGA TAA
AGTG G AA G - ACATAG ----
GAM13994 2666 TACTTATCAAGTGCCTCCAG TTA AAG C TTC CCTTT
1 TGTTTCAGACCTTTTTTTAT TAC TC TGCCTC AGTGT AGA
GCACTCGAGGTAGAAATGTA ATG AG ATGGAG TCACG TTT
TAA --- C TAT -----
GAM13995 15170 TACTTCCAGCCTTCCCTTAT CAGCCT TTATC GA TT GAAACAA
9 CTGATAGACCATCTTTGGGA TACTTC TCCC TGATA CCATCT GG
AACAACCAGGTGGATGTTAA ATGAAG AGGG ATTGT GGTGGA CC
TGGGAGAAGTA ------ TA--- A- -- -------
GAM13997 7675 TACTTGATCAAGGAGTTAAC AT- A T ACA TC AAAAA
9 TCAACAATGTCGCAAAAAGC TACTTG CA GGAGTTAAC CA ATG GC
CCATGGTGGTTAACTCTGTG GTGGAC GT TCTCAATTG GT TAC CG
TAGCAGGTG GAT G - GG- C- -----
GAM13998 15517 TACTTGATTCATGATGAGGA GATTC A CCAC A A- TCTTTT
1 GATGGCCACTGAAATTGGAC TACTT ATG TGAGGAGATGG TG AATTGGACAGTG CAG
AGTGACAGTCTTTTCTGCCC ATGAA TAC ATTTCTCTGCT AT TTAACTTGTTAC GTC
ATTGTTCAATTATATTCGTC AGAT- - T--- A CC ------
TCTTTACATTAGAAAGTA
GAM13999 2625 TACTTGGCAAAATAAAACTG CAAAATAAAAC A AAG- ATAATAATAAA
1 ATAGTAAGTCTATAATAATA TACTTGG TGAT GT TCT
AAAGAAACAACAATTACTAA ATGAATC ATTA CA AGA
GTA ---------- A ACAA ----------

GAM14001 603 TACTTTCAAATGGCTGTTAA TCAAATG - CAG GTATAA
5 CCACAGGGAATTGTATAAGA TACTT GC TGTTAACCA GGAATT
TTCTTGGTTAGCATGTATGA ATGAG TG ACGATTGGT TCTTAG
GTA TA----- T --- ------
GAM14004 7478 TACTTTTGACCTCTTGTGAT GACCTCT T -- C AAC
8 GAGTCAGAACTAGAACTTAA TACTTTT TGTGA GAGTCA GAA TAG
TTCGTTGACTTTCACATTTT GTGAAAA ACACT TTCAGT CTT ATT
TTAAAAAGTG ATTTTTT - TG A ---
GAM14016 15660 TAGAACTTCTATCTGATTAA T A- AT ATT TT-- TTATCTT
6 TCATTGTTTGGTGAATTATC TAGAACT CTATCTG TTA C GT GGTGAA
TTTTCACTTCCTACTTAGGC ATTTTGA GGTGGAC GAT G CA TCACTT
TAGGCCAGGTGGTAGTTTTA T CG CG ATT TCCT -------
GAM14018 19550 TAGAAGCCATATAATATTTT AT A TCATTAGC- A ATTTTCAAAA
5 CATTAGCACAAGGATTTTCA TAGAAGCC ATAAT TTT AC AGG
AAACCTCGTAGAACACTTAA ATTTTCGG TATTA AAA TG TCC
AAATTATTCGGCTTTTA CT A TTCACAAGA C ----------
GAM14019 15339 TAGAAGTAGTTTCTGATTTC TAGTTTC TTTC TGAA AGTG
5 CCTGAATGAAAGATAGTGAT TAGAAG TGA CCTGAA AGAT
CTTTTAGGCCTTCATATATC ATCTTC ACT GGATTT TCTA
TTCTA TATAT-- TCC- ---- ----
GAM14022 1627 TAGAATCGACTATTTTTATA ATCGA- TTT - T TATAT
5 GTATATTTAATATATTTGTA TAGA CTAT TATAGT ATAT TAA
TATAACTATAATAGGAACCC ATCT GATA ATATCA TATA GTT
TCTA CCCAAG --- A T -----
GAM14026 11745 TAGACAATGGGGTGGGGGTG AT GG -- C - A ATT- CCAAGTCT
8 GGCTCAAGGTGAGATGATTT TAGACA GGGGTGGG TGG GCT AAGG TG GATG TTTTGGGT

TTTGGGTCCAAGTCTACTCA GTCTGT CTCCACCT ACC TGG TTCT AC CTAC AGAACTCA
AGACAGGCATCCCAGTCTTC C- AA TC C G C GGAC --------
GGTCTCCAAATCCACCTCCT
GTCTG
GAM14027 10680 TAGACAGTATTGCACCTCTG ATTG T GGC A CTA
9 GCGAATATGACTTTCCTAGA TAGACAGT CACC CT GAATATG CTTTC
AAGCATATTCAGCGGTGAAC ATCTGTCA GTGG GA CTTATAC GAAAG
TGTCTA A--- C --- - ---
GAM14028 11975 TAGACAGTTCCATCTTTTTT A CT - TTTTTCTGCCT
2 TTTAAATTTTTTCTGCCTAT TAGAC GTTCCAT TTT TTTTTAAAT
TTAAAGACAAATTATGGGAC GTTTG CAGGGTA AAA AGAAATTTA
GTTTG - TT C ----------
GAM14037 15862 TAGAGATAACTTTTAAAAAC AC-- A AC GACAACAACAAA
9 AACAGTGACAACAACAAAAT TAGAGATA TTTTAA AACA AGT
TTCTGTTCTTAGAATTTCTG GTCTCTGT AAGATT TTGT TTA
TCTCTG CTTT C CT ----------
GAM14038 22743 TAGAGATGGCGTTGATGAAC --------- G-- - AA - AATGT
4 AGGGAATGTCGCTTGGGCAT TAGAGA TGGC TTGA TG CAGG G
TCAAAAAGCCACCCCATTTT ATCTCT ACCG AACT AC GTTC C
TCTCTA TTTTACCCC AAA T GG G -----
GAM14038 14969 TAGAGATGTATGCAGATGTG G- T CCATATT CCATATTT
6 TCCATATTATGTCCATATTT TAGAGATGTATGCA ATG GT ATGT
ACATTTGAATAGCCATGATG GTCTCTACGTATGT TAC CG TACA

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          TATGCATCTCTG                AG  -  ATAAGTT   --------
GAM14039 11890  TAGAGATTTCCAATATAAAA   A  TTTCC    AAA   -    TTTG    AATT
1          GTGGGTAATTTGTTTAGAAT TAG GA    AATAT   AGTG GGTAA    TTTAG
          TTTGAAATTTATCACACTAA ATC CT    TTGTA   TCAC CTATT    AAGTT
          AATGTTTCACTA         A -----    AAA   A    TA--    ----
GAM14040 4647   TAGAGCCCCCTTCCTTGCCC      C---  TTC-   GC   G  TTTTTGTTT
5          TGTATTTTTGTTTTAGAGGT TAGAGCC   CC    CTT  CCT TA
          TGAGTTTTGGACTAGGCTTT GTTTCGG   GG    GAG  GGA AT
          G                   ATCA  TTTT   TT   G  ---------
GAM14041 15631  TAGAGCTTCACAGTGCCAGG     CTTCACA   CC-      AG   G      AGA    -  TAGTTA       CGT
9          GGGCAGGCTGTCGTTGCAGA TAGAG      GTG   AGGGGGC  GCT TCGTTGC   GCTC TG
GCGCAGGT
          GCTCTGTAGTTAGCGCAGGT GTCTC      TAC   TCCCCTG  CGG AGTAACG   TGGG AC
CGTGTCCA

          CGTAGACCAAACCTGTGCCA     -------  CTA      GA   G      ---    T  CTACAC       ---
          CATCCATGGGTGCAATGAGG AGACCAA
          GCAGGTCCCCTATCCATCTC
          TG
                      -------
GAM14043 22820  TAGAGGATCCCCCTAGGGCT       CCCCC     TCTTATA      ATTG
2          CTTATAAAAAATAATTGTAT TAGAGGAT     TAGGGC      AAAAATA
          TTTTACTGCCTTACTAGTCT GTCTTCTG     ATTCCG      TTTTTAT
          TCTG                   ATC--      TCA----       ----
GAM14046 19754  TAGAGTGTGTGTATGTGTGT    A    T   TG    A-  T     AATAC
0          ATGTTTAAATAATACATTTG TAG GTGTG GTA  TGTGT  TG TTAAAT
          ACTAGGGCGCAGTTGCTCAT GTC CATAC CGT  ACGCG  AT AGTTTA
          ACCTG              -    T   TG    GG  C     -----
GAM14048 17270  TAGATAGGTAAGGCTGGGTG    ATAGGT-  -     T--  -  GCTCA
8          CAGTGGCTCACACATGTTAT TAG      AAG GCTGGG   GCA GTG
          CCCAGCACTTTCAGAAGCTA ATC      TTC CGACCC   TGT CAC
                        GAAGACT   A     TAT   A  -----
GAM14051 7381   TAGATGAAGTCGTTACATCG        TCGT     G-------     AAAGACTAAGC
3          GAGGGAAAGACTAAGCCCCT TAGATGAAG    TACATC       GAGGG
          CATACCAGAGATGTGTTTTA ATTTATTTT    GTGTAG       CTCCC
          TTTA                   ----      AGACCATA     -----------
GAM14054 10209  TAGATGTGGTTCCACCTAAT    T TG    CACCTAAT     GA   TC     T    GGGAAAGAG
1          GTCAGGGACCTTCTGGATAT TAGA G  GTTC       GTCAGG  CCT  TGGATA TTTAC
          TTTACGGGAAAGAGGTAAGC ATCT C  CAAG       CGGTTC  GGG  GTCTGT GAATG
          TGTCTGTCGGGGACTTGGCT    - GT    T-------     AG   CT     C    ---------
          GAACTGCTCTA
GAM14061 2249   TAGCAAGTTGAAGGACAGGT    CAA   GAAGGA    TAG    A  AAA
0          AGTTGAGATGAAACACTTCA TAG   GTT     CAGG   TTGAG TG
          AAACCCTGGTTATAGATGTA GTC   TAG     GTCC   AACTT AC
          CTG                ATG   ATATTG    CAA    C  ---
GAM14064 13717  TAGCACCACTTGAGGAAGGG    C--       AGGA    ATATATTTAAGTTCAAAG
2          GATATATTTAAGTTCAAAGT TAG   ACCACTTG    AGGGG
          CCCTAAGCAGGTGGTTTACT ATC   TGGTGGAC    TCCCT
          A                  ATT       GAA-    ------------------
GAM14065 17399  TAGCACTGAAGAACAGGCTC     C--   -  AACA-      GAAGATCAAAATGCAAA
```

1 TTGAAGATCAAAATGCAAAG TAGCA TGA AG GGCTCTT
AGAGCTATTACCTATCAAAT ATCGT ACT TC TCGAGAG
TGCTA TAA A CATTA ----------
GAM14068 1426 TAGCAGTGAGAATGGGGCAC A- GAGAA T G C A AG ACTGGACA
0 TGAGGCCCGGGATGTAGGCA TAGC GT TGGGGCAC GA GCC GGG TGT GC
CTGGACAGCAGCAACCCAGG ATTG CA ACCCCGTG CT CGG CCC ACG CG
CATCTGTGCCCCACAAACCA AC AAC-- T A A A A- --------
GTTA
GAM14068 17180 TAGCATATGGTCGCAGATGG ATA G C- AAA AAACGT T ACA
9 TGTAAATGGTAAACGTGATA TAGC TG TCG AGATGGTGT TGGT GATATCA GAG
TCATGAGACATTCCTGATAT ATTG AC AGC TTTATTACA ACCA CTATAGT CTT
CTCACACCAACACATTATTT G-- G AA CA- CACT-- C ---
AACGAGCAGGTTA
GAM14076 10919 TAGCCGGGCTGGAACAGGAG C - AA GAG CT GT C ACG
4 GACTTGGTGGAGGCGCACGG TAGC GG GCTGG CAG GA TG GGAGG GC
CACCTTCTACACATCACACT GTCG CC CGACT GTC CT AC CTTCC CG
GCGTCAGCGCCCGCTG C G GC ACA AC AT A ---
GAM14079 4896 TAGCCTTTTTATTGACTACT CTT T - ACTT A -- --- ACAT
0 TTAAGTAGAACAAACTAAAT TAGC TTTA TG ACT TAAGT GAAC AAACT AAAT
ACATATTTAACAGTTTTGGT ATTG AAAT AC TGA ATTTA CTTG TTTGA TTTA
TCATTTATACAGTACATTAA AAT T A CAT- - GT CAA ----
ATAAGTTA
GAM14082 17611 TAGCTCTCTGGCATACAGGC C CA C AA-- A TCAT CCA- CT-- AC - CA
8 CAATGACTTCATACCAGCCA TAGCT TCTGG TA AGGCC TG CT ACCAG GC ATACC GG
ATGG
GCCTATACCACGGATGGCAC GTCGA AGACT AT TCCGG AC GA TGGTC CG TATGG CC
TACC

AATCTCCATGCCGGTATCTT C TG A GGTC - CTTC AACA ATTC -- G --
AGCACAACTGGTCTTCAGCA CAATCT
CTGGGGCCTATAGTTCAGAC
AGCTG

GAM14084 11995 TAGCTGAGTACATGTTGGAT AG ---- A- TGCTAGGAATTT
1 GCTGCTAGGAATTTGCAACC TAGCTG TACATGT TGG TGC
CAATTTATATGTAGTAGCTG GTCGAT ATGTATA ACC ACG
G- TTTA CA ----------
GAM14085 17573 TAGCTGGAATTACAGGTGCC - AATT - CCT A G G TTTTTGTGTTT
7 TGCCACCATGTCTGGCTAAT TAGC TGG ACA GGTG GCC CCAT TCTG CTAA
TTTTGTGTTTTTAGTAGAGA GTCG ACC TGT CCAC TGG GGTA AGAT GATT
TGGGGTTTCACCATGTTGGC G GGT- A TT- - G - ----------
CAGGCTG
GAM14086 2342 TAGCTGGAGGCATGGGCAAG GGA ATG AA CCCAGGTAGTAA
0 GGGGGTCCCAGGTAGTAAAC TAGCT GGC GGC GGGGGGT
TCCCCAGGTCGGCTGAGGGC ATCGG TCG CTG CCCCTCA
TA GAG G-- GA ----------
GAM14086 11345 TAGCTGGCTGGGCTCTTATC TG C- TCTTATC -- CCAAG
3 TGGAAGTTCCAAGGACTAAT TAGC G TGGGC TGGA AGTT
CCACTTTCATGCTCATTCTG GTTG C ACTCG ACCT TCAG
GTTG GT TT TACTTTC AA -----

GAM14087 19735 TAGCTTAAATAATTAAAATA ATTAAAAT TG TT GA TG- ACCTTA
5 ATGGAATTTAGTGACTTGTT TAGCTTAAATA AA GAAT AGT CT TTAGTTT
AGTTTACCTTAAAATTAAAA ATCGGATTTAT TT TTTA TCA GG AATTAAA
TGGAACTTTATTTTGTTTAT GACTAT-- GT TT A- TAA ------
CAGTATTTAGGCTA
GAM14095 13819 TAGGAAGGCTTTTGGGTGGT TT - TG TTA AAACATGGG
1 TTTTAAGAAACATGGGCTGT TAGGAAGGC TTG GG GTTT AG
AGATTCCCATAATTGCTTTC GTCCTTTCG AAT CC TAGA TC
CTG TT A CT TG- ---------
GAM14095 7945 TAGGAAGGGGCAGAACTGGC - AGAACT- CT CCC TTTCCAAC
2 ACTGAGTCCCAGATTTCCAA TAGGAAGG GGC GGCA GAGT AGA
CTTTAAAACTCCATGCCCTT ATCCTTTT CCG CCGT CTCA TTT
AATAGCCATTTTCCTA A ATAATTC AC AAA --------
GAM14102 14078 TAGGAGGTGATGAGGCTGCC A GA G ACA AA AAGC
7 ACATCTAAGAGAAGCCTCAC TAGG GGT TGA GCTGCC TCT GAG
AGAGGTAGCATCAAGCCCCT ATCC CCG ACT CGATGG AGA CTC
A - A- A --- CA ----
GAM14105 10771 TAGGATATATAAATGTTGCA TA GC - A- GC A- TTC ATT
2 AGCCATTATTGCTGAATGGT TAGGA TATAAATGTT AAG CCATT TT TGA TGG TTTAGTT
TCTTTAGTTATTAACTAGAC GTTCT ATATTTATAG TTT GGTGA AG ACT ACC AGATCAA
CCAAATCAAAGACCAGTGGA TG TA A CC AA AA C-- ---
TTTATGATATTTATAGTTCT
TG
GAM14107 5032 TAGGATTGAACTTACCCGCA T-- - A- CACT-- TTCCAAATAATT
1 CTTTGTTCCAAATAATTCAA TAGGAT GAA CTT CCCG TTG
TTTCTTCGGGGGAAGCTTCT ATTCTA CTT GAA GGGC AAC
GCATCTTA CGT C GG TTCTTT ----------
GAM14108 10804 TAGGCACCTATTAAAACATC CTATTA A C-- --- TT G GAA
3 ACAGAACAGGTTATATTGTG TAGGCAC AAAC TCA AGAACA GG ATATT TGGTTT
GTTTGAAGAACTGGATATTC ATCCGTG TTTG AGT TTTTGT CC TATAG GTCAAG
CCCAATGTTTTAACTGAGTT TA---- - CAA AAC CT - ---
TATGTGCCTA
GAM14112 19455 TAGGCGAGCTCAGATCACAT C ---------- T C--- CGCT GGTC
8 CATACCGCTGGGGGTCTTCG TAGG GAGCT CAGA CA ATCATAC GGG
TATGATATCATGTTCTGCAT ATCC CTCGG GTCT GT TAGTATG CTT
CCCAAATCAAGTGGCTCTCC T TGAACTAAACCCTAC T ACTA ---- ----
TA
GAM14113 22529 TAGGCTACTTTTACCGTGGA A--- -------- A -- CA TTAAAT
5 ATATATAGTATAGAGATGCA TAGGCTACTTTT CCGTGGA ATAT TAGTATAGA GATG AAAC

AAACTTAAATGTTTACATCA GTTCGATGGAAA GGTACTT TGTA GTTATATTT CTAC TTTG
ATTTATATTGAATGTCACAT GGAA TAATACAC A AA A- ------
AATTTCATGGAAGGAAAGGT
AGCTTG
GAM14117 11753 TAGGGAGGCGGATCATTTGA - A--- TT AG-- - - TGAT
9 GGTCAGGCGTTTGATAACAG TAG GGAGGCGG TCAT G GTC AGGC GTT
CCTGGGCAATATGGATGAAA GTC TCTCTGCC AGTA T CGG TCCG CAA
CCCCGTCTCTACTG A CCAA GG ATAA G A ----
GAM14131 13949 TAGGTCTTCCTAGTCCAAGT CCTAG AGTAG G --- AA- AGCA
7 AGTTTAGTTCCAGGAAGCAG TAGGTCTT TCCA TTTA TTCCA GG GC

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          CAGCCAACTAAGTGGGAATG ATCCAGGA    AGGT    AGGT AGGGT  TC  CG
          GAAATAGTGGAACATCAGGA       CTACA   GATAA   A    GAA  AAC  ----
          CCTA
GAM14137 13327  TAGGTTCTATGATCGCATAT     TC  GATCG    AG   AG  GTAGGTAACAA
3          AGGGAGAGAAGTAGGTAACA TAGGT  TAT    CATAT  GGAG  AA
          ATTAGCTCCAAGTATGAAAA ATTCG  ATA    GTATG  CCTC  TT
          TAATGCTTA            TA  AAA--    AA   GA  -----------
GAM14139 7525   TAGTAAAAATAATCATATGC    A  A   CA   CC     GGAA   A     T   --  AT- T-  AAC
8          CAACAGGGGAATTGAACCAC TAGT AAA TAAT  TATG  AACAGG   TTGA CCACTT CTAA  ATC  AG
ATG
          TTTCTAAATCATAGTATGAA GTCA TTT ATTA  ATAT  TTGTTC   AACT GGTGAA GGTT  TAG  TC  TAC

          CTCATCTCTTCAGATACTTG    C  C   --   TT    GA--   -    T   CA  ACT  TC  ---
          GTAAGTGGTCAAAGCTTGTT T
          TTTATAATTACTTTCACTG


                    -
GAM14140 10903  TAGTAAACAACTGTATAAAG     AA  A  G   AAA  -  --   ATTACTCA
2          CACCACTTATTACTCAGAGT TAGTA  CA CT TAT   GC ACC  ACTT
          TAGGTCGCATAGAGTGGATG ATCGT  GT GA ATA   CG TGG  TGAG
          CTA                AG  -  G   ---  C   AT   --------
GAM14143 11812  TAGTACAGCAAATGAATGGA   T    AA----    ---------   T  TCTGCT
3          TATTTCTGCTAATTTCCACT TAG ACAGC     ATGAA       TGGA ATT
          TAATTTCTTCATAATATGGC GTC TGTCG     TACTT       ACCT TAA
          TGTCTG             -   GTATAA    CTTTAATTC    T  ------
GAM14147 12059  TAGTATAGTAGTAAGGAGAA    ATA---     -  -    TTAA   TA   CT     A  ACTAGAG
0          TCTTAAATCTTAGATTCTTG TAGT     GTAGTAA GG AGAATC    ATCT  GATT  TGGGGGT TG
          GGGGTATGACTAGAGCAATT GTCG     TATCGTT CC TTTTAG    TAGA  CTAA  ATCCTTA AC
          CCTAAATCCAGATGATGATT    AATATG      A  A     TAG-   C-   --      - -------
          TTACCATTGCTATGTATAAG
          CTG
GAM14147 14995  TAGTATATGAATATGCGGGA     TATGAA     -  ATATAA    TATGAAT
1          TATAAGTCTTATGAATAGAC TAGTA     TATGCG GG     GTCT
          ACCACGTATAACTCTTACTG GTCAT     ATATGC CC     CAGA
                           TCTCA-     A  A-----    -------
GAM14147 636    TAGTATCATGGACTAAACTA     TC    CT-   TA---    GAG  AAGTATATG
5          GGTCAGAGTGAAGTATATGC TAGTA  ATGGA   AAAC    GGTCA   TG
          AAAATGACCATTTTGTTTTT ATTAT  TACCT   TTTG    CCAGT   AC
          TTCCATTTTATTA          TT    TTT    TTTTA    AAA  ---------
GAM14168 241    TAGTTAAAAAGAAGTGGAAT       AAGA  T  AA-       GCTGCCT     GAGAA
1          CTTGATGAGCTGCCTAAATT TAGTTAAA    AG GG   TCTTGATGA      AAATTT
          TGAGAAGAATTTTTATCAAG ATCGGTTT    TC CC   AGAACTATT      TTTAAG
          AGCACCCTGATTTGGCTA         AG--  -  ACG       -------      -----
GAM14170 15094  TAGTTATGTGTTGTGTGATA    TAT      TGA-   AC   ATAAAATTTA
1          AACCATATAAAATTTAGTGT TAGT   GTGTTGTG    TAA  CAT
          CTTAAAATCACAACACTTTA GTTA   CACAACAC    ATT  GTG
          TTG                TTT      TAAA   CT   ----------
GAM14170 11690  TAGTTCAATCAACCTTCTAG     C    --  CTT  A   T  TTGTAATAT
5          AATTTTTGTAATATAACTTC TAGTT AATCA  AC   CT GAA TT
          AAGTATGTAATGATTTAATT ATTAA TTAGT  TG   GA CTT AA
```

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          A                T    AA  TAT  A   C  ---------
GAM14175 11373  TAGTTGTGGTTTGTCCAAAC      - T  -   A   CATCAATTGTATCTTATC
5          ATCATCAATTGTATCTTATC TAGTTGT GG TTG TCCA ACAT
          ATGTCTGGATCGATCCTGCG ATTAGCG CC AGC AGGT TGTA
          ATTA               T T  T   C   ------------------
GAM14175 17922  TAGTTTAAAAATTGGCATAT   T-    TTG---------- ATA    CTTCC      T--  CTT
9          GTTCTCTTCCAGATTAAATT TAGT  TAAAAA          GC  TGTTCT   AGATTAAA  TCC
          CCCTTGGACCTTTTAATTTA ATCA  ATTTTT          CG  ACAAGA   TTTAATTT  AGG
          TGCTAGAACAAGCACTTATC   TT   TTTCTTTTCTATTCA A--    TCGTA      TCC  ---
          TTTTCTTTTTTTTATTACTA
GAM14178 19507  TAGTTTATTTCATAAAAATA       T   AAAATACAAAAA     ATAC
0          CAAAAATATAAATATACATT TAGTTTATT CATA         TATAAAT
          TATAAAAATATGAATGAATT ATTAAGTAA GTAT         ATATTTA
          A                  -   AAAA--------      ----
GAM14181 22566  TAGTTTTCATACGTATATTA     TC    ATATTATA   A   TTAAC
3          TACACCGAGGGTGTTAACTA TAGTTT  ATACGT       CACCG GGGTG
          CTCGTGGTGAGCGTGTAAAT ATTAAA  TGTGCG       GTGGT CTCAT
          TA                 --    A-------    G    -----
GAM14188 15028  TATAAGGTTTATTTTCACTG   -     ATTTTCACTGTG     CCTCTT
7          TGTTTTATCCCTCTTGATAA TAT AAGGTTT         TTTTATC
          AAAAAAAATTCAGACTTTTG ATG TTTCAGA         AAAATAG
          TA               T     CTTAAAAAA---      ------
GAM14189 7803   TATAAGTATTTATCCCATTA       TTTATCCCATT  T  CC  TTATT
2          CATTTACCTAGTTATTTTAT TATAAGTA        ACA TTA  TAG
          TAATTGTTTACCTAGATTAT ATATTTAT        TGT AAT  ATT
          TTATA                TAGATCCATT-  T  T-  -----
GAM14189 13879  TATAAGTTTCAAGAGTTCAG    - T      C-  T  C  T   AATTTAAAAAAA
6          ATATACAGATAAAGCAATTT TATAA GT TCAAGAGTT  AGA ATA AGA AAAGC
          AAAAAAAGCTTTTCTTATTC ATATT CG AGTTTTCGG  TCT TAT TCT TTTCG
          TAAGGCTTTTGATGCATTAT    A  T      AA  -  -  -   ------------
          A
GAM14192 2083   TATAATGTAACCATTTGGGG   A   ACCATTT   C-   TTTAACTTGGACT
0          TCCGCTTTTAACTTGGACTA TATA TGTA     GGGGT  CGCT
          GTGTAACTCCTTCATGCAAT ATAT ACGT     CCTCA  GTGA
          ATA              A   ACTT---    AT   -------------
GAM14193 22650  TATAATTTGCAGCTTAATGT       CAGCTT-     AACTATT   CCTA
7          ATAACTATTTTGTCCTAACA TATAATTTG     AATGTAT     TTGT
          ATTCAAATATATTTTTATTC ATGTTAGAC     TTATATA     AACA
          CAGATTGTA              CTTATTT     AACTT--   ----
GAM14194 22739  TATACAGATAAATGAGAAGT   -   TAAA   AGT  C   TC   ATCAA
8          TTCGATTCTGCATCAAGCAT TATA CAGA   TGAGA   TT GAT  TGC
          TATTCAATCTCACCTTCTGA ATAT GTCT   ACTCT   AA TTA  ACG
          TATA             A   TCC-    --- C   TT  -----
GAM14196 10222  TATACATATATACATATTAT     TAT    A    -   T   AATTCA
0          GTATGGTTGTAAATTCATAC TATACA   ATACAT TTATGT ATGG TGTA
          ACTTATCACATGAATGTGTT ATATGT   TGTGTA AGTACA TATT ACAT
          ACTGTATA             CAT    -    C   C   ------
GAM14197 7040   TATACTCTTATATGGGCTAA     CTT      AAAA   C   GAATA   A  AGGTTCA
9          AAAGACCCCATGAATAAATA TATACT   ATATGGGCT   AGAC CCAT    AAT GC
          GCAGGTTCAGTAGTTGAGGA ATATGA   TATGCTTGG   TTTG GGTG    TTG TG
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GTGGAGTTTAGTAGGTTCGT CT- ATGA A AGGAG A -------
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GAM14199 7613 TATAGAAATTACCCAATGAA A A - AA GCGGCGAGGG
8 ATTTCTGCGGCGAGGGGGAA TATAGA ATT CCCAA TGA TTTCT
AAATTACTTGGGGATATCTA ATATCT TAG GGGTT ATT AAAGG
TA A - C AA ----------
GAM14200 17811 TATAGAACGAATTTGGGTTT C - -- TA A AAA TAGGT
1 TTAAAGAAATATTAAAAGTT TATAGAA GAA TTT GGGTTTT AAGAA TATT AGT
AGGTACTGTAAGTGTTCTTA GTGTCTT CTT AAA TCCAAAA TTCTT GTGA TCA
AAACCTGTAAACTTCATTCT A C TG -- - ATG -----
GTG
GAM14201 17058 TATAGATACACAAGGAATAA ------- ATAAT ATC
1 TTTCTGATCCAGGATCGTCC TATAGATACAC AAGGA TTCTG
TTCCAAATGGTGTATTTATA ATATTTATGTG TTCCT AGGAC
GTAAACC GCT-- ---
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2 ATTAAGCCAGGGATTGTGGG TATAGCGT AT CTGT GTTTA GCC GGG GGG
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CCTGCAGGATGAAAATGCTA AAAG G TC CAA- A ----- ---
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GAM14210 17653 TATATAGGGAGTAATTAGGG ---- A G-- TCTA TCA AAAGATCC
2 ACCTAATCTAGTTTCAGTGA TATATAG GGAGT ATTAGG ACCTAA GTT GTGAAG
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ATTTAGGTGCATCTAATAAT TTGT A ACG ---- TTG --------
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GAM14211 22899 TATATATATATACACACATA TA C TA TACG
2 TATATACGTATATATGTGTA TATA TATATA ACACATATATATACGTATA
TGTGTATATATATATACACATATA
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CGTATATGTGTGTATATATA GC A -- ----
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TGTGTATATATACGTATA
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5 ATATATATAAAATATATATA TATATAT TATATA TATATATATAT ATATATATATAT
TATAAAATATATATATATAA ATATATA ATATAT ATATATATATA TATATATATATA
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3 TAGACACCTATCTAAATCTA TATATATGCATG TATGCATA ACA CTA
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TGTGTATA GT G T --------
GAM14215 22118 TATATCACGAAGGTGAGATT - - ---- ATAA TTGAAT
1 GAATAATGCTTGAATGCAGA TATATCAC GA AGGTGAGA TTGA TGC
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TGTGATATG T A TCAA AAG- ------
GAM14215 7738 TATATCACTAATTGCTTTTC T TAA CAA-- - CCTG
3 AAGATCAAAAACCTGTTTTT TATA CAC TTGCTTTT GAT CAAAAA
GAATCACCAAGAAAGCAGCA ATAT GTG GACGAAAG CTA GTTTTT
TGTGTATA - TAC AACCA A ----

GAM14215 5169 TATATCAGAAGGTGAGATTG T - ---- ATAA TTGAT
4 AATAATGCTTGATGCAGAAT TATA CAGA AGGTGAGA TTGA TGC
CGAAACTTCTCATTTATCTG ATAT GTCT TTTACTCT AGCT ACG
TATA - A TCAA AAG- -----
GAM14216 17695 TATATCTATTTAATCTATTT C- AA - AATA--- - CTAAA
6 ATAATATCCTGCTAAACAGA TATAT TATTT TCTA TTTAT TC CTG
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3 AGAAAGGCAGGATTACATCT TATATGA TTCTG CCAAGAA GCA TTACATC TTT
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8 CAATTTTTATTCTTTTCATA TATATGT GCAA AG TTTTAT
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A AA-- TC C---- -------
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9 TGGTAAAATGTGCCACTGTG TATATGT GAAT CT ATGG ATG GCCACTGTG
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2 TGATTACATCAAGCTAACTG TA ATGTT CATTG GAA GATTACA AG TGA
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7 ATTTCTACACATAAAGTTTT TATA TTAC GG AATTTATTT AC
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CTATA C -- ATT ATTTT -----
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4 ATGTCACTAAATGAATGATG TATATTC TGATATC TATG TCAC
TGATCCCATAGATAGATATT ATATAGG ATTATAG ATAC AGTG
AGGGGATATA GG ATAG CCT ----------
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8 GTGGTTTCTATTAAAGAATA TATATT ATG TAATTGT GGT TTCT
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TCCAATATA CC TTA- ATTTAA T -----
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2 CTTGACACAAAAGTTGGTAG TATCAAAT GATAT AGCTTGAC AGT
CTGCAAGGTTAAGCTGTATT GTAGTTTG TTATG TCGAATTG TCG
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5 TGTATACAAAGTTTGCCATC TATC ATG GTACA ATA AAAGT TGCC
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GAM14231 22790 TATCACCTGGGAGTTTGTGA - AG GA A AAC----- CCCCACCTTAGACC
4 GAAATGCAGAAACCTGTGCC TATCACCTG GG TTTGT GAAATGC GA CTGTG

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2 TCTGTGTATGTACAATTCTC TATC TGATCTCCC AAT TGTG
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ATA AT-- A TTGTCTCTTA ----
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4 TTCTATTCTGGAAACAGATG TATC TATGGATCAAA CCT TC TCTG
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TGAGGTA A- CA T TCCGT ----
GAM14242 7678 TATCGCCTTCGTTCCCTATT G --- T A TTAC T AAT
5 CATTTACATTTTTGAATCAA TATC CC TTCGT CCCT TTCAT ATT TTG
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GAM14242 12072 TATCGGACTAGCACTATAAG CG A G TAA - --- GCCA
7 ATCAGCGTATCGGCCACGGA TAT G CTA CACTA GAT CAGCGTAT CG
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GATAGACTAGTA AT A A CTA C CAG ----
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3 TTCATATTCTGAGGTGGTTC TATCG TTCC GATTGTG GAGG
CTCTTCATGCAATTTGGAAT GTGGT AAGG TTAACGT CTCC
TGGTG T T ACTT-------- -----
GAM14246 13676 TATCTCCTGTTCTCCCCCCC TCC T-- CC CG ---- AATTC
7 GTGTCGCAATTCGCGTGTTA TATC TGTTC CC CC TGT CGC
CATAGGTCGGCTTGAGCACT ATAG ACGAG GG GG ACA GCG
GATA TC- TTC CT AT TTGT -----
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0 TGGATAATTTTTATTTTTTT TATCTGAA AGAA TAT GATAA
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TTTTAGATA TAAC TT A ----------
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5 TTCCTATTTAGAGGGAGTCC TATCTGC GG TCCATTC GAGGG GTC TG
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GAGTGGACTGTCCAAGCAGA AA TGTC- CC----- C T ----
TA
GAM14249 13856 TATCTGCCCTTTAATTTGCA C- AA- TG - A CA TT TTAAATACTTT
9 TTTAAAATCAGTTTCTTTAA TATCTGC CTTT TT C ATTTA AAT GT CT
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GAATAGTGAAGACAGAGTAG AT CAG GT A C AA TT ----------
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1 CCGACCGACTGGCAGAGAGA TATC GTG TTG CCCA ACCG GACTG CA GAGAGA
GAAAGGGACATCTTTCAATG GTAG CAC AGC GGGT TGGT CTGAC GT CTTTCT
CAGTCACCGTGGTATGGGCG T T- - A GCCA - AA --------
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8 CATTGTGAGCTGCATCACTT TATCTTT GCAA GCAT GTGA
TGTGCATTGCCACAGGAGAT ATAGAGG CGTT CGTG CACT
A ACAC--- A TTT ------

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5 CCTTCTTTTTCTATTGTTTG TATCTTT CA ACATCC
GGTGTAATTTTTGTAAAGAT ATAGAAA GT TGTGGG
A T TTTTAA- ----------
GAM14258 217 TATGAAGAAAGAAATGTTTT TG A AG T AAAGTT C TGTG
7 TGAAAGTTTACGTGTGTGCA TA A GAA AAATGT TTTG TA GTG
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TAATTCATTGTA GT A AA T ACTACT T ----
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7 TAAAAGATATGTCAAAATAT TATGATT AC ATAGAAG GATAT
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AATCATA AC A AAAACAA ------
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3 GCCTCAGGGCATCAGCTTCT TATG TTCC CTGT GCCCAGCCT CA GGC GCTTC
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3 CTTTTCAAAAGAAACCTCCT TATGC AGGAAAG TACTT AAG
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3 TAATCCTCAAGTCGGCGTGG TATGCT TATGA AAGAGCTA CC
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A ACT CC- GC -------
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GAM14277 17191 TATGGCCGTGGGCCTCAACA - G --- ACAAG-- C AAA
3 AGGGCCACAAAGTGACCAAG TATG GCC TGGGC CTCA GG CAC
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CATG A - AAC GCAAGAA A ---
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8 ATCTATTCCAATATATTAGG TATGG CCA AACGCCAC ATCTA
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5 TAGCATTTTATATGGTAATG TATGGTGT CAT TAG ATTTT TATGGTA
GGTATTATAAGAAATCTAGA ATATTACA GTA ATC TAAAG ATATTAT
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6 TGGACGGTGCATGAACTGTT TATGT CCCCAT CCCT GACG TGCA ACT
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2 ACATCTTAAAAATAGCTCCA TATGTA ATATT CATCT
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TA - CAAGCCA-- ----------

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TTACATA
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9 CTGAACGCACTTGTCCCTCT TATGTG ATTCTCGGGTGG TG GC GTCCCTC
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CGCTCGGGGGTCGCGTA -- A --- ---- --------
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CATA A AA- A G ------
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3 TAAAGGAGAGTTGTAGACTT TATTAACAAT ATG AGT AGGA AGTTG ACT
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2 AATATTTACATTTATACCTA TATTA TGTAT ATATA AATA TA TAT
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9 CTGTTATTTTTATTTGAGAT TATTATGTG GTAATTATAA GTTA GAGAT
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TAATTACTGCATAATA - TC --------- ------
GAM14313 4555 TATTCAAACTGCAAGGAAAA AA- AAGGAAA TG--- ATCCTGATTCTACC
7 GTTGAATGATGTATTTGATC TATTCA CTGC AGTTGAA ATGTATTTG
CTGATTCTACCCAAGTACAT GTAAGT GACG TCGACTT TACATGAAC
ATGATTTCAGCTGCAATGGC ATG GTAACG- TAGTA ----------
AGGTATGAATG
GAM14317 4778 TATTCATCACATTGGGTTGA CACA GGTT AG--- GCA TTATT

```
7          AAAGTTGGAAGATTTTGCAT TATTCAT   TTG   GAAA   TTGGAAGATTTT  TC
           CTTATTGAAAAGAATTTTTC GTAAGTA   AAC   CTTT   AACTTTTTAAGA  AG
           AAAAATGTTTCTGTACAAAT      ----  ATGT   GTAAA        AA-  -----
           GAATG
GAM14318 7175  TATTCATTCTGATGATGGAT   TC       AT  - -   -     TT CAGTAT
3          GTTTGAGTTGTTTCCAGTAT TAT  ATTCTGATG  GGA TG TTTG AGTTGT  C
           GGGACAATTACAAATCGCTC ATA  TAGGACTAT  CCT GC AAAC TTAACA  G
           CCTATCAGGATTTATA      TT       C-  C T   A     GG ------
GAM14319 393   TATTCCCAGAGGATGTCAGT   T    AG--       CCCA----   -   TA   CCAT
6          CCCAAGGACCAGTAGCTGCC TAT CCCAG   GATGTCAGT      AGGA CCAG  GCTG
           ATCAGTTTGGATTCTGAAAA ATG GGGTC   CTACGGTCA      TCTT GGTT  TGAC
           CTAACTGGCATCAACACTGG   T    ACAA       ATCAAAAG   A   --   ----
           GTGTA
GAM14319 11514 TATTCCCGCTGGCAGCAGGC   T -   GG   A  ACC    CCCCCTTCGTTC
8          ACCGCTGGCCCCCTTCGTTC TAT CC CGCT  CAGC GGC   GCTGG
           CCGGCACGCTGGCTGATGGC ATG GG GCGG  GTCG TCG   CGGCC
           GTGGTGTA           T  T   TA   G  CA-   ------------
GAM14320 90    TATTCCGCTGGATGACAAGT   T  GC   ------    AG  AGATAACGAAGCA
2          CAGATAACGAAGCAGAAGTG TAT CC  TGGA     TGACA  TC
           TCAGAACATTCCACAGGTAT ATA GG  ACCT     ACTGT  AG
           A               T  AC   TACAAG    GA  -------------
GAM14326 16026 TATTCTTGCTTTATCTGGAA    TT  TTTA---     C   TTACT----      GAATATCT     -   A
2          CAGTTTACTCCGTTATTGAA TATTC  GC      TCTGGAA AGT       CCGTTATT      ATTAGTG TTTA
           TATCTATTAGTGTTTAATAT ATAAG  CG      AGACTTT TCG       GGTAATAA      TAATCGC AAAT
           AGAAGAGCTTAATAAACCGC    T-  TTTTTCC     -  TTCCCTTAT      AAGCC---      C   A
           TAATCCGAAAATAATGGTAT   T  AAGAG
           TCCCTTGCTTTTCAGACCTT TA AG
           TTTGCTGAATA        AT TC
                        -  -----
GAM14330 21834 TATTGATGAAGTCTCTCATC     -----   TCTCT  CTT      TC-   TCTTCT
0          TTTAGAAAGGTCATAATCTT TATTGA    TGAAG    CAT   TAGAAAGG   ATAA
           CTTTATTTCCCTTTTTGTCA ATAACT    ACTTC    GTA   GTTTTTCC   TATT
           TGTTTCTTCAACCATTCAAT     TACCA    TTT--  CT-      CTT   ------
           A
GAM14330 13432 TATTGATTGCGTGGCCCATG      TGC    CCAT  GAT   TGATATT
7          TGATGCTGTGATATTCAGCC TATTGAT   GTGGC   GT   GCTG
           CAGCTGTCGCTTTATCAGTG GTGACTA   CGCTG   CG   CGAC
                           TTT    T---  ACC   -------
GAM14333 2290   TATTGCTTGTGCACGATCCT     TT  G  C  T   ACTCCAT    AATGA
7          ACTCCATGTGAGAATGACTC TATTGC  GT CA GA CCT      GTGAG
           ACCAGGTTCATGAACGCAAT ATAACG  CA GT CT GGA      CACTC
           A                  --  A  A  T   C------     -----
GAM14341 17225 TATTTAAGATCACTCTAGGA   T    T  -  C    TCCC-   TTTAT  T    AATAACTTA
6          TCCCCAAATTTATAGTAACT TAT TAAGA CA CT TAGGA    CAAA    AG AACTT
           TAATAACTTAAAGTTCTTTT ATA GTTCT GT GA ATCCT    GTTT    TC TTGAA
           GTAAACTCCTATAGCTGCTC   T    C  C  T    CAAAT   -----  -    ---------
           TTGTATA
GAM14365 9975   TATTTTCAATACTGTTAGAG        TACT----        T  TTAACTT     CTTAGTCT
2          AGTTCGGTTAACTTAGCTAC TATTTTCAA      GTTAGAGAGT CGG      AGCTAC
           CTTAGTCTGTAGCTTTTTTG ATAAAAGTT      TAATCTCTTA GTT      TCGATG
```

CATTCTCTAATTTATCTTCT CTTCTATT C TTT---- --------
TGAAAATA
GAM14367 14201 TATTTTGAAACTGAGATAAA TGAAA AAA CT AAAAGTTTAC
6 CTTGGCTTGGAAAAGTTTAC TATTT CTGAGAT CTTGG TGG
CTACCCCAAGGTCTCAGCAC ATGAA GACTCTG GAACC ATC
TAAGTA TCAC- --- CC ----------
GAM14371 7663 TATTTTTATCGTTGGGATCT T- -------- TTCTGTCTTCT
9 TTCTGTCTTCTGGGTTCCAT TATTTTTA CGT TGGGATCT
TTTTTAAATGTTTAAAAATA ATAAAAAT GTA ACCTTGGG
TT AATTTTTT ----------
GAM14374 247 TATTTTTGTGCCTGGAGCCA TG --- GCCATGT AA CCAAC
3 TGTGAAAAAAACCAACTTTA TATTTTTG CCT GGA GAA AAA
GTTCTTTTATCCTAAAGGAC ATAAAAAC GGA CCT CTT TTT
CAAAAATA CA AAT ATTTT-- GA -----
GAM14383 21937 TCAAAGAAAGCCAAAAAACC A GAAA AAAAAC CA TG G-- TC - TACT
9 TGCACTTGTTGCCAAGTCTT TC AA GCCA CTG CT TT CCAAG TTC CATCT
CCATCTTACTAGATGTGAAA AG TT CGGT GAC GA AG GGTTC AAG GTAGA
CCTTGGGATGATGAGACAGA A AAAG ATA--- A- GT TAG CA T ----
TATGGCGAAATTAGA
GAM14384 11662 TCAAAGAGCAACGCAGGGAA A A GCA--- AAA C ATGAAGC
9 ATACTAAGATGAAGCCTTAA TCA AG GCAAC GGG TA TAAG
TACCCAACAGAGTTGTGCTA AGT TC TGTTG CCC AT ATTC
TGA A G AGACAA --- A -------
GAM14386 21903 TCAAAGGTACCAGGGGTAGG AA AC-- GTAGGAA--- CTA
6 AAGAGATGCTATATCTCAAC TCA GGT CAGGG GAGATG
ACAAAAGCCCTGCAAGGCCA AGT CCG GTCCC CTCTAT
GTGA GA GAAC GAAAACACAA ---
GAM14388 202 TCAAAGTTGCCGTAACGGGA GT CGTAA GA CTCG ACATTA
0 GCTGGTCTCGGGAATGACAT TCAAA TGC CGG GCTGGT GGAATG
TACGTTTCAACCAGCCTCCG AGTTT ACG GCC CGACCA CTTTGC
CAAGCATATTTGA AT AAC-- TC A--- ------
GAM14390 15926 TCAAATCATGGTGGTTCAGA A TG ATT C-- -- TC T GTAA
6 TTTTTATTTACTGGAACTCA TCAA TCATGG GTTCAG TTTATTTA TGGAACT CAAT TTCC CT

ATTCTTCCTCTGTAAAGGGA AGTT GGTACT TAAGTT GAGTAAGT ACCTTGG GTTG AAGG GA

ATGGTTGGTGGTTCCAAACT - CT C-- CAA TG GT - ----
GAATGAGCTTGAATTCTCAT
GGTTGA
GAM14397 10329 TCAACAGTGGTGCTGTGGAA CA G ---- CCCAG AGTTAAGCACAAA
1 TGCCCAGCCAGTTAAGCACA TCAA GTGGT CTGT GGAATG CC
AAGGAAAACATTTCAATAAC AGTT TACTA GACA CTTTAC GG
AGGATCATTTGA -- G ATAA AAAA- ----------
GAM14398 10064 TCAACATTTACCAGACATCC TA --------- AA CAGCC
1 AATGACAGCCTCAGGGGAAA TCAACATT CCAGACA TCC TGA
GCACCCTTGTCTGGGGAGTG GGTTGTGA GGTCTGT AGG ACT
TTGG GG TCCCACGAA GG -----
GAM14399 11333 TCAACCAGGTGCTCTCCAAT AA --- CAATAA - CAACTACAATA T GAGC
2 AAAGACCTCATCAACTACAA TC CCAGGT GCTCTC AG ACCTCAT AGTT GTGCA
TAAGTTTGTGCAGAGCTGCA AG GGTCCG CGAGGG TC TGGAGTG TCAG TACGT

TCGACTGGAACCGTGAGGTG AC GGT CGAAG- G CCAAGG----- C ----
CTGAAGCGGGAGCTGGGCCT
GGCAGA
GAM14400 13811 TCAACTAATGCGACTTATGG ATG G ------- CAA-- AAGC
3 TAGCCAAGGAAGCCCGCAAT TCAACTA C ACTT ATGGTAGC GG
GTTACCATGGAAACTGAGTG AGTTGGT G TGAG TACCATTG CC
AATGGTTGA AA- - TCAAAGG TAACG ----
GAM14402 17668 TCAACTGGCTTTGGCATGAT - T ---- GA ATA CT A TGCGTGAGAAGAGAGAAT
5 TTATGATATCCCTGGGATTA TCA AC GGCT TTGGCAT TTTATG TCC GGG TTA
TGCGTGAGAAGAGAGAATTG AGT TG CCGG GATCGTG AGATAC AGG CCC AGT
AACCCGGAAGCATAGACTGT A T TACA TC GA- -- A ----------
GCTAGACATGGCCTGTATGA
GAM14402 10195 TCAACTGTCACCATAGAATC ACT C AGAATCTAG CA TACCTGAC
7 TAGTGCATGGTCTACCTGAC TCA GTCA CAT TG TGGTC
GACCAGACAATGTTGACTAC AGT CAGT GTA AC ACCAG
TGA CAT T --------- AG --------
GAM14403 10032 TCAACTTCAGTATCTACAAA ACTT AAAA TCCT AT CATAGT
0 AAGTTGTCCTAAAGGATTTA TCA CAGTATCTACA GTTG AAAGG TTATGGAAG
TGGAAGCATAGTTTTTCATG AGT GTCGTAGGTGT CAAC TTTCC GGTACTTTT
GCCCTTTCAACGTCCTGTGG ---- CCTG ---- C- ------
ATGCTGTGA
GAM14408 19701 TCAAGATGGAGGAGACTCTG T AGA ---- ATACA --- CTAG
5 CTGCATACACTTGGAGGTCT TCAAGA GGAGG CTC TGCTGC CT TGGAGGT
AGATTTCCATAGAGGGCACG AGTTCT TTTCC GAG ACGATG GA ACCTTTA
TAGCATATTGAGGACCTTTT - AG- TTAT CACGG GAT ----
CTTGA
GAM14408 4877 TCAAGATTCTGCTAAGATCT TTCT A GTA AT CTT
8 GTATTAATCATCTTGTGCAT TCAAGA GCTA GATCT TTA CAT
GGGAAGATTGTAGTTACTCT AGTTCT TGAT TTAGA GGT GTG
TGA CAT- G AG- AC ---
GAM14410 13937 TCAAGCTGCACCGACTGCAC A AC ACT- A ATCC TCTT
1 TTCATCCGCCTCTTGGCAGG TC AGCTGC CG GC CTTC GCC
AGGCCCCGCGAAGCAGCTGG AG TCGACG GC CG GAGG CGG
A G AA GCCC - A--- ----
GAM14410 14211 TCAAGCTGGTGATGGCTGAG - TG TG G CAGC CACCAT
5 CAGCTGACCACCATGTCGAC TC AAGC GTGA GCT AG TGAC
ATCTGAGTTCTCGCTGGCTT AG TTCG CGCT TGA TC GCTG
CGA C GT CT G TACA ------
GAM14411 15557 TCAAGGAAAGGCAGGAGGAA - AAAG GAGGAA TG GG GGGAGG
2 GAGTGCTCTGGGTGGGGGGA TCA AGG GCAG GAG CTCT GTGGG
GGTTCACAGGGTGCTTGGAC AGT TCC TGTC TTC GGGA CACTT
TGTACCTATGA A A--- AGG--- GT -- ------
GAM14414 22617 TCAAGTAAGTTTCATTTTTT TAAGTTT T TTATCT ATATAC
9 TTATCTGGGCTATATACAGT TCAAG CATT TTT GGGCT
CCTCAAATAAATAATGTCTT AGTTC GTAA AAA CCTGA
GA T------ T TAAACT ------
GAM14415 13372 TCAAGTCTGACGTGTGGTCT A AC ------ AAT TA ACA
5 TTTGGAATCTTACTCACAGA TCA GTCTG GTGTGGT CTTTTGG CT CTC
GCTGGTCACCAAAGGAAGAG AGT CGGAC CATACCG GGAAACC GG GAG
TGCCATACCCAGGCATGA A C- TGAGAA ACT TC ---

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GAM14416 22433  TCAAGTGGAAAATCTGAATA   -  GAAAATCTGAA  A            T   TGCTTCC
5         CATTGACGTTATAAAGGTCT TCAA GTG        TAC TTGACGTTATAAAGGTCTCA GCTTG
          CATGCTTGTGCTTCCCAAGT AGTT CAT        GTG AACTGCAATATTTCCAGAGT TGAAC
          TTGAGACCTTTATAACGTCA   A  AAGTCTAAAAG  -            T   -------
          AGTGGAAAATCTGAATACAT
          TGA
GAM14421 22760  TCAATATTGGTGTGCTAGAG     TT  TGT   -    C  ACGT
1         GTTGCAGTACGTACTTTAAT TCAATA  GG  GCTAG AGGTTG AGT
          TTGTTGGCCTTTTTTGTTGA AGTTGT  TT  CGGTT TTTAAT TCA
                        TT  TC-    G    T  ----
GAM14430 13497  TCACAACGATTGTGAGTGCT   AAC        C--  TAAACTT   GGAT
7         CTTAAACTTACTGGGATCGG TCAC  GATTGTGAGTG  TCT    ACTG
          TTACACTAGATTCTACTCAC AGTG  TTGGCACTCAT  AGA    TGGC
          GGTTCGTGA           C--        CTT  TCACAT-   ----
GAM14430 5094   TCACAACTGGGGACATGGCC   AA    ACA  CCCAAA   ACTA   TTACTCT
9         CAAATTGCACTAGCATTTAC TCAC  CTGGGG  TGG    TTGC   GCAT
          TCTGTGCCAAGGCAACCAGC AGTG  GACCTT  ACC    AACG   CGTG
          TTCCAGAGTGA          A-    CG-  ------  GAAC   -------
GAM14434 15552  TCACACCGACGGGGTAATGA   CA  -  G--   A-      TTAGAACTACAAGCCT
0         ATATGTTAGAACTACAAGCC TCA  CC GAC  GGGTA  TGAATATG
          TCATATTCAGGTATCCAAAG AGT  GG CTG  CCTAT  ACTTATAC
          TCAGGAATGA          AA  A  AAA   GG     ----------------
GAM14436 10779  TCACAGAGATATCAAACCTT      ATATCAAACC   ATATT   GGAC
3         CCAATATTCTTCTGGACAGA TCACAGAG       TTCCA   CTTCT
          AGTGGAAATATTAAGCTCTG AGTGTCTC       AAGGT   GAAGA
          TGA                 GAATTATA--    -----   ----
GAM14438 11072  TCACAGCCTTTCTATCCTGA   C    ------  TC-       GTTCCTTAGATGCCAGA
0         ACGTTTTGTTCCTTAGATGC TCA AGCCTT    TCTA  CTGAACGTTTT
          CAGAGAAATGTTTAGCATTG AGT TCGGAA    AGGT  GATTTGTAAAG
          GAATTCTGAAGGCTTGA    -   GTCTTA   TAC       -----------------
GAM14440 7630   TCACAGGTCTGTAAGTTAAG      TC   A   ----------  -    TGCTCTATT
0         GCTATGGTTGCTCTATTACC TCACAGG  TGTA GTTAA       GGC TATGGT
          ATATGCCAATCAATACTTTA AGTGTCT  ACGT CAATT       CCG ATACCA
          ACTGCATTCTGTGA          T-   -   TCATAACTAA  T    ---------
GAM14441 22441  TCACAGTTGGGTTTAACAGA    -   -   TAA  G  GAC    ATTT
7         TGACTTTGGATTTTCAAAAA TCACA GTTG GGTT   CA AT   TTTGG
          AGTGTGGGTGGCCGTGACTT GGTGT CAGT CCGG   GT TG   AAACT
          GTGG                T   G   TGG  G  AAA    ----
GAM14442 10113  TCACATAAGTGGAAAGAAAA   CATAA   AAA-  A   CA   AGGATG
1         AGACATTTAAGGATGTGGAA TCA    GTGG   GAA AAGA  TTTA
          ATCTTCTTCGAAGCCATGGA AGT    TACC   CTT TTCT  AGGT
          ATTGA               TAAGG   GAAG  C   AA   ------
GAM14446 10309  TCACATTGTAGAAAGTTTAA  A  T  AG    TTAAT    G  CAAGGTA
3         TTCAAAGCGCAAGGTACGGT TC CAT GT  AAAGT    TCAAA CG
          TTGACACTCACTTTACACAT AG GTA CA  TTTCA    AGTTT GC
          GGA               -  - CA    CTCAC    G -------
GAM14447 1933   TCACCAACTGCCACACCAAG    A--         AG  C- ----  TTGATGCT
7         ATTCGCCATGTTGATGCTCA TCACC  ACTGCCACACCA  ATT  GC   CATG
          TGCCACGCTAAATGATGGTG AGTGG  TGATGGTGTGGT  TAA  CG   GTAC
          TGGTAGTCCAGGTGA         ACC         AG  AT  CACC  --------
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GAM14449 17691 TCACCACCCGCGCCAGGGGG C---- -- AG G CCCAC
0 CGGGGCTCCCACGGCCCGGC TCAC ACCCGC GCC GGGGC GGGCT
CCCGGGTGGGCGGGTCTATC AGTG TGGGCG TGG CCCCG CCCGG
GTGA CTATC GG G- G -----
GAM14449 15030 TCACCACCTTGGTTTTGTTT A TT -- - T TTC GTC A AACCCAGCGC
1 TATTTTGCTTCTTGGTCAAG TCACC CC GGT TTTGTTT TATT TGC TTG AAGAAAGG GGGGAG

AAAGGAGGGGAGAACCCAGC AGTGG GG TCG AGACAGA GTAG GCG AAT TTTTTTCC CCCCTC

GCACCCCTCCCCCCTTTTTT - CC GA A T CA- --- - ----------
TAAACGCGTGATGAAGACAG ACCC
AAGGCTCCGGGGTGA

GAM14451 15392 TCACCATCTGCAGCCTTGAA CA C- CC A T GGAG- - AAAGGA
1 GGAGCTTGGTTCGGAGACAG TCAC TCTG AG TTGA GGAGCT GGTTC ACA GGC
GCAAAGGAGCCATGTGTGGA AGTG AGAC TC GACT CTTTGG CCGAG TGT CCG
GAGCCTGGTTTCTCAGTACT CC CT AT - T AGGTG A ------
TCCAGACCGTGA
GAM14453 15545 TCACCCAGGCTGGAGTGCAG CCC G T TG ------ T TTCACTATAACCTCCTCCT

2 TGGAGTGACCTTGGTTCACT TCA AGGCT GAG GCAG GAGT GACCT GG
ATAACCTCCTCCTCCCAGGT AGT TCCGA CTC CGTC CTTA TTGGA CC
TCAAGAGATTCTCCTGCCTC CC- - - CT GAGAAC C ----------
AGCCTCCTGA
GAM14454 10266 TCACCCGCTTGTGAAATGGC C - A- C----- A TCAGGT
6 CCCGCTATATCAGGTTGCAG TCA CCGCTTGT GA ATGGC CCGCT TA
CGGCAGAGAGCCATCCTCTA AGT GGCGAATA CT TACCG GGCGA GT
TAAGCGGCTGA C T CC AGAGAC C ------
GAM14455 2237 TCACCCTCATCTGCCACCAC A A- C CAC CC TG- AGT- - T AGGCAA
0 CTCCCATGTGTTCAGTTCAC TC CCCTC TCTGC AC CTC ATG TTC TCACC CA GC
CCATGCAGGCAAGCTGAGGT AG GGGAG AGACG TG GAG TAC AAG AGTGG GT CG
GATGAAGAAAATCATTGAGA G GA T TCA T- TAA AAGT A - ------
CTGTTGCAGAAGGAGGGGGA
GAM14457 10473 TCACCTCATTCTATGATAAG C- - --- - GC T A - - AAAAGA GAGCTG
3 TTGCAATTACAGGACGAAGT TCA CTC ATTCTAT GATA AGTT AAT AC GG ACGAA GT TTTAA

AAAAGATTTAAGAGCTGTTG AGT GAG TAGGGTA TTGT TCAA TTA TG CC TGCTT CG AAGTT

AAGAGGCATTCGTACCAGTT TA A GTT C A- T A A A GAG--- ------
ATTAAACTCTGTTTTGATGG
GATAGAGATTGA

GAM14460 19637 TCACCTGTACCTTGCTTGGG T- CC- CT - AAAGAATA
2 TAATACAAAGAATAGTGCTT TCACC GTA TTG TGGGTAA TAC
ATTTATACAAATTTACTTGG AGTGG CAT AAC ATTTATT GTG
TGA TT TTA AT C --------
GAM14465 4932 TCACTACAGTCTCAGTCAAC A CT TCA GT T-- TG TT TTTAAAT
5 AGTGTGAATGTATCATGTTT TCACT CAGT CAG ACA GTGAA GTATCA T TAC

TACTTTAAATGTGTGTGTGA AGTGA GTCG GTC TGT TACTT CATAGT G GTG
TACTTCTTCATTATGTCCTG C C- C-- AT CTT GT T- -------
CGCTGCAGTGA
GAM14466 6986 TCACTAGGTGACCAGGTAGG T GACC T C GTA- CAGCCAATGACCTTAA
2 GGACAGAGTAGAGCAGCCAA TCAC AGGT AGG AGGGGA AGA GAG
TGACCTTAACTCAAAATCTT AGTG TCCA TCC TCTCTT TCT CTC
TTCTCTCCCTTCAACCTGTG - ACT- C T AAAA ----------
A
GAM14468 7750 TCACTCATTAACTCATGCAT C ATACCAA ATA TAAA
2 ACCAAACATAGCTAAAGTAA TCACT ATTAACTCATGC AC GC
AGTATTAATGGTATGAGTTA AGTGA TAATTGAGTATG TG TG
ATAAGTGA A GTAATTA AAA ----
GAM14474 9967 TCACTGCGCCCGCTCATAAG C ------ AG GA CATG
5 GGGATGGCCATGGCTAGGTT TCACTGCGCC GCTCA TA GG TGGC
TATAGATAGTTGGGTGGCGC AGTGGCGCGG TGGGT AT TT ATCG
GGTGA - TGATAG AT GG ----
GAM14480 21760 TCACTTACATAGCCCCACTC GCCC C ----- GAAAGCGTGA
4 AGCTGCTTCGGAAAGCGTGA TCACTTACATA CACT AG CTGCTTCG
CGAAGCAGTAGTCCTCAGTG AGTGAATGTGT GTGA TC GACGAAGC
TGTGTGTAAGTGA GT-- C CTGAT ----------
GAM14486 2092 TCACTTGAGAACTGGTCAGC T AA--- CA- ACACGCAC
3 CCGGCAACACGCACTGCCGG TCAC TGAG CTGGT GCCCGGCA
GTCGTGCTAGGACCGCTCAC GGTG ACTC GATCG TGGGCCGT
GTGG C GCCAG TGC --------
GAM14489 5161 TCACTTTGGACACCTGATTC CTTT - - TCTATA ATGTGCA
4 TATAGGCCATGTGCAGGCTG TCA GGACAC CT GAT GGCC
TGTATCTGGTGTGTCCCCTG AGT CCTGTG GG CTA TCGG
A CC-- T T TGTG-- -------
GAM14493 10628 TCAGAACCAATAATTAGGAT GAA T - TT TCT--- TACATT
7 AGATTTTATGCTCTCTTCAT TCA CCAATAAT AGGATA GAT TATGC CTTCAT
TACATTGTGAAGTGTCTTGT AGT GGTTGTTA TCTTAT CTG ATGTG GAAGTG
GTAGTCATATTCTATTGTTG AA- - A -- TTCTGT ------
GAATGA
GAM14496 7868 TCAGAAGGATTCCTATGTGG A---- T A--- --- GACAGAG
2 GCGACAGAGGCCCAGAGCAA TCAG AGGAT CCT TGT GGGC
GAGAGGCATCCTCACCACTG AGTC TCCTA GGA ACG CCCG
A ACCAC C GAGA AGA -------
GAM14499 7533 TCAGAATCTGAGAATTCTTC ATCT - T------ -- TATCC
0 ATCACAAGCTATCCGCTTGT TCAGA GAGA ATTCT CATC ACAAGC
CTGATGCTCGAATAGAATAT GGTCT CTCT TAAGA GTAG TGTTCG
CTCTCGTCTGG GCT- A TAAGCTC TC -----
GAM14499 4933 TCAGAATGCCTTGGTCATAG ---- CTT A- T GCAAAATT
3 TGTTGTTGCAAAATTGACCA TCAGA ATGC GGTCAT GTGT GTT
TACAGGTGGCCCATGTATAA AGTCT TATG CCGGTG CATA CAG
AATCTGA AAAA TAC GA C --------
GAM14500 2378 TCAGACACTGTATGTAGAAA G C AGAAAG AA- GAAACA
9 GCTTCAAAAAATGAAACAGT TCA ACA TGTATGT CTTCAAA AT
ATGTTTGGAGAACATACATG AGT TGT ACATACA GAGGTTT TG
TGTGA G - A----- GTA ------
GAM14506 2263 TCAGAGACTGTGTGCTAAAT GAC AAATA CTA- TGATCT

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1          ATTAGGCTACTGTGATCTTA TCAGA  TGTGTGCT   TTAGG  CTG
           GGCCACCTGAGGCACATACT AGTCT  ATACACGG   AGTCC  GAT
           ATCTGA             ATC     -----   ACCG  ------
GAM14506 2068  TCAGAGAGAAGGAAGCGAAA  AG     AA--   AAAAAC   AA  TTTCA
3          AAACCCTGAATCTTTCAGAC TC  AGAGAAGG   GCGA   CCTG  TC
           AGGATGTTGCCATGCCTTCT AG  TCTCTTCC   CGTT   GGAC  AG
           CTGGGA           GG     GTAC   GTA---   --  -----
GAM14508 611   TCAGAGCTCTGCTGAATTCC     -    G  TTCCACT   TTACTTC
2          ACTGTCATTACTTCTGACTG TCAGAGC TCTGCT AA     GTCA
           AACTTTGGGCAGATGCTCTG AGTCTCG AGACGG TT     CAGT
           A                  T    G  TCAAGT-   -------
GAM14509 124   TCAGAGGCCACAAAAGAAGC      CACAAAAGA  T    AG AAGAA  CAGAGA
1          TAAGGAGAGCAAGAAGCCAG TCAGAGGC      AGC AAGGAG  C    GC
           AGAGCAAGAGGTCCTCTTTG AGTCTCTG      TCG TTTCTC  G    CG
           CTGTCTCTGA           ---------  -    CT GAGAA  ------
GAM14515 2188  TCAGATCTTTTTTGAAGGTG   A   TT   A      GA-  GAGGTGAA
2          GGTTTGACTGAGGTGAAGGG TCAG TCTT  TTGA GGTGGGTTT  CT
           CAAGGCCCACCCTTAATGGA AGTC AGAG  AATT CCACCCGGA  GG
           GACCTGA            C   GT   C      ACG  --------
GAM14521 16365 TCAGCACCGACAAGCCGCAA    A  GACAA    ACGA  ACA   GAC
0          CGAGGGACAGGCGGACCGCT TCAGC CC    GCCGCA   GGG  GGCG
           GGGCCCAGCTGCGGCGGGGG GGTCG GG    CGGCGT   CCC  TCGC
           CTGG               - GG---    CGA-  GGG   ---
GAM14521 1887  TCAGCACTGGGGCCTATAGT   CACT    A   T   AG----   TCA
3          TCAGACAGCTGCTCAGCGGA TCAG   GGGGCCT TAGT CAGAC    CTGC
           AGAGGGTTTGCACTGGAGGC AGTT   CCCCGGA GTCA GTTTG    GGCG
           CCCTCTCTTGA         CTCT    G   C   GGAGAA   ---
GAM14522 15846 TCAGCAGCACAAATCCCTTT   C  ACAAA       AA----       TTC  A-   A-  AAGTAGA
4          TATTAACCATCTTCCTTTTC TCAG AGC   TCCCTTTTATT    CCATCTTCCTT  TCG  GTAT  CAC
           TCGAGTATACACAAGTAGAA AGTC TCG   GGGGAGGGTAG    GGTGGGAGGGA  AGC  CATG  GTG

           AAGAAACAGTGAAGTACCCC   C  -----       GAGAGG       T--  CC   AA  -------
           GATAGGGAGGGTGGGGAGAG AAAGAAACA
           GATGGGAGGGGGCTCCTGA

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GAM14522 7892  TCAGCAGGATTTACACGGTG   G   A   C--  G   C------    T  G     AGCT
9          GGGCGCAGCTTCGAGGGCCG TCA CAGG TTTA  ACG TGGGG     GCAGCT CGA GGCCGGG

           GGAGCTCCTGGTCATCGAGC AGT GTCC GAGT  TGC GTCCC     TGTCGA GCT CTGGTCC
           TGTCCGACAACCCTGGCGTC   G   -   ACC  G   AACAGCC    -  A    ----
           CATGAGCCTGGTGA
GAM14523 21796 TCAGCAGTTTAAAAATTGTC    AGTTTAA-  T  T       AAAG
3          CTTTTTCTTAAAGAGGAAGA TCAGC      AAA TG CCTTTTTCTT
           AGGCATTTTCACACAAGGCT GGTCG      TTT AC GGAAGAAGGA
           GG                 GAACACAC  T -       ----
GAM14526 10821 TCAGCCAGTATTCTGCAATT    A   CT  ATTG    CATGATGAT  A    ACCAAGGAGA
1          GCTATCCACATGATGATGCA TCAGCC GTATT  GCA   CTATCCA       GC CATGGA
           CATGGAACCAAGGAGATCTG AGTTGG CGTAG  TGT   GGTGGGT       CG GTGTCT
           TGCGCTGGGTGGGTCTGTGA    -   --  CTG-     --------- C    ----------
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TGCGGTTGA
GAM14529 1877 TCAGCCTCTGGGCTCCTGCT CT--- GC TTAA CA - CTGGT
1 GCTTAAAGGCAGAGCCGCTG TCAGC CTGGGCTCCT TGC AGG GAG CCG
GTTGGTCTCCACCTGTGCAT AGTCG GACCCGAGGG ACG TCC CTC GGT
TGGGAGCCCAGCACATGCTG TACAC TT TG-- AC T -----
A
GAM14529 2198 TCAGCCTGCTGAACAGTTCC CT - CCTTTTTC TA C TCCAAAAATTTCC
5 TTTTTCAAAGACATAGATAC TCAGC GCTG AACAGTT AAAGACA GATA CA
CATCCAAAAATTTCCTGATA AGTCG CGGT TTGTCAA TTTTTGT CTAT GT
TCCTTGTTTTTAACTGTTGT TT G -------- TC A ----------
GGCTTGCTGA
GAM14530 347 TCAGCGCACAAATCTGTCCA - CAA TGTCCA A T CCGT
9 GGGCAGATGGCCGGGCCCCC TCAGC GCA ATC GGGC GA GGCCGGGCCC
GTGGGCTTGGCCTTCGCCTC AGTCG CGT TAG TCCG CT CCGGTTCGGG
CTTATGATGCTGCTGCTGA T CG- TATTCC - T ----
GAM14533 13415 TCAGCTCCTTCACTGAACAA T AACA T ACTT----- TCACTGTATCTCT
3 CTGTGTGAACTTGGTGAAGT TCAGC CCTTCACTG ACTG GTGA GGTGAAG
CACTGTATCTCTCTTCACCT GGTTG GGAGGTGAC TGAC CACT CCACTTC
TAACTCCCTCACCAGTACAG T A--- - CCCTCAATT ----------
TGGAGGTGTTGG
GAM14537 22903 TCAGCTTGGCCCTGCTCAGG G - - TG A G CTTCC ACGACAG
6 TAGAGCTTCCGCCACGACAG TCA CT TGGCC C CTC GGTA AG GCC
GGCCTGTACCGAGTGGTGGT AGT GA ATTGG G GAG CCAT TC CGG
TAGAGGTGA G G T GT - G ----- -------
GAM14537 17869 TCAGCTTTCAGTTAAAAAAG C C - AA- TG AAAGAGAAA
8 AAGAAGAAGAAATGGCAAAG TCAG TTT AGTTAAAAAAGAA GAAG GAAA GC
AGAAAGTTTTTTCAAATTTC AGTT AGA TTAATTTTTTCTT CTTT CTTT TG
TTTCTTTTTTAATTTAGATT - T T AAA TT ---------
GA
GAM14537 11978 TCAGCTTTCCTGCAAGAAGA TT CAAGAAGAAAT TG - AAGTC
9 AATCCTGGTTAAAAAAGTCT TCAGC TCCTG CC GT TAAAA
TTTGTATTGGGTCAGGAGTT AGTTG AGGAC GG TA GTTTT
GA -- T---------- GT T -----
GAM14539 4679 TCAGGAACTTGTGGCCTACG TTGTG C CTTTCTCCCCCTC
3 GTTGACTTTCTCCCCCTCTT TCAGGAAC GC TACGGTTGA
AACCGTGTGTGTGTGTTCCT GGTCCTTG TG GTGCCAATT
GG TGTG- T ----------
GAM14539 6806 TCAGGAAGACTTCCCAAAAT GAA CCAAAATAAG- C TGAATT
7 AAGACTCAGTATGAATTTGC TCAG GACTTC ACT AGTA
TAAGTAACTGATCTATGAAG AGTC TTGAAG TGA TCGT
TTAGCTGA GA- TATCTAGTCAA A ------
GAM14545 10173 TCAGGATAAACCCAATTAAG TAAA A - TT T T CTGATT
3 TTTTTTATATACTGCTGATT TCAGGA CCCA TTA AGT TT ATA ACTG
CAGTTTGTTAATTATTATGA AGTTTT GGGT AGT TTA AA TGT TGAC
TGGGATTTTTTGA TTA- - A TT T T ------
GAM14547 10148 TCAGGCAAGCAACTATACCA AAGCA A- AATATGC- CCTTGAAAATAATCA
2 ATATGCTGAGGGCCTTGAAA TCAGGC ACTAT CC TGAGGG
ATAATCATCCTCATTTTAAA AGTCCG TGATA GG ACTCCT
GGGAAATAGTGGAAAGCCTG AAAGG AA GAAATTTT ----------
A

GAM14549 14780 TCAGGCCGTTGCTGAGCTCA A C-- - -- CA AC AGGT
1 ACGGGACCCAGGTGGAGTCT TC GGC GTTG CT GAGCT ACGGG CC
GTACAGCTCAAAGTCAACAT AG CCG CAAC GA CTCGA TGTCT GG
AGCCCGA C ATA T AA CA GA ----
GAM14551 16039 TCAGGCTGCCAATGAATGGG T- ATGAA GCA CAAAGACCCCAA
0 GCAGGAGTGGCAAAGACCCC TCAGGC GCCA TGGG GGAGTGG
AATCACTTCCGACCTGCTGG AGTCCG CGGT GTCC CTTCACT
CCTGCCTGA TC C---- AGC ----------
GAM14555 22003 TCAGGGGAGCTATCCTATGC CT ATG AAGGA CA AGTT
4 TTGAAGGAACAGAGGACATC TCAGGGGAG ATCCT CTTG ACAGAGGA TCA
AAGTTTGGATCCTCTGTGTG AGTCCTCTC TAGGG GAGT TGTCTCCT GGT
TGAGGGGATTACTCTCCTGA AT --- GTG-- A- ----
GAM14557 1889 TCAGGGTTTCTTTCTTTTTT T TTTTTCA ACAC CCAGCACACAC
4 CAGTGAGACACTGCACCAGC TCAGGGTT CTTTCT GTGAG TGCA
ACACACTGCATTACTCACGC GGTCTCGA GGAGGA CACTC ACGT
AGGAGGAGCTCTGG - CG----- ATT- ----------
GAM14561 14954 TCAGGTGTCCATTCCAAGCA G C--- CAA G CC ATCCTTCA
0 GATTGGCCCTCATCCTTCAG TCAGGT TC ATTC GCAGATT GC TC
AATGTGGATCTGCCGAATTG AGTCCG AG TAAG CGTCTAG TG AG
AAGAGGCCTGA G AAGT C-- G TA --------
GAM14562 16357 TCAGTAAAACATTTTCAAAA - TCAAAAG --- TATT
2 GTCATCAATATTTTGGATCT TCA GTAAAACATTT TCA TCAA
GAGCATTTAAATGTTTTATA AGT TATTTTGTAAA AGT GGTT
TGA A TTTACG- CTA ----
GAM14562 14263 TCAGTAAATATGGTAATATA G TAT A A CAAACTT CATA
7 GGAACAAACTTAGGCTCATA TCA TAAA GGT AT TAGGAA AGGCT
AGCCTTTTAACTTTTTACAT AGT ATTT CTA TA ATTTTT TCCGA
AATCTTTAATGA A --- A C CAATTT- ----
GAM14568 15384 TCAGTCCACCACTGAACCTA G C GA-- AATC - GTTCAAA
9 AATCCAGTTTGGTTCAAACA TCA TC ACCACT ACCTA CAGT TTG
GCACTGTGGTAGGTGGTAGG AGT GG TGGTGG TGGAT GTCA GAC
TGGTAGGGTGA G A ATGG GGT- C -------
GAM14573 17787 TCAGTGCGGGAACCAATGCA -- G- A AT A C G TGGA
7 GACTGGCATTAAGGCTGTGG TCAGT GCG GA CCA GC GA TGGCATTAAG CTG
ATAGCTTGGTGCCAATTGGT AGTCA TGC CT GGT TG TT ACCGTGGTTC GAT
CGTGGTCAGCGTGAACTGA AG GA - GC G A - ----
GAM14576 15127 TCAGTGTCCCAGAATTTAAA TC- G TTAAAATT C ACTTTACA
4 ATTTCCTTGCACTTTACAGC TCAGTG CCA AAT TC TTGC
AAAGATACATATTGTGGCTC AGTCAT GGT TTA AG AACG
TACTGA CTC G TACAT--- A --------
GAM14576 13320 TCAGTGTGAAGCCTTCATCA AG GAA CATC AAGC TTAAG
8 ATAGCAAGCACTTTTTAAGG TC TGT GCCTT AATAGC ACTTT
GAGTAAAAGTTGTTAAAGGC AG GCA CGGAA TTGTTG TGAGG
AAACGTCGA CT AA- A--- AAAA -----
GAM14578 16386 TCAGTTAAAAAAGAAGAAGA A AA - GGC AAAG
2 AGAAATGGCAAAGAGAAAGT TCAGTT AAA GAAGAAGAA GAAAT AAAGAG
TTTTTCAAATTTCTTTCTTT AGTTAG TTT TTTTTTCTT CTTTA TTTTTT
TTTAATTTAGATTGA A AA T AAC ----
GAM14578 17462 TCAGTTAAAAAAGAAGAAGA - AA - GGC AAAG
3 AGAAATGGCAAAGAGAAAGT TCAGTT AAA AGAAGAAGAA GAAAT AAAGAG

TTTTTCAAATTTCTTTCTTT AGTTAG TTT TTTTTTTCTT CTTTA TTTTTT
TTTTAATTTAGATTGA A AA T AAC ----
GAM14582 11788 TCAGTTTATTCACCATACTT A CCATAC --- - ACCCTC
3 CCCCCAGGAACCCTCTCACT TCAGTTT TTCA TTCCC CCAG GA
GGTCAGGGAATGAAAGAATT AGTTAAG AAGT AAGGG GGTC CT
GA A ------ ACT A ------
GAM14594 16956 TCATATAGTCAAACCCCATG -- C A GCTGCCAAC GACTAAATAAA
5 CTGCCAACCTCAGGACTAAA TCATA TAGT AA CCCCAT CTCAG
TAAACTGAGATGGGGCTTTA AGTAT ATCA TT GGGGTA GAGTC
CTATCTATGA CT T C --------- ----------
GAM14596 1434 TCATATTACAAACTGCTCTT CAAACTGCTC AT-- G - TACCTTT
2 CCATATTTATGTACCATATT TCATATTA TTCCAT TTAT TACCATA TTA
ATACCTTTTAATTATGGTAA AGTATAAT AGGGTA AATA ATGGTAT AAT
ATAATATAATGGGAATTCTA AATCTTA--- ATAT A T -------
ATAATATGA
GAM14596 11296 TCATATTATGGCCAAGGGCC A TG - -- A- G AGGA
3 ATGATGGCAGGAGTAATCAG TC TATTA GC CAAGG GCC TGAT GC
AGGTGTTCTTGTGTTGTGAT GG ATAGT TG GTTCT TGG ACTA TG
AAGG A GT T TG AG A ----
GAM14596 14147 TCATATTCTGGACTCAAATC ATT--- CAAA- AA AA CA ACACT
6 ATGGAAAGAAGGCATTACTG TCAT CTGGACT TCATGG AG GG TTACTGT
TACACTGCGGTAAATCAGTT AGTA GACTTGA GGTATC TT CT AATGGCG
GGCTATGGGAAGCAGTTCAG GAAGAC CGAAG GG GA A- -----
CAGAAGATGA
GAM14597 6719 TCATATTTTCTATCATCATG A T TTGT T GCAA
2 TTGTGTATATGTGCAAACCT TCAT TTTTCTA CATCATG GTATA GT
GTACTTCCATGATGTGGGAA AGTG GAAGGGT GTAGTAC CATGT CA
GGTGA - - CTT- C ----
GAM14597 11666 TCATCAACATGGATATGACA CA-- T- - TTTC AGTG - AATCCCTTG
8 TTTCACAACAGTGACTAGTT TCAT ACATGGATA GA CA ACAAC ACTA GTTG
GAATCCCTTGTAACGTAGTA AGTA TGTACCTGT CT GT TGTTG TGAT CAAT
GTTGTCTGCTCTTTGTCCAT ATTG TT C C--- A--- G ---------
GTGTTAATGA
GAM14600 6975 TCATCAGGCATGGAACTATC AT T ACTA AAA A GG AAA TACTCTTT
1 AAAACGACTGGCTTCAAAAA TC CAGGCA GGA TCA CG CT CTTCAAA CAAGT
ACAAGTTACTCTTTACTTGA AG GTCCGT CCT AGT GC GG GAAGTTT GTTCA
CATTTGAAGGGGCGATGACC CT - CACC A-- - G- ACA --------
ACTCCTGCCTGTCGA
GAM14600 7849 TCATCAGGTTCGGATGAGTC T G ----- TCT G CTGCACCTC
4 TCATGTGGCTGCTGCACCTC TCATCAGGT CG AT GAG CATGTG CTG
CAGATATATGCTCTCGAACA AGTAGTCCG GT TG CTC GTATAT GAC
GTGTGGCCTGATGA - G ACAAG TC- A ---------
GAM14600 13670 TCATCAGTTTATTAGTTTGG ---- A ------ AACT TT---------- -
7 AAAAACTGTAGTTTCTAGCT TCATCAG TTTATT GTTT GGAAA GTAGT CTAGCTT
TATGAATAGCACATTCATCA AGTGGTC GAATAA CAAA CCTTT CATCA GGTTGAA
AGTTGGCTCTTCATCTATAT TATA - GTAAAT ---- CTATATCTACTTCTC C
CACTACTTTCCTAAATGAAA AGCAC
CAATAAGATATCTGGTGA ATGAAT
TACTTA

GAM14603 1374 TCATCCCCACCAAATTCCTC C AAA - A GACAAAG AAAGCG
5 AGTGACAAAGTGGTAAAGCG TCAT CCCACC TTC CTC GT TGGT
GCCAGAAGAACGAGTGAAGG AGTA GGGTGG AAG GAG CA ACCG
TGGGAATGA A --- T - AGAAG-- ------
GAM14603 11536 TCATCCCTGACATCCCTATC C - CC----- A AC-- AGAGCG
9 GTGGACGCCCAGAGCGGGGC TCATC CTG ACAT CT TCGTGG GCCC
AGGACTACGACAGCTTCCTT AGTAG GAC TGTA GA AGCATC CGGG
ATGTACAGCGATGA C A TTCCTTC C AGGA ------
GAM14608 22914 TCATCTCACCCCAGTTAAAA ACC- TAA---- G ACCCAAAAG
2 TGGCTTGTACCCAAAAGACA TCATCTC CCAGT AAT GCTTGT
GGCAGTTAACAAATGCTGGC GGTAGAG GGTCG TTG CGGACA
AAAGAGATGG AAAC TAAACAA A ---------
GAM14608 15561 TCATCTCCACATCTTCTTCC A ATCTT C C ----- GATCTG
5 TCGCACCGGATGCGGAGGAT TC TCTCCAC CTTCCT GCA CG GATGCGGAG
CTGCTTCGTGTCTTTCTCGC AG AGAGGTG GGGGGA TGT GC CTGTGCTTC
TGTAGGGGGTGGTGGAGACG C GT--- - C TCTTT ------
A
GAM14608 17453 TCATCTCGGGTGGGATGTGC CGGG G TTT GT CCTTATC
8 GAGGTTTCTGTGCCCTTATC TCATCT TGGGATGTGC AGG CT GC
GTCTGGTTCTTGGTATGTCC AGTAGG ACCCTGTATG TTC GG TG
CAGGATGA ---- G TT- TC -------
GAM14616 13136 TCATGAAGCTTCCATGAAAA A---- - T AA CAAGA TGG
2 GCCAAGAGGACTGGGTCCAG TCATG AGCT TCCA GA AGC GGAC
AGAGCTTCTGGGTAGCTGAA AGTGC TCGA GGGT CT TCG CCTG
CACGTGA ACAAG T - -- AGAGA ---
GAM14620 13532 TCATGCAAAGGAAGCCTAGT A CCT TTCCT- CTTCT
3 TCCTTCAGACACTTCTTGTT TCATGCA AGGAAG AG TCAGACA
TGACACTGTCTTGCCTTCTT AGTACGT TTCTTC TC AGTTTGT
CTGCATGA C CGT TGTCAC -----
GAM14621 12030 TCATGCCCAGATGTGCAGAT G AGATG--- - T GA AT GATTG
8 CTCATGGAACCAATGGTGAT TCAT CCC TGCA GA CTCATG ACCA GGT
TGACTTGTGGTGGCATGAGC AGTA GGG ACGT CT GAGTAC TGGT TCA
TCATGCAATGAGGCAGGGGA G ACGGAGTA A C GG GT -----
TGA
GAM14623 635 TCATGCTCTGAAACTTTGCA C AAA-- ----- AG-- -- AACT
2 TCAAGGACTGACCAACTGGT TCATG TCTG CTTT GCATCA GACT GACC
CAGGGTCATCATGATGTACA AGTAC AGAC GAAG TGTAGT CTGG CTGG
AAGAAGCCAAACAGAACATG A AAACC AAACA ACTA GA ----
A
GAM14626 21758 TCATGGGCACGGCTCGGGAC CA -- G C A GAAAC GAG AGTTTACAGA
1 GGAGACGAAACCAGACAGAG TCATGGG CGGC TC GGA GG GAC CAGACA GGTCA
GGTCAAGTTTACAGATGACC AGTACCC GTCG AG TCT CC CTG GTCTGT CCAGT
GTGTCTGCAAGAGTCACCTT CC TC G T A AGAAC G-- ----------
CTGGACTGCTGCCCCCATGA
GAM14626 21798 TCATGGGCAGTGAGCTCAGT ATG T CTCA AT GA-- GGCA
2 GGTATCTGGAGGACAGGGCA TC GGCAG GAG GTGGT CTGGAG CAG
CTGGCCACTCCAGTCACCAT AG CCGTC TTC TACCA GACCTC GTC
CTTCTGCCAGGA GA- - ---- CT ACCG ----
GAM14627 13301 TCATGGTGGAGGAGGGTAAA A TG-- GTAAATAT - ACACT
7 TATGTCACTCACACTGAGTA TC TGG GAGGAGG GTC ACTC

GACCAAATTTCTTCATATCC AG ACC CTTCTTT CAG TGAG
AGGA G TATA AAAC---- A -----
GAM14629 22053 TCATGTCACTTGTAATATTT T CT ---- TTTA TCTAAT AATCAACAAA
9 TAGGTCATCTAATCCAATCA TCATG CA TGT AATAT GGTCA CC
ACAAAGGTATATTGACTCTG AGTAC GT ACG TTATG TCAGT GG
TATTTGAAGCATTTGTCATG T TT AAGT TC-- TATAT- ----------
A
GAM14639 13398 TCATTCACTTTTATTATAGG A ATTATAGGATC AAA-- AGTA
0 ATCCCCACAAATTCAGTAGA TC TTCACTTTT CCCAC TTC
AAAGGGGTGGGATACAGAAA AG GAGTGAAAA GGGTG AAG
AAAAAAGTGAGAGA A AAAAAGACATA GGGAA ----
GAM14643 15521 TCATTCTTATTGTTTTATTA TA G ATTA AA CTCA
0 GGGCAATTTGTCTCAATAAA TCATTCT TT TTTT GGGC TTTGT
AGCCCAGGAAGAAGACGAGG AGTAGGA AG AGAA CCCG AAATA
ATGA GC A GGA- A- ----
GAM14643 7482 TCATTCTTTGGAACACTACA TT T C -------- T GAAA
6 TCTTGGAAACAGGTGCAGAA TCA CT TGGAA ACTA CATCT G
CTCTAGTTTTCCACAGTTTG AGT GA ACCTT TGAT GTGGA C
A TT C T CTCAAGAC - ----
GAM14643 22720 TCATTGAAAAGGACATCAGT - A CAT G A CG-------- CGA
7 GGACCTTCGTCATCGAATGA TCAT TGAA AGGA CA TGG CCTT TCAT
AGCTAAAAAAAAGGCCAGTG AGTA ATTT TCCT GT ACC GGAA AGTA
TACTCCTCTTTACATGA C C CAT G - AAAAAATCGA ---
GAM14646 10600 TCATTGGCAGCTTTCCAAGG T- A ----- CCGCTTTTT
4 AAAACCGCTTTTTTTTTTCT TCAT GGC GCTT TCCAAGGAAAA
TGGGTTTTTGGGCAGCCTTG AGTG CCG CGGG GGGTTCTTTTT
TGA TT A TTTTT ---------
GAM14647 16199 TCATTGGTTCCTTTAAGGGC - T TTTA-- - - AT CAGG
2 ATCCATTTCACAGGTGAGGG TCATTG GT CC AGG GCA TCC TTCA
ACTGCACCTGTCTCCGGTAC GGTGAC CA GG TCC CGT AGG GAGT
TCAGTGG T T CCTCTG A C -- ----
GAM14647 605 TCATTGGTTTCAGAGTTCGC A TCA GT C - CC--- - GCCC
3 AGGTCCCCAGCTTTGCCCAG TC TTGGTT GA T GCAGGT C CAGC TTT
ATGCTGAAAAAGAACCTGCC AG GACCAA CT A CGTCCA G GTCG AGA
AGTTCAACCAGCGA C --- TG C A AAAAA T ----
GAM14647 16345 TCATTGTAAAGATTGCCTTT TT AT TT TCTGTCT --- GAAA
4 GTTCTGTCTAAAAGTCTGGA TCA GTAAAG TGCCT GT AAAAGTCT GGA
GAAATCCCAAAGACTTTTCC AGT TATTTT ACGGA CA TTTTCAGA CCT
TATGTACTAGGCATTTTATT TT -- T- TGTATCC AAC ----
TTGA
GAM14647 14934 TCATTGTAATAATTTTTTAG T ATAATTTTTT G A AAAGCTTA
5 AGTTTAATTTGTAAAGCTTA TCAT GTA AGA TTTA TTTGT
GCAAATAAAATCTTGTACTA AGTA CAT TCT AAAT AAACG
TGA T GT-------- A - --------
GAM14648 17335 TCATTGTGGCTTTGGTTCAA TT C ------ A AACACTA CTCA
5 AAGGAAACACTACATTTGCT TCA GTGG TTTGG TTCA AAGGA CATTTG
CACAGATGATTCTTCTGAAT AGT CATC AAGCC AAGT TTCTT GTAGAC
GCTCCCCGAACTACTTGA T- - CCTCGT C A------ ----
GAM14651 4680 TCATTTATTTGAAACAGACT TATT- C -- CACAAAGAA - CA- ACCGA
7 GGGCCAATGTCCACAAAGAA TCATT TGAAACAGA TGGGCCA ATGTC TTCCT GGT GCACC

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          TTCCTGGTCAGCACCACCGA AGTAA    GTTTTGTTT ATTCGGT  TGCGG       AAGGA CTA   CGTGG

          TGTCCAAAGGTGCAATATCA     CTTAT       -      AG     ACGGG----     A   TAA     -----
          AGGAAGGGCAGGCGTGATGG TGTCCAAA
          CTTATTTGTTTTGTATTCAA
          TGA
                        --------
GAM14657 22068  TCATTTTACAAGGATATATT    T    AG      TAAT--     AT     TA     AAGT
9          AATGATATTATTGTTATATG TCAT TTACA  GATATAT     GATATT  TGTTA  TGTGA
          TGAAAGTTTACAGTTGACAG AGTA AATGT  TTATATA     TTGTAG  ACAGT  ACATT
          ATGTTTTCTTTATATATTAA    T    AA      TTTCTT     --     TG     ----
          TGTAATATGA
GAM14660 13612  TCATTTTGTTTTCTTTCTCT    TTT          TTAATTCT     TTTAT
2          TAATTCTGTTAATTTATTTA TCA   TGTTTTCTTTCTC       GTTAA
          ATCTCATGGGAGAGAAAACA AGT   ACAAAAGAGAGGG       TAATT
          TGA                ---          TACTC---     -----
GAM14666 17024  TCCAAATATAGCAAATTTGG     ATA     ATT   AACAACTA    TTACT       A  TCCT
2          AACAACTAGGCATTACTGTG TCCAA   TAGCAA   TGG       GGCA     GTGAAAGA CT
          AAAGAACTTCCTAGTTTTTC AGGTT   ATCGTT   ACC       CCGT     TACTTTTT GA
          ATTTGTCTGCCACCACATTG     AC-      AC-   A-------    CTGTT       -  ----
          CTACATTGGA
GAM14666 4642   TCCAAATATCTTACAGGCTG     AATA    A---   GC      AAA  -   TGAA
4          CTGAGAAACTAGGTGAACCT TCCA    TCTT    CAG  TGCTGAG   CT AGG
          GAGAACCTTAGTATACTGAT AGGT    AGAA    GTC  ATGATTC   GA TCC
          TGAAGAATGTGGA          GTA-    GTTA   AT      CAA  G   ----
GAM14673 13924  TCCAAGTAATGGATCCCTGA        A-     CCCT    ---      --      ACAT
0          TGGATTCACCATAGTTACAT TCCAAGTA  TGGAT    GATG   GATTCAC  CATAGTT
          GACTATGTCGTGAATTATAC AGGTTTAT  ACCTG    TTAC   TTAAGTG  GTATCAG
          ATTTCTTGTCCACATATTTG        AC     TTCT    ATA      CT      ----
          GA
GAM14673 2632   TCCAAGTGATTTATTGATGA     GT     ATTG     ACA--  G  AAACAA
6          GACATCGGCAAACAAGCAGA TCCAA  GATTT    ATGAG     TC GC
          AGACGCTCATAAAAATTTTG AGGTT  TTAAA    TACTC     AG CG
          GA                  --     AA--     GCAGA  A  ------
GAM14676 4575   TCCACAAATCTTAGCTATAA    A  AA-    A   ATA     ---       -   ATT
9          TAACAAGATGACAGATTTTG TCC CA   TCTT GCT   ATAAC   AAGATGA CAG
          ATCGTTTTAAAGTTATGAAG AGG GT   AGAA CGG   TATTG   TTTTGCT GTT
          GCAAAGAAAATGAGGA       A  AAA    A   AAG     AAA      A   ---
GAM14680 5038   TCCACCAAAAAGTCTCAAAA    C  AAAAG   CAAAAGTGTA     CAAATCT
7          GTGTAAATGGGCAAATCTTC TCCA CA     TCT         AATGGG
          CATTGTTAGATTAGAATTAT AGGT GT     AGA         TTACCT
          GATGGA               A  ATTA-   TTAGATTG--      -------
GAM14683 14212  TCCACCGTAACCTTTGTACT       TAAC        T   --------    CCTG
2          TGTTTTCCTCCTGGGGAAAG TCCACCG    CTTTGTACT GTTT       TCCT
          TGTCAAAACAGTGCAAGGAC GGGTGGT    GGAACGTGA CAAA       AGGG
          TGGTGGG                CA--       -    ACTGTGAA    ----
GAM14684 22681  TCCACGAGCCTGGAGAGCTC    A- A       A-   CGGA    GA   CCTG
5          GGACTGCGAGTCCCTGGACA TCC  CG GCCTGGAG  GCT    CTGC  GTC
          GCAGCAACAGTGGCTTCGGG AGG  GC CGGGCTTC  TGA    GACG  CAG
          CCGGAGGA             AG  -       GG   CAAC    A-   ----
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GAM14685 11369 TCCACGGACAACGAAAATCC A - GA------- - - AA AAAATTCAGACA
2 ACCCCGAATCCAAAAATTCA TCC CGGAC AAC AAATCC ACC CCG TCCA
GACATGGAATGGTGGTAGGA AGG GTCTG TTG TTTAGG TGG GGT AGGT
TTTCACAGTAAAGTTAGTCT - A AAATGACAC A T A- ----------
GGGA
GAM14690 11197 TCCACTTGACAGGCCTTGCG --- - TTG C C GA TCTA
1 CTGCCTCTCAGGATGTCTAC TCCACTTG ACAGG CC CG TG CTCTCAG TG
AAATTGGGGGTCACTGGATG AGGTGAGC TGTCC GG GT AC GGGGGTT AC
GTCCTGTAGGCGAGTGGA GGA T TAG C T AA ----
GAM14690 14827 TCCACTTGCTGCCATTGACT CTT TTGACTTC C- ACAAAC
6 TCTGGCCAGAAACAAACTTC TCCA GCTGCCA TGGC AGAA
TTTGCCGCTTGGCAGCTTGG AGGT CGACGGT GCCG TCTT
A T-- TC------ TT ------
GAM14691 15203 TCCAGAAAGCTGATGGTGTG AG- TGA --- - - CTACCTGAA
6 CCCGTCTACCTGAAACGAGG TCC AAAGC TGGT GT GCC CGT
CTGCCTGACCAAATGCTTTA AGG TTTCG ACCA CG CGG GCA
CCGGA CCA TAA GTC T A ---------
GAM14692 13141 TCCAGAACCGTGAGAAGTAA AACCG GAAG AATTT ATTT
5 ATTTCTGTTTATTTAAACAG TCCAG TGA TA CTGTTT
TCAAGTAAAATCAAGCTGGG GGGTC ACT AT GACAAA
GA--- AAA- GAACT ----
GAM14695 11697 TCCAGAGAACGAAGCCATTC AACGA ATTC A-- AC - GT T G AGCGT
3 CACAGAGAGTTCACTGAGAT TCCAGAG AGCC CACAGAG GTTC TGAG ATTGT GG CCC GC

TGTGTGGTCCCGGCAGCGTG GGGTCTT TCGG GTGTCTC CAGG ACTC TGGCG CC GGG CG

CAGGGCCTGGCGGTGCTCAT CCCA- AT-- GGA GT G GT - A -----
GGGACAGGCTCTGTGTAGGC
TACCCTTCTGGG
GAM14696 15476 TCCAGAGGGGAAGACGAAGG G -- - - ----- TCAGGGC
1 CATGGTTCAGGGCACCGTGA TCCA AGGGGA AGAC GAA GG CATGGT
AGTCCCATTCTGTTTTGTTC AGGT TCCCTT TTTG CTT CC GTGCCA
CCTTGGA - GT T A CTGAA -------
GAM14697 2180 TCCAGAGTTTATAAAGTCAA - AAAGTCAAATA AGGCATAG
0 ATATTCAGTAGGCATAGACT TCCA GAGTTTAT TTCAGT
GGAATAGATAAATTCATGGA AGGT CTTAAATA AGGTCA
A GATA------- --------
GAM14697 19461 TCCAGATCATTCTCATGTTC - A - ---- GTCAAAAAA TATG
4 GTCAAAAAATGTTGTATGCA TCCAGAT C TTCT CA TGTTC TGTTG
GCAACAAGAGCAACTCTGAA AGGTTTA G AAGA GT ACGAG ACGAC
GAAGGAATTTGGA A G A CTCA AACA----- ----
GAM14699 11007 TCCAGCAGGGGGGGCGGGAG - A - GAG - ACATCTACAACAACCTAC
3 CTCTACATCTACAACAACCT TC CAGC GGG GGGGCGG CT CT
ACGGCAGACACCGCTCCACC AG GTCG TCC CCTCGCC GA GG
TGGCTGTGA T G A ACA C ----------
GAM14701 17635 TCCAGCCTTGACCATCTCTG CTTG CTC - --- ATGTTATA
9 CCTTGGTCATGTTATAGACC TCCAGC ACCAT TGC CT TGGTC
ATTTAGTGTAATTATGGTAT GGGTTG TGGTA ATG GA ACCAG
GTTGGG TA-- TTA T TTT --------
GAM14702 17637 TCCAGCGCACTGTATGAGGA A--- ACTGTA A - C CTCCTG A CA CCT------

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1          CCGCTACCTCCTGGGCACCT TCC   GCGC    TG GGAC CG TAC    GGC CCTCTCTTGC  GGC
           CTCTTGCCAGGCCCTGCATC AGG   CGCG    AC CCTG GT ATG    CCG GGGGAGGGCG  CCG
           GCCCGCAAACAAGTGGAAAT  ACAC  GC---- -  T -  AA----  -      AC  CTAAAGGTG
           CGCCCAGCGGGAGGGGGCCA ----------  ATC
           AGTATGTGTCCCACGGCGCC        GC
           ACAGGA                  CG
                       AACAAACGCC  ---
GAM14706 103   TCCAGGACAGCATTGGAAAA   -  C  CATT   A  C    AAAA  TTT
6          GACATAGAAAAAGGCTTTGC TCCA GGA AG   GGAA AGA ATAGA   GGC
           CAATCTATTTTATTCCCTCT AGGT CCT TC   CCTT TTT TATCT   CCG
           CCATGGA             A  C ----  A  -   AA--  ---
GAM14712 5027  TCCAGGGCTCGTCCCGGCAT       G  C   TTTCA T  -  CGG   AGTC
8          TTCATGTCTTCCCACGGGGT TCCAGGGCTC TCC GGCA   TG CTT CCCA  GGTTG
           TGAGTCCGGCCATATGGGTG GGGTCTTGAG AGG CCGT   AC GAG GGGT  CCGGC
           AGCAGCTGCCTGGAAGAGTT        A  T   CG--- -  T   ATA   ----
           CTGGG
GAM14714 11922  TCCAGGTGCCAAATAGCCAT     --   AAT   ATA    TCTT  A-  TGTTAT
4          AACCTCGTCTTGGAACTGTT TCCAGGT  GCCA  AGCC  ACCTCG   GG  AC
           ATGTGGCCTCTCTGGGGTCC GGGTCCG  TGGT  TTGG  TGGGGT   CC  TG
           AGGTTTCTGGTCAGCCTGGG      AC   CT-   ACC    CTCT  GG  ------
GAM14715 15348  TCCAGTAAATTGGAATGACT   A  AA  GGA    C  A  AGGACAGCAATTA
6          CATCATCAGGACAGCAATTA TCC GT  ATT   ATGACT ATC TC
           GGGATTGGTCATATAGGTGG AGG CA  TGG   TACTGG TAG GG
           ACAGGA             A  GG  ATA    T  -  -------------
GAM14715 17478  TCCAGTACGCCTCGCAGGGG    TAC   C ------    ---   GAG
9          CGCTACGAGGTAGCTGTGCC TCCAG   GCCT GC    AGGGGC  GCTAC
           CCTCTGCAAGCAGGCCTGGA AGGTC   CGGA CG    TCCCCG  CGATG
                       ---   -  AACGTC    TGT    ---
GAM14718 11976  TCCAGTGCATCCACGTGGGG    ---  ATCCAC---   GCT   TCT
3          CTCCAACTCTGTTGGTCCAC TCCAG   TGC      GTGGG  CCAAC
           AATCATTAAGCAAATCTGGA AGGTC   ACG      CACCT  GGTTG
                       TAA  AATTACTAA   ---   ---
GAM14719 10382  TCCAGTGGCGGGACCCAATG     ----    A  CAAT-  AGACT    T     GGGGA
0          CAGACTGGCATTTAAGGCTG TCCAGT   GGCGGG CC    GC    GGCATT AAGGCTG
           GGGGATAGCTTTGGTGCCCA AGGTCA   CCGCCC GG    CG    CCGTGG TTTCGAT
           TTGGCCCGTCGGCCCGCCGT     AGTG    - CTGCC  GTTAC    -     -----
           GAACTGGA
GAM14719 10916  TCCAGTGTGGGAGATACTAC     G  G   ATA  AC  -    -  CGTACA
8          GGCTGTGTCCGTACAGACCA TCCAGT  TG GAG   CT  GG CTGTG TC
           CAGACCAGAGCTTGCAGGCT AGGTCG  AC TTC   GA  CC GACAC AG
           GGA                 G  G  ---  GA  A    C  ------
GAM14721 17541  TCCAGTTTTGGGTTTAAAAA    T     TAAAA  TT  G  A  G   AA   TGGGTAAT
0          CCTTCTGGTACCTGGGCAAA TCCAG  TTTGGGTT    ACC  CT GT CCT GGCAA  TGGG
           ATGGGTGGGTAATTCCAGTT AGGTT  AAATCCAA    TGG  GA TA GGG TTGTT  ACCT
           GTTGGGGAATAAGTGGTCCA    T      TTACC  T-  A  A  G   G-   --------
           TTAACCTAAATTTGGA
GAM14721 11324  TCCATAACAGCAGACAAAAT    T    CAGACAAAATT     ---- A     TGGAG
7          TGGAAGCAAGAGTGATTTTG TCCA AACAG         GGAAGCA   AG GTGATTT
           GAGGAGTCACACTTAGATGT AGGT TTGTC         CCTTTGT   TC CACTGAG
           TTCCCTTACCTATTTCTGTT    C    TTTATCCATTC      AGAT  A     -----
```

CTGGA
GAM14722 6741 TCCATAATGCTACTGTCTCA TAAT T CAC--- CATTTAAA
2 CTGAAACATTTAAATTTTAC TCCA GCTAC GTCT TGAAA
CCTTTAGACTGTAGCCTGGA AGGT CGATG CAGA ATTTT
C--- T TTTCCC --------
GAM14725 10284 TCCATCACATATGGTAGAGA - TATGGT - TT ATAT
7 TATATATTTATATATATTTA TCCA TCACA AGAGAT ATATAT AT
TATATAATTTCTTTTGTGGT AGGT GGTGT TCTTTA TATATA TA
TGGA T TT---- A TT ----
GAM14725 21845 TCCATCACCGTGGTGCTGCA CC G T- A TG - -- CTCTCTC
9 GGTTGTCAGCGATGCCGGCT TCCATCA GT GTGC GC GGT TCAG CGAT GCCGG
CTCTCCTGGCCTGTTGTCTG AGGTGGT CG TACG CG CCG AGTC GTTG CGGTC
AATGCCGCCTGCATGGCATT TA G TC - TA T TC -------
GGTGGA
GAM14726 22633 TCCATCATAATTCTAATCTA T T AATCTAAC-- AAGATTTGC
3 ACAATGGAAGATTTGCCCAT TCCATCA AA TCT AATGG
TTACACTTTTGAGACTTTTG AGGTGGT TT AGA TTACC
GTGGA T C GTTTTCACAT ---------
GAM14726 7061 TCCATCATAATTCTAATCTA T T- AATCTAAC-- AAGATTTGC
4 ACAATGGAAGATTTGCCCAT TCCATCA AA TCT AATGG
TTACACTTTTGAGACTTTTT AGGTGGT TT AGA TTACC
GGTGGA T TC GTTTTCACAT ---------
GAM14730 1941 TCCATGATGGGAAGGCCATT A G GCCATT CTC TATT
8 GGCTCTCGGTATTTCACAAG TCC TGATG GAAG GGCT GG
CCTCTCAGCTTCGCGTCGGG AGG GCTGC CTTC CCGA CT
A - G GACTCT ACA ----
GAM14735 19706 TCCATGTCTCCAAGTGCTCT T- CCAA - T- ATACCTGCCACC
0 GCTATACCTGCCACCAGCAG TCCA GTCT GTG C CTGCT
CTGCCACCTCCAGACTTTGG AGGT CAGA CAC G GACGA
A TT CCTC C TC ----------
GAM14735 1574 TCCATGTGCTTCTCTTGTCC GCTT TC C TCTCATACCCAAC
1 TTCATTCCACCGGAGTCTGT TCCATGT CTCTTG CTTCATTCCAC GGAGTCTG
CTCATACCCAACCAGATTTC AGGTACG GAGGAC GAAGTGAGGTG CTTTAGAC
AGTGGAGTGAAGTTCAGGAG ---- TT A ----------
GCATGGA
GAM14735 10488 TCCATGTTCCCCGGCGCCAC TT -------- A ACTCCCCTTCCTA
8 TACTCCCCTTCCTAAGGGCG TCCATG CCCCG GCGCC CT
CGCTTACCCCGGGGTCTATG AGGTAT GGGGC CGCGG GA
GA CT CCCATTCG - ----------
GAM14736 17764 TCCATTAAGCAGTTCATGGA A TT - -- TCGCTACC
7 CATCTTCTCGCTACCGGAGA TCCATTA GCAG CA TGGA CATCTTC
TGGCTCTGCTGTCCTGTGTG AGGTGGT TGTC GT GTCT GTAGAGG
GTGGA G CT C CG --------
GAM14737 11339 TCCATTCCCGCTTTTCAGAA ---------- TCA A TAGTTGGTGGT
5 GTAACGATAGTTGGTGGTTT TCCATTCCC GCTTT GAAGTA CGA
GTGCTTCCAAGGCCTATAAC GGGTGGGGG CGGAA CTTCGT GTT
ATAGGGGGTGGG ATACAATATC C-- - ----------
GAM14738 15217 TCCATTGAAAGTGCTTCAAG - T- T A TCTT - TTCTA
4 GGTAATCTTGGGTTTCTAGC TCCATTG AAAG GC TCA GGGTAA GG GT
ACCTTATCTATGATGTTTCT AGGTAAC TTTC TG AGT TCTATT CC CG

TTGCAATGGA G TT T A ---- A -----
GAM14743 4749 TCCCAAAGTACTGGGATCAC - TAC ATCA A GCTATCA
8 GGGCATGAGCTATCATCACG TCC CAAAG TGGG CGGGC TGA
CCCGGCCCCATCTCTTTGAG GGG GTTTC ACCC GCCCG ACT
GG A TCT CG-- C -------
GAM14746 15582 TCCCAAGACCCTGTGAATGC A C- ---- AAT- - CCCCCAAA
7 TCCCTGTTCCCCCAAAAACA TCCCA GA CCTGT G GCTCC CTGTT
GAGGGGCTCTGCAAGGACAG AGGGT CT GGACA C CGGGG GACAA
GCTTCATGGGA A TC GGAA GTCT A --------
GAM14747 15235 TCCCAAGTCCAGCGTGAAGG - -------- AAG CAC CCTCTT
4 GCCACAGCCCCTCTTGGCTG TCCCAA GTCCA GCGTG GGC AGCC
CCAAGCACGCAGATCCCATG GGGGTT CAGGT CGCAC CCG TCGG
GACATTGGGG A ACCCTAGA GAA --- ------
GAM14752 10123 TCCCACTGCTTCTAAAGGAA G A AAGTC -- GGAGG TGGTTGGTT
2 GTCCTGGGCAGGAGGTGGCT TCCCACT CTTCTAA GG CTG GGCA TGGCTTTGG
TTGGTGGTTGGTTCCAAAGT AGGGTGA GAAGATT CC GAC TCGT GTTGAAACC
TGAAAATGCTTGCAGTTTGA A - AGTTT GT AAAA- ---------
CCTTAGAAGAAGTGGGA
GAM14754 22429 TCCCAGAGAGAAGGCTCAGT A A CTC CA C CTGGGAC
4 CAAGGATCTGCAGCTGGGAC TCCCAG GAG AGG AGT AGGAT TGCAG
CTGCATATCTTAATTCCCCT AGGGTC CTT TCC TTA TTCTA ACGTC
GTTCCTGGGA - G CC- A- T -------
GAM14756 10698 TCCCAGCACACTTCTTCTGG C AC T TT ATCCGTCACACAGTCACA
1 TTGGCATCCGTCACACAGTC TCCCAG AC TTCT CTGG GGC
ACAGCTGGTCAGAGAACGTC AGGGTC TG AAGA GACT TCG
TGGGA - C- - GG ----------
GAM14758 7207 TCCCAGCTGCTTCCTTTGGT A- G TGGT A TCCAAATCT
7 TACCATCTCCAAATCTGAGG TCCC GCT CTTCCTT TACC TC
GTAAAGGAGGGGGTGAGGGA AGGG TGG GGAGGAA ATGG AG
AG G ---- G ---------
GAM14762 4774 TCCCAGTGGCTGCAGAATAT GT GCAGAATATGATAAA TGAATAT
5 GATAAAACTGGTGAATATCC TCCCA GGCT ACTGG
AGTCCCCCTAATTAGAAGAG AGGGT CCGA TGACC
CCTGGGA -- GAAGATTAATCCCCC -------
GAM14766 22518 TCCCATTCACTTTGATTTTC CAC TTTCT TGTAATTACCTTCTTT
6 TACATGTAATTACCTTCTTT TCCCATT TTTGAT ACA
TGTTTATCATTAGATTTGAT GGGGTAG AGATTA TGT
GGGG TTT CTATT ----------
GAM14767 22740 TCCCATTTTCACCCTGGGTT TC C- GG -- TG --- TTAGTT
7 GGTGACTGCATTAGTTTGCT TCCCATTT AC CT GT TGG ACT GCA
AGGGTTGCCATAACAAAGTA GGGGTAGA TG GA CA ACC TGG CGT
GTACAGATGGGG CA AT AA AT GT GAT ------
GAM14768 10620 TCCCCAAATTATCCCAGACA AAATTA AG-- AGG-- G CGTG
4 GGCAGCTCCGTGGAGGTGAC TCCCC TCCC AC CA CTC
AAGGTGAGAGGGAGAGGAGG AGGGG AGGG TG GT GAG
GGA AGGAG- AGAG GAACA G ----
GAM14769 22513 TCCCCACCCCCGCCAGCCGG AC - - CT A TTGA GCGG TCTTTGTGT
4 ACCTGAGGGATTCCTTTGAT TCCCC CCCCGC CAGCC GGAC GAGGG TTCCT TG GCTC

GGCGGGCTCTCTTTGTGTGA AGGGG GGGGCG GTCGG TTTG CTCCC GAGGA AC CGAG

GCGGAACAAGGAGCCCTCTG GA A G T- - ---- AAGG ---------
TTTGGGCTGAGCGGGGAGGG
GGA
GAM14773 17731 TCCCCATGGTGACCTGTGAC G TGA -- GAGACA
9 CTGCTCCCTGAGACAGGGGA TCCCCAT GTGACCTG CCTG CTCCCT
GGCCAGGCAGGTCACGGTGG AGGGGTG CACTGGAC GGAC GAGGGG
GGA G --- CG ------
GAM14775 5000 TCCCCCAGGGGGTAAAGGAA - - AA AA G ATC- - AATCAACCCC
2 GTGGTATCTTTGACGAATCA TCCC CCAGG GGGT AGG GT GT TTTG ACG
ACCCCCGTGCAGACTCGACA AGGG GGTCC CCCA TCC CG CA AGAC TGC
GCACCTGAACCCACCTGGAG A A AG A- A GCTC G ----------
GGA
GAM14776 6966 TCCCCCCTCCGCCCCCGCCG ----- CG- GCCG AAGTTAAG
1 CGGAAAGTTAAGTTTGAAGA TCC CCCCTC CCCCC CGGA
GGGGGGAAGAGGGGAACATG AGG GGGGAG GGGGG GTTT
GA TACAA AAG AGAA --------
GAM14777 5280 TCCCCCTGCTGTCTGCAGCC G GT GCAGC G- TT CTTTCTTTTCCTTTT
0 CCTCCCCGGGGAGTTGGTGC TCCCCCT CT CT CCCTCCCC GGGAG GGTG
TTTCTTTTCCTTTTTATTTT AGGGGGA GA GA GGGAGGGG CCTTT TTAT
TTTCCAGGGGGAGGGAGGAA G AG AAGGA GA TT ----------
AGGAAGGAGGGGGA
GAM14778 11447 TCCCCGCTCCTGAGTTCACT GCT---- TG TCA TA- ACCC
0 GCTACTCAACCCTGAGGTTG TCCCC CC AGT CTGC CTCA
CAGACTTGGGCCTGAAAGGG AGGGG GG TCA GACG GAGT
GA AAAGTCC GT --- TTG ----
GAM14778 17906 TCCCCGGTCCCGCCCCTCGG - --- ACT TCT
6 AGACTCCTCTGGCTGCTCTG TCCCCGGTCCCG C CCCTCGGAG CC
GGGGTTCGCCGGGGCCGGGG AGGGGCCGGGGC G GGGGGTCTC GG
A C CTT GTC ---
GAM14778 2480 TCCCCGTGAACAGCGGGAAA TG-- A--- AAACA AAGACGACAA
8 CACCAAGACGACAAGGGACG TCCCCG AAC GCGGG CC
GCCCGCAAAAGTTACCCCGG AGGGGC TTG CGCCC GG
GGA CCCA AAAA GGCAG ----------
GAM14780 11631 TCCCCTCCTGAAAGATGTCA CC- C- A-- A GCAACAGATAAA
3 TCGCAACAGATAAAGAAGAC TCC TC TGAA GATGTC TC
GTTGCCTTCAAAGACCTGGA AGG AG ACTT TTGCAG AG
TCC AA CCG A ----------
GAM14782 13180 TCCCCTGTGAAGGGCACAAG T- G G A--- - TG TGGGGTT
0 GTTGGGCCTGGGGTTGGCTT TCCCC GT AA GGC CAAG GT GGCC
GGCACTTGGGGGGCCGTTGG AGGGG CG TT CCG GTTC CG TCGG
CTTGGGGA TT G G GGGG A GT -------
GAM14782 14876 TCCCCTTTACACCTGGAAAA - CA --- AAAAAT AA TTAA
6 AAATTACAAAGGTTAACCTA TCCCC TTTA CCT GGAA TAC AGG
GTATAACAATTCCATCAGGA AGGGG AAGT GGA CCTT ATG TCC
ATGAATGGGGA T AA CTA AACAAT A- ----
GAM14782 13475 TCCCCTTTCCATCCATATTT CCT - T TATTT A CCT TTCT
7 ATCAACTTCCTAAGTTCTCT TCC TTC CA CCA ATC ACTT AAG
TTTGAGTGGATTCTCTGGTG AGG AAG GT GGT TAG TGAG TTC
TGAATAAGGA AAT T - CTCT- G TT- ----
GAM14782 10798 TCCCCTTTCTGCCAACCCAA - --- - CCCAAA T TAAA A CGAGAAAA

9 AGGATCCAAATTAAAGTAGT TCC CCTTTCT GC CAA GGA CCAAAT GT GTC
CCGAGAAAAGACACAGCATT AGG GGAAAGG CG GTT TCT GGTTTA CA CAG
TGGTCTGACTTGTGCCTAGG A ATC T CAG--- - CGA- - --------
AAAGGAGGA
GAM14783 21696 TCCCGAAAAAGGAATGCCAG AAA GAA CA TCAG GAGGAGGGAAA G AG- AA
AT
2 GTCAGACAGGTGGAGGAGGG TCCCGA AG TGC GG ACAGGTG TGGG CAC GTC GGT
G
AAATGGGGCACAGGTCAAGG AGGGTT TC ACG CC TGTCCGC ACTC GTG CGG CCG C
TATGATGAATCTCTTAAAAA --- --- AC TAA- ---------- G ACA A- GC
GAAATCCGGCCAGGCACAGT GAA CTTAAAA
GGCTCACGCCTGTAATCCCA AT TCT
GCACTTTGGGA TA AGA
A-- -------
GAM14783 11742 TCCCGAAACAAGCTTTCACC GAA TT A CGT AC CCCTG
3 GACGTGGCCACTGGCTCCCT TCCC ACAAGC TC CCGA GGCC TGGCT
GGGCCAGGCCTCGGGGCCGC AGGG TGTTCG GG GGCT CCGG ACCGG
TTGTGGGA --- CC - --- -- -----
GAM14783 7302 TCCCGAAACAAGCTTTCACC GAA TT A CGT A CCCTG
4 GACGTGGCCACTGGCTCCCT TCCC ACAAGC TC CCGA GGCC CTGGCT
GGGCCAGGGCCTCGGGGCCG AGGG TGTTCG GG GGCT CCGG GACCGG
CTTGTGGGA --- CC - --- - -----
GAM14784 10140 TCCCGCAGCAGCAAAGTCTC CA CAAA TC G AC GTACG
5 TCGCGACACCCTGTACGAGG TCCCG GCAG G TCTCGC AC CCT
CGGTGCGGGAAGTCCTGCAC AGGGC CGTC T AGGGCG TG GGA
GGGA A- C--- GA - GC -----
GAM14784 7703 TCCCGCCCGCTTGTGGCCAA - CCCG- - TGG - CACT
AAATGCCAGTCGACTTCA
9 CTGGCTCCAGTCACTCCCGG TCC CG CTTGT GGCCAAC CT CCAGT CCCGG
AAATGCCAGTCGACTTCACT AGG GC GAGCA CTGGTTG GA GGTCA GGGTC
GGGTACTGGAAGATGTTGGT A TTTAA A TA- A T--- ----------
CAACGAGAATTTCGAGGA
GAM14785 22808 TCCCGCGAAAAAAGACCTTG GC- AAAAAGA G- CAGTT TCG
8 TGGTCCTCAGTTGGCTCGGC TCCC GA CCTTGTG TCCT GGC
CAGGAAATACAAGGGGTCCA GGGG CT GGAACAT AGGA CCG
AGGGG AAC GG----- AA ----- ---
GAM14787 11217 TCCCGGGCAACAGGATGCTC C A- - C AG TT-- TGAT
2 CAGACCTTGTATGATTACTT TC CGGGCA CA GGATG TCC ACC GTA
CTGGTGGGAACGTCTGTGGC AG GTCCGT GT TCTGC AGG TGG CAT
TGCCTGTGA T CG G A G- TCTT ----
GAM14787 17623 TCCCGGGCCAAGGGGGTGGC ----- G -------- GCAC
3 CTGCACAGGCCCGATGTCTA TCCCGGGC CAAG GGGT GGCCT
CTTGCTTGCACCAGCCCGGG AGGGCCCG GTTC TTCA CCGGA
A ACCAC G TCTGTAGC ----
GAM14788 16228 TCCCGTATTTATATGCAAAG CG-- TAT AAA - G TGGAA
0 CCCGTGTGACTGGAAGTGCA TCC TATT ATGC GCC CGTGT AC
CGTGGCACGCATTTTAATAA AGG ATAA TACG CGG GCACG TG
ACTGGA TCAA TTT CA- T - -----
GAM14791 15419 TCCCTAGATGATTCTGAAGG CT ATTCT AAGCCATG GAAC
2 TAAGCCATGTTTGGGAACCC TCC AGATG GAAGGT TTTGG

AGAACTCAACCTTTCACATC AGG TCTAC TTTCCA AGACC
TTTGGA TT AC--- ACTCA--- ----
GAM14791 7748 TCCCTAGCCTGCAGCGCGCC - T A G C G G C - TG ---- - G --
4 GCGCCCCCGGCCCCGCGCCT TCC CTAGCC GC GC CG CGC CCCCC GCC CG CGCC G ACGAC
GCC CCG CC
GGACGACGCCGCCGCCTCCT AGG GGTCGG CG CG GT GTG GGGGG CGG GC GTGG C TGCTG
CGG GGC GG
GGTTCGGGGCTGTCGTGACC T T G G C A G C C GT CCAG T - TT
CTGGGTGCCGCGGCGGGGGG TCCT
AGTGCTGGGCGGCTGGCTGG
TGGA

GAM14799 16305 TCCCTCTTGGTTAACATCTG CC T TTAA - TAAAA TTCTTCTT
0 TTTAAAATCTCTGTCTTCTT TC TCT GG CAT CTGTT TCTCTGTC
CTTGATAGAGAAACAGCATG AG AGA CC GTA GACAA AGAGATAG
GTTTCCTAGACTGA TC T TTTG C ----- --------
GAM14800 1435 TCCCTGACCCTCCTTTTTGT ACC CT GTTT ATCT - - ACAACACAA
2 TTGCCAATCTGGATATTATC TCCCTG CTC TTTT GCCA GG ATATTA TCTAA
TAAACAACACAATTAGACTA AGGGAT GAG AAAG CGGT CC TATAAT AGATT
ATATGCCCTATGGCTGGAAA CA- TT GT-- ATC- G C ---------
TTGAGACTAGGGA
GAM14804 11500 TCCCTGGCGGTGCCCGCAAT C -- CGCAA AACG AATAA CAACCCCCTTA A
AAAAC
4 CTAACGTCTACAATAACCTC TCC TGGCGG TGCC TCT TCTAC CCT GTT CAGA
AACCCCCTTAGTTACAGAAA AGG GCCGCT ACGG AGA AGGTG GGA CAA GTCT

AACTCTGCAACAGGCAGTGG C GA CAG-- GGTA AC--- ---------- C -----
AATGGAGAGACGGCAAGTCG
CCGCGGA

GAM14809 15448 TCCCTTCTCTTCCCCCCACT T CCCCACT CTC GAAAAA
8 TCTGGTCTCCCGAAAAAGGA TCCCTTCTCT CC TCTGGT CC
ATGCCAGGTCAGACAGGTGG AGGGAGGAGG GG GGACCG GG
AGGAGGGA T ACAGACT TAA ------
GAM14810 22535 TCCCTTCTGCTTAGAGAAAG TGC AA- A -- TTTAGCT
0 AAATGGCCTTTAGCTGGTTT TCCCTTC TTAGAG AGA ATG GCC
CATGTTTGTGTTTTGACTGG AGGGAGG AGTTTT TTT TAC TGG
AGGGA TC- GTG G TT -------
GAM14811 6768 TCCCTTTATTACTGTTGTAG T A A----------- CTCACTT
9 TCCCTCACTTGGATATACCT TCCCTT ATT CTGTTGT GTCC
CTGTTTTCACGATAGAAATA AGGGAA TAA GATAGCA TAGG
AGGGA - A CTTTTGTCTCCATA -------
GAM14812 16126 TCCCTTTCCTGACCTTTAGT CT-- CCTTTA - TTCCAATTT
0 CTTTCACTTCCAATTTGTGG TCC TTCCTGA GTC TTTCAC
AATGATATTTTAGGAATAAC AGG AAGGATT TAG AAGGTG
GGA CAAT TTA--- T ---------
GAM14812 10331 TCCCTTTCTTTGTGAAGGTT T -------- AAG- A ATTGGG
3 ACATTCCATTGGGGGGAAGT TCCCT TCT TTGTG GTTAC TTCC
AATAAAACATAAACTGTGTT AGGGA AGA AATAC TAATG AGGG

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          AGATAGGGA            T  TTGTGTCA    AAAA    A  ------
GAM14812 22655  TCCCTTTTGTGCTTAATTGG    T    C  AT      C                      TTA
9          TCTTTCGAAATGTTTTTATT TCCCT TTGTG TTA  TGGTCTTT
GAAATGTTTTTATTAAATTCAGCCAGTATTTAT
          AAATTCAGCCAGTATTTATT AGGGG AACAC AAT  ACCAGAAA
CTTTACAAAAATAATTTAAGTCGGTCGTAAATA
          TAATAAATGCTGGCTGAATT    T   -  C-      A                      ---
          TAATAAAAACATTTCAAAAG
          ACCACTAACACAATGGGGA
GAM14815 204   TCCGAGGGCGAGCTCCAGAA     ---  GA  T  GAA     GCA  TGGA
1          AAGTTTTGCAATCTGGAGAT TCCGAG  GGC  GC CCA  AAGTTTT  ATC
          AAGGAGCTTGATGGGCAGCT AGGTTC  TCG  CG GGT  TTCGAGG  TAG
          AGACTTGGA            AGA  A-  -  AG-     AA-  ----
GAM14815 15535  TCCGATTGGTGAGGCTGTCC      GG    CT   --  GGAAATG  GAAATTGAAA
6          TTGGGAAATGGGTGAAATTG TCCGATT  TGAGG  GTCC  TTG     GGT
          AAAACCATCAAAACAATTGG AGGTTAA  ATTCT  CAGG  AAC     CCA
          ACTTCTTAAAAATTGGA        AA   T-   TT  AAAACTA  ----------
GAM14816 10773  TCCGCATCTGGGGCACGGAG      ------  -  A--     T   -  GGATCTGCA
7          GGTGACAGCTGGATCTGCAA TCCGCAT    CTGG GGC  CGGAGGG GACAG CT
          GTCTGTCCTTTCTGAAGGCC AGGCGTG    GACC CCG  GTCTTTC CTGTC GA
          ACCAGCGCACCGTGCGGA       CCACGC   A  GAA     -   T  ---------
GAM14819 12029  TCCGCGGAGGTTTCGGCAGT   G  AG--   G  AGT  A   G   GG   G   GTGGACGG
2          GGCATCCGGGGCCGGGGTCG TCC CGG   GTTTC GC   GGC TCCG GGCC  GGTC CGGCC

          CGGCCGTGGACGGGGCCGGG AGG GCC   CGGAG CG   TCG AGGC CCGG  CCGG GCCGG

          GCCGAGGCCGCGGAGCTCGC   A  GGAA    G  C--  -   G   AG   G   --------
          GGAGGCAAGGCCGAGGA
GAM14821 4990   TCCGGAGTAAACGGCTCTTC      T     CTCTT      TG A-  G  C    -  C   ACCAGCACCC
0          ATTAGCTTGGAGTGGCCGCA TCCGGAG AAACGG    CATTAGCT  G  GT GC GCAGG TC CGTG

          GGTCCCGTGACCAGCACCCC GGGTCTC TTTGCC    GTAGTCGG  C  CA CG TGTCC AG GCGC

          GCGAGACCCTGTGCGACAGC      -     TC---      GT GA  G  -    C  A   ----------
          TGGGCTGATGCTCCGTTTCT
          CTGGG
GAM14821 22392  TCCGGATTTTCGGATTCGTC     -  TT GG  TC--      CACGCGTCC
3          GACCCACGCGTCCGGTCGGC TCCGGA TT  C  AT   GTCGACC
          AGCTGTGAGGGGGTTCCGGG GGGCCT GG  G  TG   CGGCTGG
                          T  GG AG  TCGA      ---------
GAM14822 1672   TCCGGCTGGGCCTGGCCCTC      G   C-   CC   ACTTCTCCG   CTACTA    T   AA-   ACCTGA

1          AACTTCTCCGTGTTCTACTA TCCGGCT GGC  TGGC  TCA       TGTT     TGAGA CCAG   TGC
          TGAGATCCAGAATGCACCTG AGGTCGA TCG  ACCG  AGT       ACAA     ATTCT GGTC   ACG
          AGCAAGCCTGGCTCTTAGCC      G   AT   T-  AGCTTCCGA   ACCG--    C   CGA   ------
          AAACAAGCCTTCGATGATGC
          CATAGCTGAGCTGGA
GAM14822 664   TCCGGGAGAGGTGGTTCCAG   -     -    T----     -  ATGGTG
2          AATTATGGTGAGTATTTGGA TC CGGGAGA GGTGG    TCCAGA ATT
          CATTCTCGCTATCTCCTGTG AG GTCCTCT TCGCT    AGGTTT TGA
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          A                T      A    CTTAC     A ------
GAM14822 2244   TCCGGGCTTCCCCCAAGACC       TT-     AGACCA     G G    T  T TTG    AATTGA
6          ACGCTTAGCGGTGGCTTCTT TCCGGGC   CCCCCA     CGCTTA CG TGGC TCT CG   CTGT
           CGTTGCTGTAATTGAACGGG GGGTTCG   GGGGGT     GTGAGT GC GCCG AGA GC   GGCA
           TCGAGATGCCGACGTGAGTG       TAC     GA----     - A    T  - TG-    ------
           AGTGGGGGCATGCTTGGG
GAM14823 10875  TCCGGGGTCTTATCTTACAT       CTTATCTTA     ------    C    GTTTCTCTTTA
2          GGAGAGCCTCCAGTTTCTCT TCCGGGGT       CATGGA     GAGC TCCA
           TTATGGGTGCTCTCTTCTTC AGGCCCTA       GTACCT     CTCG GGGT
           CATGATCTTTCTTATCCCGG       TTCTTTCTA     TCTTCT    T    -----------
           A
GAM14823 4947   TCCGGGGTGCCTTCTTGGAA   -    T     - GGAAGATG-   GTGGTTGA
3          GATGCTTGTGGTTGAAAGAG TC CGGGG GCCTTC TT       CTT
           AGATGAAGATGAAGGTCCCT AG GTCCC TGGAAG AG       GAA
           GTGA              T    -     T AAGTAGAGA   --------
GAM14825 14886  TCCGTCCACGTGGGTAGGCC     -----     --       -      T CCGGGCTC
2          CTTGTGGCCGGGCTCCCCAG TCCG     TCCAC  GTGGGTAG GCCCTTG GG
           GGGTGTTACCCACATGTGGG AGGC     GGGTG  CACCCATT TGGGGAC CC
           GCTTTCGGA            TTTCG    TA       G      - --------
GAM14826 5275   TCCGTGGCTGCTCATTCTTG      G TG --    T  T    A     CTCTCCCAC
2          CCTACTTTACTCTCCCACTG TCCGTG C  C  TCAT CT GCCT CTTTA
           AAGCAGGTTAGCGTGAAGGT AGGTAT G  G  AGTG GA TGGA GAAGT
           GGTATGGA              - GT GA    C  T    C     ---------
GAM14827 2605   TCCGTGTTCTGCACCAGTAT    T     C    --   T-     -  AAGACTCCA
1          TGTGGCTCAAGACTCCAGAG TCCG GTTCTG ACCA  GTA  TGTGGC TC
           GCCACATTTACCATGGTCGG AGGT TAAGGC TGGT  CAT  ACACCG AG
           AATTTGGA             T    -   AC   TT     G ---------
GAM14827 6693   TCCGTTACTGAGATTGGAGT     TA   A    GGAG-  A   AGAA-    GTGA
2          GACTTAGAAGAGGGTGACCT TCCGT  CTG GATT     TG CTT     GAGG
           CCATGAAAGCAGGTAGGATC AGGCG  GAC CTAG     AC GAA     CTCC
           ACAGATGCGGA            TA   A    GATGG  -   AGTAC    ----
GAM14827 17878  TCCGTTATTTTAATGCGCTA     TATT    T  G  ACA-     AGAAATGTTTAA
4          CACCCACAGAAATGTTTAAG TCCGT    TTAA GC CT    CCCAC
           TGGGCACAAGGGCTTAATTT AGGTA    AATT CG GA    GGGTG
           ATGGA                TTT-    -  G  ACAC    ------------
GAM14831 17480  TCCTAATCAGTTTGCGTTTA     AATC         TAAT      A  GA   CA--    TCACAC
9          ATGTTTTTGATTGAGTCCAT TCCT    AGTTTGCGTT    GTTTTTG TT  GTC    TACA
           ACATCACACTGTAGATAGGC AGGA    TCGGACGTAG    CAAGAAC AA  CGG    ATGT
           AAAACCAAGAACTGATGCAG     AAC-         T---      C  AA   ATAG    ------
           GCTCAAAGGA
GAM14834 16177  TCCTACTGACTGATAATCAT     ACTGACTGA     ATGAAAA     AAATAAGA
6          GAAAAGTGCTAAATAAGAAG TCCT        TAATC      GTGCT
           TATAAAAGGGATTGAGAATT AGGA        GTTAG      TATGA
           TAAGGA               ATTTAAGA-     GGAAAA-     --------
GAM14835 665    TCCTACTTGGGCGTGCGGGA    TA  TG   GT    -    AGAAAA  GCGC
7          GAAAGAAAAAGGCGCCTGCG TCC  CT  GGC  GCGGG AGAA      AG
           ATTCTACCCGCGCTTGAGCG GGG  GA  TCG  CGCCC TCTT      TC
           GGG                GC  GT   --    A   AGCG--  ----
GAM14836 15033  TCCTAGAAATCTAATTATTC    T    ATCTAAT      TTA   ATG  AATATTTTTTTAACA
1          AGTTATTCATGACAATATTT TCC AGAA      TATTCAG   TTC   AC
```

TTTTAACAGTAAGAAATTCT AGG TCTT GTGAGTC AAG TG
GAGTGTCTTCTTGGA T CT----- TTA AA- ----------
GAM14836 22659 TCCTAGAGGTGACAAGCAGG A ----- AA GGC- TCA
6 CGCTCGCTCAGTGAGCTAGG TCCT GAGGT GAC GCA GCTCGC
TGCAAGTCCAGAGGCCTCGA AGGA CTCCG CTG CGT CGAGTG
GGA G GAGAC AA GGAT ---
GAM14839 236 TCCTAGGTTTTCTTATGGCA C G A--- - CTG GC AGGC
3 GCTGACAGCGTGGGCAAGGC TC TAG TTTTCTT TGGC AG ACA GTGGGCA
TGCCCACATGTACCTCGCCA AG GTC GGAAGGA ACCG TC TGT CACCCGT
CAACAGGAAGGGCTGAGA A G CAAC C CA- A- ----
GAM14843 10940 TCCTATTGGCCTTCTTTAAA A TTCTTTAA CTA- ATGG
4 TCCCTATGAGATGGCTTAAA TCCT TTGGCC ATCC TGAG
AAGGATGTCACTGGCCAAGA AGGA AACCGG TAGG ATTC
GGA G TCACTG-- AAAA ----
GAM14844 17258 TCCTATTTCTTTTTTTTAAG AT--- A AG -- AAATG- AATGA
3 GGTTAGTATTAACAAATGGC TCCT TTCTTTTTTTT AGGGTT TAT TAAC GC
AATGAGTAGAAAAGTTAACA AGGA AAGAGAGGAAG TTTTAG GTA ATTG TG
TGAAGATTTTAGAAGGAGAG CATTC A AA CA AAAAGA -----
AACTTACAGGA
GAM14846 16020 TCCTCACAGCGCTGGACCTG A G- T - ---- T CTGAGTTCT
8 AGTGTCGAGGTGCCTGAGTT TCCTC CAGCGCTG ACC GAGTG TC GAGG GC
CTGCCCCTTCGTGGACCACT AGGAG GTCGCGAT TGG TTCAC AG TTCC CG
TGGTAGTAGCGCTGGAGGA - GA - C GTGC C ---------
GAM14849 14739 TCCTCATCGGCAAGGGGGGC G A GC AAATTC AA- GCGACA
8 GGCAAAATTCGCAAGGTGCG TCCTCATC GCA GGGGG GGCA GC GGTGC
CGACAGCACTGGAGCACCGT AGGAGTGG CGT CCTTC CTGT CG TCACG
GTCATCTTCCCTGCGGGTGA G C TA GCCA-- AGG ------
GGA
GAM14853 5287 TCCTCCATCCCAGCATAGAG - T A AT--- TGAGTAAT
1 AATGGGGACTCCCTGAGTAA TCCTCCATCCCA GCA AG GA GGGGACTCCC
TGGGAGTTCTTTCATGTCCT AGGGGGTGGGGT CGT TC CT TTCTTGAGGG
CTGCTTGGGGTGGGGGA T C - GTACT --------
GAM14854 16152 TCCTCCCTCACCGCTCCATG - CAC CTCC TG - C--- A TGCG
7 TGCGTCCCTCCCGAAGCTGC TCCTCC CT CG ATG CGTCC CT CCGA GC
GGCTCGGTCGAAGAGGACGA AGGAGG GA GC TAC GCAGG GA GGCT CG
CCATCCCCGATAGAGGAGGA A TA- CCC- CA A AGCT - ----
GAM14856 21956 TCCTCCTATGGCAGGGAGTC T T C--- A CATCCCCCATACCGA
0 CGCATCCCCCATACCGACGG TCC CCTA GG AGGG GTCCG
ACCCCTTCAACCTGGGCGGA AGG GGGT CC TCCC CAGGC
C - AACT - ----------
GAM14858 275 TCCTCGACACATCACCAGGC CA- TCACCAG- AGA CGATATT
4 AGATCCACGATATTTGGAAC TCCTCGA CA GC TCCA
GCACGATTATTGCCCTCGAG AGGAGCT GT CG AGGT
GA CCC TATTAGCA CA- -------
GAM14859 22172 TCCTCGGGAGTTAGTGGAGG -- TA G - GGAA AT ATTG
2 GGGTCGGAAATTATCAAATA TCCTCGG GAGT GT GAGGG GGTC ATT CAAAT
TTGGTTTGCGAATAAGACCT AGGAGTC TTCA CG TTTCT CCAG TAA GTTTG
TCTTTGGCATACTTTGCTGA GT TA G T AA-- GC ----
GGA
GAM14860 17470 TCCTCTATGAAGTTAAATGA - A AA AAATG TT TTAA

8 CTGGTTCAGTGTTAACACTG TCC TCT TG GTT ACTGG CAGTG
CTAGTGAGCGACAGAGATGG AGG AGA AC CGA TGATC GTCAC
A T G AG G---- -- ----
GAM14865 15334 TCCTCTTATAGAGAAGGACA AT----- CAT ATAT - - G GCAG
0 TTCATATTTCTTGGGCGGCG TCCTCTT AGAGAAGGA TC TTCTTG GGC GGCGGAC TGC

GACGTGCGCAGGTAAGTCTG AGGAGGG TTTTTTTCT AG GAGGAC CCG TTGTCTG ATG

TTGGCCACAGGAGCTTCGAT GCCCTGT --- CTTC A G A ----
CTTTTTTTTGTCCCGGGGAG
GA
GAM14867 10760 TCCTGAACCGGCCCAACCCC GAACC CAACCCCTT T TTGCCCCC
1 TTGCTGGCGTTGCCCCCCGC TCCT GGCC GC GGCG
CCGCCCCCACGGCCCAGAGG AGGA CCGG CG CCGC
A GAC-- CACCCC--- C --------
GAM14870 16208 TCCTGACTTTTTAATGATTG CT TTT T- T A TGGC
1 CCATTCTAACTGGCGTGAGA TC GACT TAATGA TGCCAT CT AC
TGGTATCTCATTGTGGTTTT AG TTGG GTTACT ATGGTA GA TG
GA TT T-- CT - G ----
GAM14873 15182 TCCTGAGTCAGGTAGTGCAG G- CA T C - AAAGT
0 TGGTTGTAAAGTGCAGCATA TCCT AGT GG AGTG AGTG GTTGT
TTCATTTCCAAGCTAGAGGG GGGA TCG CC TTAC TTAT CGACG
GA AA T - A -----
GAM14876 11916 TCCTGCATCATAGCCACCAA G TA A AAATA A A GGGGCTGA
8 ATAGTGAGGACCGGGGCTGA TCCT CATCA GCC CC GTG GG CC
GGCCACACAGATAGGGGCCT AGGA GTAGT CGG GG CAC CC GG
GATGGAGGA G C- - ATAGA A - --------
GAM14877 19501 TCCTGCCAAGATCAGTTCCA CAA TCCAACT CAGCAT AGAAATTACG
3 ACTTCAGCAGCATTATTGCA TCCTGC GATCAGT TCAG TATTGCAG
GAGAAATTACGTTGTAATAC AGGACG CTGGTCA AGTC ATAATGTT
CCTTCCTGACACTGGTCGCA --- C------ CTTCCC ----------
GGA
GAM14877 10512 TCCTGCCAGACCTCGGGGAG A CG ATACC CA- - CC CTACT
7 GATACCTGGGAGACAGAAGC TCCTGCC GACCT GGGAGG TGGGAGA GA AG TCTGCAC

CTCTGCACCTACTGTGCAGA GGGACGG TTGGA CCCTCC ACCCTTT CT TC AGACGTG
ACTCTCCACTTTCCCAACCC G -- CA--- CAC C A- -----
TCCCAGGTTGGGCAGGG
GAM14878 22523 TCCTGCCCCGGAAGACTGTG CGGA AC T C TCCCAC
8 TCTGCAGCGTCCCACTGCTC TCCTGCCC AG TG GTCTG AGCG
AGGCCACTGAATGGGTAGGA AGGATGGG TC AC CGGAC TCGT
TAAG -- - - ------
GAM14879 16998 TCCTGCCGGGCTCGTGGCGG CC CTCGT G GT TCC
4 CTTCTGTCCGCTCCGCGGTG TCCTG GGG GGCG CTTCT CCGC
GGAAGCGCCTTCCCCACAGG AGGAC CCC CCGC GAAGG GGCG
A A- CTT-- - GT ---
GAM14883 13087 TCCTGCTTATTGTAACTGAC - TT - A- CT TCAA CAA
6 AACTGTTTTCAACTCCAAGA TCCTG CTTA GT AACTG CAA GTTT CTC
GCTAAACTATTGGGCAGTTC AGGAT GAAT TA TTGAC GTT CAAA GAG
ATGTTAAGTTAGGA T TG C GG AT TC-- ---

GAM14883 22894 TCCTGCTTCCGTCAGACCGA C- A GAGAC G GTTC
7 GACCGGCTCCGTTCGGAGGT TCCTGCTTC GTCAG CC CG CTCC
GAAGGCTGGCATGGAGCGGG AGGGCGAGG CGGTC GG GT GAGG
A TA - AA--- G ----
GAM14884 13579 TCCTGCTTGCGGACGGCTGC T C CTG- GC G - ACAGCG
0 GGGCCTGAGGGCTGGACAGC TCCTGC TG GGACGG CGG CTGAGG C TGG
GCCATGCCTCAGTACCGGGA AGGATG AC CCTGTC GCC GACTCC G ACC
ACTGTCCCACGTAGGA C - AAGG AT - T ------
GAM14885 17272 TCCTGGACTGTACTGCTGCC T G - CCC CA C T TG ACT
2 CCTGTCATGCTGTCATTGAT TCC GGACT TAC TGCTGC TGT TG TGTCA TGA GC
GGCACTGTTGTTACTGGCAC AGG CTTGA ATG GCGGCG ACA AC ACGGT ATT TG
AACACGCGGCGTGTAGAGTT T G T C-- -- - C GT ---
CTGGA
GAM14886 15399 TCCTGGCAAGCCCATGTGTG --- --- T- TG---- AGCTT
7 TTGAGAGCTTCTCAGAATAT TCCTG GCAAG CCCA GTG TTGAG
CCACCTTGGGGTCCTTGCTG AGGGC CGTTC GGGT CAC GACTC
TCGGGA TGT CTG TC CTATAA -----
GAM14887 16052 TCCTGGCCATGTTTTGGGTG GG -- T TCTT ATCTTTGTAC
7 CCTCTTCCCTTCTATCTTTG TCCT CCA TGTTTTGGG GCC CCCTTCT
TACAGAGGGGGGCCCCAGGA AGGG GGT ACAGGACCC CGG GGGGAGA
CACCTGGAGGGA A- CC - ---- ----------
GAM14888 17913 TCCTGGCCCTCTTGCTTGCT GCCCTCTT - TC CTACCTAA
0 TCTGCCCTACCTAAGGCACA TCCTG GCTTG CT TGCC
GACAAGTTCTCTGTGTAGGA AGGAT TGAAC GA ACGG
GTGTCTCT A C- --------
GAM14889 17256 TCCTGGCTGCAGATGAGTCC - C CAGA A - C A- TT AAGC
1 ACTGGGAGCATTGCCAAGCG TCCT GG TG TG GT CCA TGGG GCA GCC
GCTGCAGTCCATTGGCACCG AGGA CC AC GC CA GGT ACCT CGT CGG
AGAACACCGAGGA G - AAGA - C T GA -- ----
GAM14893 9993 TCCTGGTCTGTTCTGTGAGT T T TGGTTT CA AGCATTGAA
7 GGTTTCTATCCAGGCAGCAT TCCTGGTC GTTCTG GAG CTATC GGC
TGAAGTCAGGTGGTTCCGGA AGGACCGG TAAGGC CTT GGTGG CTG
ATGGCCAGGA - - ------ A- ---------
GAM14901 16213 TCCTGTTAGCAAGAACAATG G A AGAACAA - TTTCCTCAAC
8 TACTTCAGTTTCCTCAACCT TCCT TT GCA TGTACTTC AG
GGAAGTACAGATGCAGAGGA AGGA GA CGT ACATGAAG TC
- - AG----- G ----------
GAM14903 4859 TCCTGTTTTATACCTCTAAC - CC AACTAC- CT TTTC
4 TACCCTCCTGATTTCTCTGA TCCTGTTTT ATA TCT CCTC GA
GGAAAAAAAAGAATATAAGA AGGACGAGA TAT AGA GGAG CT
GCAGGA A A- AAAAAAA T- ----
GAM14904 1392 TCCTTAACAGATGAACTATC TT -- ATG- T CAGAAGG GATCCG
0 CACAGAAGGAAGAGGGATCC TCC AA CAG AACTA CCA AAGAGG
GTCTCTTAAGTAATTGGTTA AGG TT GTC TTGAT GGT TTCTCT
GTTAACACTGAATTTTGGA TT AA ACAA T TAATGAA ------
GAM14906 7975 TCCTTATCCGTTACCTTAAA T C TACC CA TTCC GTAA-- CAACAAATA
9 GCAGTCATTCCTTAGTAAAG TCC TATC GT TTAAAG GTCA TTA AGTTTC
TTTCCAACAAATAGAAATTA AGG ATAG CA AGTTTC CAGT AAT TTAAAG
ATGAATAAATGTTGACACTT T T CGAT A- TGTA AAGTAA ---------
TGATAGCACTGATATGGA

GAM14907 19477 TCCTTATGCGCGTAACCGTC G C TCC CTTT CA CTATA
3 CTCCCTTTGGTCAGGGCTAT TCCTTAT CG GTAACCG TCC GGT GGG
ACCCAACCTGGACCTGGTTA AGGAATA GC TATTGGT AGG CCA CCC
TCGATAAGGA - - CC- T--- A- -----
GAM14909 17887 TCCTTCAGATGTTCCATCCA TC CCAT----- TGAT T CTTT
2 GATGATACCCTGGACTTTTC TCCT AGATGTT CCAGA ACCC GGA
TGGGTTTTCTGGCCAGTTAC AGGA TCTACAA GGTCT TGGG TCT
AAACATCTTAGGA T- ACATTGACC TT-- - ----
GAM14910 4683 TCCTTCCATGTTTTCCTACA A TTTC AC- AATA- T TTTCTTTTAAC
1 CCTTTTCAATAAGTGGATTT TCCTTCC TGT CTAC CTTTTC AG GGA
CTTTTAACTCCCTGAACAGA AGGGAGG ACA GGTG GAAGAG TC CCT
GAAGCCCGTGGCACAGGAGG - C--- CCC ACAAG - ----------
GA
GAM14911 4758 TCCTTCCTCCTCTTCTTTTC C TCT- T- TCCTT T GTG GCACAAA
2 TCCTTCATCGGTGGTGCTGC TC TTCCTCC TCTT TC CA CGGTG CT
ACAAAAGAAATGCTGTTGTA AG AAGGGGGG AGAA AG GT GTCGT GA
ATTGACCAAGACCTTGGGGG C TTCC CC TTAAT T AAA -------
AACGA
GAM14912 16173 TCCTTCGGTCTTTTTTTATT CG--- ATTTGCT AAGTTGCTTATAAA
5 TGCTTAAATCAAGTTGCTTA TCCTT GTCTTTTTTT TAAATC
TAAAGATTTGTTGAAAAAGA AGGAG CGGAGAAAAA GTTTAG
GGCAGACAGAGGA ACAGA GTT---- ----------
GAM14913 15817 TCCTTCTCGGGTGCCAAAGT T G CAAA C AG - GACT
1 CCTGCAGGCCTCCGACTGGG TCCTTC CGG TGC GTC TGC GC CTCC
GAGCAGCGAGACAAGCAGCC AGGGAG GCC ACG CAG GCG CG GGGG
GTGAGGGA T G AA-- A A- A ----
GAM14913 503 TCCTTCTCTGGGAAATCTAC T CT AATCT - TG C GC ATCC
2 TCCTTTGGGCGAGTGCCTTA TCC TCT GGGA AC TCCTT GG GAGT CTT
TCCAAGAATTCCCCTGAAGG AGG GGG CCCT TG AGGAA CC CTTA GAA
ACGTCGTCCCTCGGGTGGA T CT GC--- C GT C A- ----
GAM14914 13445 TCCTTCTTCACCGACGATGT CAC- T ACAGCAAGA - AGCT
2 ACAGCAAGACACCTCAGCTG TCCTTCTT CGACGA GT CAC CTC
GGAGTGGAACCTTGTCGATT AGGAAGGA GCTGTT CA GTG GGG
AAGGAAGGA ATTA C AG------- A ----
GAM14917 11985 TCCTTGCCAGTTTCTCCCAG TTTCTCC AG C - TTGTTTT
1 CAGGACCCTCTTCTTGTTTT TCCTTGCCAG CAGC GACC TCTT C
GAAAGATGGTCGGCTGCTTT AGGGATGGTT GTCG CTGG AGAA G
TTGGTAGGGA TTTC--- G- T A -------
GAM14919 15878 TCCTTGGGCTCATCCAAGAA TCATC ACTCTTC CTAAAACA
2 CTCTTCTGTATCTAAAACAA TCCTTGGGC CAAGA TGTAT
TACATCTCAAATCTTGGCCC AGGGACCCG GTTCT ACATA
AGGGA ----- AAACTCT --------
GAM14920 16005 TCCTTGTCTACAGAGAGAAA A--- AG- AA- TT CCCAAGA
3 AATGCCTTCATCCCCCAAGA TCCTTGTCT CAGAG AAA TGCC CATCC
GGATGCGGTGAAGTTTAAAC AGGAATAGG GTCTC TTT GTGG GTAGG
TCTGCTCAGGATAAGGA ACTC AAA GAA C- -------
GAM14920 13765 TCCTTGTGATGTTTGTATGG - G TTTGTA A ACA GTAA
7 ACTTTGACAATATGTAAATA TCCTTG T ATG TGG CTTTG ATAT
TGTGTAAAGCCAGTTTTTAT AGGAAT A TAT ACC GAAAT TATA
GATTAAGGA T G TTTTG- - GTG ----

GAM14921 14748 TCCTTGTTTACCAAGGAGTA TTTA AGG GTCAG AG------ -- AGTAAG
3 TTGTCAGTGTTTAGTGTTGG TCCTTG CCA AGTATT TGTTT TGTTGG GATATA
GATATAAGTAAGTGTATTTG AGGAAT GGT TCGTAA ACAAA ACAACC TTATGT
CCAACAACAAAAAAAAACAA TGTA AGG AAAA- AAAAAACA GT ------
AAAAATGCTGGATGGATGTT
AAGGA
GAM14921 19435 TCCTTTAAAGTGATTTTGTC AAAGTGAT TG AA CTGAA
8 ATGAAAGAGTCATCTGAAAT TCCTTT TT TCATGA GAGTCAT
GACTCTCGTGATGGAGGAAA AGGAAA AG AGTGCT CTCAGTA
GGA GG------ GT -- -----
GAM14923 291 TCCTTTATTGAAAATATTGG GAAAATATTG GC- CATTACATA
6 GATAGCACTGCATTACATAT TCCTTTATT GGATA ACTG
AGTCAATATCCATAAATGAA GGGAAGTAA CCTAT TGAT
GGG ATA------- AAC ---------
GAM14926 22603 TCCTTTGCCCACTTTTTGAT TG C T GGG GTTT TTCTT
0 GGGGTTGTTTGTTTTTTTCT TCCTT C CAC TTTTGAT GTT GTTTTT
TGGAAATTAGAGATGTTAAA AGGAA G GTG GAAATTG TAG TAAAGG
GTGTGTGTGAAGGA GT T T --- AGAT -----
GAM14930 16369 TCCTTTTTCAGTTTGGTTTT TTTGGT C TT TGATTTAGAT
2 GTCTTTTCTCATGATTTAGA TCCTTTTTCAG TTTGT TT CTCA
TTGAGGGAATACAAATTTTG AGGAGGAGGTT AAACA AA GAGT
GAGGAGGA TT---- T GG ----------
GAM14932 5105 TCGAATTTCAGTGCGGGAAC ATT -- G- A AT A C G TGGA
3 CAATGCAGACTGGCATTAAG TCGA TCAGT GCG GA CCA GC GA TGGCATTAAG CTG
GCTGTGGATAGCTTGGTGCC GGTT AGTCA TGC CT GGT TG TT ACCGTGGTTC GAT
AATTGGTCGTGGTCAGCGTG ATT AG GA - GC G A - ----
AACTGATTATTGG
GAM14932 14957 TCGACCTGAGCCACGGCTCT G C A TC CC - TAAG GGCAAGAAG
8 GCCCAGGTTAAGGGCCACGG TC AC TG GCCACGGC TG CAG GT GGCCAC
CAAGAAGGTGGCCGACGCGC AG TG AC CGGTGCCG AC GTC CG CCGGTG
TGACCAACGCCGTGGCCACG G C - CA CA G CAG- ---------
TGGA
GAM14934 15249 TCGAGGAGGTGGCCCTGTAT G AG G- C CCCTGTC
5 TCCCAGCCCCTGTCGTTGGC TC AGG GTGGCCCT TATT CCAGC
AGTGGAGGGGCCACATCTGG AG TCT CACCGGGG GTGA GGTTG
A G A- AG C -------
GAM14937 13425 TCGATTGTCAAGTGCAACAG T A TG A G GAGAAG TCATCATC
6 AGGGAGAAGGTTGTCATCAT TCGAT GTCA G CA CA AGG GTTG
CTAGCAATACCTTGTGTGCT AGTTG CAGT C GT GT TCC CGAT
GACTGTTGA T - GT - - ATAA-- --------
GAM14938 13110 TCGCAAAGGCAAAAGCAAGA AA AAAAGCAA-- A C AGAT
2 AATGGCGGCAGATGCTCCAG TCGCA GGC GAA TGG GGC
TTCCCTCACATCAGCCAGTG AGCGT CCG CTT ACC TCG
CGA GA ACTACACTCC G - ----
GAM14938 4926 TCGCACAATGTTTTTATAGT C - TT ATA - - T A TT- CAT T-- AATT
8 TACCAGAGTGTACAGATTTT TCG ACA ATG TTT GT TAC CAGAG GT CAGATT GCA ATTT ATTA

GCACATATTTTATTAAATTT AGT TGT TAC AAA CA ATG GTCTC TA GTCTGG CGT TAAA TAGT

TCCCCTGATTACAAATTTTG - A TT CCC C T - A TAT TT- CAT ----

CTATGGTCTGAATCTCTGTG TTCCCC
TACACCCCAAATTCATATGT
TGA

GAM14942 22550 TCGCCGTCGCCCCCGTTCCG CCGTC - GTC TC AGC C ACATGTCTAA
5 TCCGTCGCCCAGCCGCCAGG TCG GCCCCCG TTCC CG GCCC CGC AGGG
GACATGTCTAATCCTCGTGA AGC CGGGGGC AAGG GC CGGG GTG TCCT
GGGCCGTAGGAATCGGGGGC TTGTC T AT- -- A-- C ----------
CTGTTCGA
GAM14942 7337 TCGCCTCCAGTTGCTATGGA C T ATGGAA -- GG CCACGTCT
9 ACAGGGCATTCTGGGCAGCC TCGCCTC AGT GCT CA GGGCATTCT GCAG
ACGTCTCTGCATGGAGTGCC AGCGGGG TCG TGA GT CCCGTGAGG CGTC
CAATGGGTGGAGTTGCTAGG A T GGTGG- AA TA --------
GGCGA
GAM14948 11501 TCGCTCTTCGTTAAGTCGGC - TC--- GTC CTTC AACAT
7 CTTCCCAACATGGCGCAGTC TC GCTCT GTTAA GGC CC
TATTAACATCACGGAGCTGA AG CGAGG CAATT CTG GG
T CACTA AT- ACGC -----
GAM14949 4583 TCGCTGAGTCTGAAGTTCTT G- A-- T AGCA- CTGTAA
2 CCAGCAGGTCTGTAAACCAC TCGCTGA TCTGA GTTC TCC GGT
AAAGGACGAGCAGCTCAGAG AGCGATT AGACT CGAG AGG CCA
ATTAGCGA AG CGA C AAACA ------
GAM14949 21763 TCGCTGCCCTCTCTGCCAGC GCT - --- AGCA---- GGGT
5 AGGACTGGGTGGTCCAAAGA TC GCC CTCTC TGCC GGACT
ATCGGCAAATGAGAGTGGTT AG TGG GAGAG ACGG CCTGG
AGA AT- T TAA CTAAGAAA ----
GAM14951 17498 TCGCTTGAACCCAGGAGGCA GAA-- ---- - A T A AAGCCGAG
9 GAGGTTGTAGTAAGCCGAGA TCGCTT CCCA GGAG GCAG GGT GT GT
TCACGCCACTGCACTCCAGC AGTGAG GGGT CCTC CGTC CCG CA TA
CTGGGCAACAGAGTGA ACAAC CCGA A A - C --------
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1 GAGGTTGCAGTGAGCCGAGA TCGCTT ACCCGGG GAGGT GCAGTG GCC
TGGGGCCACTGCACTTCAGC AGCGAG TGGGTCC CTTCA CGTCAC CGG
CTGGGTGACAGAGCGA ACAG GA--- - - -------
GAM14960 13624 TCGGATCCTGGCTCTTTGCG A GG TT G - TGGG
0 GTCTGGGAGGGTGGGCCTTA TCGG TCCT CTCT GCG TCTGGG AGGG
CCTAGACGCCGGAGGGGACC AGCC AGGG GAGG CGC AGATCC TTCC
GA - -- C- - A ----
GAM14961 667 TCGGCAGCGTGTATTATGAG AG ATTA AG GA TG TGGGA
5 GCCAGAAAGGTGGGTGGGAC TCGGC CGTGT TG GCCA AAGG GG
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TGAGGCTGA GA ---- CT GC GG -----
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7 CCCAACTTGTGTTTTTTGGC TC GCAG ACCCCCC CCAA TGTGT
GCGCGCCTTGGTCTGGGGGG AG CGTC TGGGGGG GGTT GCGCG
TCTGCGGA G ------- TCT CC --------
GAM14962 5283 TCGGCCTCCCAAAGTGCTGG CT ATTA TGA ACTGTGCCC
3 AATTACAGGTGTGAGCCACT TCGGCCTCCCAAAGTG GGA CAGGTG GCC
GTGCCCGGCCACCTGCCTCC AGCCGGAGGGTTTTAT CCT GTCCAC CGG
TTTATTTTGGGAGGCCGA TT CC-- --- ---------

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4 GAGACCGGTGCGACTCATGA TCGGCGG TG CTGCGG ATGAG ACC
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ATACCCGCCGA C AG CAC G ----------
GAM14964 4854 TCGGCTGGTTTACCATGACT T TA T ---- A---- CTCTCAACT
3 TCTTCAGAGACCCTCTCAAC TCGGC GGTT CCA GA CTTCTTCAG GACC
TGGTCAAAAACTGAGGAGGC GGTCG CCGG GGT CT GGAGGAGTC CTGG
CTTTCCTGGGGGGCCGCTGG - GG C TTCC AAAAA ---------
GAM14965 299 TCGGGCTTCCTTTCCACAGG CTTCCTTT C CTA--- G TG ---- ATAT
9 GTCCTATCGGTGGTGCTAAT TCGGG CCA AGGGTC TC GTGG CT AATAGAG
AGAGATATTTCTATTCTCCA AGTCC GGT TCCCAG GG CACC GA TTATCTT
GTGCCACGGGGATTGTGACC CCTT---- T TGTTAG G GT CCTC ----
CTTTGGTTCCCCTGA
GAM14966 7125 TCGGGGATATCTAACAGCAA GATAT AAC CAATA TCACTA CA- GT- --------- T
2 TACCTGATCACTACTTCGCA TCGGG CT AG CCTGA CTTCG CTA TTCTC GG A
CTAGTTTCTCGGTACTATGC AGTCC GA TC GGGCT GAAGT GAT AAGGG CC T
ATATGGTCCAATATCAAAGG ATAAC CAA TATAG CAG--- TAC AGT AAACTATAA -
GAATGATAGCATTGAAGGAC GCAT
TCGGGGATATCTAACAGCAA CTAT
TACCTGA GGTA

GAM14966 14227 TCGGGGCAGCCCCTGGAAGA GG- ------- A- - ATCATCAC
4 GATCATCACCTACTACCCAG TCG GCAGCC CCTGG AG AG
GCCATGAAGGCTGTGAACGA AGC TGTCGG GGACC TC TC
AAG AAGTACC CA A --------
GAM14967 7480 TCGGGGGCAGTTTTGGGGGT GCAGTT -- G- CAAAGAC
5 GTCTAGCAAAGACCTGGAAG TCGGGG TTGGG GGT TCTAG
GCCTTCCCGGTTAACCCTGA AGTCCC GGCCC CCG AGGTC
AATT-- TT GA -------
GAM14967 21921 TCGGGGGTCTCCCTGGCAAG GTC CA TCC CCAAGG G C CACAGC
7 GGGTCCCAGGGCCTGGAGCC TCGGGG TCCCTGG AGGGG CAGGGCCTGGAGC CCCA C
AAAAGCA
CAAGGCCCAGCCAAAAGCAC AGCTCC GGGGGCC TCCCC GTCCCGGACCTCG GGGT G
TTTTTGT

ACAGCATCAAAACATGTTTT --- CC --- AA---- - A ------
TAGTGGGAAGCTCCAGGCCC ATCAAAACA
TGCCCCTCCCCGGGGGCCTC
GA

GAM14971 5043 TCGGTGGGGTTTTTCACACT T TT GAGT- AA AA- A- AACAGAGAAGA
0 TGAGTGTGAGGGAAACAAAA TCGGTGGGGT T CACACTT GTGAGGGA CA AAAAT TCT
AAATATCTAACAGAGAAGAA AGCCACCCCA G GTGTGGG CACTCTCT GT TTTTG AGA
GAGGGTTTTGTGTGGGTCTC C GT GATGT GG GTG GG ----------
TCACTGTAGGGGTGTGTGGC
ACCCCACCGA
GAM14973 19684 TCGTATTTTTAGAAGAGACG TTT AGAGA CCA A CTGAC
7 GGGCCCCACCATGCTGACCA TCGTA TTAGA CGGGGCC CC TG
GGCCGGTCCCGAACCTCTGA AGTAT AGTCT GCCCTGG GG AC
CCTTATGA TCC CCAA- CC- - -----

GAM14974 15284 TCGTCATCTTCAGTGACGGT ---------- A- TACAACACTT
2 ACAACACTTCTGTTATGAGA TCGTCA TCTTC GTGACGG
AGAGTGAAGTTTTATGATGA AGTAGT AGAAG TATTGTC
ATTTTGAAGTG AG ----------
GAM14974 22559 TCGTCGACCCACGGCGCTCG GT - - CT C - TGACTGTGCT
6 CTCAGGCTGACTGTGCTGTC TC CGAC CCA CGGCG CG TCAGG C
CTGATTGTTGCTGCTGGTGT AG GTTG GGT GTCGT GT AGTCC G
TGGTGA TG T C T- T T ----------
GAM14974 1917 TCGTCTATGATATCGCTCAG -- A T TAAA GA- T CT GAAACTGCA
9 GTAAACTCTGAAGTATCTGC TCGTCT ATG TATCGC CAGG CTCT AG AT GCT
TGAAACTGCAAGCCAATCTG AGCAGG TAC ATGGTG GTCC GAGA TC TA CGA
CAAGAGCTCCCTGGTGGTAC GT - - CTC- ACG - AC ---------
ATTGGGACGA
GAM14975 11905 TCGTCTTTAAACCCTGCGTG TAAAC CGT A CCTG CACCGC
6 GCAATCCCTGACGCACCGCC TCGTCTT CCTG GGCA TC ACG
GTGATGCCCAGGAAGACAGG AGCGGGA GGAC CCGT AG TGC
GCGA CAGAA --- - ---- ------
GAM14975 22809 TCGTGAAGAAGCAGGAGGCT TG AAGCAG - AAGAAAGT GAATCC- TG GAAAAG
TAAGAATT
9 AAGAAAGTGGTGAATCCCCT TCG AAG GAGG CT GGT CCTGTT A GCC
GTTTGAGAAAAGGCCTAAGA AGT TTC CTCC GA CCG GGACAG T CGG

ATTTTGGCATTGGACAGGAC GT GCCCA- A GAAAAC-- ACCTACA GT A----- --------
ATCCAGCCCAAAAGAGACCT TT
CACCCGCTTTGTGA

--
GAM14976 10935 TCGTGCGTGAGCGGCGTGAT G GA GA-- ---- TAGTGT
6 GCGAGTGCTAGTGTGCACTT TCGT CGT GCGGCGT TGC GAGTGC
TGTAGCAGACTGCGCTGCGG AGCA GTA CGTCGCG ACG TTCACG
ATGAACGA A GG TCAG ATGT ------
GAM14977 21750 TCGTGGTGATCTAGGCATTG G GA AG TT ATT GCAGAGA
9 AGATTCCTGCAGAGAAGGTC TCGT GT TCT GCA GAG CCT
TTCCTTGCTCAGAAGATGAT AGTA TA AGA CGT CTT GGA
GA G GA CT TC CT- -------
GAM14978 2525 TCGTGTTCAGCATCAGCCTC G CAGC - CTGCCCTG- TCCTT
8 TTCCCTGCCCTGTGGTTCCT TCGTGTTCA CAT CTCT TCC TGGT
TGCCAAAAAACCCTGGACGG AGTACAGGT GTA GAGG AGG ACCG
AGTATGTGGACATGA - T--- C TCCCAAAAA -----
GAM14980 22466 TCGTTCGGTGGACCGGGAGC GA- A- TTAG- G TGAA
0 CGTTAGTGATGTGCTGAAGC TCGTTCGGTG CCGGG GCCG TGAT TGC
AATCAAGTCCTGGTCACCTG AGCGAGCTAC GGTCC TGGT ACTA ACG
GACACATCGAGCGA ACA AC CCTGA - ----
GAM14980 17600 TCGTTCTGCAGATTGACAAT -- ACA- ------ C GA TTAG
2 GCCCGTCTTGCTGCTGATGA TCGTTCT GCAGATTG ATGCCC GTCTTG TGCT TGACT
CTTTAGAGTCAAGTATGAGA AGCAAGA TGTCTGAC TACGGG CAGAGT ATGA ACTGA
CAGAGCTGGGCATGCGCCAG GG CGCG TCGAGA - -- ----
TCTGTGGAGAACGA
GAM14985 7809 TCTAAACCTTTGCCATCACC CTTT ----- CATCT-- GTCCA
5 ATCTATGTGTCCAACATCAA TCTAAAC GC CATCAC ATGT

CACTGTGATGAAGTTGTTCC GGATTTG TG GTAGTG TACA
TGTTTAGG TCCT TTGAA TCACAAC -----
GAM14986 4662 TCTAAAGGAATCAAATAATT A TC ATTCATCAT T CTA
6 CATCATGATTTAAATTTTCT TCTA AGGAA AAATA GATT AAATTTT
AGAGATTTTGATTTTTTTAT AGAT TCCTT TTTGT TTAG TTTAGAG
AATGTTTCTTTCCTGTAGA G TC AATATTTTT T ---
GAM15000 7512 TCTACAAATTGTTCACTGGC - TGT---- CT ATG A GAGAT
1 ATGTATTAACGAGATGATAA TC TACAAAT TCA GGC TATTA C
TAAGGCCCCTGATATTCATA AG ATGTTTA AGT CCG ATAAT G
TTTGTATGA T TACTTAT CC GA- A -----
GAM15001 12021 TCTACACCTGGGAGGCTTGC CTGGGAG A- AT TT GGA TAGAAAAAGT
1 GACGATGCTTGCTGGAGGAT TCTACAC GCTTGCG CG GC GCT GGA
AGAAAAAGTTCCCAAAGTTT AGGTGTG TGAACGT GC CG TGA CCT
GCCGGCTGCAAGTGAGTGTG AG----- CG -- TT AAC ----------
GA
GAM15001 19702 TCTACAGCGTCACCCGTAAG A - ACC AA- - TA ACCTGA
8 CGCTACGCGCACCTGAGCGC TCTAC GCG TC CGT GCG C CGCGC
GCGGACGTGCGACGAGATCG AGGTG CGC AG GCA TGC G GCGCG
CCGTGGA C T A-- GCG A GC ------
GAM15001 10108 TCTACAGCGTCACCCGTAAG A - ACC AA -- TA ACCTGA
9 CGCTACGCGCACCTGAGCGC TCTAC GCG TC CGT GC GC CGCGC
GCGGCCGGCCGACGAGATCG AGGTG CGC AG GCA CG CG GCGCG
CCGTGGA C T A-- GC GC GC ------
GAM15004 11277 TCTACCATGCAGGCCTTTTT TGC TT- TG CTAG ACTG
2 GGACCTAGGTACTGACAAGT TCTACCA AGGCC TT GAC GT
TTGGATTTGGCTTTGGTGGA AGGTGGT TTCGG AG TTG CA
--- TTT GT AA-- ----
GAM15004 13246 TCTACCCTGACTTCTCCCGC A - - CG---- AGTCC
9 TCCGAGAGTCCTTTGGGGAC TCT CC CTGACT TCTCC CTCCGAG
CCCAGGAGAGAGTCAGTGGA AGG GG GACTGA AGAGG GGGGTTT
GGA A T G ACCCCA -----
GAM15007 13113 TCTACTATATTTTACAAAAA ATAT AA CA A TTTACAC
0 AACAACTGAACATTTTACAC TCTACT TTTAC AAAAA ACTG ACAT
ATGTACAGTATTTTTCAGTA AGGTGA AAATG TTTTT TGAC TGTA
AAAGTGGA ---- AC A- A -------
GAM15007 9994 TCTACTATTGGATTTACAAC TT TT A TGTATTATAATCTTCTCC
1 ATTGTATTATAATCTTCTCC TCTACTA GGA TACA CAT
ATGTGTGCCTTCTCTAGTAG AGATGAT CTT GTGT GTA
A CT CC - ----------
GAM15009 14119 TCTACTTTATAATCAGATAT - TA- C T A GG ATG- GTAAATCTTA
1 TACGGGGGTTAGATGCTCTC TCTA CTTTA AT AGA ATT CGG GTTAG CTCTCGG
GGGTAAATCTTACTGAGAGA GGGT GGAAT TG TCT TAA GTC TGATC GAGAGTC
GGGCTAGTAACTGAAATTTC A TCA T T A AA GGGA ----------
TTGTACTTAAGGATGGG
GAM15020 16997 TCTAGTAGCGAAGATCAACC AG A AACCCA ACAAAGTAAATC
4 CATGCGCACAAAGTAAATCG TCTAGT CGAAG TC TGCGC
CGTAGACAAAGACTTTCGAG AGGTTA GCTTT AG ATGCG
ATTGGA GA C AAACAG ----------
GAM15020 7129 TCTAGTATGTAAATGTTACT A A TTGAAT GCTTCATA
7 TGAATCTGTGCTTCATAATA TCT GTATGTA ATGTTAC CTGT

GTGTGTGGCATGTATGTGCA AGA CGTGTAT TACGGTG GATA
GA - G TGT--- --------
GAM15020 10196 TCTAGTATTCAGCACTGCTT T CT -- G----- A---- CCTAAAGAT
8 TCTGGCCAAGTTAAAACTGC TCTAG ATTCAGCA GCTT TCTG CCAAGTT AAACTG
CTAAAGATCAGTTTCTTTCG AGGTC TGAGTCGT CGAG AGAT GGTTCAG TTTGAC
ACTTGGAAAAAATAGATGGA T -- GT AAAAAA CTTTC ---------
GCTGCTGAGTTCTGGA
GAM15028 22601 TCTATCATAAGAAGTGGACA T- -- GGACA- AAAC TGAAAC
1 GCACGAAACTTGTGAAACCA TCTA CATA AGAAGT GCACG TTG
ATGTGCCTTTAAACTTCTAA AGAT GTAT TCTTCA CGTGT AAC
TATGCTTAGA TC AA AATTTC ---- ------
GAM15028 6 TCTATCATCTATCCTATTAG CAT CC CT- CC TAA
2 TTCTGTCCCTCTAAGAGAAC TCTAT CTAT TATTAGTT GT CTC
CCTGACTAATACAGTGGCCA AGGTA GGTG ATAATCAG CA GAG
TGGA CC- AC TCC A- ---
GAM15029 15515 TCTATCTACAAACTGTCATT CAAACTG AT ---- - G GGGGAGATAAAGTAA
4 CTATGAACATATCAGTTGGG TCTATCTA TC TCTATGAA CAT ATCA TTG
GGAGATAAAGTAACAGATGG AGGTAGGT AG AGGTACTT GTA TGGT GAC
TGATGAGAATTCATGGATAG CAATA-- AT AAGA G A ----------
AATAACTGGATGGA
GAM15029 5122 TCTATCTCCCATTTGACATG - T A TG TTAG T-- -- T- CTCG
7 ATTAGCCTTGCATCAGTTAA TCTATCT CCCATT G CA A CCT GCAT CAGT AAA
ACTCGTTTTTACTGCAATGC AGATGGA GGGTGA C GT T GGG CGTA GTCA TTT
CATGGGATTTGTGCAGTGGG C - - GT TA-- TAC AC TT ----
CAGGTAGA
GAM15033 4907 TCTATGTGCATCCAGACCTG T- G CCAGA CA GA A T - GG GAAT CT
5 CAGCTGAACAAACAGTTGAT TC ATGT CAT CCTG GCT ACA ACAG TG ATCCAGAG TA CC
AGGTT
CCAGAGGGTAGAATCCCTAG AG TACA GTA GGAC CGG TGT TGTC AC TAGGTTTC AT GG
TTCGA
GTTTCAAAGCTTTGGTAATA CT - CAGC- AA -- A C A A- AAT- T-
ACTTTGGATACACCTGTATG TCAA
TGGCAACAGGCGACATGACA
TTCGA

GAM15042 10369 TCTCAAGCTCTCGACCTCAC A TC AC TG TATGTCATTTTC
6 GATCTGCCTGCCTCTATGTC TCTC AGCTC GACCTC GATC CCTGCCTC
ATTTTCGAGGCAGGTGGATC AGAG TTGAG CTGGAG CTAG GGACGGAG
ACGAGGTCAGGAGTTCGAGA C GA CA GT ----------
GAM15046 13085 TCTCACAGTTCCTCTGGAGA CA ----- GAAAAAAAAGAGAAAGAGG
2 AAAAAAAGAGAAAGAGGTCC TCTCA GTTC CTCTGGA
AGGGCAGGAGGATCATGAGA AGAGT TAGG GGGACCT
AC AGGAC ----------
GAM15049 22049 TCTCAGAAAGCTGGCAAAGA - AA- GCAA A GGTACAAAAAGAAA
3 AAAAGATGGTACAAAAAGAA TC TCAGA GCTG AGA AAAGAT
AATCTTTATCTGACAGTGAA AG AGTCT TGAC TCT TTTCTA
TCTGATGA T AAG AG-- A ----------
GAM15049 1695 TCTCAGAAGCTCTATCCCAT GAA TC C GACTGT T TACA
5 GGAGACTGTGATGTTCTTAC TCTCA GC TATCC ATGGA GA GTTCT
AAGAACCTTTGTCCGTCGGG AGAGT TG ATGGG TGCCT TT CAAGA

TATTGTAGGTGAGA GGA TT C GT---- C ----
GAM15051 17604 TCTCAGATTCTGTCTAAAGG G AAA ------ T ----- CGTTT
1 GGTTTTCTGGGAAGACGTTT TCTCAGATTCT TCT GGGGT TTTC GGG AAGA
TCTTTATCGCCCTGAGAAGA AGAGTCTAAGA GGA CCCCA AGAG CCC TTCT
TCTACCCCAGGGAGAATCTG G --- TCTAGA T GCTAT -----
AGA
GAM15058 13724 TCTCATCACTTAGGGTCACT TCA ACTA AAA AGGAAG
9 ACCGGAAATGGAGGAAGCCG TCTCA CTTAGGGTC CCGG TGG
GACTGGGAGACCTTGAGAGT AGGGT GAGTTCCAG GGTC GCC
TGGGA TGA AG-- AG- ------
GAM15065 7476 TCTCCAAAAATCTTGCCAGA - AAA CCA AT AGAAA C ACA
0 TATTCTGAAGAAAATCGGGG TCT CC AATCTTG GAT TCTGA AT GGGG
ACACCCCTATGGTCAGAATC AGA GG TTAGAAC CTA AGACT TA CCCC
AACAAGATTGGGAAGA A G-- AA- -- GG--- T ---
GAM15066 21743 TCTCCAACAATAACCACTGG AACAATAACCA- TCCTT TCACT
0 TCCTTGGTTCACTACTTACT TCTCC CTGG GGT
CCAGAAAGACATATACGGAG AGAGG GACC TCA
A CATATACAGAAA TCAT- -----
GAM15069 10910 TCTCCAGCAGTGGGCACCAC - A CA---- - TC ATCGCCC
8 TGGTCCGCATCGCCCGTGTT TCT CC GCAGTGGG CCA CTGG CGC
CCGGATGGCAAGTCTCCACT AGA GG TGTCACCT GGT GGCC GTG
GTGGGCAGA C G CTGAAC A TT -------
GAM15070 17120 TCTCCAGCCACTATGGAAGT G A- T GTTCTTA- GAGTATTG
1 TCTTATGCGAGTATTGGCAG TCTCCA CC CTA GGAA TGC
ATTGTGATTCCTGGGAGGAT AGAGGT GG GGT CCTT ACG
GGAGA A AG - AGTGTTAG --------
GAM15074 14086 TCTCCATGTAACTGTAGCCA ATG - A--- G TAAAA AACATTAAG
1 GAGTAAAACAGAAACATTAA TCTCC TAACT GT GCCA AG CAGA
GTCTGAGAGTCTGTGGCACC AGAGG GTTGA CG CGGT TC GTCT
AGCTAGTTGATGGGAGA GTA T ACCA G TGAGA ---------
GAM15075 21998 TCTCCCAATCATGTCTCTTT - G -- TAAA CAGTAAC C ACTTTTA
5 ACGTAAAGACAGTAACATGC TCTCCCA ATCAT TCT CTTTACG GA ATG AAAC
AAACACTTTTAGTTTACATC AGAGGGT TGGTA AGG GAAATGT CT TAC TTTG
CCTCATTCACAGTGTAAAGC G A AC GACA TACTCCC A -------
AGGAAATGGTGTGGGAGA
GAM15076 22393 TCTCCCAGGGTTACAGTGGC A TTA TG--- - ATGATCTTGG
4 AGTGGCATGATCTTGGGCTC TCTCCC GGG CAG GCAGTG GC
ACTGCAGCCTCTGCCTCCCA AGAGGG CCC GTC CGTCAC CG
GGGAGA A TCC TCCGA T ----------
GAM15082 2073 TCTCCGAGCTCGCCTGCATC A- -- G TAC - CCTCATTCT
9 TACTCGGCCCTCATTCTGCA TCTCCG GC TCGCCT CATC TCG GC
CGACGATGAGGTGACAGTCA GGAGGC TG AGTGGA GTAG AGC CG
CGGAGG AC AC - C-- A ---------
GAM15089 7995 TCTCCTGCTTCTGGGACCTG CC CT CCT - GCACC TTG T CTCCTT
4 CCAGCACCGTTTTTGTGGTT TCT TG TCTGGGA GC CA GTTT TGGT AG
AGCTCCTTCTTGCCAACCGA AGA GC AGACCCT CG GT CAAG ACCG TC
ACCATGAGCTCCCAGATTCG CT TT --- A AC--- CCA T ------
TCAGA
GAM15092 17124 TCTCCTTGCAGCTCAATCAA C AG C AAG A GCATAGTAAGA
3 GGCAATCTGCATAGTAAGAA TCTC TTGC CT AATC GCA TCT

GAGTGTGGGATTTGGAGGCA AGAG AACG GG TTAG TGT AGA
AGAGA - GA T GG- G ----------
GAM15093 16983 TCTCGAAGGGGGGCGACACC GAA GC- AGAAC--- ---- G GAGTTTCGAA
4 AGAACGACGGTTTATGGGGG TCTC GGGGG GACACC GACGG TTTATG GGG
GAGTTTCGAACCCGTGTGAG AGAG CCCCT TTGTGG TTGCC GAGTGT CCC
AAACCCGTTATGCATAGGGT --- ATT GATACGTA CAAA G ----------
GTTTTATCCCCGAGA
GAM15093 11749 TCTCGAGGAGGCCGGAGCCC A- AG- C----- G AT CCCGTC
6 CCGGAGACGATGCTGCCCCG TCTCGAGG GGCCGG CCC CG AGACG GCTGC
TCGCAGCCTGTCTGCGCCTG AGAGTTCC TCGGCC GGG GC TCTGT CGACG
CTGGGATGCCGGCTGCCCTT CG GTA TCGTCC G C- ------
GAGA
GAM15096 7837 TCTCGGTTCCTCCCATACAT C -- CC A GA AATACAGAATGAA
0 GATATAATACAGAATGAAAT TCT GGT TCCTC AT CAT TAT
AGATGAATAAGAGGAAAACC AGA CCA AGGAG TA GTA ATA
AAGA A AA AA A G- ----------
GAM15105 1940 TCTCTCCCATCCCCTTGACA T -- CC-- C CTTCCC TTTCCATC
7 CTCTTCCCTTCAGTTTCCAT TCTC CCCA TC CTTGA ACT TTCAG
CTTGAACTTCGTGGTTTTAA AGAG GGGT AG GAATT TGG AAGTT
GCACAGACCTGGGGAGA - CC ACAC T TGCTTC --------
GAM15106 10306 TCTCTCCCTGACCGCAGCCG C A G ---- GATTT- GG- ATGGG
0 CTGGGATTTGGGGCTCCATG TCTCTCC TG CC CAGCC GCTGG GG CTCC
GGGGAGAGATCTGCTTACCA AGGGAGG GC GG GTCGG CGACC CT GAGG
GCGCCTGGCTGGGGGCGAGG A G G TCCG ATTCGT AGA -----
AGGGA
GAM15108 10128 TCTCTCTCTCTATCTCTTCT TCTCTT-- CC CG TCGCC
0 CCACACGCCGATCTCGCCGA TCTCTCTCTCTA CT ACACGC ATC
TGTGTGTATAGCCTCTCTTT AGAGAGAGAGAT GA TGTGTG TAG
AGAGAGAGAGA TTCTCTCC TA -- -----
GAM15114 15364 TCTCTGCCATCTGCTCACAT AT T CACA A CATCTT CCTG
8 GCAAGGTCATCTTGTGGGCC TCTCTGCC C GCT TGC AGGT GTGGG
TGTCCACTTAACTTAGCAGG AGGGGCGG G CGG ACG TTCA CACCT
CTGGGGGCGGGGA GG T ---- A ATT--- ----
GAM15118 11965 TCTCTGTAATGTGCCTGTGC - - GTG TG ----- A GAGC
7 CTGTGGCCAGAGGGGAGCCC TCTCTGT AATGTGC CT CCTG GC CAG GGG
CCTGACCGTGCTGTGGGAGA AGAGACA TTACACG GA GGGT CG GTC CCC
GCACATTGACAGAGA G A --- GT TGCCA - ----
GAM15119 2227 TCTCTGTCTTCTTCTTGATA TG-- - TTGA----- A AGCATG
6 GAGAAACAGCATGGTTTCCT TCTC TC TTCTTC TAG GAAAC
AGACTGAATTGAAGAATGAA AGAG AG AAGAAG ATC CTTTG
GGTGAGA TGGA T TTAAGTCAG - ------
GAM15122 13388 TCTCTTACATTCTTTTTTCT CATTCTTT CG TTATAT
3 TTTTCCCGGGGTTTATATAC TCTCTTA TTTCTTTTTCC GGGT
TTTAGGAAAAAGAGATTAAG AGAGAAT AGAGAAAAAGG TTCA
AGA T------- AT ------
GAM15141 439 TCTGACACCGTTGCATTTCC TGAC GCATTTC- A TCA TAACA
1 TGGTTGTATCCTCAGCTTAA TC ACCGTT CTGGTTGT TCC GCT
CAGGCACTGGAGACAGCCAG AG TGGTAA GACCGACA AGG CGG
CTTCTTCAAATGGTCCATGA TACC ACTTCTTC G TCA -----
GAM15141 22993 TCTGACAGCAGCCATTATCC G - GC TTATCCT-- ATA TTTT

5 TGCTCCATACCTTTTGGGGA TCT ACAG CA CA GCTCC CC
GTTGTGTTCTTTGATGCCTG AGA TGTC GT GT TGAGG GG
TGAGA G C A- TTCTTGTGT --- ----
GAM15150 15199 TCTGAGGTTATGCCGATCAC TTA GA - GA CA TCACT
8 TGAGTCACCTCACTGGACAC TCTGAGG TGCC TC ACT GT CC
GAGTAGAAGGCAAGCCCTCG AGGCTCC ACGG AG TGA CA GG
GA CGA A- A G- CA -----
GAM15151 16023 TCTGAGTGGAGGAACTGCAC - A- GCA A CT TGATGCT
9 TATGGTCTCACCTGATGCTG TCTG AGTGGAGG ACT CT TGGT CACC
GTGTAGCTAAGAGAGTGACC AGAC TTACCTCC TGA GA ATCG GTGG
TCCATTGCAGA G AG GA- - AT -------
GAM15152 11422 TCTGAGTGGCGGCTCTGAGC GA G G CAA GAG A AGGTACA
1 AAGCTGAGCCCAGGGAGGCT TCT GTGGC GCTCT AG GCT CCCAGGG GGCTTTG
TTGAGGTACACAGGGTCCCT AGG TACCG CGAGA TC CGG GGGTTCC CTGGGAC
TGGGGGGCCTAAGAGCAGCC AG A A --- G-- - -------
ATGAGGA
GAM15152 5051 TCTGAGTGTAAAAATAAATC A AAAATA CT- CATGAT ACA CT TATG
3 TCTTTGTGGCATGATTCTAT TCTG GTGTA AATCT TTGTGG TCTATT GATCA GG
TACAGATCACTGGTATGCCT AGAC CACAT TTAGA AACATC AGGTGA TTAGT CC
GATTAAAGTGGACTACAATA - ACA--- AAT ------ AA- -- ----
AAGATTACATACACCAGA
GAM15154 333 TCTGATCGTTTGGCAGGGTC T- T TT GT TGAC TCAATACCCTCACTCT
8 GTGACTGCTCAATACCCTCA TC GA CGT GGCAGG CG TGC
CTCTGCAAATTGGACTTGCC AG CT GCG CCGTTC GT ACG
CGCGTTCCTGA TC T C- AG TAA- ----------
GAM15157 511 TCTGATTAAATCCTGAATTG T CT A - CTT TCA
1 TCTTGTTATTTTTTTCTTAC TCTGAT AAATC GA TTGT CTTGTTATTTTTTT AC
TCAGTTTAGAAAAGTAGCAA AGACTG TTTGG CT AACA GAACGATGAAAAGA TG
GCACAATCTGGTTTGTCAGA - T- - C TT- ---
GAM15158 16131 TCTGATTGGCTGCAGGGATG - ------ A A- TT TA- CATAG
1 AAAGTTTTTAAGTTCATAGG TCTGA TTGGCT GCAGGG TGA AG TT AGTT
ACTGATGATCCTCCTCACCT GGACT GGCCGA CGTCTC ACT TC AG TCAG
CTGCGTTTTCAGCCGGTTCA T CTTTTG C CC CT TAG -----
GG
GAM15158 10350 TCTGATTTAGATGACTAACG A ACTAACGAAAT AATCTG
5 AAATTTCTGGTAATCTGGCT TCTG TTTAGATG TTCTGGT
AGGATCACAGGAACTATCTG GGAT AAGTCTAT AGGATCG
AAATAGG A CAAGGACACT- ------
GAM15159 19553 TCTGATTTCCTGTCGTAAGA TTC CG TTT TT C-- TAAATCAATATAAC
0 TTTTTTCTTTTCATTTTCTC TCTGAT CTGT TAAGATT TCT TCATTTTCTC AGGGAGGG
CAGGGAGGGTAAATCAATAT AGATTG GACG ATTCTGG GGA GGTGGAGGAG TCTCTTCT

AACCTCTTCTCTAGAGAGGA T-- A- TT- TT AGA ----------
GGTGGTTAGGTTGGTCTTAA C
GCAGTGTTAGA

-
GAM15160 22953 TCTGCAAGGGCGACACTGGA A GACACTGGACCA - --- CCTACAA
9 CCACCCGCTGCCCCTACAAG TCTGCA GGGC CCC GC TGCC
GCATACGCTGGGGCCCATGC AGACGT CCCG GGG CG ACGG

AGA A ---------- T CAT -------
GAM15167 15674 TCTGCCAACAACGGCGTGTC CAACAA- T TG C CACGAT
5 GTGGGGCACCACGATGTACC TCTGC CGGCG GTCG GGG AC
CTGTGATCGCTGACCGCATG AGACG GTCGC TAGT CCC TG
CAGA TACGCCA - GT A ------
GAM15169 10240 TCTGCCATTTATTGGAGATA T GAGATAG AT- ACTGA
0 GGCATATAAAACACTGAGTT TCTGCCAT TATTG GC ATAAAAC
TTATTGAGCACATAGTATGT GGACGGTG ATGAT CG TATTTTG
GGCAGG T ACA---- AGT -----
GAM15169 6829 TCTGCCCACTCCCATCCTCT T - TCCTCTCCC CCATTTCTCCA
1 CCCCAAGCTCCCATTTCTCC TCTGCCCAC CC CA CAAGCTC
AGGGCTTGTCCCTGCGGTGT AGACGGGTG GG GT GTTCGGG
GGGCAGA T C CCCT----- ----------
GAM15169 7460 TCTGCCCATGTTTCATGTTT - TG A TTTCA A CACA T CTACTCACA
5 CAAAAGATCTCACATAGCCT TCTGCC CA TTTC TG AAAG TCT TAGCC AGG
AGGCTACTCACACCTTGGTT AGACGG GT GGAG AC TTTC AGA ATTGG TCC
AGCCCAGAACTTTCAGAGGG A TG - ----- A CCCG T ---------
TTGAGGCAGA
GAM15169 22481 TCTGCCCCCGGAAGTGGGCA CCGGAAGTG T AGCAGCAGCCCCACA
9 GCCAGTGCAGCAGCAGCCCC TCTGCCC GGCAGCCAG GC
ACAGCCTGGCTGTTGGGTAG GGATGGG TTGTCGGTC CG
G --------- - ----------
GAM15172 9983 TCTGCCTCTTATCTATATAC CAA
3 AGACAAGATTTCTTTGTTCC TCTGCCTCTTATCTATATACAGACAAGATTTCTTTGTTCCACAGTCTAC

ACAGTCTACCAAGTAGACTG AGACGGAGAATAGATATATGTCTGTTCTAAAGAAACAAGGTGTCAGATG

TGGAACAAAGAAATCTTGTC ---
TGTATATAGATAAGAGGCAG
A
GAM15173 15151 TCTGCCTTTTCACCTACGCA TG TTTT C - A ----- C CCC ACCCT TGT
9 GCCCCAGCCCGGCCCCCCTG TC CC CAC TA CGC GCCCC AGC CGGCC CTGGGG
AGAGAGGG
GGGACCCTAGAGAGGGTGTC AG GG GTG GT GCG CGGGG TCG GTCGG GACCTC
TCTCTTCC

CTTTCTGTTTATCCTTCTCT GT TGT- T A - ATCTC C TA- GTT-- ---
TTGCTCCAGATGGCTGCGCT CCTTTCTGTTTAT
CTCTAGGGGCGCGATGTGTG
TGTGGTGGA

GAM15175 13849 TCTGCGGGCGCCAGCAGCTC - A ---- C CCCG
5 CTCCTGCTCCCGGGCGCGAG TCTGCGGG CGCC GCAGCT CCTC TGCT
GCAGCAGCTGCCGGCGTTCT GGGCGTCT GCGG CGTCGA GGAG GCGG
GCGGG T C CGAC C ----
GAM15177 4534 TCTGCTATCTCTTTTGCAGA TA TTG T GG CCCCTC T C CAATCCCT
7 AGTCCAGGTTCAGGCCCCTC TCTGC TCTCTT CAGAAG CCA TTCAGG CTGTTGT G TG
CTGTTGTTGCTGCAATCCCT AGACG AGAGAG GTCTTC GGT GAGTCC GACGACA C AC
CACCACAGCAGTACCTGAGG TC --- - G- AT---- - C --------
TGGCTTCTGGAGAGACTGCA

GA
GAM15180 11171 TCTGCTCTGCATAGCTATTT TG --- A T GAC AA AAAA
1 GGCCCTGGCCATGACTACAA TC CTCTG CATAGCT TTTGGCCC GGCCAT TAC GC
GCAAAAGTGGGTGCAGATGG AG GAGGT GTGTCGG GAACCGGG TCGGTA GTG TG
CTGGGCCAAGGGCTGTGGTA GT ATG - - GAC GG ----
TGGAGTGGA
GAM15181 11572 TCTGCTGCCTCCCAGGCTGC TGCCT- C- ACT G TGAA GTCAGGA
4 TGGGACTGGGCTGGTTTTGT TCTGC CCCAGGCTG TGGG GGGCTG TTTTGTCCT GTG

CCTTGAAGTGGTCAGGATAC AGACG GGGTCCGAC ACCC CCCGAC GGAACAGGA CAT

AGGACAAGGGCAGCCCCACC CCCCTC CT CAC G ---- -------
CCATCCAGCCTGGGCTCCCC
GCAGA
GAM15184 5234 TCTGCTTGGACCTCCCCCAG C- TG T GCC - ACCAT
8 CCCCCCACACCATGTGCGGG TCTG T GACC CCCCCA CCC CAC
AAATGGGGGGGTCTGAAACA GGAC A CTGG GGGGGT GGG GTG
GG AA GT - AAA C -----
GAM15185 10290 TCTGCTTTGAATACGGGCAG G ------ CAGTTT CATGT
6 TTTATTGCATGTCAATTAAA TCT CTTTGA ATACGGG ATTG
CCCGTATAAACTGTTAAGGG AGA GGAATT TATGCCC TAAC
AGA G GTCAAA AAAT-- -----
GAM15190 15278 TCTGGACTGCCCAAATTTGT G -------- AAA TCATCAACT
4 CCTCATCAACTGGACAGGCG TCTG AC TGCCC TTTGTCC
AGGGCGTGAACGATGTGCGG AGGC TG GCGGG GGACAGG
A G TAGCAAGT AGC ---------
GAM15190 10726 TCTGGAGAAGCAGCATCTTG AA- ATC C CCC CATC
7 CAGCCCCATCATCATGCCCT TCTGGAG GCAGC TTG AG CAT
ACAAAGCTGCACACTCTAGA AGATCTC CGTCG AAC TC GTA
ACA A-- A CC- ----
GAM15191 13183 TCTGGAGCTGTGAGTCTCCC CT- GA TCCC A TGTACATC
2 TGTACGGTGTACATCCCGAC TCTGGAG GT GTC TGT CGG
ATTGATAAATGTTCTCCAGG GGACCTC TA TAG ACA GCC
TTG AA TT-- - --------
GAM15193 13735 TCTGGATTCATATTTCTTCA TTCAT T- - T ---- A AATCATGCCC
6 TCTGTCAAATGAGAGTAATC TCTGGA ATTTCT CA TCTG CA AATGAG GT
ATGCCCACCCTCATTGTCAT AGACCT TGAAGA GT AGAC GT TTACTC CA
GCCAGATTGTCAGAAGTTCC ----- CT T C ACTG C ----------
AGA
GAM15194 4910 TCTGGCAGCTGGTACCCGAA - CT - CGAA TATAGCAA - GACGG
8 TCCCTATAGCAAACATGTCT TCTGG CAG GGT ACC TCCC AC ATGTCTT
TGACGGAAGACATAGTACAC AGACC GTC CCA TGG AGGG TG TACAGAA
CGGGAGGTGACCCCTGACCA A C- G ---- CCACA--- A -----
GA
GAM15195 14784 TCTGGCATGGCTCCCTTTGT - CTCCCT T T CT AATATT AAAGAA
2 CCTTCCTGTGCCCTGCAAAT TCTGG CATGG TTG CCTTCCTG GCC GCA AGC
ATTAGCAAAGAAGCTTCATG AGACC GTACC GAC GGAAGGAT TGG CGT TCG
CCAGGTTAGGAAGGCAGCAT A TTAC-- - - AC ACT--- ------
TCCATGACCAGA
GAM15206 154 TCTGGGTCTCTAAAAGCCAC T T AAAA C--------- TATACC

1 CCTCAGTTTATACCAACTGA TC GGGTC CT GCCACC TCAGTT
TCAGGAAATAGGTGGTGACA AG TCCGG GA TGGTGG AGTCAA
GGGCCTTGA T - CAG- ATAAAGGACT ------
GAM15206 19745 TCTGGGTTAATCGGCCATAG GT AATCG- AG CTCTCAAT
8 AGCCTCTCTCTCAATGGAGG TCTGG T GCCATAG CCTCT
AACTGTGGTAGCTAGGGTCC AGACC G TGGTGTC GGAGG
AGA TG GATCGA AA --------
GAM15211 13597 TCTGGTTGGCCTTTTTGAAG GG CTTT AAG CAACCT CTATC
9 ACACCAACCTGTGTGCTATC TCT TTGGC TTG ACAC GTGTG
CATGCCAAACGTGTAACAAT AGA AACCG AAC TGTG CGTAC
TATGCCAAAAGA A- TATT AA- CAAAC- -----
GAM15212 17298 TCTGGTTTAAACAGATCATG TAAACAGA GAA-- A AAACT
3 AACTAACTGAAACTCAGCTA TCTGGTT TCAT CTA CTG
GCCAGAATGAACAACACAAC AGGCCAA AGTA GAT GAC
CGGA CACAACA- AGACC C -----
GAM15216 11979 TCTGTAGCAAGTTAATACCA --- AA TAA A A CAAA
6 TAATTTAATTACAAATGGAT TCTGTA GC GT TACCATA TTTA TTA
AAATATGGTAACGGGTATTT AGACAT TG CA ATGGTAT AAAT GGT
ACAGA TTA GG --- - A ----
GAM15217 13721 TCTGTAGTATCACATTTTCC TA - C TTTTCC AA TGT
5 ACAGAAAACATTGTATGTTC TCTG GT AT ACA ACAGA ACAT
TGTATTGTCATAACCTCAGG GGAC CA TA TGT TGTCT TGTA
TC A C TA---- -- ---
GAM15218 4841 TCTGTATAGTCTCGAGCTTA A CT ATT AGGG G TA GTCTGAGTA
4 ATTCACAGGGGCGATGATGA TCTGTAT GT CGAGCTTA CAC GC ATGATGAT TAC
TTATACGTCTGAGTAGTGCT GGACATA CA GTTTGGAT GTG CG TACTACTA GTG
ATCATCATGCACGTGTAGGT - TC --- CA-- - TC ---------
TTGCTACATACAGG
GAM15221 7815 TCTGTCACTCATAGTCCGGA G --- - T A- T A- AA CGACCA CTAAAC
2 AACTCATGGATCTGTCAGAA TCT TCA CTCAT AG CCGGAA CTCA GG TCTGTCAG CTA TTCT

CTACGACCATTCTCTAAACC AGA GGT GAGTA TC GGTTTT GAGT CC AGACAGTC GAT AAGA

AGAAATAGCACTGACAGAAG G TAG G - CG C GA AC A----- ------
CCCTGAGGCTTTTGGCTGAT C
GAGGATTGGGAGA

-
GAM15223 14245 TCTGTCCTCAGGCCCCACCA T-- - ACC-- A TTG---- GCCT
7 AGGCTGAGTGTTGCCCGCCT TCTGTCC CAGGCC CC AAGGCTG GTG CCC
GGGACCTGGTCACCAGCCTT AGACGGG GTCCGG GG TTCCGAC CAC GGG
CTCTGGGAGGCCTGTCTGGG TCT A GTCTC - TGGTCCA ----
CAGA
GAM15224 14787 TCTGTCCTTTCCCAGCTCGC - TT C TCGCA AACCCCGC
2 AGGCCTTGGAACCCCGCCCA TCTGT CCT C CAGC GGCCTTGG
GGGCCCCGCTGAGGGAGGCA GGACA GGA G GTCG CCGGGACC
CAGG C GG A CC--- --------
GAM15229 5300 TCTGTGCAGGGTATTATCAT G- G ATTATCATC CCGCTAC
7 CTACCGAGCCGCTACTTCGG TCT TGCAG GT TACCGAG
TATCTATGACACTGCAAGGG AGG ACGTC CA ATGGCTT

```
          A                GA    A  GTATCT---      -------
GAM15231 7695   TCTGTGGCCCCAGGCAATCT    T  C     GCAA    TCA-       -  CC   AAA
8          TTTCATTAACATTATATCCT TCTG GG CCCAG    TCTTT    TTAACATTA TAT  TAA
          AAAAATTATTATGCTAATGT AGAC TC GGGTT    AGAAA    AATTGTAAT GTA  ATT
          TAAAAATAAAGAAATTGGGA    - A    AA--    TAAA       C   TT   ---
          CTCAGA
GAM15232 10815  TCTGTGGGTCACTGGAAGCT  - G  G     G      A      A    C   -      G         AG
5          CTACCTCCCGAGTTCACGCC T CT TGG TCACTG AAGCTCT CCTCCCG GTTCA GCCA TTCTCCTG
CTCAGCCTCCC
          ATTCTCCTGGCTCAGCCTCC A GA ACC AGTGGC TTTGAGA GGAGGGC CGAGT CGGT GAGAGGAC
GAGTCGGAGGG

          CAGCTACTCGGGAGGCTGAG  T  -  G     G      C      C    T    T      G         --
          GCAGGAGAGTTGGCTTGAGC CTACTC
          CCGGGAGGCAGAGTTTGCGG
          TGAGCCAAGTA
                    ------
GAM15236 15635  TCTGTGTGTGGAAGGTAGGG         GGAAG  AG   T    A -----    AGCA
4          CTGGCGCAGGTGGCAGCAGT TCTGTGTGT     GT  GGC GGCGC GG     TGGC
          CAGAAGTCCGTGTCCGCCAG GGACGCATA     CG  CCG CTGTG CC     ACTG
          GCAGATACGCAGG              GA---  GA   C    - TGAAG    ----
GAM15237 19596  TCTGTGTTTCAAAAAGCTAA     G   CAAAAA  T    T    G-    CC   AAACT
2          CATTTAAAGATTTCCCTTAA TCTGT TTT     GC AACAT TAAA  ATTT  CTT
          ACTGAGTAAAGTAATTTATA AGACA AAA     CG TTGTA ATTT  TGAA  GAG
          TGTTGCCTAAAAAGACAGA      G   AATC--  -    T    AA    AT   -----
GAM15238 7210   TCTGTTATATAGAAAGTTAA     -    A-   GTTAACATT      CACAATTAT
5          CATTTCAGGAGCACAATTAT TCTGT TATAT  GAAA        TCAGGAG
          TTCCTGATTTCAAATATGAA AGACA GTATA  CTTT        AGTCCTT
          CAGA                A     AA   ---------      ---------
GAM15241 19428  TCTGTTGCAAATAAATTCTA  C    CAAATAAA   TAT    ACAATGATA-        A  AAGA     CT TG
7          TGTTCACAATGATATCTTCA T TGTTG       TTC   GTTC         TCTTCAGAT CC    TGAGGT  T  GTG
          GATACCAAGATGAGGTCTTT A ACGAC       AAG   CAAG         AGAAGTCTG GG    ACTCCG  A  CAC
          GGTGGGTTTGTCACTGAGCC  A    AGAAAG--   TC-    GAGATGAAGA        A  AGG-      -- GT
          TCAGGAGGAGTCTGAAGAAG  GTTTG
          AAGTAGAGGAACCTGAAGAA G
          AGACAGCAAA          T
                    -----
GAM15242 15087  TCTGTTGCCCAGGCTGAAGT    GTT      CTGA  T   AT   -   ATCTCACCTCAC
0          GCAATGGTGCAATCTCACCT TCT   GCCCAGG    AG GCA  GGT GCA
          CACTGCAACCTCTGCCTCCT AGA   TGGGTCC    TC CGT  CCA CGT
          GGGTTCAAGA           ACT      ----  -   CT   A  ------------
GAM15246 9991   TCTTAAAAAATACCAGCAGT         ATACCA--------    TTACTCATGGAATATATT
9          TACTCATGGAATATATTCTG TCTTAAAAA            GCAG
          CGTTTATAAAACTAGTTTTT AGAATTTTT            CGTC
          AAGA                    GATCAAAATATTTG    ------------------
GAM15247 14234  TCTTAAAAGGACTGAGCAGG    TAAAAGGACTGA    GG-       ATTTA    AT---     G  AG    A  --
0          GGGAGGAACATTTAAGCTGA TCT          GCAG   GGAGGAAC     AGCTG     GGAAGT  GA  TGGA GT
          TGGAAGTGGAAGTGGAAGTT AGG          TGTC   TCTCTTTG     TTGAC     TTTTCG TT  GCCT CG
          GCTGTACATTGGCAGCAAGG    ------------    AAT       GTCAA     GTAAG     A  GA    C  GA
          CCTCCGAGTTAGCTTTTGAA       ACATTG
```

TGCAGTTAACTGGTTTCTCT TGCTGT
TAACTGTGGA ACGACG

GAM15251 17482 TCTTAATACAGTCGTGTGTC A GTGT-- AAC C GGAAA
8 ATAACCTGACCTGGAAAAGA TCTTAATAC GTC GTCAT CTGA CT
TCAGTCGATGATCTAGTAGG GGAGTTGTG CGG TAGTA GACT GA
CGGTGTTGAGG G ATGATC GCT A -----
GAM15253 21877 TCTTAATTTTAAAGACCCAA AT- --- ------- TT- AATG
2 CTTGCCAAAATGTTGGCTGC TCTTA TTTAAAGAC CCA AC GCCAA
GTACTCCACTGGTCTGTCTT AGGAT AGGTTTCTG GGT TG CGGTT
TGGATAATAGGA AAT TCT CACCTCA CGT ----
GAM15256 15342 TCTTACTCCTGTTGATGCAG AC G A- -- T TACA AAAAA AAAACCAGAC
7 CTAAGGTACATTTGTAAAAA TCTT TCCT TTG TGCA GC AAGG TTTGT GAAAA
GAAAAAAAACCAGACTTTTC AGAA AGGA AAT ATGT TG TTCC AAACA CTTTT
AGACAAACCCTTTGTATTGT A- G AG TA T C--- GA--- ----------
AGATAAGAGGAAAAGA
GAM15260 7158 TCTTAGCGGCTGCTGTTGGT A TG GGTT---------- GCCG
4 TGGGGGCCGTCCCGCTCCTA TCTT GCGGC CTGTT GGGG
AGGCAGGAAGATGGTGGCCG AGAA CGCCG GGTAG CCCT
CAAAGA A GT AAGGACGGAATCCTCG ----
GAM15260 2241 TCTTAGCTTATTTTATATTT TATTTT T TCT A- AGCT
6 CCTTGTCTTAAATACTGAGC TCTTAGCT ATA TTCCTTG TAA TACTG
TCAGTAAGTTGTGTTAGGGG AGAGTTGA TAT AGGGGAT GTT ATGAC
ATTATTTCTCAGTTGAGA CTCTT- T TGT GA ----
GAM15262 22128 TCTTAGTAACCTAATGTAGT - A TA TAC---- T CCTACTACATAT
0 TACTTACTTCTTTTATCCTA TCTTAGTAACC TA TG GTTACT TTCT TTAT
CTACATATATAATAGAACCA AGAATTATTGG GT AC CAATGA AAGA AATA
TTATAGTAACGTCAATGTGG T A TG TATTACC T ----------
TTATTAAGA
GAM15265 16028 TCTTATGAAACATTTTACAA T TT AA CCC- AAAAAG
2 TTTTCCCACCTAAAAAGAGG TCTTA GAAACAT TAC TTTT ACCT
TTTAAGAAAGGGTAATGTTT GGAGT CTTTGTA ATG AAAG TGGA
CTGAGG - -- GG AATT ------
GAM15266 590 TCTTATTCCCAATGCTACAC A TC - ACAAC ----- T A GAAAATGA
4 AACCAGAAAGTAAGGTGTTC TCTT T CCA ATGCTAC CAGAAAG TAAGGTG TCT CTT
TACTTGAAAATGAAAGGAGA AGAA A GGT TACGGTG GTCTTTC ATTTTAT AGA GAA
TTATTTTAGGTATCTTTCTG C GA C AA--- TATGG T G --------
AAGTGGCATCTGGAGACAAG
A
GAM15267 21752 TCTTATTTCGGCCCAGCTGA A GG AG G-- CTT A AATGAA GA GAG CAG
4 TCCAGGTCTTTGGCATCAAT TCTT TTTC CCC CT ATCCAGGT TGGC TC GTTTCC GGTA TC

GAAGTTTCCGAGGTAGAGTC AGGA GGAG GGG GA TGGGTTCG ACCG AG CAAGGG CCAT
AG

CAGGAAGTACCGAGGGAACC - A- GA GTA --- G GGAAC- AG GA- ---
AAGGGAGGCCAGCTTGGGTA
TGAGAGGGGAGAGGAGGA

GAM15268 1651 TCTTCAAAAGACTGGGACTG AA-- T- ACT-- -- - TC ATTCTTGA
0 CTGAGATGTCCTCTATTCTT TCTTCAA GAC GGG GCT GAGA TG CTCT
GAAGAGCGTATTCTTGGAGC AGAAGTT TTG TCC CGA TTCT AT GAGA
TGATACCTCTGTTGATCTTG CTAG TC ATAGT GG T GC --------
AAGA
GAM15270 6809 TCTTCACGCCATCGCACTGG T ATCGC A A TCTGAAACCC
2 ACAGAGGCGTCTGAAACCCT TCT CACGCC ACTGG CAG GGCG
GCCCTGGCCAGTGGCGTGAG AGA GTGCGG TGACC GTC CCGT
A - ----- G - ----------
GAM15271 10857 TCTTCAGCTACCCGCCTTCG A- ACC-- TTC C TGC
6 TCTCCGAGTTTGCGACTCGC TCTTC GCT CGCC GTCT CGAGTT
GGACCGGCGTCCCCGGCGCG AGAAG CGG GCGG CAGG GCTCAG
AAGA CG CCCCT C-- C ---
GAM15273 16931 TCTTCATCTTGGTCACCACG CT CACCACG GA- ATCCGC
7 CCAGAGAGGATCCGCCCTCG TCTTCAT TGGT CCA GAGG
AATGGACACATTACCAGTGA GGAAGTG ACCA GGT CTCC
AGG -- TTACACA AAG ------
GAM15278 15011 TCTTCCCAGTATTTCTTGGA C--- ATT G A C GAAC
3 CAGTCCCAGGAACTTGAGGC TCTTCC AGT TCTTG AC GTC CAG
GGTGCAGGGTGGCTCCCAGG AGGAGG TCG GGGAC TG CGG GTT
AGGA ACCC GT- G G A ----
GAM15278 2154 TCTTCCCATCCTTAACTGTT C CTTAACTG- - TGT-- - TAAC
4 CAAGTATGTCTGTTGTAACC TCTT CCATC TTCA AGTA CT GTTG
AATAAGTTTATTGCTGTGAA AGAA GGTAG AAGT TCGT GA TAAC
ATTACTTCTGATGGTAAGA T TCTTCATTA G TATTT A ----
GAM15281 17325 TCTTCCTGCACAGAGGAGCC A CCCAAAAAAGATACC
6 TGGCCCAAAAAAGATACCCC TCTTCCTGCAC GAGGAGCCTGG
AGGCTTCTCCGTGCAGGAAG AGAAGGACGTG CTCTTCGGACC
A C ----------
GAM15283 10790 TCTTCGCATGCTTGAGTACT C TT AC-- A-- C C- A A GTTAAGAA
2 GGGACCTCGGGACCAGAGCC TCTTCG ATGC GAGT TGGG CCT GGGA CAG GCC TT
ATTGTTAAGAAAAAGGCCTT GGGAGT TACG TTCA ACCC GGG CCCT GTT CGG AA
GTTTCCCTGGGAAGCCCAAA - TT GGAA GAA T TT C A --------
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GAM15283 15623 TCTTCGCTTGAGTTCTTCTC - - TT C AATTA A T - TCTTCA
4 TGAAATTATATGCAAAGAGT TCTT CGCTT GAG CTTCT TGA TATGCA AGAG TGTG GG
TGTGGGTCTTCATCACACAT AGAG GTGAA TTC GGAGA ACT ATATGT TTTT ACAC CT
TTTTCTGTATACATCACAGA T A TC C AC--- C T A ------
GGCTCTTAAAGTGTGAGA
GAM15283 14868 TCTTCGGCATCATCTTTTAC CG - TT ATCATT-- -- TGTT
5 AATCATTTATTCTTGGATTG TCTT GCATC ATCTT ACA TATTCT TGGAT
TTATCCATTAGAGTGCTTAT AGAA TGTAG TAGGA TGT GTGAGA ACCTA
AAATGTCTAGGATAGATGTG TG A TC AAATATTC TT ----
TAAGA
GAM15283 7927 TCTTCGGCCTCAGCAGTTGA T CTCA TT TTG--- CT CTT G GG TATA
6 GCTTTGCGACCGCTTCCTTT TCT CGGC GCAG GAGCT CGACCG TC TAA GAGG CA
AAGGAGGGGCATATATGACC AGA GTTG TGTT CTCGA GTTGGT AG ATT CTCC GT
TCGTTACTGATTGGTTGACT T AAAG GG TGCTCA T- TC- G A- ----
CGTAGCTCGGTTGTGAAAGT
TGTAGA

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GAM15283 2434   TCTTCGGCGGTGGGACCAAG      C----     C  -  C     TCCTA  T    CAA
7          CTGACCGTCCTAGGTCAGCC TCTTCGG    GGTGGGA CA AG TGACCG    GG CAGCC
           CAAGGCTGCCCCCTCGGTCA AGGAGTC    CCGCCCT GT TC ACTGGC    CC GTCGG
           CTCTGTTCCCGCCCTCCTCT      TCCTC     T  C  -     TCCC-  -    ---
           GAGGA
GAM15283 14916  TCTTCGGGAAAGGTGGTGGC    -    AA  TG TG C     T----  ACTA
8          GGGGCGTCCACTAGGTTTCC TCTT CGGGA  GG  G  G GGGGCG    CC
           TGTCCCCTGCTGCTCCTTCC AGAA GCCTT  TC  C  C CCCTGT    GG
           GTAAGA             T    CC  GT GT -     CCTTT  ----
GAM15286 17834  TCTTCTCAGGGTTGGAAATC      AGGG     A   TG  A--   GGATAA
1          GTGCCAAATGGGATAACATT TCTTCTC    TTGGAA TCG  CC   AATG
           GCCGGTGTGACTTCCAGGGG AGGAGGG    GACCTT AGT  GG   TTAC
           AGGA                ----     C   GT  CCG    ------
GAM15287 15152  TCTTCTCCTCAGCTGGAGCA   T   T-     A  A   G   -    GGGCAGGA
0          GCAGCAGTGGAGGGGGCAGG TCT CTCC  CAGCTGG GC GCA CAGT GGAGG
           ACCTCCTGCTGGTGCAGCAC GGA GAGG  GTCGACC CG CGT GTCG CCTCC
           CAGCTGCTGGAGCAGG      C   TC     A  A   G   T    --------
GAM15288 22683  TCTTCTGAATTATCACAGAA      A     ----   A  AAGA          T-    TAAGTGTATTAAAA
3          AGAAGAAAGTTAGAAGAGTT TCTTCTG ATTATCA    CAGA AG    AAGTTAGAAGAGTT  AATGT

           TAATGTTAAGTGTATTAAAA AGAGGAT TAATAGT    GTCT TT    TTTAATTTTCTTAA  TTATA

           ATCATATTCTAATTCTTTTA      A     ATGA    A  GG--          TC    ----------
           ATTTGGTTATCTGAGTATGA ATC
           TAATATAGGAGA

                      ---
GAM15289 2183   TCTTCTGGAATACTTTTAAA      GG  TACTTT    -    TTAT    AAAT
1          GTTTCTTTATGGCAAAATTG TCTTCT  AA     TAAAG TTTCT    GGCA
           TTAGAAATCTTTGTTTAACT GGAAGA  TT     GTTTC AAAGA    TTGT
           TAGAGAAGG              GA  CAATTT    T    ----   ----
GAM15296 12131  TCTTGAGTATCACTCCAGCA       AT-   ---    A-      AGATGCGGTGAAGAAG
2          TGATCGCAGATGCGGTGAAG TCTTGAGT   CACT   CCAGC  TGATCGC
           AAGGTGATCAAAGTTGGCAA AGAGCTCA   GTGG   GGTTG  ACTAGTG
           GGTGCGGACTCGAGA           GGC    AAC     AA     ----------
GAM15297 11647  TCTTGATCTTTATTGCTATG      -  -  TT   -   GTG   A  TGGC       GAAC
0          TGTGAAAACTTGGCTTCCTC TCTTGAT CT TTA  GCT ATGT   AAA CT    TTCCTCACT
           ACTGAACGGTGAGGAATGGA AGAACTA GA GAT  CGA TACG   TTT GG    AAGGAGTGG
           TTTAAAGCATGAGCTTTAGT      T  T   TT   G    AAA   A  T---       ----
           AGTATCAAGA
GAM15299 17172  TCTTGCATTCATTACATTCA   T  A    T    T  AA    A    GCAGT
1          AAAGGCATTTCTGCAGTGGG TCT GC TTCAT ACAT CA  AGGC TTTCT
           AAGTCTCCTGTGTGTTATGA AGA CG AAGTA TGTG GT  TCTG AAGGG
           AGCTAGA            T  -    T    T  CC    -    -----
GAM15299 17150  TCTTGCCCCCAAGGACCAGC    TG C    AG    AGCGC    CTGA   ATACGAAC
6          GCTGTGGCTGACACATACGA TCT  C CCCA  GACC    TGTGG    CAC
           ACGTGGCCCACATAGGTCTC AGA  G GGGT  CTGG    ACACC    GTG
           TGGGCGTGAGA          GT C    CT    AT---     CG--  --------
GAM15300 11557  TCTTGCCTTTCCCTTGATAA       TTC    ATAA  CA    ---   ACC
4          TGCAGTAAGGGACCCCCATT TCTTGCCT   CCTTG    TG  GTAA   GGG
```

TTACGACACAGGGCAGGCAA AGAACGGA GGGAC AC CATT CCC
GA C-- ---- AG TTA ---
GAM15300 13820 TCTTGCCTTTCCCTTGATAA T T ATAA CA --- ACC
5 TGCAGTAAGGGACCCCCATT TCTTGCCTT CCCT G TG GTAA GGG
TTACGACACAGGGCAGGGCA AGAACGGGA GGGA C AC CATT CCC
AGA C - ---- AG TTA ---
GAM15308 11952 TCTTGGGCACTGGAGTAGGA CA---- G --- CT GCAGAT
1 CTCTTGCTGCAGATGGTATA TCTTGGG CT GAG TAGGACT TGCT
GTTCTGGTTCTCGAGAAGGA AGAACCT GA CTC GTCTTGA ATGG
ATCCAAGA AAGGAA G TTG T- ------
GAM15312 7120 TCTTGTCCACGGTGAGCTTG CT A GC A GA-- A---- A C TC -
0 CTGTAGAGGAAGAAGGAGCC T TGTCC CGGTGA TTGCTGT GAG AGA GG GC GTCGGAG
CAGC ACGGG
GTCGGAGTCCAGCACGGGAG A ATAGG GTCGCT AGCGGCA CTC TCT CC CG CGGCCTC
GTTG TGTTC
GCGTGGTCTTGTAGTTGTTC AG - GT C ACCC CGTTA - T TT A
TCCGGCTGCCCATTGCTCTC GGCGTGG
CCACTCCACGGCGATGTCGC A
TGGGATAGAA T

GAM15313 17048 TCTTGTGGGAGAGATTATCA T GA ATC -------- - G A ATTCCG
9 AGCGTTTTGAGCAGAAAGGA TCTTG GGGAGA TT AAGC GTTTT GA CAG AAGG
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ATTCATGCAAGCTTCCGAAG - AG GCC AACGTACT T G G ------
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GAM15314 483 TCTTGTGTATGGATATGTGT TGT- T ----- TGACTCCT
6 AAATGTTATGACTCCTTGAT TCTTG ATGGATATG GTAAAT GTTA
AAAAAATTTATTATGTCCAT AGAAC TACCTGTAT TATTTA TAGT
TATTCAAGA TTAT - AAAAA --------
GAM15314 17520 TCTTGTGTTGAGACTTCGTG GAGA GT--- CTA AAAGGAAGAAGAAG
8 GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC GGTGGTG AGA
AAGAAGTCTCACACCACTCC AGAACACGA GAAG TCACCAC TCT
CAAGAAGAATAAGCACAAGA ATAA AACCC AC- ----------
GAM15314 6799 TCTTGTGTTGAGACTTCGTG GAGA G T C- AAAGGAAGAAGAAG
9 GTGGTGGCTAAGAAAAGGAA TCTTGTGTT CTTC TGG GGTGG TAAGA
GAAGAAGTCTTACACCATCC AGAACACGA GAAG ACC CTACC ATTCT
CAAGAAGAATAAGCACAAGA ATAA A - AC ----------
GAM15315 15279 TCTTGTTCATGGGCAAAAGG -- GCAAA GAA- G TGA T T GTGC
6 AGGAAGGGAGGTGAGGTCTG TCTTGT TCATGG AGGAG GG AGG GG CTGGG AGA
GGTAGAGTGCTTTTCCCAGT GGAACA AGTACC TCTTC TC TCC CC GACCC TTT
CCCCTGCTGGCACTTCTCCA GT ----- ACGG G --- T T ----
TGATGACAAGG
GAM15325 17636 TCTTTATTCATAATCACAGG - T A A GGTGAGA
2 CCACAGGGGTGAGACCTGAG TCTTTATT CA AATC CAGGCC CAGG
GTTTGGGTTCTGTGGTGAAG GGAAGTGG GT TTGG GTTTGG GTCC
G T C - A -------
GAM15328 13452 TCTTTCATATTGTGAAACAT C G---- ACAT GTACAA
5 CAGAGGGTACAACCTTTGTT TCTTT ATATT TGAA CAGAGG
CTTCAGTTTAGGTATTAAAG AGAAA TATGG ACTT GTTTCC
A T ATTTG CTT- ------

GAM15329 14870 TCTTTCCAAAATTTACAAAT TCCAAAA ----- A T - TAC CAG AACTTCA
2 ATACAATATATTTATAGTAT TCTT TTTACAAATA TACAAT TATT ATA GTAT CTT AC
TACCTTCAGACAACTTCAGT AGAG AAATGTTTAT GTGTTA ATGA TAT CATA GAA TG
GCAAAGATATACATATAGTA TATAA-- TAATA C - A TA- ACG -------
CATTGTGATAATTATTTGTA
AAAATATGAGA
GAM15336 15747 TCTTTGAGTAAATGAAGATT AAA CA - GTAA T CCTTAAGT
7 CAGACTTTGTAATATTATTG TCTTTGAGT TGAAGATT GAC TTT TA TATTGC
CCCTTAAGTGCAATGCTAAA AGAGATTCG ACTTTTAG TTG AAA AT GTAACG
AAAAACGTTGATTTTCAAGC A-- -- C AAAA C --------
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GAM15337 10859 TCTTTGATGATTAAAATATT GA-- TTAAA AGAA GAAT AAATCCGCA
0 TTAGAAATCTGAATTACAAA TCTTT TGA ATATTTT ATCT TAC
TCCGCAGTATAAAGATGAAA AGAAA ACT TGTAAAA TAGA ATG
AATGTCACTTCAGTAAAAAG AATG TCAC- AG-- AAT- ---------
A
GAM15337 2306 TCTTTGCAGGGCACAGATGA G - --- A CA- CCCTTCCT
4 CCAAAGTCCCTTCCTGCTTC TCTTT CAGG GC ACAG TGAC AAGT
CTGTTACCTGTCTTGCTCCT AGAGG GTCC CG TGTC ATTG TTCG
GGGGAGA G T TTC C TCC --------
GAM15342 15097 TCTTTGTGAGTCTGAAGTAT G AA A- - AAAGCGGA
7 TGCCCAAAGCGGAGGAGCGA TCTTT TGAGTCTG GT TTGC CC
GAACCACGGACTCGAAGGGA AGGGA GCTCAGGC CA AGCG GG
A AC AG A --------
GAM15344 10466 TCTTTTAAATCCAGTCAAAG AAATC- TC--- AAATTTCCG
7 CCGCCTTAAATTTCCGGAGG TCTTTT CAG AAAGCCGCCTT
TGGTTTTTCCCCCTGTTAAG AGAAAA GTC TTTTGGTGGAG
AAAAAGA AGAATT CCCCT ---------
GAM15345 456 TCTTTTAGGTTTTTCATAAA TCA----- TAT CTCA ATATC
8 ATATATTCATTTCTCAATTT TCTTTTAGGTTTT TAAAATA TCATTT ATTT
ATATCAAATAAGTGATTATT AGGAGGTTTAAAA ATTTTAT AGTGAA TAAA
TTACAGCTCTTAAAATTTGG TTCTCGAC T-- ---- -----
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GAM15345 7028 TCTTTTAGTCTAGACTATTT CT TTTAACC------ TATGTGTT
9 AACCAAAGGTATGTGTTCCT TCTTTTAGT AGACTA AAAGG
TTAATAATTTTTCTTTAGTT AGAAAGTTA TTTGAT TTTCC
TATTGAAAGA -- TTCTTTTTAATAA --------
GAM15353 10737 TCTTTTTACATTGGCTTTTG T TTGG TT TCTC GCTA
2 TTTTCTAAATGTTCTCCAAG TC TTTTACA CTTTTGT TCTAAATGT CAA
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AGAAGAATTTGTAAGATGA T TTAA TT T--- ----
GAM15355 13546 TCTTTTTTAAATGAATTAAA - AT- TTA- A C CAC
7 TATTGAAACACTGTGCACCA TCTT TTTTAA GAA AATATTG AA ACTGTG
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CCTATTAAAATAAGA T ATC TGTA A - ---
GAM15364 1897 TGAAAATGAAAGCGTCCTTA AA-- C CCTTA A ATTACTTA
5 ACACCTCATTACTTAGAGGG TGAA TGAAAG GT AC CCTC
GTAACTCTTTCAGAAATTCA ACTT ACTTTC CA TG GGAG
AAAG T A---- G --------
GAM15365 4567 TGAAAATGTCACCCAGAGAT GTCAC- ---- A TAAT

2 ATTAAAATAATTTTTAAAGT TGAAAAT CCAGA GAT TTAAAA
TTAATTCTGGTCAAAAGTTT ATTTTTG GGTCT TTG AATTTT
TTA AAAACT TAAT A ----
GAM15372 184 TGAAAGCTGAATCCTTCCAT AAAG A CT A CCGCACA AC AATTG
9 TTCTTCCGCACATCTACTTG TG CTGA TC TCC TTTCTT TCT TTGCTTA
CTTAAATTGTGGGCAAAAGA AC GACT AG AGG AAAGAA AGA AACGGGT
GAAAAAGAAAGGATTGATCA GA-- - TT - AAAG--- A- -----
GAGCA
GAM15385 17189 TGAAATTTTTGATAACCTTC T- T C CCAA C AAAG
6 TCCAAAAACCCCACAAAGGT TGAAATTTT GA AAC TTCT AAACC CAC
GAGGTTTAAAAGAAGTTTTC ACTTTAAGA CT TTG AAGA TTTGG GTG
TCAGAATTTCA CT T - AAA- A ----
GAM15393 2278 TGAACCTGTTTTGACACTGC ACCTG CACT AACTC AT T- ------ GCCCA- TG A G
0 AAACTCAGTGGATGACATGC TGA TTTTGA GCA AGTGG GACA GC CA T GA GCT
CAGCCCATTGGAAGCTGAAG ACT AGAACT TGT TCACC TTGT CG GT A CT TGA
GTGTTCCTGAAGTATCTGAA CTTA- TTTT CTTT- C- CT ATTAAA ATAAAA GT A A
AAATATGAAATTAGCTCTGT A TGTT
TCCCACTTTTCTGTTTTTTC AGG
AAGAATTCTCA TCC
G ----
GAM15394 19557 TGAACTAAACATTCTTATGC A A TATGC ---- TGTGACCAAGT
0 AGAAGTCTTTGTGACCAAGT TGA CTAA CATTCT AGAA GTCTT
AAGATACATTTCTAAAATAG ACT GGTT GTAAGA TCTT TAGAA
AATGATTGGTCA - A TAAAA TACA ----------
GAM15395 19625 TGAACTCTCAGTCACGTGGA TC TCAC---- AA CA ACTGC
9 AGCCACGGGACTGCTCCGAA TGAAC TCAG GTGG GC CGGG
GCCGCCATAATAAAATCTGA ACTTG AGTC TACC CG GCCT
TTGTTCA TT TAAAATAA GC AA -----
GAM15399 2385 TGAAGAACTTGGGGATCCTT CT ATCCTTT -- A- CTCACTGCCTAA
4 TTATTATAATTCACAGTATC TGAAGAA TGGGG TATTATAA TTC CAGTAT
TCACTGCCTAAATGCTGAAG GCTTCTT ATCCC ATGATATT AAG GTCGTA
AAATTTATAGTACCCTACTT C- ------- TA AA ----------
CTTCG
GAM15399 16879 TGAAGAAGGTGTATCTCTCG A T T C A ACC GGCC
9 GCGGGGATGTTACCCTTGGC TGA GAAGG GTA CT TCGGCGGGG TGTT CTT
CAAGAACACTTTGTTGAAGC ACT CTTCC CGT GA AGTTGTTTC ACAA GAA
TGCCCTTCATCA A - C - - --- ----
GAM15400 21709 TGAAGAATGCACAAGAATGG TGCAC GGAT - A- AATTTATCAAACC
2 ATCACAAGATGGAATTTATC TGAAGAA AAGAAT CA CAAG TGG
AAACCCTAGCCTTGCTGTTA ACTTTTT TTTTTA GT GTTC ATC
AATTTTTTTTTTTTTTTCA TTTTT AATT C CG ----------
GAM15400 6845 TGAAGAATTTAATTACTTTA A - T AAA--- GG AC G AGCCAGGTTCAA
5 CCAAAGGAGGGGTCTACCTT TGA GAATTTA ATTACTT ACC GGAG GTCT CTT TAACT
GTAACTAGCCAGGTTCAAAG ACT CTTAAGT TAGTGAA TGG CTTC CGGG GAA ATTGA
TTAAAAGTAGGGCAACTTCA - C T GCTTGA AA AT A ----------
GTTCGGGTTAAGTGATCTGA
ATTCTCA
GAM15401 14743 TGAAGACCTCATCTGCAGAA GA- T AGAAACACCT CGCT
6 ACACCTACTATCCCGCTGGG TGAA CCTCA CTGC ACTATCC
TAGTGCAGTTGAGGCCATTC ACTT GGAGT GACG TGATGGG

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          A                ACC    T  ----------      ----
GAM15403 17682  TGAAGAGCCAGAAGTGAAGA       CAGA        GA    ACAAATTATAAAAAGCC
5          GTGACTAGTACAAATTATAA TGAAGAGC   AGTGAAGAGT  CTAGT
          AAAGCCACTAGACTCTTCAC ATTTTTCG    TCACTTCTCA  GATCA
          TGTTAGCTTTTTA            ATTG       --   -----------------
GAM15405 15789  TGAAGATCGACATTTAAAAA    GATC  A    AA    GG          TAGT  ATAGAAAAAGTTAAA
7          ATGAGGGTGAAGAAAAGCTA TGAA    GAC TTTAA  AATGA  GTGAAGAAAAGCTA    GGC
          TAGTGGCATAGAAAAAGTTA ACTT    TTG AAATT  TTATT  TATTTTTTTTTGAT    TCG
          AAGCTCAGTTAGTTTTTTTT    AA--  A    A-    AT          TGAC  ----------------
          TATTATTATTATTAAAAGTT
          AATTCA
GAM15405 4858   TGAAGATCGACATTTAAAAA    GATC  A    AA    GG   -       TAGT  ATAGAAAAGTATAAA
8          ATGAGGGTGAAGAAAAGCTA TGAA    GAC TTTAA  AATGA  GTGA AGAAAAGCTA    GGC
          TAGTGGCATAGAAAAGTATA ACTT    TTG AAATT  TTATT  TATT TTTTTTTGAT    TCG
          AAGCTCAGTTAGTTTTTTTA    AA--  A    A-    AT   A       TGAC  ----------------
          TTATTATTATTATTAAAAGT
          TAATTCA
GAM15406 10542  TGAAGCACTACGGGCCTGGC     C  AC      GCTG   AGCATG   AACGCA
8          TGGGTGAGCATGGCCAACGC TGAAG ACT  GGGCCTG    GGTG     GCC
          AGGCAAAGACACCAACGGGT ACTTC TGA  CCTGGGC    CCAC     CGG
          CCCAGTTCTTCA           T  C-      AA--    AGAAA-  ------
GAM15408 19655  TGAAGCCAAGCTCCGCCTTC    AGCC   CT     ---    AG--    TTT  TTTCT
1          TGAGCAGTTTTGATTTCTTC TGA    AAG  CCGCCT   TCTG    CAGT   GA
          CTTACTGATGCCAGAATTAG ACT    TTC  GGCGGA   AGAC    GTCA   CT
          GCGGCTCTTACCCTCA       CCCA   TC     TTA    CGTA    TTC  -----
GAM15409 13194  TGAAGCTGACGAAATGTTAA    A   GAC-   -     - CCG   A  CAAG
3          GCCGTGGATTCAAGGACCAG TGA GCT    GAA ATGTTA AG   TGG TT
          ATCTATGACATATTCCAAAA ACT CGA    CTT TACAGT TC   ACC AG
          GCTCA              -  AAAC   A     A  TAG   -  ----
GAM15412 11359  TGAAGGCCCGGTGGGAAAAG   A          A--    --   GATCCTCC   - GA     TTTTT
0          ACCACGATCCTCCTTGACGA TG AGGCCCGGTGGGA   AAGA  CCAC       TTG AC  GTTTTG
          GTTTTGTTTTTCAAAATGGT AC TCTGGGCCACCCT   TTCT  GGTG       AAC TG  TAAAAC
          GCAATAATTTAAGTGGCATC   A          CTC    AC    AATTTAAT   G  G-     -----
          TTCTCTCCCACCGGGTCTAC
          A
GAM15413 233    TGAAGGGTTTCTAGGAAGGT      --   C        TT   A--------     TCAATTATCTT
7          TTAGCAGTGCTTCAATTATC TGAAGG  GTTT TAGGAAGGT  AGC        GTGCT
          TTAGCATCATTCTCAGGTTC ACTTTC  CAAA GTCCTTCTA  TTG        TACGA
          ATCTTCCTGTAAACTACTTT      AT   T        C-   GACTCTTAC     -----------
          CA
GAM15419 15505  TGAAGTGCTTTTAATTTTCA    AG    TTTAATTTTCAG     CA-     ATA
1          GACCAAACATTTTTAATATA TGA  TGCT          ACCAAA   TTTTTA
          AAAACATTTTGGTAATATAC ACT  ACGA          TGGTTT   AAAAAT
          AAACAGCAATCA          A-   CAAACATATAA-     TAC     ---
GAM15419 10490  TGAAGTGTGACAAGTGTGGG     T  A-  ------  G   GC  -   AAAGGAATGTTC
9          CTCCTGAAAGGAATGTTCCA TGAAG GTG  CA      AGT TGG  TC CTG
          GAGAAACCAGCTAAATCATG ACTTC CAC  GT      TCG ACC  AG GAC
          GGCACCCTTCA            C   GG  ACTAAA   -   AA  A  ------------
GAM15420 512    TGAAGTTAAGTCCGTTGAAC     G     T-    -   CGC-     TG  A  TGAG
5          GCGAAAATGACAGTTGAGGC TGAA TTAAG  CCGTT GAA    GAAAA  AC GT
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GTTGTTTTCAAACTTCGAGC ACTT AGTTT GGCGA CTT CTTTT TG CG
GGCTTTTGAATTCA A TC G CAAA GT - ----
GAM15423 19602 TGAATAATTCCTTTGAGAAG T-- CTTT AAAA---- GTACAA
0 CAAAAGAACAGTACAATGTT TGAA AATTC GAGAAGC GAACA
TATTAACACGTTTCTTCCTG ACTT TTAAG TTCTTTG TTTGT
AATTTTCTTCA CTT TCC- CACAATTA ------
GAM15427 17419 TGAATCTGAGTGAATTGTAC AG AA --- T T TGAT
8 CTATTTCTGATGATGTCGGT TGAATCTG TG TTGT ACC AT TC
CTTGCAAAGCGACAGATTCA ACTTAGAC GC AACG TGG TG AG
A- GA TTC C T ----
GAM15429 17073 TGAATGACCGGGCGGGGGTT CGG G TATA C TT TGGCC
3 ATAGTACGAACTTGACTGGC TGAATGAC GCG GGGT GTA GAAC GAC
CGTCGTTTTACACCTGCGTA ACTTGCTG TGC TCCA CAT TTTG CTG
TGTCGTTCA TA- G ---- - -- -----
GAM15437 11740 TGAATTAGTTCTTAAGTGAT T TCTTA T- GC- TACCATTTT
1 TTTTGGCTTGCATACCATTT TGAAT AGT AGTGAT TTTG TTGCA
TTGCAAACACAAATTGTCAT ATTTA TCG TTACTG AAAC AACGT
TACTCTGCTCATTTA C TCTCA TT ACA ---------
GAM15441 2503 TGAATTTCCCTTAAAAGAGT CCCTTAAA-- TC TG AACTTTCTC
4 CGACTGCAAACTTTCTCTGT TGAATTT AGAG GAC CA
GGTTTCCTTTGTCTCCGTAA ATTTAAA TTTC TTG GT
AAATTTA AATGCCTCTG CT GT ---------
GAM15443 7122 TGACAAAGCCATTACTTTTA AA-- T TATT A AATAA
2 TTAGAAACAAATAATGCTTC TGACA GCCA TACTTT AGAA CA
TCAAGGTGTTGGCAACATGT ACTGT CGGT GTGGAA TCTT GT
CA ACAA T C--- C -----
GAM15447 5046 TGACACAGGGGCCGCGCTGT ------ C G AGTACAC
2 TGAGAGTACACCTTAGAGCT TGACACAG GGGCCG GCT TTGAG
CGGTTTGCAACGCTGTGTCA ACTGTGTC TTTGGC CGA GATTC
GCAACG T - -------
GAM15447 15434 TGACACAGTCTCTAAGCCTC TCTCTAA - --- C TTCCTACCTACTTTAT
3 AAGTCATGTTCCTACCTACT TGACACAG GCCT CA AGT ATG
TTATCATACTTTATGTAGGC ATTGTGTT CGGA GT TCA TAC
AAATTGTTTGTGTTA TGTTAAA T ATT - ----------
GAM15453 21698 TGACATACTCCTCCTGCGCA TACT GC- CA -- ----- -- --
8 GCCTTCAGGTTCTCCTTCTT TGACA CCTCCTGC AGCCTT GGTTCT CCTTCTTC CC GCCC
CAGGCC
CCCGCCCCAGGCCTTCAGGG ATTGT GGGGGACG TCGGGA CCGGGA GGAAGAGG GG
CGGG GTCCGG
CAGAGGCCTGCAGGGCTCGG TCAC ACT C- CT ATGCC CT AC
CCGTAGGAGAAGGTCAGGGC CAGGGCA
CCAGGGCTTCAGCAGGGGGC TT
ACTTGTTA AG

GAM15456 10781 TGACATGTTGCCAACACCTT TGTT AC CTTG--- TTATT
5 GAGAAGCATTATTTGTTTCT TGACA GCCA AC AGAAGCA
AATAAAAGTAATGGCTTTGT ACTGT CGGT TG TCTTTGT
CA TT-- AA AAAATAA -----
GAM15456 15620 TGACATTCAGAATTTGGGCA CAGAA - AAGAT--- AACT
7 TTTAAGATGTTAACTGACCT TGACATT TTTGG GCATTT GTT

AGAAACAAATGCACTAAGAA ACTGTAA GAATC CGTAAA CAG
ACAAATGTCA ACAAA A CAAAGATC ----
GAM15457 9962 TGACATTGTGCTCAGGTCGC ATTG - --- CAG AGGC CACCCA
3 AGGCCCAGGCTCCCACCCAG TGAC TGCTCA GGT CG GCCC TCC
GACAAGGGGCAGACGAGAGC ACTG ACGAGT TCG GC CGGG AGG
TGTGAGCAGTCA ---- G AGA AGA GAAC ------
GAM15457 10166 TGACATTTATTAATTCCATT C T--- -- CACAACTACATATTTTAT
6 AAGACACAACTACATATTTT TGA ATTTATTAAT CCATTA AGA
ATTCTTATAATGGCCATGTT ACT TGAATAATTG GGTAAT TCT
AATAAGTTCA - TACC AT ----------
GAM15457 432 TGACATTTGGATAAACAAGA TT ATAAACAAGA GCCA A TCGGCT
8 GGCGCCATTCCTTCCACATT TGACA TGG GGC TTCCTTCC CAT
CGGCTATGGGGAGGAAAGCC GCTGT ACC CCG AAGGAGGG GTA
AGTAGGACCCATTTGTCG TT CAGGATGA-- A--- - ------
GAM15462 10147 TGACCCCATCCATCCATGAC C A A A- A --- TTATTT
0 CAGAGGATTATTTTCCTGCC TGAC CC TCC TCC TG CCAG AGGA
TTGGCAGAGGAGGAGGAGTC ACTG GG AGG AGG AC GGTT TCCT
A A - - AG - CCG ------
GAM15463 17203 TGACCGAGCGAGAGAGAAAT ------ A A - AAATAAA AGCT
3 AAAGCAGCTGTATCCTTACT TGAC CG GCG GAG AG GC
CCTCCCGCCGACAAGAGTCA ACTG GC CGC CTC TC TG
AGAACA - C C ATTCCTA ----
GAM15463 16400 TGACCGAGTGCTCCAGGATC CG TC GA - GT C TACTGCT
4 CCGGTCATCGCTACTGCTGC TGAC AGTGC CAG TCC CG CAT GC
TATGTGTGCGGACACTGAGG ACTG TCGCG GTC AGG GT GTA CG
CGCTAGTCA A- GA AC C GT T -------
GAM15465 545 TGACCTCTATTTTCTTATAT A - TATAT G GG- ATAATTTTTTACAGG
5 TGCTCTTTGGTTTCATAATT TG CCTCT ATTTTCT T CTCTTT TTTC
TTTTACAGGGAAAAAAAAAG AC GGGGA TAAAAGG G GGGAAA AAAG
GGGGGGAAAATCAGGGGCCA C C ----- G AAA ----------
GAM15468 15785 TGACCTTTAAAATATTATAT A TT T G A --- GAATG
5 GTTTAAGGTAGGGGGGGATG TG CCT AAAATAT ATAT TTTAAGGT GGGGGG GATGAAGGGGG

AAGGGGGGAATGCCCTTTTT AC GGA TTTTGTG TATA AAATTTTA CCCTTC TTATTTTTCCC

ATTTTTCTTCCCATTTTAAA - TC - A - TTT -----
AATATGTGTTTTCTAGGCA
GAM15469 17577 TGACGACGACAAAAGACGGA A ACAAAA G GG CAACGCCAC
3 GGGCCGGGCGCCAACGCCAC TGACG CG GACGGAG GCC GCGC
GCGCGGGCACTCCGTCCGCG ACTGC GC CTGCCTC CGG CGCG
TCA - ------ A G- ---------
GAM15469 11206 TGACGCCAGATCATAACAAG ACG G ATAACA- AA CTAAT
7 AACACAAAGGCTAATCCTAG TG CCA ATC AGAACAC AGG
TGTTTTGGAGAGAGATGTGG AC GGT TAG TTTTGTG TCC
ATACA ATA G AGAGAGG A- -----
GAM15469 15101 TGACGCTGACCTGGTTGTCT -- GA T T CAG- CTCACC A- ATCAGTTAAATCG
9 TCCTCAGTCCTCTCACCACT TGAC GCT CC GGTTGTCT CCT TCCT ACTTTTC GG
TTTCAGGATCAGTTAAATCG ACTG CGA GG TCGACAGA GGA AGGA TGAGAGG CC
CCGGGGAGAGTTCATCCAGG TC A- - - TTAA CCTACT GG ----------
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GCCTGTCA
GAM15471 5244 TGACGTATTTTGCTTCTAGT T CTTCTA GTG T TTTTTT
5 ATGTGCCTACTGTGATTTTT TGACG ATTTTG GTAT CCTAC GTGA
TTCATGTGGGAAAATGCCAA ATTGT TAAAAC CGTA GGGTG TACT
AATTTGTTA T ------ AAA - ------
GAM15473 7980 TGACTATAAAATGTAATACA T TGT T A AGGGGG
8 AGGGCATATTAGGGGGAGAA TGAC ATAAAA AA ACAAGGGCAT TT
TGCCTTTGTTTTTTCTTTTG ATTG TGTTTT TT TGTTTCCGTA GA
TTGTTA T CTT T A ------
GAM15476 13343 TGACTCTGACGGGAGCAGCA CT A GC- T A - ----- TGCGGGTCCT
3 GGAAGCTGCCAGCCCACTGC TGACT G CGGGAGCA AGGAAGC GCC GC CCACTG CCTCCA

CTCCATGCGGGTCCTTGGAG ACTGG C GCCCTCGT TCCTTCG CGG CG GGTGGC GGAGGT

GGCAGACGGTGGAGCGGCGC -- - ATC - - A AGACG ----------
TTCCTCTATGCTCCCGCGGT
CA
GAM15481 9946 TGACTGTTGGAGTAAAAAAC TG TAAAAA-- TAAATCCATTGTATC
1 CTCTTAAATCCATTGTATCA TGACTGT GAG ACCTCT
GAGGTCCTTACCTCTCTGAC ATTGACA CTC TGGAGA
AGTTA GT TCCATTCC ----------
GAM15483 6906 TGACTTCTTCCTAGAAAGAA TTCTTCCTAG - ATGTTA
1 TGGAAGAATGTTTATGTTAG TGAC AAAGAATGGA AGAATGTTT
AACATTTTATCTATTCTTTG ACTG TTTCTTATCT TTTTACAAG
TCA ---------- A ------
GAM15483 2147 TGACTTGGAAGGTGCCCTGT GGAA C T T CGT TG A CACGTCGGA
8 GCTATGTCGTGCCTGCAGGG TGACTT GGTG CCTG GC ATGT GCC C GGGA
ACACGTCGGATCCCGTGGGC ACTGGA CCAC GGAC CG TACA CGG G CCCT
CTCACATGCCAGGTCACCAG ---- T - - CTC GT - ---------
GTCA
GAM15485 7503 TGACTTTCAGGTGGGGCAAT C C GG T AATTCAGTTTAGG
3 CAGTGAAATTCAGTTTAGGT TGA TTT AGGT GGCAA CAGTGA
CACTGTTTGTCAGCTTAAAA ACT AAA TTCG CTGTT GTCACT
TTCA T A A- T ----------
GAM15486 11776 TGACTTTGGATCTAATCAAG TCTAAT--- ATA- - AAAA
1 ATAGGGAAAGATCAAAAGAT TGACTTTGGA CAAG GGGAA AGATC
TTATTTCTGAAGCTTGCTAC ACTGGGATCT GTTC TCTTT TTTAG
AGTTTTCTAGGGTCA TTTGACATC GAAG A ----
GAM15486 17100 TGACTTTTCCAACCTGCTTA CTT ACC AG A -- TATTCCAGTTT
7 GTTTAACAAATTATATTCCA TGA TTCCA TGCTT TTTA CAA ATTA
GTTTTAATCATTGTAAAAAA ACT GAGGT ACGAA AAAT GTT TAAT
AGCACCTGGAGTTCA T-- CC- AA - AC ----------
GAM15487 10788 TGACTTTTTTGAAAAAATCA CT A AA AG------ ACTTTTA
0 AGTTGTAAACTTTTATTACA TGA TTTTTGA AA TCA TTGTAA
AATTAAAAATGAAGTTCTTA ACT AAAAATT TT AGT AACATT
AAAATCTCA CT C GA AAAAATTA -------
GAM15491 10850 TGAGAAGAGTTTTGCCATTC A -- TC A GAGC------ T TGTTTAAGGTCCT
1 TGAAGAGGCGAGCCTGTGGA TGAG AGAGTTT TGCCAT TGA GAGGC CTG GGAAC
ACTGTTTAAGGTCCTGTTCC ATTT TCTCAAA ACGGTA ACT CTTTG GAC CCTTG
CAGAAGAATAAAAGTTTCTC A TT TT - AAAATAAGAA - ----------

ATTATGGCATTAAACTCTAT
TTA
GAM15493 13248 TGAGAATACTGTCATTGATC AATA--- --- G G GAG AGTAT
4 TTGGAAGCAAGAGGCAGTAT TGAG CTGTCATTGA TCTT GAA CAA GC
GCAGATTGTTCAGAGATTTT ACTC GGTAGTAACT AGAG CTT GTT CG
CAATGATGGGTATAAGCTCA GAATATG TTT A - AGA -----
GAM15495 13082 TGAGAATTCCCATATTAATA A CCA A A - TTATCTGCCATT
5 AAGAAGAAAATTATCTGCCA TGAGA TTC TATTA TA AG AAGAAAA
TTTTTTCTTACTATAATAAT ATTCT AAG GTAAT AT TC TTCTTTT
GCTGAATCTTA - TC- A A A ----------
GAM15496 5006 TGAGACAAATGTTGTACTTC G - TT-- T GTAT AGGT
4 AGTATGCAGGTGCTTTATGG TGA ACAA ATG GTACT CA GC
GTACTTCTCATCTTGTGTCA ACT TGTT TAC CATGG GT CG
G C TCTT - ATTT ----
GAM15496 10428 TGAGACAAGAGTCTCGCTCT A TC C TT C--- C -- A - CAATCTC
6 GTTGCCCAGGCTGGAGTGCA TGAGACA GAG TCGCT TG GCC AGG TGGAG TGCA TG GCT

ATGGCTCAATCTCAGCTCAC ACTCTGT CTC AGTGA AC TGG TCC ACCTC ACGT AC CGA
TGCATCCTCCACCTCCCAGG A TT - T- ACCC - CT C T -------
TTCAAGTGATTCTCATGTCT
CA
GAM15501 7811 TGAGACAGGAGAATTGCTTT G AA TA-- AGGC GTT A- GAGAT
5 AACCCGGGAGGCGGAGGTTG TGAGACAG AG TTGCTT ACCCGGG GGAG GCAGTG GCC

CAGTGAGCCGAGATGGCACC ACTCTGTC TC AACGAG TGGGTCC TCTC TGTCAC CGG
ACTGTGCTCTACCTGGGTGA - AG ACAG A--- G-- CA -----
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GAM15505 10504 TGAGACGAAGTCTTGCTCTT A- TC CTT- CC C TGCAA CATCTCAGC
0 CTTGCCCAGGCTGGAGTGCA TGAGACG AG TTGCT CTTG CAGG TGGAG TGGTGA
ATGGTGACATCTCAGCTCAC ACTCTGT TC AGCGA GGAC GTCC ACCTC ACCACT
CACACTCTCCACCTGCCAGG CC TT ACTT C- - TCAC- ---------
TTCAAGCGATTCTCCTGTCT
CA
GAM15507 17051 TGAGACGGGAGGGTCACTTG C GG------ - CCA TCAA- TATGATCAT
6 ACTCCAGGAGTTCAAGGCTA TGAGA GGGA GTCACTT GACT GGAGT GGC
TGATCATGCCACAGCACTCT ACTCT CTCT CAGTGGG CTGA TCTCA CCG
AGTCTGGGTGACATATAGAA C AAGATATA T --- CGACA ---------
TCTCCTCTCA
GAM15510 1832 TGAGAGAATAGCATCTTTGT A - GG--- TTTTTTTTATATATAT
9 GGGGGATTTTTTTTATATAT TGAGAGA TAGCA TCTTTGT GGGA
ATTTCTAGACAATAAAGATT ACTTTTT GTTGT AGAAATA TCTT
GTTGTTTTTCA - T ACAGA ----------
GAM15511 10483 TGAGAGAATAGCATCTTTGT A -- GG--- TTTTTTTTATATATAT
0 GGGGGATTTTTTTTATATAT TGAGAGA TAGCA TCTTTGT GGGA
ATTTCTAGACAATAAAGATT ACTTTTT GTTGT AGAAATA TCTT
TGTTGTTTTTCA - TT ACAGA ----------
GAM15512 11733 TGAGAGATTAGAAAATGTTT GA TTG- -- ATTAATGTTTTTC
4 GGAATTTATAAAATTAATGT TGAGA TTAGAAAATGT GAAT TTATAAA
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ATATATTTTTTAACATTTTA AC TATA CC ----------

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GAM15513 21858  TGAGAGCCTGAGATGGGTGA     CC   AT--   GA- T  AA-  -    -  TCT   GCCCCTCTA
2          CCTCTGAAGGAGGGGAGCTG TGAGAG  TGAG   GGGT  CC CTG  GGA GGGGAG CTGG  GGCC

           GTCTGGCCGCCCCTCTAGGC ACTTTC  ACTT   TCCG  GG GAC  TCT CCCCTT GACT  CCGG
           CTCAGTTTCCCCATCTGTGC     AC   GACG   ACG T  GTG  A    T   ---   ---------
           AGTGGGCAGCCTGCAGTTCA
           CACTTTCA
GAM15519 22025  TGAGATCCAGGTCAGTTGTG    TC   TCA----    AT   TTTTCTCTGT
9          ATTAATTTTTCTCTGTATTA TGAGA  CAGG     GTTGTG  TAAT
           TGCAATGTATTTTCCTGCTT ACTTT  GTCC     TAACGT  ATTA
           TTCA               TC   TTTTATG    --   ----------
GAM15529 15581  TGAGATTTGGTGGGGACACA        TG   A  C--   CCATATCAT
4          GCCAAACCATATCATTTTGC TGAGATTTGG  GGGAC CAG   CAAA
           CCCTGGTCCCTCCCAAATCT ACTCTAAACC  CCCTG GTC   GTTT
           CA                  CT   -  CCC   ---------
GAM15531 17674  TGAGCAGACAGTCCAGAAAG    AG   -  - GAA        CCTTAAAC
8          CAGCCCAGGCCTTAAACTCT TGAGC  ACA GTC CA   AGCAGCCCAGG
           GGGCTGCTGTGTGTGGCATG ACTTG  TGT CGG GT   TCGTCGGGTCT
           TGGTTCA             G-  A  T  GTG        --------
GAM15539 7399   TGAGCCCTCCAGCACTATTT      TCCA  A  ATTTATT   -   CTT  CTT
4          ATTTCCCCCACCTTGGCCTT TGAGCCC   GC CT     TCCC CCAC   GGC
           GCTGTGGCGGGAAGAGCGGG ACTCGGG   CG GA     AGGG GGTG   TCG
           CTCA                ---- A --------   C   ---  ---
GAM15539 15544  TGAGCCCTCCCTGCTAAGAG      -   G  A   T  --  G   GT AGGCT  TG   TTT
5          CTGTGTGCTGGGTAAGGCTG TGAGCCCT CCCT CTA GAGC GT  GT CTGG  A    GG  GCCC
           GTGGCCCTTTGGGCTCCCTG ATTCGGGA GGGA GGT CTCG CG  TA GACC  T    CC  CGGG
           TCCAGGATTTGCGCTCTGGA      T   -  -   - TT  G   TG ----- CT   ---
           GGGTAGGGCTTA
GAM15546 2031   TGAGCTGAAGGATCAGCTGG       A-  A  GCTG  AG-  TCATCT
3          AGAGGGATCATCTTCCAAGC TGAGCTGA  GG TCA   GAG  GGA
           TCACATGACTGCTCAGCTCA ACTCGACT  TC AGT   CTC  CCT
                              CG  -  ACA-  GAA  ------
GAM15546 6786   TGAGCTGACTGTGTCCTGCC    CTGA-    C----------------    CAAG
4          AAGGCAGTGGCTGCCCAAGG TGAG    CTGTGT            CTGC
           AAGCCTGCATAGGAGATCTC ACTC    GATACG            GACG
           A                  TAGAG    TCCGAAGGAACCCGTCGGT   ----
GAM15547 13073  TGAGCTGGATGGTGAGATCG  A   G  G  AGA  ACCT    CTGCAC
3          ACCTGCGTTCCTGCACGGAT TG GCTG AT GTG  TCG   GCGTTC
           GTCACTGAGTACGCGGTGCA AC CGAC TG CGC  AGT   TGTAGG
           GCGCA              G   G  G  ATG  CAC-    ------
GAM15548 21734  TGAGCTGTATATGGTATCCT  A     ----    CCTG   C-  CCCTTCAAGA
0          GAAGCACCTGCCCTTCAAGA TG GCTGTATA   TGGTAT   AAGCA  CTG
           CAGAATGCTTGTACCACATT AC CGACGTAT   ACCATG   TTCGT  GAC
           TATGCAGCCA         -      TTAC    ----    AA  ----------
GAM15549 1890   TGAGCTTGGTGAATATAACT          T-   CTTCA    C TTATA
2          TCAGAGCTTCGTTATACAAG TGAGCTTGGTGAA  ATAA   GAGCTT G
           TTTTTATCTTTTATCAAGTT ATTTGAACTATTT  TATT   TTTGAA C
           TA                      TC   -----     - -----
GAM15552 95     TGAGGACAGAGGTTGCGGCT     C       G      -   GGGC
6          CTCGTAACCCAGGGCTGGGA TGAGGA AGAGGTTGCG CTCTCGTAA CCCA
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TTGCGGGGGGCGCGACCTCT ACTCTT TCTCCAGCGC GGGGGCGTT GGGT
TTCTCA - G A ----
GAM15555 6808 TGAGGAGTACAAGCTAATTT GT A T- TT TGT CCTC
5 TTCTGTAGAATGTTCCTCAA TGAGGA AC AGC AATT TC AGAATGTT
CATTTTTCTGATAATTCTGC ACTCCT TG TCG TTAA AG TTTTACAA
TAGTTCCTCA -- A TC T- TCT ----
GAM15575 12035 TGAGGCAGGAGAATCGCTTG A AA GA-- C AAG GTTG A - GGAC
2 AACCTGGGAAGTGGAGGTTG TGAGGC GGAG TCGCTT AC TGGG TGGAG AGTG GC CG

AGTGAGCCGGGACCGTGCCA ACTCTG CCTT AGCGAG TG GTCC ACCTC TTAC CG GC
TTGTACTCCAGCCTGTGTGA - AG ACAG T G-- ATG- - T ----
CAGAGCGAGATTCCGTCTCA
GAM15584 4657 TGAGGCAGGAGAATTGCTTG A AA GAA-- AGGC GC - CAAGATC
2 AACCCGGGAGGCGGAGGCTG TGAGGC GGAG TTGCTT CCCGGG GGAG TGCAGTG AGC

CAGTGAGCCAAGATCGCTCC ACTCTG CCTC AACGAG GGGTCC CCTC ATGTCAC TCG
ACTGTACTCCAGCCTGGGCG - AG ACAGC GA-- -- C -------
ACAGAGCAAGACTCCGTCTC
A
GAM15584 21787 TGAGGCAGGAGAATTGCTTG A AA GAA-- AGG GTTT AGCCGAGATCACAC

7 AACCCGGGAGGTGGAGGTTT TGAGGC GGAG TTGCTT CCCGGG TGGAG CAGTG
CAGTGAGCCGAGATCACACC ACTCTG CCTC AACGAG GGGTCC ACCTC GTCAC
ACTGCACTCCAGCCTGGGCA - AG ACAAC G-- AC-- ----------
ACAGAGCAAGACTCCGTCTC
A
GAM15594 2534 TGAGGCGGTGGTCAATATCC GT ATAT GTCGA- CATCACCAC
9 TGTCGAGCTCATCACCACAG TGAGGCGGTG CA CCT GCT
CGGAAAAAGGTGCACTGCCT ACTCCGTCAC GT GGA CGA
CA -- ---- AAAAGG ---------
GAM15595 22627 TGAGGCTGGGGGCACAGGGA GGGGG -- G - - CCAGGT
8 GGAGCTGCCCAGGTGCAGTT TGAGGCT CAC AG GA GG AGCTGC
ACCATTGCTCAGTGACAGAG ACTCCGA GTG TC TT CC TTGACG
CCTCA GACA- AC G A A ------
GAM15601 2380 TGAGGGTTTTCCCGCTTGCA - T - AGATGG GA TGAAG
9 GATGGCTCCGATGGTGAAGC TGAGGG TTT CCCGCT TGC CTCC TGG
CAGGGAGGGAAGCACAGTGG ACTTCC GGA GGGTGA ACG GAGG ACC
GCAGGTCCTTCA T C C AAGG-- G- -----
GAM15605 17503 TGAGGTCACGGCCGTCTTTG C - CT TG GAT G T CGG
2 CTGCTGATGCTATGGCCCGC TGAGGTCA GGCC GT T CTGCT GCTATG CCCGCC GTC
CTGTCCGGGACGGTGGGCGT ACTCCGGT CCGG CG A GACGG CGGTGC GGGTGG CAG

GGCGGCAGTGACAGCAGGCC C A AC GT --- - - ---
CTGGCCTCA
GAM15608 19551 TGAGGTGGATGTAGCTGATC - A- ATCCA GA T AGAGGAAGAAGCG
6 CACAGGTGGATGTGGTAGAG TGAGGTGGAT GT GCTG CAGGTG TG GGT
GAAGAAGCGGCCCAGCACCT GTTCTACTTG CA TGAC GTCCAC AC CCG
GGTCCAGTGCACGGTTCATC G CG CTG-- G- - ----------
TTG
GAM15610 7761 TGAGGTGGGGCCTACTCGGA G ----- - TG GG ATG

```
5           GGTGTTTGGGTCATGGAGAC TGAGGTGG GCC    TACTCG GAGG  TTTG  TC
            GAATCCCTCATGAGTGACCT ACTCTACC TGG    GTGAGT CTCC  AAGC  AG
            TGGTGCCATCTCA            G  TTCCA    A   CT   AG  ---
GAM15614 17249  TGAGTACCTATGCCTGGGCG  A       CCT    ACC   ---      TCACTTC
3           GACCACAGATTATGGATCAC TG GTACCTATG   GGGCGG  ACAG  ATTATGGA
            TTCTCCATAATATACTGTTC AC CATGGGTGC   CCTGTC  TGTC  TAATACCT
            CTGTCCCGTGGGTACCCA   C       ---    CT-   ATA      -------
GAM15616 16971  TGAGTATGGGGTTCCTCTGC   - A    TTCCTCTGC  C    TTCGTT
3           AGACTTCAGATTCGTTTCTG TGA GT TGGGG       AGA TTCAGA
            AGATTTCCTTCGTCCCTGAC ACT CA GTCCC       TTT GAGTCT
            ATCA             A  -    TGCTTCC--  A    ------
GAM15618 9986   TGAGTCAGGGAAATCTTAAA   G   GG  ATC    A   --   AATCAC
0           AGGATTATTAATCACAATAC TGA TCAG  AA   TTAAA GGAT  TATT
            TATCCATTTAAATTAACTGA ACT AGTC  TT   AATTT CCTA  ATAA
            TCA              -   AA  A--    A   TC   ------
GAM15619 500    TGAGTCCTGCCTTCTTTGTG    T    C--      GGAACTGG  -    AAA
8           GAACTGGTTCCCAACAAAGT TGAG CCTGC   TTCTTTGT       TTC CCAAC
            TGGAGAAACAAAGGGCCCGC ACTT GGACG   GGGAAACA       AAG GGTTG
            AGGTTTCA             T    CCC      --------  A    ---
GAM15622 7249   TGAGTGAGATGTGCTGTAGG    G  AGATG---   -   AG    GACA    GCTGGA
5           AGTGACACGAAGCTGGATTT TGA TG       TGC TGT  GAGT    CGAA
            GGAAAACTTAGCATGCAAAA ACT AC       ACG ACG  TTCA    GTTT
            TAATGCAATCA          A  GTAATAAA   T   A-    AAAG    ------
GAM15625 7287   TGAGTGGAGGAACGGACACA     GGA--  AA    ACACGG    GG   GC   CCCATCT
1           CGGGCACCGGGCGGCTCCCC TGAGT    GG  CGGAC     GCACC  GCG  TCC
            CATCTGGAATGCAGGGTGTA ACTCG    CC  GCCTG     TGTGG  CGT  AGG
            AGGGGTCCGGGCCAGGAGGC     GAGGA  GG    GGGAA-    GA   A-   -------
            TCA
GAM15627 19897  AAAGGAACGTAAAGAACACA       CGTA    CA  TGA      CAAACCGAACTTCAGC
8           TGACATGAGTCAAACCGAAC AAAGGAA    AAGAA  CA   CATGAGT
            TTCAGCACTCATGCCTGCTT TTTCCTT    TTCTT  GT   GTACTCA
            TCTTCCTCTTCCTTT          CTCC    TC  CC-      ----------------
GAM15629 13023  AAAGGAGATTAACGTTATTG        TAACGT     TAC    ATAA    CT       TAAAGGACT
5           ATACTTGGATAACTGGCTAA AAAGGAGAT     TATTGA   TTGG    CTGG  AATCATAT
            TCATATTAAAGGACTATGTG TTTCCTCTG     ATAATT   AACT    GACC  TTGGTGTA
            GTTCCAGCTCAACTTTTAAT         TTAT--     TTC    C---    --       ---------
            ATATTGTCTCCTTT
GAM15629 2802   AAAGGAGGGAGCACGAGTCA    - G     C   T  TGGAG     AAGTGGTGCA
8           TGGAGGCGGGAAGTGGTGCA AAAG GA GGAGCA GAG CA     GCGGG
            CCTGCAGACTTGCTCTGCTC TTTC CT CCTCGT CTC GT     CGTCC
            CATCACTTT            A  A     -   -  TCAGA    ----------
GAM15630 5844   AAAGGATCCCGCCTTGAATG   -  A     CTTGAAT  -  -   TT    G  AAG-    ATT  TT   AAATGT  -
3           GACCCATTACCAGTGAAGGG AA AGG TCCCGC       GG AC CCA  ACCA TG    GGGC   TC  GGC
AG
            GCATTTCTTGGCAAATGTAG TT TTC AGGGCG       CC TG GGT  TGGT GC    CCCG   AG  TCG     TC
            GGCCCCTAATAAGCCTCTTT   C   G     -------  A  A   TC    G  CAAA    ---  TT   GTGGTT  T
            GGTGGCTTTGAGCCCAAACC    CCCTAATAA
            GGTGGTCTTGGAGTACCGCG GGC
            GGAGCTTCTT          CCG
                        ---------
```

GAM15631 8526 AAAGGCAGATTTATGATTAT C ---- A TT- C T CTTG
1 GGGATAGACAGTAGCTTGCT AAAGG AGA TTT TGA ATGGGATAGA AG AG
CTCTCTATTTTATTTTTTAA TTTCC TCT AAA ATT TATTTTATCT TC TC
AAACTGTTCTTCCTTT T TGTC A TTT C - ----
GAM15635 19521 TGAGTGTCACTGTAGACCCC A TC- AGA AAATACCA AAGATTATC
6 AAATACCATCCCAAGATTAT TG GTG ACTGT CCCC TCCC
CGGGAGAAAGGGGGCAGTAA AC CAT TGACG GGGG AGGG
TTACCCA C TAA --- AAAG---- ---------
GAM15638 15711 TGAGTTGAAAACACATTCAT A CA--- -- C TAACT
7 CTGCAAAATAACTTTTTTAG TG GTTGAAAA CATTC ATCTG AAAA
GTCAGAATGCTATATTTTTA AC CAATTTTT GTAAG TGGAT TTTT
ACCA - ATATC AC - -----
GAM15639 15125 TGAGTTGAGCCTTGGCCAGG CCT CCA TC T TCGC GAAA
0 GGTCCGGTGCTGTCGCGGGA TGAGTTGAG TGG GGGG CGG GCTG GG
AACCTCCAGCCTTGTTCTTC ACTCGACTC ACC CTTC GTT CGAC CC
AAACCACTCAGCTCA --- AAA TT C CT-- ----
GAM15642 16916 TGAGTTTTTAAACATGCTTT - TAAACA - CAA GC AGAC TTGCT
4 TAGACAAAGGTGCTGTGAAG TGA GTTTT TGCTT TTAGA AGGT TGTGA CAAAAA
ACCAAAAATTGCTTTTTTGA ACT CAGAG ATGAA AGTTT TCCG ATACT GTTTTT
AATCATAAAGCCTTTTGACA T TAATAC C --- AA AAA- -----
AGTACATAATGAGACTTCA
GAM15648 10354 TGATACTCCAAACCACTTTT CCAAAC A - T CAGTCTT
6 AAAAAGCTTTCCCAGTCTTG TGATACT CACTTTTAA AAG C TTCC
GAATGCCTTCTTAAAAGTGT ACTGTGA GTGAAAATT TTC G AAGG
TCAGTGTCA CTT--- C C T -------
GAM15649 19603 TGATAGAATAGGAAAATTTT T- TT - TTTC
7 AACATTTTTGTTTCTAAGGA TGA AGAATAGGAAAATT AAC ATTTTTG
TAGTTTTAATTTTCTTATTT ACT TTTTATTCTTTTAA TTG TAGGAAT
TTTTCA TT TT A ----
GAM15651 7358 TGATAGGTTGTGTCACTATT AG T C T TT C TTCAAAT TTTA
7 ATTGTTCAGTTCAAATAATT TGAT GTTG GTCA TA TA GTT AG AATT
TTTAAATTTCCATCTTGATT ACTA TAAC CAGT GT AT TAG TC TTAA
TTATTGTTGACCCAATGATC G- C T T TT T TACCT-- ----
A
GAM15656 2206 TGATATTGCTTCCTGACTAG ATA - GA-- G- GTTTATACAAA
3 GAGTTCTGTTTATACAAAGG TG TTG CTTCCT CTAGGA TTCT
AAAATTCTGGGCTGGGGAGG AC AAC GGAGGG GGTCTT AAGG
ACAAAAGCA GAA A GTCG AA ----------
GAM15656 11988 TGATATTTAAAACATTTATG AAAACA- -- AA- TCATTT
5 TGGTAAAATAATCTCATTTG TGATATTT TTTAT GTGGTA ATAATC
ATTATGGATATCATAAATAG ATTATAGA AGATA TACTAT TATTAG
AATATAAAAGATATTA AAATATA AA AGG ------
GAM15657 2462 TGATCAAGATCCTTACGTTA -- C AC------ AAAGATA
9 CTCTGAAAGATACAGAACAA TGATCAAGA TC TTACGTT TCTG
TATGAACGTGAAGATTTCTT ATTAGTTCT AG AGTGCAA AGAC
GATTA TT A GTATAACA -------
GAM15665 15395 TGATCTGGAAGCCAACCTGG A CCAACCT TCC G TAC
9 CTGTCCTGAAGCTGTACCAG TG TCTGGAAG GGCTG TGAA CTG
TTCAACCCAGCCTTCTTTCA AC AGACTTTC CCGAC ACTT GAC
GACCA C TT----- CCA - ---

GAM15666 2409 TGATCTTAGATCACTAAAGC AGA A- CTCAGA C C C CA ACCTCCT
7 CTCAGACTCCTGGGCTCAAG TGATCTT TCACT AAGC CTC TGGG TCAAGTGAT CTCC
GCCTCA
TGATCCTCCCAGCCTCAACC GCTAGAG AGTGA TTTG GAG ACCC AGTTCACTA GAGG
CGGAGT

TCCTAAGTAGCTGAGGCAGG CCG CG AAACG- C A A A- -------
AGAATCACTTGAACCCACGA AAGTAGC
GGCAAAGTTTGCAGTGAGCC
GAGATCG

GAM15667 10836 TGATCTTTCAGGATTTCATC TC TT TCA ATTATAACA
3 ATTTGGGATTATAACATTCA TGATCTT AGGAT CA TTTGGG
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A TT T- TA- ---------
GAM15669 14210 TGATGAAGAGGGAGCCAAGA TG A- G C ATT AAAG- TAATG - AAGC
0 TTGTCAAAGACCTAATGTCC TGA AAG GG AG CAAG GTC ACC TC CA
AAAGCTGAGAAGAATGGTGT ACT TTC TT TC GTTC TAG TGG AG GT
GAAGATTACCTTGCCTGTTG GT AG G C CAT AAGTG TAAGA A ----
ACTTTGTCA
GAM15669 2433 TGATGAATGCAAAGACTTTT AAT AA C TT T ATG---- GAAGAA
4 ATTTGTCCAGATGACAGAAG TGATG GC AGA TTTTA TG CCAG ACA
AATGTGAAGAAACTGGTCAT ACTAC CG TCT AAAGT AC GGTC TGT
TTGAAATCTAGCTCCATCA CT- A- - TT T AAAGAAG ------
GAM15670 4804 TGATGACTTCCATATGGACT GA TAT - ACTCAG- G CCT CAAAA
4 TTGACTCAGCTGTGGCTCCT TGAT CTTCCA GG ACTTTG CT TGGCT CGGG
CGGGCAAAATCTGTACGGTC ACTG GAAGGT CC TGAAAT GA ACTGG GTCT
AAAGAAACCTATAAAGTACC A- --- A ATCCAAA A CAT -----
TGGAAGAGTCA
GAM15670 13220 TGATGAGAACACCGTGTACA TGAGAA - G AGCA GCGAGGA
6 GCATCGGCGAGGACGGGAAG TGA CA CCGT TAC TCG
GTAGGCGGCTGCAGGATTCA ACT GT GGCG ATG GGC
TAGGAC C G GAAG -------
GAM15671 13727 TGATGAGGTTCTCTTCTTTT TG TT TCT GAC-- GAGATTACAAAA T GAATTA---
6 GACTGATGGAGATTACAAAA TGA AGG C TCTTTT TGATG CTCT GGATTCTCT
CTCTTGGATTCTCTGAATTA ACT TTC G AGAAAA ACTGC GGGG TCTAAGGGG
TACTTCTGTAGGCTAACGTT GT CG TTC AAGTA ---------- C TCGGTTGCA
GGCTGGGGAATCTCGGGGCG ----- TTCT
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CTTTGTCA ATG
ATCGG ----
GAM15672 5352 TGATGATGCACAGTTTGATG GA---- - G TG GC CAT G TGA G GAATTTGGT
4 CTTCCCATTGTGACAGTGAC TGAT TG CACA TT AT TTCC TGT ACAG CAAGG T
AAGGGTGAATTTGGTGGCTT ACTA AC GTGT AA TA AAGG ACA TGTC GTTTC G
TGGTTCTGTAACAGGAAAAA AAATTA A - GT AA --- A TTG G ---------
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CA
GAM15674 15363 TGATGCAGAGCTCATGGGTC T - GGG CTA A GGGAT T GTTGAAA
1 ACTAAGTAATGGGATGGTCT TGA GCAGAGC TCAT TCA AGT AT GGTCT CA
TCAGTTGAAATGAGACTTAA ACT CGTTTCG GGTA AGT TCA TA TCAGA GT

TAACTCTTGAATGGTGCTTT - T --- TC- A AT--- - -------
GCTCA
GAM15674 2553 TGATGCATTATTAAGTATAT A ATTAA ----- TATAAGTTT
5 GGTTATATAAGTTTTGACAA TGATGC TT GTATATG GTTA
ATGCATATACCTATGGAAGC ACTACG AG CATATAC CAGT
ATCA A GTATC GTAAA ---------
GAM15675 19482 TGATGCGCAAGGCCATCCGA T - A GCCA G ACC AAAACAAC
0 GGGCACCTGGAAAACAACCC TGA GC GCA G TCC AGGGC TGG
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CTCA C T - AAAG - --- --------
GAM15675 11667 TGATGCGTCGCAGTATGGTC C AG GGT GGTA G TG GGT
3 TGCAGGTCGGGTAGCCGGTG TGATGCGT GC TATGGTCTGCA CG GCC G GC
GCGGTGCTGCAGGTAGGGTG ACTACGTA CG ATATCAGGCGT GT TGG C CG
TGGTGCGGACTATAGCATGC - -- GGT GGGA A GT ---
ATCA
GAM15680 11424 TGATGGTGAAACGGTGACCA GAA G A AC------ CG CTGGCTA
6 GGACACCTCGGTCTGGCTAA TGATGGT AC GTG CCAGG ACCT GT
CAAGGGTTCTAAAAACTTGG ACTGCCG TG CAC GGTTC TGGG CA
ACACGGTGCCGTCA --- G A AAAAATCT AA -------
GAM15681 21848 TGATGGTGCTTGTGCCGCTC CTT C CCTT T TTATGCTT
2 CTTGTGGCCCTTATGCTTGG TGATGGTG GTGC GCT G GGCCC
GCCCGGCCGCGCTCACCGTC ACTGCCAC CGCG CGG C CCGGG
A T-- C ---- - --------
GAM15681 10884 TGATGGTTCTCTGCTTTATA A TCTCT-- TATA C G A - GGTGAGAGAAAGAA
7 TCTCCAACTGGAATAATGCT TG TGGT GCTT TCTC AACT GA TAA TGCTGTT
GTTGGTGAGAGAAAGAAAAC AC ACCG CGAA AGAG TTGG CT ATT ACGACAA
AGCACTTAGTCAGGTTTGAG - TACTTTT ---- T A G C ----------
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GAM15690 13691 TGATTCAAGATGGAAAAGGT A AG AAAA GATGTA CAAA
8 GATGTAACCATTACAAATGA TG TTCA ATGG GGT ACCATTA
TGGTGCTACCATTCTGAAAC AC AAGT TACC TCG TGGTAGT
A A CT A--- ------ ----
GAM15691 19664 TGATTCAGAAATCAGTGAAT A GAAAT TTTT A ACAGGA
5 TTTTCACTTGGACAGGACCA TG TTCA CAGTGAA TC CTTGG
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AAACA A ACC-- TAC- A ------
GAM15694 13865 TGATTCTATTTAAGGGAAGT AGG T TGAG GACGGATG
4 AGCTGAGATTTAGACGGATG TGATTCTATTTA GAAG AGC ATTTA
TAGATGCTCTTTGGGTGAAT ACTAAGGTAAGT TTTC TCG TAGAT
GGAATCA GGG - ---- --------
GAM15699 21863 TGATTGTAGTGTCTTACTGT TTGT TG--- -- G T TG TCAACCTT
2 GTGTGTTCAACCTTGTGCTT TGA AG TCT TACT TG G T
AGAGTATCAGAAATATCTCT ACT TC AGA ATGA AT C G
CTTCA TCTC TATAA CT G T GT --------
GAM15708 14852 TGATTTTGCTTGGTTGACCG GC GT GAATTAC CTAGT
5 AATTACTAGTGACTAGTTTA TGATTTT TTG TGACC TAGTGA
CTAAACTAGGTCATTCAAAG ACTGAAG AAC ACTGG ATCATT
GAAGTCA GA TT ATCAA-- -----
GAM15708 10876 TGATTTTGGTTTTCTTTATA TG ATA CT CTAAAA CTAAA
9 ATTTTCTGTATTTTCTAAAA TGATTT GTTTTCTTT ATTTT GTATTTT TGT

TGTCTAAAACAACGAAGTAT ATTGAG TAAAAGAAG TGAAA TATGAAG ACA
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GTTA
GAM15709 14128 TGATTTTTATTAATTTCATA TTATTAA A--- - AAAT
8 ACTGGGAAATTCCATGTGAA TGATTT TTTCAT AC TGGG
AGTGAAACAAGCATGAGTCA ACTGAG AAAGTG TG ACCT
TACGAAC AAAG T ----
GAM15711 2288 TGCAAAAACACGAAGATTGT AAAA--- A- A C CCTACTA
2 CCCTGCCTACTACGAGGACA TGCA CACG AG TTGTCC TG
GACTGATGTGGAACTTCTGC ACGT GTGT TC GACAGG GC
A CTTCAAG AG A A -------
GAM15711 15261 TGCAAAAACTAAATCAGGTG A- - TGTC AAATATGCCA
4 TCCCGTAAATATGCCAGCGG TGCAA AACTAAATC AGG CCGT
TCTGGGTTTGGTTGATTGCA ACGTT TTGGTTTGG TCT GGCG
AG G ---- ----------
GAM15712 17743 TGCAAAATATTTCATAAGTA --- A AA--- GG T AATATTACTG
5 TGGATGTGCAATATTACTGG TGCA AAAT TTTCAT GTAT ATG GC
CCATAGTGCAAAAGGTGAAA ACGT TTTG AAAGTG CGTG TAC CG
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GAM15725 17381 TGCAATCCGCTTGACAGTGA T ACAG - T ACAG -- T
1 GCGGTTGCAATCCGCTTGAC TGCAA CCGCTTG TGAGCGG TTGCAA CCGCTTG TGAGCGG
TTGCAA CCGCTT
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AACGTT GGCGAG
TTGACAGTGAGCGGTTGCAA - GACA T - GACA TA -
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TTGCAATCCGCTTGACAGTG
AGCGGTTGCA

GAM15726 23003 TGCAATGGTTTTTACCCCTC A- ACC A A TC--- - GAC T ACACATAC
7 ATGAAGGTCAGAGGTGGACT TGC ATGGTTTTT CCTC TG AGG AGAGG TG TAT TGT
ATTTGTACACATACACACAT ACG TACCAGAAA GGAG AC TCC TCTCC AC GTA ACA
GCACACCCTCTCACGTCCTC AC GTC - C TGCAC C AC- C --------
CAGAGGCTGAAAGACCATCA
GCA
GAM15728 16272 TGCACAAGGATGATACAAAG CA T ACAA TC GC ATTCACAA
6 TATCTGGGCTAGATTCACAA TGCA AGGA GAT AGTA TGG TAG
CTATTCCAATTACTATCTCT ACGT TTCT CTA TCAT ACC ATC
TCCTGCA CC - ---- TA TT --------
GAM15730 16323 TGCACAGATACAGAAGACCC A A A CTCCG - CAT
1 TCCGTCATGCAGCATCTGCC TGCACAG TACAG AG CC TCATG CAG
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CTGTGCA - C C CTACG C ---
GAM15732 11194 TGCACATAAATGTAAACCAA AC AAAC CA--- A AA AACTAAC
5 AACATGTATTTCATCAAAGT TGC ATAAATGT CAAAA TGT TTTCATCA GT
AACTAACATGATGATGAGAA ACG TATTTATA GTTTT ACA AGAGTAGT TA
ACAGGATATTTTGAAACATA AA CAAA ATAGG A AG -------
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GAM15734 10690 TGCACCATGTCACACTGGGG ------ ACA GGGAA A-- GGGA
3 AAGCCACTGGGGACAGCCAG TGCAC CATGTC CTG GCC CTG

GCCAGACGGGGGACATGCAG ACGTG GTACAG GGC CGG GAC
AAAGTGCA AAAGAC GG- AGAC- ACC ----
GAM15736 11209 TGCACGCGTACGTAAGCTTG CG--- T CT - - ------- CTACTACTACTAAA
6 GATCCTCTAGAGCGGTCGCC TGCA CGTACG AAG TGGAT CC TCTAGA GCGGTCGC
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CCGCGTCGACATCTGGATGG TATCA - -- C T ACAGCTG ----------
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TGCA

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1 TTCTGAAATTATTAAAAAGA TGCA C AA GAG CTTT TTCT
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TGCA C GT AC GTA C ----------
GAM15742 11208 TGCAGAAGGAGGCTGTGCAG AGAA G AGAAA AG CATCCCACA
2 AAAGAGGAGCCCATCCCACA TGC GGAGGCT TGC GAGG CC
GGAGCCTCAGTGGAGTCTCC ACG CCTCTGA GTG CTCC GG
CAAGCA AAC- G A---- GA ---------
GAM15743 6999 TGCAGACCAAGGTGTCCAAA CC G - AA-- TGA TTGAGAGGTC
6 TGAGGTGACCCAGACTTGAG TGCAGA AA GTG TCCA TGAGG CCCAGAC
AGGTCGTTTGGGCTTTAGGA GCGTCT TT CAC AGGT ATTTC GGGTTTG
GTGGAGCACGTTTCTGCG -- G G GAGG --- ----------
GAM15751 4670 TGCAGCTGAGGCAATACTCC CT ATACT- ACA- AAAG
1 AACAGGGTGAAAGCACTCAA TGCAG GAGGCA CCA GGGTG
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TGCA CT ACCCTT CTAA ----
GAM15754 14120 TGCAGGGCTTAATAAAGTAG -- TAA A ---- TG GC AATC
8 TTGTTGCCCAGAATCTTGGA TGCA GGGCT TA AGT AGT TT CCAG
AGGTGGCTTATCACTGTAGC GCGT CCCGA AT TCA TCG GG GGTT
CAGCCCTTTGCG TT CCG G CTAT GT AA ----
GAM15755 13158 TGCAGGGTCTGAGAACATCA G TC G GA GAAAA-- TAATTT
3 GAGTGAAAAACATAATTTTG TGCAG G TGA AACATCA GT ACA
TCAAATAAACATGATGTTGT ACGTC C ACT TTGTAGT CA TGT
CAAGCCTGCA - GA G A- AATAAAC ------
GAM15758 19740 TGCAGGTTTGTTACATAGGT A- T ATA AA T GCTA - TGCTG
0 AAATGTGTGCTATGGTGGTG TGC GGTTTG TAC GGT ATG GT TGGT GGTG
TGCTGCACCTATCAACCCAT ACG TCGAAT ATG CCA TAC CA ACTA CCAC
GACCAAGGTATTAAGCTCAG AC T GAA G- C ---- T -----
CA
GAM15760 4934 TGCAGTGATGCTGCCTACAC C GAT TACA CACC CCTTCTC TC CC AC T
7 CTCCACCTCCTTCCCCTTCT TG AGT GCTGCC CCTC TCCTTCC CC AGGCAA CCG
AGACAG
CCCTCAGGCAACCCCGACAG AC TCG TGACGG GGAG AGGAGGG GG TCTGTT GGT
TCTGTC
ACAGTGGCACTCCTGGTCCT - --- ---- TCTC TCTC--- T- TT -- G
GCTGTCTTGGTTTTGTCTTG G C TCCTG
GCTCTGGGAGGACTCTGAGG G AC
GGCAGTGCTCA C TG
T C -----

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GAM15761 1899  TGCAGTGCCAGCAAGTATTT      CC C     TC    AATTTCAAC    ATATT
0              CAAATAAATTTCAACGACTT TGCAGTG  AG AAGTATT  AAATA       GACTTG
               GATATTCAAGTCCAAACTAA ACGTTAT  TC TTTGTAA  TTTAT       CTGAAC
               ATATTTAATGTTTTCTTTAT      T- T     --    AAATCAAAC    -----
               TGCA
GAM15764 22625 TGCAGTTTCTTGGGACATAG       CT  GACA-----   ----  GCAAAGAA
1              GAGCGCAAAGAAGCTACAGC TGCAGTTT  TGG       TAGG   AGC
               CTGGACTTACCACCACTAAA GCGTCAAA  ACC       GTCC   TCG
               CTGCG                TC  ACCATTCAG   GACA  --------
GAM15770 5256  TGCATCTACATAATATCAGA       -   TATC   A   ----    TAGATT
4              TATTACGGATGTTAGATTGC TGCATCTA CATAA   AGAT TTAC   GGATGT
               ATCTCAGTGTAAATCTTTAT ATGTAGAT GTATT   TCTA AATG   TCTACG
               GATAGATGTA             A   ----  -   TGAC    ------
GAM15772 10961 TGCATGACCGAGGAACCCAC      CCGA  AACC  -  AACA  CAA  CCAA
8              TGAACACCCAAGGCCAACCG TGCATGA   GG   CA CTG   CC   GG
               GAGACAGATGCACCCAGATC ATGTACT   CC   GT GAC   GG   CC
               ATGTA                AGAC  AC--  A  AGA-  ---  ----
GAM15773 7950  TGCATGAGGTTTGGTAACAG   ATG      TAACAG-  A-    CTGGTTAAC
4              GCAAAGTCATCTGGTTAACG TGC   AGGTTTGG     GCA  AGTCAT
               TGACTGATGCAAAAAGTCCA ACG   TCCGGACC     CGT  TCAGTG
               GGCCTGGGCA          GG-      TGAAAAA   AG    ---------
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8              ATGTGTAATTGTGACAAAAC TGC TGATTTTG      CTATA GT     GT
               TAAACTGTAGAGAAAAGACA ACG ACTAAAAC      GATGT CA     CA
               AAATCAAGCA          A      AGAAAAGA   - AAT---  ------
GAM15775 17018 TGCATGGGAATGAGGCTGTT       AA-  A   GTT   C---   AACTG
4              GGACGAGAACTGCTCATTTT TGCATGGG   TG GGCT   GGA   GAG
               CTTGGGCCCAGTACCTATGC ACGTATCC   AC CCGG   TCT   CTC
               A                    ATG  -   GT-   TTTA  -----
GAM15775 14202 TGCATGGTAATACCCATTAA    TG   A-   -      AGA   AGAG
6              ATTAGAGGCAAGAGTGTTAG TGCA  GTA  TACC CATTAAATT   GGCA
               AGGTTTGATGTGGTGAATAC ACGT  CAT  GTGG GTAGTTTGG   TTGT
               GTTGCA               TG   AA   T      AGA   ----
GAM15779 5074  TGCATTCAAAGTTATCGGTA    -   ---    T   TATT   ----  TATCATT
0              TTACCAGCTATCATTGTTTT TGCAT TCAA   AGTTA CGG   ACC   AGC
               GGGGTTTCTCTGCTAATTCT ACGTA GGTT   TTAAT GTC   TGG   TTG
               ATTGGCATGCA          C   ATC    C  TCTT  GGTT  -------
GAM15780 414   TGCATTCTGACCCTCCCGCC  C    A      CCT--  -----      C---   CCT
1              TGGGGGGTGGGGGCGTTGCC TG ATTCTG CCCTCCCG    GGG    GGGTGGGGG   GTTG
               TCAACACCTCCCCCATCCCT AC TGAGAT GGGAGGGT    CCC    CCTACCCCC   CAAC
               GTTCCCTGTCCTGGGAGGGA  C    A      CCTGT  TTGTC      TCCA   ---
               TAGAGTCCA
GAM15781 11644 TGCATTGCTTCAGATGGTGG      CTTC-    GTGGTG    CACAAAGCACTT
3              TGTCTGAACACAAAGCACTT TGCATTG    AGATG    TCTGAA
               TTCAGAAACGTCTAAATACA ACGTAAC    TCTGC    AGACTT
               ATGCA                ATAAA    AA----    ----------
GAM15783 17422 TGCATTTCCTCATCCTGTTC   A  C     TGTTCT    CAT  TCTACCTGT
6              TCTCTGTCATAGATCTACCT TGC TTT CTCATCC     CTCTGT  AGA
               GTTCTTAACAGAGGGATGAG ATG AAA GAGTAGG     GAGACA  TCT
               AAAAAGTA             A  A     ------     AT-  ---------
```

GAM15785 19643 TGCATTTTCTCTCCTATAAG AT-- CTATAAGAG CG-- TAAT
5 AGCTTACGGTCTAATGGCAC TGC TTTCTCTC CTTA GTC
TTTAGGACATGCAGAGAGAA ACG AAAGAGAG GGAT CGG
ATAAAGCA AAAT ACGTACA-- TTCA ----
GAM15785 11901 TGCATTTTTCTGTCATTCTC TTT CATTCTC--- GTTTTA
6 TTCATTTGTTTTAAGGTGGA TGCATT CTGT TTCATTT
AAATTTTCTTACAGTTGATG ACGTAG GACA AGGTGGA
CA TT- TTCTTTTAAA ------
GAM15788 2425 TGCCAAGTTTCATGAGGACA AA T G A ACA TGGACGAT
6 ACGGACAGCTGGACGATGCC TGCC GTTTCA GA GACA CGG GC
CGTGTCATCCTGGAGCAAGG ACGG CGAGGT CT CTGT GCC CG
CA AA C A - --- --------
GAM15790 22623 TGCCACCACAGGTACCAGCA C -- ACCAG AAA - CAGG
5 CTTAAATTTGTCAGCAGGCT TGCCA C ACAGGT CACTT TTTG TCAG
GACCAAAGAGTGGCCTGTCT ACGGT G TGTCCG GTGAG AAAC AGTC
GTTGGCA T TC ----- --- C ----
GAM15790 610 TGCCACCATCAAAACCAAGC - ATCAAAA AGC-- - GTTTG
8 GTACCATCCAGTTTGTGGAT TGCCA CC CCA GTACCA TCCA
TGGTGCCCCACTGGCTTCAA ACGGT GG GGT CGTGGT AGGT
GGTTGGCA T AACTTC- CACCC T -----
GAM15791 13412 TGCCACCTCCTCCTTTAGAA AC C AGAAAACTG AATACA
4 AACTGATCTTAATACAGAGA TGCC CT CTCCTTT ATCTT
TAAAAGAGGAGTAGAAGGTA ATGG GA GAGGAGA TAGAG
AA T AAA------ ------
GAM15798 10681 TGCCAGGGTGAAAGGGATAG GTGAAAGGGATAGA TTAGA CCAA
3 ACAACTGGATTAGAGCCCAA TGCCAGG CAACTGGA GC
GTGCCACTCCAGTTGCTTGG ACGGTTC GTTGACCT TG
CA ---------- CACCG ----
GAM15801 22517 TGCCATCAGGGAAGCTTAAC A---- G C A T AC- TTCTCT
5 TACAACAATTCTCTTTCAGT TGCC TCA GGAAG TT AC ACA AA
GTCGTCAATTTTCCATGAGT ACGG AGT CCTTT AA TG TGT TT
TCAGGCA ACTTG A T C C GAC ------
GAM15802 11864 TGCCATGACCCCAGCACTTG C T C-- ACT C TGCTA
7 GCCAGCACTGTGCTACGTTG TG CA GA CCCAGC TGGCCAGCA TG
CTGGTCACAGCTGGGCCATC AC GT CT GGGTCG ACTGGTCGT GC
TGCCA C - ACC AC- T -----
GAM15807 4566 TGCCCACAGCTGCTGGACAG C T A A C CACCT
1 CCAGAGCCATCACCTGTAGC TGC CACAGC GCTGG CAGCCAG GC AT
ACTGGTTGCCAGTGCTGTGT ATG GTGTCG TGACC GTTGGTC CG TG
GTA T - - A A -----
GAM15808 10283 TGCCCACTAGCTAATGTAAA CT TAATG A AG C TTACC
1 CACCAAAGAACCATTACCTG TGCCCA AGC TA ACACCAA AA CA
CTTATTGGTGTATAACTTGC ATGGGT TCG AT TGTGGTT TT GT
TTCTGGGTA CT TTCA- A A- C -----
GAM15810 17397 TGCCCAGTCCCTGAAAGAGA ---- TGAA A - AA- GAAGA
9 TGGTCTCCAAGCTGAAGAAG TGCCCAGTC CC AG GATGGTCT CC GCT
CCCCGGCGGATCATCCTCCT ACGGGTCGG GG TC CTACTAGG GG CGA
GGTGAAGGCTGGGCA AAGT TCC- - C CCC -----
GAM15812 15666 TGCCCATTTCATATTGTTGT C TCATAT T TGT- AATTC
4 CTGTGTTGTAATTCATAACT TGC CATT TG TGTC GTTGT

TTTGATACCATTTCTGATGT ATG GTAG AC ATAG CAATA
GTA T TCTTT- C TTTT -----
GAM15815 22686 TGCCCCTGACCATTAACGAC C--- A A -- TTTTTTTTTTTTTT
8 TGTTTTTTTTTTTTTTTTTT TGC CCTG CC TTAACGACT GTTTTTT
TTAAAGAATGGAGTTGTTGG ACG GGAC GG GGTTGTTGA TAAGAAA
GGCAGGACATGCA TACA - - GG ----------
GAM15820 15135 TGCCCTGCAGGGACTGCAGC - - - A AGCT A - CACCGA
4 TGCAGAGACCCACCGAGGTA TGCCC TG CA GGG CTGC GC GAG ACC
CTCCGCGTAGGCCCGTGACG ACGGG GC GT CCC GATG CG CTC TGG
TGGGCA T A G G ---- C A ------
GAM15822 4762 TGCCCTTGTCTGAGTGTCCA C CT------- T CAG A G CGTC GTGAAA
9 GCCAGTCTGGCTGCGGGCCC TGC CTTGT GAG GTC CC GTCTGGCTGCGG CC GC
GTCGCGTGAAAGCAAGGTTG ACG GAACA CTC CAG GG CAGACTGACGTT GG CG
CAGTCAGACAGGAAGACCTC T TATAGTAAC - AA- A - AA-- ------
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GAM15823 11297 TGCCCTTTCTTCTTTGTCAA CT-- T GTCA C AC-- AAATTTA
2 AAGACAAAATCACAACAAAT TGCC TTC TCTTT AAAGA AAAATC AAC
TTAGTTCAAAGATTTTTTTT ACGG AGG AGAGA TTTTT TTTTAG TTG
TTCTTAAGAGACGGACTCTG TCTC C ATTC T AAAC -------
GCA
GAM15824 13594 TGCCGACTCTATCGATCCCT T C C- TACCT- AATGA
1 TACCTTCAATGAGACCTACC TGCCGACTC AT GAT CCT TC
AGGACATCAGTGAGTTGGTA ATGGTTGAG TG CTA GGA AG
- A CA CCATCC -----
GAM15824 11717 TGCCGATGATTCATGGCACG T TCA C T GCTTGACGAAT
6 CGGGCTCGTTGCTTGACGAA TGCCGA GAT TGGCA GCGGGC CGTT
TGACGGCTCGCATGCCACGC ACGGTT CTA ACCGT CGCTCG GCAG
ATCTTGGCA - CGC A - ----------
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1 GGGCAGCAAGCCCTGCCTGG TGC CACTCGC CAG CAGGGC
AAAGAGGATGTGGGTGGTGC ACG GTGGGTG GTC GTCCCG
A TG TAGGAGAAAG C -----
GAM15825 14842 TGCCGCGCCATGTCCTGCTT --- T- T C- GCAG
5 GGCCCGCTGCAGGGCGGCTC TGCCGCGCCA TGTCC GCT GG CCGCT
CAGCTCGGACAACTTGGCGT ACGGTGCGGT ACAGG CGA CC GGCGG
GGCA TCA CT - TC ----
GAM15826 10540 TGCCGGAAAGGCTTCCCGTG AAAGGC - T GACTG AAGAA
0 AGACTGGATAAGAAATCAAA TGCCGG TTC CCG GA GAT
AATCTGGTGAAATTGCCGGC ACGGCC AAG GGT CT CTA
A GTTA-- T - AAAAA -----
GAM15829 17294 TGCCTACAATGCCTTTCAGA CA CCTTTCAGA G T AAA
9 TCCGTGCTGGAAACTCGCAG TGCCTA ATG TCC TGC GG
GGGGACTTTTACATTAGGCA ACGGAT TAC GGG ACG TC
-- ATTTTCAG- G C ---
GAM15831 209 TGCCTAGCCTTATCATGAAC CT-- CT TC TT TTCAAAGAGTTAATC
3 TTGAGGTTCAAAGAGTTAAT TGC AGC TA ATGAAC GAGG
CCCTCTGTTCATTATTGCTT ACG TCG AT TACTTG CTCC
TTTGCA TTTT TT -- T- ----------
GAM15833 7514 TGCCTCAGCCTCCCAAAGCA CA AAA A TTTCA AGGG- CAAGGAGTA
7 CCATTAATCTTTTCAAGCAG TGCCT GCCTCCC GC CCATTAATCT AGC CCT

GGCCTCAAGGAGTAAGGACA ACGGA CGGGGGG TG GGTAATTGGG TCG GGA
AAGCTAATGGGTTAATGGGT -- --- - TAA-- AAACA ---------
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GAM15836 14867 TGCCTCGCATCCTGTTGGCC CT CCAA--- AACGC TATT
3 AAGTCGCAACGCAGTATTCT TGCCTCGCATC GTTGG GTCGC AG
CATCGGCGACGATCATTCCG ACGGGGCGTAG CGGCC CAGCG TC
GCGATGCGGGGCA -- TTACTAG GCTAC ----
GAM15837 10268 TGCCTCTCAGAACATCACCT -- AGAA ACCTACCAC GAACAGCA
0 ACCACTGCAAGAACAGCATT TGCC TCTC CATC TGCAA
GCATACATGGATGAGGAGAC ACGG AGAG GTAG ACGTT
TGGCA TC GA-- GTACAT--- --------
GAM15838 19515 TGCCTCTGTCTTTGAAAAAT T - TGAAAAATA AAT AAGAAGA
4 ACTTCCAATTCCAAGAAGAG TGCC CTGT CTT CTTCC TCC
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GGCA - A AG------- AAC -------
GAM15843 11942 TGCCTGGCACCCCAGTCTGC GG AG- AG CACGCCC
2 ACAGCCCCGCACGCCCTGGG TGCCT CACCCC TCTGCAC CCCCG
GGAGTGTAGGATGGGGGTGG ACGGA GTGGGG GGATGTG GGGGT
AGGCA G- GTA AG -------
GAM15849 22108 TGCCTTCAATCTGGCGTCGG - AT- G TC - TT CTA C C GG
4 CTTCCAGGCCGGTTTGGGCC TGCCTT CA CTGGC TCGGCT CAGGCC GGT GGGCCAC
CTCCGGG GGG GCT
ACCTACTCCGGGCGGGCGCT GCGGGA GT GACCG GGCCGG GTTTGG CTA CCCGGTG
GGGGCCC CCT CGG

GGGGGGCTCCCCCGGGGAGT C CAC - GC G CC A-- - - --
GGCCCCCATCGGGTTTGCGG GG
GCCGGGCCAGCACTGCAGGG
CG
--
GAM15851 22070 TGCCTTGAGACAGGGTCTCA C A TC- CTTT CCA- - A-- AGTC
4 CTTTGTTGCCCAGGCTGGAA TGC TTGAG CAGGG TCA GTTGC GGCTG GA TGC
TGCAGTCGCACACTCATAGC ACG AACTC GTCCC AGT CGACG CCGAT CT ACG
CCCCTGCAGCCTTGACCTCC - G TCC TC-- TCCC A CAC ----
CTGGCTCAAGCA
GAM15854 13912 TGCCTTTGGCTGGCTCCTTG CT C - TG TGT -- A- T GCAA
3 GTGTGGGGCAGGGTAGGGTT TGCCTTTGG GG TCC T G GGGGCA GGGT GGGTT G
TGGCAACAGCCTGGGCTTCA ACGGAAACT CC AGG G C CCCCGT TTCG TCCGA C
TGCCCCCTCTGGTGGACCTC -- - T GT TC- AC GG - ----
AAAGGCA
GAM15854 15034 TGCCTTTTATACAATGCTCA C- ACAA CA AA- TTTTGTT
8 TGAATCTTTTTTGTTAAGAC TGC TTTTAT TGCT TG TCTT
CACAAAAGCAATAAAAATGC ACG AAAATA ACGA AC AGAA
A TA ---- AA ACC -------
GAM15855 11105 TGCCTTTTCCTTGTTTTTTT TTCCTTGTTTTTTT AA- GACAA
2 AATATGTATTTTTAATTGAC TGCCTT AATATGTATTTTT TT
AAAAGAGGAGAGTATATATT ACGGAG TTATATATGAGAG AA
TATGAGGCA TAT---------- GAG -----
GAM15855 17268 TGCGAAGGGCCAGGTGTCGG AAG GG-- -- C CTC TCATCATAT
5 GCGCTGTTTCTCGTTTTCAT TGCG GGCCA TGT CGGG GCTGTTT GTTT

CATATAGACAAAACAGCCCT ATGC CTGGT ACG GTCC CGACAAA CAGA
GCTGCAAAGATGGTCAACGT AA- AGAA TC - A-- ---------
A
GAM15856 11035 TGCGAGATGTGTATAAGAAA - T A - T GATT GGTCAAGA
2 TTCGATTGCGGGTCAAGACG TGCGAGA TGTG AT AG AAA TC GCG
TTATAGATTTTACTGGTCCA ACGTTCT GTAC TG TC TTT AG TGC
TGCTCTTGCA C C G A T ATAT --------
GAM15859 15367 TGCGCGCACCATCCCAACAC C - AA CA -- AAGAAAAGG
7 AGCAGCAAGAAAAGGGCAAT TGCG GCACCA TCCC CA GCA GC
GCATGAAGGGGTTGGTGCCG ACGC CGTGGT GGGG GT CGT CG
CA - T AA A- AA ---------
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4 CTGTGCCAGCCCATGCTAGC TGCGCT TTAGG ATATC GTGC AGC
ACCGGTATGTGCGACCCTAA ACGCGA AATCC TATGG CACG TCG
TAGCGCA T CAGCGTG C A ----
GAM15860 17845 TGCGCTGAATGATGTCACGG AAT TG CAC- GT AACACA
5 CAGTCGTTGAACACACGGCG TGCGCTG GA T GGCA CGTTG
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CGCA AC- GT ACTC AG ------
GAM15860 22609 TGCGCTGCATGTGTTCCACA - ----- CATG AAC CTC
6 TGGGCTCGAACCAGCTCTTG TGCGC TGCATGT GTTCCA GGCTCG CAG
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GAM15861 11800 TGCGGAAGCCGGACGGGCAG G C C- A CCCCAA
2 GGATGGGGCCCCAACTTCGC TGC GAAG CGGA GGGCAGGG TGGGG
CCTGCCCATTTTGACTTCAG ACG CTTC GTTT CCCGTCCC GCTTC
CA A A TA - ------
GAM15861 1669 TGCGGAGTTAACTGCAAAGA C AAC ------- CTG TGC G C- GT C
8 TGCTGTCCGTGCGCGTTGCT TG GGAGTT TGCA AAGATG TCCG GCGTT CTG GGCC
GGTCCG GC
GCGGCCGTGGTCCGCGCCCT AC CTTCAA ACGT TTCTAC GGGT CGTAA GAC CTGG
TCAGGC CG
TCCTCGGCGGGCCGGACTGG - GGA CGTTACT TT- TT- A CT -- -
TCTCCAGAAATGCTTTGGGT TTCCTCGGC
TCATCTTTCATTGCTGCAAG CC
GAACTTCCA GG

GAM15863 4980 TGCGGGCCGTCACACGGAGC CG ACA- A C G ACAACTGC
4 CCGGAGACAACTGCCTATGC TGCGGGC TC CGG GC CG AG
GCACTGGAAGGAACGCCCGC ACGCCCG AG GTC CG GT TC
A CA GAAG A C A --------
GAM15864 10740 TGCGGGGGTCTTTATGGCAG - TTA--- G- ATCCCC-- TG GCGC
3 ACAATCCCCGGCTGAGCGCT TGCGGG GGTCT TGGCA ACA GGC A
TGGCCAGAGTTTCTGTGATG GCGTCC TCAGG ATCGT TGT CCG T
CTAGAATCTGGACTGCCTGC G TCTAAG AG CTTTGAGA GT ----
G
GAM15864 13850 TGCGGGTCAGATGTTTCCAC C T CCACT A------- ACTT
5 TTAGGAATATTTACTTGAAT TGCGGGT AGA GTTT TAGG ATATTT
ATATAAGCTACCTACTTTAA ACGCTCA TTT CAAA ATCC TATAAG
AACTTTCACTCGCA C - ATTTC ATCGAATA ----

GAM15867 11962 TGCGTGACCAAGATCAGCCT ACCAAGA C AAA-- ATCC
1 GGCAAATGTCATCCGACAGC TGCGTG TCAG CTGGC TGTC
TGGGCCAGACTGAGTACATA ACGTAT AGTC GACCG ACAG
TGCA ACATG-- A GGTCG ----
GAM15867 19705 TGCGTGACCTGGCAGCTGTA A T --- CT---------- ACT
2 GCTTCTGTGGGACTTCCACT TGCGTG CC GGCAGCTGT AGCTT GTGGG
GCTCAGGCGTCAGGCTCAGA ATGCGC GG TCGTCGATA TCGGA CACCT
TAGCTGCTGGCCGCGTA C - GAC CTGCGGACTCGT ---
GAM15867 14783 TGCGTGACCTGGCAGCTGTA G - A GT TTCT ACT
3 GCTTCTGTGGGACTTCCACT TGC TGA CCTGGC GCT AGC GTGGG
GCTCGGGCGTCAGGCTCAGG ATG ACT GGACTG CGG TCG CACCT
TA G C - GC T--- ---
GAM15869 5178 TGCGTTCATCCTTTACGTAT C-- CTTT T T G TTTCAT
0 ATATGGTTTAGTTTCATCTA TGCGTT ATC ACG ATA AT GTTTAG
AACAGTCTATCGTTCGATTT ACGTAA TAG TGC TAT TG CAAATC
AAATGCA ATT CT-- - C A ------
GAM15878 354 TGCTAGCTATAGTTCTAGAG TAG A TT GA -- T TA T CCGG
9 GTACCGGTGGTTAACGTTAG TGC CT TAG CTA GGTA CCGG GGT ACGT AG
CCGGCTACGTATACTCCGGA ACG GG ATC GAT TTAT GGCC TCA TGCA TC
ATATTAATAGGCCTAGGATG TA- - CG AA AA - TA - ----
CA
GAM15881 2155 TGCTAGTTGTATATAAAATT - T ATAAAA CT- C- TGTACAGTTTTCAAAT
3 TAATCTCACCGAATGTACAG TGCT AG TGTAT TTTAAT CAC GAA
TTTTCAAATTTCACGTGTAT ACGA TC ACGTA GAATTA GTG CTT
ATTAAGGAACTGATGCATCT G T GTCAAG TAT CA ----------
GAGCA
GAM15881 15483 TGCTAGTTTCTTTTTCGGGG A TTCTTTTTC C- GGACTA
4 GGACAGAGGACTATCTAATC TGCT GT GGGGGGA AGA
TCCCTCTTCAATCACAAGCA ACGA CA TCCCTCT TCT
A CTAACTTC- AA ------
GAM15882 17401 TGCTATAGAATGTTAGATGA G G AT- ATT-- - G---- GGATA
0 CATATTATTGACTGAGGGAT TGCTATAGAAT TTAGAT AC ATT GAC TGAG GATTTCT
TTCTGGATAAGAGATTACTA ATGATGTTTTA AATTTA TG TAA TTG ACTC TTAGAGA
ACTCATGTTTTCTGAATCTC A G CTC GTCTT T AATCA -----
GTGATTTAAAATTTTGTAGT
A
GAM15884 499 TGCTATTGTATTATCCATTA TTGTATTATCCATT T- T ATTTA
6 GTTCTGTAATATTTAATTTT TGCTA AG TCTG AAT
AGATTCTTTTATTTTTTTAA ACGGT TC AGAT TTA
TTGGCA TAATTTTTTTATTT TT T -----
GAM15887 13054 TGCTCAGACAGGGTGTGCTG T ACA G T T A GAAG
9 GGCATCAAGGTGAAGATCAT TGC CAG GGGT TGC GGGCA CA GGT
GCTGCCCTGTGACCCAACTG ATG GTC CCCA GTG CCCGT GT CTA
GTA - AA- - T C A ----
GAM15890 16084 TGCTCATAGACCCCCTTGTC CAT- CC TT - C TTGGA
0 TCTAGCACTTGGAGTCCTTA TGCT AGA CCC GTCTCTA G AC
GAGATGGGAATCTTGACAGC ACGA TCT GGG TAGAGAT C TG
A CAGT AA -- T C -----
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2 TTCAGGACCGACCTATCCCA TGCT CAT TC CA CATT CT GGA

GAATGGTGTGGAGTGCAGCA ACGA GTG GG GT GTAA GA CCT
C A T G - C-- --------
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5 ATTGCATTTGTCTTGGCATT TGCT CATC GGCTTC TGT
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TAGCA T TAA GTGCCTCTT-- ----
GAM15893 13793 TGCTCCCGACCATCACCTGT AC- AC TG ACA A-- AT CCGGGAGA
4 GGGCACACCATCGAGATCCT TGCTCCCG CATC C TGGGC CC TCGAG CCT
CCGGGAGAAGGGCTTCGACC ATGGGGGC GTAG G GCCCG GG AGCTT GGA
AGGCGCCCGTGGTGGATGAG GGA GT GT C-- ACC CG --------
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GAM15894 2499 TGCTCCTCTCGGAGGAGCGC TCTC A CCG A CAG
4 CCTCCGCAGGAGGGTCTTTC TGCTCC GGAGG GCGCCCT CAGG GGGTCTTTC
CAGGAAGGACCTGTTTGAGG ACGAGG CCTCC CGCGGGG GTTT TCCAGGAAG
GGCGCCCTCCCATGGAGCA TAC- - A-- G ---
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8 CACACCCCAATTTCATGGAG TGCT CTTGT GCAGATGC CAC CCA
TGATTTGCGTCTGCAGCAGG ACGA GGACG CGTCTGCG GTG GGT
CAGCA C A- TTTA A ------
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9 CTGAACAGACTTCTGGGAAG TGCTCT CAGTGG CCTG AC GACT GGGA GG
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TCAGTGCCAGGCCATCCACT C TACC-- CG A TTT ATA -----
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GAM15898 4659 TGCTCTGCAACCTTAGACAC GCAA TA- --- C C ACCTT CGAGAAA
9 CTCTGCCAGACCTTTGTCTT TGCTCT CCT GAC ACCT TGC AG TGTCTT
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CAGGTAAGGTCCCCAGGAGA ---- CCC GAA C - GT--- -------
GCA
GAM15903 21702 TGCTGAAGAAGGTGGAAGGC - - ---- AAG---- TG AGGAT
8 TTGGAGGATCTGAGCAATCT TG CT GAAGA AGGTGG GCT G
CACCACCTTGCATCTTCGAG AC GA CTTCT TCCACC CGA C
ACA A G ACGT ACTCTAA GT -----
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9 AACCATGCCTCCTTGCCTCT TGC A GCTGT TCTAACCA GC CTCC
GGAGACTCTTGTTGGTTGGA ACG T TGACG AGGTTGGT TG GAGG
GCAGTAGTTGGCA GT GA-- -- - TTCTCA --------
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5 GGATCAGATTTTATTAAGAC TGCTG CCAGTGG AGG TC
CTCTACTGGAAAAGAAACAG ATGAC GGTCATC TCC AG
TA AAAGAAAA -- - ----------
GAM15908 1379 TGCTGAGGCTGTAAGAACTA GAG AAGA CC GG CCGTGGCAT
0 CCCTGGGTCCCCGTGGCATG TGCT GCTGT ACTA CT GTCC
GACAAGCTTAGTGTAGATGG ACGG CGGTA TGAT GA CAGG
CAGAGGCA AGA GATG TC A- ---------
GAM15910 16364 TGCTGCAATTTCTACTCTGA C AA - CTGAA T ATGC GAAC
9 AATAATTTCTATGCCTCAGT TG TGC TT TCTACT ATAAT TCT CTCAGT
GAACATTGAGAGGATATTAT AC ACG AA AGATGA TATTA AGG GAGTTA
CAGTAGATAAGGGCATCA T GG T C---- T A--- ----
GAM15912 17711 TGCTGCAGGCTGTCATGCTC T - GT- CAAAAC CCCACCT

0 AACAAAACGCTCCCACCTGG TGC GCAG GCT CATGCTCAA GCT
TTTGGGTATGCAAGGCACTG ACG CGTC CGG GTATGGGTT TGG
CGCA - A AAC ------ -------
GAM15914 13952 TGCTGCTAAGTCAGGTTGCC TG C ------ - -- GAAA
7 TTTACTTTGAAAAAGGTAAA TGC CTAAGT AGGT TG CCTT TACTTT
AAGGACAAAACATATCTACT ACG GATTCA TCTA AC GGAA ATGGAA
TAGGCA -- - TACAAA A AA ----
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2 ATCTTCCACAATACTATCTT TGCT TCC CTT CACAA
GTGTAAGTTCATCATCAAAA ATGA AGG GAA GTGTT
GGAAAGTA A- AAAACTACTACTT T -------
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6 TGTCAGAAAACAAAACAAAA TGCTG CTTTG CAGAA TCAGA AAC AAAGTTTT
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5 AATTTTTATTTGACTGGTGT TGCTGG TC TGACAA TATT
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GTCT- --- CTT- -----
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3 GGGTCTTACTCCTTGGAGGC TGCTGGG CT GTGGTCCA GGTCTT
CATGTGGGCCATGAGGTCCA ACGACCT GA TACCGGGT CCGGAG
GCA G G GTA --------
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1 AAGTAACCCCAAATTATACC TGCTGT CT CCATCTT AG CCA ACCCAC GA
CACCTGAAAGACCTTTGTGG ATGACA GA GGTAGAA TC GGT TGGGTG TT
GTTGTGGAAAACCTGGAAGA GA GTC GG-- CAAAA GT---- T- ------
TGGCTGAGAGACAGTA
GAM15930 22560 TGCTGTGGCTCTAGACACTA G A CACTAAAGGACC A GAACT
0 AAGGACCTGAGATCCGAACT TGCTGT GCTCT GA TGAG TCC
GGGCTCATCAAGGGCAGCGG ACGGCG CGGGA CT ACTC GGG
CA A A ---------- - -----
GAM15930 17089 TGCTGTGGCTTTTTTAAGGA T TTT AA TAACTACC GG CCTTTTCATTGT
1 TAACTACCTTGGGGGCCTTT TGC GTGGCT TT GGA TTGG G
TCATTGTTTTCCAACTCCGG ACG CACTGG AG CCT AACC T
GATCTGGTCACGCA - TCT GG C------- TT ----------
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9 AGGGCCTTGGGGGCTGGCCC TGCTGTTC AG AGGGCCT TGGGGG
CCCACCAGGCCTTCTAGAGC ACGACGAG TC TTCCGGA ACCCCC
AGCA A --------- CC -----
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4 CTGGGCCTCTACCTCAGCCC TGGA GCCT TGGGC
ACACTTCCTCCAGGCCTCCA ACCT CGGA ACCCG
C- CCTCCTTCAC- ----------
GAM15934 7710 TGGACATGGACATGAGCCCC GA GGA G - C CCCCA ACT - GTGTGAACTAAAG

8 CTGAGGCCCCAGAACTATCT TG CAT CAT AGCC CC TGAGG GA ATCTTT TCGGT
TTTCGGTGTGTGAACTAAAG AC GTA GTA TCGG GG ATTTC CT TAGAAA AGCCG
GCCGACAAAGATTATCACTT AA --- A T A A---- AT- C ----------

TAAGGTGGCTAATGATGAAC
A
GAM15935 10701 TGGACCAAACGGCGCGTCCC ACCAAA TCCCAAAGC --------- ACCATACC
6 AAAGCGCTGGCACCATACCG TGG CGGCGCG GCT GGC
CCCACCACCCAAGCAACCCC ACC GCCGCGC CGA CCG
CGCGCCGCTCCAGCCA GACCTC CCCCAA--- ACCCACCAC --------
GAM15937 13867 TGGACCTAAATACCCAGAAG C AA - GAAGCACCCCCC AAGATTTGTA
5 CACCCCCCTTTGTAAGATTT TGGA CTA TAC CCA TTTGT
GTAACAAAAATTAATATGAA ATCT GAT ATG GGT AAACA
TGGAGTAAATAGTTCTA T AA A AAGTATAATTAA ----------
GAM15939 4845 TGGACGACAACGATGCTCAC ACA T TCACAAA CCGT C GTGAA
0 AAAGAAGGCCGTGTGGCAGG TGGACG ACGA GC GAAGG GTGG AG
TGAACTCCACCACCTTCCTC ACCTGT TGCT CG CTTCC CACC TC
TGCTCGTATGTCCA A-- - TCTC--- AC-- - -----
GAM15939 4767 TGGACGGGGGGGCTACCCTG - GG ACCC--- CT GA A GCAC
7 GCTTCCCTGCTGAAGGAGGG TGGA C GGGGGCT TGG TCCCTGCT AGG GG
CACCCCCTGAGTAGGGGTCC GCCT G CCTCCGG ACC GGGGATGA TCC CC
AAACCATAGGCCTCCAAGTT T AA ATACCAA T- G- - ----
CCG
GAM15941 290 TGGACTATGGCCAGGATGAA A -- GAAGAGG GAAGAA
1 GAGGCAGTGAAGAAGCTGAC TGGACT TG GCCAGGAT CAGT
AGTAAATCCTGGCACCAAAG ACCTGA AC CGGTCCTA GTCG
TCCA A CA AATGACA ------
GAM15944 10352 TGGACTTTTTTAACTTGTTT TTTA TGTTTTCATCT- TATCAT
7 TCATCTGTTTATCATGACTT TGGACTTT ACT GTT
TTTTATTTCTGGTGTAGAGT ACCTGAGA TGG CAG
CCA TG-- TCTTTATTTTTT ------
GAM15945 13527 TGGAGAAAGCAGCCCAGGAC AGCA - AC AATAAAACACA
5 ACTGTTGAATAAAACACACA TGGAGAA GCC CAGG ACTGTTG
ATAGTCTCTGTGGTCTTCTC ACCTCTT TGG GTCT TGATAAC
CA C--- T C- ----------
GAM15946 6810 TGGAGAAGGAGAGTGCGGAC A AG- GC- GAGA A T TTCGG
6 GAGAATGGAAACTTGAGTTC TGG GAAGG AGT GGAC ATGGAA CT GAG
GGCTCTAGGTTCCATGTCCC ACC CTTCT TCA CCTG TACCTT GA CTC
CAACTACATCTTCCCA - ACA ACC ---- G T -----
GAM15949 7467 TGGAGAGAAAAACAATGCAT GAAAAACAATG A GC G AAAA
5 TCATTGTTGCCAGCTTTGAA TGGAGA CATTC TTGTT CA CTTTG
AATAAAGATGAGAACAAGGA ACCTCT GTAGG AACAA GT GAAAT
TGAGATCTCCA AGA-------- - GA A ----
GAM15951 11825 TGGAGAGCCTGTGGTCCTCA AGAG G A A---- AGAGGCA
1 GGGATGGGAGAGGCACCCAC TGG CCTGT GTCCTC GGG TGGG
AGGACCCGAGGGCAGCAGGA ACC GGACG CGGGAG CCC ACCC
CCA A--- A - AGGAC -------
GAM15956 14862 TGGAGCATCCACCTGGGGCT TCCA C A - A T TA AA C CCCCTAT
2 GACCGAGGGTGAGGAGTTCT TGGAGCA CCTGGGG TG CCGAG GGTG GGAG TC CG GC TC

ACGAAGCCTCCCCCTATGAG ACTTCGT GGACTTC AC GGCTC CCGC CCTC AG GC CG AG

CCGGTGACCTCCCGCCTCTC TC-- T A T - C TG -- - -------
GGACATCTTCAGGCTTGCTT

CA
GAM15958 13756 TGGAGCTCTTTCTAGCAGAT - TTTCT ATGTG G T GTTC
8 GTGGAAGGATTGTCAGTTCT TGGAG CTC AGCAG GAA GATTG CA
GCGATCATTCAGACTGCTCC ACTTC GAG TCGTC CTT CTAGC GT
GAGTCTTCA T CC--- AGA-- A - ----
GAM15960 242 TGGAGCTTCTTTATCTGCCA A T C GAATA------- -- CT TG ATA
1 GAGAATAAGCCCTGTTACCT TGG GCT CTTTATCTG CAGA AGCCC TGTTAC GC G
GCTGGATATTGGCTGTGGCA ATC CGG GAAGTAGAC GTCT TCGGG ACGGTG CG T
CTGGGCTGAGTGGAAGTTAT A - T ATTGAAGGTGAG TC T- GT ---
CTGTCAGATGAAGGGCACTA
GAM15962 11718 TGGAGGCAAGATGGGCTGGG - CA G CT G A G---- CTTC
3 TAGAGAGCAGGACTGGAGCT TGGA GG AGAT GG GG TAGAG GCAGGACT GAG
TCCTCACCAGGGTTCTGCCT ACCT CC TCTA CC CC GTCTC CGTCTTGG CTC
CTGGCCCCGATCTCCCCATC A CC G -- G - GACCA ----
CA
GAM15962 22782 TGGAGGCAGGGCTGCCTGAG A - CCT A-- - TTT- TTTCCACATCT
7 AAGGGGCTTTTGGGGTTTCC TGG GGCAGG GCTG GAG AG GGGC TGGGG
ACATCTCCCCATCTTGTCCA ACC CCGTCC CGAC CTC TC CCTG ACCCC
CTGACCTCCTCCAGCACCTG - A CTC CAG A TTCT ----------
CCCCA
GAM15962 5104 TGGAGGCATCGGGCAGCCAC CA A - TTCA------- TCCT
9 TTTCACTTCTCCTGAAGAAC TGGAGG TCGGGC GC CACT CTTC
AGCCCCTTGGTGAGCCGCCT ATCTCC AGTCCG CG GTGG GAAG
GACCCTCTA C- C A TTCCCCGACAA ----
GAM15966 22714 TGGAGGGGCGGCAGATTCTG GGGGCG AGA AG- A A GGGC
1 GCAGGGCAGCAGAGGGCTCA TGGA GC TTCTGGC GGC GC GA
GTGGCCATGGCTAGAGGGGT ACTT TG GAGATCG CCG TG CT
AAAAAATTCA AAAAAA GG- GTA G A ----
GAM15968 11833 TGGAGGTGGGGGCGATCTTT TGG G A- T G T ----- GGGGG
0 ATTGTGGCGGTGGGTGGGAG TGGAGG GG CG TCTTTAT GTG CGG GG GTGGGAG
GGGGGTTCCCACGTGAGCCC ACCTCC CC GC AGAGATA CGT GTC CC CACCCTT
TGGTGCTATAGAGAGCCGGC TG- G CG T G - GAGTG -----
CGTCCTCCA
GAM15976 232 TGGAGTTATTGTTGACCAGG AT GAC-- TCAA AAGGAG ATATGCA
1 CATCAAGAAAGGAGGGATAT TGGAGTT TGTT CAGGCA GA GG
GCATCAGAAATCATTTTGCC ACCTCAA ACGA GTCCGT CT CT
TGAAATAAGCACAACTCCA C- ATAAA TTTA AAAGA- -------
GAM15978 14908 TGGAGTTTTTAAAAACTTTT AG ACTT AC G C TGAC
3 GGACGTGGCCGGGCACGGTG TGG TTTTTAAAA TTGG GT GCCGGGCA GG
ACTCATGCCCGGTAATCCCC ACC GAGGGTTTT GACC TA TGGCCCGT CT
AGCACTTTTGGGAGGCCA G- CAC- CC A A ----
GAM15978 15209 TGGATAAATTTCCTGTTGTG AA T T --------- TT TTAAC
8 TGGGTGGCATTTTTCTTAAC TGGATA TTTCCTGT GTG GGGT GGCA TTTC
GAGATTTGCTTCTGTCTTAG ACCTAT AAGGGACA CAC TCCG TCGT AGAG
CCTCACACAGGGAAAATATC AA - - ATTCTGTCT TT -----
CA
GAM15979 17938 TGGATAACTAACGCGTGCTT AACTAA G AAG G - CCTCAT
0 AAGCCTCTGAGGACCTCATT TGGAT CGC TGCTT CCTCT AG GA
CACTAAGAGGACGAGGCGGC ACCTG GCG GCGGA GGAGA TC CT
GCAAGTCCA AAC--- - GCA A A ------

GAM15980 1350 TGGATAATTGATTAACTTAC A AACT- -- ATTT- TATTATCTTCT
8 TGATTTTATATTTTATTATC TGGATA TTGATT TAC TG TATATTT
TTCTGAATATATATAGCACT ATCTAT AATTAA ATG AC ATATAAG
GTATCTTGAATTAAGTATCT G GTTCT TC GATAT ----------
A
GAM15981 21871 TGGATACCTCTAGTGCAATT -- A - AA A AATATC
1 TATAAGCAATATCGTTTACA TGGATAC CTCT GTG C TTT TAAGC
AAAGGTTACAGAGAAGTATC ACCTATG GAGA CAT G AAA ATTTG
CA AA - T GA C ------
GAM15986 17823 TGGATCTGATGACACAGAAG GA-- A A A TGTACTGTATTTAT
4 AAGCTGTACTGTATTTATGC TGGATCT TGAC CAG AG AGC
TGCTATTGGTCACAAGAGAT ACCTAGA ACTG GTT TC TCG
CCA GAAC - A G ----------
GAM15986 17513 TGGATCTGGCGGCGCTGCTG T - CT CC CTCT
5 CCGCGCCGCCTCTGCCGCGG TGGA CTG GCGGCGCTG GCCGCG GC
TCCTAGCGCCGCTCGGCTTC ACTT GGC CGCCGCGAT TGGCGC CG
A C T CC -- ----
GAM15988 498 TGGATGAGCGTGGCTTGTCC G --- CCCAAT ACTTTA
6 CAATAAAACTTTATTTTCAG TGGAT AGC GTGGCTTGT AAA
AAACAAGCCACTGGGCTGGT ACTTG TCG CACCGAACA TTT
TCA G GGT AAGACT ------
GAM15989 21883 TGGATGATATCCTGCAGAGT A A T C TTTTCC CT GTTC
2 GTTTTCCAGCTTGGTTCCAT TGG TG TA CCTG AGAGTG AG TG
TCTCCCCTTCACTTTCAGGT ACC AC AT GGAC TTTCAC TC AC
ACACCA - - - - TTCCCC TT ----
GAM16000 22699 TGGATTTTGCTGCCTGATAC TTT- T - CGTGAA ATTT TCATGT
1 GTGAATCTTCTTGGAATTTT TGGAT GC GCC TGATA TCTTCTTGGA TTC
TCTCATGTGGATCTAAGGGG ACCTG CG CGG ATTAT AGGGGAATCT AGG
AATGCTTTATTATGGCTGCT TTGT T T TTCGTA ---- ------
GTTGTCCA
GAM16001 17134 TGGCAAACAGGACAGTGGAC AACA--- A GACT - GATAG
5 TCATCTCGGTGATAGGCTGT TGGCA GG CAGTG CATCT CGGT
AGATGCTAACACTGGCCAAT ACCGT CC GTCAC GTAGA GTCG
TCAATGCCA AACTTAA G AATC T -----
GAM16007 17778 TGGCACAGATCCTGAAGATG G A - G AT A AGAA CCTT -- GATGAA
6 TCATCAGAAATGCCTTGTGC TG CACAG TC CT AAG GTC TC ATG GTGCT TTGCTTT
TTTGCTTTGATGAAGAAGCA AC GTGTC AG GA TTC TAG AG TAC CACGG AACGAAG
ACTGGCACCATACAGGAAGA A G A G AT A GACA ---- TC ------
TTACTTGAGAGAGCTGTGAC
A
GAM16008 5004 TGGCACCCCGGCCTATGGCA - C- - - C CCA GGTAT
8 TTGGCCTTCCAGGCATGGTA TGGCAC CC GGC CTAT GG ATTGGCCTT GGCAT
TGTGCCCGAGGGGTCAGTCT ACCGTG GG CCG GATA TC TGACTGGGG CCGTG
GATAGAGCCTAGGAGTGCCA A AT A G - AGC -----
GAM16009 5083 TGGCACGAGGGGAATACCTA C GA- ACCTACT--- A GATTTTCA
1 CTGTTGATCAGATTTTCATG TGG AC GGGGAAT GTTG TCA
ACAATTTAACTTCCCATTCC ACC TG CCCCTTA TAAC AGT
CCATAGTCCA - ATA CCCTTCAATT - --------
GAM16009 22935 TGGCACGCTCGAACTTCCGG ------ GAACT C - C A T --- GGC T
2 CCCTTGGAGCGGACGTAGGG TGGCAC GCTC TCCGG CCTTG GAG GG CG AGGGT
TTGGTGT TG G

TTTGGTGTGGCTGTGCGGGG ACCGTG CGAG AGGCC GGAGC TTC CC GT TTCCA GGCCGTA
GC C
TTCCTGGGGCCTTGCCGAAA ACAGGA ----- A G - G T CAT AA- -
TGCCGGTACACCTTTTGGCC CCTGG
CTTGCGAGGACCGGAGAGCA CGGGGTT
GGACAGTGCCA GTTCCGG

GAM16009 14752 TGGCACTCCTAGGCTCTATC TA T CAGAC A CC CATACCA
8 AGACTGACCCCTCGGGCACA TGGCACTCC GGC CTAT TG CC TCGGGCA
TACCATGCCTGGAAGGCCAA ACCGTGGGG CCG GATA AC GG GGTCCGT
TGCCATAGGCCGGGGTGCCA -- - CCGTA C AA -------
GAM16015 7253 TGGCAGGAGAAGTTGCCCAA A - CCAA G AG ACAAA
9 CTGGCAGATCACAAAGATGG TGGCAGG GAAG TTGC CT GC ATC
CGAGCGCAAGTTTCACCTGT GTTGTCC CTTT AACG GA CG TAG
TG A G C--- G G- -----
GAM16016 2510 TGGCAGGCTCAATCTGGCCT CA - T ---------- CTA
5 CTAGGCTACCTAGCTACTTT TGG GGCTCA ATC GGCCT CTAGG
GTAAGGCCTGATCTGGGCCC ACC CCGGGT TAG CCGGA GATCC
CA -- C T ATGTTTCATC ---
GAM16017 16067 TGGCAGGTGGTATTGGGGTC G TA-- CCTCA ACCT
5 CCTCAGCCCACCTGGGCCGT TGGCAG TGG TTGGGGTC GCCC
GACCTCAAGTGTCCACTGCT GTCGTC ACC AACTCCAG CGGG
G - TGTG TGC-- ----
GAM16018 10674 TGGCAGTGATCCTTTTCTTT - CTT TTGC AC TCTT -- TAAG
6 GCAAAGTACTGTCTCTTTGG TGG CAGTGATC TTCT AAAGT TGTC TGGT TCCAG
TTCCAGTAAGTTGGACCACC ATC GTCACTGG AAGG TTTTA ACAG ACCA AGGTT
ACATGACATCATTTTCCCTG A TCC TCCC CT TAC- CC ----
GAACCTGGTCACTGACTA
GAM16019 11617 TGGCATAAGTCCACATGAGT AA CA A - G TTTAAAT
5 TATGTTCTTTTAAATAGAAA TGGCAT GTC CATG GT TAT TTCT
ATACGCCATGAAGATAGTGC ACCGTG TAG GTAC CG ATA AAGA
CA A- AA - C A -------
GAM16023 471 TGGCATTCGTTCACGTCAGA - C GT- C- TGTG GATAAA
6 CACTTGTGATGATAAAGTAT TGG CATT GTTCAC CAGA ACT AT
GGTACTCTGTGAGTGGACTG ACC GTAG CAGGTG GTCT TGG TG
ATGACCA A T AGT CA TA-- ------
GAM16025 22520 TGGCCAACAGGTAAAGAAGT TAAA AG C ----- CAC
5 CAGCTAGTATTTGCAGCCAC TGGCCAACAGG GA TCAG TAGTATTTG CAGC
GTTGAATATCAAATACTATT ACCGGTTGTTT CT GGTT ATCATAAAC GTTG
TGGTGTCCTTTGTTGGCCA C--- GT T TATAA ---
GAM16026 16154 TGGCCAAGGGCCGCGGCCGC A G G--- AGGC- A AGCAGAA
4 GGAGGCCTGCAGCAGCAGAA TGGCCA G GCCGC GCCGCGG CTGC GC
GCAGCAGAAAGGCCGCGGCA GCCGGT C CGGCG CGGCGCC GACG CG
TGGGCGGCGCTGGCCG - G GGTA GGAAA A -------
GAM16027 13513 TGGCCAATGGTTTACTTTTT CAAT--- - T GT CTTT
0 GTTTCTCTTTAGAATGAAAT TGGC GGTT TACT TTT TTCT
GGTGTAACCCTATAAAGCCA ACCG CCAA GTGG AAA AAGA
AAATATC T T GT ----
GAM16032 7284 TGGCCATGGCGCTGCAGCTC CGCTGCA T GGA AATCA
5 TCCCGGGAGCAGGGAATCAC TGGCCATGG GC CTCCCG GCAGGG

CCTGCGCGGGAGCGCCGAAA GCCGGTGCT CG GAGGGC CGTCCC
TCGTGGCCG AAAGC-- C G-- -----
GAM16035 12016 TGGCCCGGAACACGCTGTCC - GAACA C - G GG GGACA G ACGAGAA
3 TCGCGCTTCCGCCGGGTGGA TGGC CCG CGCTGTC TCGC GCTTCC CC GT TC ACGAATTTG

CATCGACGAATTTGACGAGA ACCG GGC GCGGCGG GGCG CGGAGG GG CG AG TGTTTAAAC

ACAAATTTGTGGACGAGCAG A G---- C G A A- AGC-- G -------
GAGGAGGCGGCGGCGGCGGC
GGCGGAGCCA
GAM16037 296 TGGCCGAGGAGAAGCGCGAG G -- A AGG A------- CCTGA
2 GGCTACGAGCGTCTCCTGAA TG CC GAGGAGA GCGCG GCTACG GCGTCT
GATGCAAAACCAGCGTGGCG AC GG CTTCTCT CGCGC CGGTGC CGTAGA
GCGCGCTCTCTTCCAGGACA A AC - GG- GACCAAAA -----
GAM16042 7734 TGGCCTGCTGACACTTCCCT C GC ACT TGCAACCCAT- ACCCCT
3 GCAACCCATCCACCCCTGGT TGG CT TGAC TCCC CC
TTCTCCTCCTGGGAGTCAAA ACC GA ACTG AGGG GG
GTCCA T A- --- TCCTCCTCTTT ------
GAM16043 2602 TGGCCTGTATGTTGTCTGCC ATG- TCT--- A-- GT TTGT
4 GTAGAGGTATTTGTATGTCT TGGCCTGT TTG GCCGT GAG AT
CAGAACGGTTATACTCAAAA ACTGGGTA AAC TGGCA CTC TA
ACATGGGTCA CAAA TCATAT AGA TG ----
GAM16046 7820 TGGCGAGCCACATCCTTACT CG CA TTACTGCA G- G A- CCAG
2 GCACTGAGGGAGAAGCAGGC TGG AGCCA TCC CTGA GGA AAGC GGCT
TCCAGAGCTGAGCTTATCTA ACC TTGGT AGG GACT TCT TTCG TCGA
GTCAGGAATTTGGAGTTGGT A- TG TTTAAG-- GA A AG ----
TACCA
GAM16048 6942 TGGCGCTGACTGTGGGAGGG C A---- - ACC TACTGCCT
1 ACCATCTACTGCCTGATCGC TGG GCTG CTGTG GGAGGG ATC
CCTCTACATGGCTTCGCAGC ACC CGAC GGTAC TCTCCC TAG
CCA - GCTTC A GC- --------
GAM16049 542 TGGCGTGAACCCGGGAGGCA C AACC A G - --- TTGCA
9 GAGCTTGCACTTGCAGTGAG TGG GTG CGGG GGCA AG CTTG CAC
CCGAGATTGTGCCCCTGCAC ACC CAC GTCC CCGT TT GAGC GTG
TCCA T ---- - G A CGA -----
GAM16050 16095 TGGCGTGAACCTGGGAGCTT G- AA- TG AGCT-- A - AGAT
4 GCAGTGAGCCGAGATCGCGC TGGC TG CC GG TGCAGTG GC CG
CACTGCATTCCAGCCTGGGC ACCG AC GG CC ACGTCAC CG GC
AGCAGAGCCA AG GAC GT GACCTT - C ----
GAM16051 15205 TGGCTAAGCCTTTGTTAAAC AAGCC AA ATCACAG T T GCATGAA
4 CAATCACAGCGGTGGGTGGA TGGCT TTTGTTA CCA CGG GGG GGAAA
AAGCATGAATTTTCCCCTCG GCCGA AGGCAAT GGT GCT CCC CTTTT
GCAGTGGGGTAACGGAAAAA GAAAA GG GACG--- - - -------
GAGCCG
GAM16055 11303 TGGCTATGACACAATCATTT A AT TTA- AACG ATGATGGG GTTGAA
4 ACCAGAAACGTTTCCATGAT TGGCTATG CACA CAT CCAGA TTTCC TCCT
GGGTCCTGTTGAAAGGAGGA ACTGGTAC GTGT GTA GGTCT AAAGG AGGA
AAGCTGTCTGGATTTATGTG C -- TTTA GTCG -------- ------
TGCCATGGTCA
GAM16062 7462 TGGCTCTGCCTGCACTTCTT CT G GACTCAGAGACTAAA

3 TTTGGGACTCAGAGACTAAA TGG CTGCCT CACTTCTTTTTGG
TTAGAAAGGGGTGGGGGTAG ACC GATGGG GTGGGGAAAGATT
CCCCA CC G ----------
GAM16066 15425 TGGCTGCCCAGTGTGTCACA --- A ---- A - T- TGT
4 AAGGTGGCGCTGAATGTTTC TGGCT GCCC GTGT GTC CAAAGGT GGCGC GAA
CTGTGCCAATCTTTGGATAA ACTGA TGGG TATA TAG GTTTCTA CCGTG CTT
AGATATAGGGTCAAAGTCA AAC A GAAA - A TC ---
GAM16068 6898 TGGCTGGCCGGGACTGACGA C CCG ACGA AC - AGATCC
8 CTACCTCATGAAGATCCTCA TGG TGG GGACTG CT CTCA TGA
CTGAGCGAGGCTACAGTTCA ACC ACC CTTGAC GA GAGT ACT
CCACCA - A-- ATCG GC C ------
GAM16075 22549 TGGCTTCTAGCAATCCTCCC T AATCC- CC--- TCTC
3 ACCTCAGTCTCCTGAATCAC TGGCT CTAGC TCCCA TCAG
TGGGATTACAGGCTGGGGCC ACCGG GGTCG AGGGT AGTC
A - GACATT CACTA ----
GAM16077 17459 TGGCTTGCTTCAGGTTGACC T TCAG A TC TTTCACTC
1 ACCTTCATTATTTCACTCTG TGGCT GCT GTTG CCACCT ATTA
ATCAGGTGGCAGCGGTGGCG ACCGG CGG CGAC GGTGGA TAGT
GCCA - TGG- - C- --------
GAM16081 600 TGGGAAAATAAGGCACTGTC AATA ----- T A- A ACACA
1 CAAGTAACACACAGTGACAG TGGGAA AGGCAC TG CCA GT AC
TGGCAAAGTCGTGCTTGCTT ACCCTT TTCGTG AC GGT CA TG
CCCA CG-- CTGAA - GA G -----
GAM16082 21901 TGGGAAAGAAGTTCGATGAT A- -- G - AAA- TA AAAGCATAC
0 GAAAACTTTATCCTCAAAGC TGGG AAGAAGT TC ATG ATG ACTT TCCTC
ATACGGGGACCAGGTCTACT ACCC TTCTTCA GG TAC TAT TGGA AGGGG
ATCCATGGGCAACTTCTTGG GG AC G C CATC CC ---------
CCCA
GAM16085 17246 TGGGAACCACGTCACCACGG GG ---- ACG A C CA- - AGCAA
4 TACAACAGGCAGCAAGCCAT TG A ACC TC CCA GGTA ACA GGC
GTATTTACCATGGGGAGGGT AC T TGG GG GGT CCAT TGT CCG
CACATTTCA TT ACAC GA- - A TTA A -----
GAM16086 5132 TGGGAAGACTGTATATTTAT A A G - A G A C-- TTTTT TTTTT
6 AATTTGCATACTACTTGCAA TGGGA G CT TATA TTTATA TTT CAT CTA TTGCAA TG
TTTTTTGTTTTTCATCACTT ACTCT C GA ATAT GAATGT AAA GTA GGT AATGTT AC
GTAATAATGGAATGGAAATG - A A C - G A AAT CACT- -----
TAAGCTATAAAGACTCTCA
GAM16087 17704 TGGGAAGCTTTCTAAACTCC - TTCTAAACTCCAACT CCCACCA
5 AACTGAGTCCCACCAGCTTT TGGGA AGCT GAGT
AATTATTCCTCTAGCTCTCC ACCCT TCGA TTCG
CA C TCTCCTTATTAAT-- -------
GAM16090 10379 TGGGAATTCACATTTTAATG AATT TTAAT-- -- TAGC
6 TTTCAGTAGCCTGAACAACT TGGG CACATT GTT TCAG
CAAATTGATGTGTACCCCCA ACCC GTGTAG CAA AGTC
CCAT TTAAACT CA ----
GAM16093 5176 TGGGACATCATTCAGTCACT GG CA A C ATGGC ---- TC- CGCA
3 AGGTTGGATGGCACAAGGCT TG ACAT TTC GTCA TAGGTTGG ACAAG GCTCT ACAGA
CTTCACAGACGCATCTGTAG AC TGTG AAG TAGT ATTCAATC TGTTC TGAGA TGTCT
CAGAGTGGATCTTGTACTAA TA -- A - A---- TAGG CGA ----
CTTATGATAGAAGTGTATCA

GAM16095 11855 TGGGACTCGTGCCTTCTGCT TCGT T TTCT GTGGCCAAGA
2 GTTCTCATTGTGGCCAAGAA TGGGAC GCCTTC GCTG CATT
ATGTCCCAGCTGAGGGCCTT ACCCTG CGGGAG CGAC GTAA
TGTCCCA TTTC T CCT- ----------
GAM16095 22724 TGGGACTGCTTCCGGATCCG A- TCC CGTTA- AAA - A CAGTT
6 TTACAGAAAAGGAGGAGGTG TGGG CTGCT GGATC CAGA GGA GG GGTG
CAGTTCACCACCGTCCTCTG ACCC GACGA CCTAG GTCT CCT CC CCAC
CTCCAAGATCCAGCAGGACC AG --- AACCTC --- G A -----
CA
GAM16101 7725 TGGGAGGAGCAGTGCTTGGC A A G CT CTGC - GCTA
2 TCCCTGCAGTTTGGCTACAA TGGG GG GCA TG TGGCTCC AGT TTG
CACTTGGAGTCATCAATGCC ACCC CC CGT AC ACTGAGG TCA AAC
CCCCA - - A T- T--- C ----
GAM16105 7694 TGGGAGGTATGCATATCATT A GC- C CA G GGCACA
3 ACAGCCAGAGGGCACACTGT TGGG GGTAT ATAT ATTA GCCA AG
GGTAATAATCGTGTAAGATA ACCC CCATA TGTG TAAT TGGT TC
CCCCCA - GAA C AA G ------
GAM16110 21889 TGGGATGACAGGTTGTGAGC -- C T T CACCAAACCT TTCCCATTTTTTTATTTC

4 CACCAAACCTGGCCGTGTTC TGGGA TGA AGGT G GAGC GGCCGTG
CCATTTTTTTATTTCCATGG ACCCT ACT TCTA C TTCG TCGGTAC
CTGCTTTCATCTTCATTTCC TT - - T ---------- ----------
CA
GAM16110 10269 TGGGATGCTCCATTTGTGAA A CCA--- TG - AT TTAAACATT
9 ATACTATGATTAAACATTTC TGGG TGCT TTTG AAAT ACT GA
CAAGTAATTTTGCAAAAAAA ACCC ACGA AAAC TTTA TGA CT
AAAGCACCCA - AAAAAA GT A AC ---------
GAM16115 1980 TGGGATTTCTCTTTCAGAGT A TCTCTT T C C GAAAGACCA
2 GGGCCTGCAGTGAAAGACCA TGGG TT TCAGAG GGGC TG AGT
GCTCAGCCCCTTCTGACCAT ACCC AG AGTCTT CCCG AC TCG
GTGACCCCA C TGTACC C - - ---------
GAM16116 16069 TGGGCAACATGGCGGAACCC G A- - - AA GCA-
9 ATCTCTGCTAAGAATACAAA TGG CAACATGGCGGAACCC TCTCTGCTAAGAA TACAAAAAA
TCAGCTGG CT GGC
AAATCAGCTGGAACTGCAGG GCC GTTGTACCGCTTTGGG AGAGATGGTTTTT ATGTTTTTT
AGTCGGCC GA CCG
CACCTGCCACCAAGCCCCGG G AC T T CC ACCA
CTGATTTTTTTGTATTTTTT ACCT
GGTAGAGACAGGGTTTCGCC
ATGTTGGCCG

GAM16117 10422 TGGGCAACCCCAAAGTCAAG - AC- --- AG ATGGCAAGAAG
0 GCACATGGCAAGAAGGTGCT TG GGCA CCCAA AGTCA GCAC
GACTTCCTTGGGAGATGCCA AC CCGT GGGTT TCAGT CGTG
CA A AGA CCT -- ----------
GAM16117 15651 TGGGCAAGGCCATGCTCCTC CAA CA CTCT TTCCATG CATCC
3 TGGAGGCTTCCATGATGCAT TGGG GGC TGCTC GGAGGC ATG
CCCATATTCAGTGTTTCCCG ACCC CCG ATGAG CCTTTG TAC
AGTAAGCCCCACCCA ACC A- C--- TGACTTA -----
GAM16120 15302 TGGGCAGCCCTGGGGGGACA GC G----- CAA GCA GA ACAGAAACTACA

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0          AGGGGCACCTCGAGTACAGA TGG  AGCCCTGG     GGGA  GGG  CCTC  GT
           AACTACAACAGGAGGAACCC ACC  TTGGGACC     CCCT  CCC  GGAG  CA
           ATCCCGAAGAGCCAGGGTTA  A-      GAGAAG   A--  AA-   GA  ----------
           CCA
GAM16120 7636  TGGGCAGGGTCCGCTGATCG  GG    TCC  T--    TG G   TT  TGGT
7          TGGGCATCTTGCTGGTGTTG TG  CAGGG  GC  GATCG  G CATC  GC
           ATGGCTGTGGTCTATGCATC AT  GTCTC  CG  CTGGT  C GTAG  TG
           TCTGAATA           AA    TA-  TAT    GT G   T-  ----
GAM16120 11374  TGGGCAGGTAGGTAGGGGCA   G    A  TA    AG  AAC  AG   AC   GGATGATGA
9          GTGAACTGGAGTGGGACAGC TGG CAGGT GG  GGGGC  TG  TGG  TGGG  AGCT
           TGGATGATGAGGCTCCCCGA ACC GTCCG TC  CTCCG  AC  ACC  GCCC  TCGG
           CCCATACAGGGCCTCCCCTA   G    A  CC    GG  AT-  CA   C-   ---------
           GCCTGGCCA
GAM16126 10614  TGGGCGACAGGATGAGGCAG     ACAGGAT    A     --  GACGA
7          GCACCCCCCGACGAGGGCTG TGGGCG     GAGGC GGCACCC  CCC
           GGTGCCCGCCTCCAACAGCT ACTCGT     CTCCG CCGTGGG  GGG
           GCTCA                CGACAAC    C      TC  -----
GAM16127 13679  TGGGCGTAATCCTTGTTCTC   - C  AA  T    ----    GGAGTAA
6          CTCTGGAGTAAAGAGGATTT TGG G GT  TCC TGTTC   TCCTCT
           GGAATATGGAAGGCACTCCA ACC C CG  AGG ATAAG   AGGAGA
                        T A  GA  T    GTTT    -------
GAM16129 17595  TGGGCTCAGATAATCAGTCC    -  A  TA    CCAAACCCC   TACCTCT
6          AAACCCCTGATACCTCTTCA TGGG CTC GA  ATCAGT       TGA
           AAAAGAAACTGATTCAGAGA ACCC GAG CT  TAGTCA       ACT
           CCCA               A  A --     AAGAAAA--  -------
GAM16130 11096  TGGGCTCCGGGGCCCAAGCA      -    CCA--  AA  T   GATGGGCA
3          ACCTGGTCGATGGGCAGACC TGGGCTC CGGGGC    AGC  CC GGTC
           TGGCAGCTCTCCTGCTCTGT ACTCGGG GTCTCG    TCG  GG CCAG
           GGGCTCA              T     TCCTC  AC  T   --------
GAM16131 13286  TGGGCTGAACTGAGCGCCGA     GAA------  A  G   A---  ATACGACGAAGAA
2          GGATACGACGAAGAACCACA TGGGCT       CTG GC CCG   GG
           CCGGGCACAGATACCACGAA ACCCGA       GAC CG GGC   CC
           GCCCA                AGCACCATA  A  -  CACA  ----------
GAM16132 15911  TGGGCTGTGCCTTCATCAAC      T   TCATCAACCTCT   C   GCTTCA
7          CTCTGCATCTTGGCTTCACA TGGGCTG GCCT         GCAT TTG
           GCATGCTTGGGCTCAGCTCA ACTCGAC CGGG         CGTA GAC
                          T   TT----------   C   ------
GAM16134 10985  TGGGCTTGGCCATCGTGGTA       C  CGTGGTA   TG- CT    G   GGGACTG
4          GGCATGCCCTTGGGTGTGGC TGGGCTTGG CAT     GGCA   CC  TGGGT TGGC
           GGGACTGGCCGGATTCATCG ACCTGAACC GTG     TCGT   GG  ACTTA GCCG
           GATTTGCTGTGTCCAAGTCC       T  -------  TTA  CT   G   -------
           A
GAM16144 10023  TGGGGCAACATCTGTCCTGG      ACATC  TCC     AGATT  CCAAGACACCATTT
1          CCTCAGATTGCCCAAGACAC TGGGGCA    TG   TGGCCTC    GC
           CATTTGCTCACGGAGGCCAC ACCCCGT    AC   ACCGGAG    CG
           CATGCCCCA              -----  C--      GCACT  ----------
GAM16144 16316  TGGGGCACTGAGGCCCGGGG       T  -  C   GA   AG  ACTGGACA
6          ATGTAGGCACTGGACAGCAG TGGGGCAC GAG GCC GGG  TGT  GC
           CAACCCAGGCATTCTGTGCC ACCCCGTG CTT CGG CCC  ACG  CG
           CCA                  T   A   A   A-   A-  --------
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GAM16146 13859 TGGGGCAGTGTCTCTCACCC ---- TC TCAC GT GAATGCAA
4 AGTCTGGAATGCAACAGCGT TGGG GCAGTG TC CCA CTG
GGTCTCGGCTCACTGCAACT ACCT CGTCAC GG GGT GAC
TCCA TCAA TC CTCT GC --------
GAM16149 14808 TGGGGCTCATTTGCAGGGGG CT T A CAAA TCATCAT
2 GAGCCAAAAGGGTCATCATC TGGGG CATT GCAGGGGGG GC AGGG
TCTGCCCCCTCTGCTGATGC ACCCC GTAG CGTCTCCCC CG TCTC
CCCCA C- T - ---- -------
GAM16156 2109 TGGGGGTCTCGCTATGTTGA TC ATGTTGA TG TCTCGAGCTC
0 TGAGGCTGGTCTCGAGCTCC TGGGGG TCGCT TGAGGC G
TGGCCTCAAGTGATCCTCCC ACCCTC AGTGA ACTCCG C
A CT ------- GT ----------
GAM16170 170 TGGGTATGGAATCTTGCGGC - AA - CA- AGAC - ACGTCCATCA
8 ATCCACGAGACCACCTTCAA TGG GTATGG TCTT GCGG TCCACG CAC CTTCA
CGTCCATCATGAAGTGTGAC ACC CATGTC AGAA CGCC AGGTGC GTG GAAGT
GTGGACATCCGCAAAGACCT G C- A TAC A--- T ----------
GTACGCCA
GAM16172 6877 TGGGTCCATGTCAGGCTGAA - - TCA AGTCAGG GTAGGGGAA
4 GTCAGGCCGCGTAGGGGAAG TGG GTC CATG GGCTGA CCGC
CGGACAGTCAGCCCTTCGTG ACC CGG GTGC CCGACT GGCG
AGGCTCCA T A TTC GACA--- ---------
GAM16172 7309 TGGGTCCCCGGGGGCCCTTG GT C C---- G ACCAAAA GAC
5 GGGGGAACCAAAAACTTGAC TGG CC CGGGGG CCTT GGGGGA ACTT
AAGTCACCCCTCCCCCGAAG ACC GG GCCCCC GGAA CCCCCT TGAA
GAAAAACCCCCGTGGGTCCA TG T AAAAA G CCCCAC- ---
GAM16174 16967 TGGGTCTGTGATTCCTGGCC T ATTCC AATTGGAGCTA CCTG
8 AATTGGAGCTAGCGACGCCT TGGGTC GTG TGGCC GCGACG
GCGTCGCCGGGCCGCAGCGT ACCCAG CAT GCCGG CGCTGC
ACTGACCCA T GCGAC GC--------- ----
GAM16174 1351 TGGGTCTGTTTACAGAGTGT C TTTA AG AA G -- GCA
9 GGTAATTTCGTTCTTTAGAT TGGGT TG CAG TGTGGT TTTC TTCTTTA GATTT
TTGCAGAATTTATAAAGAAA ACCCA AC GTC ACATTA AAAG AAGAAAT TTAAG
GAAAATTACAGCCTGCACAC C ---- CG -- A AT ---
CCA
GAM16175 22877 TGGGTCTTTGCTGAGCTTCT - T CT- CTC - TCTTTAT
3 CGCCAAGTTCTTTATACTTG TG GGTC TTG GAGCTT GCC AAGT
GGCTCCAGGTTCTTACAGTG AC CCAG GAC CTTGGA CGG TTCA
ACCACA A T ATT CCT G -------
GAM16182 6954 TGGGTGTGTTGAAGAAGAGG A AG ATC- TGG-- CAGTGAAA
0 ATCCGGGTGGCCTCAGTGAA TGGGTGTGTTGA GA AGG CGGG CCT
AAGGATTTTCTCGTAGGCCT ACCCACGTAACT CT TCC GCTC GGA
TCTCAATGCACCCA - -- GGAT TTTTA --------
GAM16185 2232 TGGGTTGTTTTTCATAGCTA CATAGCTAGA TCTTTTCCAAAGTTTT
6 GATAAGATCTTTTCCAAAGT TGGGTTGTTTTT TAAGA
TTTTCTTAGAACCAACCAAA GCCTAACAAAAA ATTCT
AAACAATCCG ACCAACCAAG ----------
GAM16186 17499 TGGGTTTGAGGGTGTGTTAT TTT TTAT CA--- ATG AGCTC
1 TTTGAGTCATGAATGTACAA TGGG GAGGGTGTG TTTGAGT TGA TACA
GCTCTGTGAATCAGACCAGC GCTT TTTCCACAC AAATTCG ACT GTGT
TTAAATACCCACACCTTTTT TT- CCAT ACCAG AA- -----

TTCG
GAM16187 11391 TGGGTTTTATTTTTCAATTT A TTTTATTTTGGTT AAG ACATTTTCCA
0 TTATTTTGGTTCTCTTACAA TGGGTTTT TTTTTCAAT CTCTTACA GTTG
AGGTTGACATTTTCCATAAC ACTTAAAA AAAAAGTTG GAGAATGT CAAT
AGGTGTAAGAGTGTTGAAAA - T---------- GGA ----------
AAAAATTCA
GAM16187 210 TGGGTTTTATTTTTCAATTT A TTTTATTTTGGTT AAG ACATTTTCCA
1 TTATTTTGGTTTTCTTACAA TGGGTTTT TTTTTCAAT TTCTTACA GTTG
AGGTTGACATTTTCCATAAC ACTTAAAA AAAAAGTTG GAGAATGT CAAT
AGGTGTAAGAGTGTTGAAAA - T---------- GGA ----------
AAAAATTCA
GAM16189 6930 TGGTAAATCGCCTTTATAGC - TTTATAG CG TATTTATTGTAACACAT
1 TCGCTTTTTATTTATTGTAA TGGTAAATC GCC CT CTTTT
CACATAAAGGTAAGATGGCT ATCATTTAG CGG GA GGAAA
GATTTACTA T TA----- AT ----------
GAM16195 198 TGGTAGAAATATGGGATGCC AAT G--- A--- - - A- -- AAGATCAG
0 AAGGTGGGTGGATCACTTAA TGGTAGA ATGGGAT CCA GGTG GG TGG TC ACTT
GATCAGGAGTTTGAGACCAG ATCATCT TACTCTA GGT CCAC CC ACC AG TGAG
CCTCACCAACATGGAGAAAT C-- AAGA ACAA T G AG TT --------
CTCATCTCTACTA
GAM16195 16064 TGGTAGACAGTGTTTATGTA TA C TT T TGTGTT TT -- - ATTTTTAACTTGG
5 CGATGTGTTGTCGTTTTATC TGG GA AGTGT ATG ACGA GTCG TTA TCATT GGG
ATTGGGATTTTTAACTTGGC ACC CT TCACA TAC TGTT TAGC AAT AGTGA CCC
CCGAGTGAAATAATCCGATT CC C CT - T----- CT AA G ----------
TTGTCATTCACACTCTCCCC
CA
GAM16198 7830 TGGTAGTAGTATGATGAATC T AGTA GAAT TAA GAACCTCACA
1 TTATAACTGAACCTCACAAG TGG AGT TGAT CTTA CT
AATTAAGTAAAATCAATTGA ACC TCA ACTA GAAT GA
CTCCCA C GTTA AAAT TAA ----------
GAM16198 22836 TGGTAGTGGGTGAATCTGGA T TGG TG GAT ----- C CATTAA
4 TGGGAAAGTCGACATTAATC TGG AG G AATCTG GGGAA AGT GA
AACTCATTATTCCTCACAGA ACC TC T TTAGAC TCCTT TCA CT
TTTGTATTCTCCA - TTA GT AC- ATTAC A ------
GAM16198 7857 TGGTAGTGGGTGAATCTGGA T TGG TG GATT ----- C CATTAA
5 TTGGGAAAGTCGACATTAAT TGG AG G AATCTG GGGAA AGT GA
CAACTCATTATTCCTCACAG ACC TC T TTAGAC TCCTT TCA CT
ATTTGTATTCTCCA - TTA GT AC-- ATTAC A ------
GAM16201 84 TGGTATGACACTCGCCCCAA - ACT - CCAA--- CAAC
0 AGGAAAACAACTTTTCTTAC TGGTA TGAC CG CC AGGAAAA
ACGAAGGACGCGTCACTGCC ACCGT ACTG GC GG TTCTTTT
A C C-- A AAGCACA ----
GAM16205 4797 TGGTCAAGTTGTTTCCATTA C----- TCCA- AGTACTGA
0 AAAAGTACTGATTTTAAAAA TGGT AAGTTGTT TTAAAA
CTAATAACTTAAAACTGCCA ACCG TTCAATAA AATTTT
TCAAAA TCAAA --------
GAM16206 14100 TGGTCAGAGCGCCTGAGTTC G CGC AG A C TCAC
4 CACGACACCGTCACCGGTTC TGGTCA AG CTG TTCC CGA ACCG
GGGGAAGTAGTCCTTGACCA ACCAGT TC GAT AGGG GCT TGGC
- CT- GA - - ----

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GAM16207 15341  TGGTCAGCTGGTCCCTGCGG   TCA  T   CCT C       C  CCAGCTTCT
0          GTCCTACCAGCCAGCTTCTC TGG   GC GGTC   G GGGTCCTAC AG
           TGTAGGGCTCTCGGCCGCGT ACC   CG CCGG   C CTCGGGATG TC
           CCA               TG-  -    --- T       -  ---------
GAM16209 22755  TGGTCCACCTTTCTTAAAAT    CCA       AAATTT--------   TCAG
8          TTTTCTCAGGAATGGACTTA TGGT   CCTTTCTTA          TTC
           AGTTCTTAAGAAAGGATAAC ACCA   GGAAAGAAT          AAG
           CA                ATA       TCTTGAATTCAGGT   ----
GAM16210 6748   TGGTCCCAGCTACATTGGAA       CTACATT  AA   G-   GGG   GATCA
7          GCTTGAAGGGGGAGGATCAC TGGTCCCAG      GG  GCTT  AAG   GAG
           TTGAACTTAGGAGCCACCTT ACCGGGGTT      CC  CGAG  TTC   TTC
           GGGGCCA                -------  AC   GA   AAG   -----
GAM16211 17899  TGGTCCTCTCCAGGCTTAGC    -  --        AGCTG   CA---   TCAACTTC
9          TGGCCCAAGTTCAACTTCAC TGGT CC  TCTCCAGGCTT    GCC    AGT
           TAAGATGGCAATCGGGGCTT ACCA GG  GGGGGTTCGGG    CGG    TCA
           GGGGGTCGGCACCA         C  CT         GCTAA   TAGAA  --------
GAM16213 1947   TGGTCGACAGGCTCTCAAGG       --    TCTCAA   A-   CCCATTTTCAA
1          CAACTCCCCATTTTCAAGAG TGGTCGA  CAGGC     GGCA  CTC
           GCTGCTCCTGCCTGCTTCGA ACTAGCT  GTCCG     TCGT  GAG
           TCA                  TC    TCC---   CG  -----------
GAM16218 17005  TGGTCTTCTCCAACGAGGTG      TC   AA  A   GGAATGAGAAAAAG      A   GGGA
3          GAATGAGAAAAAGAGCACCC TGGTCT  TCC  CG GGT           AGCACCC TTT
           ATTTGGGAAAGGGGTGCTGC ACTAGG  AGG  GC CCG           TCGTGGG GAA
           CACGGGGGACCGGATCA        CC   GG  A  --------------      -   ----
GAM16218 11809  TGGTCTTGGGGTCTAGGGTG       ----         GT  G      T-   G       CA   ---
7          GGAGTTGGGTTCTGGTTTAG TGGTCTT    GGGGTCTAGG  GG AGTTGGG  TCTG TTTAGATC  GACA
AGGTTCTA
           ATCCAGACAAGGTTCTAGAC ACTAGGG    TCTCGGGTCT  TC TCGATTC  AGGT AGGTTTGG  TTGT
TTCGGGGT
           ATTGGGCTGGGGCTTAAGTG       GAGG         --  G      TT    G       AA    GAA
           TTAAGGTTTGGAGTGGATTC  ACATTGGG
           TTAGCTGCTTCTGGGCTCTG G
           GAGGGGATCA          C
                      --------
GAM16220 17758  TGGTGAAGATTCTGCTGAGA   G-      TT   CT       A-  CA-       TT   TCGTCC
8          TTTTAGACAGTGATGTTTTA TG  TGAAGA  CTG  GAGATTTT  GA   GTGATGTT  AGA
           GATCGTCCTCTCAACATCAT AC  ACTTCT  GAC  TTTTAAAA  CT   TACTACAA  TCT
           GATTCCCAAAATTTTTACAG   GA     T-   AT       CC  TAG       C-   ------
           TTCTTCAAGCA
GAM16223 22445  TGGTGAGATTTCGGACAAGT  GG        GACAA    C   ACA-  CG  TGAT G    GTG    GAAGGG

0          GGCAGTACATCCGGCTGATG T  TGAGATTTCG     GTGG AGT    TC  GC    G ACAGT   GCACT
GGGC
           GACAGTGTGGCACTGAAGGG G  ATTTTAGAGC     TACC TTA    AG  CG    T TGTCG   CGTGA
CCTG
           GGGCCGTGGAGTGCTTCCAT  A-         -----    -   AAAG  AA  ---- G    AA-     AGA---
           GGTCCAGAAGTGCAAGCTGT       TGC
           GTGCAAGAGAAAATTCCATC CGTGGAG
           GAGATTTTAAG         GTACCTT
                         ---
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GAM16224 22959 TGGTGAGGGCGTGTGGCTGA T- - GT GAA TT C-- - GCCACA
1 AGCTCTGTTCCTGCTTGGGG TGG GAGGGC GT GGCT GCTCTG CCTG TTGGGG GTTG

GTTGGCCACACAGCATCCCA ACC CTCCCG CA CCGA CGAGAC GGAC AACCCT CGAC
ACTCCAGGTCCAGAGCCGAG TC A GT GC- CT CTC A ------
CCTGACAGCCCTCCTCCA
GAM16224 22940 TGGTGAGGTATAGGAGTTGG TAT ------ TG A -- AAATA
3 AGTTTCGCAAATAGCCTGAG TGGTGAGG AGGAG T G GTTTC GC
ACCTTGAGAACATTTCCTTC ACCACTCC TCCTT A T CAGAG CG
CTCACCA T-- TACAAG GT C TC -----
GAM16224 15684 TGGTGAGTGGGGCTCAAACA G TG AACAAAACATA GGAAGAGA
9 AAACATAAGGGAAGAGACTG TGGT AG GGGCTCA AG
AGACAAATGTGGGCCCTCCT ACTA TC CCCGGGT TC
GATCA G CT GTAAACAGAG- --------
GAM16229 10133 TGGTGCCCAAGCCCAGCCTT T A CC-- G A AG---------- CGCC
2 GCCCACAGCCCTTCCAGCTG TGG GCCCA GCCCAG TT CCC CAGCCCTTCC CTGCCT
CCTCGCCAGGCGGAGCTGCT ACT CGGGT CGGGTC AG GGG GTCGGGAAGG GGCGGA

GCATCTCCAGGAAGGGCTGA - - TCCA G A ACCTCTACGTCGTCGA ----
GGGGGAACCTCTGGGCTGGG
CTCA
GAM16229 22872 TGGTGCCCCCCTTGGCTTTA CCCTT C TTCTCCGGCATAAAAACAC
3 ATTTCTCCGGCATAAAAACA TGGTGCCC GG TTTAAT
CATTAAAACCTCAGTGGGCA ACCACGGG CC AAATTA
CCA TGACT A ----------
GAM16230 17421 TGGTGCTGACTATCCAGTTG CT- T- GG C GA - T GGA TCAT
7 ATGGGCTGCCAGATCTGGGG TGGTG GACTA CCAGTTGAT GCTG CA TCTGG GGCA GCCCA
CC
CATGCCCAGGACCTCATGGA GTCAT TTGGT GGTCGACTA CGAC GT GGACC CCGT CGGGT GG

TGGGCTGCCTCCAGGTGACA AGT CC A- A -- T - A-- ----
GCAATCAGCTGGCCTGGTTT
GATACTG
GAM16231 14243 TGGTGGAAAAGGGTGTATTG AAAA A A A-- AAC AACTTC
8 ACAACAGAGAAACAGAACTT TGGTGG GGGTGT TTG CA CAGAGA AG
CCTACTTTTTGACATGACAA ACCACT CCTACA AAC GT GTTTTT TC
CACATCCCCTCACCA CC-- C A ACA CA- ------
GAM16232 14194 TGGTGGAGCTAAGAGAGTGA T TAA A TG CC TG- ACCAGG
6 CCTCCATTGCAGACCAGGCT TGG GGAGC GAG G A TCCAT CAG
GAATGTGGACTTTGCCTTGT ACC CCTTG TTC C T AGGTG GTC
TCCCCA - --- - GT TC TAA ------
GAM16234 15883 TGGTGGCATCTCCAGAGAAG CA AGAAGAC GGCT T G T T TG GATTGTGA

3 ACCAGGCTTCAGGCTGCGCA TGGTGG TCTCCAG CA TCAGGC GC CA GGGT G A
TGGGTTGTGAGATTGTGATT ATCGCC AGAGGTC GT AGTTTG CG GT CCCA C T
GCTACCCCTGGGCGTTTGAT A- GT----- AGTT - G C T GT --------
TGATGTGCTGGAGAACCGCT
A
GAM16234 7371 TGGTGGCCGTCGCTGCCAGG - T CC CACAA TCCCGC
7 CACAAGTGTCCCGCCGCATC TGGTGGC CG CGCTG AGG GTG

TCCTTCAGCGCGAGCCACCG GCCACCG GC GCGAC TCC CGC
A - T- TCTA- ------
GAM16236 19463 TGGTGGCTGGGGGCCAGCTG TG G - TG---- AG G A-- GGGACACA
0 GGCGAGCTGCACAACGGGAC TGGTGGC GGG CC AGC GGCG CT CAC AC
ACAGTATCGTGAGGTCCGCC ACCACCG CTC GG TCG CCGC GG GTG TG
AGTTCTGCTCGGGCTCTGGC GT G C TCTTGA CT A CTA --------
CACCA
GAM16236 10987 TGGTGGGCACCAAGCTGGAC CA A GGACC- A- A- - ACA
9 CTCCGCGACGACAAGGACAC TGGTGGG CCA GCT TCCGCG CG CAA GG
CATTGAGCGGCTGCGGGACA ACTACCC GGT CGA GGGCGT GC GTT CC
AGAAGCTGGCACCCATCA AC - AGAACA CG GA A ---
GAM16238 21833 TGGTGGTAACGAAATTTGGT AA AAATTT AAT TCG TGAG
3 AATGCTCTTCGAACCTGAGG TGGTGGT CG GGT GCTCT AACC
GTTATGGGGCTGACTTTAGT ACTACCA GT TCA CGGGG TTGG
GGGACCATCA GG GATT-- GT- TA- ----
GAM16238 386 TGGTGGTCAAGGGACCCCTA GTGG G -- GAG G CATC GG A GG A
6 TCTGAGGGGGGTCATCCATG TG TCAA GGACC CCTATCT GG GGT CATGG ACG GAAG
ATTTG CTGT
GGGACGAGAAGGGATTTGAC AT GGTT TTTGG GGGTGGG TT TCG GTATC TGT TTTC TAAAT
GGCA
TGTAATGTGCTATGTACGGT ---- G AT AA- G T--- A- A GG -
AAATGGCTTTATGTACTATG ATGTGCTATG
TGCTGTTAAGGGTGGGTAGG A
TTTGTTGGTA T

GAM16241 10925 TGGTGTCTGTAAGACTCAGT GT-- T A- A ACTTTTATT TAGC
3 TACCACTTTTATTTTCCTGT TGGT CTG AAG CTCAGTT CC TTCCTG
AGCTAGGAGTTAGCAAAAGG ACCG GAC TTC GGGTCAA GG GAGGAT
AACTGGGGCCTTCCAGCCGA AGCC C CG - AAAACGATT ----
GCCA
GAM16241 11045 TGGTGTGACTTTATTTGGGG T- TT T CTGTTT-- TTTCTATATTCCCCT
6 TCTGTTTGGATCTTTCTATA TGGTG GAC TAT TGGGGT GGATC
TTCCCCTGGTCCCTTTGTTT ATCAC CTG ATA ATCCTA CCTGG
ATCCTACATATGTCTTCACT TT T- C TTTGTTTC ----------
A
GAM16245 12067 TGGTTAACAGTAACAGCAGC AAC GCAGCAC A C GATAA
1 ACAGACCCAAACTTGATAAA TGGTT AGTAACA AG CCCAAA TT
ACTTTGGGACTTGTTATTTG ATCAG TTATTGT TC GGGTTT AA
GACTA GT- ------- A C -----
GAM16245 15706 TGGTTAACTGCTTGTACAAT CT --- C TCACTTTT
3 TACGTTTCACTTTTAATTAA TGGTTAA GCTT GTACAATTA GTT
TTGTGCTTAAGGCTTTAATT ATTAATT CGGA CGTGTTAAT TAA
A T- ATT - --------
GAM16246 7862 TGGTTACTGGGTTTCCTCAT GGGTT CA-- AACA---------- TAA
7 ACAAACAGATATAATATCAC TGGTTACT TCCT TACA GATA
TTTTAAGAGAAATGTACACA ACCAATGA AGGA ATGT CTAT
AGGAAGTAACCA ----- ACAC AAAGAGAATTTTCA ---
GAM16247 16258 TGGTTAGATCATATAGCTAA AG --------- AA- AATTAGG
3 TGAATTAGGCAGGGAGCTAT TGGTT ATCAT ATAGCT TG
TTTTTGAAGATGATGAACTA ATCAA TAGTA TATCGA AC

```
                        G-    GAAGTTTTT    GGG -------
GAM16249 10644  TGGTTCATAGAAGCAGCCAC    CATAG   GC--   AG--  - G AA  A   CA   --    AGAA
2          CAGCAGATGACAAAGAAGCT TGGTT   AAGCA   CACC   CAG AT AC  AGA GCTT  GTTCT  CCTTAA

           TCAGTTCTCCTTAAAGAAGT ACCAA   TTTGT   GTGG   GTT TG TG  TCT TGAA  CAGGA  GGGATT

           TAGGGGTAGGACAAGTATCT    ACA--   ATAA   AGAA  A G C-  A   --   TG    ----
           CGTGGTATTGAAGAGGTGAA G
           TATGTTTACAAACCA

                    -
GAM16249 2445   TGGTTCATGGGGAAAAACAT    CAT  GA   A   AATTAA   T  A-  AATTATA
4          TAAAATTAAAAAGTCCAATC TGGTT   GGG  AAAAC TTAA    AAAG CCA  TC
           AATTATAGAGGTGGCTTTAA ACCAA   CCC  TTTTG AATT    TTTC GGT  AG
           CACTTAAAGTTTTCTCCCTC    ACT  TC   A   CACAA-   -  GG -------
           AAACCA
GAM16251 7082   TGGTTCTGCTTTTATACCCT    ---    TTTAT-- CC-     TCT
7          CTGGTGTCTCACCAGAAATG TGGT   TCTGCT    AC   TCTGGTG
           TTCTTGCTAGCAGAAATACT ATCA   AGACGA     TG   AGACCAC
           A                TAA    TCGTTCT  TAA     ---
GAM16252 10062  TGGTTCTTTAGCATGTTCTC         CAT  TC  AG   A  ATTACGA
6          AGTTCAAGAATTACGATCCT TGGTTCTTTAG   GT  TC  TTCA GA
           GAAAGAAGGCCTAAAGAATT ATTAAGAAATC   CG  AG  AAGT CT
           A                    ---  GA  A-   C -------
GAM16257 13468  TGGTTGTTGTGTTTCCATTT   T    T       -   GGA    TGGT
2          TAGTGGATAAAATTGGTATT TGG TGTTG GTTTCCATTT TAGT   TAAAAT
           TTGAACTATGAATGGAGACT ACC GCAAT CAGAGGTAAG ATCA   GTTTTA
           AACGCCCA           C   -       T   A--    ----
GAM16259 6747   TGGTTTCATTGAGCATATTA    TT   T    T  TAGG   --  TAGT
4          GGTGGCCCTTAGTAGGCAGT TGGT  CAT GAGCA AT   TGGC  CCT
           CAAAATATTTGTTCCATGTT ACTG  GTA CTTGT TA    ACTG  GGA
           GTCA               TT  C    T  TAAA   AC  ----
GAM16263 1869   TGGTTTGTTGCCCTTGCCAA    TTG----   -   -----    ACAAAAA
4          TAACAAAAATGTTGGAAAGT TGGT     TTGCC CTTG    CCAATA
           CGAGTGGCAAAGCTGTTGCC ACCG     AACGG GAGC    GGTTGT
           A                TTGTCGA    T   TGAAA    -------
GAM16264 13189  TGGTTTTATTTTAACTTAAC         TA   AACC---------      TAC
2          CTTTGTGAATACTTCACAAA TGGTTTTATTT  ACTT          TTTGTGAA
           AATACACATACAGAAGTAAA ATCAAAATAAA  TGAA          AAACACTT
           TAAAACTA                --   GACATACACATAA      ---
GAM16265 15478  TGGTTTTGGCCAATCCTTTA     TG-  AAT-  TTT  -  AA    ------   TTGGTC
7          ACCGAAAACGTTCAGGTTGG TGGTTT   GCC   CC   AA CCG  AACGTT    CAGG
           TCTCTGTAAAAAAACGTTCG ACCAAA   CGG   GG   TT GGC  TTGCAA    GTCT
           CGGATTTTTGGTTGGGGCAA     CAA   GGTT  TTT  A  GC    AAAAAT   ------
           CAAACCA
GAM16269 1650   TGTAAACGGTAAAGAGATTT      GG  A-    TTTT   T  TCT
2          TTACTTTTGGTCTCCGTGAG TGTAAAC  TA  AGAGAT   ACTT TGG
           TCGCATCTCTACTAAGGTTT ACATTTG  AT  TCTCTA   TGAG GCC
           ACA                  GA  CA    CGC-   T  ---
GAM16271 4747   TGTAAATCATCTCGTGTTCC    A  TCT   TCCTG      C-  CTGCACTCTCCTTCT
```

7 TGAAACTGTCCTCACTGCAC TGTAA TCA CGTGT AAACTGTC TCA
TCTCCTTCTTGATTGATAGT ACATT AGT GCATA TTTGATAG AGT
TTACTTATACGTTGAATTAC A T-- TTCA- TT ----------
A
GAM16273 13654 TGTAACACCTTATTTTTTCT A - TTTTT TA ATT AA AAAAA ACTT
3 GTATATGAATTTGTTAATAT TGTA CA CCTTAT CTGTA TGA TGTT TATAA TCT
AAAAAAATCTACTTAGAAAA ACAT GT GGAATA GACAT ACT ACAA ATATT AGA
TTATAAAAACATCACTACAG - C CTGT- C- --- AA AAA-- ----
TGTCATAAGGCTGTACA
GAM16276 11320 TGTAAGCAGCATCATGGAGG GC TGGAGGT T - TT- -- ATGAAT
7 TTTGAAGATGCCGCATTGGG TGTAAGCA ATCA TTGAAGA GCC GCA GGGA TGGG
ATGGGATGAATTCCAAATTC ATATTCGT TAGT AATTTTT CGG CGT TCTT ACCT
TGCTTGCTGGCTTTTTAATA A- TAT---- - T TCG AA ------
TTGATATGCTTATA
GAM16276 7824 TGTAAGCAGCATCATGGAGG GC TGGAGGT T C- TT -- TGAAT
8 TTTGAAGATGCCGCATTTGG TGTAAGCA ATCA TTGAAGA GC GCA TGGA TTGGA
ATTGGATGAATTCCAAATTC ATATTCGT TAGT AATTTTT CG CGT GTCT AACCT
TGCTTGCTTGCTTTTTAATA A- TAT---- - TT TC TA -----
TTGATATGCTTATA
GAM16279 2528 TGTAATAAAAGCAGCTTGTT ATAAA AG- T-- TGAACAAT
3 TTCTGCTTGAACAATAGCTC TGTA AGC CTTGTTTTC GCT
TGAGAGCAAGAAGGCTGGAA ACGT TCG GAACGAGAG CGA
ATGCA AAAGG GAA TCT --------
GAM16281 14927 TGTAATCATTTGGCTTCAAT TTT T AT T C GGGG
6 TCTGGGTGCCTTCAGGGGGC TGTAATCA GGCT CA TCTGGG GCCTT AG
TAAGGCTCTAGATGAGTTTC ATATTGGT TTGA GT AGATCT CGGAA TC
TTGGTTATA TCT - -- - - ----
GAM16282 338 TGTAATGCAAAATTTACACG A A AC CT GTGG
8 AAAGCAATGCTATCACCTCC TGTA TGCA AATTTACACGAAAGCAATGCTATC CTCCC GT

CCTGTGTGGACTTGGGAGAG ACGT ATGT TTAAATGTGCTTTCGTTACGATAG GAGGG CA

GATAGCATTGCTTTCGTGTA A A GA TT ----
AATTATGTAATGCA
GAM16284 15269 TGTAATTCATGGAGAAGACT ---------- CTAC- TAAGT
1 ACAGTTAAGTACTAAGAATC TGTAATTCATGG AGAAGA AGT
TTCTAAATGTAATTTCATGG ACGTTAGGTACT TCTTCT TCA
ATTGCA TTAATGTAAA AAGAA -----
GAM16285 16257 TGTACAAAAATACCTGCTGT AAA T - GCTTTA- TCGT
9 TGCTTTAGAAATCGTTTTCC TGTAC AA ACCTG CTGTT GAAA
TTTATGAATAGTCAGGTCTT ACATG TT TGGAC GATAA CTTT
GCAGTACA ACG C T GTATTTC ----
GAM16287 10720 TGTACACCATCACTGACAAC A AT-- A- CT AA---------- GCCTTGA
2 CTCTGCGAAGAATGCCTTGA TGTAC CC CACTGAC ACCT GCG GAAT
GTTCGTCCAGGTGCTGGAAG ACGTG GG GTGATTG TGGA CGT CTTG
ATGCTAGGTGAGTTAGTGTC C ACCT AG T- AGAAGGTCGTGGACCTG -------
CAGGCGTGCA
GAM16288 4717 TGTACAGGATGATTTTCATA T - TTTTCATA-- - - ATTCA
4 TTTTGAAGGGATTCATCACT TG ACAGGAT GA TTT TGAAG GG
TCACAAAGCATCTCCATTCT AC TGTTCTA CT AAA ACTTC CT

ATCTTGTTCA T T TACCTCTACG C A -----
GAM16293 14978 TGTACTGACTACTTTCTTCA TAC A TTTCT CATC GCCCTT TCTCAGT
5 CACATCAGTTGCCCTTTATG TG TG CTAC TCACA AGTT TATGA
ATCTCAGTTCATAAACTCTT AC AC GATG GGTGT TCAA ATACT
TGTGGTATGTAGCAATCA TA- - TAT-- TTC- ------ -------
GAM16295 13810 TGTACTTCTGTTCAAATTTA ACTT- T AAATTT ATGCCAAAG
1 ATGTGAAATATGCCAAAGAT TGT CTG TC AATGTGAAAT
TTCACATTTAGAGACTAGTT ACA GAT AG TTACACTTTA
AAAACA AAATT C AGAT-- ---------
GAM16300 15567 TGTAGATTGTCAACATCGAA TT C GAAT - A- TACTTT
6 TTGATGGGATCATACTTTTG TGTAGA GT AACATC TG ATGGG TCA
AGCTCCATACATGGGTGTTA ACGTCT TA TTGTGG AC TACCT AGT
TTTCTGCA T- - GT-- A CG ------
GAM16300 7836 TGTAGCAACCTAGATTATTA CA ATTATTATAG-- GA AATAG
9 TAGTATATTGAACAAATAGT TGTAG ACCTAG TATATT ACA
GTGAAATGTAACAAAAAGTC ATATC TGGATC ATGTAA TGT
TCCTAGGTACTATA A- CTCTGAAAAACA AG -----
GAM16303 14213 TGTAGCCTTCCGCCCTGGTA C TC T TA G- ATGA
0 TTTGGGGGGATGACCAGCCC TGTAG CT CGCCC GG TTTGGG GG
AGGCGTTGGGTGTTAGTCTG ACGTC GA GTGGG TT GGACCC CC
CA T TT - GC GA ----
GAM16305 13815 TGTAGGCTTTAAGAATTTTA AGG TTTT CTAA- - TTAT
5 TCCTAATGGCCTTTATAGGA TGT CTTTAAGAA ATC TGG CCT
CCAATGCTGATTTTTTTTTT ACG GAAATTTTT TAG ACC GGA
AAAGGGCA G-- TTTT TCGTA A ----
GAM16306 10906 TGTAGGTGCCCTCAATAGCC A CCT T C C-- GTCTTGAA
6 TCCTTGGGTGTCTTGAAGCC TGT GGTGC CAA AGC TC TTGGGT
CAGACCGATGTTCTTGTAGT GCG CCATG GTT TTG AG GACCCG
ACCGCG - AT- C T CCA --------
GAM16311 15676 TGTATAAACCGCGCACCATA A- C C CAGACAGCACAT CCCACCCCC
4 CAGACAGCACATTACCCCAC TGTATAA CCG GCAC ATA TAC
CCCCGTATTTCCACACTTAT ATATGTT GGC CGTG TAT ATG
ATGTGCACGGACTTGTATA CA A - ATTCACACCTTT ---------
GAM16315 21939 TGTATATATTATGTACACAT T A GTTA TATAT
0 AGAATGTTACATATTATATA TGTATATAT ATGTACAC TAGAAT CATAT
TATGGTTTTAGGTGTATATA ATATGTATA TATATGTG ATTTTG GTATA
TATGTATA - G ---- -----
GAM16316 13623 TGTATATTGAAAATGCTGAA ATT AAT GA CTA T CTT TACT ACACTAAA
1 TTATTGTAATCTATCTTGTA TGTAT GAA GCT ATTATTGTAAT TCT GTAAGAT CT TGT
AGATCTTCTTACTTGTACAC ACATG CTT CGA TAGTGACGTTA AGG CATTCTA GA ACG
TAAAGCACCTTAGTTTATCT AGT AT- -- --- - TTT TTCC --------
TACGGAATTGCAGTGATAGC
TATTCTGAGTACA
GAM16317 15078 TGTATCAGGAATGTTTTGGT T GAA- ---- T TT- TCAAACCA ACTTAA
3 ACTGTGTTTTCACTCAAACC TGTA CAG TGT TTTGGTAC GTGTT CAC CTG
ACTGACTTAACAGATACTGC ACGT GTT ACA AAATCATG TACAA GTG GAC
TGTGTATAACATGTACTAAA - ATTG TTAT - TAT TCGTCATA ------
TATTACAGTTATTGTGCA
GAM16322 7611 TGTATGTAAGTGTTTTACTG TG-- --------- -- ATT TTGGTGTC
5 CACTGTATTGAATTGGTGTC TGTA TAAGTGT TTTACTGC ACTGT GAA

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          TTTTGCACAGTTAGCAGTAA ACGT   ATTTACG       AAATGACG  TGACA   TTT
          ATAAAAATTAGCATTTAAAA    TAAA     ATTAAAAAT      AT    CGT  --------
          TTGCA
GAM16322 11000  TGTATGTCTTTAAACAATAA        TTAAACAATAA--   ATTTCTTCTCAAATACTG
8          GCAATTTCTTCTCAAATACT TGTATGTCT          GCA
          GTGCACTTTCCCCAAACAGA ACATATAGA          CGT
          TATACA                  CAAACCCCTTTCA  ------------------
GAM16327 7607   TGTATTCTTCACTGGTTTGC    TTCTTCA   -   AA--  G      CC-----   TGAA
0          CAATTGGTCAGGTCCCCAGC TGTA     CTGGT TTGCC   TTG TCAGGTCC      AGCG
          GTGAACGTTTCCTAGAGGAC ACAT      GACCG GACGG   GAT GGTCCAGG      TTGC
          CTGGGTAGCTAAGGCAGTGC    TAAAAA-    T    AATC   G      AGATCCT   ----
          CAGAAAAATTACA
GAM16328 13489  TGTATTTATTTATTTATTTA  G    A   A   A   A    A   G             AATCATTTCCCCATAACT
5          TTTTATTTGTTTTTCATTCA T TATTT TTT TTT TTT TTTT TTT TTTTTCATTCATCCCATT
          TCCCATTAATCATTTCCCCA G ATAAA AAA AAA AAA AAAA AAA AAAAAGTAAGTAGGGTAA

          TAACTCAATGGGATGAATGA  G    A   A   A   A    A   A           ------------------
          AAAAAAAAAAAAAAAAAAAA C
          AAAAAAAAATAGG

                    -
GAM16330 63    TGTATTTGTTTTACTGTATA   A     TTACT   TATT  A         TGTGTATG
0          TTTAAATACACACATGTGTG TGT TTTGTT     GTA    TA ATACACACATG
          TATGTATGTGTGTATCTGTT ACG AAACAA     CGT    GT TATGTGTGTAT
          CCTGCTAACAAAAGCA       A     T----   CCTT  C         --------
GAM16332 17926  TGTATTTTTAGTAGAGATGG    T       AGA    TTTCACTATGTT    -  T   CATGA   CC  ACCT
4          GGTTTCACTATGTTGGCCAG TGTA TTTTAGTAG   TGGGG          GGCCA GGC GGT     ACT  TG
          GCTGGTCATGAACTCCTGAC ACAT AGGATCGTT   ACCCT          CCGGT CCG CCG     TGA  AC
          CTCAAGTGATCTGCCTGCCT    T       AA-    ------------    T   T   TCTAG   --  ----
          TGGCCTCCCAAATTGCTAGG
          ATTACA
GAM16333 16013  TGTCAAAACCTCAAATTCTT     AAA  TCAA        ---- GG  AGTTT
3          GCTGGGGCAGTTTGTGACAA TGTCA   CC    ATTCTTGCT    G  GC
          GAGGCAGGGATGCTGGAATG ACAGT   GG    TAGGGACGG    C  TG
          ACA                  AA-  TCG-        AGAA AG  -----
GAM16338 472    TGTCACCAGAGATGGATCAC     A-       G   CACAC-    TG        AGAC
6          ACTTGATGGGGATGGTTAGA TGTC  CCAGAGAT GAT      TTGA  GGGATGGTT
          CAACTGTCTCATTCAATAAA ACGG  GGTCTTTG CTG      AACT  CTCTGTCAA
          CTGTCAGTTTCTGGAGGGCA    GA       A   TCAAAT    TA        ----
GAM16338 10474  TGTCACCATCCAGCATGAGT     A   T     ----------    TTTCT   TAAT
9          TTCTGAATAATTTCTCTCAC TGTC CCA CCAGCA         TGAG     GAA
          TTTATATCCTGTTGGCTGGC ACAG GGT GGTTGT         ACTC     CTT
          GACA                 C   C      CCTATATTTC    T----   ----
GAM16341 4551   TGTCACTGTGAGGAAGGTGA    A  G    GAAGG    GC--    AGGGC
7          GGGCGGGGAGGGCCCCCAGA TGTC CT TGAG     TGAGG    GGGG
          GCCTCAGGCAGCTCAGAGAG ACGG GA ACTC     ACTCC    CCCC
          GCA                  A  G    GACGG    GAGA   -----
GAM16341 633    TGTCACTGTTGGACGATTGG    C      G  GA    - A     AT      AAACCCGGAA
8          CAGAATGGATGTCCTCAAAA TGT ACTGTTG AC  TTGG C GAATGG  GTCCTCA
          CCCGGAATGGGGGCCACCAT ACA TGGCAAC TG  GACC G TTTACC  CGGGGGT
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          TTGGTCCAGGTCAACGGTTA  T     - --   T G     AC      ----------
          CA
GAM16343 21740  TGTCAGATGTGTCCTTGTTA  T       CCTTG     A-   -    CCTCT
1          ATATACTCGAAGTTCCTCTA TG CAGATGTGT    TTAATAT  CTCG AAGTT
          GCTTGTGGGAGATGTTAGAG AC GTTTACACA    GATTGTA  GGGT TTCGA
          CTAACACATTTGCA       -       ATCGA     GA   G    -----
GAM16343 7112   TGTCAGCACTGCACACCCTC    -   G  CAC   CCA     TT   ATACA    T   A   TTTTTTTTTTTTT
5          CAGGGGACTTGGAATACAAT TGTCA GCACT CA   CCT   GGGGAC  GGA    ATCCT TTT CTT
          CCTTTTTACTTTTTTTTTTT ACGGT CGTGA GT   GGA   CCCCTG  TCT    TGGGG AAA GAA

          TTTTTTTTAAGAAACGGGGT    G    G  C--   C--     TC   C----    C   -   ----------
          CTCTCTGTCCCCCAGGCTGG TTTT
          AGTGCGTGGCA

                        ----
GAM16346 13386  TGTCAGTGAGTGGCTCTTGT   T    A       T    CT  T    ACA
0          GCCTGCTGTAAACATTACGC TG CAGTG GTGGCTCT GTGC  GC GTAA
          CTGCACTAGGGCCATGTGCT AC GTCGT TACCGGGA CACG  CG CATT
          GTCA               T    G       T    TC  -    ---
GAM16351 14844  TGTCATTTTAAACATTGGTA          ACATT    G  TT    CATGA
7          GGCCTTGGTACATGATGCTG TGTCATTTTAA    GGTAG CC  GGTA
          GATTACCTCTCTTAAAATGA ACAGTAAAATT    CCATT GG  TCGT
          CA                       CTCT-    A  --    -----
GAM16352 2458   TGTCATTTTTGTTTTAAGAG    A       TAAGAGTTGG-   GAGTA
1          TTGGGGGGAGTATCTATAGT TGTC TTTTTGTTT         GGG
          AAAGTTGAATAAAGGGGACA ACAG GGAAATAAG         TCT
                          G       TTGAAATGATA   -----
GAM16353 22839  TGTCCACAAAGAATTCCTGG     ACAAAGAA    -  CA-    ACCGATGTCCAAA
5          TCAGCACCACCGATGTCCAA TGTCC       TTCCT GGT   GCACC
          AGGTGCAATATCAAGGAAGG ACGGG       AAGGA CTA   CGTGG
          GCA                 --------    A   TAA    -------------
GAM16353 16179  TGTCCACAGCTGGCAAATTC     A-    G  AAA     GCAG    AATCAAA
6          AGTGCAGATCAGAATCAAAC TGTCC  CAGCT GC   TTCAGT    ATCAG
          TGATGGCTGAAGGCGAGTTG ATAGG  GTTGA CG   AAGTCG    TAGTC
          AAGGATA              AA    G  G--     G---     -------
GAM16356 15340  TGTCCATCTGTCTGTATACC      TC  TC   A  --     T    ACTCC   G   AGCC
9          TTCGTGAGGGACTCCGTAGG TGTCCA  TG  TGT TA  CCTTCG GAGGG    GTA GGG
          GGAGCCTCTGTACATGCTCT ATAGGT  AC  ACG AT  GGGAGC TTCTC    CAT TCT
          TTCGAGGGATTAAGCACCAA      GA  C-   A  TA     T    GTA--   G   ----
          GTGGATA
GAM16357 4790   TGTCCATGTGAGCATGTATT    C-          ATTTCTTGA   G CCTCTAACACTG
7          TCTTGAGGGGGCCTCTAACA TGT  CATGTGAGCATGT        GGG G
          CTGTGCCCATGTGCTCATAT ATA  GTATACTCGTGTA        CCC T
          GTAATA               AT          ---------   G ------------
GAM16361 623    TGTCCCTCCACAGATCGCTC       CCA   A  GC    CCA   AACA
4          TGACCATGTAACAGCAGCTT TGTCCCT   CAG TC  TCTGA   TGT
          CAGAAAGAACTGGCGGGGGC ACGGGGG   GTC AG  AGACT   ACG
          A                    CG-   A  AA    TCG   ----
GAM16361 17648  TGTCCCTGCAAAGATGACAC    -   T    A  TG   CT   ----   -    GTG
8          TCCTCTCCAAGGTGCTTGTG TGT CCC GCAA GA  ACA  CCT    CTC CAAG
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AGGTACAGGGATGTTGTTGT ACG GGG CGTT TT TGT GGA GAG GTTC
TGCTGGGTGCA T T G GT AG CATG T ---
GAM16362 16976 TGTCCGACTCGCTGATCTTG CGACTC TG TCT T CC CATCCTCCACG T ATGTT

5 CCCTTGAGCCCCTCATCCTC TGTC GC A TGCCCT GAG CCT GCGC CTTC
CACGGCGCTCTTCATGTTGA ACAG CG T GCGGGA CTC GGA TGCG GAAG
AGGCGTAGGACTCCAGGGCG TT---- GT CTT C A- ---------- - -----
TTCTTGGCTTGACA
GAM16364 7760 TGTCCTCCCCCACGCTCCAG CCCAC ---- - GT GGCC
5 GGGAAGTCGGGCCCGTGTTC TGTCCTCC GCTCC AGG GGAA CG
TGCCTGGTAGGAGCGGAGGA ACAGGAGG CGAGG TCC TCTT GC
CA ----- ATGG G GT ----
GAM16367 11542 TGTCCTTGAACTTGGAACCT GA- TGGAA- GACAAT G GTTTGGAA
6 GACAATGTTGGTGTTGTCGT TGTCCTT ACT CCT GTTGGT TTGTCGT
GTTTGGAAATGATAAACTAA ACAGGAG TGA GGA TAATCA AATAGTA
TTAAGGAAGGAGATATAGTG AAG TATAGA AGGAAT - --------
AAGAGGACA
GAM16369 15516 TGTCGAGGGCTGCCTCCCAG C G TCCCAGT- --- - CA- GT CGTGGA
0 TCCGTGGTCCATCTCCCAGT TGT GAGGGCT CC CCGT GGTCCAT CTCC GTGCT GTGCC

GCTGTGTGCCCGTGGAGGCA ACG CTCTCGA GG GGCG TCGGGTA GAGG CATGG TACGG

TCTGGTACAGAGGAGAATGG T - TGTTGCTT TCC A AGA TC ------
GCTCCTGCGGTTCGTTGTGG
AGCTCTCTGCA
GAM16369 14948 TGTCGCTGACGAATGATGAC GACGAA ACAA - -------- A A--- CACACACACGAC
8 AAGACAAGCGAAGATCAGGG TGTCGCT TGATG GACAA GC GAAG TC GGGC
CCACACACACGACAGCCCCT ACGGCGA ACTAC TTGTT CG CTTC AG CCCG

TCGAACTTCCAAAATAAGCG GTCGAA C--- G AATAAAAC A CTTC ----------
TTGTTCCATCAAAGCTGAGC A
GGCA

-
GAM16370 10204 TGTCGGACCCCAGCCCTCCG ACCCCA- CC ----- - C AGCC
2 GGGCCTCGAGGGCCTGCAGC TGTCGG GC TCCGGGG CC TCGAGGG CTGCAGC
AGCCGCTGCAGCCTCTTGAT GTAGCT CG AGGTCCT GG AGTTCTC GACGTCG
GGAGATGTCCTGGAAAGCCA GAAACAC AA GTAGA T C ----
CAAAGTCGATG
GAM16371 13118 TGTCGTGGAATTTGAGTATA C AT TATAT - A TAAT
6 TGTGCGAATATCAAATTAAT TGT GTGGA TTGAG GTG CGAATATC AAT
GTTAGATGTTTGTCACTTCA ACA CACCT AACTT CAC GTTTGTAG TTG
ATCCACTACA T -- ----- T A ----
GAM16371 14169 TGTCGTTCGAGGGTGCGCCA T TT -- CA TTCTAGT CC AACG
9 TCGTGTTCTAGTTCCCTGGG TG CG CGAG GGTGCGC TCGTG TC TGGG
AACGTCCATCGATTTACGAG AC GC GCTC TTACGCG AGCAT AG ACCT
CGCATTTACTCGTCCGTCA T CT AT -- TT----- CT ----
GAM16372 15720 TGTCTAATTTTAGAACATTT C TTT A TTT A CCT- TCTCTTACTTT
7 TCATTGCCTCAGTCTCTTAC TGT TAA TAGA CA TC TTG CAG
TTTCTGTCTCTAAAGATTTG ACA GTT ATCT GT AG AAT GTC

TCTATTTTGAACA A TT- - TT- A CTCT ----------
GAM16373 7329 TGTCTACGACAGCTCTCAAT CGACA TCTCAATTG CA ACCGT
1 TGCCCAGTCATGACCGTCAG TGTCTA GC CCCAGT TG
CTGGGATAACCATTGCCCTA ATAGGT CG GGGTCG AC
CTGGATA CATCC TTACCAATA -- -----
GAM16375 22035 TGTCTCAAAGCAGCCCAGGG CAAA -- CCTGA CCTGATTCACCTACA
4 GCCTGAAATACCCTGATTCA TGTCT GC AGCCCAGGGG AATAC
CCTACAGTGTTCCCCTGGGC ACGGA CG TCGGGTCCCC TTGTG
TCAGCAGGCA ---- AC ----- ----------
GAM16376 2421 TGTCTCACTAGGGTCCCCTC -- - T CCTCCCCA- CT C TAA
0 CCCAAGGCTCAGCTCTAAGA TGTC TCAC TAGGG CC AGG CAG TC
CCTGCACCTGCTTCTCTTGG ACAG AGTG GTCCC GG TCC GTC AG
CCCCTGCGTGACAGACA AC C C TTCTCTTCG AC C ---
GAM16377 22132 TGTCTCCAAAAGTCCTTGAA A C GA AG AAGTTG
2 GGATTTTAGGAAGTTGTTAA TGTCTCCAAA GTC TT AGGATTTT G
AAGTCTTGAAACGATGTTTG ACGGGGGTTT TAG AA TTCTGAAA T
GGGGCA G C AG AT ------
GAM16380 10766 TGTCTCTATTTTTTCACTTT ATT TC TA -- TATA
2 ATAGGCTCCTGTTATAATAG TGTCTCT TTT ACTT TAGGCT CCTGT
GCAAGTTTAATGGGTATAAA ATAGGGA AAA TGGG ATTTGA GGATA
CACAGGGATA CAC TA TA AC ----
GAM16380 4703 TGTCTCTGAAATATTTCTTT T A TTC GAA AAAT ACTC
8 GAAGTTTTTAAAAAATTGAC TG CTCTGAA TAT TTT GTTTTTAAA TG
TCCATGTTTAAAAACAAAAA AC GAGACTT ATA AAA CAAAAATTT AC
CACATATTCAGAGCA - - CAC AA- GT-- ----
GAM16381 15482 TGTCTCTTATCATGTTGGTG TAT-- - TG GGA CGCA
6 GAGGTGGCCGCAGCCATTGC TGTCTCT CAT GT GT GGTGGC
TGGCTATGTGTTTAGAGATA ATAGAGA GTA CG CG TTACCG
TTTGT T GT --- ----
GAM16388 7228 TGTCTGTCTCAGCTCAACCA T CA CAACCACA G CCCACTTCCATCCT
0 CAGTCTGACACCAGAGCCCA TG CTGTCT GCT GTCT ACACCAGAG
CTTCCATCCTCTCTGGTGTG AC GACGGG CGA CGGA TGTGGTCTC
AGGCACAGCGAGGGCAGCA - AG CA------ G ----------
GAM16388 10237 TGTCTGTCTCTTTTCGGAAG T TC- AA- AATT-- TC TTTCTGTT
1 CGGAATTTCCTCAGCTTTTC TGTCTG CTCTTT GG GCGG TCC AGCT
TGTTAGCTCTGGGTCTACCT ACAGAC GAGGGA CC CGCT GGG TCGA
CGCACACCACCAGGGAGTCA T CCA ACA CCATCT TC --------
GACA
GAM16392 26 TGTCTTCACCTTTGTTCTCA TT--- - TTC -- CAGTC
2 GCACCACAGTCTGGATTGCT TGTC CACCT TTG TCAGCA CCA
GACAGTAGGTGTATATGACA ACAG GTGGA GAC AGTCGT GGT
TATAT T --- TA -----
GAM16392 7791 TGTCTTCACCTTTGTTCTCA TT--- - TTC -- CAGTC
3 GCTCCACAGTCTGGATTGCT TGTC CACCT TTG TCAGC TCCA
GACAGTAGGTGTATATGACA ACAG GTGGA GAC AGTCG AGGT
TATAT T --- TT -----
GAM16393 7622 TGTCTTCTGTACATCTTACT C TCTT T AATTAAAAAAAAAGAAA
8 GGGTTTAATTAAAAAAAAAG TGTCTT TGTACA AC GGGTTT
AAAAAACTCTGTTGTACAAA ACGGGA ACATGT TG CTCAAA
GGGCA A ---- T ----------

GAM16396 13753 TGTCTTTAAAAAGCATGTCG T T - TC-- T ACATTTC
0 TGATGTACACATTTCGTCAT TG CT TAAAA AGCATG GTGATG AC
TACCTATCATGTTGTTTTGT AC GA GTTTT TTGTAC CATTAC TG
AGCA - T G TATC - -------
GAM16401 15558 TGTGAACCAATACATTGAAA AC ATA TT GT T GTAA
7 GTTGGTGTTGTCATGTAAGT TGTGA CA CA GAAAGTTG GT GTCAT
GACTGCTGTAGCTTTTCTGA ACACT GT GT TTTTCGAT CG CAGTG
GTGCCTCACA CC GA- C- GT T ----
GAM16404 17765 TGTGAATCACCGGCAGAGCC AA ACCGG A GGT AGGA
7 TGGTGGAGCTGGAGGACCGG TGTG TC CAG GCCT GGAGCTGG
TTCCTGGGCCTGACAGACAC ACAC AG GTC CGGG CCTTGGCC
A -- ACA-- - T-- ----
GAM16405 15818 TGTGAATCCTAACCGCTGAT A CCTA- GC---- T AACCGAATATATCCA
0 TTTATTTAACCGAATATATC TGTG AT ACC TGATT TATTT
CAAAATATGATCACTTCCAG ACAC TG TGG ACTAG ATAAA
GTCCTCAGTACACA A ACTCC ACCTTC T ----------
GAM16405 13733 TGTGAATGACCAGGGTGGAA --- GG-- GA-- TGAA
2 TGTTTTTGAAGGAATATAAA TGTGAATG ACCAG TG ATGTTTT
GCAAAAACTGGTTGACATTC ACACTTAC TGGTC AC TATAAGG
ACA AGT AAAA GAAA ----
GAM16409 15414 TGTGACCCTATCTCAGAAAG TG - AGAAA GATA
0 AGGGAGTTAGGATATTGACT TG AC CCTATCTC GAGGGAGTTAG
TTTTTGGGGAGGTGGGTGTT AT TG GGGTGGAG TTTTTTCAGTT
GTA GT T GGG-- ----
GAM16410 14266 TGTGACTATAAGTAATGAAC CTATA - CC CC- AACCACA
6 CCAATTCCACAAACCACATG TGTGA AGTAATGA AC AATT ACA
TCAAAATTAGTCTTATTACT ACACT TCATTATT TG TTAA TGT
TCACA ----- C A- AAC -------
GAM16421 7814 TGTGATGGCTAAGTCCTGGA T CT G TAAT AGATTGTAAC
4 CTGGCTTAATGGTAAGATTG TGTGA GGCTAAGTC GGACT GCT GGTA
TAACTACCAGTAAGTTTTTG ATACT CTGGTTCGG TTTGA TGA CCAT
GCTTGGTCTCATA - TT A ---- ----------
GAM16423 4808 TGTGATTTTTCAGAATTCCC TTTT- AATTCCC CT-- TTCT
6 AGAGTTTACTCATTCTTGTT TGTGA TCAG AGAGTTTA CA
ATTAAACTCTAGCCAGTTGA ACGCT AGTT TCTCAAAT GT
CATCTTCGCA TCTAC GACCGA- TATT ----
GAM16424 16201 TGTGCAACTTATGAATCTTT AACT - TAATATT TATGC
3 GATAATATTTCCTATGCGGA TGTGC TATGAATCT TTGA TCC
TTGCTCAACAGGTTTATATA ACACG ATATTTGGA AACT AGG
AAGCACA AAAT C CGTT--- -----
GAM16425 11642 TGTGCACCATGAGCTTCTGC AC GAGCT TG AC TG T - C GCTTCCCACCG
3 ACGGCATGTGGTTCATGACC TGTGC CAT TC C GGCA TGG TCAT GA CAGCT
AGCTGCTTCCCACCGAGCTG ACACG GTA AG G CCGT GCC AGTA CT GTCGA
CTCGATGACCCGTTTGCCTC CC AT--- GT CT TT C G C ----------
GTGGATAATGCCGCACA
GAM16426 11775 TGTGCAGAAGACTCCTTGGC A CTT TGT TG TTGTAATTGGTCT
2 TGTGTGGAGGATTCTTGTAA TGTGCAGAAG CTC GGC G GAGGATTC
TTGGTCTGAGTTTTCTGTGT ATATGTCTTT GAG CTG T CTTTTGAG
CTGAGATTTCTGTATA A T-- --- GT ----------
GAM16426 14999 TGTGCAGCAATTTTCCTACA AGCAATT TACAAACT- TTTAAT

7 AACTTTCCGGTTTAATTCGG TGTGC TTCC TTCCGG
AACTGAACAGTGGAATTCCA ACACG AAGG AAGGCT
AAGCACA AAACCTT TGACAAGTC ------
GAM16430 11803 TGTGCCCACAGGTTGAGAAC - TG GAA G GCAGA GAGGTG
8 TATGTGGCAGATATCGAGGT TGTG CCCACAGGT A CTAT TG TATC
GGATGGAAAGCAGGTAGAGT ACAC GGGTGTTCG T GATG AC GTAG
TGGCTTGTGGGACACA A GT GA- G GAAAG ------
GAM16430 4617 TGTGCCCACAGTGTTGAGAA - T TG GAA G GCAGA GAGGTG
9 CTATGTGGCAGATATCGAGG TGTG CCCACAG GT A CTAT TG TATC
TGGATGGAAAGCAGGTAGAG ACAC GGGTGTT CG T GATG AC GTAG
TTGGCTTTGTGGGACACA A T GT GA- G GAAAG ------
GAM16431 17929 TGTGCCCTGGTGTACCGGCT GC T- GTA --- - ----- TGCT
7 GCAGCCTGGCCTGCTGGAAC TGT CC GGT CCGGCT GCAGC CTGG CC
CCTCAGAGCTGCAGGGGCTG ACG GG TCG GGTCGG CGTCG GACT GG
GGAGCTCTGGAAGCA AA TC AG- GGA A CCCAA ----
GAM16431 22154 TGTGCCGCCGCGCCCAGCCC CC CCCA AAAAAA AAAAA
8 CCACAAAAAAGTTAAAAAAA TGTG GCCGCG GCCCCCAC GTT
CCATAGGTGGGGGCCGCGGC ACAC CGGCGC CGGGGGTG CAA
CCCACA CC ---- GATAC- -----
GAM16433 17289 TGTGCGAGTGATGGGAAGGC GAGTG AAG CATTAT TAT
7 GGGCATTATGGCCCTATGGG TGTGC ATGGG GCGGG GGCCC
CTTTTAACCTGTACCCGTGC ACACG TGCCC TGTCC TCGGG
ACA ----- A-- AATTT- ---
GAM16434 584 TGTGCGGTTTTTTTACATAG C TTT A AAAC- GTCCCAT GTTTGCTG
0 GTAAACGTGTCCCATGGTGG TGTG GGTTT TAC TAGGT GT GGTG
TTTGCTGCACCTATCAACCT ACAC CCGAA ATG ATCCA CA CCAC
ATCACCTAGGTATTAAGCCC C TT- G CTATC ACTAT-- --------
CACA
GAM16436 1664 TGTGCTGAAGGAGGGTGTGG GAAGGA GA-- A AAA TTC GTTAA
2 AGTACCGGATAAAAATCTCT TGTGCT GGGTGTG GT CCGGATA ATCTCT CGG
TTCCGGGTTAACCGAGAGAT ATACGA CCTACAT TA GGCCTGT TAGAGA GCC
AGTGTCCGGCATGAAGTACA ------ GAAG C GA- --- -----
TCCAGCATA
GAM16440 15531 TGTGGAACAAGTTCGCATCC TG AACAA A GAGG A CGCCA
9 TGAGGGGACTGGGCGCCATC TG G GTTCGC TCCT GG CTGGG
CAGCCAGGAGTGAACCGCTG AC C CAAGTG AGGA CC GACCT
CA GT GC--- - ---- - -----
GAM16441 13416 TGTGGAAGTCCAGGGGCCCC --- - CCCCATGAA- GAGAT
7 ATGAAGCCCGAGATGGGCAG TGTGG AAGTCCAGG GG GCCC
CTCCTTATCCGCCTGGATTT ACGCC TTTAGGTCC CC CGGG
GAACCGCA AAG G TATTCCTCGA -----
GAM16450 14831 TGTGGCCGTGGCGTGGCCTG T CC T - G TT---- CTGT A TGCCC
1 GTGATCTTGGCCACTGTGGT TG GG GTGGCG GGCC TGGT ATC GGCCA GGTCTT GGGGG

CTTAGGGGGTGCCCTCCCCG GC CC CACTGC CCGG ACCG TGG TCGGT CCGGAG CCCCT

AGGCCTGGCTTATGGTGGTG T -- T G G TGGTAT ---- - -----
GCCAGGGCCTCGTCACCCTC
G
GAM16451 7113 TGTGGCGTGTAACAGTAGTT T A--- CT--- TTTTCAT

1 TGCTCATTTTCATTGTTTTA TG GGCGTGT ACAGTAGTTTG CA
TAAACTGTTGTATAAATATG AC CCGTATA TGTTGTCAAAT GT
CCCCA C AATA ATTTT -------
GAM16451 21856 TGTGGCTATTTAAATTCAAG TTTAA GTTAG TAAATAC
8 TTAGTTAAAATTAAATACAT TGTGGCTA ATTCAA TTAAAAT
TTTAAAATTGAGTCCCTTAG ATACTGAT TGAGTT AATTTTA
TCATA TCCC- AA--- -------
GAM16452 22796 TGTGGCTCGCCAGCCCTGCA TC-- CC- TA AT AGTATT
3 GTATTTGATGTGCAGTATTG TGTGGC GCCAG CTGCAG TTTG GTGC
CACCACAAGCTCTGCGGACC ACGCCG CGGTT GGCGTC GAAC CACG
TTGGCCATTGCCGCA TTAC CCA TC AC ------
GAM16452 6756 TGTGGCTCGTCTGAACTTCT - T - - ACT - A A AGT
4 CTCAATGGAACTCAGTGAGT TGTG GC CGT CT GA TCTCT CA TGG ACTC
ACCAGTGCGGAGACCATCAA ACAC CG GTA GA CT AGAGG GT ACC TGAG
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GAM16452 10385 TGTGGCTCGTCTGAACTTCT - T - - ACT - A CATG
5 CTCATGGAACTCATGAGTAC TGTG GC CGT CT GA TCTCT CATGG ACT
CATGCGGAGACCATCAAGAA ACAC CG GTA GA CT AGAGG GTACC TGA
TGTGCGCACA G T A A ACC C A ----
GAM16453 14775 TGTGGCTTAAATGATTTTTT GC AAA A AACTAATAAAG ATAT
8 CTAACTAATAAAGTGGAATA TGTG TT TG TTTTTTCT TGGAAT
TATATTTCAAAAAACAGAAG ACAC AA AC AAAAAAGA ACTTTA
AAAAAAACAGAGAAAACACA AA GAG A AGACAAAAA-- ----
GAM16454 15369 TGTGGCTTATGAATGTTCTA A ATG AATCAG GA GAG
1 ATCAGGTGTGGAAGGAGCTG TGTGGCTT TGA TTCT GTGTG AG
ACACACGGAGAGTCACAGGC ATATCGGA ACT GAGG CACAC TC
TATA C GA- ------ AG ---
GAM16454 7423 TGTGGCTTGGGACAAGCTGG C GACA-- ------- ATGGA
4 TCAGGTATGGAACCTGGCTA TGTGG TTGG AGCT GGTCAGGT
ACTGCAAGCTGAAAGACCAA ACACC AACC TCGA TCGGTCCA
CCACA - AGAAAG ACGTCAA -----
GAM16455 515 TGTGGGAGTACTTGGTCTGC TACT-- TAG- C AACCAA
5 TAGTAACTGAACCAACACTT TGTGGGAG TGGTCTGC TAA TG
AACCCGCGGACTGTTATTCT ACGCCCTT GTCAGGCG ATT AC
TCCCGCA CTTATT CCCA C ------
GAM16461 11401 TGTGGTATGGAATAAACTTC T T TAAACTTC------- TTACC
7 CCATTTACCATGGATAATTT TG GGTA GGAA CCAT
TCAACCTTTTCCTTACCTCA AC CCAT CCTT GGTA
T T TTCCAACTTTTAATA -----
GAM16462 16062 TGTGGTCCAACCTGGGCATT TCCAA TG AT G CTCCCTGTCT
2 GGCCTAGCTATCTCCCTGTC TGTGG CC GGC TG CCTAGCTAT
TGTGGTTGGGGCAGCCTGGG ATATC GG CCG AC GGGTTGGTG
GCATCTATA TACG- GT -- G ----------
GAM16463 17551 TGTGGTGCCTGGCGGAGACC G T G A - AA ACA G ---- ATGCTGA
5 TGGCCAAGGTACAGAGAGCT TGTGGT CC GGCG AG CCT GGCC GGT GA AGCTGTG TGC

GTGTGCATGCTGAGCAATAC ACACCA GG CCGC TC GGG CCGG CCG TT TCGACAC ACG

CACAGCTGTTGCCGAGGCCT - T - - T AG --- G CATA -------
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GAM16467 2547 TGTGTAAGCATTCCTTTTTC AA-- TTT T- CTC- C- A TTGTTTGTTTTTT
4 TCTGCAACCTCGCCAGCATC TGTGT GCATTCCT TCTC GCAAC GC AGC TCTGTTTT
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AGACGGAGTTTTGCTTTTGT GTAA TC- TC TTTT TT - ----------
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ATGGCACG
GAM16469 22007 TGTGTAGACGTGAAGCCTTG T TG GCC TTG- - -- TAG
1 TTTGAAGAGCTGTATTTAGA TG GTAGACG AA TTGT AAG AGCT GTATT
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1 TGTGTTTTGTAAAATCTGTA TGTGT TGT TG TATGTGT TGTTT
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2 GGATGTTGCTCCTCAGCTCC TGT TC GGGGC CTGGGGGG GTTG
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TGAGACA G TCT TCCC CCCT -----
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4 TTGCACCAACCAAAACCTGG TGTGT CGT GCGA TGTT GC CCA
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GAACACA A AGA- - TTGC C ---------
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TTTCGCTGTCTTTTCCTCAC ACACACT TCTGT CG TG
ACA CCTTT - CTT- ----------
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2 CGGCCCTGGAGCGACTGCTC TGTGTGG GAG TG CT CTG GGCC GGAGC
CCAGCCTTGGGGCTGATGTG ACACACC CTC AC GA GAT CTGG CCTCG
GTCTAGAAGGACACCTCGCC G C AG A - TGTAGTCGGGGTTCCGAC ----
ACACA
GAM16484 17705 TGTGTGGGCGCTGCTTCCAG T- C ------- ATA- GAGA
3 GATAAGGAGACTGAGGCTTA TGTG GGG GCTGCTTCC AGG AG
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CCACA CT C AGAGAGA GGAG ----
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9 CGCGTGCATGTGTGTGTATC TGTG TGTATG GTGTG GTGCG GTGCAT
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TA G - C C ----
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ACACACACACA CA- ----------
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3 TAATCTACTAGTTTTCTCCA TG GTGTT TTTTGA AC TTA AG
AGTAAAGTTCAAAGCAACAC AC CACAA GAAACT TG AAT TC
CA - C - A GAACC-- ----
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1 TGCTTTGGTCTATACAAAAA TGT TTATT TTATT CTTTG TTTGGT TAT
AACCAATAACCAAAAACATA ACA AATAA AATAG GAAAT AAACCA ATA

AAGCGATAATAATAAAACA A T C- ACAA - ----------
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1 TTGCCAAAAGGGGGGCTGAC TGTGT CC CTTATAAAGT AGGGGG
CCCCTATTTTATAAGAGGCC ACACG GG GAATATTTTA TCCCCC
GCACA CC A -------- -----
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4 GGCTTACTAGAAGTGTGAAA TGTGTTGTC GGT AGGCTTAC GT
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GACACG AA--- GG ------- ----
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1 TGTTAATGACGCTCAGTTCA TGTGTT GGTACCA TTGTTAATG GTTC
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2 ACAATTAATTAGAGTGATTA TGT ACACT ATTCA GATTAC
TGAATTAATTAGTGTTCTAC ACA TGTGA TAAGT TTAGTG
A TCT TTAAT A ----------
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2 GTACCCAGAGGTCCCAGGGA TGT CTGG TGTGG TACCC GAGG CCAGGG
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CCACA
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1 TCCTTCTGATTAAAGTAAGT TGTTA AGCAG CATCCT TTCTG TTA
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8 AAATTGCATTTTAAACTCCT TG AG GGTCT TAAAA GCATTTT
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ACGTTAAGGCCTATTTTCA TT AT ATTGCA CC ----------
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8 CTGCTGTTGGTTATGTAAGG TGTTATGTG TGC TGCT CTGTT TGTAAGGG
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GAM16518 11431 TGTTATTCTTAAAGATGTTT CTT- - TGAATATACC
8 GAAATGAATATACCTTTCTA TGTTATT AAAGATGTTT GAAA
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7 AAAACATGGACGTTGTTCCT TGTTCTCTA TTTGTA ATG CGTTG
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6 AACCTTCTGCATTTAGAAGG TGTT CTGGA ACTT CATT CCTTCTG
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GCA ATTTTCGC-- -------
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7 TTCTTATGTTTATAATCAGG TGTTCT GCC GC TG CT AT
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9 CATTTGTTTAAACCAAAAAA TGTTG GTGGTG TGTTT
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9 GAGACATTAAGAAGACTGGA TGTTGA GTACTG GA AAG AG GGAGTGG GTTG
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2 GACTTTAAGGGAGGAGAGCC TGTTGAG GGTGG CTTTA GGGA GAGA
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C AA A AAATAA ----
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2 TGACCTCAGTCCCACGACAG TGTT CTGGGC CCC GCAATGAC GTC
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9 GGGAACAAGAAGAGAAGCAG TGTTGGG GG AGGGA GAAGAG AAG AG GGG
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7 CCCTAAGTTTATCATACAGA TGT G AA AGT TCTGT
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A GT GT GCAAACC A ----------
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GAM16566 22842 TGTTTAAAATGTAAGGAAGG T A AAG- --- AGCTT
1 CTGTATAGAGCTTCTATATT TGTTTAAAA GT AGG GCTGTA TAG
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AATA - G GAGA TAT -----
GAM16566 10455 TGTTTAAATGATAAATTAGG A- TAAATT TA G ATGAA
6 ATATGTTTCTGAATATGAAA TGTTTAA TGA AGGA TGTTTCT AAT
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GAM16569 17864 TGTTTAGCATTATTTAATAG AT A CC AAG----- AAACAA
8 CCTGAAAGTGGAAAACAATC TGTTTAGC TATTTA TAG TGA TGGA
CAAATATCCATCAACTAGTG ATAAATTG GTAAGT ATC ACT ACCT
AATGGTTAAATA -- G A- ACCTATAA ------
GAM16573 14104 TGTTTCAACCGCCTTGAAAT TC CCT TC-- AC AATTCAG
6 TTTCTGGAACATTCCAAATT TGTT AACCG TGAAATTT TGGA ATTCCA
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7 CTTTGCTTTATTCACTCCTG TGT CCAT CTTTGC TCAC
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GAM16579 4796 TGTTTCTCTGTCATTGCTGT C-- TC-- ATGTT CT C TATTT
6 CATGTTCTCTAGCGATATTT TGTTT TCTG ATTGCTGTC CT AG GA
TCCTTAAGTCGGCAGTAGTA ACAAA AGAT TGATGACGG GA TC CT
GTCTAGATCAAAACA ACT CTGA CT--- AT - -----
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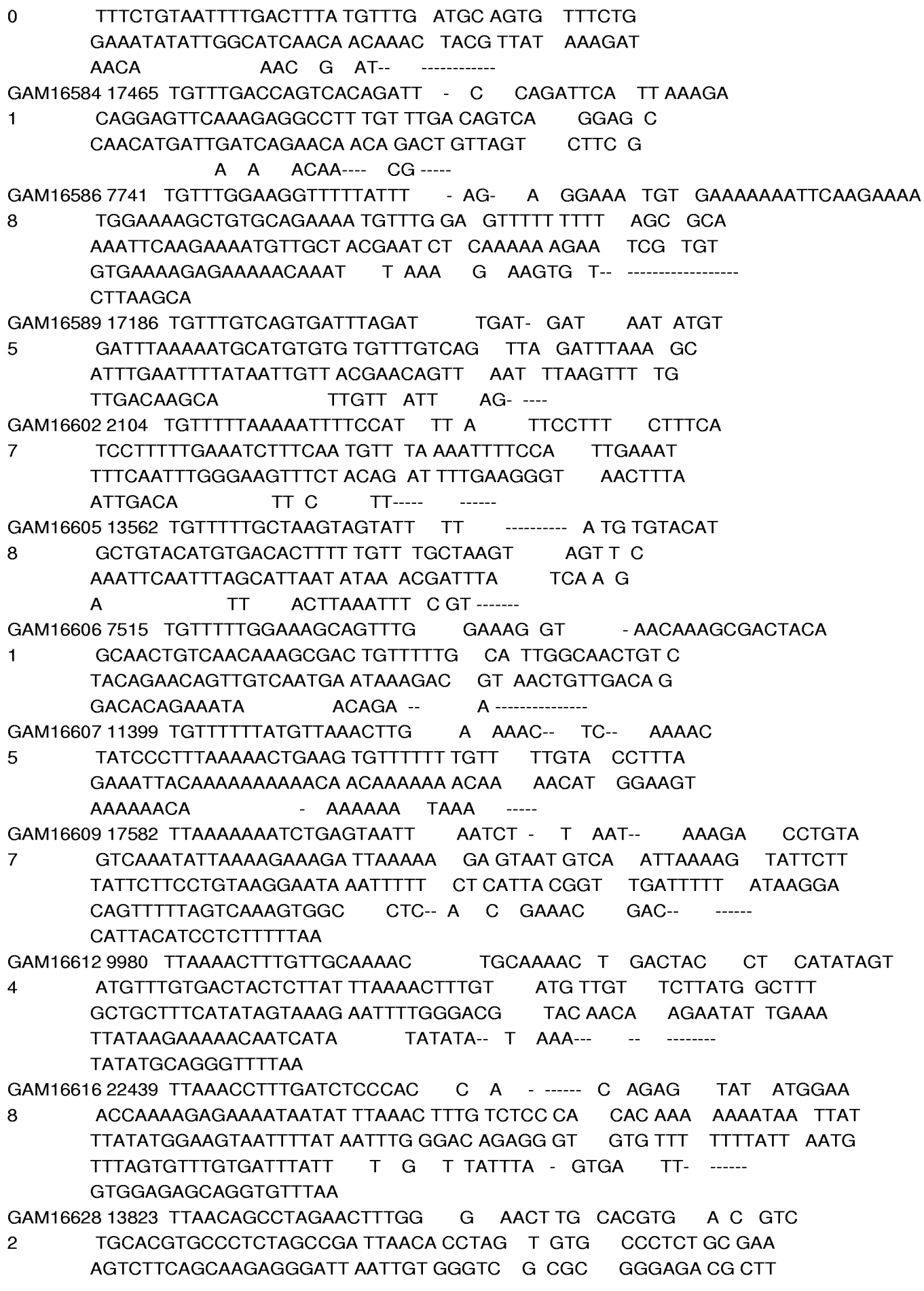
0 TTTCTGTAATTTTGACTTTA TGTTTG ATGC AGTG TTTCTG
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AACA AAC G AT-- ----------
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1 CAGGAGTTCAAAGAGGCCTT TGT TTGA CAGTCA GGAG C
CAACATGATTGATCAGAACA ACA GACT GTTAGT CTTC G
A A ACAA---- CG -----
GAM16586 7741 TGTTTGGAAGGTTTTTATTT - AG- A GGAAA TGT GAAAAAAATTCAAGAAAA
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GTGAAAAGAGAAAAACAAAT T AAA G AAGTG T-- ----------
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5 GATTTAAAAATGCATGTGTG TGTTTGTCAG TTA GATTTAAA GC
ATTTGAATTTTATAATTGTT ACGAACAGTT AAT TTAAGTTT TG
TTGACAAGCA TTGTT ATT AG- ----
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7 TCCTTTTTGAAATCTTTCAA TGTT TA AAATTTTCCA TTGAAAT
TTTCAATTTGGGAAGTTTCT ACAG AT TTTGAAGGGT AACTTTA
ATTGACA TT C TT----- ------
GAM16605 13562 TGTTTTTGCTAAGTAGTATT TT ---------- A TG TGTACAT
8 GCTGTACATGTGACACTTTT TGTT TGCTAAGT AGT T C
AAATTCAATTTAGCATTAAT ATAA ACGATTTA TCA A G
A TT ACTTAAATTT C GT -------
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1 GCAACTGTCAACAAAGCGAC TGTTTTTG CA TTGGCAACTGT C
TACAGAACAGTTGTCAATGA ATAAAGAC GT AACTGTTGACA G
GACACAGAAATA ACAGA -- A ----------
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5 TATCCCTTTAAAAACTGAAG TGTTTTTT TGTT TTGTA CCTTTA
GAAATTACAAAAAAAAAACA ACAAAAAA ACAA AACAT GGAAGT
AAAAAACA - AAAAAA TAAA -----
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2 TGCACGTGCCCTCTAGCCGA TTAACA CCTAG T GTG CCCTCT GC GAA
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3 ATTTCTGTGATAAGGAAATC TTAACATTTT TTA GTGATAAGGA
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9 CTACATTAAAGGCTAAACTT TTAA ATACAGA TTTT TACA TTAA AAACTT TTT GTT
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AGCAAGTTTTAAAATGTTAA G- T GAA T GTAAAAT C TT -----
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GTTAA
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A AAAAA TAAA GT --------
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GGCTTAA GA - TAAAAA ---------
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GA T ATAATACC ----------
GAM16650 4855 TTAATGTGAATAGCAAATTC GA AA GGTATA T- TAAC TTAAGAAT

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           GAGGAAGGTGTTATAATATT       A-     GG    AG----   TT   TC--  --------
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GAM16662 14884  TTACAGTAGCTTCTTAACAT        -----  TCT   CAT       A  TCC   GCCA
4          AGGGGTCAAGATCCAGGGCC TTACAGTA    GCT   TAA   AGGGGTCA GA   AGG
           ACCTTCTGATCCCTCATTTA AGTGTCAT    CGG   ATT   TCCCTAGT CT   TCC
           TGCGGCACCAGTACTGTGA        GACCA   CGT   TAC       -  ---   ----
GAM16665 11517  TTACATATATTATTAATGAA     ATATATTA        TGCTTCCTTTAACACCCT
0          TTGCTTCCTTTAACACCCTA TTAC       TTAATGAAT
           TTCATTGAATTTTCCAGTAA AATG       AGTTACTTA
                          ACCTTTTA        ------------------
GAM16669 7421   TTACCCATTTGTAACTCTAA         G  A  C     C       ATATC  TTG  AAAT
8          AAACAGGAAAAATATCAGTT TTACCCATTT TA CT TAAAAA AGGAAAA     AG   GC
           GGCAAATGCAATCTTTTTTT AGTGGGTGGA AT GA ATTTTT TTTTTTT     TC   CG
           TTTTTTAAGCTAAAGGTGGG         A  C  -     -      -----  TAA  ----
           TGA
GAM16669 16361  TTACCCATTTGTAACTTTAA         GTAAC      ACA      TATC  TTG  AAAT
9          AAACAGGAAAAATATCAGTT TTACCCATTT    TTTAAAA   GGAAAAA    AG   GC
           GGCAAATGCAATCTTTTTTC AGTGGGTGGA    GAATTTT   TCTTTTT    TC   CG
           TTTTTAAGCTAAAGGTGGGT         AATC-      ---       ----  TAA  ----
           GA
GAM16671 14891  TTACCGGTCATACAAAAGCA         ATAC   A   GAAC  AAT-   -   G    TAAAGCATCC
0          GAACGGAATATTCTGGAGGA TTACCGGTC    AAA GCA    GG    ATTC TGGA GAAG
           AGTAAAGCATCCCTTCATCC GGTGGTCAG    TTT CGT    TC    TAGG GCCT CTTC
           GTGGATTTAACTTACATGCC         AC--   C   ACAT  AATT    T    A    ----------
           TTTCAGACTGGTGG
GAM16673 12003  TTACGAATGGGGTGACAACT          G   CA-   TATGA  AAAAC
5          TATGATAAAAACTAGAGCTA TTACGAATGGG TGA   ACT     TA
           GTGAATTAGCCTATTTGTAA AATGTTTATCC ATT   TGA     AT
                              G   AAG   TCGAG  -----
GAM16674 111    TTACGCAAGATAATTATTTA    -   AGA--   TT    ---       ATTA
1          GAGACTGATTACAGTCTTTC TTAC GCA     TAA  ATTT   AGAGACTG
           TCAGATTTTTAGTAAATGCA AATG CGT     ATT  TAGA   TTTCTGAC
           GTAA                A   AAATG   TT    CTC       ----
GAM16674 22538  TTACGGCCTTTTTTTTTGCT       -----------   TT-      T    ATT
4          GGATATTATCTTGTAAAACG TTACGGC          CTTT   TTTTGC GGAT
           TGAAGACTACCTGTATGCTG AGTGTCG          GAAG   AAAATG TCTA
           TGA                    TATGTCCATCA    TGC     T    ---
GAM16674 17828  TTACTAAAAACCAGGTTTCA     TAAAA  CA  TT   CAAC     C   GAAA
9          CAACTTCTGCCAGAGAAATT TTAC     AC  GG  TCA    TTCTGC AGA
```

TGCAGAGCAGCTGATTCGAG AATG TG CT AGT GAGACG TTT
TATATTGTAA TTATA AG T- CGAC - ----
GAM16681 4677 TTACTGGGCAACTTCATACT G AACTTCATA C A T- ACCAGCAGC
4 GCCAGAGGGGTTGGGACCAG TTACT GGC CTG CAG GGGG TGGG
CAGCTCCACTCCCCACTGTA GATGA CCG GAT GTC CCCC ACCT
GGCCAAGTAG A --------- - A TC ---------
GAM16682 10006 TTACTGTGGCTTACCAGGTG G G A--- GTGAA GGATAGA
7 AATATTGGATAGAAATGGAG TTACT TG CTT CCAG TATT
GACTGGAAAGGAGACAAAGT AATGA AC GAG GGTC GTAA
AA A A GAAA AGGAG -------
GAM16683 2405 TTACTGTTTCACAAACCATA G ACAAAC - C-- AA- AGC
1 TCACCTGAAAGGCAGCGCCA TTACT TTTC CATAT CAC TGA GGC
TCTCATCTGTGTATATGATA AATGG GAAG GTATA GTG ACT CCG
GGGAAGGGGTAA G GGATA- T TCT CTA ---
GAM16685 7403 TTACTTGCAACAAGGAGGAC GCAACA- ACAC---- TAAT
0 ACTGGGGATAATTCCTCAAA TTACTT AGGAGG TGGGGA
GCAGCACCTCCTGGAACGAA AGTGGA TCCTCC ACTCCT
GGTGA AGCAAGG ACGACGAA ----
GAM16686 19429 TTACTTTTCACCAGCATCTT C ACCAG - AC AT CAAAAACAT
7 TACTATAATTACCAAAAACA TTA TTTTC CAT CTTT TATA TAC
TGTATATAAAAGAATGAAAT AAT AAAAG GTA GAAA ATAT ATG
GGAAAAATAA A GTAAA A -- -- ---------
GAM16686 14937 TTACTTTTGAGACAAGCTTC C AC TCT G ---- C ATT
9 TTATTTGCCTTGATACAGCT TTA TTTTGAG AAGCT TATTT CCTTG ATA AGCTT
TATTAAGTTTATAAAACAGG AGT AGAACTT TTCGA ATAAA GGGAC TAT TTGAA
GAAAATACACAGCTTTATTC A AT CAC A AAAA - ---
AAGAATGA
GAM16688 2222 TTAGAAAGGCTAGTTTTAGC - TT CT T -- CC GCAAAACA
4 TTCCTTTGTGGCTCCCTGGT TTAGAA AGGCTAG TTAG TCC TTGT GGCT CTGGT
GCAAAACAATTAGCAGTTAT AATCTT TTTGATC AGTC AGG AACG TTGA GATTA
GCAATGGACCTGATTCTAGT A TT C- T TA C- --------
TTATTCTAA
GAM16688 7687 TTAGAAATTTATGCTGACTC A-- T GC T C AAAAAA
8 GATCTAAAAAAAATTATGTT TTAGA ATT AT TGAC CGAT TAA
GGTTAATGTTAATCTATCTA AATCT TAA TG ATTG GTTG ATT
A ATC T TA - T ------
GAM16696 11550 TTAGAGATTGGTGAACAAGT T T AG- T TGT- - AATTTGCC
4 GTGAGGGTGTGAGAAACTCA TTAGAGAT GG GAACA TG GAGGG GAGAAACTCACAGA ATACA

CAGAATACAAATTTGCCTGT AATCTTTA TC TTTGT AC TTCCT TTTTTTGGGTGTTT TATGT
ATGTTTGTGGGTTTTTTTTT - - AGA T TTTT G --------
TTCCTTTCAAGATGTTTCTA
TTTCTAA
GAM16697 11756 TTAGAGGGAAGGTCTAGAAT - CTAGAAT CG T A TA TTGAAT
8 TTCCGTGCTCCTTATAAAAT TTAGAG GGAAGGT TTC TGC CCTT TAAAAT CC
TACCTTGAATGGATTTTAAG AGTCTT CCTTCCA AAG ATG GGAG ATTTTA GG
AGGGTAATGAAACCTTCCTT T ------- TA - A -- ------
TCTGA
GAM16698 15155 TTAGAGTAATTCTATTGTTA AA TA G ATT G TG TTGAA
2 ACATTTTAGTGTATTGTTTT TTAGAGT TTC TT TTAAC TTA TGTAT TTTT

TTGAAGAGAGTGTATAGTAG GGTTTCA GAG GA AATTG GAT ATATG AGAG
TGGTTAAGAGATGAGACTTT -- TA G GT- G TG -----
GG
GAM16702 4971 TTAGATTGAAGTGTCCTCCA T G TCCACTCA ATA
5 CTCACCTATTATAAATAGGA TTAGA TGAA TGTCC CCTATT
ATGCATGGGCAATTTATTTT AATTT ATTT ACGGG GGATAA
AA T A TACGTAA- ---
GAM16704 10480 TTAGCAGAAATATCCATTCA GC AAT TTCAT T TATTT
8 TTTGCTGTACTATTTGTATG TTA AGA ATCCA TTGC GTAC
TAATATTTGGGTTGATCTAT AAT TCT TGGGT AATG TATG
AA A- AGT TTAT- - -----
GAM16708 10430 TTAGCCCAGTTCTTAGGAGA - GTTCTTAGGA- ------- AACT
7 GGTACTTCAAACTTGAAAGA TTAGCC CA GAGGTAC TTCA
ATATGTATTTCGGTAACTTA AATCGG GT CTTTATG AAGT
TATGTGGCTAA T ATATTCAATGG TATAAGA ----
GAM16710 16389 TTAGCGGTTATGCGTACTGC CG G TACTG -- G GCTGAAT
8 CAGGGCTATTTGCTGAATGA TTAG GTTAT CG CCA GG CTATTT
GTAGGCTGATGGATTCGATA GATC TAATA GC GGT TC GATGAG
ATAACTAG AA - TTA-- AG G -------
GAM16712 13131 TTAGCTCCTTGGTTGTCGAA GG AACG- G GAAAAA
1 CGTCCTGTGGGGAAAAACTT TTAGCTCCTT TTGTCG TCCT TGGG
AGGGGAAGAAATGATAAGGG GGTTGGGGGGG AATAGT AGGG ATTC
GGGGTTGG G- AAAGA G ------
GAM16715 15822 TTAGGAAAGGAGATCAACAT A---- AT ------ TCAAATT
2 TTTCAAATTAGATGTTTCAA TTAGGA AGGAG CA ACATTT
CTGTGCTCCTGTTTGTCTTG AGTTCT TCCTC GT TGTAGA
A GTTTG GT CAACTT -------
GAM16720 19449 TTAGGGAATAATGACAAGAA TAAT AAAAA AATGTTGAG
0 AAAAGTCTGTAAATGTTGAG TTAGGGAA GACAAGA GTCTGTA
TACAGACATAATTTTGTTTT AGTCTCTT TTGTTTT CAGACAT
TTCTCTGA TT-- AATA- ---------
GAM16720 2202 TTAGGGAATATTTTGAGGGT - TTTTG TTTA TTCA TTT CTAT
1 TTTTATTGCTTCAGTAGTTT TTAGG GAATA AGGGTT TTGC GTAG CAAA
CAAACTATTTTGTGTCTATG AGTCC CTTAT TTTCGG AATG TATC GTTT
TAAGTTGGCTTTTATTCTCC T ----- TTG- ---- TGT ----
TGA
GAM16721 15595 TTAGGGGGTGTAGCACATTT T CACAT CA AAG
2 ATCAGGAGGTAAGATCTCCA TTAGGGGG GTAG TTAT GGAGGT
TAGTCTCCTACCCCTCCTGG GGTCCTCC CATC GATA CCTCTA
C CTCT- -- ---
GAM16727 15551 TTAGTAGTGCATTTTATTTA A CATTTT TA CTT- CTTTT
1 TTCTAAGTTGCATACTTTTT TTAGT GTG ATTTATTC AGTTGCATA TTTA
ACTTTTTAAACATCTGTGCA AGTCA CAC TAGGTAAG TTAACGTGT AAAT
ATTGAATGGATCTCACAACT A TC---- -- CTAC -----
GA
GAM16728 13680 TTAGTCATTTTAGTTGTTCC - TT- -- C-- TATGC
6 CTTTGTATGCCAAAAATGGA TTAGT CAT TAGTTGT TCC TTTG
AGACAGCTGTTTGTGCACTA AATCA GTG GTCGACA AGG AAAC
A C TTT GA TAA -----
GAM16731 10975 TTAGTGGCATCGAAAATTGG G GAAAATT TT GTCATTCGTCCA

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6          CAAGGTTCCCGTCATTCGTC TTAGT GCATC      GGCAAGG  CCC
           CAGGGCTCTTTGCTTAGGGA AATTA TGTAG      TCGTTTC  GGG
           TGTGATTAA             G    GGAT---     TC  ------------
GAM16731 15026  TTAGTGGTAATAAGAATGTT    TG  AATA       TGGACCC     GATGG
9          TTTGGACCCGATTAATGATG TTAG  GT    AGAATGTTTT      GATTAAT
           GATTAATCAGAACATTCTGA AGTC  CA    TCTTACAAGA      CTAATTA
           ACTGCTGA              GT  AG--       -------      -----
GAM16734 7088   TTAGTTTCTATATATCAGAC        ATA  CA   AAAAAGA   T   C-   -      TTATAGGAGAGA
6          AAAAAAGAAATGCTTCAGCA TTAGTTTCT   TAT  GACA     AATGC TCAG  AGTG CTTCTGTA
           GTGCTTCTGTATTATAGGAG AATTAAAGA   ATA  TTGT      TTATG AGTC  TCGT GAAGACAT

           AGAAAAAGTTACAGAAGATG        AG-  AC   CAAGAAA   T   CT   A      ------------
           CTTCCTGATGTATTAAAGAA AAAAGT
           CTGTTCAATAGAAGAAATTA
           A
                      ------
GAM16735 16106  TTAGTTTGAAGGTTGCTTTT       GA     C---   TT--   T    T    GTA
2          TTTTTTTCTTGCTTGTAAAG TTAGTTT  AGGTTG    TTT    TTT TTCT GCTT
           TGGAACAAATCTTGAATCTC AGTCAAA  TCTAAC    AAG    AAA AAGG TGAA
           CAATCTGAAAACTGA          AG     CTCT   TTCT   C   -   ---
GAM16737 14840  TTATAAAAGGGTATTTATTT       ----     TTTAT-       CATGTCAAGTCC
2          CTTATTCATGTCAAGTCCAA TTATAAA    AGGGTA     TTCTTATT
           TAAGAATTCTACTGCCCTAC AATGTTT    TCCCGT     AAGAATAA
           TTTTTGTAA              TTCA     CATCTT      ------------
GAM16737 11706  TTATAAAGGTACCACTCACT    A     CCACTCACTACATT  AAAATA
7          ACATTACAAAATAGTCTCTA TTAT AAGGTA           AC
           ACATAAAATTGCCTTAATAA AATA TTCCGT           TG
                        A     TAAAATACAATCTC  ------
GAM16738 7593   TTATAACCTTGATTGAAGCC     ACCTT   T   GCCC    A-    AACT
7          CTGTTGAAGAGTAACTGCTT TTATA     GAT GAA    TGTTG  AGAGT
           TGCCAGCATCTATTCCATCT AATAT     CTA CTT    ACGAC  TTTCG
           CTATAA               CT---  C   ATCT    CG    ----
GAM16753 13144  TTATCCGATATAGTGTAATT    CC       ----    TTAAAAGTT   -  ACAA
5          TAAAAGTTTTCCTACAAAGT TTAT  GATATAGT    GTAAT       TTC CT
           GAGTTTATATTGTTGCCTAA AATG  TTGTATCA    CGTTG       GAG GA
           ACTATGTTATGTAA         TA       AATC    TTATATTT-   T  ----
GAM16755 17756  TTATCTCTAGGTGAAGGGAT      CTAG     GG   --    TAGTTT
4          TCCAGGTTAGTTTGCTTGTA TTATCT    GTGAAG  ATTC  CAGGT
           GGATGATTTCACAGAAGATA AATAGA    CACTTT  TAGG  GTTCG
           A                   AGA-     AG    AT    ------
GAM16757 1942   TTATCTTATTAGGGAGTTGT       A        GTAT--   A  G    AA    ACT
3          ATGTCAGTGTATAAAACATA TTATCTT TTAGGGAGTT     GTC GT TATA  ACAT
           CTGTGTGGTATAACAGGCTT AATAGGA AATTTCTTAA     CGG CA ATAT  TGTG
           AATAAATTCTTTAAAAGGAT       A        ATAATT   A  -   GG   ---
           AA
GAM16758 1910   TTATCTTTTTGTAGCAGGAA        TT  AG     T   T         T AGAGT
2          TTTATGTGCCAGAGGTGAGA TTATCTTT  GT  CAGGAA TTA GTGCCAGAGG G
           GTCTTTCTGGTACTGATTTT AATAGGAA  CA  GTTTTT AGT CATGGTCTTT C
           TTGAGACCAAGGATAA           C-  GA     T   -         - -----
GAM16759 349    TTATGAAAGGTGTGAACTTG          G-   ACTT   A    CTC  GTCTTAAACCCA
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0 CAATGTCCTCCTGTCTTAAA TTATGAAAGGT TGA GCA TGTC CT
CCCAAGTTGACAGTGCCCTC AATACTTTTCA ACT CGT ACAG GA
TCAAAACTTTTCATAA AA CTCC G TT- ----------
GAM16759 15319 TTATGAACTGTCCCATCACA --- C CCA- ---- TACAGT
3 AGACATACAGTTGGCTTTCT TTATG AA TGTC TCACAAGA CA
TGTGAGTCAGATATTTTTAC AATGC TT ATAG AGTGTTCT GT
GTAA ATT T ACTG TTCG ------
GAM16759 10909 TTATGAACTTGGAGAGTATA AACTT- GAG A AGAGATATAGAAAA
4 TAAGAAAGAGATATAGAAAA TTATG GGA TAT TAAGAA
TTCTTGAATGAGTCCTATAA AGTAC CCT GTA GTTCTT
ACATGA AAATAT GA- A ----------
GAM16763 2599 TTATGCGTTTAGTTTGACTT T --- T ATTTT ACAAAA
6 ATTTTTAACAAAATATTAGA TTA GCGTTT AGT TGACTT TA
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AA T ATT T GATT- ------
GAM16763 6857 TTATGCTAAAAGAGGCAGGT AAGA A- ---- A G GCTCA
7 CGTTTCCAAGGCTGCTCAAG TTATGCTAA GGC GGTC GTTTCCA G CT
GCTGGAAGCTTAAGACCAAG GATATGATT TCG CCAG CGAAGGT C GA
CTTTAGTATAG ---- AA AATT - G -----
GAM16765 11727 TTATGGTCCCCACAACCACG - CCCA AC - --- ----- A CTTCAT
4 GCCGTCTTGTTTTCCCGGCC TTATG GTC CAACC GGCCGTCT TGTT TTCCCGG CC GGAAG

AGGAAGCTTCATCTTCCGGA AATAC CAG GTTGG CCGGCGGA ACAG AAGGGCC GG CCTTC

TCATCCGGGAAAGGGACAGA T CGTG -- G GGA TACTA - ------
GGCGGCCGGTTGGTGCGACT
CATAA
GAM16765 14967 TTATGGTCCCCACAACCACG - CCCA AC - --- ----- A CTTCAT
5 GCCGTCTTGTTTTCTCGGCC TTATG GTC CAACC GGCCGTCT TGTT TTCTCGG CC GGAAG

AGGAAGCTTCATCTTCCGGA AATAC CAG GTTGG CCGGCGGA ACAG AAGGGCC GG CCTTC

TCATCCGGGAAAGGGACAGA T CGTG -- G GGA TACTA - ------
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CATAA
GAM16765 15507 TTATGGTGCCTGATTCCTGC A CT- ----- TCA TGCCCTTTGAT
7 ATGGTCAGTGAGCTGCCCTT TTATGGTGCCTG TTC GCA TGG GTGAGC
TGATGCTCATGCCCACATCC GATGCCACGGAC GAG CGT ACC TACTCG
TGCCCAGAGCAGGCACCGTA - ACC CCTAC CG- ----------
G
GAM16766 17112 TTATGTATATGTACTGTCTA A GTA G AACAATA TAAA
7 AAACAATACTTTTTTAAAAA TTATGT TAT CT TCTAA CTTTTT
AAAGGAACAGTTGGGAGAAA AATATA ATA GA GGGTT GAAAAA
ATAAATATAA A AAA - GACAAG- ----
GAM16770 22909 TTATGTTTCACTGAGTTCTG T AGTTCT TT G TTT
5 GTTTGTGTAGCTATATTTTA TTATGTT CACTG GG TGT TAGCTATAT
TATAGCTAGATATTCCTCAC AGTACAA GTGAC CC ATA ATCGATATA
AGTGAACATGA - ACT--- TT G ---
GAM16772 10858 TTATTAGAGGGATGGGACAG T TG--- C T TA-- TTGCTGT
8 TTTTCCATATCCTTGCTGTG TTA TAGAGGGA GGA AGT TTCCA TCC

GAGCTCTGGAACACTCTCTA AAT ATCTCCCT TCT TCA AAGGT AGG
AATTTCCCTCTATTAA T TTAAA C C CTCG -------
GAM16776 6980 TTATTCTGATTTTTTCATAA - ATTT- AAT --- - GATACT
8 TCAAAGGTCATATGATACTG TTATT CTG TTTCAT CAAAG GTC ATAT
TATAGACAAGCTTTGTAGTG AATAA GAT GAAGTG GTTTC CAG TATG
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GAM16778 17158 TTATTGAAGACTTTAACAGT -- G - AGATAAAG A TTT
0 AGATAAAGGAATAGAGTTTT TTATTG AA ACT TTAACAGT GA TAGAG
TCTAATCATCTAAAGGCTGT AATAAC TT TGA AATTGTCG CT ATCTT
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GAM16781 13167 TTATTGTTTCCCCTTCTAAA TG TTCT C-- TCATT
3 GCTCAAGATCATTTCTTTCC TTAT TTTCCCC AAAGCT AAGA
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GT T--- CCT -----
GAM16796 7415 TTCAAATATTTCCATTTTTT TCCATT CC TA ATATTA
6 AAACCTCTAGAATATTATCC TTCAAATATT TTTTAAA TC GA
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TTTGAG TTAT-- AC GC ------
GAM16798 4973 TTCAACAATGGCATGGTTGC A CAT T GG-- AAGG
3 CTTGGTCTAAGGAGAAGCAG TTCAAC ATGG GGT GCCTT TCT
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GA A TTT T ACGA ----
GAM16799 1635 TTCAACCTATGAAAATGTAA ACCTAT A ACCT AAAAACTAAACTA
2 ATACCTTTGAAAAAACTAAA TTCA GAA ATGTAAAT TTGA
CTATCAGTCATTTACATCTT AAGT CTT TACATTTA GACT
CTCATGAA ACT--- C CT-- ----------
GAM16803 11824 TTCAAGGTAGTATTAAGTGT AT TGTC - CAAGCCACATTCAA
4 CCATATTTCTCAAGCCACAT TTCAAGGTAGT TAAG CAT ATTTCT
TCAAGGAAATCATGTCTTAA AGGTTTTATCA ATTC GTA TAAAGG
CTATTTTGGA -- T--- C ----------
GAM16804 14975 TTCAAGTGGGTAAAGCAGGA G- TAA GGAA-- - CCAAG
6 ATCTGAGATTTCCAAGGAAT TTCAA TGGG AGCA TCT GAGATTT
CTCAAGAAATGGATGCTCGT AGGTT ATCC TCGT AGA CTCTAAG
CCTAAGTTGGA GA TGC AGGTAA A -----
GAM16804 17086 TTCAAGTGGGTAAAGCAGGA G- TAA GGAA-- - CCAAG
7 ATCTGAGATTTCCAAGGAAT TTCAA TGGG AGCA TCT GAGATTT
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CCTAAGTTGGA GA TGC AGGTCA A -----
GAM16806 17177 TTCAATATTTGAAGCCTTTA ---- CC- A ------- -- AAACTCATTCCACAA
8 GTAAGGTGGTGCAGAAACTC TTCAATATT TGAAG TTTAGTA GGT GGT GCAG
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GGAAAACCTATTAAATATCT CTAT TAT - AAAGGTT GC ----------
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GAM16809 589 TTCAATTTGTTAACAGAGCA - AACAG T CATG- GAAATGA
5 AATTTAAGACTTTCAATCAA TTCAA TTTGTT AGCAAATT AAGACTTTCAATCAAATATGTAA CT

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AAGAAATATTACATATTTGA T GACAA C ATAAA -------
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GAM16814 5196 TTCACCATTGTGCTGGAGGA AC G A A A G AGGGCAC
8 TGAGGGCAGCCAGGGCACGG TTC CATTGT CTGG GG TG GGGCA CC
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GCGGAG GC - - - C A -------
GAM16814 461 TTCACCATTGTGCTGGAGGA AC G A A A- G AGGGCAC
9 TGAGGGCAGCCAGGGCACGG TTC CATTGT CTGG GG TG GGGCA CC
ATGCCCCCCACCCCAGGCAA GAG GTAACG GACC CC AC CCCGT GG
TGCGGAG GC - - - CC A -------
GAM16816 17881 TTCACCTGATCCTGAAAGTC CT C GAAAG CAGA AGCGA
0 CAGATGATTCTGAAAGCGAT TTCAC GAT CT TC TGATTCTGAA
TCAGAGTCAGAGAAAGAAGA AAGTG CTA GA AG ACTGAGACTT
ATCTGTGAA T- A AGAA- AG-- -----
GAM16822 10561 TTCACTTGGGCAGGAAGTCA T A-- AA C- C - A A TTCCCATC
0 GAGGACTCAGACACCAGCTT TTCACT GGGC GG GT AGAGGA TC AGAC CC GC
CCCATCGCGGGTCTCGATCT AGGTGG CCCG CC CA TCTTCT AG TCTG GG CG
TCTTCACAACCACGGCCCTG T GCA AA CT - C - - --------
GTGGA
GAM16822 7946 TTCACTTTTTGCTGATTTTG CTTT- TG TT- CCT AATCTTTGC
9 GCCTACAGTTTGAATCTTTG TTCA TTGC ATT GG ACAGTTTG
CCAGGCTGTTTCCTGTGGTT AAGT GACG TGG CC TGTCGGAC
GGCAGTTTAATGAA AATTT GT TGT TT- ---------
GAM16826 6928 TTCAGACCCTCGAGGATTCG CT--- G CG C - TGCT
1 GTCATATCGGAATTGCTGTT TTCAGACC CGAG ATT GT ATATC GGAAT
CCTGATGTATACAGTGCTTG AAGTTTGG GTTC TGA TA TGTAG CCTTG
TAAAAGGTTTGAA AAAAT G CA - T ----
GAM16826 21944 TTCAGACCCTCGAGGATTCG CT--- G CG - ATT TGCT
2 GTCATATTGGAATTGCTGTT TTCAGACC CGAG ATT GT CAT GGAAT
CCTGATGTATACAGTGCTTG AAGTTTGG GTTC TGA TA GTA CCTTG
TAAAAGGTTTGAA AAAAT G CA T GT- ----
GAM16827 17644 TTCAGAGCTGGTATCGGAGC AG ---- G - A- C---- ATAGCAAG
7 GGGGAGACCTGGGATAGCAA TTCAG CTGGTA TCG AGC GGGG GA CTGGG
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GCTACGAAGAGTGCCGGGCT G- GAGA A A CG ACCAC --------
GAG
GAM16830 1646 TTCAGATTCTTTTCTACATG T T A TA - A - TTC- AATGTG
1 TATGATGATGAAGACAGTTC TTCAGATTC TTTC AC TG TGA TG TGA AGACAG CTT
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GAM16831 10757 TTCAGCACATTCTTGTGGGC ACAT T C- TTGCA T ATAA
5 TTCAAGTTGCAAGTTTGTTA TTCAGC TCTTG GGGCTT AAG AGTT GTTA
ATAATAATAGCTATTCCTTA AAGTCG AGAAC TTTGAA TTC TCGA TAAT
AAAGTTTCAAGAGCTGAA ---- - AA CTTA- - ----
GAM16835 13122 TTCAGCTTTCAGTTAAAAAA - TC GAAG T AAAGAGGAAAG
5 GAAGGAAGGAAGGAAATGGG TTCAG CTT AGTTAAAAAAGAAGGAAG GAAA GGGC
CAAAGAGGAAAGGTTTTTTC GAGTT GGA TTAATTTTTTCTTTCTTT CTTT TTTG
AAATTTCTTTCTTTTTTAAT A T- AAA- - ----------
TTAGGATTGAG
GAM16838 15143 TTCAGGCCTTCCAGTTCACT GC T CACT AA GGGAA

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7           GACAAACATGGGGAACGTGT TTCAG  CT CCAGTT   GAC  ACATG
            GTCCAGCTGGTGGAACTGGA AGGTC  GG GGTCGA   CTG  TGTGC
                          AA  T     C---  --    -----
GAM16841 7411   TTCAGGTGGGTTGCTTTCTG      TG-----  TG    ----------  ACAT
8           GCACATGCCACTGATGGGTG TTCAGG      GGT  CTTTCT       GGC
            GGAAGTGACCAACAAATCCT GAGTCC      CCA  GAAGGG       CCG
            GAG                  TAAACAA  GT     TGGGTAGTCA  ----
GAM16841 9981   TTCAGGTTGAAAGTCACAAA        -    ACAAACAGTAG  TT--     AAAC
9           CAGTAGCCTTTTTGAGAAAC TTCAGGTTG AAAGTC         CC    TTTGAG
            CTCAAACAATGGAATAAAAG AAGTCCAAT TTTTAG         GG    AAACTC
            ATTTTATAACCTGAA           A     AAAATAA----  TAAC     ----
GAM16844 13084  TTCAGTGACATGTCCTCTCT    G  A  ----       TGCT-   GTAA
3           GCTTGGTGTAAACCATTCTT TTCA TG CA    TGTCCTCTC     TGGT
            GGGAGGACACTTTTGCCAAT AAGT AC GT    ACAGGAGGG     ACCA
            GAA                A  C  TTTC       TTCTT   ----
GAM16845 15944  TTCAGTGTAAACTAGAACAG       AA--  T   C--  T    --    CACCGT   TCTCAC
0           CTATTTCAGGAGCACCGTTG TTCAGTGT    AC AGAA   AGC ATTTC  AGGAG     TGG
            GTCTCACTCATAACACTTCT AAGTCACA    TG TCTT   TCG TAGAG  TCTTC     ACT
            CAGAGATGCTATATTCTGTG       AAAG  -   ATA  -    AC    ACAAT-  ------
            AAAACACTGAA
GAM16845 2258   TTCAGTTAAAAAAAGAAGAA      A  AA     AG      GGC     AAAG
5           GAAGAAATGGCAAAGAGAAA TTCAGTT AAA  AGAAGA  AAGAAAT   AAAGAG
            GTTTTTTCAAATTTCTTTCT GAGTTAG TTT  TTTTTT  TTCTTTA   TTTTTT
            TTTTTAATTTAGATTGAG        A  AA     CT      AAC     ----
GAM16845 16309  TTCAGTTAAAAAAGAAGAAG      -  AA       -    GGC     AAAG
6           AAGAAATGGCAAAGAGAAAG TTCAGTT AAA  AGAAGAAGAA GAAAT   AAAGAG
            TTTTTTCAAATTTCTTTCTT GAGTTAG TTT  TTTTTTTCTT CTTTA   TTTTTT
            TTTTTAATTTAGATTGAG        A  AA       T    AAC     ----
GAM16845 598    TTCAGTTAAAAAAGAGGAAG      A  AA       -    GGC     AAAG
7           AAGAAATGGCAAAGAGAAAG TTCAGTT AAA  GAGGAAGAA GAAAT   AAAGAG
            TTTTTTCAAATTTCTTTCTT GAGTTAG TTT  TTTTTTCTT CTTTA   TTTTTT
            TTTTAATTTAGATTGAG        A  AA       T    AAC     ----
GAM16846 13187  TTCAGTTATTGTGCTTGTTT      AT   -  GTTTCAA    TTTAAAATTAGTTCCT
0           CAAAATGCTTTAAAATTAGT TTCAGTT  TGTG CTT      AATGC
            TCCTGCATTGTATTGAGAGA AAGTCAA  ATAC GAG      TTACG
            CATATCAACTGAA           CT   A  AGTTATG    ----------------
GAM16846 15475  TTCAGTTTGATACATGCTAT       ATACATGC      GC   AAATTTCCTAC
4           TGATTGCTTAAAATTTCCTA TTCAGTTTG      TATTGATT  TTA
            CTAAAAAATTAATATTCTCA AAGTTAAAT      ATAATTAA  AAT
            ACTAAATTGAA              CAACTCTT      AA  -----------
GAM16847 22981  TTCATAATGATTATTTCCAA   A     TATTTCCAA    ATTATATTCTGCT      CTAT
8           ATACAATTATATTCTGCTTT TTC TAATGAT       ATACA          TTCTGTAA
            CTGTAACTATTTACAGAATT AAG ATTACTG       TATGT          AAGACATT
            TTCTGTATCCTTTGTCATTA   A     TTTCC----    CTTTT--------       ----
            AGAA
GAM16848 16963  TTCATACCCCATCCTGCCGG    TAC   TCC  C  -     ATCAA    --  AATAAGCACCA
5           AATGAGAATCAAGTGTTGTC TTCA   CCCA   TG CGG AATGAGA    GTGTT  GTC
            AATAAGCACCAGGCCAAACA AAGT   GGGT   GC GTC TTACTTT    CACAA  CGG
            CGACATTTCATTACTGACGC    T--   TC-  A  A      ACAG-    AC  ----------
            TTGGGTTGAA
```

GAM16850 17554 TTCATATCTTCTTGAGATAC T A ACTTACTAATTT TCCCAT
1 TTACTAATTTCAAGTCCCAT TTCATA CTTCTTG GAT CAAG
CTTGGTCACAAGGAGTTGTG AAGTGT GAGGAAC CTG GTTC
AA T A ---------- ------
GAM16853 4587 TTCATCCCTCAGTAGCTGCG T- - A - A AAATA-- A A - GTT
1 ACCAAATAAGGTGTAGTACT TTCA CC CTC GT AGCTGCG CC AGGTGT GT CT TGGCAGG

TGGCAGGGTTCTTGCCACAG AAGT GG GAG CA TTGACGT GG TTTACA CA GA ACCGTTC

ACACATTTGGCTCCAGGCTG TT T A C C ACCTCGG - - C ---
CAGTTCACAGAGTGGTTTGA
A
GAM16856 7314 TTCATCTTTTTAACATGTAT TTTAACA ATT - A TCTGTACT
6 TTATTGAGTCATGGCTCTGT TTCATCTT TGTATTT GA GTC TGGC
ACTGTTAGGCATTTGGGAAT GAGTAGAA ACATAAG TT CGG ATTG
ACAAAGATGAG ------- GGT A - --------
GAM16860 17235 TTCATGTGGCATTTTCCTCT T CATTTTC -- TATAAG ACCA
0 CCTTATAAGAACACCAGTTA TTCATG GG CTCT CCT AAC
TACTAGGTTAGAGCTCACCC AAGTAC CC GAGA GGA TTG
TCATGAA T CACTC-- TT TCATA- ----
GAM16862 14189 TTCATTATTGGTGTGAACTC TTATT CT - TTCTCATATTTTCC TTATCATTCATT

3 ATGAGTTCTCATATTTTCCA TTCA GGTGTGAA CA TGAG ATAGT
TAGTTTATCATTCATTACTA AAGT TCATACTT GT ACTC TATCA
TTCTCACTGTTTTCATACTT ----- TT C T---------- ----------
GAA
GAM16864 14924 TTCATTCTTTAGTGTTGTTA CTTT GTTA AAATTAAAATTGTG
3 AATGAAAAATTAAAATTGTG TTCATT AGTGTT AATGAA
TTTATTATAAGATACTTTCA AGGTAA TCATAG TTATTT
ATGGA CTT- AATA ----------
GAM16864 22608 TTCATTCTTTATTGAGTGCA T TATTGA -- CCAGGT
4 TGGTGGCCCAGGTGCTATTC TTCAT CTT GTGCATGG TGGC
CATGTATGTCATAGGTGTGA AAGTG GGA TATGTACC ATCG
A T TACTG- TT ------
GAM16867 13150 TTCATTTCAGCAATGTTACA TTTCA AA - TATTT AGTC
9 TATTTGATTGAAAGTCTTCA TTCA GC TGTTA CA GATTGAA
ATTTGTTAACAGAGCAAATT AAGT CG ACAAT GT TTAACTT
TGAA TTAAA AG T ----- ----
GAM16871 12001 TTCCAAAGCAGTCTGTCGTC - C CG-- C A TCG
6 TCAGTGTGACATTCGGTGCC TTCCAAA G AGTCTGT TCT AGTGTG CAT
ACGCTCAGAACCAGCAGGCT AAGGTTT C TCGGACG AGA TCGCAC GTG
CCTTTTGGAA T C ACCA C C ---
GAM16871 4746 TTCCAAAGCATGCATTGTTA AT-- T ACT G AAGTATTTCAA
7 CTTGGCATTAAGTATTTCAA TTCCAAAGC GCA TGTT TG CATT
AATGACAAACATTGTTACGG AAGGTTTTG TGT ACAA AC GTAA
TTTTGGAA GCAT T --- A ----------
GAM16873 7715 TTCCAACCACGTTGCCCAGT A - -- - GTAAA AAGCA
1 GTAAATCCAAGCAGGAACTG TTCC ACC ACGT TGC CCAGT TCC
GAGCATGATGTCGGTGGGGA AGGG TGG TGTA ACG GGTCA AGG
G C GT A ----- -----

GAM16876 2487 TTCCAATTTCATTGTTATGC AA GTTA- CTA TG TA G G TTTTA
4 CTATTGAAGTATTAATTGCC TTCC TTTCATT TGC T AAGTAT ATT CCAGGTTT AT
AGGTTTGATTTTTAGTGAAG AAGG GAAGTGA ACG A TTCATA TGA GGTTCGAA TG
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CAGACCAAGTGAAGGGAA
GAM16877 11087 TTCCACACCTTCACAATCCC C TT ATCC-- TCTAGAAGCAGTTAC
1 ATCTCTAGAAGCAGTTACGA TTCCA ACC CACA CATC
TGAAGCCCTGTGTGGTCTGG AAGGT TGG GTGT GTAG
AA C T- CCCGAA ----------
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9 GAAGCGCTGTTTCATCGAGG TTCCACATC GG CGA CCGA GA CG GTTTC TCG GG
AAATCCCCGACGAGACCATG AGGGTGTAG CC GCT GGCT CT GT CAGAG AGC CC
GTCATCGGCAACTATCGTAC A CAT ATCAAC A G- AC C C ----
CCAGATGTGGGA
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3 GCACTAACTCTTCTTGGGGC TTCCACA TTGCT GCAAGC CTAA
TTGTGTGGCAAACTGTGGAA AAGGTGT AACGG TGTTCG GGTT
CA TG G ------
GAM16879 10679 TTCCACCCATGGCAAATTCC CCC A- ATGG-- - GTCAA
2 ATGGCACCGTCAAGGCTGAG TTCCA ATGGCAA TTCC CA CC
AACGGGAAGCTTGTCATCAA AAGGT TACTGTT AAGG GT GG
TGGAA AAC CG GCAAGA C -----
GAM16883 10246 TTCCAGATTAGGTCATTCCT GATTA A- TAACA AGAA
3 TAACATTAAAGAATTAAGAC TTCCA GGTC TTCCT TTAA
ACGGGAGGAGACCCAATGGG AGGGT CCAG GAGGG AATT
A AAC-- AG CACAG ----
GAM16883 11402 TTCCAGCACCTAAACCAAAA CACCT AAAAAAT TTGATATGGATT
7 AATGCCACTGTATTGATATG TTCCAG AAACC GCCACTGTA
GATTTATGGTGGTGGTTTTC AAGGTC TTTGG TGGTGGTAT
AAACTGGAA AAACT ------- ----------
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3 CTGGTACCTATGTGGGACCC TTCC CCTCC TCATCA GGT CCT
CTGGTGGTGGAGGTCATCCA AAGG GGAGG GGTGGT CCA GGG
GGAA ACCTACT T CC - ----
GAM16890 7888 TTCCATCACTACATCTTTTC --- ACT- TCTTTT- - CTTC
5 TTCCGGATCTTCATCATGGA TTCCA TC ACA CTTCCG GAT
AGTTTCATTTGTTGCGGAAT AAGGT AG TGT GAAGGT CTA
ATGGAA ATA GCGT TTACTTT A ----
GAM16891 80 TTCCATCCTCCACGCGCCAG - A - CAGG A A CAT
0 GCGATGACCCCATGGGCTAC TTCCATC CTCC CGC GC CG TG CCC
GAGAGCAGCGCGGAGCGGTG GAGGTGG GAGG GCG CG GC AT GGG
GAG C C A AGA- - C ---
GAM16891 15574 TTCCATGCACTAGTACATGT A T ACA - CT--- CTTT
8 AGGCTTCTCCCTTTGGTGCA TTCC TGCAC AGT TGT AGGCTT CC
AAAGCTTAGCAACTTGTGTA AAGG ATGTG TCA ACG TTCGAA GG
GGAA - T --- A AACGT ----
GAM16894 6699 TTCCCAAAGTTTGAACGAGA A- AACGAGATGT GTAG ACAG GACA TA A
1 TGTTGCTAGTAGATTCACAG TTCCCA AGTTTG TGCTA ATTC AACAAT AGGAG TCAGGA
AACAATGACAAGGAGTATCA AAGGGT TCGAGC ACGAT TAAG TTGTTA TCCTC AGTCCT
GGAATACCTGAAAGGCCCTC GG ---------- AAGG GAG- ACC- TG C

CTGAGTCTCCTCCAATTGTT TA TGAAA
GAGGAATGGAATAGCACGAG CC
CTGGTGGGAA GG
CC -----
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8 TCTCTCCCCAAAAATGAGTT TTCCCAC CT TGCTT TCTCC CAAAA
TTGTCTGGAGAACAGGTAAT AGGGGTG GA ATGGA AGAGG GTTTT
AGTTTTAAGTGGGGA AATTTT TA CA TCT -----
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4 GGGGAGTTAGCTGTGAGCTG TTCCCC CCTG GCTG GGA TTAGC TG A CT GC
GCTGGGGTGGGGTCCGTGGC AAGGGG GGGT CGGT CCT GGTCG GC T GG TG
TGGGTCCGTGGCTGGGTCTG TAGTCT --- G G GT C G G ----
ATGGGGAA
GAM16900 22816 TTCCCCCTTCAGAAGGTGAC TCAGA A A T GCT
8 CAAGTTCCATGCTGTGGTGC TTCCCCCT AGGTG CCA GT CCAT
TGGACGCCTGGCACGGGGGGG AAGGGGGGG TCCGC GGT CG GGTG
AA CACGG A - T ---
GAM16907 7574 TTCCCTTCAAGTACTGCATA TTCAAG T TA GC TCCACATTGT
4 AAAGCTGATCCACATTGTTT TTCCC TAC GCA AAA TGA
AAATTTCTTGTGTAATTTTG AAGGG ATG TGT TTT ATT
GGAA TTTTA- - TC AA ----------
GAM16909 14173 TTCCCTTTTAGACTATGGCG CTTTTA TG A TGGA- A CAGCAGAAT
0 ACATACCTGGAGTTCATCCA TTCC GACTA GCG CATACC GTTC TC
GCAGAATGAAGAACGGGATG AAGG TTGAT TGC GTGTGG CAAG AG
GTGTGCGTTTTAGTTGGAA ------ TT - TAGGG A ---------
GAM16909 11996 TTCCGACCAGATTCAGCTGG GA----- GA- GG GGGCCA
2 GAGCCGGGCCAGGCTTTAGG TTCC CCA TTCAGCT GAGCC
TTGGGGAATGGGAATGAAGG AGGG GGT GGGTTGG TTCGG
GA AAGTAAG AAG AT ------
GAM16909 21837 TTCCGAGAATGCCGAGGAGT AGAAT TGT TTTTTAGCTTTG
3 TGTCGTTTTTAGCTTTGTGT TTCCG GCCGAGGAGT CG
TTACTTTTTGGCTGGAGCGG GAGGC CGGTTTTTCA GT
AG GAGGT TTT ----------
GAM16910 16999 TTCCGCTGTGAGGATCTGCC CT A - CCGACCT AATAC T GATAAACA
4 CGACCTGCACGAATACGCCT TTCCG GTG GG ATCTGC GCACG GCC C
CGATAAACAGGGCCGTGCCG AAGGC CAC CC TAGACG CGTGC CGG G
CAGATGCCCACCGGAA -- - G C------ ----- - --------
GAM16910 631 TTCCGGAGCATATGATTAGA G T GA G TT- TTA- ACT-- AACTA
5 GTTGGATTAGTTACCACTGG TTCC GAGCA AT TTA AG GGA GTTACC GGATGG
ATGGAACTATCGTCTTCTCA AAGG TTTGT TA AAT TC CCT CGATGG TCTGCT
GGTAGCAAATTCCTCCCTGT A C AA G CCT TAAA ACTCT -----
AAAAATCTGTTTAGGAA
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6 CCCATTTTGTATATTCAATA TTCCGGA CAGGG GACC TTTGTA TTCAAT
TGGAGTTGGACTTACAGGCG GAGGCCT GTTTC TTGG GGACAT AGGTTG
GTTAACTTTGCTTTCCGGAG TTC- AA C-- TC -----
GAM16910 7986 TTCCGGCAGACCGATTGCCT GA--- CT-- T TCAA
7 TCATGAAGGCTTCAAAGTTT TTCCGGCA CCGATTGC TCA GAAGGCT
TCCTGGCTCTGCAGTTGGGT GAGGCCGT GGTTGACG GGT CTTTTGA
ACTTGCCGGAG TCATG TCTC C ----

GAM16911 19567 TTCCGGGAAGCTGAGTTGAA GG-- - GAG- GAAAAAGGGAA GA- AG----- A-----
0 AAAGGGAATAGTGAGATGTA TTCC GAAG CT TT TAGT GATGT AAATTTCA
GAAATTTCAAGGGGACACCC AAGG CTTC GA AG GTCG TTACA TTTAGAGT
AAGATATGTGAGATTTAAAG AATA A AGAA ---------- AAA GAGGAAA GTATAG
GAGACATTAAAGCTGGAAAG -- GACA
AAGACTTCATAAGGAA GGG
CCC
AA ----
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6 TTTCATTTCTTTGGATGGAC TTCCT GGA GTTGCTGTGT TTTGGATGG
TCTTATCTAGAATACATAGC AAGGA TCT CGACGATACA AGATCTATT
AGCTCTGCAAAGGAA AACG - TA------ ----
GAM16923 17688 TTCCTGAATGAAAATGGAAA AAT AAAGTTCA ACAGTG
8 GTTCAAGTACAGTGACTATT TTCCTG GAAAATGG AGT
TCAAGCCATTTTCCACAGGA AAGGAC CTTTTACC TCA
A AC- GAACTTTA ------
GAM16941 11826 TTCCTTTTTTTCTGAGTTAG T A TA--- TG TTTGTTT
6 TTGGTTTTTGTTTGGCTGAT TTCCTTTT TTCTG GT GT GTT
GAAATGCCAGGGTGAAAGGG AGGGAAAG GGGAC CG TA CGG
A T - TAAAG GT -------
GAM16946 19615 TTCGGCGCTGGGTCCCCAAA CG-- - - AAGCAGAA GAGA
9 GCAGAATGGAGACGGATAGA TTCGG CTGGG TCC CCA TG
GTGGTGGATCCCAGAATCCC AAGCC GACCC AGG GGT GC
GAA CTAA T T GAGATAG- ----
GAM16947 16274 TTCGGGCTGTGCAAGGAGGG C AA- GA- A ACGGTGCCA
4 GATCAAGGACGGTGCCACCA TTCGGG TGTGC GGAGGG TCA GG
TGAAGACCTTTTGCGGCACA GAGTCC ACACG TTTTCC AGT CC
CCTGAG - GCG AGA A ---------
GAM16947 10158 TTCGGGGGTCTCCCTGGCAA GTC CA GTCC CAAGG G C CGCAGC
5 GGGGTCCCAGGGCCTGGAGC TTCGGGG TCCCTGG AGGG CAGGGCCTGGAGC CCCA C
AAAAGCA
CAAGGCCCAGCCAAAAGCAC GAGCTCC GGGGGCC TCCC GTCCCGGACCTCG GGGT G
TTTTTGT

GCAGCATCAAAACATGTTTT --- CC ---- AA--- - A ------
TAGTGGGAAGCTCCAGGCCC ATCAAAACA
TGCCCTCCCCGGGGGCCTCG
AG

GAM16947 14750 TTCGGGGGTCTCCCTGGCAA GTC CA TCC CCAAGG G C CACAG
6 GGGGTCCCAGGGCCTGGAGC TTCGGGG TCCCTGG AGGGG CAGGGCCTGGAGC CCCA C
AAAAGCA
CCAAGGCCCAGCCAAAAGCA GAGCTCC GGGGGCC TCCCC GTCCCGGACCTCG GGGT G
TTTTTGT

CACAGCATCAAAACATGTTT --- CC --- AA---- - A -----
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CTGCCCCTCCCCGGGGGCCT
CGAG

GAM16948 16883 TTCGGTTCTGAAGGTGGGAC TCTG-- GG ATTATATCAAAGAACAG
1 TTATTATATCAAAGAACAGA TTCGGT AAGGT GACTT
AGTTGGGCCTTGAAAATGCT AAGTCG TTCCG TTGAA
GAA TAAAAG GG ----------
GAM16948 1349 TTCGTAGCAAAAACGCTCTG TA--- C GA - CCTTTTC
7 GATGATGCCTTTTCCACTTA TTCG GCAAAAACG TCTG TGA TG
AATAGAATGTTTTTGCAAAC AAGC CGTTTTTGT AGAT ATT AC
TCGAA TCAAA A AA C -------
GAM16949 17451 TTCGTCTACAAAATGACTCG CAAAATGA T--- TCCAGGAT
0 TGGTTACCCTCCAGGATGGG TTCGTCTA CTCGTGG TACCC
TACATTTTATGAGGAGATTA AAGTAGGT GAGTATT ATGGG
ATGGATGAA AATTAGAG TTAC --------
GAM16949 11705 TTCGTGGGACCCCAGGGCCA G A CCA C TC GC ACCT C TC A-
5 TGCCTTCCAGCTCTGGCCAC TTC TGGG CC GGGC ATGCCT CA TCTGGCC CTG TTG
CAGTGGCCTC CA
CTCTGCTTGTCCAGTGGCCT GAG ACCC GG CCCG TGTGGA GT AGACCGG GGC GAC
GTCGCCGGGG GT
CACAACCAAGGGGATGCAGG - A --- - -- A- AGTC T GT AC
GGCCGCTGTGCAGTCGGCTG A AAGG
AGGCCAGAATGAGGTGTGCC CC
CGGACCCAGAG GG
A ----
GAM16950 2323 TTCGTTGACGCTTGCCCCCA G A CT CCAAG TC AACACAGAA
1 AGGGTTCCGGGTACCCCAAC TTC TTG CG TGCCC GGT CGGGTACCCC
ACAGAAGGGGTGCCCGTCGC AAG GAC GC ACGGG CCG GCCCGTGGGG
CGGGCACGCAGGGAA G - -- ----- CT ---------
GAM16950 7557 TTCGTTTGTTATTTGTGTTT T T -- TG TTGTCTTAT
4 GTGGCTTGTCTTATGTCGTG TTCG TTG TATTTGTGT T TGGC
ATAGCACAAGTGCCAGTCGG AGGC GAC GTGAACACG A GCTG
A T C AT GT ---------
GAM16950 16123 TTCTAAAATTATGAAGATCA TAT --- ---- TTA AAA CGCAT
9 ATTTATATGTAAATCTTACG TTCTAAAAT GA AGA TCAAT TATGT TCTTA
CATTAAGAACATGCTTATTG GAGATTTTA CT TCT AGTTA GTACA AGAAT
ATAAATCTAAATCTCTATTT TCT AAA AAAT TTC --- -----
TAGAG
GAM16952 6736 TTCTAAATGTTGACATATTT AAA-- ACA- CAT-- A TCAAAAAAATCACAT
3 CATTATATAATATCAAAAAA TTCT TGTTG TATTT TATAT ATA
ATCACATTATCATATACATT AAGA ACGAC ATAAA ATATA TAT
AAAATACCACCAGCAGTATC CTATG CACC ATTAC C ----------
AGAA
GAM16956 5175 TTCTACAATAATCATTTATC TAAT T TC TAT C GTTA
5 ATTTATGTAATCAAAAAGTT TTCTACAA CAT TA ATT GTAAT AAAAA
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CATGCCTTTGTGGAA TCC- C T- TTT - ----
GAM16963 22469 TTCTAGTTACATTACAAAAA - A ACAAAAATTAATCTT CTCT
5 TTAATCTTAGGTCTCTACCT TTCT AGTT CATT AGGT
CACATATATATAAAAATGAA AAGA TCAA GTAA TCCA
CTCAGAA C - AAATATATATACAC- ----
GAM16969 7544 TTCTATTTTTTTCTTACTAA T TT AA TCTCTTCT CC- T CTAG
3 TGCCTTCTCTTCTCCCTGCC TTCTATTT T CTTACT TGCCT CCCTG CCTG GGC

CCTGTGGCCTAGGCCCAGGT AAGGTAAG G GAGTGA ATGGA GGGAT GGAC CCG
TCTAGGGCAGGTACAGTGAG T GG C- C------- CTT - ----
GGGTGAATGGAA
GAM16971 16355 TTCTCACATGTTTCTGGAAT - - TTCTTTTTTTTTTAATTT
3 TTTTCTTTTTTTTTTAATTT TTCT CACATGT TTCTGGAATTT
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AGGA C T ----------
GAM16972 5186 TTCTCACTAGTTGTCAAAAA T A- AAAAGAACA T ATCT
2 GAACAGCCTTGCTATCTGGT TTC CACT GTTGTCA GCCT GCT
CAGGTGAATGACAACCAAGT AAG GTGA CAACAGT TGGA TGG
GGAA - AC AAG------ C ----
GAM16974 13559 TTCTCAGTCCAGAAAGATGG T GAT AAGGA GTTTCAAAGTTTTA
3 GAAGGAGTCGTTTCAAAGTT TTC CAGTCCAGAAA GGG GTC
TTAGGCCGCCCTTTCTGGAC GAG GTCAGGTCTTT CCC CGG
TGTGAG T --- GC--- ----------
GAM16974 2545 TTCTCAGTTCATAGGCTATC A ATAG A C- ------ A GAGAAGGAA
6 CCATCACCCTTTATTTGGAG TTCTC GTTC GCT TC CATCAC CCTTT TTTG
AAGGAACGAGAGAAGGAAAT AAGAG CAAG CGG AG GTAGTG GGAAG GAGC
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AACGAGAA
GAM16977 14171 TTCTCCAGTTGGCCCTCCAT ------ TC T CCATA --- ATCT
8 GTCCATAGGCTTCGCATCTG TTCTCCAG TTGGCCC CA GT GGCT TCGC
TGATTCAGCCCACTGTGGGT AGGGGGTT AACTGGG GT CA CCGA AGTG
CAAAAATATTTGGGGGA TATAAA T- - C---- CTT ----
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6 GCTACTGAAGCTGCGTGGCT TTCTCCC GG AGTCCA TC GCTA CT AAGCT
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TGCCTGGGAGAG T G CC T- CA G ----
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8 ACGTGGACCGCAGAGGACAC TTCTCGG GCT G CACGTG ACCGC GG
AGGCACCCAGCGGTGACATG AAGGGCT CGA C GTGTAC TGGCG CC
TGCAGCAATATCGGGAA ATAA- -- - AG AC- ---------
GAM16983 11295 TTCTCTAACCTTTCAAAGGA AA TT AAG-- - AG CAAAG
6 TTAAGGCTCAAAGGGTGTGA TTCTCT CCT CA GA TTA GCT
CTCATCTGTGGGAGGGCAGG AAGGGA GGA GT CT AGT TGG
GAA CG GG GTCTA C G- -----
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4 ATCTGTATTCTATGTGGTGC TTCTCT ACGCACGT TTC C TAT
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CT C CGT-- GT ---
GAM16984 21721 TTCTCTATAATTGCTTCTAG A- TCTAGA AAATATGACAATC
7 ATTACAAAAATATGACAATC TTCTCTATA TTGCT TTACAA
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AGAA CA TG---- ----------
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3 GAACATTTTGGTCATAATCA TTCT CTTCCT TCAGAACATTTT GG TCAT
TGAGCTTAGAAATGTTCTGA AGGA GAGGGA AGTCTTGTAAAG TC AGTA
AGGGAGTACAGGA CAT ---- AT G ----
GAM16995 13583 TTCTGAAGAATTAACCCTTG GAAGAATTAAC- GTC AC AAAC ACACGAGACAAGAG

0 GTCGCAATTACTTGAAACTG TTCT CCTTG GCAATT TTG TGG
GACACGAGACAAGAGCCAAG AAGA GGAAC CGTTAA AAC ACC
AACAAAATTGCACAAGGAAA ATAACAACCAAA A-- -- AAGA ----------
CCAACAATAAGAA
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5 ATTATGAGGTACCAAGATTG TTCTGAT TTTGG GAGG AC AAGA
TTTCTTTGTTTCTTTTTTTC AAGATTG AAACT TTCT TG TTCT
AAATTGTGGTTAGAA GTGTT TTTT----- T T -----
GAM17000 442 TTCTGATGAACTGCACTACT GATGAACT CT GAG TACCT
0 TGGAGGTCTACCTGACAGAT TTCT GCA ACTTG GTC
GAGTTTGCTAAAGGAAGGAA AAGG CGT TGAGT CAG
AAGGAAAT T- AGA -----
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9 TGCCATGAAGGGCTGCTGGG TTC TGCAGC GAGTC CAG C GCCAT GGCT
CCATGTGGCTGCCTGGGCTC GAG ACGTCG CTCGG GTC G CGGTG CCGG
TGCTGCATGAG T T - C T TA-- ----
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8 GAACATTATACATGGCAGTG TTCTGCAT TT GCAGGA CATT
ATTCTGTGGAGAGTGCAGAG GAGACGTG AG TGTCTT GTGA
AG--- G A ---------
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4 CAATACATCATACATACTTT TTCTG TGATTTTAA CAT AC CTT
ACAAGCAAGTTAAATGGAGA AAGAT ACTAAAGTT GTA TG GAA
TAAAGTTGAAATCATAGAA - GAAATAGAG- AAT AAC ---
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1 TTCCATTCATTTGATTTGTT TTC GGCA AGAA GTTC TCA TGA
CATCTGAGAATTTTTTTTTT AAG CCGT TTTT TAAG AGT ACT
TTGCCTGAA T TT- TTTT --- CT -----
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5 TCTTTATTGTCATTTACTTT TTC GCTCTCTT TTTCTTT TTGTC TAC
GGTGGACGAAGAGAAGGAGA AAG TGAGAGAG GAAGAGA AGCAG GTG
GAGTTGGAA GT ----- - --- ----
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3 TGTGTCCATTAAATGCAAAC TTCTGT TG CTAAGACT TCC
AAAGAGGAGGAAGTCTTGGC AGGACA AC GGTTCTGA AGG
AGAACAGGA AG --- AGG ----------
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1 GAGACCTTGGAGAAATAACT TTCTG TCATTT TAGGTG GACC GG AGAA
TAACTTCTTGATGCCTTGGT AAGAT AGTAAA ATCCAC TTGG CC TCTT
TACCCCACCTATAAAATGAA ATA AT CCCA TT GTAGT ----------
TATAGAA
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1 TTGGGAATAAGTTCTAGTAG TTCTGTGACCTT CTAA GTTGG TA
GATCAACATTGGATAAAGGT AGGGCACTGGAA GGTT CAACT AT
CACGGGA ATA A- AGG --------
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3 TTTAATGACCTCTGTGGTCA TTCTGTGT GT GC TT TGACC
CATTAAGCAAACAACATAGG GGGATACA CA CG AA ACTGG
G A AA--- - TTAC -----
GAM17028 1926 TTCTTAATAGCTGTCGCCTG A T- C TG CT ACT ACCAGA

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3           GCTTCACTGAACCAGATCTG TTCTTA TAGC  GT GCC  G  TC   GA
            GATCCTGGGTTACCTGCTGT AAGAAT GTCG  CA TGG  C  AG   CT
            AAGAA                -   TC  T   GT CT  GT-  ------
GAM17030 11406  TTCTTACTTTTGTTGAAATG    TA  TTTG--   A-     ACAC       GA----   GCGC
2           GTTACACTAGGAGTTTTGAC TTCT  CT     TTGA  ATGGTT    TAGGAGTTTT     CGGG
            GGGGCGCTTCGGGGGAAGGG AGGG  GA     AATT  TACCAA    ATTTTCAGGG     GCTT
            ACTTTTAAAACCATGGTTAA    GG  TCTAAA    GG     A---        AAGGGG    ----
            AAATCTAGGGGGGA
GAM17030 4878   TTCTTAGAGGAGCCATCCTG    T      CATCC-    CAAG    TGA  TGA
6           CTCCAAGGGGCCTGAGCTGA TTCT AGAGGAGC     TGCTC    GGGCC   GC
            GTGTGGTCTGTGAGCATCTG GAGA TCTCCTCG     ACGAG    TCTGG   TG
            CTGCTCCTCTCAGAG        C       TCGTCT    TG--    TG-  ---
GAM17032 21779  TTCTTATACTGTGTTAATCA      TAC--    TAATC-   A    ATCTC
2           TCAAGGAATCTCTTCTCGAT TTCTTA     TGTGT     ATC AGGA
            TAAAATACACACATCTTAAG AAGAAT     ACACA     TAG TCTT
            AA                  TCTAC     TAAAAT   C    -----
GAM17032 1417   TTCTTATATGGTCGGTAATC      T-   GTCG   ATC---   A    ATCTC
5           ATCAAGGAATCTCTTCTCGA TTCTTA  ATG    GTA     ATC AGGA
            TTTAAAATACACACATCTTA AAGAAT  TAC    CAT     TAG TCTT
            AGAA                 TC   ACA-   AAAATT   C    -----
GAM17032 7776   TTCTTATATTGGTGTTAATC      TAT  -   TAATC-   A    ATCTC
6           ATCAAGGAATCTCTTCTCGA TTCTTA   TG GTGT     ATC AGGA
            TTAAAATACACACATCTTAA AAGAAT   AC CACA     TAG TCTT
            GAA                  TCT  A    TAAAAT   C    -----
GAM17032 22974  TTCTTATATTGTTGTTAATC      TAT   -   TAATC-   A    ATCTC
7           ATCAAGGAATCTCTTCTCGA TTCTTA   TGT TGT     ATC AGGA
            TTAAAATACACACATCTTAA AAGAAT   ACA ACA     TAG TCTT
            GAA                  TCT   C   TAAAAT   C    -----
GAM17035 10362  TTCTTCAGGCCTGCCCTGTG     -    C---     TG--    AC     CACA
7           ACACTCAATCACAGTTGACG TTCTT CAGGC    TGCCC    TGAC  TCAAT
            TCAGGATGGGTACAATGTCT GAGAA GTCTG    ATGGG    ACTG  AGTTG
            GCAAGAG               C    TAAC     TAGG    C-     ----
GAM17036 10096  TTCTTCATCCAGATGCTGAC    TCA-    A   T-   TT-     TGAT
5           TTTGGGTATGATTATCCATC TTCT    TCCAG TGC  GAC   TGGGTA
            CGTTTTGCATTGGAAATTAG GAGA    AGGTT ACG  TTG   ACCTAT
            AG                  TTAA    -   TT   CCT     ----
GAM17041 17552  TTCTTCTGTTCTCCTTCTGT     -     TCCTTCTG     ATACTTAATCTTCTAA
0           TATTATACTTAATCTTCTAA TTCTT CTGTTC       TTATT
            AATAAACTAATGTGAACAGT AGGAA GACAAG       AATAA
            AAGGA                T     TGTAATCA    ----------------
GAM17041 19588  TTCTTCTTACCACAGGTCCA        CCA----   GT   C  A  A    CAGC
2           CTCACAAATCGCAGCTGGTA TTCTTCTTA      CAG  CCA TC CA ATCG
            TGGACTGGTACTGCCCCAAA AAGGAGAAT      GTC  GGT AG GT TGGT
            TAAGAGGAA               AAACCCC   AT   C  -  A    ----
GAM17043 16286  TTCTTGCCTGGTGTCGGTGG      CCT  TG  GGTG-     --   TG  ACTG
5           TTAGTTTCTGCGACTGTGTG TTCTTG   GG  TC    GTTAGT  TTC  CG
            GGACTGCTGATAGGAAGATG AAGGAC   CT  AG    TAGTCG  AGG  GT
            TCTTCAGGAA             TT-  GT  AAGGA     TC   GT  ----
GAM17046 15519  TTCTTGTGTGCTTTATTCAG        C-----------      AGAC    CTGCA
4           ACAGTTCTGCAAACTAGGGA TTCTTGTGTG          TTTATTC    AGTT
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ATAAATAAAGATACGAACAC AAGAACACAC AAATAAG TCAA
ACAAGAA AAGCATAGAAAT GGA- -----
GAM17048 654 TTCTTTATAATTCTACTTTG ATAA - - - AT-- A- ATCT AGGTT
9 AGTGCTGTCTCCATGTTGAT TTCTTT TTCTAC TTTGAGT GCT GTCTCC GTTG TGT GAGC
GTATCTGAGCAGGTTGCTCA AAGAGA GGGGTG AGATTCA CGG CGGAGG CGAT ACA CTCG

CAGGTAGCTCTAGGAGGCTG CGA- G A T ATCT GG ---- -----
GCAACTTAGAGGTGGGGAGC
AGAGAA
GAM17049 14740 TTCTTTATGTTTACCCTACC A T - CAAG CCTGAGCAT
5 AAGAGCAGACCTGAGCATTT TTCTTT TGT TACC CTAC AGCAGA
TGCTGGCCGTAGAGGTATAT AAGAAA ATA ATGG GATG TCGTTT
AAAAGAA - T A CCGG ---------
GAM17052 6723 TTCTTTCTCTTGTGCTTATT C CTTATT T GAG -- CTTCTTCTTCCTTT
8 CTTCTTGGGAGTGGTGTAAG TTCTTT TCTTGTG CTTC TGG TGGTGT AAGA
ACTTCTTCTTCCTTTTCTTA GAGAAG AGAACAC GAAG ACC ACCACG TTCT
AGCACCACCACGAAGTCTCA T AACTCT C --- AA ----------
ACACAAGATGAAGAG
GAM17053 11747 TTCTTTCTGGTATTAATCAA TTCT A AAATG AA- G CAGATA
3 ATGAGCAAAAGTGTACAGAT TTCT GGTATTA TC AGC AAGT TA
ATGGGCTTGGGGCTAGATAA AAGA CTATAAT AG TCG TTCG GT
TATCCATAGAA TAC- - A---- GGG G ------
GAM17053 14158 TTCTTTCTTGAGGCCAAGGT TTG AA--- - CGAA CC- GACAACGGGACA
5 GGGCCCGAAGGCGGCCCCCA TTCTTTC AGGCC GGTG GGCC GGCGG CCCA
GACAACGGGACATGGGCGAC AAGAAAG TTCGG CTAC CCGG CCGCC GGGT
CGCCGAGGCCACATCCCAAA --- AAACC A AG-- AGC ----------
GGCTTGAAAGAA
GAM17054 14745 TTCTTTGCCTCTCCATTCCC GC CCA CC ACTAAAAGGCTC
8 TCAGACTAAAAGGCTCCTGA TTCTTT CTCT TT CTCAG
GTTGACCAAGAGAAAGAGAA AAGAGA GAGA AG GAGTC
AA ACC TT ----------
GAM17055 16312 TTCTTTGGGAAGGCAGGAAG T C AAG AA G ATAAA
8 GAAATGCTCATAAAGAGGAT TTCT TGGGAAGG AGG GA T CTC
CAGACCTTCTTTCCCGTGGA AAGG GCCCTTTC TCC CT A GAG
A T T AGA -- G -----
GAM17058 1656 TTCTTTTGGCACTGTCTCAA - ACT-- CA AAGC AA AAATACCTG
6 TATGCAAAGCGTGTTAATTG TTCTTTT GGC GTCT ATATGCA GTGTT TTGCA
CAAAATACCTGTGCAGAAAA AGGAAAA CCG TAGA TATGTGT TACAA GACGT
CATTGTGTGTATAAGATCTA T AAATC A- GT-- AA ---------
AAGCCTAAAAGGA
GAM17059 13907 TTCTTTTTAAAAAAACCAAT TT AAAACCAATT-- AA CAAATAA
1 TTAAAAATAAAGGCAAATAA TTCTTT AAA TAAAAAT AGG
CCTAATTTTTATATAACTCA AAGAAA TTT ATTTTTA TCC
AAGTTTTTAAAGAA TT GAAACTCAATAT A- -------
GAM17061 21859 TTGAAAAATGTAACTTTTAT AAA TAA T C CA---- - TTTATCTT
3 TCTGAACATGTAGTATTTAT TTGA ATG CTT TATT TGAA TGT AGTA
CTTTATTAGCAATTTTTTTC AACT TAC GAA ATAA ACTT ACG TTAT
ATAATATAAGCATGCCTCAA CCG --- T T TTTTTA A --------
GAM17065 15285 TTGAAAGTCCGAATCTGCAA AA C CA TCAT C ACCGAA
6 GTTCATCTCTGAGAACCGAA TTG AGT CGAATCTG AGT CT TGAGA

TTTTACAGCCACTCCAGATT AAC TCA GTTTAGAC TCA GA ATTTT
TGTACTCCAA C- T C- CC-- C ------
GAM17070 10095 TTGAACCCAGTTACAAGAAA CCAGTTACAA A - GACTTTCTTGCAA
3 CAGGTCTGACTTTCTTGCAA TTGAAC GAA CAGG TCT
AGATTCTGCTTCCTCCTCAA AACTTG CTT GTCT AGA
AGTTCAA AAACTCCTC- C T ----------
GAM17070 66 TTGAACCTGGAGGTGGAGTT GA AG TG AAAACC AACA
9 GAAAAACCCAAACATGCCAT TT ACCTGG GTGGAGT A CA
GCTTGATTCCACCCGGGTGA AA TGGGCC CACCTTA T GT
AA AG -- GT CGTACC ----
GAM17071 10258 TTGAACTATTAGCTTGTGAA A ATTAG G A AAA AAAT
6 GTTTAAATCCAAATGGAGAA TTG ACT CTT TGA GTTT TCC
AGACTCAAAGAAACAGTCCA AAC TGA GAA ACT CAGA AGG
A C CAAA- - - AAG ----
GAM17072 7035 TTGAACTCTGATGGCTGTTA C GG T AAG---- TTTTCTT
1 TCAAAGGAACTTTTCTTGTT TTGAACT TGAT CTGT ATCA GAAC
TAAATTGCTGATGCAGGAAT AATTTGA ATTA GACG TAGT TTTG
TAAGTTTAA - AG - CGTTAAA -------
GAM17076 5157 TTGAAGGGTGCAAAGTGATT A A T A CT GCTGGGAGAATTA
1 AAGGCTCTGCTGGGAGAATT TTG AGGGTGCAA G GATTA GG CT
AAGGACCCTGATCCTTGCGC AAC TCTCGCGTT C CTAGT CC GA
TCTGCAA G - - C AG ----------
GAM17077 22592 TTGAAGTGGCTTGAAAAAGG G AAAA AA GAC--- GACATTGG
5 CAAGATTGACTTTTATGACA TTGAA TGGCTTGA GGC GATT TTTTAT
TTGGATAAAATCTACAAATC AACTT ATTGAGCT CCG CTAA AAAATA
AGCCCTCGAGTTATTCAA - C--- A- ACATCT --------
GAM17084 4686 TTGACAATATGTTCTGTATT - TT G TAAAACT AT T ATCT
1 TAAAACTCAAATCTTGTCGG TTGAC AATATG CT TATT CAA CTTG CGG
ATCTCTGCAGGGCTTGTGAC AGCTG TTATAC GA GTAA GTT GGAC GTC
CAATGAAGTCATATTCGTCG C T- A CCAGT-- CG - ----
A
GAM17090 10438 TTGACCTTTTCTTCCTGGAC A T- CTGGA T CAA TTGGAT
3 TATTGAAATCAAGCTTATTG TTG CCTTTTC TC CTAT GAAAT GCTTA
GATTAAGTGATATTTCTATA AAC GGGAAAG AG GATA CTTTA TGAAT
GCGATTGAAAGGGCAA - TT C---- T TAG ------
GAM17100 19544 TTGAGACAGAGTCTTGCTCT - TC C TC CA T AA----- - ACCATCTCG
6 GTCACCCAGGATGGAATGCA TTGAGACAG AG TTGCT TG ACC GGA GG TGCAGTG GC
GTGGCACCATCTCGGCTCAC GACTCTGTC TC AACGA AC TGG CCT CC ACGTCAC CG
TGCAACCTTCGCCTTCCCAG C TT - T- AC T GCTTCCA T ---------
GTTCAAGCAATTCTCCTGTC
TCAG
GAM17100 11187 TTGAGACAGAGTCTTGCTCT A - TC C TC --- T -- - ACGATCTCA
8 GTCACCCAGGCTGGAGTGCA TTGAG CAG AG TTGCT TG ACCC AGGC GGAG TGCAGTG GC

GTGGCACGATCTCAGCTCAC GACTC GTC TC AACGA AC TGGG TCTG CCTC ACGTCAC CG

TGCAACCTCCGTCTCCCGGG C C TT - T- CCC - CA T ---------
TTCAAGCAATTCTCCTGCCT
CAG
GAM17102 19566 TTGAGACAGAGTTTTGCTCT A - TT CT TT --- T AA- - G ATCT

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8          TGTTGCCCAGGCTGAAATGC TTGAG CAGA G  TTGCT  TG  GCCCA   GGC GA   TGCAGTG GC TG

           AGTGGCGTGATCTCGGCTCA GACTC GTCT C  AGCGA  AC  TGGGT   CCG CT   ACGTCAC CG GC

           CTGCAACCTCTGCCTCCTGG     C    T TT    --  T-     CCT   T  CCA      T  -  ----
           GTTCAAGCGATTCTTCTGCC
           TCAG
GAM17103 19611  TTGAGACAGGAGAATCGCTT       GG  AA     GA--       GT     GT    C  A-  TGAGATT
5          GAACCCAGGTGTTGGAGGTT TTGAGACA  AG  TCGCTT    ACCCAGGT  TGGAG  TGCA TG  GC

           GCACTGAGCTGAGATTGCGC AACTCTGT  TC  AGCGAA    TGGGTCCG  ACCTC  ACGT AC  CG

           CACTGCACTCCAGCCTGGGT       G-  AG     ACAG       --     --    C  CG  -------
           GACAAAGCGAGACTGTGTCT
           CAA
GAM17104 13280  TTGAGACAGGGTCTCGCTCT       A   TC--     C  TTG  C--   C     --     -    A  ATCC
3          GTTGCCCAGGCTGGAGTGCA TTGAGAC GGG    TCGCT TG   CC   AGG TGGAG  TGCAG GGGC TG

           GGGGCATGATCCCAGCTCAC GACTCTG CCC    AGTGA AC   GG   TCC ACCTC  ACGTC CTCG AC

           TGCAACCTCCACCTCTTGGA      -   TCTT    -  TTA  TTC   -    CA     A    -  ----
           TTCAAGTGATTCTCCCGTCT
           CAG
GAM17113 22526  TTGAGAGTCACGTTGGTGCT      ---    CGTT----      A     TTTCA
6          CAAAAACTTTCAGTTTTGGA TTGAGA   GTCA       GGTGCTC AAAAC
           GCATTTTGAATTTTGATTTT AACTCT   TAGT       TTACGAG TTTTG
           TCTCAA               TTT    TTTAAGTT      G     -----
GAM17126 13713  TTGAGGAAGTTGTATCAGTC      -   T---    CAG    ATTCT   TTTTTCAT
3          TGATTCTTAGTTTTTCATCT TTGAGG AAGT    GTAT   TCTG     TAG
           GTTAAGTAGAACGTACTATT AATTCC TTCA    CATG   AGAT     GTC
           ACTTACCTTAA            A    TTAT    CA-    GAATT   --------
GAM17126 8009   TTGAGGAGAACATGCTACTT    A    A     C    TAGACAT    AAAACGA
8          AGACATGGAGAAAACGACTT TTG GGAG ACATG TACT       GGAG
           CAGTGTCATGTACTCCACAA AAC CCTC TGTAC GTGA       CTTC
                        A    A     T    -------   -------
GAM17130 13353  TTGAGGGAGGGCAAGAGAGG       GA--  C        TTTGATAAAAT   GAAAAATGTTCTA
3          ATTTGATAAAATGAGGAAAA TTGAGG    GGG AAGAGAGGA          GAG
           ATGTTCTACTCTCCTTTCTT AATTCC    TCC TTCTTTCCT          CTC
           TCCTGGAGCCTTAA           GAGG   T       -----------   -------------
GAM17134 2456   TTGAGTAGGGCCTAGCCCCC      TA   CCT--      CTC   CC       CCATTT
5          TCCACCCCTTTTCTTCCATT TTGAG  GGG     AGCCCC   CAC  CTTTTCTT
           TGAGAGGAGAGTGCTTGGGG AATTC  CCC     TCGGGG   GTG  GAGGAGAG
           CTTGAAACCCCTTAA         --  AAAGT     TTC   A-       ------
GAM17135 5037   TTGAGTCCTTTATGAAATTC      TC   TA     T     T      TTG
6          ATAAATAAAGAATTGTTCTT TTGAG  CTT  TGAAAT CATAAA AAAGAA
           TCTTTGTGGTTTTAATAAGA AACTT  GAA  ATTTTG GTGTTT TTTCTT
           GTTCAA               GA   TA     -     C      ---
GAM17135 7669   TTGAGTCTCAGAAACAAGCT    AG     AAACA-    -  TTAATAA  AAAAT
9          CTTTAATAAGGAAAATCCAG TTG  TCTCAG      AGCT CT       GG
           AAGCTATAAAACTGGGGGGC AAC  GGGGTC      TCGA GA       CC
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          AA                GG     AAAATA    A -------  -----
GAM17137 10946  TTGAGTGGTTTATTTTTGCC    AG    TTA    TG CT--       TTTT
4          TTTTTTTTTTTTTAAAGAAA TTG  TGGT   TTTT  C    TTTTTTTT
          ATACAGTGAAGACACTAAGC AAC  ATCA   AGAA  G    AAAAGAAA
          AA                GA    C--    GT ACAT       ----
GAM17139 22389  TTGAGTTGTTGAGTATATTT       G  G   AT-  TT   A    TTGGAT
1          GAGATTGATTGGATTCAACC TTGAGTT TT AGT   AT  GAG TTGA
          TCTTGTTGAACTGAAAACTT AATTCAA AA TCA   TG  CTC AACT
          AA                  -  G   AGT   TT   C    ------
GAM17139 1384   TTGAGTTTTTAATCAAGTAC      TTTTA     TACAGCA  TC   A    TATACATTT
7          AGCACTTCATGAGAATTATA TTGAGT     ATCAAG      CT  ATG GAAT
          CATTTGTTCCCATTCAGATT AATTCA     TAGTTC      GA  TAC CTTG
          CTTCTTGATACTTAA          -----      TTCTTA-  CT   C    ---------
GAM17141 2549   TTGATACAGTCTCACTCTTG    T    TC---     CT  TT    A-  C     --   AATG   - AATCTCGG
2          TTGCCCAGGCTGGAGTGCAA TTGA ACAG     TCACT  TG  GCCC  GG TGGAG  TGC    GTG C
          TGGTGCAATCTCGGGTCACG GACT TGTC     AGTGG  AC  TGGG  CC ACCTC  ACG    CAC G
          CAACCTCCATCCCCGGGTTC     C    CTCTT     --  T-    CC  T     CA   ----   T --------
          AGGTGATTCTCCTGTCTCAG
GAM17141 7087   TTGATACGGGGGGTGGGCGC     A  -   -     C   ---   AG    CAAAT
7          CGCCAGGTCCCAAATGGACA TTGAT CG GGG GGTGGG GCC   GCC  GTCC
          AGGTGCTGGCCTCACCGCCC GACTA GC CCC CCACTC CGG   TGG  CAGG
          ACGATCAG               -  A   G     -   TCG   AA    -----
GAM17142 7034   TTGATAGAAAATTTGTCCTC     T      T   C--  C      ---   TTACT
1          AGTTGTAGGTTACTCTTAAA TTGA AGAAAAT TGT   CT AGTTGT   AGG
          GCAGCTTAGATTGCATGTTT GACT TCTTTTG ACG   GA TCGACG   TTC
          TCTTCAG               -      T   TTA  T      AAA   -----
GAM17142 19598  TTGATAGCTTGTAATGTCCA    A    ---    A     TTTAA   TT  A  GTA-     CTTCTCTGTA
7          TTTAAATTTTCAAGTGTATC TTG TAGCT   TGTA TGTCCA     ATT  CA GT    TCTTGC
          TTGCCTTCTCTGTAGCAAGA GAC GTCGA   ACAT ATAGGT     TAG  GT CG    AGAACG
          GCCAGCCTGCGGATATTGGA    -    CCA    -     TA---   GC  C  ACCG     ----------
          TATACAACCAGCTGCAG
GAM17143 7546   TTGATAGTCAACTGTGGAGC    -    CAAC      CA    CATTTACATCC
6          ATTGTCATTTACATCCACAA TTG ATAGT    TGTGGAG  TTGT
          CTTCCACAAGAACTGTACAA AAC TGTCA    ACACCTT  AACA
                            A     AGA-      C-    -----------
GAM17147 22562  TTGATCTCATCGGTAAGCGG     CT A  G    C     C   ATCACCA
3          GTGCCGGATCACCACTGACA TTGAT  C TC GTAAG GGGTG CGG
          TCCTCTTGCGGACGGAATCG AGCTA  G AG CGTTC CCTAC GTC
          A                   AG C  G    T    A    -------
GAM17147 22628  TTGATCTTAACAAGGGCATT       TAACAAGG     ---------     AAGATACACA
8          GAAGCGAAGATACACACGCT TTGATCT       GCATTG       AAGCG
          TTTACCATGGCAATGCACAA GACTAGG       CGTAAC       TTCGC
          ATGGATCAG               TAAACA--     GGTACCATT    ----------
GAM17148 2057   TTGATGAAGTCTCTCATCTT    -----    TCTCT   CTTT    CC-   TCTTCT
6          TGAAAGGCCATAATCTTCTT TTGA    TGAAG    CAT    GAAAGG   ATAA
          TATTTCCCTTTTTGTCATGT AACT    ACTTC    GTA    TTTTCC   TATT
          TTCTTCAACCATTCAA       TACCA    TTT--   CTGT     CTT   ------
GAM17149 4548   TTGATGACTAAAGAAACCTG     G   AAGAA      CACATCAAT   TCT
2          CTGCACATCAATGCCTCTGG TTGAT ACTA     ACCTGCTG       GCC
          CCAGCAGGTCAGTGGTAATC AACTA TGGT     TGGACGAC       CGG
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          AA                A  GAC--      ---------  ---
GAM17149 5011  TTGATGAGCTACTCATCCCA TG  A  ACT--  CC     ---    GA CTATT
9          GACTCAGCCAAGACACTATT T ATG GCT   CAT CAGACTC  AGCCAA CA
          TGAATTGGCTGCAGAGTCTG A TAC CGA   GTG GTCTGAG  TCGGTT GT
          ATGTGTCCACAGCCATTGA  GT  -  CACCT  TA     ACG    AA -----
GAM17152 7752  TTGATGTAAATGAAGATAAA    GT--  T   TAAA TG  TCTTGGTCAAT
7          GTGGTTTCTTGGTCAATAAT TTGAT   AAA GAAGA   G GTT
          TGCAATTTCTTTCTTTTAAA GACTG   TTT TTTCT   C TAA
          GTCAG              AAAT  C    TTAA GT  ----------
GAM17153 7196  TTGATGTCATGTGTCAAGTG        GTGTCAAG    A G-  TGATT
3          CTTACTGATTTGATTGATGA TTGATGTCAT      TGCTT CT  ATT
          AGAAGTAAAAAGTGGCATCA AACTACGGTG      ATGAA GA  TAG
          A                  AAAA----   -  AG  -----
GAM17165 10917  TTGCACGCCTGAAGAGACTC    ACG   AAGAGA  --   --  GCCAA
9          GGTCACGGAGCCAATCTGGT TTGC  CCTG    CTC  GGTCA  CGGA
          TGACTTTGAGCAGGAGGCAG GACG  GGAC    GAG  TCAGT  GTCT
                    GA-  ------  TT    TG   -----
GAM17166 15327  TTGCAGAACTTACTACTGTT    GA    A-  TTAA    GTA  G  ATATTTAAACACAAA
8          TAATACTTTGTAGAAGGAGG TTGCA  ACTTACT  CTGT   TACTTT  GAAG AGGA
          AATATTTAAACACAAATCTT GGCGT  TGAATGA  GATA   GTGAAA  CTTT TTCT
          GTTTCAGGAAAGTGCTCCAT    --    AA   CCTC    GGA  G  ----------
          AGAAAGTAAGTTGCGG
GAM17167 7989  TTGCAGAAGTAAACTGGCAA   C     AACT  CAAG    T-   CATGT
1          GGATTTTTTGTGCATGTCAC TTG AGAAGTA   GG   GATTTT  TGTG
          ATTAAAATCATCACCTACTT AAC TTTTCAT   CC   CTAAAA  ACAC
          TTCAA              -     ---- ACTA    TT  -----
GAM17169 4966  TTGCAGCTTGGAATCTATTT    G-  --   TC--   T  TC-  AGTT
1          TATGTCACCAGTTGGTCCTC TTGCA  CTT  GGAA   TATTT ATG  ACC
          ATCAAATAAAATTTCCTTAG GACGT  GGA  CCTT   ATAAA TAC  TGG
          GAGTGCAG             GA  TT   TAAA    C  TCC  ----
GAM17169 167   TTGCAGGAGCTGGGCTGCTT  TG A   C  -  TGC TG    GAGGTTCCA
4          GGATCAGAGGTTCCATGGTC T  C GGAG TGG GC   T  GATCA
          TGAACTGCTCCACTCTGGTG A  G TCTC ACC CG   A  CTGGT
          A               GT G   -  T  TCA GT    ---------
GAM17171 5156  TTGCAGTGATTTGCTTTTGC   CA   T-      G  -------      -    GCCATACCAGTTAA
2          CTCCTAGGATCACCTGTGCC TTG  GTGA  TTGCTTTT CCTC      CTAGGATCA CCTGT
          ATACCAGTTAAACAGGCTGA AAC  CATT  GACGAAAA GGAG      GGTCTTAGT GGACA
          TTCTGGAAGTTCTGAGGAAA   AA   TC      -   TCTTGAA      C    ----------
          AGCAGCTTTACAACAA
GAM17173 11196  TTGCATCCCCTCAGAGCCTC   C       GAGCC    AGGA   ATA  C    C  TT  TGTC
0          CCTTAGGAGCGAATATGCAG TTG ATCCCCTCA    TCCCTT   GCGA   TG AGAATT TC  GAA
          AATTCTCTTGAATGTCTTCT GAC TGGGGGAGT    GGGGAA   CGTT   AC TCTTGA AG  CTT
          TGAAGTTCTCATTGCACAAG   T      AGAT-    CA--   --- -    - TT   ----
          GGGTAGATGAGGGGGTTCAG
GAM17177 10503  TTGCCAACCTGAGTCGGGAT   C     A--    ATGC-    T  TGGGG
6          GCGGAGGATATTGGGGGTTT TTG CAACCTG   GTCGGG    GGAGGA AT
          CTTCCATGACCCTGACAAGC AAC GTTGGAC   CAGTCC    CCTTCT TG
          AGGTTGTCAA           T     GAA    CAGTA    T -----
GAM17181 11332  TTGCCCAGGCCATCCTTGGG      GG  ATC    ----   T  ACGT
7          CATTGGACGTCCTGTGCCAG TTGCCCA  CC   CTTGG   GCAT GG
```

GCCAAGTCCGGGATGGGCAA AACGGGT GG GAACC CGTG CC
AG CCT GGAC T ----
GAM17184 16161 TTGCCGCCGTGCGCTTGGCC TG C C G TGG C AAC - CCC- T- ACAGTCCTTCA

7 ACACTTAACATCATCCCCGC T C GC GTGC CT CCA ACTT ATC ATC GC AACT
TAACTACAGTCCTTCAGGTT A G CG TACG GA GGT TGAA TAG TAG CG TTGG
TTGCAATAGATAGATTTAAA GT A T - TAA T ATT A ATAA TT ----------
GTTTGGAATAGGCATTGCAG
TGA
GAM17184 19763 TTGCCGGCCGTCGCACTCAT - TC T ATTTA------- GGAGACA
8 TTACCCGGAGACAGGGAGAG TTGC CGGCCG GCAC C CCC
GCTCTTCTGCGTGTAGTGGT GACG GTTGGT TGTG G GGG
TGTGCAG T GA C TCTTCTCGGAGA -------
GAM17185 2160 TTGCCTAAGCTGGAGTACAT A A T T C TG C TG A CA AA
5 TGGTGTGATCTTGGCTCACT TTGCCTA GCTGGAGT CA TGG GTGAT T G TCAC CAACCTCC
CCTCC GGGG TC
GCAACCTCCACCTCCCAGGG AACGGGT CGACCTCA GT ACC CGCTA A C AGTG GTTGGAGG
GGAGG CCCC AG
GAATCGCTTGAACCCCGGAG C C T C A GT A GT C -- A-
GCGGAGGTTGTGGTGAACTG GCTT
AAATCGCCCCATTGCACTCC
AGCCTGGGCAA

GAM17187 2201 TTGCCTGAAGAAGCATTTAT - ----- A ATTTA CAGGGCC
2 TAGCATGCAGGGCCCATGCT TTGCC TG AAG AGC TTAGCATG
AGAGGCTCCTTATTTCCAGG AACGG AC TTC TCG GATCGTAC
GCAA G CTTTA C GA--- -------
GAM17190 16031 TTGCGATGTATTAGTATGTT TATTA- TGTTA CCTC TTC
3 AAAAGAACCCTCGATGTTCC TTGCGATG GTA AAAGAAC GATG
GTCCATCGTTTTTTCCTTTG AATGCTAT CGT TTTTTTG CTGC
CGCCATTTATCGTAA TTACCG TTCC- CTAC ---
GAM17191 10992 TTGCGGGACATGGCCCAGAT ---- A C ATC- CCCATGCT
0 CGTCCCCATGCTGGCTCAGC TTGC GGG CATGGCC AG GTC
TCGGTTATGACCCTTATGCA AACG CCC GTATTGG TC CGG
A TATT A C GACT --------
GAM17191 5097 TTGCGGGAGGCTGTCGGCTA TGC GA----- - - AATA T T A TAT C A AAGA
2 ATAACGGTTCTTGATACATA T GG GG CTGTC GGCT ACGG TCT GAT CA TTGC AG CTTC T
TTTGCCAGACTTCAAGATTT A CC TC GATAG CCGG TGTC AGA CTG GT AACG TT GAAG A
CAGAAAAGGGGTGAAAGAGA --- AAATTAG A T A--- C - A TTC - A AG--
AGATTGCAACTTTGAGTCAG GAAAAGGGG
ACCTGTAGGCCTGATAGACT TTCA
GATTAAACCA AAGT

GAM17199 2089 TTGCTCGGGCGCCCAGGCTG C- C CT -- AG A- GA T CACTTC
5 GAGTCACAGGGGCATGATCT TTGCTCGGG GC CAGG GGAG TCAC GGGC T TC GGGCT

GGGCTCACTTCAGCCTTGAC AATGAGTCT CG GTCC CCTC AGTG CCCG G AG TCCGA
TGGGGCCCAAGTGATCCTCC TC A AT CT AA GG TC T ------
TACCTGAGCCTTCTGAGTAA
GAM17204 7529 TTGCTGACGCAGCATCTCAG -- - - AG-------- CAAAGCTCACACAACA

```
4          GGCTCAAAGCTCACACAACA TTGCTGA  CGC AGCAT CTC        GGCT
           AGCCAATATACAGAGAGAAT GGCGATT  GCG TCGTA GAG        CCGA
           GCTCGCGGCTTAGCGG          CG  C    A  AGACATATAA  ----------
GAM17205 17663  TTGCTGAGCATGGTTATCAA    T-  - A  TTAT    AAC    GATC
2          TATAACATTTAAGATCTTGG TTGC  GAG C TGG   CAATAT  ATTTAA
           ATCAAATGTTGTCCCCGAGT AACG  TTC G GCC   GTTGTA  TAGGTT
           CTTCTGCAA            TC  T A  CCT-    AAC    ----
GAM17207 13251  TTGCTGCTGCAGTTCCTCCC      C  C    CT  -  -  ------     AAGAACAA
0          TCTTCCCTAAAGAACAATAG TTGCTG TG AGTTC  CC CT CT     TCCCTA
           GGAACAAGTAGAAGTGGTAG AACGAC AC TTAAG  GG GA GA     AGGGAT
           AATTTCACAGCAA          -  T    AT  T  A  TGAACA     --------
GAM17208 21769  TTGCTGGGGTCAGCTCGTTA      GG    TC-----  TA  CA      TTGACAT
5          CTCAACTCCAGTTGACATTT TTGCTGG  TCAGC      GT  CT  ACTCCAG
           GGAGTATAGGCACCATATTT AACGATC  AGTCG      CA  GA  TGAGGTT
           GCTGAACTAGCAA          A-    TTTATAC  CG  TA     -------
GAM17209 11112  TTGCTGTAGCAGTATTCACT    T    A  ATTCACTATAA   AACACTAC
5          ATAACTTAACACTACGAGAG TTGC GTAGC GT         CTT
           ACTTAAAAGACAGTTACTGC AACG CATTG CA         GAG
           AA                T    A  GAAAATTCAGA  --------
GAM17211 7551   TTGCTGTTTGTCTATTTTGC  TG     ---   TTTT   TCTT-      TGTTTGTTCTTGTTGT
6          AGTCTTGCTAAATTTGTTTG T  CTGTTTG   TCTA   GCAG   GCTAAATT
           TTCTTGTTGTGATTTGGTTT A  GACGGAT   AGGT   CGTT   TGGTTTAG
           TTGTTGCTTTCTGGAATTTA GT      TTA   CTTT   GTTTT      ----------
           GGCAGTGA
GAM17214 13177  TTGCTTCCTCTTGAGTGCAA      CCTCTT    C  C   AA      C   ATC    GTTT
5          CGGAAAGGGCTATCAGATAT TTGCTT     GAGTG AA GGA  GGGCTAT AGAT   TGCAC
           CTGCACGTTTGTGCAATTTA AACGAA     TTCAC TT CCT  CTCGATA TTTA   ACGTG
           TAGCTCCTCCATTACACTTC      TACTTC    A  A  C-     -   ---    ----
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GAM17214 11700  TTGCTTCTATGATACAGAGA     TCTATGA     G      AAAACTTCAAA
9          TGTCTAAAAACTTCAAATGG TTGCT      TACAGA ATGTCTA
           ACATGTTTGTAGTTTAGCGA AGCGA      ATGTTT TACAGGT
                        TTTG---     G      ----------
GAM17221 22947  TTGCTTGCAGGTTGCTCATT      -      C  ATT   - G   GA    TTTTC    TCC
1          CTCACTGTCGGACTTGTTTT TTGCTTG CAGGTTG TC   CTCA CT TCG  CTTG    GTGC
           CGTGCTCCGTATCTGTCAGG GACGGAC GTTCAGC AG   GAGT GG AGT  GGAC    TATG
           GTGAGGGCTGAGTTGGACCG       A     C  GTT   C  G   G-   TGTC-   ---
           ACTTGACAGGCAG
GAM17225 14226  TTGCTTTTGTTACAGCTATT    T  T   CAGC   G  C   AGATA
6          GTCCAAGGAGATACTTTAGA TTGC TT GTTA    TATT TC AAGG
           AGATATATATAACCAATGCA AACG AA CAAT    ATAG AG TTTC
           A                 T  C    ATAT    A  A   -----
GAM17227 5330   TTGGAAACTTGGACACTTTG   -  AA   GA  CTTT     CA-    AT-    ACAACC
4          GATTCTCACTGTATGTTAAC TTG GA  CTTG  CA   GGATTCT   CTGT   GTTA
           AACCTGATTACACGGAATAG AAC CT  GAAT  GT   TTTAAGA   GGCA   TAGT
           AATTTTTTGGATAAGGCTCA   A  CG   AG  TT--      TAA    CAT   ------
           CAA
GAM17228 17863  TTGGAAATCAGCATCGTGGG     AAAT--      GTG----  A     --   ATGA
7          CACTGCTGAGGAATGATCCT TTGG     CAGCATC      GGC CTGCTG  AGGA
           AGTGGTAGGTCAGAAGAAGA GACC     GTCGTAG      CTG GATGGT  TCCT
```

TGCTGTGAACACCAG ACAAGT AAGAAGA - GA ----
GAM17236 7089 TTGGACTCAGAGGCCGGGGC - AG - CT-- - TT T AG-- T - T
7 TCTGCGTGGTTTGCTTGGGA TTGG ACTCAG GCC GGGG CTGC GTGGT GC TGGG GTGGAGC
GCAG CG C
GGTGGAGCTGCAGCGTCAGA GACC TGGGTC CGG TCTC GACG CATCA TG ATCC TACCTTG
CGTC GT G
GCGCCTGTGACTGCGTTCCA A CG G TAAT T CT T GGCG - A -
TGCGGCCTATGTTCACTACT AGCGC
GCAGTAATCTCTGGGCGCCT AG
GGGTACCAG TC

GAM17237 14807 TTGGACTTCTGTGCATCTTG ACTTC T TGAG ---- - TTGAACCCGCCATGAT
7 AGTCCCGGACCGGTTTGAAC TTGG TG GCATCT TCCC G GACCGGT
CCGCCATGATACCGGTCACG GACC AC CGTAGA AGGG C CTGGCCA
GAGGGGAAGTAGATGCCAAC A---- - TGA- GAGG A ----------
CAG
GAM17239 11597 TTGGAGACGGGAGTGGCCCT - - CT---------- CTC
0 TCGGCTCCCGAGCTCCCTCT TTGGAGACGG GAGT GGCC TCGG
GGGGACGGCTGGCTCACTGT GACCTCTGTC CTCG TCGG AGCC
CTCCAG A G CAGGGGTCTCCCTCG ---
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5 TTTTACCCTGAGTCTCTTGA TTGGAGAGTT GTAGCC GAG CTCT TGATT CCAGC
TTCCAGCCCGTGTGATTTGC AACTTCTCGA TATCGG CTT GAGA ACTGA GGTCG
TGGCAGTCATAGAGTTCTAT CAG AACTCGCCTAT - T C ----------
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TCTTCAA
GAM17241 17232 TTGGAGGCTTGAAGTGAATT CT AA T- C GTTCATTAAACACCTTCCA
4 CGGCAGCGTTCATTAAACAC TTGGAGG TG GTGAAT CGG AGC
CTTCCAGCTCCTGTCATTTA AACTTCT AC CATTTA GTC TCG
CCACTTCTTCAA TC -- CT C ----------
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3 TGCAGCTGAAATAATAAGAG TTG GTTCTT CTG TTTATG GCT
CAATAACATAAGCAGTGAGA AAC TAAGAG GAC GAATAC CGA
ATGAGACAA AGAG T - AATAA ----------
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4 CGAGAAACTAGTGCGAAGTA TTGG TATGCATA CCGA CGAAG AGTGAT GGTATTG
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GATATCCCCGAGTCCTTCAA ATG- ACCA ATA------- CC -- TTC---
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TTGGACCATATGCATAGTAC
CGA

GAM17246 646 TTGGATGACAAGAGAAAGGA T AAGA AA ACAAA GGCTT
0 TTTACAAATGTTGGCTTGGC TTGGA GAC GA GGATTT TGTT
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CAA - GAGG GA ----- -----
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1 TTATGGAGGGCAATTTTCTC TTGGATGAGG CC ATTA TGGAGGG
TACTGATTAAAAGGTTAATT AACCTACTTT GG TAGT ATCTCTT

TCATCCAA AATT AAAAT- C -----
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0 TGTGAGAGACTGTTTAAAAG TTGGC GGACT AG CT
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9 CTTCGAGCAAGCTTATGCAT TTGGCCAA TTCGA GCA GC
GCGGTCGGAATTCCAGCTTA AACCGGTT AGGCT CGT CG
ATTTGGCCAA TAATTCGACCTTA GG A ----
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5 AAGGGCTTTTTCAGAACCGC TTGGCCCC CCCG AGA GGCTTTTT GAA GC
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6 ACAGACGCGGGCCATTGGTC T GCCCC GGG GG GACGC GGCC
AGTGTCACCGCCCAAAAACC G CGGGG TCC CC CTGTG CTGG
TAGGGGCTGG GT A- AAAAAC GCCA- A ---
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6 TCCTTGAATTTCTTCTCTTT T GCT CA ACAA GAAT
ATTCTTTTCCTTGTCTTTTG G TGA GT TGTT CTTA
TAGTTGG GT T TTTC- CCTTTT- ----------
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3 GACTGGGTCACCTATGAGCT TTGGGAAC GC GGGGCC GGACT GGG GA GCTG
GAATCAGCATCTCCTCCTGA GACCCTTG CG CCCCGG CCTGA TCC CT CGAC
GTCCCAGGGCCCCTGCAGTT A T GAC G TCCT---- A ---
CCCAG
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TGATCCCAA AGT AAA GA ATC ----------
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6 TAATCCTCATTGGTGGCTTG TTGGG CTCCAGGTG TAATC TTGG GCT GA GTTTG GG
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4 TTAAGGACCGTGGATTCAAC TTGGG CCAGGAGCC TTTAAGG GTGG TCA CG GGGCC
CGGTT
GGTAAAGGGCCGACGGTTTA GGCCC GGTTTTTGG AAATTCC TATC AGT GC CCCGG
GCCGG
TAAGGCCGAGGCCCCATTAC GG AT-- A-- CC - ATTAC A- -----
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GGTTTTTGGGGCCCGG
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8 GATCGGTGCTGGGGCAAACC TTGGGCCCC GCA TTGG TCGGTG CT GGGGCA CGTGG CC

ACACGTGGACCTTCTTGGCC AGCCCGGGG CGT GGCC GGCCAT GG CCTCGT GCACC GG

CACGGATGCTCCTGGGTTAC AT- A- - T GT AG----- C -----

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GA
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2 GGTCTTGAGCCAGACAAGGT TTGGGCTTTT TGCCC TCTTG
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CAG GGTTGA AAT -------
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4 AGAGCCTAGATGAGCTCATA TTGGGG GTCT GAGA CT ATG
CAGTCTCAACAGATCACCCC AACCCC TAGA CTCT GA TAC
CCAA CCAC- CAA- -- CA ----
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7 GTACAACAGGCAGCAAGCCA TTGG GGAA AC TC CCA GGTA ACA GGC
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CACATTTCACCAA A ACAC G C A TTA A -----
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4 GTACAACAGGCAGCAAGCCC TTG GACC GTCA GGTA AACAGG C
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CACAA A- GA A--- TT C -----
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6 AGGCGGCGGGCCGACGCCGG TTGGGG GAAGCGGC GCGG GC GGCCG
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CCAG - - -- AA-- ----
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9 TGGGGGCTCCACGGAAAGCC TT GG GGG C GGGT GGGGCTCC CGG
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GTCTCGCTGGG G G TG GGA-- GG - -----
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1 GCCTGAGGGTGCATCCCTGG T GGGGTG ACCC CC GGCCT AGGG
GGCTGGTGGGTGCACCCCTG G CCCCAC TGGG GG TCGGG TCCC
G GT G T --- G -----
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9 CAGACAGAGCTGAGGGTTTT T GGTA CAA TCCA GAC GA GGGT
TTACCCAAATCAGTCACTGG A CCGT GTT AGGT CTG CT CCCA
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2 ATAGCACTTTGTTCACTGTC TTGGT AGT ACTCTCAG AG GTTCA TG CTG
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CCACCCTTTTCTGAGAGTTA ACA T TTT- CCACCT C GA ---
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6 TCTGGGGGCTCCTAGGGCAG TTGGT TG TCTCA GTCT GGCTCCT GGTTTTGC AGT TGG

GGTTTTGCTAGTGCTTGGAG AACCA AC AGAGT CAGG TCGAGGA CTAAGACG TCG ACC

AGAGAACCAGCTGCAGAATC CG AA- GA AG- ------- - --- -------
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AACAGCACCAA

-

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8 TGGCGGATACAGTGAAATCT TTGG CAT ATGCATG CG GAT
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GAGCCAG GA GCTCTTC GA T --------
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2 AGGTTCTGAGACGCAGCTTC TTG TCCGCA GGC GTTCT GAGACGC
GCGTCTCCTGGGACAGTGTC GAC AGGCGT CTG CAGGG CTCTGCG
TTGAGTGCGGAGCAG G GAGTT TGA- TC ------
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7 AAGTGTGGAGGGCCCCTTCC TTGG CTCTGA CCTC CAGG GTGGAGG
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TCAGAGTCCAA T AG ACAT GACC ----
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4 TCTGTGAGATTGTAGTTGTA TTGG GA TTTAG GACT TCT AGATT TAG GTAC
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CAA
GAM17295 1948 TTGGTGATATTGCCCTTGCT T TATT CT ATG A AAAAT TAGA
7 ATGGAGGAGAGTTTAAAAAA TTGG GA GCC TGCT GAGGAG GTTTAA ACT
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TACTCTTCAGCAGGCCTCCC - C--- -- --- A ATGT- ----
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5 TTTAAAAATAAATATTACTG TTGG AGT GATTTGT TTAA TATT CTGAGTT GATT
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CCAA
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0 CCATGGCTGAGGTTGATGCT TTGGTTTG ACTTT CATC TG TGAGGTT TGC GCC
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AGTTGAGCCAA
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3 TTCCATTCTTGACCAAAGCT TT GGTTTTT TGG CGATTT CAT TTCTT ACC TCT TTTAAGT AGT

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GAAAATTAAA GT

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2 ATTGACTCAGGGCAGAGTTG TTGTAA GGGTCCTTCTCC GACTC
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9 AGAGATACTTTGCTGAAAAG TTGT AATGGATGA AG GAGA CTTT
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TATTGACAG G AGTTA CC CA -----
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4 TCTTCAATTTAATAAAAATC TTGT GACCT TAGT CTT ATTT
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ACAG CCAGA- AC TT AA -----
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1 ATATTCCCAGAAGCTGCTGG TTGT CAT CCTAAA GT CCAG
TCAGACACATTTAGGGATGA GACA GTA GGATTT CA GGTC
CAG - G- ACA GACT-- ------
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AAATGCAA AAA C C TATCG ----
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7 ATCTGCAGGTTCGTAAGCAT TTG C AG AGAGCTG TATC GC GG GTA CA
AGAGACGATTTGAATATCTT GAC G TC TCTCGGC ATAG TG CC TAT GT
CCAGTGATATCGGCTCTAAC T - AA-- T - A TTC AA ----------
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GCGA C CCCTCTTCCT TCC ----
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2 TATGCCAAGGGTGGAAAAAT TTGTCGA CT CTAGC CC GCCAAGGG
TGGGCTTTTTGGTGGTGCTG AACGGCT GA GGTCG GG TGGTTTTT
GAGTCGGCAA - - T ---- ----------
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4 GATTCGGGCAAGTCCACCAC TTGTC GTCATTG GTAGAT CGGG GTCCA
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AATGCGGTGGCATCGACAA CTA GTAAA - A-- -------
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1 TTGAGAATAGTTTTGTTTTT TTG CTAA TTGATG ATT TTTG AGAA AGTTTTGTTTTT AGC AGC
CC
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TCTGCACAGAAAATACCATT GGAA
AACTTAGTAG CCTT
T--- ---
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8 GAGCACCCTGATATGCAACA TTGTCTCCTCT TC TGA ACCCT TATG
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4 ACGTGTCATGAGTTGTTCCA TTGTC ATCTTCC TTACG GTCAT
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3 CTAGTTTTTGTACATAATCG TTGTCTTT TTGCAGA CACTA TTG
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GGACAG TA --- ACT- --------
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6 AATATATGCAGAATCGGTTG TTGT AC GATTAAGGAT AAATATATGCA AA CG
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2 AGCAATGAAGTTTATTTCAG TTGTGC AC GAAAGG GCAA TGAAG
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CAA AA-- CC A G ----
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GTCTATAA TATT AGAACAT -------
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4 AGTTAATGAAACTGTATTGC TTGTGG AGAG GAGGGAAGGA GTATT
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AA

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AGAGCCTCAG T A- GA- CC ----------
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TACAA TTTTATTAT TG A- --------
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AACATGTATGCTTTTCAGAA GACATAAGAC ACAATA GAC
TACAG TTTTCGTATGT TTC -----
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9 CTCTTCAAACCCAGTAGCCA TTGTT AGGAT TCT AAACCC
GGGTTTACCAGAAAATTCTA AACAA TCTTA AGA TTTGGG
GAACAA GA AA------- CCA --------
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4 GGACACTTTAAGTGCAAACC TTGT ACTGC TCC ATTTTAGG CA TTT GT
CAGATGCCTAAAATAAGGAC AACA TGACG AGG TAAAATCC GT AGA CA
AAATGCAGTCACAA C TAAAC AA - - CC ----
GAM17361 191 TTGTTAGTGTTGGTTAAGTT AG AAG - TTG-- GAG T A- ACT
3 GTTGCTTGGAAGTGAGAAGT TTGTT TGTTGGTT TTGTT GC GAAGT AAGT GCTT GAA
TGCTTAGAAACTTTCCAAAG AACAA ACAATCAA GACAA CG TTTCA TTCG TGAA CTT
TGCTTAGAACTTTAAGGTGC -- ACA A TGGAA AGA - AC ---
AAACAGACAAACTAACAAAC
AA
GAM17361 11205 TTGTTATGAACTGTAAGTAT TGA AGTA T C GATG
9 ATTCTCACAAATGGATGCAT TTGTTA ACTGTA TATTC CA AAATG
TTTGGAGTAAAATATGGTAA GACAGT TGGTAT ATGAG GT TTTAC
CTGACAG CAA AAA- - - ----
GAM17364 13704 TTGTTCCGTTAGTCGCTAAC C TCGCTAACTTA TGCTTTT
2 TTAGTAAGTGCTTTTCTTAT TTGTTC GTTAG GTAAG
AGAACCCCTTCTGACTGAGC AACGAG CAGTC TATTC
AA T TTCCCCAAGA- -------
GAM17367 1963 TTGTTGAAGGCTTCGGAGAC - - -- C TCCCTCACCT
5 CCTGTTCCCTCACCTGCAGT TTG TTGAAG GCT TCGGAGAC CTGT
GTCTCTGGGTGGCTCTTCAG AGC GACTTC CGG GGTCTCTG GACG
TCGA T T TG T ----------
GAM17372 7391 TTGTTGTGTTTTTTGTGAGA - TTTTG A TG T TG G G G T GCG
5 CGGAGTTGCACTCTTGTTGC TTGTTGT GTT TGAGACGG GT CACTCT GT CCCAG CTGGA G CAA
GGT
CCAGGCTGGAGGGCAATGGT AATAATA TAA ACTCTGTC CA GTGAGA CA GGGTC GACCT C GTT
CTA
GCGATCTTGGCTCCAGCTGG A TAATA C TA - GT - - G - ---
GTGACAGAGTGATACCCTGT
CTCAATAATAATAATAATAA
GAM17372 14075 TTGTTGTTACTTTCTATGAT TTA- AT ------ TATTCTG TTC-- ACTACT
7 GTATATATTATTCTGCAAGC TTGTTG CTTTCT GAT GTATATAT CAAGCT ATACTG
TTTCATACTGACTACTACAG AACGAC GGAAGA CTA CATATGTG GTTTGG TATGAC

TATTTTTTGGTTTGACTGTG TTTA AT ACATCT TCA---- TTTTT ------
TATACTCTACAATCTAAGAA A
GGATTTCAGCAA

-

GAM17376 21829 TTGTTTCTTAAGAAAACACA CTT CACAC- TTT A- TT A CAAA
9 CTCTTTTTTACAAATTACTT TTGTTT AAGAAAA TCTT TACA ATTACTT AAAT TTAACT
TTAAATATTAACTCAAAAGT AACAAA TTTTTTT AGAA GTGT TGGTGGG TTTA AGTTGA
TGAGATTTTGGGGTGGTGGT TTT AATTAC CC- GG GT G ----
GTGCCAAGACATTAATTTTT
TTTTTAAACAA
GAM17381 22484 TTGTTTTATTCATAATTTGT TTA TAAT C GTTC GATA
5 CATGTTCTGGGATACCAAAA TTGTT TTCA TTGT AT TGG
GTAATAATGGCTGAACTTAA AACAA AAGT AATA TG ACC
CAA TTC CGGT A AAA- ----
GAM17384 7692 TTGTTTTTAATTTATTTTGT TTT T -- CA AAAACG
1 CATATTTTTGTAAAACGGCA TTGTT AAT TA TTTTGT TATTTTTGT
GAAATGCAATAAAAACTATA GACAA TTA AT AAAATA GTAAAGACG
TTTCAACAG CT- T CA AC ------
GAM17384 7948 TTGTTTTTCTATTTTAGTGG TT-- - A TTAAA TA AATTTTA
9 TTAAAATGTATGCAATTTTA TTGTT TCTA TTTT GTGG ATG TGC
GCACCCATCTACAAAAGTTA AATAA AGAT GAAA CATC TAC ACG
GATGTTAATAA TTGT T A ----- CC -------
GAM17390 15591 TTTAAACGAGTGGCCGGGAG C - GGA A---- A GCTG
9 CAATCTGCCACCTGCTGGGG TTTAAA GAG TGGCCG GCA TCTGCC CCT
AGGCAGAGACCCTGCAATGG AAATTT CTC ACCGGT CGT AGACGG GGG
CCACCTCTTTAAA - C AA- CCCAG A ----
GAM17392 13064 TTTAAAGGCTTTCATTTTCA - TTC TT A T-- TCCAAATTC
4 TTCATATGTCCAAATTCCAT TTTAAA GGCT AT TC TTCA ATG
CCCTGAAAGATTGTAGCCAT AAGTTT CCGA TG AG AAGT TAC
TTGAA A --- TT A CCC ---------
GAM17394 15123 TTTAAATATAGTTTGACTGA TTT GATTGTGGG AC AC- ATTT
2 TTGTGGGGGTACTTACGGAC TTTAAATATAG GACT GGTACTT GG AG
AGATTTCTTTACCAAGTACC AAATTTATATT TTGA CCATGAA CC TC
AGTTTCTTATATTTAAA CT- --------- -- ATT ----
GAM17394 6761 TTTAAATCTCAGCAAACATA T GCAAACATATTT T- ATCT
7 TTTCTTTCTTGTGGCAATCT TTTAAATC CA CTTTCTTG GGCA
TGTTTTTAAGAAAGTACATG GAATTTAG GT GAAAGAAT TTGT
GATTTAAG - ACAT-------- TT ----
GAM17397 5319 TTTAACGTGTGTTTTTGCCA TT AAAAAAAG GCCA
3 AAAAAAGGCGCCAGTATATC TTTAACGTGTGTTT GCC GC
GAGGGCGAACACACGTTAAA AAATTGCACACAAG CGG TG
-- GAGCTATA ----
GAM17397 6739 TTTAACTATCAAGTAAGCTT TAA GTGAAAA TAAT AAAATAATCATGTAA
4 AGTGAAAATCTCCTTAATAT TTTAACTATCAAG GCTTA TCTCCT ATGC
GCAAAATAATCATGTAAGCA AAGTTGATGGTTC CGAAT AGGGGG TACG
TGGGGGATAAGCCTTGGTAG --- ------- ---- ----------
TTGAA
GAM17400 8003 TTTAAGTAAGCAGACGGTGT A AG GAC --- A G G GGG G T G AATT
2 TCACCTTTGTTGGGCCAGGG TTT AGTA CA GGT GTTC CCTTT TTG GCCA T GGTTTGG GG
GCC

TGGGTTTGGTGGGGCCAATT AAG TCGT GT CTA TAAG GGAAA AAC TGGT G TCAAATC TC TGG

GGTGCTCTAAACTGGTGTGG G G- AGA GGG - A G GT- G - G ----
TGCAAAAAAGGGAATGGGAT
CAGATGGTGCTGGAA

GAM17404 10851 TTTAATGGCTTAACTCGAAC - TTAACTC AC- ACACATA
9 TTGAAGACACATACTTCAAC TTTAATGG C GA TTGAAG
TGTCCTTATTGTCCATTAAA AAATTACC G CT AACTTC
T TTATTC- GTC -------

GAM17409 5054 TTTACAGGGTTGAAGAGTTT GAAGA GG- G G TTTTA
6 GGGAGGGGGTTTTACGTTGT TTTACAGGGTT GTTT GA GG G
TAGAGGATGGAAATTTTGTG GGGTGTTTTAA TAGG TT TT C
GG AGG-- AGA G G -----

GAM17413 3494 AAAGTAATGAATTGGGATGT T T GATGTAC- - TTCT
8 ACAAGGTTATTCTTAACGCT AAAG AATGAA TGG AAG GTTA
TATTTGAAACCACTTTATTT TTTT TTATTT ACC TTC CAAT
TTTT T C AAAGTTTA G ----

GAM17417 19144 AAAGTCCTACGTGACTGATT CG- TGAT AC ATA TTAAT
5 TTAAACATTGTGATAAAATT AAAGTCCTA TGAC TTTAA ATTGTG AAA
AATTTTCAGTATAATAGTTG TTTTAGGAT ATTG AAGTT TAATAT TTT
AATGTGTTAAGATAGGATTT AGA TGT- GA GAC -----
T

GAM17420 6684 TTTACATTGTTTACCAAGCT CAT TT C- AG -- AACACTA
1 GTAGTGCTTTAAGAACACTA TTTA TGT ACCAAG TGT TGCTT TAAG
CTTAAAAAGCAAAATAAACT AAAT ACA TGGTTC ATA ACGAA ATTC
TGGTTTACATTTAAA TT- TT AA AA AA -------

GAM17420 21887 TTTACATTGTTTACCAAGCT CAT TT C- AG -- ACCACTA
2 GTAGTGCTTTAAGACCACTA TTTA TGT ACCAAG TGT TGCTT TAAG
CTTAAAAAGCAAAATAAACT AAAT ACA TGGTTC ATA ACGAA ATTC
TGGTTTACATTTAAA TT- TT AA AA AA -------

GAM17423 16329 TTTACTAACACTATATGTGT A A- T - ---- AA ATATCA
1 TATGTTTTTCATAAAAATAT TTTACTA CACT TATG GTTA TGTTT TTCATA AAT
ATCAATTGATATGAACTTAG AGATGAT GTGA ATAT CAGT ACAGG AAGTAT TTA
GACATTGACTTATACGAGTG - GC T T ATTC AG ------
TAGTAGA

GAM17423 22580 TTTACTACTTTAATTTGTGC CTTTAATTTG - AAAG
3 TTTTTTTGAAAAAAAGTTTT TTTACTA TGCTTTT TTTGAAAA
CAAGTAAGAGCAATAGTAAA AAATGAT ACGAGAA GAACTTTT
A--------- T ----

GAM17426 22913 TTTACTTCTGTCTCGTCTGC C GC - CTAGCCT
2 CCCAACCGCTAGCCTCGGCT TTTA TTCTGTCTCGTCT CCCAA CCG
TGGGTAAGGCGAGGCGGAAT AAAT AAGGCGGAGCGGA GGGTT GGC
TAAA T AT C -------

GAM17427 417 TTTACTTTGCCCATTGATGT --- - TT TT GATAGTA
2 TTTCCGATAGTAGGTTAATA TTTACTTT GC CCA GATGTT CC
TTTTGGAGCTAAGGAGTAGA AGATGAGG CG GGT TTATAA GG
AAT A T- TT -------

GAM17431 10091 TTTAGAGTGTATTAGTCACG G GTATTAG ---- TA AAGTAG
7 CATGTATGGGGAAGTAGTCT TTTA AGT TCAC GCATG TGGGG
CGGGTATGCTGTTGTGAAAT AAAT TCA AGTG CGTAT GCTCT

TGAAACTGTAAA G AAGTTAA TTGT GG ------
GAM17440 11413 TTTAGTTAATAAAAGTAATT TTAATAAAA A TTCC G TTACAC- AAAG
7 TTATTCCAATGTCTGATTTA TTTAG GTA TTTTA AAT TCTGAT AGTACA
CACAGTACAAAAGTGTACTA AAGTC CAT GAAAT TTA AGACTG TCATGT
ATAACCGTCAGAAATTTTTA TTCCCATAA C TT-- A CCAATAA ----
AAGCTACAATACCCTTCTGA
A
GAM17441 11862 TTTAGTTATAGATCCCCATG TATA C- TG - A ATTAACTTCTACTC
0 GTGCCTGATGATTAACTTCT TTTAGT GATCC CATGG CC TG TG
ACTCCACATGGTGCTGTGCT GAATCA TTGGG GTGTC GG AC AC
GGGTTGGTACTAAG TGG- TC GT T - ----------
GAM17444 17510 TTTATAATTCAAATTACGTT A AAA GT CTT- ATTA- A C ACTTAA
5 GGCTTGCTCAATTATCAATT TTT TAATTC TTAC TGG GCTCA TCA TT TGTT
CTGTTACTTAAAACAAAACT AAA ATTAAG AATG ACC CGAGT AGT AA ACAA
GACATTCTGAGCTATTCCAC C A-- AC TTAT CTTAC C A ------
AGTAAAGAATTACAAA
GAM17450 7086 TTTATCATCACTCGTGATTT G TT---------- TAAAGC
5 TTAATTAAAGCGTTAAATTC TTTATCATCACTC TGA TTTAAT
CTTCTCTGTTCAGGGGTGAT GAGTGGTAGTGGG ACT AAATTG
GGTGAG G TGTCTCTTCCTT ------
GAM17457 7202 TTTATGGTGTTGGCAGTGGA G G C AAAAT - A GACA
6 AAAATTGAGGATTTGAGACA TTTATG T TTGG AGTGGA TGA GG TTTGA
TCAGACCATCACAATGTCCA AAGTAC A AATC TCACCT ACT CC AGACT
CTCTAAGACATGAA - G - GTAAC A - ----
GAM17462 1989 TTTATTCCCAGCACCTACCA CCAG C- - CCCCCCTTATAATAGA
7 TTGTGCCCCCCTTATAATAG TTTATTC CAC TACCATTG TG
ACAGTAATGGTATAGTGAAT AAGTAAG GTG ATGGTAAT AC
GAATGAA TAA- AT G ----------
GAM17465 7179 TTTATTGCAGCCTTTCTTTT AGCCTTTCTTTTC T TTTTTT
0 CCTATTTCTTTTTTTTAAGG TTTATTGC CTA TTCTT
GTTAGTATTAACAAATGGCA GAGTAACG GAT GGGAA
ATGAG GTAAACAATTAT- T ------
GAM17467 11183 TTTATTTGAGTTCAAATATT TT CAAATA TT AAATTGG
8 TTTGAAATATAAAAATTGGT TTTAT GAGTT TTT GAAATATAA
TGTATTTTTTAAAGCTATAA AGATG CTTAA AAA TTTTATGTT
TTCTTGTAGA TT TATCG- TT -------
GAM17470 10583 TTTATTTTTTCAAATTATAG T AATTATAGAAGTT T-- AAATA
2 AAGTTGTAGATGCAAAATAT TTTA TTTTTCA GTAGA GCA
GCCATTTTATTAAAAAAAAA AAAT AAAAAGT TATTT CGT
CTATGAAAAATTAAA T ATCAAAAAAAAAT TAC -----
GAM17475 10934 TTTCAATTTTTATTTTGGTT C A TG TT AAG ACATTTTCCA
9 TTCTTACAAAGGTTGACATT TTT AATTTTT TTT G TTCTTACA GTTG
TTCCATAACAGGTGTAAGAG AAA TTAAAAA AAA T GAGAATGT CAAT
TGTTGAAAAAAAATTCAAA C - GT GT GGA ----------
GAM17476 11585 TTTCACAATCTGCATGGGAA AA - - AG AA GTAGAGAACATGGA
5 GGAAAAGGATGGTAGAGAAC TTTCAC TCT GCA TGGGA GA AGGATG
ATGGACATCCTGTCTCCCAC AAGGTG GGA CGT ACCCT CT TCCTAC
TGCAAGGGCGTGGAA CG A C -- G- ----------
GAM17478 14836 TTTCACCACGTTTGCCATCA TT C GTTT---- TC TCTT TCCTGACCTCAT
5 TGGTCTTGATCTCCTGACCT T CA CAC GCCA ATGG GATC

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          CATGATCCACCCGTCTTGGC A  GT GTG       CGGT  TGCC    CTAG
          CGTCCAAAGTGCTGGGA    GG  C   AAACCTGC    TC    CAC-   ------------
GAM17481 12101  TTTCAGAACAGGAAGCTGGC     AGA-     AAG TG    T  C  CAAGC
0          GTTCTCTGCAAGCCATGGTA TTTC    ACAGG   C  GCGT CT TG
          TGCTGGAGCCTGTGATCGAA AAAG    TGTCC   G  CGTA GG AC
          A                 CTAG     GA- GT    T  T  -----
GAM17482 11925  TTTCAGAGATTATGTGTGTA         TAT   T   C   T-    AAAT
1          CATATAAACAAATGTTTCTT TTTCAGAGAT   GTG GTA ATA  AAAC
          ATTTATTTATTTATTTTTGA AGAGTTTTTA   TAT TAT TAT  TTTG
          GA                    TT-   T   T   TC    ----
GAM17485 268    TTTCAGTACTGACTGTTGGT          CTG TG    GGCC---    AAGA
8          TTTGGCCTTGCAAGAGCAGA TTTCAGTACTGA   T  GTTTT      TTGC
          AAATCAGAAGCTGGATTTCA AAGGTCATGACT   G  CGAAG      GACG
          GTACTGGAA                  TTA GT    ACTAAAA    ----
GAM17491 10302  TTTCATGATGTGCTACATGA       T-    T  A   TA  TTT    AC     CT    -  TTATA
1          TAGATTTGTAAACACCTGTC TTTCATGA  GTGC AC TGA  GA   GTAA  ACCTGT  CAATA AAC
          TCAATAAACTTATAGTTGTG AAAGTACT  TACG TG ACT  CT   TATT  TGGATA  GTTGT TTG
          TTGGAATAGGTATTATTCTC       TC    T  -   --  ---    A-     AG     G   -----
          AGTTGCATCTTCATGAAA
GAM17495 15311  TTTCCAAACAACAACAACAA      AAC     CAACA     ACATGT    CT  TAAGT-    TAAA     GTGA
6          AATAACATGTTTGCCTGTTA TTTCCA   AACAA     AAATA     TTGC  GT     TGTA    AGTAG    TTCT
          AGTTGTATAAAAGTAGGTGA AAAGGT   TTGTT     TTTAT     AACG  CG     ACAT    TCATT    AAGA
          TTCTGTATTTAAAGAAAATA      CTC     A----     GTCTTT    TT  TCATAT    TG--     ATAA
          TTACTGTTACATATACTGCT GTATTTAA
          TGCAATTTCTGTATTTATTG
          TTCTCTGGAAA
                        --------
GAM17498 15230  TTTCCACTATTAAATATCAA      CTAT   ATATCAAAAT    A   ACAAAGAG
8          AATGGGCAGTTACAAAGAGA TTTCCA    TAA        GGGC GTT
          ATAGTCCTTATTCCTGGGAG GAGGGT    ATT        CCTG TAA
                          CCTT   ----------    A   --------
GAM17501 7151   TTTCCAGTTCTTTCCGGTCA    -   TTC---       CAT-    TAA--   TCTC
0          TAATTTAACCTTCTCAGGCA TTTC CAG     TTTCCGGT    AATT     CCT
          CATAATTCCACACTGGAAAC AAAG GTC     AAAGGTCA    TTAA     GGA
          TGTTTCTGTGAAA          T   TTTGTC      CACC    TACAC   ----
GAM17502 17001  TTTCCATTGCTTGAATGTAA      TT    -   GTAAGAG    A   TGTT
8          GAGTCAGATGATGTTTTAAT TTTCCA  GCTT GAAT      TCAG TGA
          TGAAATAAAATTCTAGGCTG AAAGGT  CGGA CTTA      AGTT ATT
          GAAA                 --    T    AAATAA-    A   ----
GAM17503 14781  TTTCCCAGAAATCACACCAG        AAA--   CA   ---     A  AAGCG
7          CCTTAGAAAGCGTCAAGGCA TTTCCCAG     TCA  CCA   GCCTT GA
          AGTGGGATGGGCGTGCTGGG AAGGGGTC     GGT  GGT   CGGAA CT
          GAA                   GTGCG   AG   GAA    -  -----
GAM17507 14846  TTTCCCTCTGTAGTGGTTGG     C     AG    TT-  T    CA     ----     CTCCT
0          TGTGGCATTTATAATATAAC TTTCC TCTGT  TGG   GG GTGG  TTTATA    ATATAA
          TCCTTTATGTACACTGTAAA GAAGG AGACG  ACT   CC TACC  AAATGT    TGTATT
          CCATTCCTTCTCAGGGCAGA     T    GG   CTT  T   --     CACA     -----
          TGGAAG
GAM17509 7353   TTTCCGGGTGTTGTAGGTTT        TG   TA    -    -----       TTATACTCATGAATCTT
3          CTCTTTTTCAGGCTTATACT TTTCCGGG  TTG  GGTTT CTCTT     TTTCAGGC
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CATGAATCTTGTCTGAAGCT AGAGGTCC AAC TCAGA GGGAG GAAGTCTG
TTTGAGGGCAGACTGCCAAG TG CG C TTTTC ----------
TCCTGGAGA
GAM17510 19506 TTTCCTAATTACTGATGACA TT AA---- - G ATGA - AGTC
1 ATGATCTGCTGAGTCTAGTC T CCT TTACTGA T ACA TCTG CTG
AGAATGTGATTCAGTAAGAT A GGA AATGACT A TGT AGAC GAT
TGGAGGGGA GG GGTTAG T G A--- T ----
GAM17510 17242 TTTCCTACTGTAGAAGGCAT CTACT GA - CCCCATT
3 GGATCTACCCCATTTAGATT TTTC GTA AGGCA TGGATCTA
TACTGTCTATACCATTGAAA AAAG CAT TCTGT ATTTAGAT
TTAC- A- C -------
GAM17511 7673 TTTCCTCAGGCAGTATATTA TC - ATTA GGAA - GGTC
8 AGAGGGAACCGGAGCTGGGG TTTCC AGGCAG TAT AGAG CCGGAG CTGG
TCCCAGACTCTGGACTCTGT AAAGG TCCGTC GTG TCTC GGTCTC GACC
GGTGCCTGCCTGGAAA -- C GTG- A--- A ----
GAM17515 11650 TTTCCTGGGCACAGACCGGG G CAGA G- A TG AAGGTCA
2 GACAGTGCAGAAGGTCATTG TTTCCTGG CA CC GGG CAG CAG
TGCTGCCCAAGGATGACCAG AGAGGACC GT GG CCC GTC GTT
GAGA A A--- AA - GT -------
GAM17518 21817 TTTCCTTTCTTTCTGTTTTG CC- TT GTTTT T A TG C T -- -
4 AGTCGGAGTCTTGCTCTGTC TTT TTTCT CT GAG CGG GTCT CTCTGT GCCCAGGC GGAGT
GCAGTG G
GCCCAGGCTGGAGTGCAGTG AAA AAAGG GG CTC GCC CAGA GAGACA CGGGTCCG CCTCA
CGTCAC C
GCGTGATCTTGGCTCACTGC AAA GG ----- T C GT A - AA T
AAACTCCGCCTGGGCAACAG GTGATCTTG
AGTGAGACCCCGTCTCGGGG C
GGAAAAAAAAA G

GAM17520 37 TTTCGGAATCAGGCGGGTCC G ATC C - GT- TTCGC TTTT
2 CTGGTGATTCGCTGGGTTTT TTTC GA AGG G GGTCCCTG GA TGGG
CCCACTTCCCACGGGGACCT AAGG TT TCC C CCAGGGGC CT ACCC
CACCTTTGGGAA G --- A T ACC TC--- ----
GAM17520 15270 TTTCGGATACTTACATAGTT A ACA --- - A CAGATCGAAGAT
6 TTGCGGGAAGCCAGATCGAA TTTCGG TACTT TAGT TTTGC GGGA GC
GATGTATCCCAGCAAGCACA AGAGTC GTGGA ATCA GAACG CCCT TG
CTAGGCAGGTGGCTGAGA G CGG CAC A A ----------
GAM17520 1998 TTTCGGCGCTGGGTCGCCAA CG-- -- AAGCAGAA GAGA
8 AGCAGAATGGAGACGGATAG TTTCGG CTGGG TCGCCA TG
AGTGGTGGATCCCAGAATCC GAAGCC GACCC GGTGGT GC
CGAAG CTAA TA GAGATAG- ----
GAM17520 13494 TTTCGGCGCTGGGTCGCCCA CG-- TC C AA AAAA-- GAAA
9 AAGCAAAATGGAAACGGATA TTTCGG CTGGG GCC A GC TG
GAGTGGTGGCTCCCAGAATC GAAGCC GACCC CGG T TG GC
CCGAAG CTAA T- - GG AGATAG ----
GAM17521 10193 TTTCGGCGCTGGGTCGCCCA CGC-- TC C AA AAAA-- GAGA
0 AAGCAAAATGGAGACGGATA TTTCGG TGGG GCC A GC TG
GAGTGGTGGCTCCCAAAATC AAAGCC ACCC CGG T TG GC
CCGAAA CTAAA T- - GG AGATAG ----
GAM17521 17167 TTTCGGCGCTGGGTCGCCCA CG-- - GC AAGCAGAA GAGA

1 AAGCAGAATGGAGACGGATA TTTCGG CTGGG TC CCA TG
GAGTGGTGGATCCCAGAATC GAAGCC GACCC AG GGT GC
CCGAAG CTAA T GT GAGATAG- ----
GAM17521 10194 TTTCGGCGCTGGGTCGCCCA CGC-- TC C AA AGAA-- GAGA
2 AAGCAGAATGGAGACGGATA TTTCGG TGGG GCC A GC TG
GAGTGGTGGCTCCCAAAATC GAAGCC ACCC CGG T TG GC
CCGAAG CTAAA T- - GG AGATAG ----
GAM17521 10818 TTTCGGCGCTGGGTCGCCCA CG-- TC C AA AGAA-- GAGA
3 AAGCAGAATGGAGACGGATA TTTCGG CTGGG GCC A GC TG
GAGTGGTGGCTCCCAGAATC GAAGCC GACCC CGG T TG GC
CCGAAG CTAA T- - GG AGATAG ----
GAM17521 1794 TTTCGGCGCTGGGTCGCCCA CG-- -- CAAAGCAGAA GAGA
4 AAGCAGAATGGAGACGGATA TTTCGG CTGG GTCGCC TG
GAGTGGTGGCTTCCAGAATC GAAGCC GACC CGGTGG GC
CCGAAG CTAA TT TGAGATAG-- ----
GAM17523 2016 TTTCTAAGTTAAAAAAGACA T --- ----- GTCC TAA
5 CATGGTCCTTTATTTTTAAG TTTC AAGTTAAAA AAGAC ACATG TTTATTTT
AAATAGAATATGTAAAAAGT AAAG TTTAATTTT TTTTG TGTAT AGATAAAG
TTTCTCTTTTAATTTGAAA - CTC AAAAA A--- ---
GAM17530 14961 TTTCTCAGTTCATAGGCTAT AG ATAG A C- ------ A GAGAAGGAA
9 CCCATCACCCTTTATTTGGA TTTCTC TTC GCT TC CATCAC CCTTT TTTG
GAAGGAACGAGAGAAGGAAA AAAGAG AAG CGG AG GTAGTG GGAAG GAGC
TTAGTGATGATGAGGCAGAG -- GAGA - TA ATTAAA A ---------
GAAGAGAAA
GAM17533 19747 TTTCTCCTTAGTTGTATGAC - TT TGACA A- ACTCCACTA
9 AGGCATTGAAACTCCACTAT TTTCT CCTTAG GTA GGC TTGAA
TCAAGAGCTGCTTACTGTTA AGAGA GGGATT CAT TCG AACTT
GGGTAGAGA T GT TCG-- AG ---------
GAM17537 22399 TTTCTGAATATTGTGCCTTT T- - CT--- TAC GCC
1 TTATACCTAGCCTAGATTAA TTTCTGAATA TGTG C TTTTA CTA
AACCGATGCCATACTTATTC AAAGACTTAT ATAC G AAAAT GAT
AGAAA TC C TAGCC TA- ---
GAM17538 6854 TTTCTGAGATGAAGTCTTGC C ATGA TG T T T C ATCTC
2 TCTTTCACCCATGCTGTAGT TTT TGAG AGTCT CTCT TCACCCA GCTG AGTGCAGTGG GCC

GCAGTGGCGCCATCTCGGCT AAA ATTC TCAGA GAGA AGTGGGT CGAC TCACGTCACT CGG

CACTGCACTCCAGCCTGGGT A C--- GT C C C - -----
GACAGAGTGAGACTCCTTAA
AAA
GAM17538 22501 TTTCTGAGGTAGCAGTGCCT AG AGCA C T G T- ACCAT
8 GGTGGAGGTGTGACACCATG TTTCTG GT GTGC TGG GGAG TG GAC
TCCCTAGCTCCCCAAGCACA AAGGAC CA CACG ACC CCTC AT CTG
CACCAGGAA CA ---- A - G CC -----
GAM17541 15298 TTTCTGCTGTATATTACACT CT CACT - TACTTAGTCCTAT
2 GGCTACTACTTAGTCCTATG TTTCTG GTATATTA GGC TAC
TATGCTTCTAGTATATTACA AAAGAC TATATGAT TCG ATG
GAAA AT CT-- T ----------
GAM17542 2246 TTTCTGGACCATGAAAGTGT GGAC A - CAA------ A ACA
3 CACCAAATTCAAAGAACATT TTTCT CATGA AG TGTCAC ATTCA AGA

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          TCTGAATGTACATCCAGTGA GGAGA   GTATT TC ACAGTG       TAAGT TTT
          CATCTGTTATGCAAAAGAGG    AAAC    G  T    ACCTACATG    C  ---
GAM17546 15187  TTTCTGTTAATAACACAAAA    G  AA  ACACAAAATA     AAGAA
6          TATTTTTTTAAGAAAAAAAG TTTCT TT  TA       TTTTTTT
          AAAAAAAAGGTAGGGAAAGA GAAGA AG  AT       AGAAAAA
          AG                A  GG  GGAAAAAAA-     -----
GAM17547 7653   TTTCTGTTTTCAAAAATTAT       CAAA   ATT---    TA  AATTAC
4          TAAATCTAAAAATTACTTCT TTTCTGTTTT   AATT    AAATC  AA
          GATTTTAAAAGGATTCTCTG GAAGACAAAG   TTAG    TTTAG  TT
          AAACAGAAG              TCTC   GAAAAT    TC ------
GAM17548 22176  TTTCTTAATTAAGTGGTAGT       T  T  ---    ATTTCATACTTG
7          TTGATTTCATACTTGCAAAC TTTCTTAAT AAG GGT   AGTTTG
          TCTGACCCCTTTATTGAGGA GAGGAGTTA TTC CCA   TCAAAC
          G                   T  C  GTC    ----------
GAM17550 16370  TTTCTTATATTGTTGTTAAT    ATA    T  TCATCA    ---  TCTCGATTAAAATACACAC    AG
6          CATCAAGGAATCTCTTCTCG TTTCTT   TTGTTG TAA    AGGAAT   CTCT            ATCTTA
          ATTAAAATACACACATCTTA AAAGAA   AACAAC ATT    TCCTTA   GAGA            TGGAAT

          AGAATAAGGTTTCAGAGCAT    G--    T  TG----    TAC   CTT----------------    --
          ATTCCTGTTTATCAACAAGA AA
          AGAAA


                    --
GAM17551 10176  TTTCTTATTCTGTTTACCTG       ---  -  -  ---     -   CAA    CCTTA
1          GATTTTTATTTCAATTTATA TTTCTTAT   TCTG TTTA CCT   GGATTTT TATTT   TTTATA
          CCTTATATGAAAAAATACAA AAAGGGTA   AGAC GAAT GGA   CTTAAAA ATAAA   AAGTAT
          AATTCAAAAGGATAAGCCAG       CAG   C   A  AAA     C    A--     -----
          AGACATGGGAAA
GAM17551 5031   TTTCTTCAGCTTTTAAAATG    ---       AAAA  --  -  A  TGCTT
8          CCTGTCCAAGTTGCTTACTG TTTCT   TCAGCTTTT    TGC  CTG TCC AGT
          GGATTAGAAGCAGAAGGCTG AAAGA   AGTCGGAAG    ACG  GAT AGG TCA
          ACAAAGAAA             AAC       ----  AA  T  G  -----
GAM17552 13214  TTTCTTCATTGAGGAAAACT       TT    AA  G  T   ACC
0          GGGATAATGACCCATTTTCA TTTCTTCA  GAGGAA  CTG GA AATG
          CAGGGTTTTTCTTGAGGAAA AAAGGAGT  CTTTTT  GAC CT TTAC
                          T-    GG   A  T   ---
GAM17557 1354   TTTCTTGTTTTTGTTTGTTG     GTTTTTG   T  TTT  T  TAT     GGTGTTA
0          GTTTGGTGCATATGATAGTG TTTCTT     TTTG TGG   GG GCA   GATAGTG
          GGTGTTATGCTATTTTGCTC AAAGAA     AAAC ACC   TC CGT   TTATCGT
          TTCCCATCAAAATAAAGAAA     ATA----   T  CT-  T  T--     -------
GAM17557 14951  TTTCTTTATAACATTTAAAT      ATAACATTTA    C  TT  --    ACTCTACAC
7          ATCTGTTTCATATCCACTCT TTTCTTT       AATAT TG  TCA  TATCC
          ACACGGATAATTGATCACGT AGAGAAA       TTATG AC  AGT  ATAGG
          ATTATCTTTCCAAAAGAGA       ACCTTTCTA-    C  T-  TA    ---------
GAM17559 121    TTTCTTTGGTACCTCTGCTT    TT   CC   - TACT  C  TTGT
5          ACTGCCTCTTGTGATGCCAC TTTCT  GGTA  TCTG CT   GC TC
          TAGTCAGAATGCCTTGGAAA AAAGG  CCGT  AGAC GA   CG AG
                          TT   A-   T  TCAC  T  ----
GAM17560 592    TTTCTTTTTATGTCTGGGTC      TTA    GGT     G------  TACAT
8          ATTCAGGCAGTACATCTGAA TTTCTTT   TGTCTG   CATTCAG     CAG
```

TTAAGCTGAATGTAGACAAA AAAGAAA ACAGAT GTAAGTC GTC
TAAAGAAA TAA --- GAATTAA -----
GAM17561 22476 TTTCTTTTTGCTTTTTGTTT TTT TTTTG TCATATTTG TTGTGAAG
5 TGTTTTTTCATATTTGTAGG TTTCTT GCT TTTTGTTTTT TAGGGG
GGTTGTGAAGTCCCTAGAAA AAAGAA TGA GAGACAAAAG ATCCCT
ACAGAGAATCCAGTTGTAAG TGT CCTAA --------- --------
AAA
GAM17561 15756 TTTCTTTTTTAATGTCCAAA GTCCA-- GG AAGTGCTA
7 AGTGGGGGAAAGTGCTATTT TTTCTTTTTTAAT AAAGTGGG A
CCTATTTTCACCAAAATTGG GAGGAAGGGGTTA TTTTATCC T
GGAAGGAG AAACCAC TT --------
GAM17565 10649 TTTGAAATTCATAGTTTACA AA - CAG AATGAGA
1 GAATTTTAATGAGAGAAATT TTTG ATTCAT AGTTTA AATTTT
ATTGAGCTAATGAATGGCAG AGAC TAAGTA TCGAGT TTAAAG
A GG A TA- -------
GAM17566 7845 TTTGAACTATGTTGGGCCAA --- G GG- AA-- --- CTCTT
5 TCCAATTCTTCCCTCTTGGA TTTGA ACTAT TTG CCAATCC TTC TTCC
ATCTGAAATTGGGATTGGAG GGACT TGATG GAC GGTTAGG AAG AAGG
ACAGGTAGTAAATCAGG AAA - AGA GTTA TCT -----
GAM17568 19748 TTTGAAGGAGAAACAGAGCA AGG- G A-- A GTTG
2 GAAGCGACACCTGTTGGGGG TTTGA AGAAACAGA CAGA GCGAC CCT
TTGTGGATCTGTTTGTTTCT AGACT TCTTTGTTT GTCT TGTTG GGG
GCAGTCAGA GACG - AGG - ----
GAM17570 10789 TTTGAATGACTTGTAATGAT AT-- C -- -- TG TAA TATCC
7 GGCTGCTAAGCATATCCTGT TTTGA GA TTGTAA TGAT GGC C GCA
ACTGTGGCTATGTCAATTTG AAACT CT AGCGTT ACTG TCG G TGT
CGAATCCTCCTCAAA CCTC A TA TA GT TCA -----
GAM17570 82 TTTGAATGGTACAGTATATG TG T GTAT AAATTCA AAAAAG
9 TAAAAAAAATTCAGTTAAAA TT AATGG ACA ATGTAAAAA GTT
AGAACATTTGTTTTTACATT AA TTATT TGT TACATTTTT CAA
AAATGTTTATTTGAA GT - AAAT GTTTA-- ------
GAM17573 5349 TTTGACCTTTAAAATATTAT C- TT T G -- T GG GAATG
7 ATGTTTAAGGTAGGGGGATG TTTGA CT AAAATAT ATAT TTTAA GG AG GGATGAAGGGG

AAGGGGGAATGCCTTTTTAT AAACT GA TTTTGTG TATA AAATT CC TC TTTATTTTTCC
TTTTCTTCCATTTAAAAATA AC TC - A TA T TT -----
TGTGTTTTCTAGCATCAAA
GAM17576 2184 TTTGAGAGAGAAGAAAAACT TG AGA--- CTG AACCACA
9 GTGTTGGAACCACACCAATG TT AG GAAGAAAAA TGTTGG
ATATTTTTCTTTGTAATACT AA TC TTTCTTTTT GTAACC
TGAA GT ATAATG ATA -------
GAM17578 15224 TTTGAGATGTACGACCTGGA - - A- CCTGGA- A--- ATCAC
6 CGGCGACGGGCGCATCACGC TTTG AGAT GT CGA CGGCG CGGGCGC
GCCTGGAGATGCTGGAGATC GAAC TCTA CG GCT GTCGT GTCCGCG
ATCGAGGCAATCTACAAG A A GA ACTAGAG AGAG -----
GAM17583 10276 TTTGATACTGGTGATGACTG ACT T G - A TTGAAA - CT AACTAC
2 CACAACCAATATTGAAAACC TTTGAT GGTGA GACT CACA ACCA TA AC CATTGA AGT
ATTGACTAGTAACTACACTT AAACTA CTATT TTGA GTGT TGGT AT TG GTAATT TCA
TTAATGAGTGAATTTTATGG ACT - - A - TTTAAG A T- ------
TATGTGAGTTTTATCTCAAT

CAAA
GAM17583 13348 TTTGATACTGTATCTGTTTT TG GTATCTG TC ATAGA
3 CCTTCAAAGTATAGAGCTTT TT ATACT TTTTCCT AAAGT
TGGGGAAGGAAAGTATTGAA AA TATGA GGAAGGG TTTCG
GT AA----- GT -----
GAM17583 11033 TTTGATAGTAAGTGAGCGTT T- T - TT TCACC
6 TATTTTATTCACCATAAAAT TTTGA AGTAAG GA GCG TATTTTAT
ATTTGCATCTCTTACTCCTC AGACT TCATTC CT CGT ATAAAATA
AGA CC T A TT -----
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8 AGGGTACATACTCCATGTGG TTTG CCTGT GAAG TACAT
ACTTCCCTTAAACAGGCAAA AAAC GGACA CTTC GTGTA
-- AATTCC- AG -----
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5 GTTTAATAAGCTACTAGCAA TTTG TTATTTGC ATGTT TGTTT GC
AATAAAACATAGCAAATGGC AAAC GGTAAACG TACAA ATAAA CG
AAA - A A A---- -----
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0 TTACTGCCTTAAATTTTTAA TTTGAT AACA TCTC TACTGC ATTTTTAAA
ATAATTTTACCTCTGTGTTT GAACTG TTGT AGGG ATGACG TGAAAATTT
TAAAAGTGCAGTATGATGGG -- TCAC TAGT ----- ----------
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2 ATCAAATAGGTACTTTGAAG TTTGC TAAA TATG AATAG TAC TTTGA
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0 AAATCTGGATTAAAAAATTA TTTGCA TGAG GAAA CTGGA
CCTCTTCAGTGTTTTCTCAT AAACGT ACTC TTTT GACTT
GCAAA --- ---- GT- ----------
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0 TAAGTCATGACAATTTATTT TTTGCATAGC ATGTTAAG ATGA
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------ TTTT ----
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6 ATTCTACTGGATGCATTCAA TTT CCAG TCC TCT CTGG GC
AGTTACCAGAAGACGAAGGA GAG GGTC AGG AGA GACC TG
CTGGGGAG G ------- AAGC A AT -------
GAM17598 11226 TTTGCCCTTTTTCCCTTTTC C CTTTT TC TAAT
0 TCCATGCTTAATGGTGTGAG TTTG CCTTTTTCC C CATGCT
GCGTCAGGAGAGAGGCCAAG GAAC GGAGAGAGG G GTGTGG
C ACTGC GA ----
GAM17599 19527 TTTGCCTTAGAGATTATAGT - AG TT - AGA CAGATTTAT
2 AGTAGAACTCAGATTTATAG TTTGC CTT AGA ATAGTA GT ACT
TGTGACATGCTGTTCTGGAA AAACG GAA TCT TGTCGT CA TGA
GAGCAAA A GG -- A GTG ---------
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2 TGACATGGTGAGTGATGCTG TTTGC ATC AGGAC TTGA GGT AG
ACCTTCAAGTCCTAGATGGC AAACG TAG TCCTG AACT CCA TC

AAA G- A ---- T-- G -----
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1 ATTTACAAGAAGATTCAACC TTTG TAA TGGTA CT
TAATCAATATCACTTATCAA AAAC ATT ACTAT GA
A T C AACTAATCCAACTTAGAA -------
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0 ATGCTTCGTGTCTCTTGCGG TTTGCTGCTTCTG AC TTG TGCTTC TCTCTTGCGG GT GGGGC

GGGTGGGGCATTAGGAGGCC GGGCGGCGGGGAC TG AGC ACGAGG GGGGGGCGCC CG
CTCCG
TCTTGGCGACCGCGGGGGGA C A - GA- AG GTT --------
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CGGCGGG
GAM17610 318 TTTGGAACTAGAAACTCAGC TAGAAACTCAG GG- AATTA
3 TGGGTTGGTGAATTACACTA TTTGGAAC CT GTTGGTG
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CCAAA TTAAAGTACA- AGG -----
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1 TTATTTGCTCTCTCAAATTC TTTG TTCTCAGGT ATTTGCT GGA ATTGA
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TAATCCATCAACCTCTCATA AA--- ---- TACTCTCCAACTA AAT -----
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TCTTAGTTTTCCATAGGAAC AC TA TG TCTC- - A- -------
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5 TGTTTCCATGGGCCCGAGTT TTTGGC CGAACCA GCCA GTT TGGG GAG
ACTTTTCCCCAGATGACTCT AGACCG GTTTGGT TGGT CAG ACCC CTT
GGTTTTGTTTGGTTTGCCGC CC TTGTTT CT TAG- --- ------
CAGA
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AAAGTTAGTGTCAACCCAAC AAATC AAACC AC ACTG GA TG AG
CAAAAACTAAA AA A CCA T T AAA- ----
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9 TTTGAGGGTGTGTGACTTGC TTTGGCC GT TAG TTCC TT GGT TGTGACT TGC
CATCTGCAAAAGTCATGGCC AAACCGG CA ATC AAGG AA CCG GTACTGA ACG
AAAACAGGAACTAACAGGCC A - - AC AA- - AA -----
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8 GGATCATGAGGCCAGGAGTT TTTGG GAGG GGGT ATCATG GGCCAGG GTT
CAAGAACAGCCTGGTCAATA AAACC CTCT CCCA TGGTAT CTGGTCC CAA
TGGTGAAACCCCATCTCTAC AT---- AC AAG AA GA ----
CAAA
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4 AGATCACCTGAGGTCAGGAG TTTGG AGG GGCAGG TCACC TG G CAGG GTT
TTCAAGACCAACCTGGTCAA AAATC TCC CCGTCC AGTGG AC C GTCC CAG

CATGGTGAAACCCTGCCCCT A ---- CAA- T AA TG AAC ---
ACTAAA
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3 CCAGACACGGAGAACGGTCA TTTGGGGGGA GCC GTCC CGGAG CGGT
AAAAAGAAAAAACCGGCCTT GAATCCCCTT CGG CAGG GCTTC GCCA
CGGGGACAGAAAAAAGGCAT TA AAAAAAGA G---- CG ----------
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GAM17633 10029 TTTGGTCCCTGCGCCTTTGA CCCTGC GG GTCATAAGG
3 AGGGGGGGGGGGGGTCATAAG TTTGGT GCCTTTGAAGGGGGGGG G
GTTTCCCCCTTTTTTAAGGG AAACCA TGGGAATTTTTTCCCCC T
TTTTAACCAAA ATTT-- TT ---------
GAM17634 10980 TTTGGTGCCTGGAATTGGTA TG ----- -- -- AAC
6 TGTGGTTGGGCAACGCCCAA TTTGGTGCC GAATT GGTATG TGGT TGGGC
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TTTTGGGTATCGAG GT GTCAA TT TA ---
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4 ATCCATGGCTGAGGTTGATG TTTGGTTT G ACTTT CATC TG TGAG TT TGC GC
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CATTCAATTGATGGGAGAGT T GA GG TTA TT A- T ----
AGTTGAGCCAAA
GAM17638 518 TTTGTAAATAATGTGTTTGT AATAATGT -- TT AAAGACCA
2 TCTTTAATAAAGACCAGTTT TTTGTA GTTTGT TCT AAT
CAGAATGCAAACTCCTACTA AGACAT CAAACG AGA TTG
CAGA CATCCT-- TA CT --------
GAM17640 14798 TTTGTAATTATCTTTTAATG T C TT AG- ATCTTG
1 AGCTCTCATCTTGGAGAGAT TTTGTAA TAT TT AATG CTCTC
ACATTCTGAAATATTTACAG AGACATT ATA AG TTAC GAGAG
A T A TC ATA ------
GAM17640 1 TTTGTAATTGAAGAAAAATT AT- A GAG AG AAAGCATA
2 GAGAAAGTAGAAAGCATATT TTTGTA TGAAG AAAATT AA TAG
AAGTTAAAATTTTACTTTAT AAATAT ATTTC TTTTAA TT ATT
AATATAAA AAT A AA- GA --------
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9 AACTGATAAAAATTTCTGAT TTTGT ATTTT GAGA GGAAA GAT TTCT AG
TAGGAAACTTTGAGAATAGA AAACA TAAAA CTTT TCTTT CTG AAGA TC
GTCTTTCTTCTTTCCAAAAT A C CT -- AGAT-- GTT- ----
AACAAA
GAM17646 15925 TTTGTCAATAAGTATTCATT CA A ---- AA--- GTAA
7 GGAATATATGTAAATGTGCC TTTGT ATAAGT TTCA TTGG TATAT
TTGCCGGTTATTGAAACTTA AAACA TATTCA AAGT GGCC GTGTA
TCTACAAA TC - TATT GTTCC ----
GAM17648 19474 TTTGTCCTAATCTGCTGCCA AATC ------ A--- CCTA
9 GAATTAAAGACCTATTTTTA TTTGTCCT TGCT GCCAGA TTAAAGA
GAGGATTTGGCTTAAAAAGC AAACGGGA ACGA CGGTTT GATTTTT
AAGGGCAAA ---- AAAATT AGGA ----

GAM17652 7491 TTTGTGAAATTGCGGCCTTT - AA -- TAA TT- AAAGGGTG
1 AATGTACATTTTAATGAAAG TTTG TGA TTGC GGCCTT TGTACA TTAATG
GGTGCATTAGTATTGTACAG AAAC ACT AATG CTGGGG ACATGT GATTAC
GGGTCTTGTAAAGTCATCAA T GA TT --- TAT --------
A
GAM17652 10252 TTTGTGAATGCTGTGTATGA AT- GT A AC -- C AAGACGTTCA
3 TACCTTACTTAATACTCCTC TTTGTGA GCTGT ATGAT CCTT TTAATAC TC TC
AAGACGTTCAGAAGACAGTA GAGCATT CGACA TACTA GGGA AATTATG AG AG
TTAAAGGGAATCATTAACAG GTC AT A -- AC A ----------
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4 ACTGTAGGATCTTGAATATG TTTGTG GTTTCA TTA TGTAGGAT
TTTTACAATAATGAAGCTAC AAACAT CGAAGT AAT ACATTTTG
AAA --- --- A ---------
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7 CCATACACATGGGTAACATT TTTGTG C ACAT GCTT GC CAT ACAT ACA GACT
GACTATGGGAGTCTTGTGAA AAATAC G TGTA CGGG CG GTA TGTG TGT CTGA
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GAM17659 7233 TTTGTGTTGTTTTGTTTTTA G TTA ATGA--- TTTCCAT
5 TTTTTAAATGAAGTTTCCAT TTT TGTTGTTTTGTTT TTTTTAA AG
CTGTGCACGTTAAGAAAATA AAG ACAACAAAACAAA AAGAATT TC
AACAAAACAACAGGAA G TAA GCACGTG -------
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1 GGTGGGTGGAAAGCATGAAT TTTGTTA CCA CGG GGG GGAAA
TTTCCCCTCGGCAGTGGGGT AGGCAAT GGT GCT CCC CTTTT
AACGGA GG GACG--- - - -------
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8 ACTTTCTTGGTTTTCTAATG TTTGT AATG AAAC ATACTT TTGG
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TCACAGA CT TGA- ATA GT ----
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0 GGAAGGAAAAAAAGAGCCAA TTTGTTG GGAA AGCCA TCAG
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3 TGTTGAAAATTAATTCCTAA TTTG GCC CCA CTCA TGTTG ATTA
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GTTTTTAAG TTT - GGA T GG- -----
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1 TTCCTCATGTAACATTGGTG TTTGTTT CTTTTGT TCATGT TTGG
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1 GGTCAGATGGATAGAACAAC TTTGTT GTTTTTTTAA GGT CAGA GATAGAAC
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TTAACTTTTAAAAAAATTAT TAT T ATTTT GT -------
AATAGA

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9 TGGGATTACAGGTGTTTGCC TTTTA AATGT TTTGGGCTGGG GGTG
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TTACATTCGTAAGA GC- TTATT GCG--- -----
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6 CTGGTTGTAGGAAATCATAG TTTTAAA AAGATC TTACT TGT GGAAATC
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GAM17675 17871 TTTTAAAGTATTTCTTTTAG GTA C TT TTCTAT CCCTTTTTCTTCAATGT
0 GATTCTATTATTTACCCTTT TTTTAAA TTT TT AGGA TATTTA
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TTTCCTTTAATAAAGATTTA AG- T TT TTACC- ----------
AAA
GAM17678 10383 TTTTAAGAAATTAATTTATT - TT GAG--- TATT
5 TGAGTTCAAATATTTTTGAA TTTTAAGAAAT TAAT ATTT TTCAAA
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GAM17680 11224 TTTTAAGTTCTTTAGAATGT GTTCTT AAT- ACG TAA T TCT
7 GACGCTTTTAATATAGCCTC TTTTAA TAG GTG CTTT TA AGCC
TGGTTTTAGATGGAGAAACA AAAATT ATC CAC GAGG AT TTGG
CTATGCTATTGTCATTAAAA ACTGTT GTAT AAA TAG T ---
GAM17684 13861 TTTTAATTTGCTTATTTAAT GC- A T T- - GA C TTTT
1 ATATTTGTTGGCCAGAGATC TTTTAATTT TT TTTAATATAT TGT GGC CA GAT TA
TATTTTTATATCAATGTGCC AGGGTTAAA AA AAATTATATG ACG CCG GT CTA AT
TTGCATGTATATTAAAAAAA AAA A T TT T AA T ----
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1 AGGCACTTGGACCCCCATTC TTTTACATCC GGGGA ACTTG CCCCC TCT
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GGGTTTCCCATGGGGATGTG GGTA ----- GG GCCC ----
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GAM17689 13459 TTTTAGAGAGTCAAAATGGA --- A- ACA CCAC ACTGTGAA
3 AATAACACATTGTCCACATA TTTTAGAGA GTCAAAATGGA ATAAC TTGT ATAGCT
GCTACTGTGAAAGCTGTAAT AAAATTTTT CAGTTTTATTT TATTG GACA TGTCGA
ACAGAGTTATCCTTTATTTT ACA CC A-- TAA- --------
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GAM17690 22083 TTTTAGATTTAAATGATGTA A T A T-- TC-- AC C CTACATTAATA
2 TTTGTTCAGCTCACTGATAG TTTT GATT AAATG TGTAT TGT AGCTC TGATAGGGGG AAATA

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ATTTCAGTTAAAAA

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CTGAAG AACACAA- GAGA ------
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TTTTTATTTGAAA T TTCT- C AA ----
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9 ATGTTAATCAAAAGAAGCAA TTT GTTGCA CCACTA CATGTT TCAA AGAAGCA
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9 AAGTTGATGATAGAATATCA TTTTATATCAAGT AT TTGATG
AATAGTGAATTTGATATGAA AAAGTATAGTTTA TG AACTAT
A AG- ATA-- ------
GAM17701 13399 TTTTATTCATTGTTTCAGCT C --- GCTG AAAAAAAATGA
6 GGCCAAAAAAAATGAGGTAT TTTTATT ATTGT TTCA GCC
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AA T TTA AGTA ----------
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TTACAGTAAAA A T - AAAGAAC ----
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3 ATCACCAACATCTAACATTT TTTTATTTAA TGT ACC CTAA
TTTAGTTCAGGTACATTTGG AGAATGGGTT ACA TGG GATT
GTAAGA T --------- ACTT- ------
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4 TCTATACAAAAAAACCAATA TTTTATT TTGCTT TGGT TAT
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ATAATAAAA TAAT ATACAAAA - ----------
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6 TTGGATGTAGACTGACAGAC TTTT TTTTTAGT CAAATTTGGAT AGAC CAG
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AAAAAAA
GAM17707 7970 TTTTCAATTATCCTAAGTGT TATCCT G TTCCATCACTCTTCT
5 CTTCATTCCATCACTCTTCT TTTTCAAT AAGT TCTTCA
TGGAGAACTTCTCAATATTG AAAGGTTA TTCA AGAGGT
GAAA TAACTC - ----------
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7 AATGGCCCCCCATTTTTGGC TTTTCCC AGCC GGGAA TGGCC CCCCA TTTGGCTTT
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GCTGGGGGGAAA

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2 CTTTTTCTCTAACCAGAAGC TTTTCCTT TTTTTCT TTTCT
TTGGAAGAACACAAGGAAAA AAAAGGAA AAGAAGG GAAGA
CAC-- TTC ------
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6 GCGCTGGCTGTTTTAGGTGG TTTTCTC GC GT GC C GCTGTT
CGGCTGGGGTGGGCAGCATG AAAAGAG CG CG TG G CGGCGG
AGAAAA TA- A--- GG G GT ------
GAM17731 10797 TTTTCTTCATGGTTGAGCAG - G- G G C AATG CCATAT
3 CTTTTGGCAAAATGTGTTCC TTTTCTT CAT GTTGA CA CTTTTGG AA TGTT
ATATAGCAGTAGTTCCAAGA AAAAGAA GTA TAATT GT GAGAACC TT ACGA
GATGTTAATAGATGTAAGAA T GA - A - GATG ------
AA
GAM17731 22162 TTTTCTTCCTATTACTTGTC - AC ---- TGCCACCAGAAAT
7 TCTGCCACCAGAAATGAGAA TTTTCT TCCTATT TTG TCTC
TTCCAAAGAATGGGATAGAA AAAAGA AGGGTAA AAC AGAG
AA T GA CTTA ----------
GAM17736 4544 TTTTGAACTAATAGAAATTT CTAA AAA- GTTT ATAATA
6 AATGTTGTTTTAAGATAATA TTTTGAA TAG TTTAATGTT TAAG
CTTAAATATTAAGAAAGCTA AAAATTT ATC GAATTATAA ATTC
AAATTTAAAA AAA- GAAA ---- ------
GAM17739 16043 TTTTGAGAGTCTGACATGCA TT TGA G A T - TCAGGTAT
6 TATCATAATTTTATGTCAGG TT GAGAGTC CAT CAT TCA AAT TTTATG
TATTATAGATATTTTGAAAT AG TTCTCAG GTG GTA AGT TTA AGATAT
GGTGACTGACTCTTTTGA TT TCA - A T T --------
GAM17746 1688 TTTTGCTGATAAGGAGAAAG T GAT AAA TTA TT ACAA
7 TTTTAGTGGTCTTGATACAA TTT GCT AAGGAG GTT GTGGTC GAT
ATCGGCCACAATATTCCTTT AAA CGA TTCCTT TAA CACCGG CTA
AAGCCAAA C AT- A-- --- -- ----
GAM17750 5224 TTTTGGCTATTCTCAAGGAA T CA- AAAC--- TTG T GAAAATGA
7 ACCCTTGTATTCTTGTGAAA TTTTGGC ATTCT AGG CC TATTCT GT
ATGAACAGAATAATTGGATT GGAACCG TGAGG TCC GG ATAAGA CA
AAAGCCTGAAGGAGTGCCAA - AAG GAAATTA TTA - --------
GG
GAM17751 7331 TTTTGGGAAGAACCATGGTG GA - G GATAGACT TTA
5 GATAGACTAGAGCTTAGTTC TTTTGG AGAACC AT GTG AGAGC
TTTGTGGCACGGTGGGTTCT AAAACC TCTTGG TG CAC TCTTG
CGCCAAAA GC G G GGTGTT-- ---
GAM17757 14890 TTTTGTATTTTTAAAATGTA ATTTTTAAAA- TG ACAGTG
7 TTTTGTAAACAGTGTTATGA TTTTGT TGTATTT TAA
AATATAATTCACATACCACA AAAACA ATATAAA ATT
AAA CCATACACTTA GT ------
GAM17758 17808 TTTTGTCACATTCAGCATTA - CATT TC ----- TCA
3 TCCAGGCCTCAGGCAACATC TTTTG TCA CAGCATTA CAG GCC
TGTCTAGTGTTGTCTTGATC AGAAC AGT GTTGTGAT GTC CGG
AAGA T TCT- CT TACAA ---
GAM17760 11679 TTTTGTGACTTATGAGATGT - TTATG-- GTG C TTCATTAAACATTCT
1 GACTCAACTGCTTCATTAAA TTTTGTGA C AGAT ACTCAA TGC
CATTCTGCATTGGGTATAAT AAAACATT G TCTA TGGGTT ACG
CTAAGAATTGTTTACAAAA T TTAAGAA ATA - ----------

GAM17763 22057 TTTTGTTCCGTGATTGAATT T - TT A T- TG - TC--- A GTAA
0 TGTTGTGCTCCTGTTTCCTT TTT GTTC CGTGA GA TTTGT G C TCCTGTT CTT GTT
AGTTGTAAAACAGAGATAAC AAA TAGG GTACT TT GAATA C G AGGATAA GAG CAA
AATAGGACGTGCCCATAAGC T A T- C CC GT C CAATA A ----
TTTTCATGAGGATTAAA
GAM17765 10080 TTTTGTTTTTCTTTTTTGTA TT GTACAAAAAT C CTTGTTA
9 CAAAAATACCAGTGCTTGTT TTTTG TTTCTTTTTT AC AGTG
ATACTAGTTACTAAAAGAAG AAAAC AAAGAAGAAG TG TCAT
AAGAAACTCAAAA TC AAAATCAT-- A -------
GAM17766 11784 TTTTGTTTTTGTCCAGTAGG CCA CCC - AAAATATTC A A GTGTAAA
0 TCCCAACAGCGGGCTTAAAA TTTTGTTTTTGT GTAGGT AACAGCGG GCTT AGCA ATC TG

TATTCAGCAAATCATGGTGT GAGACGGAAACG TATTTA TTGTTGTT CGGA TCGT TAG AC
AAACAGATGTGCTTTCCTCC ATG CC- T CCTCCTT-- G - -------
AGGCTTTGTTGTTCCATTTA
TGTAGCAAAGGCAGAG
GAM17766 11440 TTTTGTTTTTTTTTCTCAGC TTTTT CATT AAA TTTAT
2 ATTACCAAACTTATTTATTA TTTTG TTTTCTCAG ACC CTTA
AGAGGTTCTGAGGAAATTGT GAGAC AAAGGAGTC TGG GAAT
TCAGAG TTGTT T--- A-- -----
GAM17767 7821 TTTTTAAAATTATGAGATAC ATT - C AT - ATTAA- AAAAAC
2 TTTTTTATGTGTGCTTCATT TTTTTAAA ATGA GATA TTTTTT GTGT GCTTC CAAT
AACAATAAAAACATTGCAAA AAAGGTTT TACT CTAT AGAGAA CATA TGAAG GTTA
GGGAAGTAATACTCAAGAGA --- A A CT A GGAAAC ------
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GAM17770 2659 TTTTTAATCCTCATTATAGT A GTAG ATA-- GTGGAA
3 AGGTGTGTTATATTAGTGGA TTTTTAATCCTC TTATA GTGTGTT TTA
ATAAGACAAGACATACAATA GAAGGTTAGGAG AATAT CATACAG AAT
TAAGAGGATTGGAAG - AA-- AACAG ------
GAM17774 10610 TTTTTATAAGTATACTGCAT AAG- -- AT- TT GCCTA
5 TTTTTGAGCCTATCATTAAT TTTTTAT TATACT GC TT TGA
TAGCTTAGTATGAAAGATAA AAGAATA GTATGA CG AA ACT
GAA GAAA TT ATT TT -----
GAM17777 10536 TTTTTATTTTGGGTTTCTTA A TG GT AA------ TGACATTT
4 CAAAGGGTGACATTTTCCAT TTTTT TTT G TTCTTACA GGG
AACAGGTGTAAGAGTGTTGA AAAAA AAA T GAGAATGT CCT
AAAAAAAA A GT GT GGACAATA --------
GAM17778 7168 TTTTTCAATTTTTATTTTGG TT --------- A TG TT AAG ACATTTTCCA
5 TTTTCTTACAAAGGTTGACA TTT CA ATTTTT TTT G TTCTTACA GTTG
TTTTCCATAACAGGTGTAAG AGG GT TAAAAA AAA T GAGAATGT CAAT
AGTGTTGAAAAAAAAATTCA GG TTTTAAACT A GT GT GGA ----------
AATTTTTGGGGGA
GAM17778 13345 TTTTTCAGAAGGTTTTAAAA GAA-- AAGAC GAATACTGATGGAAA
8 GACTGATGAATACTGATGGA TTTTTCA GGTTTTAA TGAT
AAATTACACTTAAAACCACT AAAAAGT CCAAAATT ATTA
TATGAAAAA ATTCA CAC-- ----------
GAM17779 16001 TTTTTCAGCAAATAATGCAC G A AAT TTGA CACTCTATT
1 AGATTGAATAAGACACTCTA TTTTTCA CA AT GCACAGA ATAAGA
TTTCTTGTTCTGTGCTGATA AAGGAGT GT TA CGTGTCT TGTTCT
TGGTGAGGAA G A GT- ---- ---------

GAM17780 4646 TTTTTCCAATGAATGACAAC CAA - CAAC-- TT CACTTT
5 TTTATTTTTCTTACACTTTT TTTTTC TGAA TGA TTTATT TCTTA
AAGGCTGATGAAAAACCTTC GAAAAG ACTT ACT AAGTAG GGAAT
ATTTCAATTGAAAAG TTA T TCCAAA TC ------
GAM17781 621 TTTTTCCCGACCCCCTTTTT GA TTTT A CCAAAGGG TTTAAAAATT
4 TTTTAAAAAAGGGGCCCCCA TTTTTCCC CCCCCT TTTTAAAAA GGGGCCC GGGCCT
AAGGGGGGCCTTTTAAAAAT AAAAAGGG GGGGGG AAAATTTTT CCCCGGG CCCGGA
TAGGCCCGGGCCCCCTTTTT -- CCC- C -------- ----------
AAAACCCGGGGGGGGGAAAA
A
GAM17782 11242 TTTTTCCTTGAAATCATAAA T ATCATA- TT CC GACATAA
4 GGTTGGGCCTTTGACATAAA TTTTTCCT GAA AAGG GGG TTT
AATCCCTTCCCTTCCCAAAA AAAAAGGA CTT TTCC TCC AAA
TTCAGGAAAAA - AAAACCC CT CT -------
GAM17783 8017 TTTTTCTAGTTAAGTCCCAA A TCCCAA TCA A- A GGT
4 GGTGTCAACGACAATGAGGA TTTTTCT GTTAAG GGTG ACG CA TGAGGAG
GGGTTTCTTCAGTGCCCGTG GAGAAGA CAGTTC CTAC TGC GT ACTTCTT
GTCATCGACCCCTTGACAAG A CCCAG- TGG CC G ---
AAGAG
GAM17784 10114 TTTTTCTCATTTCTGTCGTG A C CGTG AAAC AAAT
0 CTTGGAAAACTAGTAAATAT TTTTTCTC TTT TGT CTTGGA TAGT
TATGTCTAAGAAAACAAAAA AAAAAGAG AAA ACA GAATCT ATTA
AGAGAAAAA A A AAA- GT-- ----
GAM17786 17142 TTTTTCTTGTTATCTATTTC ---- A A - CT A AAATCCCAAGACTTTAAA
3 AGCCTGAAAATGAAATCCCA TTTTTCT TGTT TCT TTTCA GC G AAATG
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CATGAGGAGGAAGCATCACA CACT - A A AG A ----------
GAAGAA
GAM17787 7483 TTTTTCTTTTCTTCTCTTCC - --- T ACTATT AGGTTTG
0 CATGCACTATTCTGGAGGTT TTTTTCTTTT CTTC TCTTCCCA GC CTGG
TGCCAGGTTTGGGGAGACAT AGAAAGAAAA GAGG AGAGGGGT TG GACC
GGAGTAAAAGAAAGA T TAC T ------ -------
GAM17787 7076 TTTTTGAAGGGTTTGAATAC A ----- A ATAACATAACACATAGA
8 ATATAACATAACACATAGAA TTTTTG AGGG TTTGA TACAT
TGTACTCGGGATTTTTCCTA AAAAAC TCCT GGGCT ATGTA
CAAAAA A TTTTA C ----------
GAM17790 12075 TTTTTGCTTTGGCAATTACA TT C AC- TA CT GAGC
8 TTTATGTTCTTGGGAGCCCA TTTTTGCT GG AATT ATT TGTT TGG
GACACTGATATAAATTTCCA AAAAACGA CC TTAA TAG ACAG ACC
GCAAAAA -- T ATA TC -- ----
GAM17792 11856 TTTTTGGCCTTTCTGTCCAT -------- G AT----- G AAATGTAT
0 GCCAGGGAAATGTATTGCTG TTTTTGGCC TTTCT TCC GCCAG G
GTGCTAGAGGGAGAGGAAAC AAGAACCGG AAGGA AGG TGGTC T
GTGGACGGCCAAGAA CAGGTGCA G GAGATCG G --------
GAM17792 11590 TTTTTGGGTTCCAAGGTTTA T--- AA TT TCAAAGG GGTATATA
7 AATCAAAGGCTGGTATATAA TTTTTGGG TCC GG TAAA CT
GATTATTTTATTCCGGGATT GGGAACTC AGG CC ATTT GA
TTCTCAAGGG TTTT G- TT TATTA-- --------
GAM17796 19612 TTTTTGTTTTTAAAATGTTT AAAA A AG AATATATG
7 TATTATAAAAGTAATATATG TTTTTGTTTTT TGTTTT TTATAAA T

ATCTTTATAGAAAAATAAAG AAAAATAAAAG ATAAAA GATATTT A
AAAATAAAAA AA-- A CT --------
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9 TGTAAGGACTGAAGTTGAAG TTTTTTAAAAAA AAA CAA GACT GTTG
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TTTGTTTATTTTTTAAAAAA A - TAA--- AATAATG ------
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1 TTCTGGGACAAATTTTTGGT TTTTTTAATGGG CAA C GG
CAAGTTGTTTCCATTAAAAA GAAAAATTACCT GTT G TT
G TT- GAACT GT -------
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7 TAATATCTTTATCACAGGAA TTT TTACT GTTA TTT CA AGGAAG
GGCTGGCAATATAAAACTTC GAA GGTGA CAAT AAA GT TCCTTC
CTATGTACGAAAACTCAAAA C AAC AA CTCAAAAGCAT A ----------
ATAACCAAAGTGGCAAG
GAM17799 11896 TTTTTTAGCAAGACAAGGTG C G GT - --- AG TGCA
0 TTTTTATTGAGGTCTCAGGA TTTTTTAG AA ACAAG GTTTTTA TTGAG GTCTC GAAT
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1 GAATAACATTTATTTTATTT TTTTTTA CTT TC GAGAA TA CA TA TTTTAT GGAA
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AGACTATCTGCTATTTCTCA --- TC A T C CT C TAAAT ----
GACTAAGTGAAAAA
GAM17799 7140 TTTTTTATGTTTCCTCATTT TGTT - ATA- ACAA
8 ATTATAAACACAAGTTCGCA TTTTTTA TCCTC ATTTATT AAC
GGTAAATAGAGGGTCTAAAA AAAAAAT GGGAG TAAATGG TTG
AA CT-- A ACGC ----
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6 TGATGTAAAAAAGACCGAAA TTTTTTC GGA GATTTTGAT GTA AAG CC AATTA
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AAGGACTTGGGAAATACTAT GATT TTAA T AAAGGG A AAG ----------
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AAAAA
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4 TATGAACCAAGTAGAACAAG TTTTTTGAA AG CTATTT CAAGTA
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TCAAAAAA A AAA ------- --------
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5 ATTTATTTATGCAAACACAT TTTTT AA GG ATTT TGCAA
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TTGAAAAA GT CTAAATCT T ----- -----
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7 TGAAGTTGATTTTATTACAA TTTTTTGA TAAA TGAAGTT
ATTTCAGATTTACACATTAG AAAAGATT ATTT ACTTTAA
AAAA ACAC- AG- ----------
GAM17804 13920 TTTTTTGGCAAAATAATTTT T AAT- ATTT AAAGAAATA
5 ATTTGTTCATACAAAGAAAT TTTTT GGCAA AATTTT GTTCATAC

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CACTTGCCTAGAAA T CACT CCAT ---------
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7 ATTTATTAAACTGTAGACAG TTTTTT TGTACT AGATG ATTTATT CTG
GAGATAAATACTTTATTTCA GGAAGA ACGTGA TTTAT TAAATAG GAC
AAAGTGCAAAGAAGG A AAAC TTCA AG- ----
GAM17807 19635 TTTTTTTAATTTAAAATTCT TTTAAAATTC C T- TTAT
2 TACTGTTTATTTATATATTG TTTTTTTAA TTA TGT TAT
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AAAA TGAAAAACTC - TT ----
GAM17807 11640 TTTTTTTAGGGAAAGGGCAA GAAAG AAA ATTA TACAT
6 ACCCTTTATTATGTACATTG TTTTTTTAGG GGC CCCTTT TG
GGGGAAAGGGAGGCCACCTG AAAAAGGTCC CCG GGGAAA GT
GAAAAA A---- GA- GGGG -----
GAM17807 17122 TTTTTTTATTTAGGTTTCTG T TTTCT- C -- CTT CCTTCAA
8 ACTCTGTGCTTGTGCCTTCA TTTTTTTATT AGG GA TC TGTG GTG
ACACTTTCACAACGATTTTC AAAGGAATAG TCC TT AG ACAC CAC
TGCTCCTCGATAAGGAAA C TCGTCT T CA TTT -------
GAM17808 19638 TTTTTTTCAGTGAACATGTT TT A ----- --- ACACCAAC
2 TTTATTGAACACCAACTTAA TTTTT CAGTG AC ATGTTTTT ATTGA
TTTCAGGAACATTTCAGGTA AAAGA GTTAC TG TACAAGGA TAATT
CATTGTCAGAAA CT A GACTT CTT --------
GAM17808 10599 TTTTTTTCCCAAGCTTCGGA AA C - CT TTC C TACT
8 GAGCTATCATTTCCAACTAG TTTTTTTCCC GCTT GGA GAG ATCAT CAA TAG
TACTTTAATTGCTGTGATTT AAAAGAAGGG TGGA CTT CTT TAGTG GTT ATT
CGTTCAGGTGGGGGAAGAAA GG - G -- TC- A ----
A
GAM17809 13169 TTTTTTTCTCAAGAGGAAGT CAAG AG A- AG- AA-- ACTT
6 TCAGAAGCAGAAGGAACTTT TTTTTTTCT AGGA TTC GA CAG GGA
CCAAAGCTGAAATCCAGAAA AGAAAAAGA TCTT AAG CT GTC CCT
GTTCTAAAAGAAAAAGA AAA- GA AC AAA GAAA ----
GAM17810 522 TTTTTTTCTTTTCTGACAAA TTTCT ------ T TTTGTT
2 GTGTATGTTTTGTTGCTTGC TTTTTTTCT GACAAA GTGTA GT
ATTCAGGTTTTGTTTACTGG AAAAAAAGG TTGTTT TACGT CG
AAAAAAA TCAT- TGGACT T ------
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9 TTTTTTAATTGAAATTTTGA TTTTTTTGG TT AGAAATTTTT AAT
AAATTTTTTGACTCTAAAAA GGAAAAATC AG TTTTTAAAAG TTA
GG TC T TT ----
GAM17811 1697 TTTTTTTGTAATATTTTGGG T A GG GCG AAG TG ATT
1 GGGGGCGTGAAGGGGGTTGA TTTTTTTG AAT TTTTGGG GG TG GGGGT A
ATTTTGGCCCCACAAATTTT AAAAAAAC TTA AAAACTC TT AC CCCCG T
CTCAAAAAATTTCAAAAAAA T A TT AA- A-- GT ---
GAM17812 21981 TTTTTTTTATGACTTTTAAT T A - - TTGGGAT
0 GCTTTATTGGGATTGCAAGC TTTT TTT TGACTTT TAATGCTT TA
GTTACAAGGTTAAAGACAAA AAAA AGA ATTGGAA ATTGCGAA GT
A C A C C -------
GAM17813 16160 TTTTTTTTCTCAGTTAACTT TTTC TA T TCT AATTCTG AAATTTTTG
1 TTTTAATGGGTCTCAAAATT TTTTT TCAGT ACTTTTT AATGGG CAA TGAC
CTGTGACAAATTTTTGGTCA AAAAA AGTCA TGAAAAA TTACCT GTT ACTG

AGTTGTTTCCATTAAAAAGT TTTT -- - TT- GA----- ---------
ACTGATTTTAAAAA
GAM17813 21786 TTTTTTTTCTTTTTTTTGAA C---- A A G G G- TGGAGT
5 ACAGGGTCTGGCTCTGTTGC TTTTTTTT TTTTTTTTGA AC GG TCT GCTCTGTTGCCCA GC

CCAGGCTGGAGTGCAGTGGG AAAAAAAA AAAAAAAACT TG CT AGA TGAGACAACGGGT CG

CAACAGAGTAAGAGTCCGTC CAACA C C G A GA ------
TCAAAAAAAAACAACAAAAA
AAA
GAM17813 1882 TTTTTTTTGAAGCCTGTGAA AGCCT AA ATACAAAA
7 ATTTTATTTATACAAAAGAA TTTTTTTTGA GTGA TTTTATTT
TAAAAAGTTATTTAAAAAGA AAGAAAAATT TATT AAAATAAG
A ----- GA --------
GAM17813 11337 TTTTTTTTGATACAGAGTCT T TAC A C A T AACCGTGG
9 CACTCTGTCACCTCAGGCTG TTTTT TTGA AGAGTCTC CTCTGTCAC TCAGGCTG GA TG

AGATTGAACCGTGGCACTCC AAAAA AACT TTTCAGAG GAGACAGTG GGTCCGAC CT AC

AGCCTGGTGTGACAGAGCGA T CTA C T - C --------
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GAM17814 15073 TTTTTTTTGTATGTGGATAA TT G GAT A- TCTTATC
2 TATTTATTTGTATCTTATCT TTT TTTGTAT TG AATATTT TTTGTA
ATAGAACAAATATTTACAGA AAG AAACATA AC TTATAAA AGATAT
TACAAACGGAA GC G AT- CA -------
GAM17814 15274 TTTTTTTTTAATTTTAAAAC TTTAAAAC T ATAA
7 ATTTTTATTATAAAATACAA TTTTTTTTTAAT ATTT TATT
ATAAAAACATTGAGAAAAGA AGAAAAGAGTTA TAAA ATAA
CAAAAA-- C ----
GAM17814 13681 TTTTTTTTTACTTGACATCA TC- TTATACT
8 GCAACTTCGTGTTTATACTG TTTTTTTTTACTTGACATCAGCAACT GTGT
CACCTTGGTTGTTGATGTCA AAAAAAAAATGAACTGTAGTTGTTGG CACG
AGTAAAAAAAAA TTC -------
GAM17815 11078 TTTTTTTTTGCCATTTGCTA CC- ---- T TTT TAGTA
4 TGTTTTATTTTGCTAGTAGC TTTTTTTTTG ATTTGC TATGTTT AT GC
TTATTAAACATAACATGCAA AAAGAGAAAC TAAACG ATACAAA TA CG
ATAATCAAAGAGAAA TAA TACA T TT- -----
GAM17815 15195 TTTTTTTTTTACAATCACAC ACAA CACA T ACTG
9 ACTGGTGTCTCCACTGGGAG TTTTTTTTTT TCA CTGG GTCTCC
GCCTAGATGAAACAAGAAGA AAAAGAAGAA AGT GATC CGGAGG
AAA CAA- A--- - ----
GAM17816 21948 TTTTTTTTTTCAATAAAGGA TTTCAATAA A---- AAGAAA
2 AAGCTTTAAGAAAAGGGCAC TTTTTTT AGGAA GCTTT
GTATTCCTGGAATAGGTAAG AAAAGAA TCCTT CGGGA
AAAA TGGATAAGG ATGCA ------
GAM17816 22661 TTTTTTTTTTGAAGCTTGAA ------- - --- T TTT
3 AATTTTATTTAATTGTATCT TTTTTTTTTTGAAGCT TGAAAAT TTTA TTTAAT GTATC
TTGATACATTGAAAGCTGAG GAAAGAAGGACTTTGG ATTTTTA GAGT AAGTTA CATAG
TATTTTTAAGACAAAGGTTT AAACAGA T CGA - ---
CAGGAAGAAAG

GAM17816 13461 TTTTTTTTTTGAAGCTTGAA ------- TTT-- AAT- TTT
4 AATTTTGTTTAATTGTATCT TTTTTTTTTTGAAGCT TGAAAAT GTTT TGTATC
TTGATACATTGAAAGCTGAG GAAAGAAGGACTTTGG ATTTTTA CGAA ACATAG
TATTTTTAAGACAAAGGTTT AAACAGA TGAGT AGTT ---
CAGGAAGAAAG
GAM17816 22965 TTTTTTTTTTGAGTACTGAA G C ACC TCCCA AC GAAA
5 ACCTTTATTCCCATTTTACT TTTTTTTTTTGA TA TGAA TTTAT TTTT TG
GGAAACAAAGAACATGAACA GAAAAAAAGACT AT ATTT AAGTA AGAA AC
ATTTACTAGTCAGAAAAAAA G C AAC CA--- -- ----
G
GAM17816 10368 TTTTTTTTTTGGACAGGCAA ACA AA T TTAATT GTCA A ACAG
6 AGGAATGCTTTAATTGAGGT TTTTTTTTTTGG GGC AGGAA GCT GAG CAGGC TC
CACAGGCATCACAGGGGTCT AAAAGAGGGACC CCG TCCTT CGA CTC GTCTG GG
GCTCAGCTTCCTCGCCACCA A-- C- - ------ ---- - ----
GGGAGAAAA
GAM17817 17330 TTTTTTTTTTGGTGATATTC GA - TCAA T T TTTATT TTTTCATT
0 CTTCAATTTTTTTGGTTGTT TTTTTTTTTTGGT TATT CCT TTTTT TGGT GTT TTTT
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AGTCCATTGATCATCACAAA AC A CCC- C C TTACCT --------
AACCCAGGAAATGCAACTAA
GGAGAAAA
GAM17817 7041 TTTTTTTTTTGGTTTTCTTA TG TT AAG ACATTTTCCA
1 CAAAGGTTGACATTTTCCAT TTTTTTTTT G TTCTTACA GTTG
AACAGGTGTAAGAGTGTTGA AAAAAAAAA T GAGAATGT CAAT
AAAAAAAA GT GT GGA ----------
GAM17817 22812 TTTTTTTTTTGTCTTTATTC G TA TT T ATTCA TTGTG TTCT
2 ATTTATTTATTTATTCATTC TTTTTTTTTT TCTT TTCATTTA TA TT TTCATT CCC
ATTTTGTGCCCTTCTGGGAA AAAAAAAAAA AGAA AGGTAAGT AT AG AAGTAA GGG
TGAACCAGGACTATTTGAAT G -- TT C GACC- ----- ----
GGAAAGAGAAAAAAAAAA
GAM17817 15675 TTTTTTTTTTTAGAAGACTT ---------- TATT
3 TGTTTATTAATAAAGTAATT TTTTTTTTTTTAGAAG ACTTTGTT
CATTATGACTTTTGAAAAAA GAAAAAAAAAGTTTTC TGAAATAA
AAAG AGTATTACTTAA ----
GAM17817 11951 TTTTTTTTTTTATGATAGCC T A TA CAA A TTATT
4 AAAAGCAATTTATTATAGTT TTTTT TTTTT TGA GC AAGC AT
TAGCCTCAAAAAAATAAAAA AAAAA AAAAA ACT CG TTTG TA
T A C- A-- A -----
GAM17817 13533 TTTTTTTTTTTCAGGTTTTC TTCTAA---- GA- -- TATTTAATT
5 TAATTTTATTTGAACACAAA TTTTTTTTTTTCAGGTT TTTTATTT ACA CAAAA
ATATTTAATTTTTTGCATGT AGGAGAGAAAAGTCCGA AGAATAAG TGT GTTTT
AGAGAATAAGAGGTAATCAT TTACTAATGG AGA AC ---------
TAGCCTGAAAAGAGAGGA
GAM17817 22927 TTTTTTTTTTTCTCAACAAG T CA- TG ACAGGTG
6 CTTTCACTGGACAGGTGCTG TTTTTT TTTTCTCAACAAGCTTT C G
GGTAAAAGCTTGTTGAGAAA AAAAAA AAAAGAGTTGTTCGAAA G C
ATAAAAAA T ATG GT -------
GAM17817 21878 TTTTTTTTTTTGAAGTTCAC T A - CCCCTCAAATA
7 CGGAACCCCTCAAATATTCC TTTTTTT TTTGAAGTTC CC GGAA
TGGGAACTTCAAACAAAAAA AAAAAAA AAACTTCAAG GG CCTT

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          A                  C       - T   ----------
GAM17817 10184  TTTTTTTTTTTGAAGTTTTT       TTT     TTGCTATAAA    - A   TAACCT
8          GCTATAAAACATTTAATGTT TTTTTTTT   GAAGTTT        ACATT TA TGT
          AACCTACAATACAATGTAAA AAAAAAAG   TTTCAAA        TGTAA AT ACA
          CTTTTATGAAAAAAA          TAT     ----------    C  A   ------
GAM17817 11744  TTTTTTTTTTTGAGCATGAA       T   ---------  A       ATCT
9          AATAAATCTTTATTTTCAGT TTTTTTTT TTG       AGC TGAAAATAA
          TATTACCCACCAATAAGAGA AAAGAGAA AAC       TTG ACTTTTATT
          AA                  T   CACCCATTA  -       ----
GAM17818 7552   TTTTTTTTTTTGAGGGTCGC          A--   CGC     ATTAAGAAAACA
0          AATTTTATTAAGAAAACAAA TTTTTTTTTTTG   GGGT   AATTTT
          AATTCAACCTATACAAAAAG AAAAGGAAAAAC   TCCA   TTAAAA
          GAAAA                   ATA    AC-     ------------
GAM17818 55     TTTTTTTTTTTGAGGTTTGC          ---     T C     ATTAAGAAAACA
1          AATTTTATTAAGAAAACAAA TTTTTTTTTTTG   AGGTT G AATTTT
          AATTCAACCTATACAAAAAG AAAAGGAAAAAC   TCCAA C TTAAAA
          GAAAA                   ATA    - -     ------------
GAM17818 2428   TTTTTTTTTTTGAGTTTTTC         G   TTT--    A-    ATTGAAGCAAAACC
2          CAAAGATTTATTGAAGCAAA TTTTTTTTTTT AGT     TCCAA  GATTT
          ACCAAGTTGGTTGGATACTT AAAAAAAAAAG TCG     AGGTT  TTGAA
          GCTGGAAAAAAAAAA             G   TTCAT     GG    ----------
GAM17818 21977  TTTTTTTTTTTGCAGGGAGA      TTT       GAATA    T    GAGAA  GCTCATTA
3          ATAATGTTTATTGAGAATGG TTTTTT   TTGCAGGGA     ATGT TATT     TG
          CTCATTACAAACAAAATATA AGAAAA   AACGTCTCT     TATA ATAA     AC
          TATAAAATCTCTGCAATGCA      CGT       AAAA-    T    AACAA  --------
          AAAGA
GAM17818 22024  TTTTTTTTTTTGGGCTTTCA     T       --- TT  AAATG   A   ATAATAAC
5          AAATGTGAACTTATAATAAC TTTTT TTTTTGGG   CT  CA     TGA CTT
          AGGTCAAAGTGTGGGGGTCC AAAAG AAGGACCC   GG  GT     ACT GGA
          CCCAGGAACGAAAA          C       CCT  GG  GTGAA   -  --------
GAM17818 22624  TTTTTTTTTTTGTACAGAGC     T TT    CA   CCT    -   T    TAAGTTTAAAAAAT
6          CTGTATTTAGTGCAATAAGT TTTTT TT  TGTA  GAG   GTATT TAG GCAA
          TTAAAAAATTTGCTCTGAAA AAAAA AA  ACAT  TTC   TATAA GTC CGTT
          TATTTACTTTACATTAACAA     C  TT    --   ATT     A   T    ----------
          AAA
GAM17818 4863   TTTTTTTTTTTTACACCTAC           CAC  A-     TCAATT   TCATGTTT
7          CAATTCAATTCAGTCATGTT TTTTTTTTTTTTA   CT  CCAAT      CAG
          TCTGCTTTATTGGGCAGATA AAAGAAGAGAAAT   GA  GGTTA      GTC
          AAGAGAAGAAA                 A--  CG     TTTC--   --------
GAM17818 1805   TTTTTTTTTTTTACTACACT         TT    ----     AA---   AAT-   GTGTGAAA
8          GGAATGTAATTAAGTGTGAA TTTTTTTTTT  ACTA    CACTGG     TGT    TAA
          ATTATAGGGCAGATTATCAG AAGAAAGAGA  TGAT    GTGACT     ACG    ATT
          TGCTAATAGTTTAGAGAAAG         TT    AATC     ATTAG   GGAT   --------
          AA
GAM17819 21954  TTTTTTTTTTTTTAACCAAG       TTTTTTAA     CT--    -    T   TTAAC
4          TCTTACAGGGATTATTTAAC TTTTTTT       CCAAGT    TACA GGGA TAT
          GTGTTCCCATGTATCTCACT AAAAAAA       GGTTCA    ATGT CCCT GTG
          TGGGGCTGTATAAAAAAA         TATGTCGG     CTCT    A    T   -----
GAM17819 11989  TTTTTTTTTTTTTCGGACCA           GG   --    CTTTTTATTGTTT     TTTAT
6          GACTCTTTTTATTGTTTTGT TTTTTTTTTTTTTC  ACC  AGACT          TGTTT
```

TTTTTATAAACAAGTCTCAG AAGAAAGAAAAAGG TGG TCTGA ACAAA
GTGGAAAAAGAAAGAA -- AC ---------- -----
GAM17819 7536 TTTTTTTTTTTTTCTGTTCA CT- CA TTT ATCTAA
7 GATTTTATTTGAAATCTAAT TTTTTTTTTTTTT GTT GAT ATTTGAA
TCAAATTGTCAAAGCTACAA GAAGGGGGGAAAA CGA CTG TAAACTT
AAGGGGGGAAG CAT AA T-- ------
GAM17820 16330 TTTTTTTTTTTTTGTACTAG ---- C-- AAA TAGA
1 ATGCTATTTATTAAACTGTA TTTTTTTTTTTTTGTACT AGATG TATTTATT CTG
GACAGGAGATAAATACTTTA AGAAGGGAAGAAACGTGA TTTAT ATAAATAG GAC
TTTCAAAAGTGCAAAGAAGG AAAC TTC AG- ----
GAAGA
GAM17820 13479 TTTTTTTTTTTTTGTTTCTA TTTCTAAAAGA A - CTTAA
2 AAAGATGTTTATTTTCCTTA TTTTTTTTTTTTTG TGTTT TT TTC
AGAGTAAAAAACAGTCATTG AAAAAAAAAAAGAC ACAAA AA GAG
CATTCAGAAAAAAAAAAA TTACGTTACTG A T -----
GAM17820 7313 TTTTTTTTTTTTTTAAACAT ------ TG A GTAGGGCA
3 AGAGCTGCGAGAGAGTAGGG TTTTTTTTTTTTTTAAACATAGAG C CGAG GA
CATCCCTTGTGGTGGTACCT AAAGAAGAAAGAAATTTGTATCTC G GTTC CT
CTATGTTTAAAGAAAGAAGA CATGGT GT C --------
AA
GAM17820 17599 TTTTTTTTTTTTTTCACACT TTTTTTT C T TT CTCCAA
6 CAGAATTTAATTTCTCCAAA TTTTTT TCA AC CAGAA TAATTT
AGTTGTTTCTGTGTTTGATT AAAAGA AGT TG GTCTT GTTGAA
CATGTAGAAAA TGTACTT T T T- ------
GAM17820 22969 TTTTTTTTTTTTTTCACTTT CTTT AAAC TTTAT
7 TATAAACTGCATTTATTGTA TTTTTTTTTTTTTTCA TAT TGCA
CAGAGTACTCTGAAAAAAGA AAAAAAAGAAAAAAGT ATG ATGT
AAAAAA CTC- AGAC -----
GAM17820 11878 TTTTTTTTTTTTTTGCAGTT TTTTTTTT AGT CTTTA
8 ATTTTTAAAACTTTATTTTA TTTTT TGC TATTTTTAAAA
AAAATATGAGCATCTATTTT GAAAA ACG ATAAAAATTTT
AAAAG TTTTATCT AGT -----
GAM17821 6950 TTTTTTTTTTTTTTTGCCTT TT CT GGA CCCA -- AAAAGAAA
1 TTGGGATGGCCCCATCTGTT TTTTTTTTTTT TTGC TTTG TGGC TCTGTTT ATTTT
TATTTTAAAAGAAAAAAATT AAAAAAAAGAA AACG AAAC ACCG AGATAAA TAAAA
AAAATAGAGCCAACAAATGC TT T- A-- ---- AT --------
AATTAAGAAAAAAAA
GAM17821 17006 TTTTTTTTTTTTTTTTAATA T TT-- A C CAGCTCCCTCTCACCCCA
4 AGAATTACAAAGACAATGAC TTTTT TTTT TTTTAATAAGAATTACAAAGACAATG CAT CT
ATCCTCAGCTCCCTCTCACC AAAAA GAAA AAAATTATTCTTAATGTTTCTGTTAC GTA GA

CCAAGTATGCCATTGTCTTT C TCAT C T ----------
GTAATTCTTATTAAAATACT
AAAGCAAAAA

GAM17821 10097 TTTTTTTTTTTTTTTTCAGC TTTTTTCAGC ACATTTA
5 ATCATGAACATTTATTATGA TTTTTTTTTT ATCATGA
TTATTTTATTTAAAAAAAAA GAAAAAAAAA TAGTATT
G TTTATTTTAT -------

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GAM17821 2065   TTTTTTTTTTTTTTTTGAAA     T    T    AAA -    TTTTAT
6           GTTGAATATTTTATTATTTA TTTTT TTTTT TTTTG   GT TGAATA
            CACATATAAAGTGAGAATGA AAAAG AAGAG GAAAT   CA ATTTAT
            AAA               T    T    ATA  C     ------
GAM17821 17239  TTTTTTTTTTTTTTTTTAAA     TTT       AA    CAT    AT    TT   TCTGGGCT
7           AAGGACATATTAAATGTATT TTTTT   TTTTTTTTTA  AAGGA   ATTAA  GTAT  AAA
            TAAATCTGGGCTTTTCTGTA AAAAA   GAAAAAAAAT  TTCTT   TAATT  CATG  TTT
            CTTAATTTTTCTTCTAAAAA     TTT       C-    TT-    --    TC  --------
            AAAGTTTAAAAA
GAM17821 7003   TTTTTTTTTTTTTTTTTATT    T    T          CATACTTTAATTTCAGAA
8           TTGCATACTTTAATTTCAGA TTT TTTT TTTTTTTTATTTTG
            ACAAAATGAAGAAAATAAAA AAA AAAA AAAAGAAGTAAAAC
            TAAA              T    T          ------------------
GAM17821 4609   TTTTTTTTTTTTTTTTTCCC        TT      - GATCTC     GGGAAGGAA
9           TGATCTCTGCATTGGGAAGG TTTTTTTTT  TTTTTTCC CT     TGCATT
            AAAATGCAAAAGTGGAAAGA GAAGAGAGG  GAGAAAGG GA     ACGTAA
            GTTGGAGAGAAG              TT       T  AA----     ---------
GAM17822 2061   TTTTTTTTTTTTTTTTTGAA     T    T     AAA -   TAATCTTTTATTTCAT
0           AAGGGATAATCTTTTATTTC TTTTT TTTT TTTTTTG   AG GGA
            ATTCCACTGGGCAAAAAACA AAAAA AAAA AAAAAAC   TC CCT
            AAACAAAAA             C    C      GGG  A  ----------------
GAM17822 2299   TTTTTTTTTTTTTTTTTTGT          TTTTTT   TTTT   GC    AA       TTTTC
2           TTTTTAAAGCCCCCAACCCC TTTTTTTTTTTT     GTT    AAA  CCCC  CCCCCCTTT
            CCTTTTTTTCAAAGGGGGGG AAAAAAAAAAAA     TAA    TTT  GGGG  GGGGGGAAA
            GGGAATTTTGTTAATTTTTA          TATTTT   TTGT   AA   --       -----
            TAAAAAAAAAAAA
GAM17822 22133  TTTTTTTTTTTTTTTTTTTC             TTC    G    CTTTTTTAATTTTTTT
4           CCGGGCCCACTTTTTTAATT TTTTTTTTTTTTTTTT   CCGG CCCA
            TTTTTTGGGTTGGTTTAAAA AAAAAAAAAAAAAAAAA   GGTT GGGT
            AAAAAAAAAAAAA                  TTT    -    ----------------
GAM17822 487    TTTTTTTTTTTTTTTTTTT          TT        ACACCAAAAA   TCTTTTAT
7           TTGGACACCAAAAACCATCT TTTTTTTTTTTT  TTTTTTTTGG        CCA
            TTTATTGGAAAATTAGTTAA AAAAAAAAAAGG  AAAGGGAATT        GGT
            GGGAAACGGGAAAAAAAAAA          GC        GATTAAAA--  --------
GAM17822 7661   TTTTTTTTTTTTTTTTTTTT       TTTTT   TTT   TT     TTTTTCT
8           TTTTTTTCCTTTTTCTGGAG TTTTTTT    TTT   TTT  TTTTCC
            AACGGGATATAAATACTCAG AAAGAGA    AAA   AGG  AAGAGG
            AGAAA                CTCAT   TAT   GC     -------
GAM17822 1386   TTTTTTTTTTTTTTTTTTTT                  T    GAGCA
9           TTTTTTTTAGAGCATGAGTA TTTTTTTTTTTTTTTTTTTTTTTT TTTA
            AAGAGAAAGAGAGAAGGAAG GAAGAAGGAAGAGAGAAAGAGAAA GAGT
            AAG                              T    -----
GAM17823 17815  TTTTTTTTTTTTTTTTTTTT    T         TT          AA       GGA--      GGTGTA
0           TTTTTTTTTAAAGCCCCCTT TTTT TTTTTTTTTTT  TTTTTTTTTTTA  GCCCCCTT    TTTTTTG
            GGATTTTTTGGGTGTACAAA AAAA AAAGAGGGGGG  AAGAAAAAAAAT  TGGGGGAA    GAAAAAC

            AAGGGAAAAAGGGGGTATAA    T         GT          A-       AAAGG      ------
            AAAAAAGAATGGGGGGGAGA
            AATAAAA
GAM17823 10454  TTTTTTTTTTTTTTTTTTTT       TTTTT-   T     T         --    GCTTTG
```

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1          TTTTTTTTTTCAGGTGGTTG TTTTTTT     TTT TTTTTT TTTTTTTCAGGT  GGTT
           CTTTGAACTTTATTTGAGAA AAGAAAA     AAA AGAAGA AAAAAGAGTTTA  TCAA
           AAACAGAAGATAAATGTATC       CTATGT  T     C          TT   ------
           AAAAGAA
GAM17823 11255  TTTTTTTTTTTTTTTTTTT            T    TT       ----------       TTTT
2          TTTTTTTTTGCGTGGTTGG TTTTTTTTTTTTTTT TTTTT  TTTTTTTGC        GTGGTTGGT
           TTTTTATTAATTATCTGGAT AGAGAGAGAGAGAAA AAAAG  AAAAAAACG        TATTAATTA
           AACAGCAAAAAAACTGAAAA            T    TC       ACAATAGGTC       ----
           TAAAGAGAGAGAGAGA
GAM17823 10105  TTTTTTTTTTTTTTTTTTTT      TTTTTT  T     T      TG CAG     GCTTTG
3          TTTTTTTTTTTTGACAGGGG TTTTTTT     TTT TTTTTT TTTTTTT  A   GGGGTT
           GTTGCTTTGAACTTTATTTG AAAAAAA     AAA AAAAAA AAAAAAA  T   TTTCAA
           AAAAAAACAAAAAATAAATG       CTTTGT  T     C      GT TA-     ------
           TTTCAAAAAAA
GAM17823 10978  TTTTTTTTTTTTTTTTTTTT           TTTT     TTT  T   T    TT  TT     TTTG
5          TTTTTTTTTTTTTTTTTTTT TTTTTTTTTTTTTTT    TTTTTT   TT TTT TTTT  TT  TTTCCC
           TTTTTTTTCCCTTTGGGGGA AAAAAAAAAAAAAAA    AAAAAA   AA GGA AAAA  AA  AAGGGG
           ATTAATTAAAACAGGCAATT            CCCC     TTT  C   C    TT  TT     ----
           TAAAAAACCCCAAAAAAAAA
           AAAAAA
GAM17823 15409  TTTTTTTTTTTTTTTTTTTT             TTTT  TT       TT TT          TT    GGAAA
6          TTTTTTTTTTTTTTTTTTTT TTTTTTTTTTTTTTTTTTT   TT  TTTTTTTTT  T  TTTTTTTTTTTTT  GGCC
           TTTTTTTTTTTTTTTTGGCC AAAAAAAAAAAAAAAGGAA   AG  AAAAAAAAA  G  GAAAAAAAAAAAA
TCGG

           GGAAAAAAAAGGCTTTAAAA              TTCC  GT       CC GC          TT   -----
           AAAAAAAAGCGGCCAAAAAA AAAAA
           AAATGGACCTTAAGGAAAAA
           AAAAAAAAAA
                      -----
GAM17824 16409  GCGGCTGGGGTGGCAGGGCC      GG    C----     ---     T      GATTTCAG
7          GGTGTTTCTGTGCTGATTTC GCGGCT  GGTGG    AGGGCC   GGTGTT CTGTGCT
           AGGGTACAGGACACTGTTGG TGTCGG  CCACC    TTTCGG   TCACAG GACATGG
           CTTTAGAGACCACCAGGCTG      A-    AGAGA     TTG     -      --------
           T
GAM17836 14672  TGGAATTTTCTGAGAGATCT    AATTTT    GA     -     TTATTC
9          TTATTCTTTATTCAGGATGT TGG     CTGA  GATCTT TATTCT
           GGGATCGATCAGCACTGCCA ACC     GACT  CTAGGG GTAGGA
                      GTCAC-    AG     T     ------
GAM17837 16957  GCTCACTAGTCACAGGTCTT     - AGTCAC    CTTT    -   C   ATGTC
0          TTAGGTCCTTCTGGATGTCC GCTCA CT     AGGT    TAGGT CCTT TGG
           CACAGGGTATCTGCACTTTT CGAGT GA     TTCA    GTCTA GGGA ACC
           CTTGAGCTGAGC           C  GTTCTT    C---     T    C   -----
GAM17837 19248  AAAAGAAAACCAAAGTGGTC      AAACCAA     CC    AA    CT----    CCTTCT
2          CACAAAACATTCTCCTTTCC AAAAGA      AGTGGT  ACAA  CATT     CCTTT
           TTCTGAAGGTTTTACGATGC TTTTCT      TTACTA  TGTT  GTAG     GGAAG
           ATTGTTATCATTAACCAGTC      GACCAA-     T-    AC    CATTTT    ------
           TTTT
GAM17837 6005   ACTCTTGGTTCTCTATTCAA     -----     TCTCTAT   A-      -----     CTTT
9          AGTGTTTGGAATCTTTATTC ACTC     TTGGT      TCA  AGTGTTT    GGAAT
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TGTTTAAAACACTGATGACA TGAG AACCG AGT TCACAAA TCTTA
TTTGCCAATTTTTGAGT TTTTT TTTAC-- AG ATTTG ----
GAM17841 254 TCAGAGTCTCCTAAAGAGCC T CTAAAG GAA C AAGCT
9 CGAACAGCTGAGGAAGCTCT TCAGAG CTC AGCCC CAG TGAGG
TCATTGGAGGGTTGAGCTTT AGTTTC GAG TTGGG GTT ACTTC
GA - ------ AG- - -----
GAM17843 2563 GGCGATCGGCATCGACCTGG C CA G ---------- A TCCTGC
2 GCACCACCTACTCCTGCGTG GGCGAT GG TC ACCT GGGCACC CCTAC
GGGGTGTTCCAACACGGCAA CCGCTA CT AG TGGA CTTGTGG GGGTG
GGTGGAGATCATCGCC - AG G ACGGCACAAC - ------
GAM17851 2646 AAGCCTGACAAGTTGATGCC AC TTG- --- -- T A- CCTCC
3 ACTGCTGTCTGAGGGCTCCT AAGCCTG AAG ATGC CACT GCTG CTG GGGCT
CCGGCTCAACAGTCAGCTCA TTCGGGC TTC TGTG GTGA CGAC GAC CTCGG
GTGCTTGTGTAATTCTTCCG C- TTAA TTC CT T AA -----
GGCTT
GAM17852 16207 TCCCACTGAACTTTTTCTCC - - C ------- - C ACTA
1 AATTCGCGTACTAGCCGGAC TCC CA CTGAA TTTTTC TCCAA TTCG GT
TTGGATTTTCTGGAAAGATT AGG GT GACTT AGAAAG AGGTT AGGC CG
TCAGTTGAGGA A T T GTCTTTT C - ----
GAM17855 1137 CGGACCGCTGGATCGTGCCG G GT G GG------ ATGGA
1 GGCGGGGGCATGGAGCCCGA CGGACCGCTG ATC GCC GGC GGGC
GGAGGAGCCGGGCGGTGCGG GCCTGGCGGC TGG CGG CCG CCCG
CGGTCCG G -- G AGGAGGAG -----
GAM17856 10764 GGCCTTGCTGGTGGCTTTGG GC - G TG CCCT TTCCCTGTGT
2 GGGCCCTGGCTTCCCTGTGT GGCCTT TGG TG CTT GGGG GGC
GCCCCCCTGGAGGCATCCAA CTGGAG ACC AC GAG CCCC CCG
GAGGTC A- T G GT ---- ----------
GAM17856 10764 GGCCTTGCTGGTGGCTTTGG GC - G TG CCCT TTCCCTGTGT
3 GGGCCCTGGCTTCCCTGTGT GGCCTT TGG TG CTT GGGG GGC
GCCCCCCTGGAGGCATCCAA CTGGAG ACC AC GAG CCCC CCG
GAGGTC A- T G GT ---- ----------
GAM17857 1028 AATGGTCGTGCCAAAAAGGG G - AAAAA - ---- - C--- CTATTC
3 CCGCGGCCACGTGCAGCCTA AATGGTC TG CC GGGC CGC GGC CA GTGCAGC
TTCGCTGCACTAACTGTGCC TTACCGG AC GG CCCG GCG CCG GT CACGTCG
CGATGCGTGCCCAAGGACAA A A AA--- T TAGC T CAAT ------
GGCCATT
GAM17859 9710 CGAATCTGGAGAGCTTTGGA TC - CT ATCC TGTCT
8 TCCTGGGTGATGTCTTCATC CGAA TGG AGAG TTGG TGGGTGA
CGCCAGTACTTTACCGTCTT GCTT GCC TTTC GACC GCCTACT
CG CT A AT ---- -----
GAM17859 2760 ACAGGGCAAACAACCAGGTC AACAA GG CCCCC T CCTAAGTCT
9 GGCCTGGCCCCCGTGGCTTA ACAGGGCA CCAGGTC CCTGG GTGGCT AAG
AGCCTAAGTCTCTTCAGCCA TGTCCTGT GGTCTAG GGACC CACCGA TTC
CCTCCCAGGAAGATCTGGCC CTCC- AA CTC-- C ---------
TCTGTCCTGT
GAM17860 7759 GGCGTTCAGCAGAGTCAGGG ---- - - C GATG C TATATGATCC
1 ATGGGTCCATTATATGATCC GGCGTT CAGCA GA GT AGG GGT CAT
ATGAACCAGAACCTCACATC CCGCGG GTCGT CT CA TCC CCA GTA
TTGCTGTTCCGGCGCC CCTT T A C AAGA A ----------
GAM17867 7497 GGCTTAGCTGTGAGAAGTGG T T TG TTCTCTTCCTCT TTCTG

```
2          TTCTCTTCCTCTGGTCCCTT GGC TAGC G  AGAAGTGG        GGTCCC
           CTGGGGACTCTGTTTCCCCA CTG GTCG C  TCTTTACC        TCAGGG
           TTTCTTGCTGCTGTGTC     T   T GT     CCTTTGTC----    -----
GAM17870 14028  AGTACCACCTGCCCAGAGCA    C--    -----  GAG     ---  -  CTGACT
7          AATCTGATGGACTGACTTCC AGTAC   ACCTGC    CCA  CAAATCT   GAT GGA
           GATCAATAGGTTTGATGGCC TCATG   TGGACG    GGT  GTTTGGA   CTA CCT
           TTAGCAGGTTCTGTACT       TCT    ATTCC  A--     TAA  G  ------
GAM17872 6532   CCTCTCCTCCTCTTCCCTCC    T  -  CT- C     T-  AAAGG
7          CCATCTAAAGGGGTTTGGGG CCTC CCT CCT   TC CTCCCCA  CT
           AGAGACACAGGCAGGCGAGG GGAG GGA GGA   AG GAGGGGT  GG
                          C   C   CAC  A     TT  -----
GAM17873 6661   AGTCCCTGCTGTGTACTAGA    CCTG  T   -  AAC-   G--  GTGAGA
9          ACGACTGAGCGTGAGAGTTG AGTC    CTG GTAC TAG    GACT   AGC
           AGAGTCCCTGCTGTGTACTA TCAG    GAT CATG GTC    CTGA   TTG
           GAACGACT             CAA-  -   T  GTCC    GAG  ------
GAM17874 6661   AGTCCCTGCTGTGTACTAGA    CCTG  T   -  AAC-   G--  GTGAGA
0          ACGACTGAGCGTGAGAGTTG AGTC    CTG GTAC TAG    GACT   AGC
           AGAGTCCCTGCTGTGTACTA TCAG    GAT CATG GTC    CTGA   TTG
           GAACGACT             CAA-  -   T  GTCC    GAG  ------
GAM17875 2190   CCTGTGGCATTTTCCTTATT       TTTTC    --  AA   AACATA
9          GAATATTAACATAAGTACAC CCTGTGGCA    CTTAT  TG  TATT
           ACTGTGAGACTCTGCTACAG GGACATCGT    GAGTG  AC  ATGA
           G                    CTCA-    TC  AC   ------
GAM17880 3907   CTGATGGCTGAAGCTCCTAA   AT    A   C  AATA    ---    GAATGA
7          TATGGCAGTTGTGAATGAAC CTG  GGCTG AGCT CT   TGGCA   GTTGT
           AGCAAATGCCAGAAGAAGTT GAC  CCGAC TTGA GA   ACCGT   CGACA
           CCAGCCCCAG           C-    C   A  AG--    AAA    ------
GAM17889 1581   AAAGTGGAGGCTGAGGATGT    -    CT------   A  -  G   TTATT
6          TGGGGTTTATTACTGCATGC AAAGT GGAGG       GAGG TGT TG GGT
           AATCTCTCCAAACCCCTCCG TTTCA CCTCC       CTCT ACG AC TCA
           ACTTT                G    CCAAACCT   A  T  G  -----
GAM17891 18790  AAAGTTATGATTAATAATAT     TAT   AATAATATATAT       A     TTTAA
4          ATATAAAATGTCTGACAGTG AAAGT   GATT         AAAATGTCTG CAGTGTG
           TGTTTAACATATTGTAGATA TTTCA   CTAA         TTTTATAGAT GTTATAC
           TTTTTAAATCTTTACTTT      TTT   AT----------       -     -----
GAM17893 18199  AAAGTTGTTCAGAAACTGAT    T     AAACT    CA  ACTCCCAACTC
5          TCCACAACTCCCAACTCTGG AAAG TGTTCAG    GATTC  CA
           AGAATTTGCTGAACATCTTT TTTC ACAAGTC    TTAAG  GT
                          T     GT---    AG  -----------
GAM17894 18287  AAAGTTTTTTTGGGGGTAAA      TT     TAAA    AA-- A   AGG--  ATTTC
7          AAAGGCAACCACCTTAGGCA AAAGTTT  TTGGGGG   AAAGGC   CC CCTT   CAA
           AATTTCTTGAAAAAAAGGGG TTTTAAA  GACCCCC   TTTCTG   GG GGAA   GTT
           CAAAGTCTTTAACCCCCCAG      TT     CAA-    AAAC  -  AAAAA  -----
           TTAAATTTT
GAM17895 14548  AAATAAAGCAGAATCCCATT       ---   -  A  C   CTAT   GTAT
8          TCAAAACTATTATATGTATA AAATAAAGC   AGAAT CCC TTT AAAA   TATAT
           TATATTTTTAAGGGGCATTT TTTATTTTG   TTTTA GGG GAA TTTT   ATATA
           TCAAGTTTTATTT            AAC   C  -  T   ----   ----
GAM17896 4469   AAATAAATGATATGAATCAT      G    AATCAT       AAAT
4          TTAACTATACAAATGTATAG AAATAAAT ATATG     TTAACTATAC
```

TTAATGCTAACATGTATTTA TTTATTTA TGTAC AATTGATATG
TTT - AATCGT ----
GAM17907 2795 AAATATCAAAGACTAATACT T CT C- A ATTCTAC
3 GGAATATGTATTCTACACAT AAA ATCAAAGA AATA TGG ATATGT
ATATCATTTATTTCTTTGAT TTT TAGTTTCT TTAT ACT TATACA
CTTT C -- TT A -------
GAM17909 5999 AAATATGCGCGAGAACCGCC CGC- AA CC ACAAAAAC
1 GCGGTGTGACAAAAACCGCG AAATATG GAG CCG GCGGTGTG
CCGCCGGGGCTCTTATTATA TTTATAT CTC GGC CGCCGCGC
TTT TATT GG -- --------
GAM17911 16766 AAATATTTGAATTTTATTTT TGAAT- TA AC--- - T AACACTCAGATAATCTATA
4 CTTTTGACATACAACTGTGG AAATATT TT TTTTCTTTTG ATAC AAC GTGG
AACACTCAGATAATCTATAC TTTATGA GG AAAAGAGAAC TATG TTG TACC
CATGTTAGTATTCCTACAAG CAAAAT GC ATCCT A - ----------
AGAAAACGGGTAAAACAGTA
TTT
GAM17913 20340 AAATCAAGTGACATATTTTC A T TTT-- A G CCTAACT
1 CTTTAATTGCTCCTAACTAG AAATCA G GACATA TCCTTT ATT CT
AATAAGAGGATGATTTGTGT TTTAGT C CTGTGT AGGAGA TAA GA
CCTGATTT - - TTAGT A - -------
GAM17914 5580 AAATCATTCCTGTAGAGAAA CCT --- GTGAAA AAAT
8 TTAGTGAAAGGAAAATTCCA AAATCATT GTAGA GAAATTA GGA
AGATAATTTTGAGTTTATTC TTTGGTGA TATTT TTTTAAT CCT
AGTGGTTT CT- GAG AGAA-- ----
GAM17917 4068 AAATCTGATATTTAAAACAT C AAAACA- -- AA- TCATTT
5 TTATGTGGTAAAATAATCTC AAAT TGATATTT TTTAT GTGGTA ATAATC
ATTTGATTATGGATATCATA TTTA ATTATAGA AGATA TACTAT TATTAG
AATAGAATATAAAAGATATT C AAATATA AA AGG ------
ACATTT
GAM17923 19248 AAAAGAAAACCAAAGTGGTC AAACCAA CC AA CT---- CCTTCT
5 CACAAAACATTCTCCTTTCC AAAAGA AGTGGT ACAA CATT CCTTT
TTCTGAAGGTTTTACGATGC TTTTCT TTACTA TGTT GTAG GGAAG
ATTGTTATCATTAACCAGTC GACCAA- T- AC CATTTT ------
TTTT
GAM17927 3545 GGCTGTGAAGTGTTCGTGGC G AA C AGAC - AAG- TGAGG
5 AGTAGACTCTGAAGCTAAGG GGCT TG GTGTT GTGGCAGT TCT GAAGCT GAGC
AGCTGAGGGCTTAACAAGTT CTGA AC TACAA TACCGTCG AGA CTTTGA TTCG
TCTAGAAGCTGCCATCAACA - CG C A--- T ACAA -----
TGCCAAGTC
GAM17927 673 CTGAACCCAGGAGTTTAGGG A- AGTTTA GT T A TGATC
9 TTGCTGTGAGCATTGATCAT CTG ACCCAGG GG TGC GTG GCAT
GCCACTGCACTCCAGCCTGG GAC TGGGTCC CC ACG CAC CGTA
GTGACAG AG GA---- TC T - -----
GAM17928 254 TCAGAGTCTCCTAAAGAGCC T CTAAAG GAA C AAGCT
1 CGAACAGCTGAGGAAGCTCT TCAGAG CTC AGCCC CAG TGAGG
TCATTGGAGGGTTGAGCTTT AGTTTC GAG TTGGG GTT ACTTC
GA - ------ AG- - -----
GAM17930 6484 AAATGCAGTGTAGGGAGAGG TG GAGAT CAC C A A CATT
3 AGATGGCAGGACACAGCAAA AAATGCAG TAGGGAGAG GGCAGGA AG AA CAGG CA
CAGGACACATTTGCCTGCTT TTTATGTC GTCCTTCTT CCGTTCT TC TT GTCC GT

CTCTCTTGCCTAATTCTTCC CA AAT-- C-- - C - ----
TGACCTGTATTT
GAM17930 12375 AAATGCGGCCGCAATTCGAG - C-------- T G T--- CAATTC
9 CTCACTTGGCCAATTCGCCC AAATG CGGCCG AAT CGA CTCACT GGC
TATAGTGAGTCGTATTACAA TTTGC GCCGGT TTA GCT GAGTGA CCG
TTCACTGGCCGTCGTTT T CACTTAACA T - TATC ------
GAM17932 18753 AAATGGAAGGATTCAGCTTT A C C - AA- TG AAAGAGAAA
5 CAGTTAAAAAAGAAGAAGAA AAATGGA GGATTCAG TTT AGTTAAAAAAGAA GAAG GAAA GC

GAAATGGCAAAGAGAAAGTT TTTATTT CTTGAGTT AAA TTAATTTTTTCTT CTTT CTTT TG
TTTTCAAATTTCTTTCTTTT A - T T AAA TT ---------
TTAATTTAAATTGAGTTCAT
TTATTT
GAM17935 9899 AAATGTAAGACGTTAAAGTG A AAA- - -- AGGAGG
2 TTGCTTACAGGAGGGTAAAT AAATGTAAG CGTT GTGTT GC TTAC
GCAAACATCACCAATGCCTT TTTACATTC GTAA TACAA CG AATG
ACATTT C CCAC A TA ------
GAM17942 5604 AAATTATGAAGGAAAAACAC T- AAAC TG TAT-- C ACTAGATTATG
6 TTGTCAAAATATAGCAGAGG AAATTA GAAGGAA ACT TCAAAA AG AGAGGTG
TGACTAGATTATGCATCTCT TTTAAT TTTCCTT TGG AGTTTT TC TCTCTAC
CCTTTGATTTTTGATGGGTT TT ---- GT TAGTT C ----------
TCCTTTTTTAATTT
GAM17945 973 AAATTCTGCATCCACATTGT - TCCACAT CAT A- ATACAGGG
3 CATGTCCTTCAAAAGGATAC AAATTCT GCA TGT GTCCTTCAA AGG
AGGGCTTGATTGGAGGACTC TTTAAGA TGT ATA CAGGAGGTT TTC
TATATCTGTAAGAATTT A CT----- TCT AG --------
GAM17949 5593 AAATTTAGTTAGGACATAGA GTT TA--- AATAATG TG ATAAATTC
1 AAGAATAATGTTGAGATAAA AAATTTA AGGACA GAAAG T AG
TTCCTTGAAGCCTTTTGCAA TTTGAAT TCCTGT TTTTC A TC
CTGTCCTTAAGTTT --- CAACG CGA---- GT --------
GAM17952 12720 AAATTTTTGGGGGAGCGGGG G C GG --- GAAACT GCAC
3 GAAGGAGTTAATGAAACTGT AAATTTTTGG GGAG GGG AAGGAG TTAAT GTATT
ATTGCACAATGCTCTGATTA TTTAAAAACC TTTT CCC TTCCTC AATTA CGTAA
AACCCTCCTTTTCCCCTTTT G C TT CCA GTCT-- ----
GCCAAAAATTT
GAM17953 8997 AACAAAAAGTACTAAATGAA - - AATCC TTTCCAT
2 TCCCTATATTTCCATTATAG AACA AAAAGTAC TAAATG CTATA
TATTTATGTATTTTTATGTT TTGT TTTTTATG ATTTAT GATAT
A T ----- -------
GAM17957 21482 AACAACTATGGCCGGAACCT A- AT-- CC-- C CT CTCTCCCT
0 CCTCAGCTCTCCCTCTGCAG AACA CT GG GGAAC TC CAG
AGTTCCCTACCCTAAGAGAA TTGT GA CC CCTTG AG GTC
TGTT AA GAAT CATC - AC --------
GAM17957 20072 AACAACTCTCAATGCTTAAC AC C A TTTC-- TG G AA GAAA
1 CATTTTCAGTTGCCAGGAAA AACA TCT AATGCTTA CCAT AGT CCA GA GAGGTA
GAGGTAGAAATATCTTGTCA TTGT AGG TTACGGGT GGTA TCA GGT CT TTCTAT
TGGACACTCGTTCTATGGTG C- T - TCTTGC CA A G- ----
GGCATTTGGACTGTT
GAM17962 3789 AACACAGTAAAAAAAAAAAT AAAAAA- GGGC CTGG
1 TTTTGGGCGGGCCTGGGCCC AACACAGT AAAAATTTTT GGGC

TGGAAAAGGTTTTTAAACAC TTGTGTCA TTTTTGGAAA CCCG
CACTGTGTT CCACAAA AGGT ----
GAM17962 8932 AACACATTCCCGGTGGATAG A TCCCGGT T G A GTGAA
7 AATTGCTAAATTGTGTGAAA AAC CAT GGA AGAATT CTAA TTGT
TAGGTTAGAATTCTTCTTTA TTG GTA TCT TCTTAA GATT GATA
AATTATGGTT - TTAAATT - - G -----
GAM17963 1151 AACACCACATGCTTGCCATC A T CA GC - TGTCTTGACTGTC
0 TAGCCATGCTGTCTTGACTG AAC CCACA GCTTGC TCTA CAT GC
TCGCGATGATAGACTGCGAG TTG GGTGT CGAGCG AGAT GTA CG
CCTGTGGCGTT C C TC A- G ----------
GAM17965 8788 AACAGAAAGATATGGGGAGC GAAA GG G GTGAG ATA- GTTC
6 TTGTGAGTGATTATACTATG AACA GATATG GA CTT TGATT CTAT
TTCATAGAACAGATTAATAT TTGT TTATGC TT GAG ATTAG GATA
AGAGATTGACGTATTATATG ATA- AG A ATATA ACAA ----
TT
GAM17967 3848 AACAGAGCACTGTACTTTTT CT T TTTTTTTTTTTTT
2 TTTTTTTTTTTTTTTTTTAA AACAGAGCA GTACTTT TTTTTT
GAGACAGGGTATTGCTCTGT TTGTCTCGT TATGGGA AGAGAA
T -- C ----------
GAM17973 8324 AACAGTGAAAAATTAGTTTG AAAATT TT T AACCATC GAAA
5 GTTAGAAGAACCATCTGGAA AACAGTGA AG TGGT AGAAG TG
ACACACCAGCTTCTGCTACC TTGTTACT TC ATCG TCTTC AC
TTCATGCTCATTGTT CGTACT C- - GACCAC- ----
GAM17974 3948 AACAGTGCTTTGTACCGGAT T G C - - AA ATCT
0 CTGCTGAAGCATCTGTCCAG AACAG GCTTT TAC GGAT CT GCTG GC
CTGGTATCCTGTGAAAGTTT TTGTT TGAAA GTG CCTA GG CGAC TG
GTT - - T T T C- ----
GAM17977 12432 AACATCATCAAAGTTCACTT ATC- T TG- T ACCCTGTAAA
6 GTATTGTACCCTGTAAAACT AACATC AAAGT CACT TAT GT
GTGTGTGGTGTGCTTTCAAA TTGTAG TTTCG GTGG GTG CA
GATGTT AAAC T TGT T ----------
GAM17978 8731 AACATCTTTCTGATAACATT CT A TTATTATGTT CTTCTT
9 ATTATGTTGCCTTCTTGTTT AACATCTTT GATA CA GC
CTCACTTTGATATTTAAAAG TTGTAGAAA TTAT GT TG
ATGTT AT A TTCACTCTT- ------
GAM17980 18963 AACATGGTAATTACTAAATT GTAA- ------- GCTTTG
5 ATGAGGCTTTGCTTATAGTT AACATG TTACT AAATTATGAG
TGCTTTTAAGTAGAAAAACA TTGTAC GATGA TTTGATATTC
TGTT AAAAA ATTTTCG ------
GAM17983 12711 AACATTCGTCCAGATCCCAT TC C C- AC- AAAAGAAA
2 TTTACAGAAAAGAAACTACA AACAT GT CAGAT CCATTTT AG
GGAGTGGCCATTTGCACCTA TTGTA CA GTTTA GGTGAGG TC
TGTT TC C CC ACA --------
GAM17986 4163 AACCAACAGCAACTGAACCA A AACT A CT TT- TC TCCA AAACA
5 CTATTTAAGAAAGTCAGTCC AACCAAC GC GA CCA AT AAGAAAG AG TGGG
ATGGGAAACATCTACTTCTA TTGGTTG CG CT GGT TA TTTTTTC TC ATCT
GCTTTTTTCCTATTTTGGCT C GC-- C TT TCC GA TTC- -----
CCGGCCGTTGGTT
GAM17990 16816 AACCATAGCAGGTGTCAGCC GCAGGTGT AGTCAG AGT
5 CTGGTCCAGTCAGCCTTGCC AACCATA CAGCCCTGGTCC CCTTGCCC

CAGTGGGCAGGGAAGGGCTA TTGGTGT GTCGGGATCGGG GGGACGGG
GGGCTGTGTGGTT -------- AA---- ---
GAM17992 792 AACCCACCGCCATCGTCCCT AC - A G TC - - G - TG AGGGATG
2 CCCTCCCTCCTGCTCTGGGC AACCC CG CC TC TCCC CCTCCC TC CT CT C GGCC
CAGGGATGGGCCTGGAAGGA TTGGG GT GG AG AGGG GGAGGG AG GA GA G CCGG
GAGATGGGAGGTGGGGAGGA GC T - G GT T A G A GT -------
GGTTGCGGGGTT
GAM17993 18198 AACCCCAGTGACAGTGCAGA - G G GAAAAAGAAGGGTT GTGGA
6 AAAAGAAGGGTTTCATATGT AAC CCCA TGACA TGCA TCATAT
GGAGTGTGATGCATGTCAAT TTG GGGT ACTGT ACGT AGTGTG
GGGAGTT A A - ---------- -----
GAM17994 3525 AACCCCTAGCTGGAAAGACA A GA- GA --------- - GGGGCAG
1 GACAGCCCAGGTGTGAGGGG AACCCCT GCTG AAGACA CA GCCCAGGTG TGA
CAGTCGCCACCTGGGTAGGA TTGGGGA CGAC TTTTGT GT TGGGTCCAC GCT
AGCAGTGGTGTTTTGTACAG - ATG G- GACGAAGGA C -------
CAGGGGTT
GAM17998 5477 AACCTGGCAGCCGGACTGGG GGCA CT - - -- AAGG
8 CGCCCAGAAAGGTCAGTGGT AACCT GCCGGA GGGC GC CCA GA
GCTGCCCCATTCGGCGAAAG TTGGA CGGCTT CCCG CG GGT CT
GTT AAG- AC T T GA ----
GAM18001 18584 AACGAAGGTGATTAAAAGAC GA GA A TGAAA A ACG
3 CTTGAAATCCATGACGCAGG AAC AGGT TTAAA GACCT TCC TG
GAGAATGGGTCATTTAAAGC TTG TCCG AATTT CTGGG AGG AC
CTAGTT A- A- A TAAG- G ---
GAM18001 5423 AACGACGTGTAGGGACCATG C - GAC- T- G- CCA - AGGATA
9 TTATACGGACCCATGCGCTA AACGA GTGTA GG CATGT ATAC GAC TGCG CT
GGATAGGACGCGAGTCGAGT TTGCT CACAT CC GTACG TATG CTG GCGC GG
ATTCGCATGCATACCATACA - A ATAC CT AG A-- A ------
CTCGTT
GAM18002 3286 AACGGAGCGCATGTGGACTG C A G- AATCCG GAACACGG
8 GGAATCCGTGCGGGAACACG AACGGAG GC TGT GACTGGG TGCGG
GCCGTGATTTTGTCCAGTTA TTGTCTC TG ACG TTGACCT GTGCC
AGCAGTCTCTGTT - - AA GTTTTA --------
GAM18003 8160 AACGGGAGATGCAGTTTATT GGG-- A T ACA AGCA ATGGG
0 TACACCAGCAGCCATGGGGG AAC AGATGC GT TATTT CC GCC
CAGAGGGAATACACAGCGTT TTG TTTGCG CA ATAAG GG CGG
TACAAAGTT AAACA A C --- AGA- -----
GAM18004 8037 AACGTGTTCGACCCGCCGCC T C- - C AAGAATG TTATCT
0 GCAAGAATGATTTATCTGTA AACG GTT GACC CGCCG CGC AT
AAATACGTGTCGGTGTGGTC TTGC CAA CTGG GTGGC GTG TG
ACAACCGTT - CA T T CATAAAA ------
GAM18005 992 AACTAACGCTCACTATACAA T CA A AATTC-- AATCC
1 ATTCTATGAAATCCTCATAA AAC AACGCT CT TACA TATGA
TTACACTGTGAAGCAGGTGT TTG TTGTGG GA GTGT ATACT
TGTT - AC A CACATTA -----
GAM18011 6546 AACTCAGTGCAAAGAAGTTG A G AG TT ATA- C AGAAAA ACAC
5 GATAAATCGGAGAAAACCAC AACTC GT CAA AAG GG AAT GG CCAC
ACACGTGGCCATTGATGCCC TTGAG CA GTT TTC CC TTA CC GGTG
TTGGTTGACAGAGTT A - GG -- GTAG - ------ ----
GAM18014 3922 AACTCTGAAACGGAGACTTC CT--- A- A CACT ACTACAAA

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9          ACTTTTCACTACAAAGGAAT AACT    GAA  CGG GACTT    TTTC
           CAAAGTCACTGAGTTCTCAT TTGG    CTT  GTC CTGAA    AAGG
           TGGTT               TTACT   GA   A    ACT-   --------
GAM18015 13958  AACTCTGAAAGTTTATGCTT     --     ----    CT    AAACAAAC
0          TAAAAAACAAACTTTGACAT AACTCT  GAAAGT    TTATG  TTAAA
           AACATTATTTTCTTAGAGTT TTGAGA  CTTTTA    AATAC  AGTTT
                          TT     TTAC    --    --------
GAM18022 19327  AACTGGTCTTTAATGGGGGT       TTTAAT   GGTCAC--    ATTTGTTC
5          CACCAGGGATTTGTTCTCTT AACTGGTC     GGG      CAGGG
           GCTTTAATACCTGCTTCTGG TTGACCGG     TCC      GTTCT
           CCAGTT                TCTTCG   ATAATTTC    --------
GAM18022 8169   AACTGGTGATTGTTGGTGAT      GA     ------    TG    C   - GAAA
6          GGAGCCTGTGGAAACGACAT AACTGGT  TTGTTG     GTGA  GAGC TGT G
           GCTTGCTCATAGTCTTCAGC TTGACCA  AACGAC     TACT  TTCG ACA C
           AAGGACCAGTT             GG     TTCTGA    CG    T   G ----
GAM18023 4236   AACTGTACGACCGAGGAGCA    T  A  AC      CATGA   AACACA      AAAG
0          TGACGCAACACAAATCCCAG AAC GT CG  CGAGGAG    CGC     AATCCCAG
           AAAGTTGGGATTGACAAGTG TTG CA GC  GTTTCTT    GTG     TTAGGGTT
           AACCATTCTTTGAGCGAACG   -  A  GA      ACCAA   AACAG-       ----
           TT
GAM18025 21303  AACTGTTGTGGCCTTTTTTG       ----      TTTTGAT-   TAAGAGT
4          ATCCATAAGAGTTGGTACTG AACTGTTG    TGGCCTT       CCA
           TTTAAGGCCAAAAGTAACAG TTGACAAT    ACCGGAA       GGT
           TT                   GAAA      TTTGTCAT   -------
GAM18026 14016  AACTTAAACGAAAATTGAAC      AA--  AAA  TG AC    G    GACC
1          ATTCTGACTCGACCGAGTGG AACTTA    CG   AT  A  ATTCT ACTC
           AATATTGGTGAACGATACTA TTGAAT    GC   TG  T  TAAGG TGAG
           AGTT                 CATA  AAG  GT A-    -    ----
GAM18026 2984   AACTTAAATTCTTTGTACCA      --    -     C  TTAAAAAAA    TAAAATT
3          GTTAAAAAAAAATGTATAAAA AACTTAA  ATTCT TTGTAC AG        ATGTA
           TTTACATCTGTGCAGTGGAG TTGAATT   TGAGG GACGTG TC        TACAT
           TTGTTAAGTT             GT    T    - ---------    -------
GAM18030 16799  AACTTGGAGAAACGGTTCAA      A    C  TTCAATGCTT   ACATCTGC
5          TGCTTGGGACATCTGCCCCT AACTTGG GAAA GG         GGG
           TTAAATAATCCTTTCCCGAG TTGAGCC CTTT CC         CCC
           TT                   -    -  TAATAAATTT   --------
GAM18030 3517   AACTTGGATTTTTCTTTTTA   T       CTTT--   TAA   A   TG    TTTATT    ATGA
7          TTAATGCAGTATGTTCTTTT AAC TGGATTTTT     TTAT   TGC GTA  TTCTT     CAAGT
           TATTCAAGTATGAACTTGTT TTG ATTTAGAGA     AGTA   ATG TAT  AAGAG     GTTCA
           GAGAAACTATAGTAATATGA    T       ATTTTT    TA-   A   CA    TT----    ----
           TTTTTAAGAGATTTATGTT
GAM18032 18638  AACTTTATCTTTCTACAATG     ---    TT    AA-   AG-    AA    A    AAG
2          AAGAGTGGAATTTCTATGTT AACTT   TATCT  CTAC   TGA   AGTGG  TTTCT TGTTT
           TAAGGAATAAGAAGCCACTA TTGAA   ATGGG  GGTG   ACT   TCACC  GAAGA ATAAG
           TATCAATGGTGGGGGGGTAT     TTT    GG    GTA   ATA    --    -    ---
           TTAAGTT
GAM18037 4140   AAGAAAAGGAAATCTGGTTC     AA    TCT     C-  CATCTGAATTA
8          ACAGCATCTGAATTACTTCT AAGAA  GGAAA   GGTTCA  AG
           GGACTCTCTTTCTGGTTCTT TTCTT  TCTTT   TCAGGT  TC
                          GG    CTC     CT  -----------
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GAM18043 13993 AAGAACCACTTGGCCAGAAG CTT AG CC TGCTTTTTTTTTTTTTTT
6 TGTCCCCCAGATGCTTTTTT AAGAACCA GGCCAGA TGT CCCAGA
TTTTTTTTTTTTGGGAAACA TTCTTGGT TCGGTTT ACA GGGTTT
GTTTGGCTCTGGTTCTT C-- G- AA ----------
GAM18045 6162 AAGAACTTGATTTTGCTAGC T A T CT --- ATTTTTACCCCA
1 AGAAATTTTTACCCCATTCT AAGAACT G TT TG AGC AGAA
CAAGCTTCTATAAACAGTTC TTCTTGA C AA AT TCG TCTT
TT - A T CT AAC ----------
GAM18045 1320 AAGAAGATCACCATGTGTGA - T T GT GTGGACAACTCGAATA
9 CTGTGGACAACTCGAATAAG AAGA AGA CACCA GT GACT
TTTGACTGGTGTTTTATCTT TTCT TTT GTGGT CA TTGA
A T - GT ----------
GAM18046 14604 AAGAAGCCGCCCTGGTTGCA A - TG TT C C GGCAT
6 CATGCCGTCGGCATGACTGT AAGA GCCGCC C G GCA ATGC GTC
GTATGCTCTGGTGGTGGTGT TTCT TGGTGG G C CGT TGTG CAG
CTT G T GT T- A T -----
GAM18046 18735 AAGAAGCCGCCCTGGTTGCA A - TG TT C C GCCA
7 CATGCCGTCGGCCATGACTG AAGA GCCGCC C G GCA ATGC GTCG
TGTATGCTCTGGTGGTGGTG TTCT TGGTGG G C CGT TGTG CAGT
TCTT G T GT T- A T ----
GAM18047 12741 AAGAAGCTCAAACTCCCCAA T TCC--- AAT- G CCCACTATC
0 ATGCAGCTCCCACTATCAGT AAGAAGC CAAAC CCA GCA CT
GCTTGATGGATAAATGTTTG TTCTTCG GTTTG GGT CGT GA
GCTTCTT - TAAATA AGTT - ---------
GAM18048 6401 AAGAAGTCAGTTAAGGTTAT A A-- T C G TAA
9 TCGTGTGGGTAATCCAGCCA AAG AGTCAGTTA GGT ATT GT TGGG
ATACCAACTGACTGACTGCT TTC TCAGTCAGT CCA TAA CG ACCT
T G CAA - C - ---
GAM18049 4111 AAGAATATAATTTAAGATTT A- TTAAGA T TCTA GGG GTGACAA
8 TCGATCTAAGGGGGGACGTG AAGAAT TAAT TTT CGA AGGG ACGT
TGACAAATGTAGACCCTATT TTCTTA GTTA AGA GCT TCCC TGTA
CGTAGAGCATATTGACATTC CA TACG-- T TA-- AGA -------
TT
GAM18050 1046 AAGAATCATATATGCATTCT CATAT -- TTACA - GCAT
3 TTACACTGTAAAGCATTTTA AAGAAT ATGCA TTCT CTG TAAA
CCAGACATTAGAATCTGCAT TTCTTA TACGT AAGA GAC ATTT
TCAGAATTCTT AGACT CT TTACA C ----
GAM18050 19380 AAGAATCCAAATGAACCTTC CAAA CTTC-- A AAGTT
7 AATATACTAGAAGTTCTAGT AAGAATC TGAAC AAT TACTAG
AGGTTAATATTGTTCAGAAG TTTTTAG ACTTG TTG ATGATC
ATTTTT AAG- TTATAA G -----
GAM18058 924 AAGACCCAGTTTGGACATAG C -- - T CTTC CCTTTTTTTTACT
6 CCTTCCGGGCCTTTTTTTTA AAGA CCAGTT TGGA CA AGC CGGG
CTCCCGCTCTGTTTTGCTTT TTCT GGTCAG ATTT GT TTG GCCC
ACTGACTGGTTCTT T TC C T TCTC ----------
GAM18070 13978 AAGAGGAAACAGCCCCACTG A A CCC- GCATTTGA TTACCATTT
7 CATTTGAGAAGGTTACCATT AAG GG AACAGC ACT GAAGG
TCCTTCGAAGTTCCTGCTGT TTC CC TTGTCG TGA CTTCC
TGCCCCTT C G TCCT AG------ ---------
GAM18073 9110 AAGAGGGGGCAACTCAAGGA A G A A GGA GA- AAGCA

2 GGGACACATGACTAAGCAAG AAG GGGG CA CTCA GGAG CACAT CT
AAAATGTGACTCTGTGAGCT TTC CCCC GT GAGT TCTC GTGTA GA
GACCCCGCTT G A C G A-- AAA -----
GAM18073 9246 AAGAGGGTTAGCCAAAAAGA T-- C CCAAAG T-- ATCATCA
6 CCAAAGCCCATGTCATCATC AAGAGGGT AGC AAAAAGA CCCA GTC
AGACTCCTGGGATTCTTTTT TTCTTTCA TCG TTTTTTT GGGT CAG
TTTTTGCTTCCACTTTCTT CCT T TTCTTA CCT -------
GAM18074 9805 AAGAGGTGGGGAGGGATTAC G ATTA TGA - GA G CTAC
1 TTTGAGGCTTGGGAGTTTGA AAGAGGTGGG AGGG CTT GGCT TGG GTTT AGA
GACTACTCTGGGGCAACCAT TTCTTTACCC TCCC GAA CCGA ACC CGGG TCT
AGCCAAGACCCTCCCATTTC - A--- --- T AA G ----
TT
GAM18074 9713 AAGAGTAGGATGTCTGCTGA G G GCTGAAG C-- T AAGAAG
3 AGTCATCCATCAAGTTGAAG AAGAGTAG AT TCT TCATC ATCAAGT G
AAGCACTTGATACAGATGAG TTCTCGTC TA AGA AGTAG TAGTTCA C
AAAGAGATGCTGCTCTT G G AAG---- ACA - ------
GAM18074 12624 AAGAGTAGTTTTGTCCTAAG GTTTTGT-- ---- C TCAGTATTTT
5 ACAACAGTAATCAGTATTTT AAGAGTA CC TAAGACAA AGTAA
TTGCTTTTGTTTTGTTTTGG TTCTCAT GG GTTTTGTT TCGTT
TTTTCTTTATACTCTT ATTTCTTTT TTTT T ----------
GAM18077 5947 AAGAGTTTAGCTGCTGTATA A ---- ----- AGATG
5 AGGTAAGATGTACCTTATTA AAGAGTTT GCT GCTGTA TAAGGTA
CTTATAGCTTTCAGCAGAAT TTCTTAAG CGA CGATAT ATTCCAT
TCTT A CTTT TCATT -----
GAM18079 4292 AAGATAGAGGCAGAACTGCA GA----- AA G TGCAAT
6 GGACATCTGCAATGATGTTC AAGATA GGCAG CT CAGGACATC
TGGAGCTGTTGGACAAATAT TTCTAT TTGTC GA GTCTTGTAG
CTT AAACAGG -- G ------
GAM18080 22263 AAGATATATTTTTCAGTTAT A TCA A -------- AAAACAA
3 TTTATTTTTTCTAAAAACAA AAG TATATTTT GTT TTTTA TTTTTTCTA
TAGAAAAAAATCAACTTTAA TTC ATGTAAAA CGA AAAAT AAAAAAGAT
AAAGCAAAATGTACTT - --- - TTCAACTA -------
GAM18081 21465 AAGATATTTGTTGAAAAATG ATT AA---- ------ CTTTG
2 TTTGTGCTCTTTGGGCACTT AAGAT TGTTGA AATGTTT GTGCT
AATTAAACATTGCAAAATCA TTCTA ACAACT TTACAAA CACGG
ACATCATCTT CT- AAAACG TTAATT -----
GAM18082 18028 AAGATCCTTCTGCAAGAAAT CTTCT- - CTCTTTACCTATCAACTC
3 CTCTTTACCTATCAACTCAT AAGATC GCAAG AAAT
TTATTTGCCCACTTGATCTT TTCTAG CGTTT TTTA
TTCACC A ----------
GAM18085 4187 AAGATGCTGCGTGAAGTACT T - AG TGA A- ATACCGCCAGACCAG
3 GAGCAGGGTGATACCGCCAG AAGATGC GC GTGA TAC GC GGGTG
ACCAGCACCCGGGCGCCGTA TTTTGTG CG CACT ATG CG CCCAC
ATCACAGCTGTGTTTT T A A- CCG GG ----------
GAM18085 864 AAGATGCTGTCCGTGCGCGT CTG TGC G C- GT C TTCCTCGGC
4 TGCTGCGGCCGTGGTCCGCG AAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC
CCCTTCCTCGGCGGGCCGGA TTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG
CTGGTCTCCAGAAATGCTTT TT- TT- A CT -- - ---------
GGGTTCATCTT
GAM18085 6663 AAGATGGGGGTGACCTACTG GA GG--- G A G T G AGG

9 CAGATGGGGCGCTCAGGGAG AA TGG GT ACCT CT CAGA GGGGC CTC
GGCTTCTCTGAGGAGGTGAC TT ATC CA TGGA GG GTCT CTTCG GAG
ATTAACTAGATT AG AATTA G - A - G ---
GAM18086 6485 AAGATGTAGCGGGTTTTCTG TGT- C GT G GG CGAA
8 GTGGTGGATCCGAAGATGGG AAGA AG GG TTTCTG TGGT ATC
CCACAGAGATTCCACTTTCC TTCT TC CC AGAGAC ACCG TAG
TCTT CCTT A TT - GG ----
GAM18089 675 AAGATTCATCAGTGACACAA T ACACA TTTATTTATTATCATT
5 GGATTTATTTATTATCATTT AAGAT CATCAGTG AGGA
TCTATAACACTGATGGTCTT TTCTG GTAGTCAC TCTT
- AATA- ----------
GAM18093 6616 AAGCAAAATTACAAATACCA AAATTACAA C C CTC ATT
2 GCCTACTCACATGAAAATTT AAGCA ATA CAGC TA ACATGAAA
TTCATGTTTACGCTGATATA TTCGT TAT GTCG AT TGTACTTT
TATCTGAGTGCTT GAGTCTATA A C T-- ---
GAM18093 885 AAGCAAAATTATTTTAAATG AA- TTAA CTTAATT GCTA
3 ACTTAATTGTATGCTAATAC AAGCA ATTATT ATGA GTAT
TCATCTGATAATAAATGCTT TTCGT TAATAG TACT CATA
AAA TC-- ------- ----
GAM18097 5840 AAGCACATCATGGGCCAGAA ---- A- GG GAAT -- GATTACA
4 TGTTGCAGATTACATGCGCT AAGCA CATC TG CCA GT TGCA
ACTTAATGGAACGAAGATGA TTCGT GTAG GC GGT CA GCGT
AGATGCTT AGAA AA AA AATT TC -------
GAM18098 2861 AAGCAGAATTCCAGACAAGA AA - ACA CTACA AA-- AG GTCGGAA
7 ACTACAGGTCAGAAATGGAA AAGCAG TTCC AG AGAA GGTCAGA TGGA GGAT
GGGATGTCGGAAATCTAATC TTCGTC AAGG TC TCTT TCAGTCT ATCT TCTA
TAAACCTCTGACTTTCTAGA G- A AGA ----- CCAA AA -------
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GAM18099 18098 AAGCAGCATCATGGAGGTTG - TC G GATG- G TTGG
8 GAAGATGCCGCATTTGGATG AAGCA GCA ATGGAG TTGGAA CC CAT
GGATGAATTCCAAATTCTGT TTCGT CGT TGTCTT AACCTT GG GTA
TGCTTGCTT T -- A AAGTA - ----
GAM18100 21427 AAGCAGCTAGGGAATTCTTT C GG- C - TAATGTC
4 ATTTAGTAATGTCCTAACAT AAGCAG TA GAATT TTTAT TTAG
AAAAGTTCACATAACTGCTT TTCGTC AT CTTGA AAATA AATC
A ACA - C -------
GAM18101 22198 AAGCAGTGAGTGGCCCGTGA TGA G T ACAT-- TTTTGTCTT
9 ACATGCGTCGGTTTTGTCTT AAGCAG GTG CCCG GA GCGTCGG
TCGACGCTCAAGGTCTGGGC TTCGTC CGC GGGT CT CGCAGCT
GCCTGCTT --- - - GGAACT ---------
GAM18105 21061 AAGCATTTCATTCGGATAAG ----- A- CG AA G GA- AACC
4 ATGTGGGAGGAAAACCTTCT AAGCA TTTC TT GAT GAT TGG GGAA
GAACCAAGTCATCTAAAGGG TTCGT AGAG AA CTA CTG ACC TCTT
AGATCATATGCTT ATACT GG AT -- A AAG ----
GAM18108 4084 AAGCCATGTTCACAGCATAT GTTCACAGCATA G GATTGTTGA
3 TATTTCTGTGACTGGATTGT AAGCCAT TTATTTCTGT ACTG
TGATAGTGACAGAGATGACC TTCGGTA AGTAGAGACA TGAT
TAAAATTAATGGCTT ATTAAAATCC-- G ---------
GAM18110 6557 AAGCCTAATTTTCCTTTTCT CT CTTTTCTAA CTA
6 AATTCTGGTAGCTATTACCA AAGC AATTTTC TTCTGGTAG

GGAATTTTTGAAAGTTTTGT TTTG TTGAAAG AGGACCATT
TT TT TTTTTA--- ---
GAM18111 3639 AAGCCTGGGCAGGCTCTTTG GG ----- G ACGCTCGGGG
8 GAGACGCTCGGGGCTCCGGA AAGCCT GC A GCTCTTTGGAG
GAGCGTGGATGGCAAAGGCT TTCGGA CG T CGAGAGGCCTC
T AA GTAGG G ----------
GAM18112 6271 AAGCCTTAATCCTGACAATG AATC GA AATT A AA-- AATAT
2 CAATTGAGAAGAGGAAGCAA AAGCCTT CT CAATGC GAGA GAGG GC
TATGTGAAATCTCTCTCCAG TTCGGAA GA GTTGTG CTCT CTCT TG
GGTGTTGAAAGTAAAAGGCT AAT- AA GGAC - AAAG -----
T
GAM18113 20310 AAGCGACTTCAAAAATATGG TT AAA G C TT TTATTTTTACACAGTT
4 GAACACAGTTAGTTATTTTT AAGCGAC CA ATATG GAA ACAG AG
ACACAGTTCTTTTTGTTTTT TTCGCTG GT TGTGT TTT TGTT TC
GTGTGTGTGTGCTGTCGCTT TC GTG G T TT ----------
GAM18115 3217 AAGCGTTTTAATTCCTTTCT GTTTT- CCTTTCTCTG TGTTTTT
0 CTGTTCAGCTGTTTTTGCTG AAGC AATT TTCAGC
AGATCCATATTTAGTTTTAT TTCG TTGA GAGTCG
AAGCTT AATATT TTTATACCTA -------
GAM18119 19868 AAGCTCTTATTGCAAAAGAC --- ACATTAATG A AAAATATCTAC
2 ATTAATGAGACCAGAAAATA AAGCT CTTATTGCAAAAG AG CCAG
TCTACCTGGCTAGCTTTTGT TTTGG GGATGATGTTTTC TC GGTC
AGTAGGTATGGTTT TAT GA------- - ----------
GAM18122 22264 AAGCTGGGCCCGCGACTCAA G - AC A---------- GGGA
5 AGGGGACTGGGATGGGGATC AAGCTGG CC CGCG TCAA G
TCGTTGGACTGCGTGGCTAG TTCGATC GG GCGT GGTT C
CTT - T CA GCTCTAGGGGTAGGGT ----
GAM18124 19340 AAGCTTAAGTGAGGATTTCC TAA A ---- - - T- T TTTCCC
3 TTGCAATGAGTAGAATTTCC AAGCT GTGAGG TTT CCT TG CAA GAG AGAA
CTTCTCTCCCTTGTCACAGG TTCGA CACTCC AAA GGA AC GTT CTC TCTT
TTTAAAAACCTCACAGCTT --- A ATTT C T CC - ------
GAM18126 3557 AAGCTTTCATCTCCAGCCTT T C CAG T A G GAGGG
8 CTCCATAGCTCTGTGGAGGG AAGCTT CAT TC CCTTC CC TAGCTCT TG
CAGAGAGTTGAGGGAAGGAA TTCGAG GTA AG GGAAG GG GTTGAGA AC
GAATGGAGCTT - - AA- - A G -----
GAM18126 21351 AAGCTTTCCTGACAAGAAAA --- A --- AAA ---- GTAAA
9 AAACATGTTTGGTAAACAAA AAGCTTT CCTG CA AGAAA ACATG TTTG
AGATCATGTGTATTTCTCCT TTTGAAA GGAC GT TCTTT TGTAC AAAC
TGCAGGTTAAAAGTTT ATT - TCC ATG TAGA -----
GAM18127 20993 AAGCTTTCCTTTAGGGTTAA - TA TT GCTGT ---- C CTTCAA
0 GATGGCTGTATGAATGGCAT AAG CTTTCCTT GGG AAGATG ATGAA TGG AT
CTTCAAGTTCCAGATCTTCA TTC GAAAGGAA CTC TTCTAT TACTT ACC TG
TTATATCTTTTCTCAAGGAA T -- TT AT--- CTAG T ------
AGTCTT
GAM18127 3659 AAGCTTTGTCTTAATGTGAA TG TAAT AC ACATTTT CTT
6 CTTTTGAGTACATTTTAATG AAGCTT TCT GTGA TTTTGAGT AATGGG
GGCTTTCTATTTTTAAAAAC TTCGGG GGA TACT AAAACTCA TTATCT
TCAAAATCATTAGGTGGGGC GT T--- -- AAAATTT ---
TT
GAM18129 14605 AAGGAAACATTTATAAATTA -------- T A T TACC - ACAAAAA

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7          TTATACCTAAGAAAAGGCAC AAGGAA       ACATT ATAA TTA TA    TAAG AAAAGGC
           AAAAAGCCTTTTACTTATTT TTCCTT       TGTAG TATT AGT AT    ATTC TTTTCCG
           TTATTGATTATTGATGTGAT      TTATATAG    T   -  T  TTTT    A      -------
           ATATTTTCCTT
GAM18133 1302   AAGGAAGTGAGGGCAGCGGC         GG  AGC    TCTTC-  TTCA    TATTCT
6          TGTCTTCTGTTCAGGACTAT AAGGAAGTGA  GC   GGCTG     TG    GGAC
           TCTGTTTGCTTCACTTCCCC TTCCTTCACT  CG   CCGGC     AC    TTTG
           GGCCTGGCAATCACTTCCTT         AA  GT-    CCCTTC  TTCG   ------
GAM18141 21490  AAGGAGGACATTGTAAACAG         TTGT-     G    CAAGCA  GTACTCAA
2          GTGGACAAGCACTGTACTCA AAGGAGGACA     AAACAG TGGA     CT
           AAGGATTTCATTGTTTTTCT TTCCTTCTGT     TTTGTT ACTT     GA
           TTGTCTTCCTT               TTCTT     -    TAG---  --------
GAM18142 20541  AAGGAGTAGAATACCAAATG         AATA   AA    T      G   GCCT-     TG GAAT
4          GATAGAAACAGACTGCCTGA AAGGAGTAG    CCA  TGGA AGAAACA ACT     GAATT  A
           ATTTGAGAATTTGGATTTCT TTCCTTGTC    GGT  ATCT TCTTTGT TGA     TTTAG  T
           TAAAGTGTGTTTCTTTCTAA         ----  AA    T      G   AATTC     GT ----
           ATGGCTGTTCCTT
GAM18144 20309  AAGGATGACAAATTGTTTAC       ACAA     TACATATATACTA  GAAA
2          ATATATACTATAGAAATACA AAGGATG    ATTGTT          TA
           CACTGAACTGGCAATAACAT TTTCTAC    TAACGG          AT
           CTTT                  AA--      TCAAGTCACAC--  ----
GAM18145 3033   AAGGATTCAGTCAAACTAAG      -  T  ACTA    GG  CT    CCA---    CTCCTTTCTC
0          CAGGTACTCATGCCAGGTAC AAGGATT CAG CAA    AGCA  TA  CATG     GGTA
           TCCTTTCTCTACCCACATCC TTTCTAG GTC GTT    TCGT  GT  GTAC     CCAT
           ATGTTTGAATGCTATTGCCT       T  C   A---    AA  TT    CTACAC    ----------
           GTGATCTTT
GAM18146 5606   AAGGCAATCGGAATTTGAGT      AT  GAATT   G     G   ACCTAGATGAA
2          ACTATGGTTACCTAGATGAA AAGGCA  CG     TGA TACTAT GTT
           GATGATGGTGTCACGTGCCT TTCCGT  GC     ACT GTGGTA TAG
           T                  --  -----   -     G   -----------
GAM18148 3657   AAGGCATAAAGTGACTAGTT      TAA    CT    GAAAAA-      AAAA    AATCA
4          AGAAAAAGCATGTGAAAAAG AAGGCA   AGTGA  AGTTA      GCATGTG    AGTAA
           TAAAATCATTATTAGTATAT TTCCGT   TCATT  TTAAT      TGTATAT    TTATT
           GTAAAAAAATAATTTTACTT      ---    --    AAAAAAA      GA--    -----
           GCCTT
GAM18151 20654  AAGGCCTCTCGGAGTCACCA        - GGAG--   CC  G     ACCG
2          GGAGCTCCACCGGGAGCTGC AAGGCCTCT C      TCA  AG AGCTCC
           TCATGAACCACAGAAGGGGC TTCCGGGGA G      AGT  TC TCGAGG
           CTT                   A ACACCA   AC  G     ----
GAM18151 3577   AAGGCCTGCTGTTTCTGGAG    -      T-------   TG    GA  TCTGC
3          TGAAGTCTGCCTAATTCTGG AAGG CCTGCTG       TTC  GAGT  AG
           AGTGAAATATTAGCAGGACC TTCC GGACGAT       GAG  CTTA  TC
           TT                A      TATAAAGT   GT    A-  -----
GAM18152 1463   AAGGCGGGGTTTCACCATGT       GT--    CA  TT  C    CT   CTCAA
2          TGGCCAGGCTGGTCTCAAAC AAGGCGGG    TTCAC  TG  GG CAGG  GGT
           TCCTGACCTCAAGTGGATAT TTCCGTCC    AGGTG  AC  CC GTCC  TCA
           GCCTGCCTT               GTAT     A-  T-  A    --   -----
GAM18157 3503   AAGGGAAGTTAGGATTCACT   G   AG      TCA   AGA      -   AGA
0          TAGAGTAGCATTAATAGAGT AA GGA  TTAGGAT   CTT   GTAGCAT TAAT
           TATGTGTTATGAAAGGTCTT TT TCT  GATTCTG   GAA   TATTGTG ATTG
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AGTGTCTGTT G GT --- AG- T ---
GAM18157 20191 AAGGGACTTTATTTTGGAGA TTTATTTT - A AACCAAG ------ TAAT
9 GCCAGCAAACCAAGAAGATG AAGGGAC GG AGAGCC GCA AAGATGGT GGAC
GTGGACTAATGTCCTAAAGA TTTTCTG CC TTTCGG CGT TTCTGCCA CCTG
ACCGTCTTAAAATTATGCGG TT------ G G ATTAAAA AGAAAT ----
GCTTTGCCTTGTCTTTT
GAM18161 1605 AAGGGCTGAATAGTTATGAC GA TATGACAG CATA TGGCT
6 AGAGACCATACATGGCTTGC AAGGGCT ATAGT AGAC CA
AAAGTCTAAATATTTACTAT TTCCCGG TATCA TCTG GT
CTGGCCCTT TC TTTATAAA AAAC -----
GAM18162 831 AAGGGGATCTGAAAACCAGA AAAA A TCCC TCCCTTCT
7 GCGTCCCCGGCGCTCCCTTC AAGGGGATCTG CC GAGCG CGGCGC
TGTGCCGCCCGCTTAGGCAG TTCCCTTGGAC GG TTCGC GCCGTG
GTTCCCTT ---- A CC-- --------
GAM18164 18138 AAGGGGTCTCCAAGGGAGAG T CAA AGG- AA A CA- TGGCG
3 GTCCAATCGCCCACCCAAGT AAGGGG CTC GGGAG TCC TCGCCC CC AGTGG
GGTGGCGCCACTGGTGGGGG TTCTTC GAG CCCTC AGG AGTGGG GG TCACC
TGAGAGGAGGTGCTCCCCAG - AC- GTGG AG - TGG -----
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GAM18164 18926 AAGGGGTTTTCGCAAAATCA G TTCGCAA GGGGA AAA CTTTGT
4 CTCGGGGGAAGGGAAAGGTT AAG GGTT AATCACTCG AGGG GGTTG
GCTTTGTTAATCATGCCCTA TTC TCAA TTAGTGGGT TCCC CTAAT
TGGTGGGTGATTAACTGCTT G ------- GGTA- GTA ------
GAM18164 9005 AAGGGTCCATTCAACATATA CATTCAACATAT GCT AAATATGTAC
9 GCAGCTTATATCTAAATATG AAGGGTC AGCA TATATCT
TACAGGTATGTATGTTTTCA TTTCTAG TTGT GTATGGA
CAGTTAGATCTTT ATTGACACTT-- AT- ----------
GAM18167 12824 AAGGTAGACAAGATAGCTCC --- - ATA CCCA CTCA ATT
7 CAGAAACTCATCCATTGGAA AAGGT AGA CAAG GCT GAAA TCC
TTTTCCCTAGGCACTTGATT TTCCA TTT GTTC CGG CTTT AGG
TTGAACCTT AGT A A-- ATCC TA-- ---
GAM18174 19260 AAGGTGTCCTTGGGGCAAAA G - CAAAA G GACTTCTGAACA
1 CTGGCGGACTTCTGAACATG AAGGT TC CTTGGGG CT GCG
TGAGAGAACCCTAAGAGAAT TTCTA AG GAATCCC GA TGT
CTT - A AAGA- G ----------
GAM18175 18908 AAGGTTCTGATTTTGAGTTG - - - - ATAAA-------- GAAAGA
6 CAATAAAGGGAAAGACCATG AAGGTTCTG ATTTT GA GTTG CA GG
CTCATAGCAGTGCCAACATC TTCCGAGGT TGAAG CT CAAC GT CC
TGAAGTGTGGAGCCTT G T A C GACGATACTCGTA ------
GAM18177 9725 AAGGTTTTTGGAGCTGCACT GG A GAA TC T TAGT TCAACCTTT
6 GAAGCATCTTATTTTATAGT AAGGTTTTT AGCTGC CT GCA TTA TTTA ATA
ATATCAACCTTTTGTTTTTA TTCCAGAAG TCGATG GA CGT AGT AAAT TGT
AATTGACCTGCCAAGGTAGC -- - AC- CC T TTT- ---------
TGAAGACCTT
GAM18184 8120 AAGTAGGCTATAGGACTGGA G A GGAC ATTTCATCA
4 CATTTGGATATTTCATCAGT AAGTA GCT TAGGACT ATTTGGAT
TCAAATAGTCCTGGGCGTGC TTCGT CGG GTCCTGA TAAACTTG
TT G - ---- ---------
GAM18184 18170 AAGTAGGTCATCTAATATAA T--- - TAA AT ACA
5 AATTATAATTTTACAGAAAT AAGTAGG CATCT AATA AATT AATTTT

TTCAATTACTATTAAGATGT TTTATCC GTAGA TTAT TTAA TTAAAG
TTTCCTATTT TTTT A CA- CT ---
GAM18185 13970 AAGTAGTTGTTCCCCTTGCT G - C TG A CACG
0 CTGAAAGGGCCACGGCTTTT AAGTA TTGTT CCC T CTCTG AAGGGC
GTGGAGTGATGGGTAACGAT TTCGT AGCAA GGG A GAGGT TTTTCG
GCTT - T T GT G ----
GAM18187 16867 AAGTATTATAAATTATCTAA T ATCTAATTG AATA AATAC
2 TTGCCAAATACAGAGAATAC AAGTAT ATAAATT CCA CAGAG
TTCTGAGAATGGAAGAAATG TTCGTG TATTTAG GGT GTCTT
GATTTATGTGCTT - GTAAAGAA- AAGA -----
GAM18187 4413 AAGTATTCAACTTAATTTTT ACT ATTTT TCTTTCTTTTCACACCCGT
3 ACAGAAAATTCTTTCTTTTC AAGTATTCA TA TACAGAAAAT
ACACCCGTATTTTCTGTGTG TTCATAAGT AT GTGTCTTTTA
TATGTGAATACTT GT- GT--- ----------
GAM18192 19211 AAGTCATTTTACTAACATAA - CTAA AAGA CAAA GAAA
6 GATTCACAAAGAGGAAACTT AAGTC ATTTTA CAT TTCA GAG
CATGAACCAGATGAATATAG TTCAG TAAGAT GTA AAGT TTC
AATAGACTT A ATAA GACC AC-- ----
GAM18193 21207 AAGTCCCCTGGACAGTGGGC CCT-- ---- A--- T C AC-- A GCAC
7 AGGGGTGGCAGAGGACACGA AAGTCC GGACAG TGGGC GGGG GG AGAGG ACG GCA

GCAGCACTGCCCGTACCCCC TTCAGG TCTGTC ACCCG TCTC CC TCTCC TGC CGT
TCTCCTCTCTGTAAGCCCAT ACCCT CCGT AATG T - CCCA C ----
GCCCTGTCTTCCCAGGACTT
GAM18195 16452 AAGTCCTTTTAGGTGGCCCT TTTT- T- CTTCCAG CATCT
0 TCCAGTTGAGGCATCTCCTT AAGTCC AGG GGCC TTGAGG
AGATTTAGGCCTTCCTCTTT TTCGGG TCC CCGG GATTCC
TGGGCTT TTTTC TT ATTTA-- -----
GAM18195 4376 AAGTCGCCATAGTGTTTGCA AG-- GCA AAAA AAAA
1 GAAATTTTTAAAATTAAAAA AAGTCGCCAT TGTTT GAAATTTTT TTAAAAAAACT
AACTAAAAGGTTTTTTTAAA TTCAGTGGTG ACAGA CTTTGAAAA AATTTTTTTGG
AAAAGTTTCAAGACAGGAAG AAGG A-- A--- ----
TGGTGACTT
GAM18195 12747 AAGTCTAGAAGATGAAATTG TA- AATTG-------- AAGACT
4 TGGGAAGACTTCTAAAAATT AAGTC GAAGATGA TGGG
TTGTTTGTTATCTTTGTTGA TTCAG TTTCTATT ATCT
CTT TTG GTTTGTTTTAAAA ------
GAM18196 5781 AAGTCTGCCACAATGCTGAT C A AT ATAACC A GAAT
4 AACCCAGCCCATGGAATCAG AAGT TGCC CA GCTG CAGCCC TG
GGCTGTGCTGCAGCTGGGCA TTCG ACGG GT CGAC GTCGGG AC
TGCTT T - -- GTCGT- - ----
GAM18204 3122 AAGTGCTCTTTAGTTAAAGC ---- GT--- C A GGTCA
9 ACATTAAGAAGGGTCACTGC AAGTGCT CTTTA TAAAGCA ATTAAG AG
TTAATTGCTTTGTAAAATGA TTTATGG GAAGT GTTTCGT TAATTC TC
AGCAATGGTATTT TAAC AAAAT - G -----
GAM18206 20862 AAGTGGAAATGGCTGTATTT AAT G TT C ACAAT GGAA
5 GCTTTACAATGTTTTCAGCT AAGTGGA GGCT TA TG TTT GTTTTCAGCT
GGAAAGCTGAGGGCTGGAAT TTCACTT CCGA GT AC AAG CGGGAGTCGA
CATCTGAAGCCTTGTTCACT GTT A CT T GT--- ----
T

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GAM18207 18401  AAGTGGACAAGGCCGAGCAG  ---   CAA  CGA   AGCTC    CCCAG A G  GA     C  A
0        GAGCTCCGCGTGGCCCAGAC AA  GTGGA  GGC  GCAGG   CGCGTGG   AC GA TTT
CCGGCAAG AGA
         AGAGTTTGACCGGCAAGCAG TT  CACCT  CCG  CGTCC   GTGCACT   TG CT AGG  GGTCGTTC
TCT

         AAGTGACCCGTCTCTTGCTG  GAG   ---  TCG   ACCAA    CACGA  A  A  GA     -  -
         GAGGGAATCAGTAGCACTCA GTGACCCG
         CGTGAACCACCTGCGCTGCC
         TCCACGAGTT
                    --------
GAM18211 19089  AAGTGTTATTGGTCCTGCAG  -    TGGT   AGATG-   CAACAAAAT
5        ATGGGCACCAACAAAATGTG AAG TGTTAT   CCTGC    GGCAC
         CCAGCCAGGCAGGTATGACA TTC ACAGTA   GGACG    CCGTG
         GCTT              G    T---   GACCGA   ---------
GAM18215 3433   AAGTTAGTTTCCTTTCTTCA     GTT    TCT  -  T  T     TTA   AATCAGTG
4        TCTTTTTTTTTTTTATTAAGT AAGTTA   TCCTT   TCA TCT TT TTTTTTA   AGT
         AATCAGTGACTTGAAAAATA TTCAAT   AGGAA   GGT AGA GA AAAAAGT   TCA
         GCAGATTGGTATAAGGATTG     GTT    TAT   T  C  T     ---  --------
         TAACTT
GAM18218 14363  AAGTTCTGTGAGGCCCCCGG   TT   T   G  -    A-  TG  TG CTGTGCA
2        CAGCTGCGTGGCTGTGCACT AAG  CTG GAG CC CCCGGC  GC  CG  G
         GCGTGGCGGGCTGGGCGGGC TTC  GAC CTC GG GGGTCG  CG  GC  C
         TCCAGTCCTT          CT  -  G  C    GG  GT  GT -------
GAM18220 1738   AAGTTGGCCGAAATCTTCCT   TG   GAAA    TT   GATT  -  AAACCAGA
4        TCAGGATTTCAAGAAACCAG AAGT  GCC   TCTTCC  CAG   TCA AG
         ACTGTGATGACTGGGAAGAG TTCA  CGG   AGAAGG  GTC   AGT TC
         CGGGCTGACTT          GT  GCG-    --  AGT-  G  --------
GAM18221 3635   AAGTTGTATAAAAGTAGGTG      TAAA   G--    TCT-    AAAGA
0        ATTCTGTATTTAAAGAAAAT AAGTTGTA   AGTA   GTGAT   GTATTT
         ATTACTGTTACATATACTGC TTTAACGT   TCAT   CATTG   TATAAA
         TTGCAATTT             TCG-   ATA    TCAT    -----
GAM18221 9443   AAGTTGTTGATATTCTTTGA     T      TTGA  TTACAA  TAA--   TTATT
6        GTTTACAAGTTAATCCTTAT AAGTTG TGATATTCT   GT    GT    TCC
         TGGAGATGTGCCAATATACA TTTAAT ACTATAAGA   CA    CG    AGG
         GTTAGAATATCATTAATTT      T      TTGA  TATAAC  TGTAG  -----
GAM18222 6415   AAGTTTACTTTGTAAACAAA         T   AAACAACT     AAT   AGGG
2        CAACTGTGAGGCAATCTAGA AAGTTTACTTTG AAAC      GTGAGGC   CTAG
         GGGTTAGCGAGCCTCACTTT TTCGGGTGAGGC TTTG      CACTCCG   GATT
         AGTTTCCGGAGTGGGCTT          C   ATTT----     AGC   ----
GAM18222 18292  AAGTTTAGTCATTAATTTGG      T--    ATT   C----   TTTTTT
6        TCAAGATTTTTTTCTTTAAA AAGTTTAG   CATTA   TGGT    AAGA
         AACTATTGTGGTGTATTTGA TTCAAGTT   GTGGT   ATCA    TTCT
         ACTT                TAT    GTT    AAAAT   ------
GAM18223 6086   AAGTTTCTGAGTTAGCCATT    TTCT   TT-    TT  TTT--   TTCTTT
6        TCTTTTTCTTCTTTGAATCA AAGT    GAG   AGCCA  TC    TTC
         GTGATTTGGTTTTTCTTTCA TTCA    TTC   TTGGT  AG    AAG
         CTT               CT--   TTT    TT  TGACT   ------
GAM18225 6171   AAGTTTTATAGTTTTATATC      ATAGT          AAGT     TTTTAATTTGC
5        TTATAGAAGTTTTATATTTT AAGTTTT    TTTATATCTTATAG    TTTATAT
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TAATTTGCGTATAGACTATG TTTAGAG GGGTATAGAGTATC AGATATG
AGATATGGGTCGAGATTT CT--- ---- ----------
GAM18231 4217 AATAAGGTACTACAGAGGCA G C - G AC AGCTC TTCTTATTTTTCAGCACTT
6 TGACTCTAAGCTCGCATTCT AATAAG TA TACA GAG CATG TCTA GCA
TATTTTTCAGCACTTTGCTA TTATTT AT ATGT TTC GTAC AGGT CGT
TACTGGACACATGGCTTATG G C A G AC CATAT ----------
TACTAGTTTATT
GAM18235 16580 AATAATTTTTAGAGAAAATG A A - AA- --- -- -- A ATGAATTA
3 ATGTAATGAAAAATTGTACC AAT ATTTTT GAG AA TGATGT AATG AAAAAT TGT CC
ATGAATTAGGAGCATAGTTT TTA TAGAAA TTC TT ACTGCA TTAC TTTTTG ACG GG
TTTCCATTTAAACGTCACCA G A A ACC AAT CT AT A --------
TTACTTAAAAGATGATT
GAM18236 14499 AATACAGCTGCATAACGGTA TGCATAACGGTA T C-- TGTAAA AATAA
6 GTATTTATTAAAGAATCATT AATACAGC GTA TTATTAAAGAAT ATT CATGAG
TGTAAACATGAGAATAACTT TTGTGTCG CGT AATGATTTCTTG TGA GTATTC
ATGGATTCTAGTTTAGTTCT TTTTATATTAAA T ATT TCTTAG -----
TTAGTAATTGCAAATTATAT
TTTGCTGTGTT
GAM18246 12833 AATAGTATTTATTTAATAAA ATTT AA C TTATATTG TATGT
4 ACATATATTATATTGAACTA AATAGT ATTT TAAAA ATATA AAC
TGTGTTAATTCATTTGTATC TTGTCA TAAA ATTTT TATGT TTG
TTTTAAAAAATTATCACTGT CTAT AA C TTACTTAA -----
T
GAM18250 14693 AATATATCATGCCACTCTCC C CCA CCC---- CT- AGG AACT
8 CCTGGCCTGCAAGGTTTCAA AATATAT ATG CTCT CTGGC GCA TTTC
CTGAAAAGTGTCCTGCCAGA TTATATG TAC GAGG GACCG TGT AAAG
AGTATTGGAGCTCCATCGTA C CTC TTATGAA TCC GA- ----
TATT
GAM18252 18178 AATATCTCTCTATCTCATGG CTCTATCTCA- TGT CGTCCA
3 TATAGTGTCTCGTCCAAGCC AATATCT TGGTATAG CT
TCTATGCTAGCCCTCATCAT TTGTAGA ATCGTATC GA
AGATGTT TACTACTCCCG TCC ------
GAM18255 14289 AATATGTTCATTGCTTGTAT TC GC TAAAACAACA AG- GAA GGCTGA
9 TTTTAAAACAACAGAATTTC AATATGT ATT TTGTATTTT GAATTTCC TAT ACA AAGAGC
CAGTATGAAACAGGCTGAAA TTATATA TGA AATATAAGG TTTGAAGG ATA TGT TTCTTG
GAGCAGGAAGAAATGTTCTT TT A- ---------- GTA ATA ------
TGTATAATAATGGGAAGTTT GGAAGAAA
GGAATATAAAAGTTTATATA A
TT T

GAM18257 9705 AATATTCCTGGGAGTGGTGG CCT GG --- AA CCTGTCTAT- TCT-- TTCCAT
6 GCAATTAGCCTGTCTATGGC AATATT G AGTGGTGG GC TTAG GGCTTAGGA GT
TTAGGATCTGTTTCCATGCT TTGTAA C TTACTACT TG AGTC TCGAGTCCT CG
TGCTTCCTGAGCTTCTTCTA C-- TT TTT AG TCCATCTTCT TCGTT ------
CCTCTGAGAGTTTTTCATCA
TTTTCCAATGTT
GAM18258 8750 AATATTGGTCATCTAAAAAC TC AAAAACT GGGGTCTG
7 TTTCTGTTTTCTGGGGTCTG AATATTGG ATCT TTCTGTTTTCT
GGAAAATAGAACATAAGATT TTATAACC TAGA AAGATAAAAGG
TCCAATATT TT ATAC--- --------

GAM18259 14675 AATATTTAGTGCTTATATAA TATAATT TAT A TTTT
5 TTTTAAGTTATTACATAATT AATATTTAGTGCTTA TTAAGT TAC TAAT
TTTATTGGTATATATTTGAT TTATGGATCATGGAT AGTTTA ATG GTTA
AGGTACTAGGTATT ------- TAT - ----
GAM18262 5850 AATCAAGCTGTGAAGGAGCG AA ---- ----- AGCC G CGTGG
3 AGCCCAGGGCGTGGTGCTGA AATC GCTGT GAAG GAGCG CAG G
AAGTGCTCACAAACTTCAAG TTAG TGACG CTTC CTCGT GTC T
AGCAGTGAGATT AG AGAA AAACA GAAA G -----
GAM18266 19374 AATCATATTTTAGAATCAGG - A A ACGAAGA GA-- TGTCACATTTTAT
2 AACGAAGATTCAGGGAATGT AATCATA TTTT GAATC GGA TTCAGG ATGTC
CTGTCACATTTTATGGCATC TTAGTGT AGAA TTTAG CCT AGGTCC TACGG
CCACCTGGACAGAATATCCG T G - ATAAGAC ACCC ----------
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GAM18266 21626 AATCATCATAATATTTTCGA TC- TATTT-- G - CGA
6 GCACGAACGATTTGCTGTCG AATCA ATAA TCGA CA CGAA
ATTTACTTTTATCTTTGATT TTAGT TATT AGCT GT GTTT
TTC TTCATTT - C ---
GAM18267 12203 AATCATGTAGCTGCCTTATA T CT CT- CT- TCC TTTA
3 ATCTTTGGCTCCAGTCTTTA AATCA GTAG GC TATAAT TTGGC AGTC
GGCTGCCAACACATTATATA TTAGT CATT CG ATATTA AACCG TCGG
TGCCTTACTGATT - C- TAT CAC --- ----
GAM18267 3237 AATCATTTATTATGGTCAGC TTATTA C TTG A TCCCCTAT
7 TTGTTTTACATGTCCCCTAT AATCAT TGGT AGC TTTT CATG
CATGAGAAATGCTATCAACA TTAGTG ACTA TCG AAGA GTAC
TCTGTGATT TCTACA - TA- - --------
GAM18270 4386 AATCCTGCTGTTTTATAGAG C - - CCT- GG C-- T GATTAA
8 GGCTTCCTTGATAATTTGGG AATCCTG TGTTTTAT AGAG GGCTT TGATAATTT GC ATAC GG

CCATACTGGGATTAACTTGT TTGGGAC ACGAAATA TTTC TCGAG ATTGTTAGG TG TATG TC

ATATAGTGAGGATTGTTATG - G G CTGT AG ATA T ------
TCGAGCTGCTTTGATAAAGC
ACAGGGTT
GAM18271 19325 AATCCTTCTTTTTCTCTTTT TTTTC C CA- AAGC
5 GCCCACAATTTAAGCAAGTC AATCCTTCT TCTTTTGC CA ATTT
GATGTGCAGAAGACATGGAA TTAGGAAGG AGAAGACG GT TGAA
GGATT TAC-- T AGC ----
GAM18272 12302 AATCGCTAAGTAGGTTACAT ---- --- ACA CACATATAACTT
3 TCAGCACATATAACTTTTGA AATCGCT AAGTA GGTT TTCAG
GGGCCGTGTACTTCCAAAGC TTAGCGA TTCAT CCGG GAGTT
GATT AACC GTG --- ----------
GAM18277 8873 AATCTGTTTACCAGACATAT TTTACCAGA A-- C AG- AGTCT
8 AGCAGCCGGGCAGGGAGTCT AATCTG CATAT GCAGC GGGC GG
TCATAGCCTGTTGCGTCATG TTAGAC GTGTA CGTTG TCCG CT
TGATTCCATTCCAGATT CTTACCTTA CTG - ATA -----
GAM18284 8194 AATGACCATTTTTCCATTTT TTTCCATTTTCTTTC A CCCT
3 CTTTCTAGGAAATTAAACCC AATGACCATT TAGGAA TTAAA
TTTTAATTCTTATCTACCTT TTATTGGTAA ATTCTT AATTT
CTACATAATGGTTATT TACATCTTCCATCT- - ----
GAM18284 19065 AATGACTAAAAAGACTTATG A AAAGA ATG ATC--- TGAA

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9          TGGAATCTATACTTGAAGGT AATG CTAA    CTT  TGGA    TATACT
           ATAAAACAGTCCAAACAAGA TTAC GGTT    GAA  ACCT    ATATGG
           AAACTTGGACATT         A   CAAAA  CAA   GACAAA    ----
GAM18285 16832  AATGACTAAATGAGTGAACA    CT       ACAAAC---     AGTGAA     TCTT
1          AACAATATCAAGTGAATGGG AATGA  AAATGAGTGA       AATATCA    TGGGAAA
           AAATCTTTTTTCCAAATGAT TTATT  TTTACTCACT       TTGTAGT    ACCTTTT
           GTTAATAACTCCTCACTCAT    CT       CCTCAATAA     AA----     ----
           TTTCTTATT
GAM18286 12464  AATGAGACCATCCATTACAT   -  C  T    ACAT-    AACACAAAA
6          GTACAAACACAAAATGTACC AATG AGA CA CCATT    GTACA
           GAAAGATGGTGTTCTACATT TTAC TCT GT GGTAG    CATGT
                        A  T  -    AAAGC    ---------
GAM18286 5933   AATGAGATTCAGGAAACATC       TC--   A  TCC-  CAG  TCCTG
9          CTGTCAGCCTCCTGGGAAAG AATGAGAT    AGGA ACA    TGT   CC
           CATCCTTGTCTCCTTAGTAT TTACTTTA    TCCT TGT    ACG   GG
           TTCATT                TGAT    C   TCCT   AAA  -----
GAM18288 19985  AATGAGGACCTTCAAATAGG      ACC    AA    GTGAT    TAA    TACTTGCAT
2          AGTGATTGAAATAAATAACT AATGAGG   TTCA  TAGGA    TGAAA   ATAAC
           ACTTGCATGTTATGCTTTCA TTACTTC   AGGT  GTCTT    ACTTT   TATTG
           TTCTGGGTGGAATACTTCAT      ATA    GG    -----    CG-    ---------
           T
GAM18288 12721  AATGAGGCTTTTGCTAAGTG        TT   ----     C  ACTT    TTTGATCT
3          GCCAGACTTGGGATTTGATC AATGAGGCTT  GCT    AAGTGGC AG    GGGA
           TTCCTCACTTGTTATTTATT TTATTCCGAA  TGA    TTTATTG TC    TCCT
           AAGTTTAAGCCTTATT           TT   ATTA     T  AC--    --------
GAM18289 22338  AATGAGTTTCTTACTCGGGA    GA  T    -  G    C     GAAGAT
2          GCTGGCTGAAGATGGCTACT AAT  GT TCTTA CTC GGAG TGGCT
           CTGGAGTTGAGGTGCGAGTT TTG  CG GGAGT GAG TCTC ATCGG
                        AG  T    T   G    -    ------
GAM18290 19854  AATGATCATTTTCCTCTCGT     --     TCCTC    GTA---   CAGA   GAT
1          GGTATGGGCAGACTGGATCA AATGA  TCATTT    TCGTG     TGGG    CTG
           GGAACTCAGACAAATATGAA TTACT  AGTAAA    AGTAT     ACTC    GAC
           TGTAAATGAAGTCATT        GA     TGTA-    AAACAG    AAG-   ---
GAM18293 5515   AATGCAATCCTAAGAGCTAA    GCA    ---   GCTAAT    CTTTTCTTTT
4          TGTGGACTTTTCTTTTTCCA AAT   ATCCT   AAGA     GTGGA
           TGAAATGTCTTTAAAGGATG TTA   TAGGA   TTCT     TACCT
           AATT                AG-    AAT    GTAAAG    ----------
GAM18299 6295   AATGCTTACATACTTTTGAA       A   CTTTTGA      CC   AAAAATC
0          TTTGTACCTGCAAAAATCGT AATGCTT CATA      ATTTGTA  TGC
           ATACAAGTTATGAGAGCATT TTACGAG GTAT      TGAACAT  ATG
                           A   -------      --   -------
GAM18300 1263   AATGGAAACCCCTCCACCTC     A              T    AA----  CA   AACAAC
4          CCACTTCTCAAAAGCACCCA AATGG AACCCCTCCACCTCCCACT CTCA     AG  CCC
           ACAACGGGCCCTGGGCACTG TTACC TTGGGGAGGTGGAGGGTGG GAGT     TC  GGG
           AGGGTGGGAGGTGGAGGGGT     A              -   CACGGG  CC   ------
           TACCATT
GAM18300 5669   AATGGAAGGATTCAGCTTTC      A      C   C          -   AA-    TG  AAAGAGAAA
9          AGTTAAAAAAGAAGAAGAAG AATGGA GGATTCAG TTT AGTTAAAAAAGAA GAAG   GAAA  GC

           AAATGGCAAAGAGAAAGTTT TTATTT CTTGAGTT AGA TTAATTTTTTCTT CTTT   CTTT  TG
```

TTTCAAATTTCTTTCTTTTT A - T T AAA TT ---------
TAATTTAGATTGAGTTCATT
TATT
GAM18303 1559 AATGGCAGTGCTTTGTTCAC GCTTTG TAAAG - TAAATTT
5 TTAAAGGGACCAAGCTAAAT AATGGCAGT TTCACT GGACCAA GC
TTGTATTGGTTCATGTAGTG TTATTGTCA AAGTGA CTTGGTT TG
AAGTCAAACTGTTATT AACTG- TGTA- A -------
GAM18306 8515 ACAAATACTATATGAAATTT ACT-- A CAC TTTCAC
2 TTCACATTATTTTCACATAA ACAAAT ATATG AATTTTT ATTAT
TTTTAAAAATTACATATTTC TGTTTG TATAC TTAAAAA TAATA
AGGTTTGT GACTT A TTT ------
GAM18313 3678 ACAAGAAAAAGAATCTTTAC A - TTTA--- CCCTTTCTCT
5 CTTTACCCTTTCTCTTGGAG ACAAGAA AAGAA TC CCTTTA
GAATATTTGACTTCTTATTC TGTTCTT TTCTT AG GGAGGT
TTGT A C TTTATAA ----------
GAM18315 3921 ACAAGACTTGCATAGAAAAA A ----- GAA TTA
1 TAAGATATTATATTTTGTTT ACAAG CTT GCATA AAATAAGATA
GTATGTATTTAGAGATTTGT TGTTT GAG TGTAT TTTGTTTTAT
A ATTTA G-- ---
GAM18315 3468 ACAAGATCACAGACAGGGTA A A GG---- A AGA----- ATTTACAA
9 AGAAGGGGGAGAGAGGAAAT ACA GATCAC GACA GTAAG AGGGGG GAGGAA
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TTCCTTATTTACAGAGATTG A A TAGAGA A GATAAATA --------
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GAM18316 14511 ACAAGATTGCATAAGATGTG GCAT G ATACTC GT T GTGG AATAAT
3 AATACTCAGTCATTTTAATC ACAAGATT AAGAT TGA A CATT TAATCA G
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TTATAATGGTTTTGGATCTT GCAT G ------ TG T AATA ------
TACGAATCTTGT
GAM18318 1291 ACAAGGCCTGTCTGCCTGAT G- T C - A AGACCC- GCCT
9 GCCAAGACCCAACGCCTGTT ACAA GCC GT TG CCTG TGCCA AAC
TTTTAAGTGGCAGCAGGACA TGTT CGG CA AC GGAC ACGGT TTG
TACGGCAATTGT AA - T A G GAATTTT ----
GAM18322 9076 ACAAGTTATTGCCACTGCTA A TATT C C ---- CA- TT- ATGCCA
3 CGGTATATTTCAAGAGATTC ACA GT GCCA TG TACGG TATATTT AGAGA CT
TATGCCAGGTATTCTCTGAA TGT CA CGGT AT ATGTC ATATGAA TCTCT GG
AAGTATAGATCCTGTATTAA A TCCT A T CTAG AAG TAT ------
TGGCTCCTACATGT
GAM18322 1215 ACAAGTTTCTATTCAGATTT TT---- TC TTTT TT TTCAT
7 TCTATTTCTTCATGATTTAG ACAAG TCTAT AGA CTA TC
TCTTGGTAGGTTTCTTCTTG TGTTC GGATG TCT GAT AG
T TTCTTT GT ---- TT -----
GAM18325 701 ACAATCACTTGGACTTTATC -- CT- ATCT- ATGGA
4 TGGGCAATGGATGCCCCTCA ACAA TCA TGGACTTT GGGCA
AGAAGTTTACAATGACATTG TGTT AGT ATTTGAAG CCCGT
T AC AAC AACTC -----
GAM18331 19851 ACAATTCTCTTTTCCTGACC T C -- AC CT- TT- ATACATCCAC
3 AATCTTGTTTTACCCTATAC ACAAT CT TTTTC CTG CAAT TGTT ACCCT
ATCCACAGGGTTTTGACACT TGTTG GA AAAAG GAC GTTG ACAG TGGGA
TGTTGTCCAGTTGAAAAAAG - A TT CT TTC TTT ----------

GTTGT
GAM18336 14415 ACACACACAGAGAGAGCAGA - C GG- ACACA
6 GGGGGGAGACACACTCTCAC ACACACA CAGAGAGAG AGAG GGGAG
ACTCTCTCTCTCTGCTGTGT TGTGTGT GTCTCTCTC TCTC CTCTC
GT C - ACA -----
GAM18345 9709 ACACATTGATATCCCACACA TGAT C----- ATAAAAG- TG AT TT ATAC
2 TATAAAAGTCATGCTCTGCA ACACAT ATCC ACACAT TCATGCTC CAA AC TGT
AATACTTTGTATACACACTG TGTGTA TAGG TGTGTA AGTATGGG GTT TG ACA
TCCTTGTGGGGTATGAATTC CATT AACTTC GGACCTTA GT CC TC ----
CAGGATGTGTCTTCAAGGAT
TTACATGTGT
GAM18348 5364 ACACCCCCTGAGCGTCATGA C TG ------ GA - C GC C ACAC
3 CTCTGGTGGTTCCCTGCCCC ACA CCCC AGCG TCAT CTCTG GTGGTTC CT CC TG
TGACACCGCGGATGGAGAGC TGT GGGG TCGT AGTA GAGAC CACCGAG GG GG GC
CACTCAGAGGATGAAGATCT C -- TCTAGA G- T A TA C ----
TGCTGGGGCTGT
GAM18352 16778 ACACGCACATTCACAGTAGT GCA T GTA- TCCCA CAG- AAAGTA
8 TCCCAGGGCAGCAGAAAGTA ACAC CAT CACA GT GGG CAG
CTGAAATCCCACCTTATGTG TGTG GTA GTGT CA CCC GTC
ATGAAGTGT AA- - ATTC ----- TAAA ------
GAM18355 22328 ACACTACTGGGGAACATTGC --- G AAC G A TAGA
3 TTACCTGGTTTAGAAGCCAG ACACT ACT GGG ATT CTT CCTGGTT
GCAAGAATCACCCGGGTCAT TGTGG TGG CCC TAA GAA GGACCGA
GGTGT TAC G AC- - C ----
GAM18356 3745 ACACTCAGTGGGAGTGGACC AG GTGGA - ATCACAA CA ATG
7 GGCGATCACAAGAGGGGCAG ACACTC TGGGA CCG GCG GAGGGG GATG
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CCTGCACGGAAAAATCCCAG -- AAAAA A CCACC-- A- ---
GGTGT
GAM18360 2862 ACACTGGCTGAAGGAAAATT GC A GAAAA TATTTCAATTATTTTTAT
2 TGTATTATTTCAATTATTTT ACACTG TGA G TTTGTAT
TATGTACAGAAAACTCAACA TGTGAC ACT C AGACATG
GTGT A- - AAA-- ----------
GAM18362 4141 ACACTTACCACAGCTTGTAT CCAC T C TTGTTT-- TAAT
5 TTACGTAATTGTTTGGTTAA ACACTTA AGCTTGTA TTA GTAA GGT
TGCCTATCTGTCTTACTTGA TGTGAGT TCGAATAT AGT CATT CCG
CTATAAGCTCTATGAGTGT ATC- C T CTGTCTAT ----
GAM18363 14579 ACACTTGAGGTGTGTGACCA CTT G GACCA CA AG A- - AAATCTTC
8 CTTTACAGAGAAGAGGCTAT ACA GAGGT TGT CTTTA GAGAAG GCT TGAA AGAT
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GT
GAM18364 8694 ACACTTTATTTTCAACTAGA C TCA--------- G AACA
5 AAGGTGCAAACATGTAACTT ACA TTTATTT ACTAGAAAG TGCA
TTTGGTCACACTCTCAACAA TGT AAATAAA TGGTTTTTC ATGT
ATAAACTGT C CAACTCTCACAC A ----
GAM18365 3759 ACAGAAAAGGCTAATGATAC AA CTAA T--- AAA TTTCACCCT
8 CTAAAAAGCTTTCACCCTGT ACAG AAGG TGA ACCTA AGC
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CCTTGGCTGT GG ATTG CAAC GCA ---------
GAM18365 16579 ACAGAAAATGATGTTACAAA AAAT AACA A CCACTCT
9 CACCAGAAAAGCCACTCTCT ACAGA GATGTTACA CCAGAA AG
ATTCTGGATGTAATATCTCT TGTCT CTATAATGT GGTCTT TC
GT ---- A--- A -------
GAM18372 19269 ACAGACACTTGGTAGGGATA C G-- CCCA- -- ATAT C TTGTACAC
2 CCCCATACGAACGATATCTC ACAGA ACTTGGTAGG ATAC TACGA ACG CT ACTACG
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TAGTCCGTACTCGTAGTAGT - ACA TGATG CA CT-- T --------
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GT
GAM18375 19905 ACAGAGAGCTCAAAGACAGG - TCAAAGACAG A CA CT TT-- C AGGCCAC
1 CCCATGCAGGTGCTGTTTCT ACAG AGAGC GCCC TG GGTG GT CT CGGTG
CCGGTGAGGCCACCACCGAA TGTC TCTCG TGGG AC CCAC TA GA GCCAC
GTACTATTCCACCACCAGGG G ---------- - CA CT TCAT A -------
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GAM18376 3092 ACAGAGCACAATAGGGAGAA CACAA G CTGG- CAGA G CCTTCATA
0 GGGGTACTGGTTCTGAACAG ACAGAG TAGGGA AAGGGGTA TTCTGAA AT GGTTC
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CCGATGTTTCAGAAAATACT AA--- G CATAA TG-- G --------
GCTTTTTGTTCTTAAACTCT
GT
GAM18376 9562 ACAGAGCCACTGGCACAAGT AGCCACT A T - TAGT CACTCCC
6 GCCCTTAGTGCTGCCACACT ACAG GGCAC AG GC CCT GCTGCCA
CCCTGGCAGCCAGGTGCCCT TGTC CCGTG TC CG GGA CGACGGT
GGTGCCCACCCCTGT CCCAC-- G C T C--- -------
GAM18380 5519 ACAGAGTTTCACCATGTTGG --- CACCA G-- - CTTGAA C A T ACC
7 CCAGGCTGGTCTTGAACTCC ACA GAGTTT TGTT GCCAGGC TGGT CTC TG CCT GTGATCC
CA
TGACCTTGTGATCCACCCAC TGT TTTAAA ACAA TGGTTCG ACCA GAG AC GGA CATTAGG
GT
CTCGGCTCCCAGAGTGCTGG ATT TCC-- GAA C CC---- T - - GTC
GATTACAGGCATGAGCCACC - C CTC
ACGCTTGGTAAGAACACCTA C CT GG
AATTTTTATGT G GA CC
A - ---
GAM18380 19810 ACAGAGTTTTGTCTTTTCTA - TT TC CTAA ------- ACTA
9 ATCCTTGTTAGACTACTGAT ACAG AGTT G TTTT TCCTT GTTAG
TTAAAAGAAGGAAAAAAAAA TGTC TCAA C AAAA AGGAA TAGTC
AGCCCAACTCCTGT C CC GA AAAA GAAAATT ----
GAM18387 16639 ACAGCAGTTTGGTATTGAGT G - T TT-------- TCTAGC
6 TTCTTCATCTAGCTGAAGAT ACA CAGTTTGGT AT GAG TCTTCA
TCACAAATTCTCCATAATCA TGT GTTAAACTA TA CTC AGAAGT
AATTGATGT A A C TTAAACACTT ------
GAM18390 711 ACAGCCTAAGCTGAGTGTGA ------- G - GA - GAA CGA C TATC
3 CCCCAGAAGCCACGATGTGC ACAGCC TAAGCT AG TGT CC CCA GCCA TGTG TCTG
TCTGTATCCAGAACACACTT TGTCGG GTTTGA TC ACG GG GGT CGGT ACAC AGAC
GGCAGATGGAGGAAGCATCT TACCAGA G T AA A AGA TC- A ----
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GAM18393 3884 ACAGCTGAAAGACATATGGT AAAG A TC C ACGAAAA

7 TTCTTTTAGACGCAACGAAA ACAGCTG AC TATGGTT TTTTAGA GCA
ATGTTCTAAAATTGACTGTG TGTTGAT TG GTGTCAG AAAATCT TGT
GTGATAGTTGT AG-- - TT - -------
GAM18394 5650 ACAGCTGGAAGTGGGGGTGG C -- GG CC - CTCCC
8 GGGCCGCCTGCTCCCCAGAG ACAG TGGAA GTGGG TGGGGG GC CTG
CTCCCCGTGTCCATCTTTCC TGTC ACCTT TACCT GCCCCT CG GAC
ATCTGT T TC GT -- A -----
GAM18395 945 ACAGCTTCTCTACAGACTCC C- --- ACTCC- TTTC
7 GGCCCTTTTCAGGGCCCCCA ACAGCTT TCT ACAG GGCCCT
AACTGTCACGGAAAGAGCTG TGTCGAG AGG TGTC CCGGGA
T AA CAC AAACCC ----
GAM18398 19853 ACAGGACCAGGTGGAGCAGT GA G GA TT GGCACAAG
3 TCCTGGCCCGGCACAAGGGG ACAG CCA GTG GCAG CCTGGCCC
CCAGGCCTGCAGCACGTGGG TGTC GGT CAC CGTC GGACCGGG
GCTGT GG G GA C- --------
GAM18399 18889 ACAGGAGCATTCAGAATGAA AG TC AAGACCGACA AGGAGAAAA
8 GACCGACAGATACAGGAGAA AC GAGCAT AGAATG GATAC
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AGGT GA T- ---------- ---------
GAM18406 18777 ACAGGGTCTCACTCTGTCAC T C TC --- - A C GGC TCTCCAC
3 CCAAGCAGGAATGCCATGGC ACAGGGTC CACT TG ACCCA AGCAG GA TGC AT GTGA
GTGATCTCCACTCACTGAAT TGTTCTAG GTGA AC TGGGT TCGTC CT ACG TA CACT
GCAATCTCTGCTTCCTGGGT - - T- CCT T A - AGT -------
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GAM18409 6559 ACAGGTGCTTTGACAGTTTT - GA T- ATGAA ATGCAATAAAACCAAAC
8 GATGAAAGATGCAATAAAAC ACAGGTG CTTT CAG TTTG AG
CAAACCTGATGCAGACCCTG TGTCCAC GGGA GTC AGAC TC
GAAGGGACACCTGT A AG CC GTAG- ----------
GAM18410 8700 ACAGGTGGTTGCTTTGAACT AG - GC - - GAGAAAAACAGA
2 TTATTTGAGAAAAACAGAAG AC GTG GTT TTTGA AC TTTATTT
ATAAATGTATCAAAAGAACA TG CAC CAA AAACT TG AAATAGA
CACAGGT GA A GA A T ----------
GAM18413 8778 ACAGTAGGGGGAAGGTGTGG GGG GG - TG CTTTAATCCAT
3 CTCATTGACTTTAATCCATT ACAGTAG GAA TGTGGCT CAT A
TGGTGAAGTCACAGATTCAC TGTCGTC CTT ACACTGA GTG T
TGCTGT A-- AG A GT ----------
GAM18414 8038 ACAGTATTGCTAGGGGGCAG ATT A G AAATT ATCT TGCCGC GCTA
4 AAAATTCCTATCTTCTCTGC ACAGT GCT GG GGCAGA CCT TCTC GTGG
CGCGTGGGCTACCACACAAT TGTTG CGG CC CTGTCT GGA AGAG CACC
GAGATTGCAGGTCAGATCTG GTT A G AGACT CGTT TAACA- ----
TCGCCAGGCTTGGTTGT
GAM18415 20939 ACAGTCGGCACTGTTATTTG CG CAC A TG ATCAGCA CTCAA
7 CTTCTTTTAATCAGCAAAGG ACAGT G TGTT TT CTTCTTTTA AAGGC
CCTCAAGTCTTAAAATAAAA TGTCG C ACAA AA GGGGAAAAT TTCTG
GGGGAGAAGAACAAACTAGC AT AA- G GA AAAA--- -----
TGT
GAM18415 18027 ACAGTCTACTTATTTTTTGT G AC TCCC AT----- TTT
8 CCCTTTTATATCCTATTTTA ACA TCT TTATTTTTTG TTTTAT CCTA
GGCAAAATGATAAAACCCAG TGT AGG AATAAAAGAC AAAATA GGAT
AAAATAACAGGAATGT A AC CC-- GTAAAAC ---

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GAM18425 4371   ACAGTTTTTATTTCCATCAG     TT    T   C   AATGTAT   ACAC
4           TAAATGTATAAAAACACTTT ACAGT  TTATT CCAT AGTA      AAAA
            TCCCTTAATACTCATGGCAA TGTTA  AATAA GGTA TCAT      TTTT
            TAACTATTGT            TC    C   C   AATTCCC   ----
GAM18426 19404  ACATAAACTGCATTTATTGT    AA-    ATT        AAATTC  AATGG
4           GTAGAAATTCAGAATGGCTC ACAT   ACTGC   TATTGTGTAG     AG
            AGGCTACACAATAGTAGTCA TGTA   TGATG   ATAACACATC     TC
            GATGT              GAC    ---        GGAC--  -----
GAM18427 18664  ACATAAGCATTTCCCAAGTT     A  ATT   -------   TT   A   CTGTTA
7           GCTATTATCTGTTAATAACA ACATA GC   TCC      CAAG  GCT TTAT
            GTGGTTTGATTAATTGGATT TGTGT CG   AGG      GTTT  TGA AATA
            GGCTGTGT            - GTT   TTAATTA    GG   C   ------
GAM18430 2698   ACATACGAAGTTACCACCTC     -    TACCACC   A   AATAAC   A-   C    ACAA   AT    GG -
2           AAGGGAATAACAGAAGAACG ACATAC GAAGT      TCA GGG     AGA  GAA GTTGC    TGT  CTACG
GT
            TTGCACAATGTATCTACGGG TGTATG CTTCG      AGT CTC     TCT  CTT CAACG    ACA  GGTGT  CA
            GTACGCGAGTTCAAACAATG      A    CTACC--   -   ACACA-   CA   -    ----   CG    AA  A
            TGGGCACAGCAACTTCACTC ---  GCGA
            TACACACTCTGACCATCGCT    AC
            TCAGTATGT            TG
                        ACT  ----
GAM18430 21500  ACATACTTGAACTTACACTG   A    G    ACAC    AAA   TGTTTACT
7           GGCAAATGTTGTTTACTACA AC TACTT AACTT    TGGGC   TGT
            GTCCAAATGAAGTTAAAGTG TG GTGAA TTGAA    ACCTG   ACA
            GT                -    A    GTAA    ---   --------
GAM18433 6235   ACATAGTGAAACCCCATCTC    A   AA-   -    -    A    AAATACAAAAAA
1           TACTAAAAATACAAAAAATT ACAT GTG   ACC CCAT CTCT CTAA
            AGCAGGGCGTGGTGGTGGGC TGTA CAC   TGG GGTG GGGA GATT
            ACATGT              -  GGG   T    C    C   ------------
GAM18433 9316   ACATAGTGGAGGCCGCAGCA      ----      C  A-  AG     ACAT
4           GTCAGGGACATTTCTGAAGC ACATAG    TGGAGGC GC  GC  TCAGGG
            GAGCGTCTTCGATGCCTATG TGTATC    GCTTCTG CG  CG  AGTCTT
            T                   CGTA      -  AG  A-      ----
GAM18438 18916  ACATCACTAGTCTTTCTGAA     - ACTAG      GAAACT  TGAAGATATTATT
1           ACTGCTGAAGATATTATTGC ACAT C     TCTTTCT      GC
            TAAAGAAAGAGAACAGAATG TGTA G     AGAAAGA      CG
            T                  A ACAAG      AAT---  -------------
GAM18446 4378   ACATCTTTGGAAATGATGAG    CTTT     GA      A   CCTGTGTTAAAAAAAA
3           ATTATTTCCTGTGTTAAAAA ACAT    GGAAAT  TGAGATT TTT
            AAAAAAAAATCTTAAATTTC TGTA    CCTTTA  ATTCTAA AAA
            CTACAATGT            ACAT     A-      A  ----------------
GAM18450 18988  ACATGCAGAAACCCCGTCTC    T   GAA   -    -   TA    AAATACAAAAAA
0           TACTAAAAATACAAAAAATT ACA GCA   ACC CCGT CTC  CTAA
            AGCTGGGCATGGTGGTGCAT TGT CGT   TGG GGTA GGG  GATT
            GCCTGT              C   ACG   T    C   TC   ------------
GAM18451 18093  ACATGCCTTGGTTCACGGAT    T  CTTG       ATG-  AA    CCCGTA
3           GGCAAGTCCCCCGTAGGATG ACA GC    GTTCACGG    GC  GTCC
            GCATGCCCGTGGACACGCTG TGT CG    CAGGTGCC    CG  TAGG
            T                  -  CA--       CGTA  G-   ------
GAM18457 21041  ACATGGTATTTATCAGGGGG     G   T   CA   - A      C     TTAATTATGGGT
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5          GATTTTGCCCTTTTATTTAA ACATG TAT TAT  GGGG GG TTTTGCC TTTTAT
           TTATGGGTATAAAATGGCAA TGTAC ATG ATA  CTCC CC GAAACGG AAAATA
           AGCCACCTCAAATATGTACA    - T  AA   A -     T    ----------
           TGT
GAM18464 9519  ACATGTGCATTGGTGATTTT   T  - TT-    TTT--    TTCATTCTTAATATT
2          GATCATTCATTCTTAATATT ACA GTG CA  GGTGAT   GATCA
           TGATTTCTGTGTCACCTACT TGT TAC GT  CCACTG   TTAGT
           GTCATTTGT          T  T  CAT    TGTCT    ----------
GAM18464 3813  ACATGTGGTGTTTGGTTTCC    T   T--   TTT  TGC-    T  AGTT
6          TGCTCCTCTGTAAGTTTGCT ACATG GGTG  TTGG  CC   TCCTC GTA
           GAGGATAATGGCTTCCAGCT TGTAC CTAC  GACC  GG   AGGAG CGT
           TCATCCATGT          -  TTC   TTC  TAAT   T  ----
GAM18469 21077  ACATTATTGAGGAAAATTAA    TATT    AAATT---   -   A    CCCCACCCTTTACATT
8          TATCACAGCATAACCCCACC ACAT   GAGGA      AATA TCAC GCATAA
           CTTTACATTTTGTGCAGTGA TGTA   CTTCT      TTAT AGTG CGTGTT
           TTATTTTTTAAAGTCTTCTT   CTTT   GAAATTTT   T   A    ----------
           TCATGT
GAM18472 20279  ACATTCGCTCCACAGAACTG  A   -    AGAA    A  AGGTCATCGA
0          GCAAGCAGGTCATCGAGTAT AC TTCG CTCCAC   CTGGCA GC
           GCCGGCAGTGGAGATGAACG TG AAGT GAGGTG   GGCCGT TG
           T              C   A    AC--    A ----------
GAM18474 1467  ACATTGCCAGCAGGTGGGGG      C  A   -  TG  CCA   T  CCTCC
0          TGTCTCCAGCCTTGCGCCTC ACATTGC AGC GGTGG GGG  TCT  GCCT GCG
           CCGCTGGGTCAGGATGTCTG TGTAGCG TCG CCACT TCT  AGG  TGGG CGC
           TCACCGCTGCGATGT         -  -   G  GT  AC-   T  -----
GAM18479 19914  ACATTTCGTCGAGTTTGTGT    TT  CGA- TT  T   AGAA    CAACA
0          GTGGGAGAACACAACAACAT ACAT  CGT   GT  GTG GTGGG   CACAA
           TGTGCCCACTTATCTACAAT TGTA  GTA   CA  TAT CACCC   GTGTT
           TATGTTATGT          TT  TTAA  TC  T   ----   -----
GAM18480 12759  ACATTTGGATCCACCAGCAT      -  A  --    AA  A   ATTTTGCC
4          GAAAATAGGGGATTTTGCCT ACATTTGG ATCC CCA  GCATGA  AT GGGG
           TCCATGCTTATGCACTGGGG TGTGGACC TGGG GGT  CGTATT  TA CCTT
           GTCCCAGGTGT             C   -  CA    CG  -   --------
GAM18482 5460  ACATTTTCTACATGTGCCAT   TTTTCT    TGCCAT    CTTGATACAT
4          TAATAACTTGATACATTTGT ACA    ACATG    TAATAA
           TACATTTCATGTTCTTCTGT TGT    TGTAC    ATTGTT
                          CTTCT-    TTTAC-    ----------
GAM18486 8771  ACCAAACTCAAAGTAGCTCC   A  TC     - TC   TC  AA  C  AAA    ATGAAA
5          TGGTCAGAAAGTGCAGTAAA ACCA AC  AAAGTAG C  CTGG  AGA  GTG AGT  GGGTGC
           GGGTGCATGAAAGCATCCGC TGGT TG  TTTTATC G  GACT  TCT  TAT TCG  CCTACG
           TCTATGGTCTCCTCAGTGGT   G  GA    T GT   CC  GG  C  ---    ------
           CTATTTTAGGTGTGGT
GAM18487 9657  ACCAACACAGGAGATATTTT    C  --- -      TAT----------     CAATGAATT
6          TATAGAAAGCAATGAATTTT ACCAA ACA  GG AGATATTTT           AGAAAG
           TTCTTTAAAGAACTTAATTT TGGTT TGT  CC TCTGTAAAA           TCTTTT
           TAAAATGTCTACCCCATGTT    -  ACC  A      TTTTAATTCAAGAAATT    ---------
           TGGT
GAM18489 9421  ACCAAGGACACTGACCCCAA   A   CT--    AA  G   CCTA  TCCAG
6          GCTGTCCTGCCTAGCGTCCA ACCA GGACA   GACCCC  GCT TCCTG   GCG
           GCGTCTTCTAGGAGGGTGGG TGGT CCTGT   CTGGGG  TGG AGGAT   TGC
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GTCTGCCTGTCCTGGT - CCGT -- G CTTC -----
GAM18492 18805 ACCACAAACTATGCTTCAAC CTA CAACA--- ----- AACTTC
7 ACCTTCTTCAACTTCGAGGA ACCACAAA TGCTT CCT TCTTC
CATGCAGGAGATCACCAAGC TGGTGTTT ACGAA GGA AGGAG
ACTTTGTGGT C-- CCACTAGA CGTAC ------
GAM18494 735 ACCACACCTAAAATAGACCA C C A ACCA A-- C-- - C A TTTCAT
2 CTGAGGAGACCATAGAGCGG ACCA AC TAAA TAG CTG GGAGA CA TAGAG GG TGC
ATGCTTTCATGCACCCTTTA TGGT TG GTTT ATC GAC TCTTT GT ATTTC CC ACG
CTGCACTTTCTGACCAGGAG T A C GAG- CAG CAC C - - ------
CTACTTTGAGTTTGGT
GAM18496 18022 ACCACATTGTTGCTTGGAGA A G TG GA -- TTTTCGCGTCTGTC
6 CATGTCATTTTCGCGTCTGT ACC CATTGTT CT GA CA TGTCA
CTGACATTTGCGTCTGAGAA TGG GTAACAA GA CT GT ACAGT
ACAATGCGGT C A GT GC TT ----------
GAM18497 4094 ACCACCCACAGGCTGGTATT A CT ATTGA TCTTG- CCTT
3 GACATCCTTCTTGGGCCGGG ACCACCC CAGG GGT CATCCT GGCCGGG
CCTTTTTGGCCAAATGTAGG TGGTGGG GTTC CCG GTAGGA CCGGTTT
ATGGATGGCCCTTGGGGGTG G -- GTAG- TGTAAA ----
GT
GAM18500 20295 ACCACGGGGTCCAGTGCCTG C CAGT C CAAC C GAAG
1 TGGGCCAACCACCAGGAAGC ACCA GGGGTC GC TGTGGGC CAC AG
TGTGCATGCCCACAGCCCGA TGGT CCCCGG CG ACACCCG GTG TC
GGCCCCTGGT - AGCC - TAC- - ----
GAM18501 6148 ACCACTGAAGAAAAGACGAA - AAAGACGAAT AAGG AAGGAG
6 TGCAAAGGAAGAAGGAGCTT ACCACTG AAGA GCA AAG
AATGCCAGGAACAGATTTTG TGGTGAC TTTT CGT TTC
CAGTGGT G AGACAAGGAC AA-- ------
GAM18503 5655 ACCAGAGGCTTAGGAGGCGT A C GGCG TG ATACTCA
9 TTGAGAGGATACTCATCTTT ACC GAGG TTAGGA TT AGAGG
TGGGAATCCTGACCTTAGGT TGG TTCC AGTCCT GG TTTCT
A - AA-- GT -------
GAM18504 20092 ACCAGATCCTTCTCATCCGT - CC - ACG TTTTC -- ATTTCTTCGCTAATTA
5 ACGGATTTTCAAATATGCGC ACCA GAT TTCT CATCCGT GA AAATAT GCGCTAT
TATATTTCTTCGCTAATTAG TGGT CTA AGGA GTGGGTA CT TTTATG TGTGGTG
TGGTGTTGGTATTTTCATGA T TC C GTA ----- GT ----------
TGGGTGCAGGACTATCTTGG
T
GAM18508 5513 ACCAGCTGCATGACGGTGTC AGCT T-- GT TC T - C-- TACCCT
3 CTGTCCTCGGCAGCGCTACC ACC GCA GACG GTCCTG C CG GCAG GC
CTGCCAACTGCACGGTGCGG TGG CGT CTGC CAGGGC G GC CGTC CG
GACCACGTCCACTGCTTGGG GTT- CAC AC GT - A AAC ------
T
GAM18509 6641 ACCAGGAGGCTGATGGTGAG - G T GTAGGA- - AAGCG
4 TAGGAGGAAGAGGAAGCGCT ACCAGGA GGCT ATGG GA GGAA GAGG
TCATTTTGGTAGGATCTTCG TGGTTCT TCGG TGCT CT TTTT CTTC
TGGCTGTCTTGGT G - T AGGATGG A -----
GAM18509 18492 ACCAGGATGGTCGCTTTCTG - T T T TCTCGTT T CTCTTGCCCT
7 TCTCGTTCAATGATCCTCTT AC CAGGA GG CGCT TCTG CAA GATC
GCCCTGATCTTGTTCAGACG TG GTCCT TC GTGG AGAC GTT CTAG
GTGTCTCTCCTGTGT T C T C TT----- - ----------

GAM18514 4398 ACCATCCACCACCGTCTTCT C C -- C AA T TTTCT- C- TTAACCAGC
1 TTAGAACACTGTTTTCTGGG ACCAT CAC AC CGT TTCTTTAG CAC GT GGGAT TGATG
ATCTGATGTTAACCAGCCGT TGGTA GTG TG GTA AAGAAGTC GTG CA CTCTG ACTGC
CATTGTCTCTGTCATACGTG A T CC C -- - TACTGT TT ---------
CTGAAGAACATGCCGTTGTG
AATGGT
GAM18516 3504 ACCATGCACCCTTGAAAAAA - T C AAAAA --------- C CTTCATCAC
1 GCTTTGCCTCCTTCATCACG AC CA GCAC CTTGA GCT TTGC TC
AGCAATCTTCCGCCAGCAGT TG GT CGTG GAACT CGA AACG AG
CAAGCGTGCCTGTGT T C C GA--- CCGCCTTCT - ---------
GAM18525 4133 ACCCAGGAGGCGGAAGTGTG AGGCG TG AA--- GCCAAGA
7 CAAGTGAGCCAAGATCACAC ACCCAGG GAAGTG C GTGA
CACGTGCACTTCAGCCTGGG TGGGTCC CTTCAC G CACT
T GA--- GT CACCA -------
GAM18531 12840 ACCCATATACCTTTTAAGTT CA TT GT TT-- CTA AATATTAA
1 TGTTTCAACTAACAATATTA ACC TATACC TTAA TTGT CAA AC
AGTGAATTGCTTTGCAAGTT TGG GTATGG AGTT AACG GTT TG
TGACTGGTATGCAGGT AC TC TG TTTC AAG --------
GAM18532 20094 ACCCCAAAATCTTTTCAGTT AAAA- AG G GG AGGT
8 GTGGGTTTGTAGGTGCGAGT ACCCC TCTTTTC TT TG TTTGT
TTGAAGAGGAAAAGAGGAAG TGGGG AGAAAAG GA GT GAGCG
GGGGT GAAGG GA A TT ----
GAM18533 6106 ACCCCACGGAAATCTGTCAA C GAAATC AATACA AACGTTCACGATTTTC
4 TACATATGGAACGTTCACGA ACCC ACG TGTC TATGG
TTTTCCCATAGGGACAAACA TGGG TGC ACAG ATACC
CGTTGGGT T ACAA-- GG---- ----------
GAM18533 20265 ACCCCAGAACATTTAAGGTG CAGAA AAG TG GA A TCGGGAC
6 TATGAGAACTCGGGACGTCA ACCC CATTT G TAT GA C
AATATGTAGAAATGAAGAGG TGGG GTAAA T ATA CT G
GT AGAA- GA- GT AA - -------
GAM18536 18640 ACCCCCGCGAAGACTCTGGC CGA CTGGC T G - -- - GCGTGGGAGGG
0 GCCTCCTGCAGGCGTCCCGA ACCCCCG AGACT GCCTCC GCAG CGT CCCGATC GCAG GCT

TCGCAGGCTGCGTGGGAGGG TGGGGGT TTTGG CGGAGG CGTC GTA GGGCTGG CGTC TGG

GGTACTGCAGGGTCGGGTAT --- C---- T - T GA A ----------
GCTGCTGGAGGCCGGTTTTG
GGGGT
GAM18536 14471 ACCCCCTTTCTGCTGCCCTC TTC GC C--- CAAAACTTAC
8 ACCTGTGCAAAACTTACCAC ACCCCCT TGCT CCTCA CTGTG
AGCCTTTGAGGAAGTATGGG TGGGGGG ATGA GGAGT GACAC
GGGT T-- A- TTCC ----------
GAM18543 6676 ACCCGTCCGAGCGCCCGGGG T GA G --------- GGGA
0 GCCGCTGGCGGGAGCCGGCG ACCCG CC GC CCCGGGG GCCGCTGGC
GCACGCGGGGGCCCCGGGGC TGGGT GG CG GGGCCCC CGGCGGCCG
GGCTGGGT C -- - GGGGGCGCA ----
GAM18546 3389 ACCCTCTACGCCTGGGAGGG C C- - -- --- - TGCGTCT
4 GGCCTGCGTCTGGATCCCCT ACC TCTA GC CTG GG AGGGGG CC
GCACCTACAGAGCCCTAGAT TGG AGAT CG GAC CC TCCCCT GG
GGT T CC A AT ACG A -------

GAM18547 8146 ACCCTCTTTATTCACAAGTG T- C A GTACCTC C CCATAA
0 TACCTCTGCTAACCATAATT ACCCTCTT ATT ACA GT TG TAA
ACATCACTAAGCCTGTTAGT TGGGAGAG TGA TGT CG AC ATT
TTGAGAGGGT TT T C AATCACT - ------
GAM18548 16757 ACCCTGCCTCCCTGACTGCG - - ---- C --- TG -- C ATAC
3 CCTGTGTGACACATACGTTC ACC CTGCC TCC CTGA TGCG CC T GTGA AC
ACTGGTGGGGCACGCATCAG TGG GACGG AGG GACT ACGC GG G CACT TG
ATACGGATGGCAGTGGT T T CATA - ACG GT GT - ----
GAM18553 6672 ACCGCCCCTGCCGCTGGCTG --- GCT A C A TG G AGACACCGGACATG
9 CAGATGGCTGACCTGCGGGC ACCG CCCCTGCC GGCTGCAG TGG TG CC CGG CGG
GGAGACACCGGACATGCTGG TGGC GGGGACGG TCGACGTC GCC AC GG GCC GTC
CCGACGGCACCCGGCTGCAG CCT --- G C - CA G ----------
CTGGCAGGGGTCCCGGT
GAM18554 1201 ACCGCGTCGGACGTCGAAGT C GAC CGA A -- TTT
7 GTTTAAGGCGGGTTTCCCAG ACCG GTCG GT AGTGTTT AGGC GGG
GCCTGGAATGCTAAACCAAC TGGC CGGC CA TCGTAAG TCCG CCC
GGCCCGGT C AAC AA- G GA ---
GAM18556 16822 ACCGTGAAGCTGCTTTGGAA -- A TTT--- TT- - T TACCACT
7 CTTGTACCGTCCTACCACTG ACCG TGA GCTGC GGAAC GTA CCG CC
GTGGCTGCCTCGTTCCCTGT TGGC ACT CGGCG CCTTG CGT GGT GG
CTGCGGCTCATTCGGT TT - TCTGTC CTC C - -------
GAM18557 18540 ACCGTGTTAGCCAGGATGGT CG TT - A TCTC TCCTGACCTTGT
5 CTCGATCTCCTGACCTTGTG AC TG AGCC AGG TGG GATC
ATCCACCCACCTCGGCTCCC TG AC TCGG TCC ACC CTAG
AAAGT AA CC C - CAC- ----------
GAM18562 21116 ACCTATAAAGTGAAATAGAA A ---- C TAAACTGACT
4 CTTATTTAAACTGACTAGTA ACCT TAAAGTGAA ATAGAA TTATT
ATTCTGTAACTTTTATTTTA TGGA ATTTTATTT TGTCTT AATGA
CAGGT C TCAA - ----------
GAM18563 20212 ACCTATTAAAGTCTTGTGTC A-- AG ------ - GAG TGAAAT
4 GGAGAGTTGAAATATTAAAT ACCT TTAA TCT TGTGT CG AGT
GAACACAGAGGAGAGAAGTT TGGG AATT AGA ACACA GT TTA
AAACAGGGT ACA GA GAGGAG A AAA ------
GAM18565 6575 ACCTCACGCCTTCACCTTTA AC CACCTTTAAC- C TCCCTCAT
6 ACACCTCCAGTCCCTCATCT ACCTC GCCTT ACCT CAG
GAAGGTTCCCTCTCCCAGAG TGGAG CGGAG TGGA GTC
GCAGAGGT A- ACCCTCTCCCT A --------
GAM18565 18052 ACCTCACTCCTGTTTGGCTG TCAC GT GA TG AAT TCTTAATACCATACT
9 ATTGGGTTGAATTTCTCTTA ACC TCCT TTGGCT T GGTTG TTC
ATACCATACTGAATGTAACT TGG AGGG GATTGA A TCAAT AAG
TGACGAGTTAGTAGGGAACT TCA- AT GC GT GT- ----------
GGT
GAM18567 6301 ACCTCATCTCCCCATTTGTT A- --- -------- GGG- TTGATT
6 GGGCGCATCCTTGATTGGAT ACCTC TCTCC CCAT TTGTT CGCATCC
GTGGGAAAACGAAGAATTCT TGGGG AGAGG GGTA AGCAA GTGTAGG
ATGGACCGGAGACCGGGGT CC CCA TCTTAAGA AAGG ------
GAM18571 6321 ACCTCGGCAGTTCTTCAATG T G TCAATG AG---- GACA
0 TTCAGCTGGACACAGAGTAT ACC CGGCA TTCT TTC CTG
AGAAAAAAATGGGATGCCGT TGG GCCGT AGGG AAG GAC
GGT T - TAAAAA ATATGA ----

GAM18571 8663 ACCTCTAGAAACCCCAATCC T ACCCCAATC C CT AAAATTTCCAGGC
9 TTCATCTACATAAAATTTCC ACC CTAGAA CTT AT ACAT
AGGCATGTTTATTAAGTTCT TGG GATCTT GAA TA TGTA
AGGGT - --------- T TT ----------
GAM18572 20263 ACCTCTCCCAGTGCATGGTT CCC C- - A - -- - TCATC - AAAATCA
4 GACAATCACTGGTTTCCATC ACCTCT AGTG ATGG TTG CAAT CA CT GGTTTCCA AAAT CTT

ATCAAATCTTAAAATCAAAG TGGGGA TCAC TACT AAC GTTA GT GA TCGAAGGT TTTA GAA

CATTTTGGAAGCTGAGAATG C-- TC T G T AA G ----- C -------
TATTGGCAATTCATCTCACT
CAGGGGT
GAM18574 8119 ACCTCTTCAAAAAGCGATGC AAA CG CT-- CTAA- GTTTACAA
1 TACCACCTAATAGTTTACAA ACCTCTTCA AG ATG ACCAC TA
TGGAAAAGTGGTCATTCATT TGGAGGGGT TC TAC TGGTG GT
ACTGTGGGGAGGT G-- AT TTAC AAAAG --------
GAM18575 14423 ACCTGAAAGAAACTTCATAC GAAAGAAA CTTGTG TTCCCCATCT
2 TTGTGTGTTCTGTTCCCCAT ACCT CTTCATA TGTTCTG
CTCAGAGCAAGATTATGAAG TGGA GAAGTAT ACGAGAC
AGAAGGT AGA----- TAGA-- ----------
GAM18575 12461 ACCTGAACCTCTGTCTTCGA GAAC - ACCAAC AAC TG ATTAATTG
6 CCAACTGAAGCAACTTGGGA ACCT CTCTGT CTTCG TGAAGC T GG
TTAATTGCTTGATTAGCTTC TGGA GAGACA GAAGC ACTTCG A TC
ACGAAGCACAGAGATAAGGT ATA- C ------ ATT GT --------
GAM18581 5733 ACCTGGAGGCCCAGGCCCTG - - A TGT AAGGAGC G G- - TGA
3 TTGGGAAGGAGCCGGGCAGC ACCTG GA GGCCC GGCCC TGGG CG GCA CAGTGTCC CAC

AGTGTCCCACTGAGTGTGGA TGGAC CT CCGGG CTGGG ACCC GT TGT GTCGTAGG GTG

TGCTGAGTGTGTGCCCATGG T T G T-- ------- G GA T ---
GTCGGGGCCTTCTCAGGT
GAM18581 4210 ACCTGGCCACTTGTACCCGG C AC- A ---- G GAGAT
8 GTCCCGCGGAGATCGGGGGC AC TGGCC TTGT CCC GGGTCCC CG
CCGAAAGGGCACAAAGGGGT TG ACTGG AACA GGG CCCGGGG GC
CACGT C GGA C AAAG - -----
GAM18583 12644 ACCTGGGCCAGCTCGGGTGT CA --- TG G - A TA TTTTAT
8 CAGGTTGACAGTTATGTTTT ACCTGGGC GCT CGGG TCA GT TGAC GT TGT
TATACAAGGCGTCGTATGTG TGGACTTG TGA GTTT AGT TA GCTG CG ACA
ATGTTTGCAAAGTAGTTCAG A- AAC GT G T - GA ------
GT
GAM18585 1553 ACCTGGGTTCCAGACCAAAG GTTC AAAG G - TG GGG
2 CAGGGTATTGGGGGGTTTGG ACCTGG CAGACC CAGG TA T GG
CTAGTTTGGTGGGGTCTGAC TGGACC GTCTGG GTTT AT G TT
CAGGT A--- GGTG G C GT ---
GAM18585 19866 ACCTGGTAATAAATGGCATC T AA GG GGTACGAA TGAGA
4 GGTACGAAGTGAGTGAGACT ACCTGG AAT AT CATC GTGAG
CATGATGAAATCATTCCAGG TGGACC TTA TA GTAG TACTC
T - C- AA -------- -----
GAM18585 803 ACCTGGTGCCTGAGCTCGAT G CT A - CC ATCTTCTCCC
7 GGGGTCCGCATCTTCTCCCG ACCT GTGC GAGCTCG TGGG GT GC

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          CAGCACCCACGAGTTCCTGC TGGA TACG  CTTGAGC ACCC CG  CG
          ATGAGGT              G   TC     -   A  A-  ----------
GAM18587 16802  ACCTGTCTGGGTGTCCTGGC   - TC      CCT   T  TCT   CGTTCACA
6          TCTTCTGGGCGTTCACACCT ACC TG  TGGGTGT   GGC CT   GGG
          TCAGGCCTTAATACCCAAGC TGG GC  ACCCATA   CCG GA   TCC
          GTGGT              T  GA      ATT   -  CT-   --------
GAM18588 5847   ACCTGTGTGTTCTTTTGATA   CT   T   C     T  A     CTTCTGTTTTTCTCAA
9          CATTTATCTTCTGTTTTTCT AC  GTG GTT TTTTGA AC TTTAT
          CAAATAAAGTTCAAAGCAAC TG  CAC CAA GAAACT TG AAATA
          CACCTGT            TC   -  C     -  -    ----------------
GAM18589 5576   ACCTGTTTTTACTTCCTCAC        TACTTCCT   C- TG    GTTTTGTAAATGTA
7          CCTGAATTCGTTTTGTAAAT ACCTGTTTT       CAC  C  AATTC
          GTAGAGTTTGGATGTGTAAC TGGACGGAG       GTG  G  TTGAG
          TGAGGCAGGT               TCAAT---   TA GT    --------------
GAM18589 9303   ACCTTAAAAACGTGAAAGGC       AAC   AA    CAAACTGGAT      CTTTTGTC
9          CTCAAACTGGATGTTGCGAC ACCTTAAA   GTGA  GGCCT        GTTGCGA
          TTTTGTCTCGCAGCAGGTTC TGGAGTTT   TACT  TTGGA        CGACGCT
          ATCATTAATTTGAGGT          AAT   AC    ----------      --------
GAM18591 8642   ACCTTATGATAATTTATTAG   T  --    TTTATT       CTTTCCTT
1          GTTATACTTTCCTTTATGGC ACC TAT  GATAA     AGGTTATA
          CTTTATTTATCTTATATGGT TGG ATA  CTATT     TCCGGTAT
                        T   TT    TATT--       --------
GAM18594 14308  ACCTTGAATTGATCCTAAGA   C TG     -     GA----------      T-       A   TAC-  CC
5          TTGGTAGTAAAGGTATTATG AC T  AATTGA TCCTAA            TTGGTAG  AAAGGTATT TGT    CT
          TTACCTCCTAACAGCACTAC TG A  TTAACT AGGATT            GACTATT  TTTCCATGA ACA    GA

          AAAGTACCTTTTTTTATCAG   A GT     C     ACCATTTTAAAAACAA      TT       A   TCAC  --
          AACAAAAATTTTACCATTAG TAAC
          GACTCAATTTGAAGT

                        ----
GAM18595 6326   ACCTTGGCGTAGTACCAAAA         A  ---  CAAAA     CAA-   AGGCTT
3          TGTGGCCAATCGAGGCTTCG ACCTTGGCGT GT   AC    TGTGGC    TCG
          AGTAAGTCACAGCAGCGTTC TGGGGCCGCG CA   TG    ACACTG    AGC
          AACAGCGCCGGGGT             A  ACT  CGACG     AATG   ------
GAM18597 20752  ACCTTTCCCCTGGGTTTCCA     TTC      TTTCCATT      TT-  -----      AATTT
6          TTAGGGTAGTTCTTGAAATG ACCT   CCCTGGG       AGGGTAG   CTT     GAAATG
          AATTTCATTTTTCACTGAGT TGGA   GGGACCC       TTCCATC   GAG     TTTTAC
          GCCTACCTTCCCAGGGCAGG    C--      --------      CGT   TCACT     -----
          T
GAM18598 3812   ACCTTTGTAAGGAGATGGTG     --   AG   -------   T      T    A    CTTT  TTACAC
7          GATGGATTAAGAATAACCTT ACCTT  TGTA  GAG      ATGG GGATGGA TAAGA TAAC    GA
          TGATTACACTCTCCCGTTGG TGGAA  ATAT  CTC      TATC CCTATCT ATTTT GTTG    CT
          TTTTACTCTATCCCTATGAA     AA    GA   GAACAAG   -     C    G    CCCT  ------
          CAAGCTCAGTATAAAAAGGT
GAM18601 1575   ACGACGTGAAGGAGCAGATT     C--        CAGATTTACAAACT    AAGAAG
2          TACAAACTGGCCAAGAAGGG ACGA   GTGAAGGAG           GGCC
          CCTTACTCCTTCACAGATCG TGCT   CACTTCCTC           CCGG
          T                  AGA        ATT-----------    ------
GAM18602 18983  ACGAGGACGTGGGTTGTATC     GA   GGG   -   CT   A-   ---    TGGGG
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6          CTGCCAGGTTGAGTGGGGCT ACGAG  CGT   TTG TATC  GCC  GGT   TGAG
           CACACGCTAGGGTGAGATGT TGTTC  GCG   GAC GTAG  TGG  TCG   ACTC
           CAGAAAGCGCTTGT         --  AAA  T   AG   GA   CAC   -----
GAM18603 9242   ACGAGGCTGGTGTAATCGGC         -  AAT   - AC     TA     ATG     A  TCCCG
0          ACCGAGGCTAGGCCGGATGC ACGAGGCTGGT GT   CGG C  CGAGGC  GGCCGG   CCGAG TG

           CGAGATGTCCCGCAGCTCGG TGTTTCGACCG CG   GCC G  GCTTCG  CTGGCC   GGCTC AC

           GGCCGGTCATGCTTCGTGGT         T  GT-   T GT     TA     GG-    G -----
           CCGTGGCTGCCAGCTTTGT
GAM18605 18274  ACGATTCGCAGTTATATAAG       G ----       AGG    C     TC   TCTC
5          GGAATCAGTGTTCACGTCTC ACGATTC CA    GTTATATA   GAAT AGTGT  ACG
           TGTATATATTTATTTATGTG TGTTAAG GT    TAATGTGT   TTTA TTATA  TGT
           TAATTTAATGGGAATTGT        G  AATT      A--    T    TA   ----
GAM18606 8344   ACGCACCTGCTATTTCACCA    A-  T-   A  -     AC   GG  AATACAG
7          TACTATGGAGAATACAGCTA ACGC  CC   GCT TT TCACCAT  TAT  AG
           ATGAAGTGGTGGCAGAAGCT TGTG  GG   CGA GA GGTGGTG  GTA  TC
           TGGCCGTGT             CC  TT   A  C      AA   A-  -------
GAM18609 22190  ACGCGAGGAACAACACTTCA    -   GAACAA     AG   AA----    ATAAC
7          GGGTAAGGTGATAACCACCG ACG CGAG     CACTTC  GGT     GGTG
           ATATGGCCGGGAAGTGCTCG TGC GCTC     GTGAAG  CCG     CCAC
           ACGT                A   ------     GG   GTATAG   -----
GAM18611 16610  ACGCTTAACTGTTGTGTATC    TT--   G  G    CT      TCTTT
6          TTTTTTGTTCTTTACAAGAA ACGC    AACT TT TGTAT  TTTTTGT
           GTGCAGAGGGGTTTTTTGTG TGTG    TTGG GA ACGTG  AAGAACA
           T                  TTTT    G  G    --      -----
GAM18612 5784   ACGGAAAGGAAGGGCTCAGA    AAAG     T  AT     T   CACAT   CA     AAG
1          TTAGGGGGTGTAGCACATTT ACGG    GAAGGGC CAG  TAGGGGG GTAG    TTAT  GGAGGT

           ATCAGGAGGTAAGATCTCCA TGTC    TTTTCCG GTC  GTCCTCC CATC    GATA  CCTCTA
           TAGTCTCCTACCCCTCCTGG    A---      -  CG      C   CTCT-   --     ---
           CCTGGCCTTTTACTGT
GAM18612 20288  ACGGACACGGTTGTTTACAC    -  C      TAC    CAAATCG-   CTTGCC
4          CAGCAAATCGTTCCTTGCCG ACGG ACA GGTTGTT   ACCAG       TTC
           AAAAGCAAAACTGGTTCCAG TGTC TGT TCGACGA   TGGTC       AAG
           CAGCTTGTACTGT         A  -      CCT     AAAACGAA   ------
GAM18614 14332  ACGGCCGGGATGCTCACGCC       GA--   C    C    CGC--  TCCA
7          CTTCTGCGCCGTCCACGATC ACGGCCGG    TGCT ACGCC TTCTG    CG
           CACGGAAGGCGTCAGCAGTT TGCTGGTC    ACGA TGCGG AAGGC    GC
           GCTGGTCGT               GTTG   C    -    ACCTA ----
GAM18615 2842   ACGGCGTGGAGTGCAGCGAC   -  T  G  A  AC   A  CTTCC
3          GTCAAGTTCTTCCAGCTGGC ACG GCG GGA TGC GCG  GTCA GTT
           CGCGCAGTGGTCCTCGCACG TGC CGC CCT GTG CGC  CGGT CGA
           T               A  T  G  A  GC   -  -----
GAM18621 3626   ACGTAGGCAAGCATCAGCCC    A  C   A-      TAGGG     TG TCC
5          TAGGGCTCAGCTGATCCTTG ACGT GG AAGC  TCAGCCC    CTCAGC  A
           GCTGGGGGGCTGGCAGCTTC TGTA CC TTCG  GGTCGGG    GGGTCG  T
           CATGT                - -   AC      -----     GT ---
GAM18621 5876   ACGTAGGTTCTTTTCTATTT   GTAG       CTA    --- TAA  GTCG
7          TCCCTAAGCGTCGGCCGGTT AC    GTTCTTTT   TTTTC   CC   GC
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TGAGAAATAAAAGGACAGAG TG CAGGAAAA AAGAG GG CG
T AGA- TA- TTT C-- ----
GAM18622 16506 ACGTCGTGAACGCCCGCCTC G AC C CT- - A-- A ACTGT
8 CAGTGAATGTAATGGGACTG ACGTC TGA GCC GC CCAG TGA TGTA TGGG
TTTCACTGCGCCCTCAGCTG TGCAG ATT TGG CG GGTC ACT GCGT ACTT
GCAAGCAGGTCTTAGGACGT G C- A AAC G CCC C -----
GAM18624 9062 ACGTGGACATCCGCAAAGAC ACAT- AA CT GCCAACACA
8 CTGTACGCCAACACAGTGCT ACGTGG CCGC AGAC GTAC
GTCTGGCGGCACCACCATGT TGTACC GGCG TCTG CGTG
ACCAC G- T- ---------
GAM18626 1129 ACGTGTATCCCCTCCCAAGG TA-- AG AG T TTGA
4 GCTAGTTTTTTTGTTTGAAT ACGTG TCCCCTCCCA GGCT TTT TTTGT
AAATAGGGGGCCATGGGAGG TGCAC GGGGGAGGGT CCGG GGA AAATA
GGGATTTCACGT TTTA A- G- T ----
GAM18626 22197 ACGTGTATGTATTAGTGTGC - G T - A T----- TATTCACAAGT
5 TAGATTATTTAGCAGAATAT ACGTG TAT TA TAGT GTGCT GATTA TTAGCAGAA
TCACAAGTTTCTGTTGACCT TGTAT ATA AT ATCA TACGA TTAGT AGTTGTCTT
TGTTGATTGAGCATGACTAC T A C G G TGTTCC ----------
TAAATATTATGT
GAM18628 5546 ACGTTCGCAAAGTCTGTAGT GCA AGTCA AG CCCTATT
9 CATCACAGGCTTCCCTATTG ACGTTC AAGTCTGT TCAC GCTT
AGCTCGTGGACAGGCTTAGA TGCGAG TTCGGACA GGTG CGAG
GCGT A-- ----- CT -------
GAM18633 6553 ACTAAGACTGGCTGTGGTTA AG C- TG AATGAATAT GTTC
7 AATGAATATGTTCAGTTCTG ACTA ACTGG TG GTTA GTTCA
AACTTTTAATAGTAACTCCA TGGT TGACT AC CAAT CAAGT
ATTCAGTAATGGT AA TA CT GATAATTTT ----
GAM18633 20158 ACTAAGACTGGCTTGTGGTT AG- GC TG AATGAATAT TTTT
8 AAATGAATATGTTCAGTTTT ACTA ACTG TTG GTTA GTTCAG
TTGAATTTTAATAGTAACTC TGGT TGAC AAC CAAT TAAGTT
CAATTCAGTAAATGGT AAA TT CT GATAATTT- ----
GAM18633 8117 ACTAAGACTGGCTTGTGGTT AG GC T - A ATAT TTT
9 TAATGAATATGTTCAGTTTT ACTA ACTG TTG GGT TTA TGA GTTCAG
TGAATTTAATAGTACCCCAA TGGT TGAC AAC CCA GAT ATT TAAGTT
TTCAGTAATGGT AA TT C T A ---- ---
GAM18637 6488 ACTACAAGGTGATCCAAATG CA- A-- ------ A--- AAAC
1 TAAAGGTAAACACCTACTGT ACTA AGGTG TCCA AATGTA AGGT
GCATTTGACCATGGAACCCA TGGT TCCAC AGGT TTACGT TCCA
CCTCTCTGGT CTC CCA ACCAGT GTCA ----
GAM18641 13995 ACTACTTCTATGTTTTCAAC TA T TT ACATC T-- --- CAAT
6 ATCACCCTTCATGGCCAATG AC CTTCTA GTT CA ACCC TCAT GGC
CCTGGATGACACGGGTCACT TG GAAGAT CAA GT TGGG AGTA CCG
GCTAACCTAGAAGGGGT GG C TC CAC-- CAC GGT ----
GAM18642 13036 ACTAGAACGACTGAGCGTGA AGA A G - GAG TGAG CCCT
2 GAGTTGAGAGTCCCTGCTGT ACT ACG CT AG CGT AGT AGT
GTACTAGAACGACTGAGCGT TGA TGC GA TC GCA TCA TCG
GAGAGT GAG - G A AGA TGTG ----
GAM18642 21034 ACTAGAATGTTGACCTCGAG ATGTT GAG- AG - ACTTGC
6 CCGAGGCCTACTTGCAGCGC ACTAGA GACCTC CCG GC CT
ACCGGAGGAGAGGTCTCTAG TGATCT CTGGAG GGC CG GA

T ----- AGGA CA C ------
GAM18643 4286 ACTAGAGACCATCCGCTCAG A AC -- G T ACTAC AACA
2 TGGGCTACTACAGAAACATC ACT GAG CAT CC CTCAG GGGCT AGA
TATCAGCCCCCTGAGGGCAA TGA CTC GTA GG GAGTC CCCGA TCT
TGCCTCAGT - C- AC - C CTA-- ----
GAM18645 19415 ACTAGCATCACTCCTAAATA A - ACT -- A --- - TG TTTTTTGT
1 ATGTGAACTTGTTTTGATTT ACT GCA TC CCTA AATA TGTGA ACT TGTTT A
TTTGTTTGAGGCAGAGTCTC TGA CGT AG GGAT TTGT ACACT TGA ACGGA T
TCACAGTGTTCCTAGGCTGG - G GTC CC G CTC G GT --------
AGTGCAGT
GAM18645 4044 ACTAGCTGGGGCAACATGGC C A A AA- - C CAAAA TTAA
7 AAAACCCCACGTCTACAAAA A TAGCTGGGGC AC TGGCA ACC CCA GTCTA AATTT
AATTTTTAAAAATTAGCTGG T ATCGACCTTG TG ACCGT TGG GGT CGGGT TTAAA
GCATGGTGGTGTGTGCCAGT C G - GTG T A CGA-- ----
GGTTCCAGCTACT
GAM18649 14472 ACTATACATAGTCATATACG AC C ----- ACAT- AACCATAC
3 TAACATCTATAACCATACAT ACTAT ATAGT ATA TACGTA CTAT
AGTCACATATGTAATATCTA TGATA TATCA TAT ATGTAT GATA
TAACTATACATAGT CA A CTATA ACACT --------
GAM18652 16491 ACTATGCCATATGGTTTTTC A- ATA- TTT- GAA-- TACT
8 AGAAACATGATACTTCATGT ACT TGCC TGG TTCA ACATGA
AATAATGAATAATCCAGACA TGA ATGG ACC AAGT TGTACT
GGTACAAGT AC ACAG TAAT AATAA ----
GAM18653 20479 ACTATTATGATCAAGGATAT TA--- AGGA AA CAA
7 GGAAATTACAATAGTGCCTA ACTAT TGATCA TATGG ATTA
TGGTGGTGATCAAAACTATA TGATA ACTAGT GTATC TGAT
GT TCAAA GGTG CG ---
GAM18653 20816 ACTATTATGATCAAGGTTAT TA--- AG TT AA CAA
8 GGAAATTACAATAGTGCCTA ACTAT TGATCA G ATGG ATTA
TGGTGGTGATCAAAACTATA TGATA ACTAGT T TATC TGAT
GT TCAAA GG GG CG ---
GAM18655 1223 ACTATTTCCAAGAGCAACAG A CA A--- AATC AAATC
2 CAAATCGAAAAATCTTCATG ACT TTTC AGAGCAAC GCA GAA
CAATGGTTGTTCTAGAAAAG TGA AAAG TCTTGTTG CGT CTT
T - A- GTAA A--- -----
GAM18658 21081 ACTCACAAAGATATTCTCAC CAAA TATTC AGTCAA GTCAAAAT A ACT ATG

2 TTAGTCAACTCCTGTCAAAA ACTCA GA TCACTT CTCCT GA GGTGA GGC
TGAAGGTGAACTGGCATGGC TGGGT CT GGTGAA GAGGG CT TCACT CCG
CCGATCACTGTCCATAAGGG C--- TACTC A----- AATAC--- G AGC ---
AGAAAGTGGCTCATTCCTGG
GT
GAM18663 8191 ACTCAGTTTTATTGACTTCC C TT TT- CATTT CC AT AGCT
7 AGCATTTCCCCCTGGATCTG ACT AGTTTTA GAC CCAG CC CTGG CTG
AGCTCAGCCCAGCTGGTTTT TGA TCGGAGT CTG GGTT GG GACC GAC
GGTTCGTCTCTGAGGCTCAG C CT CTT TT--- TC C- ----
T
GAM18666 21573 ACTCCACCTGAAGATTATCG C C AAGATTA TATAAGAGAATAAGAATT
9 GCTATAAGAGAATAAGAATT ACT CAC TG TCGGC
GCCGACACATAACAGTGAAG TGA GTG AC AGCCG

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        T              A  -  AATACAC    ----------
GAM18670 18628  ACTCCGGGGCGTTTCCGGGC       CGTT  --     T   C  CTT   ATGTC     AGG
9        TGTTCGCTCCTGCTTGGCAA ACTCCGGGG   TCC  GGGCTGT CGCT CTG  GGCA    GCGAGAA

        TGTCGCGAGAAAGGTTTTCG TGGGGCTCT   GGG  CTCGGCA GTGG GAC  TTGT    CGCTTTT

        CCTCCTGTTTCAGCGGTGAC       TTT-  TT     -   C  T--   CCTC-     ---
        GGCTCTTGGGTTTTCTCGGG
        GT
GAM18672 9315   ACTCCTGGACAGCGGACTCT     GG-   C    C  GT TT-  CAA   -   ACA
3        GAGTTTTGGCAAGAAGCTTC ACTCCT   ACAG GGACT TGA  T   GG   GAAG CTTC
        ACAGAAGACTTCCCTTTGGT TGAGGA   TGTC CCTGA ATT  G   CC   CTTC GAAG
        TTAAAGTCCCTGTAGGAGGA     GGA   -    A  TG TTT  ---   A   ---
        GT
GAM18674 6117   ACTCGATAAATCGTGTAGAG      AAA   GTA  CTA    - ATGAT
9        CTATGGCACAGATGATCTAG ACTCGAT   TCGT   GAG   TGGCAC AG
        TGTTACCCTCATAATGAATC TGGGCTA   AGTA   CTC   ATTGTG TC
        GGGT              ---   ATA   CC-    A  -----
GAM18675 18862  ACTCGTCCAACTGACAAGCC     T   CT-----   A----------  CCTT
5        CTTGCGCCCTGCCTCTCCAG ACTCG CCAA      GACA            GC
        GATGTCTACAAAATTGGTGG TGGGT GGTT      CTGT            CG
        GT              -  AAAACAT   AGGACCTCTCCGTCCCG  ----
GAM18685 4486   ACTCTTCTTCTTTTGTGAGT        TTTTGT    --     TTTCTTGTTT
5        CTTCTTTTATTTCTTGTTTT ACTCTTCTTC     GAGTCT  TCTTTTA
        AGAGGGTTGGATTTTGATTT TGAGGAGAGG     TTTAGG  GGGAGAT
        GGAGAGGAGT              TTTAGT     TT     ----------
GAM18688 5887   ACTGAAAAATTTGGTAAATA    AA   T   AAA   TT--      GTTA
0        GGTTGGATTCTTGTTAGAGG ACTG  AAAT TGGT   TAGG   GGATTCTT
        GTTTTTGTTCTGGAAGCCAT TGAT  TTTA ACCG   GTCT   TTTGGGAG
        ATTTGATAGT          AG   T   AAG   TGTT      ----
GAM18696 14391  ACTGAGGCCGTGGTTCCAGT   -  -   T  T-    T-     TC   --  G   TGGA
8        GGCTGCTCGGTGGTGGGGCT ACT GAG GCCG GG  TCCAG  GGCTGC  GGTG  GT GGGC

        GGAGCTTGGCAGCATCCTGC TGA CTC CGGC CC  AGGTC  CCGACG  CTAC  CG TTCG
        AGCCCTCTGGACTCCCGGCT   G   T   - TC    TC     TC    GA  G   ----
        CTCGAGT
GAM18701 21433  ACTGCAACACAATTTAAATG      C   A   AA  G   GTAAATTAGGTCACAAA
3        TCTGTAAATTAGGTCACAAA ACTGCAA ACA TTT  AT TCT
        AGGGATGCAAAATGTTTGCA TGACGTT TGT AAA  TA GGA
        GT              -  A   CG  G  ----------
GAM18704 20383  ACTGCATTTGAACTTTATTA    CA    AC   T   T---   -     TTACTGAATCCTT
6        CTTTTAGGCATCATTTACTG ACTG  TTTGA  TTTA TACT    TTAG GCATCAT
        AATCCTTATGATGTGCTAAT TGAC  AAATT  GGAT GTGA    AATC TGTAGTA
        TACAGTGCTAGGCCTTAAAC    AC    CC   C   CATT   G     ----------
        ACAGT
GAM18705 8335   ACTGCCATCCGCGGGTCGGG    C   -  GG  C  G   CT  AG GC  CCTG
2        GGAACTGCAGGGCCTCCTGG ACTG CATC CGC  GT GG GGAA  GC  G  CT
        GATCAGGCTTTTCTGCCAGC TGAC GTAG GCG  CG CC TCTT  CG  C  GG
        AGCGAGATGACAGT        A   A  A-  A  G   TT  GA TA  ----
GAM18706 5673   ACTGCCGGTAGTGTCCCTTC    C    T  CCCTTCTCT    T    G   CTTCACCCCAA
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5 TCTGCGAGTGGGGGGGGGCC ACTGC GGTAG GT GCGAG GGGGG GGGC
TTCACCCCAAGCCCACCTCC TGACG TCATC CG TGTTC CCTCC CCCG
CTTGTCCTCAGCCTACTGCA - - ACTCC---- - A ----------
GT
GAM18707 3915 ACTGCGGGTCACGTTGAGAG - --- C A AACA ATG
9 CCAACACCATGGGCTCGGTT ACTG CGGG TCA GTTG GAGCC CC
CCGGCTGAAAACCCGCCAGT TGAC GCCC AGT CGGC CTTGG GG
C AAA - - CTC- ---
GAM18708 9890 ACTGCGTGCTATCCTTCAAC GT-- T C A A ACGTGG AATGTC
3 AAGTGTACGTGGCTGGATAA ACTGC GC ATC TTCA CA GTGT CTGGAT
TGTCGTCCAGATCCCACATG TGACG CG TAG AGGT GT TACA GACCTG
TGTGGACGATCGCCATAGCA ATAC C C - G CCCTA- ------
GT
GAM18712 6082 ACTGGAAGGATGGATATAGA G ------- A---- CCTGC
6 CCACCTGCTGGTCGATCAGT ACTG AAGGA TGGATAT GACCA
GTCCGGTAACCCTCCTTGCG TGGC TTCCT GCCTGTG CTGGT
GT G CCCAATG ACTAG -----
GAM18716 9490 ACTGGCATCTCATTTACAAA - TCT TTTA ----- TGT
8 GTATTTTTGTGAAATACTCT ACTG GCA CA CAA AGTATTTT
CCATTGGCTTTGCTTGCTCA TGAC CGT GT GTT TCATAAAG
GT T TC- TTCG ACCTC ---
GAM18722 1719 ACTGGTGATTGTTGGTGATG GA T G-- CT GAAAGACA
6 GAGCCTGTGGAAAGACATGC ACTGGT TTGTTGG GAT GAGC GTG
TTGCTCATAGTCTTCAGCAA TGACCA AACGACT CTG CTCG CGT
GGACCAGT GG T ATA TT --------
GAM18723 712 ACTGGTGGGCCTGGGCTTCT GT TG CTTCT CCTCCTG GATC
0 GAGGTGGCCTCCTGCCCTGA ACTG GGGCC GG GAGGTGG CCCT
TCAGGGACCCTCCCCGCTTT TGAC TCCGG CC TTTCGCC GGGA
CCTGGGCCTCTCAGT TC GT ----- CCTCCCA ----
GAM18725 18794 ACTGTACATACCAGTTGTTT TA- TG-- CA AAACTTTA
7 CTACAATTGAAACTTTACAA ACTGTACA CCAGT TTTCTA ATTG
TATGGAAAATACATTGGCTT TGACATGT GGTTA AAAGGT TAAC
TGTACAGT TTC CATA A- --------
GAM18726 8272 ACTGTACTATAATACTGCTC AT- A- T AA AA- AA TTTTTACC
3 TTCTGAAATAAATTGAATAT ACTGTACT AAT CTGC CTTCTG ATA TTG TA
TTTTACCTGGCCAAAACTAT TGACATGG TTA GGCG GAAGGT TAT AAC GT
CATGGAAGGCGGGAATTTTA ATT AG - AC CAA CG --------
GGTACAGT
GAM18727 12883 ACTGTATATAGGGAGTAATT G- ---- A G-- TCTA TCA AAAGATCC
8 AGGGACCTAATCTAGTTTCA ACT TATATAG GGAGT ATTAGG ACCTAA GTT GTGAAG
GTGAAGAAAGATCCCTTTAC TGA ATATGTC TCTTA TAATCT TGGATT TAA CATTTC
GTTAATTTAGGTGCATCTAA AA TTGT A ACG ---- TTG --------
TAATTCTTGTTCTGTATAAA
AGT
GAM18731 3444 ACTGTGAAAAAGATATTTGT GA GAT G - CA AA-- AAGACA
5 TGGTGGCATTAAAGAAGACA ACTGT AAAA ATTT TT GGTGG TT AG
CTGAAGAACATCACCTAAGA TGACA TTTT TAGA AA CCACT AA TC
GATTATTTTGAACAGT AG AT- G T AC GAAG ------
GAM18732 9084 ACTGTGATACAAGCACTGGG G T AG ----- TGAGAT
8 TTCTTTGAGATGAGAGCTGT ACT TGA ACA CACTG GGTTCTT

TTTTAGTGTCTGTTCGGAGT TGA GCT TGT GTGAT TCGAGAG
G - CT TTTTG ------
GAM18734 846 ACTGTGGAATGCCTGCGGGG TG GCC-- GG- T----- TAATG
5 TGATGTTGATATTCTAATGG AC TGGAAT TGC GGTGATGTTGA ATTC
AGTTCCTGCTCAATGTCACC TG GCTTTA ACG CCACTGTAACT TGAG
ACAGCACCAGAATTTCGTCG CT AGACC ACA CGTCCT -----
T
GAM18734 6015 ACTGTGGCCTGGACAACTTC ------- - GA - GA -- TGG
8 GGGGACTTTGACTGGGTCAT ACTGT GGC CTG CAACTTCG GG CTT TGAC
CGAGAACCATGGAGTTGAAC TGACG CCG GAC GTTGAGGT CC GAG ACTG
AGCGCCTGGAGGAGCAGT AGGAGGT C AA A AA CT ---
GAM18737 9205 ACTGTGTTTCTTTCCTTTTG T T TT- GAAAATG ATT ATCT
2 TGGAAAATGGTCATTCTGAA AC GTGTT CTTTCCT TGTG GTC CTGA
TCTTCAGGACAAACACATCT TG CATAG GGAAGGG ACAC CAG GACT
GGGAAGGTGATACTGT T T TCT AAA---- --- ----
GAM18737 18223 ACTGTTAATATTAAAAGGAA - TTAA- ACATAATAAAA CCCAGT
5 CATAATAAAATGGCCCAGTC ACTG TTAATA AAGGA TGG
CAACTAAAACAGTCCTTGAG TGAC GGTTAT TTCCT ACC
TCTATTGGTCAGT T CTGAG GACAAAATCA- ------
GAM18742 9811 ACTTAAGGACCAAGATTTAA --- A--- TT AATA
0 TAAAAGTAATAATTTTTATT ACTTAAG GACC AGA TAATAAAAGT
GCTTCTCCAAGGTCATTCTT TGAATTC CTGG TCT GTTATTTTTA
AAGT TTA AACC TC ----
GAM18744 12859 ACTTACTTCAATCTTGTTGA ACTTC GT- C-- AAA ATAT
8 GCTCAGAATAAACAGATATC ACTT AATCTT TGAGCT AGAAT CAG
TGAGATTTTACAAGCTTGTA TGAA TTAGAA GTTCGA TTTTA GTC
AAAGATTTATCAAGT CTAT- AAT ACA GA- ----
GAM18748 6014 ACTTATGTTTTATGTGGACA A- T G GACAA G T GCAA
8 ATTGTGATACAGGCAACTGT ACTT TGTT TAT TG TT TGA ACAG
TTCAGAGCTCAATAGGTACA TGAA ACAA ATG AT GA ACT TGTC
ACAGGAAGT GG C G AACTC G T ----
GAM18749 20664 ACTTATTTTTGTTTTCAAGG - C--------- ---- TCAGTC
8 GCTCATGGAATCAGTCTTCC ACTTA TTTTTGTTTT AAGGGCT CATGGAA
ATGTGACAGCTTTTTAAATA TGAGT AAAAACAGAA TTTTCGA GTACCTT
TTTTAAGACAAAAACTGAGT C TTTTATAAAT CAGT ------
GAM18752 21108 ACTTCAGTTTCCATGAAATA T CAT TAAAC GACTATATAAA
1 AACAATGACTATATAAAATT ACT CAGTTTC GAAA AAT
CCACCTTTCTGAAACTGCAG TGA GTCAAAG CTTT TTA
T C T-- CCACC ----------
GAM18754 12891 ACTTCCCCTTCTCCCTGCTG CTTCT GCTGG T - -- ATCG
9 GGGCTGCTGGCCCTGGCCAT ACTTCCC CCCT GGC GCT GGCCCT GGCC
CGGGCTCTGGGGCCTGGCTG TGAAGGG GGGG CTG CGG CCGGGG TCGG
TCAAGGGGTCTCTGGGAAGT TCTCT AA--- T T TC ----
GAM18755 5406 ACTTCCGCTGCAGGTCGACT C--- CA TC TA CATCA ACCAAA
5 TATTCCCATCAGCACCAAAG ACTTC GCTG GG GACT TTCC GC
CCACTGGAGGGGGTCATCCA TGAAG CGAT CC CTGG GAGG CG
CTAGCAAATGAAGT TAAA CA TA GG TCAC- ------
GAM18756 3474 ACTTCGGGCTGTGCAAGGAG T C AA- GA- A ACGGTGCCA
9 GGGATCAAGGACGGTGCCAC ACT CGGG TGTGC GGAGGG TCA GG
CATGAAGACCTTTTGCGGCA TGA GTCC ACACG TTTTCC AGT CC

CACCTGAGT - - GCG AGA A ---------
GAM18757 19003 ACTTCGTTGTGGTTGACACG G TGACAC ATA - C TCCTTGGC
1 GTGCATATGGGATTCGAGTC ACTTC TTGTGGT GGTGC TG GGATT GAG
CTTGGCCTCAATCCGCGGGG TGAGG AACACCA CCATG GC CCTAA CTC
TACCACCACAAGGAGT - ------ GG- G - --------
GAM18758 22211 ACTTCTGGAGGCTTCCCTTG G CT CTTGA GCAAAAGGTGGGAG
9 AAGCTCTGTGCAAAAGGTGG ACTTCTG AGG TCC AGCTCTGT
GAGACAGAGCTGGACCTGCA TGGGGAC TCC AGG TCGAGACA
GGGGT G -- ----- ----------
GAM18765 18441 ACTTGGAGCAAAAGATTGAG CAAAAGA TTTCAT TCCTT AGA - T TC CCAG
1 GTGCATTTCATGCCTCCTTT ACTTGGAG TTGAGGTGCA GCC TTG GTC TTGC CTG GC
TGAGAGTCTTGCTCTGTCGC TGAACCTC GACTCCACGT CGG AAC CGG GACG GAT CG

CCAGGCTGTAGTGCAGTGGC C------ ------ TTCT- G-- T T GT ----
GCAATCTTGGCTGCACCTCA
GCCTCCAAGT

GAM18765 16839 ACTTGGCTAATGAGCCAAGC GCTAAT AGCA C ATTATCAG
9 ATTGAGCGAATTATCAGTCC ACTTG GAGCCA TTGAG GA
TCGACATGGCTCTAACGACA TGGAC CTCGGT AGCTC CT
GGT AGCAAT AC-- - --------
GAM18767 17994 ACTTGGTCATCTGATTTTAT TCT TTA G CAAA
1 ATTTGCCTTATCCAAAGATG ACTTGGTCA GATT TATTT CCTTATC
GGGAAAGTAAGTCCTGACCA TGGACCAGT CTGA ATGAA GGGGTAG
GGT C-- --- A ----
GAM18767 907 ACTTGTAGATCAAAGCCAAG TA AAAGC CCC A ACA CCTGGA
9 GCCCCCAGGAAGGTGACATA ACTTG GATC CAAGG CCAGGA GGTG TACT
CTCCTGGAAGTACACCTCCT TGAAC CTGG GTTCC GGTCCT CCAC ATGA
GGTCCTTGTACCGGTCCAAG -- CCAT- T-- - --- ------
T
GAM18768 9603 ACTTGTATCTGCTGTGTAGC TG CT G C ATCT T C ATATC
2 ATCTGATCTGAATGGCAGGC ACT TATCTG GTGTA CAT TG GAA GG AGGCTT
TTATATCAAGCTTTCTTCCA TGA ATGGGC CACGT GTA AC CTT CT TTCGAA
TATGGTGCACCGGGTATGAG GT -- G T ---- - - -----
T
GAM18769 20547 ACTTGTCTTTTTCAAGGACT TG A- ACT CT- TATCTCTTGTACTACACT
9 GGTCTTTCTATCTCTTGTAC ACT TCTTTTTCA GG GGT TTC
TACACTGAATTCACCCCCAC TGA AGAAAAAGT CC CCA AAG
TGAAAAAGATGAGT GT CA C-- CTT ----------
GAM18770 3392 ACTTGTGGAGTACAGAACAC TG- GTACA CACT - GAT AAATAC
4 TTGAGGCGATTTAAAATACT ACT TGGA GAA TGAG GC TTA
AACCAGCTCTCATTCGAAAA TGA ACTT CTT ACTC CG AAT
TTCAAATAGT TAA AAAAG ---- T ACC ------
GAM18771 16711 ACTTGTTTATACCCTCAGAC ACC- A TTTTA A ATT- TAG
0 TTTTTTAATGTTAGGTATTT ACTTGTTTAT CTCAG CTT ATGTT GGT TG
GTAGCATTAGGCCAACATGT TGAATAAGTA GAGTC GAA TACAA CCG AC
ATTAAGCTGAGCCAGATGAA GACC - TTATG - GATT ---
TAAGT
GAM18775 716 ACTTTATGGAGAACCCTCAC A A C TCACTAA ATG GAAAAG

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1          TAAGGCAATGTGGAAAAGTA ACTTT TGG GAA CC      GGCA   TG
           ATGTGCCGTTGGATTCCCCA TGAAA ACC CTT GG      CCGT   AT
           AAAGT               -  C   A  TTG----    GTA ------
GAM18775 9039   ACTTTATTAAATGCTGTAAA      TTAAAT    TAAA--    AA   G    TGTT
2          ATCTAAATACGATCCTGTTG ACTTTA     GCTG     ATCTA  TAC ATCC
           GATGTGAATGGGTCTAGTCC TGAAAT     TGAC     TGGGT  GTG TAGG
           AGTTTATTTTAAAGT          TTTATT    CTGATC     AA   -   ----
GAM18779 6312   ACTTTGAGAACCACTGGCTT      A    C-    G   AG-  -  A  AAT
9          AGAGGCATGAATCAAGCTCT ACTTTG GAAC  ACTG CTT   AG GC TG
           AGAAAGCAGTCAGTTCCAGG TGGGAC CTTG  TGAC GAA   TC CG AC
           GT                  -    AC    -   AGA  T  A  ---
GAM18781 8095   ACTTTGGGAAAATTATTTAT   TT  GG ----       A   CT-   CACG
1          TTCTCCCCACGGGGTTCAGA AC  TG  A    AAATTATTT TTT   CCC
           CAAGTAATTTCACATTTCAT TG  AC  T    TTTAATGAA AGA   GGG
           TGT               TT  TT ACAC       C   CTT   ----
GAM18783 5697   ACTTTTAAAACTTTAAACGA     TAAAACTTTAAAC    CAC     AATAGTTGTAC
3          CCCACAGCTGAAATAGTTGT ACTTT          GACC   AGCTGA
           ACTTAGCTAGGTTAAAAACA TGGAA          TTGG   TCGATT
           CATAATAAGGT            TAATACACAAAAA    A--     ----------
GAM18787 1026   ACTTTTTCATCCATGGCTGA     TT    CAT GC      GA   T  CATG
5          GGTTGATGCTGCCATGGCTG ACTTT  CATC   G  TGAGGTT  TGC GC
           CAAGACCTCATTCTTGATGG TGAGA  GTAG   C  ACTCCAG  ACG CG
           GAGAGT                GG    TT- TT      A-   T  ----
GAM18788 12440  ACTTTTTTAATGGGTCTCAA       T     TCT   AATT- TG  ACAAATT
8          AATTCTGGGACAAATTTTTG ACTTTTT AATGGG   CAA     C  GG
           GTCAAGTTGTTTCCATTAAA TGAAAAA TTACCT   GTT     G  TT
           AAGT                  -     TT-   GAACT GT  -------
GAM18794 12914  AGAAAACCAGTATTCTAAAC       C   A  C    CAC     T     -   A   TCTT
6          ACATTTTCTTTATGTGACAT AGAAAAC AGT TT TAAA   ATTTTC TTATGT GAC TAT
           ATTCTTGTGCGTCTATGTAA TCTTTTG TTA AA ATTT   TAAGAG AATGTA CTG GTG
           TGAGAATTTTTAAAAAATTG       -  A  A    T--     T     T   C   ----
           TTTTCT
GAM18799 5422   AGAAAATGTAGTTAATTACA   AA      TTAATTACAAT    AG   ATTCCACATA
0          ATTTAAAGAGTATTCCACAT AG  AATGTAG          TTAA  AGT
           AACTTCTTAATTTCTACATT TC  TTACATC          AATT  TCA
           CCCT               CC      TTT--------    CT   ----------
GAM18799 18921  AGAAAATTCATCTAATTATC     A   CA  TAATTATCAG       GTTTA
8          AGTGTCAGTTGTTTAAGCTG AGAA ATT  TC         TGTCAGTT
           GCAACTTCTCCCTGACTAAT TCTT TAA  AG         ACGGTCGA
           CTTCT                C   TC  TCCCTCTTCA       -----
GAM18800 3788   AGAAACAAAAGCAGGTGCTG     CAA-   C    --     TCA---   AAACC
4          AATCATGAAAACCTCAATTA AGAAA    AAG AGGT  GCTGAA     TGA
           TTTTTAGCATGCCTCTTAAT TCTTT    TTC TCCG  CGATTT     ACT
           ATTTCT               ATAA   -   TA     TTATTA   -----
GAM18804 19138  AGAAACTAATATTAGTAAAT      TAATA--    T  ATG      A---   AAGT
0          GGAAAATTATGTAAGTACAA AGAAAC      TTAG AA   GAAAATT    TGT
           AACAATTTTCAGTTCTAGGA TCTTTG      GATC TT   CTTTTAA    ACA
           AAAATGTTTCT            TAAAAAG    -  GA-      CAAA   ----
GAM18805 20610  AGAAACTTATTAGGCAAGAA     AC      GCAAGAA   -   AAT--      TCCA
1          CAGGTAATGTAGTTATCCAT AGAA  TTATTAG      CA GGT     GTAGTTA
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GACTACTTTTAACCATGCAG TCTT AATAATC GT CCA CATCAGT
ACTAATAATATTCT AT AGAC--- A ATTTT ----
GAM18806 9034 AGAAAGAAGAAGGTGGTTCA A- AAG- T AGAACA CACA
8 TAGAACAGCCACAGCCAGAT AGAA GAAG GTGGT CAT GC
GACCACAAAACTTCAGTTCT TCTT CTTC CACCA GTA CG
GA AAAA - GAC--- ----
GAM18810 22273 AGAAAGGTCTTTCAGGAAAT - - TT AAAT ACCATATTA
3 TCGGTACCATATTAGCTGGC AGAAAG GT CT CAGG TCGGT
AACTTTGGGAGTACTCTTTT TTTTTC CA GA GTTT GGTCG
T T T GG CAAC ---------
GAM18814 1337 AGAAATATCGCCTTACCCTT A TC- A TG G TAA TACA ATAGA
8 TGTGATTAATGGTACAATCA AGA ATA GCCTT CCCTT T AT TGG ATCATA
TAATAGATATGATGAATCCA TCT TAT TGGAG GGGGA G TG ACC TAGTAT
AACGTGGTGAGGGGGAGGTC A TTC - GT G CAA TAAG -----
TTTATATCT
GAM18817 16659 AGAAATGTTGATGGGAACTG AA A C AG G C--- A GT-- T GCCAAA
4 AGCATTGCTTGCTTTCATCA AGA TGTTG TGGGAA TG CATT CTTG TTTC TCAG GTTC TGTT

GGTGTTCTTGTTGCCAAAGA TCT ATGAC GCCCTT AC GTGA GAAC AAAG AGTC CAAG ACAG

CATGAACGATACTGAGGAAA AA C - GA - AGCA G ATAG T ------
ACGACAAGAGTGAGCATTCC
CGCCAGTAAATCT
GAM18817 21576 AGAAATTCCCTGGACCAGAT T C A A TG AAGAGAAAAGAGGGG
9 GCTGAAAGAGAAAAGAGGGG AGAAA TCC TGG CCAG TGC A
TTGGTAGTTGGCTATGGATT TCTTT AGG ATC GGTT ATG T
TTCT T T - G GT ----------
GAM18818 20492 AGAAATTTAAAATGTGGTCT T- CTTTT AAAGAA TTTT
7 TTTTTTTTAAAAGAAACACT AGAAATT AAAATGTGGT TTTTTA ACAC
TTTGTGTCAGAAATGAAAAT TTTTTAA TTTTGTACTA AAAAGT TGTG
AAATCATGTTTTTTAATTTT TT AAT-- AAAGAC ----
T
GAM18822 21474 AGAACAGTAACTCTAGAAAT - AA-- AAAT - GAAGTTCTGA
3 CCCTGAAGTTCTGAAGAGGC AG AACAGT CTCTAG CC CT
AGCTGGAGGATGATTGTTAC TC TTGTTA GAGGTC GG GA
T A GTAG GAC- A ----------
GAM18826 21677 AGAACGTAAGTGTTCTTGAA A TA CTT C T TTGTCTTACT
7 GACATATATTTTGTCTTACT AG ACG AGTGTT GAAGA ATA ATT
AATCTGTTTCTTCCAAGCAC TC TGT TCACGA CTTCT TGT TAA
TACTGTACT A CA AC- T C ----------
GAM18827 20117 AGAACTATTGAGAAATTGAT - A- TG TAA TGA A ACACTAATTAC
6 TAATGACATGAGGGCACAAC AGAACTA TTGAGAA T AT TGACA GGGC CA
ACTAATTACTGGCCCGCTGT TCTTGAT AATTCTT G TA GTTGT CCCG GT
TGGCATTGGGGTTCTTAACT C GG GT CG- CG- - ----------
AGTTCT
GAM18831 18245 AGAACTTTTATAAAAGCATC CTTTTAT ATCTT---- - TTCAAC
3 TTTTGGAACTTCAACGTTGC AGAA AAAAGC TTGG AAC
CAATTTTCCTCAGCTTTTTT TCTT TTTTCG AACC TTG
TTCCCTTCT CCCTTTT ACTCCTTTT G ------
GAM18835 3714 AGAAGAGAAGTTGCTAGGCC A -- GC ATTGACGTTTAAGCC

5 TGATTGACGTTTAAGCCCAG AGAAG GAAGT TGCTAG CTG
AACTGGCGTAGCTTCACTTC TCTTC CTTCG GCGGTC GAC
T A AT AA ----------
GAM18836 3514 AGAAGAGGAAAGTTGCTAGC - A TG - TTATTG T CTACATAT
0 ATTTATTGAGTTTCTACTAC AGA AGAGG AAGT CT AGCAT AGT TCTA
ATATTGGGCACTGTGCTAAG TCT TTTCC TTTA GA TCGTG TCA GGGT
TGATTTACCTTTCTCT C A GT A ------ C --------
GAM18836 18832 AGAAGAGTCTAAGATGGTGA A ---------- T TGAT
9 CTGATGTCTCTTCCTCCTTC AGAAGAGTCT AGAT GG GAC
CCAAATATCTGAGACTCTTC TCTTCTCAGA TCTA TC CTG
T G TAAACCCTTCCTCCT T ----
GAM18838 1094 AGAAGATGGTAACTGGGATC T ---- GT- - ACACCCCCA
0 TCGTTGGAAATAACACCCCC AGAAGATGG AAC TGGGATCTC TGGA AATA
ATATTCTTCATCAGGGATCC TTTTCTACC TTG ACCCTAGGG ACTT TTAT
CATATTGTTCCATCTTTT - TTAT ACT C ---------
GAM18840 20837 AGAAGCCAAAGATAACCTGA A ATAACC CCC TGTCTGTT
5 TCCCTGCCTGTCTGTTGGCA AGAAGCCA AG TGAT TGCC
CCTGTCATCCTCTGGCTTCT TCTTCGGT TC ACTG ACGG
C CT---- TCC --------
GAM18854 5456 AGAAGTTCATCCCTCCTGCT TTC - G CTG- GCCC
1 CTTACTGTTTCCGGCCCTGG AGAAG ATCC CTCCT CTCTTA TTTCCG
AGGAGAATGAGGGAGGAGAG TCTTT TGGG GAGGA GGGAGT GGAGGT
GGTTTTCT --- A - AAGA ----
GAM18854 20769 AGAAGTTCCCCCTACCCTTG TTC TAC T ATTTAC- GCT
GAATTCTTCACTATAA
2 CTGCATTTACTTTTGCTTTA AGAAG CCCC CCT GCTGC TTTT TTAAAGAGAGA
AAGAGAGAGAATTCTTCACT TCTTC GGGG GGA CGACG AAAA AATTTTTTTCT

ATAAATCTTTTTTTAATAAA --- CAA C ACCCCCT AAT ----------
AAATCCCCCAGCAGCCAGGA A
ACGGGGCTTCT

-
GAM18854 3786 AGAAGTTCCTTATATATTAT TTCC T ATTAACCCCTTATCAG
3 GTATATTAACCCCTTATCAG AGAAG TTATA ATTATGTAT
ATATATGATTTGTAATTATT TCTTT AATGT TAGTATATA
TTCT TATT T ----------
GAM18856 5924 AGAATACTGACCTGAGAGGA - C AGGA C AGA- T ACCTAATTC
9 GGCCCAGTGAGATTCTGAAA AGAATA CTGA CTGAG GGCC AGTG TTC GAA
CCTAATTCTTCGAAGGCGTA TTTTAT GACT GATTC CCGG TCAT AAG CTT
CTGGCCCTTAGTTCAGTTAT T T ---- - GCGG - ---------
TTT
GAM18857 14517 AGAATAGGGAGTTTTCACAC A - TT ------ TT TT TTTTCACCT
7 GTTTCTTGATCTTTTCACCT AGA TAGG GAGTT CACA CG TC GATC
GATCCTGATTTGCCATCTTG TCT ATCC CTCAG GTGT GT AG CTAG
TGTTGACTCACCTATCT - A TT TCTACC TT TC ---------
GAM18858 9492 AGAATATACCCAAAAAAGTA T AAAAAGT ACCACCCTCGCACAGC
3 AATTTCTACCACCCTCGCAC AGAATA ACCCA AAATTTCT
AGCAGAAATTTCAATGGGTT TCTTAT TGGGT TTTAAAGA
ATTCT - AAC---- ----------

GAM18859 8370 AGAATATTCTACACCTTGGA TTCTAC GGAA- TCA------ ACA TCACT
7 AAAGAAAATCAGCAGTAACA AGAATA ACCTT AAGAAAA GCAGTA TTC
TTCTCACTGAATATTGTAAA TCTTAT TGGAA TTCTTTT TGTTAT AAG
TTACATTTTTCTTCATAAAA CATACA AATAC TACATTAAA --- -----
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GAM18863 8089 AGAATCTCCTTTTTTCAGGG CC T C CAT ACA T AAAT
8 CCATAATGACATGATGTAAA AGAATCT TT TTT AGGGC AATG TGA GTAA
AATTTGCTTTAAACCATTCA TTTTAGA GA AAA TCCCG TTAC ATT CGTT
TGCCCTTAAATAGCTAGATT TC T T TAC CAA T ----
TT
GAM18864 8737 AGAATCTGAAAGCCTCTTTC C AA CT TCTTTTC TT CTCT ------ TTGTT
0 TTTTCAGGCTTGATGACTCT AGAAT TGA GC CTT AGGC GATGA TCTA AGGTAT
TCTAAGGTATTTGTTATGCC TCTTA ACT CG GAA TCCG TTGCT GGGT TCCGTA
TCTCTTCTGGGTTTTTCGTT A -- AT CTAT--- TT TTTT CTTCTC -----
TTGCCTTATCAAGTAGCTCA
AATTCT
GAM18869 14633 AGAATTAAAAATCTGCATCT AT - T CCACTA AATATATTAA
3 TCCACTATTTTCAATATATT AGA TAAAAAT CTGCA CTT TTTTC
AAGAGAAATAAGTGCAGCAT TCT GTTTTTA GACGT GAA AAGAG
TTTTGCATCT AC C - TA---- ----------
GAM18869 17985 AGAATTAAAATTATATGTAG AAT A - AACA- AA AGAA
4 AAGGAAACACCAAGAAAAGA AGAATTAA TAT TGTAGA AGGA CC GAAA
ATTTCCAGGGAAAATCCTCT TCTTAATT ATG ACGTTT TCCT GG CTTT
TTGCAGGTATTAATTCT --- G C AAAAG AC ----
GAM18870 19202 AGAATTAGGCAGCTGGACTC TT -------- A AGT- - ATCCCAA T- GCAA
1 AGTTTAGATGATCCCAATTT AGAA AGGCA GCTGG CTC TTA GATG TTTTG TG
TGTTGGCAACATCCAAAGCA TCTT TCCGT TGACC GAG AAT CTAC GAAAC AC
TCGTAATCAGGAGCCAGTCG CT ATACAAGC - GACT G ------- CT ----
AACATATGCCTTCTTCT
GAM18872 20853 AGAATTGCAGTGGAGCAAAT ATT GCA C TT--- AAATATA
0 TGGTCATTTTTTAAAAAAAT AGA GCAGTGGA AATTGGT ATT TTAAAA
ATATTTTAACCTACAGTCAC TCT TGTTACTT TTGACCA TGA AATTTT
CAGTTTTCATTGTTCT --- --- C CATCC -------
GAM18872 18792 AGAATTGCCCCTGCCACTTC AT- CC AC ACC C G- TTCTCT
2 CACCCTCCAGGTCATTTCTC AGA TGC CTGCC TTCC CT CAG TCAT
TATGAGACTGAAGCAGGAAG TCT ACG GACGG AAGG GA GTC AGTA
GCAGAGCATCATCT ACT A- -- AC- A AG ------
GAM18873 14607 AGAATTGGTAAAAACAGACA G AAAC A A TTTGAGT
0 GCTCATAGAATTTTGAGTAT AGAATTG TAA AG CAGCTCAT GAAT
TCCATGAGCTGCTCATTACA TCTTGAC ATT TC GTCGAGTA CTTA
GTTCT - AC-- - C -------
GAM18876 20051 AGACAACAGAATAGATTTTT AGAATAGA C AA CCAAAGTCACA
5 CACAAGTAACGGCACCAAAG AGACAAC TTTTT ACAAGT CGGCA
TCACATGCTGGAATTTGTAA TTTGTTG AAGGA TGTTTA GTCGT
GGAAACGAGGTTGTTT GAGCA--- A AG ----------
GAM18877 12234 AGACAAGCTTGTAGTGAAGT C C --------- TAGCAATAATTT
5 ATAGTAGCAATAATTTCTGT AGA AAG TTGTAGTGAA GTATAG
ACCTGATCAAGTTTATTGCA TCT TTC GACGTTATTT CATGTC
GCCTTTCT - C GAACTAGTC ----------
GAM18878 14001 AGACAATGACTTTTGTAAGG - TTTT-- T CTATCTATC

0 ATTGGTACTATCTATCTATC AGACAATG AC GTAAGGA TGGTA
ATTCCTTATTGACATGTACA TCTGTTAC TG TATTCCT ACTAT
TTGTCT A TACAGT T ---------
GAM18878 22248 AGACAATGTTCACAGCTACT ATGT G CTT - AAGAAAAGCAG
6 TCTCCTTTAAGAAAAGCAGA AGACA TCACA CTA CT CCTTT
AAGGCAGTTTTAGGTGTGGT TCTGT GGTGT GAT GA GGAAA
CTGTCT CT-- G TTT C ----------
GAM18883 8761 AGACAGAGACCAAGAACTTG AC G T C ATT GAAATACA
1 CCCAATTTTAGGAAATACAC AGACAGAG CAA AACT GC CA TTAG
TAATGTGCAGTTGTTGCCTT TCTGTTTT GTT TTGA CG GT AATC
TTGTCT CC G - T --- --------
GAM18883 5577 AGACAGAGAGAAAAGTAACG AA AAC AT-- TT TCTCAGCATTTT
3 GGTTGATGTTTGACTCTCTC AGACAGAGAG AAGT GGGTTG GT GACTC
AGCATTTTGAGTCTGGCTTC TCTGTTTTTC TTCA CTTAAC CG CTGAG
CCAATTCCTGACTTGACTTT AG GTC CCTT GT ----------
TTGTCT
GAM18887 8052 AGACAGGGAACACTTGTGAG AA T - - A GCATCTGA
2 CACACAGAGCAGCATCTGAT AGACAGGG CAC TGT GAGCAC ACAG GCA
GCCCTGTGGTGTTTGGCATG TCTGTCCC GTG ACG TTTGTG TGTC CGT
TGCCCCCTGTCT CC T G G C --------
GAM18888 9346 AGACAGTAGCTCCCTTAAAA A C CCTTAAA C A CACTCTTCA
2 CACACACACACTCTTCATGG AGAC GTAG TC ACA AC CA
TATGTCACAGAACTACAGTC TCTG CATC AG TGT TG GT
T A A ACAC--- A - ---------
GAM18889 20018 AGACAGTTATTCAGTTGAGA TT-- - -- ATTACATCA ACTTTTCA
6 CATGTATTACATCATTTCTT AGACAG ATTCA GTTG AGACATGT TTTCTT
ACTTTTCAAGGAAAAACATG TCTGTC TGAGT CAAC TTTGTACA AAAGGA
TTTTACAACTTGAGTTTATC TATT T AT A-------- --------
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GAM18892 20643 AGACATTATAATAGTGGTTG AT A- G TT TGAGAAAGG TAG TGTA
8 TCAATGAGAAAGGAAGAGTT AGAC TATA TA TGG GTCAA AAGAGTTAG CTTG
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TTAATTTTTATTTTGGCCCA -- AG G -- TTA------ TTA ----
GTAGATATAGTCT
GAM18896 13039 AGACCATGACTACCTTCACC - GACTA TGGAA A ACGCCC
0 TGGAACATCAACCACGCCCG AGAC CAT CCTTCACC CATCA CC
GCTGATGGTGGTGGAGGAAC TTTG GTA GGAGGTGG GTAGT GG
GATGTGTTT T GCAA- TG--- C ------
GAM18902 12662 AGACGAACCGGATGTCAACG CGAA CAAC- A --- TAA
1 GGATCCCCTAAGGCTTGGAA AGA CCGGATGT GGG TCC CC
CCCTTTATACATCTGGGGCA TCT GGTCTACA CCC AGG GG
TCT ACGG TATTT A TTC ---
GAM18905 12590 AGACGGCCATCGCCATCGAG T ATCGA T ACTTCATCCA
0 ATTGAGCACTTCATCCAGCT AGACGGCCA CGCC GAT GAGC
CATCACCGGCGTGGCTGTCT TCTGTCGGT GCGG CTA CTCG
- CCA-- - ----------
GAM18911 21325 AGACTCCATTTATGAAAGAA TC TG - TT- AGATTTCACA
0 AATCTTTTATAGATTTCACA AGAC CATTTA AAA GAAAATC TTAT
ATAGCCTGATTTTCATTTTG TCTG GTAAAT TTT CTTTTAG GATA
TAAATGTGTCT T- GT A TCC ----------

GAM18911 17961 AGACTCCTTGCGGGGCTTCA A CG GC- --- TG AAAT
3 GTTGCATCTAAATAGATGTG AG CTCCTTG GG TTCAG T CATCT
AGAGTTGAAAGACCTATAAG TC GGGGAAT CC AAGTT A GTAGA
GGGCT - AT AGA GAG GT ----
GAM18912 1542 AGACTGAGAAAAAGAGCGTT ---- C - AATA GA TTCC TTCT
7 GAATATAAGAGAAAATACTT AGACTGAGAA AAAGAG GT TG TAAGA AAATAC TCTG
CCTCTGTTCTCAGATCGTAT TTTGACTTTT TTTTTC CA AC ATTTT TTTATG AGAC
TTGTTTTAAGGCCACACCTT GAAG - C CGGA G- CT-- ----
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GAM18912 20484 AGACTGAGACAGACAAGCTG - G ACA G TG G TT-- C CTGA
8 AGTGTGTTTTGTTTTATCAC AGACT GA ACAG AGCT AG T TTTTG TTATCA CC
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AAGAGATCCTAAGCTCCTGT A G C-- A CT G TCCC C ----
GTCAAGTCT
GAM18913 14041 AGACTGCAGGTGCCGCACAT TG A-- C- A TG A-- T GAAA
7 TGTCAAGTTAGAAATACTCC AGAC C GGTGC GCAC T TC AGT A
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GAM18916 5666 AGACTTAAATGGGTCACAGT ---- GT -- T ACA TTAA
2 GACGACATGTTAACAACGTC AGACTTAAAT GG C ACAG GACG TG
CCTGTTTGGTCCTGAAATTT TCTGAATTTA CC G TGTC CTGC AC
AAGTCT AAGT TG TT C A-- ----
GAM18916 9269 AGACTTAGAGCCTTTGATTA CCTT TG C AGTTATTTCA
5 AAATGGAAGCAAGGGAGTTA AGACTTAGAG TGATTAAAA GAAG AAGGG
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AATTATACTTTAAGTTT AT-- TT - ----------
GAM18925 14660 AGAGAAGGGACGGGGTGGCT C GGT CT TCA - GG GC TCCGACAT
9 GGGCAGTCAGGGAAGGAGGG AGAGAAGGGA GG GG GGGCAG GG GAAGGAG TC CCGGA

TCGCCCGGATCCGACATTTT TCTCTTCCCT CC CC CCTGTC TC CTTCCTT AG GGTTT
GGAGAGATTCCTTCACTCTC - AT- CC CTC A AG A- --------
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CTCT
GAM18929 19188 AGAGACAATGCCAAGAATTC - AT AAGAA - A T-- AATGAC
3 CGTATATCTCCAAATGACTG AG AGACA GCC TTC CGT TATC CCA
GTCTGATAGACGAGGACACG TC TCTGT TGG AGG GCA ATAG GGT
GTTGTCTACT A -- CAC-- A G TCT ------
GAM18930 21070 AGAGACATTTAACTTTCAGT GACA CA G GAA C - CCTAATACT
6 TTGGAGGAAAGTCAGAAAAA AGA TTTAACTTT GTTTG AG AGT AGAAA AAGAA
GAACCTAATACTTTCTTATT TTT AGGTTGGGA CAAGT TC TTA TTTTT TTCTT
TTTAATTATACTGTGAACAA AAC- AA G ATA A A ---------
AGGGTTGGACAATTT
GAM18933 3963 AGAGAGAACTCCGCAAGGGG - GAA ---------- T G CATA A ATA
1 GGTGGGGTGTCCATAAGAAC AGA GA CTCCGCAA GGGGGG GGGGT TC AGA CACTCC

ACTCCATAGGAGTGCTCTAG TCT CT GAGGTGTT TCTCCC CCCCG AG TCT GTGAGG
AGGCCCCCCCTCTCTATAAA A GTG TAGAAAATATC - G A--- C ---
AGATTTGTGGAGGTGTCATC
T
GAM18934 5646 AGAGAGAGAAACTGACAGAG AG ACTGA AGTTA TGAACACTAC

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1          TTAATGTTTGAACACTACAA AGAG  AGAA    CAG    ATGTT
           CATCCCTGCCTTCTTCCTTT TTTC  TCTT    GTC    TACAA
                          CT   CC---  CC---   ----------
GAM18939 3066  AGAGAGTAAATATTTTAGGT     T-    TTT   TT    AACCATG
1          TTTGTGAACCATGCACAGTC AGAGAG  AAATA   TAGG  TTGTG
           TCTATTTTATTTTTTTTTCT TCTTTT  TTTAT   ATCT  GACAC
                           TT    TTT   CT    -------
GAM18939 21578  AGAGAGTACACACCAATCAT   A    - A   TCATCCATACC    ACGA
4          CCATACCGCACAACGATGTG AG GAGTAC AC CCAA        GCACA
           CCTAATTGTATCTTGGGTCG TC CTCATG TG GGTT        CGTGT
           TACTCCT           -    C  -   CTATGTTAATC    ----
GAM18940 8425  AGAGAGTGCTAACCAGCTGT       CTAACC-  C    TT------  TTCTATCT
0          GGTTCCTTTCTATCTAGGTA AGAGAGTG      AG TGTGG       CCT
           ATTTCTCCACAACTTCTCTC TCTCTCAT      TC ACACC       GGA
           ATACTCTCT              ACTCTCT  A    TCTTTAAT  --------
GAM18940 8244  AGAGATAATTCAAAAAGGAA      A   AAA  GA    --     AAAAGTG
9          AACTATATATAAAAGTGGTA AGAGATA TTCA   AG  AAACT  ATATAT
           TATCAAGTTTGTCTCTGAAA TCTTTAT AAGT   TC  TTTGA  TATATG
           TATTTCT               A   C--  TG    AC     -------
GAM18942 8152  AGAGATGAGGGGCAGCATCA     T     C   A   G  CAG   - AG     CCCAAA
7          GTGCAGCTGGCAGGCAGAAC AGAGA GAGGGG AGC TCA TG   CTGG C  GCAGAA
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           ACAGTGGGCTCCCCTTTCTC    -    -  -  G  AG-   C GA     ------
           T
GAM18946 5751  AGAGCAAGCACAAAGACCGG    CAA  AC    CCGGA  T     - C    CAGT     AA----     T
2          ATATTTGTGGTGCCACCGCA AGAG   GC  AAAGA    TAT TGTGGT GC ACCG    TGCAGA     GGAATG
CAG
           GTTGCAGAAAGGAATGTCAG TTTC   CG  TTTTT    GTA GCACCG CG TGGT    ACGTCT     CTTTGT
GTT
           TCAGAAATGAATTGTGTTTC    AAC  GA    ACAAG  C     T  T   ----     CACTGA     -
           AGTCACTCTGCATGGTTGCT  -  GAAA
           GCCACGCATGGAACATTTTT T CA
           AGGCCAACTTT         A GT
                          A  ----
GAM18947 5988  AGAGCACTAGTAGATGGGGC      CT    A--  -  CA  C    GACT
5          CACACTGATGACTGTCATGA AGAGCA  AGTAG   TGG GGC  CA TGAT
           AGCCACCAGGCCTGCTCTGC TCTCGT  TCGTC   ACC CCG  GT ACTG
           TCT                  C-    CGG   A   AA  -   ----
GAM18948 9340  AGAGCAGCCAATGGCACAAG    C   C    G  CAA      C   TAA   AAAAAA
5          TCTTTACAATTAATTAAAAA AGAG AGC AATG CA   GTCTTTA AAT   TTA
           AATAAATCATTCTGAAGATA TCTC TCG TTAC GT   TAGAAGT TTA   AAT
           CTGCATTTGCTCTCT         -  T   - CA-      C   CTA   ------
GAM18949 14576  AGAGCAGGAGAAGCAGAGGT    C-       CA-    TTAT  C    ATGCA
0          TATGACAGTTATGCAGACTT AGAG  AGGAGAAG   GAGG    GA AGTT
           TCCCCCTCCTTTTTCTCTTT TCTC  TTCTCTTT   CTCC    CT TCAG
           TCTCT                TT       TTC    CC--  T   -----
GAM18950 2699  AGAGCATCCCCTGCAAAGCC     ATCC     AA    CACC   G-  CCTG
3          CCCACCCCAGAGCCTGCTGA AGAGC    CCTGCA  GCCCC    CCA  AG
           TGGAAGCGGGGCTGCAGGAC TCTCG    GGACGT  CGGGG    GGT  TC
           GCTCT                CA--     --    CGAA   AG  ----
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GAM18955 4514 AGAGCGTTTATAATTCATTT C TATAATT A AGTATT
6 ACAAGTGCAGTATTGCGCTA AGAG GTT CATTTAC AGTGC
GTAAATGTTACTTGACCTCT TCTC CAG GTAAATG TCGCG
- TTCATT- A ------
GAM18956 18744 AGAGCTCAGATCTGGGATCG - AGA GA CC GAAT GAT AGGCGCCAA
7 CCTGTGAATTGGGATGGGTG AGAG CTC TCTGG TCG TGT TGG GGGTGTGT
TGTAGGCGCCAAGCACATCC TTTC GAG GGACC AGT ACG GCC CCTACACG
TTACCGTTAGCACTTGACCA A GA- -- TC ATT- ATT ---------
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GAM18957 913 AGAGCTCGTACGCATGTGTA A C- ----- TG TA T TGA CCCAGTCTCCCCA
5 GAATGGCTGAGGACTTCCCA AG GCT GTACG CA TG GAA GGC GGACTT
GTCTCCCCAGAGTCCGTGCC TC CGA TATGT GT GT CTT CCG CCTGAG
TTTCCCTGTGTGAATTTTGT - TC TTTAA GT CC T TG- ----------
ATCTAGCCT
GAM18958 3136 AGAGCTGATAATAGATGTTT T-- T TTTT A ATGT- AGACTC
3 AGTTTTAAAAAGGATTATGT AGAGC GATAATAGATGTT AG AAAAAGG TT GCGGG
GCGGGAGACTCTCTGTTAGA TCTTG TTATTGTTTACAG TC TTTTTCC AG TGTCT
GGAGCCTTTTTCATCTGACA TCT - TAC- G GAGAT ------
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GAM18960 20873 AGAGCTTTAAGCTACTTTTC T- TCCAGT TTGCC
6 CAGTAGTTTGCCACTTTCTC AGAGC TTAAGCTACTTT AGT
CGAGGTAGTTTGGCTGCTCT TCTCG GGTTTGATGGAG TCA
TC CCTCTT -----
GAM18961 3456 AGAGGAAAAAGCAAGTGCTC AAAA A T CA AA--- AAAGAAACAAAAG
1 CAGAAAAACCTGTAAAGAAA AGAGGA GCA G GCTC GAA ACCTGT
CAAAAGACAGGTGAGACTTC TCTTCT TGT C CGAG CTT TGGACA
GAGAGCCCTGTCATCTTCT AC-- - C AG CAGAG ----------
GAM18962 14714 AGAGGAAGGAGGAGTTCAGA GA---- A T AG T-- A AAGAAGG
7 GGTTCCCCAGGGAAGAAGGC AGAGGAAG GG GT CAG GT CCCC GGG
CCGGGGCTTGCACTGCACCC TTTCCTTT CC CA GTC CG GGGG CCC
CAGACAGTTTCCTTT GACAGA C C A- TTC - -------
GAM18964 18712 AGAGGAATTTGGAGTAGTTT AATT --- CA A TTGATT TGCT
2 CAAATACAAGATTGATTGCT AGAGG TGGAG TAGTTT AATACA GA GC
GCTGCTACTTCTGTATTAAA TTTCC ACTTT ATCAAA TTATGT CT CG
AACTAGATTTTCATATGCCT GTAT TAG AA - TCAT-- ----
TT
GAM18964 5637 AGAGGACATTTTAAGGAAAA GA TTT AAAAGGG---- AAAAAA
7 AAAGGGCTTTAAAAAAATGG AGAG CAT AAGGAAA CTTTA
AGAATAATAATAATTTCCTT TCTC GTG TTCCTTT GAGGT
TGTGTGAACTCT AA TGT AATAATAATAA ------
GAM18965 12512 AGAGGACTGAAGTCTGTTCA A A TCTGTT TG C GGTT AGCA
5 CAGTGGCCCATGGTTGGGCA AGAGG CTG AG CACAG GC CAT GGGC
GCAGCCCTGGGTGAGCTCCT TCTCC GAC TC GTGTC CG GTG CCCG
GTGTTCTCCAGCCTCT - C TT---- CT A GGT- ----
GAM18968 14357 AGAGGATCATATATGCTTCA A C A AATG ATTA
1 TGGAAATGAGTTTATTAAAG AGAGGATCATAT TG TTC TGGA AGTTT
CTGTCTAGAGTCACATATGG TTTTTTGGTATA AC GAG ATCT TCGAA
TTTTTT C T - G--- ----
GAM18968 1009 AGAGGATCCCGGTTTTACAA ATCCCG AC- T TTA
2 TAGTCAGAGTTATTCTGTTT AGAGG GTTTT AATAG CAGAG

GTTTAAAAAATAAGAAACCT TCTCC TAAAA TTGTT GTCTT
CT AAAGAA AAT T ---
GAM18970 3112 AGAGGCATGACCTGACTGCA CAT CC CT C -- CTACTACTCT AATC
7 CTGTTGCTGACTACTACTCT AGAGG GA TGA GCA TGT TGCTGA GCC
GCCAATCGGCTACCCTCGAC TCTCC CT ACT CGT ACA ACGACT CGG
TCAGCACCACATTGCCTCAT TT- TT C- T CC CAGCTCCCAT ----
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GAM18971 5516 AGAGGCCAGAGAGGCGGTGG - C ----- - AGAAGTG
2 CGTCCGAGAAGTGCGGTGCG AGAGGC CAGAGAGG GGTG GCGT CCG
TGTGTATACTCTCTCTCTGT TCTCCG GTCTCTCT TCAT TGCG GGC
GCCTCT T C ATGTG T -------
GAM18978 18841 AGAGGGTGCTCCAAGAATTA G - AGAATTAAAA G- ATTTAAAGC
3 AAATCTGTGCTGGGATTTAA AGAGG TGCT CCA TCTGT CTGGG
AGCTTCAGAGGCAGAAAGGC TCTTC ACGA GGT AGACG GACTT
AGAAGTGGAAGCAACTTCT A A GAAGACGGAA GA ---------
GAM18979 3241 AGAGGTAGCTACCCGGATGC T ACCCGGA C T AT ACT A TATGA
7 AGTCCTTTGGGATGAAGACT AGAGG AGCT TG AG CCTTTGGG GAAG AT GGG
ATAGGGTATGACCCCATCAT TTTCC TCGG AC TC GGAGACCC CTTT TA CCC
TTCCCCAGAGGTCTCAGGCT - ------- - T -- AC- C -----
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GAM18979 14736 AGAGGTAGTGATAGATACTT GT TG TA G----- CAAT AAA A TCTT A-
9 GTCCTCCTGGCAATATCAAA AGAG AG A GATACTT TCCTCCTGG ATC TGC GTT CCA
GTTG
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CGAC
TTTTCAGCCCTGGTTTGACG TG GT C- ATCTTG ACT- CA- - TTT- CC
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TTCTAGGGTATCCTTGCTGT
CTCT

GAM18988 18050 AGAGTCACTGACTCGGGGTT A C TT T C TT C CC TTCCT
8 TGGGTAGCTCCTCATTTTCC AG GTCA TGACTCGGGG TGGG AGCT CTCA TTCCGAATCA TGG
TGG TGGGG
GAATCACTGGCCTGGTTCCT TC CGGT ACTGAGTCTT ACTT TCGA GGGT GGGGCTTAGT ACT
GCC ACTCC
TGGGGGATCCTCACTTTCCG - C TT C A TT C AA TTTC-
AATCACTGATTCGGGGTTTG GAT
GGAAGCTCTTCATTTTCTGA
GTCACTGGCCT

GAM18997 894 AGAGTTCAATATATCGATGT CA-- C-- T--- A T TCTT
3 TGCATGTTATTTTTATCTTT AGAGTT ATATAT GATGT GC TGTTAT TTTA
AGACATGGCAGCTACTGCAT TCTCAA TGTGTA CTACG CG ACGGTA AGAT
CTTCATGTGTCACAAACTCT ACAC CTT TCAT - C ----
GAM19007 18000 AGATACAGATCTCTTCAGCT AC T CTCAC ACTCATATA
5 CACCAAAACTCATATATTTG AGAT AGATC CTTCAG CAAA
CTTTCTGAAGGATTTCATCT TCTA TTTAG GAAGTC GTTT
C- - TTTC- ---------
GAM19018 9893 AGATCACTGTAAATGATTTC C AAT---- TC AACA TCAA
1 TGAACAGCTTTTCAAAGGGC AGAT ACTGTA GATT TG GCTTT

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          ACAGCAAGGATTTTCTTAAT TTTA TGACGT      TTAG  AC    CGGGA
          GCAGTAATTT           A     AATTCTT    GA  GACA    ----
GAM19018 14424  AGATCAGACTGTTACTGTGT       CT---   A  -     ATGTAGAAAAAGGA
6          CTATGTAGAAAAAGGAAGAC AGATCAGA     GTT CT GTGTCT
          ATAAGAAACTCCATTTTGAT TCTAGTTT     CAA GA TACAGA
          CT                   TACCT   A  A     ----------
GAM19018 19167  AGATCAGATGGTCGTAGTTG       A   TCG      TGT-     TATTTCT
9          TGTGGCTTTATTTCTGAGTT AGATCAG TGG   TAGTTG    GGCTT
          CTCTTAACTGTTCCATTGGT TCTGGTT ACC   GTCAAT    TTGAG
          CT                   -  TT-     TCTC     -------
GAM19019 22246  AGATCAGATTGTTACTGTGT       TT---   A  G-     A   AGGAAA
2          CTATCTAGGAAAAGGAAGAC AGATCAGA     GTT CT  TGTCT TCT
          AAAAGAAACTCCATTTTGAT TCTAGTTT     CAA GA  ACAGA GGA
          CT                   TACCT   A  AA     A   ------
GAM19022 14720  AGATCCTGTTTTGAAATTCC          TG   TTCCATTCACATTA    GATTTACTA
2          ATTCACATTACATTCGATTT AGATCCTGTTT  AAA           CATTC
          ACTAGAATGCCTTTTTTTTT TCTGGGGTAGA  TTT           GTAAG
          CTTTTTTGAGATGGGGTCT          GT   TTCTTTTTTTTTCC    ---------
GAM19023 14728  AGATCGGTCAGTTTGATGCT       TC    TG    T    --   TGC     TTC    G  T    TCACCTTATACT
1          CGATGAATGCTGGGAATTCA AGATCGG  AGTT  ATGC CGAT  GAA   TGGGAA   AGAG AA GTCT

          GAGGAATGTCTTCACCTTAT TTTAGCT  TCGA  TATG GCTA  CTT   ACCCTT   TCTC TT TAGG

          ACTTGGATTTGCTCTCTTCC       T-    --    T    GT   T--     C--    G  -    ------------
          CATTTCTGATCGTGTATAGC T
          TTTCGATTT


                    -
GAM19023 8528   AGATCTATGATTTTCATATA                  AC----     TTCATC      TACA
7          TATACGATCTTTCATCTTTC AGATCTATGATTTTCATATATAT     GATCT     TTTCATA
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          GATCCGATTCATATATATGA                  CTTAGC     CACTA-      ----
          AAATCATAGATCT
GAM19028 18976  AGATGACGTTTATGATCGTA      ACGTTTA    C   TGCTGCT   CTACT
5          TGCTGCTAGACTACTTCTTT AGATG       TGAT GTA      AGA
          TCTTATCATCAGTTCATCCA TCTAC       ACTA TAT       TCT
          TCT                  CTACTTG    C   TCTTT--   -----
GAM19029 16420  AGATGAGACAACACTGAAGA    T    AACACT-     CAAATT   TTTAGTAT
3          TCAAATTGTGTTTAGTATCA AGA GAGAC      GAAGAT     GTG
          CTATCTTCTCTCCTCGTTTC TCT CTTTG      CTTCTA     CAC
          TCT                -    CTCCTCT     T-----   --------
GAM19031 21617  AGATGATCAAAACAAGGGAT        AAAACA  GG   TT  TT   -      ATTTAAAGTATTTAC
0          TTTTTTTACAAGAGCTGTAT AGATGATC     AG   ATT   TT  ACAA GAGCTGT
          TTAAAGTATTTACACAGTTC TCTATTGG     TC  TGG  GA  TGTT CTTGACA
          TTTGTTAGCGGGTTTCTAGG        GGGA--  TT   GC  T-    T      ---------------
          GGGTTATCT
GAM19039 14070  AGATGGGCTGGGTAGAGAGC    G  CT  G     A       G----   CTTC
2          AGGACTGGAGCTTCCTCACC AGAT GG  GG TAGAG GCAGGACT    GAG
          AGGGTTCTGCCTCTGGCCCC TCTA CC  CC GTCTC CGTCTTGG    CTC
          GATCT               G  --  G     -       GACCA   ----
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GAM19040 18717  AGATGGGTGGATCACCTGAG       TGGA    -  AG     AGTTCTAGATCAG
6                GTCAGGAGTTCTAGATCAGC AGATGGG    TCACC TG  GTCAGG
                 CTGGCAACATGGTGAAACCC TCTACCC    AGTGG AC  CGGTCC
                 CATCT                CAA-     T  AA     ----------
GAM19041 3874   AGATGGTGTAAATGGTAAAC        AAA    AAACGT      T  ACA
8                GTGATATCATGAGACATTCC AGATGGTGT   TGGT     GATATCA GAG
                 TGATATCTCACACCAACACA TTTATTACA   ACCA     CTATAGT CTT
                 TTATTT                CA-    CACT--      C  ---
GAM19044 19187  AGATGTCTTATTATTAAAGT      TTA     AAGTT-    T  T-    AAATAAA
1                TACCTATTATTGTTGGAAAT AGATGTC   TTATTA     ACCTA TAT  GTTGG
                 AAACTAATTTGTACTGGGTT TTTACGG   AATGGT     TGGGT ATG  TAATC
                 TAGCATGGTAACATGGCATT       TAC     ACGATT    C  TT    -------
                 T
GAM19045 20617  AGATGTGGGATGTCAGTACT    T     TGT   T  GG       ------       TCGT
1                GGCATGTGCCTTATGACCCT AGA GTGGGA   CAG ACT  CATGTGCCT     TATGACCC
                 CGTGGGTCATGATAACTGGG TCT TACCTT   GTC TGA  GTGCATGGG     GTACTGGG
                 TACGTGGAGTTCTGTTCCAT   -     ---  T  G-       TCAATA       ----
                 TCT
GAM19046 18265  AGATGTTAAAGAGATCTTTG       AA-    A  T  CAGAG   GAAA
1                CCAGAGCCAGAAATGGAAAG AGATGTT   AGAG TCT TGC     CCA
                 TACAGACTTCTGAAAATATC TCTATAA   TCTT AGA ATG     GGT
                 T                   AAG    C  C  AAA--  ----
GAM19047 20487  AGATTAAAATCATAATGCAT     -    AT   GCA-  A      CTCCTT----   TTTATT
6                GACTAAAAACTCCTTGGATT AGATTA AAATC  AAT    TG CTAAAAA        GGA
                 TATTTCCCATTTTAAAATTT TCTAAT TTTAG  TTG    GC GATTTTT        CCT
                 TTAGCGGTAAGTTCAGATTT      A     AC   AATG -      AAAATTTTAC   ------
                 ATAATCT
GAM19048 1470   AGATTAATCCATCTATTTTC    T----   -  CTATTT     TTCATATTACAAAC
4                TGCATTCATATTACAAACTG AGAT     AATC CAT     TCTGCA
                 CAGATGCTCTGTGTGATTTG TCTA     TTAG GTG     AGACGT
                 TACATCT              CATGT    T  TCTCGT     ----------
GAM19049 14572  AGATTATAATTTTCAGAAAG        TTTTC---       TT  AA   C     GCTAATTCCATCATA
6                GATTTTTAACATCTGCTAGG AGATTATAA       AGAAAGGAT  TT  CAT TGCTAG
                 CTAATTCCATCATATTAGTA TCTAATATT       TCTTTTCTA  AA  GTA ATGATT
                 TATGAAATTATCTTTTCTCC        TATTGACC        TT  A-   T     ----------
                 AGTTATTTATAATCT
GAM19049 19910  AGATTATAGCAACAATGGAG     ATAG  ACAA    -     AGTT----  TATGG
8                TTGGGAAGTTGGTATGGCCT AGATT    CA    TGGAG TTGGGA       GG
                 ATAATTGTCCTAAGTTCCAG TCTAG    GT    ACCTT AATCCT       CC
                 AATGAAAAGATCT           AAAA  AAG-     G     GTTAATAT  -----
GAM19050 6503   AGATTATCTCACATTTAAGG    T    CACATTTAA   G  GTT    GGTGCAA
0                TGGCGTTCATGGGTGCAACA AGAT ATCT        GGT GC   CATG
                 TGTAGCGACCCAGGTTATCT TCTA TGGA        CCA CG   GTAC
                                T    C--------  G  AT-   -------
GAM19053 4500   AGATTCCTCCTTATAATTCT    TT   CC   T    CT   A-    T    T   ACTTGGAA
1                GTAAGTGTTGGCTTTTAACT AGA  CCT  TTA AATT  GTA  GTGT GGCT TTA
                 TGGAATAATGGCCATATCCT TCT  GGA  AAT TTAA  CAT  TATA CCGG AAT
                 ACCAAATTTTAAAAGGTTTC    TT   A-   T    AC   CC    -    T   --------
                 T
GAM19053 21113  AGATTCGGGCAAGTCCACCA          ----------     A---   -  AC-     AT  GA  TATAAATG
```

6 CTACTGGCCATCTGATCTAT AGATTCGGGCA AGTCC CCA CT TGGCC CT TC CGGTG
AAATGCGGTGGCATCGACAA TCTGGGTCCGT TCGGG GGT GA GTCGG GA AG GTTAC
AAGAACCATTGAAAAATTTG ATGAACTTCC AAAG A GTC AG AG TTTAAAAA
AGAAGGAGGCTGCTGAGATG CA GACAAAA
GGAAAGGGCTCCTTCAAGTA G TC
TGCCTGGGTCT C AG
A- -------
GAM19053 20634 AGATTCGGGCAAGTCCACCA ---------- A--- - AC- AT GA TATAAATG
7 CTACTGGCCATCTGATCTAT AGATTCGGGCA AGTCC CCA CT TGGCC CT TC CGGTG
AAATGCGGTGGCATCGACAA TCTGGGTCCGT TCGGG GGT GA GTCGG GA AG GTTAC
AAGAACCATTGAAAAGTTTG ATGAACTTCC AAAG A GTC AG AG TTTGAAAA
AGAAGGAGGCTGCTGAGATG CA GACAAAA
GGAAAGGGCTCCTTCAAGTA G TC
TGCCTGGGTCT C AG
A- -------
GAM19053 20280 AGATTCTATATCCTAAAACA ------ TAA ------ A A CCTGCAAT
9 TTTAAACCTCACTAGGCCTG AGATTCT ATATCC AACAT TTAA CCTC CTAGG
CAATTTTGGAGAGGGTTAGC TCTGAGA TATGGG TTGTA GATT GGAG GGTTT
TAAATATGTTGGGTATCACT CTTCAC --- TAAATC G A --------
TCAGAGTCT
GAM19063 14025 AGATTTTGGTTTTTATAAAT G A AATA T - TTA TAG-- A ATG
3 ATAAATGTTTTATTTTTAAA AGATTTTG TTTTT TA TAAA GTTT TATTT AATG GAAGAT TTG
TGTAGGAAGATATTGATGCA TTTAAAAC AAGAA AT ATTT CAAG ATAAA TTAC CTTCTA GAC

GAATCTTCGTTTTCATTAAA - A GACG - T --- TTTTG A ---
TATGAACTTTAGCAGTAAAA
GAACAAAATTT
GAM19063 18657 AGATTTTTCAATTTTTATTT TTC A TG TT AAG ACATTTTCCA
5 TGGTTTTCTTACAAAGGTTG AGATTT AATTTTT TTT G TTCTTACA GTTG
ACATTTTCCATAACAGGTGT TTTAAA TTAAAAA AAA T GAGAATGT CAAT
AAGAGTGTTGAAAAAAAAAT C-- A GT GT GGA ----------
TCAAATTT
GAM19066 4466 AGCAAACTGAGACTTAATCA A- CT CAAA CT CTA
4 AAGAACTTGCTACATATTCC AGCAA CTGAGA TAAT GAA TG
CAGTTGGATCTCAGAATTGC TCGTT GACTCT GTTG CTT AC
T AA AG ACC- AT ---
GAM19066 9498 AGCAAAGAAATATTAATATA ATTAATATA -- ATAGTTTG
7 GTGCTGCATAGTTTGGCCAA AGCAAAGAAAT GTGCT GC
GCATACTCATCATTTCTTTG TTGTTTCTTTA TACGA CG
TT CTACTCA-- AC --------
GAM19069 3923 AGCAACAAAGGAATGCAAGG AACAA - AG-- A--- CGAGAGCAT
9 CTGAGCTCCGAGAGCATGAG AGC AGGAA TGCA GCTG GCTC
CAATGTGGTAGAATGCATTT TCG TCCTT ACGT TGGT CGAG
CCTGGGCT GG--- T AAGA GTAA ---------
GAM19070 8251 AGCAACCCCCAGCCTGAAGC CC C-- G AA ATCA ATCCAATG
9 ATAAGAGATCAAGATCCAAT AGCAACC CAG CTGAA CAT GAG AG
GCTAAACTCCAATGGTTCAG TCGTTGG GTC GACTT GTA CTC TC
TGACTGTGGTTGCT T- AGT G AC AAA- --------
GAM19071 3564 AGCAACCTATTGGAAGCATA C T TACAAA- AG A GA CTCA
2 CAAAGCAGTTTATTTTAGAG AGCAAC TAT GGAAGCA GC TTTATTTT GAG ACT

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          GAACTCTCAAGTGTCTTAGG TCGTTG GTA TCTTCGT      TG  AGATGGGA TTC  TGA
          GTAGAAAGTAAAAAGTTGCT      A  T      TGAAAAA  AA       -  TG  ----
          TCTTATGAGTTGCT
GAM19077 5494   AGCAAGTAGTACAGTATGTT      T  TAC    T   A     CATCTCAAAA
0          AGGGATCATCTCAAAAGTTC AGCAAG AG   AGTA GTT GGGAT
          CAAGCTACTTCTTTCTTTGC TCGTTT TT   TCAT CGA CCTTG
          T                  C  TCT    -   A    ----------
GAM19079 9066   AGCAATCCACAAGATCTGGC    AA   A    ATC    AT--------  AGCTCAC
9          ATGGCAGCTCACGCCTATAA AGC  TCC CAAG   TGGC         GGC
          TCCTCGCTACTTGGGAGGCT TCG  AGG GTTC   ATCG         CCG
                        G-   -    ---    CTCCTAATAT   -------
GAM19081 5488   AGCAATTATGTCTTTATTGG    AA  ----  CT     G    A     TTAC   CTTTGA         A   ATTG
4          TTATATAAATTTACAGTCTT AGC  TTA    TGT  TTATTG TTAT TAAAT    AGT      GAAGCTGTGT AAT
          TGAGAAGCTGTGTAAATATT TCG  AAT    ACA  AATAAC AATA GTTTA    TCA      CTTTGATATA TTG

          GCCAGTTAATATAGTTTCAC    AA   TATA   AT     -    C     TTTT   ------         A   ----
          TTTTTATTTGCATAACAATA CCA
          ATAACAATATTAAAAGCT

                        ---
GAM19082 20192  AGCAATTTTGGTTCCGAAGA       TTG--    -  AA       CTCTAGCT
6          TGTAGGCTCTAGCTCCTACG AGCAATT     GTTC CG  GATGTAGG
          TTGCTGTGGACATATTGATT TCGTTAG     CAGG GT  TTGCATCC
          GCT                  TTATA    T  CG       --------
GAM19083 3259   AGCACACTGTAGGAACTGTA    AC   GTA  AA      CCC      GAA
8          GACCCCAAGTTGAAAACTTG AGC  ACT   GG  CTGTAGA   CAAGTT
          TTCTATGGAACCAAAGTAGC TCG  TGA   CC  GGTATCT   GTTCAA
          T                A-   AA-  AA      T--      ---
GAM19091 4109   AGCACTCCCAATACCCCATT      CC-  -    C   TT     GG-    ACAGC
7          CCATAGGATTAACAGCTAGT AGCACT   CA ATAC CCA  CCATA   ATTA
          ATATATGGTGGTGTGTATGT TTGTGA   GT TGTG GGT  GGTAT   TGAT
          ATAGTGTT              TAT  A    T   --     ATA    -----
GAM19098 19939  AGCAGAGGCGGTCCCTGGAC    - AG    TCCCT    - CC-    TCC
3          ACGCCCCAGTCCCTGGCATC AGC AG  GCGG     GGACA CG   CCAG
          GCTGTCCTCCCGCTCCTCGC TCG TC  CGCC     CCTGT GC   GGTC
          T                C  CT    CT---     C  TAC    ---
GAM19100 18646  AGCAGATGTGGATTAGCAAG     GA     ATTAGCAAGC   A TA   CGAG
2          CAGGAGTACGACGAGTCGGG AGCA  TGTGG         AGG G  CGA
          CCCCTCCATCGTCCACCGCA TCGT  ACGCC         TCC C  GCT
          AATGCT               AA     ACCTGCTACC   C GG   ----
GAM19103 19880  AGCAGCCTCTTGTCACAGCT      -    -   AGCTTGACTCC     AGTGT
1          TGACTCCTAGGTAGTGTGCC AGCAGCC TCTTG TCAC          TAGGT
          TAGTGACCAAGAGGGCTGCT TCGTCGG AGAAC AGTG          ATCCG
                          G    C    -----------     -----
GAM19104 18943  AGCAGCTATTACCAAAAAAG     CT-    C--  AAAAA     T-  TTCCA
2          GCATATACTTCCAGTCCTGT AGCAG   ATTA   CA     GGCATA  AC
          GCTCCATCTGCCTTAATTCT TCGTT   TAAT   GT     TCGTGT  TG
          TTGCT                TCT    TCC  CTACC     CC  -----
GAM19105 8534   AGCAGGAAAACAAGCATTTG    A    AACAAGCA  TG   AA TT  T  -     GGT
6          ACTAATTTCTTCCACACTGT AGC GGAA       TT  ACT  T  CT CCA CACTGT
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GGTATAGTGCTGGCAGGGAA TCG CCTT GA TGA A GA GGT GTGATA
GAGTTGAGAATTCCAGCT A AA------ GT GA GG C C ---
GAM19106 21513 AGCAGGAGCATCCATGAAAT C ATCCA GAACG CCTTCCATGA
6 TGAACGCAGGACCTTCCATG AG AGGAGC TGAAATT CAGGA
ATCCTGGCACAGATTTCAGC TC TCCTCG ACTTTAG GTCCT
TCCTACT A ----- ACACG ----------
GAM19108 18787 AGCAGGGCCCGAGCTGGAAG C GA G A C C CC C CGT
8 CGCAAGGCAGCCGCCGCCGT AGCAGGG CC GCT GA G GCAAGG AG GC GC
GCCGCTCCTCCCTTGCCCTC TCGTCCC GG CGG CT C CGTTCC TC CG CG
AGGCCAGGTCCCTGCT T AC A - C C CT C ---
GAM19108 9560 AGCAGGGCCTCATACTCCTG - CT- CT CT- CGCTGTC
9 GGCCTGGCGCTGTCCCTCTG AG CAGGGC CATA CCTGGGC GG
CCCGGGTCTGTGCCAGCTCT TC GTCTCG GTGT GGGCCCG CC
GACT A ACC CT TCT -------
GAM19109 18541 AGCAGGGCGGCAATGGTGTA GG CAA A- G - CCGGAG
2 GCGGCGGGGGCCGGAGTCGT AGCA GCGG TGGTGT GCGGC GG GG
TGGCTGTGAATACCACCTCT TCGT CGTC ACCATA TGTCG TT CT
GCATGCT A- TCC AG G G ------
GAM19111 20338 AGCAGGTTTAAAAGGTGCTC TTTA TGCTCA GA TA ATTACG
7 ATTTAGAGATTCTAACCAAT AGCAGG AAAGG TTTA GATTC ACCA
TACGTGGTGAATTATAAAAT TCGTCC TTTCT AAAT TTAAG TGGT
TTCTTTCCTGCT ---- TTA--- A- -- ------
GAM19114 886 AGCAGTGGCTGCTACAGCTG CA G -- --- AC--------- A TAGGCAAT
5 GTACGGACTGATAGGCAATT AG GTGGCT CTA CAGCT GGT GG CTGA
CAGACCAACAGAAGATAACC TC TACCGA GGT GTCGA CCA CC GACT
ATAAGCTGCATGGAGCCATG AG - AC ATA ATAGAAGACAA A --------
ACT
GAM19121 5803 AGCATCCACATGGTGACAGG A A - A T --- CCCGAGAA
0 TCTGGACCCCGAGAAGTTGA AGC TCCAC TG GTG CAGG CTG GAC
TCAGCCTGCACACAGTGGAG TCG AGGTG AC CAC GTCC GAC TTG
CT - - A - - TAG --------
GAM19124 3801 AGCATGAGCCACTGCACCGG G- - CT CG GAC GTCAAA
1 GCTGACATGTCAAAATAAAG AGCAT AG CCA GCAC GGCT AT
GTTAAGTGCTATGGTCTGAA TTGTA TC GGT CGTG TTGG TA
TGTT AG T AT AA AAA ------
GAM19124 750 AGCATGCTCAGTTAAATTTG C A C ---------- C C A
8 AATTTCAGACAAACAATGAA AG ATGCTCAGTTAA TTTGAATTTCAGA AAACAAT GAATG TTTTA
TGTAA
TGCTTTTACTGTAAATATAT TT TACGGGTCAATT AAACTTAAAGTCT TTTGTTA CTTAC AAAGT
ACGTT
GCCAAATATTGCATGAAACA C C C AAGTGCAATT - - -
TTCTTAACGTGAAATTGTTT ATGCCAA
CTCTGAAATTCAAACTTAAC TAT
TGGGCATCTT ATA

GAM19125 8863 AGCATGGAATTTAAGTTTTG ------- TTT TT TA AAC-- CAACA ---------
1 TATTTTGAACAAAAATAGCA AGCA TGGAA AAGT TG TTTTG AAAAATAG TCTG
ACATCTGTTTTCTGTATGGC TCGT ATCTT TTCA AC AAGAC TTTTTATT AGAC
AAAGAAAAACTAAATCCCAG TTATTAA TC- CT CA ACCAA TTC-- CCTAAATCA
ACTTTTATTTTTAACCACAG GTATGGCAA

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          AAACCATCACTTCTTTCTAA TTTTCT
          ATTATTTGCT         AAAAGA
                        ---------
GAM19125 14593  AGCATGGACCAGATCCCAGA    T    C  A-  CC--   CT  AT  CCCA
4           CTGCATCACCCATGTCGCCA AGCA GGAC AG  TC    AGA  GC  CA
          TCTCCGAGAGCCTAGTCCCT TCGT CCTG TC  AG    TCT  CG  GT
          GCT                C    A  CG  AGCC   AC  CT  ----
GAM19126 9230   AGCATGGGGCCTGGGGCTCC    A   -  CCT           C---------     TGAA
0           TGTTAGCAAAGTTGAAGCTT AGC TGG GG   GGGGCTCCTGTTAG         AAAGT
          TCCCCAGGGCCCTAGCAGGA TCG ATC CC   CTCTGAGGACGATC         TTTCG
          GTCTCCCACTAGCT        -   A ---           CCGGGACCCC     ----
GAM19127 8281   AGCATGTGGCCAGGGGTGCA    -  T        T-       G GG     A  AG  TGTCCC
2           GGGTGGCGGGGGGTCAGCAG AGCA TG GGCCAGGGG  GCAGGGTG C  GGGGTC GC  CA

          CATGTCCCTGGGCAGGCCCT TCGT AC CTGGTCCCC  TGTCCCAC G  TCCCGG CG  GT
          GGGCACCCTGTCTCCCCTGG    C  T        TC       - GG     A  G-  ------
          TCTCACTGCT
GAM19128 12290  AGCATTAATACTAGGTGTAA     TAATA  A    TAAG-----------   --  GCCA
2           GCCCTATTGCCAAATAAAGG AGCAT     CT GGTG            CCCT  ATT
          GAAAATAAGAGATGCTCATC TCGTA     GA CTAC            GGGA  TAA
          GAGGAATTATGCT          TTAAG  G    TCGTAGAGAATAAAA    AA  ----
GAM19131 21619  AGCATTGTTTTGGAGCTGGT    --    T       --- T   CA  -  AA  GCAAAA
2           TCACAGAAAAAAGGCAAAAC AGCA  TTGT TTGGAGCT   GG TCA  GA AA  AG
          TGGTTATCCTGACCCTCAAG TCGT  AATA AACCTCGA   CC AGT  CT TT  TC
          CTCCAACATAAACTGCT       CA   C       ACT  C   C-  A  GG  ------
GAM19135 14491  AGCCAACTACCTGGGCTGGG     A   CC    CT-        T   --------  CA    CAC
8           CCATCATGCACGCCAGCCCC AGCCA CTA  TGGG   GGGCCATCA GCAC       GC  GCCC
          ACGGGCCTGCTCCTGACGGT TCGGT GAT  ATCC   CCCGGTGGT CGTG       CG  CGGG
          GCTGGTGGCCCTCACCTACA     -  AC    ACT        -   GCAGTCCT  TC    ---
          TAGTGGCT
GAM19137 21377  AGCCAATCCAGAAGTCTTTA     AT   --     -   TAAA  ACCATAATAACCA
4           AATCACCATAATAACCAGAG AGCCA  CCA  GAAGT CTT    TC
          AATAGGAACTTCCCTGGGCT TCGGT  GGT  CTTCA GGA    AG
          GGCT                CG   CC    A   TAAG  ----------
GAM19140 20723  AGCCACCGCACCCAGCCTTG      CG  -      -  TTTC---    GT    TGAG
2           TTTTCTGGGGTTTCGTTGAG AGCCAC  CAC CCAGCCT TGT      TGGG  TTCGT
          ATGAGGTCTCACTCTGTCAC TTGGTG  GTG GGTCGGA ACA      ACTC  GAGTA
          ACAGGCTGGAGTGTAGTGGT      AT  A      C  CTGTCTC    TG    ----
          T
GAM19141 3893   AGCCACTCAGAAGGCTGAGG    -   CAGA    G    AGGA  A  GCTTGA
5           CAGGAGGATCGCTTGAGACC AGC CACT    AGGCT AGGC    GG TC
          AAGAGTTTGAGCCTGCGGTG TCG GTGG    TCCGA TTTG    CC AG
          AGCT                A    CG--     G    AGAA  -  ------
GAM19145 6221   AGCCAGGATTCTCAAATGGA        TTCTCAA   GAAG GG     ATA
9           AGTGGTATATATAATATGTT AGCCAGGA      ATG    T  TATAT
          AAAAACATCCTGCTTTCCTG TCGGTCCT      TAC    A  GTATA
          GCT                   TTCGTCC   AAAA TT     ---
GAM19149 21137  AGCCATAACTCCAGTTGTAC    ATAACTC    T    ACTC-    CCCCATTCTCTTTTA
4           AACTCAATCGCCCCATTCTC AGCC      CAGT GTACA     AATCG
          TTTTACGGTTCAAAATGTAC TTGG      GTCG CATGT     TTGGC
```

TGCTGACCTTGGGTT GTTCCA- T AAAAC ----------
GAM19150 20987 AGCCATCCTAGGGGTCTGGT A ------- CT-- GGA AAGAA- AAACAA
5 GTGAGGGAATCAAGAAGAAC AGCC TCCTA GGGGT GGTGTGAG ATCAAG CC
CAAACAAGGGCTGGGCTTGG TCGG AGGGT CCCTA CCGCACTC TGGTTC GG
TGGCTCACGCCTGTAATCCC - TTCACTA ATGT GG- GGGTCG ------
ATCACTTTGGGAGGCT
GAM19155 13967 AGCCCAGGCTCTTTGTAGCT CT TTGT ATTCTCC TATG
4 TATTCTCCAGTATGCTTTCC AGCCCAGG CT AGCTT AG
TCCAAGCTTCCAGTTCTGGG TCGGGTCT GA TCGAA TC
CT T- CCT- CCTCCTT ----
GAM19158 9206 AGCCCCCAAATGCCAGTGGT CC AA- C TTAATTC GA TCAG
2 TTAATTCAGTGGAGTTCAGA AGC CCA TGC AGTGGT AGTG GT
CCTCATTCCTATATCATTGC TCG GGT ACG TTACTA TTAC CA
AGTGTGGATGCT TA GTG - TATCC-- TC ----
GAM19166 20878 AGCCGAGCCTGAGGCTGGGG GAG TG -- A GT TCAT
1 ATGGTGGCTCATGCCTGTAA AGCC CC AG GCTGGGG TG GGC
TCCCAGCACCTTGGGAGGCT TCGG GG TC CGACCCT AT CCG
A-- GT CA A GT ----
GAM19167 2928 AGCCGCTCCACTCGCATGTC C CG CACTG A- TCGCATCAC
9 CACTGTCTCAGAGCTTCGCA AGC GCTCCACT CATGTC TCTC GAGCT
TCACGGCTCAGGAGAATGAC TCG CGAGGTGG GTACAG AGAG CTCGG
ATGGAGGTGGAGCTGCT T AG TA--- GA ---------
GAM19169 4065 AGCCGGCGTCGAGGCGGGGC T - GG - C C C C- GG C TG
0 GCGGGAACGACGGCGGCCAT AGCCGGCG CGAG GC GGCGCGG GAA GA GG GGC ATGGCG
CTCGGGGC CGGG T
GGCGGGCTCGGGGCCCGGGT TTGGTCGT GCTC CG TCGCGTC CTT CT CC CCG TACCGT
GAGCCCTG GTTC G
GTCGCAGGTGGTGCTTGTGT C T -- A - T A CC G- T GT
CCCGAGGTGCCATCCGCCAC CAGG
CTTCTTCACTGCGCTGCTCT CG
CGCTGCTGGTT GT

GAM19169 12437 AGCCGGGTTGCGCCAGGCTG - --- AG CATAG TTCTCGT
6 TCATAGTCCTTCTCGTGGAA AGCC GGGT TGCGCC GCTGT TCC
CACGGCGGCGCGGTCACCCA TCGG CCCA GCGCGG CGGCA AGG
GGCT A CTG -- CA--- -------
GAM19175 4005 AGCCTCCAAGGGAGAATTGC CC G AGAA A-- CCTGACCTCTTA
0 AGAATTGGCCTGACCTCTTA AG TCCAA GG TTGCAGA TTGG
CCAAAACTCTGTAGCCTGTT TC AGGTT TC GATGTCT AACC
GGATTCT TT G C--- CAA ----------
GAM19175 19993 AGCCTCCCACCACGCTCACT CCACCACG CA CCT GAAAAAGTTAAG
9 GCCTGGCTTGAAAAAGTTAA AGCCTC CT CTG GGCTT
GAAGCCCCTCAGGAAGAGAA TCGGAG GA GAC CCGAA
TCGAGGCT CTAAGA-- AG TCC ----------
GAM19179 3408 AGCCTCTTCCCGGTTCCATT TCT C T CCACCTC CACCCATTC
3 TCCCACCTCTGGACACCCAT AGCC TCCCGGTT CAT TC TGGA
TCTCCAACCAATGATGTGCA TTGG AGGGCCGA GTG AG ACCT
GCCGGGACGGTT C-- C T TAACCA- ---------
GAM19180 4006 AGCCTGAGACTAGTTCGGAC CT T T AAG
4 TCCCCTTCGGCAAGGTCGAA AGC GAGACTAGT CGGAC CCCCTTCGGC

GGGGGTTCGGCTGGTCTCTG TCG CTCTGGTCG GCTTG GGGGAAGCTG
CT T- - - ---
GAM19181 20679 AGCCTGCAGTGTGTGCGTGG TGT C A T TTA GT- TGTCGT
0 CAGTTTGGTTTATTGGTAGT AGCCTGCAG GTG GTGGC GT TGGT TTG AG
GTCGTCTCAGCAGCGTGCCA TCGGGCGTC TAC CACCG TA ACCG GAC TC
CATGGCCACCATCTGCGGGC --- - G C TGC GAC ------
T
GAM19181 1452 AGCCTGCTTTGCAAGGAGCA C GCAA A CT C TGCTGT
4 GCGCCTCTGCTGCTGCTGTG AGC TGCTTT GGAGC GCGC CTG TGC
CACAGCCGCGCGCTTCAATA TCG ATGAAA CTTCG CGCG GAC ACG
AAAGTAGCT - ATAA - CC - ------
GAM19182 2712 AGCCTGGCCCATGGAGGCAT GG AGG T GA ---------- TACT
3 GTTCAGGGATCAGCACTACT AGCCT CCCATGG CA GTTCAGG TCA GCAC
GTGCTTCTTGGAGGAGGTGG TCGGA GGGTACC GT CGAGTTC GGT CGTG
GACTTGAGCTGGACCCATGG -- CAG - AG GGAGGAGGTTCTT ----
GAGGCT
GAM19189 21204 AGCCTTTATTGGGTCAGGGC - ATT G AG CCAGA CAGG
0 TTGCTCCAGAGCTCAGGGGC AGCC TTT GG TC GGCTTGCT GCT
CAGGTAGGTCAGGAGCCTTG TCGG AGG CC AG CTGGATGG CGG
GGATGGCT T GTT G GA AC--- ----
GAM19191 18494 AGCGAGCGGGCGCCGGGAAG AGCG- GGA G G AC - GA CAGCT A
AACTGG
8 CGAGGAGACGCCCGCGGGAG AGCG GGCGCCG AGC AG AG GCC CGCGG GGCC GCTCGG
GC
GCCCAGCTGCTCGGAGCAAC TCGT TCGCGGT TCG TC TC CGG GCGCC CCGG CGAGCC CG

TGGCATGGCCCGAGCCATGG GGTCA GG- - G GC T G- TAC-- - ------
CCGCCGCGTGGCCGCTGCTG CATG
CTGGTGGCGCTACTGGTGCT

GAM19193 4503 AGCGCACTGCTCCACTGCGC ACT A G CTC G CTGGA TGACGT
3 CTCTCTGCAGCTGGACTCTT AGCGC GCTCC CT CGC TCT CAG CTCT
GACGTAGAGAAACCTGGGGA TCGTG CGAGG GA GTG AGG GTC GAGA
TCTGTGAGGGAGCTGGTGCT GT- - - TCT G CAAA- ------
GAM19194 6123 AGCGCCGGCTATGCCCCTGT GC TA--- CCC T - TG ACAC
3 ATTGGATTGCCACACGGGTC AGC CGGC TGC TGTA TG GAT CC
ACATTGCATGCAAGTTTGCT TCG GTCG ACG ACGT AC CTG GG
GAGCT A- TTTGA T-- T A -- ----
GAM19196 18876 AGCGCTCCACCCAAATACAT CCA AAATACATTAAC CTCA
3 TAACACCTCCTCAGAGGTTT AGCGCT CCC ACCTC
ATTTCTCCCAGGGACAGTGC TCGTGA GGG TGGAG
T CA- ACCCTCTTTATT ----
GAM19197 1774 AGCGGAGTACGCGGGTGGCT TA- GG - -- T TTCCT
7 GGACCTACATGCTTCCTGCT AGCGGAG CGCGGGT CTG GAC CTACA GC
GTGGCTGTCTCGGAACCCGT TCGCCTC GTGCCCA GGC CTG GGTGT CG
GGTCCTCCGCT CTG A- T TC - -----
GAM19200 16755 AGCGGTTGACCCTCCTGGCT - GACCCTCC-- C CC-- -- ----- AGA ACCCC
2 CCCCTGAATTCTGTATTCAA AGC GGTT TGG TCC TGAATTCT GTAT TCAA TGGA
AGATGGAACCCCTCCAATTG TCG CCAG ACC AGG GTTTAAGG CATA AGTT ACCT

ATGCCCATACAAGGAATTTG A AAATTAATAC A CTTC AA CCCGT A-- -----
CTTCGGAACCACATAATTAA
AGACCAGCT
GAM19202 8760 AGCGTGTGCAGCGCTACCTG C CTACCT A GAA-- - ACCGA
5 GAGGAGAAGGGCACCTACCG AG GTGTGCAGCG GG GGA GGGCAC CT
AGGAGTGTCTGCCGATCTAC TC TACGCGTCGT CC TCT TCTGTG GG
CTGCTGCGCATCT - ------ A AGCCG A -----
GAM19205 8051 AGCTAAGCAATAGGGTAGGC AA- - ---------- C- TCCACCC
8 CTAATTCCACCCGTTAGTAC AGCT GCA ATAGGGT AGG CTAAT
CTTAAAAAATACACCCTATA TCGA TGT TATCCCA TCC GATTG
TGTGAGAGCT GAG A CATAAAAAAT AT -------
GAM19208 2910 AGCTACGAGGAAAAGAAGTA GA AAAAGAA A CG G ACGC
7 CACGATGGGGGACGCTCCTG AGCTAC GG GT CA AT GGGG
ATTATGACAGAAGCCAGTGG TCGGTG CC CA GT TA TCCT
CT A- GAAGA-- - AT G ----
GAM19217 1123 AGCTCATCAATGCTGCCAAG A AA -- CAAG- TCCTCGAACTCCTAT
4 GGCTCCTCGAACTCCTATGC AGCTC TC TGC TGC GGC
CATTCAGCAACGCAAGGACG TCGAG AG ACG ACG CCG
AGCT C GA CA ACTTA ----------
GAM19220 21547 AGCTCCCCAACCCCGAATCA C ACC- G A T AAAG-- A ATCC
5 GTGACTCGGAAAGTGAGGAT AGCTCC CA CCGAATCA TG C CGG TG GG
CCCCCAAGGAACCCGGCCAG TCGAGG GT GGCTTAGT AC G GCC AC CC
TGATTCGGAAAATGAGGAGC A AAAA G C - CAAGGA - ----
T
GAM19223 19787 AGCTCGCCTTCTGGTCCAGG TTC CCA-- G AGCGC
8 TTCGGGAAGCGCTCGCGGGC AGCTCGCC TGGT GGTTCG GA
CGTCAAGCCACGCGGCGAGC TCGAGCGG ACCG CCGGGC CT
T CGC AACTG G -----
GAM19228 3618 AGCTCTGTCCTAAGTCTCCT AA- CCTA- TTCTCCTTGGCCT
1 ATCATTCTCCTTGGCCTTGA AGCTCTGTCCT GTCT TCA
GTTTCAGACAAAAGGGCAGA TTGAGACGGGA CAGA AGT
GTT AAA CTTTG ----------
GAM19228 20244 AGCTCTTATCTTTGGTGGCT ATCT --- T TCG TG TGCT
6 GTGGTCGGGTGTTTGCTGGT AGCTCTT TTGGT GGCTG GG GG TT
GCCCCCAGCTGAAGCCAACA TTGAGAA AACCG TCGAC CC CC GG
AGAGTT C--- AAG - --- GT ----
GAM19229 14558 AGCTCTTCTCTCTGCCACTG C---- ------- CA- TCACTCCT
1 TCACTCCTCAGAAAGCTAAA AGCTCTT TCTCT GC CTG
TTAGGAGACACAAAAGAGCT TCGAGAA AGAGG CG GAC
AACAC ATTAAAT AAA --------
GAM19230 2830 AGCTGAACACTAGTCACTGG GAACACT- AC TC TTCTCTT
4 GTTCCACGGTTCTCTTCCGT AGCT AGTC TGGGT CACGG
GACCCACGACTTCTAATAGA TCGA TCAG ACCCA GTGCC
GCT GATAATCT C- -- -------
GAM19231 16592 AGCTGAATCTCAGGGTAAGA - C A C-- CC AAAT
5 CTCCCCATAAATGTGCAGAA AGCTG AAT TCAGGGTA GA TC CAT
AATCTGCCCTGAAATTCCAG TTGAC TTA AGTCCCGT CT AG GTG
TT C A - AAA AC ----
GAM19238 8669 AGCTGCCCTCCTCTTCTCCC T - TCA CAGCCC
5 CTCACACTACAGCCCTGGTG AGC GCCC TCCTCTTCTCCCC CACTA

GGGGAGAAGGGGGTGGGTGC TCG TGGG GGGGGAAGAGGGG GTGGT
T - T --- ------
GAM19240 1143 AGCTGCTCTTCTACTGGAAT CTC GAATGCAAA CCCCACAAGCAGAAAA
0 GCAAAGCCTCCCCACAAGCA AGCTG TTCTACTG GCCT
GAAAAAGGCGCAGTAGAGCC TCGAC GAGATGAC CGGA
AGCT C-- G-------- ----------
GAM19242 1286 AGCTGGAGGTCTTGCTCTGT C TC TG C TT C TG- --- TA ATCA
5 TGCCCAGGCTGTAGTGCAGT AG TGGAGG T CT TG GCC AGGC TAG TGCAGTGG TA
GGTATAATCATGGCCCACTG TC ACCTTC A GA AC CGG TCCG ATT ACGTCACC GT
CAGCCTTAATTGCCTAGGCT C CT GT - T- A TTA CCG CG ----
CAAGTGATCCTTCCACCT
GAM19243 6655 AGCTGGCAGTGCCAGGGCTG CA TG CA- TGAACCG CTGCGACC
2 TGAACCGTGTGCCTGCGACC AGCTGG G C GGGCTG TGTGC
GCACAACTCCCTCAGCCCAC TTGACC C G CCCGAC ACACG
AGTGCAACCAGTT AA GT ACA TCCCTCA --------
GAM19246 14685 AGCTGGTCAGATACAAATAA - - A AA G CA TTA ATAATG TGTTAAC
2 TAGTGACTTCACAGTTTAGT AGCTGG TC AGATAC AAT TAGT ACTT CAGT GTAATT GGTACT

AATTATAATGGGTACTTGTT TTGATC AG TCTATG TTA ATTA TGAA GTCG TATTAA TCATGG

AACATTTGGTACTAAATTAT G A A AA A AC TTG A----- -------
GTTGCTGCAAAGTAATTAAA ATTT
ATTAGTATCTAGAGCTAGTT

GAM19246 8538 AGCTGGTCCTCCACTTTGCT C TC T T TG TTC TTCGTGT
5 GGTTCAGCCTTCGTGTGGCT AG TGG C CCAC TTGC G AGCC
CCTGGTAACGTGGGCTCCAA TC ACC G GGTG AATG C TCGG
CT A TC - C GT C-- -------
GAM19249 9681 AGCTGTCTTGCGCACAATCA T - AAT A CACA GTTC
7 AAGCTGCCACAGGGTTCCTC AGCTG CTTGCGC AC CA AGCTGC GG
GCAGCAGCTCTGCCAGTAGC TCGAC GAACGCG TG GT TCGACG TC
GCAAGCAGCT - A ACC C ACGC ----
GAM19251 1551 AGCTGTTGCAGATTGTGTAT - GA GTATCTTTGA C AGTA
8 CTTTGACTGAATACTATGAG AGCT GTTGCA TTGT CTGAATA TATG
TATATATTGTTCAGACTAAA TCGA CGATGT AACA GACTTGT ATAT
ACAAATGTAGCTAGCT T A- AAATCA---- T ----
GAM19252 919 AGCTGTTTGTGTAACTTCCC --- TAA C TA- TGTGTA CT T CTCTCC
3 TTAACTGTGTAGTAGCTGTC AGCTGT TTGTG CTT CCT AC GTAGCTGT G GTAA
TGTGTAACTCTCCTTACCTG TCGACA AACAC GAA GGA TG CGTCGACG T CATT
TGCAGCTGCAGGTATGTCTT TGA --- T TTC TATGGA TG C ------
AGGTAAGCACAAAGTACAGC
T
GAM19258 20020 AGCTTCTCCATGCAGAAGGC T GA-- GA TGT TCCT
0 TGAGGTGTGCTCCTGTTCCA AGCT CTCCATGCA AGGCT GG GC
GGCCTGTGTTGTGTGGAGGG TCGG GAGGTGTGT TCCGG CC TG
CT - TGTG A- T-- ----
GAM19258 19879 AGCTTCTGCCTTTCCTTACA -- TTT- TTACA AC ATGATGA
4 GATACCATCTATGATGAAGA AGCT TCTGCC CC GAT CATCT
TGAGGTCCTCCTGGCCCTGG TCGA AGACGG GG CTG GTAGA

CAGAACAGCT CA TCCC TCCTC GA -------
GAM19260 20671 AGCTTGGCGCAAGGCCCGTG AA GTGG G CAACGT
8 GCCGTCTTCAACGTGAGAAG AGCTTGGCGC GGCCC CC TCTT
GAAAGGGGCCAGGCGTCAAG TCGAACTGCG CCGGG GG AGAG
CT GA GAAA A ------
GAM19263 9278 AGCTTTATTGTGATTACGTG - T G - C G C TT- TAAGCA ATACCTTTCCA
9 TATGTTTCTTCTTTCTTTTA AG CT TATT TG ATTA GTGTAT TTT TTCT CTTT GACCC
AGCAGACCCATACCTTTCCA TC GA ATGA AC TAGT TACATA AGA AAGA GAAA CTGGG
GGGTCAAAGTACAGAATAGA A C A A - - T CAT ------ ----------
ATACATTGATACAAAGTACA
GACT
GAM19265 20687 AGCTTTCGAGTACGCATGAC TTCGA-- A --- AGTGCTCTATCC
2 CAGAGTGCTCTATCCCTGGT AGCT GT CGCATG ACCAG
GCCCATGCGCATGACCACTG TCGG TA GCGTAC TGGTC
GCT TCACCAG C CCG ----------
GAM19266 19982 AGCTTTGAAGCCAGATATTG GCCA TATT C C CT GAA
8 ACCTCTCTCTAGCTGTGAAA AGCTTTGAA GA GAC TCT TCTAG GT
TTTCTAGATGGAGTCTTCTT TCGGAATTT CT CTG AGG AGATC TA
CCAATTTAAGGCT AAC- TCTT - T TT ---
GAM19267 2849 AGCTTTGCCTCTCCATGGAA TT - ----- C T AG TTCCAA TCCA
2 TAAGTGAAGACTTTCCAAAA AGCT GC CTC TC ATGGAA AAGTGA ACT AAAC
ACTCCAGTTTGCAGTGCTTA TCGA CG GAG AG TGCCTT TTCATT TGA TTTG
CTTTTTCCGTTGACCTCCGA CT T CCTCC T T CG CG---- ----
GTGCTCAGCT
GAM19267 16436 AGCTTTGGTTTTGCTTACAA - T ----- AA ATA TT --- AGAT
6 AGTATATTTAAGGATTATTC AGCT TTGGT TTG CTTAC AGT TTTAAGGA ATTCT GCTGA
TGCTGAAGATTCAGTTTAAG TCGA AACCG AAC GAATG TCA GGGTTCCT TGAGA TGACT
AGTTTTCCTTGGGAGAACTA C T ACAAA AA AGA TT ATT ----
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CAGCT
GAM19270 22299 AGGAAAAACTTATGGCATGT AAA TAT T T- TT C---- ATGTCCCTC
8 ATAGTGAGGTTAAGGACTTG AGGA ACT GGCA GTA AGTGAGG AAGGA TTGC
CATGTCCCTCGCGATGGTTT TCCT TGA TCGT CAT TTATTCC TTCCT AGCG
CCTTCCCCTTATTCTTACTG G-- C-- - TC CC TTGGT ---------
CTCAGTGTCCT
GAM19270 3689 AGGAAAAACTTGAGGGAAGT AA------- AG TAA ACAA TTCG
9 GTTATAAAACCACAAAGGTT AGGAAA CTTGAGGGA TGTTA AACC AGGTT
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CAATTCCTTAGGCAATTAAT CTAATTAAC A- --- ATAG ----
CTTTCCT
GAM19272 5550 AGGAAAAGAAAGAAAGAAAA AA --- ATTCTT TG TG TG GTTGT
0 TAAATTCTTAATGTGTGTGT AGGAAAAGA GAAAGA AAATAA AA TG TG T
GTGTTGTGTGTGTGTGTGTT TCCTTTTCT CTTTTT TTTATT TT GT GT G
TGTAATTATTTCTATTTTTC CA ATC AATGT- GT GT GT -----
ACTCTTTTCCT
GAM19275 5796 AGGAAAGAAAATACTAGCTT - AATACT TT TCCA CTCCC
9 GGAGTCCAGCTTCTCCCAAG AGGA AAGAA AGC GGAG GCTT
TCTCCTTGCTCCTTCTTCTC TCCT TTCTT TCG CCTC TGAA
CT C CC---- TT ---- -----
GAM19292 19099 AGGAAGTCAGGTTGGGTGAC A GG G C AA CTCT

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1          CCCAGTAACTGCTCTCAGAG AGGAAGTC GGTT  GT ACCC AGT  CTG
           GCTGGGTGATGACCGGCTTC TCCTTCGG CCAG  TA TGGG TCG  GAC
           CT                   -   -- G   -  GA  ----
GAM19294 4144   AGGAATATAGGCAGATGTAC   A     C A  A  AAC---- AA   GAATGGCGA
4          AGAACTGAAATTCGAATGGC AGG ATATAGG AG TGT CAG     TG  ATTC
           GAGGATGGCAAGAAAAGCTG TCC TGTATCT TC ACG GTC     AC  TAGG
           GCAACTTCTATGTACCT     A     - A  -  GAAAAGA  GG   ---------
GAM19295 9196   AGGAATCGCCACACTGTCTT     C ---      -  CCAC-----     TGAA
5          CCACAATGGTTGAAATCATT AGGAAT GC   CACACTGT CTT       AATGGT
           TACACTCCCAAGAACAGTGT TCCTTA CG   GTGTGACA GAA       TTACTA
           GAAAGCATTCCT          - AAA      A   CCCTCACAT     ----
GAM19295 5863   AGGAATCTGCACAGCAGAAC    TCTGCAC    --    C    TACTTTTAACACATTCGG
9          GTGACAGGAGTACTTTTAAC AGGAA     AGCAGA  ACGTGA AGGAG
           ACATTCGGTTCCTTTTATGT TCCTT     TCGTCT  TGTATT TCCTT
           CTTCTGCTTTATTTCCT       TATT---    TC    T    ------------------
GAM19296 12163  AGGAATGAAAAATTTGTACA      AAAAATT   CAA  A    A  AACAAGATA
4          ATGTACATAGAAAAAACAAG AGGAATG     TGTA   TGT CATAG AAA
           ATATTTACTGTGACAACTAT TCCTTAT     ATAT   ACA GTGTC TTT
           ATATTCCT              -------   CA-  -    A   ---------
GAM19299 9453   AGGAATTATAAACTAACTTT         ACTAACTTT-   A   AACAG
0          AATTACTTCAACAGGAAGAA AGGAATTATAA        AATT CTTC
           TTTCAAACTATGTTGTAATT TTCTTAATGTT        TTAA GAAG
           CTT                  GTATCAAACT   -   -----
GAM19302 13007  AGGACACCCAGACTGTGTCT        GAC--   CTAA    AATTCTTAACTCCTAA
3          AAGGGCCAATTCTTAACTCC AGGACACCCA    TGTGT   GGGCC
           TAAGGCTTGTTTGCATAACT TCCTGTGGGT    ATACG   TTCGG
           AATGGGTGTCCT             AATCA    TTTG    ----------------
GAM19302 3462   AGGACACTAGAGAGAACAGG   A  TAGAGAGAAC----     TAGAGAACAAGAAC
5          AAGCTAGAGAACAAGAACGC AGG CAC          AGGAAGC
           TTTCTTAGAGAAGAAAACTG TCC GTG          TCTTTCG
           TGCCT             -  TCAAAAGAAGAGAT     --------------
GAM19303 16618  AGGACAGAGGCCGGAGGCAG   A  A  C A    C  TTAGA  TCGCA
1          GCGGCTTAGACGCTCGCAGT AGG CAG GGC GG GGCAGG GGC    CGC
           GCCCGTGCCACCTGCCCTGC TCC GTC CCG TC CCGTCC CCG    GTG
           CCTGCCCT          C  -  - -    A  TGCCC  -----
GAM19305 1511   AGGACATGTGGGGTTTCTTG    CATG    TTCTT  CACC    TCTT
3          CTCACCCCCACTCTTGTGGG AGGA   TGGGGT   GCT   CCCAC
           ACGCGGCCTGTGCCCTGATT TCCT   GTCCCG   CGG   GGGTG
           TTCCT              TTTA    TGTC-  CGCA    ----
GAM19306 13752  AGGACCAGTAGCCACTTTAA   A      CACTTTAACTTTTT        --   CTAAA
5          CTTTTTGGGGCTGGGCTTAA AGG CCAGTAGC          GGGGCTGGGCT  TAAC
           CCTAAAGTTGCAGGCTCAGC TCC GGTCGTCG          TCTCGACTCGG  GTTG
           TCTCCTATGCTGCTGCTGGC   -      TCGTATCC------        AC   -----
           CT
GAM19308 3426   AGGACCTTGTGGTAGCAGGG   A   --   TA  G  A    CTTCATT
8          ACCATGCTTCATTCGTGGCT AGG CCTT  GTGG  GCA GG CCATG
           GTGTCCCCATCTGAGGGCCT TCC GGAG  TACC  TGT TC GGTGC
                        G   TC   CC  G  -   -------
GAM19310 19091  AGGACGTGTTAGCCACTTTC     - T      TTCTTCTTCTCCCCT   CTTCTC
2          TTCTTCTCCCCTGACTCTTC AGGACG TG TAGCCACT           GACT
```

TCAGTCGGTGGTTATCAGTG TTCTGT AC ATTGGTGG CTGA
TCTT G T ---------- ------
GAM19311 3886 AGGACTGGTGAGGTCTTGCA -- G A C CCACCACTGCTTTCATTT
7 AGCCCACCACTGCTTTCATT AGGA CT GTG GGT TTGCAAGC
TGTTTGCAAACCCCATGGGA TCCT GG TAC CCA AACGTTTG
CTCCT CA G C - ----------
GAM19314 20657 AGGAGAAGCTGTGCTACGTC GAA- T CTA GC GACTTCGAG
2 GCCCTGGACTTCGAGCAGGA AGGA GC GTG CGTC CCTG
GATGGCCACCGCCGCATCCT TCCT CG CAC GTAG GGAC
ACGC C CG- A- ---------
GAM19314 8392 AGGAGAAGCTGTGCTACGTC ---- T TA GC GACTTTCGAG
3 GCCCTGGACTTTCGAGCAGG AGGAGAA GC GTGC CGTC CCTG
AGATGGCACCGCCGGATTCT TCCTCTT CG CACG GTAG GGAC
CCT AGGC C -- A- ----------
GAM19314 18452 AGGAGAAGCTGTGCTCCGTC AA-- T GCT G GAACTTCGAG
4 GCCTGGAACTTCGAGCAGGA AGGAG GC GT CCGTC CCTG
GATGGCAACCGCGATCCTCC TCCTC CG CA GGTAG GGAC
T CTAG C AC- A ----------
GAM19316 8462 AGGAGACATGAAGATGACCA TGA A -- AC-- AATTATG
6 GACTGGGCAAATTATGTGTC AGGAGACA AG TGA CCAG TGGGCA
CAAAACTTGGCCTCACCTGT TTCTCTGT TC ACT GGTT ACCTGT
TGTCTCTT TG- C CC CAAA -------
GAM19319 6288 AGGAGAGGGAAGAGGTGATA GA A AT- - CC-- TGCTCT GAGAAA
5 TGAGCCTCCTCTGTGCTCTG AGGAGAGG AG GGTG ATGA GCCT TCTG GACA
ACAGAGAAATGTCCAATTCC TCCTCTCC TC CCAC TACT CGGA AGAC CTGT
AGATCAAAGGCATCATTGCC TC - CGT A AACT CTTAAC ------
ACCCTCTCCTCTCCT
GAM19321 4022 AGGAGATGCTTATTATTTGT T T- T AAG TTTTGCAC
9 TGAAGGATTTTGCACTCACC AGGAGATGCT AT ATTTG TG GA
ATTAAATCTATCAGTGTTTC TCCTTTGTGA TA TAAAT AC CT
CT C TC T CA- --------
GAM19328 5647 AGGAGCTTGTTTCATATCGT C TCA C - T G-- GATA ACAGACAC
1 GCCATTAACAGGCCAGATAT AGGAG TTGTT TAT GTG CCAT AACAG CCA TC
CACAGACACGGAAATGGAAA TTCTC GACAG ATA CAC GGTA TTGTC GGT GG
CTGTTATGGACACTATAGTT C TTG T A - AAA AAA- --------
GACAGCCTCTT
GAM19328 16852 AGGAGCTTTTAAATTTTATG GC TT-- TC CT--- CTTTTTCTT
2 TCAAATCTATCAAGCTTTTT AGGA TTTTAAAT TATG AAAT ATCAAG
CTTTTTGATTTATTGTTTTT TCCT AGAGTTTA GTAT TTTG TAGTTT
TATGTCTTATTTGAGAAATC AA TTCT TT TTATT ---------
CT
GAM19330 4172 AGGAGGAGATGTTAAAGTAA AGATGT- CC GC A TT TTGG
1 CCCATCTTGCAGGACGACAT AGGAGG TAAAGTAA CATCTT AGG CGACA GAAGA
TGAAGATTGGTCTTCTGTTG TCTTTC GTTTTATT GTAGAA TCT GTTGT CTTCT
ATCTAAGATGATTATTTTGT AGAAAAT A- -- A -- ----
AAAAGACTTTCT
GAM19330 8614 AGGAGGAGTTTTTTTTTTT AG C TTTTTTTTTTTTTTT
8 CTTTTTATTTTTTTTTTTT AGGAGG TTTTTTTTTTT TTTTTA
TTTAAAAAAAAAAAAAAAA TCCTCC AAAAAAAAAAAA AAAAAT
ATCCCTCCT CT A ----------

GAM19332 4493 AGGAGGCGGCAGTCTGAAGA G -- T GA GGA- TCAGAG- CAA
8 GGATGAGTTCAGAGTCAAGC AGGAG CGGC AG CT AGA TGAGT TCAAG
AACTTGAAGATAACATTCAG TCCTT GCCG TC GA TCT ACTTA AGTTC
AGGTCTAAGTCTTGGCCGTT - GT T A- GGAG CAATAGA ---
CCT
GAM19335 12376 AGGAGGTGTCCATGGTCTCG GTGT T TCT GAG GTTGAA
9 CCTTTGAGTTCGTTGAAGAG AGGAG CCA GG CGCCTTT TTC
GAAGGCGTCCTGGTACTCCT TCCTC GGT CC GCGGAAG GAG
AT-- - T-- --- ------
GAM19337 766 AGGAGTAGTATTTGTCATCA A A - AA C CA- GATACATCGGG
1 ATCCTGTACATGTAGTGATA AGGAGT GT TTTGTC ATC TC TGTA TGTAGT
CATCGGGACTGCGGGTTATA TCCTTA CA AGGCAG TAG AG ATAT GCGTCA
AGAGAGATGGACGGAGACAT - G G AG A TGG ----------
TCCT
GAM19337 3683 AGGAGTCAAGAAACTTTTCT CAAGA TTC TT ATTGAC
3 TTTGAGCTATTGACAGCTTT AGGAGT AACTT TT GAGCT
TAACAAGTTATTATACTCCT TCCTCA TTGAA AA TTCGA
TATTA C-- TT ------
GAM19337 12652 AGGAGTCAGAAAACCACCGA CAGAAAACCA A- --- T TAATATGT
4 TTCTGTTTTATTGTAATATG AGGAGT CCG TTC TGTTT ATTG
TCAGTCGAATAATTGAACCC TCCTCA GGC AAG ATAAG TGAC
GGGAACTCCT AG-------- CC TTA C --------
GAM19347 18789 AGGATCCGCGTATAGGCTGA -- GTATAGG AAAAGAC C- A- GCGC
3 AGAAAAAGACGTTCAGTTAA AGGA TCCGC CTGAAGA GTT AGTT ACAGT
CAGTGCGCGCTGTAGAACTT TCCT AGGTG GACTTCT CAA TCAA TGTCG
TAACACAAGTCTTCAGGTGG TA ------- GAACA-- TT GA ----
AATTCCT
GAM19359 18266 AGGATTTAATAATTACTCTT A AATTACTCT C CA- ATAA
2 TTACTTTTATTACAATAAAT AGG TTTAAT TTTA TTTTATTA ATAA
AATTATCAATAATAGAATTA TCC AAATTA AAAT AAGATAAT TATT
AACAATTTTCAATTAAAACC A ACTTTTAAC T AAC ----
T
GAM19359 5668 AGGATTTGGCAGCCTTCCAG TG --- --- TATG- GAGGGA
9 AATGGTATGGAATCTGAGGG AGGATT GC AGC CTTCCAGAATGG GAATCT
AAGATTTATGTTTCGTTTTG TTTTAA TG TCG GGAGGTTTTGCT TTTAGA
GAGGATAGCTCAAGTTGAAT GT AAC ATA TTGTA ------
TTT
GAM19362 16424 AGGCAACAGAAGATGCTGCC - CA AGA -- AACTA-- CGAG
4 AATAACTATGCCCGAGGGCA AGG CAA GA TGCT GCCAAT TGCC
CTACACCATTGGCAAGGCAG TCC GTT CT ACGG CGGTTA ACGG
ATCATTGACCT A A- AG- AA CCACATC ----
GAM19364 9522 AGGCAAGTTCTTCATCCACT CAA CCACTCAA GAAACTTTAAAA
1 CAAGGAGAAACTTTAAAATC AGG GTTCTTCAT GGA
CACTTAAAATGAAGAGCATT TCC CGAGAAGTA CCT
CCT TTA AAATTCA- ----------
GAM19366 20558 AGGCACATTGGGTATCATTC ACA TC T- TT AT G TTTTT TTTTC
4 ATTACATTCTTGAGTTTTTA AGGC TTGGGTA AT CA AC TCTT AG AGGG
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CCCAGGCCT

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GAM19367 3941   AGGCACTGAGCGCGAGTTCC       --  GA TCCTG     T TGAC   T   AA  CACCAA
8          TGAGGCCTTGTGATGACTGC AGGCACTGA  GCGC  GT    AGGCCTTG GA   TGCC GTTG  GAT

           CTGTTGAAGATCACCAAGTC TCTGTGACT  CGTG  CA    TCCGGGGC CT   ACGG CAGC  CTG
           CGACGGCATCCGGGGCCTGT       TC   AC  TG---      - ----  -   --  ------
           ACCAGTGCCTTCAGTGTCT
GAM19368 1744   AGGCACTGGAGAGATATTCT     -  -       - GTGTACA--   ATTT
0          GTGTACATTTCATTTGAGAC AGGCAC TGG AGAGATATT CT       TTTC
           TCCTTCCAAGTAGTATTTCT TCTGTG ACC TCTTTATGA GA       AGAG
           GCCATGTGTCT           T  G       T  ACCTTCCTC   ----
GAM19369 12331  AGGCAGAAATCTTCCTGGAT    GAA     -------    GAAA   ACAAG
0          GAAAAGAAACAAGTTCTATG AGGCA  ATCTTCC     TGGAT   AGAA
           GTCCACAAAGGCGGAAGATG TCTGT  TAGAAGG     ACCTG   TCTT
           ATGTCT              AG-     CGGAAAC    GTA-  -----
GAM19380 4501   AGGCAGGGCAGTGCCCAGCT       A  G   A     TG  A-  C-    GTC     CCTGA
4          CCATGTAAGTCCATCTGTCT AGGCAGGGC GT CCC GCTCCA  TA  GT  CATCT   TGGGTC
           GGGTCCCTGAGACCCAAGAT TCCGTCCCG CG GGG CGAGGT  GT  CG  GTAGA   ACCCAG

           GCAGCAGTGTGTGGAGCAGG       C  G   A     GT  GA  AC    ---     -----
           GGGCCGCCCTGCCT
GAM19384 4182   AGGCATAGAGAATGGCGTGC     AGAGAAT    G  CTTTCTG    TAGA
1          ACTTTCTGCAGCTAGAGCTG AGGCAT     GGCGT CA      CAGC
           ATTCAATGGGCGCTTGAGTG TCCGTG     TCGCG GT      GTCG
           CCT                 AGT----    G  AACTTA-   ----
GAM19384 19320  AGGCATCACAAGTGGTCGGG    TCA   -   C   CTCA   CTCTGGT    C   CTTTCT
9          CTCAGCTACTCTGGTTCCTA AGGCA   CAAG TGGT GGG    GCTA      TCCTA AGA
           CAGACTTTCTTCTTTGGGAT TTCGT   GTTC ACCA CTC    CGAT      AGGGT TCT
           AGCGTCTCTCACCATCTTGA    TA-   T   -  TCTG   -------    T   ------
           TTGCTT
GAM19388 8382   AGGCATTTCATCTGGGTATT      TC  C    TATTT     CCAGTCCA
0          TTCAGGCTCCAGTCCAGGCC AGGCATT  AT TGGG    TCAGGCT
           TGGCCTTCCACATCTGGTGC TTCGTGG  TA ACCT    GGTCCGG
           TT                  TC  C    TCC--     --------
GAM19388 12771  AGGCATTTTTGAGAAAGCAA       T  GA    ATC    CCT   AACAAAATAG
5          ATCGTATACCTTATTAACAA AGGCATTTT GA  AAGCAA   GTATA   TATT
           AATAGAATATATATATATAT TTCGTAAAG CT  TTCGTT   TATAT   ATAA
           TGCTTATCTGAAATGCTT         T  A-     ATA    AT-   ----------
GAM19389 6441   AGGCCACACAGGGGCTGCTG    ACAC       TGT    -----  T   CCCCA
8          TCCGGCGAGTGGGCCCCACC AGGCC   AGGGGCTGC   CCGGC    GAG GGG
           CCTCTGGGAGCTGGGCAGCC TCCGG   TCTCCGACG   GGTCG    CTC CCC
           TCTTTCAGGCCT          ACTT      ---    AGGGT   -  -----
GAM19390 5983   AGGCCAGAGAGTCTGAAAGA    CAGAG    GAAAG   AATGA    CCTTTACA
7          CAAATGAATTCCCCTTTACA AGGC    AGTCT    ACA    ATTCC
           GGAGTATTATGTGGACTACA TCCG    TCAGG    TGT    TGAGG
           AGCCT               AACA-    -----  ATTA-    --------
GAM19396 20491  AGGCCCGGCTCCCAATAGAG    C  C  CCAA   A      CAAA     TGACAT
4          GCCGCGCAAACTGTTGTGAC AGGCC GG TC   TAG GGCCGCG    CTGTTG
           ATCAGCGGCTGCGGCTGCTG TCCGG CC AG   GTC TCGGCGT    GGCGAC
           CCCAGACCGGCCT         -  -  ACCC   G      C---     ------
GAM19398 19345  AGGCCGCAGGGAGAGGGGGA     CA-   A   G  AAA    AAA         AAG-   T--    TCTC
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8 AAGGTCCAAAGCTGTGGAGA AGGCCG GGG GAGG GG GGTCC GCTGTGGAGAAAG GGGC
CCCTG
AAGAAGGGGCTCCCTGTCTC TCCGGT TCC CTTC CC CCGGG CGGTACCTCTTTT TTTG
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CAGGGTTTGTTTAAGGTTTT CAC - A GAC ATC GGAA TTT ----
CTCCATGGCCTAGGGCCCAG
CCACTTCCCTCACTGGCCT
GAM19403 12306 AGGCCTGGCACAGCCTTGGC T - --- - - CTGA
7 TTCCACGCCTGAGCGTGGAG AGGCC GGC ACAGC CTTG GC TTCCACGC
CGCACGAGTTAGTTGTAGTC TTCGG CTG TGTTG GAGC CG GAGGTGCG
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GAM19403 9515 AGGCCTGGGCCCGCTTCCTG - C-- T C A AACAAGCAGC
9 CAAGAAAACAAGCAGCTTCT AGG CCTGGGCC GC TC TGCA GAA
GCACGACGCACTGGCCCAGG TCC GGACCCGG CG AG ACGT CTT
ACCT A TCA C C - ----------
GAM19404 14542 AGGCCTGGGCCGCTTCCTGC - G --- T C A AACAAGCAGC
0 AAGAAAACAAGCAGCTTCTG AGG CCTGG CC GC TC TGCA GAA
CACGACGCACTGGGCCAGGA TCC GGACC GG CG AG ACGT CTT
CCT A G TCA C C - ----------
GAM19404 8203 AGGCCTGTCTCTTGAGCATG - CT-- CA CAG CC CCA
6 GGCAGGCCCCTGTCCCAGAC AGGC CTGTCT TGAG TGGG GCC TGTC
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GAM19412 12240 AGGCGGGCGGATCACGAGGT CGGA GA---- GATCGAAACCA
4 CAGGAGATCGAAACCATCCT AGGCGGG TCAC GGTCAGGA
GGCTAACACGGTGAAACCCC TCTGCCC AGTG TCGGTCCT
GTCT CAA- GCACAA ----------
GAM19414 20508 AGGCGTTTCTACAATGACGT TTTC A C G AGTGGTA
2 GTTACAAGGAGTGGTACTTT AGGCG TACA TGA GT TTACAAGG
GTGAGCTTCGGTGTATTTGC TCCGT ATGT GCT CG AGTGTTTC
CT TT-- G T - -------
GAM19414 19268 AGGCTAAGTCAGAGTCTCCT AA- A- C CT --- GAA C AAGCT
7 AAAGAGCCCGAACAGCTGAG AGGCT GTCAG GT TC AAAG AGCCC CAG TGAGG
GAAGCTCTTCATTGGAGGGT TCCGA TAGTC CA AG TTTC TTGGG GTT ACTTC
TGAGCTTTGAAACAACTGAT GAG AA A -- GAG AG- - -----
GAGAGCCT
GAM19418 2744 AGGCTCAGTTCCTGGAAGAG AG A- A-- C GGTCGCTA
8 AGACAGAGGGTCGCTACTCT AGGCTC TTCCTGG AG GAGA AGAG
TCTTGGCCTGCTCAGGAGGG TCCGGG GAGGACT TC TTCT TCTC
GGCCT G- CG CGG - --------
GAM19420 878 AGGCTCGGCACAGAGAAGGA C C A GT- CC G TT AGGCCG
3 GGTAGCTCCACCTGCCTTCC AGGCT GG ACAG GAAGGAG AGCT ACCT CC CCCTGC
CTGCAGGCCGGCGGGGTGGG TCCGG CC TGTC CTTCCTC TCGG TGGG GG GGGGCG

GGTATGGCTCTGCTCCTTCC T - - GTC TA - T- ------
TGTCCTGGCCT
GAM19420 9152 AGGCTCGGCACAGAGAAGGA C ACAGAGAAG GAGG T- G A AG CACTCC
4 GGTCGAGGTGATTGGGGGAG AGGCT GGC GAGGTC TGA TGG GGAGC GACA TAC
CAGACAAGTACCACTCCGTG TCCGA CCG CTCCGG ACT ATC TCTCG CTGT GTG
TGTCGGCTCTGCTACTTCAA C GA------- AAGA TC G G -- ------

GAAGGCCTCAGGCCCAGCCT
GAM19421 14658 AGGCTCTCTCTTTCCCGTTC GC T T TT- ----- C AATAC
0 CACCGCTGAATACCATTGGT AG TC C CTTTCCCG CC ACCG TG
TACTAGGCCTTGGGAAGGGT TC AG G GGAAGGGT GG TGGT AC
GAATCT TA T - TCC ATCAT T -----
GAM19422 19935 AGGCTGAAATGAAAGTGTCT - A AGTG - G-- ACTCA
0 TCCAGGGTGGGTACTCAACT AGGCTG AA TGAA TCTTC CAGGGT GGT
AAAGCTCTGAGGAGGAATTC TCCGAC TT GCTT GGAGG GTCTCG TCA
GCTTCCAGCCT C C AA-- A AAA -----
GAM19427 20188 AGGCTGCTGGTCAGCGCCTC T T GCGCCT TG A T TCATC CA TAC-
ACCAACA
7 CCAGGATGGGAAGCTCATCA AGGC GC GGTCA CCCAGGA GGA GC CA TGGGA GC ACC

TCTGGGACAGCTACACCACC TCCG TG CCAGT GGGTCCT CCT CG GT GCCCT CG TGG

AACAAGGTCCACGCCATCCC - T AAT--- -- - C C---- AC CACC -------
GCTGCGCTCCTCCTGGGTAA A
TGACCTGTGCCT

-
GAM19429 721 AGGCTGGACCCATCCCTGTG - CCATCC T CCAATCG ACAC
6 GCTCCAATCGGAACACTCAA AGGCTGG AC CTG GGCT GA
ACCCCAGCCTCAGCCAGTCC TCCGACC TG GAC CCGA CT
CAGCCT C ACC--- T CCCCAAA ----
GAM19430 16786 AGGCTGGACTTGGGGCCGTG TG A- - T - CCAGAGT
1 CGGGGCCCAGAGTGCTCCTG AGGC G CTTGGGG CCG GCGGG GC
CCGGTTCCCGAGGGCTGGCT TTCG C GAGCCCT GGC CGTCC CG
T GT GG T - T -------
GAM19444 22268 AGGCTGTGGACGGGGAGGAG T A--- - - A AT AC T TG G TTCT
9 CTGCACGATGGAACCCGTGT AGGC GTGGACGGGG GG AGCTG C CG GGA CCG G AGGT TC

GAGGTGTCTTCTGGGACCTT TCCG TACCTGTTCC CC TCGAC G GC CCT GGC C TCCA GG

GCCGGCCTCCCGGGCCAGCT - GACC G C G -- CC - GT G ----
GCCCCAGCCTTGTCCATGCC
T
GAM19446 20013 AGGCTTAGACTGTGGGAAGG TA T AAGG TT- AAAT
6 ATAAATTGCAAATGCTTCTT AGGCT GACTG GGG ATAAA GC
TATGGTACCCTGGTTGGCCT TCCGG TTGGT CCC TATTT CG
-- - ATGG CTT ----
GAM19448 8128 AGGCTTCTGAACAATGCCTT T CAATG AG TG CTT
4 TGAGGAGCTGGTTGGCTTCC AGGCTTC GAA CCTTTGAGG C GTTGG
AGCTGGGCCTTAAAGGATAT TCCGGGG CTT GGAAATTCC G CGACC
TCTGGGGCCT T ATA-- G- GT ---
GAM19450 8963 AGGCTTTCCCACACATCTTA T CC-- C CAT - TACACCTCC
4 CATTGTAAGGTACACCTCCC AGGC TTC ACACAT TTA TGTA AGG
CTATGCGTTAACATGTGTCT TTCG AAG TGTGTA AAT GCGT TCC
TCGAATGCTT T CTTC C T-- A ---------
GAM19452 9774 AGGGAAAAAACAGGGGGGGG AAAAAAC- CCAAAA CTCAA
1 GCCAAAATTCCCCTCAAGGG AGGG AGGGGGGGGG TTCCC

AACCTCCCCCCTTCCAAAAA TCCC TCCCCCCTCC AAGGG
CCCT AAAAACCT ------ -----
GAM19460 20011 AGGGACAGACGCCTCGGCCC AC-- - C A GATA ACGA
3 CTAGAGGATACCACGAGGGA AGGGACAG GCCTC GGC CCT GAG CC
GGCTCAGGAGCTGGAGGCCC TCCCTGTC CGGAG TCG GGA CTC GG
AGCTGTCCCT GACC G A - GGAG ----
GAM19461 19168 AGGGACCGTTATATAAAGAA G GT- AAAG- CTCAACA
7 CCTGAACTCAACATTCAGGT AGG ACC TATAT AACCTGAA
TGTAACATATATTGGGTGTC TCT TGG ATATA TTGGACTT
T G GTT CAATG -------
GAM19462 20057 AGGGACTGGACGGCTGAGCT AC - TGAGCT CC CAC ACTGCTG
3 GGGCATCCGACACGTACTGC AGGG TGGA CGGC GGGCAT GA GT
TGACCATCAAGTGCCTGCTG TCCC ACCT GTCG TCCGTG CT CA
ATCCACCCT -- A ------ AA AC- -------
GAM19465 12400 AGGGAGAGGGGGGGGGGGGG - C GGTGGTTTG
6 GGGGGCGGAGAAAAAAGAAG AGGGAGAGGGGGGGGGG GGGGGGGG GGAGAAAAAAGAA

GTGGTTTGTTTTTTTTTTTC TTCTTTTCCCCCTCCCC CCCCCCCC CCTTTTTTTTTTT
CCCCCCCCCCACCCCTCCCCC A - ---------
TTTTCTT
GAM19467 910 AGGGAGCTGGGGGGTGGCTG -------- CA T TG T ACCT
2 AGGGCTCAGGCTGCTTGGGG AGGGAGCTGGGGGGT GGCTGAGGGCT GGC GCT GGG GG

TGGACCTCTCTCTGGGCCGC TCCTTTGACCTCCCG TCGACTTTCGG CCG CGG CTC TC

CAGGCTTTCAGCTCCATCCC TCCCTACC A- C GT - ----
TGCCCTCCAGTTTCCT
GAM19468 921 AGGGAGGGGCTGGGGGGGGG ----- T GCA-- AA- - TC GAGTCGG
8 CATGAATGGAGTCAGGGAGT AGGG AGGGGC GGGGGGGG TG TG GAG AGG
CGGCCTTTCACAGAACAGGA TCCC TCCCCG CCCCCTCC AC AC CTT TCC
AACCTCCCCCGCCCCTGTGC CCGTG - AAAGG AAG A -- -------
CCCCT
GAM19469 5810 AGGGAGGGGGTAGGGCTGGG - GG A AAGATA G GTA- TTGGT
1 TTATTAAGATACAGGCTGCT AGGGAGGGGGTAG GGCT GTT TT CAGGCT CT TTTTACA
GTATTTTACATTGGTTGTGG TTTTTCCCTTATC CTGA CAA AG GTCCGA GG GGGGTGT
GGGAAGGGGAGCCTGAGAAA A AA A A----- G GAAG -----
ACAAAGTCACTATTCCCTTT
TT
GAM19471 12882 AGGGATCTCATTGCCAGGTG C TG -------- A A CACGT
9 TAGGGCGATAACATCACGTA AGGGATCT AT CCAGG TGT GGGCGAT ACAT
TGTCATCGCCCAACAATGAA TCCCTAGA TA GGTTC ACA CCCGCTA TGTA
TACCTTGGTGATAGATCCCT - GT CATAAGTA A C -----
GAM19475 3716 AGGGCACCCGCAGCTGCCCC A G --- - TTGT TTTCTC
4 CTTTGTTCCTTTCTCGGGTG AGGGC CCC CAG CTG CCCCCT TCC
GGGGGACAGAGACTGGGGGG TCCCG GGG GTC GAC GGGGGG GGG
CCCT - G AGA A T--- ------
GAM19476 1552 AGGGCAGAACTATACCGGGT AGA- -- G-- C ACA A TGCTAC
0 GCCTGACAAGAGCACTTGCT AGGGC ACTA TACC GGTGC TG AGAGC CT
ACAGGTTCTACAGCACCAGA TCCCG TGAT ATGG CCACG AC TCTTG GA
GGTACTTAGTAAAAGCCCT AAAA TC AGA - A-- - ------

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GAM19480 5715  AGGGCCCAGCCGACAGAACT    C     AC  AA   G TCTCCCTG       CC   CCC
2          GGCTCTCCCTGCCCGCTCGG AGGGC CAGCCG  AG  CTG C      CCCGCTCGG  GGG
           CCGGGCCCTCCCCGAGCGGG TCCCG GTCGGT  TC  GAC G      GGGCGAGCC  CCT
           AACACACTGCAGGGCTTGGC     A     --  GG   - TCACACAA       --   ---
           TGAGCCCT
GAM19481 12986 AGGGCCGGGGCCGGGGACGC   ---   G      AC  AGC  ACGCGGAAGAAGAAGG
2          CAGCGGCACGCGGAAGAAGA AGG   GCCG GGCCGGGG  GCC   GGC
           AGGGCCCGGGGCCCCTGGCC TCC   CGGC CCGGTCCC  CGG   CCG
           ACGGCGTACCT          ATG   A      --  GGC  ----------------
GAM19487 1519  AGGGCTGCAGTTCACAAATC       AGT   CA-    AAAACA  AGGGCC
2          AAAACACGAGGGCCCGCACC AGGGCTGC   TCA   AATC     CG
           AAGATTCATTGATCGCAGCC TTCCGACG   AGT   TTAG     GC
           TT                  CT-   TAC    AACCAC  ------
GAM19488 9852  AGGGCTGTCAAAAACTTGCT    -  TCAAAA-    CTT   A   CAAAATTC
5          TGTCATGTCAAAATTCACAG AGGG CTG      ACTTG   GTC TGT
           ATTTCAAGTCATTCTCCAGA TCCC GAC      TGAAC   TAG ACA
           CCCT                A   CTCTTAC    TT-   -   --------
GAM19489 4090  AGGGCTTCCGAAGCGCTGAT       -  A    GATCCAGATGCCG    A   TCTTG
1          CCAGATGCCGGGGGAGGCTC AGGGCTTC CGA GCGCT          GGGG GGC
           TTGGTCCCCCAATCCCAGAC TCCCGAAG GTT CGTGA          CCCC CTG
           AAAGTGCCTTGTGAAGCCCT       T   C    AACAGACCCTAA-    -   -----
GAM19491 9102  AGGGGACAGAACTAAGGGCA      C   ACTAA   CA       GA  GGAT
7          GGAGAAGAGAATGGATGTGT AGGGGA AGA    GGG  GGAGAAGA  AT
           CTTCTCTCCCATCTTCCCCT TCCCCT TCT    CCC  TCTCTTCT  TG
                             -  A----   --       G-  ----
GAM19492 20968  AGGGGAGGGGATGTCTCACC          T    ACC   C      GAGA
9          GGGCTGGGGGTGAGAATCCC AGGGGAGGGGA GTCTC   GGG TGGGGGT
           CAACCCCAGGGACTCCCCTT TCCCTTCCCCT CAGGG   CCC ACCCCTA
           CCCT                    -    AC-  A      ----
GAM19497 21088  AGGGGCCCACAAGGCAGGAA      CCAC  G       ATCCTT   G   TTGTGCT
2          CATCCTTTGGGGGTTTGTGC AGGGGC    AA GCAGGAAC      TGG GGT
           TGCTGTCATACGGTTCCTGT TCCCTG    TT TGTCCTTG      ACT TCG
           GTTCAGTCCCT             AC--  G       GCAT--   G   -------
GAM19498 3007  AGGGGCTCACGCGCACGCTG     C---  C    C      CA-  TTCTTCGACCT
3          CTCACCTTCTTCGACCTGGC AGGGG    TCA GCGCA GCTGCT   CC
           CTGGCGGCTGCGCATGAACT TCCCC    AGT CGCGT CGGCGG   GG
           TCCCCT               TTCA  A    -     TCC  -----------
GAM19498 22209  AGGGGCTGACTCGCACGCTG     C---  CT   C      CAT  TCTTCGACCT
9          CTCATCTTCTTCGACCTGGC AGGGG    TGA  CGCA GCTGCT   CT
           CTGGCGGCTGCGTATCAACT TCCCC    ACT  GCGT CGGCGG   GG
           TCCCCT               TTCA  AT   -     TCC  ----------
GAM19499 20811  AGGGGCTGCGGTCTCTGCAA     CT-   G     CAAT  AATG    CTCTT
2          TGAAATGTGGCCTCTTGCCA AGGGG   GCG TCTCTG    GA    TGGC
           ATCTCCCCGGAGGCGCTTTC TTCCC   CGC GGAGGC    CT    ACCG
           CCTT                TTT   -     CC--  CTA-    -----
GAM19500 9797  AGGGGGAAGAATGGAGATGG      AA---    -----      CA  G    GGAATTAGA
2          CAGGGCTCTGGAATTAGAGG AGGGGG    GAATG    GAGATGG  GG CTCT
           AGGTCATTCATTTCACAAAC TCCCCC    TTTAC    CTTTACT  CT GAGG
           ATTTGCAGACCCCCT         AGACG    AAACA     TA  G   ---------
GAM19502 5775  AGGGGGGGGTGTCCCCAAAG          CCCCAAAGA--  C  AG   GCTACA
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0          AGACGAAGATCGCTACAGAT AGGGGGGGGTGT        GA GA  ATC
           AATCCTCCACAATATTAAAC TCCCCCCCCACA        CT CT  TAG
           ACCCCCCCCT                AATTATAACAC  C  AA  ------
GAM19504 20455  AGGGGTGGAGACTTGTTCAT       AG   G   TA-----    GTGC
6          ATCTGTGTGCGCAGAGTGCT AGGGGTGG  ACTT TTCA      TCTGT
           ATTGAGAAAGTACCGCCCCT TCCCCGCC  TGAA GAGT      AGACG
                        A-   A   TATCGTG   ----
GAM19504 1140   AGGGGTGGGATCACAGCATC     TG  A-  ACA-   -   AGG---    TAGA
8          TCAGGTCCTCTAGAGGGGAA AGGGG  GG  TC   GCAT CTC     TCCTC
           ATAGGGGGAATGCCTAGGAA TTCCT  CC  AG   CGTA GGG     AGGGG
           CCCTGTCCTT            GT  CA  GATC   A   GGATAA    ----
GAM19504 3947   AGGGGTGGGCATCCGGGCTA     GG  ---   ----------     GCTTTA
9          AGGCTTTACTTGGCGGCAGT AGGGGT  GCA   TCCGG        GCTAAG
           CTCATCGGATTTTGCAGCTT TCTTCG  CGT   AGGCT        CGGTTC
           CT                A-  TTT    ACTCTGACGG    ------
GAM19505 5883   AGGGGTGGGGGAGAGCAGTC   G   G     ----   -  CG--   CAACC
0          CGTCTACAACCTGGAATCAG AG GGTG GGGAGA    GCAG TC    TCTA
           ATTTGCAAAATTTCCTGCAC TC TCAC TCCTTT    CGTT AG    AGGT
           TGCT              G   G     AAAA   T  ACTA   -----
GAM19505 22243  AGGGGTGTAGGTGTGCCTTG   - GG      G-   -  TGT   A      GGCTAGGG
3          TGGTAAGAAGTGGGCTAGGG AG G  TGTAGGT  TGC CT   GGT AGAAGTG
           CATTTTTAATCTTAGAGCGA TC C  ATATCCA  GCG GA   CTA TTTTTAC
           AACCTATAATCACT        A TA      AA   A  TT-   A      --------
GAM19507 3832   AGGGTACAGTGTGGTAGTCT    -   -   G  GTC    CCTA   ATACACCCATGAAAACACC
6          TGACCTAGGAATACACCCAT AGGGT ACAG TGTG TA   TTGA    GGA
           GAAAACACCTCCACAATTAA TCCCG TGTC ACAC AT   AATT    CCT
           AATAGCACATCTGTGGCCCT     G   T   G  AA-    AACA  ----------
GAM19510 18465  AGGGTCATGATCAAAATTTT       T   -    -----       --   A     TAGCAAC
2          TTGGGTACCAGTATTTAGCA AGGGTCA GATC AAAAT     TTTTTGGG  TACC GTATT
           ACAATATAGGTAATTTTAGA TCTTAGT CTAG TTTTA     AGAGATTT  ATGG TATAA
           GAGTATAATTTTGGATCCTG       C   G     ATATG       TA   A     -------
           ATTCT
GAM19513 5728   AGGGTCTTGCTCTGTAGCCC      TTGCT   T       CTG-   T  A TG      ACGATCATA
3          AGGCTGAAGTGCAGTGGTGG AGGGTC     CTG AGCCCAGG    AAG GC G  GTGGGC
           GCACGATCATAGCTCACTGC TCCTAG     GAC TCGGGTCT    TTC CG C  CACTCG
           AGCCTTGAACTCTGGGCTTC      T----   T       CAAG   -  A GT     ---------
           AGTGATCCT
GAM19515 21661  AGGGTGAGGGTGAGGCCGCC      AG    A  C    AG    -    GA    A   TCAG   TTCA
3          AGTGCTGGATGATGGGAGCC AGGGTG  GGTG GG CGCC  TGCT GGAT  TGGG GCC    CAC

           TCAGCACTTCAGTGAGCCGG TCCCGC  CCGC CC GTGG  ACGG CCTG  ATCC CGG    GTG
           CCCTAAGTCCTGGCAGGTGC      GA   C  C    --   T    A-    -   CCGA   ----
           CCCCGCCAGCGCCCT
GAM19516 6170   AGGGTGCAATGAATGTGTTA    T   A-   AT----  -     TTCGTATTCCC
0          CTTTCGTATTCCCAGTAACT AGGG GCA  TGA      GT GTTACT
           ACCTTTCCTCACCTGCTCCC TCCC CGT  ACT      CA CAATGA
           T                 T   CC   CCTTTC  T     -----------
GAM19520 20362  AGGGTTCCATCTTTGCTATC     T    TTT    C------        GC     AAAAT
3          TGTTGATCAGCCTTAGAAAA AGGGT CCATC   GCTAT      TGTTGATCA  CTTAG
           TCTAAGTATGATCAATAAAT TCCTA GGTAG   TGGTA      ATAACTAGT  GAATC
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TTTAATGGTTGATGGCATCC C T-- ATTTTAA AT -----
T
GAM19522 9767 AGGGTTTGGTGTGGCTGTCG - GTG GGG - GG AAT TACACCTC
6 GGGTTCCTGGGGCCTTGCGA AGGGTT TGGT GCTGTC GTTC CTGG CCTTGCGA GCCGG

AATGCCGGTACACCTCTCGG TCCCGA ACCG TGACAG CGAG GGCC GGAGCGTT CGGCT

CCCTTGCGAGGACCGGAGAG C --- GA- A A- CC- --------
CAGGACAGTGCCACAGCCCT
GAM19531 18490 AGGTAGAGCTCAAAAGTTAG TA TCAAA TT T TG TTTTCCAAC
4 CAGCTATTATGTATTTTTCC AGG GAGC AG AGCAGC ATTA TAT
AACATGTTTGATTGCTGCTT TCC CTCG TC TCGTCG TAGT GTA
CTGCTCCCCT C- ----- T- T TT ---------
GAM19532 14649 AGGTAGGAATGAGGTATAGA AA- - TATA T- TC- TT CACAAGACT CTTA
4 AAAGAGATAGCATCTTCTTT AGGTAGG TGA GG GAAAAGAGA AGCA TTCT GG AGTGG
GGCACAAGACTAGTGGCTTA TTCATCT ACT CC CTTTTTTTT TTGT GAGA CC TCGCC
CCGCTTACCTTAGAGTTTTG AAA A CAAA TT TTT TT AT------- ----
TTTTTTTTTTTTCAAACCCA
TCAAAATCTACTT
GAM19535 8664 AGGTATCTGTGACTCTTGGG A G AC CCTCT T AACT CTTCTC
9 CCTCTGCTCTGGTGGGAACT AGGT TCT TG TCTTGGG GCTC GGTGGG TA
TACTTCTCTATAGCCCACTG TCCA AGA AC AGAGCCC CGAG TCACCC AT
AGCCCCGAGACAGAGAACCT - G -- ----- - GAT- ------
GAM19537 16596 AGGTATTTTTGCAATCTAAA T C------- AAA G T TAATACT
8 ATAGTGATGCTAATACTGCT AGG ATTTTTG AATCTA TA TGA GC
TCAGTAAGCTAGATTTACTA TCC TAAGAAT TTAGAT AT ACT CG
ATTTAAGAATCCT - TTAATCAT CGA G T -------
GAM19542 6223 AGGTCATTGCTCCCTGGAGG T- G GGAT TGAATTCTACAACC
0 ATGCCTGAATTCTACAACCG AGGTCATTGC CCCT GA GCC
GTTCAAGGGCCGCAATGACC TCCAGTAACG GGGA CT TGG
T CC A ---- ----------
GAM19542 3752 AGGTCCAGGCAGTGACCTCA TC CA- C A------ AGCACA
8 CAAGGACAGCACAGTTTTTG AGG CAGG GTGA CTC CAAGGAC
CAGCTTAGAGATCACCCACC TCC GTCC CACT GAG GTTTTTG
TGCCCCT CC ACC A ATTCGAC ------
GAM19550 12947 AGGTCTTGCAGGAAGCTTGA C G A TG AAT CA CCTG
2 CAAATGCCCTCAGCAATGGC AGGT TT CAGGA GCT ACA GCCCTCAG ATGG
CTGCTGTCTGGGGGCCTGTT TCCA AA GTCTT CGG TGT CGGGGGTC TGTC
GGGCATTCTGGAAAACCT A G A GT C-- -- ----
GAM19551 5922 AGGTGAACCAAGTGGAGCCA CCAAG- GA - AG AA GA - GGAATCCGA
9 GTTGAGACGCGAAGGTGAGC AGGTGAA TG GCCA GTTG ACGCG GGT GCT GGT
TGGTGGAATCCGAACCAAGC TTCACTT AC CGGT CAAC TGTGC CCG CGA CCA
AGCCAACGTGTGGCAACATG CTCTAA G- A GG AA A- A ---------
GCGCAAATCTCTTCACTT
GAM19552 18379 AGGTGAAGAGGGACCGTATT AA -- ATT TG TT G TG CATA
2 CTGGGGCTTAGTGTGGGTGG AGGTG GAGGGAC CGT C GGGC AGT TGGG GGG
GGCATATCCTCCCCAAACTT TCTAC CTTCTTG GCG G CTTG TCA ACCC CCT
GTTCTGGTGGGCGATGTTCT A- TA GGT GT T- A CT ----
TCACATCT
GAM19552 21066 AGGTGAATGTGGAAGATGCT GAA G GAT GA A - AAGGC - TTGTCTAC

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6          GGAGGAGAAACCCTGGGAAG AGGT  TGT GAA  GCTG  GGAGAA CC CTGGG    TCC TGG
           GCTCCTGGTTGTCTACCCAT TCCA  ACG TTT  CGAC  TTTCTT GG GACCC    AGG ACC
           GGACCCAGAGGTTCTTTGAC   ---  G  ---  AG    - A   -----  T  --------
           AGCTTTGGCAACCT
GAM19554 4177  AGGTGAGGAGGTGGAGAGAC   G  GAG   AGA   CC--  CCCC  GTCC
9          AGCCCACCCCCGTGTCCACC AGGT AG  GTGG  GACAG  CAC  GT
           GTGACCCCTGTCCCCACACT TCCA TC  CACC  CTGTC  GTG  CA
           GACCT              G  A--   C--   CCCA  C---  ----
GAM19558 20282  AGGTGCAAGGACGTGTTGAA   -    GTG   CTA  T  AG    TGG   GTG
1          CTAGCTCTCTGCAGCCTCCT AGGTG CAAGGAC  TTGAA  GCTC CTGC  CCTCCT  AGGAT
           TGGAGGATGTGATCCTATGG TCTAC GTTCCTG  GACTT  TGAG GATG  GGAGGG  TCCTA
           GAGGGGTAGGAGTATTCAGG   A    ---   A--  -  G-    TA-   ---
           TCCTTGACATCT
GAM19561 21052  AGGTGCTATTTAACATGGGA    CTATTTAACA    A   T  C   CCAGCCC
3          GGAGAGCGTGTGCGGCTCCA AGGTG       TGGGAGG GAGCG GTG GGCT
           GCCCAGCCCGCTGCTCACTT TCCAC       ACCTTTC CTCGT CGC CCGA
           TCCACCCTCTCTCCACCT     CTCTCTCCC-     A   -  -  -------
GAM19564 9815  AGGTGGAGGGGGCCCACATT       G-   CA---    CC    ATC
9          TTCCTGTAGAATCTTTGCAT AGGTGGAGG  GGCC   CATTTT  TGTAGA
           TGAGGTGGTTCCGGCCAGTT TTTACCTTT  CCGG   GTGGAG  ACGTTT
           TCCATTT              GA   CCTTG    TT    ---
GAM19568 5712  AGGTGGCCGTGATCGCCTCC   T-     AT GCCTCCATT    TGTGCCATCATCCT
4          ATTGTGAGCTGTGCCATCAT AGG  GGCCGTG  C      GTGAGC
           CCTGCTCATGTCCATGGCCT TCC  CCGGTAC  G      TACTCG
           TCCT             TT     CT ---------    ----------
GAM19571 14401  AGGTGGGCAGATCACTTGAG  GT  CAGA   TGA-- GT   A--  CGA
7          GTCAGGAGTTCGAGACCAGC AG  GGG   TCACT   G  CAGG  GTT
           CTGGTCAACATGGTGAAACC TC  CCC   AGTGG   C  GTCC  CAG
           CCGTCT           TG  CAA-    TACAA TG   GAC   ---
GAM19572 8965  AGGTGGGCGGCGGCCCCTCC     CG     CTCC   G  G  CT  C    A  T   CTGA
1          ATGCGCCCGCCGCTGCCGTA AGGTGGG  GCGGCCC   ATGC CCC CCG  GC GTAGC CG GGCG

           GCACGTGGCGCTGATGCCCG TCCATCC  TGCCGGG   TACG GGG GGT  CG CATTG GC CCGT

           AGTTACTGCTGGGGGGGCAT     --     ----   -  G  -- T   A  -   ----
           GGGCCGTCCTACCT
GAM19572 6677  AGGTGGGGAAGGAAAGAGAA      ----------    AA--  AGA   TACT
3          AGTTACTACTTACCCTGTGC AGGTGGG       GAAGG   AG   AAGT
           CCTTCAAACATGCCTCCCAC TCCACCC       CTTCC   TC   TTCA
           CT                   TCCGTACAAA    CGTG  CCA   ----
GAM19575 20730  AGGTGGTGGTCAGGTGGCTG  G  G   A   G  A  G ----------   GAGAACAGTTA
4          ATGTGACGGCAGAGAACAGT AG TG TGGTC GGTG CTG TGT AC         GGCA
           TATGCCAGGAGTTGTAAGTG TC AC ACTAG CCGT GAC ACG TG         CCGT
           GCAGCAGGTGCCAGATCAGC  G  G   A   G  G  G  AATGTTGAGGA  ----------
           AGCT
GAM19579 18254  AGGTGTGGGTGGGGCCCGTG   TGT  TG   -  TG   TGA--- G   CTGCCCGTCC
3          GCTCTGAGCGCCTGTCTGCC AGG   GGG  GGGC CCG  GCTC    GC CCTGT
           CGTCCACAGGGCCCTGATGA TCC   CCC  TCCG GGT  CGAG    CG GGACA
           GCTGTGGAGCCTTCCCCTCC   CCT  CT   A  GT   TAGTCC -   ----------
           CCT
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GAM19580 18677  AGGTGTTCTCAGCATTCATC   TG  T  -    T  AGT   CAAATGAA- A   AAAGTAAGTGA
3          ACAGTGTTGCAAATGAAGGA AGG  TTC CAG CATTCA CAC   GTTG       GG GATG
           GATGAAAGTAAGTGACATCC TCC  GAG GTC GTAAGT GTG   CGAC       CC CTAC
           CCCAGTACTCCCAGCTGGTG   CA  T  T    C  GT-   CCTCATGAC C   ----------
           CTGAATGTCTGTGAGACCCT
GAM19581 3818   AGGTTAACTTTGCTGTGTAG    AA-   CTGT    CT------    TACCTGAATTCG       AAGTC
7          ATTCTGTGTAGCTACCTGAA AGGTT   CTTTG   GTAGATT      GTGTAGC         TCCAAGAAA
           TTCGTCCAAGAAAAAGTCTC TTCAA   GAAAC   CGTCTAG      CACATCG         AGGTTTTTT

           ACATTTTTTGGAAAACCAAT    GTC   CTC-     ACCTTTGT     TCGTAACCAAA-       -----
           GCTGCTACACTGTTTCCAGA TCACA
           TCTGCCTCCAAAGCTGAACT
           T
                       -----
GAM19582 4504   AGGTTAAGTTCCTTGATGCC    AAG-    GA      --- GGAA
0          CTCCTTTGGAAAGAAGTGGA AGGTT   TTCCTT  TGCCCTCC   TTT
           GGGTGAGGGAAAAAGGACTT TTCAG   AAGGGA  GTGGGAGG   AGA
                         GAAA    --      TGA  ----
GAM19582 20179  AGGTTACAACTAGAGGCTTG      AACTAGAGG    GG  G   GTAAAAA
6          TGGAATGAGACGTAAAAAGT AGGTTAC       CTTGT  AAT AGAC
           CTATTAACAAGAAAGGTAAT TCTAATG       GAACA  TTA TCTG
           CT                  GAAA-----    A-  -   -------
GAM19583 3982   AGGTTAGAGAGCGGGACCTT    TAGA---      C   T  GA    - G  TGTG     G  TCTC
6          CTTCGAGTTACTGGAGATGT AGGT     GAGCGGGA CTTC TC  GTTACT G AGA   CGAGATC AGA
CTTCG
           GCGAGATCGAGATCTCCTTC TCCG     TTCGTTCT GAAG GG  TAGTGA C TCT   GTTCTAG TCT
GAGGC
           GGGTGACCGGAGATGTTCTG    CTAGAGC      T   C  A-    G G  TCTA     G  TGTA
           GATCTTGATCTTCTGCGAGT  GTGA
           GATAGGCGAAGTTCTTGCTT G
           CGAGATCGCCT        C
                       ----
GAM19587 3335   AGGTTCTGGGTCCGGGGCGA   TT    CCGG      G   -------   -   ACACTG
4          GGGGCCCATCTTCTTCTACA AGG  CTGGGT   GGCGAGGG CCCAT      CTTC TTCT
           CTGGGAACGAGGGCGACGTG TCC  GGCTCA   CCGCTTCC GGGTG      GGAG AAGG
           TGGGCCTTCGCCAACAACTC   --    ACAA     -   TGCAGCG   C   ------
           GGCCT
GAM19590 6099   AGGTTGCTCCACAGGTTGGC    G    AGG--    ATG  C   TCC---      ATACA
5          AATGATGCTGTCTTCCTGAT AGGTT CTCCAC    TTGGCA  ATG TGTCT    TGATTTTT
           TTTTATACAAAGAATTATAC TCCAG GGGGTG    AACCGT  TAC ACGGA    ATTAAGAA
           TACAGGCACATATATGCCAA    -   ACTGA    ATA  -   CATCAT      -----
           AGTCAGTGGGGGACCT
GAM19592 877    AGGTTGTCATACGCATATTT       TA--  ATAT-  A  TCT  GA  A   TTG
0          GACCTTCTCTCGAAACAGGC AGGTTGTCA   CGC    TTG CCT  CTC  AAC GGCGC
           GCTTGGCGTCGTTCAGGGTG TCCGACGGT   GCG    AGC GGG  GGG  TTG CTGCG
           TGGGCGATCAGGGCGCACTT       TCAC  GGACT  -  TGT  AC  -   ---
           GGCAGCCT
GAM19596 2743   AGGTTTGTGGAAATTCAATT    T  G  A  -  TTAT   AAAAACC
1          ATGATGAAAAACCTATCTTT AGGT TGT GA ATT CAA   GATG
           TTTGTAATGTTGGCATACTT TTCA ACG TT TAA GTT   CTAT
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                        T  G  G  T  TTTT  -------
GAM19604 21417  AGTAAATATTAATATGATCA     A    A    TC  T  A  ATATTCA
0               CTTACACTATATTCAAGAGT AGTAA TATTA TATGA  ACT AC CT
                AGTTTCATGTAGTACTTATT TTATT ATGAT GTACT  TGA TG GA
                          C   -   T-  - A -------
GAM19607 12279  AGTAACTGCAAAGATGCTGT    C C     CTGT  G  C    G  C-   GT    C   TTCCTCGGC
9               CCGTGCGCGTTGCTGCGGCC AGTAA TG AAAGATG   CC TG GCGTT CTG  GGCC  GGTCCG GCCC

                GTGGTCCGCGCCCTTCCTCG TCGTT AC TTTCTAC   GG GT CGTAA GAC  CTGG  TCAGGC CGGG

                GCGGGCCGGACTGGTCTCCA    - -     TT-- G T    A  CT   --    -   ---------
                GAAATGCTTGGGGTTCATCT
                TTCATTGCT
GAM19608 3981   AGTAACTGCAAAGATGCTGT    C C     CTG   TGC    G  C-  G     C   TTCCTCGGC
0               CCGTGCGCGTTGCTGCGGCG AGTAA TG AAAGATG   TCCG   GCGTT CTG  GGC TGGTCCG GCCC

                TGGTCCGCGCCCTTCCTCGG TCGTT AC TTTCTAC   GGGT   CGTAA GAC  CTG GTCAGGC CGGG

                CGGGCCGGACTGGTCTCCAG    - -     TT-   TT-    A  CT  -     -   ---------
                AAATGCTTTGGGTTCATCTT
                TCATTGCT
GAM19616 19962  AGTACAACAATCAAGAGACG        AT---------      C   ATTAT
4               ATCATTATGATCTTCTTTTG AGTACAACA         CAAGAGA GATC
                TCTTATGTTTGTGTTGTATT TTATGTTGT         GTTTTCT CTAG
                          GTTTGTATTCT     T   -----
GAM19616 1321   AGTACAAGGGCTATCTGGTA  T    GG     -  ----     GAT---   A  GAAC
5               TCTGTAGATGGCTACATGAA AG ACAAG  CTATCTG GTA   TCTGTA     GGCT CAT
                CATGCAGCTTGCAAATACAG TC TGTTC  GGTAGAT CAT   AGACAT     TCGA GTA
                AAGAATACATAGATGGAGCT  -   GA     A  AAGA     AAACGT   C  ----
                TGTCT
GAM19617 9450   AGTACATCATAATCGGCGAC    CA-   A-  C   - C  AGG-   G     CAT-  TTATT
8               ACAGGTGTTGGTAAATCATG AGTA   TCAT  AT GGC GA AC   TGTT GTAAAT   GC
                CTTATTGCTACAGTTTACAG TCAT   AGTA  TG CCG CT TG    ACAG CATTTG   CG
                ACAAGAGGTTTCAGCCAGTG    TCC    CG  A   A  T  GAGA   A     ACAT  -----
                CATGACCTTACT
GAM19618 9154   AGTACCAAGGATCCTTACTC    CCAA   -  ACTCA   G  CT   TACGGAGAATAT
5               AGTTCTGAAACTGTGACTAC AGTA   GGATC CTT    GTTCT AAA  GTGAC
                GGAGAATATGTCACTATTTG TCGT   CCTGG GAA    TAAGA TTT  CACTG
                AGAATAAGAGGTCCCACCTG    CCAC    A  -----    G  AT    ------------
                CT
GAM19620 3708   AGTACGAGCTGGGCGCAGCG       CTG  C    -  G  ATCGGC      CACCGC
6               CTGTACATCGGCTGGGCGGC AGTACGAG   GG GCAGC GCT TAC     TGGGCGGC
                CACCGCGCTGCTCATGGTAG TCGTGTTC   TC CGTCG CGG ATG     ACTCGTCG
                GGCGGCTGCCTCTTGTGCT       --- -    G  G  GT----      ------
GAM19620 8817   AGTACGGCAGCCTTGAGATC    ACG  - CT  A   CAAAT   CGGCCT
8               AAATGCCCCGGCCTGGGCTC AGT   GCA GC  TG GAT    GCCC
                CAATCCACAGCATGCAAAAC TCA   CGT CG  AC CTA    CGGG
                T               AAA   A  AC  -   ACCT-   ------
GAM19628 3902   AGTAGCCATGGCGGCCATGA    A   T--  -    T---     TG G   GTTTCGGTTA
4               GTTGTTGCGGCGGGTTTCGG AGT GCCA   GGC GGCCA   GAGTTGT  C GCGG
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TTACTGCGGTGGCAGCTCTG TCA CGGT CCG CCGGT CTCGACG G CGTC
TCTGGCCGGCCCCTTGGCAC - TCC G CTGT GT G ----------
T
GAM19628 8523 AGTAGCCCTCTTTCTCCTGG AG- T GGGAT TG AAAT
6 GATCTTGCTGAAATTAGTGG AGT CCCTCT TCTCCT CT CTG
GTGGGGGGGTGGGGGGACGA TCA GGGGGG GGGGGG GG GAT
CT GCA T GT--- GT ----
GAM19628 19777 AGTAGCCGTAATGGGTCCTG GTA- - C-- A-- A GTC
8 CAGGAGCCACCCAGCTGGTC AGTAGCC ATGGG TCCTG AGGAGCC CCC GCTG
CAGCGGGATGGGCTCCTCCT TCGTTGG TGTCC AGGGC TCCTCGG GGG CGAC
CGGGAGCCTGTGTGAGGTTG AGTG G TCC GTA - ---
CT
GAM19630 18334 AGTAGGATTATTGTCCAAAG TTA A- TTTA- GGGAAACGGGGTAA
6 GCTTTTATTTAGGGGAAACG AGTAGGA TTGTCC AAGGCT TTTAG
GGGTAATTAAAACAGCAGCT TCATTCT GATAGG TTTCGA AAATT
TTAGGGATAGCTTCTTACT TC- GA CGACA ----------
GAM19630 6329 AGTAGGCATACAATAACCTA T T TAACCTAAAGATCTC TG GTCTAAAA
ATTCTA
8 AAGATCTCATAGAAGTATAC AG AGGCA ACAA ATAGAAGTATAC AGA TAC
TGAGAGTCTAAAATACATTC TC TTCGT TGTT TGTTTTCGTGTG TCT ATG
TAGTAGTGCATGTCTTGGTG T T ---------- GT GTACGTG- ------
TGCTTTTGTTTGTTTGCTTT
CT
GAM19631 21323 AGTAGGTCTTAAGTGTCATC TC T C ATCTTCTTTCTGTA
5 TGGCATCTTCTTTCTGTAGC AGTAGG TTAAG GT ATCTGGC
CAGGTAACTCTTAAATCTTA TTATTC AATTC CA TGGACCG
TT TA T A ----------
GAM19631 5428 AGTAGGTTACCATTTTGAGG - C TTT C A AA AAA ATGA TTT
9 CAGTTGGATATAAATTATGT AGTA GGTTA CAT GAGG AGTTGG TATA TTATGT TATGT TTATGA

AAATATGTATGATTATGATT TCGT CCGGT GTA TTCC TCAATC ATGT AGTACA ATACG AATATT

TTTATAAATGGCATAACATG A C TC- A - G- --- GTA- ---
AGTGTACTAACTACCTTCTA
TGCTGGCCATGCT
GAM19640 19281 AGTATCTATTTATTAAATGA TT AAATGAATG AA GAAA
4 ATGCACAATTGAAAGAGTGA AGTATCTA TATT CAC TT
AGATTGAATGTCTAGATATT TTATAGAT GTAA GTG AG
CT GTTAGAA-- -- ----
GAM19645 1104 AGTATTCTTTCTAGAGAGTT A ----- -- TGT GAA
1 AGGTTCTGTGGATGAAATCC AGTATTCTTTCTAG GA GTTA GGTTC GGAT
TTGGACCCTTGACGGAGATC TCGTGAGGGAGGTC CT CAGT CCAGG CCTA
CTGGAGGGAGTGCT - AGAGG TC TT- ---
GAM19646 9298 AGTATTTAAGATGGATATTT TATTT TG- A G T-- TT TG TATCTT
0 GGTGGCTCTATTTGTTCTGA AG AAGA GAT TTTGGTG CTC ATTTG C A
TATCTTTTGGTCTAAATTAT TC TTCT TTA GAACCAT GAG TAAAT G T
GAGGTACCAAGATTGTTTCT TTTGT TTG - G TAT CT GT ------
TTGTTTCT
GAM19646 12258 AGTATTTCACTTTTCTCGAT TTTCA - C CAC C GCAT
5 CACTAAACATATGCATATAT AGTA CTTTT CT GAT TAAA ATAT

TTTTAAAAATCAGTAAAAGC TCAT GAAAA GA CTA ATTT TATA
ATTACT TAC-- T - AAA T ----
GAM19648 12973 AGTCAAAGATTCCACTGATT - TTCCA TT TT AACATCAGGATTA
7 GACATTTGATAAATAAACAT AGT CAAAGA CTGA GACA TGATAAATA
CAGGATTATGTTTATTGTTT TCA GTTTCT GACT TTGT GTTATTTGT
GTTTTCAGTCTTTGCACT C ----- T- TT ----------
GAM19653 1253 AGTCACCCTTTAAAAGAACA CCC-- AAGA A A AATATTA
1 TTAAATAATAATAATATTAA AGTCA TTTAA ACATTA ATA TAAT
TTATATATGATGTATATTAA TCAGT AAATT TGTAGT TAT ATTA
ATATTCTGACT CTTAT ATA- A - -------
GAM19653 6153 AGTCACGAATAAATTGGGAA A ATAAATTGG G ----- TAAA
4 GGCCAAGTTAAAGCTTCGAA AGTC CGA GAA GCC AAGT
AGGCATTCAATCTTAAGTCG TTAG GCT CTT CGG TTCG
GATT - GAATTCTAA A AAAGC ----
GAM19662 3140 AGTCATTTGGGACCATATTG GGG ATATT GT- TT AGGACA
2 TCTGTGGCTTTCAGGACAGG AGTCATTT ACC GTCT GGCT C
GAGCTTTGGGACTCAGGTAG TCAGTAGA TGG CAGG TCGA G
ATGACT --- ACT-- GTT GG ------
GAM19662 20059 AGTCCAAACCAATCATCGCA AA- AA G AG-------- GAAATCCA
7 GAGCCAGAAATCCATGGGGC AGTCC ACC TCATC CAG CCA
ACAGCCGCTGGATGGGGTGA TCGGG TGG GGTAG GTC GGT
CGGGCT CAG -- - GCCGACACGG --------
GAM19664 1061 AGTCCAGGGTCAAGGTGGTG T TCA -- T A GG TGGAGGCTGT
9 GCAGGGCTGGTTCCCTCTGG AG CCAGGG AGGT GG GGC GGGCT TTCCCTC
AGGCTGTGAGGGAGAGCCCG TC GGTCCT TCCG CC CTG CCCGA GAGGGAG
TCCCAGGCCTGTCTCCTGGC - CTG GA - - -- ----------
T
GAM19668 6236 AGTCCGCACCATGCTGGTTA C--- CA GTTAG TCCA A A ACTGAG
3 GGAAGATCCAGGAAGAGTCA AGTC GCAC TGCTG GAAGA GG AG GTC
CTGAGGACCTACCTCTTCAC TCAG TGTG ACGAC CTTCT CC TC CAG
CTACAGCAGTGTCTATGACT TATC -- ATCCA ---- A - ------
GAM19671 4456 AGTCCTGCAGTCCTTAGGTT GCA GG TTC A TAC TG TT T TTGAA
9 TTCAGGAGTTAAGTACTTTG AGTCCT GTCCTTA TT AGGAGTT AG TT TAC ACT AGAGCT
TACTTACTTAGAGCTTTGAA TCGGGA CAGGGAT GA TCCTTAA TC AA GTG TGG TCTCGG
GGCTCTTGGTCTGTGTTAAC GAG TT --- A C-- TT TC T -----
CTAAATTCCTAGTTTAGGGA
CGAGAGGGCT
GAM19673 21642 AGTCGACTGACGCATGATGT GACTGAC A T--- AACT
9 AGATGTGCGCAACTGTGCCA AGTC GCATGATGT GATG GCGC
ATCATCCATATCATGTCTGC TCAG TGTACTATA CTAC CGTG
AAGACT AACGTC- C TAAC ----
GAM19674 8573 AGTCGGCGGAAGCCCTGCGC GAA CGC-- AG-- TGCA GATGCGCTG
8 GCGCTCAGCCTGCAGCTGGT AGTCGGCG GCCCTG GCGCTC CC GCTGGTG
GGATGCGCTGCACCAGCGTC TCGGCCGC CGGGAC TGCGGG GG CGACCAC
CGGATCGGGGCGTCTTTCCA AC- CTTTC GCTA CCTG ---------
GGGCCACGCCGGCT
GAM19675 14631 AGTCGGTCTTTTGATTACAA T A-- CA - AAGAT
1 CTATAGAAGATCGTATAGTC AGTCGGTCT TTG TTA ACTATA G
CTAGAAACAGTAGACCGACT TCAGCCAGA GAC GAT TGATAT C
T AAA CC G -----

GAM19676 19080 AGTCTATACACTGTGGCCTC A C T - A - ACAG AG CT TG AGCTC
9 AACCTCCCAGACAGGGCAGA AGTCTAT CA TG GGC CTCA CCTC CCAG GGC AGAA G GGC

GAACTGTGGGCAGCTCGTTT TCAGATA GT AC TCG GGGT GGAG GGTC TCG TCTT C TTG

GCTTTCTAGGCTGGCTGGAG - T - A - A GG-- GA T- GT -----
AGGTGGGAGCTCATTGATAG
ACT
GAM19677 1528 AGTCTATTAAAGAATTCAAC AT A- ACTATGCAAATT GTCTATTTA
2 TATGCAAATTTGTGTCTATT AGTCT TAAAGA TTCA TGT
TAACATGAGGCTCTTTAAGA TCAGA ATTTCT GAGT ACA
CT -- CG ---------- ---------
GAM19677 3888 AGTCTATTCCAGGTAGACAG GT CA C GTCCAA
4 GCCTGCAGGGGGTCCAACCC AGTCTATTCCAG AGA GGCCTG AGGGG
CTACAGGCCCCTCTGTCTGG TCAGATAAGGTC TCT CCGGAC TCCCC
AATAGACT TG CC A ------
GAM19680 8563 AGTCTCCATGCAATTTTCAG CT- ATG- TT - - TCTG CATTTT
8 ATGAAAAACATTCTGTGCAT AGT CC CAAT TC AGATGAAAA ACAT TG
TTTCAATTTGTGTGTTTTCA TCG GG GTTG AG TTTACTTTT TGTG AC
TTTAGATGGTTGAAAGGGTT TTT GAAA GT A G TTTA ------
TGCT
GAM19681 12901 AGTCTCGCATGTCTTTACTT CGCATG TACT - ACA G CTAG
7 CACATAAATGTATTACACTG AGTCT TCTT TCACATAA ATGTATT CT TC
TCCTAGGAGAGCAAATGCAT TCAGG AGAG AGTGTATT TACGTAA GA AG
ATTATGTGAGAGAAAAATAG ATAAAA ---- A AC- G ----
GACT
GAM19684 16685 AGTCTGAAGCTAACTGACGA GA A C TT GTTTA TAT
0 TTGCAGCTAGTTTATGATTA AGTCT AGCT ACTGA GA GCAGCTA TGAT
TATCAGTAGTTGTTCCTTAG TCGGG TCGA TGATT CT TGTTGAT ACTA
TAAGCTAGGGCT A- A C -- G---- ---
GAM19684 12458 AGTCTGACTCTTAAGAACTT CTCTTA A AA CC GG ATCC
1 AAAATCCTAGGGAAATCCTT AGTCTGA AGA CTTA AT TAG AA
TTCTAAAATGGTAAGATTTA TTAGACT TTT GAAT TA ATC TT
CATTTTCAGATT TTTACA A GG AA TT ----
GAM19693 21572 AGTCTTGTAAATGTTATTTT T- GT TAATCCCTTTA TTTATCT
2 AATAATCCCTTTAAATTTTA AGTCT GTAAAT TATTTTAA AAT
TCTGTTGCTGTTACCTCTTG TTAGA TATTTA ATAAAGTT TTG
AAATATGATTTATTTAGATT TT GT CTCCATTGTCG -------
GAM19693 18601 AGTCTTGTGTAGAGATCTAT TCT T TCTATAAAA C TTACAGAATACGGAAAC

3 AAAATCTCAGGGCAATTTAC AG TGTG AGAGA TCT AGGGCAAT
AGAATACGGAAACATTGTCT TC ACAC TCTCT AGA TTCTGTTA
TAGAAACACTATTCTCTCCA CTT C TATCACAA- - ----------
CATTCCT
GAM19695 19061 AGTCTTTTTTAAAATGCACA TT AA CACA CCC AGGTCA
0 AAGCCTCCCAGCTAAGAGGT AGTCTT TT AATG AAGCCT AGCTAAG
CACTTGGTTAGGGCTTCATT TCAGAG AG TTAC TTCGGG TTGGTTC
AGGACTGAGACT TC GA ---- A-- ------
GAM19699 20141 AGTGAAGGTGTGGGGAAGCA -- AA---- TGT AGCATTAA - - AA-- A GA----
1 TTAAAGGACTGACTGAAGGC A GTG GG GGGGA AGGAC TG ACTG GGCCTGC TG TT

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          CTGCATGGATTCCATGTCAT T  CAC     CC  CTCCT      TCCTG AC TGAC   TCGGACG AC     GA
          GAGTTGGAGATAATACAGCA  GG  AAAAGA  TAT    AATTTCAC    G  G    CATG      - ATAATA
          GGCTGTACCAGTGCAGGTCC   TGTCATGAGT
          TCACTTTAATCCTCTATCCA CCA
          GAAAACACGGT        GGT
                        ----------
GAM19704 18757  AGTGACTGTCACCCACACTT    AC  TC-       TTTGATTGT   G     -  C      TATTT
3          TGATTGTGTTGCCAGGACAC AGTG  TG   ACCCACAC        GTT CCAGGA CA AGGCAGA
          AGGCAGATATTTTTTGTTTT TCAC  AT   TGGGTGTG        CGA GGTCTT GT TTTGTTT
          TGTTTCTGGGAGCGTGTGGG    AA  TCT      ---------  G     T  T      -----
          TTCTTAAACACT
GAM19706 8480   AGTGAGAGAGTTGATGGATA         T-    ----------  ATTACCTA
1          TTACCTAGTCTGCCATTACT AGTGAGAGAG  TGATG          GAT
          GGACATCATTCTTTTTTACT TCATTTTTTC  ACTAC          CTG
                           TT    AGGTCATTACCGT  --------
GAM19714 1014   AGTGATGTTACCGGAAGAAA         --    AAGAAA     ACATCG--      CGAG
5          GAGTCAACATCGATTACGCG AGTGATGTT  ACCGG     GAGTCA       ATTACG
          AGTGTGATAATAAAGCTGAT TTATTACAA  TGGTC     TTTAGT       TAGTGT
          TTGTAACTGGTTCAACATTA         CT    AATG--     CGAAATAA     ----
          TT
GAM19716 8972   AGTGCAAACACATCTTCTGT    CAAA    TC----     T  -  CATT
7          TTAACCCATTGGTATACACA AGTG    CACA     TTCTGT TA ACC
          GAATATTCCTGTGCCCACAC TCAC    GTGT     AAGACA AT TGG
          T                 ACCC    CCTTAT     C  A   ----
GAM19717 18506  AGTGCACCGGTTTGGTATCA     A    T    AT    GGTTA  GAAA    AAGGAGAGAA
7          CGGGTTATGGAAAAGGAAAG AGTGC CCGGT TGGT  CACG     TG    AGGA
          GAGAGAATCCTGGAACAGGA TCGCG GGTCG ATTA  GTGC     AC    TCCT
          ACGTGCCATTATGCTGGGCG     -    T    CC    AAGG-  AAGG    ----------
          CT
GAM19718 20000  AGTGCAGATTATTAATTACC    C     T   TTAC    CTTTTT   -    TAT
5          TGGCTTTTTAAAGTTATTAT AGTG AGATTA TAA    CTGG      AAA GTTAT
          ATAACATTTTCAGATTTTAT TCAC TCTAAT ATT    GACT      TTT CAATA
          TAATCTCACT           -     T   TTA-    ------   A     ---
GAM19718 8668   AGTGCAGCCAGCAGTCCACG   T     A-     -  A   G    --  GT    CTCATACA
6          TGGCTGCCGTGGGCCTCATA AG GCAGCC  GCAGT CC CGT GCTG  CC  GGGC
          CAGCCTCAGGACCAGCGATG TC CGTCGG  TGTCG GG GTA CGAC  GG  TCCG
          CGGCGCTGTGGGGCTGCTCT   T     GG     C  C   G    CA  AC   --------
GAM19720 9588   AGTGCCACCACGTTGTGTTC   TG    ACGT  TG TCCT   -    ATTTCC
2          CTGATCTGTGATTTCCCGCA AG  CCACC    TG  T    GAT CTGTG
          GCATCTTGTGCAGGTGGTGC TC  GGTGG    AC  G    CTA GACGC
          T                 GT     ----  GT TT--   C     ------
GAM19724 6542   AGTGCGAAGTAGTGATCAGG    -    T-     CA     GC  T     ATCCCCGA
0          TATGCTGTGAGATATCCCCG AGTG CGAAG  AGTGAT  GGTAT  TG GAGAT
          AGTCTTCAATGCTATCATTC TTAT GTTTC  TTACTA  TCGTA  AC TTCTG
          TCTTTGATATT           A     TC     --     --  -     --------
GAM19731 14495  AGTGGACAGGGGGATCTTCC      AC--    GG      CAAGT--  GGAA
4          AAGTCTGGAAAGTTGAACAG AGTGG    AGGG  ATCTTC       CT
          GAGATGACCTTCAGGCCATT TTACC    TTCC  TAGAGG       GA
                           GGAC    AG      ACAAGTT  ----
GAM19734 4342   AGTGGATTCCTGAAACCGGT    GATTCCT-    -    -   TACTGAACCTT
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2          GATAGTACTGAACCTTCTGT AGTG      GAAAC CGGTG ATAG
           ACACTGTGTTTTTTCCTATA TCAC      TTTTG GTCAC TGTC
           CACT               ATATCCTT   T   A  ----------
GAM19735 21542  AGTGGCCGTGTCTCATTGCC    - GT--- T      CTCAGA    AGCA
8          TCAGACATGCAGCAGCATGA AGTGG CC    G CTCATTGC     CATGC
           AGTGCGCGATGAGCTGGAGG TCACC GG    C GAGTAGCG     GTACG
           GCCCACT            C  GAGGT -      CGTGAA    ----
GAM19737 8701   AGTGGCTCACACCTGTGCAC   TG C  A   TG GCA   GG     CACT
3          GGTGGCTCCTAGCACTTTGG AG  G TC CACC  T   CGGT  CTCCTAG
           GAGGCCGAAGTGGGTGGATT TC  T AG GTGG  G   GCCG  GAGGGTT
           GCT              GT -  -   GT AA-   --      ----
GAM19738 8659   AGTGGCTCTTGAGTTCCTCT     T-  T   TC-    CAGTT  G   A-    TT     TGTAACT
6          GCAGTTTCGACAATTAGGAT AGTGGC  CT GAGT   CTCTG    TC ACA  TTAGGA  GGTGTCT
           TGGTGTCTTGTAACTGGACA TCGCCG  GG CTTA   GAGAC    GG TGT  GATCTT  CTACAGG
           TCTTCTAGCATGTGGGTTGT      TC  T   TAT    ATGTT  G   AC    --     -------
           ACAGAGTATATTCTGGCTGC
           CGCT
GAM19740 2685   AGTGGGAGTAGATAATTTTG      G------         GGAA     GTGAAG
5          GAAAGCTGGGTGAAGCCAGT AGTGGGA      TAGATAATTTT    AGCTGG
           TGTGGAGAATTGTTTGAATA TTACCCT      GTTTGTTAAGA    TTGACC
           TTATCCCATT             ATTATAA         GGTG     ------
GAM19746 9187   AGTGGTCGAGCGGCGTATCA   TG   A   -   TCA- -      GATAAAGTTCTCAGG
2          ACCTCGCGTGATAAAGTTCT AG  GTCG GCGG CGTA    AC CTCGCGT
           CAGGACGTGGGTGTATCCTG TC  CAGC CGTC GCGT    TG GGGTGCA
           CGACTGCGCGACTGCT      GT   G   A   CCTA  T     ----------------
GAM19751 20053  AGTGTACCCCTATAACCCTT    TACCCCT    CCC      ----     AGA
0          TGGCTTTTTTCAGAGAAAGA AGTG      ATAA   TTTGGCT    TTTTTC
           CTTCAGCCAAATTGTCCCTT TCAC      TGTT   AAACCGA    AGAAAG
           TCACT              TTTCCC-    ---      CTTC     ---
GAM19751 3995   AGTGTAGCAAATCGTGATGT      GCAA--------       -----    TTT
4          AAATTTTTTACTGCTGGTCA AGTGTA          ATCGTGAT     GTAAA
           TGGTCAAAAAGTAAGATACG TCGCAT          TGGTACTG     CATTT
           CT                 AGAATGAAAAAC       GTCGT     ---
GAM19755 2896   AGTGTCCTTAGCCCAACCCA   T      -  AACCC   G      TCAC
2          GTGGCTTGGGTCACCCCAGG AG GTCCTTAG CCC     AGT GCTTGGG
           TAGCTCGGGCCTGAGGACCT TC CAGGAGTC GGG     TCG TGGACCC
                        -      C   C----   A      ----
GAM19755 14035  AGTGTCGACAGGGGGAAATG    T      ----  AAA    TG T---     AGCCC
6          ATTGTTTTTTGAGCCCCAGA AGTG CGACAGG    GGG   TGAT  T    TTTTG
           ATCATATGATCAAACCTATA TCGT GCTGTCT    TCC   ACTA  A    AAGAC
           GTCTGTCGTGCT          -      GATA   AA-    GT TACT     -----
GAM19759 14609  AGTGTGGTTCAAAGAGAAGT   TG      --      GTTT    TTTATGAAGTTCC
2          TTTTACGTTTATGAAGTTCC AG  TGGTTCA  AAGAGAA    TTACG
           TGTGATCAGTTTTTTTAATG TT  ACCAGGT  TTTTTTT    AGTGT
           GACCATGTT          GT      AA      GACT     -------------
GAM19764 22266  AGTGTTGTTTTTTATTTTCT      GTTTTTTA      TC    CC   TGCA
4          TTCTTGGGCCAGCTGCAGCT AGTGTT       TTTTCTT  TTGGG  AGC
           TCCAACCAAGAAAACCTCAA TTACGA       AAAAGAA  AACCT  TCG
           AGCATT               AACTCC--      CC    --  ----
GAM19769 821    AGTTAATAAATCTATTATTG      TAAATCTATT     TA      TCTTT--  CT    C   TTTG
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9          TTTAATGTCTTTCTTTGTCT AGTTAA       ATTGTT  ATGTCTT     GT  CTTTG AGT
           CTTTGCAGTTTTGACTTAAA TCAGTT       TGACAG  TATAGAA     CA  GAAAT TCA
           GTACTTTATGTAAGATATGA     TT--------    --     TGTATTT  T-    -  ----
           CAGTTTTTGACT
GAM19773 12152  AGTTAGAGACAAAAGGATGC   -  -     A  A   GACAAATACTTAACTAGG
0          TGACAAATACTTAACTAGGA AGT TAG AGACAAA GG TGCT
           GCACTATTTGTTTACTGCAC TCA GTC TTTGTTT TC ACGA
           T               C  A     A  -  ------------------
GAM19775 5994   AGTTAGTAACAGAATTCAGA   TAG-   A  ATT-    T   T  AGTT
4          ATAGAATAGAGTTCTTTTTT AGT   TAAC GA   CAGAA AGAA AG
           TTCTGTCAGTCCGTTGTTCT TCA   GTTG CT   GTCTT TTTT TC
           ACT             TCTT   C  GACT   -   T ----
GAM19776 9680   AGTTATACCTCCGGTGACAA    TACC    GA        TAGGCCTGAAACGT
2          TCATCCAAGTAGGCCTGAAA AGTTA   TCCGGT  CAATCATCCAAG
           CGTCTTGGGTGATTGAACCG TCGAT   AGGCCA  GTTAGTGGGTTC
           GATAGCT             ----    A-        --------------
GAM19777 19198  AGTTATCCAATAGCTACTGA   T   AA    C  AAA   -  T  AGGTA
1          AATACAAGATGGAAGGTATC AGT ATCC  TAGCTA TG  TACA AGA GGA
           CTCTCTGTACCATAGCTAAA TCG TAGG  ATCGAT AC  ATGT TCT CCT
           GGATTGCT            T   AA    - C--   C  -  -----
GAM19781 9095   AGTTCACTATATAGAGCTAT      --   GA    -----  A  GT  GAGC
9          TGAAAGAGTTCTGAGCAGAG AGTTCACT  ATATA  GCTAT    TGA AGA  TCT
           TTTTATCAGGTAGGTAGCAG TTAAGTGA  TGTAT  CGATG    ACT TTT  AGA
           TATGTAGAGTGAATT          GA    GA    GATGG  A  TG  ----
GAM19786 20678  AGTTCCTGAGCGACAGGTGG        G  A  T  A   TG  GA--     --  GAAG   AGGA
6          ATGCTGCAGAAGGGCTTTCT AGTTCCTGAGC AC GG GG TGC  CA   AGGGCTT  TCT   GAGG

           GAAGGAGGAGGACCTCACGG TCGAGGACTTG TG CC CC ACG  GT   TCCCGAA  AGA   CTCC

           AGAAGAAGCCCTGGTGTGTG        -  -  T  -  GT  GTGG     GA  GGCA   ----
           GCACCTCCGTGTTCAGGAGC
           T
GAM19788 3732   AGTTCTATTGACCACCAAGT        ACCACCA-   TC   AGCCC    A   AATGGGGG
8          ATCTAGGAGCCCATTCTCAC AGTTCTATTG      AGTA  TAGG    ATTCTC CCTC
           CTCAATGGGGGGAGGGAGAG TCAAGGTAAT      TCGT  ATCT    TGAGAG GGAG
           TTATCTAATTGCTATTAATA        GATAATTA   TA   AT---    -   --------
           GTAATGGAACT
GAM19790 4285   AGTTCTGCTAGAATTATTGA    CT-   GAA         ATAC   -     TTTATTAATATTT
4          GATATTTATACATGCAGAGT AGTT   GCTA   TTATTGAGATATTT   ATGCA GAGTTAC
           TACTTTATTAATATTTGTAA TCAA   TGAT   AGTAATTTTATGAG   TACGT CTTAATG
           TTCATGCATAAGAGTATTTT    TAT   ---          AA--    A     -------------
           AATGATAGTTATAACT
GAM19792 3649   AGTTCTTGGATTGATAGCAA      G  TT    CAACA-   CTCATGCTCCC
5          CAAAGGCTCATGCTCCCCCT AGTTCTT GA  GATAG     AAGG
           TCCCTCCCTATCTTTGAAGA TCAAGAA TT  CTATC     TTCC
           ACT                 G  T-    CCTCCC   -----------
GAM19792 20047  AGTTCTTGTGTGTTCGTATC         GTTCGTA       TTCCC     GCA
6          TTTATTTATTCCCTAGTTTG AGTTCTTGTGT      TCTTTATTTA     TAGTTT
           CAGAACTGTCTGAATAAAGG TTAGGAACATA      GGAAATAAGT     GTCAAG
           ATACAAGGATT                -------        CT---     ---
```

GAM19792 12489 AGTTCTTTGATTTGCTCTTT TC T-- -- TTT CCTCCACT
7 GAGGACCTCCACTTCTTCTT AGT TTTGAT TGC TC GAGGA
TGACCGCATACATCAAATGG TCG AAACTA ACG AG CTTCT
CT GT CAT CC TTT --------
GAM19793 19964 AGTTGAAAAGTTCCGGCAGA AAAAGT AGAA CCCTGTA
4 GAATTCTGGCTCCCTGTAAG AGTTG TCCGGCAG TTCTGGCT
CTAGAGACTGTTGGATGGCA TCGAC AGGTTGTC GAGATCGA
GCT GGT--- A--- -------
GAM19795 9531 AGTTGAGAGTAAGAAATATG A AAGAAATAT--- AACA TGAA
9 AGAGAACACATGAATGAACG AGTTG GAGT GAGAG CA
CTCTTTAGCAGACATGGACT TCAAC CTCA TTCTC GT
CCAACT - GGTACAGACGAT GCAA ----
GAM19796 2812 AGTTGAGGGCGTGCCAGCTG CCA ---- CC- CTCT
0 CTGCTCCCGAACTCTTTCGC AGTTGAGGGCGTG GCTG CTGCT CGAA
ACAGTAGTATACAGCCGTGT TCGACTCCTGTGC CGAC GATGA GCTT
CCTCAGCT --- ATAT CAC ----
GAM19798 5433 AGTTGCTAAATTTGTGTTCC AAA- TG G TAAATT AA TG TGA
5 CATTTTAAATTGACCAATTT AGTTGCT TT T TTCCCATTT GACC TT GGGTG
GGGGTGTGACACTTTTGAGC TTAATGA AA A GAGGGTAAG TTGG AG TTCAC
GGTTGAATGGGAGAATGAAG ATAG GT A ------ CG TT ---
ATAAGTAATT
GAM19799 20776 AGTTGGAAGATGGAGATCAA - -- G A AA - AG A AAG
3 CCGGAGAGCAAGAAGCTGGC AGTTG GAA GAT GAG TC CC GG AGC AG
TTCCCAGGGAGACTCAATCA TCAAC CTT CTA CTC AG GG CC TCG TC
GTTCTCAACT T GA A - AG A CT G ---
GAM19800 1316 AGTTGGGCTGGGTCTTGGTA ----- G TAC TTCCGCCCATCT
9 CACGTGGTTCCGCCCATCTC AGTTGGG CTGG TCTTGG ACGTGG
CACGTCCAAGAACTAGTTCA TCGACCC GATC AGAACC TGCACC
CCCCAGCT CACTT A --- ----------
GAM19803 12764 AGTTGTGACTGAAAACACTG AAAACA AAA A C ATTCA
4 AAACCTACCACGTCCAGATT AGTTGTGACTG CTG CCT CCA GTCCAG
CACTGGATTGGGGGATAGAG TCGACACTGGC GAT GGG GGT TAGGTC
GAACGGTCACAGCT AAGGA- A-- - - -----
GAM19803 3189 AGTTGTGGACACAAAGAGAG -- A AAA------ - CCAG
7 CTGTCTCCAGAGACAGATTC AGTT GTGG CAC GAGAG CTGTCT
TCAAAGACCAGGTGCCCACT TCAA CACC GTG CTCTT GACAGA
TAACT TT C GACCAGAAA A ----
GAM19805 16505 AGTTGTTTTCTATCATAAAT CTATC A- - TCAC CTT TCTCA
6 ACATGTTTTCACAGCCTTGT AGTTGTTTT ATAA TACAT GTTT AGC GTC
CTCTCAGACTCTGCTAAATA TCAATAAAG TATT ATGTA TAAA TCG CAG
ATGTAGCTTATTGAAATAAC T---- CG A ---- TCT -----
T
GAM19805 20796 AGTTTAAAAGCAGTTTCCAT TT A - T TTCGTTTCT
8 GTGTTTTCGTTTCTGATACC AGT AAA GCAGT TTCCA GTGTT
TGGAATACTGCATTTTTACT TCA TTT CGTCA AAGGT CATAG
TT A T C ---------
GAM19807 9762 AGTTTAATTAGGTCCCAGTT -- - TT ----- TTTTTTT
1 GTCAATTTTTTTTGTTGCAT AGTTTA ATTAGGTCC CAG GT CAAT
TTGCTTTTGAGGGCTTAGTC TTAAAT TGATTCGGG GTT CG GTTG
ATAAATT AC A TT TTTAC -------

GAM19810 5795 AGTTTATTACATTTGGAAAA ATTACA - - GTA-- -- AAAAA
1 TCTACTGTACAGGGAAAAAC AGTTT TTTGG AAAA TCTACT CA GGG
CCATTGGATTAAGTAGAGTT TCAGA AAACC TTTT AGATGA GT CCC
TTGCCAAAAGCAAAAGACT AAACGA G G ATTAG TA -----
GAM19814 16462 AGTTTCTCAGAATGCTTCTT CA CTTCTTTCT- ATGT
3 TCTTGTCTTTATGTGAAGAT AGTTTCT GAATG TGTCTTT
ATTTCCTTTTCCATTCAGAA TCAAAGA CTTAC ATAGAAG
ACT -- CTTTTCCTTT ----
GAM19815 8291 AGTTTCTTTTTTAATTTTTT --- TTT TT-- T T T T ATTGG
8 AAATTTATGTCATTGTATTG AGTT TCT TTAA TTTTAAAT TA G CAT GT
GACTATGCTTATATTTAAAA TCAA AGA AATT AAAATTTA AT C GTA CA
CTACTTAATTTAGAGTTAAC TTG TTT CATC T T - T -----
T
GAM19817 14648 AGTTTGCAGCCATCGGCCCC CCATC CACTA CGCGCGCT
2 ACTACGGCTCGCGCGCTGGC AGTTTGCAG GGCCC CGGCT
CGCCCAGGGCCTTCCTGTAA TCGAATGTC CCGGG GCCGG
GCT CTT-- ACCC- --------
GAM19817 3833 AGTTTGCCATGTTTCTTCTG G G GTGC ACCA CC- G AA TGTAAGAT
7 TGCCTACCATTCTCCCTTGG AGTTT CCAT TTTCTTCT CT TTCTC TTG CCTC CTTC
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GGGGGGGACAAAAAGAGAAG A - ATT- AATG AAA A G- --------
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AAAATT
GAM19819 914 AGTTTGTCGTGGTTATAAAA T TC TT- - TTA--- AGAATA
9 CAATTAGCAGAATAGCCTAC AGT TG GTGG ATAAA ACAA GC
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CCATACT T CT TTT A TACATC ------
GAM19832 8600 ATAAAAGGTACATACTATTC A --- TT ACTTTTCCACCAAAA
7 TGCACTTTTCCACCAAAAGC ATAA AGGT ACATACTA CTGC
AGTGGTGTGTTATGCTTGTT TATT TTCG TGTGTGGT GACG
AT G TAT -- ----------
GAM19838 9047 ATAAATAATGACCTAATTTC - --- A TTAAAAAA GTTT
2 ATTTAAAAAATGGTTTCAGC ATAAATAATG AC CTA TTTCAT TG
AAATATGAAAATAGAAAGTC TGTTTATTGC TG GAT AAAGTA AC
CGTTATTTGT C AAA A TAAACG-- ----
GAM19842 12982 ATAACATGATTTAAGGTTGA A- TGAA G AT ATTT
3 AATGGCTTTAGAATCATTTG ATA CATGATTTAAGGT ATG CTTTAGA C
GGTTTGAGGGTGTGTTATTT TGT GTACTGAGTTTTA TGT GGAGTTT G
TGAGTCATGAATGT AA TTG- G GG ----
GAM19842 5659 ATAACATTGATTATTGATTA C TT TAGA- AT-- G GGGTA
6 GATACATATCATTATAGTTT ATAA ATTGA ATTGAT TACAT CATTATA TTTA
AGGGTATGGGATATAGTGTC TATT TAACT TGATTA ATGTA GTGATAT GGGT
CAATGTAGCATTATTAGTTC - -- TTACG ACCT A -----
AATTTAT
GAM19847 3527 ATAAGATCTAAGAGTTACCT A--- - A C TACAGAAAGAAGAT
2 GGCTACAGAAAGAAGATGCC ATAAG TCT AAG GTTA CTGGC
AGATGACACTTAAGACCTAC TGTTC AGA TTC CAGT GACCG
TTGT ATCC A A A ----------
GAM19847 12854 ATAAGATCTAAGAGTTACCT A--- - A C GTACAGAAAGAAGATG
3 GGGTACAGAAAGAAGATGCC ATAAG TCT AAG GTTA CTGG

AGATGACACTTAAGAACTAC TGTTC AGA TTC CAGT GACC
TTGT ATCA A A A ----------
GAM19856 1022 ATAATCATATATTATATAAA CA TTATATAAAAAT TCATGC
0 AATTCTGATTCATGCATCAG ATAAT TATA TCTGAT
ATTACATAAATTATACAATT TGTTA ATAT AGACTA
GT AC TAAATACATT-- ------
GAM19860 6048 ATAATTCCTCCAGGATATCC CT GG T CA - AGAAAGATTA
5 ACCATGCCCGCAGAAAGATT ATAATTC CCA ATA CCAC TGCC CGC
AGCGAGGCGACGTGGTTGTA TGTTAAG GGT TGT GGTG GCGG GCG
TGGCAGAATTGT AC A- T CA A ----------
GAM19867 8901 ATACAGGCCTCTGCCTCGGC A T-- C - A CCT TCAC- TCGCCT
0 CGCAGGCCCTTCAGTCACCG ATAC GGCC CTGCCT GGCC GC GGC TCAG CG
TCGCCTCGTCTCCCTGACTG TATG CCGG GACGGG CCGG CG CTG AGTC GC
TCCGCAGGCCTGGGCAGCAT - TAC T A C TC- CCTCT ------
GGCCGTAT
GAM19869 3748 ATACATGTAAGATTTGTTAT T TTTGT TA CC TT A -- CTATCACC
3 ATATCCTTAGTTTTAAAAAA ATACA GTAAGA TA TAT TTAG TTAAA AA TCA
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TTAACCTTAATTATACTTGT - TTTT- TC TT CC A CC --------
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GAM19870 9004 ATACCAATTCCCCTTTACAA CCTTTACAACTG- AGA T GAA
3 CTGATGCAGATCATTATGAA ATACCAATTCC ATGC TCA TAT
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CACTTTAGGAATTGGTGT ATTTCACATCCCA GAA C ---
GAM19871 5648 ATACCATATTGAGATTATAA - - ATTATAATA C C -- TATT
2 TATTCTTGCAGTCTAAATTT ATAC CATAT TGAG TT TTGCAGT TAAA TTTAAGC
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GCATTGTAAAAAGAAAAGTT T T GAAAAG--- A C TC ----
CATGTGTGTGTGT
GAM19876 12810 ATACTCTGGTCATTTTTCAA TC T TTTTT A TATT TCT TTTCT
7 GCCATGTTTTATTGTATCTG ATAC TGG CA CAAGCC TGTTT GTA GT
TTTTCTACTTTATGTGAGCA TGTG ACC GT GTTTGG ACGAG TAT CA
AGGTTTGCTGTCCAAGGTGT GA T C---- A TG-- TT- -----
GAM19877 8698 ATACTGATGATTTAAAAACA TG T - ACA- ACA AC GA C- CTATTTC
9 AGCACAACAACGTAAAGAAT ATAC A GAT TTAAAA AGC ACA GTAAA AT TTCCT
CTTCCTCTATTTCAGGAGAA TGTG T CTA AATTTT TTG TGT CATTT TA GAGGA
ATGATTTACTGTGAAGTTAT GT T C CCTA AAG -- AG AA -------
CCTTTTAACATCTTTGGTGT
GAM19880 12273 ATACTTTAAAATTATAGGAA TAAAATTA AATA C- G AATT
5 TAATCTCAGTGAATTCAGTG ATACTT TAGG AT TCA TG
AATGTGCAACCTAAATCAAC TATGAA ATCC TG AGT AC
CAAGTAT CCAACTAA AACG TA G ----
GAM19881 20595 ATAGAAAAATGAGCTTTGCC A- A T- - T- C ACGTAAA
7 ATCATCAGAAACGTAAATTT ATAGAA AATG GC TTGC CA CAT AGAA
TAATGCCTGTGCAATTGCCA TATTTT TTAC CG AACG GT GTA TTTT
TTAATTTTAT AA - TT T CC A -------
GAM19889 21215 ATAGATATTGGTTTTTCTTT ATAT- TTC G AAC
1 CTCTGACTTGAACTAAGTAG ATAG TGGTTT TTTCTCT ACTTG
GAGAAACCAAACCATAAACC TATC ACCAAA AAAGAGG TGAAT
TAT CAAAT CC- A ---

GAM19890 828 ATAGATTGAGGTTGGTTTAA G - A CC- T ACAATAAA- A AGGTT
8 AATTATTCCTGTAAACCAAC ATAGATT AGGTTG GTTTAA ATTATT TG AAACCA GCAAAGA G

AATAAAGCAAAGAAGAGGTT TATTTAA TCCAAT CAGATT TAGTGA AC TTTGGT TGTTTTT C

CATTTTTGTAAATAACACTG - T G TAA - CACAATAAA A -----
GTTTCAAATAGTGATGTTAG
ACTTAACCTAATTTAT
GAM19892 16746 ATAGCAAGTCTGAAAAATAG G T ATA CAAATATT TTAT
4 AAGATAGTCAAATATTGTTT ATA CAAG CTGAAAA GAAGATAGT GT
ATGCTAAGAACTGTTTTTAA TGT GTTC GACTTTT TTTTTGTCA CG
TTTTCAGCTTGATGT A - AA- AGAAT--- ----
GAM19895 9180 ATAGCGCCAGTTCCCCAGCA GCC- C-- CAAA AGAG CCCCCGGATGCA
5 AACCCCCTCCAGAGCTGCCC ATAGC AGTT CCCAG CCCCCTCC CTG
CCGGATGCACAGACAAGGAG TGTCG TCAG GGGTT GGGGGAGG GAC
GGGGCTTGGGAGTGACTTGA AAGT TGA C--- AACA ----------
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GAM19896 20118 ATAGCTAGCCAGAACAACTT GC G- CA AATTC TTAAA CACAT AG ATA TT AA
3 AAAATTCTTCTTTAAACTTC ATAGCTA CA AA ACTTAA TTCT CTTC TG TC TTA TGG
CACATTGAGTCATATTATTT TGTCGGT GT TT TGAATT AAGG GAAG AC AG AAT ACC

GGAAAACCCATTAAAAGAAA AA GA AA ----- TAAG- TTAAT AA AA- T- --
CATAATTGAAGGAATGGAAT AAC
TAAGTAATTAGTGAATGGCT
GT

GAM19898 3700 ATAGGACAGTCCAAAATGAG GT AAA AGAAC CCA- CCCTC
2 GAAGAACGGAACCAGACCCT ATAGGACA CCA TGAGGA GGAA GA
CTCCAGCTTCCATATGTCTT TATCCTGT GGT ACTTCT CCTT CT
CACCTGGTGTCCTAT -- CC- GTATA CGAC -----
GAM19900 19799 ATAGGCGGCAGACCCCAGGT GACC-- G GC ACC
0 GGTGCGTGGACAGACCCTGT ATAGGCGGCA CCAGGTG T GTGGACAG
CCACAGCGCCTGGCTCCCGT TGTCCGTCGT GGTCCGC A CACCTGTC
GCTGCCTGT GCCCTC G -- ---
GAM19900 18899 ATAGGGAACAGTTTTGCCCT - --- AA G- TAC T AATCAAGA
5 GGAACAGAGTTACAGATACA ATAGGGA ACAGTTTT GCCCTGG CA AGT AGA ACAC
CAATCAAGAGTGTTCTTGCT TATCCTT TGTCAGAA TGGGGCT GT TCG TCT TGTG
GATGCTCGGGGTCTGAAGAC C GTC C- AG T-- - --------
TGTCTTCCTAT
GAM19902 19963 ATAGGTATCACTACTACATT ATCAC A CATAAAAG- AAGTA
1 TTACATAAAAGGGAAGTATC ATAGGT TACTAC TTTTA GG
AATAAACTTTAGAAAGTAGT TGTCCA ATGATG AAGAT CT
AAATTCACCTGT CTTAA A TTCAAATAA -----
GAM19903 1095 ATAGGTTTATGGTTTGGTTT TTA GG- CT AGTTC
4 CTCCTACTTAGTTCAAGTCA ATAGGT TGGTTT TTTCTC ACTT
GAGAAAGAAAAACCAATATC TATCTA ACCAAA AAAGAG TGAA
TAT TA- AAG AC -----
GAM19911 3132 ATAGTTTAGTAATAGGTCAG TAAT CAGGG- CAACAT
9 GGGTTTGAGCAACATTTTAA ATAGTTTAG AGGT GTTTGAG
GCATTATAATTTTCTCCTAA TATTAAATC TTTA CGAATTT

ATTAT CTCT ATATTA ------
GAM19916 6159 ATATACAAGTGGGACCATAA AG ACCATAAAC --- AAGACTAC
1 ACATTCTCTAGTAAGACTAC ATATACA TGGG ATTCT CTAGT
ACTAGCACAGAGTAATTTTA TATATGT ACCC TGAGA GATCA
CCCATGTATAT -- ATTTTAA-- CAC --------
GAM19916 16652 ATATACAGATAAATGAGAAG A TAAA AGT C TC ATCAA
5 TTTCGATTCTGCATCAAGCA ATAT CAGA TGAGA TT GAT TGC
TTATTCAATCTCACCTTCTG TATA GTCT ACTCT AA TTA ACG
ATAT - TCC- --- C TT -----
GAM19916 9376 ATATACATAGATACATTTAC AG CAT- C TATATAAATT
8 ATATTTATATATAAATTTAA ATATACAT ATA TTA ATATTTA
ATGTTTAGTTTATATAAATG TATATGTA TAT GAT TGTAAAT
TATAT AA ATTT T ----------
GAM19917 1498 ATATACATCGCAATTTCTTT ACA - AAT-- - AA GAGAAAA
1 GTACAATAGGTGAGAAAAAT ATAT TC GC TTCT TTGTAC TAGGT
CTGCAGTATAGAAGAATAGA TATA AG CG AAGA GATATG GTCTA
GGCAGAGAAATAT AAG A GAGAT A AC -------
GAM19918 20364 ATATACTTAAAATGTTATTT ACT--- - T AAATT CCCT TATTATTT
1 GATAAATTTGCCCTTCTATT ATAT TAAA ATGTTAT TGAT TG TC
ATTTGATCCCCAGTCACATA TATA ATTT TATAATA ACTG AC AG
ATATATTTATGCCTGATAT GTCCGT A C ----- CCCT --------
GAM19921 14452 ATATATACTTTTATATATGT CT A A TAAATATAT
4 GTAAATATTAAATATATATG ATATATA TTTATAT TGTGT AATAT
TTCACATAAATATAAATTAT TATATAT AAATATA ATACA TTGTA
ATAT T- A C ---------
GAM19923 20562 ATATATGCATGTGTATACAC CA TATAC C CATAAA
7 ACACGCACATAAATGCATGT ATATATG TGTG ACACA GCA
GTATTATCACACACATATAT TATATAC ACAC TGTGT CGT
AC TATTA A ------
GAM19925 20777 ATATATTCATTTGCACTTAC T GCAC- GT- - C CTCTA
0 GTGAAACACAAACTTTGCTC ATATAT CATTT TTAC GAAACAC AAA TTTG
TACAAAATTTCGTGTTTCTT TATGTA GTAAA AGTG CTTTGTG TTT AAAC
AGTGATTTTAAAATGCATGT C ATTTT ATT C A -----
AT
GAM19925 3182 ATATATTTTAGAAATTACAG AATTACA TG TTTCTTAG
9 TTGTATCTGTTTCTTAGTAG ATATATTTTAGA GT TATCTG
GTGTGGCCTTTAAAATATGT TGTATAAAATTT CG GTGGAT
C------ GT --------
GAM19926 16616 ATATATTTTTTAATTTTACA TAA CACC A AAGAAA
3 CCTGAACACAAAGAAATGTG ATATATTTTT TTTTA TGA CACA
GTCACTAAAAATAAAAGTAT TATATGAAAA AAAAT ACT GTGT
AT TA- C--- G ------
GAM19934 14317 ATATGATCCACAATATAAAA A CAA AA--- - AAAACTAC
3 ACCAAAAACTACTGTGTGCA ATATG TCCA TATAA AC CA
AATTATACCTTGGACCATAT TATAC AGGT ATATT TG GT
C TCC AAACG T --------
GAM19934 12174 ATATGATGTAGAAATACCTC A AAATA - G- AC CTAA A
GCCACCAAGGAGCCA
7 GGTGGACAACATTGCTAAAA ATATG TGTAG CC TC GTGGACA ATTG AATGG GATT
TGGAGATTGCCACCAAGGAG TGTAT GCATC GG AG CACCTGT TAAC TTACC CTAA

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          CCAATGAATCCCATTAAACA     C     GAAA- T GA      A-    AAA-     -   ----------
          ATATGTCCACAGGATGGAAA ATG
          GCTACGCTATGT


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GAM19938 4050   ATATGTATAATATTATAATA            T           A               ATATTATAA
6           TACATATAATATATATTATA ATATGTATAATAT ATAATATACATAT ATATATATTATATGTATA
          TGTATAATATTATAATATAC TATACATATTATA TATTATATGTATA TATATATAATATACATAT
          ATATAATATATATGATATGT           C           G               ---------
          ATATTATCATATTATACATA
          T
GAM19939 3085   ATATGTCAGGGTACTGTATA     T-  GG      ---  G    GGAA
5           GGTTCTGGAAGGAAGTTATA ATATG  CAG  TACTGTA   TAG TTCT
          ATATAGTAGACTGTTCATGT TGTAC  GTC  ATGATAT   ATT AAGG
                          TT   AG      AAT   G    ----
GAM19946 5643   ATATTCCGGCCTTTACTTCA     C      TACTT     TTTCT-      ATACATATGCA
9           GAGTTTCTTCCAAAGATACA ATATT CGGCCTT     CAGAG     TCCAAAG
          TATGCATTTTGGATCACAGT TGTAA GTTGGAG     GTCTT     AGGTTTT
          TCTGGAGGTTGAAATGT        A      -----     GACACT      -----------
GAM19947 8988   ATATTCTTCTACTGATTCAG      T-      ----      CA  CACGAAA
6           TCAGACACGAAATCCAACTG ATATTC  TCTACTG    ATTCAGT  GA
          AATTACCCGGTAGACTGAAT TATAAG  AGATGGC    TAAGTCA  CT
          AT                  TC       CCAT      AC -------
GAM19949 9642   ATATTGATTTCTGCCCTCAG       TTC  CC    GC     ATAAAGTAAA
1           CTTCAAATAAAGTAAATTGA ATATTGAT   TG  CTCA  TTCAA
          AATGGGAACAATATCAATAT TATAACTA   AC  GGGT  AAGTT
                          TA-  AA    A-    ----------
GAM19955 5746   ATATTTGTGATATTTCTGGC       GA    TC   CC-    AA-     AG     C    TAT
5           CGATGAAGAATTGAGAGTCT ATATTTGT  TATT  TGG   GATG   GAATTG  AGTCTG TTAT
          GCTTATTATGTAATAGATTG TATGAATA  ATAA  ACC   TTGT   TTTGAT  TTAGAT AATG
          GTAGTTTAAATGTTTTTCCA       A-   GA   TTT    AAA     GG     -    ---
          AGAATAAATAAGTAT
GAM19958 20375  ATATTTTTCAAAAATAAAAC         AAAATAA    G --   C   TT  CA--     ACATGAAA
2           TGCCATATCCCATTGCCAAC ATATTTTTCA      AACT CC  ATAT CCA  GC    ACTTT
          TTTACATGAAAAAGGTATAT TATAAAAAGT      TTGA GG  TATA GGT  TG    TGGAA
          GTTCTGGTATATTAGGAAGT         AGTAA--    A  AT    T   CT  TATA    --------
          TAATGATGAAAAATAT
GAM19958 21157  ATATTTTTCTAGAAAGAACA      TTCT     AACATA       TTAAAAT
5           TATTTGGCATTTTAAAATAA ATATTT    AGAAAG     TTTGGCATT
          TGTTAAAAACAGCTTTCTCA TGTAAA    TCTTTC     AAATTGTAA
          AATGT                 C---      GACAA-       -------
GAM19962 19121  ATCAACATATCCTGATTCGA      ATA   TG TTCGAA-   G   ATT    ACTC
3           ATGCGAAGATTTCTAACTCT ATCAAC   TCC  A      TGC AAG   TCTA
          AGACACTTGCAGTAACATTT TAGTTG   AGG  T      ACG TTC   AGAT
          GGGAAGTTGAT             A--   GT TACAATG   -   AC-    ----
GAM19962 22265  ATCAACGATTGATGCTCCTT    AC  -----    C   TCT   TTTCTAC  TG    TCAAA
8           CTTGATTTCTACTTTGCGGT ATCA  GAT    TGATG TCCT   TGA      TT  CGGTG
          GTCAAACATCGTGAATACCT TAGT  CTA    ACTAC AGGA   ACT      AA  GCTAC
          CAAGGATCATCATATCTATC    CC   TCTAT    T   ---   CCAT---  GT    -----
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CCTGAT
GAM19963 18681 ATCAACTGGAAAGCAAGCAG GGAA AGC -- AGAACTAAATAAACTAC
3 TCTGCAGAACTAAATAAACT ATCAACT AGCA AGTCT GC
ACGCCAGGATTATGCTAGGT TGGTTGG TCGT TTAGG CG
TGGT A--- A-- AC ----------
GAM19964 1472 ATCAAGTCAGAGAGACAAAA TC CAAAATA T A GTAA
4 TATTTTTCAGAGGGTAACTT ATCAAG AGAGAGA TT TTC GAGG
CAGAACAATCTCTCTTCCTT TGGTTC TCTCTCT AA AAG CTTC
GGT CT ------- C A ----
GAM19965 20315 ATCAATGAGATCCGTCAGAT ATG G AGATGT G- ATCAAAA
5 GTCTGGGGCGCAGATCAAAA ATCA AGATCC TC CTGGG CGCAG
TTGCGAACCCAGTGGAAGGA TAGT TCTAGG AG GACCC GCGTT
TCTACTGAT CA- A GT---- AA -------
GAM19965 20075 ATCAATGATTATGTGGCAAA A - G AA AAA A ------- ATTGTGGA
8 GCAAACGAAGGGCAAGATTG ATCA TGATTATG T GCA GC CGA GG GCAAG
TGGACTTGCTTAAGAACCTC TGGT ACTAGTGC G CGT CG GCT CC CGTTC
GATAGCAATGCGGTCGTGAT - T G AA ATA - AAGAATT --------
CATGGT
GAM19966 753 ATCAATGTAGAACTCAGCCT A- AG -- T GGAAAGAAAAAA
3 TCTTGGAAAGAAAAAAAAGA ATCA TGT AACTC AGCCT CTT
GGCTCCGGGTTGACAAATGG TGGT ACA TTGGG TCGGA GAA
T AA G- CC - ----------
GAM19967 1048 ATCAATTTCTTCAAATAGCT AT- C AG ------- TACA ATAAT
0 TGCTTACATGATAATCAATT ATCA TTCTT AAAT CTT GCT TG
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GGAATAGTGAT GAT - CT TACCAAC TTA- -----
GAM19974 21305 ATCAGAACCGCGGGCCTAGA AACCG C C TA - GTTT
8 CTTGTAGCGGAAGTGTTTAT ATCAG CGGG CTAGA TTG GCG GAAGT
TTCACGCCGGTTTTAGTCCC TGGTC GCCC GATTT GGC CGC CTTTA
GACAACTGGT AACA- T T -- A ----
GAM19981 12398 ATCAGTCTTATCACCTTTCT AT CTT T TTTC- TTCATT
1 CTTGGTTTCCATTCATTTGT ATCAGTCTT CAC TCTCT GG CA
CTCTCCAGAGAGTGGGAAGG TAGTCGGAA GTG AGAGA CC GT
CTGAT GG --- - TCTCT ------
GAM19982 8850 ATCAGTTTCTTTTGAAGGTG - TTC TGA TTAAA GCTTCCATG
6 AGTAAAATTAAACTCTGTGC ATCA GT TTTTGAAGG GTAAAA CTCTGT
TTCCATGACAGGGGTTTTTT TGGT CA AAAATTTCC TATTTT GGGACA
ATACCCCTTTAAAAAATACT T TAA CCA TTG-- ---------
TGGT
GAM19984 9384 ATCATATGAGTTCAGGTGTG ATA T TG GA TTTCACTGGT
3 GAGTTTTTCACTGGTGGCAT ATC TGAGT CAGG TG GTT
CATGTCTGTGCTCAATAGAT TAG ACTCG GTCT AC CGG
ATA T GT TA ----------
GAM19984 4462 ATCATCAAGGGGGTAAAAAC - TAAAAACGAGT GA G ------ AACGGATTACAA
8 GAGTCCTGGACCTTGTCTTG ATCATC AAGGGGG CCTG CCTT TC TTGGGGAG
GGGAGAACGGATTACAACTT TAGTGG TTCTTCC GGAC GGAA AG AACCCTTC
CCCAATTGCTTGAAAAGGGT G ---------- TG A TTCGTT ----------
CAGGCCTTCTTGGGTGAT
GAM19985 6483 ATCATCATAATAGACCAGTT A CCAG CC GGAGTCCTAA
3 AACCCAGGAGTCCTAATGTT ATCATCATAAT GA TTAA CA

```
          TTAAAACATCATTGTGGTGA TAGTGGTGTTA CT   AATT  GT
          T                    - ACAA   TT ----------
GAM19985 19111  ATCATCATTTAGTTTTCTAA     ATTT     TAACCCTT-     TTC
8          CCCTTCTTTGATTCTTAAAG ATCATC   AGTTTTC       CTTTGA
          TTTCAAAATGGAGACTCATG TAGTAG   TCAGAGG       GAAATT
          GATGAT               GTAC     TAAAACTTT     ---
GAM19992 20218  ATCATTTTTAAACTTTGTTT         ACT-    TAT-     ---   AAATG
8          ATTTGTAGATTAAAATGTAA ATCATTTTTAA   TTGTT   TTGTAG   ATTA
          TGCATTACAATTTTAACAAT TAGTAAAAATT   AACAA   AACATT   TAAT
          CACTTAAAAATGAT             CACT    TTTT     ACG   -----
GAM19993 9302   ATCCAAATGAAATTCGGTCC    AA--  AAA  ---  CCT   TCAATTTAT
5          TTGGGTCAATTTATTCCATT ATCC   ATG  TTC  GGT  TGGG
          ACCAAAGAACAGCATAGTAG TAGG   TAC  AAG  CCA  ACCT
          GAT                ATGA  GAC  AAA  TT-  ---------
GAM19994 5518   ATCCACACTGCCCAAATTTC   CAC    CCAA---    CAC  A  TCAA
6          CACGCACCTCAAGGCGCCCA ATC   ACTGC      ATTTC   GC CC
          GAGATCACGCACGCGGTACG TAG   TGGCG      TAGAG   CG GG
          AT               CA-    CACGCAC    ACC  C  ----
GAM19995 19909  ATCCACTTTATGCAAAGGGA   -    -  G  AA   AAGATAA     GGGA
9          AGATAAACTCTTGGGAGAGA ATC CACTT TAT CA  GGG      ACTCTT
          GTGGGGGACCCGTGGATACA TAG GTGAA ATA GT  CCC      TGAGAG
          AGTGAGAT           A    C   G  G-   AGGGGG-     ----
GAM19997 1085   ATCCAGCAATTTTCCTGCTG    AG-   -------     GC----    ATTT
4          GGTATTTACCCAAAAGAAAG ATCC   CAAT      TTTCCT     TGGGT
          GAAATCACTATATTGAAGGG TAGG   GTTA      AAAGGA     ACCCA
          AT                GAA    TATCACT     AAGAAA     ----
GAM20000 5581   ATCCATCGGTTCGCCAGATA    A  GG     ----  -   C   A   TACAACTTTATCCAAC
5          GTCTTTAGCTTACAACTTTA ATCC TC  TTCGCC    AGA TAGT TTT GCT
          TCCAACGGCAAATACTATTC TGGG AG  AGGCGG    TCT ATCA AAA CGG
          TATTAGGCGGAAAGAAGGGT    A  AA     ATTA  T    T   -  ----------------
GAM20001 16676  ATCCCAATACTGGGAGGCCG     AA   --      G    A  CA     A--    CA  AGTTCGAGA
5          AGGCAGGCAGATCACAAGGT ATCCC  TACT  GGGAGGCC AGGC GG  GATCAC   AGGT  GG

          CAGGAGTTCGAGACCAGCCT TAGGG  GTGA  TCCTCCGG TCCG CC  TTAGTG   TCCG  CC
          CAAGTGATTCCCCCGCCTGG     CG    AA      G    C  CC     AAC    A-  ---------
          GCCTCCTAAAGTGGCGGGAT
GAM20006 4121   ATCCCTGAGAGACGTGTGCA         GAC     ---     AAAC   GG   TTCT
0          TGGAAAACGTTGGAGCTTCT ATCCCTGAGA   GTGTGC   ATGGA    GTT  AGC
          GTTGAGATAATCTTCATTAG TAGGGATTCT   TATATG   TACTT    TAG  TTG
          GTATATATCTTAGGGAT           A--     GAT    CTAA   AG   ----
GAM20007 8129   ATCCGCCCTGATCTCTCAGT       --  T--  C    GCAC  CCAA  T  ACTTT
1          GCACCCCCAAGGTGGACTTT ATCCGCCC  TGA   CT TCAGT    CC    GG GG
          CCCCAGGACCAGCTGACAGC TAGGCGGG  ACT   GA AGTCG    GG    CC CC
          ACTCACTGGGCGGAT           TC   CAC  C    ACCA  A---  -  -----
GAM20013 12235  ATCCTGGCCCATCGTGCTGC     - -    GT-    CT   CCA    T    CCA   GAATG
7          TGCCCCACGGTTCGGTACCA ATCCTG GC CCATC   GCTG  GCC   CGGT CGGTA   CAC
          CACGAATGGTGCGCTGCCGG TGGGAC CG GGTAG   CGAC  CGG   GCCG GCCGT   GTG
          CCGCGGCTTCAGCCTGGATG      T  A    GTC    TT   C--   -    CGC   -----
          GAGCTCAGGGT
GAM20014 8928   ATCCTGGCTGGAATTCGTGT      G    AAT   TG      T  CG     T   ACG
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0 AGTGCTTCACGTGGCATGTC ATCCTG CTGG TCG TAGTGCT CA TGGCA GTC
ACGGACTTGCCGTCTGGGCA TGGGAC GGCC GGT GTCACGG GT GCCGT CAG
CTGTGTGGCCGGCAGGGT - --- GT - CT T ---
GAM20016 20869 ATCCTTATTGGGCAAGCTGG - TTG AA G GAA C GGAAATAACTGAA - CTTG
0 AGTTTTGAAGTGACAGAGGA ATC CTTA GGC GCTG AGTTTT GTGA AGA AGAT GA
AATAACTGAAAGATGACTTG TAG GGAT TTG CGAC TCAAAA TACT TCT TCTA CT
TCAATCTGGAACAAAGTCTA T CAA GA G ATG A GAAACAAGG---- A ----
TCATGTAAAAACTGCAGCAG
GTTAACTAGGTGAT
GAM20016 8323 ATCCTTCTTTTTCTCTTTTG TTTTC CC A AGCAAG
8 CCCACAATTTAAGCAAGTAG ATCCTTCT TCTTTTGC ACA TTTA
ATGTGCAAAAGAAATGGAAG TAGGAAGG AGAAAACG TGT AGAT
GAT TAA-- -- - ------
GAM20016 3307 ATCCTTCTTTTTCTCTTTTG TTTTC CC A AGCAAG
9 CCCACAATTTAAGCAAGTAG ATCCTTCT TCTTTTGC ACA TTTA
ATGTGCAGAAGAAATGGAAG TAGGAAGG AGAAGACG TGT AGAT
GAT TAA-- -- - ------
GAM20018 20356 ATCCTTTTGGGCATGTTCCC CATGTT - TT CTTAGCTC
0 CATTTTTTGCTTAGCTCCAA ATCCTTTTGGG CCC CATT TTG
TTAGTGTGGGCCTAACCCAA TAGGGGAACCC GGG GTGA AAC
GGGGAT AATCC- T TT --------
GAM20018 18476 ATCCTTTTTAAATGTAATGT AAATG G G TG GAAGG
1 GGCAGATTGTGAAGGGTGGT ATCCTTTTT TAAT TGGCA AT T
TGCTAATTAGAGAAGAAGGA TAGGAAGAA ATTA ATCGT TG G
T GAG-- - - GT -----
GAM20019 19948 ATCGCAGACTTTCTCAACTC C CT TC A- CG--- ACTCAGC
4 GTTCGCCTACTCAGCAGGAA ATCG AGA T TCA CTCGTT CCT
GACAATGAGGATGAAGACCT TAGT TTT A AGT GAGTAA GGA
TTATGAT A CC GA AG CAGAA -------
GAM20020 10227 ATCGGAGAGCAGGTAGTACT GA TA -- - C CAT GATG
4 GGCAGGACATGGGGATGCCC ATCG GAGCAGG GT AC TGG AGGA GGG
TCCTCCGCGTGAACAGTCTG TAGC CTCGTCT CA TG GCC TCCT CCC
CTCCACGAT AC GA AG C - --- ----
GAM20020 14379 ATCGGGGAAGGGTCAGGGCT G G G TTCTGTGGA AACG C ACCA
8 TCTGTGGAACTTGGAACGTG ATC GGGAA GGTCAG GC ACTTGG TGC AGG
CCAGGACCACCTGCAAAAGC TAG CTCTT CTAGTT CG TGGACC ACG TCC
CAGGTGCGTTGATCATTCTC A A G ---------- GAAA - ----
AGAT
GAM20020 19863 ATCGGGGTCATTGCTATTCC ATT ATTC C A TTCAACCC
9 CCTCTGATATTCAACCCTAT ATCGGGGTC GCT CC TCTG TA
AGAAGGAGCCTGGACTCTGA TAGTCTCAG CGA GG AGAT AT
T GTC ---- A - --------
GAM20021 8910 ATCGTCAATGAAAGCCCTGG AA A T TCT A C - TTC -
1 GCTGCTCTCCAGGATGTCAC ATCGTC TGAA GCCCTGGGC GC CCAGG TGTCAC ATTGG GGG
GGCTCGTCC GG
CATTGGGGGTTCGGCTCGTC TAGCGG GCTT CGGGGCCTG CG GGTCC GCGGTG TGGCC CCT
TTGGGCGGG CC
CGGTGGCCGGGGCGGGTTTC -- - - CC- - - A --- G
CACCGGTGTGGCGCCTGGCC TGG
GCGTCCGGGGCTTCGGGCGA

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          T
                    ---
GAM20023 8545   ATCTAAGGGGGGTGGGAAGG     A        AAG  T  C    CCAT
1           TTAACAAAACCATTTTTTTT ATCTA GGGGGGTGGG   GT AA AAAA
          ACATGTCCATCCCCCTGGGT TGGGT CCCCCTACCT   CA TT TTTT
                          -        GTA  -  T    ----
GAM20023 20651  ATCTAAGTTAACAGTGTGCT     A---    ACAG   GC   GCCACCAATGAAAATA
3           GTGCCACCAATGAAAATAAC ATCTA    GTTA    TGT  TGT
          AAAACAAAGTGACAAAATGG TAGGT    CAGT    ACA  ACA
          AT                 AAAA    GAA-   AA  ----------------
GAM20023 16855  ATCTAATTAATATATTCTGA      TTAATATA     A   ACATAA     -   GATAAAAGTA
7           CTAACATAATCATCCAAAGA ATCTAA       TTCTG CTA      TCATC CAAA
          TAAAAGTATTTGTGATGGCA TGGATT       AAGAC GGT      GGTAG GTTT
          AATGGACAGAACAATCATTT      TACTAAC-     A   AAAC--     T   ----------
          AGGT
GAM20029 1101   ATCTATTGTCCAGTAGTCAC      -    AG-  GTCACAT     CAA   AATTGCAA
4           ATGGGCTCAATCTAATTGCA ATCTAT TGTCC   TA      GGGCT   TCT
          AAGAGAAGCCCCAAAATATA TAGGTG ACAGG   AT      CCCGA   AGA
          AGAGGACATGTGGAT          T    AGA  ATAAAAC    AG-  --------
GAM20029 6244   ATCTATTTGGTGAAATATTC      TT    AAATATTCA    CA     ATTTTC
7           ATTGTCATTGTGATTTTCCA ATCTAT  GGTG        TTGT  TTGTG
          CAAGTATAAGTTCTTAAGTA TAGATA  TCAT        AATA  AACAC
          CTTTATAGAT             TT    GAATTCTTG    TG     ------
GAM20030 8318   ATCTCAAGACTAATTTTGGC     AAG   AAT    G     CG   GGGGAG
3           GGTGCGGCTGGGGAGGGCAT ATCTC   ACT   TTTG CGGTG  GCT
          ATCGGTAAACAGAGTAGGGG TAGGG   TGA   AAAT GCTAT  CGG
          AT                 GA-   GAC    G     A-   ------
GAM20032 3434   ATCTCAGCCGCCCTCTGCCT      C-    -    GCCT--  TG  TTT  GT-   TTTTCT
0           CTTGGGTTTGCGTGGTTTTT ATCTCAG  CGCC CTCT     CT  GG   GC   GGT
          CTGCCTCAGCCTCCTGAGTA TAGAGTT  GTGG GGGA     GA  CC   CG   CCG
          CCTAAGGGAGGTGTCTTGAG       CT    A    ATCCAT  GT  TC-  ACT   ------
          AT
GAM20034 6387   ATCTCCCAAACTCATTTCTT        -    TTTC    TC--     TCACCTCC
3           CATCTACAGTCACCTCCCTG ATCTCCCAA ACTCA    TTCA    TACAG
          TATCCCTGAACACCTGGGTA TAGAGGGTT TGGGT    AAGT    ATGTC
          TTGGGAGAT                A    CCAC    CCCT    --------
GAM20035 20961  ATCTCCTACGCCTGCTAGTC     CC  C    -    TCCTGCATCG    GAGC
7           CTGCATCGAACAGAGCTGTT ATCT  TA GCCT GCTAG         AACA
          ACCCCTTCTAGTGAGGCTAA TAGA  AT CGGA TGATC         TTGT
          AGAT               A-  -    G     TTCCCCA---    ----
GAM20036 6229   ATCTCCTCTTTTTTTTTTTT     CTC     TTT       G  AGAA-  TT   CT  CGC
1           TTGGAGACAGAATCTTGCCC ATCTC   TTTTT   TTTTTTGGA AC     TC  GCC  GG
          TGGCGCCCGGCTTGAGCACC TAGAG   AAAAA   AAAAAACCT TG     AG  CGG  CC
          GTGTCCAAAAAATATAAAAA     TAT     TAT       G  CCACG  TT   --  ---
          TATGAGAT
GAM20038 21558  ATCTCTGACTTATTGATTAT      G   TATT  TTA    C   TCAAG
5           GGAACCTGTCAAGTAGTTTT ATCTCT ACT    GA   TGGAA CTG
          CAACTCTCCCAGTGAGGGAT TAGGGA TGA    CT   ACTTT GAT
                           G   CCCT  CA-     T   -----
GAM20040 14333  ATCTCTTCTATAATGCAGTG     TTCTATAAT  A     TT-  CAGA  AAAT
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4          TTGTTGCCAGACCAAATGGA ATCTC       GC GTGTTG  GC   CC
           GCTTCCGATACCGCTCACGA TAGAG       CG CATAGC  CG   GG
           GAT                CACT----- C    CTT  A---  ----
GAM20046 1313  ATCTGGAGATGCAAGTTAAC       AT   G  AACCGAA  ----------  -  CAAGCCATCA
3          CGAAGGTGCTCTGCCAAGCC ATCTGGAG  GCAA TT     GGTG       CTC TGC
           ATCAGCGTGAGAAAAAAAAA TAGACCTC  CGTT AA     CCAC       GAG GCG
           CCACCAGAAGTTGCCTCCAG       --   G  GA-----   CAAAAAAAAA  T  ----------
           AT
GAM20047 18768  ATCTGGGCCAGGCTGGGCCA    --   A       - G   G-  GGTCACGA
3          GGCCTGCAGGGTCACGACTG ATCTG  GGCC GGCTGGGCC A GCCT  CAG
           GAGGGTGTGGGCCCGGCCAG TAGAC  TCGG CCGGCCCGG T TGGG  GTC
           GCTGGCAGAT           GG   A      G G   AG  --------
GAM20055 2729  ATCTTCCAGTTGTTCATAGT       TT   TA   ATTGT   CC  GATA
1          CAGATTGTCATGCCTTGATA ATCTTCCAG  GTTCA  GTCAG   CATG  TT
           AGTTCATGTCCTGACTGGGC TAGAGGGTC  CGGGT  CAGTC   GTAC  GA
           CTGGGAGAT                --   --   CT---   TT  ----
GAM20066 18376  ATGAAAATCTTTCTGATGTG    AAATC        G   -  CAGC
3          TGTCTATAAGCAGCCTTGAT ATGA    TTTCTGATGTGT TCTAT AAG
           GGGATATGTTAGAAGTGTCA TACT    GAAGATTGTATA GGGTA TTC
           T                GT---        -   G  ----
GAM20069 20217  ATGAACAAGTATGCTTGGGG   AA      TT------   GT   TGCT
9          AGTCTTCTTGCTGGAGGGTT ATG  CAAGTATGC      GGGGA  CTTCT
           CCCTTCACTGTTGCGTGCTT TAC  GTTCGTGCG      TCCCT  GGAGG
           GACCAT            CA      TTGTCACT   TG   ----
GAM20070 1759  ATGAACATAATTTATTTGTA   A  AAT     TAAT       CCCAAAGTAGCA
3          ATTGGAACAAAGCCCCAAAG ATGA CAT  TTATTTG   TGGAACAAAGC
           TAGCAGTTTTGTTCTACCAG TACT GTA  AATGGAC   ATCTTGTTTTG
           GTAATTAATGCTCAT       C  ATT    C---        ----------
GAM20072 18405  ATGAAGAACCACAGAATGGC      CCA  A-  CTGC   TTCCT
3          TGCAGATGTTCCTTGTCTTT ATGAAGAA  CAG  ATGG   AGATG
           TCCATGACTGACATTTTTCA TACTTTTT  GTC  TACC   TCTGT
           T                  ACA  AG   TTT-   -----
GAM20076 2911  ATGAAGTCATATTGTGATGG   --    A  G   -- AG  AAAGTTG
4          TAGGCAAAGTTGGTTCACTT ATGA  AGTCAT TT TGATG  GT  GC
           CATCAGAAGATGACTATTCA TACT  TCAGTA AA ACTAC  CA  TG
           T                TA    G  G   TT  CT  -------
GAM20079 6440  ATGAATGCTAGGGGGATCCC   AA-  T    ATCCC--     AT-  CGATA
9          GCGTTAGATGACCGATAGTC ATG  TGC AGGGGG     GCGTTAG  GAC
           TAATTAATGCAAAACCCCCC TAC  ACG TCCCCC     CGTAATT  CTG
           CCTTGCACCCCAT        CCC  T    CCCAAAA     AAT  -----
GAM20080 19230  ATGAATTACTTGGTAAATAT      ACTTGG     TT   TATTT  TTTATTT
6          TTTATAGTATTTGGTTTATT ATGAATT    TAAATAT  TATAG   GG
           TCCCTTTATATTATATTTGA TACTTAA    GTTTATA  ATATT   CC
           ATTCAT               ------     TT   TC---  -------
GAM20089 19359  ATGACTGGGCAGATTTTCCC     ---- G  ATT   CTGT  A-   GATTGTTG
0          TGTGGAAAAGGTGATTGTTG ATGACT   GG CAG  TTCC   GGA  AAGGT
           ACCTTGATCTTGGAGCTGGC TACTGA   CC GTC  GAGG   TCT  TTCCA
           CTTAAAGTCAT           AATT  G  ---   T---  AG   --------
GAM20089 19047  ATGACTGTTGGAGAGGAGAA   A  GT    G    AAAA  AAAACTGCAA
5          TAAAATCAAAACTGCAAGAA ATG CT  TGGAGA GAGAAT   TC
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CCCATTTTTGTCTTCATAAG TAC GA ACTTCT TTTTTA AG
CAT - AT G CCCA ----------
GAM20098 9072 ATGAGGCTCCCAATGTTGAC TC AA T C - AG--- TT AAACAA
6 GTTGGCCAGGGCCTTTGCAA ATGAGGC CC TGT GA GTTG GCC GGCCT GC
ACAAGCCAGGCCAAAAAGGC TATTTCG GG ACA TT CAAC CGG CCGGA CG
TCAACATTTACACCGGCTGC TC CC T A T AAAAA C- ------
TTTAT
GAM20108 16486 ATGATCCATCTGTGTAGTTT CCATC TTT C CA CCAGGTTTTAAAT
6 CTGAACAGTCAGCGATTCCA ATGAT TGTGTAG CTGAA AGT GCGATT
GGTTTTAAATAGTTGTAAAT TACTA ACACATC GACTT TTA TGTTGA
TTTCAGTTTCTACACACTTT TTTC- TTT - AA ----------
ATCAT
GAM20109 14549 ATGATGAACAGTATGCTTGG G AA TT----- GT TGCT
6 GAGTCTTCTGCTGGAGGTTC AT ATG CAGTATGC GGGA CTTC
CTTCACTGTGCGTGCTGACC TG TAC GTCGTGCG TCCT GAGG
ATGGT G CA TGTCACT TG ----
GAM20111 5896 ATGATGCGCGTCTTCTTGTT GA - T T CC G - TTG- CGACT
0 GTCCCGAGCCGCGTTGCCCG AT TGC GCG CTTC TGTTGTC GA CCGC G CCCGG
GCGACTCCGGGATCTCGGCG TG ACG CGC GAAG ATAATAG CT GGCG C GGGCC
GTCAGATAATACGAAGCCGC TC A C C A- - G TCTA -----
AGCACTGT
GAM20114 18140 ATGATTCAATTATCTCCACC CAATTATCTCCACC ------ TTGA-- GGG ATTAC
1 TGGCCCCACCCTTGACACCT ATGATT TGGC CCCACCC CACCT GATT
GGGGATTATTACAATTAAAG TACTAA ACCG GGGTGGG GTGGA TTAA
GTGAAATTTGGGTGGGAACA ---------- ACACAA TTTAAA AA- -----
CAGCCAAATCAT
GAM20119 19234 ATGCAATTATCTAATACAGT TT AT----- -- CTACCTACCT
0 AGAATCTACCTACCTATTCA ATGCAA ATCTA ACAGTA GAAT
ATGCTGTTTAATTATGGATT TACGTT TAGGT TGTCGT CTTA
TGCAT -- ATTAATT AA ----------
GAM20124 9670 ATGCAGTATTTGGTTTCCTG ATT TTT TGT- T TAATTT
1 TTCCTGTGTTAATTTGCTTA ATGCAGT TGG CC TCCTG GT
GGATAATGGCCTCCAGCTGC TACGTCG ACC GG AGGAT CG
AT --- TCC TAAT T ------
GAM20129 9795 ATGCCACCAAGGCCCGGGCC A- A- CGGGC T GA TGGAG
4 CATGGGCTGGAGGTGGAGCC ATGCC CC AGGCC CCA GGGCTG GG
CTCAGCCCTGGAACAAGGCT TACGG GG TTCGG GGT CCCGAC CC
TCAGGCAGGCAT AC AC AACAA - TC -----
GAM20131 9215 ATGCCCGTGAGCGAGCTGAC - GA A AC CAA GGGCTA
7 TGACAAGCTGGGGCTACAGC ATGCC CGT GCG GCTG TGA GCTG
ACTTACGCAGCCGCACGTGG TATGG GCA CGC CGAC ATT CGAC
TAT T -- - GC CA- ------
GAM20133 5836 ATGCCTATAGTTCCTTGAAA - AT -------- A C--- AGACA
1 AATACTTCATCATAGACAGT ATGC CT AGT TCCTTGAA AATACTT ATCAT
GATATATGGGTATTATTTAA TACG GA TCA GGGAATTT TTATGGG TAGTG
GGGGAACCACAACTCGAGTG T GC ACACCAAG A TATA -----
CAT
GAM20136 6417 ATGCCTTAACATGTGGAGTG CTTA T GTACCGT CTCACTA
0 TACCGTGGGGCCTCACTAGC ATGC ACATG GGAGT GGGGC
CTCTAACTCCCTGTGTCTGC TACG TGTGT CCTCA CTCCG

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          AT                TC--    C    AT-----    -------
GAM20139 3221  ATGCTACACAACCAGAAAGT      ACAAC     -----      T  A  GAAAATGA
3          AAGGTGTTCTACTTGAAAAT ATGCTAC    CAGAAAG    TAAGGTG TCT CTT
           GAAAGGAGATTATTTTAGGT TACGGTG    GTCTTTC    ATTTTAT AGA GAA
           ATCTTTCTGAAGTGGCAT       AA---     TATGG     T  G  --------
GAM20139 16538  ATGCTACACAACCAGAAAGT      ACAAC     -----      T  A   AAAATGAA
4          AAGGTGTTCTACTTGAAAAT ATGCTAC    CAGAAAG    TAAGGTG TCT CTTG
           GAACAGGAGATTATTTTAGG TACGGTG    GTCTTTC    ATTTTAT AGA GGAC
           TATCTTTCTGAAGTGGCAT       AA---     TATGG     T  -  --------
GAM20151 12577  ATGCTTTTAGATTAAAATGA         -    ATG-  G  ACTTAAAA
0          AGGTGACTTAAAACAGCTTA ATGCTTTTAGA TTAAA    AAG TG
           AAGTTTAGTTTTAAAAGTGT TGTGAAAATTT GATTT    TTC AC
                            T    GAAA  G  --------
GAM20155 706   ATGGAATCCTGATATGTTCC     ATCC-    T  --  C    AAAACCTTCTAGCCC
2          CATGCAAAAACCTTCTAGCC ATGGA    TGATA GT  TCC ATGCA
           CTGCATTGGACGGCTTATTA TACCT    ATTAT CG  AGG TACGT
           CTCCCTCCAT            CCCTC    T  GC  T    ---------------
GAM20155 1500  ATGGACAAATACACAGAGGT     CAAA   CAGA---- T   A    C  ACT
9          CTCAAGACCACGGACTCCTG ATGGA    TACA       GG CTCA GACCA GG
           GTCTGAGCCATAAAGACTGT TGCCT    ATGT       CC GAGT CTGGT CC
           AACTCCGT              CA--   CAGAAATA  -   -    -  ---
GAM20156 21235  ATGGACAGCAGGCTAAAAGG      --    ---   AA  CACAC  TAACA
8          GCACACTGTAACACACCCCC ATGGACA  GCAGG   CTAA  GGG    TG
           ACTTAGGCTCCTGCACTGTC TACCTGT  CGTCC   GATT  CCC    AC
           CAT                   CA    TCG   CA  CC---  -----
GAM20157 6458  ATGGACAGGGATGATAATTG   GAC   A  -  A   GCCTC  A  CAA
0          GGCCTCCAAGAACAATTCAT ATG   AGGG TG ATA TTGG    CA GAA
           GAAAACCGAATATACAGCCT TAC   TTCC AC TAT AGCC    GT CTT
           TAACAT              AA-   G  A  A   AAAA-  A  ---
GAM20159 19280  ATGGAGAGTTCAAAGACCTA       TT  AA  CCTAAG     TGACT
6          AGCCTTGATGACTTTAAGGG ATGGAGAG  CA  GA     CCTTGA
           AAATATTGGTGCTTTCTCTA TATCTCTT  GT  TT     GGAATT
           T                   TC  GG  ATAAAG     -----
GAM20175 21610  ATGGGAACACCATGAAGTGT   GG   -  -  AG     A  AACATTC
1          GTTACAAACATTCTGAAACA ATG  AACA CCA TGA  TGTGTT CA
           TAAGTTACTGGCTGTTTTCA TAC  TTGT GGT ATT  ATACAA GT
           T                 TT   C  C  GA     A  -------
GAM20175 9542   ATGGGACACCTTGAACCCTG   -   A-     -  -  TG  GA   G  -  AGGGA
8          CGGAATAGAGCGAGGGATGA ATG GGAC  CCTTGA AC CC  CG  ATA AG CG
           CTGTATGTGTGGGTGTGTCG TGC CCTG  GGAGCT TG GG  GT  TAT TC GT
           AGGAGGTCCACGT         A   GA     G  T  GT  G-  G  A  -----
GAM20176 21601  ATGGGACCCTAGGGGCGCAC     A-    G  GC----  CTA   A  TG-  C    AGCGAA
1          TATGGAGCTGGACGGGGAGC ATGGG  CCCTA GG     GCA   TGG GC   GA GGGG
           GAACCCCTCAATGCCCAATG TACCC  GGGAT TC     CGT   ACC CG   CT CCCC
           CCTGACACTGTAGGGCACCC     AC    G  ACAGTC   A--   -  TAA  -   ------
           AT
GAM20179 3951   ATGGGATTCAAAATACCTTT  TG    CAAAATACCTTTT      A       CAA     TTCTGTAAACT
9          TAAAAAGTATTCTAGCACAA A  GGATT          AAAAAGT TTCTAGCA   GATTT
           GATTTTTCTGTAAACTAGAT T  TCTAA          TTTTTCA AAGGTTGT   TTAGA
           TATGTTGGAAACTTTTTTCT  GT    ATCT---------      -      A--    -----------
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AAATCTTGT
GAM20181 8560 ATGGGCCTCTGTTCTAAACT TCTG A AAGT--- AATG
1 GAAGTTCTTTTAATGAGAAG ATGGGCC TTCTAA CTG TCTTTT
ATAGAGAACAGATTAGAAAT TACCCGG AAGATT GAC AGAAGA
ACGGCCCAT CATA A AAGAGAT ----
GAM20186 8275 ATGGGTCGTGACACTGGGCC TG C-- TG G - TTT CT ATGATTCGA
4 TGAGCTTTGTCTACATGATT ATGGGTCG A AC G CCTG AGC GT AC
CGAGTTTACCTGCTGCAGGG TATCCAGT T TG T GGAC TCG CA TG
TTGGTACATTGTGACCTAT GT ACA GT G G TC- TT ---------
GAM20188 4106 ATGGGTTTTTAAAGCATGAG TT CA A ATAATTGTGCTA
7 AATGTGATAATTGTGCTACA ATGGGTTT AAAG TGAGA TGTG
TAATCTTAGACTTTTGAACT TATTCAAG TTTC ATTCT ATAC
TAT T- AG A ----------
GAM20193 14641 ATGGTGACAACATGCTGGAA AA-- G G- G T TCAACAT
4 GCCAAGTGCTCAACATGCCT ATGGTGAC CAT CT GAA CCAAG GC
TGGTTCAGGGGATGGAAAGT TGCCACTG GTA GG CTT GGTTC CG
CACCGT AAAG G GA - - -------
GAM20193 9898 ATGGTGACAACATGCTGGAG AA-- G -- G T TAACAT
5 CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GGA CCAAG GC
GGTCCAAGGGATGGAAAGTC TGCCACTG GTA GG CCT GGTTC CG
ACCGT AAAG G AA G - ------
GAM20193 9436 ATGGTGACAACATGCTGGAG AA-- G G- T TAACAT
6 CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GAGCCAAG GC
GTTCAAGGGATGGAAAGTCA TGCCACTG GTA GG CTTGGTTC CG
CCGT AAAG G AA - ------
GAM20193 6225 ATGGTGACAACATGCTGGAG AA-- G G T TAACAT
7 CCAAGTGCTAACATGCCTTG ATGGTGAC CAT CT GAGCCAAG GC
GTTCAGGGATGGAACGTCAC TGCCACTG GTA GG CTTGGTTC CG
CGT CAAG G A - ------
GAM20193 14544 ATGGTGACAACATGCTGGAG - AA- G G- GCTAACAT
8 CCAAGTGCTAACATGCTTGG ATGGT GAC CAT CT GAGCCAAGT
TTCAAGGGATGGAAGTCAAC TGCCA CTG GTA GG CTTGGTTCG
CGT A AAG G AA --------
GAM20193 9593 ATGGTGACAACATGCTGGAG AA-- G G T TAACCT
9 CCAAGTGCTAACCTGCCTTG ATGGTGAC CAT CTG AGCCAAG GC
GTTCAGGATGGAGAGTCACC TGCCACTG GTA GAC TTGGTTC CG
GT AGAG G - - ------
GAM20194 1615 ATGGTGACAACATGCTGGAG ACAA-- G G C T TAACAT
0 CCCAAGTGCTAACATGCCTT ATGGTG CAT CT GAGCC AAG GC
GGTTCAAGGATGGGAAAGCA TGCCAC GTA GA CTTGG TTC CG
CCGT GAAAGG G A - - ------
GAM20195 20761 ATGGTGATTTCAATCGCAAT ATC-- -- AAATTGATG
0 ATTTTAAATTGATGAGAATG ATGGTGATTTCA GCAA TATTTT
ATTTGTAAACATGAAGTTAC TATCATTGAAGT TGTT GTAAGA
TAT ACAAA TA ---------
GAM20197 9105 ATGGTGTTTTGTGACTTAGA TTTT - TTTTA C TAT C TATT
9 AGTTTTAAGTAGTCGTTCTT ATGGTG GTGAC TTAGAAG AGTAGT GTTCTTA CTAAG ATT
ATATCTAAGCATTTATTAAT TGTCAT CACTG AGTCTTT TCATTA CAAGAAT GGTTT TAA
TTTGGTAAGAACATTACTAT TTT- T GCATA - --- - ----
ACGTTTCTGATGTCACTTTT

ACTGT
GAM20199 12457 ATGGTTCTTACAGACAGAAG GTTCTTAC C AT TT T ATTCTATACCTTC
4 ATCTGGGTTCATTGTTTATT ATG AGA AGAAG CTGGG CAT GTTT
CTATACCTTCAAGCCATGTC TAC TCT TCTTC GACCT GTA CGAA
TCCAGCTTCTATCTTTTCCC ATCCCTTT A -- CT C ----------
TACAT
GAM20202 8578 ATGTAAACTCGCGTCCGTGC AAA- TC T G GCCC A GTGGCCGAA
5 TGCGTGCCCAGAGTAGTGGC ATGT CTCGCG CG GCT CGT AG GTA
CGAATACCTTAACGGGGCTG TACG GAGCGC GT CGG GCA TC CAT
TGCGCGAGGAGAGCAT AGAG GT - G AT-- - ---------
GAM20210 8547 ATGTATATAATATCTCCGGT ATATCTCC- - ACCTA
9 TTATAAAACCTATTTATAAC ATGTATATA GGT TTATAAA
ACTTTTTACATATATGTACA TACATGTAT TCA AATATTT
T ATACATTTT C -----
GAM20213 20419 ATGTATTATTTTAACTAACA TT ACTAA GC- TATACATTTTTTTCAT
0 AAGGCATATTATACATTTTT ATGTA ATTTTA CAAAG ATAT
TTCATATATAAACTTTGGAA TACAT TAGGAT GTTTC TATA
TAGGATTTTACAT TT AAG-- AAA ----------
GAM20215 14513 ATGTCAATCTATAATTTTAA CTA TTTAA TATCCAA C TAAGT
2 CCATTTATCCAAGATTCTAC ATGTCAAT TAAT CCATT GATT TAC
TAAGTGTAAAATTATTTAAT TATAGTTA ATTA GGTAA TTAA ATG
AATGGCTATTAAATTGATAT A-- TC--- TAATTTA A -----
GAM20218 8067 ATGTCCTGTGGGTCAATGTA CC--- TC---- - A CTGTATA
9 TGTATGTGTATATGTCTGTA ATGT TGTGGG AATGTA TGTATGTGT TATGT
TAACATACACATATACAGTA TACA ACACCC TTACAT ACATATACA ATACA
CATTCTCTTTCCCACACATA TATAC TTTCTC G C -------
TACAT
GAM20222 16828 ATGTCTTATTATTAAAGTTA CT AAAGTT TATT AAATAAA
8 CCTATTATTGTTGGAAATAA ATGT TATTATT ACCTAT GTTGG
ACTAATTTGTATGGGTTTAG TACA ATGGTAG TGGGTA TAATC
ATGGTAACAT -- ATT--- TGTT -------
GAM20223 8933 ATGTCTTTCAATGTTATGTA CAATGTT A T A A CC - TTCT
5 GTTTTTAGAGTATAAGTTCC ATGTCTTT ATGT GTT TT GAGTAT AGTT AC AC
ACACTTCTGTAGTTAGATTA TATAGAAA TATA CGA GA TTCATA TTAG TG TG
ATACTTAAGTAGCATATTTC TTTCCTT - T A A AT A ----
CTTTAAAGATAT
GAM20229 21324 ATGTGCCGGCGGAGTATCGT - - AGTATCGTTT - TC ------ AAAC
4 TTGGCTCTTCATATATTTTA ATGTGC CGGC GG GGC TCT ATAT ATTTT
AACAGAATTCACACATATAG TATACG GCCG CC CTG AGA TATA TAAGA
AGACGTCCCAGCCGTGCATA T A ---------- C GA CACACT ----
T
GAM20234 20973 ATGTGTACCATGGCTGAAAA - A T - G AAAAA-- C -- C AGA C CT GGA
4 AAAGAGTCACAAGTGGCTGA ATGT GT CCA GG CT AA GAGTCA AAG TGG TG CA TG
CCATACA
GACACTGCTCCATACAGGAC TACA CA GGT CC GG TT CTCAGT TTC ACC AC GT AC
GGTGTGT

TCATGTGTGGTCATTGCCCA A A - A G CTACTAC A TA C CC- T T- ---
CCCAATCTTATGACTCCATC CTCA
ATCTTGGGACCTGGAACAAC

```
          AT
                    ----
GAM20238 6193   ATGTGTGGCTCAGGCCGGGC   T   CTCA             C     AA     CACT
1           ATGGTGGCTCACGCCTGTAA ATG GTGG   GGCCGGGCATGGTGGCTCA GCCTGT  TCCTAG

          TCCTAGCACTTTGGGACCAC TAT TACC   CCGGTCCGTACCACCGAGT CGGGCA  AGGGTT

          GGGCATGAGCCACCATGCCT   T   ----             A     CC     ----
          GGCCCCATTTAT
GAM20238 21069  ATGTGTGTGTTTATTTACAA       TG T   TTACAAGTA   AAT--   AAGAA
9           GTACTAAATCTGAAGAACAG ATGTGTG  T TAT       CTA     CTG
          TAAAATAGGAAATAGCCGTA TACACAT  A ATG       GAT    GAC
          TATGTACACAT             GT T   CCGATAAAG   AAAAT   -----
GAM20239 8845   ATGTGTTCGTGACACGGATC     TTCG     GGAT-   CT   G    ATCGAG
3           AACCTTTTTGTGCTTATCGA ATGTG    TGACAC    CAAC  TTTT TGCTT
          GGAGCAGAAAATCGTTGTGA TGCAC    GTTGTG    GTTG  AAAA ACGAG
          AAGTGTTGAAGCCACGT       CGAA     AAAGT    CT    G    ------
GAM20244 4530   ATGTTATTGGTATAGTGAAA     ATT   A  G      AG -      TGAACT
0           AGAAGACCAGATTTTGAACT ATGTT   GGT TA TGAAAAGA  A CCAGATTT
          AGATCTGGATTCTCTTTTTA TACGG   TCA AT ATTTTTCT  T GGTCTAGA
          GTAACTCAGGGCAT         GAC   -  G      CT A      ------
GAM20244 20661  ATGTTATTTTGGGCATTTGC     -     -     ---     TTTCTTCCCT
1           AGTTTTCTTCCCTGCTGCAT ATGTT ATTTTG GGCATT   TGCAGT
          GTAATGTCTCAGAATCAACA TACAA TAAGAC CTGTAA   ACGTCG
          T                 C     T     TGT     ----------
GAM20247 6259   ATGTTCCTTGTAGAAAACCT   G        AAACCTATC    TACTCCTTTC
1           ATCTCCATACTCCTTTCTGG AT TTCCTTGTAGA       TCCA
          ATTTTTGTTTATAGGGGAGA TA AGGGGATATTT       AGGT
          T               G         GTTTTT---    ----------
GAM20249 21040  ATGTTGAACTTTCTTCCTTG      AACT   TTCCTTGA  CA      G   AATG
1           AATCAGCGTTAGAGTCAAAT ATGTTG    TTC       AT  GCGTTAGA TCA
          GTGGGTTTAATGTGAATGCT TACAGC    AAG       TA  TGTAATTT GGT
          AAATGAATATGCGACAT        GTAT   TAAATCG-  AG      G   ----
GAM20250 12893  ATGTTGGAAGAATGCATTCT     GG   AAT    TCT     - A    TA  ACCAA
4           TGGGGTGAATTCATAGCACC ATGTT  AAG   GCAT   TGGGGT GA TTCA  GC
          AAGCCTTGGACTCTACTTTA TACAA  TTC   TGTA   ATTTCA CT AGGT  CG
          TTTATGTTACTTAAACAT       A-   AT-    TTT     T  C    TC  -----
GAM20254 8204   ATGTTTCAACTTCTTTAGTT     TCA-----  TTCT       ACCCTGTGCTG
2           CAACCCTGTGCTGTGGACTG ATGTT       AC    TTAGTTCA
          ATCTTGTGCCCAATTAACAT TACAA       TG    AGTCAGGT
                          TTAACCCG  TTCT       -----------
GAM20259 19007  ATGTTTTCATACTGGGTACT      T-    CT---      ACTG    TTT      TGTG
2           ACTGAAATTTTGCAGATGTG ATGTTT  CATA     GGGTACT    AAAT   GCAGATG
          TGCATCTGTTCCATTTAAGG TGTAAG  GTGT     CCCGTGG    TTTA   TGTCTAC
          TGCCCTTAAATGTGTTGAAT      TT    AAATT      AA--   CCT      ----
          GT
GAM20259 1722   ATGTTTTCGATCTTGATGCT       CGA   TGA     -  A-     GCCA
4           ATAGAGAACAGCCATGTTCC ATGTTTT   TCT   TGCTAT AG  GAACA
          CCTGATAGCAAGAAAAAGAC TGCAGAA   AGA   ACGATA TC  CTTGT
          GT                    AA-   ---     G  CC     ----
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GAM20262 8739 ATTAAATAAGATTTGTCTAC A TT C CATCAA TAAAT
8 TAACCATCAAGAATAAATTT ATT AATAAGA TGT TACTAAC GAA
TAACACAGTTAGTAAACATT TGA TTATTTT ACA ATGATTG TTT
TTATTAAGT A -- A ACACAA -----
GAM20264 8404 ATTAACCAGGACGAAGAAGA AA GACGAAGA GAGGAAG G AAA TTTATC
3 GGAGGAAGACGAGGATTAAA ATT CCAG AGAG ACGAG ATT TTTCA
TTTCATTTATCTGGAAAATT TAA GGTC TCTT TGCTT TAA AAGGT
TCGTATGAGTTCTGAATAAA GG AAAATAAG GAGTA-- - --- ------
ACTGGGGAAT
GAM20267 16779 ATTAATCCTTTTAAAACATT A ACATT AAAG G TAT
8 TTTGTTAAAGTTAGTGTATC ATTA TCCTTTTAAA TTTGTT TTA TG
AGTAAGAAACAGACCTAGTT TAAT AGGAAAATTT AGACAA AAT AC
TAAAAGGAATAAT A GATCC AG-- G ---
GAM20269 12906 ATTAATTCAATTAAAACCAT TT--- AC - AA TTTTTTTCT
2 TACCTTAAAATTTTTTTCTT ATTAATTCAA AAA CATTAC CTT AA
TCGAAGTGTGGTGTCTTTTA TGATTAAGTT TTT GTGGTG GAA TT
TATTTGAATTAGT TATAT CT T GC ---------
GAM20271 3337 ATTACATATGTCATTGGTTC ATGTCATTG T ATTTGAA
3 CCTTTTAATTTGAATGGGTG ATTACAT GTTCCC TTTA
GGGATAAAATAAAGATGTAA TAATGTA TAGGGG GGGT
T GAAATAAAA T -------
GAM20276 8477 ATTAGACGTTATCAGAAGTC ---------- CCACTGA
3 CACTGAACTTCTGATTCGCA ATTAGACGTT ATCAGAAGT
AACTTCCCTTCCAGCGTCTG TGGTCTGCGA TAGTCTTCA
GT CCTTCCCTTCAAACGCT -------
GAM20276 931 ATTAGATCCCAGGGACTGGA T C GGAC TTAC
8 CTGGGATGTTTTACAACATT ATTAGA CC AGGGACT TGGGATGTT
TTAAAAGGTTTTTTGGTCTG TGGTCT GG TTTTTGG ATTTTACAA
GT - T AAA- ----
GAM20280 1583 ATTAGTATAAAGCCTGCCCT ATA--- CTG CTGTT GAAGAA
1 GTTGTGTGAAGAAGCATTTG ATTAGT AAGC CC GTGT
GACTGCTTAAGTTGGCTAAT TAATCG TTCG GG TACG
GTTGAA TCA TT--- ------
GAM20291 9407 ATTATTTCACAGATAATGAG CA-- T GAG--- - ATAACAAA
0 ACCTTAATAACAAATAGGCG ATTATTTCA GA AAT AC CTTA
TAAAAAAATTTTCACATTGA TAGTAAAGT CT TTA TG GGAT
AATGAT TACA T AAAAAA C --------
GAM20291 16480 ATTATTTCTGTGTATATATG TC ATA- --- - AA C-- T TATATT
1 TTCCAAAGAAATGCGGCTTG ATTATT TGTGTAT TGT TC CAAAGA TG GGC TG
TATATTCATGCTTTTCAACT TGATGA ACACATA ACA AG GTTTTT AC TCG AC
TTTTGTGATAGACAGTTGAT -- GTTG GAT T CA TTT T ------
ACACAAGTAGT
GAM20292 18880 ATTCAAACTTACAGATAAGG ---- ACAGAT - CTCTATCA
6 GTTAGCTCTATCACTCAACT ATTCA AACTT AAGGGTT AG
CTTTAAAAAGTTTATATGAA TAAGT TTGAA TTCTCAA TC
T ATAT AAAT-- C --------
GAM20307 12360 ATTCCCCTGATTCTCTCTAC C A TC ----- AA TA--- TTAAAT
9 AAAATGCTAACATTTAAATA ATTCCC TG TTC TCT ACAA TGC ACAT
TGTCATTTGTAAATTGTTAA TAAGGG AC AAG AGA TGTT ATG TGTA
CCAGAAGGAACATGGGAAT T - GA CCAAT AA TTTAC ------

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GAM20315 4284   ATTCTATGCCTAATACTCAC     A   CT   --   C   CGCA   TTTCT
5           ACGCAACATTTCTTGTACTT ATTCT TGC  AAT  ACT ACA    ACA
            TGTAAGTCCGTTTGCGAGAA TAAGA GCG  TTG  TGA TGT    TGT
            T                -   T-   CC   A   TTCA   -----
GAM20315 20245  ATTCTATGCCTAATACTCAC     A   CT   -   C   CGCA   TTTCT
6           ACGCAACATTTCTTGTACTT ATTCT TGC  AAT ACT ACA    ACA
            TGTAAGTCGTTTTGCGGAGA TAAGA GCG  TTG TGA TGT    TGT
            AT                G   TT   C   A   TTCA   -----
GAM20322 14396  ATTCTGGTATAGAAGACATT     TG ---     AGAC       -  CATTTGTCA
0           AAGGAAGCATTTGTCACTCT ATTC  G   TATAGA    ATTAAGGA AG
            CTTTAGTAAGTCTATGATCT TAAG  T   GTATCT    TGATTTCT TC
            TGGAAT              GT CTA     GAA-       C ---------
GAM20326 5640   ATTCTTTTACATTTGCTGAA       A  TTT  TG  GA      ATTT    CTA  TGGT
8           GAATGCTTTATTTCCAACTA ATTCTTTT CA   GC  AA  ATGCTTT    CCAA   TG
            TGTGGTCAATTTTGGCAGAA TAAGAAGA GT   TG  TT  TGTGAAG    GGTT   AC
            GTGTGATTTGGTGCTGAGAA       -  CG-  GT  AG      AC--    TTA  ----
            GAAT
GAM20327 2735   ATTGAAAAAGAAAAAGAAGA     AAAA   AAA    AA   AAA    AACAAAAGAAAG   CATG
5           AAACGAAAAGAAGAAACAAA ATTGA    GAA   GAAGA  ACGA   GAAGA         CAT
            AGAAAGCATCATGATGAATA TAACT    CTT   TTTTT  TGTT   TTTCT         GTA
            AAATGTCTTTGCTTGTAATT     ATA-   AAA    AA   CG-    GTAAAATAA---   ----
            TTTAAATTCATATCAAT
GAM20329 20875  ATTGAAGTCTGTGTCTTCGC    -   C    CTTC  CC     G  C   T  TTAGCATT
6           CCTTTTAAGTGCATCTCCTT ATTG AAGT TGTGT    GC  TTTTAA TG ATC CC
            AGCATTGGGATCATTAAAGC TAAC TTTA ATACG    CG  GAAATT AC TAG GG
            TGCACTCGCATAATTTACAA     A   -    CTCA  TC     -  -   -  --------
            T
GAM20333 8200   ATTGAGACCGCAACTGCTTG       C   -      --  C  TG TCATT
3           CACTGATCATTTTGGTTCAT ATTGAGA CGC AACTGCT  TG AC  A
            GAGCAGTTGGTGATTTTAGT TGATTTT GTG TTGACGA  AC TG  T
                              A   G      GT   T  GT -----
GAM20333 6139   ATTGAGACGACATTGTTCCA    G      A-     CACAAA     TAGG
4           CAAAGTCCTTTAGGAGGGGC ATT AGACGAC  TTGTTC     GTCCTT
            GATTGAACGAGAGTCGTCTG TAA TCTGCTG  AGCAAG     CGGGGA
            AAT                G      AG      TTAG--      ----
GAM20335 9194   ATTGATAGACTTCGTAGTAT     TA-    --      AT--- T     TTCCAAGATGT
9           GTCACTCTTCCAAGATGTGA ATTGA   GACT  TCGTAGT     G CACTC
            GTGCTCTTAACTACGAATGG TAACT   TTGG  AGCATCA     C GTGAG
            TTAATTCAAT             TAA    TA      ATTCT -     -----------
GAM20336 21177  ATTGATGAATTCTGTATCTT         TCT  A   TCT  -   TCCTGTATCTTTTT
5           CTCTGGTTTCCTGTATCTTT ATTGATGAAT   GT TCT   CT GGTT
            TTAATCAAGTCTAGAAACTA TGACTACTTG   CA AGA   GA CTAA
            TGTTCATCAGT               TAT  A   TCT  A   ----------
GAM20341 9895   ATTGCCAACTGATGGAATGT     CAA   A   AA    CCTCT    A    TACC
2           GCCTCTGCTGACTTGTACCC ATTGC   CTG TGG  TGTG     GCTG CTTG
            AGGCCAGCCCACACCACAGA TGACG   GAC ACC  ACAC     CGAC GGAC
            CTGCAGT               TCA  -  --   C----    C    ----
GAM20343 8187   ATTGCTCAGACACCTGTGAA     TC  ACACCT TG   G    ATACATG
5           CAGTCTTGATACATGCAAGA ATTGC  AG     G  AACA TCTTG
            TGTTTGCCAAACTTTGTAAT TAATG  TC      C  TTGT AGAAC
```

TT AAAC-- GT - -------
GAM20343 9559 ATTGCTCCTAACTGGAAGAT G A AAGATCTCA TT TTGT
7 CTCACTTTCCCCTTGTGGGG ATT CTCCTA CTGG CT CCCC
TAGGAACCGATGCCAGTGGG TAG GAGGGT GACC GA GGGG
AGGGAT G - GTAGCCAAG T- ----
GAM20347 19322 ATTGGAGTATTTGAAAATGA ATTT-- - CAATA AG TGCCA
8 CCAATATATAGCTGCCAGTC ATTGGAGT GAAAAT GAC TAT C
ATGGTCCAGTCTGTTTTCTG TAACCTCA CTTTTG CTG GTA G
TTAAACTCCAAT AATTGT T ACCTG CT -----
GAM20348 3691 ATTGGATTCATTTTAAAACT TT TT --- A-- CTTTCA
2 TAAGTTCTTTCAAGCTAACA ATTGGA CA TTA AAACTT AGTT
AGTTTAACTGGTTTGTTCCA TAACCT GT GGT TTTGAA TCGA
AT T- TT CAA CAA ------
GAM20348 1495 ATTGGCAAATAGCGTGGGAT G AAAT TA----- T TCTTAATGGGTGT
5 AGATTTGTCTCTTAATGGGT ATT GC AGCGTGGGA GATT GTC
GTGACCAATCCTGTTTTTCC TAA TG TCGTATCCT CTAA CAG
TATGCTCTGGGTGAAT G GGTC TTTTGTC C ----------
GAM20349 19059 ATTGGCATATTTCAGGACCA T ---- CC TC TG TAACAT
0 TAGTTTCTTGTTAACATATG AT GGCATATTTCA GGA ATAGTT T T
GATAACTATTTCTAATATGA TA TCGTATAAAGT TCT TATCAA G A
AATATGCTTAT T ATAA T- TA GT ------
GAM20350 5511 ATTGGCTGGTGGACAGAAGG GG G CAGAA -- A-- TGAAAT
3 CACTGCAGCCTGAAATGGCA ATT CT GTGGA GGCACT GC GCC
GAGTCTGGTGCTGACGATCC TAG GA CGCCT TCGTGG TG CGG
GCGAGAAGAT AA G AGCAG TC AGA ------
GAM20351 9882 ATTGGGGGCCATGGGTAGGG C - TTT -- -- TG AAT
2 GTTTGGGGGGCGGCCGGTGG ATTGGGGGC ATG GGTAGGGG GGGGGGC GGCC GG GGGG

GGGAATCCCCTGCCTTGGCC TGATCCCCG TGC CCGTCCTT CCCTCCG CCGG CC CCCC

TTGCCTCCCCTTCCTGCCAC - A C-- TT TT GT ---
GTGCCCCTAGT
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6 CTCTTGGGACATCCTGTCAT ATTGGTC TTTGTT TCT G GAC
CTGAGAATGAACAAAGACCA TAACCAG AAACAA AGA C CTG
AT ------ GTA GT TA -----
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3 TTTAGGAACAAGTGTGTTTA ATTGGT CCCG AACGTT GAACA
TACAACGTTTGGGGACCAAT TAACCA GGGT TTGCAA TTTGT
G-- --- CATA ----
GAM20353 787 ATTGGTTCCAAGACGCGTAG AAGA -- -- T-- - AAAGCCCC
7 GCGAGTTGGTCTGAAAGCCC ATTGGTTCC CGCGT AGG CGAG TGGT CTG
CCGGTATCATTCCTCGAATC TAACCAAGG GCGTA TCT GCTC ACTA GGC
TCAATGCGGGAACCAAT ---- AC AA CTT T --------
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7 TAACATAGGTTGGCTGGTTT ATTGG TT ATCT CA GTGT TAGG GG TGGTTTTGTTTT TGTT
TGTTTTTGTTTTAGACAATT TGATC AA TAGA GT CACA GTCC CT ATTAAGACGGAA ACAG
TAAGGCAGAATTATCTCCCT CT A C - AC-- CT - TTTA ---
GCAACACTGCAGATAAATCC
TAGT

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0 TCTCCTTGGTGAAGAACATC ATTGTAG AAC TTC TCT CTTGG GA
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CTACAGT AA - AA CC- - ------
GAM20360 18641 ATTGTCTTTGGAAGCTCAAG GAA CAAGGA AA TG TAGAAAC
2 GATCAAAGTGACGTAGAAAC ATTGTCTTTG GCT TCA G ACG
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8 AAACATACGTGTGCATGTGT ATTGTGAAT GTGC GC ATAAA ATACGT
CTTTATAGCAGCATGATTTA TAATATTTA TACG CG TATTT TGTGTA
TAAT G A A C ----
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1 GCCGGGAAAGGAAACCGGGA ATTGTGT GCGC CCGG
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TAGT AAAGCAG-- AGTATAAG ---------
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1 AGAACCACCAAAAAGGAAAA ATTGT ATTAATATC TTTC CC
AAAGAAAAGATATTAATACA TAACA TAATTATAG AAAG GG
AT - A AAAAAAA -----
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7 ATTTTTTTTACTAAAACTTT AT AATCTT TTTGTTTTGTAT TTT ACT
CATTTAAAACAGTTATTAAA TG TTAGGA AAACAAAATATA AAA TGA
TATATAAAACAAATACACAG GT CACAT T TTAT ----------
GATTTGGT
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4 CAAACCTTACAGCCAGAAGG ATTTACCA AG CTGT CCTT
GAAAAAAATAGCTTGTGGTA TAAATGGT TC GATA GGAA
AAT GT-- - AAAAAAG --------
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5 GTAAGTGATTGTGCCCTGCA ATT ACCAA TATT TTGT TGA TGTGCC
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AAAATAATCTTGGTTAAT T CTA A- GAACA T -------
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2 AAAGCATCTCCCATAACAAA ATTT AGGAAT AAGTT CATCT CCCAT
TGATGGGGAAGATGAATTTG TAGA TCCTTG TTTAA GTAGA GGGTA
TTCCTTCAGAT CT --- ---- AG --------
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2 GAAATGGTTGTATTAGATGT ATTTAT TC TAGTTC GGT TATTAGATG
TCTCTATCATTTAATAATAT TGAATA AG ATCAGG TCA ATAATTTAC
ACTTGTGGACTAAAAGATAT T AAA TGT------ TATA --------
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8 AGTCACTTAACTACAACTAA ATTTC TC TTTGCCT TC TC CTTA
GAGAAAGACACAGGTAGATG TAAGG AG AGATGGA AG AG GAAT
ATAGGGAAT GAT T CAC AA- A --------
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3 AAGTATTTGTTACTGCACAC ATTTCA CAG AGCA AGTATTTGT CTG
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TGCACTGTACATCTGAAAT CTACAT ACG-- C CTA ------

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3 CTAGAGTTAATGTTTTAATC ATTTCATT CA TA GAG TTAA
TCACTGTAATGTTAATGAAA TAAAGTAA GT AT CTC AATT
T TT--- A GTCA- T ----
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4 CTGGCTGTAATAAAGTGTTA ATTTCTCT AACC GCTGGC
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T ATTGGA G ----------
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AGT AAGA- ACCAC- -----
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6 AGATGGGAAAGGGCTCCTTC ATT AGA AGGC TGCT GA GGG
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T GT GGG T A- T -------
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4 TCCTTAGCTCCAAAAGCAAG ATTTGCA TGAT CTT GCT
TCCTTTATCAAAATGCAAAT TAAACGT ACTA GAA CGA
AAA-- TTTCCT - -----
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5 GTTTTCTTACAAAGGTTGAC ATTTG AATTTTT TTT G TTCTTACA GTTG
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GAGTGTTGAAAAAAAAATTC -- A GT GT GGA ----------
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4 ATTTCTGCAAAAAAATAAAG ATT AA ATTAGCT TTTCT
AAGCCAGCTGATATTTTGAT TAG TT TAGTCGA GAAGA
TT A CC---- ----------
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2 ATTTTAGCCCTCCTACAAAG ATTTT GGGT TCTCTT AGC CT
CGCTCAAGAGATACCTTCCG TAGAG TCCA AGAGAA TCG GA
AGAT CCT- T C----- C -------
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6 CGTAAAGGGGTCCTGAGACC ATTTT GAGTTTT CAA CGT GGTC
AAAATGTTTGAAAACTTGAG TAAAG TTCAAAA GTT GTA CCAG
AAAT AG - T- AAA-- ----
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0 GATCATTTGGAAAATACTGG ATTTT TAA AT ATACA TCGA ATTTGGAAAAT CTGG
TTCACTGAGTTTTTCAGGTT TGAAA ATT TA TATGT AGTT TAAACCTTTTG GACT
TTCCAAATCTTGACACATTT A T - TACTTTACAC C- - ----------
CATTGTATATTTTAAAAAGT
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7 TAAAAATAGTAATTTTTCAC ATTTTATCAAG GAC CTAT GT AAAAAT
TTAGTGGAGTCTTTTGATAG TAGGATAGTTT CTG GGTG CA TTTTTA
GAT T A ATT C ----
GAM20421 782 ATTTTATTATACTTAAATGA AATG---- CAA ACAAGAA
4 ACTCAAGTACAAGAAACAAA ATTTTATTATACTTA AACT GT
GTTAAAATATGTAAGTATAA TAAAATAATATGAAT TTGA CA
TAAAAT GTATAAAA AA- -------

GAM20421 1311 ATTTTATTGCTTTGAATGCT - AATGCTCAA T AAA
6 CAAACTATGGGAAATCTTTG ATTTTATTG CTTTG ACTA GGG
GTAAAAATAAAGACAATAAA TAAAATAAC GAAAT TGGT TCT
AT A AAAAA---- T ---
GAM20422 6175 ATTTTATTTTCCCCACAACA T CC- AACAAA CCCACTTCTCTA
3 AAGAATTATCCCACTTCTCT ATTTTAT TTC CAC GAATTAT
AGTAATTTCCATCGTGCAAG TAAGATG AAG GTG TTTAATG
AATGTAGAAT T AAC CTACC- ----------
GAM20426 4081 ATTTTCTCCTTATAGTAGTT T AG- CCGA- A A ATTT
6 GGACCGATTATGGACACGGA ATTTTCTCCT ATAGT TTGGA TTATGG CACGG ATA
ATAATTTTATACTGTGGCTA TGAAAGAGGA TATTA AATTT AGTATC GTGTC TAT
TGAGAGCATTTAAGAGATTA T GAG ACGAG G A ----
TTAGGAGAAAGT
GAM20433 16871 ATTTTGTGGTCATTAAGCAT ----- AA T G TAAA
3 TGGGTGGGTAAATTCAACCA ATTTTGTGG TCATT GCA TGG TGGG
CTGTAAAATGAAATTACTAC TAAAACATC AGTAA TGT ACC ACTT
AAAAT ATTAA AA C A ----
GAM20433 20123 ATTTTGTTATTGTGTTGTAT G C- TATA
7 CACATTGATGGTTCAGTATA ATTTTGTTATTGTGTTGTATCACATTGAT GTT AG
CTCAAACAATCAATGTGATA TAAAACAATAACACAACATAGTGTAACTA CAA TC
CAACACAATAACAAAAT A AC ----
GAM20436 6476 ATTTTTATTTTGGTTTTCTT A TG TT AAG ACATTTTCCA
6 ACAAAGGTTGACATTTTCCA ATTTTT TTT G TTCTTACA GTTG
TAACAGGTGTAAGAGTGTTG TAAAAA AAA T GAGAATGT CAAT
AAAAAAAAAT A GT GT GGA ----------
GAM20437 21668 ATTTTTCCTTTGATTTTCTC T TTT-- CAG ATAAGTG
4 TTCTCAGTCATAAGTGGAAA ATTTT CCTTTGA TCTCTTCT TC
TGGAAGGGATTCATTCAAAG TAAAA GGAAACT AGGGAAGG AG
GTAAAAT T TACTT TAA -------
GAM20444 19955 CAAAAAAAATTAAAATAAGA - AAA AACC CACACAATGATAAACCA
7 AAACCAAAGCACACAATGAT CAAA AAAAATTA TAAGAA AAAG
AAACCACTTTTCTCTTCTTG GTTT TTTTTAAT GTTCTT TTTC
CTGTAATTTTTCTTTG C GTC CTCT ----------
GAM20446 3198 CAAAAAGGTGCTACGGTAGT AA TG --- GT A T A- TTGTAGTT
9 GATGAAATTATAAGTAGATT CAA AGG CT ACG AGTG TGAAAT ATAAGT GAT
TGTAGTTGTCCCATTTATTA GTT TTC GA TGT TTAT ATTTTA TATTTA CTG
TTTTAATATTTATGTTTAAG GG GT ATT AT A T CC --------
TGCTTGGTTG
GAM20450 16554 CAAAACCTAAAGGAGGTGTT CCTAAA GG T GATA- - ATCTCTAAAAAATC
3 TGGTGATAACTCTGAAATCT CAAAA GGA TGTT GGT ACTC TGAA
CTAAAAAATCTTCAGGAGTA GTTTT CCT ACAG CCA TGAG ACTT
AAAAACCGACAAATCCCCCT TCCC-- AA - AAAAA G ----------
TTTTG
GAM20451 16472 CAAAAGAAAACCTAGGTTCT A AG-- TTT CTCTATTC
4 TTTTATTACTCTATTCTAGT CAAAAGA AACCT GTTCT TATTA
AAGAACAGAAAGGTTATCTT GTTTTCT TTGGA CAAGA ATGAT
TTG A AAGA --- --------
GAM20453 780 CAAAAGGTATTGAAATTTAA TT---- AAAAAG T- T- AAAAGCCTC
6 AAAGTTACAGTTTTATATGT CAAAAGGTA GAAATTT TTACAGT TTATATG TTAA
TTAAAAAAGCCTCTTAATTC GTTTTTCAT TTTTAAA AATGTTA GATATAC AATT

ATATAGTTATTGTAAGCAGA TTTTAC GAGACG TT TT ---------
GAAATTTTCATTTTTACTTT
TTG
GAM20460 16790 CAAACAAGAGGACTGTGTTG AA - A T T TG C - - TAAT
2 TGGTCTGGGGAGAATGTAAT CA CA AG GGAC GTGT G GT TG GGGAG AATG
CATTCCTTCCACAACTGCTG GT GT TC CCTG TACG C CA AC CCTTC TTAC
CATGTCCCTGTGGGTG GG G - - T GT - A C ----
GAM20462 4403 CAAACCAGCAACATGAAATG C CAA-- AA AA-- CA GCTTA
5 GACAAACCAATCTGCTTAAG CAAA CAG CATGA TGGAC AC ATCT
ATCTGTCATAGTTTAGATCA GTTT GTC GTACT ATTTG TG TAGA
TGGTTATCTGATTTG A TATTG AG ATAC TC -----
GAM20465 21430 CAAACTCTCTCTCTAAATTT A TC TT AA CTGTTGAA
2 AAAATGCTGTTGAATATGAT CA ACTCTCTC TAAA TA ATG
ACTTTTGAGGAGAGAGTGTG GT TGAGAGAG GTTT AT TAT
G GA TC AG --------
GAM20465 19261 CAAACTCTGTCTGGGCCACG A- T- T GC CGGA C CT AGA T C G G
4 CGGAGCTCCTGCTCAGAAGC C AAC CTGTC GG CACG GCTC TG C AGCCTG GGA AGGCCC
TGTCCTT
CTGTGGACAGGCCCGTGTCC G TTG GACGG CC GTGC CGAG AC G TCGGAC CCT TTCGGG
ACGGGGA

TTGATGAGGGAGAGGAGGGG GG TT T TC ---- - AG GG- - - G -
CAGGGGCTTTCCCAGGCTGG ATGAGGGAGAGG
GGACAGAGCCGTGCTCCTGG
CAGTTGTTGGG

GAM20466 3260 CAAACTGGAAGAATCACATT -- AA ---- A T T TTCC A TTTCT
9 ACCTGACTTCCTTTAGCATT CAAA CTGG GA ATC CAT ACC GAC TTT GCA
TCTTGTAGAACACGTCTGGT GTTT GACT CT TAG GTG TGG CTG AAG TGT
GTGGATAAAATCACTCAGCT TC CA AAAA - - T CAC- A -----
TTTG
GAM20467 8407 CAAACTGGTTTTCTGGTTTT TTT-- TT----- CATC- ACCTTATATAATCTAA
0 CCATCTGGTACCTTATATAA CAAACTGG TCTGG TTC TGGT
TCTAAACCAATTAAGAATTA GTTTGGCC GGACC AAG ACCA
GCTTCCAGGTTAACCCGGTT CAATT TTCGATT AATTA ----------
TG
GAM20468 2691 CAAAGAAAGCTGAATGGTTT A TG GT TC A CAA AACATA GCAAGA
1 ATATTCCTGATGTACAATTT CAA GAAAGC AATG TTATAT CTG TGTA TTTTT TTT
TTAACATATTTGCAAGAAAA GTT TTTTTG TTAC AATATA GAC ACAT AAAGA AAA
GGAAAAAGAAAACTACACCA A -- -- C- C CA- AAAAGG ------
GCATATAACATTGTTTTTAT
TG
GAM20470 18524 CAAAGAGAACTGCCAGTGCC AA-- C GT - AAAG CAGG
0 AGGAAAGCCCAGGGGAAGCC CAAAGAG CTG CA GCCA GG CC
GTGGCTGCCAGGAAGCTCTT GTTTCTC GAC GT CGGT CC GG
TG GAAG C -- G GAA- ----
GAM20470 12333 CAAAGAGGAACTGCTGGCCA AC GG GAGTAC GTGGCATGA
5 CGAGTACGGGGTGTGGCATG CAAAGAGGA TGCT CCAC GGGGT
AATCCTGTGGAGCATCCTTT GTTTTTCCT ACGA GGTG TCCTA
TTG -- -- ------ ---------

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GAM20472 4296  CAAAGCCAGCAACGACATGT  AAG   A   CA  ACCACA C      CAGG
6          ACCACAGCCGCGCGCTGCAG CA  CCAGC ACGA  TGT    GC GCGCGCTG
           GTGGTGCGCGCCCGCAAGCA GT  GGTCG TGCT  ACG    CG CGCGTGGT
           GATCGTAGCTGGGGTG     GG-   A   AG  AACGCC -      ----
GAM20476 3713  CAAAGGCCTGGTCCTTGTAG  A  ------  TCC       ----      --  GAA  ATTCA
3          CTGTGATCTGGATAATGGAA CA AGGC    CTGG  TTGTAGCTGTG   ATCTGGAT  AATG  ACT
           ACTATTCAAGTAGACATTTG GT TCCG    GACT  AATATTGGCGT   TAGACTTA  TTAC  TGA
           ATTCAGATGCTGTGCGGTTA  G  TCTTTA  TAA       GTCG     GT   AGA  -----
           TAAAATTCAGATTTCTGCCT
           GTG
GAM20481 18978  CAAAGTTCCGTAGTCTAAGA        TAGTC   - A  TAACTGAATTAAAAATTAT
6          TAACTAACTGAATTAAAAAT CAAAGTTCCG    TAAG AT AC
           TATGTAATACTTGTGGAACT GTTTCAAGGT    GTTC TA TG
           TTG                  -----   A A  ----------
GAM20487 2839  CAAATCGGTGCCACCCGGCC   T   C  ------     GA  AATCC-  TAGATT
3          GTGACAAATCCTAGTAGATT CAAA CGGTG CACC    CGGCCGT  CA    TAG
           CTGTGCATGTGGAGCGGCCG GTTT GCCAC GTGG    GCCGGCG  GT    GTC
           CGAAGAGGTGACACCGTTTG   -   A   AGAAGC     AG  GTACGT  ------
GAM20491 18918  CAAATTATATTCTGGAAATT   A  -   T------    TT  GTATTAAG
7          GCAGTATTAAGTGCCTTTTC CAA TTA TATTC     GGAAA  GCA
           CTCTCCATGAATATTAAATT GTT AAT ATAAG     CCTTT  CGT
           G               A  T   TACCTCT   TC  --------
GAM20492 1238  CAAATTGCGCTTAAGAAAAA  AA       A  AAA  TAC   TTGAGAAT
9          TACTACGAGAATTGAGAATT CA  TTGCGCTTA GAA  TAC  GAGAA
           TTTTAACGTAACTTCCTAAG GT  AATGTGAAT CTT  ATG  TTTTT
           TGTAAGATG          AG       C  CA-  CAA   --------
GAM20498 19052  CAACAGAGAGAATGGAAAAC     A  G       CTA-   T--  A    ATTTGAAA
7          CTAGTCATGATAGTTAAATT CAACAG GA AATGGAAAAC   GTCA  GAT GTTAA
           TGAAATTAACCATCTTCTGA GTTGTT TT TTATTTTTTG   CAGT  CTA CAATT
           CCCTAGTTTTTTATTGTTGT     G  G       ATCC   CTT  C    --------
           TGTTG
GAM20499 19834  CAACAGGATGCCTCTTAAAG     GA  C----------    ---  -  ----------    TGAT
8          ACATCTGGTGATTAGAAACC CAACAG  TGC          TCTTA  AAG ACA          TCTGG
           CAGAGACTATTTTATATTCT GTTGTC  ACG          AGAGT  TTC TGT          AGACC

           GTACTTGCCTGAGATATACC     TG  AATCAACCACCATAT   CCG  A  CTTATATTTTATCAG   ----
           ACCAACTAAGCAGTCTGTTG TAGAAAC



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GAM20500 20768  CAACAGGCCTATTAGAAGAA    A  CTATT       ACTAA    CTAC
0          TGAACTAACGTGTCTACGCA CAAC GGC    AGAAGAATGA    CGTGT
           TGATTATTTTTCTTAAGCTG GTTG TCG    TCTTTTTATT    GTACG
           GTTG               G  AAT--       A----    ----
GAM20501 19894  CAACATCCTGTTCTGCGGCT    AT  T    G   TTCCTT  TCTTTTT
7          TCCTTGGCTCTTTTTGCCCG CAAC  CC GTTCT CGGC     GGC
           TATGCCGAAGAGCCGGGCGT GTTG  GG CGAGA GCCG     CCG
           TG                 CG  C    A   TATGC-  -------
GAM20501 2934  CAACATGAAGGTCCTCTTAC      A--   C    ACTTAT  --  TCACT
8          TTATTCCGCCTTCACTAGGC CAACATG  AGGT CTCTT     TCC  GCCT
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AAGGACGAGGGCACCTACAC GTTGTGC TCCA GGGAG AGG CGGA
GTGTTG ACA C C----- AA -----
GAM20502 20196 CAACATTAGACATTTCTTTC TA CATT--- CA A GG ATCTGCC
1 AGTACTGGTTTTGTCCCTAT CAACAT GA TCTTT GT CT TTTTGTCCCT
CTGCCAGGGGCAAAGAAAGA GTTGTA CT AGAAA TA GA GAAACGGGGA
TGAAAAGATAATTTATCCTA TC ATTTAAT AG - AA -------
TGTTG
GAM20504 9324 CAACCCAGCCGGGCCGTAAG A- - GTAAGAAT A TG CGCT
4 AATCCGCAGGTGAGCCCTGC CAACCC GC CGGGCC CCGC GG AGCCCTG
GCTCGGGGCTGCCCCGTGGG GTTGGG CG GCTCGG GGTG CC TCGGGGC
GCTCGTGCCCGGGTTG CC T -------- C CG ----
GAM20507 16863 CAACGAAATAAAATATTCTC TAAAA CTCC C ------- ATTTT
3 TTCTCCTATCTTCTTGACAT CAACGAAA TATTCTCTT TAT TTCT TGAC
TTTGTCACATCACAAGAACA GTTGCTTT ATGAGAGAA ATA AAGA ACTG
TAACTAAGAGAGTAGCTTTC CG--- TCA- C ACACTAC -----
GTTG
GAM20507 3658 CAACGAGATTTGGTCGTAGT GA----- G T -- - TCA
5 GGGGCGCCTTGGTCACCAGG CAACGA TTTG TCG AGT GGGGC GCCTTGG
GCTGCTTTTAACTCTGGGTA GTTGTT AAAT GGT TCA TTTCG CGGGACC
AAGTGGATATTGTTG ATAGGTG G C AT T ---
GAM20508 20598 CAACGGGGGCTTCATAACTG CG GCTTC AC - CAATG TACAG
2 AAATAAGACACAATGAAATC CAA GGG ATA TGAA ATAAGACA AAATC
TACAGGGTTTATGTTTTATA GTT TCC TAT ACTT TATTTTGT TTTGG
TTCAAATATAACCTTATTG AT AA--- AA A A---- -----
GAM20508 823 CAACGTCTTGATTAACTTGC - AT- TGCTTAA--- CACAAAAATCACA
4 TTAAGGAATGTCACAAAAAT CAACGTC TTG TAACT GGAATGT
CACAACATTCTGAAATTTTT GTTGTAG AAT ATTGG TCTTACA
TGGTTATTGTAATGATGTTG T GTT TTTTTTAAAG ----------
GAM20518 3155 CAAGAAAGCTCAGCTGGTGG AG -- - T G ACCGAC
0 TGATTGCACACCGACGTGGA CAAGAA C TCAGCT GGTGG GATT CAC
TCCCATCGAGCTGGTTGTCT GTTCTT G GGTCGA CTACC CTAG GTG
TCTTG CT TT G - - ------
GAM20526 18985 CAAGAGGCTCACTGATGTGC AG - -------- A GCAC ACGC
0 ACTTGGCAATGACGCTATTG CAAG GCT CA CTG TGT TTGGCAATG
TCAAAAGAACACAGAATTTA GTTC CGA GT GAC ACA AACTGTTAT
TTTGTAGCAGCTTG GA T TTATTTAA - AGAA ----
GAM20528 6576 CAAGATGGAGACGGCGGCGG A-- C C C TAGC GTGAC A CACAT
2 CTGTAGCGGCGTGACAGGAG CAAGATGG GA GG GG GGCTG GGC AGG GCC
CCCACATGGCACCTGCCCAG GTTCTACC CT CC CC CCGAC CCG TCC CGG
CCCCACCTCAGCCCATCTTG CGA - A - ---- ----- A -----
GAM20530 16810 CAAGCAATGCGTGCCCCAGT CAA - CCCAG CAA TC C GAGG
6 CTGTCAAGGCCGCATCTGTG CAAG TGC GTGC TCTGT GGCCGCA TGTG GGG
CGGGGAGGCCCCACGTCTGT GTTC ACG CACG AGGCG CTGGTGT GCAC CCC
GGTCAGCGGAATGCACAGCA TAA A TA--- A-- CT - ----
AATCTTG
GAM20531 3488 CAAGCACTGGACTGGAATTT CA ----- A TT AGA-- A TACA
1 TGAGAGAGGCATTTACAGAC CAAG CT GGACTGGA TT GAG GGC TT
GCTGATAACTTTGGAATCCA GTTC GA CTTGACCT AG TTC TCG AG
GTTCCCTTTAGACCTTG CA TTTCC A GT AATAG C ----
GAM20531 8413 CAAGCAGAGTGGGGATGTCA AG AG AT - - TGCAC

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4           CCTGCAACTTGCACGGATTG CA  CAG  TGGGG  GTCACCTG CAA CT
            CCGGGTGGCCCCCAGCTGTC GT  GTC  ACCCC  CGGTGGGC GTT GG
            TG               CT  G-   --      C  A -----
GAM20539 4103   CAAGGAACTTCAGGCACATG         AG-   ATGGTG  GA  GTTA
4           GTGCTGATGAGTTATTAAAG CAAGGAACTTC  GCAC    CT  TGA
            AGGGTGTACGGGAGTTTCTT GTTCTTTGAGG  TGTG    GA  ATT
            G                    GCA   GGA--- A-  ----
GAM20540 19024  CAAGGAATCTGTGTCTTTGA    GA -   TC-   A    ACCTCAAAAG
3           TGACCACCTCAAAAGGGTCG CAAG  AT CTGTG   TTTG TGACC
            CAGACTTCACAGTGTAACTT GTTC  TG GACAC   AGAC GCTGG
            G                  AA  T    TTC   -   ----------
GAM20540 1555   CAAGGAATGGAAGTATGATT     AT   AGT TG   T    C---  AATTAGAAA
4           TTCCAACCCAAATTAGAAAT CAAGGA  GGA   A  ATT TCCAA   CCA
            GGAAACTTGGGTGATTGTTT GTTCCT  CCT   T  TAG GGGTT   GGT
            CTCCCCTCCTTG           CC   CTT GT   T    CAAA  ---------
GAM20547 3512   CAAGGGGGGTGCATGCTTCA    GGGGG      -  AAGGA---  CTG    GAAA
7           AAGGAATGCTGGGGGTGAAA CAAG    TGCATGCT TCA      ATG   GGGGT
            ATCCTAAACATGGGTAGAAT GTTC    ACGTACGA GGT      TAC   TCCTA
            GGCAGCATGCAGGACTTG     AGG--      C   AAGATGGG   AAA    ----
GAM20555 16642  CAAGTCCAAGAAGCTACGCT   A-   AAGA   AC- -   GAA    GAC
6           TTTGGAATCTATGACATAGA CA  GTCC   AGCT   GC TTTTG   TCTAT
            CAACAAGACGCCAGAGCTGA GT  TAGG   TCGA   CG AGAAC   AGATA
            GGGATGATG           AG   GAG-   GAC  C    AAC    ---
GAM20556 8198   CAAGTCTGAGCTCTGGAAGC      AGC    AAG    AG   TTAGCC
7           CAGAAGCCTTTAGCCAGGAA CAAGTCTG   TCTGG   CCAGA  CCT
            TTTGGAGACCAGGATGTAGA GTTCAGAT   GGACC   GGTTT  GGA
            CTTG                GTA    AGA    AA  ------
GAM20562 5605   CAAGTTCCAGCCTCCATGCC   AG   A--- -   ATG   ACA- -    TGACCAGTAAC
1           CACAGCAGCCATGACCAGTA CA  TTCC   GC CTCC   CCC    GC AGCCA
            ACTGGCTAGCCCCAGGGAAG GT  GAGG   CG GAGG   GGG    CG TCGGT
            GGAGAGCCTCAGGAGTCTG   CT   ACTC  A   GAA   ACCC  A    -----------
GAM20567 5404   CAATACCCTGGCAGTTCTGG   TA    GCA   -  CCC----    ACG
3           CCCTCCCGACGCGGGAACCA CAA  CCCTG   GTTC TGG      TCCCG
            AACCCACGAACCACAGGGCG GTT  GGGAC   CAAG ACC      AGGGC
            TTG               GC    AC-   C   CAAACCA    ---
GAM20571 14521  CAATATTCCAAATTATAGGT      CCAAATTATA    AG-    GTG   ATGAAGAA
0           TGAGAGAATGTGACTATGAA CAATATT       GGTTG   AGAAT   ACT
            GAAAGTATTCTAACCAACTA GTTATAA       TCAAC   TCTTA   TGA
            AAAAAAATATTG           AAAAAA----    CAA    ---   --------
GAM20571 21038  CAATATTTGGGTATTAATGA    TTTG    T   ATAAT    TAA--  ATAATCCCAGAA
7           TAATATATTTAAACCATAAT CAATA   GGTAT AATG    ATATT    ACC
            CCCAGAAGGTGATTTGATAT GTTAT   CCATA TTAC    TATAG    TGG
            TCTTCCATTATACCATTATT    TA--    -   CTTCT    TTTAG  ----------
            G
GAM20580 20805  CAATGCAAACATCTATAAAA    CAAACAT--    AAAT  C   - TAAT
0           TGCCTCTGCATAATTGTCAG CAATG      CTATA   GC TCTG CA
            AAGCTATAGTCCAGAAATCA GTTAC      GATAT   CG AGAC GT
            TTG                TAAAGACCT    ---- A   T ----
GAM20581 20666  CAATGCTCCAGAAGGATTGC   A   C  GAA--     CCCA   GATGGA
8           CCCAGCTGATGGAAGTAGTG CA TGCT CA    GGATTGC   GCT
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CGATCCAACTATGAAGCAAT GT ACGA GT CCTAGCG TGA
G A A ATCAA TGA- ------
GAM20582 13026 CAATGGAACAGATTAGAGAG T A ----- AGAGCC AAATAAAG
5 CCCAGAAATAAAGCTGCACA CAA GGA CAGAT TAG CAG
CCTATAACCATCTGATCTTT GTT TCT GTCTA ATC GTC
G - A CCAAT CACAC- --------
GAM20583 18608 CAATGGGAAGGTTGATGCTC AT ATG CG - GAACTGGGGA
8 GAAGTGACCGAACTGGGGAG CA GGGAAGGTTG CT AAG TGACC
GTCATCTTTAAGGACAATTT GT TCTTTTTAAC GA TTC ACTGG
TTCTTCTG CT AG- AT T ----------
GAM20587 9516 CAATTAATACTTTGAAGAAT TAAT AA TTT AGGTTTAAA
3 TTGACTGTTAGGTTTAAAGA CAAT ACTTTG GAA GACTGTT
CAGTTTTCCCAAAGTTCATA GTTA TGAAAC CTT TTGACAG
TTG TACT C- --- ---------
GAM20591 2872 CAATTGAGAATTGTTGCCTG T T C-- AA-- ATGT
9 AAAACCATGTGGGAGATTTA CAA TGAGAATTG TGC TGAA CC
AATGTATTAGTTTTTATTTG GTT ATTTTTGAT ATG ATTT GG
T T TAA AGAG ----
GAM20597 8898 CACAAAATAGAGATTAATTT AA AGA AA-- ATT
6 TAACTTAAATTTTAAGCTTG CACA ATAG TTAATTTT CTTAA
AAGATTAGGTACTATCTGTG GTGT TATC GATTAGAA GAATT
C- ATG GTTC ---
GAM20598 14626 CACAAACGTAGGGGCTTTCC AAAC-- CCA G G CACAG
6 ATGTGCAGGGCACAGTGCTG CAC GTAGGGGCTTT TGT CAG G
GACACTGAGGCCTCTGCCCT GTG CGTCTCCGGAG ACA GTC T
CCAGTG ACCTCC TC- G G -----
GAM20599 20602 CACAAAGGAGTCTGTGGACA AA GTCT ACAGG G AGAA TGGAG
5 GGCAGGGGCAGAATCCTGGA CACA GGA GTGG CAGG GC TCC
GGGAGCGCCTGAGCCACCAT GTGT CCT CACC GTCC CG AGG
CCCATGTG AC AC-- GA--- G ---- -----
GAM20601 12700 CACAAATTGCCTGAAAACTT T ---- AAACTTCCTT CAG
5 CCTTAAGCAGCTTCACTTTA CACAAA TG CCTGA AAG
TTGTCAGGATATCGCTTTGT GTGTTT GC GGACT TTC
G C TATA GTTATTTCAC ---
GAM20602 6442 CACAACAGAAAGTAAGGTGT AA ----- T A GAAAATGA
2 TCTACTTGAAAATGAAAGGA CAC CAGAAAG TAAGGTG TCT CTT
GATTATTTTAGGTATCTTTC GTG GTCTTTC ATTTTAT AGA GAA
TGAAGTG AA TATGG T G --------
GAM20604 14375 CACAAGCTAAATCTCAAAAT - - CAAAA A-- TT TAATACCTTAAT
9 AAAACTGTTACTTTAATACC CAC AAGCTAA ATCT TAAA CTG ACTT
TTAATAAGTCTCAGAACTTT GTG TTCGGTT TAGG ATTT GAC TGAA
AGATAGGATGTTGGCTTAGT A G ATAG- CAA TC ----------
G
GAM20609 16588 CACACAATGAATGATCACCT C GAA TC CA-- ---- AGCCAC
9 GCATGTCGGCAGCCACGCTC CA ACAAT TGA ACCTG TGTC GGC
ACGGACAGATCCAGGTTCAA GT TGTTG ACT TGGAC ACAG TCG
CAGTTGTTTG T ACA -- CTAG GCAC ------
GAM20610 1082 CACACAATTAAGTTGCTGCA AATTA CTG--- AAT - GAGAGAA
0 AATTCAAAAGCTTAGAGAGA CACAC AGTTG CA TCAA AAGCTTA
ATAAGCTTCTTGGTGGTGAA GTGTG TCAAC GT GGTT TTCGAAT

ACTACAACTCTCACGTGTG CACTC ATCAAA GGT C -------
GAM20611 4306 CACACACACACACACACGAA A C A- AAAAACAA A GCTTGA
0 AAACAAAGAAAAAAGTGCTT CACACAC CA AC CACG AGAAAAA GT
GAGCTTTTTCTAACTTCCCC GTGTGTG GT TG GTGC TCTTTTT CG
GTGCAGTCTGGTGTGTG - C AC CCCTTCAA - ------
GAM20613 18582 CACACAGGGGCTTAAGAGAA GGGG GCC-- TCTT
1 GGCCAAAGTTTCTTGATTTT CACACA CTTAAGAGAAG AAAGTT
TTTTATTTCTTTTGAGATGT GTGTGT GAGTTTTCTTT TTTTAG
GTG A--- ATTTT ----
GAM20614 21381 CACACATTAAAGTGTAGGCT AAA A- T ---------- CTAG
5 CCATAATAGCTAGCTATTTT CACACATT GTGT GGC CCAT AATAG
GTATTCTTCATGGTGCCCGG GTGTGTGA CACG CCG GGTA TTATC
CACAGTGTGTG --- GC T CTTCTTATGTT ----
GAM20614 4243 CACACATTCAATATCCAACA CAT TCCA AATAG ACGT
7 AATAGAGTAATAAACGTTTG CACA TCAATA ACA AGTAATAA
TTGCTAGTGTTATTGATATT GTGT AGTTAT TGT TCGTTGTT
GTG TAT ---- GA--- ----
GAM20614 12158 CACACCAACTCAGGAAGACT --------- ACTG GGTG
9 GGCTGGTGAGTGTGCTTCCT CACACCAAC TCAGGAAG GCT
GAAGGATCCAGGTTGGTGTG GTGTGGTTG AGTCCTTC TGA
GACCTAGGA GTG- ----
GAM20615 9077 CACACCCAGCTAATTCTTCT CAGC TC T--- A A TT- CAT- GGC CT
7 ATTTTTGGTAGAGATGGGGT CACACC TAATTCT TATTTT GGT GAG TGGGG TCAC GTT
CAGG
TTCACCATGTTGGCCAGGCT GTGTGG ATTAGGG GTGAAA CCG CTC GCCCT AGTG CAA
GTCC
GGTCTCAAACTCCTGAACTC AC-- TC CCCT A C TCT AACT --- --
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CCTCCCAAAGTGCTGGGATT GGT
ACAGGTGTG TCA

GAM20615 12671 CACACCCAGGCACTAGAGCA CC - ACT- T---- - A TGT
8 GTTCTGGGATACAGTGTCTG CACA CAGG C AGAGCAGT CTG GGAT CAG
AATCCTCAGTGGTCACTGCT GTGT GTCC G TCTCGTCA GAC CCTA GTC
CTCTTGGCCCTGACTGTG CA C GTTC CTGGT T A ---
GAM20617 18145 CACACGGATAACCTTTGGAG A TAACCTT GA C CAACT
9 TACGTGACAACAACTTTGTC CAC CGGA TG GTA GTGACAA
ACCTATGACACCAGCTTCTG GTG GTCT AC TAT CACTGTT
CGTG C TCGACC- AG C -----
GAM20619 1494 CACACTCTGCCAGGTCCTGC T CAGG GCA T- --- TCTT
4 ATGCTGTGAGCCATCAGGAC CACACTC GC TCCT TGCTG GAGC CATCAGGAC
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CTCAGTGGGGAAAGTGAGTG - AA-- --- TC ACA ----
TG
GAM20619 6024 CACACTCTGCCAGGTCCTGC T CAGG GCA T- --- TCTTT
5 ATGCTGTGAGCCATCAGGAC CACACTC GC TCCT TGCTG GAGC CATCAGGAC
TCTTTGTCCTGGTGACAGCT GTGTGAG TG AGGG GTGAC CTCG GTGGTCCTG
CCTCAGTGGGGAAAGTGAGT - AA-- --- TC ACA -----
GTG
GAM20623 4425 CACAGACATTTTCGGGGCAG GA- TC AGT G GA CT ATAAATTTTG

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6          TTTTCTTTGGGAAGGTCTTT CACA  CATTT  GGGGC  TTTCTTT G  AGGT  TTG
           GATAAATTTTGTAATCACCT GTGT  GTAAA  CCCCG  AAAGAAG C  TCCA  AAT
           CTCGGAAGAAAGCCCCAAAT  ACA  --  ---  G TC  CT  ----------
           GACATGTG
GAM20624 9211  CACAGAGATAAGTGAGGAGA  ATAA  GAGGA  G-  G  TGCT
6          GTGGGGAGTGAGCTTGCTAG CACAGAG  GT  GAGTG  GGAGT AGCT
           CTGCTCCAGTACTTGAGAGC GTGTCTC  CG  TTCAT  CCTCG TCGA
           GACTCTGTG  AG--  AGAG-  GA  -  ----
GAM20624 18283  CACAGAGCAAATAACATTAC  C  -  ACA  --  CCT  AG  AAATACAA
7          TGAAAGAACCTGGAGGCTAT CA AGA GCAAATA  TTACT  GAAAGAA  GG  GCTATT
           TAAATACAAAATGGCAGTTT GT TCT CGTTTAT  AGTGA  CTTTCTT  TT  CGGTAA
           TCTTTCAAAGTGAAAATATT  T  T  AAA  AA  --- GA  --------
           TGCTTCTTTG
GAM20626 6245  CACAGAGTTAGGTAACAAAA  C-  A  AACAAAAATTCCTA  GAGTAAAA
3          ATTCCTATCAGAGTAAAATG CA  AGAGTT GGT  TCA
           ACAAAGCACAGAAAAACCAG GT  TCTTAG CCA  AGT
           ATTCTAATG  AA  A  AAAAGACACGAAAC  --------
GAM20626 1168  CACAGATCTGGGTCCCCACA  A  GG  CCA-  G  TGATGAT
8          GTGACATGATGATTGTGACT CAC GATCTG  TCC  CAGT ACA
           GGACCGGAAGCGGGTTAGTG GTG TTGGGC  AGG  GTCA TGT
                A  GA  CCAG  G  -------
GAM20628 1328  CACAGCAACTCCCTGTTTCC  - --- - CCTGTTT-  TATTTCT
1          TGCATATTTCTTGCAGGTCT CACAG CA  AC TC  CCTGCA
           CTGAAGATGTCGATGTCTGT GTGTC GT  TG AG  GGACGT
           G  T  AGC  T  AAGTCTCT  -------
GAM20628 3900  CACAGCAGACCAATCATGTT  -  A  AATCAT--  TCCC-  AATTTAACAA
4          CCCTGAAATTTAACAATCAA CAC AGCAG CC  GT  TGA
           TCATACTTAATAAAGGCCTG GTG TTGTC GG  CA  ACT
           TTAGTG  A  C  AAATAATT  TACTA  ----------
GAM20632 1570  CACAGCTAGTAAACAGCTGA  AAACA  ---  GCATTC  C  GTAT
5          GCCGGCATTCAAATCCAGGT CACAGCTAGT  GCT  GAGCCG  AAATC AG
           ATCTAGGTTTAAATGGCTCC GTGTCGATCA  CGA  CTCGGT  TTTGG TC
           CAAGCCCACTAGCTGTG  CC---  ACC  AAA---  A  ----
GAM20634 18371  CACAGCTGTTATGCCAGATG  A  -  ATG  AGA-  TTTAA  ATATCAGC
0          GTCAGTTTAAAGATATCAGC CAC GC TGTT  CC  TGGTCAG  AG
           CTGTCTGACTACAAAGGAAA GTG TG ATAA  GG  ATCAGTC  TC
           ATATGTCGTG  C  T  AA-  AAAC  TG---  --------
GAM20638 12446  CACAGGTGACGACAGTAGCA  T  CAGTA  A-  C--  C  -  -  -  G  TT-  CCT
4          GGGTCTCAGCTGGGAGGGTC CACAGG GACGA  GC  GGGT  TCAG TGG GAGG GTC CC TCTGG
CTGGA
           CCGTCTGGTTCTGGACCTCC GTGTTC CTGCT  CG  CCTA  GGTT ACC CTCC CGG GG AGACC
GATTT

           ATCCTCTCTTTTAGCCTCCA  -  CGAGA  GG  TTA  C  T  T  C  -  TCC  ---
           GAGGCGGCTCCTCTCCACTT CCATCCTCTCT
           GGATTATCCGGGCAGAGCTC
           GTCCTTGTG
                ----------
GAM20640 18759  CACAGTCTTTGACAATAGTA  C  GACAA  CTTA  GA  -  AGAAT
5          GCTTACTAAGACTGCTCAGA CACAGT TTT  TAGTAG  CTAA  CT GCTC
```

ATGAGTAAGCTTTAGGAAAC GTGTCG AAA ATCATC GATT GA TGAG
TACTAAAATGCTGTG T ----- AAAG TC A -----
GAM20641 21021 CACAGTGCAGGATGGGCACT T ATG C- AT--- CCTGCC
7 CCGTGATGGCCCCTGCCGGC CACAG GCAGG GGCA TCCGTG GGCC
CTCCTGCGCGGACCTGCCAG GTGTT TGTCC CCGT AGGCGC CCGG
CCCTGTCTTGTG C CGA CC GTCCT ------
GAM20645 16857 CACATAGAATACCCCTTCCT - AATACCC CTA G GCTCT CTTAATTT
7 ATCAGCTCGCTCTGATTTAG CACA TAG CTTC TCA CTC GATTTAGC
CCTTAATTTGTTAAATTTTT GTGT GTC GAAG AGT GAG TTAAATTG
TAGAGATGAATGAAGTGCTG C GT----- TA- A ATTTT --------
CTGTG
GAM20654 21169 CACATTCAGAAAGAAAGCAA AAAGA AAAT TA TAA TGCTTATCATTT
9 ATAAATCTAATATTAATTTC CACATTCAG AAGC AAATC ATAT TTTC
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GTGATTTCTAGCTTGCTGCT GTCG- ATC- -- TA- ----------
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GAM20658 3918 CACCAAATGGCTCCCTTTGC AAA G TT CAA- GAAA GAAA
8 CCAAGTGAAAGCCGAAAGGT CACC TG CTCCCT GCC GT GCC
CAGCGGCTGGCTGGGGAGGC GTGG AC GAGGGG CGG CG TGG
AGGTG --- G T- TCGG AC-- ----
GAM20659 17999 CACCAAGATCTGCACCTGCG AA A------ C --- CACCC
8 GCGGCTCCACCCGGGCCCGC CACC GATCTGC CCTG GGC GGCTC
GCCCTAGGCTTCACGGCAGA GTGG CTAGACG GGAT CCG CCGGG
TCAGGTG A- GCACTTC C CGC -----
GAM20661 12541 CACCACAAAGGGAAAGTGAA C AA- GAAAGCA TG AATTTGAGTGA
1 AGCATTGGAGGAGGATAATT CA CAC AGGGAAAGT T GAGGAGGAT
TGAGTGAGTCCTCTTCTGAG GT GTG TCTCTTTCG A CTTCTCCTG
AGCTTTCTCTGGAGTGATG A AGG AG----- GT ----------
GAM20661 16787 CACCACCACCCCACCTATGG - A- -------- AT G ACA
7 GCTTGGGCACAGCCAGAGCC CACCA CC CCC CACCT GGGCTT GGC
TGGGTGCAGTCAAAGGGCAG GTGGT GG GGG GTGGG TCCGAG CCG
GCTGGTG C AC AAACTGAC -- A ---
GAM20662 8222 CACCACCCATGATCCATCTG CACCC- CCATC TTT C CA
TTCCAGGTTTTAAATAGT
5 TGTAGTTTCTGAACAGTCAG CAC ATGAT TGTGTAG CTGAA AGT GCGA
CGATTCCAGGTTTTAAATAG GTG TACTA ACACATC GACTT TTA TGTT
TTTGTAAATTTTCAGTTTCT CTCACC TTTC- TTT - AA ----------
ACACACTTTATCATCCACTC
GTG
GAM20662 4074 CACCACCGCCACTTCGTCAT A ---- ---- AT G CAG
7 CCGCAGAGGCCAGGTCTTGC CACC CCGCCA CTTC GTC CCGCA AGGC
GGGAGATTGCTGAAGAGTAT GTGG GGCGGT GAAG TAG GGCGT TCTG
GGCGGGGGTG G ATGA TCGT AG - ---
GAM20662 20832 CACCACCGTTACTACGATCA C CT GATC - - C-- TGAG
9 ATGTTTGCGCATGTTCGAGA CACCAC GTTA AC AATG TTTGCGCA TGTT GAGA
TGAGTCTCACCAACAGTGTG GTGGTG CAAT TG TTAC GAATGTGT ACAA CTCT
TAAGTCATTAACAGTCCTAA T CC ACAA T G CCA ----
CTGTGGTG
GAM20664 18606 CACCAGAGTTCTGCTCCCTC A CT CCTC TCCTC CCCCG
5 ACTCCTCGCCCCGCCCCCTG CACCAG GTT GCTC AC G

TCCCAGAGTCCGACCTGGTG GTGGTC CAG TGAG TG C
- CC ACCC TCCCC -----
GAM20665 5936 CACCAGCCGCCTCCACCATG A -- ACCA C GA TT--- CCCAACGAGATCAAA
2 CCGCCGAAGTTCGACCCCAA CACC GC CGCCTCC TGC GCC AG CGAC
CGAGATCAAAGTCGTATACC GTGG TG GTGGAGG ACG TGG TC GCTG
TGAGGTGCACCGGAGGTGAA C AA CC-- - AG CATAT ----------
GTCGGTG
GAM20665 12345 CACCAGCCTCTCACCACCAG CA A AGA AC ATATGTTTTCTCTTCTTCC
3 AGATGACCGGAAATATGTTT CACCAGCCTCT CC CC GATG CGGAA
TCTCTTCTTCCTTCCGTGCA GTGGTCGGAGA GG GG CTAC GCCTT
TCAGGGGAAGAGGCTGGTG A- - A-- GT ----------
GAM20666 18523 CACCAGCTTCCCATCACGTG - TCA- TCTC- TCTTCT
1 TCTCGATCTTCTTCACAACC CACCAGCTTC CCA CGTG GA
ACGGCCCTGGAGGAGCTGGT GTGGTCGAGG GGT GCAC CT
G A CCCG CAACA ------
GAM20666 14305 CACCAGGAGTCCACATTCCA GGA - A- G G CGA
3 GGAGCTGTGCGACGGGGCTG CACCA GTCC AC TTCCAG AGCT TG
CTGGAGGAGTCGGACTGGTG GTGGT CAGG TG GAGGTC TCGG GC
--- C AG G G ---
GAM20670 3686 CACCATGGTGGGTCCAGGAT A- TG -- - ----- TCTCT
3 GGGTCTCCATCTCTTGGACT CACC TGG GGTCCAG GA TGGGTC TCCA
TGTGATCCACTCGGCTGGGC GTGG ACC CCGGGTC CT ACCTAG AGGT
CTCCCAAAGGTG AA CT GG C TGTTC -----
GAM20670 6228 CACCATGTCAGCCAGGCGAA CA T ---- AACT- ACCT
5 CTCCTGACCTCAGGTGATCC CAC TG CAGCC AGGCG CCTG
GCCTGCTCGGCTGCCAGAGT GTG AC GTCGG TCCGC GGAC
G AG C CTCG CTAGT ----
GAM20672 9543 CACCATTGATATTGTATTTA A ATAT TATT A GGTGGG
2 GAAGGTTTCAGGTGGGTGAA CACC TTG TG TAG AGGTTTCA
ACCTCCTATTCCATGCGTAA GTGG AAT AC ATC TCCAAAGT
GGTG - GCGT CTT- C ------
GAM20673 9620 CACCCACTCCACGGTGCGCA C TC CG CATCAA-- A TCCA
4 CATCAAGGACGTCCACGCCC CAC CAC CACGGTG CA GG CG
ATACTCGCTGTACACCGTGA GTG GTG GTGCCAC GT CC GC
CGTGTGTG T CA AT CGCTCATA C ----
GAM20676 18610 CACCCATGTATCCTGCTGCT C TATCCT -- GAC CTGAG
0 CCGGACGCTCTGAGGGCTGG CAC CATG GC TGCTCCG GCT
AGCAATGCCCCTCCATGCGT GTG GTAC CG ACGAGGT CGG
G C CTCCC- TA --- -----
GAM20678 16478 CACCCCGCCATACTCTTCAG - TACT AGCAA TC A CCTGGCC
0 CAATCTCCCGCAAGACCTGG CACC CCGCCA CTTC TC CCGCA GA
CCTCTGCGGATGACGAAGTG GTGG GGCGGT GAAG AG GGCGT CT
GCGGTGGTG T ---- C---- TA - -------
GAM20679 4145 CACCCGCTTTGTGAAATGGC C TGT A- C----- A TCAGGT
5 CCCGCTATATCAGGTTGCAG CA CCGCTT GA ATGGC CCGCT TA
CGGCAGAGAGCCATCCTCTA GT GGCGAA CT TACCG GGCGA GT
TAAGCGGCTG C TAT CC AGAGAC C ------
GAM20681 1245 CACCCTGCCTTGTCTCCAGG TG GAAGCTCTGTG
5 AGGTCCGAAGCTCTGTGGGA CACCC CCTTGTCTCCAGGAGGTCC
CCTCTTGGGGGCAAGGTGGG GTGGG GGAACGGGGGTTCTCCAGG

GTG GT ----------
GAM20683 16590 CACCGAACTTTATTTCGTCT A-- TTTC C GGCC AAGA
3 CATCATGGGGCCTCTTGAAG CACCG ACTTTA GT TCATCATGG TCTTG
ACAGGACATCGTGGTGAACA GTGGT TGAAAT CA AGTGGTGCT AGGAC
ATTTAAAGTCAGTGGTG GAC TTAA - AC-- ----
GAM20684 21569 CACCGAGTCACTGTCTTGAT GAG A GT- A-- A T- AAAT GCTGTG
2 TTAGGAAAGGGCTTCCAAAT CACC TC CT CTTGATTT GG AAGGGC TCC GGGGCT
GGGGCTGCTGTGGGTCCTCG GTGG AG GG GAGCTAAG CC TTTCCG AGG TCCTGG
GATTGCCTTTCCCGGGGAAT AAA - AGT GGG C TT C--- ------
CGAGTGAGGGAAAAGGTG
GAM20685 4364 CACCGCGCCGACGTCCCCTC - C TCCCCTC CT CTCTCCTCC
2 GGCCTGCGCTCTCCTCCCGC CACC GCGC GACG GGC GCG
TTGTCCCCTGTGTTCGTGCT GTGG CGTG TTGT CTG CGC
GGTG T C GTCCC-- TT ---------
GAM20685 20513 CACCGCGTAGCCGCTGAGAC C A C - CC-- - CT A AA C CTTGAA
4 CCTCCGCTCGCTTCCTCAGG CAC GCGT GCCG TGAG AC TCCGCT CG TCCTC GGC GG AG

CAAGGCAGCTTGAACTCCCC GTG CGCG CGGT GCTC TG GGGTGA GC AGGAG CCG CC TC

GGCCGAGGACACGAAGTGGG - - A C ACCA A AC - GC C ------
ACCAGTCCTCGATGGCGCGC
GTG
GAM20685 3065 CACCGCGTAGGATGCTGATA C AG- GCCTGCCGATG CCAG
5 TTGCCTGCCGATGCTGCCAG CACCG GT GATGCTGATATT CTG
CGGAAATGATGATGGTGTCA GTGGC CA CTATGACTGTGG GGC
GTATCAAAACCGGTG - AAA TAGTAGTAAA- ----
GAM20686 3180 CACCGTCCGGTCAGAGAAGC C A AA AAGAAGG - T A TTTG
6 TAAGAAGGGCCCCTGGAGAA CA CGTCCGGTC GAG GCT GCC CC GG GAAG
GTTTGCTTCCCTGGAGGTAA GT GTAGGTCAG CTC CGG TGG GG CC CTTC
GCGGCCCTCAGACTGGATGA A A C- CGAA--- A T - ----
TG
GAM20687 21025 CACCGTGGTGCTGCAGGTTG TG -- TG--- - -- CTCTCTC
1 TCAGCGATGCCGGCTCTCTC CACCG GTGCT GCAGGT TCAG CGAT GCCGG
CTGGCCTGTTGTCTGAATGC GTGGT TACGG CGTCCG AGTC GTTG CGGTC
CGCCTGCATGGCATTGGTG -- TA CCGTA T TC -------
GAM20688 9701 CACCTACACAGAGGCTGTGC C A---- G AGACG A CCTTCAA
4 AGACGGTGGACCCCTTCAAG CACCTACA AG GGCT TGC GTGG CC
GCCACAGGCAAGCCCCACAC GTGGGTGT TC CCGA ACG CACC GG
TCTGTGGGTG C ACACC - GA--- - -------
GAM20693 20154 CACCTCTTATAGAGGTTGAT C TATAG -- TGCT TCC
1 AGGACTGCTTGGGTCCTCCA CAC TCT AGGTTGAT AGGAC TGGG
CTGTCCTCTGTCAATCTAGT GTG AGA TCTAACTG TCCTG ACCT
TAGACGTG C TTGA- TC TC-- ---
GAM20693 3188 CACCTCTTTGGGCGATTTGC TTT TT--- - A- CCGT
3 GGGGCCCAAGCCCGTGTTGG CACCTC GGGCGAT GCG GGGCCC AGC
GGGCCCTCGCTGTGTGTTGT GTGGGG TCTGTTG CGC CCCGGG TTG
CTTCTGGGGTG TCT TGTGT T GG ----
GAM20694 12798 CACCTGCAGCGAAAATTAAC C C- AATTAA CT GA AAAA
7 CCTTCTGGATCAAAAGAACA CA CTGCAG GAA CC TCTG TC
GACTGGCTTCCCCTGCAGAT GT GACGTC CTT GG AGAC AG

G A CC C----- TC A- ----
GAM20695 22346 CACCTGCCATTTGGATTGGC CCA GG C T G A TT TTA- C- AGAT
3 AATCTGCAAGATTTTATTAC CACCTG TTT ATTGG AA CT CAAG TTTTA AC AATG AAC
TTAAATGCAACAGATGTTCT GTGGAT AAA TAACC TT GA GTTC GAAGT TG TTAC TTG
CATTCATTGTTCTGAAGCTT TTA AG - - G - CT TTAC TC ----
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AGGTG
GAM20697 5408 CACCTGGGCTATATTTTTTT - C T- T A TAGT
3 TTAATTTTTAGTAGAATAAA CACCTG GG TA ATT TTTTTT ATTTT
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TG T T TT T A ----
GAM20697 20404 CACCTGGGTAGCTGAGAGAG C AGCT A AAG- AAAT
5 ACAGAAGGTAAAATTGCGGA CA CTGGGT GAGAGAG CAG GTA
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ATG A GGC- - GAGG ----
GAM20702 19333 CACCTTGACTGCCCCCAGAA CTT - CAG TG T- GACC
8 GTGTGTCTTGAGACCTCCTG CAC GACT GCCCC AAG TGTCT GA
GGCGTGCTTAGAGGGGTGAG GTG TTGA TGGGG TTC GCGGG CT
TTGTG --- G AGA GT TC ----
GAM20703 3972 CACCTTGGGAAGGGGGTTCC AA- TC G CTGT
4 TGGTGGTCCTGTGACAACCA CACCTTGGG GGGGGT CTGGT GTC
GAGACCCCCAGGCCCAAGGT GTGGAACCC CCCCCA GACCA CAG
G GGA GA A ----
GAM20704 21152 CACCTTTCATCTCTCTGCTC TTT T TC CA- -- GCCTG
5 AGGTCTGGCCTGCAGGAGCC CACC CA CTC TGCT GGT CTG
CGCAGCAAGGAGTGTGTGGT GTGG GT GAG ACGA CCG GAC
G TGT - GA CGC AG -----
GAM20705 4156 CACCTTTTGGCTACTTGAAT TG C C TT-- -- TT GAACAA
8 CAAGTTGCTATGGGCATTCA CACCTTT G TA TTGAATCAAG GCTAT GGGCA CAT
TGAACAAGTGTTTGTTTGAG GTGGGGA T AT AACTTAGTTT TGGTG TTTGT GTG
TGGTTTGTTTTGATTCAATT TT - T TGTT AG TT ------
ATTTAGGGGTG
GAM20706 8598 CACGAAATAAATAAACCGGA - TAAACCG---- AC AAAA
2 GGAACTCCAGGAAAACTTGG CACGAAA TAAA GAGGA TCCAGG
GAATCTTCAATGCAATCTTT GTGTTTT ATTT CTTCT GGGTTC
TTATTTTTGTG T TTCTAACGTAA AA ----
GAM20707 4148 CACTTGAGGCATGTCACAAG T TC AAG G TCAG
8 GGCTGGGGCGTCAGCGTCGT CACTTGAGGCA G AC GGCTG GGCG
GGTTGGAGTAGCTGCTTCAG GTGGACTTCGT C TG TTGGT CTGC
GTG - GA AGG G ----
GAM20709 22228 CACTTGGCTCCTGAGGGATC - CT -- G CGC-- A TTGACTACCT
7 TTTACTGAACGCAGCACCTT CACTT GGCTC GAGGGAT CTTTACT AA AGC CC
GACTACCTGGCGCTCTCTCT GTGAA TCGAG CTCCCTG GGGGTGA TT TCG GG
TGAGTGGGGCTGTCCCTCCT A TC TC G CTCTC C ----------
GAGCTAAAGTG
GAM20711 8047 CACTTGTTGTGGTGTCAAGG T G A AAT AAA - CTCGA
1 CAAATGCAAAACAGGTTTCT CACT GTT TGGTGTCA GGCA GCA CAG GTTT
CGAAAGCGCTGACTGTTGTC GTGG CAG ATCGTAGT CTGT TGT GTC CGAA
TGATGCTAGACTGGTG T - - --- CA- G -----
GAM20711 16520 CACTTGTTTATGGCCTAAAA C CCTAA GACACA

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3          TTTGTATAAGGACACACTTA CA TTGTTTATGG    AATTTGTATAAG
           TACAGATTTCATAAACAATG GT AACAAATACT    TTAGACATATTC
                      -       -----         ------
GAM20717 18064  CACTTTGGGAGGCCAAGGCG    T  GGA    A GC  G---------- GATCA
0          GGCGGATCACGAGGTCAAAA CACT TG   GGCCA G  GG            CG
           GATCAAGACCATCCTGGCCA GTGG AC   CCGGT C  CC            GC
           ACATGGTG            T  AA-    C TA  AGAACTAGAAAACTGGA  -----
GAM20722 8077   CAGAAAAATAAATGTCTATC     AAATAAA   TA    A     G   AAAAA-  GCCCA
2          AGTACTTTCTGTTTGAAAAA CAGAA      TGTC  TCAGT CTTTCT TTTG     GAA
           GAAGCCCATTTGAGACCCAG GTCTT      ACGG  AGTCA GAAGGA AGAC     TTT
           AAGGAAGACTGAGGCACAGA     AGAC---   --    -    -   CCAGAG   -----
           TTCTG
GAM20725 14661  CAGAAAATGGGCGGGGTGGT      A        GGT---------     GATGGG
5          GTGGGTGATGGGACTCATTG CAGAAA TGGGCGGGGT         GTGGGT
           TAGAAAGGAAGCCTTGCTCA GTCTTT ACTCGTTCCG         TACTCA
           TTTCTG              -        AAGGAAAGATGT     ------
GAM20729 12515  CAGAAAGCAGTTTAAAGTTA      C   TTAA   AT--    T  T    ---    G  AC    TTTT
1          TTGTTTTTATTATTTTTATT CAGAAAG AGT    AGTT    TGTTT TA TATTTT   TATTT CT  CAATA
           TGCTACCAATATTTTTATTG GTTTTTC TCG    TCAA    ATAAA AT ATGGAA   ATAAA GA  GTTAT
           TAAGAAATACAAAAGGTATT      -  TTTA   ACAT    C  T    AAC    - AT    ----
           ACAAATATACAAACTATTTG
           CTCTTTTTG
GAM20732 5723   CAGAAATTCTAGTTTTTGAA    AAA    GT----      GA  T  GGATCA
5          AGAGATGCGGATCAGCTCAA CAG   TTCTA     TTTTGAAA  GA GC
           TTTTAGAACAAGTATGGGAA GTT   AGGGT     AAGATTTT  CT CG
           AGTTG               GAA    ATGAAC      AA  -  ------
GAM20734 3965   CAGAACATATACCATATAGT    AA    AC--   AT   ------    GCAA
5          GAAAGGCAACTTTTTAAATA CAG  CATAT    CAT  AGT     GAAAG
           ACTTCATGACTAATATGAAC GTC  GTATA    GTA  TCA     TTTTC
           TG                AA     ATCA   CT   ATAAAT    ----
GAM20740 14466  CAGAAGAGCTTGCTAGAGTG    -    TTGCTA   T    AACT-    CCAG
0          TCAAAACTTCTCCCCAGGGA CAGA AGAGC     GAG GTCAA     TCTCC
           GATAATGTTGACCCTTGCTC GTCT TCTCG     TTC CAGTT     AGAGG
           TCTCTG              C     ------  C     GTAAT    ----
GAM20741 18993  CAGAAGCATGCACAAAGAGA     GCA-  C      GA    -  ACAGTGC
8          TAATGTGACAGTGCTACAAT CAGAA    TG ACAAAGA  TAAT GTG
           TAGGTCTTTGTCAGACATTC GTCTT    AC TGTTTCT  ATTA CAT
           TG                 ACAG  -      GG    A  -------
GAM20742 18203  CAGAAGCCGTTCTTCACTTG      CC    TTCACTT  C   TGC-    CACTT
0          CCTTCTGCAGCTCCACTTGA CAGAAG  GTTC      GC TTC    AGCTC
           GCTTCCTGAATGCCTTTCCG GTCTTC  CAAG      CG AAG    TCGAG
           AACCACTTCTG             AC    CCTTTC-  T   TCCT    -----
GAM20742 9548   CAGAAGCCTCTGATGCTTTC    AA      -------  TT    T  C--    CATCTTTCT
3          CCCTGGCAGGTCCATCTTTC CAG  GCCTCTGA      TGC  TCCCC GG   AGGTC
           TGATCTAATCCTGGGGGTGC GTC  TGGAGACT      ACG  GGGGG CC   TCTAG
           ATCCATTGTCAGAGGTCTG    --       GTTACCT   T-    T  TAA    ---------
GAM20746 14509  CAGAAGTCATCAGAGCTGAG       A    -    --    GCCTTGAA
4          GCATGGCCTTGAACATGTCA CAGAAGTC TCAGAG CTGAG  GCATG
           CTCAGTCTCTGGGGCTTCTG GTCTTCGG GGTCTC GACTC  TGTAC
                             -     T     AC     --------
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GAM20746 12328 CAGAAGTCCAAGGACACTTC A C G GG TGGGTGA
6 CTGAGTGGACAAGGTGGGTG CAGAAGTCCAAGG CACTT CT AGTGGACAA TGGG
GGTGATCCAGTTGTCCACTA GTCTTCGGGTTCC GTGAA GA TCACCTGTT ACCT
AGAAAGTGCCCTTGGGCTTC C A A G- -------
TG
GAM20750 12932 CAGAATCCAGTGGAACCCAA A- - GA-- A CCTAAGCGCC
3 AGTCCTAAGCGCCATTCTGG CAGA TC CAGTG ACCCA AGT
GTCTTACGCTGTGACATCTG GTCT AG GTCGC TGGGT TTA
AC T ATTC C ----------
GAM20752 5972 CAGAATGGCCGTGTCGGACA CCGTGTC CT TT- TCACATTCT
3 CTGATTTGGATCACATTCTT CAGAATGG GGACA GA TGGA
CCATCTTCTGTTCTTCCTCC GTCTTACC CTTGT CT ACCT
ATTCTG TCCTT-- -- TCT ---------
GAM20754 18060 CAGAATTCTTGATCTTGAAA GA- TTGAAAACAA AATGTA
5 ACAAGCAAATGTATGCCTTA CAGAATTCTT TC GCA
AAAAATGAAGAGGGAGTTCT GTCTTGAGGG AG CGT
G AGA TAAAAAATTC ------
GAM20757 5429 CAGACACCAGCTTCCCATCA A-- - TCA- TCTC- TCTTCT
8 CGTGTCTCGATCTTCTTCAC CAG CACCAGCTTC CCA CGTG GA
AACCACGGCCCTGGAGGAGC GTC GTGGTCGAGG GGT GCAC CT
TGGTGCGGCTG GGC A CCCG CAACA ------
GAM20762 22215 CAGACCAGTCTTCCGTGGCA CA CC---- CTGA G CA- --- GGAA
4 GGCTGAGCGCTCCAGTCTTC CAGAC GTCTT GTGGCAGG GC CTC GTCT TCAGTAG
AGTAGGGAATTGCTGAATAG GTCTG CAGGA CATTGTCC CG GAG CGGG AGTCGTT
GGCACAGAGGGCACCTGTTA AC CTTCCA A--- G ACA ATA ----
CACCTTCAGGACCAGTCTG
GAM20763 12415 CAGACCCTTCCAAGTAAGTC GACC CAAGTAA ACGAAAG ACCA
8 CAACGAAAGCCATGACCACA CA CTTC GTCCA CCATG
TGGATGATATGGATGATGAA GT GAAG TAGGT GGTAC
GATGATG AGTA TAG---- ATAGTA- ----
GAM20764 8712 CAGACCGAGAAAGGCGGGAG - AGAAA G A ACAG AACT
0 AACACAGAGCCAACTGGCTA CAGAC CG GGCG GAG AC AGCC
AGTCCTCGCGTCCCGAGTTT GTTTG GC CTGC CTC TG TCGG
G A C---- G C AA-- ----
GAM20770 20844 CAGACTGCTTCGGGCTGCCG - TCG- GAGGACCTTC GCCC
0 AGGACCTTCTGGGCCCCCAC CAGACT GCT GGCTGCC TGG
ATTAATGAGGCAGCCACCTG GTCTGA CGG CCGACGG ACC
GCGAGTCTG G TCCA AGTAATTAC- ----
GAM20770 4273 CAGACTGGAACATCTAAAAC - TG AA T AAAC - - ACAAAA CCAA
1 AGGAGCTTGGATGACAAAAG CAGA C G CA CTA AGGA GCTT GGATG GCAG
CAGCCAACTGTAAGGCATAT GTCT G C GT GGT TCCT CGAA CCTAT TGTC
CCAAAGCGTCCTCATGGTTG T GT AG T AC-- G A ACGGAA ----
GACTGGTTCTG
GAM20774 3729 CAGAGAACGAGTTAGTGCGG C A AGTTTCAA TCAA
2 CAGTTTCAAGTCTCAAGGCC CAGAGAA GAGTT GTGCGGC GTC
ACTTGGCTGCACGGATTCTT GTCTTTT CTTAG CACGTCG CGG
TTCTG - G GTTCAC-- ----
GAM20774 13048 CAGAGAAGAGAAAAATGCAG AA AAA -- A GCTCAG
6 GACACTGGCTCAGTAGTGCC CAGAG GAG AATGCA GG CACTG
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GG GG- TT - ------
GAM20775 1332 CAGAGAATGTGGCTTAGGCG A T - AGGC ATTATACACTGC
7 CCGGTTATTATACACTGCGA CAGAGA TG GG CTT GCCGGTT
TTGGTAGAGACCTCATCTTT GTTTCT AC CC GAG TGGTTAG
G - T A A--- ----------
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7 AGTTCCTGCAGGAGAATGAC CAGAG CCGAGTT AAGTT GCAGG
CAGAGCCTGCTAAACTTCAG GTCTC GGCTCAG TTCAA CGTCC
CGACTCGGACAGCTCTG GACA CGAC AT- ----------
GAM20778 3211 CAGAGAGATAGTATATATTT TAGTAT ATT A - AAATT
6 TAACAACTTGAAATTCATAG CAGAGAGA AT TTAACA CT TG
GTGTTAATAGATTCCTCTTT GTTTTTCT TA AATTGT GA AC
TTG CCT--- GAT G T -----
GAM20778 9032 CAGAGAGATGAGGGGCAGCA GAT C A G CAG - AG CCCAAA
7 TCAGTGCAGCTGGCAGGCAG CAGAGA GAGGGG AGC TCA TG CTGG C GCAGAA
AACCCAAATTCTGCAGGCCC GTCTCT TTCCCC TCG GGT AC GACC G CGTCTT
AGGACAGTGGGCTCCCCTTT --- - - G AG- C GA ------
CTCTG
GAM20787 3553 CAGAGCGAGTCACGTACATT GCGAG C A T GG- T GCTGAA
2 TATGAGGCAAGTCAGCTGAA CAGA TCA GT CATTTA GA CAAG CA
TGCTTGAAATCTAGATGAAT GTCT AGT TA GTAGAT CT GTTC GT
TTGAAGATCTG AGA-- T A - AAA - ------
GAM20787 18815 CAGAGCGCGGGGTTAGGGGT - TAGG- TC- TG TT- G CTGCTCC
4 TCATTGCCTTGTGTCCTCTG CAGAGCG CGGGGT GGT AT CC GT TCCT
CTCCGGGAGACTTCGGTGAT GTCTCGC GCCTCA CCG TA GG CA AGGG
TCTGCCACGTCACTCCGTCG T CTGCA TCT GT CTT G -------
CTCTG
GAM20788 18122 CAGAGCTCAACTTATGTGCT A A --- T - ---- TGGT
5 TCGGGCTGGGCACTGGTGTG CAG GCTCA CTT ATG GCTTCGG GCT GGGCAC
TTTCTGAAGCTCTGAAGCTC GTC CGAGT GAA TAC CGAAGTC CGA TTTGTG
ATTCGAAGGTGAGCCTG - G GCT T T AGTC ----
GAM20793 3053 CAGAGGATGTGAGAGGCAGA - G C AG A- CCTGG
5 GGCAGGCTCCTGGGGCTGAG CAGAG GATGT AGAGG AG GC GGCT
CTCCTTCCTCTGCATCATTC GTCTT CTACG TCTCC TC CG TCGG
TG A - T CT AG -----
GAM20793 2727 CAGAGGCACAGGTGCCGGCC A ---- TG -- CA AGAA TGGACT
7 CTGCAGCCCCCAGAACCTGG CAG GGCA CAGG CCG GCCCTG GCCCCC CC
ACTGGAGGGGGCCATGGGGC GTC CCGT GTCC GGC CGGGGT CGGGGG GG
ACCGGACCCTGGTCCTGCCC - CCTG CA CA AC A--- ------
TG
GAM20795 16771 CAGAGGCTGAAGTATACAAA GC TACAAACTGAAAG GAACTA
4 CTGAAAGCTGAACTAAGAAA CAGAG TGAAGTA CT
TGACTCTTTACTTCAAACTC GTCTC ACTTCAT GA
TG AA TTCTCAGTAAA-- ------
GAM20804 6112 CAGAGTGTAAATGGTGATCT AA TGATCTTCTA C GTCC
5 TCTAAATCTGTGTCCACAAA CAGAGTGT ATGG AAT TGT
TTCCAAAACCCATAACACTC GTCTCACA TACC TTA ACA
TG A- CAAAACC--- A ----
GAM20807 9018 CAGATAAGACAGGGAACACT ATA AA T - - A GCATCTGA
8 TGTGAGCACACAGAGCAGCA CAG AGACAGGG CAC TGT GAGCAC ACAG GCA

TCTGATGCCCTGTGGTGTTT GTC TCTGTCCC GTG ACG TTTGTG TGTC CGT
GGCATGTGCCCCCTGTCTAC A-- CC T G G C --------
TG
GAM20808 3345 CAGATAATCTAAAACTACGA AAT AC- T TG CACAA
4 ATACTACCTGACTCCACAAG CAGAT CTAAAACT GAATAC ACC ACTC
GGTACGGTGTATTCTCCAGT GTCTA GATTTTGA CTTATG TGG TGGG
TTTAGCATCTG C-- CCT - CA -----
GAM20809 18543 CAGATACTATTTTAGGGCTT A CTTAG- CAACAG ACT
4 AGGTACAACAGTGGACTCTA CAG TACTATTTTAGGG GTA TGG
AAGATTGCAAATATCTCTGA GTC ATGATAAAGTCTC CGT ATC
AATAGTAACTG A TATAAA TAGAA- ---
GAM20816 19979 CAGATCTGCCCTCCAATGGC A -- AT ATC GAAACCAAGAAGA
6 ATCACCAGAAACCAAGAAGA CAG TCTGCC CTCCA GGC ACCA
TGGTAAGGCCTGGAGGTGGC GTC AGACGG GAGGT CCG TGGT
AGAGCTG G TG -- GAA ----------
GAM20818 16566 CAGATGATCTCTGAATGAAT TGAT- TGAA TTATA G G
ATGCTTAAAGATTTCTCTA
7 GCTTATAGGGAACCATATGT CAGA CTCTGAA TGC GG AACCATAT TAT
ATATGCTTAAAGATTTCTCT GTCT GAGATTT ACG TC TTGGTATA ATA
AATAAATATGGTTGCTGCAA TAATT CA-- ----- G A ----------
CTTTAGAGTTAATTCTG
GAM20823 19926 CAGATGTTATGATTCTCTCC T TAT C- TTTGCCCTT-- TTGAA
4 CTTTGCCCTTATTGTTGAAC CAGA GT GATTCT TCCC ATTG
AATTTTTTTTTCTTGGGAAC GTCT CG CTAAGG AGGG TAAC
GGAATCTTGCTCTG - TT- CA TTCTTTTTTTT -----
GAM20823 18204 CAGATGTTTATGAACGAGGG TT AA - G TGG A - G TATG
8 GCAGTGGGCTGGGGACACTG CAGATG TATG CGAGGGGCA GTG GC GGAC CT GCTG GGT

CTGGGGTTATGGCTGTAGTG GTCTGT GTAC GTTCCTTGT CAT TG CCTG GA TGAT TCG
AGGTCCATGTGTACTTGTTC T- G- T G TA- - G G ----
CTTGGCATGTTGTCTG
GAM20824 8283 CAGATGTTTTGAAGATCGTG -- A--- - - - TC AACTA
0 ACGTCTTGTAACTAGCAGTG CAGATGTTT TGA GAT C GTG ACG TTGT
TGTGCACAGAATCCTACTCA GTCTGCAAG ACT CTA G CAC TGT GACG
AGGAACGTCTG GA CATC A A G GT -----
GAM20824 3262 CAGATTAGAAAAACTGAGGT AT- AAAAA A ATG A GA TA CACC
4 TATGGCACTGACTTAGGCAC CAG TAG CTG GGTT GC CT CT GG
CCCCCAGCAAGGCAACCCAG GTC ATC GAC CCAA CG GA GA CC
GGACTACAACTG AAC AGG-- - --- - AC CC ----
GAM20826 1237 CAGATTCTATTCAGACTTCA ATT- CTTC- TTTTTCATT
0 TCAGTTTTTTCATTACTGAT CAGATTCT CAGA ATCAGT
CTTTTTCTGTTCCAGGATCT GTCTAGGA GTCT TAGTCA
G CCTT TTTTC ---------
GAM20826 21310 CAGATTGACAATGCCCGTCT A A- AT - CT- CG A--- CAAG AGA AGTT
9 GGCCGCGGATGACTTCCGCA CAG TTG CA GCCC GT GGCCG GATG CTTCCGCAC TATG
CAG
CCAAGTATGAGACAGAGTTG GTC AGC GT TGGG CG CCGGT CTAC GAAGGTGTG GTAC
GTC

AACCTGCGCATGAGTGTGGA A AG CG A CGT AA AGCC A--- GC- ----

AGCCGACATCAATGGCCTGC GAAC
GCAGGGTGCTGGACGAACTG

GAM20827 19773 CAGATTGACACCCTGAGTGG A CACC - GC TCCAGAGAAAT
0 CTTCTCCAGAGAAATGAAAT CAG TTGA CTG AGTG TTC
CATTGCAGTACCTCAACCTG GTC AACT GAC TTAC AAG
C CCAT G TA ----------
GAM20830 18598 CAGATTTTGCTTTTATTTAA TTTTGCTTTTATT- A TTTTATGT
0 CTTAATTTTTTATGTAGGTG CAGA TAACTTA TT
AGTTATATTTTCTTTCTTTT GTCT ATTGAGT GA
CTG TTTCTTTCTTTTAT G --------
GAM20830 3490 CAGATTTTGTCTCTTCATTT TT G TCT- TTT - TATC
5 TGGCCGTTAGTATCCTAAGT CAGA TT TC TCAT GGCCG TTAG
GGCCTTGTGATCATGAGGGT GTCT GG AG AGTG CCGGT AATC
TTCTG TT G TACT TT- G ----
GAM20831 20917 CAGCAAAGATTGCCTTGTCC CA- CCT AAGA TC ATCCTCAT --- GTATTT
6 CCAAGAGCCTCCTCGATCCT CAG AAGATTG TGTCCCC GCC CTCG GAGT TGGTT
CATGAGTTGGTTGTATTTGG GTC TTCTGAC GCGGGGG CGG GAGC CTCG ACCGG
CCAGACGCTCCGAGCGGCAG TAG C-- A--- C- -------- CAG ------
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GAM20832 3295 CAGCAAATGTAAATGAGCGG AA AAA AGCG AA G G GTGGGAAGA
3 CAATGAGCTTGGTGTGTGGG CAGCA TGT TG GC TGA CTTG TGT
AAGAACAGCAAGGTCAGCAA GTCGT ACA AC CG ACT GAAC ACA
AGCAGGAACATGCTG -- AGG GAAA -- G G ---------
GAM20833 19407 CAGCAAGAATCTTCAGTACC AAGAA C AC G CTGATGTT
6 AGAGGTGCCTGATGTTGCAC CAGC TCTT AGT CAGA GTGC
ATTTGCCACTTGAGAAGCTG GTCG AGAG TCA GTTT CACG
A---- T CC A --------
GAM20835 6624 CAGCAATGTGAGACTGGCCA A A CC CTTTTCCCCTTCGTC
7 GTGCTTTTCCCCTTCGTCCA CAGCA TGTG GACTGG AGTG
TTCCCAGTCACATGATGTTG GTTGT GTAC CTGACC TTAC
A A C- ----------
GAM20837 8241 CAGCACACTACCAGAAGACA CAC CAG- GA ---- - AAAAG
7 GCAGAAATGAAAAGCATTTA CAGCA TAC AA CAGC AG AAATG
CTTGTGGCTGGATTATTTGT GTCGT ATG TT GTCG TC TTTAC
AATGCTG A-- TTTA AG GTGT A -----
GAM20838 18561 CAGCACATTCTTGGTACTCA CT ACTCATG G-- C--- G GGAAT
8 TGTCTCATGGCATCCTGGAG CAGCACATT TGGT TCTCAT GCAT CTG AG
GGAATCTGCGGAACTGTGCA GTCGTGTAG ACCA AGAGTA CGTG GGC TC
TGATGAGAAAAAACCAGATG -- AAAA--- GTA TCAA G -----
TGCTG
GAM20839 18996 CAGCACCATAACACTAGACC A AACA- AG- G AA CCTGCA
6 CAGCCTAACTGTCCTGCAAC CAGC CCAT CT ACCCA CCT CTGT
AGGGGATGGGTAAAAGGGAT GTCG GGTA GA TGGGT GGG GACA
GATGGCGCTG C GTAGG AAA A -- ------
GAM20839 12648 CAGCACCCACCTCGGACTTG AC CTCGGACTT G TG GCAAG ATCCT
8 GCTGTGGACGGTTGGTGCAA CAGC CCAC GGCTGTG ACGGT GT TGC
GTGCATCCTGCAGGGCTGGC GTCG GGTG TCGACGC TGTCG CG ACG
TGTGCGCAGCTGTGGGCTG -- --------- G GT GG--- -----

GAM20842 20254 CAGCACTTTGGGAGGCTGAG G T - AGG- G--- ACGA
3 GCGGGCGGATCACGAGGTCA CA CAC TTGG GAGGCTG CGGGC GATC
GGAGTTTGAGACCAGCCTCA GT GTG AACC CTCCGAC GTTTG CTGG
CCAATGTGGTG G T A CAGA AGGA ----
GAM20842 12959 CAGCAGAGCATCCGGAACGT -- AC A- - - -- A AGCT
9 CACAGAGGACGTGCAGAACA CAGCAGAGCATC CGGA GTC CA GAG GACGT GC GAAC

GCTGTTTGGCCTACGTCACT GTCGTTTCGTAG GTCT CAG GT CTC CTGCA CG TTTG
CATGAGGACATCTGCAGATG AC A- GA A A TC G ----
CTTTGCTG
GAM20843 18980 CAGCAGAGGCTGGGGTGACT AGA GG C- G GAGATGA
5 CATGGATAGAGATGATGTGT CAGC GGCTG GTGA TCATG ATA
GTGATCTTATTTCGGCCCAG GTCG CCGGC TATT AGTGT TGT
CTG AC- TT CT G -------
GAM20845 3834 CAGCAGCCGGCTGGAGCAGC -- AGC- C - C C C- G CTCT
3 GGCCCCTCAGGTCTCGGAGC CAGC AGCCGGCTGG AG GGCCC CT AGGTCT GGAGC CGGT
CGC
CCGGTGCGCCTCTGCGGTCG GTCG TCGGCCGGCC TC CTGGG GG TCCGGG CCTCG GCTG
GCG
TCGCTCCTGGGCCTCGGCGG CT GTTC A C C T CT - ----
GTCACTCTTGCCGGCCGGCT
TCGCTG
GAM20846 22231 CAGCAGCTCTGAGAAAAGGG C - A A- TATCT ACC
2 GCAGGAGGAAGAAGTATCTG CAG AGCT CTG GAAAAGGGGCAGGAGG AGAAG GGGAAT

GGAATACCATTCTCTCACTC GTC TCGA GAC CTTTTCCCCGTCCTCC TTTTC CTCTTA
TTTTCCCCTCCTGCCCCTTT - C C CC TCACT ---
TCCCAGCAGCTCTG
GAM20846 4527 CAGCAGGACAATGGCATGGA CAAT C ACT ACGACACGCTC
8 CTGGCTTAACGACACGCTCT CAGCAGGA GG ATGG GGCTTA
GGGTCTACCATCCCTATATC GTCGTCCT CC TACC CTGGGT
CTGCTG ATAT C AT- ----------
GAM20850 9772 CAGCAGTTTAAAAATTGTCC AGTTTAA- T T AAAG
4 TTTTTCTTAAAGAGGAAGAA CAGC AAA TG CCTTTTTCTT
GGCATTTTCACACAAGGCTG GTCG TTT AC GGAAGAAGGA
GAACACAC T - ----
GAM20853 4388 CAGCATCTGGTCCTTTTGCT CTG TTTT T - ---- ATCCC
3 GTGACCCACCCCATCCCGGA CAGCAT GTCC GCTG GACCC ACC CC
GCTGGTCGGGTCTGGCTGGA GTCGTG TAGG CGGT CTGGG TGG GG
TGTGCTG --- T--- - C TCGA -----
GAM20854 21675 CAGCATGCACACAGCTCTCT A ACA CT TG ACCTTG A CTCC
2 GTACCTTGGCCAGGTCTCCA CAGC TGC CAGCT C T GCC GGT
CCAGGCACCACAGTGGGAGG GTTG ATG GTCGG G G CGG CCA
CTGGTAGTTG - --- AG GT ACACCA A ----
GAM20856 4142 CAGCATTGGATCAACTATTT GGA- ACT AGA ATT
4 CTTCAGATCGTTCTGATTCA CAGCATT TCA ATTTCTTC TCGTTCTG
GAGCGAGAGGAGATTGAAGT GTTGTAG AGT TAGAGGAG AGCGAGAC
GGATGTTG GTGA --- --- ---
GAM20861 14397 CAGCCACTTCATCATCCGTC CC CATCC AG ACCTTTTC
4 AGAAGCCAGACCTTTTCCTG CAG ACTTCAT GTCAGA CCAG

GATTTGACATCCAGTGGGGT GTC TGGGGTG CAGTTT GGTC
TCCTG CT ACCTA A- --------
GAM20862 9150 CAGCCAGGTCTGGGAAGTCT TC GA CTTCTCCTACTTCGC
8 TTCACTTCTCCTACTTCGCT CAGCCAGG TGG AGTCTTTCA
GAAAGGCTGTCCACCTTGGT GTTGGTTC ACC TCGGAAAGT
TG C- TG ----------
GAM20863 3495 CAGCCAGTTCTGCGGGGGCA TC G A -- ATGC
2 TAGGCAGCTATGCGGTTGGT CAGCCAGT TGCGGGG C TAGG CAGCT
CCTGAGCCCTGCGATGCTGG GTCGGTCG GCGTCCC G GTCC GTTGG
CTG TA - A TG ----
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3 AGCTCTACATGTGCTGGGTC CAGCC TTGT TCAC AGCTCTA CATG C
CATGGAAATAGAGCTGTGGT GTCGG AACA GGTG TCGAGAT GTAC G
TGTACAAGGCTG - TGTT- - AAAG CT ---
GAM20864 8230 CAGCCCAAGCCTGACTATGG A GACTATGG C T T TGAG
8 AGCTGCTGTGGCTTTCTTTG CAGCCCA GCCT AGCTG TG GGCT TCTT
AGGAGACAGCCCGCCAGCTG GTCGGGT CGGG TCGAC GC CCGA AGAG
GGCCTGGGCTG C -------- C - C ----
GAM20866 18782 CAGCCCCACCGGTTTCGTCG CC TCG CAGTCCT -- CG GTT- T T TCAG
7 CAGTCCTGAGGCAGGTGCGT CAGCCCCA GGTT TCG GAGG CAGGTG T GGC GTGCTG GG

GTTGGCTGTGCTGTGGTCAG GTTGGGGT TCAG AGC CTCC GTTCAC G CCG CGCGGT CC

CCTGGCGCTGCCCTGAGTCC C- TA- AAGACAC CT CT AGTC T - ----
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AATGACTCTGGGGTTG
GAM20868 9854 CAGCCCTCACTTCTCCATCC CTCACT ATCC T AGCA
8 TGGAGGTCTTCCAGCAGGAG CAGCC TCTCC TGGAGG CTTCC
GTCTTTCACGGGGATTGGCT GTCGG AGGGG ACTTTC GGAGG
G TT---- C--- T ----
GAM20870 20089 CAGCCCTTGCCTCCACGTCT - ACGT TG A- CC CGCC
2 GAGAATGCCCGGCGCCCCAG CAGC CCTTGCCTCC C AG ATGC GG
CATGGCTTGGGGAGGCGGGG GTCG GGGGCGGAGG G TC TACG CC
TGCTG T ---- GT GG A- ----
GAM20870 2964 CAGCCCTTTGCTCGGCTGCA CC --- A-- AGATCCA-- GATGGGC TG -
5 CCAGCGGGAGATCCAGGTGA CAG CTTTGCTCGG CTGC CCAGCGGG GGTGAT AGCC
GT G
TGATGGGCAGCCTGGTGTAC GTC GAGACGGGTC GACG GGTCGTCC CCACTG TCGG
CG C
CTGCGGCTGGGCTTGGAGAA TA ACA ACA ACCGTCATC AAGAGGT GT G
GTCACCCTACTGCCACCTGC ACCT
TGGACAGCAGACACTGGGCA T
GAGATCTG G

GAM20878 14061 CAGCCTGGACGAGAGCATCC CT A AGA A - AA TG A AAAG TCAA
3 TCCTCAAGTGGACAAAAGGC CAGC GG CG GC TCCTC CTC G G CA GCT
TTCAAGGCATCTGGCTGCGA GTCG CC GT TG AGGAG GGG C C GT CGG
GGGCGAGGACGTGGTGACCC TC A GG- C C AG GT G CTA- ----
TGCTG
GAM20884 21421 CAGCGCCAGTCTGCTGGGCC CCA T - TTCTA ACTGCACA

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1          TCCCTTTCTAGCTACTGCAC CAGCG  GTCTGC GGGCCT CCCT    GCT
           AGGCCCCAGGGAAGGCTTGC GTCGC  CAGACG TTCGGA GGGA    CGG
           AGACCCGCTG           C--    -    A   CCC-- --------
GAM20885 3704  CAGCGCGGTGCACTCGCGCG    C  TGC       ACAC   TG AGGTG
2          AACACGGCCTGGAGGTGCTG CAGCG GG  ACTCGCGCGA   GGCC  G
           GGCCTCGTGCGGGTCCCGCT GTCGC CC  TGGGCGTGCT   CCGG  C
           G                - ---       ----  GT -----
GAM20885 9528  CAGCGCGTTGTGGGCTCCCG    C  T    TCCCGCC--------  GTCC
3          CCGGGGTCCCCCGCGGCTGT CAGCG GT GTGGGC          GGG
           CGCCGCCGCCTACGCCGCTG GTCGC CG CATCCG          CCC
                      - -    CCGCCGCTGTCGGCG  ----
GAM20886 18967  CAGCGGCGCCGCTCTGGGCA      CC-- TC  GGCAT    - ACT  -    AGAGGCC
9          TGGTAGCCGACTGCGGGGTG CAGCGGCG   GC  TG   GGTAGC CG  GCGG GGTGCG
           CGAGAGGCCCGCGCCGCCGT GTCGCCGT   CG  GC   CCGTCG GC  TGCC CCGCGC
           GCGCGCTGCCTACGAGGCTT      CTTT  GA  AT---    C  G--   G    -------
           TCTGCCGCTG
GAM20888 20778  CAGCGGTTGGATCATTTTCA         -  T--     CT  AAATA
1          TTGCTGTGAAATACACCACA CAGCGGTTGGAT CAT  TTCATTG  GTG
           ATGGATTTATGCATTCAACC GTTGCCAACTTA GTA  AGGTAAC  CAC
           GTTG                    C  TTT     AC  -----
GAM20888 5704  CAGCGTAAGGCGGGTGCGTC   CGTAA    T  GTCT   T  TCCTCGTGTC
2          TTCTGTACTCCTCGTGTCGT CAG    GGCGGG GC   TCTG AC
           CCAGAGCCTCGTCGTCCACT GTC    CTGCTC CG   AGAC TG
           G               ACCTG    - ----   C ----------
GAM20889 3332  CAGCGTTAGATGCCCCCACC   CGT  G  CC   CC  CT  A  TGGA
1          CACCTGTACTCTGGAGAGAC CAG   TA ATG  CCCA  CAC  GT CTC
           TGTGCTGGGAACATGTACCA GTC   AT TAC  GGGT  GTG  CA GAG
           CTG               ACC  G  AA   C-  T- -  ----
GAM20892 8102  CAGCTATGCCGACTTTGTCT   TAT   --   T -    --------   A  - TGAG
3          GGTTTTTGATCTCTGAGGAA CAGC  GCCG  ACTT GT CTGGTT      TTTG TCT C
           GACAAAAAAACACCGACCAG GTCG  TGGT  TGAG TA GACCAG      AAAC AGA G
           CATCGAGTACTGGTTCCGCT   CCT   CA   C  C    CCACAAAA   -  A ----
           G
GAM20893 21236  CAGCTCAAGGGGAAGAAAGT     AA   A AA  -  G  A   A  AG  GTC   TCCT   A AGCC
3          ACGGACAAGTTCACTGAGAG CAGCTC  GGGGA G  AGT ACG ACA GTTC CTG  AGC   TACG
GGCCA CG
           CGTCTACGTCCTGGCCAACG GTCGAG  CCCCT C  TCG TGC TGT CGAG GAC  TCG   ATGT   CCGGT
GC

           AGCCATCCGTGGCCCTGTAC     --   - CC  C  G  A   -  G-  GCC   C---    - ----
           CGGCTGCAGGAGCATGTGCG ATC
           TCGCTCCCTCCCCGAGCTG

                      ---
GAM20893 16760  CAGCTCAAGTCGGCCTGCAA     CAA-  C  - G  A    ACATCC   - AAA-- -    GGAGA
4          GGAAGACATCCCCAGCGAAA CAGCT    GT GGC CT CA GGAAG     CCAG CG    AG AGTGA
           AGAGTGAGGAGATCACTACT GTCGA    CA CCG GA GT CCTTC     GGTC GT    TC TCACT
           GGCAGTGCCTGGTTTAGCTT     ACAA -  A  G  -    GATTT-   C  GACGG  A    -----
           CCTGGAGAGCCACAACAAGC
           TG
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GAM20893 18231 CAGCTCACTGGACCAAGGAA CA -- ACTC A AC ATCTG
8 ACTCTTCAACACGTATCTGA CAGCT CTGGA CCAAGGAA TTC AC GT
TAGGTAGAACATCTTTTTTG GTCGG GACCT GGTTTTTT AAG TG TA
GGATCCAGAGGCTG A- AG CTAC A GA -----
GAM20894 20599 CAGCTCAGCAGTAGAAAGGT AGCAGT AAG TG - G GACACACG
1 TCTTGGACAGGGTGCCAGGA CAGCTC AGA GTTCT GACAG GGT CCAG
CACACGCTGGGGCTGCTGTC GTCGAG TCT CAGGA CTGTC TCG GGTC
ACAGGACAATCTTAAAGGAG GAAAT- AA- CA G G --------
CTG
GAM20895 1130 CAGCTCCAGCACACACACTC C CACACACA-- C-- GGCAG
5 TTCCCTGGGCAGCAGGAAAA CAGCTC AG CTCTT CCTG
GGAGGTAACAAGGACTTGGG GTCGGG TC GAGGA GGAC
CTG T AGGAACAATG AAA -----
GAM20899 3351 CAGCTCTTCAAGACCGAGAG TC-- AAG -- A A AACG
3 GAAAAAAGCAACGGCTTCTT CAGC TTC ACCGAG AGG AA AAGC
CCCTGACTTGGTGAAACATG GTCG AAG TGGTTC TCC TT TTCG
CTG TACA --- AG C C ----
GAM20903 5617 CAGCTGCCCTACAAACTCCG TG CCTACAAACTCCG GCTTTTCTTCTCACTTCA

1 TCACAGCTTTTCTTCTCACT CAGC C TCACA
TCATGTGAAAACTACCCCAG GTCG G AGTGT
TGGCTG GT ACCCCATCAAA-- ----------
GAM20903 12681 CAGCTGCCTTAAGCCTCTGG T -- AAG G A G ATAT
5 GCATTGACGTTGATATCGAT CAGC GC CTT CCTCTG GC TT ACGTTG
GTGGAGCACGGAGGGAAAGA GTCG CG GAA GGAGGC CG AG TGTAGC
AGCCGCTG C AA AG- A - G ----
GAM20904 4433 CAGCTGCTCATGATCCGCGC T ATGA - -- C CAACTA
1 CTGTCGGGTCAACTAGCCTC CAGC GCTC TCCG CGCCT GT GGGT
ACCGAGGTGCCGGAAAGGAG GTCG CGAG AGGC GTGGA CA TCCG
CGCTG - GAA- C GC C ------
GAM20905 9621 CAGCTGGAAGATGGACGCAC G A A GTGTCT CGAAT- AATG
0 CGTGTCTGGCTATCGAATCC CAGCTG AAG TGG CGCACC GGCTAT CCGT
GTAATGATGGTACTATGTAG GTTGAT TTC GTC GTGTGG TCGATG GGTA
CTGGTGTGCTGACTTGTAGT G A - ------ TATCAT ----
TG
GAM20905 18054 CAGCTGGAGCTGAGACCCCC - AG GA C CACCA - -- GC TA - AA
3 ACCAGGCTCATGGCCCTTCC CAG CTGG CT GAC CC GGC TCA TG CCTTCCC CTCAGT
TCCTGA CTC
CTACTCAGTTCCTGAAACTC GTC GACT GA TTG GG CCG AGT GC GGAGGGG GAGTCG
AGGGCT GAG
CACCCTCAAGCCGAGCTCGG C A- AC A A---- G TC TA CG G C-
GAGGCTGAGGCGGGGAGGAT CACCCTCAAGCC
CGCTTGAGGCCAGGAGTTCA
AGATCAGCCTG

GAM20907 3594 CAGCTGTAACTAAGTATATA G AA- ATATACA AG CTAG
4 CATGTAGGCTTTTCTAGAAA CA CTGT CTAAGT TGT GCTTTT
AGTACAGAACCAATTTAGAA GT GACG GATTTA ACA TGAAAA
AGCAGATG A AAA ACCAAG- -- ----
GAM20908 12994 CAGCTGTCGCTGTCTTCTTG -- T TGC- AAGAC CCGAC

7 CGTCCGAAGACCTGCACCGA CAGCTGT CGCTGTC TCT GTCCG CTGCA
CTGCAGCGGACCCTTGGACG GTCGGCG GCGACGG AGG CAGGC GACGT
GCAGCGCGGCGGCTG GC C TTCC ----- -----
GAM20910 966 CAGCTTAAATTCTCTGGGTT -- TTCTCT TT GT AAATAC
8 TTGTTTTGAAATACCAAATA CAGC TTAAA GGG TT TTTG
AATTTCTTCCTTCTTTAAAT GTCG AATTT TCT AA AAAC
GCTG TA CTTCCT TT AT ------
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8 GGCCCTGAGCCTGAGTCTGT CAGCT GCTTT CCATGGGCCC GC
ACCCGGGTCCGTGGGAAGTT GTCGG TGAAG GGTGCCTGGG TG
GGCTG T ---- CCCA --------
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5 AAGAAGAAGAAATGGCAAAG CAG TTT AGTTAAAAAA AAGAAG GAAA GC
AGAAAGTTTTTTCAAATTTC GTT AGA TTAATTTTTT TTCTTT CTTT TG
TTTCTTTTTTAATTTAGATT - T CT AAA TT ---------
G
GAM20916 4122 CAGCTTTCTGGAAGTATTAT TTC A TATTAT AAA A ACA AAGTTA
1 AGAAAAAGAAGGTTTATCTA CAGCT TGGA G AGA AGAAGGTTT TCTA TT
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GACTTTTTGAATCTCTCCAC CAC - ------ AAG - GG- ------
ACAGCTG
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9 GTTCTGGGTTCACCTCCCTG CAGCT TGGT GGGAACT GGT CTGGGT CTCC GCT TGGA
TCT
CTCATGGAACGTCTCTCAGT GTTGA GTCG CCTTTGG CCA GGCCCA GAGG CGA ACCT
AGA
TGATTATGGCAAGAAATCCA T ACA ACC C TTTACCTCTT T- -- AA- A
AGCTGGAGTTCTCCATTTAC - GTTGATTA
CCGGCACCCCAGGTTTCCAC TCA
AGCTGTAGTTG GGT
C --------
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4 TACTGCAGCCAACGTTGGAA CAGCTTTT TGAA AGTTA CTGCAG AAC TT
AAGTTTACTGCAGCTTTTGA GTCGAGAA ACTT TCAGT GACGTC TTG AA
CTTCTTCAAAGAGCTG -- CT- TTTC AT - ----
GAM20918 18731 CAGGAAACAGATTGAGAGCT AA- GA- - TATA GCGC C GTAA
8 GTATATCTGGCGCTAAAAAC CAGG ACAGATT GA GCTG TCTG TAAAAAC A
CAGTAATGTTTTTGTAGAAA GTCC TGTCTAA TT CGGT AGAT GTTTTTG T
GTTGGCATTGAGAATCTGTG GGG GAG A TGAA ---- - ----
GGCCTG
GAM20922 5378 CAGGAACCTGGCCTCGGAAT AACC CCT A - GAAAGACCAGGA
0 CCAATGGAAAGACCAGGACA CAGG TGG CGGA TC CAATG
TTGAGAATCTGTACCAAAAC GTCC ACC GTCT AG GTTAC
CTG AAA- AT- A A ----------
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5 CCTGGGGACGATTGCCAGAT CAGGAAG GCT TG TCC CTGG G
CGGGGTCAAAGGCCTTCCTG GTCCTTC CGG AC GGG GACC T
- AA T GCTA G -----
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3 TAGCCACCAGAACACAGAAT CAG CAGAA TCATT TCTT CACCA GAACA

GTTCTTGGTGAGAAGGGCCG GTC GTCTT AGTAG GGAA GTGGT CTTGT
GATGATTCTGGAACTG AAG - GCCG GA- T -----
GAM20931 19828 CAGGACCTGGTTGCTACTGG C TT-- T- TTC ACTGCAGAAAA
0 TTCGGCAACTGCAGAAAATG CAGGA CTGG GCTAC GG GGCA
TCCTCCCTTGTGGCTTCCTC GTCCT GACT CGGTG CC CTGT
AGCTCCTG C CCTT TT CTC ----------
GAM20931 14353 CAGGACGAAAATCAGGTAGT C AA GG TTGGTGA GAAA
1 TGGTGAAGTCAGGAAACTGA CAGGA GAA TCA TAG AGTCAG
TTGAGTTGTTTGAGTTCATC GTCCT CTT AGT GTT TTAGTC
CTG A G- TT GAG---- ----
GAM20931 20477 CAGGACTGGATATGGGAGAT CT ATG ----- CAACA AA A TTCCATGC
9 GGGGAGTCAACATTGGTTAA CAGGA GGAT GGAGA TGGGGAGT TTGGTTA TG CTTG
ATGACTTGTTCCATGCCAGG GTTCT CCTA CTTCT ACTCCTTA AACTAAT AC GGAC
CATAATCAACATTCCTCATT -- CAA TCATT C---- -- - --------
ACTTCTTCAACATCCTCTTG
GAM20932 18539 CAGGACTGGGGTGAAAGTGG A GAAA ATA- AACATTTATG
1 ATACAGCAACATTTATGGTT CAGG CTGGGGT GTGG CAGC
GGCAGCTATGGACCTCGGCC GTCC GGCTCCA TATC GTTG
TG - GG-- GACG ----------
GAM20933 1216 CAGGAGACCGGGTCTTGAAC G A CTT AC ACCAACCTTAGAA
8 AGCTGGTACCAACCTTAGAA CA GAG CCGGGT GA AGCTGGT
ACTAGCTCTCTAATCCGGCT GT CTC GGCCTA CT TCGATCA
CGTG G - AT- C- ----------
GAM20936 688 CAGGAGCCCGTGGCCACAGC - - - A CAT AT C GA CCGA
1 CATGCCATCGTCGGTGACCC CAGGAG CC CG TGGCCAC GC GCC CGT GGT CC
CGAGGCAGCTCACGCGGTTG GTCCTC GG GC ACCGGTG TG TGG GCA TCG GG
TCGTGGCCAGCGAGGACTCC A A G C T-- C- C AC ----
TG
GAM20943 2922 CAGGAGTTTTCCTACTTGTT A TT- T T TG CTA TCACTC CTG TC AGTT
4 GATGCCTATTCCTCACTCGT CAGG GT TCC ACT GT ATGC TTCC GTG TTTTC ATTTT
GCTGTTTTCTCATTTTAGTT GTCC CA AGG TGA CA TACG AAGG TAC AAAGG TAAAG
GAAATCTGGAAAAAACATCT - TGT - - -- --- TC---- AAA TC ----
GGAAGCATACAGTGGATGTA
CCCTG
GAM20944 8495 CAGGATCTCAGGATTCGTAG CT C A CCCA ATATTT CTTTAT
9 ATCCCAGATTATATTTGCCT CAGGAT CAGGATT GT GAT GATT GC
TTATGCTTTAAAAATTAGTC GTCTTG GTCCTAG TA CTG TTAA CG
ATTGATCCTGGAGTTCTG AG T - A--- AAATTT ------
GAM20946 18294 CAGGATGCCACGCTGGGCCG CC CC TATTTCCTGCCAAT
2 AGCGACTATTTCCTGCCAAT CAGGATG ACGCTGGG GAGCGAC
GTTGCTCACTCGGTGTACGT GTCCTGC TGTGGCTC CTCGTTG
CCTG A- A- ----------
GAM20953 6090 CAGGCACTGAATCGATGGTA - A A T ATAATG TTTTTTTTTCCC
7 ATAATGTTGTCTTTTTTTTT CAG GC CTG ATCGA GGTA TTGTC
CCCGGCAAACTTTCTGCTTT GTC CG GAC TGGCT TCGT AACGG
CGGTCCAGAGCTCTG T A C T CTTTCA ----------
GAM20954 14696 CAGGCAGAAAGGTTGGGCAT AAA T- CAT-- - TATC
1 GGGCTTGGTATCCCGAAGCT CAGGCAG GG TGGG GGGCTT GG
CTGTCTCCCACTCCGTGCTG GTCTGTC CC ACCC CTCGAA CC
TCTG GTG TC TCTGT G ----

GAM20954 12414 CAGGCAGACCACATTAGGCA C- CC TAG TACCA-- TTCAAAAAC
2 TTACCAGTACATTCAAAAAC CAGG AGA ACAT GCAT GTACA
TGTACCTCATATATGTATGT GTCC TCT TGTA TGTA CATGT
ATCTTCCCTG CT A- --- TATACTC ---------
GAM20958 1167 CAGGCCAGACATCTACATCT G CTAC- AGCC--- GAAAA
4 AGCCGTGCGAAAAGTATATA CAG CCAGACAT ATCT GTGC
GACAAGATTGCCCATGTCTG GTC GGTCTGTA TAGA TATG
GACTG A CCCGT ACAGATA -----
GAM20959 21286 CAGGCCATGCTGAGACAAAG C AGA AAGC ACA- A ACCC
2 CAGCTGACAGAAATGCTACC CAGGC ATGCTG CA AGCTG GA ATGCT
CAGCATCTTAAACCAGCTTG GTCTG TACGGC GT TCGAC TT TACGA
GTGCGGCATAGTCTG A GTG ---- CAAA C ----
GAM20960 18949 CAGGCCCTAGGAGGGCGAGG GC T G AGT A TCAGGGTC
4 GCTTAGTAGGTATCTTCAGG CAG CC AG AGGGCGAGGGCTT AGGT TCT
GTCAGAGCCTGAGTCCTCGC GTC GG TT TTCCGCTCCTGAG TCCG AGA
CTTGTTGGTTCTG TT - G --- - --------
GAM20963 5418 CAGGCCTGGATGTGAGTTGA GAG TG TT T AATGAC
0 CCTTTGATTTTGAATGACCA CAGGCCTGGATGT T ACC TGATT TG
CAGTCACGGTTGAAAGCATT GTCTGGACTTACG A TGG ACTGA AC
CAGGTCTG AA- GT C- C ------
GAM20963 19931 CAGGCCTGGGGGGGGCCAGCC - GCCAGCC - C A---- CACCC
3 CGAGGCGCTGTCTGGAGCTC CAGG CCTGGGGGGG CGAGG CG TGTCTGG GCT
ACCCAGTCCCCACCAGGCGA GTCC GGACCCCCC GCTCC GT GCGGACC TGA
TGACCTCGCCCCCCAGGACC A ------- A A ACCCC -----
TG
GAM20963 21511 CAGGCCTTTACATGTATTCT TTACAT A TGAAAC A -- ATTATC
9 CATGAAACTCTATGAAGTAG CAGGCCT GT TTCTCA TCT TGAAGTAG ATATT
ATATTATTATCAATATTCCT GTCCGGA CA AGGAGT AGA ATTTCATC TATAA
ACTTTACAGATGAGGAAACC CC---- A ------ C CT ------
CAGGCCTG
GAM20964 22302 CAGGCGCGCGGGGCCGTCGG C - G G A GG CGG C --- GCGG
9 GGCTGAGCGGCGGTGTGTCG CAGGCGCG GGG GCC TCGGG CTG GCGGC TGTGT GCGG GG
CGGGGG
GGCGGCGGCGGGGGGCGGCC GTTCGCGC CCC CGG GGCCC GGC CGCCG GCACG CGCT CC
GCCCCC
CCCGGGACCTCGCATGCACG T G - G - AA TA- - AGG ----
AAGCCGCCGGGCCCGGGGCG
CCCTCGCGCTTG
GAM20966 20510 CAGGCTACTTCTATAGACAT CTAC G- - A ACCTAA-- TAAA
7 CACTTAACCTAAAATTCTAA CAGG TTCTATA AC ATC CTTA AATTC
AGAGTTAATATGCATGAGGG GTCC AGGATAT TG TAG GAGT TTGAG
ATAGTAATATAGGAAGCACC ACGA AA A G ACGTATAA ----
TG
GAM20967 12367 CAGGCTAGTCAGCGCCTGGT CTA- C - CCG CA CCGCAACCTCCCTCTCC

0 TCCGGTGCTGCAAGCTCCGC CAGG GT AGCGCCTG GTT GTGCTG AGCT
AACCTCCCTCTCCAGCTCGG GTCC TA TCGCGGAC CGA CACGGC TCGA
CACAGCGCAGGCGCTCATCC CTCC C G --- -- ----------
TCCCTG
GAM20968 16492 CAGGCTCCACCGGTAGTTTC - CAC- TTTCCCGTCTTT GTTTCA

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2          CCGTCTTTGCAGTTTCATGT CAGG CTC   CGGTAG         GCA
           TACTATACATTCCTGCCGAT GTCC GAG   GCCGTC         TGT
           CCGAGTCCTG          T  CCTA    CTTACATATCAT  ------
GAM20969 19971  CAGGCTGATCAACTATGCCA    T AT  A  AT    CA-  ---    AA  CCTGA
6          CCAATGGTGCCAAGTTCCTG CAGGC G  CA CT  GCCAC  ATG  GTGCC  GTT
           AAGCGGCACATGTATGATGT GTCCG C  GT GA  CGGTG  TAT  CACGG  CGA
           GGCCAGTGGCCGCCTG       - CG  -  C-    TAG  GTA   --  -----
GAM20972 1298   CAGGCTGGTCTTGAACTCCT       TCT  A--    A   CAA     ACC  C   CCTC
4          AGCCTCAAGTGATCCACCTG CAGGCTGG   TG  ACTCCT GCCT  GTGATCC  TGC TTGG
           CCTTGGCCTCCCAAAGTGTT GTCCGACC   AC  TGAGGA CGGA  CATTAGG  GTG AACC
           GGGATTACAGGCAGGAGTCA       CGT  CAC    -   ---     GTT  A   ----
           CCATGCCCAGCCTG
GAM20973 3487   CAGGCTGTCTCTTCGGGTCA    C    - TC  -  C--  -  G  AGAA
2          CCGCTGTGAGAACAAGGCAG CAGG TGTCT CT  GG GT  ACC GCT TG
           GTACAGCACCAGGGCAGACA GTTC ACAGA GG  CC CG  TGG CGG AC
           CTTG               -   C  GA  A  ACA  A  A ----
GAM20974 21106  CAGGCTTGTGAAAGGAACCA     ------     GGAA    TGGTTATAAAGT
7          TCTGGTTATAAAGTGGTGGC CAGGCT    TGTGAAA   CCATC
           AGATTTCACGAAATCTAGCC GTCCGA    GCACTTT   GGTGG
           TG                 TCTAAA     AGAC    ------------
GAM20975 8894   CAGGCTTTCTCTGGGGGACA    TTTCT     A   A -    AGCAC
0          GCAGTCTCTGAGCACCAGGG CAGGC    CTGGGGG CAGC G TCTCTG
           AGCAGTTGCCCTCAGGCCTG GTCCG    GACTCCC GTTG C AGGGAC
                      -----     -  A G    -----
GAM20981 689    CAGGGAGAGGCTCTTCTGCG    A  GC    G    AG  GTT    GAGCCTCA
1          TGTAGTGGTTGTGCAGAGCC CAGGG GAG  TCTTCT CGTGT  TG  GTGCA
           TCATGCATCACGGAGCATGA GTCCC CTT  AGAAGA GTACG  GC  TACGT
           GAAGACGTTCCCCTG       - GC    -   AG  AC-    --------
GAM20981 8670   CAGGGAGAGTGATTTGTGTC   GG   TG  T---   C    G  CATTTGGTA
5          CTCCAGGGGACATTTGGTAT CAG  AGAG  ATT   GTGTC TCCAGG GA
           CGTCTGGAGATATTTTTGGT GTC  TCTT  TGG   TATAG AGGTCT CT
           TGTTCTATCTG         TA   GT   TTTT   -    G ---------
GAM20982 18381  CAGGGAGCTCCCAGTCCTGG    ---     C    GGGAGAG   AAGGCAAAG
1          GAGAGGCTGAAGGCAAAGCA CAGG   GAGCTCC AGTCCT     GCTG
           GCAGAGGACTCGGAGCTCAC GTTC   CTCGAGG TCAGGA     CGAC
           ACTTG               ACA     C    GA-----   ---------
GAM20984 14530  CAGGGATATTGTTAATTTTC     TA  T     CATACT   -    CCT
1          ATACTTAAAAATGATACCTT CAGGGA  TTG TAATTTT    TAAAA ATGATA
           ATTATCTTTTAAAAATTGCC GTCTCT  AAC GTTAAAA    ATTTT TATTAT
           AAACTCTCTG            CA  C     ------    C    ---
GAM20984 12517  CAGGGATCAGCTGCTTGGCT    AT  -  TTG   TG T-  GTGC
2          TCTGCTGGAGGTGCCTCCCT CAGGG  CAG CTGC  GCTTC  C  GGAG
           GTGGGGGCGCAGCCTGCCTC GTCCT  GTC GACG  CGGGG  G  CCTC
           CTG               CC  C   ---   GT TC   ----
GAM20986 8800   CAGGGCAGCCTGGCCCAGCA      -  GG  A  A   AAG    CAGG   ATCA
4          GGTCAAGGCGCCACAGGGGG CAGGGCAG CCT  CCC GC GGTC  GCGCCA  GGGCC
           CCATCAGGTCCAGCTGGCGC GTCTCGTC GGG  GGG CG CCGG  CGCGGT  CCTGG
           AGGCCGGCAGGGGAGGGTCT       T  AG  A  G   A--    CGA-   ----
           GCTCTG
GAM20987 16514  CAGGGCATACAAGATGCATT     A   GATG  TC  AAAA  AATA
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1          CCCAAAAAGAATACTGAGAG CAGGGC TACAA   CAT  CC   AG
           GATATGGAAATTGTGGCCTT GTTCCG GTGTT   GTA  GG   TC
           G                -   AAAG   TA  AGAG  ----
GAM20989 9787   CAGGGCGCATAGTGATACCT    C-   TA-  GATA  T   ATAAAGG   GATGAATAAAACA
6          TTGATAAAGGGCAGATGAAT CAGGG  GCA   GT   CC TTG     GCA
           AAAACATGCAGCTACACGAC GTCCT  TGT   CA   GG AGC     CGT
           GGAAGAACAATTGTAATCCT    AA   TAA  AGAA  C   ACATCGA  ----------
           G
GAM20991 21365  CAGGGCTGGAGAGAGGGAGA      GGAGA      -  G  CCGGACG      TGT
8          CGCAGAGCCGGACGTGACGG CAGGGCT    GAGGGAGAC GCA AG     TGACGGGC
           GCTGTGCTTGTCAAAACTGT GTCTCGG    CTTCCTCTG CGT TC     ACTGTTCG
           GCAGTCTCCTTCGTGGCTCT      TG---       A   G  AAA----      ---
           G
GAM20994 20786  CAGGGGAGGCCCCAGTGAAG   G     -    TGAA  -  CT-   CA---    TCCC
1          GCCCTGGCCAGGGCTTCCCA CA GGGAGGC CCCAG   GG CC   GGC    GGGCT
           GCCCCTTCTGCCTCCGGACC GT CCCTTCG GGGTC   CC GG   CCG    CCCGA
           GGCCTGGGTGCTTCCCGTG   G     T    CGG-  A  CCT   TCTTC    ----
GAM20994 1006   CAGGGGATGGCCCTGGTTGG      -   ----    TG C    A   GTGAA
8          CCTGGAAGGGTGAACCTGCC CAGGGGAT GGCC   CTGGT  G CTGG AGG
           AGATTTATCAGTAGAGGCTG GTCTCCTA TCGG   GACTA  T GACC TCC
           ATCCTCTG               G   AGAT    TT A   G  -----
GAM20994 737    CAGGGGATGTTCATTTTTTT      TGTT     TT  TC-    -     A   A   AGA
9          ATTCCTGTGTGTTTTATCTA CAGGGGA   CATTTTT  AT   CTGTG TGTTTT TCT GAA
           GAAAGATTCAAGAAGAATAT GTCCCCT   GTAAAAA  TG   GACAT ATAAGA AGA CTT
           TACAGATTGTTCAAAAATGT      ----      CT  TTA    T    -   A   ---
           CCCCTG
GAM20995 2676   CAGGGGCAGCTCCGGTGGCG       CTCC     --   ACAG   -   G  CCA     AGGT
3          GCCCACAGGACACCAGCCCC CAGGGGCAG   GGTGGCG  GCCC   GAC ACCA CC   TCTTGC

           ATCTTGCAGGTGTAGGACAG GTCCCTGTT   TCACTGC  CGGG   TTG TGGT GG   AGGATG
           GTGGTAGTTGCAAGGGCACC       ACC-     CA   AACG   A   -  AC-     ----
           GTCACTCCATTGTCCCTG
GAM20996 9325   CAGGGGCGGGGGTGGGAAGG      GG-   GG   GCT     CCT  GTCC
6          CTCCTTTGGCCTTGGTCCCA CAGGGGC   GGGT  GAAG   CCTTTGG   TG
           CCAAAGGCTTCAACCCACAG GTCCCCG   CCCA  CTTC   GGAAACC   AC
           CCCCTG               ACA   A-   ---      ---  ----
GAM20997 8748   CAGGGGGACAGCCTGGAGTG    -  GA    CT-----  G-    AGCCATGACA
0          CACAGCCATGACAGTGCAGA CAGG GG  CAGC     GGA  TGCAC
           TCCTGCTGAAGCTGGACCGC GTCC CC  GTCG     CCT  ACGTG
           CTG               G  AG   AAGTCGT   AG    ----------
GAM20998 21441  CAGGGGGGGCCCCCAAAGGG     GG  -  AAA   CATTTTTAA    G  GGAT
3          ACATTTTTAACGGGGGGGGG CAGGGG  GCC CCC   GGGA       CGGGG GG
           ATTCGCCCCGGCCGGGCTCC GTCCCC  CGG GGG   TCCT       GCCCC CT
           TAAGGGAGGCTACCCCTG       AT   A   AA-   CGGGCCG--    G  ----
GAM20998 4308   CAGGGGGTGGGGAAGGCGGT         -  AGG   -   TCT  AGCCC
6          GCTTCTTGAGCCCCACTTAG CAGGGGGTGGG GA   CGGT GCT   TG
           CAACTGGTCACTCATCCTCT GTCTCCTACTC CT   GTCA CGA   AC
           G                    A  G--   A   TTC  -----
GAM20999 12133  CAGGGGTGAGCGCTCAGAGC     TG     -   A-  AG      ATGA    - -  G   AGGG
4          AGGAAGGGGATGATGGGCAT CAGGGG  AGCGCT CAG  GC  GAAGGGG    TGGG C AT CGC
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GCGCAGGGGCGGGTAGTCCC GTCCCC TCGTGG GTC TG CTTCCTC GCCC G TG GCG
GGAACTCCTTCAGGTAGCTG GT C GA GA AAG- T A G ----
CGGTGCTTGCCCCTG
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6 CTACTTTTCATAAGTGCATC CAGGGT CTTTTG ATA GTG ATCT TCTGAC AT AAT
TGCTTGTCTGACAATCAATT GTCCCA GAAAGT TAT CAC TGGA GGATTG TA TTA
ATAATTTATAGTTAGGAAAA TTACC TCACTAAGTTC- A - ATAAAA A T ----
TAAGGTCACATATCTTGAAT
CACTTGAAAGCCATTACCCT
G
GAM21004 18928 CAGGGTGCTGCTGGCAGTGG T TG - --- A- G GGT G CT AGG
6 AGACCTGGGGGTGCGGGTCC CAGGG GC CTGGCAG TGG AG CCTG GGGTGCG CCT GG
GAGC
TGGGCTGAGCAGGGCTCCCG GTCCC CG GACCGTC GCC TC GGAC TCTACGT GGA CC CTCG

AGGTGCATCTGCAGGAGCTG T GT T GGG GA G --- G -- ---
GGCCGTCTGCCAGTGGCTCC
CTG
GAM21007 8851 CAGGTAACATATTTCTAACT AACATATTT-- TC- - CCGC
8 CTATACACCGCTGCTATAAA CAGGT CTAAC TATA CA
TGTTGGTTTAACACTACGCC GTCCG GGTTG ATAT GT
TG CATCACAATTT TAA C ----
GAM21008 16873 CAGGTACCATCTGTGGTGGC T T-- CT- T ----- TTAA
4 TCTCTGCAAGTTTTAAAACT CAGG ACCATC GTGGTGG CTC GCA AGTT
GCCTCTGCTGAGCTCTCATC GTCT TGGTGG TACTACT GAG CGT TCAA
ATTTTGGTGGTTTCTG T TTT CTC T CTCCG ----
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8 ATCGGCACCTTGTCGCGTAC CAGGT GGTC GTC TCG GGC TTGTCGC TACTTTTTC
CTCTGCGC
TTTTTCCACACTCTGCGCCA GTCCG TCGG TAG AGC CCG AATAGCG GTGGGAAAG
GGGGCGCG
GCAGCGCGGGGGACGAAAGG AG - AT- AA- CA- - CAG- -----
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TAGATGGCTGAGCCTG
GAM21011 9573 CAGGTATGTCAAGGGGTCAG - G - GT GTAG----- AGGT
0 TGTAGGGTAGGTGCTAAAAG CAGGT AT TCA AGGG CAGT GGT
TGAAACTGGTCCCTCTGAGG GTCCA TG AGT TCCC GTCA TCG
TCACCTG C G C TG AAGTGAAAA ----
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8 CAGATGCCTACTTCTCAGTC CAGG AAG TTTACAGT AGAT
TCCAGCTGTAAAAGCTTCAA GTCC TTC AAATGTCG TCTG
TTCCTG TTAAC GA ACC ----------
GAM21012 2719 CAGGTCCAGCCCTGGGGCAA - GC- -------- AAGT- GGAAG
6 GTAACTGGAAGGGTTTATAG CAGGT CCA CCT GGGGC AACT
GCCCCCTGAATAAAGGCTAT GTTCG GGT GGA CCCCG TTGG
GGCGCTTG C ATC AATAAGTC GATAT -----
GAM21013 8595 CAGGTCCCGAATGAAGGTCT TC GAAT AA-- CGTCAAGTT
6 GAAGGGCGTCAAGTTTCCAA CAGG CC GAAGGTCTG GGG
AACAGATCTTCTGAGGTGCC GTCC GG CTTCTAGAC CCT
TG GT AGT- AAAA ---------

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9 TTGTTTGGAAGGTGGGGGGA CAGG GAAA GCAGGTT TTTGT GG AAGG GG GGGGAG TGCC

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3 ACCATCAATGCTTTCCACAT CAGGTG AGG CTGG TGA CAATG
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TCCACTTG C ACT - ACTTAT -------
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2 GCCTCCCAAAGTGCTGGAAT CAGGTG TGCC CAC CTTG CCA
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CCTG AAC A T ATTAA ------
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2 CGAGGAGGCGGCGGCTCTGT CAGGTG TGCT AGCG CG GG GGCGGC GGCTCTG
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1 CATCAGGAGTCATGTAATGT CAGG G GCG GTT CT CATCA GAG TCAT
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6 TGGCAGGAGTCCTTAGGGCT CAGG TGTG GC TGTG GGTC TGGC GA
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CTG T G T - T GGA ----
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3 GATGCTAAGATTTTTCCTGA CAGGTTC TGC TCAAC TGCT TTTTCCT
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TTGATTGCAGAACTTG - TT- --- ----- ----------
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6 AGACGTTGACCGGACTTTGA CAGGTTT TCG AGCAC CGT A
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C--- A A-- GT -------
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2 AAATCTGGGTTAGTCTTCCA CAG AAACATTCCA G CCA AA TGGG
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TTG C -- - A TC -------
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9 ATATTTCAATAGCTTAGCAA CAG AGAAA ATTATA AT TC GC
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6 GTCTAATGAATCTCAAGATT CAGTAGACCTAATGACATTTGTCTA TGAATC
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GTCTACTG G ----
GAM21040 8840 CAGTAGCCCCATTTCAGACT CC TT-- ACTCC T AA TTTTCCC
9 CCCATTCCAACATTTTTCCC CAGTAGC CA TCAG CAT CC CAT
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8 TCCTTACGAGAAGAAAGCCT CAGTATCTG GTC TTCC GAG AGA
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CTGCAGATGCTG GTC--- - TGACTCC C -----
GAM21046 18425 CAGTATGTTTATGTCATTCT TA- - TTCTAAA AG- ATTCA
0 AAATGCAGCAATTCATGATA CAG TGTTTATG TCA TGC CA
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CAGGTTTG TGG T TAACCTG ATA -----
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1 ATTATAGGGAAAAAACCTCC CAGTA TAAATAATC TGGC TAGGG
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ACTG C - AAG- --------
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4 GTGGGCCAGTTCTTGCTTCT CAGT TGGAA ATACC TGGG AGT
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AACTG -- AT TCGA- CTCT ----
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6 ACATGTGAATAAGGTCTGAA CAG AT GGA AATTGGCA GAAT GGTCTGA
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1 TTTTGTTGTTTTCTGTTCTG CAGT TTTGTC AC GGGT TTGTTGT
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GCAAAAATTG A T- TAA T- ----------
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9 GTCCTGGCAGCAATGAAGGC CAG TCA GCC TGGA GTCCTGG AGC TGAAGG CGGG
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ACTG -- G A GT TTT TA -----
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CGATTG GTCA ACC--- ----------
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9 ATGGTTTATAAATTCCTACA CA TCTCT TTAGAT ACA GGT TA
CTTTGTAAATCTAAAGAGAA GT AGAGA AATCTA TGT TCA AT
TG A -- AA T C --------
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4 CCGGTGTTGGCAGTTGGGAC CAGTG CTGTTGT CCG GTGTTGG GTTGGG
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4 ATCGACTCTGCCGGCTCGGC CAGTGAG CAGTG TGAAT CT TGCCG
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TGAGTTCATTG GA TTC TATCA C ---
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TG -- TC--- G T - ------
GAM21072 3068 CAGTGCATTTTTCAAAAATA TTTTCAAAAATA T T TTCCTT
5 TTAATAAGTTCATTCCTTTG CAGTGCAT TTAA AAGT CA
TGCTTTTAACTTCCTATGTA GTTATGTA AATT TTCG GT
TTG TCCTTC------ - T ------
GAM21073 17987 CAGTGCCGGGAGATCTTGTC --- - ATC CT CTGT
6 TGTGGACTGTTCCACCAACA CAGT GCC GGGAG TTGT GTGGA
ACCCCTCCCAGGCTAAGCTG GTCG CGG CCCTC AACA CACCT
AAT A CCC AC ----
GAM21075 21552 CAGTGCTGGCCTGGAAGCCC - GG-- ---- C- AAG GGTA
6 CTCAAGTCGGGTATGAAGGA CAGTG CT CCTGGAA GCC CTC TCG
GCTGGCCGTGTTCCGGGAGA GTCAC GG GGGCCTT CGG GAG AGT
AGGTCACTG T AAGA GTGC TC GA- ----
GAM21076 9779 CAGTGGAAAATGCAAAGTGT - A AA T AA AA---- ATTC
2 GTGCAAGCAAATGCTTTTAT CAG TGGAAA TGCA GTGTG GC GC ATGCTTTT
TCAGGGGCATGGTATGGTGG GTC ACCTTT ATGT CACAC CG TG TACGGGGA
CTCACACCTGTATTTCCAGC G - C- T G- GTATGG ----
TG
GAM21081 1438 CAGTGGGAGGAGTCAATGTC G T TCATTCTACCCC- CTAAA
6 ATTCTACCCCTCGCTAAACG CAGTGGGA GAG CAATG TCG
AAGATATTAACATCTATTGC GTCGCCTT TTC GTTAT AGC
TTGTTCCGCTG G - CTACAATTATAGA -----
GAM21083 19904 CAGTGGTATTTGTGGCGTAT - T C AT-- C- TG - G GGC
6 CTGGCGCTTGTCAGTGTGGG CAGT GGTATTTG GG GT CTGG GCT TCAG T TGG
GCCCAGGCCTGATGAGCCAC GTCG CCGTAAGC CC CG GACC CGA AGTC G ACC
CAGCCCAGCACCCGAATGCC T - A ACCC AC GT C G ---
TGCTG
GAM21088 3528 CAGTGTGCACGTGGGAACCT T ACG ACC CAG TGGA
5 GTCCCCAGGCTGGAGCATAG CAGTG GC TGGGA TGTCCC GC
GGGCATGATCCCAGCTCACT GTCAC CG ACCCT ACGGGG CG
G T --- AGT ATA ----
GAM21093 20725 CAGTTAAGCTCTGCAAGTCT TAAGC TC CCTGC T CT TT CACT
0 GCCTCCTGCTCAGCATACAG CAGT TCTGCAAG TGCCT TCAGCA ACAGG TG GCCC
GCTTGTTGCCCCACTGGGCC GTCA AGACGTTC ACGGG AGTTGT TGTTC AC CGGG
ATCTTGTTGTTGATGGGCAT ----- T- T---- - T- -- ----
CTTGCAGAACTG
GAM21093 2788 CAGTTACAATATTTGATCTA AATA---- TAA-- CATTCACT
3 AGAACATTCACTTTCCAACT CAGTTAC TTTGATC GAA
GATCAGAAAGTAAAGGTGAC GTCAGTG AGACTAG CTT
TG GAAATGAA TCAAC --------
GAM21098 958 CAGTTCCTATTATGTGGTGA CTAT T AA- - AAATG
6 AATTTTGTAAATAAATGATT CAGTTC TA GTGGTGA TTTTGTA AAT

ATACAAAACAGTCACCACCT GTCAAG AT CACCACT AAAACAT TTA
AGAACTG ---- C GAC A -----
GAM21103 18785 CAGTTGAGGAACGGGAACAA ---------- CAAAGATTATGATAGC
0 AGATTATGATAGCTTTCCGA CAGTTGAGGAA CGGGAA
CCACCACCAACTTCAATTTC GTCGATTCCTT GCCTTT
CTTAGCTG TAACTTCAACCACCACCA ----------
GAM21107 8459 CAGTTGTTTGGTCTGAACGT T G GAACG GTGGG T GG G TTAATAT
1 ATGTGGGTAATGTATAGGTC CAG TGTTTG TCT TAT TAA GTATA TCTA TCT
TAGTCTTTAATATAGATAGA GTC ATAAAC GGG ATA ATT TATGT AGAT AGA
AATGTATTTTAAAAAAATAA T G GGA-- AAAAA T AA - -------
GGGGGGCAAATATCTG
GAM21107 16623 CAGTTTACAAAACAAGTGCA TTT AA AG AA TA-- A--- GCTTA
6 AATTACCAAACTCAAAGCTT CAG ACA ACA TGC AT CCA ACTCAAA
ATTTGAGTAGAATGGGCTCA GTC TGT TGT ACG TA GGT TGAGTTT
TGGGCAATGTGATGTTCCCT CCT AG A- GG CTCG AAGA -----
G
GAM21112 8468 CAGTTTGTACAGCTTTGCTA T TT - AAA G CTTTGAAC
2 AATCGTGCTTTGAACCAAGA CAGT TGTACAGC TG CT TC TG
ACAAGTCATTGCTGTGCACA GTTA ACGTGTCG AC GA AG AC
TTG C TT T ACA A --------
GAM21123 22287 CATAATATTTATCCTAATCA TATT T A-- TATTATAAAGCAT
6 GATTATTATAAAGCATATCT CATAA TA CCTA TCAGAT
GAACGTGGGCTATTTTTATG GTATT AT GGGT AGTCTA
TTT- C GCA ----------
GAM21126 3367 CATACAAGAGAGGAAGACAT A GAGAGGAAG A AAAGGAGCAAAGGAAAA

3 ACCAAAGGAGCAAAGGAAAA CAT CAA ACAT CC
GGATGTAATATGAGATTGAT GTA GTT TGTA GG
G - AGAGTATAA - ----------
GAM21131 9174 CATACTTATATACTTTTTGA TT C---- A-- T A ---- TTT
2 AATATTTATTATTAGCTAAT CATAC ATATA TTTTTGAAAT TTTAT ATT GCT AATAATTTA
TTATTG
AATTTATTTTTATTGTATCG GTATG TATAT AAAAATTTTG AAATA TAA CGA TTGTTAAAT
GATGGC
GTAGCTCTAAATTGTTCTAA TT TCGAT ATA T A AATC CTC
AGCAAATTATAAAATAGTTT TAT
TAAAAATAGCTTATATTTGT
ATG

GAM21131 12722 CATACTTTCATGCATTTCAT CTTT G TT ATC CAAA GC T TTTAGT
5 CATTTCTCAAAAGAGCTTTA CATA CAT CA TC ATTTCT AGA TTTATT CCT
TTTCCTTTTAGTAGGAATAG GTAT GTG GT AG TAAAGA TCT AGATAA GGA
ATCTAGAAATCAAGATTTGG AATC G TT AAC ---- -- - ------
GTGCTAATATG
GAM21135 1290 CATAGCTATTTGGCCCTGGC A T GAC AA AAAA
9 CATGACTACAAGCAAAAGTG CATAGCT TTTGGCCC GGCCAT TAC GC
GGTGCAGATGGCTGGGCCAA GTGTCGG GAACCGGG TCGGTA GTG TG
GGGCTGTG - - GAC GG ----
GAM21136 19805 CATAGGAAGCCATAGTTCTT AA CA C - A------ - GTCCAA
8 TGTTACCACAGGGAATTACG CATAGG GC TAGTT TTT GTTACC CAGGGAAT TAC

TCCAAGTGAATTTCCTGATT GTATCT CG ATCGA AAA CAGTGG GTCCTTTA GTG
CTCAGGTGACTAAAAAGCTA CA -- A T ACTCTTA A ------
GCACTCTATG
GAM21137 6038 CATAGGATGGGTCAGTGGGC ATGG G G C ATTCCTATTCTC
4 ATGGCTCTATTCCTATTCTC CATAGG GTCA TGG CATGG TCT
AGACCATGCCAGTGGCAACC GTGTCC CGGT ACC GTACC AGA
TGTG AA-- G - - ----------
GAM21137 873 CATAGGCTTTGATTCTGTGA --- C--------- CCCAAA
9 GCCCAAATTCACATATTGAA CATAG GCTTTGATT TGTGAG
GAAGATCAAAGCAAACTGTG GTGTC CGAAACTAG ACACTT
AAA AAGAAGTTAT ------
GAM21138 18125 CATAGTAAATGTTAACAGCA AA A C GAA-- ATGG
4 ACACCTGAAGTATATGGATA CATAGTA TGTTA CAG AACACCT GTAT
CAAGAAAGGTGTTTTGTAAT GTATCAT ATAAT GTT TTGTGGA CATA
AGATACTATG AG - - AAGAA ----
GAM21139 20587 CATAGTATCTATTACAAAAC TCTATT- A- TTCTT CCAT
1 ACCTTTCTTGTATCCATATA CATAGTA ACA AACACCT GTAT
CTTCAGGTGTTGCTGTTAAC GTATCAT TGT TTGTGGA CATA
ATTTACTATG TTACAAT CG CTT-- ----
GAM21141 4387 CATAGTGTGTATTGGTCTGA G TGGT GA G GG GATG
0 AGGGGGTGGTGGGATGCCAA CATAGTGT TAT CT AG GGGT TGG
AGCCTGCTCAAGTTATGGAC GTGTTACA GTA GA TC TCCG ACC
ATTGTG G TT-- AC G AA ----
GAM21141 18797 CATAGTTTATATGTATATGC A TA---- GC-- T CATA
7 ACACATACATACATATATGT CAT GTTTA TGTATAT ACACA ACATA
TGTGTATAAATGTACACTTT GTA CAGAT ACATGTA TGTGT TGTAT
TTTAGACATG - TTTTTC AATA - ----
GAM21145 3138 CATATATTTATTGCAAATAC A A TG CTT C ATGTAA
6 TTAAAATTCTTATGTAAAAT CATAT TTT T CAAATA AAAATT TT
GATTTTCTATATTTGTGAAA GTATA AAA A GTTTAT TTTTAG AA
AAATATG - A GT ATC T ------
GAM21146 5520 CATATCCCAAATGCTGCTTG CAAAT--- T AAC- CCTCGGTC
3 CTTCAAACAGGCACCCTCGG CATATCC GCTGCT GCTTCA AGGCAC
TCGTGCCTCCTCTGAGGCTG GTATAGG TGACGG CGGAGT TCCGTG
GCAGTTCCTTCCTGGATATG TCCTTCCT T CTCC --------
GAM21153 19387 CATATTTGCTAAGAATGTCT TT T C CC- ACCTATA
5 ATTTCCAAGAACCTATATCT CATAT GC AAGAATGT TATTT AAGA
TACAAAATACACATTCTTGC GTGTG CG TTCTTACA ATAAA TTCT
TTGTGTG TT - C ACA -------
GAM21153 12954 CATATTTGCTCAACAAAATG A TG AACAA---- GA - - A TGCTTT
6 ATCAGTTTCAGAAAGTGCTT CAT TT CTC AAT TCA GTTT CAGA AG
TCTCTCTGTGGACATGAGGA GTA AG GAG TTA AGT CAGG GTCT TC
TTGGATTAGAGGAGTGGAAT - GT GAGATTAGG GG A T C ------
G
GAM21156 12436 CATCAAGAGGTCATGATTGC AAGA -- GAAGAG A AA GAA ACATGATC
1 AGAAGAGGTGACTGGAATTG CATC GGTCATG ATTGCA GTG CTGG TT TG
AATGACATGATCCAGGGGAG GTAG CCAGTAC TGACGT CAC GGCC AG AC
GCCGGCCACAAATGCAGTAA GA-- AA AAA--- C GG GGG --------
CATGACCAGGATG
GAM21157 4490 CATCACATGTAAACCCAGCT T GTAA GCTA GAAAA - AAG TTGT

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8          AACAGAAAAATACATTCACA CA CACAT   ACCCA   ACA    ATACAT TCAC  CG
           AGCGTTGTTGGTGGTGGTGT GT GTGTA   TGGGT   TGT    TATGTG GGTG  GT
           GTATGGTGTGCTATGGGTCA  C   AC--   ATCG  GG---    T   GTG ----
           ATGTGCTG
GAM21158 8401  CATCACCTTTGATGGCAATC    CC-    T-   ATC--------   AG  CAAG
9          CCATAGCTCAAGAGTCATGG CATCA  TTTGA  GGCA        CCAT  CT
           TACAAACACACTGTCCTTCA GTAGT  AGACT  CTGT        GGTA  GA
           GAATATGATG           ATA    TC   CACACAAACAT   CT ----
GAM21161 3507  CATCAGCTGGCAATTGTAAA   C    C  -  AAAT    TCC  GATCAAAA
7          TAGGTTTCCAGGATCAAAAC CAT AGCTGG AAT TGT   AGGTT  AG
           TAACCTTTCAGCGTATTCTC GTA TCGACT TTA GCG   TCCAA  TC
           AGCTATG           -    C  T  ACTT   --- --------
GAM21167 21084  CATCCACCCAGGAGGAGGCA   - CCC   -   CAC----     C   A   C  GGGAGTA
2          CTGGCAGGCTGGGAGCCCAT CATC CA  AGGA GGAGG      TGGCAGG TGGG GCC AT
           GGGAGTAATTGGCCTCATCC GTAG GT  TCCT CCTCT      ACCGTCC ACTC CGG TA
           TGCCAACCACATTCTCCTTC   A ---   T    TACACCA     T   -  T -------
           CTTGAGATG
GAM21169 20329  CATCCCAGATATCTTTGATG       A  T  T   T  ACACAC     AAAGGATG
0          TACACACTAAGATAAAGGAT CATCCCAG TA CT TGA GT     TAAGAT
           GATCTTGAAGACCTTATAGT GTAGGGTT AT GA ATT CA     GTTCTA
           TAATTGGGATG             A  T  T   C  GAA---    --------
GAM21171 996   CATCCGGATTTCCCACCAGA  TC   TTTC     AG   GAAC      A  TGCACACTGAACAT
4          GTGTGGAACCCGGGGTCATG CA  CGGA   CCACCAG  TGTG   CCGGGGTC TGA
           ATGCACACTGAACATTCAAG GT  GCCT   GGTGGTC  ACAC   GGTCTTAG ACT
           ATTCTGGCACACAGCCTGGT  GA   TGT-     CG   AC--      A  ----------
           GGTGTTCCGAGTG
GAM21173 4288  CATCCTCGTGGGAAATTTCC     T  TG   AT--  --      GTG
0          AGGTTTTGTGAAGACCTGTA CATCC CG  GGAA   TTC  CAGGTTTT
           GAACCTCTTTTTGTGGGGTG GTGGG GT  TTTT   AAG  GTCCAGAA
                        -  GT   CTCC  AT      ---
GAM21179 3908  CATCGTTTCTTTCCCTGTTG   C    TTCCC  TT  -  AGAAC    CATCA
7          CAGAAGAACTTTCACATCAT CAT GTTTCT    TG  GC AGA    TTTCA
           GAGAATCTGGTTTCATTTTT GTG CAAAGA    AC  TG TCT    AGAGT
           AGAAACTGTG          T     TTTTT  TT  G   A----    -----
GAM21181 1025  CATCTACATAATATCAGTAT     C   A      TTACGG   ----    TGGT T    TAATCT
1          TACGGATGTAAGATTGGTCT CATCTA ATA TATCAGTA     ATGT   AAGAT   C CAGTG
           CAGTGTAATCTTACTGGTAG GTAGAT TAT ATGGTCAT     TACA   TTCTG   G GTCAT
           TGTCTTAGTAACATGGAAAT     -  -      TAAAGG   ATGA    TGAT -    ------
           TACTGGTATATTAGATG
GAM21186 6465  CATCTCCTACAATAGGAAGT   C     A     TAAG  GAAGA  AGTG
0          AAGGTAGAAGAGATAGTGAT CAT TCCTACA TAGGAAG   GTA    GAT
           TAATAATACACGTTTCCTAA GTA AGGGTGT ATCCTTT   CAT    TTA
           TGTGGGATATG          T     A     GCA-  AATAA  ----
GAM21194 14282  CATCTGTGGATTGTGAAGTT   C   G   G   A   A   G-     TAA  TTTTTT
0          TATCTAGTTGTTTATAACTT CAT TGTG ATT TGA GTTT TCTA  TTGTTTA   CT
           TTTTTAGCTAAATAGAATGG GTG ATAC TGA ACT CAAA AGGT  GATAAAT   GA
           AAAACATCAAAGTGCATACG   C   G   A   A   -   AA     C-- ------
           TG
GAM21197 20396  CATCTTGTGGGCCTTGTGGT       T   CT---       CT---  CACTGCT
6          GTTCTGGTCACTGCTACCCT CATCTTG GGGC    TGTGGTGTT    GGT
```

CTCAATGCCACACATGAGCC GTGGGAC CCCG ACACCGTAA CCA
CTCAGGGTG T AGTAC CTCTC -------
GAM21198 3630 CATCTTTGACTTTGGCTCCA - TTT-- CTCCAT GA G AACT
6 TGTTTCAGGATGCGTGTGAA CATCT TTGAC GG GTTTCAG TGCGT TG
CTCGATGTAATTGAAATTCC GTGGA AACTG CC TAAAGTT ATGTA GC
CCTTTTTGTCAATAGGTG T TTTTT CCT--- A- - ----
GAM21203 1271 CATGAAGGGATGTTGAATTT G T TTTTTAT TTT--- A TAT
1 TTATCAAAAGCTTTTTCCTC CATGAA GGA GTTGAA CAAAAGCT TCCTC CC
ACCTATGGAGAGGATCATAT GTATTT TCT TAATTT GTTTTTGA AGGAG GG
AGTTTTTGTTTTTAATTCTG G - TT----- TATACT A ---
TTTATG
GAM21204 5441 CATGAATGGTTTATTAATAG T---------- TAGAGT
3 GTTCATGTACTGTGGTAGAG CATGAATGGTTTATTAATAGGTTCATGTACTG GG
TCCCTGGGGTCAGGTCCGGC GTACTTACCAAATAATTATCCAAGTACGTGAC CC
CAGTGCATGAACCTATTAAT CGGCCTGGACTGGGGTC ------
AAACCATTCATG
GAM21204 16824 CATGACAACAGACACATTGA G AC A ATG- TTTA
8 CATGGGTGGGTTTACCCGCC CAT ACA AGAC CATTGAC GGTGGG
AAGCGTCGATGGTCTTCTGT GTG TGT TCTG GTAGCTG CCGCCC
GTG - CT - CGAA ----
GAM21204 12388 CATGACAACAGACACATTGA G AC A ATG-- GTTTA
9 CATGGGTGGGTTTACCGCCA CAT ACA AGAC CATTGAC GGTGG
AGCGGTCGATGGTCTTCTGT GTG TGT TCTG GTAGCTG CCGCC
GTG - CT - GCGAA -----
GAM21210 12148 CATGAGGAAGGACAAAGATA GACAAAGA AGGTT TAAAACAT
1 AACAGGTTTCTAAAACATGA CATGAGGAAG TAAAC TC
CGGAGGTTTGAGATGAAGCT GTACTTCTTC GTTTG AG
TCTTCATG GAAGTAGA GAGGC --------
GAM21212 12585 CATGATCACGAAGGACACTG TG ---- AG T G ATAATT CCTG
4 AGAAAAAAATAATTTAGAAC CA ATC ACGA GACAC GA AAAAAA TAGAAC
CCTGGTTTTGTGAATTTTTT GT TAG TGTT TTGTG TT TTTTTT GTTTTG
GTTTGTGTTTCTTGTTTGAG GT AGTT CT T G AAGT-- ----
ATTGTG
GAM21213 6623 CATGATGAAGATCCTGTGAA AT ATCCTGT T - ATGCTTGGACC
0 CTCTGGCGTGGATGCTTGGA CATG GAAG GAAC CTG GCGTGG
CCCCACGCGTGGTGTTCCTT GTAC CTTC CTTG GGT CGCACC
CTCCATG CT ------- T G ----------
GAM21213 19315 CATGATGCGAACAGTACAGA A GAACAG-- AGA GG- GAGCAAA
3 TTGCGGCAGTGAGCAAAACT CATG TGC TAC TTGC CAGT
GATAGCAAAAGTAATATAAA GTAC ATG ATG AACG GTCA
AGTACCATG C AAAATATA AA- ATA -------
GAM21217 8562 CATGCAGGCGAGCTGGTCAT - -- G AT -- C AGGG
0 CGCCTCGCCGGAGGGCCAGC CATGC AGGCGA GCTG TC CGCCTC GC GG
TGGAGGTGCAGACGGTCATC GTACG TCTGCT TGGC AG GTGGAG CG CC
GTCTAGCATG A AC - AC GT A ----
GAM21224 16693 CATGCTATTGAATGCATCTT ATT- ATC ATAA CT TAAATATT
1 GTTTATAACTGTCTTCTAAA CATGCT GAATGC TTGTTT CTGT TC
TATTGAATAGAAATAAAGCG GTATGA TTTGCG AATAAA GATA AG
TTTTTACAGTATG CATT A-- ---- -- --------
GAM21224 1502 CATGCTCAAGTGAAAGTTGT AA GAAAG TG A AAGAC

2 AAAAATATCATAAGACATGA CATGCTC GT T TAAAAAT TCAT
ATTTTTGTGAACAGGAGTGT GTGTGAG CA A GTTTTTA AGTA
G GA ----- GT - -----
GAM21225 5913 CATGCTCTTCCCCGGCTGTG TCCCC GTGTG--- GAGGA
3 TGCACTTGAGGAAAGTGAAG CATGCTCT GGCT CACTT
TTCCAGGCCAAACTAGAGCA GTACGAGA CCGG GTGAA
TG TCAAA ACCTTGAA -----
GAM21226 6151 CATGCTGGTTTAAATTCAGA ATTC---- GAT AGGAAATA
2 AGGAAATAGATTAAGGAAAT CATGCTGGTTTAA AGAAGGAAATA TA
ATATATATTTTCTTCTAAAA GTGTGATTAAATT TCTTCTTTTAT AT
CTTATTAAATTAGTGTG ATTCAAAA AT- --------
GAM21234 1726 CATGGCAACCGCCAAGGCCG AACC - - C T TGC A- TCGC
2 TTGCTGCTGGCAATTCCTGT CATGGC GC CA AGGC GT GC TGGCA TTCCTG
CGCCAGGAAGATGTCATTGC GTGCCG CG GT TCCG CA CG ACTGT AAGGAC
CACAGCCTCTGAGCCGCCGT C--- A C A C TT- AG ----
G
GAM21235 21263 CATGGCCAAGCGGCTGAGCC C -- G CAAAT G AAAAC A- AGAACCG
6 AAATTGGGGTGGAAAACACA CATGG CA AGCG CTGAGC TGGG TGG ACAG GG
GAGGAGAACCGCCGGCTGTA GTGCC GT TCGT GACTTG ACCT ACC TGTC CC
CCGCCAGTCCATGTTCAGTG A AG - T---- G GCCA- GG -------
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GAM21240 21148 CATGGGCTCAGTCGCTTCCT G - C AT A - TGA
0 GATGAGATGGGCTGAGCGCC CATG GCTCAGTC GCTTC TG GAG TGG GC
GCTTCCAGAAGTGGACTGGG GTAC CGGGTCAG TGAAG AC TTC GCC CG
CGCATG G G - C- - G ---
GAM21241 21405 CATGGGGGCTTCGATGGTGA GG GG CA AAA- GCGGCGAGG
1 CTGTCAAGCAAAGAGCGCGG CATGG GCTTCGAT TGACTGT AGC GAGC
CGAGGGTTCGACAGCTGCGG GTACC TGGGGTTA GCTGGCG TCG CTTG
TCGAGATTGGGGTACCATG A- GA -- ACAG ---------
GAM21242 20609 CATGGTAAACTGACCAATTG AC-- -- TT- T T- TTAT
9 CAGTGAGTCTTTATAGCCCT CATGGTAA TGAC CAA GCAG GAG CT
CCCTGCTCCTTGCAGTCATT GTACCGTT ACTG GTT CGTC CTC GA
TATTGCCATG ATTT AC CCT C CC ----
GAM21244 1030 CATGGTCTGCTTGTGGCCAC -- C--------- - C-- ATCAT
3 CTCATCATGAACTGTCGGCC CATGG TCTG TTGTGGCC AC TC
ACAGTTCTTTACCACAGATT GTACC AGAC GACACCGG TG AG
CCATG TT ACCATTTCTT C TCA -----
GAM21246 2986 CATGGTGGTGAGTTTATTAC G TGA A A- A AGG AGGGT
9 ATTAGCATGAGGGCAGGGTG CATG TGG GTTTATT CATT GC TG GC
TAAGCAGGCAGAGTGGATGA GTAC ATT CAAGTAG GTGA CG AC TG
ACGTTTACATG - TG- - GA G GAA -----
GAM21252 6498 CATGTATATGTATGTGTGTG A ATACACACACAC
0 TGTATATATGTGTATATATG CATGTATATGT TGTGTGTGTGTATATATGTGTATATATGT
TATACACACACACACATATA GTATATATATA ACACACACACATATATATATATATATACA
TATATATATATACACACACA C ----------
CACATATATATATG
GAM21256 8849 CATGTCTGTAAAACTTGACG T AAA - AT---- GC- T ATTTT
4 TATTTTGTGTATGCATGTTT CATGTC GT ACTTG ACGT TTTGTGTAT ATGTTT C
TCATTTTGCAAATATTTAAT GTACAG CA TGGAC TGTA AGATATATA TATAAA G
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GGTACGACATG
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6 TCATTGGTTTTCTCCCTTAC CATGTCTTG TGTTTTC TTGGTT CCCTT CTG
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TGATTAGAGGAAGCAACAGG A----- A TTGT - -------
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GAM21258 1602 CATGTGATTTCAGGTTTTTC T --- T ACATTGAGA
7 GTACTGAGAACATTGAGATT CATG GATTTCAGG TTTTTCG ACTGAGA
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AATCTTATG T CAC - ---------
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4 CTATATACATATGGGGCTTC CATGTG AGTGTA CATA TATAT ATATGGGG
CCTATGTACATATACATATG GTATAT TCACAT GTAT ATATA TGTATCCC
CATACACTATCTATATG CTA AC- AC CA ---
GAM21260 3804 CATGTGCTGGTGGGAGTACA T --- G T- CTC CCTCA
0 TGACTCGCCTCCTCAAGGTT CATG GCTG GTGG AGTACA GA GCCT
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CCATG - TTT G CC --- -----
GAM21260 9791 CATGTGGCTTGCTCAGTGTT TG CT C GCAA TCTTGGACT
9 TAATTGCAAGTTTTCAATCT CA TGG TGCT AGTGTTTAATT GTTTTCAA
TGGACTTTGAAAACAGGATT GT GCT ATGA TTGCAAATTAG CAAAAGTT
AAACGTTAGTACTCGTGTG GT C- - GA-- ---------
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1 AGCTAGCTTTCTAACTTACT CATGTGT ATACA AAG TAG
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ATG TA-- AACA A ------------
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6 AAAGAGTCCATATCCGATCA CATGT TAATC CAG TTTAAA GTC
TTTAAACATTTGGATTATAC GTACA ATTAG GTT AAATTT TAG
ATG T - TAC AC -------
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2 CCGTGGGCACTAATCTGCAC CATG TACCTGGAA GA G GG
TTTGTTCCAGGTAATCCATG GTAC ATGGACCTT TT C CT
CTA GT CA GT ------
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0 AGAACGTGATGAAAGACGAT CA GTTG TGTGTG GAACG GATG
ATCCCCGTTTACACACAAAT GT CAAC ACACAC TTTGC CTAT
TCAACTG - TTAA--- A CC --------
GAM21270 12431 CATTAAACTCTTCTAACTTT - AC TC T TTCT GATA
1 CTTCTTTCTGTGATAATTCA CATT AA TCT TAACT TCTTCT GT
GAAGATAGTTATGGATCTTC GTAA TT AGG ATTGA AGAAGA TA
AATG C CT T- T CT-- ----
GAM21270 6152 CATTAACAAAAACCCGTGAT C AACCC TG ACA-- TTC TATTCATT
9 ATTGAAGAACAAGATGTTCT CATTAA AAA GTGATAT AAGA AGATG TCA
CATATTCATTTGATTTCATC GTAGTT TTT TACTGTG TTTT TCTAC AGT
TACTTATTTTTGGTGTCATT A ----- GT ATTCA TTT --------
TTATTGATG
GAM21276 18472 CATTAGATAAATCAATTGAC GATA A CAAAAG TTTTC
1 TGCAAAAGCATTTTTCATGA CATTA AATCAATTG CTG CAT
AGTCAGCCAGTTGATTAGTA GTGAT TTAGTTGAC GAC GTA

GTG GA-- C TGAA-- -----
GAM21278 20503 CATTAGTCTTTTATTATAAC A TA- - -------- GG G GCCAA
3 CATATTGAATGGGGTCGCTT CATT GTCTTT TTATAAC CATATTGA ATGG TC CTTT
TGCCAAAAGGAGAAATCATT GTAG TAGAAA GATATTG GTATGACT TACT AG GGAA
TCTTAAATCAGTATGAGTTA G TAC A AAATTCTT AA A -----
TAGCATAAAGATGGATG
GAM21284 6261 CATTCAATCTAATCCGGTAC CTAATCCG AA C TCA- CTA
4 AAGAACGGTCTCAATGGCTA CATTCAAT GTAC GAA GGTC ATGG
CCATAAATGGCTCTTCCGGT GTAAGTTA TATG CTT TCGG TACC
ATATCTTACCATTGAATG CCATTCTA GC C TAAA ---
GAM21284 18870 CATTCACATAGTCTTCTCAG T CA T C - TG- A -- ATCA
9 GCTGCCAGGACTCTTCATCA CA TCA TAG CTTCT AG GC CC GGA CTCTTC
GGGGAGCATCCCGGAGTGCA GT AGT GTC GAGGA TC CG GG CCT GAGGGG
CTCAGGAGCTGATGATTG T A- - C A TGA C AC ----
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6 CCAATAGCTTGGCATTCATT CATT ATTATGGG TA AAT CCAA
AAACGTACTCCCGTGATTGA GTAG TAGTGCCC AT TTA GGTT
TG T TC GCAAATTAC C ----
GAM21296 8588 CATTGAAAAGAATCCGGTTT A-- -- AA----- TCAGAG
8 ATAACCAGGTTTCAGAGGAC CATTGAA AGAATCC GGTTTAT CCAGGTT
CTGGAATAATAATAAGCTTT GTGACTT TTTTAGG TCGAATA GGTCCAG
GGATTTTGCATTCAGTG ACG TT ATAATAA ------
GAM21298 22238 CATTGACAATCCAGTGGGCA A---- A CACAGGCT TTTTA
0 CAGGCTTCAGTTTTACTGAT CATTGAC ATCC GTGGG TCAG
GATACCCACGGATATGCAGT GTAACTG TAGG CACCC AGTC
CAATG ACGTA - ATAGT--- -----
GAM21299 6304 CATTGAGTTGAAGGATAGCA TG G GGA GCAG- A GATTTCG
6 GTGTACCGTGATTTCGATGG CAT A TTGAA TA TGT CCGT
AACAAAGAATAGAGTTCAAG GTA T AACTT AT ACA GGTA
TTGATG GT G GAG AAGAA A -------
GAM21300 806 CATTGATAGTTTTCATGAAT A G T CAGA
0 CGTGGAATGATTTATCTTTT CATTG TAGTTTTCATGAATCGTGGAAT ATTTATCT TT
CAGAAACAGATAAATGGTTC GTGAC ATCAAAAGTACTTAGTGCCTTG TAAATAGA AA
CGTGATTCATGAAAACTACC C G C ----
AGTG
GAM21301 12732 CATTGATTTTGTATCCTGAG TTG - GC A CTTAT
0 ACTTTGCTGAAGTTGCTTAT CATTGATT TATCCTGAGA CTTT TGA GTTG
CAGCTCAAGAAGCTTTCAGG GTAGCTGG GTAGGACTTT GAAG ACT CGAC
ATGGGTCGATG --- C A- - -----
GAM21307 3992 CATTGTAACAATGCCTCTTT TAACAAT CTCACAT- G ATTCGAAG
1 TCTCACATAAAGTTATTGAT CATTG GCCTCTTTT AAA TTATTG
TCGAAGCAGTAAATTTTCTT GTAAC CGGAGAAAA TTT AATGAC
TTTAAAAAGAGGCTCAATG T------ ATTTTTCT A --------
GAM21311 20967 CATTGTTTGTTTCTATTCAA TG TTT-- CAA GAACTTCA
9 CCAATTTCAGAACTTCATGA CAT TTTG CTATTCAAC TTTCA
AAAAGTTGAATGGTAGGTTG GTA GAGT GGTAAGTTG AAAGT
AGTGATG GT TGGAT AA- --------
GAM21313 5872 CATTTAAGCCTGAAATTGTC TT C ----- TGTGAAGTGAAGTATGATC
1 CTGTGAAGTGAAGTATGATC CAT AAGC TGAAA TTGTCC
GGACAGCCTCTTTTCAGCTT GTA TTCG ACTTT GACAGG

TTATG TT - TCTCC ----------
GAM21315 8482 CATTTAGAAAATTACTACAA TTA A- AC AAAA T GAAA
1 AGTAAAACATGTGAGGAATA CAT GA AATT TACAAAGT CATG GAGGAATA
GAAATGTTTTTTTCATGAAC GTA CT TTAA ATGTTTTA GTAC TTTTTTGT
ATTTTGTACCAATTCATCAT TTA AC CC CAA- T ----
TATG
GAM21317 20060 CATTTATCCTATGTGGTTTC A- TT ------ TTA TTGG
0 TCCTTAGACCTTGGGGTCAT CATTT TCCTATGTGG TCT CC GACC
GGTTCAGCAGAGGTTACATA GTAAA AGGATACATT AGA GG CTGG
GGAGCAAATG CG GG CGACTT TA- ----
GAM21317 20317 CATTTATGTAAATTTACATT A TAAATTTACA AGAA CAGG
5 CTAGAATACCAGGGTAAACA CATTT TG TTCT TAC
AGGAGACGTTATTCAAAGAT GTAGA AC AGGA ATG
G A TTATTGCAG- ACAA ----
GAM21317 8464 CATTTATTAATACAGCGAAA T ACAG G AA-- A AAAA
8 GAAATTTATGAAAAAATTCA CATT ATTAAT C AAAGA TTT TGAA
AGAAGGAGTCTTTGACATTA GTAA TAATTA G TTTCT AAG ACTT
ATAATG - CA-- - GAGG A ----
GAM21321 9101 CATTTCCTAATTTATGGGGA TAA A TTAATT A---- AGTC
5 TTTTAATTGAAAATAAATTG CATTTCC TTT TGGGGATT GAAAATA ATTG
AGTCCAATAGAGCTGTTTTT GTAAAGG AAA ATCCTTAA TTTTTGT TAAC
TTCTCAATTCCTACAAAATG TA- C CTCTT- CGAGA ----
GAAATG
GAM21321 18070 CATTTCCTTAAGAAACTTTT - AAGA - A GCCA
9 TCTGATTAGCCATGGCAGAA CATTT CCTT AACT TTTTCTG TTA
AACAGTTGGAAAAGGCAAGT GTGAA GGAA TTGA AAAAGAC GGT
G C AAGG C - ----
GAM21322 19927 CATTTCGATTTCAGAATTTA ATTT A- A AGAAGAA
3 CTTAGATTCAGAAGAAGAAT CATTTCG CAGA TTTACTT GATTC
CGAAGTGGAGATCTGTGAAG GTGAAGT GTCT AGGTGAA CTAAG
TG ---- AG G -------
GAM21328 21242 CATTTGCTCCTATGTAACCT C AACC G GA- A ACCC
8 CTGCTGAACCATGACCCCAA CATTTG TCCTATGT TCT CT ACC TG
GGTCTAAGGAGAAACCACAT GTAAAT AGGATACA AGA GA TGG AC
AGGATAAATG - CCAA G ATC A ----
GAM21329 6633 CATTTGGCAATGTGCTCCCT TTT- TG CT---- GT- ACCA
5 GTGGCAACCATGCCTGAAGG CA GGCAA TG CCCT GGCA
GTACAATCGTGTTGCTTGCT GT TCGTT GC GGGA CCGT
TG TCGT GT TAACAT AGT ----
GAM21338 12483 CATTTTGCTTATTCATGGCA TT CT A TCTTTC-- TTATTTT
9 TCTTTCAAATTTTATTTTAG CAT TG TATTC TGGCA AAATT
TTTCCTTTATTTGCCAAGAA GTA AC ATAAG ACCGT TTTGA
TACATATG T- -- A TTATTTCC -------
GAM21339 6406 CATTTTGGAGTAAAATATGG GGAG-- TA C C TTC------- AT T TAGTAT
1 TAACTGACAGTTCCTTCTTA CATTTT TAAAA TGGTAA TGA AGTTCC TTA TTTCA TG
ATTTTCATTGTAGTATCATT GTAAAA ATTTT ATCGTT ATT TTAAGG AGT AAGGT AC

GGAATCTGACCAACATCCTG AAAGGA CA - T TCCTACAACC CT T ------
GAATTTTTATTGCTAACTTT
TAAGGAAAAAAATG

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GAM21344 16481  CATTTTTTATGAAACTATCT  TT-        TAT--- -  ACA  CA   C  TCATAAT
1         GGGGACACTTCAGAAAGCAT CA  TTTTATGAAAC    CT GGGG  CTT  GAAAG ATG
          GTCATAATTATTTTTCCCAA GT  AAAGTATTTTG    GA CCCC  GAA  CTTTT TAT
          GCCCCAAGTCCATTGTTTTA  TTT        TTACCT  A   ---  CC   -  -------
          TGAAATTTTG
GAM21345 8639  CCAAAAAACAGCATAAGAAT     AAC-  A   A       GTTATATTCCAA
3         TAAAAACAGTTATATTCCAA CCAAAA   AGC TAAG ATTAAAAACA
          TGTTTTTAATACTTGGTTCA GGTTTT   TTG GTTC TAATTTTTGT
          CATTTTGG             ACAC  -  A       ----------
GAM21346 12310  CCAAAAATGTTTGCCAATCC    A  GT--    -  CCTG     TGGT
9         CTGCTTTAGATGGTTCTAAA CCAAA AT   TTGCCA ATC   CTTTAGA
          GGAAAGATATGGTAGTTAAA GGTTT TA   GATGGT TAG   GAAATCT
          TATTTGG             A  AATT    A  AAAG     ----
GAM21347 4115  CCAAAACCTGAGGCAGAAAG   AAA   AGG---   AA  --  ATTTG
8         TGGATAATTTGTGTCAACAC CCA  CCTG    CAGA  GTG  GATA
          ATCTGGACAAGCAGGAATGG GGT  GGAC    GTCT  CAC  CTGT
                       AA-  GAACAG  A-  AA  -----
GAM21354 20323  CCAAACTGTAAATACAGAAC   AAC-        AC   C   CTCA
0         TAGGCACATCTCAATGTTCT CCA   TGTAAATACAGA  TAGG ACAT
          GTCTCTGTGTTTACATTACT GGT   ACATTTGTGTCT  GTCT TGTA
          GG                CATT        CT   -   ----
GAM21354 19366  CCAAACTGTCTCTGCCTCTT    CT  -  T    T-   AGAATCCAG
1         CCCGGAGAATCCAGCTGGGC CCAAA  GT CTC GCCTCT  CCCGG
          TAGAGGCTGAGCACCTTTGG GGTTT  CA GAG CGGAGA  GGGTC
                       C-  C  T    TC   ---------
GAM21354 21395  CCAAAGAAGCGTAGTATACT   ---  G    ATA--  A  -  A  TATGTC
8         AGGACCTATATATGTCTGAG CCAA   AGAA CGTAGT    CT GGA CCT TA
          GGATCTAAGGCACCACTATG GGTT   TCTT GTATCA    GA TCT GGG GT
          TTCTGACTTGG          CAG   -    CCACG  A  A  A ------
GAM21357 12572  CCAAAGCTGCAAACCATTTA  AA   CAAACCA  A GG  CAT  TTACATATT
9         GGGAGTCATCAATTACATAT CC  AGCTG     TTT G  AGT  CAA
          TTTGTACACTTTCAAAAAGC GG  TCGAC     AAA C  TCA  GTT
          TTACAGCTGGG         G-   ATTCGA-  A TT  CAT  ---------
GAM21366 12680  CCAAATTGCAAAGTGGATAT  A  --  AAAG-  A---        CG    ACAGG
4         TATATTGGCGACCTTCACAG CC AAT  TGC    TGG   TATTATATTGG  ACCTTC
          GGGGGGTCCGGTGTGGTGGG GG TTA  ACG    ACC   GTGGTGTGGCC  TGGGGG
          AACCAAACAGGCACAATTAG  A  AC  GACAA  AAGG       --    -----
          G
GAM21366 12779  CCAAATTTCGTGAAGAACCA   AAT   G  AACC   T   T  T   T  GTG    GGATG
7         GGTTGCTGTGTTGCAGTGCT CCA  TTCGT AAG   AGGT GCTG GT GCAG GCT  TTGCCC
          GTGTTGCCCGGATGGGGCAG GGT  AAGTA TTC   TCCG TGGT CG TGTC CGG  GACGGG
          GGCCCTGTGCTGGTTGCCTC  GT-   G  GC--  T  - -  C  ---    -----
          GCTTGATGAATGTGG
GAM21367 3123  CCAACAAACAGTCCTGCTCA    AA   C  GC   --    CTTCT  AGT  TTCT  GA  CCAGCGCCA
2         GAGTGAAGCTTCTCCAGTGG CCAAC  ACAGT CT  TCAGA  GTGAAG   CC  GGC   CCA  TCC
          CTTCTCCAGATCCCCAGCGC GGTTG  TGTTA GA  AGTCT  CACTTC   GG  CCG   GGT  AGG
          CAGGAGTGGTTTGCCCGGTA    --   A  A-   TA    AT---  C--  TTT-  G-  ---------
          CTTCACATTCTGAAAGAATT
```

GTGTTGG
GAM21367 20121 CCAACAAACTTTATCATAAT AA A AA--- - AAA TTTT
4 GCAACTAGTGGGAAAATAGA CCAAC ACTTT TCATAATGC CTAG TGGG ATAGA
TTTTTCTATACCTTCATCTG GGTTG TGGAA AGTGTTATG GGTC ACTT TATCT
GGTTAGGTATTGTGAAAGGT G- - GATTG T CCA ----
GGTTGG
GAM21367 21353 CCAACAAAGATTTCAGGGAT A- G GGA AG AGAAAAAGTA
5 TTTGTCAGGGAGAAAAAGTA CCA CAAA ATTTCAG TTTTGTC GG
TCGGACAGAAGCTGAGATGT GGT GTTT TAGAGTC AAGACAG CT
TTGGATGG AG G G-- G- ----------
GAM21368 12927 CCAACAAATTAGATGACTGA ACAAA A GAG---- AT CAAA
0 GGTGTAATGGACAAATCCTA CCA TTAGATG CT GTGTA GGA
TGCACAAAGGGAGGGTATCT GGT AGTCTAT GG CACGT CCT
GAATATGTGG GTATA G AGGGAAA AT ----
GAM21368 20553 CCAACAAATTAGATGACTGA ACAAA ----- GAG AT CAAA
1 GGTGTAATGGACAAATCCTA CCA TTAGATG ACT GTGTA GGA
TGCACAAAGTGAGGGTATCT GGT AGTCTAT TGA CACGT CCT
GAATATGTGG GTATA GGGAG AA- AT ----
GAM21369 20278 CCAACACAGAGGAGATCTTC CACAG A CAATA AACCAAAGA
0 AATATGTTAACCAAAGAAAC CCAA AGGAG TCTT TGTT
ACCAGAGACCTTCTACATTG GGTT TCTTC AGAG ACAA
G ACA-- C ACC-- ---------
GAM21369 12897 CCAACACGCTGGTGAGAGGC A- CTGGT TGATT G TG GAAGA
5 CTGATTAGGTTTTGGGGAAG CCA CACG GAGAGGCC AG TTT GG
ATCTGAGAGCTCTGGCCTCT GGT GTGC TTCTCCGG TC AGA CT
TCGTGAGTGG GA ----- TC--- G GT -----
GAM21371 1269 CCAACCAAAAGGAGGCCCCA A AAA GA CA-- T GAAAA
6 TGTGGGCTGGAAAACAGCCC CCA CC AG GGCCC TG GGGCTG
CCAGAAAGGGTCAATTGAAG GGT GG TT CTGGG AC CCCGAC
GGTGG G AAG AA AAAG C -----
GAM21371 6336 CCAACCAAATGGCTTTGCCT AAAT CTT CC - --- A ATTCTTAC
7 CCACCAAAAGACATAGAGAT CCAACC GG TGCCT AC CAAA AG CATAGAG
TCTTACCTCTATGCTAAGTT GGTTGG CC ATGGG TG GTTT TC GTATCTC
TGTGTTTGGGTACCCTCTAG ATCT C-- TT T GAA - --------
GTTGG
GAM21372 8905 CCAACCCATGATGGGCAGGA A-- ATG G AATCTTGAGG
4 GGGCTAATCTTGAGGGGCCT CCA CCCATG GGCA GAGGGCT
TTGTGTCACCATGGGCTATG GGT GGGTAC CTGT TTTCCGG
G ATC CA- G ----------
GAM21372 6666 CCAACCTCAGACTCCAAACT AAC GA AAA G C ACAA-- G A GGAGA
8 GTTGCCGGCGACAAATGCTA CC CTCA CTCC CT TTGC GGCG AT CT TG
TGGGAGACGGAGGGTGACAA GG GGGT GAGG GA AATG TCGC TG GA GC
ACGCTGTAAGAGACGGAGCG AGA GC CA- G - AAACAG G G -----
TGGGAGAGG
GAM21374 12778 CCAACGTGGGCAAGTTGCTC AC G A G A --- GACA
0 AAGGGTATCGACAGGTACAA CCA GTGG CA GTT CTCA GG GTATC
TCCTGAGAACCTGGCCACCC GGT CACC GT CAA GAGT CC CATGG
TGG CC G C - - TAA ----
GAM21375 9448 CCAACTCGTCCAACTGACAA AC T T-- AG TTGCG TG TCTTCC-- ATG
8 GCCCTTGCGCCTGCCTCTTC CCA TCG CCAAC GACA CCC CC CC GGG

CGGGATGCCTACAAAATTGG GGT AGC GGTTG CTGT GGG GG GG TCC
TGGGATTGGGACTGTCTCTG A- C TCT CA TTA-- GT TTAAAACA ---
TTGGCCGAATGG
GAM21376 20969 CCAACTGCATTTTATTTTTC A TTTT CG TTTTCCT C AAAACTA
5 GGCAGATTTTCCTCACCCTA CCA CTGCA ATTTTT GCAGA CAC CT
AAACTAAGCGTGCTGCTTCT GGT GATGT TAGAAA CGTCT GTG GA
GCAAAAGATTTTTGTAGATG A TTT- A- TCGTC-- C -------
G
GAM21386 14541 CCAAGCTGGGCCCGCGACTC G - AC -- G GGGAT
4 GAAGGTGACTGGGATGGTGA CCAAGCTGG CC CGCG TCGA AGGT ACT
TCTCGTTGGACTGCGTGGCT GGTTCGATC GG GCGT GGTT TCTA TGG
AGCTTGG - T CA GC G -----
GAM21386 14636 CCAAGCTGGGCCCTGAGATC A- CCCTGAGA A GC AGTGTA
5 GAGCGGGCTGAGTGTACAAT CCA GCTGGG TCG GCGG TG
CCGCATGAATGATGCACCCA GGT CGACCC AGT CGCC AC
GCACTGG CA ACGTAGTA A TA ------
GAM21387 19266 CCAAGGAACCAAGGGACGCT AACCAA A- ATAAT TAAA
3 TGGCATAATCAGGTAAACTT CCAAGG GGG CGCTTGGC CAGG
GTGGTCAGGCGAGCCCAAGC GGTTCC CCC GCGGACTG GTTC
CTTGG GAA--- GA GT--- ----
GAM21387 9010 CCAAGGACACTGACCCCAAG A CT-- AA G CCTA TCCAG
7 CTGTCCTGCCTAGCGTCCAG CCA GGACA GACCCC GCT TCCTG GCG
CGTCTTCTAGGAGGGTGGGG GGT CCTGT CTGGGG TGG AGGAT TGC
TCTGCCTGTCCTGG - CCGT -- G CTTC -----
GAM21388 20566 CCAAGGAGCTAGAGGACTTT A - AG -- ATGA AAAG
8 GAGATGAAGAAAGCTGCTGC CCA GGA GCTAG GAC TTTGAG AG
TCGAGCTGTCACTGGCGTCC GGT CCT CGGTC CTG GAGCTC TC
TGG - G A- TC GTCG ----
GAM21390 6222 CCAAGGGATCTGCCCACCAT A ATCT C C CC CACCA
8 TCCGGGGGTCACCAGCCCTT CCA GGG GC CA CATT GGGGGT
CCAGTGATGAGCCCCCCATG GGT CCC CG GT GTGA TTCCCG
G A CC-- A A CC -----
GAM21391 9571 CCAAGGGGAGTGTACATCCA A G CATCCAAG GTA GGAAA
3 AGGTGAGTGTATTCGGGAAA CCA GGGGA TGTA GTGAGT TTCG
CGAGGGAATTTACAGTTACA GGT CCCCT ACAT CATTTA GAGC
GTCCCCATGG A G TGA----- AGG -----
GAM21392 9337 CCAAGTAACTGAGTGAGATA -- T T TAAA G TTCCT C AGGGCC
9 AACAGCAGTTCCTCTCTCTC CCAAGT AAC GAG GAGA CA CAG CTCTCT TCCCTCCGG
TCCCTCCGGAGGGCCCCGGG GGTTCA TTG TTT CTTT GT GTC GAGAGG AGGGGGGCC

GGGACGGAGAGTTCCTGATG CG T T TTAG A CTT-- C ------
GATTTTTCTTTTTGTTGCAC
TTGG
GAM21395 12299 CCAAGTGTGTGTTGTGAGGT A --- TGT GAGAA
6 GTGTTCCGAGAAGGAATTCC CCA GTGTGTG TTGTGAGG GTTCC
TTCACAGAGTCGCGTACTGG GGT CATGCGC GACACTTC TAAGG
- TGA CT- -----
GAM21397 2975 CCAAGTTGGAGGCTGATCTG AG TG TGA- AGA A CAAGG G AAAG G
GAAGAAACAGA
3 GAGAAGAAGTTCAAGGTGGC CCA T GAGGC TCTGG AG AGTT TG CA CTC GCTA

AAAAGCTCGGCTAGAAGAAA GGT A CTCTG AGACC TC TCAG GC GT GAG TGGT
CAGACCGGAGGACGGCAAAG -- GT TCCC AG- G A---- G AA-- G GTAGGAAAC--
GATGTGGTGGAGAATGGCGA GAGGA
GACTGCTGACCAGACCCTGT CCG
CTCTGATGG GGC

GAM21399 16674 CCAATCACGTTGTATTAGGT TC - T GCCCT GAAGAGAG
4 AGCCCTTGGGAAGAGAGCCA CCAA ACGT TGTAT AGGTA TGG
TCATATTTTATACACATGTT GGTT TGTA ACATA TTTAT ACC
TTGG T- C T ACT-- --------
GAM21400 8149 CCAATCCCAGCCAAAGAATG T- A- GAAT C A - ATTGT
1 CTCCTGTTACCTTCATTGTG CCAA CCC GCCAAA GCT CTGTT CC TTC
GATGGAGCAGTAGTCAAGTT GGTT GGG CGGTTT TGA GACGA GG AGG
TGGCCAGGGTTTTGG TT AC GAAC T - T -----
GAM21400 21197 CCAATCCCCACATTTAAAAT AT CACATTT- AA G ATTT
3 GGAATGTTTGGTTTATTTAA CCA CCC AAAATGG TGTTTG TTT
AGTAAATAGGCTATTTTTTC GGT GGG TTTTATC ATAAAT AAA
TTACTGGGTCTGG CT TCATTCTT GG G ----
GAM21402 18977 CCAATGCTACACAACCAGAA - ACAAC ----- T A GAAAATGA
6 AGTAAGGTGTTCTACTTGAA CCA ATGCTAC CAGAAAG TAAGGTG TCT CTT
AATGAAAGGAGATTATTTTA GGT TACGGTG GTCTTTC ATTTTAT AGA GAA
GGTATCTTTCTGAAGTGGCA C AA--- TATGG T G --------
TCTGG
GAM21404 8438 CCAATTACTTCATACCCTTT ATTAC CCCTTT G A ATTATGCA
3 TTGGAGACTGATTATGCACA CCA TTCATA TTG AG CTG
GCTGCAACATCTTATGAAAC GGT AAGTAT AAC TC GAC
CTATGG ATCCA TCTAC- G - --------
GAM21405 21559 CCAATTGGGTGTGAGGAGTT ---- GAG --- A TT ATTT
9 CAGTTATATGTTTGGGATTT CCAATTG GGTGT GAGTTCAG TTAT TG TGGG
TTTAGGTAAGTGGGTGTTGA GGTTAAT TCGCA TTCGAGTT GGTG AT ATTT
GCTTGAACGCTTTCTTAATT TCTT AG- GTG A GG ----
GG
GAM21407 12230 CCACAAAAACAGGTATATAC AAAACAGG TTTG AG T T TGGA
0 TTTGAAAGGAGATGTCTTGG CCACA TATATAC AA GAGA GTCT GGAACAT
AACATTGGAATGTTCTCAGA GGTGT GTGTATG TT TTCT TAGA TCTTGTA
TTTCTTGGTTGTATGTGATC GTACTA-- ---- GG T C ----
ATGTGTGG
GAM21408 9126 CCACAAATGTAGCAAACAAC ATGT- A C-- T GGAC
8 TGCTGGTGGACGCCGTATCA CCACAA AGC AACAA TGC GGT
TTGTTGGCTTAGTGTTGTGG GGTGTT TCG TTGTT ATG CCG
GTGAT G ACT - ----
GAM21419 8157 CCACAGCCTGTAACTCAGTG C A- TC G T - TGAATT
3 TTTTGTACTTCACTGAATTG CCACAG CTGT AC AGT TTTTG ACT TCAC
TGATGGTTAGAAACTTCGTG GGTGTT GATA TG TCA AAGAT TGG AGTG
GATAGTTTGTGG T GG CT - - T ------
GAM21421 3441 CCACAGGTCCTCTTTAGCCA ---- C--- - CA AACCTC
0 CAGGGAACCTCCTCTGGAGC CCACAG GTC TCTT TAGC CAGGG
TGAAAGACACAGACGCCGCT GGTGTC CAG AGAA GTCG GTCTC
GTGG GCCG ACAC A AG ------
GAM21421 14024 CCACAGTCCTGCATTTACTG G - A- CT - CTTAATGATT

5 CCTTTCACTTAATGATTTGG CCACA TCCTG C TTTA GCCT TTCA
ACAGGTTTTAGAGAGCCAGG GGTGT AGGAC G AGAT TGGA AGGT
ATGTGG - C AG TT C ----------
GAM21425 2789 CCACATGCGTGTGGCAGCCC AC TG C AG ----- TG AGGA
2 AAGGCTTTGTTGTAGGAGCA CC ATGCGTG G AGCCCA GCT T TTGT
ATGACTGTTGGTATGGGCTA GG TATGTAC T TCGGGT TGG A AACG
TTCCATGTATCGGG GC CT A A- TTGTC GT ----
GAM21426 20918 CCACATGTTGTGGAGGGACC T T - -- - AA TGT TGCAGCCT
1 CTGTGGAAGATTGTGCCTGC CCACA GT GTGG AGG GACC CTGTGG GAT GCC
AGCCTGGCCTGTTGCCCACA GGTGT CA CACC TCC CTGG GACACC TTG CGG
GAGGTCTACCTGCCACACTG - - G AT A CG TC- --------
TGG
GAM21427 2900 CCACATTGACTGTCTGTAGA TGACT T G AAA---------- GGTA
2 TTTTGGAAAGTGGTAACAGG CCACAT G CTGTA ATTTTGG GT
TACATAGGTAACCAGAGTAT GGTGTA C GATAT TGAGACC CA
ATAGCTTATGTGG TT--- - A AATGGATACATGGA ----
GAM21428 19900 CCACCAAAATGCTTACATCC AA TACATCC - A- C- GAAA
1 GTGTGTAATATCCCGAGAAA CCACC AATGCT GTGT GTAAT TCC GA
TTATGGAAAATTATAACATA GGTGG TTACGA TACA TATTA AGG TT
GCATTAAGGTGG AA ------- A AA TA ----
GAM21428 21120 CCACCAACACAGTTTTCGAT ACAC TTT CCAAAC T - - TGAT
9 GCCAAACGTCTGATTGGACG CCACCA AG TCGATG GTC GATTGGACG CAG ATT
CAGATTTGATGATGCTGTTG GGTGGT TC GGTTAC TAG CTGACCTGT GTC TAG
TCCAGTCTGATATGAAACAT ATT- CC- AAAGTA T T G ----
TGGCCCTTTATGGTGG
GAM21430 8499 CCACCACAGAGAGCCAGCAA CAGAG GCA ------ A AGTC
1 GGCCTTCAGGAAGTCTCCGG CCACCA AGCCA AGG CCTTC GGA
AGGTGTCACCCTCAATGGCT GGTGGT TCGGT TCC GGAGG CCT
TGGTGG ----- AAC CACTGT - ----
GAM21430 21100 CCACCACCATGCCTGACCCA A- T ------ TT AGCA
7 TTTGGCAGCAGCCTCGTGTG CCACC CCATGCC GACC CAT GGC
TGGTGGTCTGGTGTGGACGG GGTGG GGTGTGG CTGG GTG CCG
TGG CA T TGGTGT CT ----
GAM21430 3420 CCACCACCTGGAGCCCGAGG C GGA- AG T AAGTACAGC
9 AGGTGCTCAAGTACAGCGAG CCACCA CT GCCCG GAGG GCTC
TTCTTCACGGGCAGCAAGCT GGTGGT GA CGGGC CTTC TGAG
GGTGG C ACGA A- T ---------
GAM21432 4062 CCACCAGATGGCCTAACTCA ACCAGA AA AC- TCAATTCTGCATACCAT
1 CTGCTCTTCAATTCTGCATA CC TGGCCT CTC TGCTCT
CCATAGAGCAATGGAGGAGG GG ATCGGA GAG ACGAGA
CTAGG ------ G- GTA ----------
GAM21432 16631 CCACCAGGACTTATCTCAGA - ACTTA AGAAAA ---------- GG GAGC
8 AAATTGCTGACCGCCTGGGC CCAC CAGG TCTC TTGCTGA CCGCCT GCCTG
CTGGAGCTAGGCAAGGTGGT GGTG GTCC AGAG AACGACT GGTGGA CGGAT
GACTAAGAAATTCAGCAACC T ----- GACC-- TAAAGAATCAGT A- ----
AGGAGACCTGTGTGG
GAM21433 9113 CCACCAGTCAAGGGTGGGAA A A GT AAT G- AGG T TAAAAGTTATATGTAC
4 TAGGGTGGGAGGGGGTTGGC CCACC GTCA GG GGG AGGGT GG GGG TGGCTT
TTTAAAAGTTATATGTACAA GGTGG CAGT CC TCC TCCCA CC CCC ACCGAA
GCCATCCCGTACCAGACCCT A - -- GGT GA ATG T ----------

TGGCCTCCTGACAGGTGG
GAM21433 20813 CCACCATCATACTTTTTTTT A TAC TG AAAAG
7 TTTTTTGCTTTTAAAAAGTG CCACC TCA TTTTTTTTTTTTT CTTTTA
GAGGTGGAAAAAAAAAAAAA GGTGG AGT AAAAAAAAAAAAG GGAGGT
ACTGAAGGTGG A CAA GT -----
GAM21433 17990 CCACCATCATCTGATTTTCT A- CA GAT----- GATG G CTACAAA
8 AGCTGATGTTGTTGGGCTAC CC CCAT TCT TTTCTAGCT TTGTT GG
AAACTGAACAAAGAGCTGGA GG GGTA AGA AGAGGTCGA AACAA TC
GATCTGCCCAAGACAATGGA AA AC ACCCGTCT GA-- G -------
AGG
GAM21441 9271 CCACCGAGGCGCGCGTGGGG - --- - - T--- T- GCT- CTCCTCACACT
3 CCACTGCCGTGGCGGCGGCT CCA CCGAGGCGC GCGTGGG GC CAC GCCG GGCGGCG GCC

GCCCTCCTCACACTCGGCTC GGT GGCTCCGCG TGCGCCC CG GTG CGGC CCGCCGC CGG

CGCGCCGCCTCCGGCCACCG A GGG T C CCAC CT GCCT ----------
TGCGCTCCCGCGTGGGGCGC C
CTCGGATGG

-
GAM21442 5374 CCACCGCGGGGCCCAGGTTC C- G CA TTCCCAA CCACACCA
0 CCAAGAGGTCCCACACCAGA CCAC GC GGGCC GG GAGGTC
CCTTCCCGGCCCAGCCTGTG GGTG CG CCCGG CC TTCCAG
G TC A C- ------- --------
GAM21442 20485 CCACCGGGTGGGGGCTGGGG CC G TG AAAAGC CTGA
6 GTTGGGAAAAGCCATTTCCT CCA GGGTGGGG C GGGGTTGGG CATTTC
GAGAAGTGTCCGGCTCCTGG GGT CTCACTCT G CCTCGGCCT GTGAAG
GTCTCACTCCATGG AC G GT ------ ----
GAM21445 9654 CCACCTCTTTTCCCCCAAGC TT - A CCAA CTT GTA
8 CCAACAATCCTTTGAGGTAC CCACCTCT TCCC CCA GC CAATC TGAG
TCATGATTGAGCGCGTGGTG GGTGGGGG GGGG GGT CG GTTAG ACTC
GGGGGGGGTGG -- T G CGA- T-- ---
GAM21446 20940 CCACCTGCCGGGAGCATGCC -- GC AGCA- T C - TGGGG
6 TCTGCGCCACTGGGGGATGG CCA CCT CGGG TGCC CTG GCCA C
CCAGGGCAGTAAGCCCGTTG GGT GGG GCCC ACGG GAC CGGT G
GGGATGG AG TT GAATG - - A -----
GAM21447 12143 CCACCTGCTCTTGTCCACGG A - CTTG - GAG-- G GTAG
0 TGAGCTTGCTGTAGAGGAAG CC CC TGCT TCC ACGGT CTT CT
AAGGAGCCGTCGGAGTCCAG GG GG ACGA AGG TGCCG GAA GA
CACGGGG - C CCTG C AGGAA G ----
GAM21448 3004 CCACCTGTTTTTGTCCACGG A TTTT-- - GAG-- G GTAA
1 GGAGTTTGTTGTAAAGGAAA CC CCTGT GTCC ACGGG TTT TT
AAGGACCCGTCGGATTCCAA GG GGGCA TAGG TGCCC AAA GA
CACGGGAGG A CAACCT C AGGAA G ----
GAM21449 6670 CCACGACACTTCGGCAATTT ACAC C GGAA AGGATT
3 GGAAGGACCCAGGATTGGGT CCACG TTCGG AATTT GGACCC
CCAAGGGTTTCGGACAACGT GGTGC AGGCT TTGGG CCTGGG
GG AAC- - AA-- ------
GAM21450 1211 CCACGCAGGTGCCCCGCGCT C A GCGCT- C ----- C CCTACA
4 CCCCGCTCAGCCATGTCGTC CCA GC GGTGCCCC CCCCG TCA GCCATGT GT

CTACAGCCGCGTGGCGCTGG GGT CG CTACGGGG GGGGC AGT CGGTGCG CG
TGACCGGGGCCAACAGGGGC T G ACAACC C GGTCG C ------
ATCGGCTTGG
GAM21450 8870 CCACGCCTGGAGCGCCTTCT C A --- T- CA-- CCTG
9 GCAAGGCCCTGGCCTAAGAC CCA GCCTGG GC GCC TCTG AGGC
AGGCTGGCACAGCCCCAGGC GGT CGGACC CG CGG GGAC TCCG
TTGG T C ACA TC AGAA ----
GAM21451 5362 CCACGCTCAGCTCCGACTGG A CAGC ACTG -- A ACC
6 GACGGCGAGCGCACCGCGCC CC CGCT TCCG GGACG GCG GCGC
GCAGTGTCTACTCCGGATCA GG GCGA AGGC TCTGT CGC CGCG
AGCGGG - ACT- CTCA GA - ---
GAM21452 16667 CCACGGAGATCATGCTTTCA ATCAT TT G AG AA ATTTAAGAAAC
2 GTGATAGGGCAGAAGAATTT CCACGGAG GC TCAGT AT GGCAG GA
AAGAAACTCAACTGCCAAGT GGTGTCTT CG GGTTA TG CCGTC CT
GATTGGTGCTTCTGTGG ----- T- G AA AA ----------
GAM21452 18397 CCACGGCCCGATGTTCTCAA ACG A- T A -- TCGCC
6 AGCCCTGCTCGCCGCAGGTG CC GCCCG TGTTC CA AGCC CTGC
GTTCTGGAGCAGCCGGGCGG GG CGGGC ACGAG GT TTGG GACG
AGG AGG CG - C TG -----
GAM21452 21555 CCACGGCTCCTCCTTATGAC -- - - CCATTCAAATCTAC
9 TCCATTCAAATCTACGGTTA CCAC GGCTCCT CCT TATGACT
TGAAGGCAGGGGCTCAGTGG GGTG TCGGGGA GGA GTATTGG
AC C A ----------
GAM21453 14616 CCACGGGCACCTACCACGGG CTACCA A G AC A AAC A AC TAC
3 GACAGCGACCTGCAGCTGGA CCACGGGCAC CGGGG CA CG CTGC GCTGG GC TCA GTG

ACGCATCAACGTGTACTACA GGTGCTCGTG GCCCC GT GC GACG CGGCC CG AGT CAT

ATGAGGCCACCGGCGGCAGT CCGC-- - - AT G AC- G AA ---
ACGTGCCCCGCGCCGTGCTC
GTGG
GAM21453 8328 CCACGGGCCTGGTGTTCATC C - ATC C --- A ACATC C- GGGGTCCA
5 ATCGTGGTAGTCAACATCTT CCA GGG CCTGGTGTTC AT GT GGT GTCA TTCATCA GGCTTC

CATCACGGCTTCGGGGTCCA GGT CCC GGACCACAGG TG CG CCA CGGT AGGTAGT
CCGAAG

GAAGCCCTTGATGGACATGG - A GAT A ACC - AC--- TC --------
CACCCCAGCAGTTAGGGACA
CCAGGACCCTGG

GAM21454 4086 CCACGTCACCGACCCTTCGG - -- TTC- TTTT CG A TT AC - -
5 CTTTTGGGTTCGGGTGATGA CCA CGTCACC GACCC GGC GGGTT GGTGATG TGG CC GTCA
GCGG CC
TGGTTCCACGTCAGCGGCCC GGT GTAGTGG TTGGG CCG CCCAG CCACTAC ACC GG CAGT
CGTT GG
TCCGCCTCTTGGGTTTGCGT A GC TTCT CCT- -- - TT -- G T
GACGGTTCCACATCACCGAC TCCGCCTCTT
CCTCCGCCTCTTGGGTTCGG C

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          GTGATGATGG         G
                             ----------
GAM21462 8351   CCACTGAAAAGAAATGGAGA   --  -   -    G   AAAA   ACCAATG
2          ATGAAAAATTTACCAATGAA CCA  CTGA AAAGA AATGGA AATG   ATTT
           ATAATACATTATTCATTATC GGT  GACT TTTCT TTACTT TTAC   TAAA
           TTTCTCAGGTTGG         TG   C    A    A   ATAA   -------
GAM21462 6539   CCACTGAACCTAAGCAGTAG      AA   AA  AGTAGG      CAAG
5          GTTTGTATTCAAGAATACGA CCACTG  CCT  GC     TTTGTATT
           AGAAGTGGCCGGGCGCGGTG GGTGGC  GGG  CG     AAGCATAA
           G                    GC   C-  GTGAAG      ----
GAM21465 3379   CCACTGCGCCCAGCCCCAGA       -    CCA-    TTTTTTT-  T   TTTT
5          TAATTTTTTTTCTTTTTTTT CCACTGCGC CCAGCC   GATAA      TCT TTTT
           TTGAGACAGATTCTCGCTTT GGTGACGTG GGTCGG   CTGTT      AGA AGAG
           GTCACCAGGCTGGAGTGCAG        A     ACCA    TCGCTCTT  C   ----
           TGG
GAM21466 5649   CCACTGGAGGGGTTCAAAGG  A       T   --      CG   AGTAC
5          TTCGCGTCCCAGTACGGGAA CC CTGGAGGGG TCAA  AGGTTCG  TCCC
           TGAGCCTCTTTGATCTCTTC GG GGCCTTCTC AGTT  TCCGAGT  AGGG
           CGGGG              -       T   TC      A-   -----
GAM21468 18202  CCACTGTATTTACTCCTTTG    T  A   A     T   TAT   GCTTGTG
1          GAATATGGTGCTTGTGGCCT CCAC GT TTT CTCCTT GGAA   GGT
           TTCTGAGGAGAAAGCTGTGG GGTG CG AAA GAGGAG CTTT   CCG
                            T  -   -     T   ---   -------
GAM21471 14054  CCACTTCATAACTGTGAGGA    TTCATAACT-   GG   T   TAAATCACTTAAGT
1          CTCTGGGATAAATCACTTAA CCAC        GTGA  ACTC GGGA
           GTTTCCTGAGTGTCATTTTC GGTG        TACT  TGAG CCTT
           TTCTCTGTGG           TCTCTTCTTT   G-   T   --------------
GAM21472 19125  CCACTTCTTTCTTCTCTCTT     TC--   TTCTCTCTT-   -  TCCCCGT
2          CGGTCCTCCCCGTGGAACCG CCACT    TTTC        CGGT CC
           TAATGTATACGAAAATCTAG GGTGA    AAAG        GCCA GG
           TGG                TCTA    CATATGTAAT    A -------
GAM21473 1242   CCACTTTCTGAGGACTACTC    C     --   --    - TG   AGGC    CT   GCTC
6          TGGATCAGGCTTCGGCTCCG CCA TTTCTG  AGGA  CTACT C  GATC   TTCGG  CCG
           GCTCCGGCTCTGGATCAGGA GGT AAAGGC  TCCT  GGTGA G  CTAG   AGGTC  GGC
           TCTGGGAGTGGCTTCCTAAC   -    AA   TC    G GT   GACT    TC   ----
           GGAAATGG
GAM21480 2967   CCAGAAGTCTATAACATTCC    A    ATAACAT  CA-   ACA   A-      GTTAAT
3          AATTCACACTTCATACCTAT CCAG AGTCT      TC   ATTC   CTTC  TACCTATT
           TGTTAATGGTAGGTACAGGA GGTT TCAGG      AG   TAAG   GAGG  ATGGATGG
           GAGGAATGATGATTTACCCG    A    CCCATTT  TAG   GA-   AC      ------
           GACTATTGG
GAM21481 6513   CCAGAATATGTGAATAAGCA       TG     AGCA   GA   ATC
3          GACAGAAAGAATCTTTTGAT CCAGAATA  TGAATA   GACA  AAGA
           GTCGATGTTCAACTATTTTG GGTTTTAT  ACTTGT   CTGT  TTTT
           G                    CA     AG--   AG   ---
GAM21483 8481   CCAGACAACCACCCCACCAA    ACAA      AC  A-    AG  GACAA
4          GTTCAAGGTGACAAATGTGG CCAG   CCACCCC  CA  GTTCA  GT
           ATGATGAGGGGGTGGAGCTG GGTC   GGTGGGG  GT  TAGGT  TA
           G                  GA--      GA  AG    G-  -----
GAM21483 1062   CCAGACAACCTTAGCCAAAC    A---   C--  TA-   AAACCA   CCCAAA
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5 CATTTACCCAAATAAAGTAT CCAG CAA CT GCC TTTA
AGGCGATAGAAATTGAAACC GGTC GTT GA CGG AAAT
TGG CAAA AAA TAG ATATG- ------
GAM21485 8123 CCAGACGAGACTATTTTTCA G AGAC TTTT C CGC TAGTTGT
7 CAAGCGCGGAGTAGTTGTCT CCA ACG TAT CA AAG GGAG
CCCCTTTTGTTATGTAAAAA GGT TGT ATG GT TTC CCTC
TGTGTGG G AAAA TATT T C-- -------
GAM21486 19895 CCAGACTACTTCCTATAAAT AC- - AATTTCTCCT GAAA
1 TTCTCCTGGGAAACCTGCCT CCAG TACTTCC TATA GG
TTGTATGTGGAAGTATACCT GGTC ATGAAGG GTAT CC
GG CAT T GTTTCCGT-- ----
GAM21486 9622 CCAGACTGCATGTTATTGCG CT- TATT ---- - AACAAAGATC
7 AGCAGGAACAAAGATCCCTG CCAGA GCATGT GC GAG CAGG
ACTTTCTAGTTTTTATATGC GGTCT CGTATA TG TTC GTCC
TCTTCTGG TCT TTTT ATCT A ----------
GAM21486 5388 CCAGACTGCCTCCCAGCCAG - CT CA-- A G- CA TACAGC
8 AGTGCGCACTTACAGCAGAC CCA GA GCCTCC GCCAG GT CG CT
CGGAGCACTGGCCAGTGGAG GGT CT TGGAGG CGGTC CG GC GA
GTTCTCATGG A CT TGAC A AG CA ------
GAM21492 4325 CCAGAGGACGGCAGAACCCA A CG CCCATCAT AGAGCCAA
7 TCATCATGCAGAGCCAAGCA CC GAGGA GCAGAA CATGC
TGTCAACCTTTCTGCATCCT GG TTCCT CGTCTT GTACG
TAGG A A- TCCAACT- --------
GAM21493 14435 CCAGAGGCTTGGTTTTATTG GA -- -- T-- TTTTCT
2 TGCAGTTTTCTTTGTCCTCA CCA GGCT TGGT TTTATTG GCAG
ATGAGATGCCATAAGCTGTG GGT TCGA ACCG GAGTAAC TGTT
G G- AT TA TCC ------
GAM21495 14405 CCAGAGTTCTTAGAGCTTGT A T- - TG TCTA AATTCCCCA
8 GTCTAAAGGGTAATTCCCCA CCAG GTTCT AGA GCT TG AAGGGT
ACCCTTCCTTATGAGCATTT GGTT CAAGA TTT CGA AT TTCCCA
TTAGAACATTGG A TT A GT TCC- ---------
GAM21501 18688 CCAGATTAGTCCAAGAATTT GA C AGAATTTT A CTAT
0 TTGTGATGGAAGCTATTTTC CCA TTAGT CA TGTG TGGAAG
CACACATCCTATGTACTAAA GGT AATCA GT ACAC ACCTTT
TGG A- T ATCCT--- - ----
GAM21503 12834 CCAGCAACGACATGTACCAC A CA ACCACA C CAGG
1 AGCCGCGCGCTGCAGGTGGT CCAGC ACGA TGT GC GCGCGCTG
GCGCGCCCGCAAGCAGATCG GGTCG TGCT ACG CG CGCGTGGT
TAGCTGG A AG AACGCC - ----
GAM21503 20901 CCAGCAACGACATGTACCAC A CA ACCACA - TGCAG
2 AGCCGCGCGCTGCAGGTGGT CCAGC ACGA TGT GCCGCGC GC
GCGGCCCGCAAGCAGATCGT GGTCG TGCT ACG CGGCGTG TG
AGCTGG A AG AACGCC G -----
GAM21503 5534 CCAGCAAGTTTCACCTGGGT AAGTT - TT- TTTAA TACAA
9 TGTATTTTAAATGTTTTACA CCAGC TCA CCTGGG GTAT ATGTTT
AGAATGTCCATGTGCTTCCC GGTCG AGT GGATCC CGTG TGTAAG
TAGGCTGAGCTGG ----- C CTT TACC- -----
GAM21507 9824 CCAGCAGCCGAGAAGAGGCC CA--- AGAAGA CAG- GTGGGA
3 CAGCAGCTGTGGGAGGCTGA CCAG GCCG GGCC CAGCT
AAAGGTCAAAATGCGGCAAA GGTC CGGC CTGG GTCGG

TCCTGG CTAAA GTAAAA AAAA ------
GAM21513 21162 CCAGCCCCATGGCTGCTGCT CAT CT - A- CACCTAGC
3 GAGTCAGCCACCTAGCGCTG CCAGCCC GG GCTGC TG GTCAGC
GCCCCATGCAGCCTCCCTGG GGTCGGG CC CGACG AC CGGTCG
GCTGG TC- TC T CC --------
GAM21514 4130 CCAGCCCGGGTGTTCTGAAA A- GG GA TG GA -- GC G ---
3 TTGGCGACTTCAAATTGCTG CC GCCCG TGTTCT AAT GC CTTC AAATT TGTTCTTTT GAATT
AGACCT
TTCTTTTGGAATTAGACCTT GG CGGGC ACGGGG TTG TG GGAG TTTAA GCAAGGGGA CTTAG
TTTGGA
AAGGTAGGTTTTAAGATTCA CG AA A- GT -- AA -- A AAT
AGGGGAACGAATTTAAGAGG TAAGGT
GTTGGTTAGGGGCAAACGGG
CGCGG

GAM21517 4181 CCAGCCTGGATACGCTTCCA GATA - A- A TTG
3 TAGCAAAGGGTTGCCCTTGG CCAGCCTG CG CTTCC TAGC AAGGG
CTACAGGAGGACGCGGGCTG GGTCGGGC GC GGAGG ATCG TTCCC
G ---- A AC G ---
GAM21522 5910 CCAGCTAAGATATGCTTTCT T TA-- TTTC - ACCACATGAAGC
2 GGCCGCGACCACATGAAGCC CCAGC AAGA TGC TGGCC GCG
GCGGGCTGTTGTAAATTTCT GGTTG TTCT ATG GTCGG CGC
TTGTTGG T TTAA TT-- G ----------
GAM21525 8322 CCAGCTGGAACTGATCTTGA A TGA CC ------ C - CTTGC
8 CCCACACAGCTGGCCACTTG CCAGCTGG AC TCTTGA CA CA AGC TGGCCA
CTGGTCATGCTCTGAAACTT GGTCGACC TG GGAACT GT GT TCG ACTGGT
TGCATCAAGGCTGTACCAGC A TC- AC TTCAAA C T -----
TGG
GAM21528 6626 CCAGGAAAGCCGATCACCTT AA CC T GAG ATAC TG T ACAA
5 GCTATTGAGCTCATACGTGG CCAGGA GCCGATCA TTGC ATT CTC G GG CT
GTCTACAAAGTCCTGCCGGG GGTTCT CGGTTGGT AATG TGG GGG C CC GA
AAAGGTGTAATGGTTGGCTC -- -- - AAA C--- GT T ----
TTGG
GAM21528 4409 CCAGGAAAGGCTCCAGTGGT AAA - AGT CTTA CCAAAAAAT
7 TCTTACTTGATCCAAAAAAT CCAGG GGC TCC GGTT CTTGAT
GTCAAGAATTAATCTAGGAG GGTCC CCG AGG CTAA GAACTG
GCCGGGCCTGG GGG G AT- TTAA ---------
GAM21529 17993 CCAGGAACGAAAATGACGGA GAAAATGAC -- TGC A- TCAG
6 ACGGGTGCTGGAGGCCTCAG CCAGGAAC GGA ACGGG TGG GGCC
GGTTGCCCACTTCCCGTGCT GGTCTTTG CCT TGCCC ACC TTGG
CCAAGTTTCTGG AA------- CG TTC CG ----
GAM21532 12909 CCAGGACTGGCAGAAACTGC ACTG-- AAA AT---- TTGAT
9 GATTCTCTTGATGAGGTCCA CCAGG GCAG CTGCG TCTC
TGTGCAGCACTTGCACTCGC GGTCC CGTT GACGT GGAG
CCTGG CGCTCA CAC GTACCT -----
GAM21534 19141 CCAGGAGCCTGCATGTGCTT CA--- TG T- TT ACATATGA
3 TGGCCATTTCACATATGAGG CCAGGAGCCTG TG CT TGGCCA TC
TTTGGTCACTGGTCCAGGAA GGTTCTTGGAC AC GG ACTGGT GG
ACAGGTTCTTGG AAAGG CT TC TT --------
GAM21536 19978 CCAGGATCAGGAGGACCCCG A A A ACC-- AGT A GCTGA

9 AGGAGTTCTACGTGCTGAGC CCAGG TC GG GG CCGAGG TCT CGT
GAGACCACCTTGGCCCAGCC GGTCC AG CC CC GGTTCC AGA GCG
CCAGAGCCTGG G A - GACCC ACC - -----
GAM21537 19131 CCAGGATGTCATCGATTTCA GAT ATT C CCA CCTG
9 CTGGCCATGCCCTGGCGCTC CCAG GTCATCG TCA TGG TGC
TACTGACTGATGACTAACTG GGTC CAGTAGT AGT ATC GCG
G AAT C-- C TC- ----
GAM21542 5691 CCAGGCCAGGCAGGGCCTGT G AG G GGAA GCTCTGACCA
4 CCCAGGAATCTGCTGCTCTG CCAG CCAGGC GGCCT TCCCA TCTGCT
ACCAGGCAGGTGGGGAGGCT GGTC GGTTCG TCGGA GGGGT GGACGG
TGGCTTGGCTGG - GT - ---- ----------
GAM21544 18887 CCAGGCGGCCTCCCCTGCCG - - --- C CC AAA - GAACA
0 CATAAAGTGCTTGAACAGAG CCAGG C GGCC TCC CTG GCAT GTG CTT
CCGCCGTGCCTCAGAGGACT GGTCC G CCGG AGG GAC CGTG CGC GAG
GGGCCTGTCCTGG T T GTC A TC C-- C -----
GAM21553 8625 CCAGGGACCACCGCGCAGAA ACCGCG GA - ATGATCCC
5 CAGGAGGATGATCCCCCTCG CCAGGGACC CA ACAG GAGG
CTGTGATGATTCGGTTCTTG GGTTCTTGG GT TGTC CTCC
G CTTA-- AG G --------
GAM21559 5416 CCAGGGGGGGGCCCCCCCGG G CG GT GAGG
4 TTGTGCCTTTGAGGAGAGGT CCAGGGGGGG CCCCCC GTT GCCTTT
GGCAAGGGGGGGCCTCCTTT GGTTTCCTCC GGGGGG CGG TGGAGA
GG G AA -- ----
GAM21560 12420 CCAGGGGTGGACGATGCTGA GG GGA - G AT GG CAAC
1 GTCAGAATGTGGCCTGGACA CCA GGT CGATG CT AGTCAGA GT CCTGGA
ACTTCGGGGACTTTGACTGG GGT CCA GCTAC GG TCAGTTT CA GGGCTT
GTCATCGAGAACCATGG A- AGA T G -- G- ----
GAM21560 21181 CCAGGGGTTTCCTCCTTTCG T- ---- TT G TTA
3 TTTGGGTTATCAAAGCGTTA CCAGGGG TTCCT CCT CGTTT GG
GGTTATAGGAATTCTCTTGG GGTTCTC AAGGA GGA GCGAA CT
TT TATT TT A ---
GAM21564 8857 CCAGGTGCGGTGGCACACGC ------ CACA---- C CCA ACTCAGGA
8 CTGTAGTCCCAGCTACTCAG CCAGGT GCGGTGG CGC TGTAGTC GCT
GAGGCAGAGGCTACAGCGAA GGTCCG CGTCACT GCG ACATCGG CGG
CCAACATCACTGCACTCCAG ACCTCA ACAACCAA - AGA --------
CCTGG
GAM21565 5833 CCAGGTGTGACAGGATCCAA ---- A A------ G C A GTCAC AG - G
5 CCCGCTGGCAGGAGGAAGGT CCAG GTGTG CAGGATCCA CCC CTGG AGG GGAAG GA CA
GGAG
CACGAAGCAGGAGGTAAGCC GGTC CGCGC GTTCTAGGT GGG GGCC TCC CCTTC CT GT
CCTT
CAACGGCCAATTCCATGATC AGGG G AAGCAAC - - - GAACC A- A A
CCAAGCTTCCCCTCCGGGGG TAA CAAC
CAACGAATGGATCTTGGCGC GCC
GCGGGACTGG CGG
AC- ----
GAM21567 21426 CCAGGTTCAAAGGATTCTCG TCAAA T T CAGCC GAGTAGCT
3 TGCCTCAGCCTCCTGAGTAG CCAGGT GGA TC CGTGCCT TCCT
CTGGGACTACAGGCATGTGA GGTCCG TCT AG GTACGGA AGGG
CTCTATGCCTGG TA--- C T CATC- --------

GAM21567 6318 CCAGGTTCAAGCGATTCTCC CAA- ATT CC--- TCCTAAGT
6 TGCCTCAGCCTCCTAAGTGG CCAGGTT GCG CTCCTG TCAGCC
CTGGTATTACAGGAGTGTGC GGTCCGA CGT GAGGAC GGTCGG
CATTAGCCTGG TTAC GT- ATTAT --------
GAM21568 18820 CCAGGTTGCTTTGCTCGGTG GCTTT- AAG G AAATCGG
9 AAGAGAGGAGGGTAAATCGG CCAGGTT GCTCGGTG AGA GAGGGT
ATTCTCGTTTAGCACTGGGT GGTCTAG TGGGTCAC TTT CTCTTA
TATACAGATCTGG ACATAT GA- G -------
GAM21569 5875 CCAGGTTTCCACAGCTGTAG TCCACA -------- AGCCCCTA
5 TTGAGCCCCTACAACTCCAT CCAGGTT GCTGT AGTTG
CCTCACAGCCAGAGCAACCT GGTCCAA CGACA TCAAC
GG CGAGAC CTCCTACC --------
GAM21570 9458 CCAGTACCAGCTGCTGGCCA AGC G - ---------- T CAGTA
3 CGCATGTGCCCACAGTATGG CCAGTACC T CTGGC CACGC ATG GCCCA
GCCATCGACCAATATCGTGT GGTCGTGG A GACCG GTGTG TAC CGGGT
GTGCCAGGAGGTGCTGG --- G T CTATAACCAGC - -----
GAM21572 18363 CCAGTATTTGGGCGCCATAT AG - CATATATAA TG GTTAAA
9 ATAAGCCTGGGTTAAATTGG CC TATTTGGGC GC GCC G
GTCATCTAAAGCTGTCCAAA GG ATAAACCTG CG TGG T
TAAGG A- T AAATCTAC- GT ------
GAM21573 22267 CCAGTCACGTTGAATTTATG TC TTGA- G CCAAATGAATTT
6 GTTCGTCCAAATGAATTTAC CCAG ACG ATTTAT GTTCGT
GAGCAGTAAGTGGTTTTGTT GGTT TGT TGAATG CGAGCA
GTTGG GT TTTGG A ----------
GAM21574 20177 CCAGTCCTCTCGCCGTTTTC - CTC-- T CT TTGTCCTTGT
6 CTGCTTGTCCTTGTGCTTGA CCAG TCCT GCCG TTTC GC
GATCGGTTCCGCAGGAGCTG GGTC AGGA TGGC AGAG CG
G G CGCCT T TT ----------
GAM21576 12272 CCAGTGAAGTAGTGAATGCA A AG- AA- A G CTTCTA
5 CGGAGAGCTTCTATTCTGCG CCAGTG AGT TG TGC CG AGAG
GCAGGACAGACACTCCACTG GGTCAC TCA AC ACG GC TCTT
G C CAG AGG - G ------
GAM21579 18516 CCAGTGGAAGATGCTCAACA G GA AA- C C TTGCT
9 CCTCCTCCTTGCTGGAGCAG CCAGT GAA TGCTC CA CT CTCC
CTGAACGAGCAGTTTAACTG GGTCA TTT ACGAG GT GA GAGG
G A G- CAA C C -----
GAM21580 8609 CCAGTGGACGGCTTTTCTGC AC-- TT TGCA TTAAT GACAATG
3 AGGTTTAATAGATGACAATG CCAGTGG GGCTT C GGT AGAT
ATCTCTACCGATGGGAAGTC GGTTATT CTGAA G CCA TCTA
CTTATTATTGG ATTC GG TAG- TC--- -------
GAM21581 20252 CCAGTGGCCAGGGCTTTGTT TG CA --- -- TG - C- GCAG
0 GCGTTGGGGCTCTCCTGCAG CCAG GC GGGCTT TGTTG CGT GGGCTCT CCTG AGT
TGCAGACTTACAGGAAGGGC GGTT TG CCCGAG ACGAC GCG TCCGGGA GGAC TCA
CTTGGCGGCCAGCACGCGAG GA -- CGC CG GT A AT ----
CCCGTAGTTGG
GAM21581 3280 CCAGTGGGAGTACTCAAGTC AG TAC GT CTC G CT TCT TAACT
2 CTATCTCCATGTTAGTTCTT CC TGGGAG TCAA CCTAT CATGTTA TT TCAA AATAT
CAATCTAATATTAACTATAT GG GCCTTT GGTT GGATA GTATAAT AA GGTT TTATA
TTTGGCAAGTAATATGACTA G- --- TG TCA G C- --- -----
TAGGGTTTGGTTTCCGGGG

GAM21582 21475 CCAGTGTAAGAGATGGCATG TAA AT GATAT- AAG TTCCCT
5 ATATGGAAGTGTATTCCCTT CCAGTG GAG GGCAT GG TGTA
ACAGGCCTGAAGAGTGTCCC GGTCAC CTC CTGTG CC ACAT
TCCACTGG --- C- AGAAGT GG- ------
GAM21583 18260 CCAGTGTGTTGAACAAATTC G G AAA- AAGAGT A-- TTCT
2 AAGAGTTGGTTCTACGCTTC CCAGT TGTT AAC TTC TGGTTCT CGC
TGTGAGAAGAACTGTGAAAA GGTCG ACAA TTG GAG GTCAAGA GTG
GAGCATGGTTGAACAGCTGG - G GTAC AAAAGT AGA ----
GAM21583 18927 CCAGTTAAACTGCTCGTTCA TAAAC- TT G G AGCAA
6 GCTGCTCCAGCAAGGAGGAG CCAGT TGCTCG CA CT CTCC
GTGTTGAGCATCTTCCACTG GGTCA ACGAGT GT GA GAGG
G CCTTCT T- G G -----
GAM21585 9720 CCAGTTCACCCAGGCCCTGG TCA CA------ T ACC A --- - AG-- - AAG--
0 ACCGCCAAACAGCTGCTCAG CCAGT CC GGCCC GG GCCAA CAG CTGCT C CT GCTT
C
CTGCTTAAGCTGGCCCACAA GGTCG GG CCGGG CC CGGTT GTC GACGA G GA CGAA
G
GTACAGACCAGAGACAAAGC TC- AAGAAGAG - --- - AGA A AAGA A ACAGA
AAGAGAAGAAGCAGAGACTG CCCACAAGTACAGA
TTGGCCCGGGCCGAGAAGAA TGG
GGCTGCTGG ACC

GAM21585 12919 CCAGTTCCTACAACGTGCAG AG AAC TG A C A- TCTTGTGTCT
4 TAGGGCGGCGGTAGCTCTTG CC TTCCTAC G CAGT GGGCGG GGT GC
TGTCTGTGGACTCTGCTCAG GG GAGGATG T GTCG CTCGTC TCA TG
CTGTGTCCGTAGGAGTCGG CT CC- GT A - GG ----------
GAM21586 12645 CCAGTTGATGGGCTGCCAGA GG C GA - T GGA TCAT
5 TCTGGGGCATGCCCAGGACC CCAGTTGAT GCTG CA TCTGG GGCA GCCCA CC
TCATGGATGGGCTGCCTCCA GGTCGACTA CGAC GT GGACC CCGT CGGGT GG
GGTGACAGCAATCAGCTGG A- A -- T - A-- ----
GAM21587 19903 CCAGTTGTAGAGCGGCGTCC T- - --- C AAGCACC
1 TTGTTCAAGCACCGGATAAT CCAG TGTAGAG C GGCGTC TTGTTC
GATGCCCCTGATTTTGCATT GGTC ACGTTTT G CCGTAG AATAGG
CTGG TT A TCC T -------
GAM21593 2951 CCATACTGGTATGTGTTTCT T T-- - TC - ACAAGACA
1 CCTGGACAAGACATCATGGA CCATAC GGTA GTG TT TCC TGG
ACAACCACTCCTATCTGTAT GGTATG CTAT CAC AA AGG ACT
GG T CCT C CA T --------
GAM21595 22325 CCATAGTTCTCCCGCGTCTG A C- - TT CCCC TTCCTTTTCC
7 GTTGGCCCCGTGTGTTCCTT CCAT GTTCTCC GC GTCTGG GG GTGTG
TTCCTATACCTCCCCAGGCA GGTG CAAGGGG CG CGGACC TC CATAT
GCCTGGGGAACGTGG - TC A CC ---- ----------
GAM21595 4336 CCATAGTTCTCCCGCGTCTG A CC - TT CCCC TTCCTTTTCC
8 GTTGGCCCCGTGTGTTCCTT CCAT GTTCTC GC GTCTGG GG GTGTG
TTCCTATACCTCCCCAGGCA GGTG CAAGGG CG CGGACC TC CATAT
GCTCGGGAACGTGG - CT A CC ---- ----------
GAM21597 18419 CCATATGCACTTTTGAGCAT GC--------- - --- TTCTACAGC
6 TTCTACAGCATGCGATTCTA CCATAT ACTTTT GA GCAT
AGAGTAAACCCACCCAATAT GGTATA TGAGAA CT CGTA
GG ACCCACCCAAA T TAG ---------

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GAM21601 8882   CCATCACGGACTTCCTGGGA      GGACTT    -----  AA    TCCATT
4                AAATCAGATCCATTTCTGGA CCATCAC     CCTGG    GAA  TCAGA
                 GTTCTTCCGCCAGGGTGATG GGTAGTG     GGACC    CTT  GGTCT
                 G                  ------    GCCTT   GA    ------
GAM21601 19282  CCATCACGGACTTCCTGGGA      CGGACTT    -----  AA    TCCATT
5                AAATCAGATCCATTTCTGGA CCATCA      CCTGG    GAA  TCAGA
                 GTTCTTCCGCCAGGTGATGG GGTAGT      GGACC    CTT  GGTCT
                                -------    GCCTT   GA    ------
GAM21601 3142   CCATCACTGTACTTAAACTC    - A-  G    AAAC-   -  AAAGAAAAAG
9                CAGAAAGAAAAAGCTAGGAA CCAT C  CT TACTT    TCC AG
                 ACAGAAGTAGAGAGGAATGG GGTA G  GA ATGAA    AGG TC
                              A GA  G    GACAA   A ----------
GAM21604 5463   CCATCATTCTCGCAATTAGT         -----------         ACAGGGA
0                GACAGGGACGCTGGTTGTGG CCATCATTCT         CGCAATTAGTG
                 AGGAGTATTTGGAGTGGTGG GGTGGTGAGG         GTGTTGGTCGC
                                TTTATGAGGAG         -------
GAM21606 18765  CCATCCCCCAGCTGGCATAC     C  CA    CATA  TGTA   A     AGGAAA
2                TGTGTAGTGCAGTTTTTAGG CCATC CC  GCTGG    CTG    GTGC GTTTTT
                 AAAGAGGACCGCACCCTCAG GGTAG GG  TGACC    GAC    CACG CAGGAG
                 GGAACCAGTGGTGATGG       T --    AAGG   TCC-   C     ------
GAM21608 4389   CCATCCTGGGCAGAGCTGTA    -       G  GTATGAG    AAGTACC
2                TGAGGCCCAAGTACCGGGCA CCAT CCTGGGCAGA CT      GCCC
                 CCCCAGGGTCTGCTCAGGTG GGTG GGACTCGTCT GG      CGGG
                 TGG               T       G  ACCCCA-   -------
GAM21608 6414   CCATCCTTTAATAGATCTCA      TTTA   GA   CATAAG   A-    GATCA
5                TAAGCAGAATTCAGATCATG CCATCC    ATA  TCT     CAG  ATTCA
                 AATGACTGACCAGAATATGG GGTGGG    TAT  AGA     GTC  TAAGT
                 GTGG                ----  A-   CCA---   AG    -----
GAM21609 14703  CCATCGGCCGAGTCTGAGGG    T     A-   T--     --   TG AA--    AGAAA
3                ACTCTGAAATCACAGAAAGT CCA CGGCCG  GTC   GAGGGA  CTC  A    TCAC
                 GGGAGCTTGGAGGATCCCTC GGT GCCGGT  CGG   CTCCCT  GAG  T    GGTG
                 CATGGCGATGGCCGTGG     -    AG   TAC     AG   GT CGAG   -----
GAM21612 18844  CCATCTGCCGTGTGACTGGT    TCT-- C     AC    -    GAA---    AAAGGCAG
9                GGGATGAACGGTAAAGGCAG CCA     GC GTGTG  TGGTG GGAT     CGGT
                 ACCGAGATGAATCCTCACCA GGT     CG CGTAT  ACCAC CCTA     GCCA
                 TATGCTGCTATGTTGG       TGTAT  T    --    T    AGTAGA    --------
GAM21616 20838  CCATGAACTAAGAGGCCAGA     A   AG--     ---     C   TATTGC
6                AGGCAAGTATTGCCTTTCCT CCATG ACTA    AGGCCA   GAAGG AAG
                 TCATATGGTTTGATGTGGTA GGTAC TGGT    TTTGGT   CTTCC TTC
                 CATGG                A    GTAG     ATA     T  ------
GAM21616 16821  CCATGAAGCTGGTGACCATG    GAA    -   CA    GACAAGCTCTCCAG
8                TTTGACAAGCTCTCCAGGAA CCAT   GCTGG TGAC  TGTTT
                 CAGAGTCATCCAGCCAATGG GGTA   CGACC ACTG  ACAAG
                              AC-    T    AG    ----------------
GAM21619 3767   CCATGAGGCTGATTCCTTCC     AG-      CCTTCCTTCTTCTC    TCCTTCGTTCATTCAT

0                TTCTTCTCTTCCCTCCTTCG CCATG   GCTGATT           TTCCC
                 TTCATTCATGGGAAAGTCAG GGTAT   TGACTGA           AAGGG
                 TGCGTATGG             GCG      ----------------    ----------------
GAM21623 6212   CCATGCCTATCCAGGTGCTG      TAT-    TGC   A    CTGA  A  A   ATTAAGAACA
```

0 AAGGGCCTGACCATCACTCA CCATGCC CCAGG TGA GGGC CC TC CTC
TTAAGAACAGAGGAGGCTGC GGTGCGG GGTCC ATT TCCG GG AG GAG
CTGTTACTCCTGGTGTTGGC TTGT TC- G TC-- - - ----------
GTGG
GAM21624 9721 CCATGCGCTACAAGTCCCAG GC---- TCC ACCCC--- AATC
2 GACCCCCGGAATCCTGCACA CCAT GCTACAAG CAGG CGG
ATGACCTGCTTTGTAGCTCT GGTA CGATGTTT GTCC GTC
CCAATGG ACCTCT C-- AGTAACAC ----
GAM21625 18190 CCATGCTCCTCCTGGCACCT CTCCTCCT -- --- CAAGCAGT
0 TTTACTCTGCCCAAGCAGTG CCATG GGCACCTTTT ACT CTGCC
GCAGCCCAGTCCAAAAGGTG GGTAC CCGTGGAAAA TGA GACGG
CCTGCCATGG CGT----- CC CCC --------
GAM21626 4407 CCATGGAGTAGATTACAGCG AGATTACA TT CAAGGACAT
9 TGTTGGACAAGGACATTCCC CCATGGAGT GCGTG GGA
CCGCGTGAAGGCACACTCCA GGTACCTCA TGCGC CCT
TGG CACGGAAG CC ---------
GAM21628 5439 CCATGGCCGCGTATTTCGCC -- G TAT-- - G CG CC- C CCATCT
2 GTATGGGCCTCGGTCCCGAG CCATG GCC CG TTCG CCGTAT GGCCT GT CGAGT CCGCAT

TCCCGCATCCATCTGTGCGG GGTAC CGG GC AAGC GGCGTG TCGGG CA GTTCA GGCGTG

AACTTGCTCACAGGGCTGGT CA A TACGC A G A- CTC A ------
GCGGACGAACGCATCGAGGC
ACCATGG
GAM21633 14659 CCATGTGACTGCAGTGTAGA T TG TG T----- -- -- CTGG
1 CCTTGGCACTGGTGCTGTAG CCA G AC CAG GTAG ACCTT GGCA
GGTGACTACCGTGGCCTGTG GGT C TG GTC CATC TGGGA TCGT
GTTGCTGG - GT GT CGGTGC AG TG ----
GAM21637 18574 CCATTAGAAATTAATAACTG -- - AA - GTGG T GAAATAGG
6 TGGCTCTTCCAGTTGAAATA CC ATTAGAA ATT TAA CT CTCT CCAGTT
GGAATTGGAGAGAAAGGATT GG TAATTTT TAA ATT GG GAGA GGTTAA
AGGAATATTTTAATTAGG AT A GG A AAA- - --------
GAM21645 16562 CCATTGAGCAGTCACATCGC A AGTCAC G T A AAGCCTTCAAAA
2 TGGGATCAAGTAAGCCTTCA CCATTG GC ATC CTGGGA CA GT
AAAATATGCTCCCAGAGATA GGTAAC CG TAG GACCCT GT TA
CAAGCCAATGG - AACA-- A C A ----------
GAM21647 3779 CCATTGGATATAGAGTTTAT A ATATA TTATGAA G TGAAA AAATATCATCC
1 GAAGCGTTGGCATGAAAAAG CC TTGG GAGT GC TTGGCA AAGTG
TGAAATATCATCCCACTTAT GG GACC CTCA CG AACCGT TTCAC
TGCCAAAGCAGACACACTCG A ACAG- CACAGA- A TA--- ----------
ACACCAGAGG
GAM21648 3561 CCATTTAAAAATGCTTGGAA TTAAAAA -- ATA ATAA
4 CTATATGTGAATAATTATAC CCAT TGC TTGGAACT TGTGA
AAAGTTCCAGATGCAACATG GGTA ACG GACCTTGA ATATT
G CA----- TA AAC ----
GAM21648 20526 CCATTTAAAAATGCTTGGAA TTAAAAA --- ATA TGAATAATTAT
5 CTATATGTTGAATAATTATA CCAT TGC TTGGAACT TGT
CAAAGTTCCAGATTGCAACA GGTA ACG GACCTTGA ACA
TGG CA----- TTA A-- ----------
GAM21653 13004 CCATTTGTAGAGTAAAGCTT T AGA AAA -- GACC CAGC

```
0          CAAGTGACCAGTCAGCACTC CCA TTGT  GT  GCT  TCAAGT   AGT
           CTAACTTGATAAGTAGACCA GGT AACA  CA  TGA  AGTTCA   TCA
           CAATTGG            T  C-- GA-  AT    ATCC  ----
GAM21654 8647  CCATTTTATAAAATGTTATA      TAAAA   TACTC      -------- A   CC   TCC   TG
0          CTCATATTTGTCTGAATTTT CCATTTTA   TGTTA   ATATTTGTC     TGA TTTTT  AGTAT  TACA
           TCCAGTATTCCTACATGAAA GGTAAAAT   ATAAT   TATAAACGG      ACT AAAAA  TTATG  ATGT

           TTGTATGTATTAAAAACTCA      TATC-   -----      TGATTATA  C   --   T--   --
           ATATTAGTGGCAAATATTAA AAAT
           TACTATTAAAATGG

                      ----
GAM21655 1749  CCATTTTTAATCTATGGGTT  A   --  TAT   TCAA-  TT---   AC    CTTGCAA  A   GA
1          CAACTGTTTGTGAGACTGAA CC TTTTT  AATC  GGGT   CTGT   GTGAG  TGAATC    TGC TTAA
           TCCTTGCAATGCATTAAGAT GG GAAGA  TTAG  CCTA   GGCG   TACTC  ACTTAG    ACG AATT

           ATTAAAGCAAATTATGATTC  A   CT   TC-  TGCTG   TTCTT   --   TATTAA-  A   --
           ACTCATTTCTTGCGGGTCGT TA
           ATCCCTGATTTCAGAAGAGG

                      --
GAM21655 21527  CCATTTTTGTCTTATATGAA     ---  T   TAT   T----------     CCAAGAAA
5          ATTTCTGTCCCAAGAAAGGC CCATTT   TTG CTTA  GAAA         TTCTGTC
           AGGATTACATCTTTTTTTTT GGTGAG   GAC GAAT  TTTT         AGGACGG
           TTTTTAAGCAGTTTGAGTGG     TTT  -   TTT   TTTTTTCTACATT     --------
GAM21655 12935  CCCAAAAAGGGGTGGGCCCC     A   T-     CCAAAA    ACCCG
9          CCAAAATTCCCCACCCGGGG CCCAAA AGGGG  GGGCCCC     TTCCCC
           GGAGATCTAGGGGCCCCCCC GGGTTT TCCCC  CCCGGGG     AGGGGG
           CCTCTTTGGG            C   CC     ATCTAG     -----
GAM21656 9155  CCCAAAACAAGTTCTTCCAG     A   TTCT------ -    A------------------ GAAA
2          ACTAAAGAAATTAAGGTAAC CCCAAA CAAG        TC CAGACT             AA
           ATCAATACCTAGGTCTGAGA GGGTTT GTTC        AG GTCTGG             TT
           TATACCCATCCTTGTTTGGG     -  CTACCCATAT  A    ATCCATAACTACAATGGAA  ----
GAM21656 1121  CCCAAAACTATTGTTTGTGT    AA-  ATT T TG  TTT     ---  ATTCA
4          TTCTGTGTTTCATATTCAGT CCCA  ACT  G T  TG  CTGTGTT  TCAT
           GATTTAATACAGTATCATGG GGGT  TGG  C G  AC  GACATAA  AGTG
           CTGAGGTGGATGGG        AGG  AGT - GT  TAT     TTT  -----
GAM21658 3028  CCCAAACTGCTAGGATTACA    AA----    AG  TTAC   G  A  CACTGC
2          GGCGTGAGCCACTGCGCCAG CCCA     CTGCT  GA   AGGC TG GC
           GCCTTCTCAGCAGCTCTTGT GGGT     GACGA  CT   TCCG AC CG
           GGG                GTTCTC    CT ----   G  -  ------
GAM21663 18603  CCCAACGCCAGGTCGTCTGG  -  AC     TCGTCT    -    -  CT  GAGAGTGA
5          GAGCGATGGAGGCTGTGAGA CC CA  GCCAGG     GGGAGC GATGG AGG  GT
           GTGAACCCCTGCTGTTGGTT GG GT  TGGTCC     CCCTTG TTGTC TCC  CA
           CCCCCTGGTTGTGTGG      T  GT     ------     G    G  C-  --------
GAM21664 8815  CCCAACTGGAAGCCCGAGAA    ACT     CC---       TGTCCCATCATT
1          GTCTGTCCCATCATTGACTT CCCA   GGAAGC     GAGAAGTC
           CTTATACTGCTTCTTCTGGG GGGT   TCTTCG     TTCTTCAG
                         CT-     TCATA      ------------
GAM21664 1599  CCCAACTTTAATTTTGAATG    A  TTAAT   AA-     -  AGAGT   CAT
```

5 CATTTCCAGAGTGGCCATGC CCCA CT TTTG TGCATTT CC GGC
CTAGAGGGCAGATGCAGAGC GGGT GA GGAC ACGTAGA GG CCG
AGGTGGTAGTGGG - TGGT- GAG C GAGAT ---
GAM21666 5718 CCCAAGATGGTGATGCTGCT T - - G- TTT CACT CTGG
1 GCTGCTGCTTTCCGCACTGG CCCAAGATGG GATGCT G CT CTGCTGC CCG GG
CTGGCCTCTTCGGTGCGGCA GGGTTCTACT TTACGA C GG GACGGCG GGC CC
GAGGGACAAGCATTTCATCT - A A GA T-- TTCT ----
TGGG
GAM21667 4415 CCCAAGGCTGCGCAAAGTGA AA --- -- CA --- GA T ATCCAC
7 CACACTGAGTCGCCCATCCA CCC GGCTGC GCAAA GTGA CA CT G CGCCC
CGGGCGCCAAGACCTGCTTC GGG CCGGCG CGTTT CACT GT GA C GCGGG
ACCTTTTGCTACGCGGCCGG -- CAT TC TC CCA AC - ------
G
GAM21670 20756 CCCAATACTTTCTGCATCAG T- T - C CAG -- AACC
6 CAGCCTGCAAACCTGCAAAG CCCAA AC TT CTG AT CAGCCT GCA
GTTGAAAGTTTAGCAATGTT GGGTT TG AA GAT TG GTTGGA CGT
TTTGGG TT T C T AAA AA ----
GAM21670 4007 CCCAATAGCAGGCGCACAGG ---- --- --- CT CTTAACA
8 GTCTCACTTAACATGTACTC CCCA ATAGCAG GC GCACAGGGT CA
TGTGCCAAGCACTCTGCTAT GGGT TATCGTC CG CGTGTCTCA GT
TATATGGG ATAT TCA AAC T- -------
GAM21672 17109 CCCAATTACAGGATTATACG TA A - AT------ TCATT
2 GTACCATCACATCATTTGTG CCCAAT CAGG TTATACGGT ACC CACA
GAAATTGGGGTGACTGTATA GGGTTA GTTC GATATGTCA TGG GTGT
GCTTGGGATTGGG GG - G GGTTAAAG -----
GAM21675 12784 CCCACAGCCTAAGCTGAGTG ---- ------- G - GA - GAA CGA C TATC
4 TGACCCCAGAAGCCACGATG CCC ACAGCC TAAGCT AG TGT CC CCA GCCA TGTG TCTG

TGCTCTGTATCCAGAACACA GGG TGTCGG GTTTGA TC ACG GG GGT CGGT ACAC AGAC

CTTGGCAGATGGAGGAAGCA ACAT TACCAGA G T AA A AGA TC- A ----
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TGTTACAGGG
GAM21675 8964 CCCACAGCGGCGTCTGTGTC CGGC GTG C TC A AGGTT
5 TTTCAGCTCCAGAGGAGGTT CCCACAG GTCT TCTTT AGC CAG GG
CCCTGTGGCTAAAGAGGACC GGGTGTC CAGG AGAAA TCG GTC CC
TGTGGG ---- --- - GT - -----
GAM21677 16572 CCCACCACTGCGGGCATCGA - G CATC- CA C GGAC ACGAT
9 GGACAGCGCCGCCTAGGACC CCCACCA CT CGGG GAGGA GCGC GCCTA C
ACGATGCACATGGGCGTGCT GGGTGGT GG GCCC CTCCT CGTG CGGGT G
CCTCACACCCCCGGGATGGT A - CCACA -- - ACAC -----
GGG
GAM21678 3404 CCCACCAGAAGGTGGACTTA CA AG TG CTTA TCATAAA TAACATGA AGAA

0 GGTGGACAGTTTCATAAAGC CCCAC GA G GA GGTGGACAGTT GCA GTAGA
ATAACATGAGTAGAAGAATC GGGTG CT C CT TTATTTGTCAA CGT CATCT
TACTGCCAATAACTGTTTAT AA AA GT A--- TAAC--- -------- ----
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GAM21678 6040 CCCACCAGATCTCATGTCAA A AT G- TT A TTGTAGTC
1 CTTGTAGTTTGTAGTCACCA CCC CCAG CTCAT TCAAC GT GT

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CGGG C CG GA T- C --------
GAM21678 9476 CCCACCAGTCCTTGCACTGT AGT- GCAC T GACAC CCAGGA
5 TCTGACACTTTCCCCAGGAG CCCACC CCTT TGT CT TTTCC
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ACGGTGGG CATT ---- T AACA- ------
GAM21680 18375 CCCACCCTCGGCGCGGCGCT A -- C---------- GCCCGAA
5 CGCCCGAAGAGTCACCCCCT CCC CCCT CGGCGCGG GCTC
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GAM21681 8576 CCCACCTCCGCATGGCAGGT CCTCC A AGA - GG CTGA A G - AAGCT-
8 CAGAGGGCACCTGGGCTCTG CCCA GC TGGCAGGTC GGG CACCT GCT GAA CC TG GC
GGTCC
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CCAGG
CCTAGAGGAGGAGGACCCCT CAGAC - GGC A AA ---- - A A AGGTCC
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GTCAGACTGGG A

GAM21682 18929 CCCACCTTCTGTTGCTATTT CC C ATT AGAGT GCTTTG
6 TGAGAGTCATAGTTGCTTTG CCCA TT TGTTGCT TTG CATAGTT
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ACTTGGG TC - GT- ----- ------
GAM21687 5434 CCCACTGCCGGCAGTGCTGG C C GC G- CAACAGAG TCTAGATT
0 TTCTCCAACAGAGTGGTGTC CCCA TGCCGG AGT TG TTCTC TGGTG
TAGATTTATCAGAGTAACGA GGGT ACGGCC TCA AC AAGAG ACTAT
GAAGACAAACTCCGGCACTG C - A- AG CAATGAG- --------
GG
GAM21691 4227 CCCAGAAGCTCCTCCGTCAG --- GCTCC--- - - A GTAACA
3 TTAGATTTGTAACAAAAATT CCCA GAA TCCGT CA GTTAG TTT
AATATGAACGGAATAAATAA GGGT CTT AGGCA GT TAATT AAA
TTCCAGTGGG GAC AATAAATA A A A ------
GAM21694 6551 CCCAGAGCCAGAGCTGCTTG AG- A CT- T G TACCA G CTTAC
1 TGCGCTGGTACCAGATGGGT CCCAG CC GAG GC TGTGC CTGG GATGG TG
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CACTGGG
GAM21695 8921 CCCAGATCCACATGCGGGAG A ACA CC GC AA G AATGCC
0 GCCCTGCAGCAAATGGACAA CCCAG TCC TGCGGGAGG CT AGC ATG AC
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CCCTCCTGCACCAGGAGCTG G ACC CA GC CA G ------
GG
GAM21698 14312 CCCAGCAGTGAGCCTAGGCT --------- CCT- TGT T CTCT
1 TGTGTGTCTCTCTGGTCACA CCCAGCA GTGAG AGGCT GTG CT
GTCTTTCCCTTACTCCCTCT GGGTCGT CATTC TCTGA CAC GG
AATGCTGGG AATCTCCCT CCTT --- T ----
GAM21700 20824 CCCAGCCCCTAGCCCCACAG CCTA ACA AAGACAGTTTGACATAACA
4 CCAAGACAGTTTGACATAAC CCCAGCC GCCCC GCC
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GG TCC- CCC ----------
GAM21701 18680 CCCAGCCGACCTCCAATCCC AG CCAA TG -- CCTTG
2 TGACAGCTCCTTGGGCTGAG CCC CCGACCT TCCC AC AGCT
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G -- CCGC GT AG -----
GAM21706 5623 CCCAGCTGCCGGCAGTGCTG C C GC G- CAACAGAG TCTAGATT
3 GTTCTCCAACAGAGTGGTGT CCCAG TGCCGG AGT TG TTCTC TGGTG
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AGAAGACAAACTCCGGCACT - - A- AG CAATGAG- --------
GGG
GAM21706 5510 CCCAGCTTGAGTGAACTGCA --- - ------ A TG C TG CAAGC
9 CTGTGACAAGCTTGCATGTG CCCA GCTTGA GT GA C CA TG A
GATCCTGAGAACTTCAAGCT GGGT CGAACT CA CT G GT AC T
CCTGGG CCT T AGAGTC A GT - GT -----
GAM21708 16465 CCCAGGAAGACATTCTGGAT A AGACAT AT TACT - ATGGT
3 GAGTTACTGGGTAACATGGT CCC GGA TCTGG GAGT GGGT AAC
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CGGG - ------ -- C--- G -----
GAM21715 8765 CCCAGGATCACTATTTATAC CTA A A ----- --- - T TTTTT
6 ATGAATTAATGCTGCTTTTT CCCAGGATCA TTTAT CATGA TTA ATGC TG CTTT TT
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TATCCAAATAACTTATGATA TAA - C AAACC TCT T T -----
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GAM21718 19265 CCCAGGCTAGCCAGCCTTTT - C GC ACA- CTTT G- -- A AAT
5 AACAACATCTTTTGGGGTAC CCCAGG CTAG CA CTTTTA ACAT TGG GT ACA TTAG
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CAGCCATATGTGTCATGTAG C C A- GTAC TAT- GA TT G ---
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GAM21719 9887 CCCAGGCTGAGAGCGCCCAG G T GA-- C AG A GACTGA
1 AGCAACAGACTGATGATGCT CCCA GC GA GCG CC AGCA CA
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GG A T AACA A CT A ------
GAM21727 8352 CCCAGGGGACCCCTCTCGGC ACC TCTC TCA CT CCCT
6 CTCAGGCTCTGCTCCCCTGA CCCAGGGG CC GGCC GGCT GCTC
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GAM21728 18726 CCCAGGTATGTGTAGAGGCC T TAGA C TGG CACTT TTTCTAC
1 CAGTGGGGGTGGCCACTTGG CCCAGGTA GTG GGCC AG GGGTGGC GGTG
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ATCCAGTCTGGCCCCAGTAC C GACC - TGA TCCC- -------
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5 AGGTGTATTACACCTGATAG CCCAGGT GC CTCATAA AGGTG
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G ACC AT GATAG -----
GAM21730 4318 CCCAGTAGCCTCAAGCAGCA TA AAGCA AA- ATGA
2 CCAATGGGGATGACCCTGAC CCCAG GCCTC GCACC TGGGG
AGGTGCCCTCAGGGGTCTGG GGGTC TGGGG CGTGG GTCCC
G -- ACTCC ACA ----
GAM21733 9885 CCCAGTGGAAGGAGGGGAAG TG AA A G- GAAAC AGCC

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1          ATTTTGGAAACCTGGTAGCC CCCAG  G  GG GGGGAA  ATTTTG    CTGGT
           ACCAGTAAGGTGATTCTCTG GGGTT  C  CC TCTCTT  TGGAAT    GACCA
           CCCTGTTGGG            GT --  G     AG     -----    ----
GAM21733 9395   CCCAGTGGAGCAGCCATCAG     --   - --  CAT       GTGCTA
3          AGCCCAGTGCTATGGGCTTT CCCAG  TGGA GC  AGC   CAGAGCCCA
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           G                  CG    A  AT   T--       ------
GAM21735 8597   CCCAGTTGAGCATGGCATCT     TTGAG-   -    T    A  ACACTG
2          GTCGACCACACTGGGACGAC CCCAG     CATG GCATC GTCG CC
           GATGTGCATGAAGACTCTGG GGGTC     GTAC TGTAG CAGC GG
           G                  TCAGAA   G    -    A ------
GAM21736 18650  CCCAGTTTTCAAGAATCAAC   -  TT    AT   A  ATGACA   AG   GCTACACACA
2          ACATATGACAAGGTAGCTTA CCC AGT  TCAAGA  CAAC CAT     AGGT  CTTA
           GCTACACACATGAGAAGCCT GGG TCA  AGTTTT  GTTG GTG     TCCG  GAGT
           GAGAAAGTGGTTGTTTTGAA   A  --    --   -  AAAGAG   AA  ----------
           CTAGGG
GAM21737 5419   CCCATATCTCATTTTATTTC    T   C-     T--    T-     CAT
8          AACTGTTAAACATTTTGATC CCCA ATCT  ATTTTAT   TCAAC  GTTAAA
           TGTTGACCCATAGGATCAGG GGGT TAGG  TAGGATA   AGTTG  TAGTTT
           ATTTGGG              T   AC     CCC    TC    ---
GAM21746 14300  CCCATGTGCCATGCATGGTG     T  CAT   T-  -  CT     CAAA
3          CTGGGCACCAAAGTGCTTTC CCCATG GC   GCA  GG TG  GGGCAC
           CATCCCTTGCCTGCTATGGG GGGTAT CG   CGT  CC AC  TTCGTG
                        -  TC-   TC  T  CT     ----
GAM21747 12782  CCCATTAAGGCGGCAGCAGT     --     G AG   T    AAGTTGATA
3          GGATGAAGTTGATACATTCT CCCATT  AAGGCG C  CAG GGATG
           TTGAAGTGCTTTTCGATGGG GGGTAG  TTTCGT G  GTT CTTAC
                        CT     - AA   T    ---------
GAM21749 16607  CCCATTGTGGCTCAGCGGTT      T----   T   C  TTAA    C  ACTGG-  TTCA
7          AATGAACCTGACTGGCATTC CCCATTG    GGC CAG GG    TGAAC TG     CA
           ATGAGGACGCAGTTCAATCC GGGTGAC    CCG GTC CC    ACTTG AC     GT
           CTGGCCTTGCTCAGTGGG        TCGTT   -   -  TA--    -  GCAGGA  ----
GAM21750 9615   CCCATTTCGCCCGTTATGTT    TTTC------    TTAT    TG    ACTT
4          TTGTCCCACTTGGGGTGAAA CCCA       GCCCG    GTTT  TCCC
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           TGGG               CTCTCCTGTT    CGCT    GT    ----
GAM21750 1760   CCCATTTTAATCAATTTGAA    ----   A   A   GAA    AATTTA
9          AGGTTAATTTAAACCTCTAG CCCAT    TTTA TCA TTT   AGGTT
           AGGTGAATGAGCAACATGGG GGGTA    GAGT AGT GAG   TCCAA
                        CAAC    A   G   ATC    ------
GAM21751 14026  CCCATTTTTTGGCTTTTGAG      T- TG    GAGGGGG    TT   TTGCTTGTCTGTT
3          GGGGTTCAGTTTGGGTTGCT CCCATTT  T  GCTTTT      TTCAG  TGGG
           TGTCTGTTTCCGGGTTGGGG GGGTGGG  G  TGAAAG      GGGTT  GCCT
           GGAAAGTTGGTTGGGTGGG       TT GT     GG-----    GG   ----------
GAM21754 3497   CCCCAAGTCACCGGCAGAGC   C     CC     G-    A-    TCCATTTCAACGCT
3          CTCCATGGCTTCCATTTCAA CC CAAGTCA  GGCAGA  CCTCC  TGGCT
           CGCTAGCCAGCGGGGGAGTT GG GTTCAGT  CCGTTT  GGGGG  ACCGA
           TGCCTTGACTTGAGG      A     T-    GA    CG    ----------
GAM21754 8856   CCCCAAGTCAGCCCTCCATC     GT    T---- A    TTTCC  A   CT  ACCTGTAA
4          TGTTTTCCTGATTTCCTTCA CCCCAA  CAGCCC    CC TCTGT    TG TTTC  TC
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CCTGTAAGATAGAGACATCA GGGGTT GTTGGG GG AGACA AC AGAG AG
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GAM21755 9529 CCCCACCAAACTAAATGATC CTAA- CAGG GGAG GA G CAT
7 AGGTCATTGGAGGTGAAGGG CCCCACCAAA ATGAT TCATT GT AG GGTT
GTTCATGACTGCTGGACAGA GGGGTGGTTT TACTA AGTAA CA TC TCAG
GAATGAAATATCATGTTTAT ATTTG TAA- GAGA GG G ---
TTGGTGGGG
GAM21756 4048 CCCCACCGGGAGGGGCCACA -- CC ACCTG- CTCG
8 AGGACCTGGGCCTCGGCCAC CCCCAC CGGGAGGGG ACAAGG GGC
CAAGCTTTGTCCCCTCTCGC GGGGTG GCTCTCCCC TGTTTC CCG
TGTGGGG TC -- GAACCA ----
GAM21757 3438 CCCCACCTCGCTTCCACCAA CCTC- CACCA- - TC TCTTC
0 GGGCCCATCGGTCTTCCCCC CCCCA GCTTC AGGGC CCA GG
TGGCGCCCTGCTCCAGGAGC GGGGT CGAGG TCCCG GGT CC
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GAM21758 20277 CCCCACTGCTGGCCATCCCT CT C--- CCT- C GG TC GTTC
3 ACCTGCATGGGTTTCGGTGT CCCCA GCTGG CATC ACCTG AT GTT GGT
TCACCAGGACAAATACAGGT GGGGT CGACC GTGG TGGAC TA CAG CCA
TCTTGGTGTTACCCAGCCTG C- CATT TTCT A AA GA ----
GGG
GAM21760 4393 CCCCAGCCCCTGCGCCCGGC --- - C- - - GAGAG
8 CCGAACGAGAGGTTCCGGAG CCCCAG CC CCTGCGCC GGC CCG AAC
CCCCGGCGCGGGCGGGTTCT GGGGTC GG GGGCGCGG CCG GGC TTG
GGGG TTG C CC A C -----
GAM21762 20937 CCCCAGGAGTCCACTGATTT GGA ATTT-- - TCTT CCAA
3 CTCATCTTCCTCCCAAGAGG CCCCA GTCCACTG CT CA CCTC
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GGCAGTGGGG GA- GTCTTC C TTAC ----
GAM21763 1541 CCCCAGTCAGTCACCGCCTC AG AG ACC CTC-- GTTCCTCA
6 TGCGCTGTTCCTCAGGTGTA CCCC TC TC GC TGCGCT
ATATTGTTAAGAAAGAAAGG GGGG AG AG TG ATGTGG
GG AA AA AAT TTATA --------
GAM21765 12277 CCCCATATTATTACAGGTTC A T G CCAAATC AGT CCGCCCACCAA
2 CAAATCGAGGCCGAGTGCAC CCCCAT TTA TACA GTT GAGGCCG GCA
CGCCCACCAATGCCACGGCC GGGGTA GAT ATGT TAA TTCCGGC CGT
TTTAACAATATGTATTAGCA C T A CAAT--- AC- ----------
TGGGG
GAM21768 4218 CCCCCAAAAGGCGTGAACCT AA--- C A CACC TAAAGT
5 TGCACCTTCCTAAAGTGGAA CCCCCA AGG GTGA CCTTG TTCC
CTCGGGGTCGCACTTCACAG GGGGGT TTC CGCT GGGGC AAGG
TGGGGG GACAC A - TC-- ------
GAM21769 16437 CCCCCAATGCAGCTCGTGAT C--- AG-- G T -- CA ATCGGGCA
0 TTGGAAACTCACCATCGGGC CCCC AATGC CTC TGA TTGGAA ACT CC
AGGCAAGTGGTTCCGGTTTA GGGG TTACG GAG ATT GGCCTT TGA GG
AGAGATGGGCATTTAGAGGG AGAT GGTA A T GG AC --------
G
GAM21770 18589 CCCCCAGAGGAATCTGGTAA GAAT --- ACAAACA GGCGCGG
3 AGAAGACAAACAGGGCCAGG CCCCCAGAG CTGG TAAAGAAG GGGCCA
CGCGGTGGCTCACTTCTTTA GGGGGTTTC GACC ATTTCTTC CTCGGT

ATCCCAGCACTTTGGGGG AC-- CTA A------ -------
GAM21771 3365 CCCCCATCTCTGTGACTTTC C C CTTTCCTG AC AGATG
7 CTGGAGACTCACTTCCTAGA CC CCATCT TGTGA GAG TCACTTCCT
TGAGGAAGTGAAGCTTATCA GG GGTAGA GCACT TTC AGTGAAGGA
CGAAGATGGTGG T A A------- GA -----
GAM21772 3172 CCCCCCCCATATGCCGCCCC CCC-- T - - AG TCAGG AAGAA
8 GGAGCTGTTTCAGGGCAAGA CCC CCA ATG CCGCC CCGG CTGTT GC
AGTACGACGGGCCGGAGGTG GGG GGT TAC GGTGG GGCC GGCAG TG
GACATCTGGAGCCTGGG TCCGA C A A G- CA--- -----
GAM21773 20303 CCCCCCCCCGGGGGGGGGGG G ---------- TGTTTTTT
0 GGGGGGTGTTTTTTTCTCTT CCCCCCCCCGGG GGGGGGGGG GGGG
TAAAAAAACCCCTCCCCGCC GGGGGGGGGCCC CCCCTCCCC CTCT
CGGGGGGGGG G AAAAAAATTT --------
GAM21773 4302 CCCCCCCCCTTAACCCCCCC TTAA T-- --- CG A C--
1 CCTTTGGGGGGGCGGGGGGG CCCCCCCCC CCCCCCCCC TTGG GGGGG GGGGGGGGTT
CCCCC TGGGGGG
GGTTACCCCCCTGGGGGGGG GGGGGGGGG GGGGGGGGG AACC TTCCT TTCCCCCCAA
GGGGG ACCCCCC
GGGGACCCCGCCCCCCCACC ---- CAT AAA TT - TCC
TGGGGGAACCCCCCTTTTTC - GGAC
CTTAAACCAATACGGGGGGG G GGG
GGGGGGGGGGG C CCC
G ----
GAM21773 3208 CCCCCCCTTTTTGGGGGAAA --- AAAAAA AA C A-- CCACCCCC
3 AAAAGAACCTTCCCGATGGC CCCCCCCTTTTT GGGGGA G CCTT CCG TGG
CACCCCCCCCAAAACGGAAAG GGGGGGGAAAAA TCCCCT C GGAA GGC ACC
GCCCTCCCCTTCAAAAAAGG ACT ------ CC A AAA --------
GGGGG
GAM21773 1537 CCCCCCGCCGCGGCCCCGGC G C GAGG- - AAGAAGCCCA
6 GAGGCCCGCAAGAAGCCCAG CCCCCCGCCGC GCC CGGC CC CGC
CGAGGAGGAGGCTGCGGTGG GGGGGGCGGCG TGG GTCG GG GCG
CGGCGGGGGG G C GAGGA A ----------
GAM21774 4265 CCCCCGAGTCTTGCACTCAA A-- CACT AC AGG C - - GAGAACTA
4 CGACGGAGGCGGCGCCGCTG CCCCCG GTCTTG CA GACGG CGG GCCGC TGCTCTT G

CTCTTGGAGAACTACGAGGA GGGGGC TAGAGC GT CTGCC GCC CGGCG ATGAGGA C

GTATGCGGCTCCGGGCCGTC ACC ACTC -- GG- T T G --------
TGCTCACGAGATCCACGGGG
G
GAM21775 19126 CCCCCGGAGTCCTTTTTTAT AG A T- TTT
2 TTTTTTTCCCTTTGGGCCAA CCCCCGG TCCTTTTTT TTTTTTT CCC
AAAGAAAAAAAAGGGGACTG GGGGGTC GGGAAAAAA AGAAAAA GGG
GGGG AG A CC ---
GAM21775 18340 CCCCCGTGCACCTCCCTGGC G A CCC GCCT G TG AAACTTG
7 TGGCCTGTGATGGCAAACTT CCCCC TGC CCT TGGCTG GT A GC
GGTTGTGGCTCACGGCCACT GGGGG ACG GGG ACCGGC CG T TG
GGGGCAGGGGG - - TC- ACT- G GT -------
GAM21777 18644 CCCCCTGAGAGCCTGGCGCA ---------- C CAG----- ACTC
0 GCTGGGACTCCCCAGAAATT CCCCC TGAGAGC TGGCG CTGGG

CACTGCCAGCTCTTAAATAT GGGGG ATTCTCG ACCGT GACCC
GGGGTGGGGG TGGGGTATAA - CACTTAAA ----
GAM21779 12952 CCCCGATTTGTAGGCAGCAG ATTTGT - AGAGA A A AGTT
4 AGAAAGAGATCTTAGTAATA CCCCG AGGCA GCAGAGAA TCTT GT AT
GTTGTGGCCAAGGATTCTTT GGGGT TCTGT CGTTTCTT GGAA CG TG
GCTTGTCTCCTGGGG CC---- T A---- C G ----
GAM21780 8979 CCCCGCCCCCAAAATATGCC AAATA - G - T-- -- AGAGTG
0 CGTCCTGTATCCATGAGAGT CCCCGCCCCCA TG CCC TC CTG ATC CATG
GCATGTCGGTTCTCAGTGAG GGGGTGGGGGT AC GGG AG GAC TGG GTAC
GGTCAGAGTGGGGGTGGGG GAG-- T - T TCT CT ------
GAM21782 5986 CCCCGCTACCTGTACTCGTG GCTAC ACT A -- G TGC-- CCAAA CT ACCCCTC
0 GGAGGATGGTGATTGCTCAC CCCC CTGT CGTGGG GGA TGGT AT TCACA GC TGG
ACCAAAGCCTTGGACCCCTC GGGG GACG GCATCC CCT ACCA TG AGTGT CG ACC
CCAGCCTGTGACCTTTGTGA AACA- AC- A CA G TTTCC C---- -- -------
CCAACTCCACCTACGCAGCA
GACAAGGGG
GAM21782 20858 CCCCGGACCTGCAGTCTATG A - AT---- AG - A C----------
6 GAGCAGATTCGGCGGATCAT CCCCGG CCTGCA GTCT GG CAGATT CGGCGG TCATGCGGC

GCGGCCACAGATGTGCCTGA GGGGTC GGACGT CAGG CC GTCTGG GTCGTC AGTGTGTCG

CCAGGGCCTGCTGTGTGACC G G AACAGT CA T C TCCGGGACCAGTCC
TGCTGTGGTCTGACCCTGAC - AGAT
AAGGACGTGCAGGGCTGGGG AC
TG
G ----
GAM21783 6418 CCCCGGGATTTTGGCCTGCC - TTTT C- - AGAC
6 CCTTCGTCGGAGACCCGGCC CCCC GGGA GGC TGCCCCTTCG TCGG
GGGGGGGCGCAGCTCTTTCC GGGG TCCT TCG GCGGGGGGGC GGCC
TAGGGG A TTC- AC C ----
GAM21783 5478 CCCCGGGCCCATGGGTCCAT GG--- AT- A AA AAGG
8 CCAAACTCCAAGGGGAGTGG CCCC GCCC GGGTCC TCC ACTCC
AGGGCCCCCAGGGCAAAAAG GGGG CGGG CCCGGG AGG TGAGG
GGG AAAAA ACC - -- ----
GAM21784 795 CCCCGGGGGGGACGCCCGGA G A AGAAA- GTTCTA
0 GAAACGTGGTTCTACACGGG CCCCGGG GGG CGCCCGG CGTG
ACGACCGGGCGCCCACTTGG GGGGTTC CCC GCGGGCC GCAC
GG A - AGCAGG ------
GAM21784 6055 CCCCGGTTCCCGCTCATCCA TCCC T A C AGCG-- G TG AAAC
3 CCGACACGCGAGCGCGGCTG CCCCGGT GCTCA CC CCGA ACGCG CG C C
CAAACGTGGGCGACACCCTG GGGGCCA TGGGT GG GGCT TGCGT GC G G
CGTTTCGGGGCTGGGTCCCA CCC- C - T CCCACA G GT ----
CCGGGG
GAM21789 20946 CCCCTCCTTGAAGCTGATGG C- GAA T G TG ACA- TCTCT
4 TGAATGTGTGCGGACACACT CC CTCCTT GC GATGGTGAAT TG CGG CAC
CTCTGTGAAAGTTGTGTAGA GG GAGGAG TG TTGTCATTTA AT GTT GTG
TTTACTGTTTGTGAGAGGAG TC AG- T G GT GAAA -----
CTGG
GAM21791 21624 CCCCTGACATTGACCTCCTA ACA- - ACCCT CCC C GACCA
1 CCCTGACCCCTGCCTGACCA CCCCTG TTGA CCTCCT GAC TG CT

AGCCATGTCTGAACAGGAGG GGGGAC AACT GGAGGA CTG AC GA
CTCAAGCCCCAGGGG CCCG C CAAGT T-- C -----
GAM21792 22182 CCCCTGGCCAACCCTGTGGA - CCAACC -- ------ -- A G AAAGA T
4 GCTTCGATGAGCTGCACCGT CC CCTGG CTGT GGAGCTT CGATGAGCT GC CC TCTATGC
TG
CTATGCAAAGATGTATTCCC GG GGACC GACG TCTTGGA GTTGCTCGA TG GG AGGTACG
AC

AGCACAGCATGGAGGGAGTG T TTTACC AG ACAACT AG A G ACACG -
AAGCTCGTTGTCAACAAGGT ATTCC
TCTGAGCAGCCATTTCCAGG
TGG

GAM21793 20874 CCCCTGGGCAGGGGGCGGGA CA G - TCG- A CTGA
2 TTCGGAGGAACCTGAGTGCC CCCCTGGG GG GGCGG GAT GAGG AC
TCAGTCATCGCCGTCACCAT GGGGACCT CC CTGCC CTA CTCC TG
CCAGGGG A- A G CTGA G ----
GAM21793 12855 CCCCTGGGCTGCCTTGAGTC GC GT -- G TCAC CCGGACGA
4 CTGCTGCAGCTCCCTCACAG CCCCTGGGCT CTTGA CCTGC T CAGCTCCC AGTGCT
TGCTCCGGACGAGGTACTGG GGGGACCCGA GAGCT GGACG G GTCGGGGGG TCATGG

GGGCTGGGGCGCAGGTCGAG -- -- CG G ---- --------
AGCCCAGGGG
GAM21793 21582 CCCCTGGGCTGCCTTGAGTC GC GT -- G TCAC CGGACT
5 CTGCTGCAGCTCCCTCACAG CCCCTGGGCT CTTGA CCTGC T CAGCTCCC AGTGCTT
TGCTTCGGACTAGGTACTGG GGGGACCCGA GAGCT GGACG G GTCGGGGGG TCATGGA

GGGCTGGGGCGCAGGTCGAG -- -- CG G ---- ------
AGCCCAGGGG
GAM21793 1114 CCCCTGGGGTTTCCACCTCC TCCA G CC CCCT
9 TGCCTCCGGCCCTCCAAAGG CCCCTGGGGTT CCTCCT CCT GG
GGGGAGGCCCCAACCCCAGG GGGGACCCCAA GGAGGG GGA CC
GG CCCC G AA ----
GAM21794 9494 CCCCTGGTCAGGAGGTGGAG GGTC GA A- AG ATATCACAGACA
0 TAACTAAGGATATCACAGAC CCCCT AG GGTGG GTAACTA G
ACTCTGGTTGCAGTCACCAT GGGGG TC CCACT CGTTGGT C
CTCAGAGGGGG AGAC TA GA CT ----------
GAM21794 12523 CCCCTGTTGGATGCAGTGTC - GTTG AGT --- TTCGTCAGT
9 TCGGGACTTCGTCAGTGTCC CC CCT GATGC GTCT CGGGAC
TGCACAGGCGCATCAAGAAG GG GGA CTACG CGGA GTCCTG
GCGG C AGAA --- CAC ---------
GAM21795 14361 CCCCTTCCCATCCCCCCACC CC CCACCC C - AT CCAG
9 CGCCTGCCCATGGGCCAGTC CCCCTTC ATCCCC GC TGC CC GGG
CTAGGAGCAGCTGGGGATGA GGGGAAG TAGGGG CG ACG GG CCT
AGGGG -- T----- - A AT ----
GAM21796 12776 CCCCTTCTCCTCCTCCTCTT TCCTCTT TCTCC T C TGGTCC
2 CCTCTTCAGTCTCCAACGAC CCCCTTCTCCTCC CCTCTTCAG AACGACTC GCCC CGA

TCTGCCCCCGATGGTCCTCG GGGGGAGGGGGGG GGGGGGGTT TTGTTGGG TGGG GCT

TGGGTTGGGTTGTTTTGGGG TCGTGTT ----- T T ------
GGGTTGTGCTGGGGGGGAGG
GGG
GAM21797 12266 CCCCTTGGGTCGTCGCCTGG G C--- GG - - C CC - CGAG
1 GCCGCCCGTCGTTCCCCGGC CCCCTTGG TCGT GCCT GCC GC CCGT GTT CCGG CCC

CCCGAGGGGTCCGGCTGGCC GGGGAACC AGTA TGGA TGG TG GGCG CGG GGCC GGG

GCGGTGTGGGTAGAGGTCAG G CGAC GA G T C TC T ----
CATGAGCCAAGGGG
GAM21798 4335 CCCCTTTTCCAGGGGGAAAA A AAAACC CCCACTTGCTTTAATAAAT
2 CCTGGGGGCCCACTTGCTTT CCCCTTTTCC GGGGG TGGGGG
AATAAATCCCCCACCCCCCG GGGGAAAAGG CCCCC ACCCCC
GGAAAAGGGG G C----- ----------
GAM21798 1282 CCCCTTTTTTTTTGAAAAAG AAAAAG CAAT
4 GGCGCCCCTCAATAGGGGCG CCCCTTTTTTTTTG GGCGCCCCT
CTATTATAAAAAAGGGGGGG GGGGGGGAAAAAAT TCGCGGGGA
ATTA-- ----
GAM21799 1445 CCCGAAGGTGGGCGTCCCGC AA- G G C G TCC A ACGTT
3 GGGGCTCCAGTCTCCAGGAC CCCG GGT GGC TCCCG GG GC AGTCTCC GG
GTTCCGGGAGGCTCCGCGCT GGGT TCG CCG AGGGT TC CG TCGGAGG CC
CTGGGAGGCCGGCTGCGTGG GCG G G C G CC- G -----
G
GAM21799 3291 CCCGACCCACAGTCAGGCCC ACAGTCAGG CC A CGTTTT
8 AGGGCCACACCACGTTTTTG CCCGACCC CCCAGGG AC CCA
GAGTTCTTGGGAAAGGGTTG GGGTTGGG GGGTTCT TG GGT
GG AAA------ -- A ------
GAM21800 12821 CCCGACTGCAGCATTCAAAG A AGCA- AAA CCAC AGGTTGAG
6 CCCCCACGGAGGTTGAGCCG CCCG CTGC TTC GCCC GG
GGCACAGAAACACAGCAGCG GGGC GACG AAG CGGG CC
GG - ACACA ACA ---- --------
GAM21801 9264 CCCGAGCCTGGCGACCATGC GAG ACCA AGGA-- - GGGTGAA
1 AGGAGTCGCTGCGGGTGAAG CCC CCTGGCG TGC GTC GCTGC
CAGCTGGCCGAAGAGCAGAA GGG GGGCTGC ACG CGG CGACG
GCGTCGGGAGAGGG AGA GAAG AGAAGC T -------
GAM21801 8421 CCCGAGCTGGGCCTCGAAAT A CGAAATGACA - - GGGA
3 GACAGCAGGGTTTGGGCTTG CCCG GCTGGGCCT GCAGGGTT TGGGCTT GG
GGGGACTGAGGCTTACAGCC GGGC CGACCCGGA CGTCCCGA ATTCGGA TC
CTGCAGGCCCAGCCGGG - ---------- C G ----
GAM21802 12965 CCCGATCTGCCTCCAGTCTC ----- G --- A TG TT G CTC
8 GGACTTGGTTGTTGCGCGCT CCCGA TCT CCTCCAG TCTCGG CT GTTG GC CG
CCGGCTCCGGCTGAGCTGGG GGGCT GGA GGAGGTT AGGGTC GA CGGC CG GC
AGAGTTGGAGGAGGTGTTTT TTTGT - GAG - GT CT - ---
CGGG
GAM21802 19072 CCCGATGCACTTTGAGGGGT T- ACT -- TG A ACTC
9 GTTGGAGAGGGGACTCCCCC CCCGA GC TTGAG GGGTGT GAG GGGG
ACTCGCACTTAACTCAACGG GGGCT CG AACTC TTCACG CTC CCCC
CTCTCGGG CT GC- AA -- A ----
GAM21803 2805 CCCGATGTCTTTTTTTTTAC - TTTACTGTGGAAA CG TAACAT
0 TGTGGAAATAGGATCGGAAG CCCGATG TCTTTTTT TAGGAT GAAGAGAG

AGAGTAACATTTTTTTTTTA GGGTTGT AGAAGAAA GTCCTA TTTTTTTT
ATCCTGATAAAGAAGATTGT T TA---------- AT ------
TGGG
GAM21804 6569 CCCGCACTCCTACATAGACA C AC ACATAG- ACG T ACAGA ---- ACATACC
0 CGTACTTTGACACAGAGAGG CC GC TCCT AC TACT TGAC GAGGTCT AGC
TCTAGCACATACCGCTCCAA GG CG AGGA TG GTGA ACTG TTTCGGG TCG
GGGCTTTGACGTCACAGTGA T A- ACACACA AA- C CAG-- AACC -------
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GAM21805 8091 CCCGCCACCACGCCCAGGTA CCAC ----- T G G AGTA
4 ATTTGGTGTCAGTAGAGACG CCCGCCA GCCCA GG AATTT GT TC
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GGCGGG C--- GTACC T G G ----
GAM21806 20500 CCCGCCCAGGGCAGGCCAGT -- A- - T ---- CTGG
3 CTCGTGGGCCTGGGCCTGGG CCCGCCC AGGGC GGCCA GTC CGTG GGC
CATGGACATGGCCCAGCTCT GGGCGGG TCTCG CCGGT CAG GTAC CCG
GAGGGCGGG AG AC A - GGGT ----
GAM21807 8811 CCCGCCCCTGCCCGTTGCAG - - G CA CCCTA - CCCTAA
2 CCCCCCCTAGCTCTCCCCTA CCCG CCCCTG CCC TTG GCCCC GCTC TC
AGAGGAGCCGTTCGGGGTCG GGGC GGGGGC GGG GGC TGGGG CGAG AG
GGGGTCGGGGGTCGGG T T - -- CTTGC G ------
GAM21808 14328 CCCGCCGGCCGCTTCCGCTC CC G CC G GCTGCA
8 CCGGCGCAGGCGCTGCAGCT CCCG GGCC CTTCCGCTC GGC CAGGC
TGGCCAGAGCGGAGGGGGCT GGGC TCGG GGAGGCGAG CCG GTTCG
CGGG -- G A- - ------
GAM21808 8916 CCCGCCGGGGAACAAAACTT G GA- ACTT C AACC G CATC
9 GTGTGGCGAAACCGGCGCCC CCC CCGGG ACAAA GTGTGG GA GGC CC
ATCGGAGCCCCTATTTTTAC GGG GGCCC TGTTT CACATT TT CCG GG
ACTTTGTGAACCCGGGGGGG G AAG ---- T ATCC A ----
GAM21810 8501 CCCGCGTATAGCTTCTGGCC C - TCT CT-- G TGTATTGTT
9 TGGGGCTTGGCCTGTATTGT CCCG GTA TAGCT GGC GGGGCTTG CC
TGGACGAGTTCTTTATGCTT GGGC CAT ATCGG TCG TCTTGAGC GG
ATGGCTATTACACGGG A T TAT TATT A ---------
GAM21811 9029 CCCGCTACGACATGGACCGC C - AC- CT T TCCGCGCC
6 TTTGGCGTGGTCTTCCGCGC CC GCTACGA CATGG CG TTGGCGTGG CT
CAGCCCGCGCCAGTCCGACG GG CGGTGCT GTACT GC GACCGCGCC GA
TCATGATCGTGGCCGG C A GCA CT C --------
GAM21812 8813 CCCGCTGTGGTCTGCACAGT GTGG CA CACATA TCACGATCAC
6 GCACATACCTCACGATCACG CCCGCT TCTGCA GTG CC
GGAAACACACATGCAGAGAA GGGCGG AGACGT CAC GG
GGCGGG AAG- A- ACAAAG ----------
GAM21812 8070 CCCGCTTCACCGGCAGCCGC - T -- C A CCAG
8 AGAGGCACCCCAGGGTGTCC CCC GCT CACC GGCAGCCG AG GGCACC
TCGGCTGCCCCGGTGGGCAG GGG CGG GTGG CCGTCGGC TC CTGTGG
GG A - CC - - ----
GAM21813 20306 CCCGGACCCTGCTCTCACCC C CC-- CTC- CT- CCCG
6 CTGGCACCCGTGCCTACGGG CC GGA CTG TCACCC GGCA
TGGCTCCCAGAACATCCTGG GG CCT GAC GGTGGG CCGT
T ACAA CCTC CAT ----
GAM21814 2955 CCCGGAGTATGGCCGCAAGA - A A C -- A CC A G C CCTC AGC
6 AGCGCCTCCTGACTGGGCCT CCC GG GT TGGC GCAA GA GCGCCT TG CT GG CTCATGTC CAG

CATGTCCCTCCAGAGCCTGA GGG CC CA ACCG CGTT CT CGCGGA AC GA TT GAGTGTAG GTC

ATGATGTGAGCTTGAGCACA A - - T AA A C- - G C TAA- ---
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CCCAGGG
GAM21815 19840 CCCGGCAGCACCCCTAGCAA GGCAG GC A T T AAGATTC
4 ATAGGTCTGTATCAAAGATT CCC CACCCCTA AAAT GG CTGTA CA
CTGTACAGCTGGTTTTGGGG GGG GTGGGGGT TTTG TC GACAT GT
GTGAAGGG AA--- -- G - - -------
GAM21815 12357 CCCGGCAGGGCTGGTCAGAG CA TG TC CA - CCGCC
5 GGGCACAGCCACCGCCTGTG CCCGG GGGC G AGAGGGGCA GC CA
CCTGCCCCTCTCTGGCCCAC GGGTC CCCG C TCTCCCCGT CG GT
TGGG A- GT -- C- T -----
GAM21816 12268 CCCGGCCCAGGGCGCCGCGG G C G - C- ACCCT A TC AGGCT
3 GCCCTTTGGTGACTCGACCC CCC GCCCAGGGCGCCG GGGCCCTTT G TGA TCG GGCCA
CAGGG C
TGGCCAACAGGGTCCAGGCT GGG TGGGTCCCGTGGT TCCGGGAAG T ACT AGC CCGGT
GTCCC G
GTGCCCTGTGGCCCGACCTC G - G G CC ----- - GT -----
AGTGGAAGGGCCTTGGTGCC
CTGGGTGGGG
GAM21819 12693 CCCGGCGGGAGGAAGCTGTC GCGGG -- G --------- TCGG
1 AAGCGCCAGGGGGGCCTTCG CCCG AGGAAGCTGT CAAGC CCAG GGGGGCCT
GGGGCTCCCGGGTTAAGGCT GGGT TCCTTCGGCA GTTTG GGTC CCCTCGGG
GGGGTTTGCCACGGCTTCCT GA--- CC G GGAATTGGG ----
AGTGGG
GAM21819 18154 CCCGGCGGGGCGGGCCGCCG - GG G G CTGTGA
2 GGTTGGGCTGTGACTCGGCG CCCG GCGGGGCG CC CCG GTTGGG
TGGGGGATGCCCCGCGCGGG GGGC CGCCCCGT GG GGT CGGCTC
G A- G G ------
GAM21821 19137 CCCGGGACCAGGTGCGCCGC GA - - - TG TT A A T T GCTGCTG
0 TGCCTTCGAGCCAACCTGCT CCCGG CCAG GT GCGCCG C CC CG GCCA CC GCT GT
TGTGCTGCTGACAGTGGTGG GGGTC GGTC CG TGCGGC G GG GC CGGT GG TGA CA
CCGTGGTGGCCGGCGTGGCG AG G G C GT T- - - - - -------
CTGGGACTGGG
GAM21825 3489 CCCGGGCAGGAAGATTTGGC GGAAGA C GATGCC GATCAAAA
9 CTCTCAGATGCCCGGATCAA CCCGGGCA TTTGGC TCTCA CG
AACGTGGGAGTCAAGGATGC GGGCCCGT GAACTG AGGGT GC
CCGGG AG---- - ------ --------
GAM21826 20137 CCCGGGCCTGAAGCTCCACC AAG CCC C TCCAGAC
5 CCGGCCAGGGTCCAGACTTC CCCGGGCCTG CTCCAC GGC AGGG
TGCTTGTGGGGAAGCAGGCC GGGCCCGGAC GGGGTG TCG TCTT
CGGG GAA T-- - -------
GAM21828 20996 CCCGGGTGCCCGAGGGGGCT T -- --- GG TGTTTGAATTTTT
4 TTGGCCCTGTTTGAATTTTT CCCGGG GCCC GAGGGGG CTTT CCC
GGGAAAAGGAAACCCCTTTA GGGCCT CGGG TTTCCCC GGAA GGG
GGGGCTCCGGG - GA AAA AA ----------
GAM21828 21024 CCCGGGTTTTATTTCTCTCT T TT T CTTG--- T CTGTT
8 TTCTTGAGTGGACTGTTTCC CCCGGG TTTAT C CTCTTT AG GGA
CTATAATTAAAAGAGGTGGT GGGTCC GAGTG G GAGAAA TC CCT

GAGTCCTGGG T GT - ATTAATA - -----
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9 GGCGGTGGGTGAGCCCGAAC CCC GTACCCG TCC GGCGG GGT
TTTCTGTCTGGACGGGTGTG GGG TGTGGGC AGG CTGTC TCA
GGG G ----- T TT --------
GAM21829 21487 CCCGGTATCATTCCTCGAAT ATCAT- C ATT ---- G A AT AGAC G TG
0 TTCAGTGCGGGAACCAATGC CCCGGT TC TCGA TCAGT GC GGA CCA GC TGGCATTAAG
CTG
AGACTGGCATTAAGGCTGTG GGGTCA AG GGCT AGTCA CG CCT GGT TG ACCGTGGTTC
GAT

GATAGCTTGGTGCCAATAGG GACAGC T ACT AGTG A - GC GATA - --
TCGTGGTCCAGCGTGAACTG GA
ATCATCGGTGACGACAGACT
GGG
--
GAM21829 5473 CCCGGTGCTGGAAAGGCGCC -- G AA--- GCC G AAGC
8 CAGGGCCCAAGCGGGACCTG CCCG GTGCT GA GGC CAGG CCC
AGCCACGCGTCGGGCACAAC GGGC CACGG CT CCG GTCC GGG
GGG AA G GCGCA A-- A ----
GAM21830 21326 CCCGGTTGAAAGATTGCCGC GT AAG C TCACA GGA AGAA
2 TCACACCGGAAGAGAACTGA CCCG TGA ATTG CGC CC AG
GGAACTTGCGTCGATGTCAG GGGC ACT TAGC GCG GG TC
TCGGG TG G-- T TTCAA AG- ----
GAM21833 6057 CCCGTGGATGTGCAAGTTGT TG AT TG A- T AGAGA ACCGG
6 GGAGAGAAGGAGCACCGGGT CCCG G G CA GTTG GG AGGAGC
TCCTGCCCAGCACTGTGCTT GGGC T C GT CGAC CC TCCTTG
GCGGG GT -- GT CA - G---- -----
GAM21833 20544 CCCGTGGGCGGCACGGGGGG GG G A G A- A- GGCGG
7 GGCGCCGGATTCACCCGTGG CCCGT GC GC CGGGGG GGCGCCGG TTC CCCGTG
GCGGCACGGGGGGGGGCCCG GGGCA CG CG GTTCCC CTGCGGCC GGG GGGCAC

GCGTCACCCTTGGGCGGCAC -- G G A CG GG -----
GGG
GAM21833 8162 CCCGTGGGGTGGTAACAGTG GGGG TA A CCTTAGAGCCC
8 AAGAGACCTTAGAGCCCTTT CCCGT TGG ACAGTG AGAGA
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AAA- -- A ----------
GAM21834 6567 CCCGTTAGCTGACTTCCTTG TT GA- T GCT AGGAG G TT C G GTAGT
9 AGCTCCCCAGGAGTCGGTTT CCCG AGCT CTTCC TGA CCCC TC G TC CCTCT T
CCCCTCTGTGTAGTGGAGAG GGGT TCGG GGAGG ACT GGGG AG T AG GGAGA G
GTGAGGTGGAAGGGGTCACG -- GGC C --- A---- G GG T G -----
GAGGCGGGGCTTGGG
GAM21838 909 CCCTACCACTGAAGATGAGT TGA AGTTT CCT TACT
7 TTCTCCTCTGTTACTACAGC CCCTACCAC AGATG CT CTGT
ACAGTCTGCGTCTGTGGTGG GGGGTGGTG TCTGC GA GACA
GG --- GTCT- CAC ----
GAM21840 8470 CCCTAGCCTTGCTTGTTAAA C- G G TGTT TTTTTTTTTTTTTTT
9 TTTTTTTTTTTTTTTTTTTT CC TA CCTT CT AAATTTTT
AAGAATTTCTGGGAAGGGTA GG AT GGAA GG TTTAAGAA

CTGG TC G G TC-- ----------
GAM21842 20312 CCCTATAGCTATAGAACTTG ATAG ATA C- G A ATG TG A GACAG
6 GGGGCTATCTCCTATGCCCC CCCT CT GAA TTGGG GCT TCTCCT CCCC G CAG
TGGACAGGACAGTTGGCTGG GGGA GA CTT AACTC TGA AGAGGA GGGG C GTT
GGGACAGGAGAAGTGCTCAA AACA GTA CT G - CA- GT G -----
TCTTCATGAGACAAAGGG
GAM21848 22236 CCCTCATCCTCTTATCTAGT C CTTATC T TTCTTTATCCTT
3 TTACTTTTCTTTATCCTTGA CCCT ATCCT TAGT TACTT
GTATACTATAGACCAGGATA GGGA TAGGA ATCA ATGAG
GGG - CCAGAT T ----------
GAM21850 12407 CCCTCCAGAGAGAAAGGAGG -- A - - TCC- TCCGTC
1 CCGCTCCCAAGTCCGTCCTT CCCTC CAGAG GAA AGGA GGCCGC CAAG
GCCCCGTGGCCTTCCTGTTC GGGAG GTTTC CTT TCCT CCGGTG GTTC
CTTTGACGAGGG CA - G T CCCC ------
GAM21850 2690 CCCTCCCAACCCCCTTGATC C ----- - GA ---- GATCA
7 CCTTTCTCTGATCAGGGGAA CCCT CCA ACC CCCTT TC CCTTTCTCT
AGGAGCTGAGTGAGGGAGGT GGGA GGT TGG GGGAG AG GGAAAGGGG
AGAGTTGGAAGGG A TGAGA A TG TCGA -----
GAM21851 4478 CCCTCCCCAGACTTCGCCTT TCCC GAC GC - TTTT- C- TT-- A- C TAGAA
8 CCTCTTTTTAAGCTGGTTTA CCC CA TTC CTTC CTCT AAG TGGT ATGAA AAGA C
TGAAAAAGACCTAGAAGATC GGG GT AAG GAAG GGGA TTC ACCA TACTT TTCT G
TTGATTCATTTTTACCATTC TTA- AGA A- A TACCT TT TTTT AG A -----
TTTCCATAGGGAGAAGAGAA
AGATGATTGGG
GAM21852 3042 CCCTCCCGCTTGCTCCCCAG CGC G GC CCC CCCCT TGT TTTGGGT
8 CCCACCCACCCCCCTGTACA CCCTCC TT CTCCCCA CCA ACC GTACAGAA CTGC
GAATGTCTGCTTTGGGTGCG GGGAGG AG GAGGGGT GGT TGG CATGTTTT GGCG
GTTTTGTACTCGGTTTGGAA --- G AA T-- CT--- --- -------
TGGGGAGGGAGGAGGG
GAM21855 12841 CCCTCCTTTATTCCCCATCC T- CATC CAACT AA GTGACA
9 CCCAACTTGAGAACAGGGTG CCCTCCTT ATTCCC CCC TGAG CAGG
ACACCTGAGCTCACTCGGGC GGGGGGAA TGAGGG GGG ACTC GTCC
TTAGGGAGTCTAAGGGGGG TC ATTC CTC-- GA ------
GAM21861 8131 CCCTCTTCCGGCAACTTGTC C AACT C CAC TAAATTCC
8 TGTGCACCTTAAATTCCAGC CCCT TTCCGGC TGT TGTG CT
CTCACAAATATTCAGCTGGG GGGA AGGGTCG ATA ACAC GA
AAGGG - ACTT A TCC --------
GAM21862 930 CCCTCTTGGTGACCCCCCCA G- G CCCCCCATC TAAG
3 TCTGGAGTTAAGGCTCCAAG CCCTCTT GT AC TGGAGT
CAGCAAGTGACAGAGGAGGG GGGAGGA CA TG ACCTCG
GA G AACGACGA- ----
GAM21864 5368 CCCTGAAGCCGAGAAATGTG AG---- - AAAT A- - AGAT
5 GAAAAGCGAGATTGTCTTTG CCCTGA CCG AG GTGG AAAG CG
ACCATTTGCTATGGACATTG GGGACT GGT TC TACC TTTC GT
TCAGGG GTTACA A GTT- AG T ----
GAM21865 3591 CCCTGACAGAATGGTGGTGC GACA AT ---- ---- TTA TTTTTAAC
1 GGGATTGTTAAAGGTTTTTA CCCT GA GGTGGTG CGG GATTG AAGG
ACCCTTCCAATTATGACCGG GGGA CT CCACCAT GCC TTAAC TTCC
TTATACCACCTCCCGAAGGG AGCC -- ATTG AGTA C-- --------
GAM21865 18461 CCCTGACATGCATCTTCGTC GACA-- C- - CC TGGCTT

2 TCTCCATCCTGGCTTGGATC CCCT TGCAT TTC GTCTCT ATCC
TAGAGGCAGAAAAGTGCAGA GGGA ACGTG AAG CGGAGA TAGG
AGGAAGGG AGGAAG AA A TC ------
GAM21867 8605 CCCTGATAATAGGCCTTTCA A - -------- T G - C-- C- AC
3 AATGTATGTTCATGTCTCTG CCCTGAT ATAG GCCT TTCAAA GTAT TT CATGTCT TGA
CTTGCATT
ACCTTGCATTACCCCAATGT GGGACTG TGTC CGGA AGGTTT CGTG AG GTACGGA ACT
GGATGTAA

AGGCTTCAAACAGGCATGCG G A ACCCCAAA C G C CAA TC --
AGGTGCCTTTGGAAAACCCC CCC
AAGGCACTGTGGTCAGGG

GAM21869 16843 CCCTGCATTCCACTCATCAG T A --------- C TCACAAG TTTC
9 CTTCACAAGTAGGTTTTCAC CCC GCATTCC CT CAT AGCT TAGGT
CTGGTCATAGCTATGCCTAA GGG CGTGAGG GA GTA TCGA GTCCA
CTACAGGGAGTGCTGGG T - CATCAATCC - TACTG-- ----
GAM21870 18487 CCCTGCCAACCAGTTTGGGC GCCAACC T - GCAC AAA
1 CTGCGGCACACCCGTTGAAA CCCT AGT TGGGCCT GCG ACCCGTTG
CAACGGGTCGCGGGGCCCAC GGGA TTA ACCCGGG CGC TGGGCAAC
ATTTCACGAAAGGG AAGCACT C G ---- ---
GAM21875 14042 CCCTGGAAGAAATCGAGTGA A A GAGTGA - ATT- TAAT
3 TCTCTGATTCCTTAATGGGC CCCTGGA GA ATC TCT CTG CCT
AGGCAGAAGAGATAGATCTC GGGACCT CT TAG AGA GAC GGG
CTCCAGGG C C ATAG-- A GGAC ----
GAM21875 12399 CCCTGGAAGAGGGACTCCAA T AA AC AATGG G CTCC
4 TGGGCATTGCCCCTCCGGGG CCC GG GAGGG TCC GCATT CCC
AATGCGGACTCCTCCCCCTG GGG CC CTCCT AGG CGTAA GGG
GG T CC C- ----- G ----
GAM21876 8423 CCCTGGAGCCACGCGTTGTC TGGA TT CTT AAA TC AGCT
2 TTCATCAAAAAGTCCCAGCT CCC GCCACGCG GT CATC AAG CC
GGAGCTTGGGGTGCACTTGT GGG TGGTGTGT CA GTGG TTC GG
GTGGTGGG ---- T- C-- GG- GA ----
GAM21877 12142 CCCTGGCAGACTTCACACCT TG--- TTCACA TT TACCCCCT
0 CATTGCTTTACCCCCTGGGC CCC GCAGAC CCTCA GCTT
CTGGGGAAATGTCTGTACTT GGG TGTCTG GGGGT CGGG
TGGG TTTCA TAAA-- C- --------
GAM21878 5377 CCCTGGGATGCGAAGCTTTC - G T GAAG- TT- A CTTG
9 TTTGAGCCTTGGCACAGAGT CC CT GGA GC CT CTTTG GC
ATGGAAGTAGCTCCGAGAGG GG GA CCT CG GG GAGAC CG
A G - ATGAA TAT A ----
GAM21881 9783 CCCTGGTGTGGGGAGCCGAG - T TG A GAG G A GGGA CTGG
7 GCGGTGCAGGCCCTCCGGGA CCC TGG G GGG GCC GC GTGC GGCCCTCC GCGC
GCGCCTGGGTGTGGGGGGCC GGG GCC C CCC CGG TG CACG CCGGGGGG TGTG
GCACGGTAGGCGCCCTGCCC C C GT G A-- G - ---- ----
CGCGGG
GAM21883 5367 CCCTGTCGAAAACACGAAAA TG AACAC TAC- C---- AGACA
5 TACTGGCGGGTGAAGACATC CCC TCGAA GAAAA TGG GGGTGA
ACCCAGGATCCAAAGCTTTT GGG GGCTT CTTTT ACC CCCACT

CAAATTCGGTGGGG GT AAA-- CGAA TAGGA -----
GAM21886 743 CCCTGTGTGTGTCTTACCCC --- T A GAGAGGGGCA
2 CTGTGAGAGGGGCAGCAGGG CCCT GTGTGTG CTT CCCCCTGT
GGAGAGCGCACACCAGAGGG GGGA CACACGC GAG GGGGGACG
GAC - A ----------
GAM21887 12912 CCCTGTTGGCCGCTTAAACT GCTTAAAC A T A CTTAAATGCGTC
1 AAAAGGCTACAGACGGGCTT CCCTGTTGGCC TAA AGGC ACAG CGGG
AAATGCGTCTCCGCTGTGTT GGGACGGCCGG ATT TTTG TGTC GCCT
TCTTATGCCTCGGGCCGGCA GCTCCGT- C - - ----------
GGG
GAM21887 20773 CCCTTAAATGCCTTATAAAA T C AAAA CCATC- TC TGCGCTTTT
5 GACCATCCATCCAGTCTGCG CCCTTAAA GC TTAT GA CA CAGTC
CTTTTGACTGTGTGCAAGTA GGGGGTTT CG AATA CT GT GTCAG
TCAGTAATAATGCTTTTGGG T T ATGA ATGAAC GT ---------
GG
GAM21891 8868 CCCTTCCCCGGGCCACGGTG CCCGGG --- TCCCT CT- CACCCA
1 GCCTTGGGTCCCTGCCCTCC CCCTTC CCACGGT GGCCTTGGG GCC CC
CACCCAGGTTTGGTTCCTCC GGGAAG GGTGTCA CCGGGGCCC TGG GG
CGGGGCCCCCACTGTGGAGA AATAGA CCC TCCT- TTT ------
TAAGAAGGG
GAM21896 14306 CCCTTTAATGGCATTGCCAC AAT TG C ----- TCCCATTG
8 AGCGGGTCCCATTGTCTGCA CCCTTT GGCAT C ACA GCGGG
AGTTTGTCGTGATGCTGAAG GGGAAG TCGTA G TGT CGTCT
GG --- GT C TTGAA --------
GAM21899 1479 CCCTTTCGCCAGCTGGCGTA T ----- G AGC--- A CGCACCGATC
0 ATAGCGAAGAGGCCGCACCG CCC TTCGCCA GCTG CGTAAT GAAG GGC
ATCGCCCTTCCCAACAGTTG GGG AAGCGGT CGAC GCGTTG CTTC CCG
CGCAGCCTGAATGGCGAATG T AAGTC - ACAACC - ----------
GG
GAM21900 8178 CCCTTTGGCCCGGCTGCGCC CC ------- CC CA CCC ACG
3 CACAGGCCCCCGGACGCCGA CCCTTTGGC GGCT GCG CA GGC CGG
GCCATGCCCGCACAGAAGAG GGGGAGCCG CCGA CGC GT CCG GCC
CCAGCCGAGGGG A- GAAGACA CC A- A-- ---
GAM21900 19317 CCCTTTGTAGAATCGGCACC AGAA CA AAT C GCGAGCTG
6 CAATACGCGACGTGGGCGAG CCCTTTGT TCGG CCC ACG GACGTGG
CTGCCATGTCACGTCGGGAC GGGAAACA GGCT GGG TGC CTGTACC
TCGGACAAAGGG ---- CA C-- A --------
GAM21901 6178 CCCTTTTCCCAAGGAAAGTC CA AA-- GGAAA T- TTGGCC
2 TGGAAATGCTGAATTTTGGC CCCTTTTCC AGG AGTCT TGC GAATT
CAATTCCTGTAGTTAGGGCT GGGGAAAGG TCC TCGGG ATG CTTAA
GTCGCCTGGAAAGGGG -- GCTG ATTG- TC ------
GAM21901 693 CCCTTTTTCCCCTTTAAAAA TTT----- - AAAAAA T AAGT
8 ATTTTTGTGAAAAGTTTCTT CCC TTCCC CTTT TTTTTG GAA
AAAAAAAAAAAAAAGTGGGA GGG AAGGG GAAA AAAAAT CTT
ATTGTTTGTGGG TGTTTGTT T AAAAAA T ----
GAM21902 18412 CCGAAACAAGCTTTCACCGA GAA TT A CGT C CCCTG
5 CGTGGCCACTGGCTCCCTGG CC ACAAGC TC CCGA GG CACTGGCT
GCCAGTGTCCTCGGGGCCGC GG TGTTCG GG GGCT CC GTGACCGG
TTGTGG --- CC - --- T -----
GAM21903 8082 CCGAAGCTTCCGGACGACGA GG GA-- AA CCCAACA

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6          GGAACCGCCCAACATGGCCT CCGAAGCTTCC  AC   CGAGG  CCG
           CGGAGAGTGGGAAGCTTTGG GGTTTCGAAGG  TG   GCTCC  GGT
                                G-  AGAG    --  -------
GAM21904 2720   CCGAATCAGTGGTGGGAACG  GAA-     TG  AAC   AA-- AG----------    CCCAT
7          ACAAACAAGGTTTCCCCATG CC   TCAGTGG  GG  GACA   CA          GTTTC
           AAGCAGGGTGTCTTGACCCA GG   AGTCATC  CC  CTGT   GT          CGAAG
           TGGCCGTGTCCGCCTGCTAC  AATG     GT  GC-   GCCG  ACCCAGTTCTGTGGGA    -----
           TGAGTAAGG
GAM21906 20374  CCGACCCCAGCCGCGGTGAG   CCCCA-   -  TG  TCTGT  G  TCCGTT
6          TCTGTGGCGCGCTCCGTTGT CCGA    GCCG CGG  AG    GGC CGC
           GGCCCTTCTTGTTGCCGGCA GGCT    CGGC GTT  TC    CCG GTG
           CTTCTTCGG           TCTTCA   C  GT  TTC--  -  ------
GAM21908 3253   CCGACGGGAAAAGGCGACCT   AC   AAA  GAC  T   - TC  CGTGC
0          GTGGTGATGTCGACGTGCTC CCG  GGGA  GGC  CTG GGTGA TG  GA
           ATCATTCACCCAGATGGCCG GGC  CCCT  CCG  GAC CCACT AC  CT
           GTCCCACGG           A-   GG-  GTA  -   T  TA  -----
GAM21908 20169  CCGACGGGGAAAGGCGACCT   ACG   AA  GAC  T   - TC  CGTGC
1          GTGGTGATGTCGACGTGCTC CCG  GGGA  GGC  CTG GGTGA TG  GA
           ATCACTCACCCAGATGGCCG GGC  CCCT  CCG  GAC CCACT AC  CT
           GTCCCACCGG          CA-   GG  GTA  -   C  TA  -----
GAM21909 20809  CCGAGCCCAGACTGTCAGGT   --    AC    T  -  ACAGTGCAG
9          CCGAGCACAGTGCAGGTTAT CCGA  GCCCAG  TGTCAGG CCG AGC
           GGTCTGACGTTGGGCCTTTG GGTT  CGGGTT  GCAGTCT GGT TTG
           G                  TC    --    -  A  ---------
GAM21911 9475   CCGAGGAGAAGCGCGAGGGC  --    A   AGG   A-------   CCTGA
1          TACGAGCGTCTCCTGAAGAT CC  GAGGAGA GCGCG  GCTACG    GCGTCT
           GCAAAACCAGCGTGGCGGCG GG  CTTCTCT CGCGC  CGGTGC    CGTAGA
           CGCTCTCTTCCAGG      AC    -   GG-   GACCAAAA   -----
GAM21912 6651   CCGAGGTATCCACGTGGAGG    GTAT   G  G  TGC  C  AGAAGCAGAAC
8          TGCCCCCAGCAGAAGCAGAA CCGAG   CCAC TG AGG  CCC AGC
           CGCTTGGGTCCCCTGCAGGT GGCTC   GGTG AC TCC  GGG TCG
           GGCTCGG             ----  G  G  CCT  T  -----------
GAM21913 3293   CCGAGGTGTCCTCCAGAGCT   A  G    AGA    AGCGG  -  ACAGGAG
0          GCAGAGCGGGCGTCCACAGG CCG GGT TCCTCC  GCTGCAG   GC GTCC
           AGGGACAGTGGAACTGCGGC GGC CCA GGGAGG  CGGCGTC   TG CAGG
           GGGGAGGGGACCCGG      - G   GG-    AAGG- A   -------
GAM21914 20403  CCGAGTGAGCACCTTCCCCT    T  GCACCTTCC   ATC   TGATGTTT
0          TCATCTCAGGTGATGTTTCC CCGAG GA      CCTTC  TCAGG
           TGGCAGAAGGCATTTACAAT GGCTC CT      GGAAG  GGTCC
           CTCTCGG             T  AACATTTAC   AC-   --------
GAM21916 9424   CCGATTCTCTGGCTCCAGCT   ATTC   -    C-----  -  ACACAGC
4          CAGGAAACACAGCTTCCTTG CCG   TCTG GCTCCAG    TCA GGAA
           ACCATCACTGGGGCTCAGGC GGC   GGAC CGGGGTC    AGT CCTT
           GG                ----  T    ACTACC  T   -------
GAM21916 21544  CCGATTCTGGTTTCCTGGGG   A   G   C   ----   G  A     GACCCAG
5          CTGCGGCCACTTCGGTGGAC CCG TTCT GTTTC TGGG   GCTGC GCC CTTCGGTG
           CCAGCGCTGAGGCGGCGGCG GGC AAGA TAAAG ACCC   CGGCG CGG GGAGTCGC
           GCGAGGCCCAAGAAATAAGA   G   A   A   GGAG   G  C      -------
           AGCGG
GAM21919 8269   CCGCAGCCGGGCTGAGGCTG   G       GAGG  AG  A---   CAGATCAA
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6          AGAGCATGTACCAGATCAAG CC CAGCCGGGCT   CTG  AGC   TGTAC
           TATGAGGAGCTGCAGAGCCT GG GTCGGTCCGA   GAC  TCG   GTATG
           GGCTGGG          -       ----  G-  AGGA   --------
GAM21919 21504  CCGCAGCGAATGAAGGCGAA       --     C  A  AC  GAGAACCCCTGAA
7          CAACGCGAGAACCCCTGAAG CCGCAGCGA  ATGAAGG GA CA  GC
           CCTGGTCCCTTCATCCTCGC GGTGTCGCT  TACTTCC CT GT  CG
           TGTGG                CC     - G  C-  ----------
GAM21920 16814  CCGCAGTCCCTCTATTACTC       C    T-  CAC   TGAGA  AAGA
7          ACTGGTTGAGAGCAAGAGCG CCGCAGTCC TCTAT  ACT   TGGT   GC
           GTGCCATTCAGTTTGTGGAC GGCGTTAGG AGGTG  TGA   ACCG   CG
           GGATTGCGG              C    TT   CTT   TGG--  ----
GAM21921 3663   CCGCATCAGCTCCTCGAGCT     CA  - T  -----  T  -  GAGT
0          TCTCCCGAGTGGGCAGCAGC CCGCAT  GCT CC CGA    GCT CT CCC
           AACTTTCGCGGTGGCCTGTG GGCGTG  CGG GG GCT    CGA GA GGG
           CGG               TC  T C   TTCAA  C  C  ----
GAM21921 20130  CCGCATGCCATCCCAAGATT    T-   TCCCA    ATG--    CTTATAACTA
2          ATGTCCTCACTTATAACTAT CCGCA  GCCA    AGATT    TCCTCA
           GAGGGAAGAAGATCTCCAGC GGTGT  TGGT    TCTAG    GGGAGT
           TGGTTCTGTGG          CT   CGACC    AAGAA    ----------
GAM21921 18128  CCGCCAATCTCTCTAGCACT    AATCTCTCTA    GTT-   -   CTGA
7          GGTTCCAGGTATCTGAATGC CCGCC       GCACTG   CCAG GTAT
           TTTGGTTGACAGTGCGGTGG GGTGG       CGTGAC   GGTT CGTA
                        ----------     AGTT   T   ----
GAM21922 3045   CCGCCACTTCGTCATCCGCA     ----  ----  AT   G   CAG
4          GAGGCCAGGTCTTGCGGGAG CCGCCA   CTTC   GTC  CCGCA AGGC
           ATTGCTGAAGAGTATGGCGG GGCGGT   GAAG   TAG  GGCGT TCTG
                         ATGA   TCGT   AG   -   ---
GAM21923 12182  CCGCCCAGCCCCAGGTGGGT   C     CA-     AGT    G--   C  G   CCT  AGGT
6          AGTGGGGAGGAGAGCTGGCA CCG CCAGCCC   GGTGGGT   GGGGAG   AGAG TG CATT   CC

           TTCCTCCAGGTGGCAAATGG GGT GGTCGGG   CCGCCCG   CCTCTC   TCTC GC GTAA   GG
           CGACTCTATACTCTCCGCCC   A     ACC     ---     ATA   A  G   AC-  ----
           GCCCCAGGGCTGGATGG
GAM21924 3399   CCGCCCCGTGCCCCGCCGCG     C  G  C   -        -      GGT      GCGCTG
7          CCCCCTGCGGGGGCGAGGTC CCGCCC GT CC CGCC GCGCCCCCTGC GGGGGCGA   CGGGCCTG

           GGGCCTGGCGCTGCGGGCCT GGCGGG CA GG GTGG CGTGGGGGGCG CTCCCGCT   GTCCGGGC

           GTCGCCCTCGGCGGGGGGTG     - - C   G        G      ---      ------
           CGGGTGCGGACGGGCGG
GAM21927 5957   CCGCCGCGAGTTTTTGTTTT     G  AG--      --     CAAAA    GCGC
4          GTCCCAAAATCCCCGCGCGG CCGCC CG   TTTTTGTT  TTGTCC    TCCCC
           GGAATAGGGCAGTGGGCAGA GGCGG GT   AAAGACGG  GACGGG    AGGGG
           AAAGACTGGGCGG          - CAGA      GT     ATA--    ----
GAM21927 4287   CCGCCGCTCAGGGTTTTTAG     C-----     TTTTT   C   A   ATAAAAATG
9          AACTTCAGCCATAAAAATGG CCGCCG     TCAGGG    AGAA TTC GCC
           GCAGAATTTTCCTTGATCAT GGTGGC     AGTTCC    TTTT AAG CGG
           ATCGGTGG               TATACT     -----   -   A  ---------
GAM21929 2781   CCGCCTCCACCTCCAAGAAA   G   CA    AAGAAAGTA    - TCCAA
0          GTAGAGGCCCTCCAAGAGGT CC CCTC  CCTCC       GAGGCC C
```

CTTAAAGGGGGAAGAGGAGG GG GGAG GGGGG TTCTGG G
A AA AAA------ A -----
GAM21930 9557 CCGCGAGAAGACGTGGAACA - - A --- ---- T TTCG
8 TCTCGTTCGCGGGCTGCGGC CCG CG AG AGACGT GGAA CA CTCG
TTCCTCGGCGTCTACTACGT GGC GC TC TCTGCG CCTT GT GGGC
CGG T A A GCT CGGC C ----
GAM21931 20665 CCGCGCAGCATCGTGAAGGG G GTGA G T- CT GT--------- TGGAA
3 CTGGGGCCTTCACTCCTCTG CCGC CAGCATC AGG CTGGGGCCT CA CCTCT GGCTC
TGGCTCTGGAAGAGCCCGAT GGCG GTCGTGG TCC GACCCCGGG GT GGAGG CCGAG

TTCCTCAGGAGGCATGTCGG A TG-- G CT AC ACTCCTTTAGC -----
GCCCCAGGCCTGTGGTGCTG
AGCGG
GAM21931 12813 CCGCGCCATCAACATCGCGC C - TC G TG A CTGCCAATACCT
5 TGCAGGTGGCTGCCAATACC CCG GC CATCAACA GC C C GGTGG
TCCACCGTGGAGCTTGTTGA GGT CG GTAGTTGT CG G G CCACC
TGAGCTGG - A T- A GT - ----------
GAM21934 6011 CCGCGGCGGACATGGCAGCT G GACAT A CAGA CAAGCACAA
4 CAGACCACCAAGCACAAGTG CCGC GCG GGC GCT CCAC
GGAGGCGGCCCATGTGGCGG GGCG TGT CCG CGG GGTG
G AC--- G AG-- ---------
GAM21935 4385 CCGCGGGGCACAGAGGCACA G ACAGAG ACAAGAG--------- GGGGAA
2 AGAGGGGGAGGGGGGGAATT CC CGGGGC GC GGGGAGGG
CTCCCCACAAAATACAACAC GG GCCCCG CG CCCCTCTT
AAGCGCCCCGGGG G ------ AACACAACATAAAACA ------
GAM21936 6066 CCGCGGTGGCTTCCGAGGAG G TT GA AGGT -- ATGTG
2 GTTTCGAGCATGTGGCATTC CCGCGGT GC CC GG TTCGA GC
GAGGGCCGGGGTCGCGGCCG GGTGCCG CG GG CC GAGCT CG
TGG G CT GG GG-- TA -----
GAM21936 9849 CCGCGTATCATACACCTTCC C T CCT- TAG- ---- CAAGG
4 TAGGGGCGTGAGTCAAGGGC CCG GTA CATACA TCC GGGCG TGAGT
TCAGGATTGCCCATGTGGAT GGC CGT GTGTGT AGG CCCGT ACTCG
CACTGTGTGCTGCTCGG T C CACT TGTA TAGG -----
GAM21937 20735 CCGCGTTTCCTTCCATCCCA C C C CAAA---------- AGAAA
3 AAGTAGAAAGCCGTACTCAG CCG GTTTC TTC ATCC GT
GGTACACGGATAGAACGAGA GGC TAGAG AAG TAGG CG
TCCGG C C A CACATGGGACTCATGC -----
GAM21937 16856 CCGCTACAGGCACCAGTGCC - A- A A C T- CTAG GTCGA
8 GCTGCGCGGGAGCTAGGGCT CCG CT CAGGC CC GTG CGC GCGCGGGAG GGCT
GTCGAGGCCAACCCTTCCGC GGC GA GTCCG GG CGC GTG CGCGCCTTC CCGG
GCCCGTGACGCGGGGCCTGA A GA - G A CC CCAA -----
GAGACGG
GAM21937 22347 CCGCTACCGGCTGGTATCGA --- G-- TC AA GAAGA
9 ACAAGCTGAAGAAGCGGTTC CCGCTAC CGGCT GTA GAAC GCT
CTGCGGAAGCCGAACGTGGC GGCGGTG GCCGA CGT CTTG CGA
GG CAA AGG C- G- -----
GAM21938 6625 CCGCTCCAGACTTTAGTCAC AG T CTA GAGTGAG
4 TAGGTTCTAGGAGTGAGCTG CCGCTCC ACTTTAG CA GGTTCTAG
GGGCCATGCTGAGGTGGGGG GGTGGGG TGGAGTC GT CCGGGGTC
TGG G- - A-- -------

GAM21938 12315 CCGCTCTGACAATGGGCAGG - ACAA G AAA GCGCT
9 GAAATTTCGGCGCTCGAGGA CCGC TCTG TGGGCA GG TTTCG
CTGTGCCCAGGAGCAGATGC GGCG AGAC ACCCGT TC GGAGC
GG T GAGG G A-- -----
GAM21940 947 CCGCTGGATCAACGATGTGG G -- - -- CA ACG- CA - GCAGAGG
8 AAGACAGCTACGGGCAGCAG CCGCTG ATCA ACGATG TG GAAGA GCT GGCAG GTGGAC
CTATGA
TGGACCTATGAGCAGAGGAA GGTGAC TGGT TGCTAT AC CTTCT CGA CCGTC CACTTG
GGTGCT

AATCGTGGAGTTCACCTGCC G GG G TG TC CACA -- A -------
ACACAGCCTTCTTCGTCAGT AAAA
ATCGTGGTGGTGCAGTGG

GAM21941 4091 CCGCTGGTCGTGGCGAAAGA G T C AA-- C GAG A CCCGC
5 GCCGGCGGAGCCGGAGACCC CCGCT G CGTGG GA GAG CGGCG CCGG GA
GCTCCCGGAGACGCCGACTC GGCGG C GCGCC CT CTC GCCGC GGCC CT
GCGATCCCCGCGCGGGCGG G - C AGCG A AGA - -----
GAM21941 14581 CCGCTGTGCCGGGTCCCAGC ---------- G CCAGC A CAGAGCA
6 CCCAAGCCAGAGCAGCATGG CCGC TGT CCGGGTC CCCA GC
GTGGCCCGGGACACCAGACA GGCG ACA GGCCCGG GGGT CG
AGTGCGG TGAACAGACC G T---- A -------
GAM21942 12922 CCGCTTCTGACTGCCTAGGG C-- CTA G CATCCTGTCATCATC
4 CGAGTGGGCATCCTGTCATC CCGCTT TGACTGC GGGC AGTGGG
ATCTCCACTGTCCCAAGCAG GGTGGG ACTGACG CCTG TCACCT
TCACTAGGGTGG ATC AAC - ----------
GAM21942 16541 CCGCTTGGTTTTTTTTGGTA ------ TT-- A T GA A GGTTCA
6 ATTAAATATTGTATGATTTA CCGCT TGGTTTTTT GGTAATT AATA TGTAT TTT TCT
TCTGGTTCAAGGAAGATGCA GGTGA ATTAAAGAG CTATTGA TTAT ACGTA GAA GGA
CTATTCAGTTATCTATTGAG CGTTTT TTAT C C -- - ------
AAATTATTTTGCAGTGG
GAM21943 9185 CCGCTTTTCATGAGACAACC G GAG A AGA AAAAAAAGAAA
1 AGATGCTGTAAAAAAAGAAA CC CTTTTCAT ACA CC TGCTGT
ACAGCACGGGATGTGTGAGG GG GAGGAGTG TGT GG ACGACA
AGGGG G --- A GC- ----------
GAM21944 16795 CCGGAAGCAGCTGCAAGACA AAGCAG AAGA AAG- C ATCCA
1 GCAGAGAAGCTGCCAATATC CCGG CTGC CAGCAGAG CTGC AAT
CAGTTAGCAGATGACTTTGC GGCT GACG GTCGTTTC GACG TTG
TGGCAAGCAGAGGAAGTCGG GAAGGA AACG AGTA A -----
GAM21944 16522 CCGGAAGCTGCCCTTCCAGA AA C ----- AG GAGG GCGCAG
2 GGTTGGTGAGGGAGATCGCG CCGG GCTGC CTT CC AGGTTGGT GAGATC
CAGGATTTCAAAACCGACCT GGCT CGACG GAG GG TCCAGCCA CTTTAG
GAGGTTTCAGAGCGCAGCCA AC C ACTTT AG AAA- ------
TCGG
GAM21948 21408 CCGGATCCCTGCCTAGCGCG C ------ - - G - A TACT- GAGATCA
7 GCCCAACCTTTACTCCAGAG CCGGATC CT GC CTAG CGC GCC CA CCTT CCA
ATCATGGCTGCCGAGGATGT GGTCTAG GA CG GGTC GCG TGG GT GGAG GGT
GGTGGCGACTGGCGCGACCC C ACCCAG C A G T A CCGTC -------
AAGCGATCTGG

GAM21948 8151 CCGGATCGAAGTAACACAGG - AGTAA A- A-------- CGGGAAT
9 AATCTCAGCGGGAATTTGAG CCGG ATCGA CAC GGA TCTCAG
AAGAATGTAATCCAAGTGAT GGTC TAGCT GTG CCT AGAGTT
GTCGATACTGG A GTA-- AA AATGTAAGA -------
GAM21949 20426 CCGGATGGAACGTACTCTGT GG GTAC G ATA- A AGC
4 GCTTATATCATCACAGAGCT CC ATGGAAC TCT TGCTT TCATC CAG
TGGATGAAAGAGAGCGAGAA GG TATCTTG AGA GCGAG AGTAG GTT
GAGTTCTATAGG A- AGA- - AGAA - ---
GAM21949 6516 CCGGCAAGGCCTCCAGGCCC - AA CTCC G - - CCTTC TCT TG - GAGC
6 TGAGCCCCACTTCTGCCTTC CC GGC GGC AGGCCCT AGCC CCA CTTCTG ACC GCC GGA
CCC
ACCTCTGCCTGGGACCCGAG GG CCG CCG TCCGGGA TCGG GGT GAAGAC TGG CGG CCT
GGG

CTGGGCTCCTGGGCCTTGGT A -- C--- - C A CCC-- TTC GT C ----
CCCCAGAAGATGGCGGCTAG T
GGCCTCGCCGCCAGG

-
GAM21950 14478 CCGGCCCCAGGCATGTACCA C T- ACC A--- -- CCCTCA
6 CGGACCCCCTCCCCTCAGAG CCGG CCCAGGCA GT ACGG CCCC CTC
CTGGGGCCTCCCGTCAGCTC GGTC GGGTCCGT CG TGCC GGGG GAG
TGCCTGGGCCTGG C CT AC- CTCC TC ------
GAM21951 14324 CCGGCCGCCCAGGGTCGCCG CCA - G T CACC TA TCT CACCATCT
4 CCGCCCCTCGCACCGCTAGG CCGGCCGC GGGTCGC CGCC CCCC CG GC GG GCG

TCTGCGCACCATCTCGCCCC GGCTGGCG CTCGGCG GCGG GGGG GC CG CC CGC
CGCCGTGGGGAGGCGTGCGG A-- T A T ---- CC --- --------
CTCAGCGGTCGG
GAM21952 698 CCGGCGAGGGCAGAGCCAAC G G- ----- A- - TCTTCAC
7 AGCCTCTTCACGGTCTGTAA CC GCGA GGCAGA GCC ACAG CC
GGTCATTGTTTGCCAGTCGT GG TGCT CCGTTT TGG TGTC GG
GGG G GA GTTAC AA T -------
GAM21955 3877 CCGGCTGGAGCGGTCGCCTC --- G CT C TGCTGCC
6 CGCCGCGCTGCTGCCGCGTG CCGGCTGGAG CG TCGC CCG CGCGC
CCGGTTGTGAGCGGGTCTCC GGCTGACCTC GC AGTG GGC GTGCG
AGTCGG TGG G TT C -------
GAM21956 16769 CCGGCTTTCCGCCTTGAAAT - C-- T -- GAA- CCCAAAAAAA
1 TCCCCGAAGAAAGCCTCCCA CCG GCTTT CGCC TG AAATTCCCC GAAAGCCT
AAAAAAGGGCTTTTAAAAGG GGC CGGAA GCGG AC TTTGGGGGG TTTTCGGG
GGGGTTTGGCATGGCGCCCA A CCC T GG AAAA ----------
AGGCACGG
GAM21956 14417 CCGGGACACCCCGTGTGTGG GG - C G T G C AA GC AGAATC
5 CAGGCGGCGAAGCGCTCTGG CCG AC AC CC TG GT GCAGG GGCG GC TCTGG
AGAATCCCGGACAGCCCTGC GGC TG TG GG AC CG CGTCC TCGT CG AGGCC
TCCCTGCAGCCAGGTGTAGT TT A T - - A C CC AC ------
TTCGG
GAM21959 19786 CCGGGCATAGTGGTGCATGC CAT- GCA-- GTAA- CTAT
8 CTGTAATCCCAGCTATTTGG CCGGG AGTGGT TGCCT TCCCAG
GAGGCTGAGGCACAAGAATC GGTTC TCACTA ACGGA AGGGTT

ACTTGAACTTGG AAGT AGAAC GTCGG ----
GAM21960 6278 CCGGGCCCGGGCGCGCCGAA G --- GAAA- AGG A GAAA
5 ACCAGGGCCACCGAAAGGCG CCG GCCCGG GCGCGCC CC GCC CC
GCGGGAAGGAGGCGCGCGGA GGC CGGGCC CGCGCGG GG CGG GG
CCGGGCGCGG G AGG AGGAA G-- C ----
GAM21962 5490 CCGGGCGGGGGAACGCGGCC G CCAC T TG TGA A G------- TGTGT
1 ACCCTGAGTCTGGTGAGTCG CCGGGCG GGGAACGCGG CCTGAG C G GTCG CTGC
GCGGCC C
ACTGCGGCGGCCTGTGTCCG GGTTTGC CCCTTGCGTC GGACTC G C CGGC GACG
TGCCGG G
AAGTGTCCGGGGCCGTGAAC A C--- C GT --- - GGAACAAG -----
AAGGGCAGCGGCCTGGCCTC AAGTGTC
AGGCCTGCGTTCCCACGTTT CG
GG GC

GAM21964 18478 CCGGGGCACAAGCTGTTGTA ---- AAG T A TCCAATCTTCC
3 GGAGCTTTCCAATCTTCCGG CCGG GGCAC CTG TGT GGAGCTT
GCTCCAGCGCCAGGGTGCTA GGCT TCGTG GAC GCG CCTCGGG
TCTTCGG TCTA G-- C A ----------
GAM21964 1112 CCGGGGCGCAATGCGAGCGG CAATGC C C TA TTGGTGGACT
9 CTGGCGTAGGCTTGGTGGAC CCGGGGCG GAG GG TGGCG GGC
TGTCACTGCCACCTCTCCGC GGCCCCGC CTC CC ACCGT CTG
CCCGG ------ T - CA ----------
GAM21966 3098 CCGGGGTGGCGCCGGCCGGG T--- C GGC--- GGAG
1 GCGGGGGAGCCCAAAAGACC CCGGGG GGCG CGGCCGG GGG
GGCTGCCGCCTGCTCCCCGG GGCCCC CCGC GTCGGCC CCC
TCGT C AGAAAA ----
GAM21966 5587 CCGGGTCACCCTGGTTTGTG A CT-- --- TG- CCG
6 AGTTGCCCCGGGACCATTCA CCGGGTC CC GGTTT GTGAGT CC
CCATGGACCTTATGGAGATC GGTCTAG GG CCAGG CACTTA GG
TGG A TATT TAC CCA ---
GAM21966 17991 CCGGGTCATCACCTTGGAAA ATCAC TG C GA TAATATCAT
7 CCAGGGACGATAATATCATT CCGGGTC CT GAAAC AGG CGA
CGGGCCTGTTTTTGAGAAGA GGCCCAG GA TTTTG TCC GCT
CCCGG AA--- GT - GG ---------
GAM21967 21550 CCGGGTGCTGCAGGAGCTGC T A T G GA A AC AA CA A- - GCCCT
3 GGCTGATGGATGCGGACGTG CCGGG GCTGCAGG GC GCG CT TGG TGCGG GTG GCG GGC
GGC GCCC
AAGCGCAGGCAGGCGCCCGC GGCCC CGGCGTTC CG CGC GG GCC GCGCC CGC CGC CCG
CCG CGGG

CCTGGGCTGCCCCGCCCCGC - - T - TC C C- C- C- CC T -----
CCGCCCCGCGCCCGCTGGCG
CTGCCTTGCGGCCCCGG

GAM21968 18218 CCGGGTTATGGTCGGGTTTC -- ATG- CG G A TTTGTGCTTTT
5 TATTGGGAATGCTCTTTGTG CC GGGTT GT GGTTTCTATT GGA TGCTC
CTTTTGGGCATCTGAATGGA GG TCCAA CA TCGAAGGTAA TCT ACGGG
AGCTTTACATAGAACCTTAG AT GATA TT G - ----------

```
         G
GAM21969 6550  CCGGGTTCACACCATTCTCC  G  TC   CATT---    C  A  CTC-----         ACTACA  GCC
0         TGCCTCAGCCTCCGGAGTAG CC GGT  ACAC     CTCCTG CTC GC      CGGAGTAGCTGGG    GGC

         CTGGGACTACAGGCGCCCGC GG CCG  TGTG     GGGGAC GAG TG      GTTTTATCGGCCC    CCG

         CACCACGCCCGGCTATTTTG  A  TT   CCACTTT    A  A  ATTTTTAT         GCACCA  ---
         TATTTTTAGTAGAGACAGGG C
         GTTTCACCGTGTTTGCCAGG


                  -
GAM21969 18941  CCGGTCCCATTGCTTGCCAG  GG   ATTG    AGT   -  GAGGAAAA
8         TTGGGGAGTTGAGGAAAAGA CC  TCCC   CTTGCC  TGGGG AGTT
         TTGTCCCGTCGGTAAGGGGG GG  AGGG   GAATGG  GCCCT TTAG
         AAAGG            AA  G---    CT-   G   --------
GAM21970 3220  CCGGTGACACAGCGGCCCTT  -  -   GC----     GACAT--   - GAAACTGATTTA
2         GACATTGTGCGAAACTGATT CCG GTG ACACA    GGCCCTT     TGTG C
         TAGCCACATAAAATAAAGGG GGC CAC TGTGT    TCGGGAA     ACAC G
         CTTTACAATGTGTCCACACG   A  C   AACATT    ATAAAAT   C ----------
         G
GAM21971 9862  CCGGTTCAGGCAGGCCCTGG           C   A   C TGTC   G  TAA
5         ACTGGCGTGTCCCGGTCTAA CCGGTTCAGGCAGGC CTGG CTGG G   CCG TC
         GAGTGGCCCAGCCGGCGCCT GGTCGAGTCCGTCCG GGCC GACC C   GGT AG
         GCCTGAGCTGG                C   -   - ----  G  ---
GAM21971 8766  CCGGTTGTGCAGATTATCAG    - G    A     ACA  C  AG-  A   CTA  TT  CCGG
9         TTGGACAGTGCAGAGTGAAC CCGGTT GT CAGATT TCAGTTGG  GTG AG  TGA CGGGT  TT  CA

         GGGTCTATTTTCACCGGTGG GGTTAG CA GTCTAG AGTCAACT  TAC TC  ACT GTTCA  AA  GT

         GAAATACTTGATCAAAGCTC     T  G    A     GAG  C  GAA  A   TA-  GG  ----
         CATGAGTCAACTGAAGATCT
         GGACTGATTGG
GAM21972 20044  CCGTACAAACTGAGATCCTT    ---   C-  -  TCC    CCC  AAAA
2         GGTACCCCTAAAAAGATTGC CCGTA  CAAA  TGA GA  TTGGTA  CT
         CAATTTTCTTCATCTTTGCC GGTAT  GTTT  ACT CT  AACCGT  GA
         ATATGG             ACC   CT  T  TTT    TA-  ----
GAM21972 4361  CCGTACTGCAGAGCTTACAC   TA--     -----   ----    AATTG   TG  AATGTTCG
4         AAAATTGAAGAATGTTAATG CCG   CTGCAGA   GCTT   ACACAA   AAGAA  TT
         TTCGAGTTTTCTTATCTTGT GGT   GACGTTT   TGGA   TGTGTT   TTCTT  GA
         GTTTAGAGGTTGTTTTTTGC   TCTA    TTTGT   GATT    CTA--   TT  --------
         AGATCTTGG
GAM21972 20428  CCGTAGCAGAAAAGTATTCC    A  AGAAA  A   A-    CT  C    ----------    TTA
7         AATCCTCTGCCATTTCTGGG CCGT GC    AGT TTCC  ATCCT  GC ATTTCT       GGGGAT
         GATTTAATCTCCTTGATTTT GGTA CG    TCG AAGG  TGGGA  CG TGAAGA       CCTCTA
         GAAGAAGTAGCCCAGGGTCA    C  GTA--  A   AC    CC  A    AGTTTTAGTT    ---
         GGAAAGCTATGGCCATGG
GAM21975 5948  CCGTCCCCTAACCCCCAGTC      CTA   CC--   --     C  T   TTTTCT
5         CTCACTGTCCTGTTTTCTTA CCGTCCC   ACC   CAG  TCCTCA TG CCTG
         GGCACTGAGGGATCTGAGTA GGTAGGG   TGG   GTC  GGGAGT AC GGAT
         GGTCTGGGATGG            TC-   ATGA   TA    C  -   ------
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GAM21976 4380 CCGTCGTCAGGGATAGCAAA TC G AAAA ---- - A -- TCCTC
5 AGCCCTGGTCAGGGACTGTC CCG GTCAGG ATAGC GC CCTGGT C GG GACTG
CTCCAGTTTGCCGGAACCAG GGC CAGTCC TATTG TG GGACCA G CC TTGAC
GTACAGTGAAGTTATCCTGA CA - AAG- ACAT A G GT -----
CACCGG
GAM21979 12519 CCGTGCAGACAGTGGCCTTA C A- T C AT C G TTTTCATCAGT
3 TCACTCCGGGAGGCTTTTCA CCGTG AG CAG GG CTT CA TCCGG AGGC
TCAGTGCCTGCTGGAATGGA GGTAC TC GTC CC GAG GT AGGTC TCCG
GACCCCTGAACTCATGG - AA C A -- A G ----------
GAM21979 18693 CCGTGCGCGTAGCTGCGGCC C AG C- GT C TTCCTCGGC
8 GTGGTCCGCGCCCTTCCTCG CCGTG GCGT CTG GGCC GGTCCG GCCC
GCGGGCCGGACTGGTCTCCA GGTAT CGTA GAC CTGG TCAGGC CGGG
GAAATGCTATGG - AA CT -- - ---------
GAM21980 20034 CCGTGCTCCTGTGATTAATG CTCC A-- CTG A - TGG
4 CTGTGAGCAACAGGCATGGT CCGTG TGTGATT ATG TGAGCA CAGGCA TGG
GGCCAGTGCCTGTGCTCGAA GGCAT ACACTAA TGC GCTCGT GTCCGT ACC
CCGTGACAATCACACATACG AC-- CAG CAA - G ---
G
GAM21981 16463 CCGTGGGAATGATCCACGAA -- GG - CGAA-- TTGGCTCT
5 CTGCTCTTGGCTCTGAGCGG CC GTG AATG ATCCA CTGCTC
GTACCCTGGGTCCATTTTCA GG CAC TTAC TGGGT GGCGAG
CCTGG TC TT C CCCATG --------
GAM21981 4513 CCGTGGGAGTCTGCTACACC - GT - C CTTTTTGATTT TTCC
6 ACTTTTTGATTTGGGCTTCC CCGT GGGA C TGCTACA CA GGGC
GCTTTGATGTGGCATGGTTC GGCA TCCT G ACGGTGT GT TTCG
CTGACGG G TG T A ---------- ----
GAM21981 20129 CCGTGGGAGTCTGCTACACC - GT - CCATTTTGA TG TTCC
7 ATTTTGATTGGGCTTCCGCT CCGT GGGA C TGCTACA T GGC
TGATGTGGCATGGTTCCTGA GGCA TCCT G ACGGTGT A TCG
CGG G TG T --------- GT ----
GAM21981 12581 CCGTGGGAGTCTGCTACACC - GT - C TTTTTGATTT TTCC
8 ATTTTTGATTTGGGCTTCCG CCGT GGGA C TGCTACA CA GGGC
CTTTGATGTGGCATGGTTCC GGCA TCCT G ACGGTGT GT TTCG
TGACGG G TG T A ---------- ----
GAM21981 9140 CCGTGGGCCCATAGCGTTTC ------ A GTT AACGTCTG
9 GGTGTCACAACGTCTGGTGG CCGTGG GCCCAT GC TCGGTGTCAC
CACCGAGTAATGGGTTCTCT GGTACC TGGGTA TG AGCCACGGTG
ACCATGG ATCTCT A --- --------
GAM21982 8987 CCGTGGGTCCGATTAGCCTT T GA- TTCT TT TGC C AGCG
2 TTCTCTGCCTTGCTTGCTTG CCG GGGTCC TTAGCCTT CTGCC GCT TTGAG TTC
AGCTTCAGCGGAATTCGAAA GGC CTCAGG GGTCGGAA GGCGG CGG AGCTT AAG
TGGCTGGCGGTAAGGCTGGA - AAA T--- T- TAA - ----
AAGGACTCCGG
GAM21982 13044 CCGTGGTTTTTCTGAGCATG - ----- T TTTCATTT
3 GTTTTTCATTTAGCTTTGCT CCGTG GTT TTTCTGAGCA GGTT
CAGAGATGCTTAACACATGG GGTAC CAA AGAGACTCGT TCGA
A TTCGT T --------
GAM21982 3114 CCGTGTACACCAACCTTATG CA- ACCTTA AGT CAG
5 GTGTGAGTGGCCAGGCCCAC CCGTGTA CCA TGGTGTG GGC
ACTAAACCTGGGACTACACG GGCACAT GGT ATCACAC CCG

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          G                    CAG   CCAA--      ---   ---
GAM21982 5802   CCGTGTACAGGCTGCTATCC    GTAC    TG    CCA -     AA A  ACC     TCCGCT
6               ACACCACCAAAGACAACCGT CCGT    AGGC  CTAT   CA CCACCA  G CA   GTTCC
                TCCTCCGCTGGAACCCTGCT GGCA    TTCG  GATG   GT GGTGGT  C GT   CAAGG
                GGTGGCTGAAGTAGACGCTT    AAA-    CA    AA-  C     -- -  CC-     ------
                AAAACGG
GAM21982 12869  CCGTGTCCCGGCGCACCCGG   T   -   G    ----   AC---     TGCT     TGGCCT
7               ACTCCCGCTGCTGGTTCCTG CCG GTC CCG CGCAC    CCGG    TCCCGC    GGTTCC
                GCCTGGAACCCCGCGGGACC GGC CAG GGC GCGTG    GGTC    AGGGCG    CCAAGG
                CTGCTGGCCTCGTGCGGCGG   -   C   G    CTCC    GTCCC     CC--     ------
                CGACCGG
GAM21982 20745  CCGTGTCCTGTTCAACTGAG     ---      CA   GAGAAGAAAA   A  ATG  CAGA
8               AAGAAAACGTAGCATGGTCA CCGTG   TCCTGTT  ACT         CGT GC   GT
                GAATAAGGCATGAAAAGGGG GGCAC   AGGACGG  TGA         GTA CG   TA
                AAAGTGAGGCAGGAACACAC     ACA      AG   AAGGGGAAAA   -  GAA  ----
                GG
GAM21990 12742  CCTAAATTACAAATGCATTC    AATTACAAA     CA   CAAATA     TC-  CT    TATTAT
9               AGAACAAATATACCTTTCTC CCTA        TGCATT  GAA     TACCTT   TC  TTTT
                CTTTTTTATTATAAAACAGA GGAT        ACGTAA  CTT     ATGGAA   AG  AAAA
                TACAAGGTAAAATTCAAATG    GACG-----     A-   AAA---     CAT  AC    ------
                CAGCAGTAGG
GAM21991 20351  CCTAAATTATTGTGCAAAAT   TAA   A     AAA    GA      TTTATTT
0               TTGAAATGTTTTTTATTTAA CC   ATT TTGTGC   ATTT  AATGTTT
                ATATTAGAAATAGCACAAAG GG   TGA AACACG   TAAA  TTATAAA
                TCATGG             TAC   -     A--    GA      -------
GAM21993 21577  CCTAACTATCCAGGAGATCG    A-      CA     C   GC  T  CCAGGTCCTC
2               CTGCGCTGGCCAGGTCCTCC CCT  ACTATC  GGAGAT GCT  GC GG
                CTGCATGGTATTTCCCAGGT GGA  TGGTGG  CCTTTA TGG  CG CC
                GGTGAAGG             AG     AC     -  TA  T  ----------
GAM21996 18002  CCTAAGTCTATTTAGCCTCA    AAGT    T  G   CACA    ACTT     TCTGGTAT
3               CAGATGACTTTAGAAATCTG CCT    CTAT TA CCT    GATG    TAGAAA
                GTATTTTCTACATCAGGGTA GGG    GATA AT GGA    CTAC    ATCTTT
                CATAGCGGGG           GC--    C  G   ----    ----      --------
GAM21996 9409   CCTAATCCTCTCCTTACTCC    A     -         AGACT  GG   AA--  ACCAGGA
9               CAGACTTTGGCCTAATCACC CCT ATCCTC TCCTTACTCCC     TT  CCT    TC
                AGGAGACAAAAGGAAAATAA GGG TGGGGG GGGGGTGGGGG    AA  GGA    AG
                GGGGGGTGGGGGTGGGGGTG    G     T         GAAT-  AA   AAAC  -------
                GGG
GAM21997 9686   CCTAATCGACTTCTTCCATG    A  C  CT     ATG-    AC  ATCCTCATC
1               CGAGACGCATCCTCATCGCC CCT AT GA  TCTTCC    CGAG  GC
                CTCGAGAGGGGGGATCTCAT GGA TA CT  AGGGGG    GCTC  CG
                CAGG               C  -  CT     GAGA    C-  ---------
GAM22000 9525   CCTACAAGGAGTTGGAGATC    ACAAG    T   GA    G     AGTA  CA    GATTCAA
3               TTCGAGGAAGAGTAGCCAGA CCT     GAGT GGA  TCTTC AGGAAG    GC  GATGT
                TGTGATTCAAGCATTGTGAA GGA     TTCA CTT  AGAGG TCTTTC    TG  TTACG
                GCTTTCTGGAGACATTCACT    CTTA-    -   AC    -     GAAG --     -------
                TATTCAGG
GAM22004 5901   CCTACCCTATGTTATCTCAA                          AGAGCC
6               GTTAGGGAAATGAGAGCCCA CCTACCCTATGTTATCTCAAGTTAGGGAAATG
                TTTCCCTAACTTGAGATAAC GGATGGGATACAATAGAGTTCAATCCCTTTAC
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ATAGGGTAGG ------
GAM22005 21082 CCTACCGCGTGCTCAATGGG A- - TG AT - - TTGA
0 CTCTGCTTGAGCAAGGGCAC CCT CCG CG CTCA GG GCTCT GC
CCCTGAGTGTGACGGGAAGG GGA GGC GT GAGT CC CGGGA CG
AG A GT CC A A ----
GAM22006 9091 CCTACGACATTCCCCACGTC A A CCACGTCT C- - - CAAGGA
5 TGGCCGAGCGTGCTCAAGGA CCT CGAC TTCC GGC GAG CGT GCT
AGCGGCGACTCAAGCCGGAA GGA GCTG AAGG CCG CTC GCG CGA
GTCGAGG - - -------- AA A G ------
GAM22011 963 CCTAGAAGTCTGCGGTCTGA -- CG------- G CTTT
3 GGCTCTTTGGGTTCAGACAC CCT AGAAGTCTG GTCTGAG CT
ACTGTTCTAGGCTTCTGTAG GGA TCTTCGGAT CAGACTT GG
G TG CTTGTCACA G ----
GAM22013 1227 CCTAGAGGGTGGCGGGATTG T G -- T TTT GTGG
6 ATCATTTGGTGTGTGGGCAC CCTAGAGGG GGC GGAT TGA CA GGTGT
TTTTGTTTACTGTCTGGTCC GGGTCTTCC CTG TCTG ATT GT TCACG
CTTCTGGG - G TC T TT- ----
GAM22017 21528 CCTAGGAAGCGAACTTATGA GA C ----- GAA GA AAGG
1 ACAGATAAAGGTGGATGAAA CCTAG AG GAAC TTAT CA TA
ATGAAAACTGTTCCTCTCTG GGGTC TC CTTG AGTA GT GT
GG TC - TCAAA AAA AG ----
GAM22023 6316 CCTATATTAAACAAATCAAT TTAAACAA TAGCCAAAC AAAAAC
5 TAGCCAAACAGAAAAACCTT CCTATA ATCAAT AG
CAAAAATTATTGATAAATTT GGATAT TAGTTA TC
ATAGG TTAAA--- TTAAAAACT ------
GAM22025 12792 CCTATGACGAGACGGCAGGC TA-- -- A CA CA --- A A ACCTACAGAA
3 ATGCTGAAGACCATCAACCT CC TGACG AG CGG GG TGC TGAAG CC TCA
ACAGAATGAGGGCTTCACCT GG ACTGC TC GCC CC ACG ACTTC GG AGT
GCACCATCCGCTACCGTCAG TTAG CA - TA -- TCC - G ----------
ATTGG
GAM22034 8393 CCTCAACAACTGGATGGAGA AACAAC- GA --- A GAC
2 GCGCCATGGAGGACCTCCAG CCTC TGGATG GAGCG CC TGGAG
GACATGTTCATCGTCCATAC GGAG ACCTGC CTTGT GG ACCTC
CATCGAGG CTACCAT TA ACA - ---
GAM22035 13040 CCTCAACCTCCCAGGCTCAA C C CCA C A - CCAGTTATT CAGCAGC
2 GCAAACCTCCCACTTCAGCC CCT AAC TC GGCTCAAG AA CCTCCCACTTCAGCC CC
CAGGTG
CCCCAGTTATTCAGGTGCAG GGA TTG AG CCGAGTTT TT GGAGGGTGGAGTCGG GG
GTCTAC

CAGCTCACATCTGTAATCCC C - TGC T A A AACCCTAAT -------
AAGGAGGCTGAGGTGGGAGG TCA
ATTTTTTGAGCCCGTGAGTT
CAGG

GAM22035 8492 CCTCAAGCTCCCATGGACCT CCAT---- ACCT - GTTAAA
8 GTGGGCGGGGAGTTAAATCC CCTCAAGCTC GG GTGGG CGGGGA
CTGTTCCATCTCGCCTGTTC GGAGTTTGAG CC TACCT GTCCCT
CCAGAGTTTGAGG ACCCTTGT GCTC T ------
GAM22038 3927 CCTCACACCTGGACCAAATG A C- CC TGA ATAAAAAGAAAACC

9 AGCTGAAGCTGATAAAAAGA CCTC CAC TGGA AAATGAGC AGCTG
AAACCTAGCTGCTTATTTAT GGAG GTG ACTT TTTATTCG TCGAT
TTCACCGTGGAGG - CC TA --- ----------
GAM22039 5911 CCTCACAGGTCAGCCGCTCC C-- TCA C- A CGC- CTT
5 ACCTCCGCGTCGTCCTTGAT CCTCA AGG GC GCTCC CCTC GTCGTC
GATCCACGAGGGGAGCTCGT GGAGT TCC TG CGAGG GGAG TAGTAG
CCTCCTCCATGAGG ACC TCC CT - CACC ---
GAM22042 4088 CCTCACTGGTTCCCTAAACC A GT TAAA T GTGATTCA
8 TTGGTGGCTGTGATTCAGGT CCTC CTG TCCC CCTTGG GGCT
CCCCAGGGGGGACTCAGGGA GGAG GAC AGGG GGGACC CTGG
GG G TC ---- C --------
GAM22047 13020 CCTCAGGAAAACGTGGTCCC AAA T CCCA- T A TT CTC
4 CACCTGGAGCTTCCCTCGGT CCTCAGGA CG GGTC CC GG GC CC
TGCCCTGGCCCTTGACCCCG GGAGTCCT GC CCAG GG CC CG GG
TCCTGAGG --- C TTCCC T - TT ---
GAM22049 19815 CCTCAGTATAGCTTGCAATT - - CT TTT G C CCCAGT
1 TAAGACCTAGATCCCAGTAT CCTCA GT ATAG TGCAA AA AC TAGAT
TTACGTGTTTTGCGTTTTAT GGAGT CA TATT GCGTT TT TG ATTTA
AACATGAGG A A TT --- G C ------
GAM22053 19299 CCTCATGAAGATCCTCACTG T AGA - A- A-- - TACA
1 AGCGAGGCTACAGCTTTAGC CC CATGA TC CTC CTG GC GAGGC
ACACGGACGAGCGGGAATCG GG GTGCT GG GAG GGC CG TTTCG
TGCGG C AAG C CA ACA A ----
GAM22055 954 CCTCATTCGCCATTATCAGA T GC-- ATCAGATCCA AGAA
1 TCCACACAGAAGTGAAACAG CC CATTC CATT CAC
TATGAATGCAAAGAATGTGG GG GTAAG GTAA GTG
T AAAC GTATGACAAA ----
GAM22057 9052 CCTCCAAAGCCGAAACAGAC CAAA A---- AGA- - TAGTAC
1 CAGAGATAGTACTTTCATGG CCTC GCCG AAC CCA GAGA
AGAAGTTACATGCGGTAGAT GGAG TGGC TTG GGT CTTT
GAGG TAGA GTACA AAGA A ------
GAM22057 21434 CCTCCAAGCGCAAATTCCGC AAG AAATTCC GTCATGGA
6 ACCAAGGTCATGGACTTGGT CCTCC CGC GCACCAAG
GCACGACTGGCGAAGGGGGG GGGGG GCG CGTGGTTC
GAA GTCAGCA --------
GAM22061 18634 CCTCCAGGCTCATGATGGTG - - GAT- GCTAAGGAATCACA
1 TTGCTAAGGAATCACAGACA CC TCCAGG CTCAT GGTGTT
CCTAAGGTGAGTTCTGGGCG GG GGGTCT GAGTG CCACAG
G C T GAAT ----------
GAM22065 20924 CCTCCCACTACCACCCAATC CACTACCA ATC C AGCAAA
0 TGCCTGCCACAGCAAAGTGC CCTCC CCCA TGCCTGC AC
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AGG TCCCCC-- CCC - ------
GAM22065 19954 CCTCCCAGCCCTGGGCGCAC -- A - C ACAGCAT CTC A ACAGG TG G TCCA
5 AGCATGGAAGAGGAGCTCGG CC TCCC GCCCTG GG GC GGAAGAGGAG GGG GG GT GG
CC
GAGGACAGGGTTGGGGCCTC GG AGGG TGGGGT CC CG CCTTCTCCTC CCC CC CA CT
GG

CAGGGTCTGACACCACCCCA AC A A A AT----- AC- A A---- GT G ----

CTCCTCTTCCTAGCACCATG
GGGTAGGGACAGG

GAM22066 22210 CCTCCCATCCTCGTGCACAC - T ACACGGA GACAGG TTGG
6 GGATGCTGACAGGCCTTGGG CCTCC CATCC CGTGC TGCT CC
GAAAGCAGCGCGTGGATGTG GGAGG GTAGG GCGCG ACGA GG
GAGG T T ------- AA---- ----
GAM22069 20125 CCTCCCCTGCTGAATCTGAG CCT ATCT - AGTG CCA AAA AG
AGGAGAAAATAC
0 CCACAGTGTGATCCCAGCTT CCTCC GCTGA GAGC CAC TGATC GCTTT GG ATGC
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ATACGGCATTGCTAGAAGCC TAC ---- A AGGA C-- A-- GT ----------
GGTCGAGGAGTGAGCTCTCG G
GTCATGGAGG

-

GAM22069 6400 CCTCCCCTTAGAAAGCTGAC TC AGCT- CT TT A TCGA
1 TGGGAATTGCAAGTCGACTG CC CCCTTAGAA GA GGGAA GC AG
GTGCTTCCCCTCTGAGATTC GG GGGGGTCTT CT CCCTT TG TC
TGGGGGTGGG GT AGAGT C- CG G ----
GAM22070 754 CCTCCCGTGCTGCCCGGGGG - G CCC A- C - AAGGA AGGAA
8 CAGGCAGGTGGGCAAGGAGG CCTCCC GT CTG GGGGGC GG AGGTG GGC GGGGGC

GGGCAGGAAGCCCCCCAGGC GGAGGG CG GAC CCCCTG TC TCCAC CCG CCCCCG
CTCACCTTCTGAGTCCCCAA A G TAA AG T T GAC-- -----
TCAGGGCAGGGAGG
GAM22074 19196 CCTCCGTGCAGTCCCGGGTA C - GG AGAGC GG -- TAGTCGATTT
9 GAGAGCCCGGTCCCTGCGCT CCTC GTGCAG TCCC GTAG CC TCC CTGCGC
AGTCGATTTGTGCAGTAGGA GGGG CGCGTC AGGG CGTC GG AGG GACGTG
AAGGAGGCTGCAGGGGATCT C T GA GGA-- AA AT ----------
GCGCCGGGG
GAM22080 5564 CCTCCTGGAGCTGGAGCTTG CC- - GGTGA -- TGCTG
0 GTGAGTGGGCTGCTGGTGAT CCT TGGAGCT GGAGCTT GTGG GC
CACGGAGGGCTCCGGGCTCT GGG GTCTCGG CCTCGGG CACT TG
GTATGGG TAT G AGG-- AG -----
GAM22082 4057 CCTCGAACTGGCTGTTCCAG AA CTGTT G T GG TTGTT
3 GCGGCGTCGGGCTGGTTGTT CCTCG CTGG CCA GCGGCG CG CTGG
CCAGGGCGCGTCGCGTGGCC GGGGC GACC GGT CGCTGC GC GACC
GTTCCAGCCGGGG C- TTGCC G - GG -----
GAM22082 22253 CCTCGAGTGGCTCCGAATGT GAGT CC--- GT AT G A CAGGTATT
9 TTGATCAGCAAGAAATTCAG CCTC GGCT GAAT TTG CA CA GAAATT
GTATTAATTTCTGGTGCACA GGAG CCGA CTTG AAC GT GT CTTTAA
AGTTCCCATAAGCCTAGAGG AT-- ATACC -- AC G - --------
GAM22086 18181 CCTCGTGAGTAGCTGGGATT GAG T --------- CCAC
9 ACAGGAGCATGCCACCATGA CCTCGT TAGCTGGGA TACAGGAG CATG
CTGTCTAATTTTTGTATTTT GGGGCA GTTGATTTT ATGTTTTT GTAC
TAGTTGAGACGGGG GA- T AATCTGTCA ----
GAM22087 8027 CCTCTAAGGGGTATACCTGG CT A TG CCCG TG------ ---- G ATAC

9 CCCGGGGCGTGGCCACCACT C CTAAGGGGT TACC G GGGCG GCCACCAC TG TGTC
ATTGC
GGTGTCATACATTGCGCGTT G GGTTTTCCA ATGG C CCTGT CGGTGGTG AC ACAG
TAACG
CATTCTCCTTGGCAATTTGG T- - GT A--- TCTCTTTA CATA A GTT-
ACAACAATACGTGGTGGCAT G TTCATTCTCCT
TTCTCTTGTCCACTGGGTAA CG
CCTTTTGGTG GT
- ----------
GAM22089 21327 CCTCTACTAAAAATACAAAA A AAAATACAAAAAT GGTGGTGG
6 ATTAGCTGGGCATGGTGGTG CCTCT CTA TAGCTGGGCAT
GGTGCCCAGCTACTAGGGAG GGAGG GAT ATCGACCCGTG
G - C---------- --------
GAM22091 2784 CCTCTATTCTTGAAGAGCGT CTA G GCGTATTCT CTGATAC
1 ATTCTTGGAGCTGATACCTC CCT TTCTT AAGA TGGAG
TGTTGATCTTGAAGAAACTG GGG AAGAA TTCT GTCTC
GG TCA G AGTT----- -------
GAM22091 12504 CCTCTATTTAAGACTCCAGT A--- - A-- A - TCTCAT
2 AACTACTCTCATGTAAGTAA CCTCTATTTAAG CT CC GT ACT AC
CCCAGGTAGATCCCTTAGGT GGAGATGGATTC GA GG CA TGA TG
AGAGG CCTA T ACC A A ------
GAM22092 9495 CCTCTCATTGTTTCTGGGGA CT- T-- - GG T AT- A- AGGGTAGG
7 TCAGCATTCAGACAGGGTAG CCT CATTGT TC TGG A CAGC TC GAC
GGTCCAGATAAGTTGTTTCC GGA GTAACA AG ACC T GTTG AG CTG
ATGATCCACAATGTTCAGG CTT CCT T TT - AAT AC --------
GAM22094 12969 CCTCTCCTGGAGAGCCTCAG -- A C A -- CACA G ACCT
8 CCTGCACAGCTGCCACCTGG CCT CTCCTGGAG GC TC GC CTG GCT CC
AGCGCATCAGCCGCGGCGCC GGA GAGGACCTT CG GG CG GAC CGA GG
TTCCAGGAGCAAGG AC C C - CC TACG - ----
GAM22096 3611 CCTCTCTCTGGTGTTGGATG - TG TGTT A TT T--- TTTGCCTTTT T- - TCTCT
3 CTTTGTGTGAGTTTGCCTTT CCTCTC TC G GG TGCT GTG GAG GAAG TCC CA
TGAAGTTCCCATCTCTTGCG GGAGGG AG C TC ACGA TAC CTC CTTC AGG GT
GATTCTTCCTCTGTCCATTT G GT TGTT - TT CTGT ---------- TT C -----
AGCACTTTGTCTGGAGGGGA
GG
GAM22097 6577 CCTCTCTGGTTCCACATGTG TGGT - --- T T CCCA
3 GTTGTTCAGCCCCAGCTGTA CCTCTC TCCAC ATGT GGT GT CAGC
CCATCTGTGCGTGGTGGATA GGGGAG AGGTG TGCG CTA CA GTCG
ATGAGGGG TAAT G TGT C T ----
GAM22097 729 CCTCTCTTTTCTAGGGGGGA A - GG - --------- AAT
9 TGTGACCCTTTGAAAAAAAT CCTCTCTTTTCT GGG G ATGTG ACCCT TTGAAAAA
TTTTTTAAGAAGGGGGGGGG GGAGAGAGAGGA CCC C TATAT TGGGG AATTTTTT
GTGTATATTTCGCCCCAGGA C G TT G GGGGGGAAG ---
GAGAGAGG
GAM22099 9594 CCTCTGACTCTAAGGCCCTG CT C- TAA CC A GA CAAAA- A TGCTT CTT
3 TGGGATGAAAAGCAGGTATC CCT GA TC GG CTGTGGG T AAAGCAGGTATC GA CTC
GGCC
CAAAAGAACTCTGCTTGGCC GGA CT AG CC GACACCC G TTTCGTCCGTGG CT GAG
CCGG

CTTTGATACGGCCTTGAGGT TC AA TCG A- G TC TCCCGA G TT--- ---
CAGCCCTGGTGCCTGCTTTC TGATAC
TGGCCCACAGACCGCTGAAA
TCCTAGG

GAM22100 21586 CCTCTGCAGGCCTGGAGTTT T CT- TT CTCA - - GC TCCAT
8 GCCTACTCAGAGGCCCCGCG CCTC GCAGGC GGAG TGCCTA GA GGC CCC GC
CTCCATGCAGGGCGCCATCA GGGG TGTCCG TCTT ACGGGT CT CCG GGG CG
TGGGCATCTTCTTCTGCCTG C TCT CT A--- A C A- -----
TCGGGG
GAM22102 777 CCTCTGCCTTGCCCCCAGAC G C AGA AC AGGAG AGA
3 CCACCAGCCAGGAGCCAGAG CCTCT CCTTG CCCC CCC CAGCC CC
GAGGGAGGCTGAGGGGCGGG GGAGA GGAGC GGGG GGG GTCGG GG
GACGAGGAAGAGG A A C-- GA AGGGA ---
GAM22103 12769 CCTCTGGACTTGCATTCTGA CT TTG GATA- TG TTTAATTTAAAT
5 TAGGTGCTTTAATTTAAATG CCT GGAC CATTCT GG C
TGCCCAAAGGGAGTGACTGT GGA TCTG GTGAGG CC G
CTTCAGG CT TCA GAAAC GT ----------
GAM22103 12640 CCTCTGGCCCCGTCCCTCTT - CC TTTCTC G A CAGGA
8 TTCTCCGGCAGGGACGCAGG CCTCTGG CCCCGTC TCT CG CAGGG CG
ATGCCTTGGTGCACTCTAGA GGAGGCC GGGGCAG AGA GT GTTCC GT
GACGGGGACCGGAGG A -- TCTCAC G - -----
GAM22105 16443 CCTCTGTCCCTGTGTCTGCT C - TGT------ T - TAGACTTT
3 AGCACTAGACTTTGTTGCTG CCT TGT CCC GTCTGC AGCA C
CAGATTGATCCAGTGGGTAC GGA ACA GGG TAGACG TCGT G
ATAGG T T TGACCTAGT - T --------
GAM22109 12394 CCTCTTCTTGTTTTGAAAGA T G GAA A CTGCTTT A C C AGTCT
4 TGGTCGGCTGCTTTTGGTAG CCTCT CTT TTTT AG TGGTCGG TGGT GG ACG TC
GCACGCTCAGTCTGAATGTC GGGGG GAA AAAA TC GCCGGCC ACCG CC TGT AG
CGCCATCTTCCCGGCCGCCT C A AG- C CTTCT-- - - A -----
GAAAAAAAAGCGGGGG
GAM22111 18484 CCTCTTTGACAATAGGATAA GA AGGATAAAG GAAA
4 AGTTTTTTTGAAAAAAAAAA CCTCTTT CAAT TTTTTTT
AAAAAAAAATTGGGGGGGGG GGGGGGG GTTA AAAAAAA
G- AAAAAAAA- ----
GAM22115 1229 CCTGAACCTGAGTCTGTGGC A AG GC C AACA AG TGGA
3 GACCAGAACACAGAGGGCTG CCTGA CCTG TCTGTG GA CAG CAG GGC
GAGCTGCTGCCTGCTCACAC GGGCT GGAT AGACAC CT GTC GTC TCG
AGAACTAGGTCGGG - CA A- C C--- G- ----
GAM22116 6243 CCTGAAGCAGCACTACATTG AG- GC- A GA A-- CGACCA
5 ACCTGAAAGAACGACCATTC CCTGA CA ACT CATT CCTG AAGAA
TTCCCTGGGCTGGTGAAGTA GGACT GT TGA GTGG GGGT TTCTT
CATGAACTCAGG CAA ACA A TC CCC ------
GAM22116 5829 CCTGAAGCCGACCATCTGCT TG A AC CT TCC - GACA TACTGC
7 CCGACCAGGACAACTACTGC CC A GCCG CAT GC GAC CAG AC
GTGACTGTGTCTGCTAGTGC GG T CGGC GTG CG CTG GTC TG
CGGCATTGGG GT A C- AT T-- T AG-- ------
GAM22117 21155 CCTGAAGCTGCAGAGTGTGG A AGAG TA GGTG T GACC
2 AATACGTGGTGTTCGATGAA CCTG AGCTGC TGTGGAA CGT TTCGA GAAGCT
GCTGACCGGCTTTTTGAAAT GGGC TCGACG ACGCTTT GTA AAGTT TTTCGG

GGGTTTCGCAGAGCAGCTGC G AG-- GG ---- - ----
GGG
GAM22127 12540 CCTGAGCCTAGACTTCCACT GA AC ACTTTTT CCCT
3 TTTTCCCTTACCCCTGTGAG CCT GCCTAG TTCC CCCTTAC
GGCCTGGGAACACTAGGTGG GGG TGGATC AAGG GGGAGTG
G -- AC GTCC--- ----
GAM22128 12660 CCTGAGGAGAAGTGCTGTGT - GA- T - - A CTGTTCA
9 GGTGGGCACTCTGTTCAAGG CCTG AGGA AG GCTGT GTGGTG GGC CT
CCATGCCGCTGCAGCCCTCC GGGC TCCT TC CGACG CGCCGT CCG GA
ATCCTGCGGG G ACC C T A - -------
GAM22129 8618 CCTGAGGCAAGGGAAAGTGT G CAA A--- A---- GATGAAGAT
2 CCATCCCTGATGAAGATGGG CCT AGG GGGAA GTGTCC TCCCT
GAAAGCCGGGCACATAGTTC GGA TCC CCCTT CACGGG AGGGG
CCCACCTGAGG G AC- GATA CCGAA ---------
GAM22129 8076 CCTGAGGCCACAGCGGCCCC - - - GCG CC TCATCTTCCTCCTACCT
4 CATCTCATCTTCCTCCTACC CCT GA GG CCACA GCCC ATC
TGATCTGGGCATGTGGATCA GGA CT CT GGTGT CGGG TAG
TCTAGG T A A A-- TC ----------
GAM22130 8828 CCTGAGGGCTGTGGGGTGGA - TGTGGGG GA G G A CCA
CAAGCAGTTTCATTTC
1 ATGAGCTGGAAGGCCGTGAT CCTG AGGGC TG ATGAGCT GAAGGCC TG TG TCTT
GCCATCTTCAAGCAGTTTCA GGAC TCCCG AC TACTTGG TTTCCGG AC AC AGAA

TTTCAAAGACTTCAACAGGG G TTGAGA- AG G G A TTC ----------
CCTTTGGGTTCATGACAAGA A
GTTGCCCTGCAGG

-
GAM22135 14365 CCTGATGTTAATGGTAGATT AT- T AG TGA T TT CTGGA
7 TGAGCGTATGAATTTTTAAT CCTG GTTAA GGT ATT GCGTA GAATTT AATG
GCTGGATATTTTGAATTTTG GGAT CAGTT CCG TAA CGCGT TTTAAG TTAT
CGCATAATAGGCCTTGACTT GTT - GA TA- - TT -----
GTAGG
GAM22136 22327 CCTGATTCTGGGCATCTTCA ----- ATCTTC TT- CTCGTCATCATCC
2 TGACCATTCTGCTCGTCATC CCTGATT CTGGGC ATGACCA CTG
ATCCCAGTGTTGGTCGTCCA GGACTAG GACCCG TGCTGGT GAC
GGCCCAGCGATAGATCAGG ATAGC GACC-- TGT ----------
GAM22137 14278 CCTGATTTGTGCTTTAAGGA ATTTG AAAACT- CTTTCTGC
2 AAACTGTGAACTTTCTGCTT CCTG TGCTTTAAGG GTGAA
CATGTATCAGTTTTAAAGCA GGAC ACGAAATTTT TACTT
ACCCAGG CCA-- GACTATG --------
GAM22138 9112 CCTGCACGACAACTGGATCC G C CAACT - A- A TCAA- C CA TG GC ----
9 TGCACCGTGACCTCAAGACG CCT CA GA GGATCC TGC CCGTG CC GA GTC ACC CT TGA
GC
TCCAACCTGCTGCTGAGCCA GGA GT CT CCTAGG ATG GGCGC GG CT CAG TGG GG ACT
CG
CGCCGGCATCCTCAAGGTGG A - CC--- C AG - TCGGG T -- GT A- CCTA
GTGACTTCGGGCTGGCGCGG ACGCC
GAGTACGGATCCCCTCTGAA C
GG G

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GAM22140 2761  CCTGCAGCCAGTTGCATGAA  GC--     T  T-      TCCCATCTT    C   CACT
8          GGGCATCCCATCTTGCTGCT CCT   AGCCAGT GCA  GAAGGGCA       GCTGCT TGTC
           CTGTCCACTGGCATGGCGGC GGA   TCGGTCA CGT  TTTCCCGT       CGGCGG ACGG
           CCCACTGCCCTTTTTTGCCA   GTCT     C  TT      CACCC----    T   ----
           CTGGCTTCTGAGG
GAM22143 20079  CCTGCCAAAAGAGCTCATGT   -   AGAG  ATG  G   A  A-  AAGA
6          TGTGCCACCACCAAGAGGAA CCTG CCAAA   CTC   TT TGCC CC  CC
           GGGGCAGGGGAGGATTTGGA GGAC GGTTT   GAG   GG ACGG GG  GG
           CAGG              A    AG--  --- G   - AA ----
GAM22144 12352  CCTGCCACACTCCCCTCCCA    CA  CTC   - A  TG--  CCAG
0          GCCTGGTCCCAGGACAGGTG CCTGC  CA   CCCTC CC GCC   GTC
           GTCGGTGAGGGTCTGGAGCG GGGCG  GT   GGGAG GG TGG   CAG
           GG                AG  CT-    T  C   TGGA  ----
GAM22144 18742  CCTGCCAGGTGAAAGGAAAT   C- GG-     AAATA  CAC        ATGACTAA
8          ATTGCACTTTCTGTTCTCAT CCTG  CA   TGAAAGG    TTG   TTTCTGTTCTC
           GACTAAGGGGACAGGAGTTC GGAC  GT   ACTTTCC    GAC   GAGGACAGGGG
           CAGAAGAACCTTTCAAGATG    TA  AGA     AAGAA  CTT       --------
           ATCAGG
GAM22147 3091  CCTGCCCTCTGATCTCTGCC    C       CT-   GT-     TCCCA
6          TGTTCCTCTGTCCCACAGGG CCTGC CTCTGATCT   GCCT   TCCTCTG
           GGCAAAGGCTACGGGTCAGA GGGCG GAGACTGGG   CGGA   GGGGGAC
           GAGCGGG              A       CAT   AAC     -----
GAM22147 1041  CCTGCCCTGAGGATGCGGCT    CC    A----   G    ---   CGGCT
9          GCGGGCCCGGCTGGTCACGC CCTG  CTGAGG    TGCG CTGCG  GGCC
           GCAGTGCACATACCTTCAGT GGGT  GACTTC    ACGT GACGC  CTGG
           TTGGG              TT     CATAC   -   GCA   -----
GAM22149 18177  CCTGCCGGCAAACTTAGCCT   -   CAAA  T  -    ---- --       TTCAATTCT
4          TGCTGCCCAGCTCCTCTTCA CCT GCCGG   CT AGC CTTGCT   GC  CCAGCTCCTC
           ATTCTGAGGAGCTGGTTGTA GGA CGGCT   GA TCG GAACGG   TG  GGTCGAGGAG
           CTTGGCAAGCGCTCAGATCG   A   A---  C  C     TTCA  TT       ---------
           GCAAGG
GAM22155 18811  CCTGCGGAGTAACTGCAAAG   - GG   C  C     CTGT  G  C    G  C-   GT    C   TTC
7          ATGCTGTCCGTGCGCGTTGC CCT GC  AGTAA TG AAAGATG   CC TG GCGTT CTG  GGCC
GGTCCG GCCC
           TGCGGCCGTGGTCCGCGCCC GGA CG  TCGTT AC TTTCTAC   GG GT CGTAA GAC  CTGG
TCAGGC CGGG

           TTCCTCGGCGGGCCGGACTG   A --    - -     TT-- G  T    A  CT   --    -   ---
           GTCTCCAGAAATGCTTGGGG CTCGGC
           TTCATCTTTCATTGCTGCAA
           GG
                    ------
GAM22157 8697  CCTGCTAATTTTTGTATTTT   C     T     TTGTAGAGAC -  TCA      GC  AGT-  CTCAA
0          TTGTAGAGACGGGGTTTCAG CCTG TAATTTT GTATTTT       GG GGTT   GCAGGTTG  CAC   GGT

           CAGGTTGGCCACAGTGGTCT GGAC ATTAGGA CGTGAAA       CC CCGA   CGTCCGAC  GTG   CCA

           CAAATTCCCAACCTCAAGTG   -     T     C--------- G   CTC      TA  AACT  -----
           ATCAGCCTGCCTCAGCCGCC ATTCCCA
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CAAAGTGCTAGGATTACAGG

GAM22158 8366 CCTGCTCCATCATTACCTAT -- A A AAA AAG TCTGCT
7 AAACCGCCAAGGTTCTGCTG CCTGCT CC TC TTACCTAT CCGCC GT
CAGGGCGGATAGGTGGGAGG GGACGA GG AG GGTGGATA GGCGG CG
TCAGCAGG CT - - --- GA- ------
GAM22160 19006 CCTGCTCTTCCATTTCTTCC T TCCATTT CGAT GTGTAACGA
1 ACGATGGTGCAGTGTAACGA CC GCTCT CTTCCA GGTGCA
TGCACTTTGGAAGGGAGTTG GG TGAGG GAAGGT TCACGT
G T ------- T--- ---------
GAM22162 1133 CCTGCTGGCCCTCCTGACGG G C - GA G- ACACAGA TCG
2 CGGCCCTGACACAGAGCCTC CCT CTGGCC TC CT CGGC GCCCTG GCC
GGGCAGCCCAGGGCAAGCTG GGA GACCGG AG GA GTCG CGGGAC CGG
AGAGATGGCCAGAAGG A T A -- AA CCGA--- ---
GAM22162 14691 CCTGCTGGTGCTTCTCTCAC GGTGCTT T C GACG A-- - G G AG T
8 CTCTGACGCCCTTGACTGTA CCTGCT CTC CAC TCT CCCTTG CTG TA TCACCCT CTCC GCC
CCA
GTCACCCTGCTCCAGGCCTC GGACGG GGG GTG AGA GGGAAC GAC AT GGTGGGA GGGG
TGG GGT
CAATGTGCCTGCTGTGGTGG ------- T T ACA- GAG C G - -- T
TGGGGAGGGTGGGTACCAGG AT GCCT
AGCAAGGGACAAGATGTGTG GT
GGGGCAGG CG
GT ----
GAM22163 8854 CCTGCTGTTTTCTGAAGCAT - GAA-- C GAAC
6 TCCTAAGGAACCTTAGAGTG CCTGCTGTT TTCT GCATTC TAAG
TGGGAGAGAGAAATAGCAGG GGACGATAA GAGA TGTGAG ATTC
A GAGGG - ----
GAM22166 4441 CCTGGAAGACTTTTTTTTCT TT TTCTTATTTTAG A CAT
4 TATTTTAGTTGAGAAGTTTC CCTGGAAGACT TTT TTGAG AGTTT
ATAAACTGCTCAAGGATTAG GGACCTTTTGA AGG AACTC TCAAA
TTTTCCAGG TT ---------- G ---
GAM22169 12890 CCTGGACTTGTTGTTGCAGC GA - T--- TG G AA GACTT
1 TGAGGCACAGCAATGACTTG CCTG CTT GTTG TGCAGC AG CACAGC T
GGGCTGTGGCTGCTGTATTT GGGC GAG CGAT ATGTCG TC GTGTCG G
GTAGCTGAGGACGGG AG T GTTT -- G GG -----
GAM22169 20008 CCTGGAGAGGGCGGCATGAT - A -------- GCA A --- CGAG
9 CCTAGTGGGCCGAGGTCAAC CCTG GAG GGG CG TGATCCT GTGG GC
CGCCAGGGTCAAACGGAACA GGAC CTC CCC GC ACTGGGA CGCC TG
CAACCCACTCTCAGG T A AACACAAG AA- C AAC ----
GAM22171 21445 CCTGGAGGCCGAGTGGAAAC GAG A AAAC------- A CAAACCCGGAA
8 TGGCAGTCCCAAACCCGGAA CCTG GCCG GTGG TGGC GTCC
GGACGGCCACCTAGATCCAG GGAC TGGC CACC ACCG CAGG
CCACCGGTACACAGG ACA - GACCTAGATCC G ----------
GAM22175 21033 CCTGGCAACACTGAGCACTG - A- GC- GAAA- CTTTC- A- C ATATGAA
7 AAATCTCCTTTCTTTGCCTG CCT GGCA CACTGA ACT TCTC TTTGCCTG CTG ATTT
ACTGCATTTATATGAAAGGT GGA CCGT GTGATT TGA AGAG AAACGGAC GAC TGGA
CCAGAACAGGCAAATTTGTA T CG AGA AAGAC ATGTTT AA C -------
GAGACAGAAAGTAGATTAGT

GGCTGCCTAGG
GAM22176 9666 CCTGGCACCTGTGTTCCAGC - - -- ACATC ACATGC
3 CCACATCCCACATGCGGCTC CCTGGC AC CTGTGTTCC AGCCC CC
GGGCTTCGGAACACGGAGTG GGGCCG TG GGCACAAGG TCGGG GG
GCCGGG G A CT CTC-- ------
GAM22176 21639 CCTGGCACGGTGACTCACGC ACG C AC AATCC A TGT
4 CTGTAATCCCAGCACTTTGT CCTGGC GTGA TC GCCTGT CAGC CTT
GAGGCTGAGGCAGGCAGATC GGACTG CACT AG CGGACG GTCG GAG
ACAAGGTCAGG GAA - A- GA--- - ---
GAM22176 4220 CCTGGCACTCTAGTGCACCC C AG A -- - ACA AGG G TGCT
6 AGGAGTCTGGACAGGAGGGC CCTGGCA TCT TGC CCCAGG AGT CTGG GG GCA TGC

AGTGCTGCTGCATGCAGCCC GGACCGT AGA ATG GGGTCC TTA GACC CC CGT ACG
CAGTATTTACCTGGGGTAAG - -- - AT T --- GA- - ----
ATGCCAGG
GAM22178 14298 CCTGGCATGGACAGAAGCCA ----- A- A A- GA CAT --- TGAA
1 GGGGACACATCCACCCAGTG CCTGGCA TGGAC GA GCC GGG CA CCAC CCAG
AACTGGACTGTGGCCATGAA GGACCGT ACCTG CT TGG CCC GT GGTG GGTC
CCCAGGGTATCAGGTCCAAA CTCAA GA A GA AA ACC TCA ----
CTCTGCCAGG
GAM22184 20850 CCTGGCTCCTCTCAGTTATG G T C T-- ATGATTATAGAAC
0 TCAAATGATTATAGAACTTG CCTG CTCC CT AGT ATGTCAA
GCATTTTACTAGGGAGCAGG GGAC GAGG GA TCA TACGGTT
- - - TTT ----------
GAM22185 22322 CCTGGCTGCACTGAATTCTC GC A TCT--- GG GGTG
1 CAGGCTGGGTGCAGAGTGGT CCTGGCT ACTG AT CCA CTG
TAGCTGTCCGGTTGGGCCAG GGACCGG TGGC TG GGT GAC
G GT C TCGATT GA ----
GAM22187 22242 CCTGGGAATTCCTATGTATG - TAT TTC AC A - TGGGGGT
1 TCCCTTTCCAAACCGAGGGG CCTGG GAATTCC GTATGTCCCT CAA CG GGG GG
GTGGGGGTTCACCCGCGTAT GGGCC TTTAAGG CATGCAGGGA GTT GC CCC CT
TGCAGGGACGTACTTGGAAT G TT- C-- AT G A -------
TTGCCGGG
GAM22187 19827 CCTGGGAATTTTCAACATGG G ACATG-- AATTATTTACTCAA
2 TCTAATTATTTACTCAAAGA CCTGG AATTTTCA GTCT
CATAGATGTGAAAATTTTAG GGATT TTAAAAGT CAGA
G - GTAGATA ----------
GAM22188 8472 CCTGGGAGAAGTGGGTGTCC GGGAGA G G- G AA TG G GAGA
1 CGTAAATTGAGCGAGAGTTG CCT AGTG GT TCCC TA T A C
GGGTAGGGGAGAATATATTG GGG TTAT TA AGGG AT G T G
AGTGGGG GTGAG- A AG G GG GT - ----
GAM22191 986 CCTGGGCAGAGCATCTGCAC - TCTGCACCT G AACGTA
1 CTGCCGGACAGGAACGTATC CCTGGGCAGA GCA GCC GACAGG
TGTCAGGTTGCTTTTGCCCA GGACCCGTTT CGT TGG CTGTCT
GG T --------- A ------
GAM22195 22240 CCTGGGGAGGGCCACACCCT GAG ACA - TG AG CCAGAT
8 GCAGGAGCACCAGATTGTCC CCTGGG GGCC CC C CAGG CA
TTGTGGAGGGCGGCCGCACC GGACCC CCGG GG G GTTC GT
CAGG ACG CG- A GT CT ------
GAM22197 17992 CCTGGGGTGAGGGGCCCGGG T - - G - - TT TCCTCC

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9          TTGCGGGCCGTTCCCCTCCT CCTGGGG GAGG GGC CCGGGTT CGG G CCG  CCCC
           CCGGGGTTGGACTTCGGGCC GGATCCC CTCC CCG GGCCCGG GCT C GGT  GGGG
           CGGAGCCTCCTCCCCTAGG      -  T  A     -  T A  T-  ------
GAM22199 12665  CCTGGGTGCTGTGGAAGGTA     --   TG GGAAGGTA  AG     GGACAA
2          GTAGATTCTGGACAAGGGAT CCTGG  GTGC  T      GT  ATTCT
           GATGGTGTGGTACTGCCAGG GGACC  CATG  G      TA  TAGGG
                      GT   GT TGG-----  G-    ------
GAM22202 3478   CCTGGTCTGTAGCCACCCTC      T  A-   C     G   CGGCTCCATAT
9          CTGGGCCCGGCTCCATATGG CCTGGTC GT  GCCA CCTCCT GGCC
           CTAAGGGGGCTGGCGAGCTG GGACCAG CG  CGGT GGGGGA TCGG
           ACCAGG                T  AG   C     A  ----------
GAM22217 18051  CCTGTCCTTACTCCCTCTTT   - CC     C     AGA--    TACCCAC
7          AAGATTGCGTACCCACTGCA CCT GT  TTACTCC TCTTTA    TTGCG
           GAGTGCTGAAGACGGGGTAG GGA CA  GATGGGG AGAAGT    GACGT
           CCACGAGG           G  CC     C     CGTGA    -------
GAM22218 20488  CCTGTCGTCTAAGTCATGGG     ---     AG -----   -   C-  GTGA
1          AAGCCACGTGAGTGATCTTT CCTGT   CGTCTA  TC    ATGG GAAG  CAC
           GCCATCTCCGGGAGTGGATG GGACA   GTAGGT  GG    TACC TTTC  GTG
           GTTACAGG              TTG     GA  GCCTC   G   TA  ----
GAM22218 3612   CCTGTCTCAAACAGCCCAGG    T  CAAAC       CCT   ATACC   ATTCACCTA
4          GCCTGAAATACCCTGATTCA CCTG CT    AGCCCAGGG   GAA    CTG
           CCTACAGTGTTCCCCTGGGC GGAC GA    TCGGGTCCC   CTT    GAC
           TCAGCAGG            -  C----        ---  GT---  ---------
GAM22219 8570   CCTGTCTCATGTTTTCAATA    -     TT  AATAAATA--    G   TTTTTTT
0          AATATGCTGGTTTTTTTTTT CCTGT CTCATGT  TC        TGCTG TTTT
           TAAAGGCAGTAGTGAGTAAC GGATA GAGTACA  AG        ATGAC GAAA
           CGATTACATGAGTATAGG      T     TT  CCAATGAGTG    G  -------
GAM22226 21278  CCTGTGGATTGAAATGGCTG     GGATTGAAA      GA  A  CG-   TCCCTT
6          CAGATAGATCCCGCAGTCCC CCTGT       TGGCTGCA  TAG TCC   CAG
           TTCTGAAAGGAACTGTGTAG GGACG       ACCGATGT  GTC AGG   GTC
           CCAGCAGG            ---------      --  A   AAA  ------
GAM22228 12327  CCTGTGGTTCTTTCTCCTGC    T    TTT    CT   G   G  AC---   TGCGT
3          TGGTGGCAGCTACAGGATGC CCTG GGTTC   CTCCTG  GGT GCA CT    AGGA
           GTTCCTTCCCGAGGTGCAGC GGAC CCGGG   GAGGAC  TCG CGT GA    TCCT
           TTTCAGGAGTTTGGGCCCAG    -   TTT    TT  A   G  GCCCT   -----
           G
GAM22229 18626  CCTGTGTGAGGAAATCCCGT     G  ---    --     ----  G  -----  GTTAA
6          GGAGCCAGGGTTAACCTAAT CCTGT TGA   GGAAA  TCCCGT   GGA CC    AGG
           GAGGGTCTGTAAACGGGACT GGGCG GTT   CCTTT  AGGGCA   TCT GG    TCC
           TTTCCATATTGGGCGGG       G  ATA    TC     AATG   G  AGTAA  -----
GAM22233 18020  CCTGTTGACAGATGGAGATT   GTT----      G  A   -     GCCTT  TGCATT
2          GGGCAGCAGGGCCTTGCTGC CCT      GACAGAT GAG TTGGG CAGCAGG    GC
           ATTGTTATCTGCTGTTCCGA GGA      CTGTTTG TTC AGCCT GTCGTCT    TG
           CTTGGTTTGTCTTGTCCAAG   ACCTGTT      G  -   T     AT---  ------
           G
GAM22234 3481   CCTGTTTACCCTCTGCAGCC   G  A-     G  G     - AGAGGCCAA
3          CCTGCAGAGGCCAAGCCAGG CCT TTT  CCCTCT CA CCCCTG C
           GGATGAGGGGGAGAAGGAGG GGA GAA  GGGGGA GT GGGGAC G
                        G  GA     - A     C ---------
GAM22237 4222   CCTTAAATCATGTGGCTTAA   TAAA    -    TA  A---     AGAAT
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4 AAGCAGTGAGAATCACTGTC CCT TCATG TGGCT AA GCAGTG
GTATTAGGGTCATTGTGAAT GGA AGTGT ACTGG TT TGTCAC
AGG TA-- T GA ATGC -----
GAM22239 4080 CCTTAATGTGTGTGTTTATT - TG T TTACAAGTA AAT-- AAGAA
1 TACAAGTACTAAATCTGAAG CCTTA ATGTGTG T TAT CTA CTG
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CCGTATATGTACACATCTGA C GT T CCGATAAAG AAAAT -----
GG
GAM22241 20880 CCTTAGACTATAGACATAAC TA TATA ACT--- CAGTGCA
2 TACAAAGCCAGTGCAGCTTT CCT GAC GACATA ACAAAGC
GTTTTCTGTATGTTGTTGGG GGG TTG TTGTAT TGTTTCG
GG GG ---- GTCTTT -------
GAM22244 6079 CCTTAGTTGGAGGCCACAGT A C TC - CTAGT
3 CATCTTTAACATCTAGTATG CCTT GTTGGAGGCCA AG ATCT TTAACAT
TTGACAGGTTCTATGGTTTC GGAG CAACCTTTGGT TC TGGA AGTTGTA
CAACAGAGG A A T- C -----
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5 AAACGAGATCATTGCCTGAC CCTTA GTT AGCCC TGA AG TC CCTG
ACCAGGGACTACCTCAAGGG GGAGT CAG TCGGG ACT TC AG GGAC
CTTTTGACTTGAGG T TTT- A CCA- - ---- ----
GAM22246 21290 CCTTATTTTTTCTGTATATG TTTTT TA ATT AA AAAAA ACTT
6 AATTTGTTAATATAAAAAAA CCTTAT CTGTA TGA TGTT TATAA TCT
TCTACTTAGAAAATTATAAA GGAATA GACAT ACT ACAA ATATT AGA
AACATCACTACAGTGTCATA CTGT- C- --- AA AAA-- ----
AGG
GAM22247 16767 CCTTCAATCAGCAAAAATTA TC C TT A AGA--- ATCA
2 AAAAGAAATCCAGAGCTATC CCTTCAA AG AAAAA AAAAAGAA TCC GCT
AAGCCATGAAGGAATTTTTT GGGGGTT TT TTTTT TTTTTTTT AGG CGA
TTTTTTTTTTTTTTTTGGGG TT T TT A AAGTAC ----
G
GAM22247 9410 CCTTCAATGGCCATATAGCA AAT CCATATAGCA ACACTCCAGCAGAA
4 TTGGGCACACTCCAGCAGAA CCTTC GG TTGGGC
GCCCGAATTCAAATCCCTGG GGAAG CC AGCCCG
AAGG GT- CTAAACTTA- ----------
GAM22248 9866 CCTTCACCCTCAAGCGCTGC TT C C A A- - GAGG
4 AGAAGCATGAGGTGAGGGCC CC CACCCT AAGCG TGCAGA GC TG AGGT
TGCAGCGCTCTGTACCGTTT GG GTGGGA TTTGC ATGTCT CG AC TCCG
AGGGTGTTGG TT - C - CG G ----
GAM22249 5944 CCTTCACGATGCTTTGTGTG A G TT TG TC- ACCTCA
1 TCATCCGGAACCTCATCCGG CCTTC C ATGCT G TG ATCCGGA
ATAATCGTGTGGAGTATGGA GGAAG G TATGA T GC TAGGCCT
AGG - - GG GT TAA ------
GAM22252 16464 CCTTCCAAGTAAGTCCAACG AGTAA AACGAAAGG GACCA
1 AAAGGCCATGGACCACATGG CCTTCCA GTCC CCATG
GATGATATGGGATGATGGAA GGAAGGT TAGG GGTAC
GG AG--- GTATAGTAG -----
GAM22252 4463 CCTTCCAATTTGTTTTCTCC TC--- - TG CT--- TT CCTCA
3 CTTTAGCCTCACTTAGGGTT CCT CA ATT TTTT CCCT AG
TCCAAGATGAATCTGTCCAT GGA GT TAA AGAA GGGA TC
AGG TACCT C GT CCTTT T- -----

GAM22252 12475 CCTTCCACTCAGCTCAACTT T CAG AAC ------ GAGCA
8 TATGGCTTCCTGAGCAAGGA CC TCCACT CTC TTTATG GCTTCCT
GGTAAAGAACATGGAAGAGA GG AGGTGA GAG AGGTAC TGGAGGA
AGTGGATGG T A-- A-- AAGAAA -----
GAM22253 8034 CCTTCCAGCCTGCGCTTCCT - CT CT -- -- TCTTGT
6 CTGGTGGTTCTTGTGCCTAG CCTTC CAGC GCG TCCTCT GGT GGT
CCCAGGAGGGGACGCCGTTG GGAAG GTTG CGC GGGAGG CCG CCG
AGAAGG A C- AG AC AT ------
GAM22256 14621 CCTTCCGCTTGCGCTGTGAG CTT CT A - - T T C CAATAACATGTCAA
4 CTGAGGCGGTGTATGTGCGG CCTTCCG GCG GTG GC TGA GGCGG GTA GTG GG
CAATAACATGTCAACCCCGC GGAAGGC CGC CGC CG GCT CCGCC CGT CGC CC
TGCCCGCCATCGTGCCCGCC C-- -- C T A - - C ----------
GCCCGGAAGG
GAM22258 9785 CCTTCCTGACTCGGCTTGGG T T C TG ---------- C AGTGAAGA
0 GGAACTGCGGCCAGTGAAGA CCTTCC GAC CGG T GGGGA ACTG GGCC
GGCTCCGGTGTGTCTCCTCT GGAGGG CTG GTT A TCCTT TGGC TCGG
TCCTTGATTGTGTCTGGGAG T T - GT CTCCTCTGTG C --------
G
GAM22258 20514 CCTTCCTGTCCGCCCTCTTC CTCTTCCCCTCTAAT TCAC
4 CCCTCTAATGCTCACGCTCC CCTTCCTGTCCGCC GC
CAACACAAGGTGGGCAGGGA GGAGGGACGGGTGG CG
GG AACACAACCCT---- ----
GAM22259 19176 CCTTCGCCTGCCTGTGTCTC G G GTG AACCCCTTTAGA
9 TCCCCAAACCCCTTTAGATG CCTTC CCT CCT TCTCTCCCCA
GGGAGGGAAGAGGAGGAGAG GGGAG GGA GGA AGGGAGGGGT
GG A - GA- ----------
GAM22261 18360 CCTTCTAGATGCTTATTTTC AGAT TATTTTCC CCTAC
1 CACCTTTTCCTACAGAAGGT CCTTCT GCT ACCTTTT
AATATTCAGTTACCAGAAGG GGAAGA TGA TGGAAGA
CCAT CTTATAA- -----
GAM22268 16561 CCTTGAAAGCTCTGCATCAT AA- TCT A ATG T CTCA AT GA-- GGCA
6 GGGCAGTGAGCTCAGTGGTA CCTTGA GC GC TC GGCAG GAG GTGGT CTGGAG CAG

TCTGGAGGACAGGGCACTGG GGGACT CG CG AG CCGTC TTC TACCA GACCTC GTC
CCACTCCAGTCACCATCTTC CCA TC- A GA- - ---- CT ACCG ----
TGCCAGGAAGCCTGCACCTC
AGGG
GAM22273 20791 CCTTGCACATCTGACATGGC ACATCTGAC- AA AG T TGCC
6 TAAGCAGGCTCAGGTGCCCC CCTTGC ATGGCT GC GC CAGG
TGGCAGCAGTCATCAAACCG GGAACG TACTGA CG CG GTCC
CTGGCAAGG GTCGCCAAAC -- A- - ----
GAM22273 20949 CCTTGCAGATGATGATGCTA - A- AT TA ACTACAA-- AAAC
8 GACTACTACAACTGGAAACC CCT TGCAGATG TG GC GACT CTGG
CAGGGAAATCAAAGTTGCTA GGA ATGTCTAT AC CG TTGA GACC
CAACTATCTGTATAGG T CA AT -- AACTAAAGG ----
GAM22276 21191 CCTTGCTGAGGTTTGCCAGC GTTTGC CG AC- TTAA
0 CGGGACACCAGTTAACTGCT CCTTGCTGAG CAGC GGAC CAG
CGTTCAGCTGCTCAGCAAGG GGAACGACTC GTCG CTTG GTC
------ A- CTC ----
GAM22280 5613 CCTTGGCTTCAACCTTAGCT TCAACCTTA GG TG A ACAGAGA

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9          GGGGCTGCAGCAGCACAGAG CCTTGGCT       GCTG  GC  CAGC GC
           AGCAGCTGTGGTGGCAGCAG GGAACCGA       CGAC  TG  GTCG CG
           CCAAGG                ---------   GG  GT   A -------
GAM22285 22317  CCTTGTAGGTCGCTTGGCAA   TG        GCA    ---      C   GGT
1          GGTACCACCTAGCTGTGGTA CCT  TAGGTCGCTTG   AGGTA   CCACCTAG TGT
           TACCTAGGTGGCGATGCCTG GGA  GTCCGGTGAGT   TCCGT   GGTGGATC ATA
           ATGAGTGGCCTGATAGG      TA        AG-    AGC      C   ---
GAM22286 21298  CCTTGTCTCCCTTGGATGAG     T  C---    GA      CAAA    TTGG
0          AGGGCAAATGCGTTGGTGCA CCTTG CT    CCTTG  TGAGAGGG    TGCG
           GTTCCTCTTAGTCAAGGACC GGAAC GA    GGAAC  ATTCTCCT    ACGT
           AAGCCAAGG             C  ACCA     TG       TG--    ----
GAM22287 3035   CCTTGTGTTGGAGGCTGCTG   TT---  - TG      CTGT   G  AGGAACG
2          TGATGTCAGGAACGGGGATC CC     GTG T  GAGGCTG    GAT TC
           TGTCTAGCTTTTGGCCACTA GG     CAC G  TTTCGAT    CTA GG
           CCTGG              TCCAT   C GT      CTGT   G -------
GAM22288 12324  CCTTGTTTTAGTTGAATATG    G    AG    A    AAGAAA   A   GTCC
5          AAGAAAGTCAGTAGTCCTAC CCTT TTTT  TTGA TATG     GTC GTA
           AGATACGTAGTTAGAAAAAG GGAG AAAA  GATT ATGC     TAG CAT
           GAGG                 G    A-   G    A-----   A   ----
GAM22289 20976  CCTTTAAATATTTTGCTATA     AAATAT     T  AAAAA    G     AGTTTC
5          AAAACATTTGTGATAAGTTT CCTTT     TTTGC AT     CATTT TGATA
           CTATCAAAATGGGGAGATTG GGAAA     AGACG TA     GTAAA ACTAT
           CAGAAAAGG              ------     T  GAGGG    -    ------
GAM22290 3183   CCTTTAAGATATCCATCTTT       A-   CC    TTTT--      -  CCT--       ACTT
2          TTCTTTTTAACCCTAATCTT CCTTTAAG  TAT  ATCT     CTTTTTA AC     AATCTTTC
           TCACTTGAAAGATTTTATTG GGAGATTC  ATA  TGGA     GAAAAAT TG     TTAGAAAG
           TATAAAAAGTTTCACAGGTC       AA   AC    CACTTT      A  TTATT       ----
           AATAAACTTAGAGG
GAM22292 5830   CCTTTCAGTTCTGTACCTAG    TTC      TACC     T   AA-  ACTTTA
9          GCCTCCAAAGCACTTTAGCC CCT   AGTTCTG    TAGGCC CCA   GC
           TGTGGGGCTTGCCAGAACTC GGG   TCAAGAC    GTTCGG GGT   CG
           GGG                C--      C---      -   GTC ------
GAM22293 6427   CCTTTCATAATATGGGGAAA       TAATAT   GA        GCT       AGC-    GATAGA
2          ATGTAGATGCTTGAATGTTT CCTTTCA     GGG  AAATGTAGAT   TGAATGTTT    ATTA
           AGCATTAGATAGATAGTTTT GGAAAGT     TTC  TTTACGTTTG   ACTTACAAA    TGAT
           GAAACATTCATTGTTTGCAT       TCG---   AG        TT-       GTTT    ------
           TTGACTTGCTTGAAAGG
GAM22295 18213  CCTTTCCTGATTTTGCATGT     ----   A    -    TCTCA   CCA    A T      --   TTAC
4          TCTCATTCCCAAAGTAGTCT CCTTT    CCTG TTTTG CATGT    TTC   AAGT G CTACCTT  AGT
           ACCTTAGTTTACACTCAAAG GGAAA    GGAC AAGAC GTACA     AAG   TTCA C GATGGAA  TCA
           GTAGCACTTGTTGAAACTAC     CGTC    A    A    TCA--   TTG    - -      AC   ----
           ATGACAGAAACAGGCTGCAA
           AGG
GAM22296 5375   CCTTTCTAGCGTGGGCTGTA    T  TA--    G-  C        A GAGAA
5          AAGTAACGAGAAGTGCTTTA CCT TC    GCGT  GG TGTAAAGTA C
           TACTGAACGTGGTTGATGGG GGG AG    TGCA  TC ATATTTCGT G
                          T  TTGG    AG  -        - -----
GAM22296 14352  CCTTTCTATATGATTTCAGG     C    TG TT-    GA      GGTCACAG
8          AGTTCTTGGGTCACAGCAAG CCTTT TATA  A   TCAG  GTTCTTG
           AATCTGATCCTTGTATACAG GGAGA ATAT  T   AGTC  TAAGAAC
```

AGG C GT CCT -- --------
GAM22301 3899 CCTTTGCCCGCATGCTGATC T-- C - G AG GGG
2 GCGCAAGAGGGGCTGCTGTG CC TTGCC GCA TGCT ATCGCGCA AG
CGGTGGCAGTGCTGGCAGCA GG GACGG CGT ACGG TGGCGTGT TC
CGG CAC T G - CG ---
GAM22302 20413 CCTTTGGAGAAAGCCAATGG GAGAAAG AA AGCA--- ---- TG CACGGCCTT
6 TCGAGCAGATCCAGTGAGTT CCTTTG CC TGGTCG GAT CCAG AGTTCC
CCCACGGCCTTGGAGCTTGC GGAGGC GG ACCAGC CTG GGTC TCGAGG
TGGCCGCGTCAAATCAACGA AGAACA- AA AACTAAA CGCC GT ---------
CCAAAGGACAAGACGGAGG
GAM22303 935 CCTTTGGCCCACATATGGTT T A-- A G - TTGT
1 CTGTCCCGGTGAGCTCTGTT CCTT GGCCC CAT TGGTTCTGTCCCG TGAGC TCTG
GTCAGAGGCTCACGGGACAG GGGA CTGGG GTA ACCAAGACAGGGC ACTCG AGAC
AACCACATGCTAGGGTCTAG T ATC C - G ----
GG
GAM22303 9184 CCTTTGGGCTCGGGGCCCAA -- TC AAGACT AG GTAGAT
8 GACTTGGGAGAGGTGTAGAT CCTTTG GGC GGGGCCC TGGG AGGT
GCTTGCCCAGGGCCCCTGCC GGAGAC CCG CCCCGGG ACCC TTCG
GACAGAGG AG T- ------ G- ------
GAM22309 14334 CCTTTTGCTAACATTGCTCA -- ATTGC C CTCT- GTTG
8 CGGCAACTCTTCAGTGTTGG CCTTTT GCTAAC TCA GGCAA TCAGT
CTGATAAAATTGCCCTGAAA GGAAGA TGGTTG AGT CCGTT AGTCG
CTGGTTGGTGAAGAAGG AG GTCAA C AAAAT ----
GAM22310 6581 CCTTTTGGCGACATTCCTGT TT ACATTC TATA G CCAG
1 ATAAACTAGTGGTTCCAGAA CCT TGGCG CTG AACTA TGGTT
CCAGTGGTTCCCAGCCCCGC GGA ATCGC GAC TTGGT ACCAA
TAAGG -- CCC--- CC-- G ----
GAM22312 8808 CCTTTTTGGTTCTCAGCCTC TT G TCTCA ---- AAATAGCG
6 TCTCGAAATAGCGTGGGACA CCT TT GT GCCTC TCTCG
TCGAGGCACCCTGCAAATTA GGA AA CG CGGAG AGGGT
GG TT A TCCCA CTAC --------
GAM22313 8260 CCTTTTTTCCCCCCGGGGGC TT GG C TGGGG
2 GGGGGTTTTGGGGGGGCCCC CCTTTT CCCCCC GGG GGGGGTTT
CCCCAGGGGGGGGGGGGGGG GGGGGG GGGGGG CCC CCCCCGGG
GG GA - -----
GAM22314 18226 CGAAAAATAACCATCGGGCG AAAATA TC-- GCTC ACCC
2 GGGCTCTCGTCGTACCCGCG CGA ACCA GGGCGGG TCGTCGT
GCGAACCATCCGCCCACCTT GCT TGGT CCCGCCT AGCGGCG
GGTTCG ------ TCCA ACCA ----
GAM22315 18221 CGAAATACTGGATTATGATA C ATTATGATAAG AA ATGGTAAAAAAAA
5 AGGGTTTAAGGATATGGTAA CGAAATA TGG GGTTT GGAT
AAAAAAATCCCAGGACCACC GCTTTGT ACC CCAGG CCTA
CATGTTTCG - CA--------- AC ----------
GAM22315 12706 CGAACACAGGGAAAGTTCCA AA - AAAGTT ATTAT TCTTGGT
9 GATTATGGTCTCTTGGTGAC CG CA CAGGG CCAG GGTC
CCTGGCCATGGCCCTGATGG GT GT GTCCC GGTC CCAG
GTG GG A GGTACC ----- -------
GAM22316 16557 CGAACAGGTTTATTTTAGTA -- G ATTTT CAAACAC AAAAAACAAAAACAAACA

0 CAAACACAAAAATCAAAAAA CGA ACA GTTT AGTA AAAAATC

CAAAAACAAACAGATTTTTT GCT TGT CAAA TCAT TTTTTAG
ACTCCAAACGTGTTATCG AT G CC--- ------- ----------
GAM22319 12990 CGAATCTGTGCGCGTAGAGC - CGCGTAGA T -- G GCTTGA
6 GTCCGTCCAGCAGGCTTGAC CGAAT CTGTG GCG CCGTC CA CAG
TGGTGATGACGGCGTCGCAG GCTTA GACGC TGC GGCAG GT GTC
CATTCG C -------- - TA G ------
GAM22320 6199 CGAATTTCAGTGCGGGAACC T- -- G- A AT A C AC TGGA
4 AATGCAGACTGGCATTAACG CGAAT TCAGT GCG GA CCA GC GA TGGCATTA GGCTG
GCTGTGGATAGCTTGGTGCC GCTTA AGTCA TGC CT GGT TG TT ACCGTGGT TCGAT
AATTGGTCGTGGTCAGCGTG TT AG GA - GC G A -- ----
AACTGATTATTCG
GAM22320 3727 CGAATTTCAGTGCGGGAACC ATT -- G- A AT A C G TGGA
5 AATGCAGACTGGCATTAAGG CGA TCAGT GCG GA CCA GC GA TGGCATTAAG CTG
CTGTGGATAGCTTGGTGCCA GTT AGTCA TGC CT GGT TG TT ACCGTGGTTC GAT
ATTGGTCGTGGTCAGCGTGA ATT AG GA - GC G A - ----
ACTGATTATTG
GAM22322 3889 CGACCCTCGACTGCGGGGCC - - A - GCCCG- GCGG
3 CGGGCGGCGGCGCTAGCAGA CGACC CT CG CTGC GGG GGCG
TCCAGCGGATGAAGCGGTCG GCTGG GA GT GGCG CCT TCGC
C A A A AGACGA ----
GAM22322 21652 CGACCTCCTAGCTCTTCTGT A CCTA T TG G CT ------- CGTG
6 GGAGGCCATCCTTTCTGTCC CG CCT GCTCTTC G GAG CCATC TTCT GTCC
CGTGGGACTCTGTAAAGAAT GC GGG CGAGAAG T CTC GGTGG AAGA CAGG
GGTGGCTCTGTGAAGAGCCC - AACC - GT - T- AATGTCT ----
AAGGGCG
GAM22323 18791 CGACGATTATAAGCGAGTGC TATAA AGT CT CACC ACAAT
3 TCTTGTCACCGCATAGACAA CGACGAT GCG GCT TGT GCATAG
TCTGTGTACCACATTAGCCG GCTGCTA TGC CGA ACA TGTGTC
TCATCGTCG C---- --- TT CCA- -----
GAM22324 19136 CGACTATGACTACCTGCGGA C -- C --- C-- TTCACC
4 AGCTCTTCACCGACCTCTTC CGA TATGA CTAC TGCGG AAG TC
GACCGCAGTGGCTTCGTGTT GCT GTGCT GGTG ACGCC TTC AG
CG T TC - AGC TCC ------
GAM22324 6160 CGACTCACTATAGGGAAAGC A ACTATA T C CA AC GT AATTC
6 TGGTACGCCTGCAGGTACCG CG CTC GGGAAAGCTGG ACGC TG GGT CG CCGG
GTCCGGAATTCCCGGGTCGA GC GAG TCCTTTTGGCC TGCG AC CCA GC GGCC
CCCACGCGTCCGGTTTTCCT C GACGCG - C -- -- TG -----
GCGCAGGAGCCG
GAM22328 20852 CGAGAGCTCAGCGCAGCGCA AGAG A CAG AGAG- A CAAAAA
3 GAGGGAGGCAAAAACCCCAG CG CTC GCG CGC GG GG
AAAGCGGGACGCAGAGAAGG GC GAG CGC GCG CC CC
CG GGAA A AGG AAAGA - ------
GAM22329 12245 CGAGATGAGTTTCTGAGGAT A AGT G GA AG T - TG C CACTACTGCT
0 CAGCACTGCCAGTGGAGATG CG GATG TTCT AG TC CAC GC CAG GAGATGGG GT
GGCGTCACTACTGCTACCCT GC CTAC AAGA TC AG GTG CG GTC CTTTACTC CA
CATTTCACCTGCGCTGTGGA - --- G AC -- T C CA C ----------
CACTGAGAACATCCG
GAM22329 6006 CGAGCACATGATGGCGATAC G GC- ACGGG AA G TCTC
3 GGGAGCTCAAAGTGTGCCTT CGA CACATGATG GAT AGCTC AGTGT CCT
CTCGGGGACACTGGGGTTGG GCT GTGTGCTAC CTA TTGGG TCACA GGG

GAAATCAAGCATCGTGTGTC - GAA AAGGG G- G ----
G
GAM22332 774 CGAGCTGGAGCTGTGGTCTA AG TG CT- - C CGAGCCA
2 CTCTGCGGGCGAGCCACCCT CG C GAGCTGTGGT ACT CTG GGG
CAGCAGTTGTATCACAGTTC GC G CTTGACACTA TGA GAC CCC
TGGAGCG GA GT TGT C T -------
GAM22333 9463 CGAGGACTTCGAGGCTCGCA A GA C CA- - G T CACT
1 TCGCGCTGTTGCCACTGTTA CGAGG CTTC GG TCG TC GC CTGT GC
CAGGCAGAAACCGACCGGAG GTTCC GGAG CC AGC AG CG GACA TG
GACCTTG A G- - CAA A - T ----
GAM22336 18894 CGAGGTTGTGGTGTCTGGGA G T GTCT- AAA A--- - GAG AA TG AGT
8 AACTCCGAGGACAGAGGGCT CGA GT GTGGT GGG CTCCG GGA CA GGCT ATCCA A
AAATCCATGAAGTTTGTGGA GTT CA CATCA CCC GAGGC CCT GT TCGG TAGGT T
TGGCTGATGATCCACAGCGG G T ATTGT A-- GACA A AG- -- GT ---
AGACCCTGTTAACTACTACG
TTG
GAM22339 13964 CGAGTGGAATAGCTCCCGCC - ATA --- C C C CAAGA
3 TGATCAGCAAGACTATCAAG CGAGT GGA GCT CC GC TGAT AG
CAGGCCAAGCGCTCCAACTC GCTCA CCT CGA GG CG ACTA TC
G A CG- ACC A A - -----
GAM22342 3394 CGATGATAGAGTCGCCAGCA A GA CGCCA GT-- TC AAGG
7 GCACGTGGTTCTCGTAAGGA CGATG TA GT GCAGCAC GGT TCGT
TGAATGCTTGTAGTGCTGTC GCTAC AT CA TGTCGTG TCG AGTA
TAAACGTAACATCG A G- AATC- ATGT TA ----
GAM22343 5946 CGATGGGCCCAAGGAGGTTG A G AAGG- TGT T - TTTTGAACCTGT
6 TCGCTGCAGGCTTTTGAACC CG TGG CCC AGGT CGC GCA GGC
TGTGCCTTGCTGTGCTCACC GC ACT GGG TCCA GTG CGT CCG
TGGGGGGGGGTCACG - G GGGGG CTC T T ----------
GAM22344 3384 CGATTATGACACTGACAATG A - ---- CAAT - TA AACATAC C CATAA
0 AAAATACTAACATACCAGTC CG TTATGA CA CTGA GAA AA CT CAGT ATTTAC
ATTTACCATAAGTGAATATT GC AGTATT GT GACT CTT TT GA GTTA TAAGTG
GAATTTGAAGCGTTATTCCC - A AATA ATCC A GC AGTTTAA - -----
TATCAGATAATGATTATGAC
G
GAM22344 14321 CGATTGGCGGCGGAAATATG GGAAA G AGAA CTCAAC
8 TGTAGAAGCGCGCTCAACCG CGATTGGCGGC TAT TGT GCGCG
CGCGGGCGAATAACAGGGCT GCTGACCGTCG ATA GCG CGCGC
GCCAGTCG GGACA A GG-- ------
GAM22346 18604 CGCAAATGGGGCCGCCTCGG AAT ---- CA TCCA C AT A ATCAGC
0 CACCTCCAGGCCAGAATTTA CGCA GGGGCC GCCTCGG CC GGC AGA TTAA TGTT
AATGTTATCAGCGGCAATTG GCGT TCCTGG TGGAGTC GG TCG TCT AGTT ACGG
ATCTGCTCGGGACTGAGGTT C-- GCTT AG C--- - -- A ------
TCGGGTCCTCTGCG
GAM22347 18421 CGCACAACCACGCGGCGGGG - AAC - G - AGAG CCACAACA
0 AGAGGGCCACAACATCAGAC CGC AC CACG CG CGG GG GG
CACCGGCGACGTGTCAGTAG GCG TG GTGC GC GCC CC CT
CG A ACT A G A AGA- --------
GAM22347 20631 CGCACCCCTGAATTTCTCCG - ------- A- CT - AATTTCC
4 CAAATTTCCTGCCGGCAAGG CG CACCC CTG ATTT CCG CA
TCCCAGCATTTGAGGGTGAT GT GTGGG GAC TGGA GGC GT

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        G              A   AGTTTAC  CC   AC  C -------
GAM22351 14496  CGCAGCCCTGCTCGTGGGTC       G  ---    ----  AG  CTGCTTA
0        CAAGAGCTGCTTACTTCTGG CGCAGCCCT CTC  GTGGGT   CCA  AG
        GGGCACCCATGCTGAGGGGG GCGTCGGGG GAG  TACCCA   GGT  TC
        CTGCG                - TCG    CGGG  CT -------
GAM22351 1083   CGCAGCCGGATGGGTGCCGG   G  --- -   -  AAG   AAACACC
2        CCAAGTCTTAAACACCAAGG CGCA CCGG  ATG GGTGCC GGCC  TCTT
        AGGGCCTGGCACTGCGTTTA GTGT GGCC  TGC TCACGG CCGG  GGAA
        CCGGTGTG          - ATT  G   T  GA-  -------
GAM22352 8832   CGCAGGCCAACTCGACCACA     CCAAC  A   A   CTCT  CGTTC
0        GATGCTCTGAACGTTCTTCT CGCAGG    TCG CCAC GATG   GAA
        CATCATCGTGGATGACCTGC GCGTCC    AGT GGTG CTAC   CTT
        G                ----- A  -  TACT  -----
GAM22352 6564   CGCAGGTGATCCCGCAGGGA    G   CCCGCA  T    A  - AAAGA
5        TACCTCAGAGTTTCCAAAGA CGCAG TGAT     GGGA ACCTCAG GTTT CC
        GGCAGACCTTGAGGTTCCCA GTGTC ACTA     CCCT TGGAGTT CAGA GG
        TCAGCTGTG          G  ------  -    C   C -----
GAM22352 9186   CGCAGTAGTGACAGAGGAGG   A--      A-    G  GATGATGATGAAGAGA
6        AGGATGATGATGAAGAGACT CGC   GTAGTGAC  GAGGAG AG
        GCTCCTCCCGTTATTGCCCC GCG   CGTTATTG  CTCCTC TC
        GCG             CCC      CC    G ----------------
GAM22352 8934   CGCAGTCTCTTGAAGGCGCT       CTT  AG-      CAAGAAA   G   TGT
8        TGTCAAGAAATCTGCACTGT CGCAGTCT   GA   GCGCTTGT      TCT CAC
        GTGGGGAGCAAGTGCATATC GTGTCGGG   CT   CGTGAACG      AGG GTG
        CTGGGCTGTG             TC-  ATA      -------  G   ---
GAM22353 19225  CGCATCCCATATTGCAAAGA  C    A    AAA----     CA   AT   ------------    GAAA
8        GAGGACAGCCCATGGTATCG CG ATCCC TATTGC     GAGAGGA  GCCC  GGTAT         CGGAA
        GAAGAAATTCTGGCGGAGAG GC TAGGG ATGGCG     CTCTCTT  TGGG  TCATG         GTCTT
        CACTGTACTTGGGGTCCTTC  -   -   GTCTACG     CC   GT   TCACGAGAGGCG    ----
        TCTCGCATCTGGCGGTAGGG
        ATCG
GAM22353 20594  CGCATCCGTCCGCAGCTTCA   A  C   C   CTTCA  A    CCAAGT
9        TGAACGTGGCCAAGTCCATG CGC TC GTC GCAG    TGA CGTGG
        CTCACATTCTGCTGACTGAG GCG AG CAG CGTC    ACT GTACC
        CG               - T  T   TTAC-  C    ------
GAM22358 8745   CGCCATCCTTGGTCTTGACC   CA-     TC- TG   TCA-   GTCCG
0        GTCAGCTCGTCCGGGGCGAA CGC   TCCTTGG   T  ACCG   GCTC
        GTGGTTGACATCCAGGGACA GCG   AGGGACC   A  TGGT   CGGG
        CGCG             CAC      TAC GT   GAAG   -----
GAM22358 951    CGCCATTTGCTCCTGTTTTC   C   G      TTCG  AG   T    T   CTG   TCA    CAAT
6        GGCAGGCTTCCAGCTTCTCT CGC ATTT CTCCTGTT   GC  GCT CCAGC TCT   GGC   GGGGC

        GGGCTCAGGGGCCAATGCTC GTG TGGA GGGGACGA   CG  CGG GGTCG AGA   CTG   CCTCG

        CCGTCAAGACGCTGGGGCAG   -   G      CGA-  A-   -    C   A--   C--    ----
        CAGCAGCAGGGGGAGGTGTG
GAM22359 2894   CGCCCACCGAGCGCTGCAAC    AC-   C-   CAACC  C   A T   GCAA
1        CGCCGCAAGTGCCGCAAGGC CGCCC   CGAG  GCTG    GC GCA G GCC
        CCTGCGCCAGTTCTTCGACC GTGGG   GCTT  TGAC    CG CGT C CGG
        GGGTG               CCA   CT   ----- -   - C   ----
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GAM22359 14023 CGCCCACGTCCACCTCTGGT CC CACCTC G AAGC
2 TTGGGGACAAAAGCTTGTCC CG CACGTC TGGTTT GGGACAA
TGGAATCGTAAAGATGTGTC GC GTGTAG GCTAAG TCCTGTT
G T- AAAT-- G ----
GAM22359 20989 CGCCCCACACCGTCTCTGGG ---- ACAC CT C- AAACAGCG
9 CGAGAAAACAGCGTCTCCCC CGCC CC CGTCT GGG GAGA
CCTAGGACGCCCGGATTAGG GCGG GG GCAGG CCC CTCT
CG ATTA CCC- AT CC --------
GAM22363 20701 CGCCCGGCCATGGCTGCGGT CC CA CT - C - C C T TGCT
2 GGCGCTGATGCCACCGCCGC CG CGGC TGG GCGGTGG CG TGATGCCA C GC GC GC

TGCTGCTGCTGCTGCTGTTG GC GCCG GCC CGCCGCC GC GCTGCGGT G CG CG CG
GCGTCGCCGCCCGCCGCCTC CT C- TC C C T T T T ----
CGCGCCGTCCG
GAM22364 4531 CGCCCGTCCGGAGCCCGGCT GT AG - G TG AT GGGT
1 CGCTGGGGCAGCATGGCGGG CGCCC CCGG CC CGGCTC C GGGCAGC GGCG
GTCGCCGCTGCTCTGGGGGC GCGGG GGCC GG GCCGGG G CTCGTCG CCGC
CGCGGGCCGGGGGCG -- G- C - GT -- ----
GAM22364 21234 CGCCCGTCCGGCGCACGCTC C T- - A CT - G TCCGCT
2 CGCCTCCGTCAGTTGGCTCC CG CCG CCGGC GC CGCTCCGC CCGT CA TTGGC
GCTGTCGGGTGCGCGGCGTG GC GGT GGCCG CG GCGAGGTG GGCG GT GGCTG
GAGCGGCAGCCGGTCTGGAC A CT A - C- C G ------
G
GAM22364 19968 CGCCCGTGCGGGAGGATGAG CGT ATG AG- TG ATGGGGA
3 TCAGAGGTGGATGGGGACTG CGCC GCGGGAGG AGTCAG G G
CAGCCTGACTGGACCTCCTG GTGG CGTCCTCC TCAGTC C C
CTCTGGTG TCT AGG CGA GT -------
GAM22367 21585 CGCCGCTGCACCGCCTGCCT CG ACC CC A GA---- C- CCCCG
8 GAGAGAAGTCGTCGCGGCGA CGC CTGC GCCTG TG GA AGTCGTCG GGCGA
CCCCGTCGCCTCCGGCGGCT GCG GACG CGGAC GC CT TCGGCGGC CCGCT
ACCATGTCCGCCCAGGCGCA TA --- CC - GTACCA CT -----
GATGCG
GAM22368 19019 CGCCGGCGCCGCGGGAGGTG C C - TGGT- AGC GAGC
5 GTGGAGGCCTAGCCGGAGCC CGCCGG GCCG GGGA GG GGAGGCCT CG
GAGAGGTCTCTTGTTCCCGT GCGGCC TGGC CCCT CC TCTCTGGA GC
CCCACGGTCCCGGCG C A G CTTGT GA- ----
GAM22371 12731 CGCCTCCTGCACCATGCGGC TCCTG T TCGATCT T TGCTC
5 TCGATCTCCTCCTTGCTCAG CGCC CACCA GCGGC CC CCT
GCGGCCCTTGTCGTTGGTGA GTGG GTGGT TGCTG GG GGA
TGGTG TA--- - TTCCC-- C -----
GAM22372 14058 CGCCTCTTCGTGCCAGCGCT GC- - C C TGGA AC AG A TA CATCTGGAC T
5 GGACAAACCCGAGACGGACC C CTCTT CGTG CAG GC CAA CCG ACGG CC CTCAGC
CGG GC
TACTCAGCCATCTGGACCGG G GAGGA GTAC GTC CG GTT GGC TGCC GG GAGTCG GCC
CG
TGCGTGGCCTTCATCGGTCA ACT C T A TG-- GT G- - -- C-------- -
GGCCCGCGCTGAGGGCCGTG G TTCATC
CGGTGTTGGTGCACTGTCAT TGGCC
GCAGGAGTCAG ACTGG
G ------

```
GAM22373 3966   CGCCTGACGGGCCCGGCGGC      A-  -   ----------  G     A  CGCGCT
0           GGCTGAGCCGCGCTGCGCAG CGCCTG  CGG GCCCG         GCG CGGCTG GC
            CCGACGCGGGAATGAAGCGG GCGGAC  GTC CGGGC         CGC GCCGAC CG
            GCGCTGGGCAGGCG           GG  G    GAAGTAAGGG  A     G ------
GAM22373 4072   CGCCTGAGACTAGTTCGGAC   ---       AGT        C  -  AAG
1           CCCCCTTCGGCAAGGTCAGA CGC   CTGAGACT   TCGGACCCCC TTC GGC
            AGGGGGTCCGGTGGGTCTCG GCG   GGCTCTGG   GGCCTGGGGG AAG CTG
            GCTAGCG             ATC       GT-       -  A  ---
GAM22373 8505   CGCCTGCCAGCTGGAGCTAT  G    C    -  CTA  A    AGCGTGAAA
6           TCACTTCCAGCGTGAAAGGG C CCTGC AGCTG GAG   TTC CTTCC
            AGGGACTCACAGCTGCAGGG G GGACG TCGAC CTC   AGG GAGGG
                        -   -    A  ---  -    ---------
GAM22374 18674  CGCCTGCTCTGTGCAGATCC     --  -   GTGCAGA   -      GGCCTCAAA
2           TCGTCCCTGGCCTCAAAGGG CGCCT  G CTCT      TCCT CGTCCCT
            GATGCGGGAGAGAAGGGAGA GCGGA  C GAGG      AGGG GTAGGGG
            CAAAGGCG              AA A    GAAGAG-   C      ---------
GAM22377 21328  CGCGAAGATGCCAGTGGCGG    AA   G    TG  GGT---------      GAAAG
4           TGATGGCGGAAAGCGCCGTC CGCG  GAT CCAG  GC          GATGGCG
            TAGTTTCAAAAAGTTGCTGG GCGT  CTA GGTC  TG          CTGCCGC
            ATCAGTGCG             GA   -   GT  AAAAACTTTGAT      -----
GAM22378 12295  CGCGAGCGAAAGACGCCAGC      CGAAA---   G  A-    AG CA     ACATAC
0           CGAGTCAGAGCGGACATACT CGCGAG       GAC CC  GCCG  T  GAGCGG
            CGCTCCCGTCCGGCCCGGGT GTGCTC       CTG GG  CGGC  G  CTCGCT
            CCCCAACCCCTCGTG          CCCAACCC  -  CC    CT CC     ------
GAM22378 5369   CGCGATCAGCGGACCCATCA    G  C  C   CC    AA---    GA     AAAGAAA
8           AGGCGGATCTTGAAAGAAAC CGC AT AG GGA  CATC     GGCG  TCTTG
            AAGGACGCTCATACGATGTT GTG TA TC CCT  GTAG     TCGC  GGAAC
            TCCTCTATGGTG          G  -  T   TT    CATAC    A-     -------
GAM22379 18040  CGCGCACGTAGTCGCTGGGG      C    TC  TG   TC  TGAA   GACGA
2           TCCTTGAAGCTGACGAAGCC CGCGCA GTAG  GC  GGG  CT    GCT
            GTAGCCCTTGGTCTTGCCTG GCGTGT CGTT  TG  TCC  GA    CGA
            TGCG                 C    C-  GT   C-  TGC-   -----
GAM22380 8842   CGCGCCGCCGCTTCGGGCCT     -     -     G  ----  T      AGTCCTG
4           CTGGTTGGGAGTCCTGTCCG CGCGC CGCCGC TTCGG CC    TC GGTTGGG
            GCCTGACTTAGGCCGAGCGC GCGCG GCGGCG GAGCC GG    AG CCGGCCT
            GGCGTGCGCG             T     C    -  ATTC  T      -------
GAM22381 3266   CGCGCGCGGACGAGTCGAAG    GCG   A  A    AG  T  GACAGAGTGAACA
6           GATCGGACAGAGTGAACACG CGC   CGG CG GTCGA  GA CG
            TCGTCGACACGCCGGGAGCG GCG   GCC GC CAGCT  CT GC
                        AGG   -  A    G-  -  -------------
GAM22383 1159   CGCGGAGGCGGGGCGGAGGC      G    C  -    G   -------     TTATTGTT
2           GCCGCGGCGGCTGTTATTGT CGCGGAG CGGGG GGA GGCGCC CGGC      GGCTG
            TCGGCTGGGCTCGGTCGGGC GCGTCTC GCTCC TCT TCGCGG GCTG      TCGGC
            GCTGTCTCCCTCGGCTCTGC      G    C  G    -  GCTCGGG    --------
            G
GAM22384 8333   CGCGGCGCCCCTAGCCGGCC          A-----       GCGC   GTC
0           CTGCGCCGGGGTCTCCGAGG CGCGGCGCCCCT     GCCGGCCCT   CGGG
            GCCGGCCCGGCGGGGGGCGC GCGCCGCGGGGG     CGGCCGGGA   GCCT
            CGCG                    GCGGCC       ----   ---
GAM22384 18151  CGCGGCGGGAGAGCGTGTCC  -    GA-    T-  CCC  -   CCT  A G   TGAGCC
```

3 CGCCGGCCCTGAACGCCATG CG CGGCGG GAGCG GT GC CGGC GA C CCA
AGCCTGGGTCCCCGCCGCGC GC GCCGTC CTCGC CG CG GCCG CT G GGT
CCGCTCCGCTCCGACTGCCG T AGC CT CC- C CCC - - ------
TCG
GAM22386 8113 CGCGGTACTGCTGCAGGAGC GT A A TG AAGTGGAAC
2 TGTTGCTGGAAGTGGAACCC CGCG ACTGCTGC GG GCTGT CTGG
AGGCGGCGCCGGTAGTAGTC GTGC TGATGATG CC CGGCG GACC
GTG -- G G -- ---------
GAM22389 9698 CGCTACTGGCAAGTCTGTCT ACT AGTCT GCTC GC AGAA-- TAA
3 GGGGCTCCCTCGCTGTCCAG CGCT GGCA GTCTGGG CCTC TGTCC CAGCCC
AACAGCCCTAAGGGTTGCCA GTGA CTGT TAGACCC GGAG ACAGG GTTGGG
CCGGGACAAGAGGACCCAGA CAT ----- A--- A- GCCACC ---
TTGTCTACAGTG
GAM22391 8540 CGCTCCATGCGAGCCCTGGC T- ------- AG C AAACCA AG TGTCA
1 AAAACCAAGGGCATGAGTCT CGC CCATG CG CC TGGCA AGGGCATG TC
GTCAGAACATGCCCTCAGCA GCG GGTAC GC GG GTCGT TCCCGTAC AG
CTGCTGTGGTCCGGAACACC TC CCACAAG CT T CACGAC A- -----
CATGGCTGCG
GAM22392 9118 CGCTCCTGATCATGACAGAT CC AT GACAGATG- TC GCATTTGAA
1 GCCTCCCTGGTAGCATTTGA CGCT TG CAT CC CCTGGTA
ATACCAGGATGGAGAACGAA GCGG AC GTA GG GGACCAT
AATGCACAATGGCG TA AC AAAGCAAGA TA ---------
GAM22392 18402 CGCTCGTCACCAGGACCCAA - TC - G AA GA AA TGCAT
9 GGAACCAAAAGTGCATCTGA CGCT CG AC CA GACCC G ACCA AG
TGGTCTCAAGGGTCGTGTGT GTGA GT TG GT CTGGG C TGGT TC
TGTGAAGTG A GT T G AA TC AG -----
GAM22393 19205 CGCTCGTCACCAGGACCCAA - T- C G AA GA AAATTGCATCTGA
0 GGAACCAAAATTGCATCTGA CGCT CG CAC A GACCC G ACCA
TGGTCTCAAGGGTCGTGTGT GTGA GT GTG T CTGGG C TGGT
TTGAAGTG A TT - G AA TC ----------
GAM22393 9610 CGCTCTAATAGACATTGCAC TAA---- C CAC - - CTAG
1 CAGGAGCTCTAGAGTCTCAC CGCTC TAGA ATTG CAG GAG CT
TGAAACAGTTCTAAATAATT GCGAG ATCT TGAC GTC CTC GA
GAGCG TTAATAA - AAA A T ----
GAM22393 9285 CGCTCTGTTACCCAGGCTGG C TT C-- C -- A - AAGATCTTG
9 AGTGCAGTGGCAAGATCTTG CGCT TG ACC AGG TGGAG TGC GTG GC
GCTCACCGCAACCTCCACCT GCGA AC TGG TCC ACCTC ACG CAC CG
CCAGGTTTCAAGCG - TT ACC - CA C T ---------
GAM22394 8806 CGCTGACGCCGTGTTTCCTC GAC C CTCTTT GC T TGA G T ATGGG GTG
7 TTTCGGCCGCGCTGGTGAAC CGCT GC GTGTTTC CG CGCGC GG ACAG ACCCG CGCC CC
TG
AGGACCCGTCGCCATGGGCC GCGG TG CACGAAG GC GCGCG CC TGTC TGGGC GCGG
GG AC
GTGTGATCCGTGGACAGAGG AAA C T----- AC - TTG - C GAA-- AG-
AAGGGCGCCGGGTCTGTGTT A CGTG
CCGCGCGCACGTGAAGCACC TC
GTAAAGGCG AG
- ----
GAM22396 19304 CGCTGCCACTCCCGGGAGCA - ACTC --- ATGAA ACCGAA
1 TGAAGGACCGAACCCAGGAG CGCTG CC CCG GGAGC GG

CTCCGCACGGCCAAGGACAG GCGAC GG GGC CCTCG CC
CG A AACC ACG AGGAC ------
GAM22397 3533 CGCTGCTCACATCCTGCACG - TCAC AC ACTGA C CGTCC
0 GAGACTGACCCGCCCTGCGT CGC TGC ATCCTGC GGAG CC GCCCTG
CCTAGGGCAGGCTCCAGGCA GTG ACG TGGGACG CCTC GG CGGGAT
GGGTCTGCATGTG T TC-- GA ----- A -----
GAM22399 14399 CGCTGTGCCAAACGCTGCTT G AAA- -- - GA TTTATT
9 CGGGAGCTGTTTATTTAGCC CGCT TGCC CGCT GCT TCGG GCTG
TCCGACAGCTAAGCGAATCG GCGG GCGG GCGA CGA AGCC CGAT
GCGGGCG - CTAA AT C TC ------
GAM22400 3146 CGCTGTTCTTTATGTATTGA TT T TATT - C- CTTGT
9 GAGAACTGTTTCTTGTAAGC CGCTG CTT ATG GAGA GAA TGTTT
ATCTTCATCTTCTTCCATTA GCGAT GAA TAC TTCT CTT ACGAA
AGTAGCG -- T CTTC A CT -----
GAM22401 3671 CGCTTCAGTCTCCTGCTCGG A C CT - --- C CTTCTGAC
7 ACAGCTTCTCTTCTGACAGA CGCTTC GT TC GCTC GGA CAG TTCT
ACTGACATCCAGGGCGATAC GCGAGG CA AG CGGG CCT GTC AAGA
GGAGCG - T -- A ACA - --------
GAM22402 8688 CGCTTCCTATCTCAGCGCCC ----- ATC C - - C-- CGCC
3 TGCCGCCGCCGCCGCGGCCC CGCTT CCT TCAG GCC CT GC GCCGC
AGCGAGCGGCCCTGATGCAG GTGAA GGA AGTC CGG GA CG CGGCG
GCCATCAAGTG CTACC CGT C C G ACC ----
GAM22404 3103 CGCTTGAGGGGATTATAATT - A AA AAAAAGAGG AG GA CATG
1 TCTTTAAAAAGAGGGGAGGG CGCT TGAGGGG TTAT TTTCTTT GG GGGA GGC
GAGAGGCCATGGCCGTCCCA GCGA ACTCTTC AGTA AAGGAAA CT CCCT CCG
GTCAAGAAAAGGAAGATGAA G A G- AGAA----- GA G- ----
CTTCTCAGAGCG
GAM22404 5978 CGCTTTCATCTTGTAAACCT T CT--- A--- TATTTC
9 GAATTCTATTTCGAGTACTC CGCT TCAT TGTAAACCTG ATTC
CAGGTTTATGTTTAAATGAC GTGA AGTA GTATTTGGAC TGAG
AGTG C AATTT CTCA ------
GAM22405 1204 CGCTTTTCTAAGTCAGTTGT TTT AG -- CG CTACCC
6 TTCTCGGGCTACCCTTTAAG CGCT CTA TCAGT TGTTTCT GG
AGACACTGCTGAATGGCCTG GTGG GGT AGTCG ACAGAGA TT
GTG TCC A- TC AT ------
GAM22406 22323 CGGAACTTAATTTCGGATTC AAC C T- --- --- A--- TGCATAT
7 TATGAAGGCGAAGATTACTG CGG TTAATTT GGA TC TATG AAGGCGA GATTAC
CATATGTGATCATACTTGCC GTC AGTTAAA CCT AG ATAC TTCCGTT CTAGTG
TTGCACATACATGACTTCCA C-- - TC TAC ACG CATA -------
AATTGACCTG
GAM22408 20797 CGGAATTCCCGTGTCGACCC A T TCGACC - - GACGAT
9 ACGCGTCCGGCGACGATGAC CGGA TTCCCG G CACGC GTCCGG C
CGGACTGTGTGCCGGGAGAT GCCT GAGGGC C GTGTG CAGGCC G
CCG A - ------ T A ------
GAM22409 20909 CGGACAAGTCATCCCCGTGG A- AG AT GT- C AAAACA CCAGAA
2 TTCGTAAAACATGTCCAGAA CGG CA TC CCCC GGTT GT TGT
ACAACAAACCCCAGGGGCAG GCC GT AG GGGG CCAA CA ACA
AAATGGGCCG GG AA AC ACC A ------ ------
GAM22410 18812 CGGACCGCGCTCTCGATTTC - TCTC TCTG CGCCTCTA
0 TGCCGCGTCCCGCCTCTAGG CGGA CCGCGC GATT CCGCGTCC

ACGCGGAGTCCGTGTGCGGT GCCT GGCGTG CTGA GGCGCAGG
TCCG T TGC- ---- --------
GAM22410 8532 CGGACCTTATTGACCCAACT A TATT CTCT T GAACTA
3 CTGCTGGATGAACTAATCTG CGG CCT GACCCAA GC GGAT
CCCCCTTGGGTTCTTTGGGC GCC GGG TTGGGTT CG TCTA
CG - TTTC CCCC - ------
GAM22411 12479 CGGACTGCCCCAAGGCCCCC ACT CCA CCC--- C- TCCAG
7 TGCCGCCGCGTCCAGCGCCT CGG GCC AGGC CTGCCGC GCG
GCGGCAGCCAACCGCCTGCC GCC CGG TCCG GACGGCG CGC
GGCCGCCG GC- CCG CCAACC TC -----
GAM22412 8478 CGGACTTTTGGGCCGGGGCC GA TT C GCC C TCTCTA CTCC
1 GGGCGGCGGGGGAGGCTCTC CG CTT GGGC GGG GGG GGCGGGGGAGGC AGGC

TAAGGCCTCCGCCTCTGCCT GC GAG CCCG CCC CCC CCGCCCTCTCCG TCCG
CTCCCGCCCCCTTACCCGCC -- GC - ATT - TC---- ----
CCGGAGCG
GAM22413 13022 CGGAGCACCAGGTGCAAGGT CAC G C ---- T ATGTTGTAG
1 GGACTCTTTCTGGATGTTGT CGGAG CAG TG AAGGTGG ACTCT TCTGG
AGTCAGACAGGGTACGACCA GCCTT GTC AC TTCTACC TGGGA AGACT
TCTTCCAGCTGTTTTCCG TT- G C AGCA C ---------
GAM22415 6420 CGGAGCTTGGACCCCGATTG A ACCCCGATT TG --- CTTTAATC
2 GCTGCAATGCTGAACTTTAA CGG GCTTGG GGC CAA TGCTGAA
TCTTCAGCAACTTTGTGGCC GCC TGAACC CCG GTT ACGACTT
CCAAGTGCCG G --------- GT TCA --------
GAM22415 9738 CGGAGGATTAGAGCAGGCGG A-- ATTA A- GG GGGG GGGA
7 TGCGCTGGGGGCGGGAGCAG CGG GG GAGC GGC TGCGCT GC
CGCGGAGCCCGGCTCGGCCA GCC CC CTCG CCG GCGCGA CG
CACCG ACA GG-- GC AG ---- ----
GAM22415 9117 CGGAGGCTGGCCGATGATGA A T C GAT-- AC- A T A GCCCA
9 TGGCTGGACGCCACGGTGTT CGG GGC GGC GAT GATGGCTGG GCC CGGTGT CAGGA CGT

CAGGAACGTGCCCAGCGCTC GTC CCG CCG CTA CTATCGGCC TGG GCTATG GTCCT GCG

CTGGTATCGGGGTTCACCGG C T - GGAGT ACT G - C -----
CTATCTGAGGATCGCCTGCC
CCTG
GAM22418 8087 CGGAGTTGAGAAACTGCAAG AGAAACT GA- ACAAAA AAACAACA
1 GAACACAAAAGACTCAAACA CGGAGTTG GCAAG AC GACTC
ACAGAGTTCGAGGGTCTACT GTCTCAAT CGTTC TG TTGAG
TGCTAACTCTG ------- ATC GGAGC- --------
GAM22418 19876 CGGAGTTTCACTCTTGCTGT TCTTG G CAAA ACT T ATTTT
2 GCAAAGAGACTGGTGGCATT CGGAGTTTCAC CT TG GAG GG GGC
TTGCCCCTGCTCCAGAGATC GTTTCAAGGTG GA AC CTC CC CCG
TGTGGAACTTTG TCTA- G ---- GT- - -----
GAM22419 12668 CGGATGGGTTACCGGACTTC TACC T--- AT AAAAT TTTGATATC
6 CAGGCATTGCAAAATGCCTT CGGATGGGT GGAC TCCAGGC TGC GCC
TGATATCGGTCGCAGCCTGG GTTTGTCCA TCTG AGGTCCG ACG TGG
ACATTGTCTATTACCTGTTT TTA- TTAC -- C---- ---------
G
GAM22419 3999 CGGATGTTTTAAGAAAATGG AT-- A- AA A CAAA-- GACA

8 CAGACAAACCAGACATGGGG CGG GTTTTA GAA TGGC GA CCA
GAAATCGCCAGCTTCGATAA GTC CGGAAT CTT ACCG CT GGT
GGCCAAGCTG GAAC AG CG - AAAGGG ----
GAM22420 14020 CGGATTCTTGGCGAGGATGT TTCT C ATGTGCT -- CTCG
1 GCTTGTCTTGGATGATGTAC CGGA TGG GAGG TGTCTTG GATGATGTA
TCGTACGTCGTCAGCAAGAC GCCT ACC CTTC GCAGAAC CTGCTGCAT
GTTGAACTTCCCACTCCG C--- - AAGTT-- GA ----
GAM22421 20944 CGGCACCGCGCCCGAGCCCA C- -- - GCCCA -- GATCA
9 CTCCATTCAGATCATGAAGG CGGCAC GC GCC CGA CTCCAT TCA
TGGAGGAGATCGCGGCCAGC GCCGTG CG CGG GCT GAGGTG AGT
AAGTGCCG AA AC C AGAG- GA -----
GAM22422 12179 CGGCACTGCTATGGATGAGG C T ATGAGGA A A ACAAAC
2 AGGACCTATGAACAAACTCA CGGCA TGC ATGG GG CCT TGA
AGGGCCAGAAGATCGTGTAC GCCGT ATG TGCT CC GGG ACT
TGCCG C - AGAAGA- - A ------
GAM22423 12197 CGGCAGGCAGCCAGCGAGGC G A A A C TCTACAACTCCGACTACGT
2 CTGCTTCTACAACTCCGACT CG CAGGC GCC GCG GGC TGCT
ACGTGGCAGCCCGTGGGCGC GC GTCCG CGG TGC CCG ACGG
CTGGCG G - G - - ----------
GAM22423 21309 CGGCAGTCTGCGCGCTACTC C CG- CTACTCTTCT CCTACACATCCTAACA

5 TTCTTCTGCCCTACACATCC CGG AGTCTG CG TCTGC
TAACAGCAGACGACACAGAC GCC TCAGAC GC AGACG
TCCG - ACA ---------- ----------
GAM22424 12435 CGGCATTTTGCCTTCCTGTT -- C - --- CTCACC
0 TTTGCTCACCCAGAAACGCT CGGCATT TTGC TTC CT GTTTTTG
GGTGAAAGTAAAAGATGCTG GTCGTAG AATG AAG GG CAAAGAC
AA A T TCG ------
GAM22427 12356 CGGCCCGTTGTTGCGTTGCG CC G - T TT T CACT - TCACG
0 TTTCCTTCCTCTTTCACTCC CGG CGTT TTGCGTTGC GTT CC CC CTTT CCGC GC
GCGCTCACGGCGGCGGCAAA GCC GCAA AGCGCGGCG CAG GG GG GAAA GGCG CG

GCGGCGGCGACGGCGGCGCG CA G G C C- C C--- G -----
AGAACGACCCG
GAM22428 20103 CGGCCGCCGCGGAGGAGGCG -- G GA CT --- ATT-- ATGCG
0 CTGCGGGGATTGGGATGCGC CGGCC GCC CGGAG GGCG GC GGGG GGG
CCTGGAGCCCCACTGCTCGT GCCGG CGG GTCTC TTGC CG CCCC CCC
TCACTCTGGGCCGGGCCG GC - AC T- TCA GAGGT -----
GAM22429 21485 CGGCCGTCAACCTCCTCAAG C AACC AA CTTCAA ACA AACTA
4 TATACTTCAAAGGACATTTA CGGC GTC TCCTC GTATA AGG TTT
ACTAAAAGCCCTACGCATTA GCTG CAG AGGAG TATAT TCC AAA
TATAGAGGAGACAGTCG A ---- A- TACGCA CG- -----
GAM22431 16842 CGGCGATCGCGGGAGAGGGG ATCGC G A - CATAC-- GACC
5 GCCATACCGGACCCGCAAGC CGGCG GG AG GG GGGC CG
ATGCCCACCACTGCCACAAA GCCGC CC TC CC CCCG GC
CGCCG AAACA G A A TACGAAC ----
GAM22432 3562 CGGCGCGAGTGCGTCTGGTC G GG - AA --- - GAAG
9 GGAAGGGGGGGGTCTGAAGA CGGC CGAGTGCGTCT TC GG GGGG GGGGT CT
GTACCCTATGCCCCACCAGA GTTG GCTTACGTAGA AG CC CCCC TCCCA GA
AAGATGCATTCGGGTTG G A- A A- GTA T ----

GAM22433 9648 CGGCGCGTGGGGCTCGCGCG C T C----- CC- TCATG
4 GCCCAGTCATGCTCACGCCC CGG GCGTGGGGC CGCG GGC AG
CCCCTCGCGCGCCTCACGCC GCC CGCACTCCG GCGC CCG TC
CCG C C TCCCCC CAC -----
GAM22433 18897 CGGCGCTTCCGCAAGTTCCT TC C T C T TG GG- AACTTCGA
8 GGTGTTGTGGCAAACTTCGA CGGCGCT CG AAG TC TGG GT T CA
TGAGAATGACCCCAAGACCT GTTGCGG GT TTC AG ACC CA A GT
TTGAGGGCGTTG GA - C A C GT AGA --------
GAM22433 14725 CGGCGCTTCCGCAAGTTCCT TC C T C T TG GG- AACTTCGA
9 GGTGTTTGTGGCAAACTTCG CGGCGCT CG AAG TC TGG GTT T CA
ATGAGAATGAGCCCAAGACC GTTGCGG GT TTC AG ACC CGA A GT
TTTGAGGGCGTTG GA - C A - GT AGA --------
GAM22434 20836 CGGCGGCCGAAGAGGCTGGC CGAAGA- AG-- G- - GT GGTGAG
4 AGGTGGCGCCGTGGGGTGGG CGGCGGC GGCTGGC GT GCGC CGTGGGGTGG GCTCCT

TGCTCCTGGTGAGAGGAGTC GCCGCCG CCGGCCG CG CGTG GTGCCTCACC TGAGGA

CACTCCGTGCGTGCGGGCGG AGAGCCC GAGG GG C -- ------
AGGCCGGCCCCCGAGAGCCG
CCG
GAM22435 3754 CGGCGGCTGCGCGTCCCGGC GC --- - -- AA GCGTTG
1 CCTCCCCAAGGCTCGGCGTT CGGCG TGCGC GTCCCGGCC CTC CCC GGCTCG
GCGAGTCCGGGCAGGGTGGC GCCGC GCGTG CAGGGCCGG GGG GGG CTGAGC
CGGGACGAGGTGCGATCGCC TA GAG T AC C- ------
G
GAM22436 2709 CGGCGTCTGCGGCAGAATGA TC G A GTCA C TAGAT
0 TGGTCAGGCAATAGATTTTT CGGCG TGC GCAGA TGATG GG AA
CACAATATCATCTGTGGCAC GCCGC ACG TGTCT ACTAT CT TT
CGCCG C- G - AACA T -----
GAM22436 3001 CGGCGTGCTCTTCCTGAGTT GC C------- CT T TCAA AAAAACAAA
3 CTTCAATGGAAAAAACAAAT CG GTGCT TTC GAGT CT TGGA
CCAAGACTCCAGAAATATAC GC TACGG AAG CTCA GA ACCT
TTGGCATATCG TA TTCATATA AC - ---- ---------
GAM22436 1243 CGGCGTGGCGGGCGATCCCA G T GGCGA- ACA C-- GGAAA
4 CACGCGCCACGGGAAACGTT CG CG GGCG TCCC CGCGC ACG
ACGCGCGAGGGAGAGAAGCG GC GC CCGC AGGG GCGCG TGC
CCCCGGCG G C GAAGAG A-- CAT -----
GAM22436 21322 CGGCGTTCTTTTCCTCTGCC CG ----- G- A G TCGA CTCACA
6 GTGAGTGCGCTTCGACGCTC CGG TTCTTTT CCTCT CCGTG GT CGCT CG
ACACGGTGGCGGACACACGG GCC AAGAAAA GGAGA GGCAC CA GCGG GC
AGAGAGGCAAATAAAAGAAG AG TAAAC GA A G TG-- ------
ACCG
GAM22436 5621 CGGCGTTGCTGCCCCCGAGA TT- TGCC- A GG TG T CCCG
7 CCCGGGTGCCTGCCCCGGCG CGGCG GC CCCG GACCC G CC GC
GTGCGGGTCGCGGGCCTCCG GCCGC CG GGGC CTGGG C GG CG
CTCTCGCCG TCT CCTCC G -- GT - ----
GAM22437 19394 CGGCTAGGTACGAGGCTGGG A TA ------ T - TACTGTCTATCC
0 TGGCGCTACTGTCTATCCGC CGGCT GG CGA GGC GGGTGGC GC
AGCCATCCGCCTTTCTTTCG GCCGA TC GCT CCG CCTACCG CG
GGCTAAGCCG A GG TTCTTT - A ----------

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GAM22437 5814  CGGCTAGGTACGAGGCTGGG    AG A   CT   TCA  AG TG      AAGT - CT   -- A
1          TTCACGGAGGCTGCGGCTGC CGGCT  GT CGAGG  GGGT  CGG  GC  CGGCTGCAG   AC CGC
GCGGA  GTA
         AGAAGTACCGCCTGCGGAGT GCCGG  CG GCTCC  CCCG  GCC  TG  GCCGGCGTC   TG GCG
TGCCT  CGT
         AACTGCAAAGATGCTGTCCG    G- -   TT   C--  -- GT      GT-- C  --   GT  A
         TGCGCGTTGCTGCGGCCGTG   GCAA
         GTCCGCGCCCTTCCTCGGCG CT
         GGCCG           GA
                    ----
GAM22437 18174  CGGCTATTTTTTTTTTTCTAT     T    TTTTCTA   A             -   A   TGA--   AG
2          TTTAGTAGAGATGGGGTTTC CGGCTA TTTTT      TTTT GTAGAGATGGGGTTTCACCA TGTT GTCT
GGTC
         ACCATGTTAGTCTTGAGGTC GCCGAT AAAAA      AAAA CATCTCTGCCCCAAAGTGGT ACGA CGGG
 CCAG

         AGGAATTTGAGACCAGGCTG     T    CATAA--   A             T   -   TCGGA   --
         GGCAGCATTGGTGAAACCCC GAATTTGA
         GTCTCTACAAAAAAATACAA
         AAATTAGCCG
                    --------
GAM22437 6639   CGGCTCAAGACTGACAACGC     AAG-   A  A    G  A  AGCACGGA
3          CGGCGACCAGCACGGAGGCG CGGCTC    ACTG CA CGCCG CG CC
         GCGGCGGTGGCGGTGGAGGA GCCGAG    TGGC GT GCGGC GC GG
         GCCG              GAGG   G  G    G  -  --------
GAM22438 21399  CGGCTCCGACACATCTCACT           C-  GT-   CG    TGT-    GGAGT
0          GTGCTGCGTGGTGGTGTGGT CGGCTCCGACACATCT  ACT   GCTG  TGGTGG   GGTTC
         TCGGAGTGAACTTCTCCTAT GTCGGGGCTGTGTAGG  TGA   CGGC  ATTATC   TCAAG
         TAACGGCCTGAGTCTGGATG           TC   GTC   A-    CTCT    -----
         TGTCGGGGCTG
GAM22438 9469   CGGCTCCGAGAGCAGGTTCT    -   AGAG      C   A  TC   ACAG  CCGG
1          TCGTGAGTTCCTCACAGGGC CGGC TCCG    CAGGTTCTT GTG GT  CTC    GG
         CGGTCAGAGCTACACATTGA GCCG AGGT    GTCCAAGAG TAC CA  GAG    CT
         GAACCTGAACATGGAGGCCG    G    ACAA      T   A  TC   A---  ----
GAM22438 3054   CGGCTCCGAGAGCAGGTTCT    -   AGAG      C   A  TC   GCAG  CCGG
2          TCGTGAGTTCCTCGCAGGGC CGGC TCCG    CAGGTTCTT GTG GT  CTC    GG
         CGGTCAGAGCTACACATTGA GCCG AGGT    GTCCAAGAG TAC CA  GAG    CT
         GAACCTGAACATGGAGGCCG    G    ACAA      T   A  TC   A---  ----
GAM22439 12401  CGGCTCTTGAGCTGCGCCAG      TGA-  --   CAGCC   GCCAG       ---  AGA  C-
0          CCCCCGGCCAGCGCGTACTG CGGCTCT    GCT  GCGC    CCCG    CGCGTACTGG   GCC   CT
GCCCCGGG
         GGCCAGACTCGCCCCGGGCC GCCGAGA    CGG  CGCG    GGGC    GCGCGTGGCT   CGG   GA
CGGGGCCC
         GCGGGGGACCCGGGGCACAG      CAAA   AC    AGAAC    ACA--       TCA   GG-  CA
         GGGGCACTTCGGTGCGCGAC -  GCGGG
         ACGGGCAAGAGCGCCAGGCA  CC
         AACAGAGCCG          GG
                    A  -----
GAM22439 20538  CGGCTGCAGAAGTACCGCCT       GAA    -   CT    --   A  GCAA
7          GCGGAGTAACTGCAAAGATG CGGCTGCA   GTAC CGC  GCGGA  GTA CT
```

CTGTCCGTGCGCGTGCTGCG GCCGGCGT CGTG GCG TGCCT CGT GA
GCCG --- C -- GT A ----
GAM22439 18311 CGGCTGCAGAAGTACCGCCT AAGT - CT -- A GCAA
8 GCGGAGTAACTGCAAAGATG CGGCTGCAG AC CGC GCGGA GTA CT
CTGTCCGTGCGCGTTGCTGC GCCGGCGTC TG GCG TGCCT CGT GA
GGCCG GT-- C -- GT A ----
GAM22440 9605 CGGCTGCAGCTCACAGCCGC AGCTC- C CTTCTT T CATTGCTCAT
0 CTTCTTCCTGGCCACATTGC CGGCTGC ACAG CGC CC GGCCA
TCATTGGCCTGGCCATGCGC GCCGACG TGTC GCG GG CCGGT
CTGTACTATGGCAGCCG GTATCA C TACC-- T ----------
GAM22440 9401 CGGCTGCCATCTAGTTTGAC C AGT CGC C-- G CAATTTCGCT
2 GCGGATTCTCTTGCCCACAA CGG TGCCATCT TTGA GGATT TCTT CCCA
TTTCGCTTGGGAAGACCAAG GCT ACGGTAGG AACT CCTGA AGAA GGGT
TCCTCAAGGATGGCATCG - --- --- ACC - ----------
GAM22440 19980 CGGCTGCTCTTCAGCACCGT TG CTT AC T T-- CCA
5 GGAGTGGGCGCGCCACGCGC CGGC CT CAGC CG GGAG GGGCGCG
CCTTCTTCCCCGAGCTGCCG GCCG GG GTCG GC CCTT CCCGCGC
GTGGCCG GT CC- A- C CTT ---
GAM22442 12783 CGGCTTTGTGGACTTTTGTC TG TTTT TCT-- CTGT
6 CTTCTAGGTCTGTGCTTTTA CGGCTTTG GAC GTCCT AGGT
ATAGGACTGTCTCCAAAGTT GTTGAAAC CTG CAGGA TTCG
G CT T--- TAATT ----
GAM22444 5461 CGGGAAGGTTCTGGAGGCAA AGG----- G AAC A- GAT
5 ACGAAGCCTGCGGGATCTGC CGGGA TTCT GAGGCA GA GCCTGCGG
AGGCGCTCAGTGCCTTGGGG GTCCT AGGG TTCCGT CT CGGACGTC
AAGAAGGAATCCTG AAGGAAGA G GA- CG ---
GAM22445 20001 CGGGACCCTATGATCTAAAG ACCC TCTAAAGC - ACCTTCTCACCATTC
0 CCGCCCGACCTTCTCACCAT CGGG TATGA CGCC CG
TCCGTGGCGCCCCCATTTCA GCCC ATACT GCGG GC
TACTGACCCG AGTC TTACCCCC T ----------
GAM22445 14359 CGGGAGAAGTTCGTGGAAAG G GTGGAA GAAAA AGTTGG
7 CCCTGAAAACAGAGTTGGCT CGGGAGAA TTC AGCCCT CAG
GGCAAAGGGCTGAGGTTCTC GCTCTCTT GAG TCGGGA GTC
TCG G ------ AACG- ------
GAM22446 22270 CGGGAGCGCCTGGTGAGAAT A - ---------- -- GAC
4 GTATTTTGACAAAGTATGTT CGGG GC GC CTGGT GAGAATGTATTTT
CTTAAGCCGGCACAGAAGGA GTCC CG CG GGCCG TTCTTGTATGAAA
AAGCAGCGCCTG G A AAAGGAAGACAC AA ---
GAM22447 12159 CGGGAGGTAGGAGCATAATG GG G A G AA--- AATT TG GTGTTAA
1 TAGAATTGGTGGGCGTGTTA CG A GT GGA CAT TGTAG GG GGC
AGCTTGTTTTCCTGCAACTG GC T CA CCT GTA ACGTC TT TCG
GATGGTCCCACGTTTCG TT G C G GGTCA CTT- GT -------
GAM22447 12934 CGGGAGTCGAGCAGTGATTC TC TGATTC --- T CATTTT
8 TTGGGAGCTGCTCATTTTAG CGGGAG GAGCAG TTGGGA GC GCT
CTGCCTGTCCCAGCTCTGCT GCCCTC CTCGTC GACCCT CG CGA
CCCTCCCG C- TC---- GTC T ------
GAM22447 14033 CGGGAGTCTTGGCCAGGGAT G TT A- AT A- ----- GCT AA C--- TCCAA
9 GGGGAGCGGGGAGGCTCCAA CGGGA TC GGCC GGG GGGG GC GGGGAG CC CTC GC

CTCCGCTCCAAGCCCCTGAG GCCCT AG TCGG CCC CCCC CG CCCCTC GG GAG CG

GAGGTCACTCCCCATCCAGC G CC CG GT AC ACCTA ACT AG TCCC -----
CACCCCTGCCCGCGGCTCCG
AGTCCCG
GAM22450 1609 CGGGCATCGGCTTCCAGTCC A CTTCCA CC - AG -- ACA CC ACCCAGC
1 GCGGAGGGCGAGGCGGCGTG CGGGC TCGG GT GCGGA GGGCG GCGGC GTGG GCGGC
GGC
GACAGCGGCCCGGCACCCAG GCCCG AGCC CG CGCCT CCCGC CGCCG CGCC CGCCG
CCG
CGCCCCGCCGCCCGCAAGCC - CCG--- C- G G- AA --- CC -------
GCGCGCCCGTCCGCCGCGCC
CCGAGCCCG
GAM22450 12264 CGGGCATGGGAAGTATGAGA AT AT A- - GTG CCG
3 AGGTGCTTGTGGGGGGGCCC CGGGC GGGAAGT GAGA GG TGCTT GGGGGGC
GGCTCCCTAGGCGTCCCATC GTCTG TCCTTCG CTCT CC GCGGA TCCCTCG
TCGCTTCCTGGGTCTG GG -- AC T --- ---
GAM22451 1329 CGGGCCGCTTTCCACAATGC GG G TTCCACAATG G A C- - AA AAGA-- GC
3 AGTTGCTGTAGTCATCTACA CG CC CT CAGTT CTGT GTCAT TA CAATAATA TCCA GGA
ATAATAAATCCAAAGAGGAG GC GG GA GTTAA GACA TAGTA GT GTTATTAT AGGT CCT
CCAGTTACCATGACTCATCC AT G ---------- - A CT C AG CACGGA AC
AGGCACTGGAGATATTATTG C ACCAT
CTGTCATGATAACAGAATTG AGTT
AGGGGTACG TCAG
- -----
GAM22452 9579 CGGGCGGGGTGTCGGCTTAA GG G T TAA AACCTC T GAAAAAACATTA
6 CTTTAACCTCGCGTCCCCTC CG CG GGTG CGGCT CTTT GCG CCCCTCG
GGAAAAAACATTACGAGGGG GC GC CCAC GCTGG GAAA TGC GGGGAGC
CGTAAAGAAAGCGGTCGCAC AA G - C-- GAAA-- - ----------
CGCGAACG
GAM22453 1747 CGGGCGTGGTGGTGCGTGCC CGT- G G - AGCTACTCA
0 TGTAGTCCCAGCTACTCAGG CGGG GGTGGT CGTGCCT TAGTC CC
AGGCTGAGGCATGAATCGCT GTCC TCGCTA GTACGGA GTCGG GG
TGAACCTG AAGT A - A ---------
GAM22454 22218 CGGGCTTTCCCAAGAATCCT AA- ATCC C GCTT A TTCG
3 CCCAAGGTTGCTTCCCCAAG CGGGCTTTCCC GA TCC AAGGTT CCCCA GC
CTTCGGCTGGGGTTGGCCTT GCCTGGAAGGG CT AGG TTCCGG GGGGT CG
TGGATCCCCGGGAAGGTCCG CCC ---- T TT-- - ----
GAM22454 9115 CGGGCTTTTCAAAAAGGAGG G- AAAAA ACA AAA TTC T CGCCCCCT
4 GACACAAATTAAACCCTTTC CG GCTTTTC GGAGGG CAAATT CCCT CCCT TGTTGGA
CCCTTTGTTGGACGCCCCCT GC CGAAGAG CCTCCT GTTTAG GGGA GGGA ACAACTT
TTCAACATAGGGAGGGGATT GA AACA- C-- --- --- T --------
TGCTCCTCCACAAGAGAAGC
AGCG
GAM22454 21457 CGGGGACAGCGGTCACTGCT GCGGTCAC GG-- CACGTCCACCCCCAC

7 GGGCCTTCCACGTCCACCCC CGGGGACA TGCTG CCTTC
CACGAAGGATAACAGCAAAA GTCCCTGT ACGAC GGAAG
TGTCCCTG AAA----- AATA ----------
GAM22455 5758 CGGGGACTGCAGGAGGCGGG - - G-- AGA - AAGAGGGA
0 GCAGACGGGCTGCAAGAGGG CGGGG ACTGCAGG AGGCGG GC CGGGCTG C
AGCCGGCCCGACGCGGACCG GCCCC TGACGTCC TTCGCC CG GCCCGGC G

CTTCCCTGCAGTGCCCCG G C AGG CA- C --------
GAM22455 16720 CGGGGACTGGATTGACAGTA TGG - TC ------- CTC
2 TCCTGGCCTTCTCAAGGTCC CGGGGAC ATTGACA GTA CTG GCCTT
CTGCACAGCTTGCTTGTCGA GTCCCTG TAGCTGT CGT GAC TGGAA
TGTCCCTG --- T TC ACGTCCC ---
GAM22456 19134 CGGGGCCAAAAAAGGGGGGG C--- TTAAA GGA
5 GGTTTAAACCCCCCGGAGGG CGGGG CAAAAAAGGGGGGGGGT CCCCCC
GGGGCCCCCTTTTTTTTTTG GCCCC GTTTTTTTTTTCCCCCG GGGGGG
CCGACCCCG AGCC ----- ---
GAM22457 9079 CGGGGCGCGGGGCTCCCGGG GG C - G C- G TCTG
9 CGCGCGTGCCCGGGGTCTGC CG GCG GGGGCT CCCGGGC CGCGTGC CG GG
TGTGCAGCGCGCGGCCCGGG GC CGC CCTCGA GGGCCCG GCGCGCG GT TC
CAGCTCCCGCTACG AT - C - AC G ----
GAM22458 18146 CGGGGCTGACGTGCCCGAGT GG A CG---- GC T GATGCCA
8 CACCAGCGATTGTTGATGCC CGG CTG CGTGCC AGTCACCA GA TGTT
AGACACTTATGGTGATTGGA GCC GGC GTACGG TTAGTGGT TT ACAG
CCCGGCATGGCGGTACCG AT G CCCAGG A- C -------
GAM22459 1544 CGGGGCTTGAGCAGTTGGTT GCTT G- G T A- A GGTGGCA
5 GGGCTTGCAGCAGCCGGTGG CGGG GAGCA TT GTTGGGCT GC GC GCC
CAGGCGGTGGGCAGCCCAAT GCCC CTCGT AG TAACCCGA CG TG CGG
GGAGATGCTCCACCCG AC-- AG G - GG G -------
GAM22460 993 CGGGGGAGTTGTGGTGCTTC A - TG G TCTCT -- -- TGCT
2 TGGGTCTCTGGGCCCCGCCT CGGGGG GT TG GTGCTTCT GG GGGC CCC GCC
GCTGGCCTGGGATGCCCTCA GCCCCC CG GC TACGAAGG TT CCCG GGG CGG
TGTTGGGAAGCATTCCGTGC - T CT G GTACT TA TC ----
CCCCCG
GAM22461 5466 CGGGGGGGCCTGGGTCCCAG G T --- - G G CT TC GTGC
4 CGGGTGGGGGGGCTGGTTCG CGGGGG GCC GGGTCCCA GCGG GTG GG GG GGT GCG

CGGTGCCGTTGCTCACCGCC GCCCCC CGG TCCGGGGT CGCC CGT CC CC TCG TGC
GTGCGCCGCATTTGGGGCCT G - TTA G G G AC T- ----
GGCGCCCCCG
GAM22461 14320 CGGGGGGGCGCCGGTGCTGA GG GAAACA -- G CGGG
5 AACAGGGTCCCCGCGCCGGG CGGGGGGGCGCC TGCT GGG TCCCC CGC
GCGGGGGAAACCCAAAGCGG GCCCCCCCGCGG GCGA CCC AGGGG GCG
GGCGCCCCCCCG G- AA---- AA - ----
GAM22463 685 CGGGGTGGGCGGGGGGAGCC T GG CC TCAC ATGGG
2 GAGCAGTCACGTATGGGGCA CGGGG GGGCGGGG AG GAGCAG GT
TCTGCTCTTTTCTCTGTCCT GTCCT CCTGTCTC TT CTCGTC CG
CCTG - TT -- TA-- -----
GAM22464 1091 CGGGTCACAGCGCCGCCGCC T -- C C CC T T- GCCCCT
8 GCCCATGCTGCTGCCCCTAG CGGG CAC AGCG CGC GCCG CA GC GCT
CCTGCCTGCACGGCCGCGTC GTCC GTG TCGC GCG CGGC GT CG CGA
GCTCAGTGCCTG - AC T C AC C TC ------
GAM22465 18362 CGGGTGACAGGACTTTTCGA - AC T TC -- ---- TC T GCCCA
9 ACAAGGTCTCACCATGCTGC CG GGTG AGGACT T GA ACAAGG TC ACCA GCT
CCAAGCTGGTCTGAAAACTC GC CCAC TCCTGA G CT TGTTCT AG TGGT CGA
TTGTCCTCAGGCAGTCCTCC T CC C GA CC CAAA TC - -----
CACCTCG
GAM22466 9859 CGGGTGAGCCCCAAGGAGAA CCCA - AC ACCAA AAGAAA

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0          GACCGTACCAATGAAAGAAA CGGGTGAGC   AGGAG AAG  CGT    TGA
           TCAACGCTTGCTCCTGACAG GCCTACTCG   TCCTC TTC  GCA    ACT
           CTCATCCG                ACAG    G  --  -----  ------
GAM22467 9318  CGGGTGGATCCCGAAGTGCC    T-   CC  A  -  G   AC-    T   A TGCGG
0          GGCGGCACCGCGCATCCTCA CGGG  GGAT  CGA GTG CCG CGGC   CGCGCA CCTC G
           GTGCGGCGGAGGTGCGCGAG GTCC  CCTA  GCT CGC GGC GTCG   GCGCGT GGAG C
           CGCTGCGGACGCATCGAATC    TT   A-  A  A  -  CGA    -   G -----
           CTTCCTG
GAM22467 18711  CGGGTGGTAAAGTGGCAACG    T   A      CG  GAA     TATCTGGTCT
3          GCGAATTTGGGTATCTGGTC CGGG GGTA AGTGGCAA  GC   TTTGGG
           TCCCAAAAGTACTTGCCGCT GTCC CCAT TCGCCGTT  TG   AAACCC
           CTACCCCTG           -   C      CA  A--     ----------
GAM22467 18594  CGGGTGTGCTGCTCGGCTAG         CTC-   TA   G   --   GGCG
4          CGGCGGCGGCGGCGGCCCAG CGGGTGTGCTG    GGC  GCG CGGC  GGC
           TCGGTGTATGCCTTCTCGGC GCCCGCGCGGC    CCG  TGT GCTG  CCG
           GCGCCCG                 TCTT   TA   G    AC   ----
GAM22467 3344   CGGGTTCACACGCCCGGGGG   G    CAC-----   G  G   GAAAAGCACCACA
9          GGGGAAAAGCACCACACTTC CG GTTCA       GCCC GG GGGG
           GCTGGGGCCAACAAATTGAA GC CAAGT       CGGG TC CTTC
           CGCG              G    TAAACAAC    G  G   -------------
GAM22468 12896  CGGTAACTTTATTACACTGG      CTT    ACAC      CATTAATATAGGAA
9          AAAACCATTAATATAGGAAG CGGTAA   TATT    TGGAAAAC
           TTTTCCACAAATACTTACTG GTCATT   ATAA    ACCTTTTG
                          C--    AC--       --------------
GAM22469 18235  CGGTACTATGCATATGGTCC --------- T     CA     - AATATCAAA    TGA  CAT    GAC---
8          AATATCAAAGAGAATGATAG C        GG ACTATG  TATGGT CC       GAGAA   TAG  TGAAG    T
           CATTGAAGGACTCGGGGATA G        CC TGGTAT  GTATCA GG       CTCTT   ATC  GCTTC    A
           TCTAACAGCAATACCTGATC  AAACTATAA -     AC     T ---------    CG-  AC-    ATCACT
           ACTACTTCGCACTAGCTTCT    GATATCTAACAGCAATA
           CGGTACTATGCATATGGTCC CGGG
           AATATCAAAG          GTCC
                          -----------------
GAM22470 21210  CGGTATCGTAGATAGACCTG    A   TAGATAGACC    TG  AG--  GAG  AAGCA
5          GCTGGGAGGAGAGGCAAGCA CGGT TCG         TGGC  GG    GA   GC
           GTAAATCGAGACTTGGCCAT GCCA AGT         ACCG  TC    CT   TG
           GAACCG              -   ----------    GT  AGAG  AAA  -----
GAM22470 21383  CGGTATTTAACTTTTTGGCA      TTA--    T  GC     GAAGC       ----    ATAGT       AT
8          AAATAGAAGCTTTGGTCATA CGGTAT    ACTT TTG  AAAATA    TTTGGTCA    TAGCC    TCTTTAAAA

           GCCATAGTTCTTTAAAAATT GCCGTG    TGAA GAT  TTTTAT    AAATTAGT    ATTGG    AGAAATTTT

           TTTTTAAAGAGGTTATCTCT      CTCCG    C  --     AACA-       CTCT    -----        --
           GATTAAAACAATATTTTTAG TT
           CAAGTGCCTCGTGCCG

                          --
GAM22472 21031  CGGTCTCCTACTTCATAACT     CT       -   A    AG      G-  TT ACGG
9          TGAGTTCGGGGATTTCACGG CGGT  CCTACTTC ATA CTTG  TTCGGG  AT  C
           GGGATAATCTGGGGGCGGGG GCCA  GGATGGGG TAT GGGC  GGGTCT  TA  G
           TATAGGGGTAGGGTACCG      TG       A   G    GG     AA  GG ----
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GAM22474 12155 CGGTGATTGCTGGTATGAGG TGCT A- A TCTAATCTT TTCGA
6 GACATCTAATCTTGGTTCGA CGGTGAT GGT TGAGGG CA GG
CTTTAAATTTGCTCTCGGAA GCCATTA CCA GCTCTC GT TC
CCCATTACCG C--- AG - TTAAATT-- -----
GAM22476 19189 CGGTGGCGCTGCGGTGGTTT G TGGT TG TG TTTG
2 CCCCGTGTGTGGGCTTTGGC CGGTGGCGCT CGG TTCCCCG TG GGC
CGCCGTGCGGGGAATTTGGG GTCACCGCGG GTT AAGGGGC GC CCG
CGCCACTG - T--- GT CG ----
GAM22476 19172 CGGTGGCGGCGGCGACTGCT G G GA G GAAGGAGGAGGAGGA
3 GCGGTGAAGGAGGAGGAGGA CGGTG CGGCG C CTGCT CGGT
GCCGAGCGGGCGCTGGCACC GCCAC GTCGC G GGCGA GCCG
G G - -- - ----------
GAM22477 18611 CGGTGGGGATAGCGATGATT - AT - GT GAGGTGAAATA
3 ATGGTAGCGGAGGTGAAATA CGGTGGGGATAG CG GAT TATG AGCG
TGCTCGTGTGTCTACGTCTA GTCATCCTTATC GC CTG GTGC TCGT
TTCCTACTG T AT T -- ----------
GAM22478 18102 CGGTGGTTCGCCGTGCGCTG TC T- TGT GTG -- GTGA
0 TCTCTGTGTCCGTAGGGTGA CGGTGGT GCCG GCGC CTCT TCCGTA GG
CCAGTACGGAAGGGGCGCTC GTCGCCA CGGC CGCG GGGA AGGCAT CC
CGGCTTACCGCTG TT CT --- --- GA ----
GAM22480 4104 CGGTTCTCTGGAGGCTGAGT CT -- TGCCGTT - --- - A GC - TCTGTT
6 GCCGTTGCGGTGCCCTAGGA CGGTTCT GGAG GCTGAG GC GGT GCC CT GGAG CGA GC

GGCCGAGCTCTGTTGCTTCG GCCAGGA TCTT CGACTC CG CCA TGG GA CCTC GCT CG

AACTCCAGTGGTCAGACCTG CT TA TATACT- T GAC T - AA T ------
CTCATATCTCAGCATTTCTT
CAGGACCG
GAM22480 12951 CGGTTGCTCAGTGACGCCAC G GA A--- GAGAA TGAG
9 TGTGGAGAAGGATGAGTCCC CGGTT CTCAGT CGCC CTGTG GGA
ATGCAGGCAAGGTGGTGCTG GTCGA GAGTCG GTGG GACGT CCT
AGGAGCTG G TG AACG AC--- ----
GAM22481 20043 CGGTTTAGCTGTGGTGGGTC G G G TT CC AGAC
2 TTGTCCAGCCAAGACTGGCT CGGTTTA CTGT GTGG TC GT AGCCA
CATTTGACTACGACAGGTGG GTCAGGT GACA CATC AG TA TCGGT
ACTG G G - TT C- ----
GAM22482 9567 CGTAAATCTATGGGTAGAAT A- C AGAA GGAACTCGATA
3 GCAAAGGGAACTCGATACTT CGT AAT TATGGGT TGCAAAG
TGCAGCAAACTTATGAATTA GCA TTA GTATTCA ACGTTTC
AACG AA A AACG ----------
GAM22483 3523 CGTAATGTGGCTACTGGTAA AA - AC-- AA-- AAACGGATAAA
4 GGTAAAACGGATAAATGCCC CGT TGTG GCT TGGT GGTA
CAGACCAAAACAGCTCGCAA GCA ACGC CGA ACCA CCGT
CG -- T CAAA GACC ----------
GAM22483 18007 CGTACCACCTCCCACTAAAA CC - AAAAGCTAACTCC GACCC GTGCTTTTC
GATTC
9 AGCTAACTCCAGAATGGACC CGTA ACCTC CCACTA AGAATG CTTT ACTG G
CCTTTGTGCTTTTCACTGGA GCGT TGGAG GGTGGT TCTTAC GAAG TGAC C
TTCGAGCCTGTCCAGGTTCA -- A ---------- ATCTC AATTATA-- AA---
ACAGTATATTAAGAAGCTCT GTCC

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          ACATTCTTGGTGGAGAGGTT AGCCT
          GCG              TTGGA
                           ----
GAM22484 22235  CGTACTGTACTTACTAGAAC    CT  A     A  ACTGCG    TATAT
5          TGCGCTAGCTATATGTTAGA CGTA  GT CTTACT GA     CTAGC
          TACTGTCGGTAAGACTCTAC GCAT  CA GAATGG CT     GATTG
          G                CT  -     -  GTCATA    -----
GAM22485 874   CGTAGCTCCTGGTCCAGCTG  T    C    CAGC  CAC---  TT  CCTCC
4          CCACTGTTTCTCCTCCAGAT CG AGCTC TGGTC   TGC     TG  TCT
          TCAATTCCTGCACCGTGATC GC TCGAG ACTAG   ACG     AC  AGA
          ATGAGCTCG          -   T    TGCC  TCCTTA  TT  -----
GAM22485 3672  CGTAGGCCGATTTCCGGGTG   AG  CGA-      TG  TA   -   -----      TTATACTCATGAATC
8          TTGTAGGTTTCTCTTTTTCA CGT  GC   TTTCCGGG  TTG  GGTTT CTCTT    TTTCAGGC
          GGCTTATACTCATGAATCTT GTA  TG   AGAGGTCC  AAC  TCAGA GGGAG    GAAGTCTG

          GTCTGAAGCTTTTGAGGGCA   GA  ATAA      TG  CG   C    TTTTC      ----------
          GACTGCCAAGTCCTGGAGAA TT
          ATAGTAGATG

                    --
GAM22486 12895  CGTATAACTGAAAGTTGGGG   ATA   AA-----  TG --    CCA    TCAG  G  T   -     GTAT
8          AAGACCACCAGGTCAGTGGA CGT   ACTG     AGT  G  GGAAGA   CCAGG    TG AG GGAG AGGTTTT

          GTGGAGAGGTTTTGTATATG GCA   TGAT     TCG  T  CCTTCT   GGTCC    AC TT CTTC TTCAAAG
          GTCTTCTTTGAAGAAACTTA   GG-   GATCCTG   GT AA    AC-    CGA-  G  -   A     AAGT
          CTTCTTGCAAGCCCTGGCAT AT  TCTT
          CTTCCAATTGGCTGTCCTAG   GG
          TAGTGGACG          TC
                    T-  ----
GAM22488 13012  CGTATTTCTAAGATGTTTCT    TTCTA   GT-    -----   ATCTCCAA
6          GTGTCATCTCCAAGACAATA CGTAT    AGAT   TTCTG    TGTC
          TTCAGAATGAATCTCCAATA GTATA    TCTA   AAGAC    ACAG
          TATG               TAACC    AGT    TTATA   --------
GAM22490 8841   CGTCAGGCTCCTGCAACCCC   CA       AACC   G----  T   CAAG
5          AGGCATGAACCAAGGTTTCT CGT  GGCTCCTGC    CCAG    CA GAAC
          GAACTACTGGGCGGGAGCCA GCA  CCGAGGGCG    GGTC    GT TTTG
          ACG              A-       ----   ATCAA  C   ----
GAM22491 16718  CGTCATGTCTAAGTCAGAGT    T  CTAAG    T  CTAAAG    GAA  C    AAGCT
0          CTCCTAAAGAGCCCGAACAG CGTCA GT    TCAGAG CTC     AGCCC   CAG TGAGG
          CTGAGGAAGCTCTTCATTGG GTAGT CA    AGTTTC GAG     TTGGG   GTT ACTTC
          AGGGTTGAGCTTTGAAACAA    - ACAA-    -  ------    AG-  -   -----
          CTGATG
GAM22494 22250  CGTCCTTTTCCCTTCCTTCG     TTTCCC   T   -  TTCCTTCCTTCCTTTCGCC
2          TCCCTTCCTTCCTTCCTTTC CGTCCT     TTCC TCGT CCC
          GCCGGGCGCGATGGAGCCGG GCGGGG     GAGG AGCG GGG
          GGCG               CC----   T   C  --------------------
GAM22494 12172  CGTCGGGCCCGGTTCGAGGT    GG--  C    GA    TGA--  A   AAGCA
8          GGCTGACGAGGACAAGCAGT CGTCG   CC GGTTC  GGTGGC    CG GGAC
          CCCGGCTGCGCTACCAGAAC GTAGC   GG CCAAG  CCATCG    GC CCTG
          CTGGAGAACGATG          AAGA  T   A-     CGTCG  -   -----
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GAM22495 18679  CGTCTACAATAACCTCAACC     ACAATAA  TCA  CC   TA   A    AAAAC
2          CCCTTAGTTACAGAAAAACT CGTCT      CC   AC  CCT  GTT CAGA
           CTGCAACAGGCAGTGGAATG GCAGA      GG   TG  GGA  CAA GTCT
           GAGAGACG              GAGGTAA  ---  AC   --   C    -----
GAM22496 9604   CGTCTCCGAGTTTGCGACTC  TC       - GA -   GA    CGTC
1          GCGGACCGGCGTCCCGGCGC CG  TCCGAGTTT GC  CT CGCG  CCGG
           GAAGAGGCTGGACTCGGATT GC  AGGCTCAGG CG  GA GCGC  GGCC
           CG               TT       T  GA  A    --   ----
GAM22496 3811   CGTCTCCTTAATGGTTCCTG     CCTT-    TTC    GT----       T  TTTATT
2          ATGTACGGTGGTTTATTTAT CGTCT     AATGG   CTGAT     ACGGTGGT TA
           TTGCATCACCGTCCACGAAT GTAGG     TTACT   GACTA     TGCCACTA GT
           CAGTTTCATTTTCATGGATG     TACTT    TT-    AGCACC       C  ------
GAM22498 21232  CGTCTTCAATGGGGTAGTGA     TCA       G-     TGT      GTCTATGGCTTATTTTTG
3          GGTGTTGTTCATGTCTATGG CGTCT   ATGGGGTA  TGAGG   TGTTCAT
           CTTATTTTTGATGAATGTTC GCAGG   TATCCTAT  ACTCC   GTAAGTA
           CTCAGATATCCTATGGACG      ---       AG     TT-      ------------------
GAM22498 16648  CGTCTTCCAGCCGGGGGACA       A-  -        -----  AT  T        CTC   TTT
4          CTATCCTCGAAGACACCTCG CGTCTTCC  GC CGGGGGACA    CT  CC CGAAGACAC   GTG
           TGTTTCACCCGTGTTTTTGC GCGGGGGG  CG GCCCCCTGT    GA  GG GTTTTTGTG   CAC
           GGCGAGAAGGCTGTCCCCCG       GG  T       CGGAA  GC  C       CC-   ---
           TGCGGGGGGGGCG
GAM22499 18469  CGTCTTTGTCAAGCACCAGT     T   AAGCA  AG  AC   A -  ATCA
0          TACTGCACGCATCAGCTGAG CGTCT TGTC     CC  TT  TGC C GC
           CACGGAGGGGATAGGCACGG GCAGG ACGG     GG  AG  ACG G CG
           ACG                  C    ATAG-  G-  GC   A T  ----
GAM22500 12904  CGTGAGCCAATTCTCCCTAA     GCCAA     CT---    -    CCCTT-      TAGT
8          TAAACTCCCTTATATATGTA CGTGA     TTCTCC     AATA AACT     ATATATG
           GTCATATATCCTACTAGTTC GTACT     AAGAGG     TTGT TTGA     TATATAC
           TGTTCCTCTGGAGAATCATG     -----     TCTCC    C    TCATCC      ----
GAM22501 12615  CGTGATCGTTATGATAGAGA  -    -       GAGAAA-  -    T  GCCTTA
8          AAGAGATCGTGAGCCTTATT CG TGATC GTTATGATA      GA GATCG GA
           TTGATCGTCAAAGTAATGTC GC ACTAG CGATACTGT      CT CTAGT TT
           ATAGCAGATCATCG       T    A       AATGAAA  G    T  ------
GAM22505 8775   CGTGCGTGGAAGTGGCTCGC      - G     G  GCAGATA   GAGAA
7          AGATACTGGAGAACGGGAAG CGTGCG TG AAGTG CTC      CTG
           GGAGACGCTTGCAGCGCGCG GCGCGC AC TTCGC GAG      GGC
                              G  G     A   GGAAG--   -----
GAM22506 12319  CGTGCTCTATGCCCGGACAG   G   TA   CGG   - TG   GC    A--    CTATCTT
0          TGGTGGCGCCGATGGGCTAT CGT CTC  TGCC   ACA G  GTG  GCCG   TGGG
           CTTCCCAGAACGGCACGCTG GCA GAG  ACGG   TGT T  CGC  CGGC   ACCC
           TATGTGACGGCACGGAGGAC   G   GC    CAG   A GT   A-    AAG    -------
           G
GAM22510 4416   CGTGGGGCTGTGGCCACCCT       TGTG    CCT--    AACTCCTTTC
8          TTCAAACTCCTTTCTGAATG CGTGGGGC    GCCAC    TTCA
           CTTGTGGCATCTGCCCCATG GTACCCCG    CGGTG    AAGT
                              TCTA     TTCGT   ----------
GAM22513 21608  CGTGTCCCGGAGATGGGAGT    TCCC     ----  A   AA-      AATG
5          TCAAGGCTCAGTAATGGCTG CGTG    GGAGAT    GGG GTTC   GGCTCAGT
           GGTCCCCGAGCCCTGCCAAT GTAC    CCTCTA    TCC CGAG   CTGGGTCG
           CTCCTCATG             T---     ACCG   -   CCC       ----
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GAM22516 9017 CGTGTTTTTGTGAACACAAA TT AACACAAATT ACAAA GAGGTA
6 TTCTCCACAAATGGGGGAGG CGTGT TTGTG CTCC TGGGG
TACCCTAGAAGGGAGCACAA GCACA AACAC GAGG ATCCC
TTACACG TT ---------- GAAG- ------
GAM22516 14074 CGTTACGGGTGCTGGCGGCT TAC-- -- G C CA GA AAA TAAGCAGCT
9 GCAGCCGGAGTTCAAACCTA CGT GGGT GCT GCGG TG GCCG GTTC CC
AGCAGCTGGAAGGAACCATG GCG TCCA CGA TGTC AC CGGT CAAG GG
GCCAACTGTGAGCGTACCTT TTACT TG G A -- AC GAA ---------
CATTGCG
GAM22517 4009 CGTTATCCTCTCAGGATTCT TA CA TCT C- GCACTAATTTATAAA
7 TATCTGGGCACTAATTTATA CGT TCCTCT GGAT TAT TGG
AACCATTATATTTATTCAGG GTA AGGAGG CTTA ATA ACC
AGGACCATG CC A- TTT TT ----------
GAM22518 9391 CGTTCAGCAAGGACCCAAGA C A A-- AA CG GCGATAACCCA
4 GCGCGGGGCGATAACCCACC CGTT AGC AGG CCC GAGCG GG
TATGCTCAGGGGAACCCTCG GCAA TCG TCC GGG CTCGT CC
CTAAACG A C CAA GA AT ----------
GAM22520 2925 CGTTGATTTTGGGCCTATTG A G ATT---- ACACCT TATGACGCTT
8 AAGACACCTGCTCAGTATGA CGTTG TTTT GGCCT GAAG GCTCAG
CGCTTCTGAGCTAAAAGCTT GCAGC AAGG TCGGG CTTC CGAGTC
CCATGAAGGGGCTGGGAACC C G GAAGTAC GAAAAT ----------
GACG
GAM22520 20342 CGTTGCCCACCCACCCCACA CA AC- AGCC A- --------- GAACA A AGCAGG
9 GCCCAGAGTGGGGGCTGAAC CGTTGCC CCC CCCAC CAG GTGGG GGCT AGC CCC
AAGCACCCAGCAGGGGGGCT GCGACGG GGG GGGTG GTC TACCC CCGA TCG GGG

AAACAAGCCAATTCATTTCC AG GCT A--- CC TTTACTTAA ACAAA - ------
CATCCCTGAGTGGGTCGGGG
GAGGCAGCG

GAM22523 20942 CGTTTCCTTTCCCGTTGGGG CC TCCCG -- AC CCCTGC
7 CTTCCACTGACCCTGCTCAC CGTTT TT TTGGG GCTTCC TGA
CGGAGGCGTCCTAGATGTAG GCGAG GA GATCC CGGAGG ACT
TAGAGCG AT TGTA- TG CC ------
GAM22523 21592 CGTTTCGGGTGCTGGCGGCT TTC-- -- G C CA GA AAA TAAGCAGCT
8 GCAGCCGGAGTTCAAACCTA CGT GGGT GCT GCGG TG GCCG GTTC CC
AGCAGCTGGAAGGAACCATG GCG TCCA CGA TGTC AC CGGT CAAG GG
GCCAACTGTGAGCGTACCTT TTACT TG G A -- AC GAA ---------
CATTGCG
GAM22525 6224 CGTTTTTATCATTAAGACCT ATC AA- TTT AGC T--- TTA -- CCAT--
4 ATTTGTTAGCTAGTAGAGCT CGTTTTT ATT GACCTA GTT TAG AGAGCT TGT TCGCTGT
TTATGTTCGCTGTCCATGAA GTAGAAG TAA CTGGAT TAA ATC TCTTGA ACA AGTGACA
ACCTTCTGTAACCACAGTGA A-- GAC TAT GTT TCTT TGA TC CCAATG
CTACAAGTAGTTCTTTCTCT - ACC
ATTGAATTATTAGGTCCAGA GAA
ATAGAAGATG CTT
T ---
GAM22534 8954 CTAAAGTCCATAGTTTACAT GT ----- A TTCATT
4 TAGAGTTCATTCTTTGAGTT CTAAA CCATAGTTT AC TTAGAG

TCACGGATTATGGGTTTTGG GGTTT GGTATTAGG TG AGTTTC
TG CACTT - ------
GAM22536 3747 CTAGATGAGTAACAAAAAAA ---- TAACAAA-- A T- GAAAT
6 TGAAATAAGTTCTTGGAAAT CTAGA TGAG AAA TGAAATAAGT CTTG
TAAGCCATTTATTTTAATTT GATCT ACTT TTT ATTTTATTTA GAAT
GCTATTTTTTTCAATGTTCT TGTA TTTTTATCG A CC -----
AG
GAM22538 3442 CTAGCAGAGTAGAAATAAGA A- AGAAA CCA ACCAGGTAG
9 GGCCAGGATTCAGCACCAGG CTAGC GAGT TAAGAGG GGATTCAGC
TAGGCTGGATTCCTTCTTAG GGTCG CTCG ATTCTTC CTTAGGTCG
GTGGCTCAAGCTGG AA GTGG- --- ---------
GAM22542 16612 CTAGCGGGTGGCCCTCTCTG AG T TCTCTGGAA G C- TAGCA
0 GAACAGGTCGATTCCCGGGT CT CGGG GGCCC CAG TCGATTCC GGG
AGCACCCTCGGAGTTGAGCT GA GCCC CCGGG GTC AGTTGAGG CCC
GGGGCCCCCGAAAG AA - --------- G CT -----
GAM22547 19308 CTAGGCAATGTGGTACATGC - AT C-- ATA-- GCAA
1 TATACAGGCAACTGAGCAGA CTAGG CA GTGGTA ATGCT CAG
GCATTCATGCCACTGACCTG GGTCC GT CACCGT TACGA GTC
G A -- ACT GACGA ----
GAM22551 22303 CTAGGGGTCTGTACCGGGCT CT-- C- C CC-- C TCACCTCT
8 GGCCTGTGCCTATCACCTCT CTAGGGGT GTAC GGG TGG TGTGC TA
TATGCACACCTCCCAACCCC GGTCCCCA TATG CCC ACC ACACG AT
TGTATTCCCACCCCTGG CCCT TC A CTCC T --------
GAM22551 3080 CTAGGGGTCTGTACCGGGCT CT-- C- C CC-- C TCACCTCT
9 GGCCTGTGCCTATCACCTCT CTAGGGGT GTAC GGG TGG TGTGC TA
TATGCACACCTCCCACCCCC GGTCCCCA TATG CCC ACC ACACG AT
TGTATTCCCACCCCTGG CCCT TC C CTCC T --------
GAM22552 20876 CTAGGTACCCATAAGAAAAA CCATA- AAA TT TC T- TG GAATCTG
5 AGATTCATTCTCTGTGAAAA CTAGGTAC AGAA AGA CAT TC GTGAAAAC TAG
CTGTAGGAATCTGTTGTTGT GGTTTATG TCTT TCT GTA AG TACTTTTG GTT
TTTCATTTGAATATGCTCTA ATCTCG CA- C- TA TT TT -------
CTTCTGCTCTAGTATTTGG
GAM22552 20658 CTAGGTCTGATGGAAGGCTC G TGG T --- CTCATTCTTCTTATTCCAC
7 AGGAGAAACTCATTCTTCTT CTA GTCTGA AAGGC CAGG AGAAA
ATTCCACTTTCTTGCCCTGG GAT CAGATT TTCCG GTCC TCTTT
CCTTGTTTAGACGTAG G TG- - CGT ----------
GAM22558 3682 CTAGTGCATCTGGGGCCCTG G ---- - T-- GC TT T TTACA
7 GTGTTGGCTATTTATGGTTA CTAGT CATCTGGG GC CCTGG GTTG TA TA GG
CACCTATCTACTCGATTTCC GATCG GTAGATCC CG GGACC TAGC AT AT CC
CAGGAGCGTATCCTAGATGA A TATG A CTT TC CT - -----
GCTAG
GAM22559 18426 CTAGTGCCTGGGCTTGCTCA G - TTG - TTCTT TTT
2 CGTTCTTGGTCACTTTGTGG CTA TGCC TGGGC CTCA CG GGTCAC
CCCTTGTTGAGGCCCACGGC GAT ACGG ACCCG GAGT GT CCGGTG
ATAG - C --- T TC--- ---
GAM22559 9373 CTAGTGTAGGGTTTTTTGAC T GG TGAC T AAAA GTTAA
8 TCCCTTTAGTGAAAAACTTG CTAG GTAG TTTTT TCCC TTAGTG ACTT
TTAAGGGTGGTATATTAATG GGTC CATC AGAGG AGGG AATTAT TGGG
GGAAATGGAGAGACTACCTG - AG TAA- T ATGG -----
G

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GAM22559 2875   CTAGTGTATTTACTATTATG     G  T     TTAT    T  ATT  A  ATTTAGG
9               CGATTGAATTGCAGTATTTA CTAGT TAT TACTA    GCGA TGA   GC GT
                GGATAGTTACTCATTCGTTT GATCA GTA GTGAT    TGCT ACT   TG TA
                CTTAGTGTATGACTAG        -  T    TCTT    T  CAT  A -------
GAM22563 1161   CTAGTTTTATTAACTAGACT          ACTAGACTTATA      CTT   ATACTAA
6               TATAAGAAGGTCTTCGTATA CTAGTTTTATTA          AGAAGGT   CGT
                CTAAGCGTAACCTTTTATCA GATCAAAATAAT          TTTTCCA   GCG
                CACTCACATAATAAAACTAG          ACACTCACACTA      AT-  -------
GAM22566 3275   CTATACATAGTCATATATGT    AC          A      ACTA    ACCATA
2               AATATATAACTATATGACCA CTAT  ATAGTCATATATGT ATATATA    TATG
                TACATAGTCATATATGTAAC GATA  TATCAGTATATACA TGTATAT    ATAC
                ATATATGACTATACATAG      CA          A      ACTG   ------
GAM22572 9367   CTATCATCATCTAGCACCTG      T  C-   A-      --    CCCACGT
5               TCCGGTTCCCCACGTGAGCC CTATCA CAT  TAGC  CCTGTCC  GGTTC
                TTGGGCAGGACGCTGCAGTG GGTAGT GTG  GTCG  GGACGGG  CCGAG
                TTGATGG               T  AC    CA      TT     -------
GAM22573 5641   CTATCCACGTTCGCGCAGGG   A  A       CAGGGG  AATA  TTTTTACT
2               GGCAATACATTTTTACTTGG CT TCC CGTTCGCG     GC    CA
                GGGCAATTACCGCGGACGGG GA AGG GCAGGCGC     CG    GT
                ACAG              C  -       CATTAA  GGG-  --------
GAM22575 12672  CTATCTGTCTTTAACAACTG       TCT-      C----      AGTTG  TTTTGT
4               CTGCCAGTTGCCTTTTGTGG CTATCTG    TTAACAA    TGCTGCC    CC
                GGTAGCATACTTTTGTTAGC GGTGGGC    GATTGTT    ACGATGG    GG
                AACCGGGTGG              CAAC      TTCAT      -----  ------
GAM22577 5737   CTATGAATCCCTATGTATGA     AA      GTA  AGA  AGG    AGGCTGCA
3               GAGGAGGGAGGCAGGCTGCA CTATG  TCCCTAT   TG   GG   GAGGC
                GCTTCAGCCACAGAATGGGG GGTAT  AGGGGTA   AC   CC   CTTCG
                ACTATGG               C-      AG-  A--  GA-     --------
GAM22580 19772  CTATGGCCCTCCAGGCCCAC        ------  A    ACAGC  TAT  AATT
1               AGCGGTATCCAATTGGCATC CTATGGCCC     TCC GGCCC    GG   CC
                CAGGGTCGGACTCCCGGGGC GGTACCGGG     AGG CTGGG    CC   GG
                CATGG                  GCCCTC   -    A----  TAC  ----
GAM22581 20519  CTATGTAAATTCTAGAGAGT      AAATTCT    GTA  --   C  TCATCT
6               AGCAGACCTCTCATCTGAAG CTATGT      AGAGA   GC  AGAC TC
                TCTTAGTGAATCTCTTTTGA GATACA      TCTCT   TG  TCTG AG
                CATAG                GTTT---     AAG  AT    A  ------
GAM22584 9536   CTATGTTGGCCCGGGGATTG   ATG     C     TG----  --      GCGG
8               CCCGACCATGGCGGTATGGT CT   TTGGCC GGGGAT     CCC  GACCATG
                TTGGGGACCATCATCCTCGG GA   GACCGG CTCCTA     GGG  TTGGTAT
                CCAGAGAG           GA-     -     CTACCA   GT      ----
GAM22588 12288  CTATTATTATAATGCAGATA    TAT     GCAGAT    C    CGGAATA
3               TGTCAGATCGGAATAATTTA CTAT   TATAAT     ATGT AGAT
                CATTTACAAATTATATCATA GATA   ATATTA     TACA TTTA
                G                  CT-     AACATT   -   -------
GAM22588 3994   CTATTATTCCAGTGCTTTGA   ATT    AG    TG  AAG-  GACGTGGA
4               GAAGCCGACGTGGAGGATCG CT   ATTCC  TGCTT  AG    CC
                CTTGAGGCAAGGAGTTCGAG GA   TGAGG  ACGGA  TC    GG
                                GCT    A-     GT  GCTA  --------
GAM22590 21525  CTATTCTTAAGTCCTACACT    TTCT     CT   C         ATCA   C  TGCA
6               GTTTTAGAGCATCAAGTCAC CTA    TAAGTC  ACA TGTTTTAGAGC    AGT AC
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TGCAGTTATTCAGTTCTGAG GAT ATTTAG TGT ACAGAGTCTTG TTA TG
ACACTGTCGATTTATTTTAG TTT- C- C AC-- T ----
GAM22592 3955 CTATTGGCATGTCTGGTGAT T T AT--------- CTGT
4 TAGTTCTGTGACTGTGTTTT CTAT GGCATG CTGGTG TAGTT
ACCTGTGCCAGCATGCCATG GGTA CCGTAC GACCGT GTCAG
G - - GTCCATTTTGT ----
GAM22594 12966 CTATTTCTCTATGTTTATTC TGTTT TC TA A G AG CAAG
5 TAGTTAAGGAAATGTTGAGG CTATTTCTCTA AT TAGT AGG AAT TTG GG
GCAAGCCACCAAATTACCTA GGTAGAGAGAT TG GTCG TCC TTA AAC CC
GGCTGAGGTTAGAGAGATGG ----- GA GA A - CA ----
GAM22598 13009 CTATTTTTGAGAATAACTTT TT-- G CT CATTTCC
4 AATGAGACATTTCCTCTCAT CTAT TTGA AATAA TTAATGAGA
TAACATTGTTATTAATGATG GATG AATT TTGTT AATTACTCT
TAG TAGT A AC -------
GAM22598 9420 CTATTTTTTATTTGCAACTA TTAT CAACTACAT- TTTCACACAAT
8 CATGATTTCACACAATTCTC CTATTTT TTG GA
TTAAACAACGACATAAAATA GATAAAA AGC CT
G TAC- AACAAATTCT ----------
GAM22605 12744 CTCAACACACTAGCGCGCAG A CTA C GA GGGCCGGAGA
8 TCCGAGAGGGCCGGAGATCG CTCA CACA GCGCG AGTCC GA
GGACTCGCGCCACTGTGATG GGGT GTGT CGCGC TCAGG CT
GG A CAC - G- ----------
GAM22606 5951 CTCAACACTTAAATTCATAA C AAA- A- TTAAG ATGTAAG
0 AATTAAGACCATGTAAGGGT CTCAA ACTT TTC TAAAA ACC
ATGTTTTTAGAGAAATGGAA GAGTT TGAA AAG ATTTT TGG
GTTTGAG - GGTA AG TGTA- -------
GAM22607 21219 CTCAACGCAAGGCTTCACAG A A --- C -- AAGGACA
3 CTTTCCAAGGACAGGGACCG CTCA CGCA GGCT TCA AGCT TTCC
GCTCTGGAGTGGCCGTGCGT GAGT GCGT CCGG GGT TCGG AGGG
GAG - G TGA C CC -------
GAM22607 4209 CTCAACGGGGCCCTCACCAT AACGG C A C-- A ATGGAC
4 CGGCACCATGGACGGCGCCA CTC GGCC TC CCAT GGC CC
ACGTGGAGATGGCCGAGGAG GAG CCGG AG GGTG CCG GG
GAG-- T A CAA C ------
GAM22610 8658 CTCAAGGTGCCTCGTTTTTG GCCTC- TT- TCC GGA
7 TCCTAGAAATGGAGTTTCTA CTCAAGGT GT TTG TAGAAAT
TATCAATCTGCTTCATAACC GGGTTCCA CG AAC ATCTTTG
TTGGG ATACTT TCT TAT ---
GAM22617 5524 CTCACAATTTTTCTTTAAGT TT---------- AG CTA
2 TTGAAACTATTTCAAAATGA CTCACAATTT CTTTA TTTGAAA
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TGTGAG TACATCAATATATT A- ---
GAM22625 1122 CTCACCTGGAACATTGGGAA C AACAT A TATTT AGGT
0 TTGTTTATTTTTTGATGAGG CT ACCTGG TGGGA TTGTT TTTGATG
TCATCAGAAATAATCTCACC GA TGGACC ACTCT AATAA AGACTAC
AGGTCAG C ----- - ----- ----
GAM22627 1468 CTCACTATAGGGAAAGCTGG CTA GGAAA T T C CA AC GT AATTC
1 TACGCCTGCAGGTACCGGTC CTCA TAG GC GG ACGC TG GGT CG CCGG
CGGAATTCCCGGGTCGACCC GAGT GTC CG CC TGCG AC CCA GC GGCC
ACGCGTCCGCAAATACTGCC ACC ATAAA - - C -- -- TG -----

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          ATGAG
GAM22627 14701  CTCACTCATGGAAGAGAATC     T    GA-------      C  AG   TTTT    A----     AAGGAAAAGTGC
9          CCAGGTATTTTTAGCAGTGT CTCAC CATG        AGAGAAT CC  GTA    TAGC    GTGTTG
          TGAAGGAAAAGTGCGGACCA GGGTG GTGC        TCTCTTA GG  CAT    ATCG    CATAAC

          ATACATAACGCTATTACAAG     -   AAATTAGGC      C  AA   T---    CAATA     ------------
          GCATTCTCTCGGATTAAACG GGAC
          TGGTGGG

                        ----
GAM22628 14364  CTCACTCTCCTGACTCTGCT     TC  CT   T-    T  ----    TAACT   ATCTG
1          CCTCTGTGTAACTGCCATCT CTCAC  TC  GAC  CTGC CCT    CTGTG    GCC
          GGGCTCTCACGGTCCTGGGC GGGTG  AG  TTG  GACG GGG    GGCAC    CGG
          GCAGTTGTTGACTGTGGG       TC  --   TT    C   TCCT    TCT--   -----
GAM22628 1285   CTCACTGAGAATTCACCAAG    A-  GA     C  CAA     -----     ATT
5          TGGGGCAGGATTCCTGCAAC CTC  CT  GAATT AC   GTGGG    GCAGG
          TACCCGCGTAGTTCAGGGGA GAG  GG  CTTGA TG   CGCCC    CGTCC
          GAG               AG  GA    - ---     ATCAA     ---
GAM22640 8443   CTCAGCCAGGGCTGCTTGCG    A-  C--     G    CG A    ATTGA    AAA   TCTT
0          GAAAAGATTGATTTGAAAGT CTC  GC   AGGGCT CTTG  G AAAG     TTTG   GTC
          CTCTTGGCGGCGGAACTTTG GAG  CG   TCCCGG GAAC  C TTTC     AGGC   CGG
          CTACAAGGGGCCCTTTTGCC    GC  TTT     G    AT G    A----    GG-   ----
          GGAG
GAM22641 19857  CTCAGCCTCAGGATTTCGTG   C   CT    TTT    --  T     GCCC
0          CTTGTACCTGCCCAGGTGCT CT AGC  CAGGA   CGTG  CT GTACCT
          GGTCCACGTACTCCTGTAGC GA TCG  GTCCT   GCAC  GG CGTGGA
          TCAG              C   AT     CAT    CT  T     ----
GAM22642 8369   CTCAGCGGTATTCTGGTGCT     GG     G  CTTA     CTCAG    TGAT
7          TATGGTGCCTCAGTTTCTGA CTCAGC  TATTCTG TG    TGGTGC    TTTC
          TGAAGAATTGCACCACGACA GAGTCG  ATGAGAC GC    ACCACG    GAAG
          GAGTAGCTGAG            --      A ----     TTAA-    ----
GAM22643 4349   CTCAGCTAGGTCCTGAAATT    GCT   TC   AAATT    T   G   TA-  GAACA
3          GTCGTGCTGTTCTATGGAAC CTCA   AGG  CTG    GTCG GCT TTC   TG
          ACAGATGGGGAGCTGATTTT GAGT   TCC  GAT    TAGT CGA GGG   AC
          CATAGTCCCTTGAG         ---  CT   ACTTT    -   G   TAG  -----
GAM22644 3807   CTCAGCTCTGTCCCTGCCCA          CCT  -   G-     GG TGGCG
0          GCTGGTGGGTGGCGTAGGCC CTCAGCTCTGTC   GC CCA  CTGGT  G
          AGGATGGTGTGGCAGAGCTG GGGTCGAGACGG   TG GGT  GACCG  T
          GG                    ---  T   AG    GA -----
GAM22644 12309  CTCAGCTGCTTAAGCTGGCC    A  ---------    AAG--    CCCACAAGTACAGA
3          CACAAGTACAGACCAGAGAC CTC GCT       GCTT    CTGG
          AAAGCAAGAGAAGAAGCAGA GAG CGA       CGAA    GACC
          G                A   AGAAGAGAA    ACAGA    ----------
GAM22654 6490   CTCAGTAAAACGGCATTTTG    G   ACGG   TT    GCT     TACTCCACC
2          TTAGCTTTCTCCTTACTCCA CTCA TAAA    CAT  TGTTA   TTCTCCT
          CCAGGGGAATAACAGTGAAT GAGT ATTT    GTG  ACAAT   AAGGGGA
          TTAGTGAG             G   AA--  --    ---      ---------
GAM22655 3702   CTCAGTATCTCTGATTTCTG      A-  --   -   TTC    A   CAAAAAAA
0          AAGATGTACAAAAAAATATA CTCAGT  TC  TCT GAT   TGAAG TGTA
          GCTTCATATATCTGGAATGA GAGTCA  AG  AGG CTA   ACTTC ATAT
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GCACTGAG CG TA T TAT G --------
GAM22658 5482 CTCAGTGGGCTCCCCAGGCC GG T A-- ACAGG--- GGTC
0 CCACAGGTGGGTCCAAGAGA CTCAGT GC CCCC GGCCCC TG
GACGGGGCCGGAGGGGTGCA GGGTCG CG GGGG CCGGGG AC
AGCTGGG AA T AGG CAGAGAGA ----
GAM22669 1150 CTCATGAGACTCTTCATTTT CA - T TTTG- GACAGGA
2 GTCCACTTTGACAGGAAAAG CT TGAGA CTCT CAT TCCACTTT
TGGGAATGTATGCAGAGCTC GA ACTCT GAGA GTA GGGTGAAA
TCAAAAG AA C C TGTAA -------
GAM22672 18382 CTCATGGAGAATTTAGAATC ATG -- TC - ---- GTTTC TTCTAAGACGTA
2 GCCTGTCTACTTGTGTTTCA CTC GAGAATTT AGAA GCCTGT CT ACTTGT ATTATTC
TTATTCTTCTAAGACGTATT GAG TTCTTAAA TCTT TGGATA GG TGAACG TAATAAG

TTGAATAATTACCTGCAAGT AA- GC CA A TTGT TCCAT ----------
TGTTGGAATAGGTACTTCTC TTTT
GAAATTCTTAAGAG

GAM22674 12368 CTCATTCAGAGCTCTTTTGG CA---- CT GC CGAGAAACAGACACC
7 CTGCGAGAAACAGACACCCA CTCATT GAGCT TTTG TG
ATCAAATCAGCTTCAGCAAA GAGTAA TTCGA AAAC AC
ATGAG AACGAC CT TA ----------
GAM22685 14449 CTCCACTAAGGGGCCCTTGG A- CC AAC CAATGT A TGAA
2 AAACCGGACAATGTTGAAGG CTCC CTAAGGGGC TTGGA CGGA TG AGGC
CTGAAGCTTCCATGGGGATC GGGG GGTTCCCCG GACCT GCCT AC TTCG
CGCAGTCCAGAGCCCCTTGG AG A- GAC AGGGGT C ----
GAGGGG
GAM22686 710 CTCCACTTCCAGTTGCATGG CACTT-- CA CCCCACATTA
5 GACTCTCCCCACATTAAGAG CTC CCAGTTG TGGGACTCT
TTCCAATAGCTGGTTCTATA GAG GGTCGAT ACCTTGAGA
GAG ATATCTT A- ----------
GAM22688 4202 CTCCAGAGTTTTCCTGAAAC GA C AAAC AG ACA AGGAG CCTCA
6 TCTCTTCAAGTCACACTCAG CTCCA GTTTTC TG TCTCTTCA TC CTCAGCT CC
CTAGGAGCCCCTCAGGAAGC GGGGT CAGAAG AC AGAGAAGT AG GGGTTGA GG
AGTTGGGAGGATGAAGAGAA GC A GACA -- GA- CGAA- -----
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GAM22692 21032 CTCCAGGCCGGGTGTGGTGG A G- T G- ACA TAA AACT
9 CTCACACTTGTAATCCCAGA CTCC GGCC GG GTGGT GCTC CTTG TCCCAG
ACTTTGGGAGGCCAAGACGA GAGG CCGG TC CACTA CGAG GAAC AGGGTT
GCAGATCACCTGAGGCCAGG A AG - GA CA- CGG ----
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GAM22693 20800 CTCCAGGCTTTCAGAATAAT CTT---- -- ATT TTCC
1 TGTTTGTTCCCAAATTCCTG CTCCAGG TCA GAATA GTTTG
TTCCCTGATCAACTTCCTGG GAGGTCC AGT CTTGT TAAAC
AG TTCAACT CC CCT ----
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3 AAATGATTCAGCATTTAGAC CTCC AG AGTATTGAGGT AAATG
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TCCTCGGAG C C TTAAAAATTTCAGA ------
GAM22695 9789 CTCCATAATCACATGAGCCA TAATC T TCCTTAT AATC

8 ATTCCTTATAAGAAATCTCT CTCCA ACA GAGCCAAT AAGA
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TCTCTGGAG CTCTT - TGTGTGT ----
GAM22697 1063 CTCCATCGACCACCTGGAAC ATCGA----- AC AA - GAGCACGAGA
4 CGGCGAGCACGAGAGCCAGG CTCC CC CTGG CC GGC
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GAG GACGTACACA A- CA A ----------
GAM22698 20803 CTCCATGATAATCCCCCTCT A ATAATC C - G CAGATC
5 GATGGTACAGCAGATCCTGT CTCC TG CCCCT TG ATG TACAG
AACATGCAAGGGGAGCAGGA GAGG AC GGGGA AC TAC ATGTC
G - GA---- - G A ------
GAM22700 18756 CTCCATTGGCTCTTGGTGCC -- G T CACCA - GTTAG
2 CACCAGCCCCTGTTAGAGGA CTCCAT TG CTCTTGG GCC GCC CCT
GGCCCAGAGGCTCAAGAGGC GAGGTA AC GAGAACT CGG CGG GGA
ACCATGGAG CC G - AGACC A -----
GAM22701 16737 CTCCATTTTCATTAGGCAGG - CAT AG A AA ATGA
1 TTGACTAAAAATGATTGCAG CTCC ATTTT TAGGC GTTG CT AA
TAACAGGTTTATATAAAATA GAGG TAAAA ATTTG CAAT GA TT
GGAG A TAT GA - CG ----
GAM22701 22245 CTCCCAAAGTGCAGAGATTA A- A ATTACAGACA A CACCC A ATAC- CCTA
8 CAGACATGAGCCACTGCACC CTCCC AAGTGC GAG TGAGCC CTG TGCCC CT TTTTT
CTGCCCACTATACTTTTTCC GAGGG TTCACG CTC ACTCGG GAC ACGGG GA AAGAA
TAAAGAACTGAAAGAGGGCA GA A AC-------- G ----- A AAGTC ----
CAGGGGCTCACACTCAGCAC
TTAGGGGAG
GAM22702 9607 CTCCCAAGAGAGACTTGTTT T AGAG TT GG TT TGGTGT
6 GGGCCTTTTGTGGTGTCAGT C CCCAAG ACTTGT G CC TTG
GGAATGGATAGGTAACTTGG G GGGTTC TGGATA T GG GAC
GTG T AA-- GG AA T- ------
GAM22704 3744 CTCCCACTCCACGGGGATGT C AC TC --- -- -- TT AGGCA
6 CGCTGGGATAGAAGCCTTTG CTCCCA TCC GGGGATG GCTG GGA TAG AAGCCT GACC

ACCAGGCAGGTCAGGCTTGA GGGGGT AGG CCCCTAC CGAC TCT GTC TTCGGA CTGG

CTGGTTCTTGTCAGCTCATC - -- T- TGT TG AG -- -----
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GAM22705 8893 CTCCCAGATGCTGGGCCCAG AGA CCAGAG ACCCCAACAATCCAGCACA

2 AGCCACCCCAACAATCCAGC CTCCC TGCTGGGC CC
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AGGGAG ACC CCCCA- ----------
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1 GCTGAGGAAGCGAGAGGTTT CTCC GCTCCA GCT AGGAAGC
TCTAGGCAGATTTGGAGCCC GAGG CGAGGT CGG TCTTTTG
TGGAG TCC TTAGA--- A -----
GAM22709 21428 CTCCCCAATCACCGCTGCTT CCCAA CG T --- T CTCTTCACA
0 GCCAGGGTGCCTCTTCACAG CTC TCAC CTGCT GCCA GGG GC
TTCCCATGTGGCAGCAGTAG GAG GGTG GACGA CGGT CCC TG
TGGCAGAG AC--- AT - GTA T ---------
GAM22710 9212 CTCCCCAGTCCTCTCCTGGC - CCTCT-- GGCA C TAGA

2 ACCAGCACCTTAGAAGTTGT CTCCC CAGT CCT CCAGCA CT
TGGCAGAAGGCACTTAAACT GAGGG GTCA GGA GGTTGT GA
GTGGGAG T AATTCAC AGAC T ----
GAM22710 12265 CTCCCCCAAAATGTATGTAA C- AAAA - A --- ATCAAA
7 TATAATCTGATCAAACAGAA CTCC CC TGTA TGTA TATAA TCTG
TTTTATGGTGCACTATAGGA GAGG GG ATAT ACGT GTATT AGAC
AGGAG AA ---- C G TTA ------
GAM22710 9586 CTCCCCCAATGGGGCCTCCA - A- - CCACCT CAAGT
9 CCTCCTTCAAGTAAGGCTCC CTCCCC CA TGGGG CCT CCTT
CAGGTCCCCACCTGTGGGGA GAGGGG GT ACCCC GGA GGAA
G T CC T CCCTC- -----
GAM22711 21369 CTCCCCCACCCACAGGCCCA C- C---- CTCCT-- TCTC
1 GCCTCCTCGGTCTCCTGTCT CTCCCCCAC CACAGGC CAGC CGG
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CTGTGGGGGAG TC TCTTC TTGCTCT ----
GAM22711 18310 CTCCCCCCGAGGACCCCGTC CCC AC- GTC C - ATTCCCCCCC
6 GGCCGGCGCATTCCCCCCCG CTCC CGAGG CCC GGC GG CGC
CGACCCGCCGGGATGCCTTG GAGG GTTCC GGG CCG CC GCG
CTGGAG TC- GTA --- C A ----------
GAM22711 8294 CTCCCCCGGCTTGGAGGAGG C TG GAGGCGG G C---- - GTT
9 CGGCGGCCGAGGAGCTGGAG CT CCCCGGCT GAG CGGCC AGGAG TGGAGTT GGC

TTGGCGTTGCCGGACTTCAC GA GGGGCTGA TTC GCCGG TCCTT ACTTCAG CCG
CTTCTTCCTGGGCCGGTACT T TG ATG---- G CTTCC G ---
TGTAGTCGGGGTAG
GAM22717 8088 CTCCCGGTCATCATCTTCAC - CATCA- AC TT TG TCGT ATC
8 CACGTTCTGGGGCCTCGTCG CTCC CGGT TCTTC CACG C GGGCC CGGC
GCATCGCCGGGCCCTGGTTC GAGG GCCA GGAAG GTGC G CCCGG GCCG
GTGCCGAAGGGACCCAACCG C ACCCAG CC TT GT ---- ---
CGGAG
GAM22718 19874 CTCCCTAATGGCTTCAAGTA TA- GGC AATAA GG TATGAGAT
5 ATAATTGGGAATATGAGATT CTCCC AT TTCAAGT TTG AA
TAACAGATTTGAAATAATAA GAGGG TA AAGTTTA GAC TT
TGGGAG TAA ATA ----- AA --------
GAM22721 1195 CTCCCTGAGTAGCTTAATAA G CTTAAT-- CC--- ATTTATTTCGC
3 TCAACCTTCTGAGTTATTTA CTCCCT AGTAG AATCAA TTCTGAGTT
TTTCGCAATTCAGAGACTTC GAGGGG TCGTT TTAGTT GAGACTTAA
TTGATTTGGACCCATTGCTG - ACCCAGGT CTTCA ----------
GGGAG
GAM22722 4229 CTCCCTGGGTCTGCGTTCCC T TC C - GGG A AG CTCAT TTTCCCTTTATT
4 TCCCTCTGGGCCTGACTGAG CTCCC GGG TG GTTCCCTC CCTCT CCTG CTG CCTG TGT

CCTGCTCATTGTTTTCCCTT GAGGG CCC AC CGGGGGGG GGAGG GGAC GAC GGAC ACA

TATTACACAGGACAGCCAGG T GA - A --- C A- ----- ----------
GGAGGAGGGGGGGCCAAGCC
CTGGGAG

GAM22724 3049 CTCCCTTCATTGCATCTGAG TTC-- TG T A ----- TGT TTTTCTT T TC TCTTA

0 GACTTGTTTTCTTTTTCTTT CTCCC AT CA CTG GG ACT TTTCT TAT TTTAA C
ATTTTTAATCCTCTTAGTTT GAGGG TG GT GAC CC TGA AGAGA ATA AAATT G
TAAATATATTGCCTAGAGAC CTCTT GT T - ATCAT CTC TCCGTT- T TT -----
TCAGTTACTACCCAGTTGTG
GTTTCTCGGGAG
GAM22726 22196 CTCCGACTCCAACTCCCCCT GA- ACTCC- GTAAGAGGAGGA
0 GCTGTAAGAGGAGGAAGCGG CTCC CTCCA CCCTGCT
GGACACAGTGGGGACAGGAG GAGG GGGGT GGGGCGA
ACA GACACA ----------
GAM22726 18195 CTCCGAGCAGATTATGAGAT CA ATGAG AG AGA CCTG
3 TGCAAGTAAAGAAAGAGACC CTCCGAG GATT ATTGCA TAA AAGAGA
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ATGGATCACTTGGAG A- G---- AG AAG ----
GAM22726 12625 CTCCGAGGACAGAGGGCTAA A--- - GA AA TG AGT
6 ATCCATGAAGTTTGTGGATG CTCCG GGA CA GGGCT ATCCA A
GCCTGATGATCCACAGCGGA GAGGC CCT GT TCCGG TAGGT T
G GACA A AG -- GT ---
GAM22727 20045 CTCCGCCACCATGTTCGAGG C ATG C CGC-- GGTCCA
8 CGCGCCTGGTCCAGGGCTCC CTCCG CACC TT GAGG GCCT
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G T AA- A TACCT ------
GAM22729 20394 CTCCGGAAAACCATTGGCCG AAAA TG --- G AGTCAAG
4 CCTGGCAAGTCAAGTGCAAG CTCCGG CCAT GCCGC CT GCA
AACGCGGCAGGTGGCTGGAG GAGGTC GGTG CGGCG GA CGT
---- GA CAA A -------
GAM22735 3515 CTCCTCACTGGACTCGCCTC C-- A CGCCT C------ CCCCA
6 TCTCCTCTCCTCCCCCCAGG CTCCTCA TGG CT CTCTCCT TCCTCC
AGGAACTTGAAAGGAGGGTA GGGGAGT ATC GA GGGAGGA AGGAGG
AAAAGACTAAAATGAGGGG AAA A AAAAT AAGTTCA -----
GAM22739 3990 CTCCTCTCCCCTCACCCTCC C CC A CC GCCACTG
5 TGCCCCTGGCCACTGCAGGA CTCCT TC CTC CCCTCCTG CCTG
TCAGGAGGGGAGAAGAAGGA GAGGA AG GAG GGGAGGAC GGAC
G - AA - TA -------
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2 GCCCTTGTTTACAAGCACGC CTCCTCTC TGTGTT TGGG
GTTACCCTTCCTGAGGGGAG GAGGGGAG GCACGA ATTT
TCCTTCCCATTGC AC- ------
GAM22747 719 CTCCTGGAAGTTCGTGCTCG - AA TC CGGGTTCT AGCATGAA G G GCTG
5 GGTTCTTGCTGCACAGCATG CTCC TGG GT GTGCT TGCTGCAC GCC ATCTG CC
AAGCCGATCTGGCCGCTGGG GGGG ACC CG TACGG ATGACGTG TGG TGGAT GG
GTAGGTGGTGATGGTGCAGT C AC GA -------- GTAG---- - G ----
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GAM22747 9583 CTCCTGGAGTGGATCCGGCG G A C----- CA - TGGCT
9 CACCATCCCCTGGCTGGAGG CTCCTGGA TGG TC GGCGCAC TCC CC
ACCGTGTGCCCCAAAAGACT GAGGACCT ATC AG CCGTGTG AGG GG
ATCCAGGAG - - AAAACC CC A -----
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9 AGGCATTTTTCCTAAGGCTT CTCCTGG GGGAG GGTGAGG AGG
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AGGGG TCTACTTC T GGAA -------

GAM22750 21414 CTCCTGGGTTCAAGCAATTC A T CA ACTCAGGA
2 TTCTGTCTCAGCTACTCAGG CTCCTGGGTTCAAGC ATTCTTC GTCT GCT
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TTGAACCCGGGAG C T A- --------
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1 GTAAAGGCAGAAAAGATTTT CTCC ATGGA GTA GGCAGAAA
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G TG------ C-- A- ----
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3 AGCCGCTCCCGAGGCCCCGG CTCC TGCTTTTGC GCCGC CCG
CGCGGCGCGAGGGCGCGGAG GAGG GCGGGAGCG CGGCG GGC
C ------- C- ------
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8 GCAGCCGAAGCTTCTTTTCG CTCC GTCCTGAGT GTCAG AGCC GCT
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TGGGGCTCGGGACATGTGGA TGTA GGG T AG- ----------
G
GAM22758 1016 CTCCTTTGCTGCTAGTGTCC TTT--- C - CA TC CTTTATCAACA
0 ATATCCTCTTTATCAACAAG CTCC GCTG TAGTG TC TA CT
TTTACGATCACTGTCAGTTT GAGG TGAC GTCAC AG AT GA
CCCTGGAG TCCCTT T T C- TT ----------
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5 GCCAAAGCCCAACTCCCAGG CTCGAGCCC GCCTC CC CCA AGCCC
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AGGGGCTTGAG GAG T TAAA C --------
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8 AGAGCCAAAGACAATTCAGG CTC GAGGG CTGTATA CAG CC
AACTGCTGTGCAGCCCCTCA GAG CTCCC GACGTGT GTC GG
GAG A C C-- AA ----------
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1 GAGTCAGGCCTTGTGAAACC CTCGA AG GGAATCAG TCA GCCT G
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GCTCCTCGAG CC-- GA GA GA C -----
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8 TCGTATGTAAAATGGGGTAA CTCG ATTTGA GA CTCTC CCTCGT
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GAG C A A TCAAAT -------
GAM22766 12789 CTCGCTGGACCACAAGTGAC - G CACA C T CCAA
2 CGATGTATGCCAACGTGCCT CTCG CT GAC AGTGAC GA GTATG
TGTCACTGTACGTCGGGACG GGGC GG CTG TCACTG TT CGTGC
GG A G CATG - C ----
GAM22767 19310 CTCGGAGCCCGACCTGGCGG GG - G T C T ACAC
4 TCGACTTTGACACTAACGTT CTC AGCC C ACC GGCGGT GAC TTG
TGCTGCCTGGTGCGGCTAGA GAG TCGG G TGG CCGTCG TTG AAT
G A- C - T T C ----
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8 CCCCCTCCTCTCAGGATCTC CTC CCTCC CTGC GG GCCC CCTCTCAGG CTCAGCC CC

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GAM22771 6461 CTCGGTCCGGTTGACTCTGC C GA - - A- -- C TTCG
5 GGAGCCATGGAGGGCGGCTT CT GGTCCGGTT CT CTGC GGAGCC TGGAG GG GGC
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9 CCCCTCAGCACCCTGCCTTG CTCGT TGAC TCTTGC CC CC CCTCA C CCC GCCTTG TCTCCA
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TCTCCAGG

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GGGAGTAGGGAGGTCAGGCG
GG

GAM22781 3150 CTCTACCTGGTTGGAAGGCT T T AAG GT- G GA CTGA
7 GTGTCGTTCGGAGAGCCTGA CTCTACC GGT GG GCT GTC TTCG GAGC
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GCCGCCGGTAGGG - - GGA GGG - G- ----
GAM22785 20016 CTCTAGTCCCATCCAAAAAA CC CAAAAAA - T TTTC
6 AGTTGGCTTCGTTTCTGCAG CTCTAGTC ATC AGTTG GCT CG
CTCAATTCACAGATCAGACT GAGGTCAG TAG TTAAC CGA GT
GGAG AC ACAC--- T C ----
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5 CAGGGGTGAGCCATCACACT CTCT AAAGT GGAA GGGT AGCC
CAGGCTGATCCATATTTTCT GAGA TTTTA TCTT CCTA TCGG
TAATTTTCAGAG C AT- TTATA- G ----------
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9 CCTGTATCTCCCATGGAAGA CTCT AGT TCCA CTG CCCTG TCT CCCA GGAA TGA
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3 GACGGGATTGGCCATGAGTT CTCTC TTC GT CGT GAAGA GG TGGCCAT
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GAM22795 9454 CTCTCCCCTCTGACTACCTA CC CTA AAAA-- TA AA- GAGGTTGG
8 AAATCAATACCCAATAGAGA CTCTCC TCTGA CCT TCAA CCC TAGA
GGTTGGTTTAAACGGGATTT GAGAGG AGACT GGA AGTT GGG ATTT
GAGTTGAGAGGGCTCAGATA AT CG- GAGTTG TA CAA --------
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GAM22796 12575 CTCTCCCTGCCCAGGGGCTG G GGGGC A C--- CTGG
4 GGCCACTCTGCCCGCTCTTC CTCTCCCT CCCA TGGGCC CTCTGCCCG TCTTC
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AGGGGCCCATGGTGGGAGGG A GGT-- G ACAA ----
GAGAG

GAM22796 2821 CTCTCCGAATGTCTTTTTTT T A T T AA T-- - TTCTTTTGTCATCTCC
7 AAGTGAATATCAATGCTTCT CTC CCGA TG CTTT TTT GTGAA ATCA ATGC
TTTGTCATCTCCGTATCTGA GGG GGCT AC GAAA GAG TACTT TAGT TATG
TCATTTCATGAGCAAAGTCA T - T C -- TAC C ----------
TCGGTGGG
GAM22799 14418 CTCTCGGGGGGGCCGGGAAC CC GA AC- TGCGCC
3 AACTGGGTGCGCCTCCGACG CTCTCGGGGGGG GG ACA TGGG
TGTGACTTTTTCCCCCGGGG GGGGGCCCCCTT TC TGT GCCT
G TT AG GCA ------
GAM22801 2817 CTCTCTCTCTTTTTGAGATG - C- TCTTT- - TC TG C TT C-- -- -
0 GAGTCTTGCCTTGTTGCCTA C TCT TC TTGAGAT GGAG T C TTG GCCTAGG TGGAG
TGCAGTG G
GGCTGGAGTGCAGTGGCATG G AGA AG GACTCTG CCTC A G AAC TGGGTTC ACCTC
ATGTTAC C
ATCTTGGCTCATTGTAACCT T TA CCCTCC T TT GT - T- TCC CA T
CCACCTCTTGGGTTCAAGTG ATGATCTTG
ATTCTCCTGTCTCAGCCTCC C
CGAATAGATG G

GAM22801 20097 CTCTCTCTTCCAGCTGCAGA T GCAGA A CT -- TG - GGGA
6 TGCCACACTGTCCTCTGCTT CTCTC CTTCCAGCT TGCC CA GTCCT C CTTCC CG
CCCGGGGACGAGGGGGTGGG GAGGG GAGGGTTGG ATGG GT CAGGG G GGGGG GC

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GAM22804 5563 CTCTCTTCGTCCATGGCCTG TCG C- C ATA C GGCATAA
7 ACTATATAGGCATTGGCATA CTCTCT TCCATGGC TGA TAT GG ATT
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GAM22807 5499 CTCTGAAGTGTCACATTTAA GAAGTG - ---- - TTTT
0 TATCAGTTTTTTTTAAAGCA CTCT TC ACATTTAAT ATCA GTTTT
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AGAGAG GA---- A ATCT A ----
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4 CTGAAATCCGCCGGGAAGCC CTCT GACA CAGTG GCTGGA GA ATCCG GG
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GGTGTCTCCAGAG CCT G T C- C -- ----
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5 CTGAAATCCGCCGGGAAGCC CTCT GACA CAG GGCTGGA GA ATCCG GG
TGGGTCTCCTCTAGCTTATT GAGA CTGT GTT TCGATCT CT TGGGT CC
TGGTGTCTCCAGAG CCT G TAT C- C -- ----
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8 GGTGCCACCTACAACATCAT CTCTG GG CT GGTGCC CC AC
AGTGGAGGCACTGAAAGACC GAGAC CC GA TCACGG GG TG
AGCAGAG GA- A AAG---- A - ---------
GAM22809 18625 CTCTGAGATGCTGGGCCCTG AGATG CC G- AC- GG-- A ACACT
2 GGCTTCTACCCTGCGGAGAT CTCTG CTGGG CTGG CTTCT CCTGC AG TC
CACACTGACCTGGCAGCGGG GAGGC GACCC GACC GAGGG GGGCG TC AG
ATGGGGAGGACCAGACCCAG ACAG- A- AG GTA ACGG C -----
GACACGGAG

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GAM22809 4157   CTCTGAGCCATGGCTTCCCA    GA     CTT    AGACACTCA  TCCCT
4          TAGACACTCAGGTCCCTCCA CTCT  GCCATGG   CCCAT       GG
           GCTACAAGGTGGGCACCATG GAGG  CGGTACC   GGGTG       CC
           GCGGAG              --      AC-    GAACATCGA  -----
GAM22811 6328   CTCTGATCGAGATACTATTT    A   GATACTA    A  TTCCT   TATACT
0          CAGATGTTCCTGCAGTATAC CTCTG TCGA     TTTCAG TG    GCAG
           TTTGTGATGCCAACTGAAGA GAGAC AGTT     GAAGTC AC    TGTT
           AAATATTGACAGAG         -   ATAAAA-    A  CGTAG   ------
GAM22812 9051   CTCTGCAATTTATGCTGCAC     AATTT-----  C     CC  G  GTAAA
2          GCCCGGACGTAAAGTGCGTC CTCTGC        ATG TGCACG  CG AC
           GTGCACATTCACACCCCAGC GGGACG        TAC ACGTGC  GC TG
           AGGG                ACCCCACACT  -    T-  G  -----
GAM22814 967    CTCTGCATGACTTGGGCACT    G    CT  GG   GA  TG--   CT--   TCTCCC
0          GACATGGTTCCTGCCATCTC CTCT CATGA  TG  CACT  CA   GTTC   GCCA
           CCTGGCTTATGAGCAGGCTG GAGA GTACT  AC  GTGA  GT   CGAG   CGGT
           AGAGTGACATCATGAAGAG     A    -- A-   GA  CGGA   TATT   ------
GAM22816 20955  CTCTGCGCAGGCTCCGCACG                    G   CAGG
5          CAGCTAGGTCATCAGGATGG CTCTGCGCAGGCTCCGCACGCAGCTAG TCAT
           GCTAGCTGCGTGCGGAGCCT GAGACGCGTCCGAGGCGTGCGTCGATC GGTA
           GCGCAGAG                          G   ----
GAM22822 3246   CTCTGGAGTTGGGCTAGAGG   T   TT-     AG CC    CTTTTGAA   TACCT
4          CCAGACTTCTTTTGAAAGGT CTC GGAG   GGGCTAG  G  AGACTT      AGG
           ACCTCCTGGGCTTGAAGGTC GAG CCTT   CTCGGTC  T  TCTGGA      TCC
           TTCTTCCTGGCTCTCTTTCC    T    TCT     CT CT     AGTTCGGG  -----
           TGAG
GAM22823 22275  CTCTGGCCTGGGGTTGCTCC    GG   -        ----------        G  GCTGT      TGGA
5          CTGCCCGGCAGGCTGCTGTT CTCT  CCT GGGGTTGCTC          CCTGCCCGGCA GCT
TTGGCAGC    G
           TGGCAGCTGGAGGTGGCAAG GGGA  GGA TCCCGACGGG          GGACGGGTTGT CGG
GACCGTCG    T
           AGCTGCTGGTGCTGCCAGGG    AA  G        ACCCTCTAGTAA        G  -----      TGG-
           CGTGTTGGGCAGGAATGATC  TG  AAGA
           TCCCAGGGCAGCCCTGAGGA G  GC
           AAGGG            C  CG
                       GT  ----
GAM22823 21658  CTCTGGCTCAATCAGATTCC         A  AGAT    TGGGG   GAA--   AGGGACTTAG
7          TGTGGGGGCTGAACTCAGGG CTCTGGCTCA TC    TCCTG    GCT    CTC
           ACTTAGGAGGAATGAGCATC GGGACCGAGT AG    AGGAC    CGA    GAG
           AGGATAGATGAGCCAGGG          -  AT--    TA---   GTAAG  ----------
GAM22827 6322   CTCTGGTCTAGATTTTCATA     G  T    T    ATA    A   AAG  AAA
6          TAATGTATTAAAGACAAAGT CTCTG TC AGAT TTCAT   ATGT TTA   AC
           AGTGAACATCAATGAACATC GAGAT AG TCTA AAGTA   TACA AGT   TG
           TGATAGAG              -  -   C    AC-   -   GA-  ---
GAM22836 3701   CTCTGTTGTGTGGGAGAAAC           AGAAA-    C   TTTCACC
3          CCCGCGTGTTTCACCCACCC CTCTGTTGTGTGGG     CCCCG GTG
           GGGGGGGTGCCCCCACACAGC GGGACGACACACCC     GGGGC CAC
           AGGG                       CGTGGG    C  -------
GAM22839 5799   CTCTTACACGGCAGCCACAT    TACACG    CACATA    TCT   ATCTAGCTCTC
6          AGTGTTCTTCCATCTAGCTC CTCT     GCAGC     GTGT   TCC
           TCGGACTGCATCAGCTGCAT GGGG     CGTCG     TACG   AGG
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          CTCGGGG              CTCTA-    AC----   TC-  ----------
GAM22841 20748  CTCTTATCAATGAAGAACTT     T  TGAAG       T----  ACAATAATAAAC
8          TGTATCCAACAATAATAAAC CTCTTA CAA    AACTTTGTA    CCA
          TGGCAAATTGCAAAGTTACG GAGGAT GTT    TTGAAACGT    GGT
          TTTTGTAGGAG           -  TTGCA       TAAAC  ----------
GAM22843 8843   CTCTTCAGCCAGGCAGGCAG        AG--     A-   --- C    TC  ACT
2          GCAGGCAGGCATCCTCACTG CTCTTCAGCC   GCAGGC  GGCA  GG AGGCA  CTC
          AGTGCCTCCCAGGTGCCAGG GAGGAGTCGG   TGTCTG  CCGT  CC TCCGT  GAG
          TCTGTATTGGGCTGAGGAG         GTTA    GA   GGA  C    --   ---
GAM22844 20988  CTCTTCCGGGCAAAATGGCG  C       AAATG   T  A  AATG   G   CG-  G  TCT     CTACA
5          ATGGGACTAATGTGCGGACG CT TTCCGGGCA    GCGA GGG CT   TGCG ACGC   GGA CT
GCGCTTG
          CCGGGAGCTTCTGCGCTTGC GA AGGGTTCGT    CGCT CCC GG   ACGC TGCG   CCT GG
TGCGGGC

          TACAGTCCGGGCGTCGGGTC  A       GTAA-   -  G ----   -   ACA  G  C--      -----
          CACAGCGTCGCAGGGCCCTC GTC
          GCAATGTGCTTGGGAAAG

                    ---
GAM22848 5557   CTCTTGAATGTATGGCCTCA    TG ATGTAT   CTC   CT         CCCTAAACCCCC   CCTG
0          GGGCTTCCCTAGAGGGGCCC CTCT  A    GGC   AGGG  TCCCTAGAGGGG         TTCA
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          GCTTACCCCCTTTAGGGATT    GT CCC---   TT-   TT         CATTC-------   ----
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GAM22848 1132   CTCTTGACCCTTAATGCTCA    GA   TAATG   -  TCTTG   AGTTAATCAGCCACA
4          GGTTCTTGTGGGGAGTTAAT CTCTT  CCCT    CTCA GGT    TGGGG
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GAM22849 16439  CTCTTGAGTCTTGGCCATGA    G   --   ----     CTGT   AGAGA
2          GATCTGTGTTCAGAGAGAGC CTCTT AGTCT  TGGCC   ATGAGAT   GTTC
          TGTTTCGTAAAGGGCCAGTG GAGAG TCAGG  ACCGG   TGCTTTG   CGAG
          GACTAGAGAG            A    TG    GAAA     T---   -----
GAM22850 12227  CTCTTGCTTTCCTTTGAGGC   -    TCCTT   GC    C  CTTTTT
8          AGCTGCTGTCTTTTTACACA CTC TTGCTT    TGAG  AGCTG TGT
          GCTCTCGTCTAAGCAATGGG GGG AACGAA    GCTC  TCGAC ACA
                    T     TCT--   --    -   ------
GAM22852 1773   CTCTTGGTGTATGACATCAC    T      A-   ACCAA  GC     TTTGA   CATCGA
6          CAACCGCTGGTCCTTTGACG CTCT GGTGTATG  CATC    CC  TGGTCC    CGG
          GCATCGACCGCTGGATCAAG GAGG CCACGTAC  GTAG    GG  ACTAGG    GCC
          GAGATCGATGAGCATGCACC    C       GA   CTAGA  A-     TC---  ------
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GAM22853 6072   CTCTTGTATAAAAAAGCACC        AAAAA--   CCA-     TGGACT
1          AGTGTCCTGGACTGGACACC CTCTTGTAT      AGCA   GTGTCC
          CACTGCTATAAAAGATGCAG GGGGACGTA      TCGT   CACAGG
          GGG                   GAAAATA   CACC     ------
GAM22855 18325  CTCTTTAAATCTGATAAGAA    TTAAA    TA    CATTTACA-----  C     G -----          T
3          ACATTTACAGGCCTGGTGGC CTCT    TCTGA  AGAAA          GG CTGGTG C    TCATGCCTGTAATT
          TCATGCCTGTAATTTCAGCA GAGA    AGACT  TTTTT          CC GACCAC G    AGTGCGGACATTAG
          CCTTGGATTACAGGCGTGAC    C----    TC    TTTTTTTTTTCTA  C     - TCAGC          G
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GACTGCACCAGCCCATCTTT C CAC
TTTTTTTTTTTTCTTCAGAC AG
AGAG TC
T ---
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0 TGTCTACAGTTGCTGTCCAT CT CTTTAGGTC CAAT GT ACAG
TCTTTCATTGAGATCTAAGG GA GGAATCTAG GTTA TA TGTC
CAG C A CTTTCT CC ---
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3 GGAGATAGGCCACAAAGGTG CTCT TCATCCTG GTC GG TAG GCC
CTGCCAAGGACCAGGATGAT GAGG AGTAGGAC CAG CC GTC TGG
GGAG T -- GAA --- G -----
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3 AATCAGACTAATTCTCAGTC CTGAAAAG AGAAA TGA AGACT
TTCGGATTTCTTCTTTTCAG GACTTTTC TCTTT GCT TCTGA
T- AG ----- -------
GAM22864 3775 CTGAAAATCAAGAAACTAGA TG A -- AAC T T TAACTATATT A TT----
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A
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GTATTTTCTTTAAAAGTAGG GT C CT ATA T T TTTTTTT--- G GAAAAT
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TTTTTTTTTTTTAATATCTT GG
GTCATTCTTGG TC

GAM22865 3785 CTGAAACTACGGATCTTCCG - TA CTTCC TTC GTTC
5 ACTTCTGGATGTTCGTCCGT CTGA AAC CGGAT GAC TGGAT
CTGTCTTGTCTGCGGTTGTC GACT TTG GTCTG CTG GCCTG
AG G GC TT--- TCT ----
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4 CCTGGTGGCATGTGGGACGT CTGA TTTTGAAGCTT GTCC GG G ATG
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TCGGGAGATTAG AG- AAG TT GT T -----
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7 AGCATCATTCACTGGACGTG CTG GAC TA GC AAGCAT TCACTG TGA
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GAM22879 9501 CTGAAGCTGAAGGGCCCCTG A - CC TTT CATGCC
4 GTTTGGACATGCCTCTTTCC CTG AGCT GAAGGG CCTGG GGA
CGGGCTCTCTTCTGGCTCCA GAC TCGG CTTCTC GGGCC TCT
G C T TC CTT ------
GAM22880 14682 CTGAAGGCTGGAACACTTGC -- T G CTT--- T ATAAT
5 TACTGGATAATCCGTAGCTT CTGA AGGC G AACA GCTAC GG
TTAATGTTGCGCCTCTTCAG GACT TCCG C TTGT CGATG CC
TC - G AATTTT - -----
GAM22885 12674 CTGAATCTCCCCTCACCCTC CTC A C ------ --- TGAG
5 GCAGGGACCCTCTGAGGAGG CTGAAT CCCTC CCCT GCA GGGA CCCTC
GTATTCCCCCATTTTGCAGG GACTTA GGGAG GGGA CGT CCCT GGGAG
GGAGGGAATTCAG A-- - - TTTACC TAT ----

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GAM22888 18480  CTGAATGTGCTATGTGTCTG       G   GTG- TGGG   A-    C----------   ATTGAA
3                GGTTTCATCCATCCGACATT CTGAATGT CTAT    TC    TTTC  TCCAT          CGAC
                 GAAGTTGACTTACTGAAGAA GACTTACG GGTG    AG    AGAG  AGGTA          GTTG
                 TGGAGAGAGAATTGAAAAAG       A   AAAA  TTA-   AG    AGAAGTCATTCA   ------
                 TGGAGCATTCAG
GAM22890 8837   CTGACAAACCAAGAAGGATT    ACAA    GA--------     ---  AGA
8                GCCAGAGGTCTTGATCCTGA CTG    ACCAA        AGGATT   GCC
                 AAGAATAATTGGTGCCACAG GAC    TGGTT        TCCTAG   TGG
                          ACCG    AATAAGAAAG     TTC  ---
GAM22890 12812  CTGACAAACCAAGAGGATTT    ACAA    GAGG   GC-  A   CTTG
9                GCCAGAGGTCTTGATCCTGA CTG    ACCAA    ATTT   CAG GGT
                 AAGAATAATTGGTGCCACAG GAC    TGGTT    TAAG   GTC CTA
                          ACCG    AA--    AAA   -   ----
GAM22892 3550   CTGACACATGAGGCAAAAGG    A  C--   -   AAAAGGC    A  ATGCTCCAGA
2                CTCCGACGATGCTCCAGACG CTG CA   ATGA GGC      TCCG CG
                 CGGACACGGCCATCATCAAT GAC GT   TACT CCG      AGGC GC
                 GCAG               -  AAC    A   GCAC---    -  ----------
GAM22896 20886  CTGACCAGCGAAGAGAGAGA    A   CGA-  GAG  A   T   CCA   -    T   CCACTGCCCAC
5                GCTGTAGGGCCAGCTGCCGG CTG CCAG    AGA   AG GCTG AGGG   GCTG CCGGGC CAGG

                 GCTCAGGCCACTGCCCACCC GAC GGTC    TCT   TC CGAC TCCT   CGAC GGTCCG GTCC
                 TGGCCTGGACAGCCTCCTTC    -   CATG   --- C    T    C--    A     -    -----------
                 AGCCCTTCTGTACCTGGCAG
GAM22898 5689   CTGACCTACTGAATATCTAG       --   AATATCTA  A      AT---    TCAACT
9                CATCCTTAGATTGGCTCAAC CTGACCTA  CTG       GC TCCTTAG     TGGC
                 TGTTACTTTCCTAAGGAGTC GACTGGAT  GAC       TG AGGAATC     ATTG
                 CTTCTACAGAATAGGTCAG        AA   ATCTTCC-  -      CTTTC   ------
GAM22903 8989   CTGACGTGGCCCTGTCATCT       ------------   C    --   CAACACATCCC
0                CAACACATCCCAGGTCAGGC CTGACGT          GGCC TGTC  ATCT
                 AGGCCTCAGCTGAAACAATG GACTGTA          CCGG ACGG  TGGA
                 TCAG                  ACAAAGTCGACT    -   AC    -----------
GAM22907 18872  CTGACTTCAAAAAATTAATG     T   A    TAA     TC    GACATTTTAAAAA
2                TGTATCCAGGGACATTTTAA CTGACT CAA AAAT   TGTGTA  CAGG
                 AAACCTGTACACAGTGTTTA GATTGG GTT TTTG   ACACAT  GTCC
                 TTGTGGTTAG             T   A    TG-     --   -------------
GAM22910 6656   CTGAGAAGCCTCATCAGGAG     AA    CAT--    A      -  T  AGATGAG
8                GCCTGTCCTGGAGATGAGCT CTGAG  GCCT     CAGG GGCCTGT CC GG
                 TGGCACAGGTCACTTGCACA GGCTC  TGGA     GTTC CTGGACA GG TC
                 TAGGTCTCGG             --    TACAC    A      C  T  -------
GAM22911 12673  CTGAGAATTTCTCTTGCATG       T-   CTTGC-    CTT    TTAC
8                CCTTAGCTTTACAGCTTTTG CTGAGAAT  TCT     ATGC   AGCT
                 CATTCCTGTGGATTATTCTC GACTCTTA  AGG     TACG   TCGA
                 AG                    TT   TGTCCT    TTT    ----
GAM22911 13045  CTGAGACACAGTTTCACTCT     A   -  TT     C  TC   AG----    GA  -     -  AAATCTCG
9                GTCACCAGGCAGGAGTGCAG CTGAG CAC AG  TCACT TG  ACC      GCAG  GT GCAGTG GC
                 TGGCAAATCTCGGCTCGCTG GACTC GTG TC  AGTGA AC  TGG      CGTC  CA CGTCGC CG
                 CAACCTCTGCATCCCGGGTT     C   G  TC    -  T-   GCCCTA    TC  A     T  --------
                 CAAGTGACTCTGGTGCCTCA
                 G
GAM22920 12775  CTGAGCAAGAAGGAGCTGAA    A   AGA    -   GAA     G   CAGA
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2          AGAGCTGCTGCAGACGGAGC CTG GCA   AGGA GCT   AGAGCT CTG
           TCTCTGGCTTCCTGGATGCC GAC CGT   TCCT CGG   TCTCGA GGC
           CAG               C   AGG   T   TC-     -   ----
GAM22921 8419   CTGAGCAGATTCCTCATGGT      AGATT    AT   ---   GG    GT-   T    ACCTT
0          CATGGGGGCCACGTTGTTAT CTGAGC    CCTC  GGTC   ATGG  GCCAC   TGT ATGT
           GTACCTTGCATCACGTGGGT GACTTG    GGAG  CCAG   TACC  TGGTG   GCA TACG
           GGTTTCCATATAGACCGAGG      GC---    --    ATA    TT    GGT   C    -----
           CGGTTCAG
GAM22923 14479  CTGAGCCCCCGCTCCTCCTC       CC        T  GGTGAGA    GAGCCG
8          TGCGGTGAGATGCCAGAGCC CTGAGCCC  GCTCCTCCTC GC      TGCCA
           GTGGCGGAGCGAGGAGGAGT GACTCGGG  TGAGGAGGAG CG      GCGGT
           GGGCTCAG                --        -  AG-----    ------
GAM22925 14366  CTGAGCTAGCATGCCCAGCC    A-  T   A   CCA   -   GAGAGCC     AG  TGATG
9          CACAGAGAGCCTCCACTAGA CTG  GC AGC TGC   GCC CACA      TCCACT  AG
           GTGATGCTAAGTGGAAATGT GAC  CG TCG ACG   TGG GTGT      AGGTGA  TC
           GAGGTGCAGCTGCCACAG     AC  -   -   ---   A    AA-----     A-  -----
GAM22933 9765   CTGAGGATGCCAAGGACTTC       T  CAA--  AC      AGAG  AGA--   ATTTT
0          TTCAAGAGGCAGATAGATTT CTGAGGA GC     GG  TTCTTCA    GC     TAG
           TCTAACCAAGCAGATGGAGA GACTTCT CG     CC  AAGAGGT    CG     ATC
           AAACCAAACAGCTCTTCAG        -  ACAAA  AA      AGA-  AACCA   -----
GAM22939 19182  CTGAGGCTAGATAAGATAAC   GA-  C    AAGATAA  A----      GGTC
0          CAGTTAGTGGGTCCACTGAC CT   GG TAGAT      CC     GTTAGTG
           CTTTAGGACAGTAGTCTATC GA   CC ATCTG      GG     CAGTCAC
           CGTAAG             ATG  T     ATGACA-  ATTTC      ----
GAM22941 5711   CTGAGGGCCCTCATGCCATA      GC  ---      CA    -    TGCCTT    GAA
1          TTCCTGTGCCTTTGAAGAAT CTGAGG  CC   TCATGC  TATT CCTG     TGAA
           TCATCATCAGGTAGTAAAGC GACTTC  GG   AGTACG  ATGA GGAC     ACTT
           ATGACCAGGATCTTCAG         TA  ACC     AA    T    TACT--    ---
GAM22943 9595   CTGAGGTTCCAAGCATGCTT       --   A   ----------------     TCC
7          GTCCTAAGCTCAGGTCCCTG CTGAGGT  TCCA GCAT            GCTTG
           CTGGTGCCTGGACCACCTCG GGCTCCA  AGGT CGTG            CGAAT
           G                    CC    C    GTCGTCCCTGGACT     ---
GAM22945 14073  CTGAGTCCCTCTGGGCAGCA     T  CTC--    - AGCA   CCCTTCTCCACCCCACCCC

4          GCTCCCTTCTCCACCCCACC CTGAG CC     TGGG C    GCT
           CCAGCACCCGTCCCAAATGT GACTC GG     ACCC G    CGA
           GGCCTCAG               C  TGTAA    T CCCA  --------------------
GAM22947 19133  CTGAGTGATGGGCCCTGCCT    A  GA    -      -    G   CT   T  TCAGGCT
0          CCCTGTGCCTCATCCTCAGG CTG GT  TGGGC CCTGCCT CCCT TGC  CA CC
           CTGGTTGGAGCAGAGGGTGG GAC CG  ACCCG GGACGGG GGGA ACG  GT GG
           GCAGGAGCCCAAGCACAG     A  A-    A      T    G   AG  T  -------
GAM22954 20048  CTGATATTATCCTGGGATAA       TAT-   GG--    C  TA   GGTAC    -   TTATTT
5          CGATATGTGGTACAATACTC CTGATAT    CCTG    ATAA GA  TGT     AATA CTC
           TTATTTGAGATATTAAACAC GATTATG    GGAT    TATT CT  ACA     TTAT GAG
           TTCATTATAAAATAGGTTTT       TTTT    AAAA    A  TC   AA---    A   ------
           GTATTAG
GAM22955 18706  CTGATCAATCCTTCTTTTTC     TCA       T     C     CC   A    AGCAAG
4          TCTTTGCCCACAATTTAAGC CTGA   ATCCTTCT TTTCT TTTGC  ACA TTTA
           AAGTAGATGTGCAGAAGAAA GACT   TAGGAAGG AAAGA AGACG  TGT AGAT
           TGGAAGGATTCAG          ---       T    -    --   -    ------
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GAM22955 1257   CTGATCAATCCTTCTTTTTC    TCA      TTTTC      CC  A   AGCAAG
5          TCTTTTGCCCACAATTTAAG CTGA   ATCCTTCT    TCTTTTGC  ACA TTTA
           CAAGTAAATGTGCAAAAGAA GACT   TAGGAAGG    AGAAAACG  TGT AAAT
           ATGGAAGGATTCAG         ---      TAA--      --  -   ------
GAM22955 1256   CTGATCAATCCTTCTTTTTC    TCA      TTTTC      CC  A   AGCAAG
6          TCTTTTGCCCACAATTTAAG CTGA   ATCCTTCT    TCTTTTGC  ACA TTTA
           CAAGTAGATGTGCAGAAGAA GACT   TAGGAAGG    AGAAGACG  TGT AGAT
           ATGGAAGGATTCAG         ---      TAA--      --  -   ------
GAM22957 9625   CTGATCCTGCTTTGCTGCGT     C    T CTG   CCA  AA  TTA   GAAAAATACA
0          CCAGGAAGATTAGATAGAAA CTGATC TGCTT G   CGT   GG  GA   GATA
           AATACATATTGATTTGGCCA GATTAG ACGAA C   GTA   CC  TT   TTAT
           AATGAACAAGCAAGATTAG      A    - AA-  AA-  GG  TAG   ----------
GAM22960 19203  CTGATGATATTCTGAATTCT    TG   TTCTGAATTCTCCCT     CCAAA    CT     TT    AT--
CCC
2          CCCTATAGAAACCAAATAGA CTGA  ATA          ATAGAAA    TAGAA  AAAATT  ATAA   CTC
           ACTAAAATTTTATAAATCTC GATT  TGT          TATCTTT    ATCTT  TTTTAG  TGTT   GAG

           CCCTATACCATAATTTAGAG    GT  ----------------      TC---    C-     TT    ATAT   ---
           TATATTGTTTGATTTTCTTC TATACCATAATTTA
           TACTTTTCTATTGTTGTTAG

                        ----------
GAM22963 6373   CTGATGGTACTTGGTAGGTT    ---   A   -   - GT    C   A  TTTCTAATGCCTCTT
1          GTTCTGGACATTTCTAATGC CTGA   TGGT CTT GGTA G  TGTT TGG CA
           CTCTTTGCCATAACACTCAT GACT   ACTA GAA CCAT C  ACAA ACC GT
           ACCTAAGGATCAAGATCAG     AGA    G   T    A TC    T   - ----------------
GAM22964 19830  CTGATGTTGTAGAAGCATTT          AGCA    TCA   ---    CAAAAAA
5          CTCACTGTCCTCAAAAAAGG CTGATGTTGTAGA    TTTC   CTG   TCCT
           GAAACCAGGTGAAATTTATA GGCTACAATATTT    AAAG   GAC   AGGG
           ACATCGG                   ----    TG-   CAA    -------
GAM22965 18068  CTGATTAAAGTGCCTTCAGC      A-    - -     G   A  CCATCTCTCCC
0          CAAGACCATCTCTCCCTCCT CTGATT  AAGT GC CTTCA CCA GA
           GGTGAAGTGTGACTTCGAAT GATTAA  TTCA TG GAAGT GGT CT
           TAG                 GC    G  T     -   C  ----------
GAM22967 21195  CTGATTCCTTATTTATGGAA    TTCCT    TAT    C        ATA  ATTTC
1          TCATCTCTGGGTATATGATT CTGA    TATT   GGAAT ATCTCTGGGT   TG
           TCCAAAACCTAGAGATATTC GACT    ATGG   CCTTA TAGAGATCCA   AC
           CTATGGTATAATTCAG       TAAT-   TAT    -        AA-  -----
GAM22967 14445  CTGATTGCGAAATGGCAAAA    T    AAATG   AAA   -   ATATGAGAA
7          AGCCAGGATATGAGAACTTG CTGA TGCG     GCA   AGC CAGG
           TGCTGCCTGCGGGTGCATTC GACT ACGT     CGT   TCG GTTC
           AG                  T    GGG--   CCG   T    ---------
GAM22968 5819   CTGATTTAAAAATATGGTCT    TT       --        TTTTAT    T   ---  G     TTTC
9          TTGTTTTATATGATTAAATG CTGA  TAAAAATA  TGGTCTTTG     ATGA TAA   AT GTTTGT
           GTTTGTTTTCATAGATGATA GACT  ATTTTTAT  ACCAGAAAT     TACT ATT   TA TAGATA
           TGTTACTCATTGTAAAGACC    T-       AC       GT----    C   GTA  G     ----
           ACATATTTTTATTCAG
GAM22969 12404  CTGATTTCTCTGTGGAACGT        TCT      C- TG T     CGAGTGA
5          GTTCGGTCCCGAGTGAGGAC CTGATTTC   GTGGAA  G  T CGGTCC
           TGTGTGTCTTTTTACCCTGA GATTGAAG   CATTTT  T  G GTCAGG
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AGTTAG TCC TC GT T -------
GAM22973 17982 CTGCAACCTCAGCCTCCTGG CAA- A CT ATTCAA AATCCTCTCACGTCA
1 ATTCAAGCAATCCTCTCACG CTG CCTC GC CCTGG GC
TCAGCCACCCAGGTAGCGGG GAC GGGG CG GGACC CG
GACTACAG ATCA - AT CAC--- ----------
GAM22973 3156 CTGCAAGACTGTGCCCTTCC TG C T CT- CC- C- A-- A GCAACAGATAAA
9 CCTCCTGAAAGATGTCATCG C CAAGA TG GCC TCC TC TGAA GATGTC TC
CAACAGATAAAGAAGACGTT G GTTCT AC CGG AGG AG ACTT TTGCAG AG
GCCTTCAAAGACCTGGATGT GT T - TGT TCC AA CCG A ----------
GGCCATTCTTGTGG
GAM22974 12298 CTGCAAGGAAAAGTTGAATG AAGGAAA TG--- ATCCTGATTCTACC
8 ATGTATTTGATCCTGATTCT CTGC AGTTGAA ATGTATTTG
ACCCAAGTACATATGATTTC GACG TCGACTT TACATGAAC
AGCTGCAATGGCAG GTAACG- TAGTA ----------
GAM22975 5790 CTGCAAGTGCCGTAAGTGGG A C AG- ------ ACGT
6 CCTGTGACGTCACACCGACC CTGCA GTGC GTA TGGGCC TGTG
GGCCCGAGGTATCGCATGTG GGCGT TACG TAT GCCCGG ACAC
CGG G C GGA CCAGCC ----
GAM22976 8728 CTGCACAAACATATTGATAC GC AA TT ACAAAAAC GTTAAG
6 AAAAACAACACTGTTAAGAG CT AC ACATA GAT AACACT
TGTTTGCACCGTCTATGTGG GA TG TGTAT CTG TTGTGA
GTAAG A- GG -- CCACGT-- ------
GAM22978 1493 CTGCACCAACATCATCAGGA G AAC A- A C-- -- G TCTCCTCT
2 AGCCTGTGGTGTGCGGAGTC CT CACC ATC TCAGGA GC TGTGGT GTGC GAG
TCCTCTCTTGGCATCGACCA GA GTGG TAG GGTCCT CG ACACCA TACG TTC
CACCAGCCTCCTGGGGGATA G CA- GG C ACC GC G --------
CGGTGGAG
GAM22980 19890 CTGCACTTATAGTTTTAAAA ACT AG T--- ACACATA AT TTTCAGT
6 TATCGTACACATAACATTAT CTGC TAT TTTTAAAA ATCGT ACATT GA
GATTTCAGTTCTAAATGTAA GACG ATG GAAATTTT TAGTA TGTAA CT
ACCATGATTTCTTTTTAAAG GT- CA TCTT CCAAA-- AT -------
ACGTATGGCAG
GAM22982 20042 CTGCAGAGCGAGGGCATGGG CGA A G ACC GG TTCT
6 CCTACCGTGGGGCTTCTGCT CTGCAGAG GGGC TGG CCT GT GGC
GAGCCGAGGGGCCAGCCCCA GGCGTCTC CCCG ACC GGG CG TCG
CTCTGCGG AC- - G AGC AG ----
GAM22984 20100 CTGCAGCAGGCCTTGCAAAG G C GCAAA TCT T - --- AAGAACAGATGA
0 GGGGCATTCTGGATGGTGGT CT CAG AGGCCTT GGGGGGCAT GGA GG TGG TGC
GCAAGAACAGATGAGCGAGT GA GTC TCCGGGA CCCTCGTA CCT TC ACC GCG
CCAGCTCTCCTCATGCTCCC G C A---- CT- C G TGA ----------
AAGGGCCTCCTGGAG
GAM22985 8185 CTGCAGCGGCTCGTCTACTC A T ACT- GC ----- GCCA
9 CATGTGCTCCCTCTGCCAGG CTGC GCGGC CGTCT CCATGT TC CCTCT
AGGAGAATGAAGACATGGTA GACG CGTCG GTAGA GGTACA AG GGAGG
CAAGATGCGCTGCAGCAG A C ACAT GA TAAGA ----
GAM22987 5670 CTGCAGGAAGAAGATGATCT - - TCT CCGT CT AA TCTTC
0 GATGGCCGTGGGTGTCTGGG CTGCA GGAAGAA GATGA GATGG GGGTGT GGG GC
AAGCTCTTCGTGGCCTCAAT GACGT TCTTCTT CTACT CTATT CCCGTA TCC TG
GCCCTCCTTTATCCTCATCT A T C-- TCCT AC GG -----
TTCTTCTATGCAG

GAM22989 19382 CTGCAGGGCGCCGGTCTAGG TG - - -- A TA CCT
0 GTACCAATGCCTCGTTGGCC C CAGGGC GC CG GTCT GGG CCAATG
CAGATGGTGAGCGGCCTTGT G GTTCCG CG GT TAGA CCC GGTTGC
GG GT G A GG - -- ---
GAM22989 1221 CTGCAGGTCGACTCGGCCGA --- TC A A CT TCA A C TCTTCAC
7 GTATGGCTGCCTCAAGGCAT CTGCAGGT CGAC GGCCG GT TGG GCC AGGC TCG GC
CGCGCTCTTCACGCCCGACG GACGTCCG GTTG CCGGC CA ACT CGG TCCG AGC CG
CCTGTGGCTCTCAGACCCGG AGA CA C G CT TG- C C -------
CCACGTTGAGAGCCTGCAG
GAM22990 21226 CTGCAGTCCACCGGCCAGGT CCACC ---- TTCCT ATCT
5 GTTCCTGGGTATCTACCTCA CTGCAGT GGCCA GGTG GGGT
TCTGTGTGGCCTACTCACTG GACGTCA CCGGT CTAC TCCA
CAG CTCAT GTGT ----- ----
GAM22992 5489 CTGCAGTTGTGCGAGGACGA - TG - C A TCCT- AAG CCTT
7 AGTTCCTCCAGAAGAAGGCC CTGC AGT TGC GAGGA GA GT CCAG AAGG
TTCCTTACCTGGTCCTCACA GATG TCA GCG TTCCT CT CA GGTC TTCC
TCTCCTTAGCGTGACTCGTA C GT A - A CTCCT CA- ----
G
GAM22994 13001 CTGCATCAAAGGTAGACTTT AA - TTTC- AGGT GGTTGGAG
2 CGCACAGGTTGTGAGGTTGG CTGCATCA GGTA GAC GCAC TGTGA
AGTCACAGTGTTATTTGTTG GATGTAGT CCAT TTG TGTG ACACT
TACCTGATGTAG -- G TTTAT ---- --------
GAM22994 6367 CTGCATCATCAGTGTCATGT TCAGTG AT-- G TGGGA
7 CTGTAGCTGGGAGCTGGAGA CTGCATCA TC GTCT TAGC
CCCAAGAAATCCTGGTGCAG GACGTGGT AG CAGA GTCG
CCTAA- AACC G -----
GAM23000 19056 CTGCCAAAGGTACCGGGGCC A- A - C - G GGGA CTGT
8 GTGACGAACTGAGGGAAGAT CTGCC AAGGT CCG GGGC GTGACGAA CT A AGATTCCC

TCCCCTGTGGGAGTCTTGGG GACGG TTCCA GGT CCCG TACTGCTT GG T TCTGAGGG

TTTCGTCATGCCCGTGGACC AG - G - T G ---- ----
TTGAGGCAG
GAM23002 20233 CTGCCAAGGACATTCTGGAC ------ A GGAC-- ----- AATG
2 CAGAAAACTTAATGAAGTTT CTGCCA AGG CATTCT CAGAA AACTT
CTTCTTCTGATGATAAGGAT GACGGT TCC GTAGGA GTCTT TTGAA
GCCTTCTATGTGGCAG GTATCT - ATAGTA CTTCT ----
GAM23002 6359 CTGCCAATCAGGAAGCTCCC A CAG CT- GCCTC GTCCAG
4 CAAGCCTCACTGTCCAGAGT CTGCC AT GAAG CCCCAA ACT
TTTTATTGGGGTTTCTTTAC GACGG TA TTTC GGGGTT TGA
ATAGGCAG A CA- TTT ATTTT ------
GAM23002 22181 CTGCCAATGTCGATTGGCCT AATGTCGA A- GGCAAAAAAAA
5 TAATTTGGCAAAAAAAAAAA CTGCC TTGGCCTT ATTT
TGGGGGGCCGAAATAAATGG GGCGG AGCCGGGG TAAA
GCGG GTAAATAA GG ----------
GAM23002 3215 CTGCCACAAAAACAGGTAAT AAAA-- G - TTGAAAGG T TGGA
6 ACTTTGAAAGGAGATGTCTT CTGCCACA CA GTAATA CT AGATGTCT GGAACAT
GGAACATTGGAATGTTCTCA GACGGTGT GT TATTGT GG TCTATAGA TCTTGTA
GATATCTGGTTGTTATGTGA GTACTA G T -------- C ----
TCATGTGTGGCAG

GAM23003 18417 CTGCCACAGCCTTGACCGGC CAC ---- CCG AATG
3 CGGAAGGGAATGCCCTTCAC CTGC AGCCT TGACCGG GAAGGG
CCGGTTAGATGGGGCTCTGC GACG TCGGG ATTGGCC CTTCCC
AG TC- GTAG CA- ----
GAM23004 4246 CTGCCACCGCCTGCCTGAGA CACC CC A GAA- C - C-- CCCCG
6 GAAGTCGTCGCGGCCGACCC CTGC GCCTG TG GA GT GTCG CGG CGA
CGTCGCCTCCGCCGGCTACC GACG CGGAC GC CT CA CGGC GCC GCT
ATGTCCGCCCAGGCGCAG ---- CC - GTAC T C TCC -----
GAM23006 18738 CTGCCAGCCATCGGGCCCAG A- - T -- A GG TGTCTT A AGTAC
1 GTCTCTGGGGTTGTCTTACC CTGCC GC CA CGGGC CC GGTCTCTG GT ACCGC GTG
GCAGTGAGTACCACGCGGTA GACGG CG GT GCCCG GG CCAGAGAC CA TGGCG CAC

CTACAGAGACCGGCTGCCCG CC T - TC - AT ------ - -----
TGTGCCCGGCAG
GAM23006 2737 CTGCCAGGCAGCAGCGAGGA G A G -- GA AGAAGG
7 TGGTGACCGAGAAGGTGGGG CTGCCAG CAGC GC AGGA TGGT CCG
ACCACGTCCTGGTGGCTGTT GACGGTT GTCG TG TCCT ACCA GGT
GGCAG - G G GC GG ------
GAM23007 8636 CTGCCAGTATGCTGTTAGTC CCA CTG G AG- CAGT
1 AAGAGTCCTCAGTAGGAGAA CTG GTATG TTA TCAAG TCCT
CTTGAGTGAAACGTACACCC GAC CATGC AGT AGTTC AGGA
AG CCA AA- G AAG ----
GAM23007 8081 CTGCCATCATGGAGCACCTG - TCA CA - GAATT TTAA
9 CGGGAATTCCTGTTAACAGG CTGC CA TGGAG CCT GCGG CCTG
CCGTGAGGACCTTCAGCCTG GACG GT ACTTC GGA TGCC GGAC
TGCAG T CCG CA G ----- ----
GAM23010 3133 CTGCCCATTGAAGCGGTAGT - GA G TG TA AGAA GAA AGAGATAGAAGA
5 GATAGGCATAGAAGGCGAAG CTGCC CATT AGCG TAG A GGCAT GGC GTGGT
TGGTAGAGATAGAAGAACCG GACGG GTGG TCGT GTC T CCGTA CCG CGCCA
CAGCCAATGCCGCTTGCTGG T -- G GT CG A--- A-- ----------
TGCTGGTGTGGCAG
GAM23013 8535 CTGCCCGTTTTCCCCCATCT C TC--- C G GAGG AGGCAG GAG CTG
9 CAGGGCCTGGCTGAGGCAGG CTGCC GTTT CCCCATCT AG GCCTGGCT CAGGGC GAGA
GCCC
GCAGGCAGGAGAGAGGCCCC GATGG CAAG GGGGTAGA TC CGGACCGG GTCCCG CTTT
CGGG

TGAGGGCGGGTTTCAGGCCC T CACGT C A ---- GA---- GGG ---
TGGGCCAGGCACTCAGATGG A
GGTGCACGAACTGGTAG

-
GAM23015 13986 CTGCCCTGGCCCACCTCCGT - -- CC TG ------- TGTATGTGAT
1 GCTGCGGTCCTGTATGTGAT CTGC CCT GGCCCA TCCG CTGC GGTCC
GGATTTGTCTGAGCAGTGTG GACG GGG TCGGGT GGGT GACG TTAGG
GGCATGGGCTGAGGGAGCAG A AG AC GT AGTCTGT ----------
GAM23016 2827 CTGCCGGCCGCCGAGCTGGT TG CG GAG TG C GCCT
9 GCAGGCCTGCCGCCTGGTGT C CCGGC CC C GTGCAGGC TGCC
GCCTGCGCTGGAAGGAGCTG G GGTCG GG G CGCGTCCG GTGG
GTGG GT A- AA- GT T ----

GAM23018 1147 CTGCCTACAACTATGGGAGC TACAAC- A T GGTTACAA
0 TACGGCGGTTACAAGCCGTG CTGCC TATGGG GC ACGGC
CCCCTATACCCCAACGGCAG GACGG ATATCC CG TGCCG
CAACCCC C - --------
GAM23018 18080 CTGCCTAGCACTGCTCTTTT T CTGCTCTT TG TGT ACAC
3 TGATGTTGTAGTGACACCAT CTGCC AGCA TT ATGT AGTG
TTACATTGAATTAATGCTTG GATGG TCGT AA TACA TTAC
GTAG T AATT---- GT T-- ----
GAM23020 22269 CTGCCTCCCATTGCCCGTTC TG - C TCT T GCCT C C AGAACC
3 TGACCTCAGCCTTGGAACTC C CCTCCCATTG C CGT GACC CA TGGAA TC TCA
CTCAAGAACCTGAAGATTCC G GGGGGGTGGC G GCA CTGG GT ACCTT AG AGT
ATGTGGTCACGTGTCGGTGG GT T T --- T ---- - A ------
GGGGTGG
GAM23022 19965 CTGCCTGACTAACTCCATGG TGACTAACT ---------- ATCTTAC
8 CATGGATCTTACCCGTGACA CTGCC CCATGG CATGG
AAATGTGTTCCATGGTCAAA GACGG GGTACC GTGCC
AAATGGCAG TAAAAAACT TTGTGTAAAACA -------
GAM23029 8966 CTGCGAGCCATTCACCCAGC C CCAT AC A TCCAAGACAGAGCC
3 TGGTCCCTCCAAGACAGAGC CTG GAG TC CC GCTGGTCCC
CGGGGCCAGCGGCAGACTCC GAC CTC AG GG CGACCGGGG
CAG C ---- AC - ----------
GAM23029 20883 CTGCGATGATTTCTGTGAAA GAT T- ATTT C GCGA
9 ATTTTGCTGTAGCGATGCAC CTGC GA TTCTGTGAAA TG TGTA
CATTGTTTCACAGAATTTCC GACG CT AAGACACTTT AC ACGT
AAGCAG AAC TT GTT- C ----
GAM23032 20170 CTGCGCTCCTGTCTTCTGGC CGC- CTTC TTCA AAGATCC
0 TTCAGTCTGGAAGATCCCCA CTG TCCTGT TGGC GTCTGG
GACACATGCTAACAGGATCT GAC AGGACA ATCG CAGACC
ACAG ATCT ---- TACA -------
GAM23033 19040 CTGCGGCTCCGGGCTGGTGG ------- T GGCCA C- GTCC
8 CCACGCGAGGGTGTCCGCCC CTGCGGC TCCGGGC GGT CG GAGGGT
TCTTCGACCTGCCTGGATTT GACGTCG AGGTCCG CCA GC CTCCCG
TTGTGCTGCAG TGTTTTT T ----- TT ----
GAM23035 12814 CTGCGGTATGTGGTCTCTGG A TCT A T TTT T- TCTG
0 AGGGCTGTTTGTCCTGGGTC CTGCGGT TGTGG CTGG GGGC G GTCC GGGTC
TCTGGGCCCCTGGACTTCGT GACGTTA ATATC GACC CCTG C CAGG CCCGG
CCCCAGTCCTATACATTGCA C CT- - - TT- TC ----
G
GAM23035 20818 CTGCGTGCGCAGGTTCGTCG C-- A GT - G- AGAAT
6 TCTGTGCCAGGAGAATCAGT CTGCGTG GC GGTTCGTC CTGT GCCA G
GGCTACGGGATGAACTGGCC GACGCAC CG TCAAGTAG GGCA CGGT C
AACACGCAG AAC G -- T GA -----
GAM23037 9167 CTGCTAATATAATTACTACG ATATAATTACT A G- GTGA
5 ATCAGACAGCGAGTGATCGA CTGCTA ACGATCAG CA CGA
GTGGCTGATCGTCCGACTCC GACGAT TGCTAGTC GT GCT
GTAGCAG GCCTCAGCC-- G GA ----
GAM23038 6009 CTGCTAGAGCCGAGCGAAGC CC ----- TG- AAATCAA
8 GATGCCTAAATCAAAGGAAC CTGCTAGAG GAGC GAAGCGA CCT
TTGTTTCTTCAAGCTCTTCT GACGGTCTT CTCG CTTTGTT GGA
GGCAG -- AACTT CAA -------

GAM23042 16537 CTGCTCAGCCTCCTCCTGCT CT CCTCCT--- - G A GA-- CCCTCA
6 CGGCCCAGCCCAGGGAGACC CTG CAGCCT GCT CGGCCCA CCC GG GAC
CCTCAGTCCATACCAGGGTG GAC GTCGGA CGA GTTGGGT GGG CC CTG
GGTTGCAGCTGATCCAACAG AG CAACCTAGT C - A ATAC ------
GCTGGACAG
GAM23043 4161 CTGCTCATCAGACAGGTCCG TG CA G T G AA T -- CAATG CAGA
3 TCAAAATCTTTGATGTGCGC C CT TCA ACAGG CC TCA ATCTTTGA GT GCG GAGGG
AATGGAGGGCAGATCCTTAT G GA GGT TGTCC GG AGT TGGGGACT CA CGC TTCCT
CGCCGACCTCAGGGGTCATG GT AC G T G AC C GC TA--- ----
AGGGTCCTGTGTGGCAAGTG
G
GAM23043 8541 CTGCTCCAGCAGCTGGTGCT G AG T T CA TCCTGCCC
8 GCAGCCAGCAGGAGGTCCTG CT CTCC CAGCTGG GC GCAGCCAG GGAGG
CCCCCTCCACTGGCTGCTGC GA GAGG GTCGACC CG CGTCGGTC CCTCC
TCCAGCTGAGGAGAAG A A- T T A- --------
GAM23043 8420 CTGCTCCATCCCAGGACCTT T TCC A- ACC C CCTG
9 AACCAGCGCTCCCTGGAGCA CTGC CCA CAGG CCTTA AG GCTC
CTCTGAGGGGCCTGTGGGCA GACG GGT GTCC GGAGT TC CGAG
G - --- GG C-- A ----
GAM23045 22180 CTGCTCGACCTTCCACTAGT CG C CACTA TAC- TCATT
8 ACATACTTGCTCATTGTAAA CTGCT AC TTC GTACA TTGC
ACCTGTATGAAAGTGTAGCA GACGA TG AAG TATGT AATG
G TG A ----- CCAA -----
GAM23049 8221 CTGCTCTTTGACACTGCTTT CTTT CTTTTGGTAC TGGCCTAT
0 TGGTACCCTGGGTGGCCTAT CTGCT GACACTG CCTGGG
TTCAGGTGGTTTTTAGTGTC GGCGA CTGTGAT GGACTT
TGCAAGCGG ACGT TTTTGGT--- --------
GAM23051 19078 CTGCTGATTGGGGGAAATAA G -- AA TT CACTATCC
2 TTTTCACACTATCCTGAATT CTGCT ATTGG GGG ATAA TTCA
TTGTGCCTGTCTAATAAGCA GACGA TAATC TCC TGTT AAGT
G A TG G- TT --------
GAM23054 3333 CTGCTGCTTTTGTCACCTTT -- GTCACC C AAAGTTGGCC
1 CTCAAGTCAAAGTTGGCCGA CTGCT GCTTTT TTTCT AAGTC
CTTAAGAAAATTAAAGAAGC GATGG CGAAGA AAAGA TTCAG
TTGGTAG TT AATTA- A ----------
GAM23054 6239 CTGCTGGAGGACTGGACTGC - GGACTGG TA CTCC
8 TACTACTACTCCTGGCTGTG CTGCT GGA ACTGCTAC CTA
GCAGTGAGAGAATCCTGGCA GACGG CCT TGACGGTG GGT
G T AAGAGAG TC ----
GAM23057 6102 CTGCTGGTGGCTGCTGGGGG - G G G CAGAAGAGGAA
0 TGCATGTTCAGAAGAGGAAA CTGCTGG TGGCTGCT GGG TGCAT TT
AGATGCGGTTCAGGTAGTCA GACGACT ACTGATGG CTT GCGTA AA
TTCAGCAG T A G G ----------
GAM23065 18896 CTGCTTGAGAACAGCTGCCC T A A --- - AGAT TAGA
2 CAAGATGAAGTAGACTTTTC CTGC TG GA CAGCT GCC CCA GAAG
AGTGGTGGTATGAGCTGTCC GACG AC CT GTCGA TGG GGT TTTC
ATGCAG T - - GTA T GACT ----
GAM23067 4258 CTGCTTTAATTATGCAGTCC TTT AT- - AC TG AATCC GGCAA A TCTG
3 CGACTTGAGAAATCCACGCT CTGC AATT GCAGTC CCG T AGA ACGCT AGG GT
GGCAAAGGAGTTCTGGCCCC GACG TTAG CGTCGG GGT A TCT TGCGG TCC CG

TGAGAGGCGTTCTTGATGGT TCT ACC T -- GT ----- AGAG- C ----
GGCTGCCCAGATTTCTGCAG
GAM23067 20378 CTGCTTTCCCTCGGAATGTT TCCCT T TTCCG C ACATTAAA
7 TCCGTAACAGGACATTAAAC CTGCTT CGGAA GT TAA AGG
CTTTGATTTTACTTCCGTGA GACGAG GCCTT CA GTT TCC
GCAG T---- - TTTTA - --------
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8 ATGTTTATGTGTATGTGTAT CTGC T TA GGCA GAGA GTT GTGT TGTGT
CTAAAGCACAGCACTTAATT GACG A AT CTGT TTCT TAA CACG ACACG
CTTTACCTTGTCTATGATGC T GT - TCCAT - TT- - -------
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GAM23069 12323 CTGCTTTTAACAGAACTAGT TTTTAACAG AAA A AATAC
2 AAATATTTAATAATACATAG CTGC AACTAGT TATTT AT
AATAATGGCTAGTTATTTGC GACG TTGATCG ATAAG TA
AG TTTA----- GTA A -----
GAM23074 9363 CTGGAACATCGGATATAAAG AA GA AAG TAAG TCAATT
3 GTTAAGTTTCAATTAAAAGT CTGG CATCG TATA GT TT
GCACATGTGGATGATGAACT GATC GTAGT GTGT CG AA
AG AA AG ACA TGAA ------
GAM23076 977 CTGGAAGATTCAGGAGCCTG AA CT---- CG TTC
7 GGCGGGCTTCGCTTACTCTC CTGG GATTCAGGAGC GGG GGC
ACCTGCTTCTGAGTTGCCCA GACC TTGAGTCTTCG CTC TCG
G CG TCCACT AT ---
GAM23082 21541 CTGGACAAGAAGGAGTACCG A AA-- TA GGAA ATCGATTG
0 GAAGCCCATCGATTGGGGTG CTGGACA G GGAG CC GCCC
CAGGCTCCCCAGCTGTCCAG GACCTGT C CCTC GG TGGG
- GACC -- ACG- --------
GAM23082 20302 CTGGACAGGGCTGGAGAGAA G GGA AA A- ---- G- - - GG A GTA
9 GCAAGGGGGCTGGGGAGAGT CTGGACA GGCT GAG GCA GGGG GCTG GGAGA GTG GCC
TCC GCGG
GGCCGGTCCAGCGGGTAGCC GATCTGT CTGG TTC TGT CTCC CGAC CCTCT CGC CGG GGG
CGCC

GCCGGGGGCACGCATCTCCA G GGG GG GA ACGG GA A A -- C ---
GCAGCGGCACCTCAGTGTGG G
CTTGGGGGTCGTGTCTAG

-
GAM23084 14463 CTGGACCTGGACACCAGGGC ACC AC --- CACAAGA
9 TCGGTGGACACAAGATCTAT CTGG TGG ACCAGGGCTCG GTGGA
TGACGGGCCTTGGTAGCCAC GACC ACC TGGTTCCGGGC TATCT
CAG --- GA AGT -------
GAM23086 8637 CTGGACTCGGTTCACCTTTG GG GA------- GGAG
6 ACACCTGGAGAGGTGGGGAA CTGGACTC TTCACCTTT CACCT
GCCAGGGGGTGGGGAGTCCA GACCTGAG GGGTGGGGG GTGGA
G -- ACCGAAGGG ----
GAM23092 18740 CTGGAGCACTTACTCAGGTG G- C AGGTGGCT AAATGA
3 GCTGGTGAAATGACACCTCA CTG AGCACTTA TC GGTG
GAAGGAATGAGTGCTAATAG GAT TCGTGAGT AG CCAC
AA A GAAGACT- ------

GAM23092 6413 CTGGAGCAGTGGGTGACCGA CA G CCG A - CCTGCCTT
5 GGAGGCCGCCTGCCTTTGTG CTGGAG GT GGTGA AGG GGC CG
CCGCCTTCGCCAACCACTCC GGCCTC CA CCGCT TCC CCG GT
GG AC A --- G T --------
GAM23093 1752 CTGGAGCGCAGCCTAGGCTG A AG AG TG -- G-- - - A G
7 GGGCTGCCCCTGCTGGCGTC CTGG GCGC CCT GC GGGCTGC CCCTGCT GCGTCC GCG
GGACCC GTCT GCT
CGCGGGACCCAGTCTGGCTT GACC CGTG GGG CG CCCGGCG GGGGCGG CGCGGG CGC
CCTGGG CGGG CGG
CTGTAGCGGGGCAGGGCGGG - GG CA -- CA AGA A A G A
GTCCACGCAGGGCGCAGAGG TGTAGC
CGGGGACGCGGCCCGCACGG TC
GGGGTGCCCAG GG

GAM23093 18015 CTGGAGCGCGGACCTGGACA G A TG A -- - A GACTG- TGCA
8 AGTGCATGGACTGCGCGTCT CTG AGCGCGG CC G CA AGT GC TG CGCGTCT
TGCAGGGCGCGACCGCACAG GAC TCGCGTC GG C GT TCA CG AC GCGCGGG
CGACTTCTGCCTGGGCTGCG G - GT C CT G - ACGCCA ----
CTGCAG
GAM23096 3670 CTGGAGGCTAGAGAGGGAAG -- - G - - C -- GGCATATCCCAGACTA
1 GGAGCCGCGATTCGGCATAT CTGGAGG CT AGA AG GGAAGGGA GC GCGA TTC
CCCAGACTAGAACCTTGCCG GACCTCC GA TCT TC CTTTCCTT CG CGTT AAG
CTTTCCTTTCACTGTCTCAG TT C G A T C CC ----------
TTCCTCCAG
GAM23096 16774 CTGGAGGCTAGTACACTCCA AG TA- A TC TCCT AAGTATCG
2 TTCCTGGGGAAGTATCGCCC CTGG GC GTAC C CAT GGGG
CTATATGTGGGTACGCTGTT GACC TG CATG G GTA CCCC
GCCAG GT TCG - GT TAT- --------
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5 ACAGTTGCTGTTGGTGCAGG CTGGAG GTGG CAGGTACAG GCTGTT GGTGC AGGTG TCT

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GCGCTGAAACAGCCTGTGCT AAGGAGGT GA -- AG G A ----
TGAGTCATTGGAGGAATTCC
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GAM23101 9217 CTGGATCGTTGCTCGTCCTA TC- T TG CG AAATCGA A GAAACCA
7 GTGGTAGCGCAAATCGACTA CTGGA GTTGCTCGTCC AG GTAG C CT CT
CTGAAACCAAGAAGGCTAAG GACTT CGATGGGTAGG TC TATC G GA GA
AGTACTATTTCTTGGATGGG CAC T TT AT AGAATCG A -------
TAGCCACTTCAG
GAM23102 3986 CTGGATCTATGAATGACAGG A AAT C C CCACAT TTTC
0 AGGGCAGACCACATTGTTTT CTGG TCTATG GA AGGAGGG AGA TGT
CACATCCATTTCCCCTCCTT GACC GGGTAC CT TCCTCCC TTT ACA
CCCATGGGCCAG - C-- - C ACCT-- ----
GAM23102 16681 CTGGATCTGCAATGATAGAA TCT GATA GCC A ---- G T GAAG--
1 TTGGCCTGCCACAGACATTG CTGGA GCAAT GAATTG TGCC CAGA CATTG TATT AAGTT
AGCA
GTATTTAAGTTGAAGAGCAG GACTT CGTTA CTTGAC ACGG GTCT GTAAC GTAA TTCGA
TCGT
AATTCACAATGATTCTGCTG --- A--- --- G CAGA G T GAGACG

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          CAGAGAGCTTTAATGGCAAT     CACAAT
          GAGACTCTGGGGCACAGTTC GAATT
          AATTGCTTCAG         CTTAG
                              ------
GAM23102 16621  CTGGATGAAGAGCCGAATAG     TGA    CCGA       C--   TCAAAGAT
7          CAAGCTGTTCAAAGATACGT CTGGA   AGAG    ATAGCAAG   TGT
          ATCTTGCTATCTCTATTTCC GACCT   TCTC    TATCGTTC   GCA
          AG                  TTA   ----       TAT   --------
GAM23102 12232  CTGGATGAAGGACGAGCGTG          A ------  -    C   AGAAAC
8          TGCCCAAGAAACTGGCCACG CTGGATGAAGG CG     AGC GTGTG CCA
          CAGCTGGACTCCGCCTTCAT GGCCTACTTCC GC      TCG CGCAC GGT
          CCGG                    - CTCAGG   A    C   ------
GAM23102 3879   CTGGATGAAGGACGAGCGTG          A ------  -    C   AGAACC
9          TGCCCAAGAACCTGGCCACG CTGGATGAAGG CG     AGC GTGTG CCA
          CAGCTGGACTCCGCCTTCAT GGCCTACTTCC GC      TCG CGCAC GGT
          CCGG                    - CTCAGG   A    C   ------
GAM23103 18019  CTGGATGAAGGACGAGCGTG          A------    -    C   AGAACC
0          TGCCCAAGAACCTGGCCACG CTGGATGAAGG       CGAGC GTGTG CCA
          CAGCTTGGACTCCGCCTTCA GGCCTACTTCC       GTTCG CGCAC GGT
          TCCGG                    GCCTCAG    A    C   ------
GAM23109 1595   CTGGCAGAGCAGCTCCCAGG    -    C    C A-    A  A-    AAAAAGACTGCCCA
4          CAAAGTGAGCTGCAAAAAGA CTGG CAGAG AGCT CC  GGCAA GTG  GCTGC
          CTGCCCAGCAGCGGCACTTG GACC GTTTC TCGA GG  TCGTT CAC  CGACG
          CTGCGGCAGCTCTTTGTCCA    T    -   C CG    -   GG    --------------
          G
GAM23109 20693  CTGGCAGCAGCCCCAGCCTG     -      CCA     ACCGCCC    TGTACT
6          ACCGCCCGGAGTGTACTTTC CTGGC AGCAGCC   GCCTG      GGAG
          CTTGACAGGCAAGGCTGTTG GACCG TTGTCGG   CGGAC      CCTT
          GCCAG                G      AA-     AGTT---   ------
GAM23111 16684  CTGGCAGTGCAATAGATTTG    CA    A   GAT-   T-   CCAGTA    -   AAACAC
8          TTTACACCAGTATCACCACA CTGG  GTGC ATA    TTGT  TACA     TCAC CAC
          AACACGTGAGTGATGTATTG GATC  TACG TAT    AACG  ATGT     AGTG GTG
          CAATACATATGGCATCACTA    AC    G   ACAT    TT    ------    A   ------
          G
GAM23112 723    CTGGCATGAGGACTGGGTCG      --      ------------     T    TTC
7          TGTTCTATGCCCGGCAAATT CTGGCA  TGAGGA          CTGGG CGTG
          CTTGTTTCTTCACATGCCGG GGCCGT  ACTTCT          GGCCC GTAT
                              AC     TTGTTCTTAAAC    -   ---
GAM23113 3609   CTGGCATGGCCTTCCGTGTC    C     CT  CGT    -     C AACGT
2          CCCACTGCCAACGTGTCAGT CTGG ATGGC  TC   GTCC CCACTG C
          GGTGGACCCTGACTGCCGTC GATC TGCCG  AG   CAGG GGTGAC G
          TAG                 -    TC  TCC    T      T -----
GAM23113 4011   CTGGCATGGCCTTCCGTGTC    C     CTTC  T    -     C AACGT
3          CCCACTGCCAACGTGTCAGT CTGG ATGGC    CG GTCC CCACTG C
          GGTGGACCTGACCTGCCGTC GATC TGCCG    GT CAGG GGTGAC G
          TAG                 -    TCCA  C    T      T -----
GAM23113 3600   CTGGCCAACAGCCTTGCCTG     CAA      -    - AA--   AAGTACAC
7          TCAAGGAAAGTACACTCCGA CTGGC   CAGCCTT GCCTG TC    GGA
          GCGGTCAGGCTGGGGCTGCT GACCG   GTCGGGG CGGAC GG    CCT
          GCCAG                TC-      T     T  CGAG   --------
```

GAM23114 16555 CTGGCCACACCGACCAGACA C - C AC- A----- A CCT CTTGCTATGACTCTCT
2 GACCCAGCCTTGATCTTGCT CTGG CA CA CG CAG CAG CCCAG TGAT
ATGACTCTCTATCACTGGGC GACC GT GT GC GTC GTC GGGTC ACTA
CTGCCTCAACTGTAACGCTG C C C AAT AACTCC C --- ----------
CTGCCCAG
GAM23115 18831 CTGGCCAGCGGAAAGTTTTA TG - A- G ACC -- AGAGGAA
3 TTTACCTGTTTCAAGAGGAA C GCCAGC GG AA TTTTATTT TGTT TCA
TGATAAACGTGAAGTAAAAG G CGGTTG CC TT AAAATGAA GCAA AGT
TTGCCCAGTTGGCTGG GT A CG G GT- AT -------
GAM23116 19114 CTGGCCATTTGGGGAAATCG --- - AAATCGCAT-- TCTCAC
6 CATGCCGTCTCACCGGCTTC CTGGC CAT TTGGGG GCCG
CTCTTCTACCTCAACATGTA GACCG GTA AACTCC CGGC
CGCCAG CAT C ATCTTCTCCTT ------
GAM23118 12998 CTGGCCGAGGAGAAGCGCGA CCG A AGG A------- CCTGA
8 GGGCTACGAGCGTCTCCTGA CTGG AGGAGA GCGCG GCTACG GCGTCT
AGATGCAAAACCAGCGTGGC GACC TTCTCT CGCGC CGGTGC CGTAGA
GGCCGCGCTCTCTTCCAG --- - CGG GACCAAAA -----
GAM23122 5905 CTGGTACATGCTCTCAGCTC T CTCT - GCCC AT-- -- A TCCTCGTAC
7 AGCCCGGATGGGTTGGAATA CTGG ACATG CAGC TCA GG GGGTT GG ATA
TCCTCGTACTGTGCCTTGAC GACC TGTAC GTCG AGT CC CCCAG CC TGT
CCTCAGCCAATGATGCTGTC - CT-- T AA-- GACT TT G ---------
CATGTCCAG
GAM23123 16673 CTGGTAGTAATTCTAGTGTT AATT --------- AA CCA
8 CAATGGTGATCCAATTACCA CTGGTAGT CTAGTGT TC TGGTGAT
AAGAATCCCTAGCACACTAG GATCATCA GATCACA AG ACCATTA
TCACTACTAG CT-- CGATCCCTA AA ---
GAM23125 18890 CTGGTCAGGTGCGCGCGGGG A-- G CG-- C CTTC
6 TCCCCCACTTCTGAGGGATC CTGGTC GGTGC CG GGGTCCC CA
CGGGACGGCGCCGTGGGCCA GACCGG CCGCG GC CCTAGGG GT
G GTG - AGGG A ----
GAM23130 19833 CTGGTCTTGATAATGTCCTG T AA- TCCT ---- T T T TCTTT
9 CAGTCTGTGTTTTATAATTA CTGGTCT GAT TG GC AGTCTG GTTT ATAA TAT
TTCTTTGTATTTATTGAATC GACCAGA CTA AC TG TCAGAT TAAG TATT ATG
TAGACTTTAAGTTATTCAGA - GAG TTAT AATT C T T -----
GATCAGACCAG
GAM23132 20580 CTGGTGAGAGACTACGGGCA -------- G AC -- A CACT
1 GGGACCCGACACTTCGGGAC CTGGTGA GA ACT GGGCA GGG CCCGA
TCAATGCTTAAGTATCCAAG GACCACT CT TGA TTCGT CTC GGGCT
ATAGTCACCAG GATAGAAC A A- AA A ----
GAM23133 9446 CTGGTGCACCTTAAGGAGCT G C AAGG AA T CA- CAAA
6 GAAGCCTGTGCCATAGCCAA CT GTG ACCTT AGCTG GCCTG GC TAGC
AGCTGGTAGCCAGGCCATAG GA CAC TGGAG TCGAT CGGAC CG GTCG
CTGAGGTCACGAG G - ---- AC - ATG ----
GAM23135 21684 CTGGTGGATGTGGTGACGGG - GA - C-- - - TT CG AG C CA GCC
1 CAGCTTGGGGACGACAGGGG CTGG TG TGTGG TGA GG GC AGC GGGGA AC GGGAG ACGTG
GC
AGCACGTGCAGCGCCGCCCA GACC AC ACACC ACT CC CG TCG TCCCT TG CCCTC TGCAC CG

CGTCTCCCGGGTTATCCCTC C G- G CCT A G C- AT GG - C- ---
GCTGGCACCTCCTCAGCCAC

AGCACCCAG
GAM23140 21285 CTGGTTCCAGAACCGCCGTT - AAC G AA CA-- AAACT
7 CCAAGTTCAAGAAACTCTAC CTG GTTCCAG CGCC TTCC GTT AG
AAGACCGGGGAGGTGCCGCT GAC CGAGGTC GTGG AGGG CAG TC
GGAGCACAG A GCC - GC AACA -----
GAM23142 708 CTGGTTGATTAATGAGGGCA GAT T GCAT T- CCTCAA
5 TGGGGTGGTCCCTCAAGACC CTGGTT TAA GAGG GGGG GGTC
TTCCCCTACCTTTTGTGGAA GACCAA GTT TTCC CCCC CCAG
CCAG GGT - AT-- TT ------
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5 AGCGGCAAAAGGGGATTATT CTGGTT TGGGGGAGGG CGG GGG
CAAAGTACCGAAAACCTTCT GACTAG GCCCTCTTCC GCC CTT
CCCGGGATCAG G AAAA- ATGAAA ----
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7 GTGGTGAAATGACAAGCAAG CTGG T TTTATATT CTT GG AAATGAC
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GGTGGGCCAG G GT - --- GT -------
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5 TTATTTTTATATCCTACAAA CTGGTTTCAGA ATTTTT
AATTTCAATAACCTTTGAAA GACTAAAGTTT TAAAAA
TCAG CCAATAACTT- ---------
GAM23145 6377 CTGGTTTGTTGAAACAGTAA TT GAAACA ---- - TGCCACAAT
4 GTCAGACAACATTTGCCACA CTGG TGTT GTAAGTCA GACA ACATT
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1 ACCATCTTAAGCATGATGGA CTG ACT GATGG CCACCATC GCA GATG
TGTTGATCATCAGATTGCCA GAC TGA CTGTC GGTGGTAG CGT CTAC
AGCTGATGGTGGAACTGTCC TC AC- AA TCGAAC TAGA- -----
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GAM23155 2905 CTGTAATTCCAGCTACTCGG - G T --- T GGCAAGAGAA
2 GAGGCTGAGGCAAGAGAATC CTGTAAT TCCA CTAC CGGG AGGC GA
GCTTGAATCCGGTAGGTGGA GACGTTG AGGT GATG GCCT TTCG CT
GGTTGCAG G G - AAG - ----------
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8 GGACGTTAATGACTACGTGT CTG AG TG GCTGCGGGA GACT G TGTCCT GC
CCTATGCCTGGGTCGGGGAC GAC TC AC CGACGTCCT CTGG C ACAGGG TG
AGCAAGGTCTCCTGCAGCGA CAAG A AG ------- AA G GC ----
CAACTGAACCAG
GAM23172 9259 CTGTCAAACTGGTTGATAAT G A TTGA---------- AGAAAAGG
2 CAAAGAAAAGGTTGGTTAGA CT TC AACTGG TAATCAA
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AAAG A A TTAAAATGAATAAG --------
GAM23175 5401 CTGTCAGAGAAATCTGAGTG GA A GGAT AAACC CAC CTTTA
8 GATGACAAAACCTGCAATCA CTGTCA GAAATCTG GT GACA TGCAAT GCA
CGCACTTTATGCTATTGTGA GACAGT TTTTAGAC CA TTGT GTGTTA CGT
TGTTTTTAACCAGATTTTAT A- - ATTT A---- T-- -----
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8 ACCCCATGTCCTCTCTTCAC CTG CAGGG GGAG CACC ATG TCT

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TCCCTGCAG - ------ T CCC TAA ------
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5 GCTCTCAAGTTACTGACGAC CTGTC TAC AAGGCT TCA TT CTG
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GTATGACAG T------ G- - AA - --------
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3 CTCCCCAGAACTTGCTGCAG CTGTCC GG CCCTCG TCT GCT CCCCA CTT CTG
TGACAGGTACAGGAAGAAGA GACGGG CC GGGAGT AGG CGG GGGGT GAA GAC
TGGGGCAGGGCTGGAGTTTG AA A TTG T GAC AGAA G ----------
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1 TAATGAAATTTCACCTGCCC C CC TCCT CAGT GCT AATG ACC TGC GTGTT TGCTT G
CTTGTGTTCCTGCTTTGGAT G GG AGGA GTTA CGA TTAT TGG ATG TACGG ACGAA C
AGTTTTTGCTCCTAAGCATT TCT T T A TAT- GTA---- T TTATCTTCT TT T
GGCATTCTTCTATTGTATGG TA TTTT
TATGTATTTATAGCAATTGT GA GT
AGGATGGTCTG CT CG
-- ----
GAM23183 3218 CTGTCCTGATTGTTGCTGCT TGA- TTGC TG G TG TGAAT
9 GGTGTTGGTGAATTTGAAGC CTGTCC TTG TGC GT T G
TGGTATCTCCAAGAATGGGC GACGGG AAC ATG CG A T
AG TAAG CTCT GT A GT -----
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1 GGTGATTGGGGGAGCAGACA CTGTCC GC GGC GGTC GAGGT TTGGGG AGCAGA GT CAC

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CTCTGCTACTTCAACGAAGG C T A- A GAAGC A --- GCT -----
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CGG
GAM23185 1317 CTGTCGCCCAGGCTGGAGTG GTC --- C -- TCA ATCT
8 CAGTGTCATGATCTCAGCTC CT GCCC AGG TGGAGT GCAGTG TG
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GGTTCAAG ACT CCC - AA TCG ----
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1 GGAAGATTCGAAATTATTCA CT TGAAC GAGA TGGGA TTCG
CGAAAAATCCTAAGATTTCA GA ACTTG CTTT ATCCT AAGC
GTTCAGAG G A AGA-- AAA ----------
GAM23199 12793 CTGTGACGGTCCCTGTAGAA G C A CTCC AAGAAC
4 GTCTCCAGGAAGAACCCTAT CTGT ACGGTC CTGTAGA GT AGG
ATTTATGGAGACCGTGGCGG GGCG TGCCAG GGTATTT TA TCC
G A A ---- ------
GAM23202 748 CTGTGAGGCTGTGGCCATCT T G CTACG ATCATC AATT
3 ACGGCATCATCATGGCAATT CTG GAGGCT TGGCCAT GC ATGGC
GTCATTAGCAACATGGCTGA GAC TTCCGA GTCGGTA CG TACTG
GCCTTTCAG T - CAA-- AT---- ----
GAM23204 20528 CTGTGATGGCGCAATTAACG G C AATTA TT CCTCCCATGTAATC
2 TTTCCTAGCCTCCCATGTAA CT TGATGG GC ACG TCCTAG
TCCTAGGACGTGTACGCTTC GA ACTGCT CG TGC AGGATC

GTCAGAG G T CATG- -- ----------
GAM23205 1029 CTGTGATTCCCTGAGAGGGT TG - C--- - ----- - GCACCTCA
3 GTATTGTCTGCCTGGGCACC CTG A TTC CTGAG AGG GTGTATTGTCTGCC TGG
TCACCATGGTAGATAATATA GAC T AAG GACTT TCC TATATAATAGATGG ACC
TGGAGACCTGTTCAGCCTAG GT T ATCC G AGAGG T --------
AATTTGCAG
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6 GGCTGCCTTCCGGCAACATT CTG GC CAGGCGCTC G A GG TGCC
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GGCCAG - - T GT A AGCATTACA ----
GAM23207 8460 CTGTGCAGTGAAACCATCTG G TG ACC TACCT CA-- C AAATCCCAAAA
4 TTACCTGTGTTGATCAAGAC CTGT CAG AA ATCTGT GTGTTGAT AGA TTC
TTCAAATCCCAAAAGAACTT GACG GTC TT TAGACG TACAATTA TTT AAG
TCATCATTAACATGACTTGC G GT --- TTCAG CTAC C ----------
AGATTTTGCTGGGCAG
GAM23210 8879 CTGTGCCTAAAGAACATAAC GC A AC ACT TATTAATGTTT
2 TGCCATATTAATGTTTTGGT CTGT CTA AGA ATA GCCA
TTATATCCTCTATAGTAATA GATA GAT TCT TAT TGGT
G AT A CC ATT ----------
GAM23211 1588 CTGTGCGGCAGGGCCTGTTA AG-- GT GTG C CGGTT
9 TGTGTCGTGCTGCGGTTCAT CTGTGCGGC GGCCT TAT TCGTG TG
CATGGAGAGTGGGGCCAAAG GACGCGTCG CCGGG GTG GGTAC AC
GCTGCGCAG GAAA -- AGA T -----
GAM23215 18380 CTGTGGAACTTTGAACATGA GGAA -- AGAGA- AACCTGAA
1 GAGAGATAACCTGAAATTGG CTGT CTTTG AACATG GAT
AACACATGTTTACGAAGAAG GACG GAAGC TTGTAC TTA
CAG AA-- AT ACAAGG --------
GAM23222 1023 CTGTGGTAGTTGGAAACAAA AAC - AA TATT TAACATCATTGCATAAC
8 TCATAATGTATTATTTAAAT CTGTGGTAGTTGGA AAATC AT TGTAT TAAATGTT
GTTTAACATCATTGCATAAC GACACCGTCGATTT TTTAG TG ACATA ATTTGCGA
AGCGTTTATTATACAGGGTA C-- A GG TT-- ----------
GATTTCTTTAGCTGCCACAG
GAM23224 1490 CTGTGGTGAGCTCCAAGGAA GTG C AG-- TCAGAT
4 GTGAATAAGTTTCAGATGGC CTGTG AGCTC AAGGA TGAATAAGTT
TTATTCAAACCTCCTTAGAG GGTAC TCGAG TTCCT ACTTATTCGG
CTAACATGG AA- A CCAA ------
GAM23227 5856 CTGTGTATGTATATCCAGAA GT------- A CA ATAGGAA
7 TCAGCATAGGAAGTCGTTCA CTGTGTAT ATATCC GAAT GC
GGATATCAGTATATAATGCA GACACGTA TATAGG CTTG TG
CAG ATATATGAC A C- -------
GAM23231 1000 CTGTGTGAGAAAGATGGCCA GAGAA- A CCA GA TAAAAAGTT
4 GTTGATGCTAAAAAGTTGCA CTGTGT AG TGG GTT TGC
GAGACCCAACTAAAAGGACA GACACA TC ACC CAG ACG
CAG GGAAAA A --- AG ---------
GAM23231 5635 CTGTGTGAGAGGTATTTTAA AGAG TTTA A TTGA
5 GAAGAGAGTGTGTTGACGCA CTGTGTG GTAT AGAAGAG GTGTG
CCTTTTCTATCATACACAAT GATATAT CATA TCTTTTC CACGC
ATATAG AACA CTA- - ----
GAM23232 14488 CTGTGTGCCAGTGCTTGCTT T TGCTTGCTTCC ACC ATCCA
4 CCAGAGAACCCAATCCATGA CTGTG GCCAG AGAGA CA

CATCTCTTTTCTCTTTCTTG GATAC CGGTT TCTCT GT
GCCATAG - CTTTCTCTTT- ACA -----
GAM23233 20400 CTGTGTGGTTGGGTGTGCGT - ------- ---- ---- TTCTTT
8 TCTTCTTTGAACTCCTGCAT CT GTGTGGTT GGGTGT GC GTTC
GAACACCTTTCCAATGACCA GA TACACCAG TCCACA CG CAAG
CATAAG A TAACCTT AGTA TCCT ------
GAM23236 21498 CTGTGTTCTGACCTTGCTGG TGAC -------- ACTGTTA
4 GGTGACTGTTATACTCCATT CTGTGTTC CTTGC TGGGGTG
AGCTTTGCAGGATGGACACA GACACAGG GGACG ACCTCAT
G TA-- TTTCGATT -------
GAM23237 8819 CTGTGTTGCTTTTAAAAACA ---- - A A-- ATAAAA
0 CCTTATAAAAGAGGAGAGTA CTGTG TTGCTT TTAAA AC CCTT
TTTGATAAGCAATTTTCATA GATAC AACGAA AGTTT TG GGAG
G TTTT T A AGA ------
GAM23237 8349 CTGTGTTGTACAGCAGAAAG GTG TG CA- ATGCCA TGGT
3 ATGCCAGGCAATGGTTTGCT CT T TA GCAGAAAG GGCAA
GAGCTTTCTGTGGATATGGA GA G AT TGTCTTTC TCGTT
AAAG AAA GT AGG GAG--- ----
GAM23241 6622 CTGTTACTGCAAAACAGTTG - TG AAAAC TTTG-- CACAATT
4 TTTGGGTGCTCACAATTGGT CTGTTA C C AGTTG GGTGCT
ACTGGCTTTTAACTTTCGGT GGCAGT G G TCAAT TCATGG
GGATGACGG A GT GCTT- TTTCGG -------
GAM23250 8531 CTGTTCTCCAGCAGAACCAA CC AACC CA CACATAT
2 ATGTCAGTCACATATACCAC CTGTTCT AGCAG AAATGT GT
ATTTAAAATTGCTTAGAATA GATAAGA TCGTT TTTACA CA
G T- AAAA C- -------
GAM23251 6330 CTGTTCTTTCTTCCTCTTCT G C TC - ---- C A- CCGGAA
8 GTCTACTGCATGCAGGCCCG CT TTCTTT TTCC TTCTGT CT ACTG ATGC GGC
GAAGCTGAGCGTTAGTCAAA GA AAGAGA AAGG AGGACA GG TGAT TGCG TCG
GGTACAGGAAGGGAAAAGAG G A GA T AAAC - AG ------
AAGAG
GAM23252 8682 CTGTTGACTTTGTGCCTGAC G CTTT TG - C G GCCA
7 AGTGGTTGGTGGGCCACCAG CT TTGA G CC TGA AGTGGTTG TGG
TAACTACTTCGTGGTGCCAT GA AACT C GG GCT TCATCAAT ACC
TCAAGAG G TAC- GT T - G ----
GAM23253 18825 CTGTTGCATCCTGCCTGAGA GC- TGC ---- C CTGT-- CATG
8 AAGCAAAGTCTGTAACACAT CTGTT ATCC CTGA GAAAG AAAGT AACA
GTGTTTGGTTTACTTTTCTT GACAG TAGG GACT TTTTC TTTCA TTGT
TTTGTATCAGATGGATAAAG AAA TA- ATGT T TTTGGT ----
ACAG
GAM23255 1450 CTGTTGCTCAGGCTGGTCTC CT ---- -- AACT TTCA- ATG CT TCT
2 AAACTCCTGCATTCAAGCAA CTGTTG CAGGC TGGT CTCA CCTGCA AGCA TG GGAC
TGTGCTGGACTCTGTCTCCC GATAAC GTCCG ACCG GAGT GGATGT TCGT AC TCTG
AAAGTGCTGGCATTGTAGGT CG TGTC AC GT-- TACGG GAA CC ---
GTGAGCAGCCACTGTGCCTG
GCCAATAG
GAM23258 8743 CTGTTGTTGTTTATAGCATT - TTATA AAAAATTAA TATT
5 TAGAAAAAAATTAAAGACTA CTG TTGTTGT GCATTTAGAA AGAC
TTGTTTAAAGCAGTTTTAGG GAT AACGACA TGTGGATTTT TTTG
TGTACAGCAAGTAG G ----- GACGAAA-- ----

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GAM23260 5600   CTGTTTCAGACCCCCCCATT      CA   -     - TT      ATG
9           TCCCGCACATGGTGTGGGGG CTGTTT  GACC CCCCCA T  CCCGCAC
            GCTGGGGGAGGTCCAAGCAG GACGAA  CTGG GGGGGT G  GGGTGTG
                              C-   A     C GG      ---
GAM23262 8871   CTGTTTCCGGGTTGGGGGGA  G     GG     - AAA-  GGTTGGGTGG
1           AAGTTGGTTGGGTGGGATGG CT TTTCCG  TTGGGG GG    GTT
            TGCCACCTTAGGATGGAGGG GA GGAGGT  GATTCC CC    TAG
            AG                G     AG     A  GTGG  ----------
GAM23262 946    CTGTTTCTAAATTCCCTATC    TT  AAATT    A       AA    ACATGC
6           CTTTTCAAACCAACATGCTG CTGT  CT    CCCT TCCTTTTC  ACCA
            GTGGAGAAGGGAGGGTGGGC GACA  GG    GGGA GGGAAGAG  TGGT
            CACAG               CC  GT---   -      G-   ------
GAM23262 9021   CTGTTTCTCCTGTTGGCTCA    -     GT      C-    T    GGG
9           CAGGGCTGAAAGGGGCTTTT CTGT TTCTCCT  TGGCTCA  AGGGC GAAAG
            GTCCTCCTGGGTCAGGGAGA GGCG AAGAGGG  ACTGGGT  TCCTG TTTTC
            ACGCGG              C      --      CC    -    ---
GAM23263 20360  CTGTTTCTTCATAGATTCTT     T  TCA-     CTTG  C    GT    AGACC
4           GGACTTTAGTTGTAAGACCT CTGTT CT    TAGATT    GA TTTA  TGTA
            ACATAGACTCGATCTAGTTC GACAA GA    ATCTAG    CT AGAT  ACAT
            AGTAACAG              T  CTTG     ----  C    --    -----
GAM23263 19987  CTGTTTGATTTTTCATGATG     TT ATTT       TA---     ATACCGGAAA
9           TAGATCACATACCGGAAAGT CTGT  G    TTCATGATG     GATCAC
            GATCGCAACTATTATGGATG GACA  T    AGGTATTAT     CTAGTG
            TGGACAG             GG GT--       CAACG     ----------
GAM23266 19410  CTGTTTTATGATTCTTAATA       T    C  AA   TTACT    -     CAC
5           GTTACTTGGTTTAAATCACA CTGTTTTA GATT TT  TAG     TGGT TTAAAT
            TTTGATACTATCCTTCTGAA GACAGAGT CTGA AA  GTC     ATCA AGTTTA
            AAGTCTGAGACAG            -   A --  TTCCT    T     ---
GAM23268 12758  CTGTTTTGCGGGCTGCTGGC    TT     T  T   C-    CC    T  T  TT  C  ACAT
0           GCTCGTGCCACTCTGCTGGT CTGT  TGCGGGC GC GGCG  TCGTG  ACTC GC GG  CG CA
            TCGCCAACATTGTCGTCCGC GACG  GTGCCCG TG CTGC  AGCAT  TGAG CG CC  GC GT
            GAGTTTTACGACCCGTCTGT    CT     - T   CC    TT   -  -  T-  T  ----
            GCCCGTGTCGCAG
GAM23278 16508  CTTAAGGATCATAAAAATCA          TAAAAAT    A--   TTGCTTGTTAAAAATG
3           TGAGGGTTGCTTGTTAAAAA CTTAAGGATCA      CATG   GGG
            TGTCCAAACGTGCAGAGACT GAGTTTCTAGT      GTGC   CCT
            GATCTTTGAG                CAGAGAC    AAA  ----------------
GAM23289 9786   CTTACTAAATTCTACCGCTA    C     CTACCGC      CTA   CAATTTTAT
5           AGAAGCTATGTCAATTTTAT CTTA TAAATT      TAAGAAG   TGT
            ACAAACTTTTTAACTAATTT GAGT ATTTAA      ATTTTTC   ACA
            ATGAG               -     TCA----      AA-   ---------
GAM23295 2724   CTTAGAGGCGGTCAGAAGCA    AGA   GG  AGAA   -    AGGA   GA  - GAGCAA
8           GGAGCAGGAACGGAGGCGAG CTT   GGC   TC    GCA GGAGC    ACG  GG C
            CAAGTCCGTCGTAGAGGCTC GGA   CCG   AG    CGT CCTCG    TGC  CC G
            CGTGCGGAGAGAGCCGAAGG    AG-   AG  AGG-   G    GAGA   TG  T ------
GAM23296 16516  CTTAGATGGCCAATTGAAAC      T  C  T    ACAAACAG     G   GTT  T  A     GATTAAG
5           AAACAGTTCTGAGACCGTTC CTTAGA GGC AA TGAA       TTCTGA ACC   CT CC CCACT
            TTCCACCACTGATTAAGAGT GAGTCT CCG TT ACTT       GGGATT TGG   GG GG GGTGA
            GGGGTGGCAGGTATTAGGGA      T   A  T    ATAATA--      A   AC-  T  -     -------
            TAATATTCATTTAGCCTTCT
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GAG
GAM23296 21531 CTTAGATGGTTTCTTCATTA T- AT -- TTA - C ---- GGGAAA-- A
6 GACCATTTTACAAGATGATG C TAG GGTT TCTTCA GA CCATTTTA AAGA TGATGTT
GCAGAT
TTGGGAAAGCAGATAACCCT G ATC CCAG AGAGGT CT GGTAAAGT TTCT ATTATAA
TGTCTA
GAATGACATGGAATCTGTGG TC -- TA C-- A - CAAC GTGATAGG A
ATAGTGAATATTACAACTCT A C AATGA
TTGAAATGGATCCTGGAGAA CC TG
TGACCCTACTG GG AC
- T -----
GAM23298 9054 CTTAGCCCCTCTGCTGGGTA CCCTCTG TG AG - TTC ACTT
8 GAGAGGCACTTTCAGGGACT CTTAGC C GGT AGAGGCA CT AGGG
TCCCTCCAGCTGCCTCTTCA GAATCG G CTA TCTCCGT GA TCCC
TCTGGGAATGAGCTAAG AGTAAG- GT CT C CC- ----
GAM23299 18001 CTTAGCTCTTGGGATGCAGG C G-- - - - GCT
9 CTCAGCCCGCTGGAGCATGA CTTAG TCTTGG ATGCAG GCTCA GC CC
GCTCTGTGTGTACCGAGAAC GGGTC AGAGCC TGTGTC CGAGT CG GG
TGGG A ATG T A A ---
GAM23300 18617 CTTAGGAGATCGGAGAGCCA ATC - A- TG - CA TTTCT
6 AGACTGTGACACCCTTTCTG CTTAGGAG GGAGA GCCA GAC T GA CCC
GGGCTCTGTGGTTCCTGGCG GGGTCTTC CCTCT CGGT TTG G CT GGG
TCTCCAAGCTTCTGGG GAA G CC GT T CG -----
GAM23301 21023 CTTAGGCCAGTCTTAGGTTT - A T A --- ACA- GTAGG
0 TTAGAACAGGATAGTAGGTA CTTAG GCC G CTT GGTTTTTA GA GGATA
TCCGGAGTCGATTGAGGGCC GGGTC CGG C GAG CCGGGAGT CT CCTAT
AGAGCAGGCACTGGG A A - A TAG GAGG -----
GAM23301 1458 CTTAGGGAGGAAGGACTAGG AGGA TAGG AAA GGAAAACGTA
2 AGGGAAAACTGGGAAAACGT CTTAGGG AGGAC AGGG ACTG
ACGGTGGGCTCTGTCTTGCG GAGTTCT TTCTG TCTC TGGC
TCTTGAG GCG- ---- GGG ----------
GAM23301 1471 CTTAGGTAACAGTAGAGATC A GTAGAGAT GGGAC C ATA
8 ATGGGACCTGCAGCATAGCT CTT GGTAACA CAT CTG AGC
CAGTGAAGTGTGAAATGTTA GAA TCATTGT GTG GAC TCG
CTAAAG A AAAGT--- AAGT- - ---
GAM23302 18725 CTTAGGTGATGTGCTTGGGA - - GGAAA CTCCCC TCCCA
2 AAGTCCCTCCCCCTCTTCCC CTTAGGT GATGTG CTTG GTCC CTCT
AAGAGACGGACATACAAGCC GGATCCG CTGCAC GAAC CAGG GAGA
ACGTCGGCCTAGG G C ATA-- CA---- -----
GAM23308 20586 CTTATCCAGAGCTTTGTTTG C - TTTGTTT AGTCA
3 AGTTCTCATAGTCAATGAGG CTTAT CAGA GC GAGTTCTCAT
GCTTTGGTGCGTCTGTATAA GAATA GTCT CG TTCGGGAGTA
G T G TGGT--- -----
GAM23310 3531 CTTATGCTTTGGCAAATTTC A T AAATTT CC TT- CC- T TCA TTCC TCTA
5 CTACCGTTGTTTGGACCTGG CTT TGCT TGGC CCTA GTTG TGGA TGG GGA TG TG
TGGATCATGTTCCTGTCTAC GAG ACGA ATCG GGGT CAAC GTCT ATC CCT AC AC
ATTTTCAGTTCCCTATTTTC A T GTCACC TA TTT TTT - TG- TTTT ----
TGTTTCAACATTGGGCCACT
GGCTATAGCAAGAG
GAM23314 20571 CTTATTGCATTGGCCAGACC TT-- T CC CCTCC A- GAA --- G ACA

3 CTCCAGTACAATGTTGAATA CTTA GCA TGG AGAC AGTAC ATGTT TAGAAGCAG TGAGG
AGG
GAAGCAGTGAGGGAGGACAT GAAT TGT ACT TCTG TTATG TGCAG ATTTTCGTC ACTTT TTC

TCTTGTTTCATACCTGCTTT CGAT C T- AC--- AA TG- CAT G ---
TAGTGACGTAAGTATTCAGT TT
CTTTCACTGTTAGCTAAG

--
GAM23315 13971 CTTATTTCCTGCTCTGTGGT TTCCTGC TG T AA--- GTTGAA
2 GTCAAGATATTGTTGAAAAT CTTAT TCTG G GTC GATATT
GTCAAAAAGACCTGCAGATA GAGTA AGAC C CAG CTGTAA
CCCCTATGAG TCCCCAT GT - AAAAA ------
GAM23316 2960 CTTATTTTTAAAATACTTTG - AATACTT CCTT TTT GTATTATGTATCCAAACTG

5 CGCCTTGCTTTGATAATTTG CTTAT TTTTAA TGCG GC GATAATTT
TATTATGTATCCAAACTGAA GAATG AAGATT ACGT CG CTATTAAA
ATTATCTGCTTTCTGCATTA T ------- CTTT T-- ----------
GAATGTAAG
GAM23317 12598 CTTCAAAAGTGAATCACTGT AA AC T CAAGCACCAGAAACATC
2 GGACCAAGCACCAGAAACAT CTTCAA GTGAATC TG GGAC
CGTCCCAAAGATTCATCTTG GAAGTT TACTTAG AC CCTG
AAG C- AA - ----------
GAM23318 12233 CTTCAAAGCTCTCACAGGAA A- GC ACAGGAA TTA- AGA
1 GCGTTAATACAGAGTATGGA CTTC AA TCTC GCG ATAC
TCGTGTAGATCGAGAAATTG GAAG TT AGAG TGC TATG
CGAAG CG AA CTAGATG TAGG ---
GAM23319 19784 CTTCAAGAACTTTGGAAATG GAA- TG A C- TTTTT ATTACC
5 CAAGCTTTTTGTTATTACCA CTTCAA CTT G AATG AAGC GTT
ACTTTTTGTTTCTCATTACT GAGGTT GAA C TTAC TTTG CAA
GAAGAAAATTGGAG AAAA GT A TC TTTTT ------
GAM23323 12911 CTTCACAGTCGGCTCTCAGC C - CT AGCA- CT TTTC
8 AGCTGCTGCTGGTTTCTCGG CTTCA AGT CGG CTC GCTG GCTGG
CTCCAGCACCACGAGTACCG GGAGT TCA GCC GAG CGAC CGGCT
CACTCTGAGG C C AT CACCA CT ----
GAM23324 21315 CTTCACCACTTCACCACTGT CA- CA CT TG AAGT - TAAAT
8 GCATCCTGGGAAGTGGCCTC CTTCAC CTT CCA G CATCCTGGG GGCCTCC TCCTT
CTCCTTTAAATAGGGATGGA GGAGTG GAA GGT C GTGGGACCT CTGGAGG AGGGA
GGTCTCCAGGGTGTGCTCTG TTA -- CT GT ---- T -----
GAAGATTGTGAGG
GAM23330 9838 CTTCAGCCGGGCTGCACTGC - G G C ACC AATTTCGC CTTTGA
4 ACCTGGGAATTTCGCAAGGC CTTCA GCCGG CT CA TGC TGGG AAGGCA
ACTTTGATGCCTTTCTAAAC GAAGT CGGCC GA GT ATG ATCC TTCCGT
CTAAAGTACTGAGCCGGCTT T - - C AA- AAATCT-- ------
GAAG
GAM23330 2850 CTTCAGCTCATCAGAGGGGC TCAGA- CA CTTTTTTAATAC
8 AAGATTCTTTTTTAATACAG CTTCAGCTCA GGGG AGATT
TCTCTCCCTGTCATCTGGGC GAGGTCGGGT TCCC TCTGA
TGGAG CTACTG TC ----------
GAM23331 1723 CTTCAGGAACCTGGCCTCGG AACC CCT A - GAAAGACCAGGA

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7          AATCCAATGGAAAGACCAGG CTTCAGG   TGG  CGGA TC CAATG
           ACATTGAGAATCTGTACCAA GGGGTCC   ACC  GTCT AG GTTAC
           AACCTGGGG             AAA-  AT-   A A   ----------
GAM23332 4101  CTTCAGGAGATATGCAGAGT      AGA  -   - T  ATAAAC   TAACACTT
0          TTGATAAACTTTATAACACT CTTCAGG  TAT GCAG AG TTG    TTTA
           TTAAAAAAACAGTTTCCTGC GAAGTCC  GTA CGTC TT GAC    AAAT
           TATGGCCCTGAAG          CG-  T   C  T  AAAA--   --------
GAM23335 1056  CTTCAGTTGTCCTTGTGATT     TTGTCCT  T  T      TGT  -   TTC
5          GGGAAATTTGTCCGTGAATT CTTCAG     TG GA TGGGAAATT  CCG TGAA
           CTTCAGTGGGATTTCTCACT GAAGTT     AC CT ACTCTTTAG  GGT ACTT
           CCATCATGTTTGAAG         TGTACT- - C      ---  G   ---
GAM23338 8959  CTTCATCTTGGTCACCACGC     CT   CACCACG  GA-   ATCCGC
2          CAGAGAGGATCCGCCCTCGA CTTCAT  TGGT     CCA  GAGG
           ATGGACACATTACCAGTGAA GAAGTG  ACCA     GGT  CTCC
           G                 --   TTACACA  AAG   ------
GAM23338 8878  CTTCATGGCACTGAACTTGT                      - CAA    G   CCAGGTGCCAA
9          CGTGGTCGGGGCCAATCCAT CTTCATGGCACTGAACTTGTCGTGGTCGGGG C   TCCAT AGCC

           GAGCCCCAGGTGCCAAGGCT GAAGTACCGTGACTTGAACAGCACCAGCCCC G   GGGTG TCGG

           GGTGGGAGAGCCCCCGACCA                    C AGA    G   ----------
           CGACAAGTTCAGTGCCATGA
           AG
GAM23339 3872  CTTCATGGGGGAAATGTAAC      GG GAAAT   CAG  ACACTATTCCACAA
2          AGTGACACTATTCCACAACA CTTCATG  G    GTAA  TG
           AAATTACTTAGATTTCATGA GGAGTAC  T    CATT  AC
           GG                TT AGATT   AAA  --------------
GAM23340 6545  CTTCATTCAGTTTTTTGTCC    TT    TT   CACA---     CATTTAAA
3          ACAGCAGTGGCATTTAAATT CTTCA  CAGTTT  TGTC     GCAGTGG
           ACTGTACTTTAAGACATGGA GAGGT  GTTAAG  ACAG     TGTCATT
           ATTGCTGGAG           C-    GT   AATTTCA     --------
GAM23341 21410  CTTCCAAAAATATCTAGGTT     AAAATATC  -   ---      TAC
9          TGTCCTCATTTTACAAATGA CTTCCA      TAG GTTTG  TCCTCATTT
           GGAAACTAAACTCTGTGGAA GAAGGT      GTC CAAAT  AGGAGTAAA
           G                 --------  T    CAA      ---
GAM23343 19809  CTTCCACACCTGCTCTAGTC    A- C   -    CC---    GTCC
7          CTGTGGGTCCCCACGTTCCT CTTCC  CA CTGC TCTAGT    TGTGG
           GCTGGACGCAGCTGAGGGAA GAAGG  GT GACG AGGTCG    GCACC
           G                 GA  C   C    TCCTT   ----
GAM23347 12476  CTTCCATTGCCACGTAGACA  T   T  CAC   C   -  GAG--  AA  GTT
8          TTGCCCAGAGTGAAGTGGTT CT CCAT GC  GTAGA ATTGC CCA   TG  GTG
           CACAGCAAAGTGTGGTGCGA GG GGTA CG  CATCT TAGCG GGT    AC  CAC
           TCTCTACTGCCATGGTGG   T   C T--   C    T  GTGAA  GA  ---
GAM23348 21523  CTTCCCAAGATGTGTTTTTA   C     G  TTTT    - CT  TGT
4          TTTCTCACTGATTGTATCCT CTT CCAAGAT TGT   ATTTCT CA  GAT
           GAAGGAATCACAGGTCTTGG GAA GGTTCTG ACA   TAAGGA GT  CTA
           CAAG              C     G  C---    A  C-  ---
GAM23352 21182  CTTCCCGAACCGTTTCGTAC     GAA   TCGT   CA- A    AG--  TCTAGCACATTCCAT
1          CTCAGCATCCCTGAGAGATC CTTCCC  CCGTT   ACCT  GC TCCCTG   AGA
           TAGCACATTCCATTCTGTAA GGAGGG  GGTGA   TGGA  CG AGGGAC   TCT
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CAGGGACGCCACAGGTTTTT A-- TTTT CAC C AATG ----------
AGTGGAGGGAGG
GAM23353 8330 CTTCCCTTCAGTGTCCGGGT A T TG ATACAGGAAAATCGGGAC
8 TGGGATACAGGAAAATCGGG CTTCCCTTC GTG CCGGGT GG
ACTTTGGCCTGGCACGGGGG GGGGGGGGG CAC GGTCCG TT
GGGG - - GT ----------
GAM23355 917 CTTCCGGAGCGCGCCAGCCT G- CCAGCCTATATATC A CTCCTTC
4 ATATATCAGTCAAGTTACTC CTTCCGGA CGCG AGTCA GTTA
CTTCTGACATGGCTCCGCAA GGAGGCCT GCGC TCGGT CAGT
GAAACGATCGCGAGTCCGGA GA TAGCAAAGAACGCC A -------
GG
GAM23355 8582 CTTCCGGCCACCGTCTGAGT GCCACCG GA C - AAGAACC
5 CTCTGCGCGAAAAGAACCTT CTTCCG TCT GTCT TG CGCGAA
CGTGACAAGACGAGAAACAC GAAGGC AGA CAGA AC GTGCTT
GGAAG ACAA--- G- - A -------
GAM23357 18654 CTTCCTCACAGCCCCTCACT ACA TC T CG ACAG AG C G GGC
6 CCCGGCGGCTGACAGCAGCA CTTCCTC GCCCC AC CCCGG GCTG CAGC CGG GGCG
CGGGC
GCGGCGGCGGCGGGCGGCGC GGAGGAG CGGGG TG GGGCC CGGC GTCG GCT TTGC
GTCCG
CTGGCGTTTCGAGGCTGAGC GCG T- - A- GA-- GA - G ---
GGCACCGGGGTTGGGGCGCG
GAGGAGG
GAM23357 8827 CTTCCTCATGACCGGCTACA ACC ACCCCGC ACTACA
8 CCCCGCTCACTACAGACCAG CTTCCTCATG GGCTAC TC
TCAGTGGCCAGCGTGAGGAA GAAGGAGTGC CCGGTG AG
G GA- ACTGACC ------
GAM23361 20176 CTTCCTGGCGGAACTTATTC T- - AA TA TCC AGC GCAG
0 TCCCAGACGCTCAGCCTGGG CTTCC GG CGG CT TTC CAGACGCTC CTGG
CAGCCAGAAGGAGCGTCTGC GAAGG CC GTC GA AGG GTCTGCGAG GACC
TGGACGAGCTGACCTTGGAA TT A -- GC TC- GAA ----
G
GAM23362 18816 CTTCCTGTTGGTTTGAGCCC T TTT----- - TTTTTGTTTTGCCCTCT
0 CTTTTTGTTTTGCCCTCTGG CTTCCTGT GG GAGC CCC
GTGTTTTCTTTGGTCCCGCA GGAGGACG CC TTTG GGG
GGAGG C TGGTTTCT T ----------
GAM23364 6597 CTTCCTTTTTCCAGAATTTG T G GAAATT AGAAA GAAGA
9 AAATTGTAATAGAAACAGAA CTTCCTTTT CCA AATTT GTAAT CA
GATGAGATTATGCCTGAGGT GAAGGAAAA GGT TTGGA TATTA GT
TGTGGAAAAGGAAG - G GTCCG- GA--- -----
GAM23366 9578 CTTCGCAGGGAACAATCCTT A--- CAAT - TG A CAGG
3 ATTGCACAGGTCAGGACCTG CTTCGC GGGAA CCTTA T C CAGGT
GGTGGGTGAGGCATTCCCCA GGGGCG CCCTT GGAGT G G GTCCA
AGGCGGGG GAAC AC-- G GT G ----
GAM23367 14663 CTTCGGGGAAGAGAGGAAAT GGGG- A ----- AGAATACAAAAGGG
5 AGGATTGAGATAGAATACAA CTTC AAGAGAGGAAAT GGAT TGAGAT
AAGGGATTTCAGCTATGTCT GAAG TTCTTTTTTTTA TCTG ACTTTA
GATTTTTTTTCTTATAAAGA AAATA G TATCG ----------
AG
GAM23369 9861 CTTCTAAGAAGGCAAGGAGG AGAAGG AAAA-- ACAATGA

3 GAAAAAAGACACAATGAGTT CTTCTA CAAGGAGGGAA GAC
ATAGAATTCTCTTTTTGAGA GAAGGT GTTTTTCTCTT TTG
GTGGAAG GAGA-- AAGATA -------
GAM23370 8383 CTTCTACCCTGACTTCTCCC C - CG----- C AGTC
1 GCCTCCGAGAGTCCTTTGGG CTTCTACC TGACT TCTCC CCTC GAG
GACCCCAAGGAGAGAGTCAG GGAGGTGG ACTGA AGAGG GGGG TTC
GTGGAGG - G AACCCCA T ----
GAM23370 21650 CTTCTACCCTGACTTCTCCC C - GC----- AGTCC
2 GCCTCCGAGAGTCCTTTGGG CTTCTACC TGACT TCTCCC CTCCGAG
GACCCCAAGGGAGAGAGTCA GGAGGTGG ACTGA AGAGGG GGGGTTT
GGTGGAGG - G AACCCCA -----
GAM23373 20559 CTTCTCAGAAAACCAAACCA GAAAACCAA AAG C- AAAACC
7 AAGGCAGCCATGAAAACCCG CTTCTCA ACCA GCAG CATG
TGTTCTGTACGTGGTTGAGA GAAGAGT TGGT TGTC GTGC
AG --------- GCA TT ------
GAM23374 4367 CTTCTCCCCACCTGGGCCTT T - G- TTG---- TCTTCA
8 GGGTTCTTCAGCTATAAAAT CT CTCCCCA CCT GGCC GGT
GGCCAGAGGTTGGGGGGCGG GG GGGGGGT GGA CCGG TCG
C T GA TAAAATA ------
GAM23375 18614 CTTCTCCTCAGCTGGAGCAG T T- A A G - GGGCAGGA
3 CAGCAGTGGAGGGGGCAGGA CT CTCC CAGCTGG GC GCA CAGT GGAGG
CCTCCTGCTGGTGCAGCACC GA GAGG GTCGACC CG CGT GTCG CCTCC
AGCTGCTGGAGCAG C TC A A G T --------
GAM23377 21011 CTTCTCTCTCTTCTGTACAC - TTCTGT - AATTTTAC CAGG
4 AGCACAATTTTACTCCAGGG CTTCT CTCTC ACACAGC AC TC
ACTTTCACGGTGGCTGTGTG GAAGA GAGAG TGTGTCG TG AG
AGAGTAGAAG T ------ G GCACTTTC ----
GAM23379 9758 CTTCTGAAGGGTCTCAATGC AA T AT C CTCC- CCTAAAC
2 CAGGAAGCCTCCCGCTCCTA CTTCTG GGGTC CA GC AGGAAGC CGCT
AACAGCGTGTTCGCTTCTTG GAAGGT CCCGG GT CG TTCTTCG GCGA
CTGGGCCCCATGGAAG AC - -- - CTTGT -------
GAM23379 21628 CTTCTGAGTGTGAGGAGGAT - A TGA A T- G CCCA CTCT
7 GATGAGGATGCCCAGGGCAG CTTC TG GTG GG GGA GAT AGGATG GGGCAGGT
GTCTCTGCCTGCTCCCTTCG GAGG AC CAC CC CCT CTG TCTTGC CTCGTCCG
TTCTGGTCCTTCCACCAGTC T C TGA A TC G TTCC ----
ACCCATGGAG
GAM23380 22285 CTTCTGCATGTTTCCCATAT C C TCCCA GACT---- ACTGTC
8 TACAGACTTGAGACTGTCCT CTT TG ATGTT TATTACA TGAG
CATTCCCATATGTAATAGAC GAA AC TACAG ATAATGT ACTC
ATCCAAAG - C ----- ATACCCTT ------
GAM23388 18407 CTTCTTAATTCTTAATAAAG A C ATAA CA G AAA TCATT
2 CATTTCTGTGTAAAAGGGTC CTTCTTA TT TTA AG TTTCT TGTA GGG
ATTTCCAAGTACAAGAAAAC GAAGAAT GA AGT TC AAAGA ACAT CCT
CTCCACTGAAAGCTAAGAAG C A CACC CA - GAA -----
GAM23392 3613 CTTCTTTCCCTGAGAGCGTG TT G C G TG C CAGACT
5 GCCTGACTTGCAGACTCGGC CTTCT CCCTGA AG GT GCC A TTG
TTGGGCAGCACTTCGGGGGG GGGGG GGGGCT TC CG CGG T GGC
GGGGG GG - A A GT C ------
GAM23393 12634 CTTCTTTGCTGTGTTAGATC TGTT - A TGA TG GCC
4 ACCGAGTGACTGATGCCATT CTTCTTTGCTG AGA TC CCGAG C AT

GGATTCTTGGGACTCTTCTT GAGGGAGCGAT TCT AG GGTTC G TA
AGCGAGGGAG TCT- C - TTA GT ---
GAM23400 18462 CTTGAACTTCAGAAAGTATC T- AAAGT- ----- C A T ACAG
5 AGGTAATCAGCAGATTGTAG CTTGAACT CAG ATCA GGTAAT AGCAG TTG AGG
GACAGCCTCAGATTGCTATT GAACTTGA GTC TAGT TCATTA TCGTT GAC TCC
ACTGGACATGATCAGGGGCT TT GGGGAC ACAGG - A - ----
GTTAGTTCAAG
GAM23413 8945 CTTGATGGATAAAAGTCTTC A ATAAAA A -- TCAAT
3 ATGTTGGCACTCAATGTGCC CTTG TGG GTCTTC TGTT GGCAC
TTAACAAGAAGATGCCCACA GAAC ACC TAGAAG ACAA CCGTG
AG - CG---- A TT -----
GAM23413 1507 CTTGATGTGATCCCATTTAT T - ATT TC TTTT TTCAGTT
8 CCACTTTTGCTTCAGTTGCT CTTGA GTGAT CCC TA CAC GC
TGTGCTTAGGGTATTACTTA GAATT CATTA GGG AT GTG CG
AG - T --- TC TT-- -------
GAM23416 9045 CTTGCAAAGCATTCACTTAA - AA C CT ATA - GAAACA
4 TATTTTAGTTGAAACAAACT CTT GC AG ATTCA TA TTTTA GTT
TAAAAGGTATATGGGTTTTC GAA TG TT TGGGT AT AAAAT CAA
GGTGAAG G GC T AT GG- T ------
GAM23418 22192 CTTGCAGTCATACAGAGGAG ---- ACAGA - ---- A-- AAATA
6 CTGGCCACGAAATACGAGAG CTTGCAG TCAT GGA GCTG GCC CG
GCAATCCAGCATCCAGCAGA GAACGTT AGTA CCT CGAC CGG GC
TGAGAAGTTGCAAG GAAG GACGA A CTAA AGA -----
GAM23423 726 CTTGCGCTTACTTTGGAGCC --- CTT GA --- GGT
3 TTCATCAGGGTTTGGTGAAA CTTGC GCTTA TG GCCT TCATCAG
AAGGCGGTATATAAGCTGAG GAACG CGAAT AT CGGA AGTGGTT
CAAG AGT AT- GG AAA ---
GAM23423 5900 CTTGCGGCCGCCTTCTCATC G T ATC T AA- CC AGCG
4 GCTCCTGGAAGGTCCCGAGC CTTGC GCCGCC TCTC GCTCC GG GGT CG
GCGACACCATGTCGGAGCCC GAGCG CGGCGG GGGG CGAGG CT CCA GC
GGGGGCGGCGGCGGCGAG G C GCC - GTA CA ----
GAM23426 8398 CTTGCTGGAGCAGCTGAACG TG ------ A- AG TTTAA
8 AGCAGTTTAACTGGGTGTCC CTTGC GAG CAGCTG ACG CAG
CGGCTGGCAAACCTCACGCA GAACG CTC GTCGGC TGT GTC
AG CA CAAACG CC GG -----
GAM23434 3227 CTTGGAGGAGTCACCCAGGA T GTCACCCA GTCA- TTAT
9 GTCATTTGATCTTATGATTA CT GGAGGA GGA TTTGATC
AAGAAAATCCATCCTCTCAG GA TCTCCT CCT AAATTAG
C A------- AAAAG ----
GAM23435 12177 CTTGGAGTCAGGGAGGGAGC AGTCA C A-- CCTTACC
4 TGAGGAGCCTTACCCTCCCA CTTGG GGGAGGGAG TG GGAG
CCACTTCCCTTCCAAGACCA GAACC CCTTCCCTT AC CCTC
AG AGAA- C CAC -------
GAM23440 19363 CTTGGCCCACATCCAGGCTA ACA-- A A -- C----- TC TTTAGCC
2 CCCCCAGCCCGTTTTTCCCC CTTGGCCC TCC GGCT CCCCCA GCC GTTTT CCCTG
TGTTTAGCCCAGGGAGGAAA GAACCGGG AGG CCGA GGGGGT TGG CAAAG GGGAC
CAGTAAAGGTGATGGGGGCA GAGGG G C AG AAATGA GA -------
GCCGGGAGGGAGGGGCCAAG
GAM23440 9063 CTTGGCCGCTGCTTGTAATC C G - GGACCAGA GCGATA
5 TTGGACCAGAACGCGATAGT CTTGGC GCT CTTG TAATCTT AC

ACCCTTAGAGGTTACCGAGA GAGCCG CGA GAGC ATTGGAG TG
GCCGCCGAG C - C ATTCCCA- ------
GAM23448 12555 CTTGGGTATTAATATTCATT T A- ATT T ATGCTTTG
4 GGTTCACATGCTTTGGTGAC CTTGGG ATTA TATTC GGT CAC
CTTCGAGTAGGTGATCCCTA GAATCC TAGT ATGAG CCA GTG
AG C GG CTT - --------
GAM23448 2769 CTTGGGTCGCTTGCTGTTCG GG G C GA----- AGACA
5 TGATATGAGACAGACAGTTG CTTG TCGCTTGCT TT GTGATAT GAC
CGGTGGGTGTCATCAGGAGC GAAC GGTGGACGA GA TACTGTG TTG
AGGTGGACAAG A- G C GGTGGCG -----
GAM23448 4381 CTTGGGTGGCATCTCCTATA - - - -- ATTCCATCATTTC
9 TCTAATTCCATCATTTCTAG CTTGGGTGG CA TC TCCTA TATCTA
ATACTTAGGGTGAGTGCCCA GGACCTACC GT AG GGGAT ATAGAT
TCCAGG C G T TC ----------
GAM23459 14702 CTTGTCCATGGGCCATCCGC T --- C AGGG CCGCC
0 AGGGTCAGGGGGGCCGCCTC CTTG CCA TGGG CATCCGC TCAGGGGGG
CTCTTGAGTGGGTGCCCCAA GAAC GGT ACCC GTGGGTG AGTTCTCCT
GATGGTCAAG T AGA C ---- -----
GAM23462 19884 CTTGTGAAGCACTTACTGAG TG GCA AC A AATATCTG CCTGT
4 TGGGAATATCTGCCACCTGT CT TGAA CTT TG GTGGG CCA
TGGACCCCGCCCACCCAAAG GG GCTT GAA AC CACCC GGT
GATTCGTGGG GT AG- -- C GCCCCA-- -----
GAM23465 9877 CTTGTGGAGACGGGATGGGG T C AT GAAAAA TGATTCT
1 AAAAATACTGATTCTGTGAA CT GTGGAGA GGG GGG TAC
AATACCCCCTTTCTCCATTA GA TACCTCT TCC CCC GTG
G T T -- ATAAAA -------
GAM23466 20695 CTTGTGTAATGTTGATACCA TG GTAATGTT A GGAAGAACAACTGAATAAG

1 GGAATGGAAGAACAACTGAA CT T GAT CCAGGAAT
TAAGATTCCTGGATTTTGTG GA A TTA GGTCCTTA
AGAATGAG GT AGAGTGTT - ----------
GAM23471 8942 CTTGTTCTTCTCTTATAAAT TT - TT- TGA CACAA
0 GACTTTTGCACAACAGAAGC CTTG CTTC TC ATAAA CTTTTG
TTTTTATTTTGATGAAGTCA GAAC GAAG AG TATTT GAAGAC
AG T- T TTT TTC -----
GAM23472 14689 CTTGTTGCTACAGTCTTCTT G ACAG CTTT T CA ATAGAGAAAG
6 TATTTTCTGCTCACTATAGA CTTGTT CT TCTT AT TTCTGCT CT
GAAAGGGGAAGCAGAACATC GAACAG GA AGAA TA AAGACGA GG
TAAGAAAGAGGGACAAG G GAA- TC-- C AG ----------
GAM23473 16699 CTTGTTTCGGACTATAGAGT A AG G G- CA --- TG TAAA
4 GCTGATGGCAGAGATTGGTG CTTGTTTCGG CTAT AGT CT ATGG GAGATTGGTGAGGAT T GA

AGGATTTGGATAAATCTGAT GAACGGAGCC GGTA TTA GA TACT TTTTAATTACTCCTG A CT

GTGTCCTCATTAATTTTCCT G CA G AG CC TGT GT ----
CATGAAGGATTACATGGGCC
GAGGCAAG
GAM23475 4107 CTTTAAACCAGAGAGTGCAT - - A - T -- GCCA
6 GTTTTAGCAGGCCACTGAAT CTTT AAA CCAG GAGT GCA GTTTTAG CAG
TAAAATTTGTGGCTCCTGGA GAAA TTT GGTC CTCG TGT TAAAATT GTC

TTTCAAAG C A - G T AA ----
GAM23477 17971 CTTTAACCTGGCTTTTAAAG CC- A---------- AGTA
2 CAGTAGTAACTGCCCCACCA CTTTAA TGGCTTTTAA GCAGT
AAGGTCTTAAAAGCCATTTT GAGGTT ACCGAAAATT CGTCA
TGGAG TTT CTGGAAACCACCC ----
GAM23479 4350 CTTTAATAGACAGAGTGGGA GA GG AT--------- AAAGACAA
1 GATGCCAAAGACAAGGTTCG CTTTAATA CAGAGT GAG GCC
AGATGAAGCTCAGACTCTGA GAAGTTAT GTCTCA CTC TGG
TATTGAAG A- GA GAAGTAGAGCT --------
GAM23480 20127 CTTTAATTGATAAAGCCAGA A G GA AACCACT - - A A AGACAATGA
4 GTGGAGACACAGAACCACTG CTTTAATTG TAAAGCCAGA TGGA CACAG GGTT CAC CT CA TG

GTTCACCTACAATGAGACAA GAGGTTGAC GTTTCGGTCT ACCT GTGTC CCAG GTG GA GT AC

TGACAGTGGAGAGTGTGACC - A -- GAAC--- T A G G ---------
CAAGCTGTGTCCAATCTGGC
TTTGCAGTTGGAG

GAM23480 9073 CTTTAATTGATAAAGCCAGA TT A G GA AACCACT - - A A AGACAATGA
5 GTGGAGACACAGAACCACTG CT AATTG TAAAGCCAGA TGGA CACAG GGTT CAC CT CA TG

GTTCACCTACAATGAGACAA GG TTGAC GTTTCGGTCT ACCT GTGTC CCAG GTG GA GT AC

TGACAGTGGAGAGTGTGACC T- - A -- GAAC--- T A G G ---------
CAAGCTGTGTCCAATCTGGC
TTTGCAGTTTGG

GAM23481 6645 CTTTACAAAATAAAAACCAA AAAATAAAA AA G-- AAC- AAAC
2 AATCTTTTGTCAACAGGATG CTTTAC ACCAA TCTTTT TC AGGATG
AAACCATCTTAAAGGAAAGA GAAGTG TGGTT GGAAAA AG TTCTAC
AAAGGAATTGGTGTGAAG --------- AA GAA GAAA ----
GAM23484 16628 CTTTACTGCAGGTAGCCAGA A TG -- C GACA TA- GCCACATA
6 CAGCCTTAGGAGCCACATAT CTTT C CAGG TAG CA GCCT GGA
CCACCAGGTGCCATGCCTAT GAGA G GTCC ATC GT TGGA CCT
TCCTGTGGAGAG - GT TT C ACCG CCA --------
GAM23496 4069 CTTTCAATAGACAGTGTTGA - AGAC GGACCA CTGGA
8 GGACCATCTTGCCTGGAGCA CTTT CAAT AGTGTTGA TCTTGC
AGGATATCAATGCTTACAAT GAAG GTTA TCGTAACT GGAACG
TGTGAAG T ACAT ATA--- -----
GAM23498 8983 CTTTCACTCAGCTTCGGAGC TT A TC G CT TGTGT CAGTCT
0 TGTGGCTGCCGGTGTGTGCC CT CACTC GCT GGA CTGTGG GCCGG GCC
CAGTCTGGCTTCGGCTCCCA GA GTGGG CGG CCT GGCACC CGGCT CGG
CGGGTCCTGGGCGGGTGGGA GG - GT G CT T---- ------
G
GAM23498 21014 CTTTCAGAACCGAACCCAAT GAA GA AA- AGGCTGAC TACGGAAAAT
4 CCTGAGGCTGACTCCTCTAC CTTTCA CC ACCC TCCTG TCCTC
GGAAAATGAGGACAGGACGG GAGAGT GG TGGG AGGAC AGGAG
GGGTGAGGGAATGAGAG AAG AG GGC -------- ----------

GAM23503 18837 CTTTCCACACAGGCTACCAG - AGGCTACC TAT ACATTTAA
4 ATATTTTATTTACATTTAAA CTTTCCAC AC AGA TTTATTT
AATAGGTTTTCTTCTTCAAC GAAAGGTG TG TCT GGATAAA
GTAGTGGAAAG A CAACTTCT TTT --------
GAM23503 3940 CTTTCCACCTAGCTGATCCT -- T CT CT TGTT TCA
7 AAATGTTCCTTCCTCAGGGA CTT TCCACC AG GATC AAA CCTTCC
GGTCTTTTCTGATTTCTTGG GAA GGGTGG TC TTAG TTT GGAGGG
TGGGTCAAG CT T T- TC TCT- ---
GAM23504 8557 CTTTCCCAAGAGATCTGGTT --- AT TG TTTTC A AGCGGTG
9 TTTCGGAGGAATATTAGGAA CTTT CCCAAGAG C GT GGAGGA TATTAGGA
GCGGTGTCTTGATGATCTTC GAAG GGGTTCTT G CG CCTTCT GTAGTTCT
CCTGCGCTGGTGTTCTTGGG TCC GT GT CGTC- A -------
CCTGAAG
GAM23507 8561 CTTTCCTTTGTCCTGGAGCC CTTT CT----- C-- TAAATT
9 TCAGCAGCCATAAATTTGAA CTTTC GTCCTGGAGC CAGCAG CA
TCTGCTGTCTTATTGTTCCA GAAAG CAGGACCTTG GTCGTC GT
GGACTTCAGAAAG ACTT TTATTCT TAA ------
GAM23512 8631 CTTTCTGGGCAGAAGATGGC AAGATGG - TT ATAAAAGAC
9 CACTGTTCAATAAAAGACTG CTTTCTGGGCAG CCAC TG CA
TCATGTGGAGCCCTGTCCAG GAGAGACCTGTC GGTG AC GT
AGAG CCGA--- T T- ---------
GAM23513 21423 CTTTCTGTCCACTCTGAGGT TT CCA A CTG AGATGT CCA
3 GCTGCTCCAGATGTGGGGCC CT CTGT CTCTG GGTG CTCC GGGGCCCTC
CTCCCAGAGGGCCTCGGAGA GA GACA GGGAT CCAC GAGG CTCCGGGAG
CACCATAGGGGAACAGGGAG GG AG- A A-- ------ ---
GAM23515 14400 CTTTGAAACATACGGGTTCC TGAAA TA - G-- A AATATCGG
6 GATCAGCAGAATATCGGTTG CTT CA CGGGTT CC ATC GCAG
CGGATGGAGGAAACCTGGCT GGG GT GTCCAA GG TAG CGTT
GGTGATGGG TAGTG CG A AGG G --------
GAM23517 19014 CTTTGAAGGCCGAAGTGGAG GA - AG AGAAGGGT G- AGCA
1 AAGGGTTCCATGTGAACAGC CTTT AGG CCGA TGG TCCATGT AAC
AGTTGAACATGGGTCAGTCG GAGA TCC GGCT ACT GGGTACA TTG
GTCCTGAGAG G- T G- -------- AG ----
GAM23518 12183 CTTTGAGCAAGGATATGAGG AGCAAG TATGA-- GCAAGGAA
8 GCCCTGCAAGGAAGGGGTCT CTTTG GA GGGCCCT
GCGAAACTCACACAGCAAAG GAAAC CT TCTGGGG
GACACA CAAAGCG --------
GAM23520 3179 CTTTGATGATATGAGTTTAA A TATG TTA AG TCCT - TCTA
5 AGGAGTCTCTCCTTCGTGGC CTTTG TGA AGT AAGG TCTC TCGTG GCA
ATCTATGCTTACGGTTTGAG GAGAC ACT TCG TTCC AGAG GGCAT CGT
AAGCCTTCCGCTATTCAGCA G TA-- CC- GA TTT- T ----
GAG
GAM23522 6421 CTTTGCAAGCACAGCAAGTC A ACA- AA C TAATA GCACAA
1 CCTGTAATAAGATAGGCACA CTTTGC AGC GC GT CCTG AGATAG
ACTGTCTGATCCAGGTACGC GAAACG TTG CG CA GGAC TCTGTC
ACGAGTTGGCAAAG G AGCA -- T CTAG- ------
GAM23525 14573 CTTTGCGAGTCAGAGCACTC TT A GC AC- C-- ACAT
3 ACGCCCGTCTACATGGATAG CT GCG GTCAGA ACTC GCC GTCT
AGGCCTCGAGTATCTGACCG GA TGC CAGTCT TGAG CGG TAGG
TCTAG TC - A- CTC AGA ----

GAM23536 757 CTTTGTATGCCCAGGGAAGG A GGGAAGG G A ATCGGAAG
3 AGGCGCTATGATCGGAAGCA CTTTGT TGCCCA AG CGCT TG
GAGTGGCTATGGTGGGCAGA GAAACA ACGGGT TC GTGA AC
CAAAG G GGTA--- G G --------
GAM23536 3117 CTTTGTCAGAATATGTCAGA T TATG A AAAACAAAA AAATGCTA
9 AAACAAAACAAAAAAAGTTT CTTTG CAGAA TCAGA AAC AAAGTTTT
TAAATGCTAAAGATTTTAAA GAAAT GTCTT AGTCT TTG TTTTAGAA
AATTAGTTCTCTGAAATTTC - TAA- C ATTAAAAA- --------
TGTAAAG
GAM23537 18758 CTTTGTCATCTTAAACCATT - T A CA A AAA A---- TAAG
2 GTAAATGAAACCTGACTATA CTTTGT CATC TA AC TTGTA ATG CCTG CTA
AGTAGATTTACAGGAACATA GGGACG GTAG AT TG GATAT TAC GGAC GAT
TATAGGAGTATATGATGTGC T T A AG A AA- ATTTA ----
AGGG
GAM23540 9015 CTTTGTGTACTGGAATGATG G GG T GAAT GAGAGG
1 TTGAATTCAGAGAGGTGACA CTTTGT TACT AATGA GTT TCA
GAACTTATTAAAGTGGATAA GAAATA GTGA TTATT CAA AGT
AG G AA - GAC- ------
GAM23544 3431 CTTTTAAAGAAAATTACTTA T A- TT TT TG GTTGT TG TTTTTT
3 ATGGAAGGTTGTGGGAAGGT CTTT AAAGA AA AC AA GAAG GGGAAGG T
GTTTTTTTGTGTTTTTTTTT GGAA TTTCT TT TG TT TTTT TTTTTTT G
TGGTTTTTGTTTTGTTTTTC T CC TT TT GT GGTTT GT ------
CTCTTTTAAGG
GAM23545 16467 CTTTTAAGCACAGTAATAGA A AATAGA A ATTA C C- AC AACAAATC
2 GGTGAGTATTATTAGCATCC CTTTTAAGC CAGT GGTG GT TTAG AT CA CCAAA
AACCCAAAAACAAATCTTTG GGAAGTTCG GTCG TCAC CG AGTC TA GT GGTTT
GCCTGTCATCCTGAAAGCCC - ------ C AA-- C CT CC --------
ACTGCTGGCTTGAAGG
GAM23547 5845 CTTTTACTTAATGTGTATTT A GTA-- C TGATATT
3 TGCATTGTGATATTTAATCA CTTTTACTTA TGT TTTTG ATTG
AGACATTAACATGAGTAGAA GAAGATGAGT ACA AGAAC TAAT
G - ATTAC - -------
GAM23548 14657 CTTTTAGTGATGTTTTGTAG TTTT G GT- TTT TT TT - A GATTCATA
5 TTTTTGGTGTACATTAGGTT C AGTGAT TTTT AGTT GGTGTACA AGGT GATCTT GC TTT
TGATCTTGCATTTGATTCAT G TTATTA AAAA TCAA CTATATGT TCTA TTAGAA CG AAG
AGAAAGCAAAGATTATCTTT TT-- A ATT T-- T- -- A A --------
GTATATCTAACTTTAAAAAA
ATTATTTTG
GAM23550 4295 CTTTTATTTAGTTTGATATG TTAG- T --- T CAGAA
4 TTTCTTTACAGAATGCAGAA CTTTTAT TTTGA ATGT TTCT TA
AACACATCTTAAAATCATAT GAAGATA AAATT TACA AAGA GT
AGAAG TACTA C CAA C -----
GAM23550 3370 CTTTTATTTATTTTCCTAGT ATTTTCCT - CTCA AAATAA
5 ATTTTTTTCCTCAGATGGAA CTTTTATTT AGTATTT TTTTC GATGGAA
AAATAATTTCATCAAGAAAA GAAAGTGAA TCGTGAA AAAAG CTACTTT
CAAGTGCTTCTGCCAAAGTG ACCGTCT- C AA-- ------
AAAG
GAM23551 9771 CTTTTCAAGAGGCAATGAAA AG AAT AAG C TGGC
2 GGCAGGCACGGTGGCTCATG CTTTTCAAG GC GA GCAGGCA GG
CCTGTAATCCCAGCACTTTG GGAAGGTTT CG CT TGTCCGT CT

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          GAAGG                CA  ACC  AA-      A ----
GAM23557 16698  CTTTTCTCTCTGCTAGATGG       T  G    AT  A    G     CT  -    CTTTTA
2          ATGTTGATGCACTGGAGGTC CTTTTCTC CT CTAG  GG TGTT ATGCA  GG AGGT
           TTTTAGCCTGCCCTTGCATG GAGAGGAG GA GGTC  CC GCGG TACGT  CC TCCG
           GCGCCTGCTGGAGGAGGAGA       -  -    GT  -    -    TC  G    ------
           G
GAM23557 5837   CTTTTCTCTGCCTTGCTTGC       CT       T   TG    TCAG  GAATT
3          TTGAGCTTCAGCGGAATTCG CTTTTCT  GCCTTGCT GCT  AGCT    CG
           AAATGGCTGGCGGTAAGGCT GGAAAGG  CGGAATGG CGG  TCGG    GC
           GGAAAGG              T-       -  --    TAAA -----
GAM23563 9176   CTTTTGGTCGTTGTAGCTCC       T-     A     AT-    GCGTCTCCAA
3          TATGGTTGCGTCTCCAAAAT CTTTTGG  CGTTGT GCTCCT   GGTT
           TTTAGGGGGCAATAATGTTC GAAGGCC  GTAATA CGGGGG   TTAA
           CGGAAG               TT     A     ATT    ----------
GAM23563 4212   CTTTTGTAATTGTGTAAAAA   TT  TA    -        GAAAAAA    A    GCAGAA
7          ATGGAAAAAAACATAAAAAG CT  TG  ATTGT GTAAAAAATG      ACAT AAAA
           CAGAATTTTAATGTGAAGAC GA  AC  TAATA CGTTTTTTAC      TGTA TTTT
           ATTTTTTGCTATAATCATTA   TT --    T        AGAAG--    A    ------
           G
GAM23565 8802   CTTTTTAAATGGTGTTGACA        T ---       CCAACTTCTCT-  ACAT
8          CCAACTTCTCTGTACATACC CTTTTTAAA GG   TGTTGACA          GT
           CTCAATTCCAATGTTAACAA GAAAAATTT CC   ACAATTGT          CA
           TTCCTTTAAAAAG              - TTA       AACCTTAACTCC ----
GAM23569 20881  CTTTTTCTCTTTAAGTGCTC       CT    - C-  T  G  AG--  GATTGA
4          CTCTAGACTAGACTGATTGA CTTTTTCT  TTAAG TG  TCC CTA ACT    ACT
           AGTAGACAGTGTGGTGGAAT GAAAAAGA  AATTT AC  AGG GGT TGA    TGA
           CAGTTTAATCAGAAAAAG         CT    G  TA  T   G   CAGA  ------
GAM23572 13996  CTTTTTTAAGTTTGAACAGA    TTTA-      C    G  T    AAATGTG  TT    TTT
7          AGGGTTGATCAAAATGTGTT CTTT    AGTTTGAA AGAAG GT GATCA      TT  GTCTG
           TTGTCTGTTTTAGGCTTGAT GAAA    TCAAATTT TCTTC CA TTAGT      AG  CGGAT
           GATTCACGCTTCTCTTTAAA    TTCCG      C    G  C    ------- TT    ---
           CTGCCTTAAAG
GAM23572 20807  CTTTTTTATCAGATTTTAGT   TT    AG    TA-     CAAT-   T  C-   TATT
9          AAGCCAATTGTTCTCAAGTA CTT  TTATC  ATTT   GTAAGC    TGT CT  AAG
           TTCTTAAAGTACATTACAGC GGA  AGTAG  TAAA   CATTCG    ACA GA  TTC
           TTACCTTAAATTCGATGATT   TT    CT    TTC     ACATT   T  AA  ----
           AGG
GAM23575 3570   CTTTTTTTGCTGGGTATTAT    TTTT      A     CAA    CAAG
0          TTCAAGAACCAAGGTTCCTA CTTT    GCTGGGT TTATTT   GAAC
           GATAACATCTAGTCTTAGAG GAGA    TGATCTA AATAGA   CTTG
                          TTC-      C     TC-    ----
GAM23575 6388   CTTTTTTTTCTTTTTCTCTT             C     T   GTATGT--   TGTG
5          TGTGTTGTATGTGGTTGTGG CTTTTTTTTCTTTTT TCTTTG GTT       GGT
           CTTTAAATTAAACCAAAGAA GAAGAAAAAGAAAAA AGAAAC CAA       TCG
           AAAAAGAAAAAGAAG                A     -  ATTAAATT  ----
GAM23576 8542   GAAAAAAAACTACATAATTT      AAAC    TAA--    --          TTA---    GAAACATTTTAA
3          CTACCAGGGCCATATTAGCA GAAAAA    TACA     TTTCT  ACCAGGGCCATA     GCAGT
           GTGAAACATTTTAAACTGCA CTTTTT    ATGT     AAAGA  TGGTTTTGGTGT     CGTCA
           GAAATTGTGGTTTTGGTTCA      AT--    TGAAC    CT          TAAAGA    ----------
           GAAACAAGTTGTATATTTTT
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          C
GAM23586 862   GAAAACAAACATTCATGTCT    AC      CA  TC  G    AA    ATTTAAA
1              TGTTTAAAGGTAATTTAAAT GAAA  AAACATT  TG  TT TTTA  GGTA
               GCCACTAAGGAAAGCAGATG CTTT  TTTGTAG  AC  AA GAAT  CCGT
               TTTAATTTC            AA     -- GA  G    CA   -------
GAM23588 12384  GAAAACATCCAGGCTCTAGC   AACA   GG   AG    A- ATA- G  G          C   GCGAGGAAG
3              TTCGAGGATATGGGTGAGCT GAA    TCCA  CTCT  CTTCG  GG    TG GT AGCTGCATCAGCG CTGC

               GCATCAGCGCCTGCGCGAGG CTT    AGGT  GAGG  GAAGT  TC    AC TA TCGACGTAGTCGC GATG

               AAGAAGTAGACGCTGATGCA   GAG-   AG   A-    CG  GTCG  G  G          A   ---------
               GCTGATGCAGCTGCTGCTGA AA
               AGAGGAGGATGGAGAGTTC

                        --
GAM23590 9125   GAAAACTTGCTCAGTGTGCC     CTT--  CA    CCTTCCAC     CACG
9              TTCCACAGTTGCCACGGCAA GAAAA     GCT  GTGTG       AGTTGC
               CTAGCCTATCACACACAGCT CTTTT     CGA  CACAC       TCAACG
               CACCTTTTC              CCACT   CA    TATCCGA-     ----
GAM23592 14737  GAAAAGAAGGAGACAGGATT    -     - C    TTTTTTT-     C  -   TCACAATATTACTT
6              TTTTTAAAGAGCAAGAAAGT GAAA AGAAGGA GA AGGA       AAAGAG AAG AAAG
               CACAATATTACTTCTTTCCT CTTT TCTTTCT CT TCCT       TTTTTC TTC TTTC
               TCCTTTTTTCCTTCTTTCCT    C      T  T    TTCTTCCT     C  C   ----------
               TTCTTCTTTCTCTTTC
GAM23596 12970  GAAAAGCGTTTAGATGAAGA   AAA --         GATAA    A---  CTTACTAA
1              TAAATGAAAGCCTTACTAAG GA   GC  GTTTAGATGAA     ATGAA    GC
               CCAAATTCATTTTATTTAGA CT   CG  CAGATTTATTT     TACTT    CG
               CATGCAAGTC           GAA  TA         -----     AAAC  --------
GAM23600 9744   GAAAATAATTGGAGATTTAT       A--      TTT-----   T---    CAGTG
9              GGTAGTATCAGTGGTATTTT GAAAATA   TTGGAGA      ATGG    AGTAT
               TTCCATTTTTTTTCTCTCCA CTTTTGT   AACCTCT       TACC    TTATG
               ACTATGTTTTC             ATC      CTTTTTTT    TTTT    -----
GAM23603 3816   GAAAATATCTAATTCTAAGT      ATCT   TC       AGTTCT   CATC
0              CTTGAGTTCTTCTCATCAGA GAAAAT    AAT  TAAGTCTTG     TCT
               CCATAGCAGGATTTAACATT TTTTTA    TTA  ATTTAGGAC     AGA
               TAACATTTTT             CAAT   CA       GATACC   ----
GAM23604 18228  GAAAATCAATTCTAAAAACT            AAAA TG GTG      A-   --    CTTA
4              GTGTGACATACAACATGACA GAAAATCAATTCTA    C  T   ACATACA  CATG  ACAT
               TCTTAATGTAACATGACTGT CTTTTAGTTGAGGT    G  G   TGTATGT  GTAC  TGTA
               ATGTGTGGACTGGAGTTGAT            CA-- GT ---      CA    AA    ----
               TTTC
GAM23607 1548   GAAAATTAAGCATTCTTCAA      TAA    TCTTCAACTT       TCTTAAAA
8              CTTTTCTATGGGTCTTAAAA GAAAAT   GCAT        TTCTATGGG
               TTCATGGAATATGTGCATTT CTTTTA   CGTG        AAGGTACTT
               TC                   ---    TAT-------        --------
GAM23609 3548   GAAAATTCTACTTCAAAGGA     T   A    AAAGGA    -   CA   ATGATA
5              AAGTTATATCACAGATGATA GAAAA TCT CTTC     AAGTT ATAT  CAG
               TTGGAATATCGACTTGGAAG CTTTT AGA GAGG     TTCAG TATA  GTT
               GAGCAGACTTTTC          C  C    AAGG--     C    AG   ------
GAM23610 12564  GAAAATTTTCTCCCTTTTCC        CTCCC--     TTTTTC      TGAACT
```

6 TTTTTCTTAAGAATGAACTT GAAAATTTT TTTTCC TTAAGAA
TCTTGGCCCTGGAGAACAAA CTTTTAAAA AAGAGG GGTTCTT
AAAAAAATTTTC AAAAAAC TCCC-- ------
GAM23615 12342 GAAACAGGACAAAGGAGAAT AC- ACAA- ----- A CATGA
4 TCATGACATGATCAAGAAAC GAA AGG AGGAGAA TTC TGA
CCCTTCTCCTAACCCCCTAT CTT TCC TCCTCTT AAG ACT
GTTC GTA CCCAA CCCCA A -----
GAM23616 6347 GAAACATCAGAATGCAAGGA A - ---- ACACATTTATAAA
8 TACACATTTATAAAGTCTTT GAA CATCAGA ATG CAAGGAT
GACCTCATGTCTGATGGTTC CTT GTAGTCT TAC GTTTCTG
G G TCCA ----------
GAM23618 22320 GAAACCACCATGAGTGGTGT -- T GTGGT- TCTA- AGAA
7 CTAGATTTCTAATGAAGAAT GAAACCA CCA GA GTCTAGATT ATGA
CATGATACAGTTTGGATTAA TTTTGGT GGT CT TAGGTTTGA TACT
GTATCTTGGACTGGTTTT CA T ATGAAT CATAG ----
GAM23619 16825 GAAACCCAGAGACTATTTTA AA- GAGACTA T ACTTG AGA A AC
TAAGCAGTCT
5 TATTCTGTACTTGCCTGAGA GA CCCA TTTTATATTC GT CCTG TAT CC CAAC
TATACCACCAACTAAGCAGT CT GGGT AGGGTATAGG CA GGAC ATA GG GTTG
CTGTTGAGGATACAGGACTG GAG AG----- T ----- --- - A- ----------
GATATGGGAGATGGGGAGTC
GAM23622 20063 GAAACGTGGAACGGGATACA A- AAC ATACAC AA TGATC
6 CCAAAGTGGTTGATCACCAC GA ACGTGG GGG CA GTGGT
CATGCCCCAGCCCCCGCGTC CT TGCGCC CCC GT CACCA
CTC CC --- GACCCC AC -----
GAM23630 8555 GAAAGAATAGTAGCAAACAG TAGT- CAA- C TCTTCATTTCTC
3 TGGCTTATTTCTTCATTTCT GAAAGAA AG ACAGTGG TTATT
CAGTAATCATTGTAAATCTT CTTTTTT TC TGTTACT AATGA
TTTTTTTTTTC TTTTT TAAA - ------------
GAM23631 18367 GAAAGAGACTTGTCCTCTGG A CTT--- C C- GTCTCTGAA
9 TCCCTGTCTCTGAAAGGACA GAA GAGA GTC TCTGGT CCT
CCAGATGGCTAAATATTTCA CTT CTTT CGG AGACCA GGA
TTC A ATAAAT T CA ---------
GAM23632 8782 GAAAGAGATTGGTCCAGAAC GA C - CGGTCAAT
3 AGTTTCCGGTCAATGAGCAC GAAA GATTGGTCCAGAA AGT TTC
TATTTTGGATTAGTCAATTT TTTT CTGATTAGGTTTT TCA GAG
T AA A C --------
GAM23634 12942 GAAAGATTTGGTGAAGGAAG A --- - CTA AA ATATCAG
8 CTATCAACTCCTATATCAGA GAA GATTT GGTGA AGGAAG TC CTCCT
GGGGACGACCCTTCCTCTTA CTT TTGAA CCATT TCCTTC AG GGGGA
CCTGGAAGTTGTTC G GGT C CC- CA -------
GAM23635 2945 GAAAGCAAGCTTTTGCCAAT CAA TT AT C- GGA
3 GATCTTTAATGGAGTTAAAA GAAAG GC TTGCCA GAT TTTAAT
TGTTTATGGTAATTGTAACC CTTTC TG AATGGT TTG AAATTG
TTTC CAA TT AT TA ---
GAM23637 6242 GAAAGCCTTTGGTAGGAAGG GGTAGGAAGGA GC CA - A - ATGCAGGAGA

7 AACAGCTCACTGCACATCTG GAAAGCCTTT ACA TCACTGCA TCTG AG GCT C
AGAGCTCATGCAGGAGAGAA CTTTCGGAAG TGT AGTGACGT AGGT TC CGA G
GCCCTATGGATGCAGTGAAT GG--------- A- -- A C A ----------

GTGGGAAGGCTTTC
GAM23638 4168 GAAAGCTCATAATAAAATAG CATAAT GA TTAAAAT AATAAAATC
5 ACTTTTAAAATTACAAATAA GAAAGCT AAAATA CTT TACA
AATCTGTACATCAAGGATAT CTTTCGG TTTTAT GAA ATGT
TTTTAAGGCTTTC AAT--- AG CTAC--- ---------
GAM23639 22251 GAAAGCTTCGTCTGCCAAAC CG G CA---- CAAGTGTGCC
4 AGAGACTCAAGTGTGCCAGT GAAAGCTT TCT CCAAA GAGACT
CTTCAAAAATTTGGAGAAAG CTTTCGAG AGA GGTTT TTCTGA
AGCTTTC AA - AAAAAC ----------
GAM23639 888 GAAAGCTTTTTTTTAACAGG A TTTTTTTAACAG A--- ATGCCTGC
7 AAAAGATACCAATGCCTGCT GA AGCT GAAAAG TACCA
GGTACCACCTTTTCAATTGG CT TCGG CTTTTC ATGGT
CTATC A TTAA-------- CACC --------
GAM23641 3120 GAAAGGATTCTGCTTGTAGA TTCTGC---- ---- TTATTTCTT
4 TTGCTTATTTCTTGCTCCAA GAAAGGA TTGTAGATT GC
ATTTATAAATTAACCCATTT CTTTCTT AATATTTAA CG
CTTTC TACCCAATTA ACCT ---------
GAM23643 5899 GAAAGGGCTTTGAGAAAAGG - AGAAA CTT- A AAAC
6 CTTTGAATAAAACTAGTCAT GAAAGGG CTTTG AGG TGA TA
CCACCTAGCCAAAGATCCTT CTTTCCT GAAAC TCC ACT AT
TC A CGA-- ACCT G ----
GAM23644 1787 GAAAGGTCGAAGATATGAGG --- ---- G - A TGGA GTTT
8 CGGTGAAGTGGATGGTGGTG GAAAGGTC GAAGA TAT AGGC GGTG AG TGGTGGT
TTTGCCATTGGAGTCTGCAC TTTTTCAG TTTCT GTG TCCG TCAC TC GTTACCG
TGGCCTGGTGGGTCTCTTTG GTG CTGG G G G TGAG ----
TGGACTTTTT
GAM23648 18905 GAAAGTGACTAGAGTTGAAA A TG A GAAA A- AATGTATGAAC
2 CCAAAAGAATGTATGAACCT GA AG ACTAG GTT CCA AAG
TGATGGGACCTGGTTGTTGT CT TT TGGTC CAG GGT TTC
C G GT - ---- AG ----------
GAM23654 14611 GAAATAATAACTTGCATTTT T TT TATTTTTTAATAT AAA CATAATCT
9 TATTTTTTAATATTGCAAAT GAAATAA AAC GCATTTT TGC TGG
GGCATAATCTCCAGCATTCC CTTTATT TTG TGTAGAA ACG ACC
CACTTCCCAAGATGTGTTTT T -- CCCTTCACCCTT- --- --------
TATTTC
GAM23655 20478 GAAATAATCTACTCCAAAGC TAA CCA-- C CA ATAAAG
1 CTTCATTCCATAAAGGGAAC GAAA TCTACT AAGC TT TTCC
TAAAGCTTAAAACAGTAGGA CTTT GGATGA TTCG AA AAGG
GTTTTC TGA CAAAA A TC ------
GAM23659 8904 GAAATATATATTGGTTTAAA TAT- TT TT T G CCCTAAACA
9 AGAGTAAAACAGCAGACCCT GAAA ATA GG TAAAAGAG AAAACA CAGA
AAACATCTGGTGTTTTTTTT CTTT TGT TT GTTTTTTT TTTTGT GTCT
TTTGTTTTTTGTTTTTTTTC TTTT T- TT - G ---------
GAM23667 6120 GAAATCTTCAAGTGGCATGT - AGT -- C TATGC
3 TTCAATGGTATGCTTATTAA GAAATCT TCA GGCA TGTTT AATGG
ACAAATGCTCATGACAGATT TTTTAGA AGT TCGT ACAAA TTATT
TT C AC- AA - -----
GAM23671 20178 GAAATGCTGTATCTACTTTC - TC C----- T TTGTTT CTT T AATT GTAT
9 TTATGTCTTGTTTCTCCTTT GAAATG CTGTA TA TTTCT ATGTC CTC TCA GT TGTTCT
CATGTAATTTGTTCTGTATG TTTTAT GACGT AT AAAGG TGCGG GAG AGT CA ACGAGG

GAGCACCACTGATAGAGTTG T TT TTTTAC T TT---- AT- - CC-- ----
GCGTTGGAAACATTTTTATT
TGCAGTTATTTT

GAM23672 21352 GAAATGGAAAGGTTGGCAGG A AA---- - CA- TCCCACT
3 CAGCTCCCACTGCGCACTTG GAA TGGA GGTT GGCAGG GC
TTAAACCCTGAAGTCCAGTT CTT ACCT CCAA TTGTTC CG
C G GAAGTC A ACG -------
GAM23673 9247 GAAATGGGCTTCTGGAGCCC TTCT ACA-- T- GTTA
3 ACACCATGAGTTATCCTTGG GAAATGGGC GGAGCCC CCA GA
GAACGGGGTTCTCCGTCCAT CTTTACCTG TCTTGGG GGT CT
TTC CC-- GCAAG TC ----
GAM23676 3778 GAAATGTTATTTTATTAGAT TTATTAGA TC - AGT
1 CTAACTCTTCATAGTATGTA GAAATGTTATT TCTAAC TT CAT
AATGTTAGAACATTTTAATA TTTTATAATAA AGATTG AA GTA
ATATTTT TTTTACA- TA T ---
GAM23676 20927 GAAATGTTCAGGATGAGACC A TCA - TTTCT AT A TT GA AG - ATC
2 TTTCTGCCTTGATTCCATAT GAA TGT GGATGAGA CC GCCTTG TCCAT TGT CA ATT CTGT
GTC
GTTTCAGAATTAGCTGTGTC CTT GCG CCTACTTT GG CGGAGT AGGTA ACA GT TGG GGCA
CAG

ATCTTGACTACGGAGGTGAT - TGG A TCT-- -- - TT AG A- T ---
GTTACAATGGATGAGGCTCT TT
GGATTTCATCCGGTGCGTTC

--
GAM23677 18483 GAAATTAAATTCCATCAAAA ATTCCATCAAAATA AATCAGAATCTCC
4 TATTTTAGAATCAGAATCTC GAAATTAA TTTTAG
CCTAAAACATACATTCTATT CTTTAATT AAAATC
AATTTC ATCTTACATAC--- ----------
GAM23685 2974 GAAATTTTATTACTGTGATT A T TTAAGAACA TGTAAAACTT
3 AAGAACATTCTGTAAAACTT GAAATTTT TTAC GTGA TTC
GAGATACACCATTCATTGTA CTTTAAAA GATG TACT GAG
GGAAAATTTC G T TACCACATA ----------
GAM23690 6238 GAACACAAGTGTGTTGTTGT C G - TG CTT T TTCATG-- A CAGT
6 CTTCTATCTTCTTCATGGCA GAA ACAAGT TG T TTGT CTATC TC GC GACT
GACTCAGTGGTCAGCGGAAA CTT TGTTCG AC G GATA GATAG AG CG CTGG
CTTGATGATAGCATAGTGGT - A T GT C-- T TTCAAAGG A ----
CAAGCTTGTTTC
GAM23693 21481 GAACACTGTTTGAGTACGTA - TT AG CG-- TAT AC- TGCTGT GATAA
6 CTGTATGCAGACCAGTTGCT GAACACT GT G TA TACTG GCAG CAGT GA
GTGAGATAATCTATACTACT CTTGTGA CG T AT ATGAC TGTC GTCA CT
GTTCCTGTCTCAGTAAAATT A GG AG TAAA TC- CTT TCATAT -----
AGATGGGCAAGTGTTC
GAM23696 12314 GAACAGGACCCGTCGCCATG - T ATGGG GTG A CGTG
6 GGCCGTGTGATCCGTGGACA GAACA GGACCCG CGCC CC TG TC
GAGGAAGGGCGCCGGGTCTG CTTGT TCTGGGC GCGG GG AC AG

TGTTC G C GAA-- AG- - ----
GAM23696 20728 GAACAGGACCCGTCGTCATG - T ATGGG GTG A CGTG
7 GGCCGTGTGATCCGTGGACA GAACA GGACCCG CGTC CC TG TC
GAGGAAGGGCGCCGGGTCTG CTTGT TCTGGGC GCGG GG AC AG
TGTTC G C GAA-- AG- - ----
GAM23700 20660 GAACATGGAGAGTGCCAAGA C GC ------- AT- ATCA
6 TCACCATCAGGTGCCGCTTC GAA ATGGAGAGT CA AG CACC
CTTCCTGTGGCTTTCCATCT CTT TACCTTTCG GT TC GTGG
TC C GT CCTTCCT GCC ----
GAM23704 8732 GAACCACATCTGGATGCAGC CCAC GCA GG - TCCC TGTAGTT
1 GGCCACTCCCTCGGCTGTAG GAA ATCTGGAT GC CC AC TCGGC
TTGCTGACCTTGTAGGAGTG CTT TAGACCTG TG GG TG AGTCG
AGTCCAGATTTC ---- AG- A- A TTCC -------
GAM23706 18528 GAACCCAAATGGGCGTTGTC CAAA GTTG- CA - CAGAG
0 ATCAGAATCAGAGGTATCAA GAACC TGGGC TCAT GA AT
TGGAGTGAGCCCAAAGGTTC CTTGG ACCCG GGTA CT TG
AA-- AGTGA A- A -----
GAM23709 21519 GAACCTGCACATGTAGTGGA - TG ACAT- A - C CATTT
6 GTGGAACATCATTTATTTTC GAA CC C GT GTG GAGTGGAA AT
CATTCTCATAACCCTCAGTG CTT GG G CA TAC CTTACCTT TA
GGCTTC C GT ACTCC A T T -----
GAM23712 3780 GAACGCATTATCATTTAGAT C - CATT AT---- CATTACTCATCTATT
7 ATTATGGGCATTACTCATCT GAA GCAT TAT TAG ATTATGGG
ATTTTCATAATTTTCAGCTA CTT CGTA ATA ATC TAATACTT
CAAAATATATGCCTTC C T AAAC GACTTT ----------
GAM23713 8341 GAACGCCCACCCACGAAGGC CCA A AG CA--- C AGAC
0 CCAGGGCGCCAGACGGCCCC GAACGC CCC CGA GCC GGG GCC
GAAAAGGCGCTCGGGGAGCG TTTGCG GGG GCT CGG CCC CGG
TTT A-- - CG AAAAG - ----
GAM23714 12961 GAACGGTTGTGACCACACCG - G ACA ACA TTTTAC TAAATCAT
4 ACACGTATTTTACAGATAAA GAACG GTT TGACC CCG CGTA AGA
TCATTCTTGCGGCGGCGGGT TTTGC CAA GCTGG GGC GCGT TCT
CGAACACGTTT A - GC- G-- ------ --------
GAM23714 16625 GAACGTGGTGTACCGGGACC ACG A- GGA CA--- TG AAC
9 TCAAGCTGGAGAACCTCATG GA TGGTGT CCG CCT AGC GAG
CTGGACAAGGACGGGCACAT CT ATTACA GGC GGA TCG CTC
TAAGATC AGA CG A-- ACAGG TA ---
GAM23718 9310 GAACTCACACCGGAGAGACA ACAC ACATA CAG CCATC
2 TACTTTCAGTGCACCATCTG GAACTC CGGAGAG CTTT TGCA
CAAAAAAGCCTTTCTGCGGA CTTGAG GTCTTTC GAAA ACGT
GTTC GC-- C---- AA- -----
GAM23720 21512 GAACTCCGCCCTGTAGCCGG CC C GTA GG G - GGC ACC CGAC
0 TGCTGGTGGCCCGGCGCGCT GAACT GC CT GCC TGCTG TGG CCC GCGCTGGA GCGG

GGAACCGCGGCGACCCGCTC CTTGG CG GA CGG ACGAC ACC GGG CGCGACCT CGCC

CAGCGCGGGACCAGCAGCAA AC C GC- GA G A --- --- ----
GGGCCGAGCGCCAGGTTC
GAM23721 20324 GAACTCCTGGGCTCAAGCAA ---- AAGCAAGC T GC- AAGTGC
0 GCCTCATGCCTTGGCTCCCA GAACT CCTGGGCTC CTCATGCCT G TCCCA

AAGTGCTGGGATTACAGGCG TTTGA GGACCCGAG GAGTGCGGA C AGGGT
TGAGACACCGAGCCCAGGTT AATT CCACA--- - ATT ------
AAAGTTT
GAM23723 20133 GAACTGAAGAAGAAGATTTT AAGAAG TTG A GATTCCATCATTGA
2 GGCTCAGTTAGATTCCATCA GAACTG AAGATT GCTC GTTA
TTGATGATCGAGTGATCTTA CTTGAC TTCTAG TGAG TAGT
AGCAGTTC GAA--- --- C ----------
GAM23724 5483 GAACTGATTGTGATCTGCTT C T - CT ---- CTT T T AAACT
1 GGTAACTTGGTTTGGTGTAA GAA TGA TG TGAT GCTT GGTAA GGTT GG GT
ACTGCTCTTAACCCTTTGCT CTT ACT AC ACTG TGAA TCGTT CCAA TC CG
GATGAAGTTGTCATCACTCA - C T T- GTAG TC- T T -----
TTC
GAM23730 6673 GAACTTCCTTACAAAAAGCA - TT AA- ----- CTTCAA TGAA
3 TCCATCTCTTCAAGGGTGAA GAACTT CC ACAA AGCATC CATCT GGG
CTCAGATGTCTGCGATGTTC TTTGAA GG TGTT TTGTAG GTAGA CTC
CCTTGTGGAAAGTTT A -- CCC CGTCT ------ ----
GAM23732 18749 GAACTTGGGGGAATTTGGTC A TG TG--- TAGGACAAAGAAT
1 AGTAGGACAAAGAATCTGGC GA CT GGGGAATT GTCAG
AGAGAGATTTCCCTGGGATC CT GG CCCTTTAG CGGTC
A GT AGAGA ----------
GAM23733 9183 GAACTTTTAGAATATGAAAA T TATGAAAA GC AGGATCCA
5 TAAGAGCCCTGAGGATCCAC GAACTT TAGAA TAAGA CCTG
AGGTCTTGGATAACTTTCTA CTTGAA ATCTT GTTCT GGAC
CAAGTTC C TCAATAG- -- --------
GAM23734 6306 GAAGAAAAAAATAATAGTTT AAAAA T AA CTAC AA TC AACTT
2 TAAGGAAATCTACAGAAGGG GAAGA ATAATAG TTT GGAAAT AG GGGAA TG
AATCTGAACTTCATTTCCCA CTTCT TGTTGTC GAG TTTTTA TC CCCTT AC
CTTTATTTTTGCGAGTCTGT ATG-- T CG TT-- A- T- -----
TGTGTATCTTC
GAM23734 16836 GAAGAAAAACTCAGATTGGA AA AGA ATAT ------- AAGTC
5 TATGGGATTGGTCAAGTCGG GAAGA AACTC TTGG GGGA TTGGTC
CCGGAAAATATTCCCCCCAA TTTCT TTGAG AACC CCCT GGCCGG
GGAGTTCCTCTTT CC G-- C--- TATAAAA -----
GAM23735 3287 GAAGAAAACGAAAAGAAGAA AA AAA AACAAAAGAAAG CATG
2 ACAAAAGAAAGCATCATGAT GAAGA ACGA GAAGA CAT
GAATAAAATGTCTTTGCTTG TTTTT TGTT TTTCT GTA
TAATTTTT AA CG- GTAAAATAA--- ----
GAM23735 9645 GAAGAAAATACATAACCAGG A- AC G- ------ ACAG
9 GACACCAAACAGTTGGATTT GAAG AAAT ATAACCA GGACA CCAA
TTTGTTTAGTGGTTGTTGAT CTTC TTTA TGTTGGT TTTGT GGTT
TTGGCTTC GG GT GA TTTTTA ----
GAM23736 20260 GAAGAAACCACAAAATTCAG CC AA- - ----- TTAT
4 GAAGGTTCTTATGAACCATT GAAGAAA ACAA TTCAG GAA GGTTC
CATTCATTGAAGAGTTGTTT CTTTTTT TGTT AAGTT CTT CCAAG
TTTTTTC TT GAG A ACTTA ----
GAM23740 21045 GAAGAAGAATTGGCCATCTT AA TG - AAAG AAAAA
1 AAAAAGCGGGTAAAAAACCT GAAG GAAT GC CATCTTAA CGGGT
GGGTTAGGGTGTGTGTTCAC CTTC CTTG TG GTGGGATT GTCCA
CTTC CA -- T GG-- -----
GAM23749 22321 GAAGACCTGTTTGATCTCAG AG T TC GAAA AGAA

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2          AAAATGCAGAGAACTGTGTC GA  ACC GTTTGA  TCA    ATGCAG
           TATGATTTAGACTGGTAATC CT  TGG CAGATT  AGT    TGTGTC
                        AA  T     T-  ATC-     ----
GAM23749 6435   GAAGACGAGGCTGACTATTT      GA  CT---          AATCAACA
6          CTGTCAATCAACAGACAGGA GAAGAC  GG    GACTATTTCTGTC
           GTGGTCCTTATCCGGTTTTC CTTTTG  CC    CTGGTGAGGACAG
                        G-  TATTC          --------
GAM23750 14632  GAAGACTATTTGTTTTCATT     CTAT-    T   TTT   TT  CT   C    CTATGTGTCC
8          TTCTTTGCCTCCTCTCTGGC GAAGA    TTGTT TCA   TCT  GC  CCT TCTGG
           TATGTGTCCCCGGAAGGCAG CTTCT    GACGA AGT   AGG  CG  GGA AGGCC
           CTTGGATTTTGACAGCAGCA     CCAAC    C   TTT   TT  AC  -    ----------
           ACCTCTTC
GAM23753 12871  GAAGAGAAGAGATTGGCAAA       AGAG--      AATG-    CCTG
0          TGGGGCTCCTGGGCCCAGTC GAAGAGA     ATTGGCA     GGGCT
           CTGCTAGTGGCAAGTTTCTT TTTCTTT     TGATCGT     CCCGG
           T                    GAACGG      CCTGA    ----
GAM23754 8487   GAAGAGAGCCTGCTGATGTG        -  -   A   GGTAA      G TTAAAAACTTTAAAAG
6          GTAATTTGCTGGGTTAAAAA GAAGAGAGC CT GCTG TGT     TTTGCTG G
           CTTTAAAAGTGTAGCAGAAG CTTTTCTCG GA CGAT ACG     AGACGAT T
           CATAGCAAGTGCTCTTTTC         T  A   -  A----      G ----------
GAM23755 5816   GAAGAGCCTAAACATTGGTG       ----   -  -   GT--     A   TCTA
6          TTCAATAGTCTACTATGAAT GAAGAGC    CTAA AC ATTG    GTTCA TAG
           TAAACAATCGTGTTGGAGAA CTTTTCG    GGTT TG TAAC    TAAGT ATC
           GCTTTTC                 AAGA    G  C    AAAT    -   ----
GAM23762 8195   GAAGATCAGTGTTGGTACAG    GA      GGTA  GATG   A    GAAAA      -   GAAA
2          ATGCAAAGTACTGAAAATCA GAA  TCAGTGTT    CA    CAA GTACT     TCATCAG CGTT
           TCAGCGTTGAAAAGTGTCTG CTT  AGTCATAA    GT    GTT CATGG     AGTGGTC GTGA
           GTGAGGTACATTGACTATGG   AA       AG--  ATCA   A    -----      T    ----
           AAATACTGAAATTC
GAM23763 18368  GAAGATCTTAGAATTGCCTG    -    AG  TT   T  C  ATTTG    GAAAAA
4          CCTCATTTGCTGGGAAAAAT GAAG ATCTT  AA  GCC GC TC     CTGG
           CAGATAGGAAGTGGCCTTTA TTTC TAGGG  TT  CGG TG AG     GACT
           GGGGATACTTT           A    GA  TC   -  A  GATA-    ------
GAM23765 6317   GAAGATGGTCGTGAATTAGG      GGTC   AATT----       -  A    CCCT
4          CTACGCTTACAGAGCCCTTT GAAGAT    GTG       AGGCTACG CTT CAGAG
           CTGGAGACGTGGCCTTAAAT CTTCTG    CAC       TCCGGTGC GAG GTCTT
           ATACACAGAGTCTTC          AGA-   ATATAAAT       A  -    ----
GAM23767 8548   GAAGCAAAATGAATAATGCT       A-     A---  T    TAAAAAC     AAAT
9          AGATTTAAAAACAGTGTGAA GAAGCAAA  TGAATA    TGC AGATT      AGTGTG
           ATCACACTTTGGTCTGTAAA TTTCGTTT  ATTTAT    ATG TCTGG      TCACAC
           CATATTTAGCTTTGCTTT         CG     ACAA   -    TT-----      ----
GAM23768 4523   GAAGCAAAGTGTTTCAACAA   A   ----  T   -   AA   GAG---   A     CT-   TATTT
7          CTGAGAGGTAAGAAAATCTT GA GCAA    AG GTTT CAAC  CTGA     GTA GAAAAT   TGT
           GTTATTTGCATGTATTTTTA CT CGTT    TC TAGA GTTG  GACT     TAT TTTTTA   ACG
           TATAATCAATCAGGTTGCAG   -   AAAA  T   C   --   AACTAA   A     TGT   -----
           ATTCTAAAATTGCTC
GAM23768 16833  GAAGCAAATGAATATTTACC     AAA   ATATTTA-   TG---   TTTCAT
8          TTGTGCTTTCATGCAAATTT GAAGC   TGA       CCT     TGC
           AGGGACCAAACTCAAAGGTT CTTTG   ACT       GGA     ACG
           TC                   GAA   CAAACCAG   TTTAA   ------
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GAM23770 20234 GAAGCACAGAAGCAAAGCCC C A A CCA------ GAACCA
1 AGGCAGAACCATGCTAACCT GAAG ACAGA GC AAGC GGCA
TACAGCTTAGCCTCTGTCCT TTTC TGTCT CG TTCG TCGT
TT C C A ACATTCCAA ------
GAM23771 2939 GAAGCAGAACAGGTAATATA AG A TATAAAACC CAATA CCTCC
2 AAACCGATACAATAAGGCCT GA CAGA CAGGTAA GATA AGG
CCCCTCTATCCTTATCTGTC CT GTCT GTCTATT CTAT TCC
TGGTC G- - C-------- C---- -----
GAM23776 19778 GAAGCCACTGGAAGGTTTCT - G TTTCT AC- GT T-- TTGT
9 CCAGACCATGTGACTGTTGC GAA GCCACTG AAGG CCAG CAT GACTGT GC
TTGTGCTTCATAGTCGTGAA CTT CGGTGAT TTCC GGTC GTG CTGATA CG
ACTGGTGTCTCCTTTAGTGG A - TCTGT AAA -- CTT ----
CATTC
GAM23780 12550 GAAGCCCTGCTGGGGTCGCG CTG- TG CGC C GAAAAA
2 CGGCTTTGGAAAAACAAATC GAAGCC C GGGTCG GG TTTG
CTGGCCCTGGACTCGGTTTC CTTTGG G CCCGGT CC AAAC
CTCA GT --- T ------
GAM23780 18495 GAAGCCGCTAGACTTTTTTT C - C-- - TCTC AGCAC ATTAA
7 CCTCCCCTCTCAGTAGCACG GAAGC GCT AGA TTTTT TTCCTCCCC AGT GGAGTCCGA

GAGTCCGAATTAATTGGATT CTTCG CGG TCT AAAAA AAGGAGGGG TCA CTTTAGGTT
TCATTCACTGGGGAGGAACA A G ATC C ---- CTTA- -----
AAAACTATCTGGGCAGCTTC
GAM23783 14570 GAAGCGGCGGCGCTGCGCCC --- - -- C CTCT C-- CACTCC
6 CTCTGCCCGGCCCCACTCCG GAAGCGGC GGCG CT GCG CC GCC GGCCC
GGCCTCAGGCCCCCGGACGC CTTTGCCG CCGC GA CGC GG CGG CCGGG
CGAGCCGCCACCGCCGTTTC CCA C GC A CCCC ACT ------
GAM23784 20866 GAAGCGGGTGTTGGCCCTGC T T CC CC- CCGCC
0 CTGGGAAGCCGCCCTTCCTG GAAGCGGG GT GG CTG TGGGAAG
ACCCAGCTCCACTCCTGCTT CTTCGTCC CA CC GAC GTCCTTC
C T - TC CCA -----
GAM23786 18818 GAAGCTCCGCCTCCGCCGCT CTCC G AG CAACCCTGCCCA
6 TAGTCCCAACCCTGCCCAGG GAAGCTCCGC GCC CTT TCC
AAGAAGGGCCCGTGGGGCTT TTTCGGGGTG CGG GAA AGG
T CC-- - GA ----------
GAM23787 20539 GAAGCTGAAGAAGCCGCCCT CTG A - TG TT C C GCCA
5 GGTTGCACATGCCGTCGGCC GAAG AAGA GCCGCC C G GCA ATGC GTCG
ATGACTGTGTATGCTCTGGT CTTC TTCT TGGTGG G C CGT TGTG CAGT
GGTGGTGTCTTACTTC A-- G T GT T- A T ----
GAM23788 5470 GAAGCTGGAATTCTATCTCC CT T A- - CA A - A- AT TTT AGTAC
4 ACATCCATTTTGCCATCTAT GAAG GGAA TCT TC TCCA TCC TTTTG CC TCT CT GA
CTTTTGAAGTACTCTGTGGG CTTC CCTT AGA AG AGGT AGG GAAAC GG AGA GG CT
GAGACCGGACAAAGAGGAGC AT T AA T CG A A CC GG TGT -----
TGGATGAAAAGATTTCCTAC
TTC
GAM23789 8488 GAAGCTGTCCGCATTTATGT AG C TTATGT ATC AGCATCCC
0 GGCATCGGTCCAAGCATCCC GA CTGTC GCAT GGC GGTCCA
TGGGCCAGTCGTGCGACAGA CT GACAG CGTG CTG CCGGGT
CTC CA - ------ A-- --------
GAM23795 18618 GAAGGAAGGCAGTCATATAG AG - TATA G G GGTAGTTG

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1          GCACAGATGCTGGTAGTTGG GAAGGA  GCA GTCA   G CACA ATGCT
           GTATATGTGGCTGACTTGTA TTTCTT  TGT CAGT   C GTGT TATGG
           GTTCTTT              GA  T   ---- G   A   --------
GAM23796 804   GAAGGAATTTTAAGAGTAGT       TT-  GA  G  T    ACA
6          TATCTTTATACAGTGAAGCT GAAGGAATT   AA  GTA TTA CTTTAT
           AAATATAATTTTCAGTTTCT CTTCTTTGA   TT  TAT AAT GAAGTG
           TC                   CTT  AA   A  C    ---
GAM23799 8133  GAAGGAGGCACAGACCGGGG    AG     CCGG-   AT    AGCC
8          AAATATGACAGCCGTCATTT GAAGG  GCACAGA    GGAA  ATGAC
           CCAGTTCTCTGTGTTGTCTT TTTCT  TGTGTCT    CCTT  TACTG
           T                  GT     CTTGA   --   ----
GAM23800 20081 GAAGGAGGCGCCTCCACTGG    -----   C  CTCCAC   A    GCTGCTA
0          ACGAGGGCTGCTATCTCGAC GAAG    GAGG GC     TGG CGAGG
           CATTTTCCGCACCTCTCCAT CTTC    CTCC CG     ACC GCTCT
           CTTC               TACCT    A  CCTTTT   A    -------
GAM23800 6596  GAAGGAGGGAGATTGACTTT   G    G    ----- TTTCTT      TCCCAAAATC
3          TCTTCGTTCCAATCCCAAAA GAA GAGGGA ATTGA    CT     CGTTCCAA
           TCTTGGAATGTTCATAGTGT CTT CTTCCT TAACT    GA     GTAAGGTT
           CCTCAATGTCCTTCATTC    A    G    CCTGT  TACTT-      ----------
GAM23805 6274  GAAGGCCGGCGGGTTGCGGC         GGTTGC   A  AC   TAAG
0          CACCCACGGATTAAGGTCCA GAAGGCCGGCG     GGCC CCC  GGAT
           CGGGGGCTTCTTTGCGTTGG TTTCTGGTTGC     TCGG GGG  CCTG
           TCTTT                GTTTCT   -  CA   ----
GAM23808 8920  GAAGGGAAAGGCAGGACATG     AAAGGCA  CAT-    ----    CCTG
5          GGCCCGGGGCCCTGGCCCCA GAAGGG     GGA   GGGCCC   GGGGC
           GAAGGGCCCCAAATCCAAAA CTTCCC     CCT   CCCGGG   CCCCG
           AACCCTTC             AAAAAA-  AAAC    AAGA    ----
GAM23810 18176 GAAGGGAGGCTTTTCATTTC          TCAT---   TATG  A    A   TAGT
7          TTATGAGTAGGTTGATGAAT GAAGGGAGGCTTT      TTCT   AGT GGTTG TGAA
           AGTTTTAACAATCAACTAGA TTTCTCTCCGGAA      AAGA   TCA CTAAC ATTT
           ATTCCTTTAAGGCCTCTCTT          TTTCCTT   ----  A    A   ----
           T
GAM23817 4339  GAAGGTCAGATATGCAGATG  AG  AGA   AG  AA      CACATT
9          AACTTCTTAAGCACATTCTT GA  GTC  TATGC  ATG  CTTCTTAAG
           GGGAAGGATGTAGGTGTAGA CT  CAG  ATGTG  TGT  GAAGGGTTC
           CAGTC             GA  ---   GA  AG      ------
GAM23819 1192  GAAGGTGTACGGCTACATGC    T    CTACA   CTC-   ACAC
7          CCCTCCTGTACACGCAGTTC GAAGG GTACGG   TGCCC   CTGT
           AGGGTGGATTCTGTGCTCTT CTTCT CGTGTC   GTGGG   GACG
           C                  -    TTAG-    ACTT   ----
GAM23820 18824 GAAGGTTAAGCTGGCTCGTC    ---  ----  GG-     TGAAATATTATAAGGT
8          CTGAAATATTATAAGGTGGA GAAGGT  TAA   GCT  CTCGTCC
           TGAGAATGGCAAAATTAGTC CTTCCG  ATT   CGG  GAGTAGG
           GCCTTC              CTG  AAAA  TAA    ----------
GAM23820 5965  GAAGGTTAAGCTGGCTGTCC     TAA   ------   C  GAAA   ATAA
9          TGAAATATTATAAGGTGGAT GAAGGT  GCTG    GCTGT CT   TATT
           GAGAATGGCAAAATTTAGTC CTTCCG  TGAT    CGGTA GA   GTGG
           GCCTTC              C--  TTAAAA   A  GTAG   ----
GAM23821 18722 GAAGGTTAAGCTGGCTGTCC     TAA   ----   C  GAAA   ATAA
0          TGAAATATTATAAGGTGGAT GAAGGT  GCTG   GCTGT CT   TATT
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GAGAATGGCAAATTAGTCGC CTTCCG TGAT CGGTA GA GTGG
CTTC C-- TAAA A GTAG ----
GAM23821 16798 GAAGGTTAAGCTGGCTGTCC --- GCTG ------ GAAATATTATAAGGT
1 TGAAATATTATAAGGTGGGA GAAGGT TAA GCT GTCCT
TGAGAATGGCAAAATTAGTC CTTCCG ATT CGG TAGGG
GCCTTC CTG AAAA TAAGAG ----------
GAM23821 18535 GAAGGTTAAGCTGGCTGTCC --- GCTG C GAAA ATTAA
2 TGAAATATTATTAAGGTGGA GAAGGT TAA GCTGT CT TATT
TGAGAATGGCAAAATTAGTC CTTCCG ATT CGGTA GA GTGG
GCCTTC CTG AAAA A GTAG -----
GAM23821 4211 GAAGGTTAAGCTGGTGTCCT TAA G- TGAAA ATAAGGTG
3 GAAATATTATAAGGTGGATG GAAGGT GCTGGT TCC TATT
AGAATGGAAAATTAGTCGCC CTTCCG TGATTA AGG GTAG
TTC C-- AA TAAGA --------
GAM23821 19200 GAAGGTTAGGCTGGCTGTCC TA ----- C GAAA ATAA
5 TGAAATATTATAAGGTGGAT GAAGGT GGCTG GCTGT CT TATT
GAGAATGGCAAAATTAGTCG CTTCCG CTGAT CGGTA GA GTGG
CCTTC -- TAAAA A GTAG ----
GAM23821 16552 GAAGGTTCCTGTCCTTCCCT TC CCT A- AG-- AATCCAGC
7 AGCTAACAAAGGTTAATCCA GAAGGT CTGT TCCCTAGCT ACAA GTT
GCAGCAGTGTTGTGGGGCTG CTTCTA GACG AGGGGTCGG TGTT CGA
GGGAGCAGATCTTC -- --- GG GTGA --------
GAM23822 18423 GAAGTAAAGCATTGTTTTGG AA -- T GGTTCA A-- AA GCAAAA
3 AGCTGGTTCACAGAAAAAAG GAAGT AGCA TTGT TTGGAGCT CAG AA AG
GCAAAACTGGTTATCCTGAC TTTCG TCGT AATA AACCTCGA GTC TT TC
TTCAAGCTCCAACATAAACT C- CA C ACTTCA CTA GG ------
GCTCGCTTT
GAM23824 2979 GAAGTACTTACGGAAATAAA - TAC--- ATAA GAAG ATAGTTTAA
4 ATTTTAGAAGATCATAGTTT GAA GTACT GGAA AATTTTA ATC
AAGATACATAGAATTCTTCT CTT CATGG TCTT TTAAGAT TAG
TATAATGGTACATTC A TAATAT C--- ACA- ---------
GAM23827 3222 GAAGTCAGCACTTACATTAC CA TACA- GAAAA TACAAC
8 GAAAATGGGTACAACCCCGA GAAGT GCACT TTAC TGGG
CACAGTAGCAATTGGTGCCA CTTTA CGTGG GATG GCCC
ATTTC AC TTAAC ACACA ------
GAM23828 1096 GAAGTCATGATGGAGTTCCA A T TC- G- CC CGCC
6 GGGGCCCATGCCCGCCGGCA GAAGTC TGA GGAGT CAG GGC ATGCC
TGCTGATTGAGCGCTCCTCA CTTCAG ACT CCTCG GTT TCG TACGG
GACTTC - - CGA AG -- ----
GAM23828 19402 GAAGTCATGGGGCTCTGTCG G-- CTGTC GA CAT TAT
7 GGAAGACATGCCAATATTTG GAAGTCAT GGGCT GG AGA GCCAA
GTTTCTGTCCAGCCCATGAT CTTTAGTA CCCGA CC TCT TGGTT
GATTTC GTA ----- TG T-- ---
GAM23830 18214 GAAGTCCTTGGGATGGGCGT TC T T TCT -- ACACC
1 CTGCTCTGGACACCCCAAAG GAAG CT GGGA GGGCG GCTCT GG
AGCTCCTGCCCTCTCAGCCC TTTC GA CTCT CCCGT CGAGA CC
TTT CC - - CCT AA -----
GAM23835 18486 GAAGTGGCACCTTTTGGGCC - AC T------- AATACCCATATCTCAA
8 CAATACCCATATCTCAAGGG GAAGTG GC CTT TGGGCCC
CCTATTTTTTACGAGACGCG CTTCGC CG GAG ATCCGGG

CGCTTC G CA CATTTTTT ----------
GAM23837 4411 GAAGTGTAACAATACATTCC --- T TCCAGGCC TCAAT
5 AGGCCTTTTATTTCAATAGT GAAGTGT AACAA ACAT TTTTATT
AAAATAATACATGTCTTGTT TTTCACA TTGTT TGTA AAAATGA
CTAACACTTT ATC C CATAAT-- -----
GAM23844 16415 GAAGTTTGAGGCTGTAGTGA A TTT C AT CA G C AT GAAT
6 GCTATGATTGCACCAGTGCA G AG GAGG TGTAGTGAGCT GATTG CCA TG ACTCCAGCTTGG
GACA GGAG
CTCCAGCTTGGATGACAGAA C TC CTCC ACGTCATTCGA CTAGT GGT AC TGAGGTCGGACC
CTGT TCTC
TGGAGTTTCACTCTTGTCTC C TGC A CT AC A A CT ----
CCAGGCTGGAGTACAATGGC TTTCA
ATGATCTCAGCTTACTGCAA
CCTCCGTCTCC

GAM23846 12825 GAAGTTTTTTAAACCTCTGA T AACCTC TTT ATTTAAAATTTCAA
1 ATTTGTACACATTTAAAATT GAAGT TTTTA TGAA GTACAC
TCAAGTGTACTTTAAAATAA CTTCA AAAAT ATTT CATGTG
AATACTTC T AAA--- --- ----------
GAM23848 19311 GAATAACAAAATCCGTTCTC T A C CTCTCT ACTTGACA
3 TCTCTTCACTTGACAGAAGC GAA AACAAA TC GTT CTTC
ATTAACTGAATTTGTTTTTC CTT TTGTTT AG CAA GAAG
T A T TTAC-- --------
GAM23851 20128 GAATAATAGCTTTTAAATTG A TAGCTTTTAAA A TAAGC
0 TTTAAAAATAAGCTTATTAA GA TAA TTGTTTAA AA
ACAAGAATATAAATTTTAAT CT ATT AACAAATT TT
C A TTAAATATAAG A -----
GAM23858 20511 GAATATAATAGAATGGTATA A G TA--- TTA---- GAAT
7 TATGCTTACATTGAATGATG GAATATA TA AATGG TATATGC CATT
CAAAATTGTGTATGACTTTC CTTATAT GT TTACC GTATGTG GTAG
CATTGTGTATATTC - G TTTCA TTAAAAC ----
GAM23861 2954 GAATATGTCACCACTTCTTG T C CT----- C -- AAAAT
8 AACTAAGTTCAGAAAATCTT GAA ATGT ACCA TCTTGAA TAAGTTC AG
AGAACTTGCTTTAAGATCAT TTT TATA TGGT AGAATTT GTTCAAG TC
CAATGGTTATATCTTT C T AACTACT C AT -----
GAM23862 12682 GAATATTCAAAATACACTTT TATT AAT TTTT C TC T T TATTT - AA
1 TACCCCACTCCATTCTGTCA GAA CAA ACAC ACC CAC CATTC G CAT ACACATATGTACA
AGA
TTATTTACACATATGTACAA CTT GTT TGTG TGG GTG GTGAG C GTG TGTGTGTGTATGT
TCT

GAAAAATGAAAGAGTCTCTG TT-- GT- TT-- T T- - - ----- G --
TGTATGTGTGTGTGTGCGAG AATGAAAGAGTC
TGTGTGTGGTTTGTGTTGTT
GTTTTC

GAM23865 12455 GAATCACATAAAATTGTGTG TAAAAT- TCATGTACAC
9 TGCACGTTCATGTACACATG GAATCACA TGTGTGTGCACGT
TGCACACATGTAACCTCTGT CTTAGTGT GTACACACGTGTA
GATTC CTCCAAT ----------

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GAM23867 20637  GAATCAGATTTGAAAAAGTT   T-   TTT-  AA    A     TTC
0          AAAACAATTTCATTGTTGTA GAA  CAGA   GAA  AGTTA AACAAT
           ATTGTTCCCTTTCTGTTTTC CTT  GTCT   CTT  TTAAT TTGTTA
                        TT   TTCC  G-    G     ---
GAM23869 20220  GAATCCAGATGGCATGGTTG     CAG-   CAT   TG T   TGGACTA  GTGA
0          CTCTATTGGACTACCGTGAG GAATC    ATGG   GGT  C CTAT     CC
           GATGGTGTGACCCCATATAT TTTAG    TACC   CCA  G GGTA     GG
           GATTT                TATA    ---   GT T   -------  ----
GAM23869 14015  GAATCCAGCAGCACATCAAA   T    AGCA   AAAAT   CCAT   C   TCAG
2          ATCCACCATGATCAAGTCAG GAA CCAGC    CATC    CCA    GAT AAG
           CTTCATCCCTGGGATGCAAG CTT GGTCG    GTAG    GGT    CTA TTC
           GCTGGTTC           -    GAAC    -----   CC--   C   ----
GAM23873 12181  GAATCTAGCACTTTCATATT    CT  CACTT   TATTT  AA    TATT
0          TTAAAGCTGATATTTTAGCA GAAT  AG    TCA    TA  GCTGA
           ATATTTTGATAAAACTTTAT CTTA  TC    AGT    AT  CGATT
           TC                 TT  AAAAT   TTT--  AA    ----
GAM23874 6453   GAATCTCTACGTTGCTTAAC   A    --       AACC      CGTGTA
0          CCTTTTGGCGTGTACCAGAG GA TCTCT  ACGTTGCTT    CTTTTGG
           GCAAGGTAATGTCGGGGGAA CT AGGGG  TGTAATGGA    GGAGACC
           TC                 A    GC       AC--      ------
GAM23880 16500  GAATGAAGTTAAGGTTATCT       TTAA--   TATCT    CTGGAA     CACTATTTCC
0          GTCATCTGGAAGCTTTACAC GAATGAAG     GGT    GTCAT     GCTTTA
           TATTTCCTAAGGCCATGATT CTTACTTT     CCA    TAGTA     CGGAAT
           CCACCGTTTCTTTTCATTC       TCTTTG   CCT--    C-----     ----------
GAM23882 6004   GAATGAGCTGCTAAATCCTG     GC    AAA  C    GATGA   CTTACC
0          AAGATGACCTCTTACCAGGG GAATGA  TGCT   TC TGAA     CCT
           AAGATTCGAGACAGCAATCG CTTGCT  ACGA   AG GCTT     GGA
           TTC                A-   C--  A    AGAAG   ------
GAM23882 20296  GAATGAGTAAGACCTAGTAT        -  CC  G      ---   A-  ACAG
3          TGATAGTACAACAGTGGGAC GAATGAGTAA GA  TA TATTGAT   AGT  CA
           TATAGTCAGTAATAATTCAT TTTGCTTATT CT  AT ATGACTG   TCA  GT
           TATTCGTTT               A  TA  A      ATA   GG  ----
GAM23884 6353   GAATGCAGAAAATGAGTATC     CAGAAAA  A     A    GCAAT---    GAAA
9          AGACAGCAATTAGTGAAAAC GAATG      TG GTATC GACA       TAGT
           TATCAAACAATGTCAGATAC CTTAC      AC CATAG CTGT       ATCA
           CACATTC              -------  -    A    AACAAACT    ----
GAM23888 2969   GAATGGAAATCTGCAGAGGC       ATCTGC    CCTCC    TCACCTAATCACT
7          CTCCGGAGTCACCTAATCAC GAATGGAA     AGAGG     GGAG
           TCTCCTCCTCTTCCTGTTCC CTTACCTT     TCTCC     CCTC
           ATTC                 GTCCT-     T----    -------------
GAM23891 20550  GAATGGGCTGCTTGCTGTGG      C   TT  ----------- TG       GGTC
8          ACTCATGGGTCCGTGAGTCT GAATGGG TGC  GCT         G  GACTCATG
           GCTCATCTTCTTCAGTTTGC TTTACTT GCG  TGA         C  CTGAGTGC
           GTTTCATTT              T   TT   CTTCTTCTACT GT       ----
GAM23897 3401   GAATGTGAAGACTCTCAACT    TG  AAG    - AA--  C   T    TTG
7          CGTATCTCATTTGATGAGCT GAA  TG   ACTCT C    CT GTA CTCAT
           GCAAGGAAGGAAGAGTAGCA CTT  AC   TGAGA G    GA CGT GAGTA
           ATTTC                TA  GA-    A GAAG  A   C     ---
GAM23898 21042  GAATGTGGACCCAGACAGCG    T    CC--   ACA   -  --      G     - GCCATTGA
4          TGGTCCTCTGCCTCTTGGCC GAA GTGGA    CAG   GCG TG  GTCCTCT CCTCTT G
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ATTGACGAGGAGGAGGAGGA CTT CACCT GTC CGC AC TAGGAGG GGAGGA C
TGACATCGCCCTGCAAATCC - AAAC C-- T AG A G --------
ACTTC
GAM23902 18694 GAATTACAGAATTACTCATT C A CATT G TTTAAAAGAAGTTT
5 TAAGGTACTTTAAAAGAAGT GAATTA AGA TTACT TAA GTAC
TTGTACATTGTCAAAGTAAA CTTAAT TTT AATGA GTT CATG
TTTTAATTC - A AACT A ----------
GAM23902 19253 GAATTAGAAACCCATCCTTC CCCA- TTCAAGCACAATAATCATC - -- CCTA
9 AAGCACAATAATCATCACAG GAATTAGAAA TCC ACAGACTTG AGT TTGCTT
ACTTGAGTTTGCTTCCTAAA TTTAGTCTTT AGG TGTTTGGGC TCG AACGAA
GCAAAGGCTCCGGGTTTGTT TTAAA TT---------- C GA ----
TGGAAAATTTTTCTGATTT
GAM23907 6202 GAATTCATAAAAACAGGGAG -- AA GGAG-- AA- TAGGGT
4 GTTAAAAGTAGGGTCTGGGT GAATTC ATA AACAG GTTA AG
GACAAAATATTGTTGGTGTA CTTGAG TGT TTGTT CAGT TC
AGAGTTC AA GG ATAAAA GGG ------
GAM23910 9868 GAATTGAAAAAGTGGAGCAT GAAAA- --- CATTC- T CAGC
8 TCAGACTTGTCTTTCAGCAA GAATT AGT GGAG AGACT GTCTTT
GGACTGGTCTTTCTATCTCT CTTAA TCA TCTC TCTGG CAGGAA
TGTACTACACTGAATTC GTCACA TGT TATCTT T ----
GAM23913 6132 GAATTGGCACCTGGATCCAA GGCA G CCAACA-- A TA A GAAAGCA
4 CAGGCATTTAGTCAAGCAGA GAATT CCT GAT GGC TT GTCA GCA
AAGCATGTGTGATCGAAGCC CTTAA GGA CTG CCG AA TAGT TGT
CTTTAGACGTCGAGGCAAAT AC-- G CAGATTTC - GC G -------
TC
GAM23913 14398 GAATTGGCTTGACATAATAA GACATAATAA A AGG - TTAAAC
7 ATATAAACATAAGGGCAATT GAATTGGCTT ATATAAAC TA GC AAT
TAAACATTGGCAGTAGTTTA CTTAACTGAA TGTATTTG AT CG TTA
TGTAAGTCAATTC ---------- - GA- G ------
GAM23915 18573 GAATTGTGAACTTGTTGAAG T- CT -- A---- T- A GCAT
7 CATAGAATTGGGCATCCAGT GAATTG GAA TGT TGA GCA AG ATTGG
ACTTTTGTCATAATCACTGC CTTAAC CTT ACG ACT TGT TC TGACC
ATCTTCTTCAATTC TT CT TC AATAC TT A ----
GAM23918 8130 GAATTTAGCTGTTCTTTATT G - ATTGACA ATTT - GAGGGTA
0 GACATGGAATTTGGGGTGGC GAATTTA CT GTTCTTT TGGA GGG GTGGC
GAGGGTAGCCACACCCTCCA CTTGGAT GA TAGGAGG ACCT CCC CACCG
GGAGGATGAGGTAGGTTC G G ------- ---- A -------
GAM23920 21607 GAATTTCATCGATGTTGTAC TC TT--- GCT TCAATAG
2 CTGGCTCAGTCAATAGTTGT GAATTTCA GATG GTACCTG CAG
CACAGGTATTAAGCCATTTT TTTAAGGT TTAC TATGGAC GTT
GGAATTT T- CGAAT ACT -------
GAM23920 18920 GAATTTCCGCTGCCTGTGCA T T T TC AA CTT CTTTAAG CAG
7 CTCATGAAAAGGGCTTTGGC GAATT CCGC GCCTG GCAC ATGAA GGG TGG GGAAG
TTTAAGGGAAGCAGCTTCCA TTTAG GGCG CGGAC CGTG TACTT CCC ACT CCTTC
CCGCATCATCCCCCAGTTCA T - - -- GA CCT ACGCCA- ---
TGTGCCAGGCGCGGTGATTT
GAM23927 1533 GACAAAATATTTGGCCTAAA T TG CCT TT A CTCTA
8 TTTTCACCTGCTCTATAGGG GACAAAATA T G AAAT TC CCTG
ATATTTTTACTGGTGTTTTG TTGTTTTGT G C TTTA AG GGAT
TT - GT ATT T- - -----

GAM23928 1074 GACAAACTTGAACGTTATTG ACTT G GCCAA A--- GTGAG
8 CCAAGTGGGACTGGTGAGCA GACAA GAAC TTATT GTGGG CTG
GAAAACCCACGATGAGTTCT CTGTT CTTG AGTAG CACCC GAC
TGTC ---- - ----- AAAA -----
GAM23929 18493 GACAAAGAAAGAAGAAAATA AAAGAAAGAAG AAA AGTGG
0 AAAACCCTAGAGAGTGGCTT GAC AAAATA ACCCTAGAG
TGGGGTTATTTTACGGTACA CTG TTTTAT TGGGGTTTC
AAGTC AAACATGGCA- --- -----
GAM23932 6282 GACAACATAATGAGACCCCC A TA- AG - AT -- CAGAAAAATTAAAAAAT
7 ATCTCTACAGAAAAATTAAA GAC ACA ATG AC CCCC CT CTA
AAATTAGCCAGGCGGGGTGT CTG TGT TAC TG GGGG GA GAT
TGCATGTTTGTAGTC A TTG GT T CG CC ----------
GAM23935 998 GACAAGAGGGTGGTCTACCT AGAG- T T - CATG-- ATTGGATG
8 GGGGGCCATGCTTCTATTGG GACA GGTGGTC ACC GG GGGC CTTCT
ATGAGAGGGACGATGCCCAC TTGT CCATTAG TGG CC CCCG GGAGA
CTGGTGATTACCAACAGTGT GACAA - T A TAGCAG --------
T
GAM23937 19243 GACAAGGACGGCAACAGTGA CA -- ACAGT CGAA GAG
0 CCTGCGAAGCGCGAGGTGCC GA AGGA CGGCA GACCTG GCGC
CAGGTCCCGACTGCCGTTTC CT TCCT GCCGT CTGGAC CGTG
CTCATC AC TT CAGCC C--- ---
GAM23939 6548 GACAATAAACTAAATAAATA A AACTAAATA AT A TGTT
0 TTCTGTATGATGTTTTAACA GAC ATA AAT TCTGT TGA
GACCATTGAAAAACAGTATA CTG TAT TTA AGACA ATT
GTC A GACAAAAAG CC - ----
GAM23940 896 GACAATGGCAGCATCTACAA A CTACA-- ---- CTT TATCA GAAA
7 CCCTGAAGTGCTTGATATCA GACA TGGCAGCAT ACCCT GAAGTG GA CAGAG
CAGAGGAAACTCTGCATTCT CTGT ACCGTTGTA TGGGA CTTCGC CT GTCTC
CGCTTCCTGGAGGGTGTCCG G ACGCCTG GGTC T-- TAC-- ----
CAATGTTGCCAGTGTC
GAM23941 8205 GACAATTATACCCGAATAGG ATTATACC ATA- C- TCCTG GAC
4 CTTCGCCCCTCGTCCTGGAT GACA CGA GGCTTCGCCC TCG GATC
CGACGATTATTTCGACTGGG CTGT GCT CCGAAGTGGG AGC TTAG
TGAAGCCACAGTCGTCTTGC CGTTCT-- GACA TC TTTA- ---
TGTC
GAM23944 1089 GACACAGAACCACTGGTTCA AACCACT - - A A AGACAATGA
3 CCTACAATGAGACAATGACA GACACAG GGTT CAC CT CA TG
GTGGAGAGTGTGACCCAAGC CTGTGTC CCAG GTG GA GT AC
TGTGTC GAAC--- T A G G ---------
GAM23945 21119 GACACAGTAGCATTTGTGCC A ------ T CAATT TG TGGAA GTGA
3 AATTTCTGGTTGGAATGGTG GAC CAG TAGCATTTG GC TC GT TG
ACAACATGCTGGAGCCAAGT CTG GTC ATCGTGAAC CG AG CG AC
GCTAACATGCCTGGTC - CGTACA - ----- GT TACA- ----
GAM23946 9874 GACACATCGCTGACTTGGCT CAT-- ACTT ACTC AAGT
2 GGCAACTCTGAAGTCATCCT GACA CGCTG GGCTGGCA TG
GCCAGTCCCGGCGTTCAATG CTGT GCGGC CTGACCGT AC
TC AACTT C--- CCT- ----
GAM23947 3020 GACACCATCTCCTCCCCCAA ---- CT T - A AAGA GCCCTTCGA
8 GGAAGACACAGCCCTTCGAT GACA CCAT CC CCC CC AGG CACA
GTGAACCTAGGAGGGTGGGA CTGT GGTA GG GGG GG TCC GTGT

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          ATGGCTTATGTC          ATTC   AG  T   A  A   AA--   ---------
GAM23947 18682  GACACCCACCGCAACTGTCT   AC-    GCAACT   TG   CATA  ACGAA
9         GGCTCATATGACGAACAGCA GAC   CCACC     GTC  GCT   TG
          AAGCGACCCAAAGGTGGATA CTG   GGTGG     CAG  CGA   AC
          GTC               ATA    AAACC-  --  AACG -----
GAM23948 5598   GACACCCTTCCTCGCCTGTT    CCTTCCTC    TTGGTGCT   CTTG    C  A  CAGC  C     ----
0         GGTGCTGGCCCTTGGGGAGC GACAC       GCCTG       GGCC    GGGAG TGG GCC    ATG TGGGGA

          TGGAGCCCAGCATGCTGGGG CTGTG       CGGAC       CCGG    CCCTC ACC CGG    TGC ACCCCT
          AGTGCGGTCAGCTCCACACA     CCTTTCGT    --------   ----    -  -  ----  -     GATG
          GTAGTCCCCACGTGGCCCAC -   C  TCAGCT
          TCCCGGCCCAGGCTGCTTTC  GTG GG
          CGTGTC            CAC CC
                      A   A ------
GAM23948 6419   GACACCGGTGTCCTTCCTCG    ACC   -   -   CC     AACC-   CTTCCA-  TCCA
3         AGTAACCGACCTTCCAGTTC GAC   GGT GTC CTT  TCGAGT     GAC      GT
          CAGCCCTCCAAGTCCCACGG CTG   CCA CAG GAG  GGCTCG     CTG      CG
          CTCGGAAGAGCGACTACCAT    CTA   T   C   AA     GCACC   AACCTCC  ----
          CGTC
GAM23950 14341  GACACGATTATTTTTCCTTC    AC    ATTTTT     A   CT TG     CT--    CCAT
3         AGCACTTTGATGTTCTAACT GAC  GATT     CCTTC GCA  T  ATGTT    AACT
          CCATGGTTTTCTAGCATTGA CTG  CTAG     GGGAG TGT  A  TACGA    TTGG
          TTGTAGAGGGTGGATCTGGT    GT    GT----     A   T- GT     TCTT    ----
          C
GAM23953 8453   GACACTGTTTTTATTTAGTT   CAC         AG   G     TTTC    C   A  CAGAAAACA
5         TGATATGTTTCTTTACAGAA GA   TGTTTTTATTT  TTT ATATG    TTTA AGA TG
          TGCAGAAAACACATCTTAAA CT   ACAAAAATAAA  AAG TATAC    AAAT TCT AC
          ATCATATAGAAGGAAATAAA   AC-         GG   A     TA--    -   -  ---------
          AACACATC
GAM23955 20327  GACAGAAGATGGTCCAGAAG     A------    G     AAGCT       ACGAGG
7         CTGGCCCTGTACGAGGATGG GACAG      AGAT GTCCAG     GGCCCTGT
          GGCCCTGGACAGTCTGCAGC CTGTC      TCTG CAGGTC     CCGGGGTA
          TGCTGTC               GTCGACG    A     -----       ------
GAM23956 18061  GACAGAATTGTACCCTGTAA       --       C   AACCATAA     -   AATTT
3         CCATAAATATGTAGAATTTC GACAGAA  TTGTACC TGT       ATATG TAG
          TACCATATCAATAAGGTATA TTGTCTT  AATATGG ATA       TATAC ATC
          AGTTTCTGTT              TG      A   AC------     C   -----
GAM23957 18300  GACAGAGCATTTCCTTGGGT       ATTTCCT          T   GAGGTA
7         GATCATAGTTTCGAGGTAGA GACAGAGC      TGGGTGATCATAG TTC
          GTTTATGATCATTCATAGCT CTGTTTCG      ACTTACTAGTATT GAG
          TTGTC                 AT-----          T   ------
GAM23959 2793   GACAGAGTCCCTCAGACGGC     A----- TC       G-      ----     AAGCACCCTGGAGA
1         CTTGGGCCAGTAAGCACCCT GACAG     G  CCTCAGACG  CCTTGGG    CCAGT
          GGAGAGCTGGGCACCTCGAG CTGTC     C  GGGGTCTGC  GGAGCTC    GGTCG
          GAGCGTCTGGGGAGCCTCAT     ATACTC GA       GA      CACG    --------------
          ACTGTC
GAM23961 21238  GACAGATTTTATACAATTCG         TATAC       A  GAGAAAAGGATAAAGAAAA
0         CTATCGAGAAAAGGATAAAG GACAGATTT     AATTCGCT TC
          AAAAGAAGTGGATTTTTCAA CTGTCTAAA     TTAGGTGA AG
          ATCTGTC                 CTTT-       -  --------------------
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GAM23963 16723  GACAGCCTATTGTGGGACCT     CC   TGT    CCTCGTG----    GTAA
5           CGTGATCATGTAAGTGATAC GACAG  TAT   GGGA         ATCAT
            TTAATAAATTCCCTTTATAT CTGTC  ATA   CCCT         TAGTG
            CTGTC               T-   TTT    TAAATAATTCA    ----
GAM23964 16862  GACAGCGGCGGCTCCGCCTA    --   C      CC      CCTATAACAT
0           CGTGGCCTATAACATTCACG GACA  GCGG GGCTCCG  TACGTGG
            TGAATGGAGTCCTGCACTGT CTGT  CGTC CTGAGGT  GTGCACT
            C                   CA   -      AA      ----------
GAM23969 20429  GACAGGGGTCATGGTTTAAA     -   TCAT         AGAAAA   GGCTTA
1           GTAGAAAATTGGGCTTACAG GACAG GGG    GGTTTAAAGT     TTG
            AGAAGCTTTGAATTCCCATT TTGTT CCC    TTAAGTTTCG     GAC
            GTT                 A   ----         AAGA--   ------
GAM23973 21549  GACAGTGGTGGGGAGGAGGA    A    -     G      A-  AG  GTCA
5           CGAGAAGGAGTCATTGTCGG GAC GTGG TGGGGA GAGGACG  GA  GA
            CGTCCTCGTCCTCATCCGCG CTG CGCC ACTCCT CTCCTGC  CT  TT
            TC                  -   T     G      GG  G-  ----
GAM23974 20729  GACAGTGTTGTGTCTGTGGA       --- TG    T-   G-  C      G   TG GAAG
1           GCCGGGGATGCTGTGGGAAG GACAGTG   T  TGTC  GTG  AG CGGGGAT CTG  G
            CTGTAGATTCCTGACTGACG CTGTCAT   G  ACGG  CGC  TC GTCCTTA GAT  C
            CCTGGCATGGTGGTACTGTC       GGT GT    TC   AG  A      -   GT ----
GAM23974 4304   GACAGTTCAAAATTGGCCTG     TTCA       TGA----      -----  ATCA
5           ATCCATGGCCATCAGGTTAT GACAG    AAATTGGCC      TCCATGG    CC
            TCCATGGGGAGATATGGCCA TTGTC    TTTGACCGG      GGGTACC    GG
            GTTTAGCCCTGTT          CCGA       TATAGAG      TTATT  ----
GAM23976 9050   GACATAATGCTATTTAAAGG     AA  CTATT     CT    TT  TCCCTTTATAT
1           CTTGAATTTTTCCCTTTATA GACAT  TG    TAAAGG  TGAA  TT
            TAATTTTCACCTTTACTTTC TTGTG  AC    ATTTCC  ACTT  AA
            AAAGTGTT              AA  TTTC-     --    TT  -----------
GAM23977 1189   GACATAGCACCTGAGCAGGC     A  ACCTGA  A  -   -   AGTCCGTGTA
3           ACCTCAGTCCGTGTAGAGTG GACAT GC      GC GG CAC CTC
            TGACCGGCACCAAGGCATGT CTGTA CG      CG CC GTG GAG
            C                   -  GAACCA  G  A   T  ----------
GAM23978 21320  GACATATCTTGTATTCATTA      T   GTATTC    AA        ATT
1           AAAATATTTTAATTTAAAAT GACATA CTT     ATTA  AATATTTTA
            ATTCTGATTTCTAAAGTGTG TTGTGT GAA     TAGT  TTATAAAAT
            TT                  -  ATCTT-   C-        ---
GAM23978 18273  GACATATGAAGAATGGATCA      T--     --  -----       A    ATGA     GGGAAAGCA
2           GAGATTTCTATGACAGTGCG GACATA   GAAGAA  TG    GATCAGAG TTTCT    CAGTGC
            GGAAAGCAGCACTGAGAAAC TTGTAT   CTTCTT  AC    TTAGTTTC AAAGA    GTCACG
            TTTGATTGTTTTCAATTTCT      TTT     TA  TTTTG      -    ----     ---------
            TCTTTTATGTT
GAM23978 21620  GACATCAACATCGTGCGGGT    TCAACATC      G     ATGCAGC--     CGCAG  --   GAGAG

9           GTCGGGCATGCAGCGCCTGG GACA       GTGCGGGT TCGGGC       GCCTGG     CTC  CTGG
            CGCAGCTCCTGGGAGAGCCG CTGT       TACGTCCA AGCCCG       CGGACC     GAG  GGCC
            GCCGAGACCCAGGCACCACC   --------      G     GAGCCACCA     CA---  CC   -----
            GAGGCCCGAGACCTGCATTG
            TC
GAM23979 12251  GACATCAGGCATTTCTTATT    A    C          AA---   TCCACC
6           TTAAAAGTCCACCCTTCAGA GAC TCAGG ATTTCTTATTTT    AAG
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GAAGATAAGAAATTTCTGAA CTG AGTCT TAAAGAATAGAA TTC
GTC A T GAGAC ------
GAM23981 3016 GACATCTGGAGCCTGGGAGT CT CCT GTCAT A- GTCA- G- -- C C
5 CATCCTGTACACCCTCGTCA GACAT GGAG GGGA CCTGTAC CCCTC GC GCTCCT GC CTT
GAGG
GCGGCTCCTGCCCTTCGAGG CTGTA CCTT CCCT GGGCATG GGGAG TG CGAGGG CG
GAA CTCC
GCACAACCTCAAGAGCTGGG AT --- ----- AA ACTCA AG GT A -
GAGCGAGTACTCAGAGGGAA GCACAA
GTACGGGTCCCTTCCTAATG
TC

GAM23981 21047 GACATCTGTCACCCCAGTGA ACC -- - ATGGTTGATTC
8 TCGCCATGGTTGATTCGGCT GACATCTGTC CCAGT GATC GCC
GATCTGGCTGGCTAGGCGGG CTGTGGGCGG GGTCG CTAG CGG
TGTC ATC GT T ----------
GAM23982 5584 GACATCTTTCCTGCATTGCC TTCC TT--- ACA CAG
1 ATCTACATAATATCAGATAT GACATCT TGCA GCCATCT TAATAT
TACGGATGGTTAGATTGCAT TTGTGGA ACGT TGGTAGG ATTATA
CTCAGGTGTT CTCT TAGAT C-- ---
GAM23984 6573 GACATGGAAAAAACTACTTT A AAAAAA--- A AAA- ATATG
0 AAAGTTCATATGGAACCAAA GAC TGG CT CTTT GTTC
AAAGAGCCCGCATTGCCAAG CTG ACC GA GAAA CAAG
TC A GTTACGCCC - AAAC -----
GAM23984 21568 GACATGGCAGCTGGTTTTCC G GGT C ACAACAAG CAAAA
5 CTACAACAAGTGCTCCAAAA GACAT GCAGCT TTT CCT TGCTC
GAGCAAGGCAGAAGTTGCGA CTGTA CGTTGA AGA GGA ACGAG
TGTC G --- C -------- -----
GAM23984 12308 GACATGGCTGTTGTGAGGAT AT- - G G CAA AGGA
6 CAAATGGAAGGATCCATGAG GAC GG CTGTT TGAG AT ATGGA
TGCTTAGAACAGTCCTGGGT CTG CC GACAA ATTC TG TACCT
C GGT T G G AG- ----
GAM23985 2708 GACATGTAAAAATAGGGAAA G -- ------- A AAATT
5 AGTGATTCAAATTGAAATGC GACAT TAAAAATA GGGAAAA GTG TTC
CTGTGTATTTTCCTATTGTT TTGTA ATTTTTGT TCCTTTT CGT AAG
TTTAATGTT - TA ATGTGTC A -----
GAM23987 741 GACATGTTTATTAATTAAAC AATTAAA - AAATAAAAAA
3 TATCACTTAAATAAAAAAAA GACATGTTTATT CTAT CACTT
GTGCATAGAAAATAAACATG TTGTACAAATAA GATA GTGAA
TT AA----- C ----------
GAM23988 9179 GACATTAGGTCCATTGTTGT AGG A --- A- GC CCA GGAGAAAAAAA
7 TTTTAAAGAGGCTGCTGGCC GACATT TCC TTGT TGTTTTT AAGAG TGCTGG CA
ACAGGAGAAAAAAATGACCT CTGTAG AGG AACG ACAAAGG TTCTC ACGATC GT
AGCAACTCTTGAGGAAACAA G-- A TGA AG A- CA- ----------
GTGCAAAGGAGGATGTC
GAM23990 16695 GACATTGGCACTGGCACGGG CA G ACGG C TG ACAT
9 ACTCTTGTCACATGATGGCG GA TTGGCACT GC GACT T TC
GTCACAGCAGGTGCCGACTT CT AGCCGTGG CG CTGG G AG
C TC A ACA- C GT ----
GAM23991 2882 GACATTGTGAATTTAACCTC CATT TTAA T ATC ATTTAC

3 TCCCGATCTGGGATTTACCC GA GTGAAT CC CTCCCG TGGG
CATGGGAGTGGCCGTTCACT CT CACTTG GG GAGGGT ACCC
TAATC AATT CC-- T --- ------
GAM23991 3648 GACATTGTTAAAACACACTT T A-- A C CA A ACTCTTG
4 AAAACAGAAGTACTTACTCT GACA TGTTA AAC CA TTAAAA GAAGT CTT
TGAAGATTTCCTTTTAATGG CTGT ATAGT TTG GT AATTTT CTTTA GAA
TTGCCTGATACTGTC C CCG - - C- - -------
GAM23991 6634 GACATTGTTCTTATGGCACA A A--- CAAGC A AG---- TTAT
7 AGCTCTAGAGAAGCTGTTTA GAC TTGTTCTT TGGCA TCT GAGA CTGT
TGCAGAAATTATCTCAGATG CTG AACGAGAA ACCGT AGA CTCT GACG
CCACAAGAAGAGCAAGTC - GAAC ----- - ATTAAA ----
GAM23991 16708 GACATTTAAAAAATGAGGTG A AA - - TAGT ATAGAAAAAGTATAAA
8 AAAGAAAGCTATAGTGGCAT GAC TTTAA AATGA GGTGA AAGAAAGCTA GGC
AGAAAAAGTATAAAGCTCAG TTG AAATT TTATT TTATT TTTTTTTGAT TCG
TTAGTTTTTTTATTATTATT A A- A A TGAC ----------
ATTATTAAAAGTT
GAM23992 12602 GACATTTCACTGAAGGACAT T CT C C CTGTTGCC
4 CCAAAAACCTGTTGCCGTTT GACA TTCA GAAGGA ATC AAAAAC
TTAGATTTTTTTTCTTGGAT TTGT AGGT TTTTTT TAG TTTTTG
TGTT T TC T A --------
GAM23995 14409 GACCAAACACTGTGACAAAG - G AAG- TTCTTCAG
2 CAGAGTTCTTCAGTTCTGAA GAC CAAACACT TGACA CAGAG
AATGTTAAAGTGTTTGAGTC CTG GTTTGTGA ATTGT GTCTT
A A AAAA --------
GAM24000 14602 GACCACCAGGCTGTTGTGTA - C- CT T TGT AGAC
6 CAATGTTTGAAAGACTTTAA GAC CAC AGG GTTG GTACAA TTGAA
TTTGTACCAGTTACCTTTGT CTG GTG TCC TGAC CATGTT AATTT
GAGTC A TT AT - T-- ----
GAM24000 12659 GACCACCTTTCTCAGTTGTG C CC- -- GTG CT CAGG
8 CCTCTAGATCCAGGGATTTT GA CA TTTCTC AGTT CCT AGATC
AAGGAAAATTAGGAGAAATA CT GT AAAGAG TTAA GGA TTTAG
ATGATC A AAT GA AA- AT ----
GAM24005 4252 GACCAGTGACCCTGTTTTGT - ------ ------ GCATTCA
1 GGCATTCATGCAAAACATGC GACCAG TGA CCCT GTTTTGTG
TGAGGGCTTTGTTCATCTGG CTGGTC ACT GGGA CAAAACGT
TC T TGTTTC GTCGTA -------
GAM24005 21335 GACCAGTTGGGTGAAATTTA AGTTG ATTTA -- CAAAT
6 ATGTGGACTCAAATGGTTAC GACC GGTGAA ATGTGG ACT
TACATCGTTCACTATGAGGG CTGG TCACTT TACATC TGG
TC GAGTA GC--- AT -----
GAM24007 3805 GACCATGTCTTATGAATTAA A TT ---- TAC A T AAC
5 CCCATACTGCACATTAAAAA GACC TGTC ATGAATTAA CCCA TGC CA TAAA
CTTTACTGGGTATGCTGGGA CTGG ACAG TACTTAATT GGGT ATG GT ATTT
TCATTAATTCATGACAGGTC - -- ACTA CGT G C ---
GAM24007 14552 GACCATGTGGGACTGTATGG - - TGTATG T - TCAAG
6 AGGTCGCTGGTCAAGCTATG GACCAT GTG GGAC GAGG CGC TGG
TGCCTTATTGTTTACATGAT CTGGTA TAC TTTG TTCC GTG ATC
GGTC G A TTA--- - T -----
GAM24009 5804 GACCCACAGCCTAAGCTGAG - ---- ------- G - GA - GAA CGA C TA
3 TGTGACCCCAGAAGCCACGA GA CCC ACAGCC TAAGCT AG TGT CC CCA GCCA TGTG
TCTG

TGTGCTCTGTATCCAGAACA CT GGG TGTCGG GTTTGA TC ACG GG GGT CGGT ACAC
AGAC

CACTTGGCAGATGGAGGAAG A ACAT TACCAGA G T AA A AGA TC- A --
CATCTGAGTTTGAGACCATG TC
GCTGTTACAGGGATC

--
GAM24010 9675 GACCCACTGTCCATTTGGGT CACT CA TT TGA AGTCAATTA
0 TGGCCTGATGCAGGAGTCAA GACC GTC TTTGGG GGCC TGCAGG
TTACCTGCAGTGGTTGGTCC CTGG CGG AAACCT TTGG ACGTCC
AAACAGGCTCTGGTC TCT- AC GG TG- ---------
GAM24010 20779 GACCCACTTCCTGCTCCAGC CCACT G CA ACCA CC CA---- A- CCCTGT
1 ACCAGCCCCTCCAGCTGACC GAC TCCT CTC GC GC CTC GCTG CCA
ACCCTGTTGGACCAGTACAT CTG AGGA GAG CG CG GAG TGAC GGT
CAGAGAGCAACGCGAGAAGG TCTT- A -- CAA- A- ACTACA CA ------
ATTCTGTC
GAM24012 1178 GACCCCAGATGAGGCCTCCA C TGAG- ---------- TCACCT
7 GTCACCTCTGGTAACGTCCC GACC CAGA GCCT CCAG
CCAGGCAAAGCTCTGAGGTC CTGG GTCT CGGA GGTC
A CGAAA CCCCCTGCAAT ------
GAM24012 8846 GACCCCAGCGCCCGCTCTGC CCA C CTGCCT- CTCTTC
8 CTGGTCCTGCTCTTCCAGGG GACC GCG CCGCT GGTCCTG
CCCTTCCCCGGCGGCCGCGT CTGG CGC GGCGG CCGGGAC
GGTC TG- C CCCCTTC ------
GAM24014 18989 GACCCCGGGTAGATTTCTCC GGT ATT CCC-- TA TCAG
5 CCCGGTAGCCCATGTTTCAG GACCCCG AG TCTCC GG GCCCATGTT
AGCGTGGGCCGCTCCCCCGG CTGGGGC TC GGAGG TC CGGGTGCGA
AGGCGCTTAACGGGGTC AAT GC- CCCCC GC ----
GAM24014 20452 GACCCCGTCAAGGCGTATAA CC- A TAA- AC ACA- TTATAT
7 GCTACGTGACACATTATATT GAC CGTC AGGCGTA GCT GTG CA
GCAAGCGCAAAGTATCCTAC CTG GTAG TCCGCAT TGA CGC GT
GCCTCGATGAGAGTC AGA C CCTA AA GAAC ------
GAM24016 12736 GACCCGGGGCTGGACGCCAG C - - --- C- TGTGAT
3 CCTCTGTGATGAGTTCTGGC GA CCGGG GC TGGAC GCCAG CTC
TGTGTCCACGCTCCTGGCTC CT GGTCC CG ACCTG CGGTC GAG
C T C TGT TT ------
GAM24016 21090 GACCCGTGTATTATTGTCCG G T GTG GGAA GAG AACAT
5 AGTGGCCGGAACGGAGCCAA GACCC TGTA TATTGTCCGA GCC CG CC
CATGGAGCGGGGTTCGGGCG CTGGG ACGT GTAGCGGGCT TGG GC GG
ATGCTGCAGGGTC - C --- G--- GA- -----
GAM24020 16820 GACCCTGTCTCAATAAAAAA CTGTCT-- AATAA A AAGTATG
1 TAAAAATAAAAAAAGTATGT GACC CAATAAAA AAATAA AA
TATTATTTCCTGTTTTATTG CTGG GTTATTTT TTTATT TT
TCTAAAATGGTC TAAAATCT GTCC- A -------
GAM24020 8400 GACCCTTTGAATGCAATGAG C A -- GTGG AG TTTATTC
9 TGTGGGAAAGCCTTTATTCG GA CCTTTGA TGC AATGAGT GAA CC
GAGTTCAAAGCTCATTCAGC CT GGAGACT ACG TTACTCG CTT GG
ATCAGAGGATC A - AC AAA- GA -------
GAM24021 18338 GACCGACCGCGGCTGCCCCA AC- --- A ATGA - G CCCCTCT

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4          GTTGATGAGCGGCGTGTCCC GACCG  CGCGGCT  GCCCC GTTG   GCG GC TGT
           CTCTGCAGCGCGCACCCCGG CTGGC  GTGTCGG  CGGGG CGGC   CGC CG ACG
           CGGGGCTTTGGCTGTGACGC    GCA    TTT   -   CCCA  G -  -------
           GGTC
GAM24022 20582  GACCGGCCGGAGAGCCGAGA   CG    GA   AGAA   - -  GG   -  A ACATT
6          AGGTGCACGGGCTGCTCAAG GAC  GCCGGA  GCCG   GGTG CA CG  CTGC TCA G
           ACATTCGTGAGGCAGAACGC CTG  CGGCCT  CGGT   CTAC GT GC  GACG AGT C
           TGCCATCCGTGGCATCCGGC   CA    A-   GC--   C  C  AA   G  G -----
           ACGTC
GAM24023 5464   GACCGTCACGGCCATGGATG      AC       TGT    AC  G   AAACGC
1          TGGTGTACGCGCTGAAACGC GACCGTC  GGCCATGGA  GGTGT  GC CTG
           CAGGGTCGCACCCTTTATGG TTGGCGG  TTGGTATTT  CCACG  TG GAC
           TTTCGGCGGTT             CT       C--    C-  G  ------
GAM24026 8444   GACCTCAAGTCATCTGCCCG     -    TCTGCC  CT   -    AAA   CTGAGAT
2          CCTTGGCCACCCAAAGTGCT GACCTC AAGTCA    CGC  TGGC CACCC   GTG
           GAGATTACAGGGGTGAGCCA TTGGAG TTCAGT    GCG  ACCG GTGGG   CAT
           CTGCGCCCTGACTTGGAGGT     G    CCC---  TC   A    GA-  -------
           T
GAM24036 9823   GACCTTGCTGATGTGCATGT   -  CT   TG  T  G    GAATG    GTAT
6          GAGGGGGAATGAGGTGTGTA GAC CTTG  GATG  CA GT AGGGG    AGGTGT
           TATGCCTAACTCCTGACTGA CTG GAAC  TTAC  GT CA TCCTC    TCCGTA
           CCATTCAAGTGTC        T   --   CA  -  G    AA---     ----
GAM24038 1604   GACCTTTGATAACCTGCTTT    TT   ACC   TTTACAA    ACTT
1          ACAAATTTTCACTTGAGAGT GACCT  GATA  TGC     ATTTTC
           GATTCTGCATATATTTCAGG TTGGA  TTAT  ACG     TGAGAG
           TT                  CT   AT-  TCTTAG-    ----
GAM24041 17956  GACGCAGGTGGGTCCCCAAA    A  TG     AAAA   GACG   GACAG   GGGTG
8          AGCGGGACGGCTGGACAGGC GACGC GG  GGTCCCC   GCGG   GCTG   GCC
           CGGGTGGGTAGGCAGCAACC CTGCG CT  TCGGGGG   CGCC   CGAC   TGG
           GCGGGGGGGGCTTGTCCGCG    C  GT     GGG-   AA--   GGA--  -----
           TC
GAM24042 1080   GACGCCAATTCGGCCAATGG    CA-  TC--  CA       CTTTCAAGCA
2          GAGCCCTTTCAAGCAGGCTT GACGC  AT   GGC  ATGGGAGCC
           CTGTGCCCTTTATGATGTGT CTGTG  TA   CCG  TGTCTTCGG
           C                  TAG  TTTC  --       ----------
GAM24042 16782  GACGCCCGTGCCTACTGTGC   G   TG---  A    CTT    GGAAAACGA
6          TTGGCGGGGAAAACGACTGC GAC CCCG    CCT CTGTG  GGCGG
           CCACGGAGGAAGAGTGGGAG TTG GGGT    GGA GGCAC  CCGTC
           TT                A   GAGAA  -   ---   ---------
GAM24044 1572   GACGCTTCACCCCAATGGTA   G   A-   --   - AACC  AATT   T   CAAAAAT
0          ACCGCTAATTAGGGGTCGCA GAC CTTC  CCCC  AATG GT   GCT   AGGGG CGCA
           CAAAAATTGCGCCCTTCACA CTG GGAG  GGGG  TTAC CA   TGG   TTCCC GCGT
           GGTACAAACACATTCGGGGG   G   GG   GC   A  AACA  ACAC   -   -------
           GGGAGGGGTC
GAM24044 856    GACGGAGAGGATGAGGGTGA    AG--   TG -  -  -      TA-  CTGT
4          AGAGTATTAACCTGTGTGCT GACGG   AGGA  A GG GTG AAGAGTAT   AC
           GTACTTTTACACTCCTTTGT CTGTC   TTCT  T CC CAC TTTTCATG   TG
           CTTGGAACTGTC          AAGG   GT T  T  A      TCG  ----
GAM24045 13987  GACGGCCATGCTGGTCTGCA   C   ATGCTG   G  -    A-  C-    --  -  ACT
4          AGTCAGAGTCCGTGCCACCT GA GGCC    GTCT CA AGTCAG  GTC  GTGCCA  CCT GTC
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GTCACTGACTGGGCCTGGTA CT CCGG CAGG GT TCAGTC TAG CATGGT GGG CAG
CAAGATCACTGACTCTGAGG C AA---- A C AC AA CC T ---
ACAAGGCCCTC
GAM24045 19231 GACGGCGGGGGCTGGATGGA -- G AT---------- GATC
9 GATCTCCCAACCTTCCCGAC GACG GCGGG GCTGG GGA
TACGGGCCGGCGTCCGTTTC CTGC TGCCT CGGCC CCT
GTC TT G GGGCATCAGCCCTTCCAAC ----
GAM24047 16806 GACGGGGTCAGCGGATGGTG GTC AT- - ATC ACATAGGGAA
4 TATCGGACATAGGGAACCTC GACGGG AGCGG GG TGT GG
GACATCCTCGCCGCTCTCGT CTGCTC TCGCC CC ACA CC
C --- GCT T GCT ----------
GAM24049 19023 GACGTCAGCGCAAAGATGCT GCGCAAAGATG G ATG ATGCGAA
6 CAGGGATGCCTATGCGAAAG GACGTCA CTCA GG CCT
GAACCATGGGAAAGAATATG CTGTAGT GGGT CC GGA
ATGTC ATAAGAAA--- A AA- -------
GAM24050 20570 GACGTGCTGGAACAGGGAGT T AA-- G AGT GCA ACAATG
7 GCTTCAGCAGGTGGACAATG GACG GCTGG CA GG GCTTCA GGTGG
CCATCCATGAGGCCAGCCGT TTGC CGACC GT CC CGGAGT CTACC
GCCTCCCAGCTCGTT T CTCC G GAC AC- ------
GAM24052 9460 GACGTTCTTCGCCGAGAGTC TTCTT AGAG G TTC CTTCAA
1 GTCGGGGTTTCCTGCTTCAA GACG CGCCG TCGTC GGGT CTG
CAGTGCTTGGACGGAACCCG TTGC GCGGC GGCAG TTCG GAC
GCGCTCGTT TC--- CCAA G T-- ------
GAM24058 3234 GACTAGAACTAATATCATTT T TAATATC- ---- ACAA
6 GGGTTTACAAAAACCATCTC GAC AGAAC ATTTG GGTTT
AAGTCCAAACATGTTCTTGT CTG TCTTG TGAAC CCAAA
C T TACAAACC TCTA ----
GAM24061 6078 GACTATCCACCTTGGGTCGC T TTGG C TTG - GAT
6 TTTGCTGTTCGTGATATGAG GAC ATCCACC GT GCT CTGT TCGT
ACAGACAGTTGCGGTGGGTG CTG TGGGTGG CG TGA GACA AGTA
TC - ---- T CA- G ---
GAM24061 1720 GACTATCCAGTTGATGGGCT - GG C GA - T GGA TCAT
7 GCCAGATCTGGGGCATGCCC GACTA TCCAGTTGAT GCTG CA TCTGG GGCA GCCCA CC

AGGACCTCATGGATGGGCTG TTGGT GGGTCGACTA CGAC GT GGACC CCGT CGGGT GG

CCTCCAGGTGACAGCAATCA C A- A -- T - A-- ----
GCTGGGCTGGTT
GAM24062 9415 GACTATGGCAAGGACCTGAT A AA- A T AGAA- CAAGA
6 GGAGAAGGTCAAGAGCCCAG GACT TGGC GG CCTGA GG GGT
AGCTTCAGGCCGAGGCCAAG CTGA ACCG CC GGACT TC CCG
TC - GAG - - GAGAC -----
GAM24063 6572 GACTATTATGCATTCTGGGT - ---------- TTGCA
2 AGGTTGCACCTGCATTGAAC GACTATTATGCATTC TGG GTAGG
ACACCACGAATGCATAATAG CTGATAATACGTAAG ACC CGTCC
TC C ACACAAGTTA -----
GAM24063 889 GACTATTTAAAAACTGGTAC A AA - ACAAC CTACAACGCCA
9 AACAGGTCTCTACAACGCCA GACT TTTAAA CT GGT AGGTCT
AGATCTAACTAAGGCTTTAA CTGG AAATTT GA TCA TCTAGA
AAGGTC A CG A A---- ----------

GAM24064 3937 GACTCAATGTGCAACTGACA TGC TG ATCT-- G AT CT AATATACA
8 TCTGCTAGTGATGATCTGGT GACTCAATG AAC AC GCTA TG GAT GGT
AATATACAACCTGTCCAGTA TTGAGTTAT TTG TG CGAT AC CTG CCA
GCCAAACAGTTGGTTTTTAT TT- GT ACAAAC G -- T- --------
TGAGTT
GAM24065 6118 GACTCAGAATCCGGCGGAGA AA--- C ACCG -- TCCT CCTTTCGCTTC
7 CCGAGGGGGGGTCCTTGGCC GACTCAG TC GGCGGAG AGGGG GGG TGG
TTTCGCTTCCCATCTCCCAG CTGAGTC AG CCGTCTC TCCCT CCC ACC
TCCCTGAACCTCTGCCAGAA CTCGA A CAAG GA TCT- ----------
GCTCCTGAGTC
GAM24067 9268 GACTCCAAATGATGTTATGG A GAT T TT C TA- A GAT-- - TTGA
6 TCATTCTGTTTTTCTGATAC GACTCCA AT GTTA GGTCATTCTG TTT TGA CG GAATA GGT C

GAGAATAGATGGTCTTGAGA CTGGGGT TG TAAT TCAGTAAGAT AAG ATT GT CTTAT CCA G

ACCTAGAATATTCATGCCTT A GAT T CT T TCC A AAGAT A ----
TATGAATCTAGAATGACTTT
AATTAGGTATGGGGTC
GAM24068 12875 GACTCCATGGTGTTGTGCAG CT - TT AA TT TCTCAT
7 AATGATTTTGGTCTCATCTA GA CCATGG TG GTGCAG TGA TTGG
GTTCGGCCTGCACTTTAGTC CT GGTACT AT CACGTC GCT GATC
ATGGGATC AG G TT CG T- ------
GAM24069 2859 GACTCCCTGGTGTGCTCCTG C - T A---------- AAGAT
9 GAAGGAAGATCTTGCGGGAC GA TCCCT GGTGTGCTCC GG AGG
CCCCCCACCGGAGCACACCT CT AGGGA CCACACGAGG CC TTC
AGGGATC - T - ACCCCCCCCAGGGCG -----
GAM24070 9033 GACTCCTCCTACGGCACCTT T A CCTT- GGA TTCTA
6 CGCGGGGGAGTTCTACGACC GAC CCTCCT CGGCA CGCGGG G
TGCGCTACCTGTCGGAGGAG TTG GGAGGA GCTGT GCGTCC C
GGTT - G CCATC AG- -----
GAM24070 14426 GACTCCTCGGTGGACAGCAA T-- ACA- A T-- ATAC A CTTCGA
7 TAATGGGTTGATATACTCAA GACTCC CGGTGG GC ATAA GGGTTGAT TCA AGT
AGTCTTCGAACTCTGACTGG CTGGGG GCTACT CG TATT CCTAGCTG AGT TCA
TCGATCCTCTTTATGGCATC TCT CCTA G TCT GTC- C ------
CTCATCGTCTGGGGTC
GAM24073 20313 GACTCTCCTCTTTTTCTCAG C TCTCA--- CA--- TGTGAC
1 GCCCCACATATTTGGGTATT GACTCTC TCTTTT GGCCC CATATTTGGGTAT
GTGACATACCCAAATGTGAC TTGAGGG AGGGAA TCGGG GTGTAAACCCATA
ACTGGGCTCAACACCTAAGG C TCCACAAC TCACA ------
GACGGGAGTT
GAM24073 9349 GACTCTGAGGCCTGGAGTGT TC A GG ---- A- C AATCCGGA
7 GCTCACCTCTCTAATCCGGA GAC TG GGCCT AGT GTGCTC CCT TCT
AGATGGGAAGAGCATTAATG TTG AC CCGGA TCG TACGAG GGG AGA
CTGGAGGCCACAAGGTT GA A GG TAAT AA T --------
GAM24077 3154 GACTGAAAGGCCTTGCTATA C G A AC GA CT AAAAC
3 ACAGGAGAGCTTCAAAAACT GA TGAAAG CCTTGCT TA AG GAG TCA
GACTTACTAATGCAGCAGGG CT ATTTTC GGGACGA GT TC TTC AGT
ACTTTTATC - A C AA A- -- -----
GAM24077 3107 GACTGAAGATACTCAGGGTA T ACTCA TAAAAA A GAAAAAAA
7 AAAAGAAATGGAAAAAAACA GAC GAAGAT GGG GA ATG

TGTTGTCTCCCATCTTTTGT CTG TTTCTA CCC TT TAC
C T ----- TCTG-- G --------
GAM24078 19004 GACTGAATGAAATTCTGTAG - - AAT TG AG-- AAA AGCTGG
3 GCAAATGGTAAATGGTAGCT GAC TGA ATGA TC T GCAAATGGT TGGT
GGGCCAGTAGCTATTTGCAT TTG ACT TATT AG G CGTTTATCG ACCG
GGGTGGATTATATCATGTT T A --- GT GGTA ATG ------
GAM24081 9747 GACTGATATTAACCAGCCAG TG TTAAC AAT-- A- GACAAT
0 GTAAATTGAACGACAATGTG GAC ATA CAGCCAGGTA TG AC
GCATTAGGTATTTGGCTGTT CTG TAT GTCGGTTTAT AC TG
TATTGGTC GT TT--- GGATT GG ------
GAM24086 20287 GACTGGAAGGTGCCCTGTGC GGAA C T T CGT TG A CACGTCGGA
0 TATGTCGTGCCTGCAGGGAC GACT GGTG CCTG GC ATGT GCC C GGGA
ACGTCGGATCCCGTGGGCCT CTGG CCAC GGAC CG TACA CGG G CCCT
CACATGCCAGGTCACCAGGT A--- T - - CTC GT - ---------
C
GAM24095 4355 GACTTACAAAGTCTTCTTAA CAAAG TA--- T- CTCG
3 TCATTATCAATCTCGGTTGG GACTTA TCTTCT ATCAT ATCAAT
TTTGTGGTGCAGTGGAAGGA CTGGAT GGAAGG TGGTG TGGTTG
GAAATAGGTC AAAGA TGACG TT ----
GAM24098 14018 GACTTCAGGCAAATCATTTA TTC - AATCA GGCATC GTCACAA
8 TTTTTTGGGGCATCAGTGTC GAC AGG CA TTTATTTTTTGG AGT
ACAAACTATAACATCAGAGA CTG TCC GT AAATAAGAGACT TCA
ATAAACCAAATGACCTCATG TAC A AAACC ACAATA -------
TC
GAM24103 12377 GACTTGAGAATTTTTTAACG TT TTTT AACT--- AAGT A GACAAA
8 TAACTTCCTAAGTGTAAGAT GAC GAGAAT TAACGT TCCT GT AGAT
GACAAAATTTGACTTACGGG CTG CTTTTA ATTGCG AGGG CA TTTA
ATATACTGGCGTTAATTTTC CC ---- GTCATAT CATT G ------
CCGTC
GAM24104 3541 GACTTGCTTATTTCACTTGA TTATTTC TG T TTCTGAGTT
8 TGTTATGTTTCTGAGTTACT GACTTGC ACT ATGTTA GT
AATATTGGGTATAGATGTAA CTGAATG TGG TATAAT CA
GTC TAGATA- GT - ---------
GAM24108 1197 GACTTTATAGAGAAAGACCA TTTAT A- AGT A TAGATACT TT CC TGTTAGTTT
9 GTTTTACCTAGATACTAAAG GAC AGAG AAGACC TTT CC AAAGGAAGAA AAA GC
GAAGAATTAAACCGCTGTTA CTG TCTC TTCTGG AGA GG TTTTTTTTTT TTT CG

GTTTGAAATGCTTTTTTTTT T---- AA GAT - TAAAT--- TT TT ---------
TTTTTTTTTAAATGGAGATA GAAAT
GGGTCTTAACTCTTGTC

GAM24109 16706 GACTTTATTGATTTTACAAG -- ---------- TCAACAG
3 TCAACAGTTTGTACATACCA GACT TTATTGATTT TACAAG
ACAATGAATCAGTAAGAGGT CTGG AATGACTAAG ATGTTT
C AG TAACAACCATAC -------
GAM24111 855 GACTTTCTTCCTCAGTGGCG T TCA GC AG-- GTGCA
0 GAGAGAAGAAAGTGCATTTA GAC TTCTTCC GTG GGAGAGA AAA
TTGTCTTTCCACATATTGGA CTG AAGGAGG TAC CCTTTCT TTT
GGAATGTC T TTA A- GTTA -----

GAM24111 19348 GACTTTCTTGGTGTGTGTGC --- G GTGCA TA - CAA
1 ATTCTTTAAAGAGCCAAGTT GACT TTCTTGGT TGT TTCTT AAG AGC
GCTTCGGGGAAACAGCCAGG CTGG AAGGACCG ACA AAGGG TTC TTG
AAAATGGTC TAA - ----- GC G ---
GAM24111 8395 GACTTTGATGGCACTCCTAG TTGA TA T CAGAC A CC CATACCA
7 GCTCTATCAGACTGACCCCT GACT TGGCACTCC GGC CTAT TG CC TCGGGCA
CGGGCACATACCATGCCTGG CTGA ACCGTGGGG CCG GATA AC GG GGTCCGT
AAGGCCAATGCCATAGGCCG ---- -- - CCGTA C AA -------
GGGTGCCAAGTC
GAM24117 18551 GAGAAAAATAAAAAGATCCA G A GA TGAAT- T TTTATCTTTTATTTTC
9 TGAATGTCATCTTTTATCTT GA AA AATAAAAA TCCA GTCA CT
TTATTTTCAGTTGGCTGATG CT TT TTGTTTTT AGGT CGGT GA
TTGGAATTTTTGTTCTTGTC G C A- TGTAGT T ----------
GAM24124 1442 GAGAAACCTTTTTAAAAAAT A AAAAAA AGA TGTTA A ACAAC
1 GGAGATGAATGTTACAGTAT GAGAA CCTTTTT TGG TGAA CAGT TTGG
TGGACAACCCGAACTGCTTT TTCTT GGAGGAA ACC ACTT GTCA AGCC
TCAAAACCAGAGGAAGGAGG - GGAG-- AAA TTC-- - -----
TTCTT
GAM24124 8864 GAGAAAGAAAGTAGTTTTAA A- GTCCA TCTT
9 GGTCCAGCTTCTTAGTCTAC GAGAAAGAAAGT GTTTTAAG GCT
TTGAAGCAAATTTTTTTTCT TTCTTTTTTTTA CGAAGTTC TGA
T AA ATC-- ----
GAM24126 14624 GAGAAAGCATGCACTTGTTA C T A- TG --- --- TCCAA
9 TTTGGAAAACTGGGCTAAAT GAGAAAG ATGCACTTGT ATTTGG AAAC GGCTA AATATATA
ACAGTA AG
ATATAACAGTATCCAAAGTT TTTTTTC TGCGTGGATA TAGACC TTTG TCGAT TTATGTGT TGTTAT
TT
ATACCATAATAATTTATTGT T - CA TT ACA TAA -----
AATTGTGTATTACATAGCTT ACCATA
TGTTTACCCAGATATAGGTG TTAT
CGTTCTTTTTT AATA

GAM24127 3305 GAGAAAGGTACACAGTTGCC AA ACA T GTT AAT TTG
6 CGGTTGGGAATGTGCTTGGC GAGA GGT CAG TGCCCG GGG GTGC
GCTGACCCTGCGGGCATCTG TTCT TCA GTC ACGGGC CCC CGCG
ACTGGTCTT GG --- T GT- AGT ---
GAM24128 5411 GAGAAATAATCCCAACCTGG A CCCAA CTC CTA TT TACACCT
4 AGCTCGTAGACTAACATCTT GAGAAAT AT CCTGGAG GTAGA ACATCT CT
TCTTACACCTAGCAGGTGTC CTCTTTA TA GGATTTC TATCT TGTGGA GA
TCTCTATCTTTAGGGCATCA C CG--- --- CTC C- -------
TTTCTC
GAM24130 12224 GAGAAATGGATAAACGAAAA - ACGAAAAA AAAAA AAACCAA
5 AAAGAAAAAGAAAACCAATC GAGAAATG GATAA AAG GA
ACAGCTTCCTAATCCTTATC CTTTTTAC CTATT TTC CT
TCATTTTTC T CCTAATCC GACA- -------
GAM24134 20066 GAGAACCTAGAGAGGATCGG ACCT--- - GGACGG T TTTCTC
8 GACGGCTTGTGATTTCTCTC GAGA AGAGAG GATCG CTTG GA
CCGAGACAACGATCTCTCTC CTCT TCTCTC CTAGC GAGC CT
TTCTCCTATCTC ATCCTCT T AACA-- C ------
GAM24135 21085 GAGAACGACCGTGGCGTCTC GAC G CT - A-- - -- T - CCTCC

2 TTTTACCTTTGGAGCCGAGG GAGAAC CGTG CGTCT TTTACC TTTGG GC CG AGGTGG GG
CCAAGTT
TGGTGGCCAAGTTCCTCCAC TTCTTG GCAT GCAGA AGATGG GGACC CG GC TCTACT CC
GGTTCAG

AAGCACGACTTGGACCTCAT A-- G -- T ACA A CG - A -----
CTGCCGAGCACACCAGGTGG ACAAGCAC
TAGAAGACGGTACGAGTTCT
T

GAM24138 707 GAGAAGAACAAGTGCCCATG AGAACAA CCAT GAA TG GGGATGAA
5 GTTGAAATTGACGGGATGAA GAGA GTGC GGTT AT AC
GTTGGTACAGACCCGAAGCA CTCT TACG CCAG TG TG
TTCTC ------- AAGC ACA GT --------
GAM24145 9304 GAGAAGCTGTTCCAGAACCT AGCT AAC--- AG---- C CTCC
1 CAGGACCCTCATGACTCCTT GAGA GTTCCAG CTC GACCCT ATGA
ATAGGGTCACCTTCGAGTCA CTCT CGAGGTC GAG CTGGGA TATT
CCCCTGGAGCTCTC ---- CCCACT CTTCCA - ----
GAM24145 21501 GAGAAGGAGATCGGCTTGTG A --- TC T- CA GAGGAACTG- ACAC--- TGT
9 GTTTCACCCTGAGGAACTGG GAGA GGA GA GGC TGTGGTTT CCCT GTAGATT GAGC
TAGATTACACGAGCTGTGCT CTTT CCT CT TCG ACACCAAG GGGA TATCTAG CTCG

CAGAACTGGATCTATGAATG A ACA TT TT AC GGACAGTAAG GTCAAGA ---
ACAGGAGGGCAGAACCACAT
TGCTTTTCACATCCATTTC

GAM24146 3723 GAGAAGGAGGGTAAGAGTGC AA G A - TT--- CCCATTCTA
2 ATTGCCCCATTCTAGCTCTG GAG GGAGG TAAG GT GCA GC
TTGCTACCTTACCTCTGACT CTC TCTCC ATTC CA CGT CG
C AG - - T TGTCT ---------
GAM24146 20447 GAGAAGGATGCGAAAAAACT A A AAAAAAC AC AAAAA ACACT
5 GTGACCGGAAAAAAGCACAC GAG AGG TGCG TGTG CGGA GC
TGCGACTCCGATACAACCGT CTC TCC ATGC ACAT GCCT CG
ACCTACTC A - CA----- A- CAG-- -----
GAM24146 12653 GAGAAGGATGCGAAGCACTG A C--- ACT T - G AAAGCCAAC
6 TGACCGGCAGAAAGCCAACC GAGA GGATG GAAGC G GA CCG CAG
TGCGGATCCGCTTCAAACCG TTCT CCTGC CTTCG C CT GGC GTC
TCCCTCTT C CAAA --- - A - ---------
GAM24146 9200 GAGAAGGCAGCAGGCGGCCT C C - ------ GCTC
8 TTGTTGCTCAGCAAGGTGCT GAGAAGG AG AGGCG GC CTTTGTT
CTGCTCGCCTACTTCCTTCT TTCTTCC TC TCCGC CG GGAACGA
T T A T TCTCGT ----
GAM24147 3766 GAGAAGGCCAGGTTTTCTAC G -- TT A TATG TTTTCT
2 CTATGGGGTTTTTCTACCCG GAGAAG CCA GGT TCT CC GGGT
GAGATACTAATGGGCTTCTT TTCTTC GGT TCA AGA GG CCCA
G AA T- - ---- ------
GAM24147 9249 GAGAAGGCCAGGTTTTCTAC G A T ACCTA TTTTCT
3 CTATGGGGTTTTTCTACCCT GAGAAG CC GGT TTCT TGGGGT
AGAGAATACTAGGGCTTCTT TTCTTC GG TCA AAGA ATCCCA

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                        G  A   T   G----     ------
GAM24147 18249  GAGAAGGGGAAGTAGAAACA   A    AA   AAA--  C   G    CCATG      AAC
8           GCTGGCGCCCTGCCATGGCC GAG AGGGG  GTAG    CAG TGGC CCCTG    GCCTGTG
            TGTGAACCACAGGTGGACCC CTC TCCCC  CGTT    GTC ACCG GGGGC    TGGACAC
            GGGGGCCACTGGCCCATTGC   C    C-   ACCCG  -   -   CCAGG     ---
            CCCCCTCCTC
GAM24148 20116  GAGAAGGGGTCATCTGCTGC    AGGG  C       CT   ATA-   ACA    C    CAT
3           ACTGAGATAGAGCACAGGGA GAGA   GT ATCTGCTGCA  GAG   GAGC   GGGATC GGATGG

            TCCGGATGGCATCTATCTTG TTCT   CA TGGATGATGT  TTC   TTCG   TCTTGG TCTATC
            GTTCTAGGGCTTGCTGCTTT    GACA  A       --  GTCG   GGA    T    ---
            GTAGTAGGTAACACAGTCTT
GAM24149 18432  GAGAAGTACCACATAAATAT    A  AC   ATA-   T--     AA   AACAGAAAAAA
6           GGATTCAAAGAAACAGAAAA GAGA GT  CAC    AATA   GGATTC  AGA
            AATCTAGAATCTTGCTATTC CTCT CG  GTG    TTAT   TCTAAG  TCT
            AAAGTGTAGCTCTC        -  AT   AAAC    CGT     A-  ----------
GAM24150 867    GAGAAGTCCCCCATGAGGTG    A T    CA  A    CAT    TGGAGCT
1           CATGGTCTTGGAGCTGGACT GAGA G CCCC  TG GGTG   GGTCT
            CTTCATCGCAGAGGGGCATC CTCT C GGGG  AC CTAC   TCAGG
            TC                A -    AG  G    TTC    -------
GAM24150 18488  GAGAAGTGAGCTGGTTCAAA         TG   CAA  TT    AGTTAGGA
4           GTTCACAGAGTTAGGACTGT GAGAAGTGAGC  GTT   AG  CACAG
            GTCCTGGCTGGCTCATTTTT CTTTTTACTCG  CGG   TC  GTGTC
            C                    GT   ---  CT    --------
GAM24151 21489  GAGAAGTTAAGCCTCGAATG    A    - C   GAATGAAT    TG A--       TATG
4           AATGAGCTGGAAGCTTTTAA GAG AGTTAA G CTC      GAGC  G   AGCTTTTAA
            TATGTTGAAAGTTGTACTGG CTC TTAGTT C GAG      CTTG  C   TTGAAAGTT
            TTCCCTGTATAGAGACTTTG   C     T A   ATATGTCC    GT ATG       ----
            ATTCCTC
GAM24160 3603   GAGAATGATAGCATTGAAGG     TGA   CAT    GAC---    GATATCTAACAGCAATA
7           ACTCGGGGATATCTAACAGC GAGAA   TAG   TGAAG     TCGGG
            AATACCTGATCACTACTTCA CTCTT   ATC   ACTTC     AGTCC
            CACTACTTTCTC           TC-  AC-    ATCACT    -----------------
GAM24160 8368   GAGAATGATGGTTTCCAGTT        -  TCCAGTTTCATC      CTACAAA
8           TCATCCATGTCCCTACAAAG GAGAATGATG GTT         CATGTCC
            GACATGAACTCATCATTTTT TTTTTACTAC CAA          GTACAGG
                              T  ------------      -------
GAM24163 22298  GAGAATGGGGGATGGTGTAT   G   GG   GGTG   GA       TGTT
0           GAACATGAGGGTGTTTTCTC GA AATG  GGAT    TAT  ACATGAGGG
            GTGTGAATGAGGGTTTTATG TT TTGT  TTTG    GTA  TGTGCTCTT
            TTGTT             G   AT   GGA-  AG       ----
GAM24163 9270   GAGAATGTATGTAAAAGTTC   AA         ----------      ACAG
5           TGTGACAGTACAGAAGGAAA GAG  TGTATGTAAAAG        TTCTGTG
            ACAACTTTTTATGTATAGCT CTT  ATATGTATTTTT        AAGACAT
            TC                CG          CAACAAAAGG      ----
GAM24166 19998  GAGAATTGCTTGAACCCGGG   AA    GAA--    AGGC   GT     A  CTAGATCAT
7           AGGCGGAGGTTGCAGTGAGC GAG  TTGCTT    CCCGGG   GGAG  TGCAGTG GC
            CTAGATCATGCCACTGCACT CTC  AACGAG    GGGTCC   CCTC  ACGTCAC CG
            CCAACCTGGGCAGCAGAGCA   AG    ACGAC    AA--   --     -  ---------
            AGACTC
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GAM24167 4075  GAGAATTGCTTGAACCCGGG  AA   GAA--   AGG   TT   A - AGAT
0          AGGTGGAGTTTGCAGTGAGC GAG  TTGCTT   CCCGGG  TGGAGT  GCAGTG GC CA
           CAAGATTGCGCCACTGCACT CTC  AGCGAG   GGGTCC  ACCTCA  CGTCAC CG GT
           CCAGCCTGGGCGACAGAGCG  AG   ACAGC   G--   --   - C ----
           AGACTC
GAM24171 3356  GAGACACAGTCTTGCTCTGT   AC  C   -      CTGGAA   - GCCATCTCA
8          TGCCCAGGCTGGAATGCAGT GAGAC  AGT TTGCTCT GTTGCCCAGG   TGCAGTG GC
           GGCGCCATCTCAGCTCACTG CTCTG  TCA AACGAGA CAACGGGTCC   ACGTCAC CG
           CAACCTGGGCAACAAGAGCA   CC  A   A      A-----   T ---------
           AAACTCCGTCTC
GAM24173 20646 GAGACAGACTCTCACTGTGT  A  ACTC-  G  TC  A--  TG  --  GG C  ATCTC
2          CGCCCAGGGTGGAGTGCAGG GAG CAG   TCACT TG  GCCC  GGG  GAG  TGCAG  G GTG
           GGCGTGATCTCCACTTACTG CTC GTC   AGTGA AC  TGGG  TCC  CTC  ACGTC  T CAC
           CAACCTCTGCCTCCCGGGTT  C  CTCTT  - T-  CCC  GT  CA  AT -  -----
           CAAGTGATTCTCCTGCCTC
GAM24180 3763  GAGACAGGATCTTGCTATGT   C   TT  A  TT   - AG  A  --   TCACAGAC
0          TGCCCAGGCTAGAGAGCAGT GAGA AGGATC  GCT TG  GCCCAGG CT  AG GCA  GTGGCTTT

           GGCTTTTCACAGACAAAGTC TTCT TCTTAG  CGA AC  CGGGTTC GA  TC CGT  TACTGAAA
           ATAATGCCCTGCAGTCTTGG   C   --  - T-   T  CG  C  AA   --------
           GCTCAAGCGATTCTCTCTT
GAM24183 16475  GAGACAGGGTTTCATCATGT   ACA   T--   A  TT  - -  GCTAGTCTCAAA
2          TGGCGCAGGCTAGTCTCAAA GAG   GGGT   TCATC TG  GG C GCAG
           CTGCTGACCTCAGGTGATTT CTC   CCCG   AGTGG AC  CC G CGTC
           GCCCGCCTC          CG-   TTT   - T- A T   ----------
GAM24189 21053  GAGACCCAGGAAAGAGACAC    CAGGAA   A  C   ACAAAG   GGAA
1          TTTGAACAAAGATCATGGAA GAGACC    AGAG CA TTTGA    ATCAT
           ATGATAAGGAATCAAATGTT TTTTGG    TCTT GT AAACT    TAGTA
           CTGATACGGTTTT          CATAG-  - -   AAGGAA   ----
GAM24190 19278  GAGACCGAGCCATGTGGCTA   CC    T---   TA  AT  TCCT  TTCA
2          GAAATCCTCCTCACTTCAGT GAGA  GAGCCA   GTGGC  GAA  CC   CAC
           GCTGGGCTTTGCCATCTACT CTCT  CTTGGT   TACCG  TTT  GG   GTG
           GGTTCATCTC          A-    CATC   --  CG  TC--  ----
GAM24195 3109  GAGACGGATTACACCTTGCC        A---   TT---   --   GCTGAAA
0          CACTTGCTGAAAAGGTCAGG GAGACGGATT   CACC   GCCC  ACTT
           GCTTCTTGGTGATCCAATCT TTCTGTCTAA   GTGG   CGGG  TGGA
           GTCTT                CCTA   TTCTT   AC   -------
GAM24195 810  GAGACGGCCATGCTGGTCTG   AC   ATGCTG   G -    A-  C-    --  -  ACT
1          CAAGTCAGAGTCCGTGCCAC GAG  GGCC    GTCT CA AGTCAG  GTC  GTGCCA  CCT GTC
           CTGTCACTGACTGGGCCTGG CTC  CCGG    CAGG GT TCAGTC  TAG  CATGGT  GGG CAG
           TACAAGATCACTGACTCTGA  --  AA----  A C    AC  AA    CC  T  ---
           GGACAAGGCCCTC
GAM24197 18290  GAGACGGGGTTTCACCATGT   A   GTT-   CAT   CAAT   TCT
1          TAGCAATGATGGTCTCTATC GAG CGGG   TCAC   GTTAG   GATGG
           TCCTGACCTTGTGATCCACC CTC GTCC   AGTG   CAGTC   CTATC
           TGCCTC             C   ACCT   TTC   CT--   ---
GAM24197 19115  GAGACGGGGTTTCACCATGT   A   GTTTC-  A  TT  C  ACT  CTCG
7          TGGCCAGACTGTTCTCGAAC GAG CGGG    ACC TG  GG CAG  GTT
           TACTGACCTCAGGTAATCCA CTC GCCC    TGG AC  CC GTC  CAA
           CCCGCCTC           C   ACCTAA  - T- A  AT-  ----
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GAM24197 3413 GAGACGGGGTTTCACCATGT A GTT- CATGTT C A CTCG
8 TGGCCAGGATGGTCTCGACT GAG CGGG TCAC GG CAGG TGGT
GCCTGACCTCGTGATCCATC CTC GCCT AGTG CC GTCC GTCA
CGCCTC C ACCT CT---- A - ----
GAM24198 1571 GAGACGGGGTTTCACCATGT A GTT- CATGTT CT CCAGT
6 TGGTCAGGCTGGTCCAGTAC GAG CGGG TCAC GGTCAGG GGT
TCCTGACCTCGTGATCCGCC CTC GCCC AGTG CCAGTCC TCA
CGCCTC C GCCT CT---- -- -----
GAM24199 4471 GAGACGGGTGGATCACAAGG - GGA AA---- GA AGA
9 TCAGGAGATCGAGACGATCC GAGACGG GT TCAC GGTCAGGA TCG
TGGCTAACACGGTGAAACTC CTCTGCC CA AGTG TCGGTCCT AGC
CGTCTC T A-- GCACAA -- ---
GAM24200 12753 GAGACGGGTGGATCACGAGG GGA ACGA-- -- CGA
2 TCAGGAGTTCGAGACTAGCT GAGACGGGT TC GGTCAGG AGTT
TGGCCAACATGGAGAAACCC CTCTGCCCA AG CCGGTTC TCAG
GTCTC AAG GTACAA GA ---
GAM24200 3194 GAGACGGTTGGATCACAAGG TTGGA AA---- GA AGA
8 TCAGGAGATCGAGACGATCC GAGACGG TCAC GGTCAGGA TCG
TGGCTAACACGGTGAAACTC CTCTGCC AGTG TCGGTCCT AGC
CGTCTC TCAA- GCACAA -- ---
GAM24201 20781 GAGACTACGGGAGGGACAGA GA AC AG ACA ACT G CTCAA TTAA
5 CACTTCGGGACTCAATGCTT GA CT GGG GG GAC TC GGA TGC
AAGTATCCAGATAGTCACCA CT GA CCC CC CTG AG CCT ATG
GCCCAGGATC AG -- GA A-- AT- A ----- ----
GAM24203 12712 GAGACTCTTCCAGGTCAAAG GA T A - GG T CCGT
6 GGCGGCGTGTGGTCCGTGCC GA CTCTTCCAGG CA AGG GC CG GTGGT
ACCGAGGTACCTGTGTCCTG CT GAGAGGGTCC GT TCC TG GC CACCG
GGAGAGCTTC TC T G A GA - ----
GAM24203 2987 GAGACTCTTCCAGGTCAAAG GA T A - GG G CCGT
7 GGCGGCGTGTGGTCCGTGCC GA CTCTTCCAGG CA AGG GC CGT TGGT
AGCGAGGTACCTGTGTCCTG CT GAGAGGGTCC GT TCC TG GCG ACCG
GGAGAGCTTC TC T G A GA - ----
GAM24204 9007 GAGACTGATGTGCGGGTCGC A- ATG GGG GC - CTAAAACC
3 CTGCCTTCTAAAACCAAGGA GAG CTG TGC TC CTG CCTT
CAGAGAAGCAAACAGAGCTC CTC GAC ACG AG GAC GGAA
GA AA- A-- A- A --------
GAM24204 20475 GAGACTGGCCTGTCACTGGG C C TCAC G CAT TCAGCT
8 GTGCCATTGTTCAGCTGCAG GAGA TGG CTG TGGG TGC TGT
CAGCCCGTTCAGCCCATCTC CTCT ACC GAC GCCC ACG ACG
- C TT-- G --- ------
GAM24207 12601 GAGACTTCTTTCTTCAGCCT CTTTCT CTTT-- CT A TTACTCTTTTTAACATT
4 TTGTCTAGAATGTTCTTACT GAGACTT TCAGC GT AGA TGTTC
CTTTTTAACATTGAGCAATT CTCTGAG GGTTG TA TTT ACGAG
TTCATTTTCCAGTTGGTATT TTTAT- ACCTTT CT A ----------
TGAGTCTC
GAM24208 12276 GAGACTTGTTTTTTACCATA - G ---- AATTA CCAT
1 ATTATTTTGCCATCAAGACA GAG ACTT TTTTTT ACCAT TTTTG
GTGGTTACAAAAAAAAAAGT CTC TGAA AAAAAA TGGTG AGAAC
ACTC A A ACAT AC--- ----
GAM24208 2730 GAGACTTTCTAAAGTGTACT AAA----- - T- G TACCT CAAAAC

3 TAAAACATAGTAGTTTTTTA GAGACTTTCT GTGTACT TAAAACA AGTA TTTTT TTCA
CCTTTCACAAAACTGAGTTA CTCTGAAGGA TACGTGA ATTTTGT TCAT AAGAA GAGT
CAAGAATACTTTTGTTTTAC GCCTTCCC C TT - CATT- ------
AGTGCATCCCTTCCGAGGAA
GTCTC
GAM24214 8861 GAGAGAGAGAGAGAGAGAGA GAGAGAGAGAGAGA AGAGA
7 GAGAGAGAGAGAGATTCTCT GAGAGAGA GAGAGAG
CCCCCAGACGTGATGTCTCT CTCTCTCT CTCTCTT
CTC GTAGTGCAGACCCC -----
GAM24221 2814 GAGAGCAGGAGCAAAGCCTT A GA AAGCCTTTCT AG -- C TGTGG
4 TCTGAAGGGTTGCCTGGCAC GAG GCAG GCA GA GGT TGCCTGG AC
TGTGGGTTTCAGGCAGGGCC CTC CGTC CGT CT CCG ACGGACT TG
TCTCTGCAGCTGCCTC - GA ---------- CT GG T -----
GAM24224 2863 GAGAGCGCGGCCGCACGCTG - --- CG AC GG CATCTT
7 GTTTTGCATCTTCAGGAAAG GAGA GCGC GGC C GCT TTTTG
CTCGTAGCCATCGCGCTTCT CTCT CGCG CCG G CGA AGGAC
C T CTA AT CT A- ------
GAM24225 19945 GAGAGCGTGTCCTACAGCAT CG-- ACA ATCCA A CAAG
6 CCACAGCACAGCCAAGGTGG GAGAG TGTCCT GC CAGCAC GC
TGCTGACCCGCCGAGGACGT CTCTC GCAGGA CG GTCGTG TG
TCACTCTC ACTT GC- CCCA- G ----
GAM24229 5750 GAGAGGAGCAACCCCCTTGT A - AC- CT-- ------- T TTTA
5 AGAATGCTTTTAGGCCTTCT GAG GGA GCA CCC TGT AGAA GCT
TCCTTATACATTTTGGGAGC CTC CCT CGT GGG ACA TCTT CGG
TGCATCCCTC - A CGA TTTT TATTCCT C ----
GAM24231 21055 GAGAGGCAGCGTGAAAGAGA G - AA AGA AG- AC AGGCCA
8 AGGAGCGGACGAAGGCCATC GAGAG CAGC GTG AG AGG CGG GA
ACCGAGATCTACCTGACGCG CTCTC GTCG CGC TC TCT GCC CT
GCTGCTCTC - G AG CA- AGA A- ------
GAM24233 12500 GAGAGGCGTGTGTCCCAGTG - - T T CT AGTTCACAA
4 CCTCCAGTTCACAAGGGAGC GAGAG GCGTGT G CCCAG GC CC
CTGGGTCGACATGCTCTTTC CTTTC CGTACA C GGGTC CG GG
T G T - AG ---------
GAM24235 20531 GAGAGGGCTGCCCAGCTGTG A T- A- T------ TGATCCAGTGACAAT
2 GCGCTGATCCAGTGACAATG GAG GGGC GCCC GCTG GGCGC
TGCCCCCTTGCCAGCCGGGG CTC CCCG CGGG CGAC CCGTG
CTCGCCCACTC A CT GC CGTTCCC ----------
GAM24236 8317 GAGAGGGGTATATGTCTTTG - T CA - TG T CCA TTACAT
5 ATGCATTGTTTGATGTCTTC GAG AGGGGTATATGTCTT GATG TTGT T ATG CTT TCAGT
CATCAGTTTACATGCTGAAA CTC TCTTCGTATGCAGAG CTAT GACG G TAT GAA AGTCG
GTATTGGTGCAGATATCTGA C T A- T GT - --- ------
GACGTATGCTTCTCCTC
GAM24237 14480 GAGAGGTATGAACGAGTTGT GAA--- GTCA CCTAT AAGCTAGGACAATC
6 CAGGTTCCTATGGGCTTAAG GAGAGGTAT CGAGTT GGTT GGGCTT
CTAGGACAATCAGGCCCTAA TTCTCTATA GTTTAA TCAA CCCGGA
ACTCCAAATTTGGATAAAAT AAATAG ACC- AT--- ----------
ATCTCTT
GAM24240 17986 GAGAGTATAAAGCCAACAGA T C C-- CCAGG AAA TA AAA ACAG
0 TCCAGGTTTTGAAATATTTA GAGAGTA AAAG CAA AGAT TTTTG TATT AGT ATG
AGTAAAATGACAGCATGACA TTTTTAT TTTT GTT TCTA AAAAC ATAA TCA TAC

CTAATAAACAAAAATATAAT T T AAA ATATA AA- -- CAG ----
CTAAATTGTTTTTTTATTTT
T
GAM24240 3741 GAGAGTATTTGTGCGCGCAT --------- - GGTGG
5 ATACGGTGGGTATATGTGAT GAGAGTATTT GTGCG CGCATATAC
GTATTGTGGGACAAAATATT TTTTTATAAA TATGT GTGTATATG
TTT ACAGGGTGT A -----
GAM24241 4512 GAGAGTCCTGATTTTTCTCA C TTTT-- ACCA ATC TG TTCT
3 CAACCAGCATCTTTGGCTTC GAGAGT CTGAT CTCACA GC TT GC
TGTTGAAAGGCATGTGGGCT CTTTCA GACTA GGGTGT CG AA TG
GCTCATCAGAACTTTC A CTCGTC A--- GA- GT ----
GAM24241 16447 GAGAGTCTCGCTCTGTTGCC CTC C T- CA C -- C GATCATG
9 CAGGCTGGAGTGCAGTGGCG GAGAGT GCT TG TGCC GG TGGAG TGCAGTGG GC
CGATCATGGCTCACTGCAAC CTCTTA CGA AC GCGG CC GCCTC ACGTCACT CG
CTCCGACCCCGGCGTTCAAG A-- - TT CC A CA - -------
CAATTCTC
GAM24242 12559 GAGAGTGACCTCCTCAAACC T CC---- AA- ---- -- TGAT
9 TGTCCCAGCTGATGCCTTGG GAGAG GACCT TCA CCT GTCCCA GC
GACTTTCAGGCAATGATACT CTCTC CTGGA AGT GGA CAGGGT CG
CCAGGTCCCTCTC C CCTCAT AAC CTTT TC ----
GAM24244 3711 GAGAGTGGCCTGGCCCTGGA - CCT - TG A TT- G TTTC
0 GCCTTTTTCTAGTCTTTTCA GAGA GTGG GGCC C G GCCT TTCTA TCT
GAATAGAATATGGGCCTGGA TTCT CACC TCGG G C CGGG AAGAT AGA
GGCTCCACTTCTT T --- A GT - TAT A ----
GAM24249 18370 GAGATACATAATTACTCAGT A A- C C GGAAA G GTA GAAAAA
6 CATGGAAAAGTGACTTAGCA GAGAT CATA TTACT AGT AT AGT ACTTAGCA TTGT
GTATTGTGAAAAAACAGGAG CTTTA GTGT AATGA TCA TG TCG TGGATTGT GACA
TGTTAGGTGGCTGTAACTCA - AG C A ----- G GAG ------
GTAAGATGTGATTTC
GAM24254 18464 GAGATCACTGGCTGGCTGGA TCACTG-- CT - TTCATTCATTAAAC
2 AGGCTTCATTCATTAAACGT GAGA GCTGG GGAA GGC
TGTTCCCCAGCATCTAATTT CTCT CGACC CCTT TTG
CTC TTAATCTA -- G ----------
GAM24257 21103 GAGATCTCTTGGTGCCTCTT CTT- C-- TC TTCTTACA CGCA
1 CCTCTTCTTACAAGGACCGC GAGATCT GGTG CTCT CTC AGGAC
AGTCCTGTTGGGTTAGAGCC CTTTAGG CCAC GAGA GGG TCCTG
CCACCCTTAGGATTTC ATTC CCC TT TTG----- ----
GAM24258 12221 GAGATGAACTATGTGGTCGG CT T GG --------- TCTC
6 GGGCGTGGTCTCCCACCGAA GAGATGAA ATGTGG CG GGC GTGG
ATGTTGTCAACGTCCACATC CTCTGCTT TACACC GC CTG CACC
TTCGTCTC C- T AA TTGTAAAGC ----
GAM24260 18387 GAGATGAGACATTTTGCCTA T CATT CTAG - T CACTTA
0 GCTGATGACCACTTAGTTCT GAGA GAGA TTGC CT GA GAC
CAAGAAGCAACTATCTCTTT CTTT CTCT AACG GA CT TTG
C - ATC- AA-- A C ------
GAM24275 19373 GAGATGGGGTTTCACCATGT A GTT- A TT C CT CTTGA
4 TGGCCAGGCTGGTCTTGAAC GAG TGGG TCACC TG GG CAGG GGT
TCCTGACCTCAGGTGATCCA CTC ACCC AGTGG AC CC GTCC TCA
CCCACCTC C ACCT - T- A -- -----
GAM24277 19290 GAGATGGGTTTCACACCATG A TT-- ACCA CT CTGGTCTTGTATT

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0          CTGTCCAGGCTGGTCTTGTA GAG TGGG   TCAC   TG  GTCCAGG
           TTCCTGGGCTCAAGTGACCC CTC ACCC   AGTG   AC  CGGGTCC
           TCCCACCTC           C   TCCC   A---  T-     ----------
GAM24277 9139   GAGATGGTGGGGTTCTCGGC   A      TT   G-  GAG   CCCTTC
8          GAGCTCCCCCTTCGGAGAAA GAG TGGTGGGG  CTC  GC   CTCC
           GTAGGAGCCCTCTACCAGCT CTC ACCATCTC  GAG  TG   GAGG
           C                G      CC   GA  AAA   ------
GAM24278 17975  GAGATGTAAAAGAGCTTGTC       AAAAGAG   G  A  C     ACA
3          ACGCCTGTGCACAGCGCAGT GAGATGT      CTT TC CG CTGTGC
           CGGAGGAGAGTCAGAATGTC CTCTGTA      GAG AG GC GACGCG
           TC                   AGACTGA   G  -  T     ---
GAM24280 12978  GAGATTAAGCATTCATCCTG    TTAAGCA    CCT          AATA   T AAATT
4          AAATGTACACTTGAATAGTT GAGA      TTCAT   GAAATGTACACTTG    GTT G
           TGAAATTCAACACAAGTGTA CTCT      AAGTG   TTTTATATGTGAAC    CAA C
           TATTTTTAGTGAAGACATTT    TTTACAG    AT-          A---   - -----
           TCTC
GAM24280 21247  GAGATTACAGGTGTGAGCCA    TTA   GTG    CAATGCA     CCAAA
9          ATGCAGCCACCCCAAAGGTG GAGA   CAG   TGAGC      GCCACC
           GTGTTCAAAGTTGATTTCTC CTCT   GTT   ACTTG      TGGTGG
                        TTA   GAA    -------     -----
GAM24282 1566   GAGATTCCATGGATTTTGGC    ATTCCA         TTGT     G  --  GG  TCTACTAT
7          ATTGTGTCTTTGTTCTACGG GAG     TGGATTTTGGCA   GTCTTT TTC  TAC  CC
           CCTCTACTATGGAGTAATGG CTC     GTCTAGAGCCGT   CAGAGA GGG  ATG  GG
           GGAGAGACTTTGCCGAGATC   ------          TT--     G   TA   A-  --------
           TGCTC
GAM24288 18175  GAGCAAAGGTTTTTAGTAAT      A  TT   A  AA    AT   TCTG       C  C    ACT      AAACCTT
7          TGAATTTCTCTGCAGTAGTC GAGCAA GG  TTT GT  TTGA  TTC    CAGTAGTC TT AAGC   TGAATGT

           CTTCAAGCACTTGAATGTAA CTCGTT CT  AGA CG  AACT  AAG    GTCATCAG AA TTTG   ATTTACG

           ACCTTTAGCATTTATTCGTT      -  TT   -  --    CT   CATA       T  -    CTT      -------
           TAATGACTACTGATACGAAT TA
           CTCAAGCAGATTTCTTGCTC

                        --
GAM24288 6644   GAGCAAATCAACATGAGGCA      ATCAA   GA   ATGA    GTTA   TGAA
9          TGATCTGAGTTATTCTGAAG GAGCAA     CAT  GGC    TCTGA    TTC
           AATTAGAGAGGCTGAATGGT TTCGTT     GTA  TCG    AGATT    AAG
           ACCTTGCTT              CCATG   AG   GAG-     ----   ----
GAM24289 8065   GAGCAACAAGTAACTCCAAA    C      AACTCCAA     CAGAAAATAGTTA
4          GTGTCAGAAAATAGTTAACA GAG AACAAGT       AGTGT
           TTCAAAAAAACTTGTTTCTC CTC TTGTTCA       TTACA
                        T      AAAAAAC-     -------------
GAM24289 14550  GAGCAACACCGTGTTGAGAA      CA  GT   ---    AC     G    CAG G     GTGC
6          CTGGAGGAAGACAGGGTTCT GAGCAA  CC  GTT   GAGA  TGGAG AAGA   G TTCTG
           GGTGCCAGAAGCTCTTCTCC CTCGTT  GG  CGA   TTCT  ACCTC TTCT   C AAGAC
           AATCTTTAAAGCCAGGCTTG      C-  AC   AAT    A-    -    --- G    ----
           CTC
GAM24291 12867  GAGCAAGATTTTTGTCTCAA     A   TT    ----    AA-    AAAAAAAAAAAAAAAAG   ACTT
7          AAAAAGAAAAAAAAAAAAAA GAGCA GAT  TTGTC    TCAA   AAAG             AGG
```

AAGAGGACTTCCTGTACTTT CTCGT TTA AATAG AGTT TTTC TCC
AAGTTGATTTTGATAATTAT - TT TTTT GAA ATG---------- ----
TTGCTC
GAM24292 794 GAGCAATGGTACCATCCTGG AAT CC GCCCACCTCC ATTAGACTCCAA
9 GAGCCCACCTCCTTGAAAGA GAGC GGTA ATCCTGGGA TTGAAAG
TTAGACTCCAATTTTCAAAA CTTG CCAT TGGGATCCT AACTTTT
TCCTAGGGTTACCTAGTTC AT- -- AA-------- ----------
GAM24299 21161 GAGCAGAACTTCTTCCAGCG -- AA ---------- -- CGCCAA
0 GGCCGCCAAGCCTCTGCAAG GAG CAG CTTCTTCCA GC GGGC
TCAACAAGTGGAAGAAGCTG CTC GTC GAAGAAGGT CG TCCG
TACTC AT -- GAACAACTGAA TC ------
GAM24300 12204 GAGCAGAGAGGGAGCCGTTC G A A--- CG A T AGACTCA
1 ATGTCAGAGACTCACTGCCA GA CAGAG GGG GC TTC TG CAG
GAAAAGCCTTACCCATTTTG TT GTTTT CCC CG AAG AC GTC
GTT G A ATTC AA - C -------
GAM24301 18655 GAGCAGATCTGTCATTGCAA C T GC-- -- AAAA
0 AGTAACAAAAATGTTAAGCT GAG AGATCTG CATT AAAGT AACA
TTTAAAAATGTAGATTTTTC CTT TTTAGAT GTAA TTTCG TTGT
- - AAAT AA ----
GAM24301 8594 GAGCAGCAGGAGGCTCGCGG CA A A TCGC A CC G A A AGACC
8 GGTGCACACCCAGCGGATGC GAG GC GG GGC GGGGTGC CA CA CGG TGC GT
AGTAGACCGCAGCAGCCGGT CTC CG CC CCG CCCCGCG GT GT GCC ACG CG
GCCTGGCGCCCCTGCCCCCC C- C C T--- - CC G G A -----
GCCCTC
GAM24302 9461 GAGCAGCCATGGGTGATGTT GC T----- GT AAAAA
2 TGGTGGTAAAAAACCTACAG GAGCA CATGGG GATGTTTG GGT
GCGTTTGGGGTCCCATGATT CTTGT GTACCC TTGCGGAC CCA
GTTC TA TGGGGT AT -----
GAM24304 1327 GAGCAGGAGCTGGCGCTGGA CA CTGGAG GA- A - G C AGCA
2 GGAGCGGAGGACGCTGGCGC GAG GGAGCTGGCG GAGCG GG CGC TGGC CTG AGC

TGCAGCAGCAGCTCCAGGCC CTC CTTCGACCGC CTCGC CC GCG GCCG GAC TCG
GTGCGCCAGGCGCTCACCGC CG CA---- GGA - T - C ----
CAGCTTCGCCTC
GAM24308 4445 GAGCATCACCTGGGAATTTG C GAA C AAT A ACA T ACCT CAA
2 CTAGAAATGCAAATTCACAG GAG ATCACCTGG TTTG TAGA GCA ATTC GGCCTCAC CCCA
GAAT
GCCTCACTCCCAACCTGAAT TTT TAGTGGACC GAAC ATCT TGT TAAG CTGGGGTG GGGT
CTTA
CAAATTCTGGGGTGGGGTCC T --- A --- C GAC - ---- ---
AGGAATCTGTTCTAACAAGC
CAGGTGATTTTT
GAM24308 16470 GAGCATCCCTGAGAGCACCA AT GAGAGCAC T-- G TAGCG
4 GCACTTCTGACCTAGCGGGT GAGC CCCT CAGCACT CT ACC
GAGCCCAGTGCTGAAGGGGC TTCG GGGA GTCGTGA GA TGG
TT -- A------- CCC G -----
GAM24317 5485 GAGCCAGGCACTAAATGGAC C AAT CT TC--- T AAG
9 TGCTCATGTCTGCTGTCATG GAGC AGGCACTA GGA GC ATG CTGCTGTCATG
AAGCATGGCAGCAGCATCAC CTCG TCTGTGGT TCT CG TAC GACGACGGTAC
ACGCCTCTTTGTGGTGTCTG - GTT C- CACAC - ---

CTC
GAM24321 1779 GAGCCCACATGCATGAGACA - CAT C AGCAC-- CTCACACCC
6 CAGCACAGAACTCACACCCT GAGCC CACATG GAGA AC AGAA
TCTTCCTCAAGTTTCTCTAA CTCGG GTGTAT CTCT TG TCTT
TATGTGTGGCTC T AAT T AACTCCT ---------
GAM24325 5471 GAGCCCCTTGGCAATACGGG CTT CAATAC CAC A CT- GCTT GG A- AAG
0 CACGAGCACGCTTCCCAAGC GAGCCC GG GGG GAGC CG TCCCAA GGGGTG CA
TGTAGGC
TTGGGGTGGGCAATGTAGGC TTCGGG CC TCC TTCG GT AGGGTT TCCCAC GT
GCGTTCG
AAGTCGATCGAGCTTGCGGC TT- ------ AA- G TCT ---- A- CG ---
TGACACCCTTTGGGATCTTG GATC
GGCTTAACCTCCTTGGGCTT TC
AG

GAM24326 6363 GAGCCCTCTGAGAGGCCCAG TGA CA TAAA CTT
1 GTCCTAAAGCAGCTTCTGCC GAGCCCTC GAGGCC GGTCC GCAG
TGGGCTGAGGTCTTGGGGGC TTCGGGGG TTCTGG TCGGG CGTC
TT --- AG TC-- ---
GAM24326 12953 GAGCCCTCTGCTGGCGAGTC CCTCT TGGCG G TATTG CAGAA
3 CAGAAACATTATTGCCCAGA GAGC GC AGTCCA AAACAT CC
AGGATTATGTGTTTATGGAT CTCG CG TTAGGT TTTGTG GG
TATTTTGCCCCGCTC CCC-- TTTTA A TATTA -----
GAM24327 1076 GAGCCCTTCACGTCAGTGAC TTCAC GT AT- TAA- ACCCGA
3 ATCGGTCTAAAACACTAACC GAGCCC GTCA GAC CGGTC AACACTA
CGATGGTGTTGTTCGGCCGC CTCGGG TAGT CTG GCCGG TTGTGGT
TCGTCTATGATAACGGGCTC CAA-- AT CTC CTTG ------
GAM24333 9509 GAGCCTGAAGACATACAGCA GA C ACA A---------- ACCT
3 CTTCACCTGGAGAAGCCTAC GAGCCT AGA AT GC CTTC
TGCGCGAGATTCTCTGGGCT CTCGGG TCT TA CG GAGG
C TC - GAG CGTCATCCGAA ----
GAM24337 6343 GAGCGAGACCTTAATCAATT - C AA G TCACTGTAT
5 TGAAAATATTCACTGTATGT GAGC GAGA CTTAATC TTT AAAATAT
ATTTTGGAGGATTGGGTTCT TTCG CTCT GGGTTAG GAG TTTTATG
CAGCTT A T -- G ---------
GAM24338 8134 GAGCGCAAGAGGACACATGG G GGA T C ------ - - C T TCCT
4 CGTGGCAAGGTGACGAGTGA GAGC CAAGA CACA GG GTGGCA AGGTG ACGAG TGA GG GC

CGGTGCTCCTGTCCATCATC CTCG GTTCT GTGT CC CGCCGT TCCAT TGCTC ACT CC TG

TCGTGTACCTCAGCCGTGCC - AGA C T GCCGAC G T A - ----
GCTCCCTGTGAGATCTTGGC
TC
GAM24338 2702 GAGCGCAGGAAGTCACTACC -- A C--- TT - AAAAC
8 ATTTATATTCTAAAACAGAA GAGCGCA GGAAGTC CTA CAT ATA TTCT
CTATCTATGTTCATAGGACT CTTGTGT TCTTCAG GAT GTA TAT AAGA
TCTGATGTGTTC AG - ACTT TC C -----
GAM24339 21472 GAGCGCGACCCCCGGTGCGG A CG GG G A CCGGC
9 CGCGGCTACCCCGGCGGAGG GAGCGCG CCCC GTGC CGC GCT CC
CGGCGGGCGCGGGGCGCGCT CTCGCGC GGGG CGCG GCG CGG GG

```
          C                  -   --   G-  G  A -----
GAM24341 20120  GAGCGGCTGGCCGCCTGCGG   C - --     TG     ---    -  G    GGCAG
6          GGCCGAGGCCGCGGCGTACG GAG GG CT  GGCCGCC  CGGGGCC   GAGGCC GCG CGTAC

          GCAGGTGCGTGCAGGCCTCC CTC CT GG  CCGGCGG  GCCCCGG   CTCCGG CGT GCGTG

          ACGGCCCCGGGCGGCCGCGG   - A CG     --     CAC    A  -    -----
          ATCCTC
GAM24342 1322   GAGCGGTCGGTGACAGCCTC   -   - GACA  TCAA   TTCAGCACCGC
1          AAGGGCTTCAGCACCGCGCC GAG CGGTC GGT   GCC   GGGC
          CATGGCAGAGCCAGACCGAC CTC GCCAG CCG   CGG   CCCG
          TC               A   A  AGA-  TA--  ----------
GAM24342 20399  GAGCGTATCGAGTTGGCTGC    T   -   CT  CCC    GCA
4          CCCCTTGAGGCACTTAAAAG GAGCG ATCGA GTTGG  GCC   TTGAG
          GCTTCAACGTTGATCCGTTC CTTGC TAGTT CAACT  CGG   AATTC
                    C   G   T-  AA-   ---
GAM24343 6491   GAGCGTGCGAGCAGTGCGAT   -- TG  A-   TG   T TG   ATGAAATAAGAAGC
1          GTGCCCAATGAAATAAGAAG GAGC  G  CG  GCAG  CGA G  CCCA
          CTGGGTGCTTGTGCTGTGCT CTCG  C  GT  TGTC  GTT C  GGGT
          GTGCTTGCTC           TT GT  CG   GT   - GT   --------------
GAM24344 6667   GAGCTAATACATGCCGACGG   G  A   C   CGACGG   TGA     CGCG
7          GCGCTGACCCCCTTCGCGGA GA CT ATA ATGC    GCGC   CCCCCTT
          GGGGGATGCGTGCATTTATC CT GA TAT TACG     TGCG   GGGGGAG
          AGATC              A  C   T   ------   TA-      ----
GAM24348 18413  GAGCTCACAGCCTCCTGCCA    CACA--   C   CA--  C   C  T--  TCTCTGT
5          GCGCGCTCTCTGTTTCTCTG GAGCT    GCCT CTGC   GCG GCT TC   GTT
          TAGCCCCGAAGCTCGCGAAT CTCGA    CGGA GATG   CGC CGA AG   CGA
          GTAGCAGGCGCCCCAAGCTC    ACCCCG   C   TAAG   T  -  CCC   -------
GAM24359 19776  GAGCTGGAGAGATGTTAGAA   -  GAGA   GAA     CT-  G    CTCTGC
1          GATGGCTCTGAGAGATTCCT GAGC TGGA   TGTTA   GATGGCT   GA AGATTC
          CTGCGAATCTGTTTTTAGCT TTCG ACCT   ACGGT   CTATCGA   TT TCTAAG
          ATCAAGTGGCATCCACGCTT    C  ----   GAA     TTT  G    ------
GAM24359 12630  GAGCTGGAGTCGCTGGTGTC       --  GC  G   CCA   CA---   -    TTTCGT
4          CAAGGGCAGGTCTTTCTTTT GAGCTGGA  GTC  TG TGT   AGGG    GGTC TTTCT
          CGTGGAAGTGGCCAATCTCC CTCGACCT  CGG  AC ACG   TCCC    CCGG GAAGG
          CTGCGCAGCAAGGCCATCCA       AC   A-  G   CG-    TCTAA   T    ------
          GCTC
GAM24359 3707   GAGCTGGCCACAAGTAAACC      CC  -   AAAC   CCAA----  CAAAC
7          TGCCAATGACAAACTCAGGA GAGCTGG  AC AAGT   CTG      TGA
          CTTAACAGAAAGACTTAGTT CTTGACT  TG TTCA   GAC      ACT
          CAGTTC               --  A   GAAA   AATTCAGG  -----
GAM24361 5870   GAGCTGGGCAGGAGAGGTGA    TG   AG       C  CCAACTGTGTTCCTAA
0          CCTCCAACTGTGTTCCTAAA GAGC  GGC  GAGAGGTGA CT
          GTTCATCTTTCGCTTGGCTC CTCG  TCG  CTTTCTACT GA
                    GT   --       T ----------------
GAM24361 14338  GAGCTGGGGGGGCCCCGACG    TGG      CGACGG      GGA    --   C  TGTTG
2          GTGCTGGGGGGACCACGCTG GAGC   GGGGGCCC    TGCTGGGG   CCACG  CTGG TG
          GCTGTGTTGCACCCAGAACG CTCG   TCCCCGGG    ACGGCCCT   GGTGC  GACC AC
          TGGCATCCCGGCAATTGGGC    ---      TTA---      AC-    AA   C  -----
          CCCTGCTC
```

GAM24364 908 GAGCTTAAGTACCCGCCAGT AA- CCG- AGT G A GGGAA GAGC
5 GAGCAGTGAGAGGGAACGGA GAGCTT GTAC CC GAGCA TG GA CG
GCCGCTATGTCGCAGTGTTC CTTGAG CATG GG CTTGT AC CT GC
CAGGACCAGTACGGAGAGTT AGG ACCA AC- G G GTATC ----
C
GAM24364 5568 GAGCTTAAGTGAAGGCAGTT T AAG- TT G GTTT
6 TTTATGGCGTTTGTAGTAAA GAGCT AAGTG GCAG TTTAT GC
TTCTGTAAAATACTTTGGTT TTTGG TTCAT TGTC AAATG TG
T T AAAA TT A ----
GAM24364 5590 GAGCTTAAGTGAAGGCAGTT T AAG- TT G GTTTT
7 TTTATGGCGTTTTGTAGTAA GAGCT AAGTG GCAG TTTAT GC
ATTCTGTAAAATACTTTGGT TTTGG TTCAT TGTC AAATG TG
TT T AAAA TT A -----
GAM24365 20675 GAGCTTCAGCTTGCTCAGGA A CAG---- TCAGG CC A - AT --- - - G
6 TCTGCCCGCGGATCGCCTCG G GCTT CTTGC ATCTG CGCGG TCGC CTCG C CT CTTGC
GCAT
ATCCTCTTGCGCATGAACTG C CGAA GGACG TAGAC GTGCC AGCG GAGT G GA GGACG
CGTG
GTCCATATCGAGTGTGCTGC G AAGACTA ----- CA - C CG ACA T T -
AGGTAGACAGGCTGAGCGCG A - CCAT
ACCGTGACCAGATGCAGGAT ACT GGT
CAGAAAAGCGC TGA CTA
- G ----
GAM24366 4293 GAGCTTCGACCTGGCCAGTA - A- ACAAAGCAG CAC GGTTAACA
6 CAAAGCAGCCTGCACAGTGG GAGCT TCG CCTGGCCAGT CCTG AGT
TTAACAACTCAGGATTGGCC CTCGG GGC GGGCCGGTTA GGAC TCA
GGGCACGGTGGCTC T AC --------- --- --------
GAM24369 1770 GAGCTTTATTATAAATCATT TTATA TAAT TT A AACAA TAAACTCAT
6 TAATATTCTTGAAGTTAACA GAGCTTTA AATCATT ATTC GA GTT CTGA
ACTGATAAACTCATTTAGGC CTCGAAAT TTAGTAA TAGG TT CAA GATT
AAACATTTTGGATTTAATGA C---- TT-- TT A ACG-- ---------
TTCTAAAGCTC
GAM24370 3583 GAGCTTTGGGAGAGATGGCC C A GATG - AA A GATAATGAA
9 GATAATGGAGTCTGGATAAT GAG TTTGGG GA GCCG AT TGG GTCTG
GAATAGGCCCGGCATATGGT CTC AAACCC CT TGGT TA GCC CGGAT
TCCCCAAACTC - - ---- A CG - ---------
GAM24371 6034 GAGCTTTTTAGAGAAGTGGA --- ---- C TG T- CTT ATTTG
3 ACGTTGGTACCCTTGGATTT GAGCTTT TTAGAGA AGTGGAA GT G ACC GG
GCCTGGTTTCTGATTTTCTA CTTGGAG AATTTCT TTATCTT TA C TGG CC
TTGTAGTCTTTAAGTGGAGG GTG GATG T GT TT T-- -----
TTC
GAM24373 9676 GAGGAAACGATGAACAAAAA ------ CG CAAAAA AATTGCC
8 CTAATCTAATTGCCAGGTTA GAGG AAA ATGAA CTAATCT
GAATTCATTATTTAATTTAC CTCC TTT TACTT GATTGGA
CTC ATTTAA AT AA---- -------
GAM24374 9182 GAGGAAAGCAGTCTTTGGAA - C - AACCA--- TT TATTG
6 ACCATTTGTTTGCTATTGGC GAG GAAAG AGT CTTTGGA TTTGT GC
TTATAAAATCAAATATCCAG TTC CTTTC TCA GAGACCT AAATA CG
AGAACTTCTTTCTCTT T T A ATAAACTA TT -----
GAM24377 3250 GAGGAAATTACTAGCACTGC GA A CACT ATT---- AAGT

1 CTAAACATTCAGAAGTCTGT GAG AATT CTAG GCCTAAAC CAG
GACACAGTTTAGGTCTAGGG CTC TTGG GATC TGGATTTG GTC
TTGTCTC TG - ---- ACACAGT ----
GAM24377 3881 GAGGAACCCAATCTGCTTCT CCCAATCT TT TG--- C GTTTG
8 GTTGTGGCACCAGAGGTTTG GAGGAA GC CTGT TGGCA CAGAG
CTTTGTTGCTGAATCTATAG CTCCTT CG GATA GTCGT GTTTC
TTGCTTCCTC -------- TT TCTAA T -----
GAM24380 9855 GAGGAAGAGTTTCGTGAAGG AGTT GAA TTT -- ATCAACA
2 TTTTGACTCTGATATCAACA GAGGAAG TCGT GGT GACT CTGAT
ATCGGCTGGTTTACCATGAC CTTCTTC AGTA CCA TTGG GGCTA
TTCTTC ---- --- T-- TC -------
GAM24380 19339 GAGGAAGATTTCGGAGGCAC AAGATT GG AA TTAC AGGTGAAGCA
9 AGGAAACTTTTTACCAGCAG GAGG TCGGA CACAGGA CTTT CAGC
GTGAAGCAGCTGTCAGAGGC CTCC GGTTT GTGTCCT GAGA GTCG
TCCTGTGGATTTGGCCTC ------ AG CG CT-- ----------
GAM24381 14637 GAGGAAGCTGGGGAAAGTGG GAAG AAG GT GGGAGA AGGCAAGA
9 TTAGGGAGGGAGACGGAGGC GAG CTGGGGA TG TAGGGA CGG
AAGACTGAGAAATCTCTGCA CTC GACCCCT AC GTCTCT GTC
TCCCCAGAACTC AA-- --- -- AAAGA- --------
GAM24385 14302 GAGGAATTTTTTTGCTTGTT GAAT C ----- AAGAAAGGAAAG
6 TGTCTTTTAAGAAAGGAAAG GAG TTTTTTG TTGTTT GTCTTTT
AAAGGATGAAAAAAATAAAC CTC AAAAGAC AATAAA TAGGAAA
AGAAAACTC ---- A AAAAG ----------
GAM24388 9141 GAGGACCAAGATGTGGAAAG GA A GGAA-- G- C TGAA
9 GAGCCAGTGAACTTGCTGAC GAG CCAAG TGT AG AGC AG
TGAGAAGGCACCTTGGAACT CTC GGTTC ACG TC TCG TC
C AA C GAAGAG AG T ----
GAM24391 20688 GAGGACGGTTTCTCTAGTCT CG T TCTAT TAA ACAATGGCA
1 ATGTTCATATAAAGACAATG GAGGA GTTTC CTAG GTTCATA AG
GCACTGTTATGAACTTTTAG CTCCT CAAAG GATT CAAGTAT TC
GAAACTCCTC -- - TT--- TG- ---------
GAM24391 3575 GAGGACTACGGTGAAGGCAG ACTA AA- A ---- A--- C- AGA TATGCAAC
7 TGAGGCGGAGCTGTCCCCAG GAGG CGGTG GGC GTGAG GCGG GCTGT CCCAG CCC

AGACCCTATGCAACGGGCAG CTCC GTCAC CCG CACTC CGCC TGACG GGGTC GGG
CTGGGCTGCAGTGACCCCGC CA-- GAC - CTTT CCAG TC GAC --------
TTTCCTCACGCCCAGCACTG
ACCCTC
GAM24394 18448 GAGGACTTCCCTAAAAAGCA - AAAA- CA GC -- ATC
1 CAAGGCGCCTGTCATCGACA GA GGACTTCCCT AGCA AG GCC TGTC
TTGGCATTTGCTAACACAGG CT TTTGAAGGGA TCGT TT CGG ACAG
GAAGTTTATC A CACAA -- A- TT ---
GAM24394 12544 GAGGACTTGAAGCAGAAAGC A CAGAAA- AAG ATACGAG
2 AAGTGAATACGAGTCAGAAG GAGG CTTGAAG GC TGA
CCAAGTATCTTCAAGACCTT TTCC GAACTTC CG ACT
A TATGAAC AAG -------
GAM24394 18807 GAGGACTTTAAATATCTCTT ACTTTA T AT CCC- AACCTCTTTCTATTTAA
4 TATGAAGTTCCCTGCCTAAC GAGG AA ATCTCTTT GAAGTT TGCCT
CTCTTTCTATTTAAAGGCAA CTCC TT TGGAGAAG CTTTAA ACGGA
ACAAATTTCGAAGAGGTTTT CTTGTG T -- ACAA ----------

GTGTTCCCTC
GAM24395 9190 GAGGAGAAGCGCGAGGGCTA A AGG A------- CCTGA
1 CGAGCGTCTCCTGAAGATGC GAGGAGA GCGCG GCTACG GCGTCT
AAAACCAGCGTGGCGGCGCG CTTCTCT CGCGC CGGTGC CGTAGA
CTCTCTTC - GG- GACCAAAA -----
GAM24396 9504 GAGGAGAGTGAAGAGGAGGC --- --- T - TCTA
3 GCTGCCTTCTAGGTGCTGTG GAGGAGAGT GAAGAGGAGG CGC GC CT
ACTTCTCCTTTTCGTGATTC CTCTTCTTA CTTTTCCTCT GTG CG GG
TTCTC GTG TCA T T ----
GAM24397 12607 GAGGAGCAACCCCCTTGTAG A-- ACC TTGT CTTTT CCTTCTT
1 AATGCTTTTAGGCCTTCTTC GAGG GCA CCC AGAATG AGG
CTTATACATTCTCGGGAGCT CTCC CGT GGG TCTTAC TCC
GCATCCCTC CTA CGA C--- ATAT- -------
GAM24399 12393 GAGGAGCGCAGCACCACCAC G CA - CATCA CATCATTGTCATCT
0 CATCAAGGTCATCATTGTCA GAG AGCG GCACC ACCAC AGGT
TCTACCTGTCCGTGGTGGGT CTC TTGT CGTGG TGGTG TCCA
GCCCTGTTGCTC G CC G CCTG- ----------
GAM24399 14726 GAGGAGGAAGGAGTGATTAT GAAGG-- GA- T GT - TTTTT
7 CTGTGTCATTATTTTTTGAT GAGGAG AGT TTA CT GTC ATTA
AGATTGAGTAAGAAGCTATA CTCCTC TCG AAT GA TAG TAGT
TGGACTCCTC AGGTATA AAG - GT A -----
GAM24400 20243 GAGGAGGACCCTGCTACAGG A- T ACA TG - A CA C GAAGAAGCCCA
2 CACTGGAGACCCACCCCGGA GAGG GGACCC GCT GGCAC G AG CC CC CG
AGAAGCCCACGCGGCTGGCT TTCC TTTGGG CGG TTGTG T TC GG GG GC
ATTGGTGTTGAAGGCGGGTT AG - AAG GT A - TC C ----------
TGACCTT
GAM24402 22252 GAGGAGGCTATGGCTAGTTA GA ATGG GTT T T CTGAA
1 GAATATATGCATGGTAACTG GAG GGCT CTA AGAATA ATGCA GGTAA
AATTACCTGTATCTGTTTTT CTC CTGG GGT TTTTGT TATGT CCATT
AATGGGGTCCTCTC TC ---- AAT C - -----
GAM24402 20498 GAGGAGGGAGAGTGTGGCCC - A G CC--- A T A TGTGT
6 CTGACTCAGTCCATCAGCTT GAGGAG GG GAGT TGG CCTG CTCAG CC TCAGCT
GTGTAGCTGAGGTCTGGGCC CTCCTC CC CTCG ACC GGAC GGGTC GG AGTCGA
AGGTCTAACCAGGCTCCCCA A C G AATCT C T - -----
CTCCTC
GAM24404 3726 GAGGAGGTGTACTTTGAGAA AG TTT CCTCT GCT GAGCACTA
6 CCTCTTGTTGCTGGTGGAGC GAGG GTGTAC GAGAA TGTT GGTG
ACTACACCTCAGACGTTTAT CTCC CGCATG TTTTT GCAG CCAC
TTTTTCTGTACGCGCCTC G- TCT ATTT- ACT --------
GAM24405 9818 GAGGAGTGATTGACTGAATG ATT- TGAAT T CTT TGTGAT
4 TCTAGTGCTTGATGTGTGAT GAGGAGTG GAC GTC AGTG GATG
CGTCTCCACTGACTGTCCCT CTTTTCAT CTG CAG TCAC CTGC
GTACTTTTC GTCC T---- - CT- ------
GAM24406 14586 GAGGAGTTCAACGATCTCCT -- A TCTCC CCT CTTTAT
4 GGACCTGGACTTTATTCTCT GAGGA GTTCA CGA TGGA GGA
CCAATTCGCTGAGCCATCCT CTCCT CGAGT GCT ACCT TCT
C AC C TA--- C-- ------
GAM24406 21241 GAGGAGTTTCCTAAAAGTTC -- - AAA--- ----- GCC
7 ATAACAGTGCCATTGTCTTT GAGGA GTTTC CTA GTTCATA ACAGT
ATATGAACATAGACTAGAGA CTCCT CAAAG GAT CAAGTAT TGTTA

AACCGTCCTC GC A CAGATA ATTTC ---
GAM24407 9400 GAGGATACTCCATATTTGTA TACT TATTT AA TT CTAAAACATACATT
1 ACGATTTTCTTCTAAAACAT GAGGA CCA GT CGAT TCTT
ACATTGAGATTATTGACTCC CTCCT GGT CA GTTA AGAG
TGGCTCCTC C--- CCT-- -- TT ----------
GAM24411 18172 GAGGATGAAAGAGGACCTGG ATGAA A CCT GG - TTGTTCT
5 GAGCGGCAACTTTGTTCTGG GAGG AG GGA G AGCGGCAA CT
TTTGTTGTTTTCTCTTCCCT CTCC TC CCT C TTGTTGTT GG
ACCTC A---- - TCT TT T -------
GAM24413 20379 GAGGATGCCATAACAACTCC G CCAT ACT G-- A TG AGTG
3 AGGGGCAATAGTGCTAGTGG GAG ATG AACA CCAGG GCA TAG CT
GTGCTGTGCGAATCTGGTAT CTC TGC TTGT GGTCT CGT GTC GG
GTTTGTACGTCTC - ATGT AT- AAG - GT ----
GAM24413 9865 GAGGATGCGGCGGTGGCATC T - G -- CTCGAAGTTC
4 TCCTGCTCGAAGTTCCAGGG GAGGA GCG GC GTG GCATCTCCTG
GATGTAGCACAGCTTGCTCC TTCCT CGT CG CAC TGTAGGGGAC
TT - T A GA ----------
GAM24423 8673 GAGGCAGAATCGCTTGAACC AA GAACC G GC GT A - AGAT
8 CTGGAGGCGGAGGTTGCAGT GAGGCAG TCGCTT CT GAG GGAG TGCAGTG GC TG
GAGCTGAGATCGCGCCACTG CTCTGTC AGTGAG GA TTC CCTC ACGTCAC CG GC
CACTCCAGCTTGAGTGACAG AG ACAGT G GA -- - C ----
AGTGAGACTGTCTC
GAM24426 9219 GAGGCAGAGGTTGCACTGAG ----- A TG A TC CACT
7 CTGAGATCGTGCCACTGCAC GAGGCAGAG GTTGC C AGCTG GA GTGC
TCCAGCTTGGGCAACAGCGA CTCTGTCTC CAACG G TCGAC CT CACG
CTCTGTCTC AGCGA - GT - -- ----
GAM24429 12412 GAGGCAGCGGCAGTGGAGTT ---- A- - AG C- - TT-- C CT CTTTTC
2 CGCTGCGCGCTGTTGGGGGC GAGGC AGCGGC GT GG TTCG TGCG CGCTG GGGGG CAC
GT
CACCTGTCTTTTCGCTTGTG CTCCG TCGCCG CA CC GAGC GCGC GTGAT CTCCC GTG CG

TCCCTCTTTCTAGTGTCGCG AACC GG G CT TC T CTTT T TT ------
CTCGAGTCCCGACGGGCCGC
TCCAAGCCTC
GAM24443 18115 GAGGCAGGAGAATCGCTTGA A AA GA-- AGG GT - GAGAT
6 ATCCGGGAGGTGGAGGTTGC GAGGC GGAG TCGCTT ATCCGGG TGGAG TGCAGTG AGCT

AGTGAGCTGAGATGGTTCCA CTCTG CCTC AGTGAG TGGGTCC ACCTC ACGTTAC TTGG

TTGCACTCCAGCCTGGGTAA - AG ACAA G-- -- C -----
CAGAGTGAGACTCCGTCTC
GAM24455 21403 GAGGCAGGAGGATCACTTGA A GA A - GC- AGATTAA C A TGTGATCGT
5 GCCCAGGAGATTAAGGCTGC GAGGCAGG G TC CT TGA CCAGG GG TGCAGTG GC
AGTGAGCTGTGATCGTGCCA CTCTGTCC C AG GA ACT GGTCC TC ACGTCAC CG
CTGCACTCCAGCCTGGATGT - TG A T GTA GACC--- - - ---------
CATAGAGAGTCCCTGTCTC
GAM24462 1268 GAGGCAGGTGGATCATAGGT - GG- G- AAA CGAGAC
1 CAAAAGATCGAGACATCCTG GAGGC AGGT ATCATA GTCA GAT
GCAATATGGTGAAACCTCGT CTCTG TCCA TGGTAT CGGT CTA
CTC C AAG AA C-- ------

GAM24463 12192 GAGGCATAAAGCAGAAAGAG A C A CAAAGACACAT TACCC
9 CAAAGACACATGAATACCCT GAGGCATAA G AGAA GAG GAA
TCTTAACAATCTCTTCTACT CTCCGTATT C TCTT CTC CTT
TATGCCTC - A - TAACAATT--- -----
GAM24471 14628 GAGGCCCCTAATCCAGACAG CCCT A--------- CCAACA
3 GTAGCCAACACTACCTGGAT GAGGC AATCCAG CAGGTAG
TTTAGGACTGGATTTTAGCC CTCCG TTAGGTC GTCCATC
TC ATT- AGGATTTTAG ------
GAM24471 18045 GAGGCCCCTGGGCTGGTGGA CC - T AC - T- --- AC AGCCT
4 CGTACCTGGTGGGCACCCTG GAGG CCTGG GCTGG GG GT ACC GGT GGGC CCTG
AGCCTCAGGGCCCTGTGCCC CTCC GGACC CGACC CC CG TGG CCG CCCG GGAC
TGGTGGCAGCCCCCAGCACC A- A C GA G TC TGT -- -----
AGGACCTC
GAM24472 6135 GAGGCCCTGTATGACATCTG - -- ACA---- T CGCACCCT
4 CTTCCGCACCCTGAAGCTGA GAGG CCCTGTA TG TC GCTTC
CCACCCCCACCTACGGGGAC CTCC GGGGCAT AC AG CGAAG
CTC A CC CCCCACC T --------
GAM24474 12138 GAGGCCTCCACCTTCTTGAA -- A - GAAGA CCATGTGAATT
7 GAAGGACCATGTGAATTTCC GAGGCC TCC CC TTCTT AGGA
TGACAGAGAACGGGGATGGG CTTTGG AGG GG AAGAG TCCT
TTTC GT - C ACAG- ----------
GAM24477 16640 GAGGCGAGCAAAAGATTGTA C AAA--- TG -- TGAAGCT
3 ATGACTGAAGCTGTTTAATT GAGG GAGC AGAT TAAT GAC
GTGATTTGTGGACGTTTTCC TTCC TTTG TTTA GTTA TTG
TT T CAGGTG GT AT -------
GAM24477 9880 GAGGCGATTTGTGGGCCATA ---------- CA GATGTG
7 CCAAGGATGTGCTGAGTGTG GAGGCGATTTGT GGGCCATAC AG
GCCTTTTCCTCTGACAACCG CTCTGTTAGACG TCCGGTGTG TC
GCAGATTGTCTC GCCAACAGTCTCCTTT AG ------
GAM24478 22257 GAGGCGCTGTGTATGCAGGG CG-- GTA A C- A A CCAGCT
4 CCCGGCAGTAAGCCCAGCTG GAGG CTGT TGC GGGCC GGC GTA GC
CCTACAGCCAAGGCCCAGCG CTCC GACA GCG CCCGG CCG CAT CG
ACAGACATCCTC TACA --- A AA A C ------
GAM24483 6469 GAGGCGGGCAGATCACGAGG CAGA GAG GATCGAGACCA
6 TCAGGAGATCGAGACCATCC GAGGCGGG TCAC GTCAGGA
TGACACGGTGAAACCCTGTC CTCTGTCC AGTG CAGTCCT
TC CAA- GCA ----------
GAM24491 14516 GAGGCGGGTGGATCACTTGA - GGA TGA-- AGT AGAC
2 GGTCAGGAGTTTGAGACCAA GAGGCG GGT TCACT GGTCAGG TTG
CCTGGCCAACATGGTGAAAC CTCTGT CCA AGTGG CCGGTCC AAC
CTTGTCTC T A-- TACAA --- ----
GAM24499 1218 GAGGCTGAGTAAGAGCCGCC CT AA ---- --- CAG C GCCG
3 AAGGCAGCACCCAGGGCCGC GAGG GAGT GAGCCG CC AAGG CA CCAGG
CTGGATGATTTCTTCAAGGT CTTC CTCA CTCGGC GG TTCT GT GGTCC
GACCGGCTCACTCTCTTC T- -- CAGT AAC TTA A ----
GAM24502 9226 GAGGCTGGGAAACGCGAGCG T CGCGA CA C A - CTCAAC
2 CAGGCGGCAGAGAGGCCTCA GAGGC GGGAAA GCG GGCGG AG GA GGC
ACGCCGTCCCTTTCGCCACC CTCCG TCCTTT CGC CCGCT TC CT CCG
GCCTTTTCCTTGCCTC T TC--- CA T C G ------
GAM24502 14679 GAGGCTGGGCTGAGCAGGAG - --- AGG GCAA ATTG

7 CGCAATGAATTGTCAGACAG GAGG CTGG GCTGAGC AGC TGA
CTGGAGTTCAGTGAGCCAGA CTTC GACC TGACTTG TCG ACT
CTTC A GAG AGG ACAG ----
GAM24505 749 GAGGCTTAACCAACGATAAC TAACCAA - G--- GGC AC GGAG G GG A
4 GGCGGCGACGGCGAAACCTC GAGGCT CGAT AACGGC GCGAC GAA CTC CTC CAGGGC
GGGC
GGAGCTCGCAGGGCGGGGGC CTCCGG GCTA TTGTCG TGTTG CTT GAG GAG GTTCCG
CCCG

AATGGCCCGGGCCTTGGAGA CG----- C AATG ACT AA GTA- - GG -
TGGAGAATTCTCAGTTGTGT ATG
AAGCTGTTCATCGGCGGCCT
C

GAM24506 2949 GAGGCTTGGTCTGTAAGCGC G - G GC - TTGTA
7 CGCTTGATTCCTTTGTAGGG GAG CTTGG TCT TAA GCCGCTTG ATTCCT
GGTACAAGTGGTTTGGGATT TTC GGACT AGG GTT TGGTGAAC TGGGGG
CAGGGCTT G T - -- A -----
GAM24507 3204 GAGGGAAAATTTGTCGAAGA G A CGA TT - TAAA GA
AGAAGAGGAAGAGAG
8 GGAGGGATTGCGGCAATTAA GA GGAAA TTTGT AGAGGAGGGA GCGG CAAT GA GGGA

AGAGAGGGAAGAAGAGGAAG CT TCTTT AAACA TTTCTTTCTT TGTT GTTG CT CCCT

AGAGGTCCCGTCGTTGTTTG G - --- TT T ---- G- ----------
TTTTTCTTTCTTTACAAATT G
TCTGTC

-
GAM24508 4170 GAGGGAAAGTAGGTCAGATT --- T - A CC--- A CT TTA
2 TTCCTATCACATCTTTTTAC GAGGGA AAG AG GTC GATTTT TATC CAT TTTTACTT
TTTTAAAGTAAAAATGGATA CTCCTT TTC TC CAG CTAAAG ATAG GTA AAAATGAA
CACATGAAATCCGACTCTTC AAA T T C TACAC - -- ---
TTAAATTCCTC
GAM24510 16605 GAGGGACAGGCACTTGAGCT AC-- CT GA -- -- AAG AGTCAGCCGTCAG
9 TGGTCACAGTCAGAAGGGTG GAGGG AGGCA T GCTTGGTCAC AGT CAG GGTGGAGGGG

GAGGGGAGTCAGCCGTCAGC CTCCC TCCGT G CGGACCAGTG TCA GTC CCACCTCCCC

CCCTCCACCAAGCTGCCACT ACTC CT TC AC CC GAA ----------
CAGTGACCAGGCCTGTCTGC
CTCTCACCCTC

GAM24511 19213 GAGGGACGAGAGCCCCTAGC AC- GC -------- G ACATTGA
4 AGGAAAACATTGATTTGCTG GAGGG GAGA CCCTA GCAG AAA
TACACTCAATAGGGCATCTC CTTCC CTCT GGGAT TGTC TTT
ATGCCTTC GTA AC AACTCACA G -------
GAM24511 5435 GAGGGACTCGCTGGCAGCAG G CT G - CCA ACCGCTC TGTACT
7 CCCCAGCCTGACCGCTCGGA GAG GA C CTGGC AGCAGCC GCCTG GGAG

GTGTACTTTCCTTGACAGGC TTC CT G GACCG TTGTCGG CGGAC CCTT
AAGGCTGTTGGCCAGGGCTC G CG - G AA- AGTT--- ------
GCTT
GAM24512 8028 GAGGGACTGTGTTGTAGATT GA T G T-- TCA TGATTG - GGGC
2 GTGATCAAGGTTGATTGGCA GAGG CTG GTT TAGAT GTGA AGGT GCAAAA CT
AAACTGGGCAGCTTTTGCAT CTCC GAC TAA GTCTA CATT TCCG CGTTTT GA
GGTGCCTGCTTACTATATCT AC T - TAT CG- TGGTA- C ----
GAATTCAGCACCTC
GAM24517 2707 GAGGGATGCAGTCCCAAAAT - T GT AAAA ATAAGGA G CTAAAA
3 GTATAAGGAAGAAGGCCTAA GAG GGA GCA CCC TGT AGAA GC
AAGCATTCTACAAGGGGGTT CTC CCT CGT GGG ACA TCTT CG
GCTCCTCTC T - TG GA-- ------- A ------
GAM24517 8821 GAGGGATGGCCAGAGCTGCT T G TG G- A----- TGCAT
6 GGAGATGGAGGGCTGCATGC GAGGGA GGCCA AGC CT GAGATGG GGGC
CCCCGAAGCCATTTTAGGGT CTCCTT TCGGT TCG GG TTTTACC CCCG
GGCTGTGGCTCTTCCTC C G GT GA GAAGCC -----
GAM24517 8079 GAGGGATGTAACTATTGAAT GG ACTATT ATA GGA GAA AAAGAAAC
7 CGGATACAAGGATCAGAATG GA GATGTA GAATCGG CAA TCA TGG
GAAAGAAACTCACGATGAAA CT TTATAT TTTGGTC GTT AGT ACT
TTGAACCTGGTTTTGTATAT AT GT---- CAA AA- AGC --------
TTATC
GAM24520 4162 GAGGGCATGCCTACAGGGGC AT-- TACA-- TTTATC G CAAG TCGC-
0 CTCTTTATCATCGATGGCAA GAGGGC GCC GGGGCCTC ATC ATGG GGTGTCCT
CAGATCA
GGGTGTCCTTCGCCAGATCA CTTCCG TGG TCTCGGAG TAG TGCC TCGCAGGG
GTTTAGT
CTGTTAATGATTTGCCTGTG GACC TCGGCG ------ G ---- TGTCC
GGACGCTCCGTGGATGAGGC CTGTTAA
TCTGCGGCTGGTCCAGGCCT
TC

GAM24521 9684 GAGGGCCGGGCCACAAGTCA G - --- AAG - T ---- TTCT
1 GCGGTGCTGCTTCTGCAAAA GA GG CCGGGC CAC TCAGC GG GCT GC
AGCCCGGCTGAGGGTGCCCG CT CC GGCCCG GTG AGTCG CC CGA CG
CCCGGACCGTC G A CCC GG- G - AAAA ----
GAM24521 6568 GAGGGCCGGGCCCACAGTCA G - C-- AG - T G CTGCA
2 GCGGTGCTGCTTCTGCAAAG GA GG CCGGGC CAC TCAGC GG GCT CTT
AGCCCGGCTGAGGGTGCCCG CT CC GGCCCG GTG AGTCG CC CGA GAA
CCCGGACCGTC G A CCC GG G - - -----
GAM24522 9013 GAGGGCTCACCCTCCTGCAC CT C - CAA A AA- AC ACA- ATCT
3 AAGGAATGAACTACAGGACA GAGGG CAC CT CCTGCA GGA TG CT AGG TG
TGATCTCAAACACCTACAGA TTCCC GTG GA GGACGT TCT AC GA TCC AC
TGCATCTTGCAGGAAGCGTG AC C A --- - GTA CA ACAA ----
CACCCTT
GAM24523 5468 GAGGGGAAAGGAGAAGGCTT AAA GAAGG TTT TC ATTTAC
1 GGGGTTTGCATCTGATTTAC GAGGGG GGA CTTGGGG GCA TG
CAACTGTTCCTCAGGACGCA CTCTCC TCT GGACTCC TGT AC
TCTGCCTCTC G-- ACGCA T-- CA ------
GAM24523 18605 GAGGGGAAGCAGTACGACAG A A ACA TGA GTGGAGG
9 CATTTTGAGGGTGGAGGCCG GAGGGGA GCAGT CG GCATTT GG

TGGATGCCGACTGCTCCCCT CTCCCCT CGTCA GC CGTAGG CC
C - - --- TG- -------
GAM24526 2912 GAGGGGATGGGGAATTAGGG G GG- A T G C TCTTG AAGC CACAATCA
3 TCCTGGCCGAATGTCTTGGG GAG GGATG GA TTAGGG CCTG C GAATG GGTAG TTCT
TAGAAGCTTCTCACAATCAA TTC TCTGC CT GATTCT GGAC G CTTAT CTATC AGGA
GGACTATCAGCTTATTCTGC G ACA G - - T TCGA- ---- --------
AGGTCTTAGGTCACACGTCT
GCTT
GAM24526 16503 GAGGGGCACACCGGGCGAGG - CAC -- C GT- - CGCG
6 CCGTTCGCCTGCGCGCAGTG GAG GGG ACC GGG GAGGCC TCGC CTG
TGGCAAGGCCTTCCCCAAGG CTC TCC TGG CCC TTCCGG GGTG GAC
TCTACCTGCTC G ATC AA C AAC T ----
GAM24530 8568 GAGGGGGCCTTCAAGCTGTA CCTTCAA ACT GCAG GCATTG
6 CTGTGAGCAGACGCATTGGT GAGGGGG GCTGT GTGA AC
ATTATCATTCAGCAGTCTCC CTCCCTC TGACG TACT TG
CTC ------- ACT ATTA ------
GAM24533 14585 GAGGGGTTCATTTGCGTGGG ----- TT G TGGCC CATCC
5 GCTGTTGGCCTGGATCATCC GAGGGGTT CA TGCGT GGGCTGT TGGAT
ATCCATCTGTACAGTTCAGC CTCCCCGA GT ACGCG CTTGACA ACCTA
GCACTGCCACAAGCCCCTC ACACC C- A TGTCT -----
GAM24533 14698 GAGGGTAGAGATGAACTGTG TA GAACTG GA AAACTGGATC
9 TGTGAGGCCAAACTGGATCG GAGGG GAGAT TGTGT GGCC
GTCAACATGGTCTTCCCCCT CTCCC TTCTG GTACA CTGG
C CC ------ A- ----------
GAM24534 19302 GAGGGTATCTAGGCCAATTT TATCT CAA TA -- AATCAATCTG
4 ATTCAGCTGGAAATCAATCT GAGGG AGGC TT TTCAGCT GGA
GTCCAGGGCTGGACCAGGCG CTCCC TCCG GA AGGTCGG CCT
CCTCCCCCTC CC--- CG- CC GA ----------
GAM24535 9123 GAGGGTCCCCTCGGGCTCTG TC - G CT AT - T TTTA CCAC
3 GATCTCCATCCTCTCCTTTA GAGGG CCCT C GGCT GG CT CCATCCTC CC ACCT
ACCTCCACAGGTGGCGGGGG CTCCC GGGA G TCGA CC GG GGTGGGGG GG TGGA
TGGTGGGGCCTCAGCTGGGA CT G G CT GG T C ---- ----
GGGTCCCCTC
GAM24539 12642 GAGGGTTGAAGTTTAACCTT - A- T T G TG - GAAA
4 ATTTTGGGTTTGTGTAAATT GAGGGT TGA GTTTAACCT AT TTG GTTTG TAA ATTGT
GTGAAAACAATATTAACTAG CTTCTA ACT CAAATTGGG TA GAC TAGAT ATT TAACA
ATGCAGCATGGGTTAAACGC C CG - C G CA A ----
TCACATCTTC
GAM24548 8490 GAGGTCCCTTCCTCAGCTGT G CC-- AG T GA------- TTCG
9 TTTGAGAAGCCTTCGGGTTG GAG TC TTCCTC CTGTTT GA AGCC
AATGTGGGTCCAGACGGAGA CTC AG GAGGAG GGCAGA CT TTGG
GGAGACGAGAGCTC G AGCA A- C GGGTGTAAG ----
GAM24555 6281 GAGGTGATTGGGGGAGCAGA GA-- G CAA AC- TCCGT
2 CAAGTACCACTCCGTGTGTC GAGGT TTGGGG AGCAGA GT CAC
GGCTCTGCTACTTCAAGAAG CTCCG AACTTC TCGTCT CG GTG
GCCTC GAAG A --- GCT -----
GAM24556 8208 GAGGTGGAGATCATCGTGGA AGA GTGGAGG T A GAAGA
9 GGAGCTGGAGCTGAAGAAGC GAGGTGG TCATC AGC GG GCT
ACCTGCTGGTGAACCACTTC CTTCACC AGTGG TCG CC CGA
A-- ------- T A -----

GAM24558 6181 GAGGTGGAGTGACTGAGAAG G GA AGAA AAAACCA - AAG--- AGAAT
2 AGAAAACCAGGTCTTAAGCG GAG TGGAGT CTG GAG GGT CTT CGTG
TGAGAATCGCGGACAAGAAG CTC ACCTCA GAC CTC TCA GAA GCGC
TACTACCCCAGCTCCCAGGA G G- C--- GACCCCA T GAACAG -----
CTCCAGCTC
GAM24559 3549 GAGGTGGGAAGATCGCTTGA TG AGA G - - TGG C AGC AGAT
3 GCCCTGGAGGTTGAGGCTGC GAGG GGA TC CT TG AGCCC AGGTTGAGG TGCAGTG CG

AGTGAGCCGAGATCGCACCA CTCT TCT AG GA AC TCGGG TCCGACTTC ACGTCAC GC
CTGCACTTCAGCCTGGGCTA GT AG- A G A --- - CAC ----
CAGAGAGAGATCTTGTCTC
GAM24566 3654 GAGGTGGGCGGATCACCTGA CGGA A - A- G AGT GGAC
3 GGCCGGGAGTTTGGGACCAG GAGGTGGG TC CC TG GGCC GG TTG
CTGGGCCGGCATGGAGAAAC CTCTACCC AG GG AC CCGG TC GAC
CCATCTC AA-- A T GG G --- ----
GAM24568 8938 GAGGTGGGGTTTTACTATGC - TT A CT ACT CTTAA
6 TGTCCAGACTGGTCTTAAAC GAGGT GGGG TTACT TG GTCCAG GGT
TCCTGGGCTCAAGTGATCCC TTCCG CCCC AGTGA AC CGGGTC TCA
CCTGCCTT T CT - T- C-- -----
GAM24572 4083 GAGGTGTACTGTGCCGTTCC T AC T - CT GC TGT
9 CCGCTGTTTGCTGCCTGTGG GAGG GT TG GCC GTTCCCCG GTTT TGCC
CACTGGACCGGGGGGCTGGC CTCT CA GC CGG CGGGGGGC CAGG ACGG
CGACTCTC - -- - T -- TC ---
GAM24578 12696 GAGGTTTATAATTAAGTTTT AAT TTATAAAAATTC CAA
0 ATAAAAATTCCAAATGTAAT GAGGTTTAT TAAGTT CAAATGTAAT
CAAGTTATATTTGTAACTTA CTTCAAATA ATTCAA GTTTATATTG
CATAAACTTC C-- T---------- ---
GAM24580 3565 GAGTAAAAAAGTGTTTCATA AA- T CATA---- T TCCA
6 AGTAATGTGATCCATCACAT GAGTA AAAG GTTT AG AATGTGA
TCTGCCAGCCAAAATTCTTT CTCGT TTTC TAAA TC TTACACT
GCCTGCTC CCG T ACCGACCG - ----
GAM24585 1785 GAGTAATCGTTGTGTAAACA AAT G A AG GAATGAAATTA
3 ATAGAATGGAATGAAATTAC GAGT CGTT TGTA ACAAT AATG
ATTAAATTGTATGCAAATGG CTCG GTAA ACGT TGTTA TTAC
CTC --- - A AA ----------
GAM24587 16784 GAGTACGGGCTGCAGGCATA ACGGG C AC-- A--- GAAA
7 CACTGAAGTGAAAACTGTCA GAGT CTG AGGCAT ACTG AGT
CAGTCAAAGTGCCTCAGAAG CTCA GAC TCCGTG TGAC TCA
AACTC AGAA- - AAAC ACTG ----
GAM24589 2883 GAGTAGCTGGGACTACAGGT GG - - TGC CACGCCG TTTTTTTGTT
7 GTGCACCCCCACGCCGGCTA GAGTAGCT GACTA CA GGTG ACCCC GCTAAT
ATTTTTTTTGTTGTTAGTAG CTCGTCGG CTGGT GT CCAC TGGGG TGATTG
AGACGGGGTTTCACCATGTT A- T A TT- CAGAGA- ----------
GGTCAGGCTGCTC
GAM24591 5698 GAGTAGGTGAATTTGTTTCA GA T- AAT TAGTG GTT T TCTGTAAC
1 AATTGTACTAGTGACAGTTT GAGTAGGT ATTTGT TCA TGTAC ACA TCTCA CA
CTCATCATCTGTAACTGTTG TTCGTTCG TAAACA AGT ACGTG TGT AGAGT GT
AGATGTATGTGCATGTGACC -- CC GT- TA--- --- T --------
ACAAATGCTTGCTT
GAM24596 14407 GAGTATTTCACACTGAGGAC TTTCA AC AT-- CT CTTC

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0          TAATCTGCTATCTTCATTCC GAGTA    CACTGAGG  TA   CTG  AT
           AGTCCCTACCCCTCAGTGCC CTCGT    GTGACTCC  AT   GAC  TA
           TGCTC               CC---      CC  CCCT  CT  ----
GAM24597 14047  GAGTCACAGGTCGTGTTACA  G  AC   C--  TTAC-   CA    ACAGACAAGCACAGAA
6          GATCAGGGGGACAGACAAGC GA TC  AGGT   GTG    AGAT  GGGGG
           ACAGAACCCCCATCTCCCAT CT AG  TCCG   CAC    TCTA  CCCCC
           CACCCAGCCTCCGAGTC    G  CC   ACC   TACCC   --   ----------
GAM24598 6083   GAGTCACGGCAGCTACCACG    A   AG-  - AC-   AC- ACA    G  -  A    ACAGCA
1          GTAACCCACATCACAGCCTT GAGTC CGGC   CTA CC   GGTA   CC   TCACA CCT TTG CCCTG
           TGACCCTGACAGCACGGGGC CTCAG GTCG   GGT GG   TCAT   GG   GGTGT GGA GAC GGGGC

           AGCAGGTGTGGCAGGATCTA    -   ACA   A  ACT   CTA  AC-    -  C  -   ------
           CTTCAGGATGGACAGCTGGA
           CTC
GAM24605 12734  GAGTCCGGCGAGTGCCTCAA    - --- C    CC   T  A--   T  TT   CT   T   TT   TAT
6          TGGAAGCGGTACTTTCTGGC GAGT CC   GG GAGTG  TCAA GGA   GCGG ACT  CTGG  GGCT GAGG
GATG
           TGGCTTGAGGTTGATGTATG CTCG GG   CC CTCGC  AGTT TCT   CGCC TGG  GACT  CCGG CTCC
CTAC

           TGGCCTTCATCTCCTCGGCC    T  TTT  C    TA   -  ACA   T  --   --   -   T-   ---
           TCAGGGTTCCGCACATCTTT GTGGCCTT
           GAATCGCTCCCCTTTGGTGC
           TC
                        --------
GAM24606 12614  GAGTCCTCCGTGTTCTGCAC   GTCC   T    C   --  T-    - AAGACTCCA
0          CAGTATTGTGGCTCAAGACT GA    TCCG GTTCTG ACCA  GTA  TGTGGC TC
           CCAGAGGCCACATTTACCAT CT    AGGT TAAGGC TGGT  CAT  ACACCG AG
           GGTCGGAATTTGGATTATC    ATT-   T    -   AC   TT    G ---------
GAM24606 20022  GAGTCCTGGCCTGGTCTGTG     C     -----  CT   A  C  ATAACA
4          GAGACGGATAACACCTCCCA GAGTC TGGCCT    GGT  GTGG GA GG
           CTTGCTTGAAAGGGTCACGG CTCGG ACTGGG    TCG  CACC CT CC
           CTC                 C     AAAGT   TT   -  -  ------
GAM24606 3010   GAGTCCTGGCCTTGTCTGTG     C     ----  CT   A  C  ATTACA
5          GAGACGGATTACACCTTCCC GAGTC TGGCCTT   GT  GTGG GA GG
           ACTTGCTGAAAAGGTCAAGG TTCGG ACTGGAA    CG  CACC CT CC
           CTT                 A      AAGT  TT   -  T ------
GAM24607 12297  GAGTCGGTCCCCCAGTGCAT   G   T--  -  A-- TG A    TAGATCTT
6          GGCATAGATCTTTGCCAGGT GA TCGG   CCC CC   G  C TGGCA
           GCCACGGAGGGTCTCCGGGT CT GGCC   GGG GG   C  G ACCGT
           C                G    TCT   A  CAC GT G    --------
GAM24613 756    GAGTCTCGCTCTGTTGCCCA   TC    C  TT     C--    --     - A  ATCT
3          GGCTGGAGTGCAGTGGCATG GAG  TCGCT TG  GCCCAGG   TGGAG  TGCAGTG GC TG
           ATCTCGGCTCACTGCAACCT CTC  AGCGA AC  TGGGTCC   GTCTC  ACGTCAC CG GC
           CTGCCTCCTGGGTTCAAGCG   TT   - T-     TCC    CA     T  -  ----
           ATTCTC
GAM24613 3372   GAGTCTCGCTCTTGTCACCC   TC    CT  TC   CA  C--   A--     - GCCATCTCA
6          AGGCTGGAATGCAGTGGCGC GAG  TCGCT  TG  ACC  GG   TGGA   TGCAGTG GC
           CATCTCAGCTCACTGCAACC CTC  AGCGA  AC  TGG  CC   ACCT   ACGTCAC CG
           TCCATCTCCCAGGTTCAAGC   TT    -- T-   AC  TCT   CCA     T ---------
```

GATTCTC
GAM24614 20764 GAGTCTCGGATTCTGCAGCC -- A GCAG A--- A TACTT
1 ACCACAGTACTTCTGGGAAG GAGTC TCGG TTCT CC CC CAG
AGGAGGAAGAGCTGAATGAC CTCAG AGTC GAGA GG GG GTC
TC TA - AGGA AGAA - -----
GAM24616 16649 GAGTCTGCAGTTCCTGAGAG AG CC A CT C CATACCTG A- C TT- A
1 GAGCTGGCGCCTCAGGCCAT G TCTGCAGTT TG GAGGAG GG GCCTCAGGC GGCT TGA
TGGA GC
ACCTGGGCTATGACTGGATT T GGACGTCGA AC CTCTTC TC CGGAGTCCG CCGA ACT ACCT
CG
GCAGGGTCTCTGGACACCAG GA -- - T- - A------- CC - TCT A
CTCTTCCATCACCAGCCAGC - TCTG
CTGAGGCCTTCTTCTCCAAG GG GTC
CTGCAGGAGT CC CAG
A ----
GAM24619 12411 GAGTCTTGCTCTGTCACCAG TC C TC ---- T -- TA - G ATCT
4 GCTGGAGTGTAGTGGCGTGA GAG TTGCT TG ACC AGGC GGAG TG GTG GC TG
TCTCAGCTCACCGCAACCTC CTC AACGA AC TGG TCCG CCTC AC CAC CG AC
CGCCTCCCAGGTTCAAGCAA TT - T- ACCC - CA GC T - ----
TTCTC
GAM24623 9158 GAGTGAACGCTAAAACGGAG CGCTAAAAC GG-- AAC AGGAAAC
5 GAGAGTAAACCCTACAGGAA GAGTGAA GGA AGAGTA CCTAC
ACGTGGGAATACTCTAGAAT CTTACTT CTT TCTCAT GGGTG
TCTTCATTC --------- AAGA AA- -------
GAM24626 18182 GAGTGACTGGGACTCCAGGT ---------- ACTCC CC C CAAACTTCCCTT TT
1 GCGTGCCACCAAGCCAAACT GAGTGA CTGGG AGGTGCGTG AC AAGC TCAG
TCCCTTTCAGTTCTTGACAT CTTACT GACCC TCTACGTAC TG TTCG AGTT

TCCTTTTCTGCTTTGTATCA TCAATCCCCTCTA C---- TA T TCTTTTCCTTAC --
TGCATCTCCCCAGATCTCCC C
CTAACTTCATTC

-
GAM24632 22229 GAGTGCAGTGGCATGATCTC T TG----- A T CTCACC AACTC
2 GGCTCACCGCAAACTCTGCC GAG GCAG GC TGA CTCGG GCA
CCCCGGGTTCAAGCAACTTT CTC CGTC CG ACT GGGCC CGT
CCTGCCTC - CTTTCAA A T CCC--- -----
GAM24634 16734 GAGTGCGGCTGACGGGCCCC - G - GGG-- - G GT AGTGG
2 GGGTGTTCCGAGTGGTGGAC GAGT GC GCTG AC CC CCG GT TCCG
AGCATGGAGGATGAGGTGCA CTCG CG CGAC TG GG GGT CG AGGT
GCGGCGGCTC G G G GAGTA A A AC -----
GAM24635 3997 GAGTGCTGCCGCTCCATGGT TG C GGTCC G ATCTG
1 CCGTGGCAGGCGATCTGTGG GAGTGC C GCTCCAT GTGGCAG CG
CTGTCGCATGGGGCAGTGGC CTCACG G CGGGGTA CGCTGTC GT
ACTC GT A ----- G -----
GAM24637 3405 GAGTGGACCAAGAAGGTCAT G A AAGAA CA- ATC GCTC
0 CAGGAACATCGCCTGCTCGG GA TGG CC GGTCAT GGAAC GCCT
GCAAGTTCTCCAGTGACCGG CT ACC GG CCAGTG TCTTG CGGG
ACCATC - A ----- ACC AA- ----
GAM24637 20767 GAGTGGAGTACTAGGAGAAG - A GAAGTAAGT A ATATG

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7          TAAGTCAAAGAAATATGTTC GAGT GGAGT CTAGGA       CA AGAA
           TATGTCTTAGCACTCTAACT CTCA TCTCA GATTCT       GT TCTT
           C                A    C    --------- A    -----
GAM24639 2794  GAGTGGCGAATTCGGGCACG   T   AATTC   AC-   -   G      C  T C   CAGTGTT
6          AGGGGTCCCGCGGGTCTGTC GAG GGCG    GGGC   GAGGG GTCCC CGGGTCTGT TCT G TTCA

           TCTTGCTTCACAGTGTTTGG CTC CCGC    TCCG   TTCTC CAGGG GCCTAGACA AGG C AGGT

           ACGGAACAGATCCGGGGACT   -   CAGCC   ACC    T    -      -  - -   -------
           CTCTTCCAGCCTCCGACCGC
           CCTC
GAM24640 20099  GAGTGGGAACACAGGGGAGA   T   A--     GA    C   ACAC   GT    - TCCCCATT
4          GTTCAGGACACCTGGTCCCC GAG GGGA   CACAGGG  GAGTT AGG    CTG  CCCCAG C
           AGCTCCCCATTGCCTGGGGC CTC CCCT   GTGTTCC  TTTAA TCC    GAC  GGGGTC G
           AGCAGCCCTCAATTTCTCCT   -   CCC     TC    C   CGAC   --    C --------
           TGTGCCCTCCCCTC
GAM24645 18024  GAGTGTCACACCTTTGCTTA   T   ---------   C  T   AT-   CTGCAAT
9          TGGCCTGCAATGCCTACGAG GAG GTC       ACAC TT GCTT   GGC
           CTAAGTGTCAAGATGAAGAC CTC CAG       TGTG AA CGAG   CCG
           CCTC               C   AAGTAGAAC   - T   CAT   -------
GAM24646 8783   GAGTGTCCGTTGAAAGCAAT     CCGTT  A  CA     ATTC   AACAGAA
5          AAGGAATTCCAGAACAGAAC GAGTGT    GA AG  ATAAGGA   CAG
           TGTACTTCTTGTCCCTCTCT TTCACA    CT TC  TGTTCTT    GTC
           CACACTT              CT---  C  CC      CAT-   -------
GAM24649 2695   GAGTGTGGAGGTCGTTGGAG     T    ----  -   - T   TTCC  GTCACCA
1          TCACTTCCGCGTCACCAGCT GAGTG GGAGG    TCG TTGG AG CAC    GC
           CCTGTGCCTGCCAGTCGGTG CTCGC CCTCC    GGC GACC TC GTG    CG
           CCCCTCCCGCTC          -    CCGT   T   G  C   TCCT  -------
GAM24652 19113  GAGTGTTTTGGTGTTCCCTG       TGGTGT         T   TGGG
5          CCCCTGTGTTTTGGGGAGCT GAGTGTTT     TCCCTGCCCCTG GTTT
           TGGGGGCGGGGATGTTGAAC TTCACAAG     AGGGGCGGGGGT CGAG
           ACTT                 TTGT--         T   ----
GAM24659 1135   GAGTTCAAGACCAGTCTGGG    TCAA--    GTC     A  A  GAA   C    -  CAAAAGATACAAAAAT

1          CAACACAGTGAAACCCCATC GAGT     GACCA   TGGGCA CAC GT   ACC CATCT CTA
           TCTACAAAAGATACAAAAAT CTCA     CTGGT   ATCCGT GTG CG   TGG GTAGA GAT
           TAGCAGATGTGGTAGCGTGT    TCGACC    ---     -  - A--  T    C  ----------------
           GCCTATGGTCCCAGCTACTC
GAM24663 1273   GAGTTCTACATTGATTGATA   TTCTACATT  T   TAC    ATTT    CTAAC
0          CCACAATTTTGATCTAACAT GAG       GA TGA   CACA    TGAT
           CACTGTGTTCATTCTAAACT CTC       CT ACT   GTGT    ACTA
           TCTC                TTCAAAT--  T   T--    C---    -----
GAM24663 1079   GAGTTCTGAATCCAAATACA    TT-   AAT    ---    A   G    CCG
7          AAGATGACATCCGGTGTGGT GAG   CTG   CCAAA   TACAA GAT ACAT
           CTTGTACATTTTGGCTAGTT CTT   GAT   GGTTT   ATGTT CTG TGTG
           TTTC                TTT   C--    TAC    -   G    ---
GAM24665 2783   GAGTTGACAATTTTATTTTC    T-    TTTTATTTT  CA    CAATACAAA
3          ACATTTCCCAATACAAAGGA GAGT  GACAA       CA  TTTCC
           AAACTGCATCTTTTTTGTCC TTCA  CTGTT       GT  AAAGG
           CACTT                CC    TTTTCTAC-  CA    ---------
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GAM24672 6286 GAGTTGTGTACTTATAAGAG AAGAGGAAGCA GCATGGAG
7 GAAGCAGAACTTGCATGGAG GAGTTGTGTACTTAT GAACTT
GAGTTTGGGATGGGTGCACA CTCAACACGTGGGTA TTTGAG
ACTC GGG-------- --------
GAM24674 20762 GAGTTTCAAGAAAAAAATTA CAAGAAAAA A CC AC- TCTTACATTACC TGTTTCT

8 AAGGCCAAAACTGTCTTACA GAGTTT AATTA AGG AAA TG ATTGC
TTACCATTGCTGTTTCTGCA CTCAAG TTAAT TCT TTT AC TAACG
ATCTTCAACAAACCAAAATT AAAAAAGTG G CT AAA CAAACAACTTC- -------
TTCTCTGTAATTGTGAAAAA
AGAACTC
GAM24679 20624 GAGTTTGTCCAACGGTTTTC T TG A TT ---- AGCTCA
2 TTGCTTCGAGCTCACGAATC GAG T TCCA CGGT TCTTGC TTCG
CTGCGGGGTTACCGCTGGGT TTC G GGGT GCCA GGGGCG AAGC
GGCTT - GT C TT TCCT ------
GAM24681 18772 GAGTTTTGCGTCTGGTACAG TT ---- TAC T -- A C AACTTCG
8 GCTGGAGTGCAATGGCGCAA GAG TTGC GTCTGG AGGC GGAG TGCA TGG GC
CTTCGGCTCACTGCAACCTC CTC AGCG CGGGCC TCCG CCTC ACGT ACT CG
CGCCTCCCGGGCTCAAGCGA TT AACT C-- - CA C - -------
TTCTC
GAM24683 8962 GAGTTTTTCCATGTCGAGAT TTTT A G TT TCCTTTTCCTGC
5 TTCCCCTCCTTTTCCTGCGG GAGT CC TGTC AGA TCCCC
GGATTCTGGACAGGTTGCTC CTCG GG ACAG TCT AGGGG
TT-- - G T- ----------
GAM24686 18227 GATAAACTCTTTAGGTATTA ATAAA - ------ TC G CG CT AAAA
4 GAGCCTCTTAGATGAGGTAT G CTCTTTAG GTATTAG AGCC TTAGAT AGGTAT TTTA
GCAAAG
CGTTTACTGCAAAGAAAAAA C GAGAAGTT CATGGTC TCGG GATTTA TCCGTA GAAT
CGTTTT

AATTGTTATAATTTTGCCAT AAGTA T AATATG TA - TT AC ----
AAGTTATGCCTATTTAGATG AAAATTGTTATAA
GCTGTATAACTGGTACTTTG
AAGAGATGAAC

GAM24687 21348 GATAAAGTTGAAGGCTACAA AA GA AC AAGACC A TGTTT
4 GAAGACCAAGGAAGCTGTTT GATA GTT AGGCT AAG AAGGA GC
GCTCCTTAAGAAACTTAAAG CTAT TAA TCCGA TTC TTCCT CG
CCTGGAATGATATC AG GG AA AAAGAA - -----
GAM24692 18743 GATAAGGACCTGTTTGGGGC TA- C- GGCAGC CAAAAT
7 AGCAGGGAGCAAAATCTCCT GA AGGA CTGTTTGG AGGGAG
TTAACAACCAAGCAGTTTCC CT TCCT GACGAACC TTCCTC
TCATTC TAC TT AACAAT ------
GAM24695 8355 GATAATCAACACGTAGCATG A GTAG AATCA T AAAA
3 CAGAATCATTATTTTAAAAG GATAATCA CAC CATGCAG TTA TTT
GACTAAGACAGTTGTGTGGT TTGTTAGT GTG GTGTGTT AAT AGG
GTGATTGTT - ---- GACAG C ----
GAM24699 21265 GATACACAATTTTGTCAGTT ACAAT T TTACTT - A CTTG
0 TACTTACAGTGCATACTCTT GATAC TT GTCAGT ACA GTGC TACT
GGGTAGTACTTGTGCTGACC CTATG AA CAGTCG TGT CATG ATGG

AAGTATC ----- C ------ T - ----
GAM24699 18391 GATACAGGAGAGTCAGAAAC - A AAACA T GT- -- T- AG AATCGAA
8 AAACTTATAGTGATGCGTTG GATA CAGG GAGTCAG AACT ATA GAT GCGT GGA GTT
GAAGGTTAATCGAAAACATC TTAT GTCT TTTAGTC TTGA TGT TTA CGCA CCT CAA
CTTACGCCTATTTAATGTAG A A CAA-- - AAT TC TT A- -------
TTAACCTGATTTATCTGATA
TT
GAM24703 19338 GATACCCGTTGTACCCTTAC CC--- CCCTT---- AAGTTTCTAATC
0 TTGAAAGTTTCTAATCTTAA GATAC GTTGTA ACTTGA
GTTTTATGAAATGCAATAAT CTATG TAACGT TGAATT
ATGTATC TATAA AAAGTATTT ----------
GAM24704 12169 GATACGTTCACCAAGCTGAT CG A- ATAAACCCC AAAACA
4 AAACCCCCAGGAAAACACCT GATA TTC CCAAGCTG CAGG
GCAGCTTGGAGGAGTTTGTC CTGT GAG GGTTCGAC GTCC
TT GA --------- ------
GAM24705 8543 GATACTACCATCCTGGCTGG A CCA G G CT AAGACCAGA
1 ACTGTCCAAGACCAGAGGAT GAT CTA TCCTG CT GA GTCC
GATCGAGACAGGACAATGGG CTA GGT AGGAC GA CT TAGG
ATC G AAC A G AG ---------
GAM24707 4124 GATACTGGAAACTTTGGTTT TG AAA T ---- GG AACACATCGA
0 TGGGATCCAGGAACACATCG GATAC G CTT GGTT TTG ATCCAGG
ATCTGGGTATCAAATATGAC CTATG T GAA CCAG AAC TGGGTCT
CCAAGCATTGGTATC GT AC- C TATA TA ----------
GAM24707 12481 GATACTGGGAAGAGCATTAG GAAG A CAA TT TCTTT
2 CCAAGAACTTGTCTCTTTGA GATACTGG AGC TTAGC GAAC GTC
TCTGTTTCGTTAAGCTGAAC CTGTGACC TCG AATTG TTTG TAG
CAGTGTC AAG- - C-- TC -----
GAM24707 9116 GATACTGTGGCCAGATGCCT GT GAT A ATGTTGC ATCAA
7 TATTGAGATGTTGCCTGCTA GATACT GGCCA GCCTT TTGAG CTGCT
TCAAAGCAGATTCAAGGGGT CTGTGG TCGGT TGGGG AACTT GACGA
TGGCTGGTGTC -- --- - A------ -----
GAM24708 5398 GATACTTTTAAGAAGTTTAG T A TTT- T ATG AACT A G ATT
4 GAGTTGTGAATGTGGTAAAA GA ACTTTTA GAAG AGGAGTTG GA TGGTAA GA CCTTTCCA TG

CTGAACCTTTCCAGTGATTT CT TGAAAGT CTTT TTTTTAAT CT ACTATT CT GGAAAGGT AT
AGTGGAAAGGTCTTATCAAT T A TTCT T A-- ---- - G ---
CTTAATTTTTTCTTTTTCAT
GAAAGTTTC
GAM24710 22206 GATAGAGATTAATACAACTA AG TAATACAAC AAAAAATATAGTACAA
7 CTTAAAAAAATATAGTACAA GATAG AT TACTTA
TAGGTAACTAAGATATAGCT CTATC TA ATGGAT
ATC GA TAGAATCA- ----------
GAM24718 1488 GATAGTAGCAGAGGAGACTT AGCAGAG A CA T- TTTCGTGATT
6 GGGATTTCATGGGTGTAGGT GATAGT GAG CTTGGGATTT TGGG GTAGG
TTCGTGATTCCTGCCTTCTA CTATTA TTC GAACCCTAAA ATCT CGTCC
AAATCCCAAGACTTATTATC CTATTA- A -- TC ----------
ATTATC
GAM24722 20642 GATATAAGTTCTGTTCAAGG TC CAA A TTCCAATCTCAAAT
4 CAAGAAGTTTCCAATCTCAA GATATAAGT TGTT GGCA GAAGT
ATATTTCATGCCAACAACTT TTGTATTCA ACAA CCGT CTTTA

ATGTT -- --- A ----------
GAM24723 4368 GATATACGTGTGTGTGTGTG TG TG - ATAT
8 TGTGTGTGTATATATATATA GATATACG TG T GTGTGTGTGTGTGT
TATATATAATGTGTGTGTAT CTATATGT GT A TATATATATATATA
ATC GT GT A ----
GAM24726 4013 GATATCAATGTAAAGGATGA T AT TGA AAACACT TATATT
2 TCAAACACTGGAATATATTT GA ATCA GTAAAGGA TC GGAA
TCCTAGGACTTCCTTTATTC CT TGGT TATTTCCT AG CCTT
TGGTTTC T CT TC- GAT---- ------
GAM24727 18119 GATATCGTAGGGGGCGGCGC TC GC TG - - ATTA--- -
4 GGCGGGTGGGGTGCGCGTTG GATA GTAGGGGGCGGC GGCGGG GGGTGCGCGT TG GGC
TTG GGGGTGCGC
GGCATTATTGGGGGTGCGCA CTGT CATCTCCTGCTG TCGCTC TCTATGCGTA GC CTG GAC
CCTCGCGCG
GAACGAGCGCGCTCCGCAGG -- -- GT T G CGAGCTG G
TCGAGCGTCGCGTATGCGTA AGAACGA
TCTTGCTCGCTGTCGTCCTC
TACTGTC

GAM24729 3269 GATATGCAGCAAGTTTAATA AT-- GCAA AATA AAG ACATAAA
1 CCTGAAGGTTAACATAAATG GAT GCA GTTT CCTG GTTA
ACAACAGGACACAGATGCAA CTG CGT TAGA GGAC CAGT
TGCTACAGTC ACAT AACG CACA AA- -------
GAM24729 9674 GATATGCTATAGTTTAGAGT T T TT CTCATTA AAGCGCTA
4 CTCATTAGGAAGCGCTACCG GA ATGC ATAG TAGAGT GG
TTCATGCTTTACTCTGTGCA CT TACG TGTC ATTTCG CC
TCTC C - TC TACTTG- --------
GAM24731 20520 GATATGTTCCTTTAAAACAT G AA ---- ATTC- TTTT- GTGTCAA
3 GAATTTTTGTTGTCTTATTC GATAT TTCCTTTA ACAT GAATTTTTGTTGTCTT TGT AACAT
TGTTTTTAACATGTGTCAAA TTATA AAGGGGAT TGTA TTTAAAAATGATAGAG ACA TTGTA

TGTTTGTATACATTTTGGAG A AA AACA GTTTT TATGT -------
ATAGTAAAAATTTACAAATG
TAATAGGGGAAAATATT

GAM24733 1518 GATATTCCAAAAGAACAAGA TTC-- C ATGCAGTGTC
2 AATTAATGCAGTGTCTAATT GATA CAAAAGAA AAGAAATTA
TTTTTTCTTTTGTAATTTAT CTAT GTTTTCTT TTTTTTAAT
C TTAAT - ----------
GAM24733 21477 GATATTCTGGTTATTCATTA ATTCT TC T GAAG - TTAG
5 TGCAGAAGGTATAGGGGTTA GAT GGTTAT ATTA GCA GTA TAGGGG
GTCCTTGCTATATTATGCTT CTA TTAATA TGGT CGT TAT GTTCCT
GGTTATAATTTTTCATC CTTT- T- T ATTA C ----
GAM24735 12254 GATATTTCGGCTCTGCATCA TT TC --- - TA GTGAA TTCAGC
2 ACTATAGCTTCTGTGAATTT GATAT CGGC TG CATCAA CTA GCTTCT TTTCCC
CCCTTCAGCGGGAAGAGGGA CTATA GTCG AC GTGGTT GGT TGAAGG GAAGGG
AGTACTGGTTTGGTGATACA CC TT ATA T CA GA--- ------
TTGCTGCCATATC
GAM24737 4032 GATCAACAGGCTTATTAGAA A TAT ACTAA GTCT

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3          GAATGAACTAAGGTGTCTAC GATCAAC GGCT   TAGAAGAATGA    GGT
           CATGATTATTTTTCTAAGCT TTGGTTG TCGA   ATCTTTTTATT    CCA
           GGTTGGTT              G   ---        AGTA-  ----
GAM24737 3690   GATCAACAGGCTTATTAGAA    A  A    TAT        A  A   GTCT
4          GAATGAATAAGGTGTCTACC GATC AC GGCT   TAGAAGAATGA TA GGT
           ATGATTATTTTTCTAAGCTG TTGG TG TCGA   ATCTTTTTATT GT CCA
           GTGGGTT              G  G   ---        A  A   ----
GAM24739 6360   GATCACAATGCGGCCAAAGG    A  A  C    A  -  TA   T--  TTCC-       GCTTCCCAATGACG
7          TGTAGAGCTGCTTCCCTTCG GATC CA TG GGCCAA GG TG  GAGC   GC    CTTCGTGTC
           TGTCGCTTCCCAATGACGGG CTGG GT AC CTGGTT CC AC  CTCG   TG    GAAGTACGG
           CATGAAGACAATGTTGTGCT    A  A  T    -  G  TC    TGT  TAACA       ----------
           CCTCAGCCTTGGTCTCAATG
           AGGTC
GAM24740 21096  GATCACATAGAATCTAGGGA       TAGAA   AGG    AAT       CTGG
3          AGAAATGAGAAATTCTGGGA GATCACA    TCT   GAAGA   GAGAAATT
           TTTTTTTTTTTAACAGAAGT CTAGTGT    AGA   TTTTT   TTTTTTAG
           GTTGTGATC              TGTGA   CAA    ---       ----
GAM24742 4263   GATCACTGACTCCCTGAAGC   TC  TG C     AA   G  ACAC   ATCCA     ---------    C  T-  T
1          CGAGACACTGAATCCAGGAG GA  AC  A TCCCTG  GCC AG    TGA    GGAGGC       GGAGA TG  GC
G
           GCGGAGACTGTGCTGATAAG CT  TG  T AGGGAC  CGG TC    ACT    CCTCCG       CCTTT AC  CG C
           ACCTATCTGCTTCAATTTCC   TT  GT C     --   G  GTCA   GTTC-     GTGAGTTCG    A  TT  T
           GCTTGAGTGGCCTCCCTTGT    AGACC
           CAACTGCTGGGCCAGGGACT ATA
           TGGTTTTC          TAT
                        -----
GAM24742 22284  GATCACTTCCAGGTCCTCAG   TC     A  T     TACACAACCACCA  AG      CAGACCTA
4          TACACAACCACCACGAGGGA GA  ACTTCC GG CCTCAG          CG  GGAAACC
           AACCCAGACCTAGGTTTCCG CT  TGAGGG CC GGAGTC          GC  CCTTTGG
           GCGCCGACTCTGAGGCCCGG   TT     C  -     TCAGCC-------  GG      --------
           GAGTTTTC
GAM24743 18327  GATCAGACAGATCACAGCTA      A      CAGCT    T  C     GCCACTGTT
3          CGGTGACATTTCTGCCACTG GATCAG CAGATCA     ACGG GA ATTTCT
           TTGGAAGTTTCTTGTTCATT TTAGTC GTCTAGT     TGTT CT TGAAGG
           TGATCTGCTGATT          -      TTACT   -  T     ---------
GAM24745 6134   GATCAGGTATTGATAACAGA       A    T     ACA  GCGA   G   AA GG  AGT
4          ACATGGCGACTTGGGAAATG GATCAGGT TTGA AACAGA   TG    CTT GGA  T  AA
           GAAAGTTTTTGGATCCAAAG CTAGTTTA AATT TTGTCT   AC    GAA CCT  G  TT
           AACAGAATCTGTTTTAAATT       -   -     AAG  AA--   A   AG TT  ---
           TGATC
GAM24749 16489  GATCATGCTAAAAGGAGATA      G-   AAA      ATATTACTCTGCTACAAAG
0          ATATTACTCTGCTACAAAGT GATCAT  CTA   GGAGATA
           GTCTCCAACTAGAAATGATC CTAGTA  GAT   CCTCTGT
                          AA   CAA      --------------------
GAM24750 9611   GATCATTTTTATCCCTAGGT   T      ATCCC    GATT      GAAAAT     ATCTAAAA
8          GATTTTTAAATGAAAATGGT GA CATTTTT     TAGGT    TTTAAAT     GGTGTA
           GTAATCTAAAATATACCCAG CT GTAAAAA     ATCTA    AAATTTA     CCATAT
           CGAATTTAAAATCTAAAAAA  C      -----    ----      AGCGAC     --------
           TGCTC
GAM24751 5992   GATCCACAGTCCTGCATTTA    C  G    - A-   CT   -   CTTAATGATTT
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4 CTGCCTTTCACTTAATGATT GATC ACA TCCTG C TTTA GCCT TTCA
TTGGACAGGTTTTAGAGAGC CTGG TGT AGGAC G AGAT TGGA AGGT
CAGGATGTTGGTC T - C AG TT C ----------
GAM24751 12493 GATCCACAGTCCTGCATTTA - GT - A- CT - CTTAATGATTT
5 CTGCCTTTCACTTAATGATT GATCCA CA CCTG C TTTA GCCT TTCA
TTGGACAGGTTTTAGAGAGC CTGGGT GT GGAC G AGAT TGGA AGGT
CAGGGATGTTGGGTC T AG C AG TT C ----------
GAM24754 12141 GATCCCCTCTTTTCCTCCCC TTT CACCCT - TGAGTCC
8 ACCCTGAAAAAGTGAGTCCC GATCCCCTCT CCTCCC GAAAA AG
TATTTTCCTGGGAGGGGGGG CTAGGGGGGG GGAGGG CTTTT TC
GGATC --- TC---- A -------
GAM24758 21506 GATCCTCTTGCCTCTGCAGC TTGC CCT TTTTTTTTTAATTT
2 CTAATAATTTTTTTTTAATT GATCCTC CTCTGCAG AATAA
TTTATTTTTTTGTAGAGTTG CTAGGGG GAGATGTT TTATT
GGGATC TT-- TTT ----------
GAM24758 20328 GATCCTGAGTGGGGACTCAT T GAGT G GA A C A AACCAG
3 GGCCCAAGGAACCAGCCGTG GA CCT G G CTC TGG CCA GG
GACCAAGAGGTCGTGAAGGT CT GGA T C GAG ACC GGT CC
C - AG-- G TG A A G ------
GAM24759 876 GATCCTTCAACAGTGTGTGG C A TG TGT TTT G CCCATC
7 ATGTCATTTTTACTGGAGTG GATC TTCA CAGTG TGGA CA TTACT GAGTG
CCCATCTACTTGAGTGACCC TTAG AAGT GTCAC ATCT GT AGTGA TTCAT
TGTATTCTAACCACTGCTGA C C CA TAT CCC G ------
ACGATT
GAM24761 18474 GATCGGAGCCGGCCGGAGCA GAG - GCACGCC-- TGA
4 CGCCAGGCCTGAGGCCTCAA GATCG CCGG CCGGA AGGCC
CATTTATCTGGACTGGAAAT TTAGT GGTC GGTCT TCCGG
GATT AAA A ATTTACAAC ---
GAM24761 22294 GATCGGCCTCGGCCGCACGC G TCG - CA A CCCT------ C CC TC CCT
6 AGTAGCCCCCCTACTCCCCG GATC GCC GCC GCACG GT GCCC ACTCC CGG AAG AGGG

GCCAAGTCAGGGCCTCCCTC CTGG CGG TGG TGTGC CG TGGG TGAGG GCC TTC TCCC

TTCCCGCGGAGTCGCAACCA A CAA A TA A TCACCAACGC C C- -- ---
CTGGGTAGCATCGTGTAGGT
AACGGCAGGTC
GAM24762 3410 GATCGTGGCTGGACTGGAGA C GG AC AG- AT- CCCGC
1 AGATGCCTGCCCGCCGGGCT GAT GT CTGG TGG AAG GCCTG
TCCTTATCCCACCCCAGAGA CTA CA GACC ACC TTC CGGGC
CATC - GA CC CTA CTT -----
GAM24762 12905 GATCGTGGGGAACCTGGGTG - - TGAAGGCA A --- GGAGT
2 AAGGCACCTTTGGCAAGGTG GATCGT GGGG AACCTGGG CCTTTGGCA GGT GGT
GTGGAGTGCTTGGACCATGC CTAGCA TCCC TTGGACTC GGAGACCGT CCA TCG
CAGAGGGAAGTCTCAGGTTG G G TGAAG--- A GGT -----
CCCTGACGATC
GAM24763 12656 GATCTAGATGACTTGAACTT -- GA GAA-- ---------- AGAAAAAGA AAAAAAA
3 CTTTAATCAAAAGAAAAAGA GATCT AGAT CTT CTTCTTTA ATCAAA AG
AGAAAAAAACTAAAAAGATA TTAGA TCTA GAA GAAGAAGT TAGTTT TC
TTTGATATTGATGAAGCTGA AT G- ATGTG CGAAGTAGTTA ATAGAAAAA -------
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AGATT
GAM24763 3962 GATCTATCACTGGGACAGAA TAT C -- AAG A AACA
7 GGAAGATGAAAACATTTACT GATC CA TGG GACAG GAAG TGAA
TCAGACTGTTTACTACTGTT TTAG GT ATC TTGTC CTTC ATTT
CGATT CTT C AT AGA - ----
GAM24766 4496 GATCTCGTTGGCGCCCGTAA T GGCG - AT GCTA - AAG
3 TCCGCTACCAGGAAGCCTAG GA CTCGTT CC CGTA CC CC AGG
GGAGGTATACGAGGGACGAG CT GAGCAG GG GCAT GG GG TCC
TC - ---- A AT AG-- A ---
GAM24769 21257 GATCTGCTGTCGTAAGTGTC T C A - A CC - CACATCCT
0 AGATCCGAGGTTGCTCACAT GATCTGC GT GTA GT GTC GAT GAGGT TGCT
CCTGGCAGGCCTCTTGTCGA CTAGGCG CA CGT CA CAG CTG CTCCG ACGG
CGACATGCACTGCGGATC T - A G - TT G --------
GAM24770 20817 GATCTGTAAGTAACTTCACA CT- AACTTCAC AAA
7 TTAAAAAATGAAATATTTTT GAT GTAAGT ATTAAAAAATG
TAATTTAAAGCTTACTCTGT CTG CATTCG TAATTTTTTAT
C TCT AAATT--- ---
GAM24771 5363 GATCTGTGGCTGCTGCATTT TC- CTGCT CT-- - TACCTGCT
7 TGGGCTTTGGGATCTACCTG GA TGTGG GCATTTTGGG TTG GGATC
CTGATCCACAACAACTTCGG CT ATACC CGTGAGGCTT AAC CCTAG
AGTGCTCTTCCATAACCTC CCA TTCT- CAAC A --------
GAM24773 12248 GATCTTGAGGGCTGTTGTCT TT CT TG ATA- TG TT ACA TGAACGAACT
7 ATACTTCTCGTGGTTCCACA GATC GAGGG GT TCT CTTCTCG G CC CCCA
CCCATGAACGAACTTGGGGG CTGG TTCCC TA AGA GGGGAGC C GG GGGT
CTCTGCGAGGGGGGCGAGAT TT AG GT GCGG GT TC --- ----------
GATGACCCTTTTGGTC
GAM24776 21261 GATGAAAATGATTTGATCCT A TG - A- AAG- GCAGG
9 GGAAGTAACTGCAGGAGTTG GATG AAA AT TTG TCCTGG TAACT
GAGGTCAGGAGGCAATGTTG CTAC TTT TG AAC AGGACT GTTGA
TTTACATC A GT T GG GGAG -----
GAM24778 4402 GATGAACCACTAGAACCAGG GA- CT AA CCTTTAC CTCT
7 GCCTTTACCAGTCTCTACTG GAT ACCA AG CCAGGG CAGT
CCATGCCCCCTGGCTTGGTC CTA TGGT TC GGTCCC GTCA
AAATC AAC -- -- CCGTACC ----
GAM24784 6630 GATGACGGAACAGGCCATCT - AACA CATC - AAGACTTC
1 CCTTCGCCGAAAGACTTCTT GATGA CGG GGC TCCTTCG CCGA
GGCCGGAGGATCGCCGCCGC CTACT GCC CCG AGGAGGC GGTT
TCATC C G--- CT-- C --------
GAM24784 14295 GATGACGTGGCCTTTCGAGG C- TTC G C GG T A C--- GGAA
3 GACCTGGCACGTACATCCCC GATGA GTGGCCT GAG GA CT CACG AC TCC CC
CGGAAGGAAGTGGAGGTCGT CTACT CACCGGA CTT CT GA GTGC TG AGG GG
GGAGATCATTCAGGCCACCC CC --- A A G- - G TGAA ----
TCATC
GAM24785 12195 GATGAGAAAGCAAAAAGTAC AGAA A GTAAAG TTATA
3 TTTGTAAAGTGTTATACAAT GATG AGCA AAAGTACTTT TG
CAGAAGGTGCTTTGTGCTGA CTGC TCGT TTTCGTGGAA AC
CCGTC CAG- G GACTA- -----
GAM24792 9166 GATGAGTTTCTGAGGATCAG AGT G GA AG T - TG C CACTACTGCT
2 CACTGCCAGTGGAGATGGGC GATG TTCT AG TC CAC GC CAG GAGATGGG GT
GTCACTACTGCTACCCTCAT CTAC AAGA TC AG GTG CG GTC CTTTACTC CA

TTCACCTGCGCTGTGGACAC --- G AC -- T C CA C ----------
TGAGAACATC
GAM24792 18187 GATGAGTTTTCCCCACTAAA TTTTCCC C A GA- C AAT AAAGACAA
5 GAATGCTGATAGTCAGAATG GATGAG CA TAAAG ATGCT TAGT AG GGG
GGAAAGACAACCCTACTACT CTACTT GT GTTTC TACGG GTCA TC CCC
GCAAGGCATGCTTTGATGTC CCCT--- A G AAC - AT- --------
CCTTCATC
GAM24793 20590 GATGATAGTTACTGATATAT A AC CA- AGAT A G C T ATGAAAA
1 ACAATCATAGATTTCACAGA GATG TAGTT TGATATATA ATCAT TTC CA AATATT GCTA GG
ATATTCGCTATGGATGAAAA CTAC ATTAA GCTGTGTAT TAGTA AAG GT TTATGA TGAT CC
CCTTAGTAGTATTATGGAAC A A- TTA GGGC - A - T -------
GGGATGATATTTATGTGTCG
AAATTAACATC
GAM24795 9602 GATGATGTCACATACCAAGT GA- ACATACCAAG T AA AGTATA
9 CTATGAGGAACAAGTATATG GAT TGTC TCTA GAGG CA
AACCTCTAGAAAATGAAGGG CTA ATAG AGAT CTCC GT
ATAGAAATC AAG GGAAGTAAA- - AA ------
GAM24798 3914 GATGCAATAGTTAGAGAAAA GTTA-- AAAC G T TCAG
7 CCAGGTGTAATTTCAGAATT GATGCAATA GAGA CAG TG AATT
CACTGTCTCCATTTGTATTG TTACGTTAT CTCT GTC AC TTAA
CATT GTTTAC ---- - - ----
GAM24799 4018 GATGCAGAGAGCCTGAAGCT T A------ C T A TAT AGGTCCA
8 GGTGGACTGTATCATCGAGG GA GCAGAG GCCTGAAG TGG GG CTG CATCG
TCCACGATGCCCGGATCCCA CT TGTCTC CGGACTTT ACC CT GGC GTAGC
CTTTCAGGCCGCAACCCTCT T CCAACGC C - A CC- -------
GTTTC
GAM24800 1523 GATGCAGGCTGGACAGGAGG G GGA GGAGGA C --- G GATA
7 ACTCACCACCTGAGCTGGGG GATGCAG CT CA CTCA CACCT GA CTGGG
ATACTCAGGTCCTGGGGTGC CTACGTC GG GT GAGT GTGGG CT GACTC
TGAGGAAATGGGGCTGCATC G --- AAAG-- C GTC G ----
GAM24801 16496 GATGCATCTGGGAAGGGCAT ATCT AA C AGCACTGCACCCATATCC
5 GGAGCACTGCACCCATATCC GATGC GGG GGG ATGG
CCATACTTCGCCCTAAGCAT CTACG CCC TTC TACC
C AAT- GC A ----------
GAM24801 765 GATGCATTCTTAATATTGTT CA AT TTGG-- A GAATA
9 TTGGTCAGCTGGAATACAGC GATG TTCTTAAT TGTT TC GCTG
AGAAAAATTAACACAGTTGA CTAT AAGAGTTG ACAA AG CGAC
GAAATATC A- AC TTAAAA A -----
GAM24802 18356 GATGCATTTGTTGGAGGTTT - TG TCTGTC- AACT
5 TCTGTCTCAACTGGTCTCTG GATGCATTT GT GAGGTTT TC
CAAGCCTCTGACTGAATGTA CTATGTAAG CA CTCCGAA GG
TC T GT CGTCTCT ----
GAM24802 4382 GATGCCAGAAGTCCGGGGAG T- CAGA G GC- GCAAAT
8 CCTTGTTGGTGCAAATGCCA GA GC AGTCC GGGA CTTGTTGGT
ACAGGAAGTTTTGGGACTAA CT CG TCAGG TTTT GGACAACCG
GCCTTC TC AA-- G GAA ------
GAM24805 8654 GATGCCGACTGGGAGCTACT CGA- GAGCTA GGT ACTA
2 GGGTGAGCTGGACTACCAGC GATGC CTGG CTG GAGCTGG
TTCAGGACCAGGACAGCGTC CTGCG GACC GAC TTCGACC
ACAG AG---- --- ----

GAM24810 20726 GATGCTGACAATACTTGGGA GA AC--- AAC- GAAAA
2 ACCTGAAGAAAATTTAGATT GATGCT CAAT TTGGG CTGAA
GTCCAGAATTGATTGAAGCG TTGCGA GTTA GACCT GATTT
TT A- GTTAA GTTA -----
GAM24810 20985 GATGCTGACCAGAGAGTCTA TG CAGA C CCC CTATTCCC
4 TCCCGGACCTATTCCCGTCC GATGC AC GAGT TAT GGAC
TATGCATTCACAGTTGGCAT CTACG TG CTTA GTA CCTG
C GT ACA- C T-- --------
GAM24810 18326 GATGCTGAGGTGCCTGTATC TGCTG C A TT- G AG GA GTA
7 ATTGGCACAGGCCAGTGCTG GA AGGTGC TGT TCA GGCACAG CC TGCT ACC
AACCGTAGGTGGAGTAGGCT CT TCTATG ACG AGT CCGTGTC GG ATGA TGG
GTGCCTTCTGAAGCAGTATC TA--- - A CTT - -- GG ---
TATTC
GAM24813 8143 GATGCTTGTGACTTCCTCTT G TCC ----- GAT TTAT
8 GTGATGTCTTATGATGAACA GATGCTT TGACT TCT TGT GTC
AAGTCAGATCTGGTCAGAAG TTATGAA ACTGG AGA ACA TAG
TATT G TCT CTGAA AG- ----
GAM24814 3196 GATGCTTTTTGTGGCCAGTC TTTTT- AGTCTGTA T AAGT
6 TGTAAGTTGTGAGAAGTCTC GATGC GTGGCC AGTTG GAG
TTGGCTGTGGGCCATTACTG TTATG TACCGG TCGGT CTC
TGTATT TGTCAT GTG----- T ----
GAM24814 4447 GATGGAAAAATTGAGGGCTT GGAA GCTTAAC GA- G T AGTTC
8 AACAGCTGAATTTGGTGAAC GAT AAATTGAGG AGCT ATTTG TGAACT AG
TTAGAGTTCCTCAGTTTAAT CTA TTTGACTCT TCGG TAAAT ATTTGA TC
AAATGTAGGCTTGATCTCAG AAC- AGT---- ATG A C -----
TTTCAAATC
GAM24815 5878 GATGGAACACATGAAATCTT AACACA AAA GG AC A ACAATCTTGCATTTA
8 TGGTTCACAGACTATTTACA GATGG TG TCTTT TTC AGACT TTT
ATCTTGCATTTAGAAGAGTC TTACC AC AGAGA AAG TCTGA AAG
TCAGAAAAAGAGAGAGCACC ------ GAG AA AC G ----------
ATT
GAM24817 9381 GATGGAAGTAATCTGCTTAA - GTA CT TTAACAAT GAAG GTGCA
0 CAATCTCAGAAGGACTGTGC GATG GAA AT GC CTCA GACT
AAGTCAATGAGTCGCTTGTG CTAC CTT TG CG GAGT CTGA
AATTCTCATC T AAG TT CT------ AA-- -----
GAM24824 14310 GATGGCAAGCCTAGCCCCCA T A A C C - -- A A- CTGC
7 TCCCTGCCCAAGACCATCCT GA GGCA GCCT GCCCC ATC CT GCCCA AG CC TCCT
CTGCAGGACAGGCCTGATGG CT CCGT CGGG CGGGG TGG GA CGGGT TC GG AGGA
GCGAGTGGTGGGGCAGGGCA - A A - T G AG C AC ----
TGCCTC
GAM24827 20392 GATGGCGGCGGCTGGGGCTG C - - CG-- G - ATC TGCT
0 GCCGTCTGAGGCGGGTGGCA GATGG GG CGG CTGGGGCTGGC TCTGAG CGGGT GGC
GGCTCTGC
TCGGCTCTGCTGCTGCGGAG CTATC TC GCC GGCCCCGGCTG GGGCTC GCCCG CCG
CCGAGGCG
CCCCCGCCTGCCCGCTCGGG - A C TCGA - T CCC ----
AGCTGTCGGCCCCGGCCCGA
CTCTATC
GAM24827 6130 GATGGCGTCAAGAAGGGCCA GTCAA ---- - G - T T GGGA
3 GGAGCAGGTGCTGGGGGACC GATGGC GAAGGG C CAGGA CA GG GC GG

TGTCCATGATCCTGTGTGAC CTACCG CTTCCC G GTCCT GT CC TG CC
CCCTTCGCCATC ----- CAGT T A A - T ----
GAM24827 19303 GATGGCTCCGGCGGCTTGGG -- CC C GAAA- CAAATT
8 GAAAGCCAAATTGCCAAAAC GATGG CT GG GGCTTGGG GC
TCAAGTCACCTCAGTACCAT CTACC GA CC CTGAACTC CG
C AT CT A AAAAC ------
GAM24828 21144 GATGGCTGCTCTAAAAAGAC GCTCTAAAAAGACA-- A GGGAAAGA
4 AAATGAATGGGGAAAGACAA GATGGCT AATGA TG
TCATTGAATACAAAACAAAT CTACCGA TTACT AC
AAGCCATC ATAAACAAAACATAAG A --------
GAM24828 3959 GATGGCTTATTTGTTTTGTA TATTT TATT-- - T TCTTTCCC
9 TTCAATGATTGTCTTTCCCC GATGGCT GTTTTG CAA TGA TG
ATTCATTTGTCTTTTTAGAG CTACCGA CGAGAT GTT ACT AC
CAGCCATC ----- TTTTCT T T --------
GAM24829 6563 GATGGGAAATAATTCAGTTT AA T A-- AGCCAA GACC
3 GAGAGCCAACTAGACCTAGA GATGGGA TAA TC GTTTGAG CTA
TTCAGACCTAGATTTGAATC CTACCCT GTT AG CAGACTT GAT
CCATC AA T ATC A----- ----
GAM24830 18109 GATGGGAGGAAAGTAGAGGT GA AAA A G TC AAAAAAGTTCG
3 TTCGAAGGGAAAAAAGTTCG GATGG GG GT GA GTT GAAGGG
TCCTTTAACATCCACCCCCC CTACC CC CA CT CAA TTTCCT
ACCATC AC CC- C A -- ----------
GAM24835 4093 GATGGGTGTTTATTGGGATT ------- TAT T A TGTGAAAAGA AGA G AACT
4 AACACTTGTGAAAAGATGGT GATGGGT GTT TGGGA TA CACT TGGTGG GGGCA TC G
GGAGAGGGCAGTCAACTGCT CTACCCG CGA ACCCT GT GTGG ACCACC TCCGT AG C
ATGTGGCCCAAGAATGCCTC TTAAGAC CT- C G ---------- GAC A AACC
AGCCACCAGGTGGTGCTCCC ATGT
ATCAGCCAGAATTGCCCATC CT
GG

GAM24835 5968 GATGGGTTGGGGCGGTTCTT TG T GA---- GG AA GT CCTG
7 AGAGCTGAGTCTTGGGGCCA GATGGGT GGGCGGT CTTA GCTGAGTCTT GGCC GG C

AGGGTCCCTGGGTCTGGGCT CTACCTA TTCGTTA GGAT TGACTCAGAG TCGG TC G
GGGAGACTCAGTCAGAAATA -- T AAAGAC GG G- TG ----
GGTATTGCTTATCCATC
GAM24836 6570 GATGGTAATATTCTATCCTT TAT C-- ATG- A CAA AT CTTTA
3 ATGACACTATTGCAACCAAA GATGGTAA TCTAT CTT AC CTATTG CCAA TGG
TTGGCTTTACCATCTTGGCT CTACCATT AGGTA GAA TG GATGAT GGTT ACC
TTAGTAGGTATAGAAGACAA --- ACA GATA - TTC CT -----
TGGATTACCATC
GAM24837 8114 GATGGTCACTCAGGGCCTTG TCAC G T ACAG- CCAAG CTTCTCT
2 TACACAGCAGCCAAGTACCT GATGG TCA GGCCTTG AC CAG TAC
TCTCTGTAACATACTGACAA CTACC AGT CTGGAGT TG GTC ATG
CGTTTGAGGTCGTGATCTCC TCT- G T CAACA ATACA -------
ATC
GAM24840 4155 GATGGTTTTTCGAATCATAA - TT- C TCATAAT C AGGATC
9 TAGCGCTGTAGGATCATAGC GA TGG TTT GAA AG GCTGT
ACTTCTGCTTTTCAAATATC CT ACC AAA CTT TC CGATA
CAGTC G TAT - TTCGTCT A ------

GAM24844 20625 GATGTATATATTATTCTGCA T TATTCTG TTC-- ACTACTA
5 AGCTTTCATACTGACTACTA GA GTATATAT CAAGCT ATACTG
CAGTATTTTTTGGTTTGACT CT CATATGTG GTTTGG TATGAC
GTGTATACTC - TCA---- TTTTT -------
GAM24845 18129 GATGTATCCCCTGCCTTGAC TCCC-- --- TG CG GC T ATTTC
1 GTCCTGCCTTGGCGATTTCT GATGTA CTGC CT A TCCT CT GGCG
GCCCAGAGGGTTTTGAGAAT CTACGT GACG GA T GGGA GA CCGT
GCAGTATATTTGCATC TTATAT TAA GT TT -- C -----
GAM24846 6064 GATGTCAATGTAAATTTTGA ATG - AATCCAA ACA - TTGT
2 AAAATCCAAACTTACATTCA GATGTCA TAAAT TTTGAAA ACTT TTC AG
GTTGTCTCGGAGGAAGTGAT CTACAGT ATTTA GAATTTT TGAA AGG TC
AATTTTAAGCATTTAAATGA AA- C AATAG-- GG- C ----
CATC
GAM24846 20860 GATGTCACGAAGTTAAAGTC CAC AG AAGTC A CTG
5 TGACACGGCTGCTGCAGCTG GATGT GA TTA TG CACGGCTG
TGCGCCAAATGAATCCACAT CTATA CT AGT GC GTGTCGAC
ATC CAC A- AAACC - ---
GAM24846 4056 GATGTCAGAGTTTATTTATT --- TTTAT - G- ACAG
7 ACCTCTGTTGTTCACAGGAA GATGTCAGAG TTTA TACCTCT GTT TTC
GAAACTAGGGGTATCTTAAA CTACAGTCTT AAAT ATGGGGA CAA AAG
ATCTTCTGACATC CTA TCT-- T AG ----
GAM24847 6248 GATGTCATAGGCGGCCTTCT T AT GC TTCTT- TTCGTAATCTCT
1 TCAGTTCGTAATCTCTCTGT GA GTC AG GGCC CAG
GCCTTGGCCATCTCGATCTC CT TAG TC CCGG GTC
C C- TA TTCCGT ----------
GAM24848 2703 GATGTCGCACTGCTGCAGCC - T - CAGC CTG AC- AGGC
6 CTCACTGGAGGATCACCAAG GATGTC GCAC GC TG CCTCA GAGGATC CAAGG
GAGGCCTTTGACAGATTCTT CTACAG CGTG CG AC GGAGT TTCTTAG GTTTC
TGAGGTGAACATGCGTGCGG G - T AAGT --- ACA ----
ACATC
GAM24848 20525 GATGTCTAAAGCTTACCAAC T AAA A- AA AGAAC C ATAACAAAAAC
8 AAAAGAACCCTCAGCAGAAT GATG CT GCTT CC CAAA CCT AGCAGA
AACAAAAACTTTGCTCAGGA CTGC GA CGAA GG GTTT GGA TCGTTT
CATTTGAGGCCAAGCAGTCG T --- CC A- ACA-- C ----------
TC
GAM24849 21158 GATGTCTCCTGGATTCCATA G C AT TATC ---------- - AT C AGCCA
5 TCTACTGGATGGGTGCCATC GAT TCTC TGG TCCA TACTGGA TGG GTGCC CTTGC TCT

TTGCCTCTAGCCAGGGAAGC CTG GGAG ACC GGGT ATGACCT ACC CACGG GAACG AGG

AAGCAGGCACACCAACTCTT G - C- CCTT TTCCTTTCTCA A AC A -----
TCCTTTCCAGTATTCCTGGG G
CCCAGAGGGGTC

-

GAM24850 14498 GATGTCTGGGGCGCAGATCA T GC AAAAT- CG ------- AGGA
1 AAATTGCGAACCCAGTGGAA GATG CTGGG GCAGATC TG AACC CAGTGGA
GGATCTACTGATAGGCAGGT TTAC GACCC CGTCTAG AC TTGG GTCATCT
TACCATCACTGGATCTGCTG - GT GTCACT CA ACGGATA ----
CCCAGCATT

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GAM24850 5651   GATGTCTTATTATTAAAGTT      TTA     AAGTT     TATT    AAATAAA
6           ACCTATTATTGTTGGAAATA GATGTC   TTATTA    ACCTAT    GTTGG
            AACTAATTGTATGGGTTTAG TTACGG   AATGGT    TGGGTA    TAATC
            ATGGTAACATGGCATT         TAC     AGATT     TGT-    -------
GAM24852 9590   GATGTGACCTACCAGATTTC    T--     CC  A     AA-      TAATAGT
6           AGAACATGTGTTAATAGTAT GATG   GACCTA  AG TTTCAG   CATGTGT
            ATATGCCACTGAAAACTTAG CTAT   CTGGAT  TC AAAGTC   GTATATA
            GTCCTGTATC           GTC     --  A     ACC      -------
GAM24853 20846  GATGTGAGTGAAAACTGCGG      A-    A-   TG  GAAA    A  CAA
2           AAATCTGAACCAAGTGCAGG GATGTG  GTGA  AAC  CG    TCTG AC
            CGTGGTTAATCATAACACAT CTACAC  TACT  TTG  GC    GGAC TG
            C                    AA    AA   GT  ----    G  ---
GAM24856 18752  GATGTGGGTGAACTCCAAAT   T    G G    CCAA       GT    ACTGTA
5           GGAGAAGTAGTCACTGTAGA GA GTGG T AACT    ATGGAGAA  AGTC
            CTTTCTTCATGGTTGACCAC CT CACC A TTGG    TACTTCTT  TCAG
            TC                -    - G    ----       --    ------
GAM24856 9780   GATGTGGGTTTGTGCATCCT        -    C   ---    AC     AG  AGTTG
6           GGACTGAAGAGTGAGTTGCA GATGTGGGT TTGTG ATC   CTGG  TGAAG  TG
            TCCTTCGACTCAGATAGATT CTGCACTTA GATAC TAG   GACT  GCTTC  AC
            CATAGAATTCACGTC            A    T   ATA    CA     CT  -----
GAM24856 21583  GATGTGGTAAGTGAACTGGA      ---  AG   AC   AA     TGTTCC
7           ACACTGGTGTTCCCCAGTGG GATGTG   GTA  TGA  TGG  CACTGG
            GTCATCAGCTACATATACAT CTACAT   CAT  ACT  ACT  GTGACC
            C                    ATA   CG   --   GG     ------
GAM24859 9777   GATGTTAAGGTGAACTTGTC      AA   --      TCA    - ATGT     G  C    CCAGA
0           ACTTGGTATGTAGGTCCGAC GATGTT  GGT  GAACTTG   CTTG GT    AGGTCC ACT CCATC
            TCCCATCCCAGAGGTGGCAG TTATAA  TCA  TTTGAAC   GAAC CG    TCCGGG TGA GGTGG
            TGGGCCTTGGCTCAAGATCA      AA  AG      TA-    T  GT--     -  C     -----
            AGTTTGAACTAAAATATT
GAM24859 5917   GATGTTAAGTAGGTTCCTCT     A-    G    CTCAACCC    C       ---     AAACTATT    TA
1           CAACCCCAGCACTAATTTGA GATGTT  AGTAG TTCCT       CAGCA TAATTTGAG   AGGAA
AAGGA
            GAGGAAAAACTATTAAGGAT TTATAA  TCATT AAGGA       GTTGT GTTAAATTC   TCCTT       TTCCT

            ACCGTTCCTTTCTCCCTTCC      GA    A    A-------    A       ATG    CCCTCT--    --
            TGTACTTAAATTGATGTTGA CCGT
            AGGAAATTACTAGAATATT

                        ----
GAM24864 21358  GATGTTTTAAACATAGAACA          CATAGAACAT  -    GAATAA
5           TTGGTTGGAATAATAACACA GATGTTTTAAA        TG GTTG
            TTAATAACAATTTAAAATGT CTGTAAAATTT         AC CAAT
            C                       AACAATAATT  A    ------
GAM24868 19416  GATTAAGCCATGCATGTCTA    A----     --  TG-  TAA    GCACGGCCG
5           AGTACGCACGGCCGGTACAG GATT    AGCCAT  GCA   TC   GTAC
            TGAAACTGCGAATGGCTCAT CTAA    TCGGTA  CGT   AG   CATG
            TAAATC               ATTAC     AG   CAA  TGA   ---------
GAM24873 12381  GATTAGACTCACCAATTTAT    AG-    A   TTTATTTTGT       TCTGT
4           TTTGTTTTTCTCCTTCTGTG GATT   ACTC CCAA        TTTTCTCCT
            GGAGAAGATCTTTGGGAGTA CTAA   TGAG GGTT        AGAAGAGGG
```

AGAATC GAA - TCT------- -----
GAM24873 5942 GATTAGCACATGACTTAAAA A -------- AAAAG- TGTT
8 GGTGCTGTTGCATAATAAAA GATT GCACA TGACTT GTGC
AGTCAACAAAGCATGTGCAA CTAA CGTGT ACTGAA TACG
ATC A ACGAAACA AAATAA ----
GAM24875 3883 GATTAGTAAAAGTGCTTTCC TA TG TCCAT A TTATTC
8 ATGTTACTTTATTCAGAGCT GATTAG AAAG CTT GTT CT
AATAAGTGCTTTCCTTAGTT TTGATT TTTC GAA CGA GA
CC GT TAAT- - ------
GAM24877 17995 GATTATATATCGTCCATATG ATA G T- AATT GTG AAA
9 TAATTATATCTGTGGTAAAA GATTAT TC TCCA ATGT ATATCT GTA
TATAAAGATATGCATTTTGG CTGATA AG GGGT TACG TATAGA TAT
GGACATAGTC C-- - TT ---- AA- ---
GAM24881 1258 GATTCAATAAAAGGCTCATT AA AG CTCATTTTG- TATA
9 TTGGATTTTATAAAATCAAA GATTC TAAA G GATTT
CCCTAAACTCTTTACAGAAT CTAAG ATTT C CTAAA
C AC CT AAATCCCAAA ----
GAM24882 18934 GATTCAATAGTAATAAAAAC AAT T AACA AAACAA TTCATATT
0 AACAGAAACAAGATTCATAT GATTC AGTAA AAA ACAG GA
TTCCACAGCTGTTTTCTTAT CTGAG TTATT TTT TGTC CT
TTGGAGTC GT- C ---- GACAC- --------
GAM24886 21685 GATTCCATAAGAGGCCTGGA ATAAGAGG TG AAAAG CTG GA ---- C
GAAGAGC
5 AAAGCTCAGTTCTGCCTCAG GATTCC CC G CTCAGTT CCTCA GAGT CCA GTCCA
AGAGTCCACGTCCAGAAGAG CTGAGG GG C GGGTCGA GGGGT CTCG GGT CAGGT

CATGGACTGGAGAAGCTCAG AGA----- GT GAAAA AA- GA AAGA - -------
TGGGGAAAGCTGGGAAAAGC A
TGGGAGAGGAGTC

-
GAM24887 14473 GATTCCGAACGTGAAGGATT GAA TG AGGA TG AAAG ACCG
6 TGGCTAAAGTTTTACCGAAA GATTCC CG A TT GCT TTTT
GAGAAGCTGAAAATGTTGCG CTAAGG GC T AA CGA GAAA
AAAGGAATC AAA GT GTAA GT AGA- ----
GAM24892 19788 GATTCTCTGCTATCTTTGCC CTGC- G T T T- TCCACAGACT
7 TTGGGTTTTGTTCTCTCCAC GATTCT TATCTTT CC TGGGT TTG TCTC
AGACTGAGATCCAGTGCCCG CTAAGA GTAGAAA GG GCCCG GAC AGAG
TGGAAAAGATGTCCCCAGAA CCCCT A T T CT ----------
TC
GAM24898 18308 GATTGAGTTCACACCTCAGC GAG- C-------- - AT A AAG
1 AGATTGAAGAGTTCAAGGAG GATT TTCACAC TC AGCAG TGAAG GTTC
CCTTCATGCTGTTCGACGAC CTAG GAGTGTG AG TTGTC ACTTC CGAG
ACCAAGTGTGAGATGAGATC AGTA AACCACAGC C GT - ---
GAM24900 20962 GATTGCGACGGCGTGCTGTG TG C T T - GAGA
9 GCTCGCGGGGAGACCTGCCG GAT CGA GGCGTGCTG GGC CG CGGG
TGCCTTGGCGCGCCTTCGAG CTG GCT CCGCGCGGT CCG GC GTCC
GTC GA T T T C ----
GAM24901 18312 GATTGCGAGTGGAAAAATAG T C AG--------- GACAGAAA
0 GGGACAGAAATCAGGTATTG GA TG GAGTGGAAAAAT GG

GCAGTTTTTCCATTTTCATT TT AC TTTACCTTTTTG CT
T T T ACGGTTATGGA --------
GAM24906 3483 GATTGGTGAAAGTTTTTAGT TG --- ---- A AAA- GGGA
4 ACCAAGAAAACAGGGATGAG GAT GTGAA AGTT TTTAGT CCAAGA CA
GCTCTTGGATTAAAAGGTAA TTA CACTT TCAA AAATTA GGTTCT GT
CTTCATTCACTGATT GT ACT TGGA - CGGA ----
GAM24907 5652 GATTGGTTGTGGTTAATGAA - TG ATGAATAT GTT
2 TATGTTCAAGTTTTGAATTT GATTGG TTG GTTA GTTCAA
TAATAGTAACTCCAATTCAG TTGACT AAC CAAT TAAGTT
TT T CT GATAATTT ---
GAM24907 12350 GATTGTACTGTATGGGGACT - TAT- AC ATT TG TGA ACCGACAGAAG
3 CCAATTGCTTGGATGACAGT GAT TGTACTG GGGG TCCA GCT GA CAGTC
CACCGACAGAAGGACTGCTT CTA ACATGAC TCCC AGGT CGG TT GTCAG
TGGGCTTCTGGATGCCCTCC C CTCC GT CTT GT C-- ----------
TCCAGTACACATC
GAM24909 19250 GATTGTGTGCCCCCCCGAGG TG CCCCC C-- T G - C A CCTTC
6 CCGTGCCGGCTGCCAGCAGG GAT TGTGCC GAGG CG GCC GCTG C AGC GGC
CCCTTCGTCGCTCGTCAGCG CTG GCACGG CTCC GC CGG CGAC G TCG CTG
GGCCGTTTCCTCCAAGGCAC CT AAC-- TTT - G T C - -----
GTCGTC
GAM24912 953 GATTTAAATAATGTCATTTT AA- A T TC TTGC
0 GGTCAGTTTTGCAATTTCCA GATTTA TA TGTCA TTTGG AGTT
GATTGGCAATAACATAAATT TTAAAT AT ACGGT AGACC TTAA
ACA A T T- ----
GAM24915 4440 GATTTAGCAGCTAATGAAGC TTTAG G A- A C TT GAAAA
4 CCAGCTTCTGAGGAAAATTC GA CA CT ATGA GC CAGC CTGAG
AGTTGTTGTGCCTCATGGAG CT GT GA TACT CG GTTG GACTT
ATGACTTTC TTCA- A GG C T TT -----
GAM24916 744 GATTTATAGTATTAGCTTTC T TT TT------ T AACA
3 TTCCATTCCAACAGGATTGG GATTTA AGTA AGCTTTC CCA TCC
TCCATTTCGAAGGTTTTTAC TTAGAT TCAT TTGGAAG GGT AGG
TTAGATT - TT CTTTACCT T ----
GAM24921 19326 GATTTCGGTAGGCACAGGTG G CACA-- AG GAGAAGATGAGAAAGAA
5 TAGGTGAGAAGATGAGAAAG GATTTCG TAGG GGTGT GT
AAATGATGCTGAGGGACCTA CTAAAGT ATCC TCGTA TA
GTGAAATC G AGGGAG G- ----------
GAM24922 3642 GATTTCTGAATGTAAAGTTG TCTG GTA G TTG -- G GTTTG
6 TTGTGTTTTTTTTTAAATAG GATT AAT AA TTG TGTTTTTTTTT AAATA TA
TAGTTTGTAGTATTTTAAAG CTAG TTA TT AGC ACAAGAAAGAA TTTAT AT
AAAGAACAGATCGAGTTCTA TA-- ATC G TAG AT G -----
ATTATGATC
GAM24929 8068 GATTTGTAGATGTTGACCCA AGA ACCC AG T C GA A TTT TTACT
3 GAGTCCTCTGTCCCCTCCTG GATTTGT TGTTG AG TCCTCTG CC CTCCT AG GGA TC
AAGAGGATTTTCTTACTGGT TTGAACA GCAAC TC AGGGGAT GG GGGGA TC TCT GG
TTCTACTGAAGGGGAGGTAG AG- CAGT GG - A AG A TT- -----
GGGAGGCTTGACCAACGGAA
CAAGTT
GAM24932 21331 GATTTTAGTATTCTTTAAAA T TAT -- CTCACTTATCTTA
7 TAGTCTCACTTATCTTAATT GATT TAG TCTTTAA AATAGT
GTTCATTAAAGATCTATAAT CTAA ATC AGAAATT TTGTTA

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        C                T  T--     AC     ----------
GAM24933 12502  GATTTTATGGGTTTTAAGTG     A   -    ----------    AAGTAA
4          GGGAAGTAATCCCATGTACT GATTTT TGGGT TTTAAG        TGGGG
           TATTTCTTAAATACCTAGGA TTGAAG ATCCA AAATTC        ACCCT
           AGTT               G   T    TTTATTCATGT    ------
GAM24938 9237   GATTTTTACTGTCCTTCATG    TTAC ----  TCA  TC  TTCTT-    TTCAGT  TATTT  ATCCT
6          ATCCTGTTCTTGAAAACTTC GATTT   TG   TCCT  TGA CTG    GAAAAC    TTG   GAGA
           AGTTTGTATTTGAGAATCCT CTAAG   AC   GGGA  ACT GAT    CTTTTG    AAC   CTCT

           TTAAATCTCCTTCCAATTTG    TAGA CTTT   TTC  CC  TTCCCT    TTT---  CTTC-   -----
           TTTTCTCCCTTTAGCCTCAC TTAAA
           TTAGGGTTTCCAAGATGAAT
           C
                    -----
GAM24940 12763  GATTTTTGTTTTTGTATTCT     TG    TATTC   CA   GAG  TCAT       AATTA-  TTTAGAGT
2          GAACATTTTGAGAGATCATA GATTTT  TTTTTG    TGAA  TTTT  AGA   ATGTTTGTTC     CA
           TGTTTGTTCAATTACATTTA CTGAAG  AAAAAT    ATTT  AGAA  TCT   TATAAATAAG     GT

           GAGTTGGTTTGGGAATAAAT     GT    TCT--   AG   AAA  TC--       GGTTTG --------
           ATCTTCTAAAAAGAGATTTA
           TCTTAAAAATGGAAGTC


GAM24940 8705   GATTTTTTACAATACATACT    T  CA    TACTTC   -  GAGATTTGAG
4          TCTGGAACTTTGAGATTTGA GATTT TTA  ATACA     TGGAA CTTT
           GAAAGCTTCCATGTATATTG CTAAA AGT  TATGT     ACCTT GAAA
           ATAAATC              T  TA    ------    C   ----------
GAM24944 9682   GCAAAACAGCTGTAGGTGGC    AAC-    TA    CCTCC-   CAACAGACAC
3          CTCCCTGACAACAGACACTC GCAA    AGCTG  GGTGG     CTGA
           AGCCCTCCCCACCCTAGCTC CGTT    TCGAT  CCACC     GACT
           TCCTTGC              CCTC    C-    CCTCCC   ----------
GAM24955 21179  GCAAACTGGTTGACATCATG    AA TG T   CA   GTTGATA   TGAAACT
0          TTGATAGCTTGAAACTGGCC GCA  C  G TGA  TCAT      GCT
           GTAGTGAAATCATCTGGGAT TGT  G  C ACT  AGTG      CGG
           GT                AG GT T   AA    ATGC---   -------
GAM24955 12442  GCAAAGAAATGTTATTAAAA     GAAATGT     A  -  GAA--      AAAT
8          CCTTGAATTTTTACAAATGT GCAAA      TATTAA AC CTT    TTTTTAC
           AAAAAACAAAAAGTGTATTA TGTTT      GTAATT TG GAA    AAAAATG
           ATGTATTTGT            AT-----     A  T   AAACA      ----
GAM24967 5459   GCAAATGGTTAGCCTGGTAT     -  TT    G   TCAG   AA  --   AAAGC
8          CAGCAGAAACCAGGGAAAGC GCAAA TGG  AGCCT GTA   CAG  ACC  AGGG
           CCCTAAGGTCCTGATCTATG CGTTT ACC  TCGGA TAT    GTC  TGG  TCCC
           AGGCTTCCACTTTGC         C  T-    G  CTA-  C-  AA   -----
GAM24968 8742   GCAAATGTGAAAAGTGAAAC  AA    AAA   AA     TTTATCA   --    TCTGTAT-    G   CCT
2          CTTAATTTTATCAACAAGAA GC  ATGTGA   GTGA  CCTTAAT      ACAA  GAAATT       GGTAT TCT
           ATTTCTGTATGGTATGTCTC CG  TGTACT   TACT  GGGATTG      TGTT  TTTTAA       CCATA AGA

           CTTAGAATACCCAAATCATA  GA    C--   CG      TCACACA   TA     TACTAAAC    -  ---
           ATTTTATTTGTACACACTGT T
           TAGGGGCTCATCTCATGTAG
```

```
          GC
                    -
GAM24968 5381   GCAAATGTTTCAGCCCAATG      GT-      CAATGT  ACCCA     AAAAAAAA
4           TCAACCCAGTTAAAAAAAAA GCAAAT   TTCAGCC     CA     GTTAA
          ATTAATGCTGTGTAAAATGG CGTTTG   AAGTTGG     GT     TAATT
          TTGAATTAGTTTGC          ATT      TAAAAT  GTCG-    --------
GAM24969 19362  GCAAATTGTATTTGTCTTCC     ATT- A  G     CGAGAG-     GT     AAAC
8           GAGAGGATGTCGTTTTAGAA GCAA    GT TTT TCTTC      GATGTC  TTTAG
          ACCTAAAGACATCAAAGGTT CGTT    CA GAA AGAAG      CTACAG  AAATC
          GAAGAGAAGACTTAGTTGC     GATT  -  G     TTGGAAA     --     ----
GAM24971 880    GCAACAGAAGTAATTGTTTC   -       AATTG   C    --- C     CTTTCTACTA
8           AAGCTCCTGATTCTTTCTAC GCA ACAGAAGT     TTT AAGC   TC TGATT
          TAAATCATGAACAGCTTTAA CGT TGTCTTTA     AAA TTCG   AG ACTAA
          AAACATTTCTGTCTGC       C       CAA--   T    ACA  T    ----------
GAM24972 1136   GCAACAGAGTCATTATTTGG    A     CA      GAGAATAACA  GAAA
1           AGAATAACAGTGAAAACAGC GCA CAGAGT  TTATTTG         GT
          CAAGCAGATAAACTCTGTGC CGT GTCTCA  AATAGAC         CA
                        -     --       GAACCGA---  ----
GAM24972 9706   GCAACAGAGTCTGTCGGCGG    C    --  TC  CG      CCCATCC    ACT
2           GAGCTCCCCATCCCCACACT GCAA AGAGT  CTG  GG  GGAGCTC      CCAC
          GTGGCTAGACAGAGTTCTTT CGTT TCTCG  GAC  TC  TCTTGAG      GGTG
          CTCAGATGCTCTCTTGC       C     TA   --  TT      ACAGATC    ---
GAM24973 21076  GCAACATCCAGACTCCAGAA   AA  T    A    AGAAT     TGCCA   AGAC
4           TACAGCTGCCAAGGAGACCC GC  CA CCAG CTCC     ACAGC     AGG
          TGTTATGCTGTGGGGACTGG CG  GT GGTC GGGG     TGTCG     TCC
          CTGGGGC             GG  C    A    -----     TATTG    ----
GAM24978 3578   GCAACTAGATTGTCCCAAAT         T  TCCCAA     GT   G   GAC-  TG    CCCAAGT
0           GGGGGTGATGGGAGACAGTG GCAACTAGA TG      ATGGGG  GAT GGA    AG  ACAC
          ACACCCCAAGTGTGTTGCTT CGTTGGTTT AT      TGTCTC  CTG CCT    TC  TGTG
          ATGTCCAGTCTACTCTGTAA         T  TCTAA-      AT   A   GTAT  GT    -------
          TCTTATTTTGGTTGC
GAM24982 3574   GCAAGAAGGTAGGAGGGAGG    --  A  GT   -          -  C  T    GAGCAACAA
7           GCAGAGCGTTGTCTGAGCAA GCA  AG AG  AGG AGGGAGGGCAG AG GT GTCT
          CAAAGGCCGCCTGCTGCCTT CGT  TC TC  TCT TCTCTTCCGTC TC CG CGGA
          CTCTGTCTGTCTCCTGGTGC    GG  C  TG   G          G  -  C    ---------
GAM24983 14690  GCAAGAATGGAAAGGGCAGG      AA--  GAAAG-     G     AAGGGAGGA
5           TCAGCAAGGGAGGAGCTGGC GCAAG    TG      GGCAG TCAGC
          TGCCAGGAGACAAAGGCTTG CGTTC    AC      CCGTC GGTCG
          C                   GGAA  AGAGGA     -     ---------
GAM24983 3910   GCAAGACACTAGGCTGTCCC    A  CACTAG-   G     ACCCC--     A    ATTGTTTACC
6           GAACCCCTGGTAATAGAATT GCA GA       GCT TCCCGA       TGGTA TAGA
          GTTTACCTTTATACCAAGAA CGT CT       CGA AGGGTT       ACCAT ATTT
          GAGTTGGGAAAGCACCAAAA   -  AAAACCA   A     GAGAAGA     -     ----------
          TCTGC
GAM24985 22247  GCAAGAGCTCCCTGGTGGTA    A A   CCC     GTA      GA-  AA   AAG   A  CACA
7           CATTGGGACGAAGGCAAGCC GCA G GCT   TGGTG   CATTGG   CG  GGC   CCG GG
          GAGGCACACCGCGGAGGCCA CGT C CGA   GCCAC   GTAACC   GT  CCG   GGC CC
          CTGGGACCAATGCACACCGA   - G   A--     AC-      AGG  CA   GA-   G  ----
          AGCGCTGC
GAM24985 8509   GCAAGAGGACAACAGTCTAT    A    ACAA---      ATC     TAAACAATAAAC
```

8 CACTCTTAAACAATAAACAG GCA GAGG CAGTCT ACTCT
GGTAAGACTGAAAAAAACCT CGT CTCC GTCAGA TGGGA
CGTGC G AAAAAAA A-- ----------
GAM24992 1138 GCAAGCGTAAGGGCGTACGT A ---------- G C TG GGGCG
9 GGGGGGGCGTCTTGCTGGGC GCA GCGTAAG GGC TA G GGG
CGGTTGGGGTACTTGCGCAT CGT CGCGTTC CCG GT C TCT
GC A ATGGGGTTGG G - GT -----
GAM24994 20459 GCAAGGAATGATGCTAGCCA -- G-- A AACTA-- CGAG
8 ATAACTATGCCCGAGGGCAC GCAAGG AATGAT CT GCCAAT TGCC
TACACCATTGGCAAGGAGAT TGTTCC TTACTA GA CGGTTA ACGG
CATTGACCTTGT AG GAG A CCACATC ----
GAM24997 20320 GCAAGGCTGAACTTCCCTAG AAG AACT A CCTA A CTTGGA
6 ACCTAAGAGTGCCTTGGAGC GC GCTG TCCCT GA AG GTGC
GCCTGTACTCAGGGGATCAC CG CGAC AGGGG CT TC CGCG
CAGCGAGGC GAG CACT A CATG - ------
GAM25000 9109 GCAAGGTTAAAGTGGGTAAT T- T- CA CCTTTTTATCAATGA
1 CATAAGCTCCTTTTTATCAA GCAAGGT AAAGTGGG AAT TAAGCT
TGAAGTTTGAAGTTTTTCTA CGTTTCA TTTTATCT TTG GTTTGA
TTTTTCACTTTGC CT TT AA ----------
GAM25003 727 GCAAGTCTTCTTAGAGCTGG AA- TC - GCT C T CTTC
4 GGCCAAGTGACTTCTCCTTG GC G TT CTTAGA GGGG CAAG GA
ACTCCTCTGAGCAAAGCCCA CG C AA GAGTCT CCTC GTTC CT
GC ACC GA C --- A - ----
GAM25004 20344 GCAAGTGCATGACAACAGTG A G G AACAGTGA- A- AG AA AGTGTG- AGAAGG

2 AGCTGGGACGGAGACAAGCT GCA GT CAT AC GCTGGG CGG AC GCTCC TGC
CCAGTGTGTGCAGAAGGGTG CGT CG GTA TG TGACCC GTC TG CGGGG GTG
AGAAGGAGGGGCGTGGCTGG - A G GGAGCTAGG AG GG -- AGGAAGA ------
ACCCAGTGGATCGAGGGTGA
TGAGCTGC
GAM25013 8441 GCAATCCGCTCGCCGTGGTC T C C T CCAAA AGGATTACA
5 TCCCAAAATGCTAGGATTAC GCAA CCG TCGC GTGG CTC ATGCT
AGGCATGAGCCACCGTGACC CGTT GGC AGTG CACC GAG TACGG
GGCTTGC C C C - ----- ---------
GAM25017 18513 GCAATGAGGACTCTCTACAG TCTCTAC GAC G - CC GG ATCTA
2 GACCCGATATGGCATCCCTG GCAATGAGGAC AG CC ATATGG CATC T G
GGATCTATTTGTGATGACTA TGTTACTCCTG TC GG TATATC GTAG G T
TATGGCAACTCTTTGCTGTC TCGTTTC AAC - A T- TT -----
CTCATTGT
GAM25018 9389 GCAATGCCAGGTTCAGTAGC GC TC- GCC-- C GGAAA
8 CGTCCCCCCGGAAAGGGGTG GCAAT CAGGT AGTA GTC CCCC
ACCTTTATGCTCGTGCTTGA CGTTG GTTCG TCGT CAG GGGG
TGTTGC TA TGC ATTTC T -----
GAM25024 19938 GCAATTCGGACAGATGATAA - AGAT CT T ATTAAAG
7 CTGTATTGTATTAAAGACAT GCA ATTCGGAC GATAA GTA TGT
TACCTTGTTTGGTTCGAATG CGT TAAGCTTG TTGTT CAT ACA
TGC G GT-- C- T -------
GAM25029 2998 GCACAAAAAAGTGACATTGT CAAAAAA- A G- G GAGGACCTAAGAA
1 CCAGCTCAGAGGACCTAAGA GCA GTG CATT TCCA CTCA
ATGAGGTGGAAAAATGCACA CGT CAC GTAA AGGT GAGT

AAATACATGC ACATAAAA - AA G ----------
GAM25031 3977 GCACAAGATTTTCTTATTGA A--- - AT-- TTAC
9 AGGTGTTACTACCTTTGCAC GCAC AGATTTT CTT TGAAGGTG
AAAGTGAAATCTCTGAGTGT TGTG TCTAAAG GAA GTTTCCAT
AGTC T ACAC ----
GAM25035 20215 GCACACATTGAGACTATGAT AC- ATGA TTTA CT ATTCTTCTGCTTA
7 TCTCTTTTTAGTTACTTCAA GCAC ATTGAGACT TTCTCTT GTTA TCA
TTCTTCTGCTTATGATAACG CGTG TAACTTTGA AAGAGGA CAAT AGT
ACAGGAGAAAGTTTCAATCC ACC ---- CAG- -- ----------
AGTGC
GAM25038 3858 GCACAGAAATCAAAAGTGTA AATCAAA AG AATGC TATGT
3 GCTAATGCTTGATATGTTCA GCACAGA AGTGT CT TTGA
ACTGGGAGACACTATTTATC CGTGTCT TCACA GG AACT
TGTGC ATTTA-- GA GTC-- -----
GAM25041 934 GCACAGCAGGCCTAGGTCCT G TAGG CCACACC C AATAA
1 CCCACACCTGCCCCCTAATA GCACAGCAG CC TCCTC TGCCC CT
AAGTGGGCGCGAGAGGAGGC TGTGTCGTC GG AGGAG GCGGG GA
TGCTGTGT - ---- AGC---- T -----
GAM25041 18217 GCACAGCCCCCTCATGCTGG A CTCAT TG GA ATTTCATGG
4 TCCTTGAGCATTTCATGGGC GC CAGCCCC GC GTCCTT GC
GGAGGGACTGGCGGGGTTGG CG GTTGGGG CG CAGGGA CG
C - ----- GT GG ---------
GAM25043 12939 GCACAGGAGTCTTCACGATG TCTTCAC TGT CA CT TCTCAAATTTCT
1 TGCGCCTCAGGCTGGCTCTC GCACAGGAG GA GCGCCT GG GGCTC
TCAAATTTCTGGGCCCTCAG CGTGTCCTC CT CGCGGG TC CCGGG
GGCGCCTCCTCTCCTGTGC TC----- C-- AC -- ----------
GAM25044 18232 GCACAGGGAAATCTCAGTTC A GAA T CAAATATG A ACACCAA
2 CTCAAATATGCAGCAAAGAT GCAC GG ATC CAGTTCCT CAGCA AGATT
TACACCAAGATCTGTGCTGA CGTG TC TAG GTTAAGGA GTCGT TCTAG
CCACAGGAATTGGATCTACT A ATC - CACCA--- G -------
AGTGC
GAM25050 20906 GCACATGCTGCTTTACAGAC GC---- --------- CGATACATA
7 GATACATATTTGTAAACTTA GCACAT TGC TTTACAGA
CTCATGCAAAATTAGTGTGC CGTGTG ACG AAATGTTT
ATTAAA TACTCATTC ---------
GAM25055 18385 GCACCAGCACAGGCCTCCAG A ACA CA --- TCTTTCT
7 GGTAGCATCTTTCTTGCTCT GCACC GC GGCCTC GGGT AGCA
TGCCCATGAGGTTCAGGTAG CGTGG TG TTGGAG CCCG TCGT
GTGC A GAC TA TTC -------
GAM25058 19837 GCACCCAGTGGAGCCTGGAT ACC GA TC C--- CC GGA ATGATGAA
6 CGGAGCCGTACCCCCCGGGG GC CAGTG GCCTGGA GGAGC GTA CCCCGG CTAG
ACTAGATGATGAACTGGACA CG GTTAC TGGACCT TCTTG CGT GGGGCC GGTC
CCGGGGATGCCAAAGTTCTT A-- -- -- AAAC A- ACA --------
CCAGGTCATTGAGC
GAM25059 19170 GCACCCATTTGTACATATAG - TTT G A TACATCACATTTTAAAT
3 GTCATTCATACATCACATTT GCAC CCA GTACATATAG TC TTCA
TAAATTGGGGACTGTGTGTG TGTG GGT CGTGTGTGTC AG GGGT
CTGGTGTGT T --- - - -----------------
GAM25063 3920 GCACCGCCGGCGGAACCAGC - C- GGAA A AAGAAGAAGAAG
7 TCATCAAGAAGAAGAAGGAG GCA CCGC GGC CCAGCTC TC

GAGCTGGAAGCCAAGCGGCT CGT GGCG CCG GGTCGAG AG
GC C AA AA-- G ----------
GAM25064 5882 GCACCTAACTGACTTCCAGA C AA C-- GTCTCTGT AAAC
9 GTCTCTGTAGAAACCTTAAC GCA CT CTGA TTCCAGA AG
TCATCTGGAGTTATCAGGGA CGT GA GACT GAGGTCT TC
GCTGC C GG ATT ACTCAAT- ----
GAM25066 9464 GCACCTATGTTATTCAAAAC A - TATTCAAAACAGC- A TACTT
0 AGCTACTAGTGTTACTTATA GC CCTAT GT TACT GTGT
CAGTATAAACCAACAACTTA CG GGATA CA ATGA CATA
CAATAGGGC - A TTCAACAACCAAAT - -----
GAM25066 2843 GCACCTCGAGATGAACTGGT - - - T GG---- C G C A GTGACT
6 GGAGGCAGCGTGTGCCCTGA GC ACCTCGA GATG AACTGG GGA CAG GT TGC CTG CCT

CCTGTGACTGGGCAGAGCGG CG TGGAGTT CTAC TTGACT CCT GTC TA GCG GAC GGG

ATCCTGAAACGGTCCTTCAG C G C T GGCAAA C G A - ------
TTCCATCGTTGAGGTCGC
GAM25068 8374 GCACCTGGGGGACCACGAAG -- -- ACCA- AA - TACCACTC
5 CCAGCTACCACTCGCTGTGC GC ACC TGGGGG CG GC CAGC
CACGGCTCACCCCCAACGGT CG TGG ACCCCC GC CG GTCG
CTGC TC CA ACTCG AC T --------
GAM25070 8707 GCACCTTTGCTAATAAGGAA ---- TG TA ATGGTC TTTGAATTAT
9 ATGGTCTCCCTTTGAATTAT GCACCT T C ATAAGGAA TCCC
GGGAAGTTTCTTGTCTGTGA TGTGGG A G TGTTCTTT AGGG
TATGGGGTGT GTAT GT TC GA---- ----------
GAM25071 8454 GCACCTTTTTTTTATTTATT C TTTATTTATT CT- GTTTA
2 TTTGGCTAGGGAGTTTATCC GCA CTTTTT TTTGG AGGGA
CTTTTTCGAATTATTTTTAA CGT GAAGAA AAGCT TCCCT
GAAGATGC A TTTTTATT-- TTT -----
GAM25071 3063 GCACGAGGGGGTGCTGGCGG C- GG G C CA GA AAA TAAGCAGCT
9 CTGCAGCCGGAGTTCAAACC GCA GAGGG TGCT GCGG TG GCCG GTTC CC
TAAGCAGCTGGAAGGAACCA CGT CTTCC GCGA TGTC AC CGGT CAAG GG
TGGCCAACTGTGAGCGTACC TA AT G A -- AC GAA ---------
TTCATTGC
GAM25072 18839 GCACGATAAGTCATCAATCG ACGATAAG TC --- GAACAACA GTATCA
0 GCCCCGGAACAACATGGTAT GC TCATCAA GGCCC CG TG
CACAAGGACAACGCACGGGC CG AGTAGTT CCGGG GC AC
CTTGATGAACGACAGC ACAGCA-- -- CAC AACAGGA- ------
GAM25074 14655 GCACGGAACTGACCGGGATC C CT G- A CT--- AACTGACCCTGA
2 CTGAGGCTGGTAACTGACCC GCA GGAA GACCG GATCCTG GG GGT
TGAACCTAAAACCCAGGATT CGT TCTT CTGGT TTAGGAC CC CCA
GATGGTCTTTCTCTGC C T- AG - AAAAT ----------
GAM25075 22296 GCACGGGATTTATACAGTGC CG ATA - C T- GTT CCAG CCT
2 ACTAATTCAGTTTTTCCAGA GCA GGATTT CAGTG CA TAA TCA TTT ATATTT
TATTTCCTGAATATAAAAAT CGT TCTGAG GTCAC GT GTT AGT AAA TATAAG
AATGACTTTGATGTCACTGG AT GG- T A TC AAT AA-- ---
GGAGTCTTATGC
GAM25078 3231 GCACTAGGAACAGAGGGGAG T C AG - C-- A CA A CC C TGAG
6 CTATCGGATTGCATCTAGAA GCAC AGGAA AG GGGAGC TAT GG TTG TCT GAA TG TG
CCTGCTGTGAGCAACATCTT TGTG TCCTT TC CCCTTG GTA CC AAT AGA CTT AC AC

CAGAATTAACCATAATGTGT - - CT T ATA - TA - CT A ----
TCCCTCCTTTCCTGTGT
GAM25079 12537 GCACTATACACCAAAGTCAA TATAC- AG A ATTATAAAGATTCAC
0 TCATTATAAAGATTCACGAT GCAC ACCAA TC ATC
GGAAGTTGGTTCAATTGTGC CGTG TGGTT AG TAG
TTAACT GA G ----------
GAM25081 16504 GCACTCCGGTTGGGGGTCCC A -- TGGG - - --- AGGA CC- TGTCGT
3 CAGGTGGGGCAGGATCCCCC GC CT CCGGT GGTCC CC AGGTG GGGC TCC CAGATC

AGATCTGTCGTGGTCTGAAT CG GA GGCCG CCAGG GG TCTAC CCCG AGG GTCTGG
GGACGCCCAGTCATCTAGGT A AG TGA- T A TGA C--- TAA ------
GGACCAGTGCCGGGAAGAGC
GAM25083 3703 GCACTCTTGTCAGACTTAAC A - - T- A--- ATTC AGATA
1 TAAGCAGATTCCCGAGATAC GC CTCTT GT CAGACT AACT AGCAG CCG
GGTGTGCTGTTAGAAGGTTC CG GAGAA CA GTCTGG TTGG TTGTC GGC
TGGTCTGCACTAAGAGGC - T C TC AAGA GTGT -----
GAM25083 8214 GCACTGAAGATGGCGGCTGC CTGAAGA C T A A T-- C---------- TTG
5 TGTAGGACGGTTGCTCCGAG GCA TGG GGCTGC GT GG CGG TGCTCCGAG GTCGG
CGTCGGTTGCCCGACATGTG CGT ACT CCGACG CA CC GTC ACGGGGTTC CAGCC

AGTGCCATTCCTTGGGGCAT CGTCCGG C T - - TTT CTTACCGTGAGTGTA ---
TTCTGCCACTGCAGCCCTCA C
GGCCTGCTGC

-
GAM25085 18499 GCACTGCATGGTATCTGCAC - ATGGTATCT - TTTACAC
1 TCAGCAGTTTACACCTGCTA GCACTG C GCACTC AGCAG
GGGTGTTCAAAGGTCAGTGC CGTGAC G TGTGGG TCGTC
T GAAACT--- A -------
GAM25085 22225 GCACTGCTCCTGATCCCTGC T- TGA CTGC CTC TCTTTCATCCT
7 TGCCCTCGCCTCTTTCATCC GCAC GCTCC TCC TGCC GCC
TGGCTTGGCACCGGAGTGGA CGTG TGAGG AGG ACGG CGG
GTTCGTGC CT TG- CC-- TT- ----------
GAM25087 20515 GCACTGGCTCTCCAACTTCA ACT AACTTCAC T CTTGATCT
3 CCGTGGGCTTGATCTTCCCG GC GGCTCTCC CG GGG
TTCATCCAGGAGGGCCTCGG CG CCGGGAGG GC CCT
C GCT ACCTACTT - --------
GAM25087 1557 GCACTGGGAGCTTACTGCGG T AG --- GGA--- GGAGA
7 AGGGCGAGGAGATTGCCCGG GCAC GGG CTTA CTGC GGGCGA
GAGGGCAGCCATGAGGCCCG TGTG CCC GAGT GACG CCCGTT
TGT - G- ACC GGAGGG -----
GAM25089 19343 GCACTGTGCAAGGAGCTCCC A G A A C A -- A GG GT CAAGATCCC
7 CAAGGGCCCGGAGCAGGTGC GC CT TGC AGG GCTCC CA GGGCCC GG GCA TGCCC GC

CCGTGCCAAGATCCCGCCAG CG GA ACG TCC CGAGG GT CCCGGG TC CGT ACGGG CG

GGCAATGCCTGGGGGCCCAT - G C G A A GG - A- AC ---------
GAGGAGCGCCTCGCAGAGGC
GAM25092 19875 GCACTTCGGGACGGGGGGGA TTCG - ACA A AAACGGGCC
2 AACACCACAAAACGGGCCTG GCAC GGACGGG GGGGAA CC CA

CGGAATTCCTCACTTGTCTG TGTG TCTGTTC CTCCTT GG GT
TGTGT TG-- A AA- C ---------
GAM25100 14007 GCAGAAATCACAGATGAAGA AA- - ATGAAG A-- ATA
8 CAACAGCATAGCTGCCATGT GCAG ATCA CAG ACA CAGC
ACCAAGCTGTTGGTGAACTG CGTC TGGT GTC TGT GTCG
C AAG T GAACCA ACC ---
GAM25102 21584 GCAGAACCACCCCAGTGCAC C CC-- TG CC - G TGCTGAT
4 CTCCCTGGCCTGGTCTGCTG GCAGAA CACC AG CA TCC CT GCCTGGTC
ATGGCCAGGTAAGTGGGTCT CGTCTT GTGG TC GT GGG GA TGGACCGG
GTCCTCTCAGGTGATTCTGC A ACTC CT CT T A -------
GAM25102 14709 GCAGAACCCCAGCCCCACCT ACC A G TGGA-- - T TTTGGAC
5 GCCTGGAGCGCGTTTGATTT GCAGA CCAGCCCC CCT CC GCG CG TTGA
GGACTCGACTGTTGTGGTGA TGTCT GGTCGGGG GGA GG TGT GT AGCT
TGGAGGGGGGCTGGATCTGT A-- - - TAGTGG T C -------
GAM25104 16750 GCAGAACTTGGGTCTCTATG -- T T AT ----- A AACC
0 GGGCAGTGGACCAACCGGCC GCA GAACT GGG CTCT GGGGCAG TGG CC
CAGAACTTTGTCCTCAGAGC CGT TTTGA CCC GAGA TCCTGTT ACC GG
CCAGTTTGATGC AG - - C- TCAAG C ----
GAM25105 5585 GCAGAAGCAGCAGAGGGTCC AAGCA A T - ----- TTCTTC
1 GGCAGGGGTTCTTCTCCTCG GCAG GC GAGGG CCG GCAG GGG
TACTGCACGGCCTTCCGCAC CGTC CG CTTCC GGC CGTC CCT
CTGC CA--- C - A ATGCT ------
GAM25110 12622 GCAGACAAAACCTGATTGCA A AAA - ---- AAAA- CTAA GG ---
5 TGTCATGTTAAAATGCTCTA GC GACA CCTG ATTGC ATGTCATGTT TGCT G GAAATT
TAAGTG
AGGGGAAATTTAAGTGCTTT TG CTGT GGAC TAATG TGCAGTGTAG ACGG C CTTTAA
ATTTAC
CTTTTCATTTACCTAATTTC C GAC C GATC AATTA TTAA TA TCC
ATCAATTGGCAATTAAGATG CTTTCTTTT
TGACGTCTAGGTAATCCAGG
CAGTGTCCGT

GAM25111 1278 GCAGACACACAGAAGCCGAG CACAGAA AT GTCACCATGT C CAATCC
0 TATTGCCGTCACCATGTCAG GCAGACA GCCGAGT TGCC CAG ACA
CACACAATCCTGTCCTGGGC TGTCTGT TGGCTCG ACGG GTC TGT
AGCTCGGTGGCAATGTCTGT AACGG-- -- ---------- C ------
GAM25113 4392 GCAGACCAGTCTTCCGTGGC CA TCC- - CTGA G CA- -- GGAA
5 AGGCTGAGCGCTCCAGTCTT GCAGAC GTCT GTG GCAGG GC CTC GTCT TCAGTAG
CAGTAGGGAATTGCTGAATA CGTCTG CAGA CAC TGTCC CG GAG CGGA AGTCGTT
GGCACAGAGGGCACCTGTAC AC CTTC A A--- G ACA TA ----
ACCTTCAGACCAGTCTGC
GAM25114 8696 GCAGACCCCAGCGTGGGCTC ACCC CCTTCC TCCTCT
1 CCTTCCAAGCTTCCTCTAGC GCAG CAGCGTGGGCTC AAGCT
TTTGGGCCTATGCTGTCCCC CGTC GTCGTATCCGGG TTCGA
TGC CCCT T----- ------
GAM25115 1751 GCAGACGGCAGAATGCCTCC G GG ATG CAAA GACT AG TTCG
1 AAAGGTGACTTCAGAGCTGC GCA AC CAGA CCTC GGT TC AGCTGC
TTCGGCAGCTGAGACAAGCC TGT TG GTCT GGAG CCG AG TCGACG
ATGAGGAACTCTGAGTATGT A A- CAA TA-- AAC- AG ----
GAM25115 5675 GCAGACGTCAGAACGATGAA AGACG --- GA ---- GGCGGA

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4          GAGGCAGGCGGATGTGAAAC GC    TCAGA  AC  TGAAGAG   GCA
           TCTTCAAGTATATCTGGAAA CG    GGTCT  TG  ACTTCTC   TGT
           GC              AAA--    ATA  A-     AAAG  ------
GAM25116 9655  GCAGACTCATGCAGCCCTAT    CTCAT  A   -  CC   AGACCAAGGCGCA
0          GGCCGCTCAGACCAAGGCGC GCAGA    GC GCCCT ATGG  GCTC
           AGAGCAACTATCAGGGCAGC CGTCT    CG CGGGA TATC  CGAG
           TCTGC              -----  A   C   AA  ----------
GAM25118 6398  GCAGAGAAGGTCTTCCTTGC    -  -  T    T   AGAA---------  GATG
1          TCAGAAGATGATGATTGGAC GCAGA GA AGG CTTCCT GCTC          GAT
           GGTGCAACCGAGCTGGGAAG TGTCT CT TCC GAAGGG CGAG          TTA
           CCTGTCATCTGT          A  G  -    T   CCAACGTGGCAGG  ----
GAM25118 19414 GCAGAGAAGGTCTTCCTTGC    -  -  T    T   AGA----------   GATG
2          TCAGAAGATGATGATTTGGA GCAGA GA AGG CTTCCT GCTC          AGAT
           CGGTGCAACCGAGCTGGGAA TGTCT CT TCC GAAGGG CGAG          TTTA
           GCCTGTCATCTGT          A  G  -    T   CCAACGTGGCAGG  ----
GAM25119 776   GCAGAGAGGAGCTGTAACGT   G     -  TA  GTG--  A   CACACA
7          GTCCAAGGTCACACAGCCTG GCA AGAGGAG CTG  AC    TCC AGGT
           GGAATTGGGTCCTGGTCTCC CGT TCTCCTC GGT  TG    AGG TCCG
           TCTGTGC            G     T  CC  GGTTA  G   ------
GAM25120 12698 GCAGAGAGTTGGCAGGTGCC       T  -   ---  -----   -  CACT
2          TCTGCCCCACTGGAGCAGAT GCAGAGAGT GGC AGGT  GCC    TCTGC CC
           GATAGGCTCGGCCTGGTCAC CGTCTCTCA CTG TCCG  CGG    AGACG GG
           TCTCTGC               -  G   GCT  ATAGT   A  ----
GAM25123 2736  GCAGAGGAAGATTGGAGACC   G    A  G  ACC  A      TTA
9          AGGAACATGATTTTAAATTA GCA AGGAAG TTG AG  AGG ACATGATT
           TGTGCCTTTACTGCAGCTTT CGT TCTTTC GAC TC  TCC TGTATTAA
           CTTGC            -    -  G  ATT  G      ---
GAM25133 12929 GCAGATCAGCCATGGCCTCG C    A   -      TC  AAGTGGTCTT    GAGAGA
8          TCGAAAGTGGTCTTGGCCAG G AGATC GCCA TGGCCTCG  GA        GGCCA
           AGAGATGGCCTCCTCGGGGC C TCTAG CGGT GTCGGGGC  CT        CCGGT
           TGTTGGCGATCTC      -   -  T      TC  ----------    ------
GAM25135 4230  GCAGATGATCGAGACGTACT    ATGATCGA    ACT TG CT    T  A  CC  -  AAGAGCCG
5          TTGACTTCCGGTTGTATCGC GCAG      GACGT  T  A  TCCGGT GT TCG  TG TGG
           CTGTGGAAGAGCCGCCAGCA TGTC      CTGCA  A  T  AGGTCG CG AGC  AC ACC
           CTCGAAGCTGCTGGACTTTG   --------   GC- GT TC    T  A  TC  G  --------
           ACGACGTCCTGT
GAM25141 6030  GCAGCACAAAGGCGGCGCGG     CAAA  C     -  CATC    TGTAGT
1          TGCACATCGGAGTTGTAGTA GCAGCA   GG GGCGCGG TGCA   GGAGT
           CTTCAGCTGCATCTGCGCCA CGTCGT   CC CCGCGTC ACGT   CTTCA
           CCTGCTGC             ----  A     T   CGA-   ------
GAM25141 927   GCAGCACAAAGGCGGCGCGG     CAA  C     -  CATC    TGTAGT
2          TGCACATCGGAGTTGTAGTA GCAGCA   AGG GGCGCGG TGCA   GGAGT
           CTTCAGCTGCATCTGCGCCA TGTCGT   TCC CCGCGTC ACGT   CTTCA
           CCTGCTGCTGT           CG-  A     T   CGA-   ------
GAM25141 4146  GCAGCACAGCGCAGGGGGTG    AC    AGGGG--  G  T   AG  TGTC
7          GCGTTGCTCAGGCTGTCGCG GCAGC  AGCGC     GTG CGT GCTC  GC
           GGTCACGGCACACACGTAGC CGTCG  TCGCG     CAC GCA TGGG  CG
           GCTCGCTGC            C-    ATGCACA  G  C   --  ----
GAM25144 6390  GCAGCAGAGACTGGGCTAAA      -  CT   TA  TAC    CTGAA
4          TACTGGAACTGAATTCCACT GCAGCAGA GA  GGGC  AA  TGGAA
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          TTTCTGCCTGCTCATTTGCT CGTCGTTT CT  TCCG  TT   ACCTT
          GC                   A  CG    TC  TTC    -----
GAM25145 1141   GCAGCAGCACCGTCTCCCTG     AG   CG    CT   AG  G  TTCTTT
1          GCAGCGGGCTTCTTTGTGCG GCAGC  CAC  TCTCC  GGC  CG GC
          AAGCCCGGAGAATGTGAGGC CGTCG  GTG  AGAGG  CCG  GC TG
          TGC                 GA   TA    C-   AA  G ------
GAM25146 21193  GCAGCAGCTGCTCTCACAGA   AG-    G  -   AC   AT    A  TATT
0          ATGACAAGCTATTGCATGTC GC   CAGCT CT CTC  AGA  GACA GC
          TCTCCGAGTGGAGCTGAAGG CG   GTCGA GG GAG  TCT  CTGT CG
          C                 GAA    -  T   CC   --    A  ----
GAM25147 12790  GCAGCAGGTGGCGCAGATGC    G  -       AGA    GC-  A   ACTACA
0          AGCTGAAGTACTACAACTCC GCA CA GGTGGCGC   TGCA   TG AGT
          GACGTGCACCGCGCCGCCTT CGT GT CCGCCGCG   ACGT   GC TCA
          GGTGC               G  T      CC-    GCA  C  ------
GAM25149 20915  GCAGCCAAGCATTTGATACT    CCA-     GATA     AAAG    GAAGA
9          GGAGAAAGTTTCAGAAGATG GCAG    AGCATTT    CTGGAG    TTTCA
          AAGAACTTCGGAAGAGAATG CGTC    TCGTAAG    GGCTTC    GAAGT
          CTCATTCTGC            TTAC      AGAA      AA--    -----
GAM25150 4476   GCAGCCAAGGCGACGAGTAG   A   AAG   AC    A---    - ACACAG   GAACGG
1          CAGCACACAGGGGGAACGGC GC GCC   GCG  GAGT    GCAG C     GGG
          CCAGGGCCTGCCACGACTCA CG CGG   CGC  CTCA    CGTC G     CCC
          CGCGGCGC            -  ---   A-    GCAC    C GGA---   ------
GAM25151 12210  GCAGCCAGTCACGGCGTCAG       --      C  CA  T T       CG  A-  TGCT
3          GTGTCGGCCCGTCGGTAGCT GCAGCCA  GTCACGG GT  GG G CGGCCCGT  GT  GC
          GCTGCAGACATGCGGGTCGC CGTTGGT  CAGTGCC CA  CC C GCTGGGCG  CA  CG
          CCATACCCGTGACAGTGGTT       GA      -  TA  - -       TA  GA  ----
          GC
GAM25152 8489   GCAGCCCAACATCCTTTCTC    ----     CAT--       GGG-      GC       -  AAT
5          TGGGGAGAAGAGCAAATGCA GCA    GCCCAA    CCTTTCTCT    GAGAAGA  AAATGCAT GC
          TGCAATGCAATGTATTTTCT CGT    CGGGTT    GGAAGGAGA    CTTTTCT  TTTATGTA CG
          TTTCAAAAAGAGGAAGGCTT    AAAC     TCTTC       AAAA      --       A  ---
          CTTTGGGCCAAATGC
GAM25154 20788  GCAGCCCTCCCTGCCATGTA     CCCTCCCTGCCAT     --  --     CCTTTTTT
8          GATCCCAGAACCTTTTTTTT GCAG           GTAGAT  CC  CAGAA
          CTGTAGGCCATCTATTCTAA CGTC           TATCTA  GG  GTCTT
          CACTACTCTGC            TCATCACAATCT-     CC  AT     --------
GAM25156 6671   GCAGCCGCTTTGGATGCTCT    GC    TT     TCTTC GC    ACG  ACCA
3          TCGGCCTGCACGGGACCATC GCA  CGCT  GGATGC     G  CTGC   GG
          ACGCAGATCCGCATCCTCGG CGT  GTGG  CCTACG     C  GACG   CT
          TGAGTGC              GA    CT     C---- TA    CA-  ----
GAM25156 21299  GCAGCCGGAGCACAGGAACA     C    CAC    ACACCA    CTCTCCTCCGCA
5          CCAGCGGCCTCTCCTCCGCA GCAGC GGAG   AGGA     GCGGC
          GCCGCCGCCTCCTCCTCCAG CGTCG CCTC   TCCT     CGCCG
          CTGC                 A    C--    CCGC--    ------------
GAM25159 19356  GCAGCCTGTAAGGTTTAATC       GTAA  TT   TCTCA----      GCAAG
3          TCAGCAATAGGCAAGTTATT GCAGCCT    GG  TAA       GCAATAG
          GTAAACATATTTTATCCCAA CGTCGGA    CC  ATT       TGTTATT
          AAGGCTGC               AAA-  CT   TTATACAAA      -----
GAM25160 18847  GCAGCGCAGCGGCCGGGGGG      - A   G     G    ---------      - CCTC
3          TGCGGGCGCCCTCGCCGCCC GCAGCG C GCG CCGGG GGTG        CGGGCG C
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GGCTACCTACCGCCGCCTGG CGTCGC G CGC GGTCC CCGC GCCCGC G
GCGCCGCCGCTGC C C G G CATCCATCG C ----
GAM25162 2909 GCAGCGTCTGGTCACTCGCT CTGG CT- C--- T GA AGAGAA
2 CTCCTCTGGGGACTGCAGAG GCAGCGT TCA CGCTCT CTC GGG CTGC
AAGCAGGACCTCGGGCCATG TGTCGTA AGT GTGGGG GGG TCC GACG
GGGTGTTTTGAATGCTGT ---- TTT TACC C AG ------
GAM25165 6144 GCAGCTCCTGCATCTCATCA - C-- ATC- AAAC GGAATG
2 AACTCGGAATGGAAAACGAT GCA GCT CTGC TCATC TC
GACACCGCAGTTCAGTATGC CGT TGA GACG AGTAG AG
A CTT CCAC CAAA ------
GAM25165 9274 GCAGCTCTACTGGGCATAGC CTCTACT C C - TAC T TG CA---- C CC
6 CGTGGTTACGGGGCTGCTGG GCAG GGG ATAGC GTG GT GGGGC GC GCCCT GCAT
TTGGCG T
CCCTCAGCATCTTGGCGCCT CGTC CCC TGTCG TAC CA CTCTG CG CGGGA CGTG
AACTGT G
GGTTTGTCGCCGTTGTCAAT CCTTTTT - T A --- T GT TCCTCA T T-
GTGCACTCCTAGGGCTGGCT TTGTC
GTCTCACACATTGCTGTCCC GGT
TTTTTCCCTGC CCG

GAM25166 13998 GCAGCTCTTTGAAATAAAAG TTGAAAT -- TT- CCTAG
5 TGATTTTAGTTCCTAGGACT GCAGCTCT AAAAGT GAT TAGTT
ATTTGTTATACTTTTGGAGC TGTCGAGG TTTTCA TTG ATCAG
TGT ------- TA TTT -----
GAM25173 20765 GCAGCTTGCACGCCTGAAGA T A - AAG CTC -- GCCAA
2 GACTCGGTCACGGAGCCAAT GCAGCT GC CG CCTG AGA GGTCA CGGA
CTGGTTGACTTTTAGCAGGA CGTTGA CG GC GGAC TTT TCAGT GTCT
CGGCAGTTGC - - A GA- --- TG -----
GAM25175 19102 GCAGGAAAAATTTAGATAGC AAAATT- AGCACAACA CAAT
0 ACAACAGTGGCAATTCACGA GCAGGA TAGAT GTGG
TGAAGAGATCTACTGCAAAT CGTCCT ATCTA CACT
CCTGC AAACGTC GAGAAGTAG ----
GAM25176 18017 GCAGGAAATATTCTTCTAAC AAT TC CTAA G - G AAAC
0 AGAGCCAGGTCAGGTAAAAC GCAGGA AT TT CAGA CCAGG TCAG TA
TAGCTGATTTTGGATCTGCT CGTCCT TG AA GTCT GGTTT AGTC AT
TCAATGGTTTCTCCTGC CTT GT CTTC A T G ----
GAM25177 4108 GCAGGAACTGGATATAGCAC G TAT C TCCCTCCCCATCCCC
1 CGTCTTTCCCTCCCCATCCC GCAG AACTGGA AGCAC GTCTT
CGAGGCTGTGCTTCCAGTTT CGTT TTGACCT TCGTG CGGAG
TGC - --- T ----------
GAM25178 19074 GCAGGAAGCTCTTTAGCCCA AAG CCCACA--------- ATT
3 CAGCAGATTCTGCATGCCAG GCAGG CTCTTTAG GCAG
CCTGGCAACTGAGGGGACCT CGTCC GGGGAGTC CGTC
GC A-- AACGGTCCGACCGTA ---
GAM25181 3590 GCAGGACTTGCCCTGTTGCC ------ CC T C- AAATGTTCTC
6 ACCAAATGTTCTCGGTATGT GCAG GACTTGC TGT GC ACC
CACATGCAAGTCTCTTTTCT CGTC CTGAACG ACA TG TGG
GC TTTTCT T- C TA ----------
GAM25183 12729 GCAGGAGCACCTACCATGCG G A A AT G CCAA AGCA A A - GAGA
9 CATTCCAAGGAGCAGCCATT GCAG AGC CCT CC GC CATT GG GCC TTC TG CTG

CATGCTGGAGACAGTCAGGG CGTC TCG GGA GG CG GTAA CC TGG AGG AC GAC
AGGTACAACCGCGAAATGGC G A - C- - AGCG AACA - G T ----
CGGAGGAGCTGCTGC
GAM25184 13957 GCAGGAGCCCCAGGAGCTGA GA --- G TG A CCTCAT
0 GCGAGGACCCTCATGTCCAT GCAG GCCC CAGGA C AGCG GGAC
GCTGTGTCCTGACTGGGTCT CGTC TGGG GTCCT G TCGT CCTG
GC -- TCA - TG A ------
GAM25185 18224 GCAGGAGGAGGCAGAGCACA AG AGA CA ATC - CAGACTC
4 GCATCGTCGGGACCAGACTC GC GAGGAGGC GCA GC GTC GGGAC
GTCTCAGGCCAGTTGCAGCC CG CTCTTCCG CGT TG CGG CTCTG
TTCTCAGC A- A-- -- AC- A -------
GAM25188 19996 GCAGGAGTGGGAGGAGGGAG GAG ------ G A GGA TAGGCT
4 GACAAGTGGAAGTCTAGGCT GCAG TGGGAG GAGG AGGACA GT AGTC
GGCTGAGCTGTTCTGTCTCG TGTC ATCCTT CTCT TCTTGT CG TCGG
AAAAGTTCCTAAAACTGT AAA GAAAAG G - AG- ------
GAM25189 21251 GCAGGATCTATTTTAAGGTC C G C GA TT -- AGATCAAG
5 CCACATGATAGGTTCTTACT GCAGGAT TATTTTAAG TCCCA AT TAGG CT TACTTC
TCAGATCAAGGAGGTGAAAG TGTCTTA ATAGGGTTT AGGGT TG ATTT GA GTGGAG
GTTTTAAAGTTGGGAATTTG A A - AA TG AA --------
GGATAAATTCTGT
GAM25191 4149 GCAGGATTTATTTTAGAGCC A ---------- GC GCAAG
0 AGGCAAGCTGATTCTAAAGT GC GGATT TATTTTAGA CAG
GCACGTGAAGAAGTAGTCTA CG TCTGA GTGAAATCT GTC
GC A TGAAGAAGTGCAC TA -----
GAM25191 21007 GCAGGCAAAAAATTGAGCAG A ATT A TTTA AAAAA CTAGATCTT
3 CATTTATTCTTGAAAAACTA GCAGGCA AAA GAGC GCA TTCTTG CTA
CTAGATCTTTAGGCAAGTAG TGTCCGT TTT TTCG TGT GAGGAT GAT
GAGATTGTGGCTTTTTCTGC C --- G TA-- GAACG ---------
CTGT
GAM25194 18058 GCAGGCCATATCATTTGAGG ---- A C A TT G C CTATAC
9 TTGAGGTGCCACTATACTGC GCAGG CC TAT ATTTG GG GA GTG CA
CATGTTTCCAGATAATAGGA CGTTC GG ATA TAGAC CT TT TAC GT
ACTCTTGC TCAA - A - -- G C ------
GAM25195 18636 GCAGGCCCATGCCGTGTCCT GG CC TG ATGTA A GGGTGA
4 GCATGTAGCCCACAGGGTGA GCA CCCATG G TCCTGC GCCC CA
TGGGGCAAGGGCGGGGTGCT CGT GGGTAT C GGGGCG CGGG GT
ATGGGATGC A- -- GT GGAA- - ------
GAM25204 12865 GCAGGGCAGCCCACCCCGCC A-- CACCC CCAC - - A C CGCGCA
3 CACGTCGCCGGAGCCGCCGC GCAGGGC GCC CGC GTC GCC GG GC GC
GCAGCAGCCCCAGGCAGACC TGTCCCG CGG GCG CAG CGG CC CG CG
CCCGCGCCCGGCCCCGCCCT CCC CCC-- CCCC A A C A ------
GT
GAM25204 4004 GCAGGGCAGCCCCATCCTGG CA- C--- ---- AGCTTCC
4 GTCTGGAGCTTCCCTAGACC GCAGGG GCC CAT CCTGGGTCTGG
CAGGCACCATGCACAGGCAT CGTCCC CGG GTA GGACCCAGATC
TCCCTGC TTA ACAC CCAC -------
GAM25207 9663 GCAGGGGCCCAGAACACCTG -------- AGAA --- TCACCT
6 CTCTCACCTGAGCCCCAGGT GCAGG GGCCC CACCT GCTC
GAAGGGGCCCGGGAACACCT CGTCC CCGGG GTGGA CGAG
GC ACAAGGGC GAA- CCC ------

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GAM25208 5823   GCAGGGGGACGGCCCCAAGT   A  ---  CGG   CAAG   -   - ACAAAA
0          GTCCTGTCCACAAAAGGCGC GC GGG   GGA   CCC    TGTC CTGT CC
           GGTGACAAAGGGACTCCTAA CG CCC   CCT   GGG    ACAG GGCG GG
           CCCGC            -  AAT   CA-  AA--   T    C ------
GAM25209 12571  GCAGGGTAGTCTGAGAGTGA  -   T  C      GA   CCTGAATAATAAATACAAT
4          AGGGCCTGAATAATAAATAC GC AGGG AGT TGAGAGT  AGGG
           AATTCCTAAACTCTCAAATT TG TCCC TTA ACTCTCA  TCCT
           CCCCTCGT           C   C  A      AA  ----------
GAM25210 6404   GCAGGGTGAGAAAGTCCCAG     -----  G  AAAG-        CAAGAGGCT
2          CCCCAAGAGGCTGGGCTGGG GCAGG     GT AG     TCCCAGCCC
           AAGGAGCTGGCTGAGTCTTG CGTTC     CG TC     AGGGTCGGG
           C                  TGAGT  G  GAGGA       ---------
GAM25210 8173   GCAGGGTGTACACCTGTGGT      T    CC  TG T    G  GCT-     --     G---    TGGTTT
9          TCTCGGGGCTGCCTTTGGCT GCAGGG GTACA  TG  G TCTC GG    GCCTTT  GGCTTT    GAGA

           TTGGAGATGGTTTTCTCGAT CGTTCC CATGT  AC  T AGAG TT    CGGGAG  TCGGGG    CTCT
           GGGGGCTGGGAGGGCTTTGT      T    TC  GT C    G  GTTT     GG     GTAG   ------
           TGGAGACTTGCACTTGTACT
           CCTTGC
GAM25212 1437   GCAGGTACCGCCCATTGTGG          CCCATTG     AAC-   AAA  T  C  CTT
2          AAGAACTGGAAAAGTGCCTC GCAGGTACCG      TGGAAG    TGG   AG GC TC
           CTTGAAGCCCTGCACCGATA TGTTCATGGT      GCCTTC    GCC   TC CG AG
           GCTTCCGTCCATGGTACTTG          ACCT---     GATA   ACG  C  A  ---
           T
GAM25213 9486   GCAGGTATTTAGAGGTGGTT    G    T   AGG      G     TGAAG
0          CTGTCAGGTGAAGTCTGAGG GCA GTAT TAG   TGGTTCT TCAGG
           AGCCAAAGCTATGTATGTGC CGT TATG ATC   ACCGAGG AGTCT
                          G    T   GAA      -     -----
GAM25214 14565  GCAGGTGAAAGTGAAGTCAC     T   AG  -     -     CGTCTCGGTGTTTTT
6          AGAAACGTCTCGGTGTTTTT GCAGG GAA  TG AAGTCA CAGAAA
           TTTCTGCTGATTTACATCTT CGTCC TTT  AC TTTAGT GTCTTT
           TCCTGC               -  CT  A     C     ---------------
GAM25214 3806   GCAGGTGAAGCCGCTGCCTG   A    AAGC       G   -----  -   GATGGA
8          CGCCCCTGGATGGACAGCGG GC GGTG    CGCTGCCT CGC     CC CTG
           AAGAAGCGAGGCGGCGCAGG CG CCAT    GCGGCGGA GCG     GG GAC
           TACCGC             -   GGAC      -  AAGAA  C  ------
GAM25215 4461   GCAGGTGCAACCTGGGAGTG   AG  -   AC-   GG  T     AT-   -   A  CACA
6          CGTGAATGCGTCCACCCACA GC  GT GCA   CTG  AG GCGTGA   GCG TCC CC
           GGAGGAGCGCTCCTCATGCT CG  CA CGT   GAC  TC CGTACT   CGC AGG GG
           CTGACAGTTCTGCGACAAGC   AA  G   CTT   AG  T     CCT   G   A  ----
GAM25216 8103   GCAGGTGCGCTCCGGGATGA    G    CTCCG    AAG      ---  AAACTCTG
1          AGTGCAGGGAGGCAAACTCT GCAG TGCG     GGATG   TGCAGGGA   GGC
           GGCTGGGTTCCTGTAAACAT CGTC ACGC     CCTAC   ATGTCCTT   TCG
           CCATCGCAGCTGC          G    TA---     AA-       GGG  --------
GAM25217 2715   GCAGGTGTCACCAGCCGCCA     TGTCA    --    A---   A  AGACCA
9          TCAAGAAGACCATCCTGGAC GCAGG     CCAGC  CGCC    TCA GA
           AAGGTGAAGCTGGACTCCCC CGTCC     GGTCG  GTGG    GGT CT
           TGC                  CCTCA     AA    AACA   C  ------
GAM25220 4443   GCAGGTTTAGGACAGCCATT   A    -    -     ------       AACTG
3          GGCTAACTGGGTCGATCTAC GC GGTTT AGGA CAGCC      ATTGGCT
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TGGGCTGATTCTGGGACCCG TG CCAGG TCTT GTCGG TAGCTGG
T C G A GTCATC -----
GAM25222 5391 GCAGTACATGATTTTTATCT A- GA TCTAA A TTCCC
5 AACAACGTTTGATTCTTTCC GCAGT CAT TTTTTA CA CGTTTGATTCT
CAGAATTAAATGCTGCATTT CGTCA GTA AAGAAT GT GTAAATTAAGA
AAGAAAGATGCCACTGC CC GA TTAC- C -----
GAM25223 13017 GCAGTAGCCAGCCATACTAT C C TA--------- TCCCAGTATCAT
7 GTGTATTCCCAGTATCATGT GCAGTAGC AGC ATAC TGTGTAT
ACGCACTAAAAAAAATGTGT CGTCGTCG TCG TGTG ACGCATG
GCTTGCTGCTGC T - TAAAAAAAATC ----------
GAM25226 5954 GCAGTCAACACTGAGACAGG TCAA- GA TTCCCCCAGAGAAAAACCT
4 TTCCCCCAGAGAAAAACCTT GCAG CACTGA CAGG
CTGCTTCAGTGGGCCCCTGC CGTC GTGACT GTCT
CCCGG TC ----------
GAM25229 14301 GCAGTCCCCAGCATACAGGT AG-- AG TACA C----- - -- T- C- TGATGTT
1 CTCTTGGCAGTGTATTCCGG GC TCCCC CA GGT TCTTGG CAG TGTA TC GGAGTC
AGTCTGATGTTGGCTCTAAG TG AGGGG GT CCA AGAACC GTT ATAT AG TCTCGG
ACTTATAATTTGTCCAAGAA GAAA GG TTTG AAAAAA T TA TC AA -------
AAAAAACCGTTTTGGGGGGG
AAAAGGT
GAM25229 14329 GCAGTCCCTGTCCCTTGGCA - G -------- T AC AGTC
3 CCAGGAGTCCCTGTAGCCTG GCAG TCCCT TCC CT GGC CAGG
GCTAGGTAAGGAAAGGGAGT CGTT AGGGA AGG GG CCG GTCC
TGC G A AATGGATC T AT ----
GAM25229 18973 GCAGTCCTCCTGGAATGTCC TCCT AATG --- -- AA - CCCAGTCA
7 TTCCCTGAACTCCTGTGGCC GCAG CCTGG TCCTT CCC TG CT CCTGTGG
CAGTCATTATAGGCAGAGCA TGTC GGACC AGGAA GGG AC GA GGATATT
CTGGGTCCAAGGAAAAGCCA CCCC GAAA CCT TC GA C --------
GGCCCCCTGT
GAM25232 19958 GCAGTGAACAACAGTTTGGT GTGAACAA TG TG TT ATTTTGA
7 GTTTTTAAGGATTTTGACTT GCA CAGTT G TTT AAGG
TTTAGATGTTGAATTGGAAG CGT GTTAA T AGA TTTC
ATGC AGAAG--- GT GT TT -------
GAM25235 13037 GCAGTGATGTTGGGCAACTC A TG G ACTCT G GACC GCGA
7 TGCGCCGGGGCCTGCGACCC GC G ATGTTGG CA GCGCCGGG CCTGC C
GCGAGGCGGGCTCGGCGCTG CG C TACGATC GT CGCGGCTC GGGCG G
CTAGCATTGCAGC A GT - ----- - ---- ----
GAM25238 5630 GCAGTGGAGGGGGCAGGACC GA A--- --- --- CAG
8 TCCTGCTGGTGCAGCACCAG GCAGTG GGGGGC GGACC TCCT GCTGGTG
CTCTGGGAGCAGGTCCACCG CGTTAC TCCCCG CCTGG AGGG CGACCAC
GCCCCTACATTGC A- GCCA ACG TCT ---
GAM25238 4410 GCAGTGGATCTTGGGAACAA T TCT A AA GAT T- TTTT CCATTCT
9 AATAAGATATCTAATCTATT GCAG GGA TGGGA CA ATAA ATC AATCTA CC
TTCCCCATTCTGGCTAGATT TGTC CTT ATCCT GT TGTT TGG TTAGAT GG
TTGGTTGTTGTGATGCTCCT - C-- C AG GT- TT C--- -------
ACTTCCTGT
GAM25242 20529 GCAGTGTAGGTGGTTTGACC TG G - ACC -- ACATGCC
2 AGAGGCGCCGACATGCCCGG GCAG TA GTGGTT TG AG AGGCGCCG
TGCCTGCCTCCCCACGGCCG CGTC GT CGCCGG AC TC TCCGTGGC
CGTGTGCTGC GT G C CCC CG -------

GAM25247 14612 GCAGTTCCAGGGATATGGCC CCA ATA C CCAACTTCCC CCAGCTCC
0 AGCAACCAACTTCCCAGGCA GCAGTT GGG TGGCCAG AA AGGCA
CCAGCTCCTGCCTTTTCTGG CGTCAA CTC ACTGGTC TT TCCGT
TCAGCCTCAACAACTGC CAA CG- T ---------- --------
GAM25249 3403 GCAGTTGCAGCCAAGGGCAT ---- C-- G - GGT ACCCTA
2 GTGGTGTGGCACCCTAGCTA GCA GTTG AGCCAAGG CA TGT GTGGC
TTAAACAGTGGCTTTGGCTC CGT CAAT TCGGTTTC GT ACA TATCG
TTTAACAATTTGC TTAA TTC G G AAT ------
GAM25251 4164 GCAGTTTATCCTCATAATGG A-- TCATA AAT GACTTAAAA
8 AATGATAGACTTAAAATATT GCAGTTT TCC ATGG GATA
TCCCATATTATGGAAAAAAA CGTCAAA AGG TACC TTAT
CTGC AAA TATTA CT- ---------
GAM25252 20385 GCAGTTTCTTGGGACATAGG CT GACA----- ---- GCAAAGAA
9 AGCGCAAAGAAGCTACAGCC GCAGTTT TGG TAGG AGC
TGGACTTACCACCACTAAAC CGTCAAA ACC GTCC TCG
TGC TC ACCATTCAG GACA --------
GAM25256 20451 GCATAAATCTTAAATCTATA AAATCTTAAATC CATTACA
9 CATTTTTACATTACATAGAA GCAT TATACATTTTTA
ATGTGTAATTATATACTCCA CGTA ATGTGTAAAGAT
TGC CCTCATATATTA -------
GAM25259 6129 GCATAATAAAAAAAGAGGTA AATAAAAA G G TGA TAAAGC
3 GCAAATGAAAATTAAAGCAT GCAT AAGAG TA CAAA AAAT
TTATTTTGGTAGTTCTTCAA CGTA TTCTT AT GTTT TTTA
TAATGATGC GTAATAAC G G TA- ------
GAM25259 5865 GCATAATCGGTCACTCGTAT AATC --- A GAA TATT TATAATTT
9 AGAACAGTATTGTTTCTATA GCAT GGTC ACTCGT TA CAG GTTTC
ATTTGAAGCTTTCTGAATGG CGTA CCGG TGGGCA GT GTC CGAAG
ACGGGTTCAGGCCTGATGC GT-- ACT G AA- TTT- --------
GAM25261 5432 GCATACACATGACATGCCAA A-- AT- CCAAGA --- - GATGTA
2 GAAACAGGTGTGGGGGATGT GCAT CAC GACATG AACAGG TGTG GGG
ATCCACACGGTTCCTGTTGT CGTG GTG CTGTAC TTGTCC GCAC CCT
ACATGTCTAGGTGCCAGTGC ACC GAT ATG--- TTG A ------
GAM25262 2865 GCATACATGGATGAGGAGAC A - TGAGG-- C A GAAAA
4 TGGCAACCTGAAAAAGGCTG GCAT CAT GGA AGA TGGCA CCT
TCATTCTACAGGGCTCTAAT TGTA GTA TCT TCT ACTGT GGA
GATGT - A CGGGACA T C -----
GAM25262 9869 GCATACATTGACAATCTAGG C T ATC--- T GCTAT
6 GTATATATGCTATGTATGTT GCATA AT GACA TAGGG ATATAT
TCTTATTGCTATGTCTATAT TGTAT TA CTGT ATTCT TGTATG
ATGT A T ATCGTT T -----
GAM25263 18322 GCATACTCGCTGCCCGCCGG - ---- CC CG CTCCC CG- C ACCGC
9 CTCCCTCCCCCGCGTCCCTG GCATACT C GCTGC GC GCTCC CCG TC CTGCG
CGACCGCCGCGGCGAAGATG TGTATGA G CGATG CG TGAGG GGT AG GGCGC
GCCTCAGGAGTGCAAGTAGC A TAGT AA -- ACTCC AGA C -----
TGATGAAGTATGT
GAM25265 826 GCATAGCTTTCAAGAAATTG A T - TT-- --- TTTTATTC
9 TCACAAAAGGTTTTATTCTC GCAT GCTT CAA GAAA GTCACAA AAGG
TTTGCTTGTGACTATTTTTC CGTA CGAA GTT CTTT CAGTGTT TTCT
ATTGAAGCATGC - - A TTAT CGT --------
GAM25268 20412 GCATATAATATTCTTTGTTT A- ------- AAA A - TGAAACCC

3 AAATGAAAGCATACTGTTGA GCATAT ATATTCT TTGTTT TGAA GCA TACTGT
AACCCGCAGTGTTGCATTTA CGTGTA TGTAAGA GACAAA ATTT CGT GTGACG
GAAAACAGTTGGAACAGAAT CC CAAGGTT AG- A T --------
GTCCATGTGC
GAM25269 5385 GCATATATTTCAGCTTATGC AT G A --- TT ATCATA
4 TGAAGAATTAGCTGTATGTA GCATATATTTCAGCTTATGCTGAAGA TA CTGTATGT GC GCG GA

GCGCGTTGAATCATATCTTG CGTATATAAAGTCGAATACGACTTCT AT GGCATATA CG CGT CT

CAGGGCCATATACGGGTACA AC G C GGA T- ------
TCTTCAGCATAAGCTGAAAT
ATATGC
GAM25272 5888 GCATCAAAGCTGCTAGTTCA A----- - -- TC GTGA TCAT
0 GATGTGACAGTGTTTTCATG GCATC AAG CTG CTAGT AGAT CAGTGTTT
AATGCTGGAATCTTACTAGT TGTAG TTC GAC GATCA TCTA GTCGTAAG
CCAGACTTACTTAGGATGT GATTCA A CT T- AG-- ----
GAM25272 17962 GCATCAATACTATCTGGAGA TCAA GGA- T AGGG AA -- CATAAGGGA
7 TAATTCTTCTAAGGGACAAA GCA TACTATCT GA AATTCTTCTA AC ACTG CAGGA
CTGCAGGACATAAGGGATCC TGT ATGATGGA CT TTGAGGAGGT TG TGAC GTCCT
TGAACAGTCAGTGGTGGAGG TG-- GTGG C GG-- AC AA ---------
AGTTCTCGGTGAGGTAGTAG
TTGT
GAM25272 18548 GCATCAATAGCAACAGAAAT AAT AC AAT CCACAGTT- AACT
8 GGGCCCCACAGTTGCAACTG GCATC AGCA AGA GGGCC GC
CCTTCATCAAGGCCTTCTCC TGTAG TCGT TCT TCCGG CG
TGCTTAAGATGT AAT CC --- AACTACTTC ----
GAM25272 12237 GCATCAATAGCAACAGAAAT AAT- AC AAT CACAGTT- AACT
9 GGGCCCCACAGTTGCAACTG GCATC AGCA AGA GGGCCC GC
CCTTCATCAGGGCCTTCTCC TGTAG TCGT TCT TCCGGG CG
TGCTTAGGGATGT GGAT CC --- ACTACTTC ----
GAM25280 20113 GCATCCCTAATGTTCTTCCT A TAATGTT CCT -- TTT GCTG
3 CTAGTCAGTTTGCTTTGCTG GC TCCC CTT CTAGT CAG GCTTT
AAAGCTCCCTGGAATTAGTT CG AGGG GAA GATTA GTC CGAAA
CAAGTCTACCGGGAAGC A CCATCT- CTT AG CCT ----
GAM25281 14723 GCATCCTCTCCACCTGATTC A GATT AAA T T TGGCCCT
5 CAAATGCTGTTGGTGGCTGG GC TCCTCTCCACCT CC TGC GTTGG GGC
CCCTGCCTCCGATGCAGGGG CG GGGGGGGGTGGG GG ACG TAGCC CCG
GGGTGGGGGGGGGC - ---- GG- - T -------
GAM25283 14296 GCATCCTTGGTTGGAAGGGC T GA G A ACACA TAACA
2 CAAGCACACACCTAACAGGC GCATCCT GGTTG AGG CCA GC CC
AGCTGGGCCTCTCGACTTGG CGTGGGG TCAGC TCC GGT CG GG
GGTGC T TC G - AC--- -----
GAM25283 1505 GCATCGCAGGCTTATCTTGC TC GCTT T TTT TT--- TTCTGATAT
6 ATTTTGATTTTATGATTCTG GCA GCAG ATC TGCA TGAT TATGA
ATATTCATGTTGATGTCATG CGT CGTT TAG ATGT ACTG GTACT
CTGTATGATTCTATTGCTTT TT ATCT T CGT TAGTT ---------
GC
GAM25284 17970 GCATCTAATGTGATAAGGCT T TG C- CA TTATATC
6 GCACGTTTTATATCGATGGT GCA CTAATG ATAAGG TG CGTT
CATTCTTTATTGTATTGGTG CGT GGTTAT TATTTC AC GTAG

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          C                -    GT     TT  TG   -------
GAM25289 19240  GCATCTGGACGTGTACGCAG    CT    T   C    TC  T  TCCGCGAT
1         TCGTTGTTCCGCGATGCTGC GCAT  GGACG GTA GCAG  GT GT
          CTCTGCTGCTGTCTGAGTGC CGTG  TCTGT CGT CGTC  CG CG
                          AG    -   -    TC  T  --------
GAM25289 3040   GCATCTGGGTTATTTTTATT   TC- GG    T    TT    C---     C  ACAAAAAAACCA
4         TTCTTTGCTTTGGTCTATAC GCA   TG  TTATT TTATT  CTTTG    TTTGGT TAT
          AAAAAAACCAATAACCAAAA CGT   AC  AATAA AATAG  GAAAT    AAACCA ATA
          ACATAAAGCGATAATAATAA    CTC  AA    T    C-    ACAA     -  ------------
          AACACTCTGC
GAM25290 5397   GCATCTGTTTTCTGGTTTTC     ----     C   TTTTC-      CTTA   CTTC
2         AATCTCTCTTACAACTTCTT GCATC    TGTTTT TGG     AATCTCT    CAA
          GACCAGAGATTACTTGTCCA CGTAG    ACAAAA ACC     TTAGAGA    GTT
          AAAACAACATGATGC          TACA     -  TGTTCA      CCA-   ----
GAM25290 5699   GCATCTTCATCTTGGTCACC   AT     CT    CACCACG   GA-    ATCCGC
8         ACGCCAGAGAGGATCCGCCC GC  CTTCAT  TGGT      CCA   GAGG
          TCGAATGGACACATTACCAG CG  GAAGTG  ACCA      GGT   CTCC
          TGAAGGGGC           GG     --   TTACACA   AAG   ------
GAM25292 21246  GCATCTTTTATTCTTGGTAG     TT     TT  T---   T     ATC
5         TTTTTGGGATCCCCGGATGC GCATC  TTATTC  GG    AGT TTTGGG
          TTTTTCCTTGGGTGACTGAT CGTAG  AGTGGG  CC    TCG AGGCCC
          GC                  TC     TT  TTTT   T     ---
GAM25298 21172  GCATGATGGTGAAACGGTGA   A-      GAA  G   A     AC------    CG  CTGGCTA
4         CCAGGACACCTCGGTCTGGC GC  TGATGGT   AC GTG CCAGG       ACCT  GT
          TAACAAGGGTTCTAAAAACT CG  ACTGCCG   TG CAC GGTTC       TGGG  CA
          TGGACACGGTGCCGTCAACG   CA      ---  G   A     AAAAATCT    AA  -------
          C
GAM25298 12691  GCATGATGTTCCACATGCCC         T   CAT    A---  AC  T  GCCA
7         ATCACGTTCAGCCATGCATA GCATGATGT CCA   GCCC    TC  GT CA
          GGAGACCGGGCTGGGCATCG CGTGCTACG GGT   CGGG    AG  TA GT
          TGC                    -   ---    CCAG  GA  C  ----
GAM25300 2982   GCATGCCATGGCTCGTGGTA    G       CG   TACCCAA   A-    TGAAGC
9         CCCAATGAAGCATCTGAAGC GCAT CCATGGCT  TGG       TGA  GCATC
          GGTGTGGTCAGCTCCAAAGC CGTA GGTATCGA  ACC       ACT  TGTGG
          TATGGATGC             -       A-   TCG----   GG    ------
GAM25303 5744   GCATGCTGATGATCTTGAGG   AT    ATGA    G   C    T   CTCTCA
2         CTGTGTCTACTCTCATGGTC GC  GCTG    TCTT AGG TGTG CTA
          GCACCCTGAGGAACTGCGGC CG  CGGC    AGGA TCC ACGC GGT
          TCGC               CT    GTCA    G   C    T   ------
GAM25304 3647   GCATGGAATCCACTGCATTC   -   A    C    TTCAATCG      TTT    A  CTGTA
2         AATCGGGATGCATTTTACCA GCA TGGA TCCA TGCA       GGATGCA   TACC CG
          CGCTGTATGGGGTATACTGT CGT ACTT AGGT ACGT       CTTATGT   ATGG GT
          ATTCAATCACGCTGCATGGA    C    A    -   CGCACTAA      CAT    G  -----
          ATTCACTGC
GAM25304 14667  GCATGGACAAAATTGAAACT      --   AAA---    AA  AT       ATGAAGTTAA
3         ATCAACTTTCATGAAGTTAA GCATGG  ACA     TTGA  CT  CAACTTTC
          GGAAGTTGCGGGAATCAAGT CGTACC  TGT     AACT  GG  GTTGAAGG
          TTGGTGTTACCATGC          AT   GGTTTG    AA  GC       ----------
GAM25304 20787  GCATGGACAAAATTGAAACT      ACAAA  TG     AT-------       ATGAAGTTAA
4         ATCAACTTTCATGAAGTTAA GCATGG     AT  AAACT        CAACTTTC
```

GGAAGTTGCGGGAATCAAGT CGTACC TG TTTGA GTTGAAGG
TTTGGTGTTACCATGC ATTG- GT ACTAAGGGC ----------
GAM25307 3765 GCATGGCCAGGCTGGCCAGG A C - C CAAGT CTGT
0 GCGTGGGCAAGTGGTGTCCT GCATGGCC GGCTGG CAGG G GTGGG GGTGTC
GTGGCACCTCCATCCTCCTG TGTGTCGG CCGACC GTCC C TACCT CCACGG
CCCAGCCGGCTGTGT - C T C ----- ----
GAM25307 17953 GCATGGCTGACAAATTGCTC GACAAA GACACA GCAGA
8 GACACAACCTGCAGAAGGTC GCATGGCT TTGCTC ACCT
AATGGGGCAGGAGGCCATGC CGTACCGG GACGGG TGGA
AG---- GTAAC- -----
GAM25308 2779 GCATGGGAATCTTTATAGTG T CTTT TGATCCTCT - TTCTAT
3 ATCCTCTGGGAGTTCTATCT GCA GGGAAT ATAG GGG AG
ACCCCTATTTATATTCCCTG TGT CCCTTA TATC CCC TC
T - TATT --------- A ------
GAM25313 9889 GCATGTAGACCAAGTGATGA AGAC G AGAAG T ATGGAAGA
4 GAAGTGAATACATGGAAGAG GCATGT CAAGT ATG TGAA AC
TTTTTAAGTGTGACTTGAAA CGTATA GTTCA TGT ATTT TG
AATATGC AAAA G GA--- T --------
GAM25313 9520 GCATGTAGGTCACCTCATTC - - - CATT ATTTTCACA
7 CATTTATTTTCACAAAGTGG GCATGT AGGT CA CCT CCATTT
CTCCAGGATGTATTTAACGT CGTGCA TTTA GT GGA GGTGAA
GC A T A CCTC ---------
GAM25316 21454 GCATGTGCATCTGTGGTGAA GCAT G GAAATG-- A TAGTT
3 GAAATGAGGAATTAGTTATG GCATGT CTGTGGT AA AGG AT
CCTGCTGCTAGTTGACTACA CGTATA GACATCA TT TCC TA
GTAAATATGC AAT- G GATCGTCG G -----
GAM25317 12879 GCATGTGTCTAGAGGACAGC GT CT A- C------- AACT
2 AGATCAACTGGTCTTTCATT GCAT GT AG GGACAG AGATC
CACTGTCCAGCTTGCCAATG CGTA CG TC CCTGTC TCTGG
C AC T- GA ACTTACTT ----
GAM25318 16849 GCATGTTCAAATGGTTTCCA - - C C TTC TTTTTCAT
5 CTGATTCGATTTTTCATTCA GCATGTTCA AATGG TTT CA TGA GA
TTTAATGCAAACCCATTCTG TGTATAGGT TTACC AAA GT ATT CT
GATATGT C C C A TA- --------
GAM25320 12794 GCATTAAAGATTTATAAGAA TTAAA T AAAATTAT A G- TTAT
5 AATTATTCAAACTGATTTTT GCA GATT ATAAG TCA ACT ATTTT
TATAAAATGAAGTATGATTT CGT TTAG TATTC AGT TGA TAAAA
TAAACTTATTGATTCCTCTT TCTCC T AAATTTT- A AG ----
GC
GAM25323 12827 GCATTAGCTAGTTATCCTGA TA AGTTAT TCTCCCC TACG
5 TGCTCTCCCCGCTACGGCCC GCAT GCT CCTGATGC GC
CTGCATCAGGCCCCAGTGTG TGTG TGA GGACTACG CG
TGT TG CCCC-- TCCC--- ----
GAM25325 21283 GCATTATTCATAATCTCTGA - TTCATAA AAATTTAA ATAC
6 AAAATTTAAGTGATACCATA GC ATTA TCTCTGAA GTG
GCAGAACTTTAGAGACAACC CG TGAT AGAGATTT TAC
TTAGTAGC A TCCAAC- CAAGACGA ----
GAM25331 20132 GCATTCTTCCTCTTCACGCG -- - TCA GG- GG CCACCC
4 GCCCGGGCGGCCACCCCCGT GCATT CTTC CTCT CGC CCC GCGG
AGGGAGAGCGCAGAGAGAAG TGTAG GAAG GAGA GCG GGG TGCC

TCGATGT CT A C-- AGA A- ------
GAM25332 6255 GCATTGATCTTATCCTCCGT GAT AT TC GA T CTCATCGTC
7 GACTGTCACCTCATCGTCGT GCATT CTT CC CGT CTG CAC
GCAGAATGAGGGCCGAGTAG CGTAG GAG GG GTA GAC GTG
ATGC AT- CC GA A- - ---------
GAM25332 19319 GCATTGATCTTATCCTCCGT GAT A- C GA T CTCATCGTC
8 GACTGTCACCTCATCGTCGT GCATT CTT TCCTC GT CTG CAC
GCAGAATTGAGGGCCGAGTA CGTAG GAG GGGAG TA GAC GTG
GATGC AT- CC T A- - ---------
GAM25334 20349 GCATTGCTGAGGATGAGACT C G - G AA- GTCTGCAG
0 CAAGGCAGGGGTCTGCAGCT GCATTG TGAG AT GA ACTC GGCAGGG
CTGTCACAGAGTGTTAATGC CGTAGC ACTC TA TT TGAG CTGTCTC
TCAACGATGC A G A G ACA --------
GAM25335 1614 GCATTGGTGATCTCTGCTAC ATTG G AC GTTCATGGTA
6 AGAAAGCTGTTCATGGTAGG GC GT ATCTCTGCT AGAAAGCT
CTTTCTCAGCAGAGATGACA CG CA TAGAGACGA TCTTTCGG
GGC GA-- G C- ----------
GAM25335 18394 GCATTGGTGATCTTTGCTAC ATTG G AC GTTCATGGTA
7 AGAAAGCTGTTCATGGTAGG GC GT ATCTTTGCT AGAAAGCT
CTTTCTCAGCAGAGATGACA CG CA TAGAGACGA TCTTTCGG
GGGGC GGGA G C- ----------
GAM25342 9794 GCATTTCCAGCTTCTACTAG C CTT A TC TAGCAAACCATC
3 ATGTCAGTAGCAAACCATCC GCATTT CAG CTACTAG TG AG
TTCCACTAGTGGCAACTGAA CGTAAA GTC GGTGATC AC TC
AATGC A AAC - CT ------------
GAM25343 18627 GCATTTCTCATTTTTATTTG CTCA --- - AAA TTGCT
5 ACAGAAAAAGTTGCTCTTGC GCATTT TTTTTA TTTG ACAG AAG
TGTACAGATTTTAAAAAACC CGTAAA AAAAAT AGAC TGTC TTC
AAAATGC ACCA TTT A G-- -----
GAM25349 16793 GCATTTTCCAAAGCAAACCC - AA AAACCCA C -- TTATT
7 AACCCTCGTGATTATTTCTA GC ATTTTCC AGC ACCCT GT GA
GCCAGGGTGAAGCTAAGGAA CG TGGAAGG TCG TGGGA CG CT
GGTAGC A AA AAG---- C AT -----
GAM25353 8686 GCCAAAAGTGGGAAAGGAAA AA GAAA AAAGA AT A AT GTCATTG
5 AGACTCATATCAACATTGTC GCCA AGTGG GGA CTC ATC AC TGTC
GTCATTGGACACGTAGATTC CGGT TCACC CCT GGG TAG TG ACAG
GGGCAAGTCCACCACTACTG CA A--- GAAC- CT A C- -------
GC
GAM25353 5854 GCCAAAATGAAATCATTGAA CAAAA ----- ATACCAGATAAATAA
7 ATACCAGATAAATAATTCAA GC TGAAATCA TTGAA
AATATTGATTTTAAAGAAGC CG ATTTTAGT AACTT
AAGAA TATAA ----------
GAM25353 12188 GCCAAAATGGGAAAGGAAAA AAATG AAA AAAG AT A AT GTCATTG
8 GGCTCATATCAACATTGTCG GCCA GG GGA GCTC ATC AC TGTC
TCATTGGACACGTAGATTCG CGGT CC CCT CGGG TAG TG ACAG
GGCAAGTCCACCACTACTGG CATCA A-- GAA- CT A C- -------
C
GAM25357 3170 GCCAAAGGCTGCGAGGTTGT - AA C - G T GTCT- AAA A--- - GA AA
4 GGTGTCTGGGAAACTCCGAG GC CA GG TG CGA GT GTGGT GGG CTCCG GGA CA GGGCT
ATCCA

GACAGAGGGCTAAATCCATG CG GT TC AC GTT CA CATCA CCC GAGGC CCT GT TCCGG
TAGGT
AAGTTTGTGGATGGCCTGAT T CG - A G T ATTGT A-- GACA A AG --
GATCCACAGCGGAGACCCTG TG AGT
TTAACTACTACGTTGACACT A
GCTGTGC T
GT ---
GAM25361 16770 GCCAACCTTGAAGCCAGTGG A - TG - G - ATTCACAAAC
5 GGCACCAATTCACAAACTGG GCCA CC T AAGCCA GTG GGCA CCA
ATGCTGCGCTTGGTTTTGAT CGGT GG A TTTGGT CGC TCGT GGT
GGTGGC - T GT T G A ----------
GAM25362 8976 GCCAACTGAAAAAGCTGAAT AACTGAAAAA AATT ACATAAAGTCAATAAA
2 TTGGAACATAAAGTCAATAA GCC GCTG TGGA
ATCCATAACCAGCAATACTA CGG CGAC ACCT
TGGGGC GGTATCATAA CAAT ----------
GAM25362 12802 GCCAACTTGAAAGTGAACAG C- T AG- T ACTTTCC AT ACAG
9 TATGACTTTCCTGATCCAGA GC AACT GAA TGAACAG ATG TG CCAGA
ACAGTTTGGCCCACATCTGT CG TTGA CTT ATTTGTC TAC AC GGTTT
TTAATCTTCCAGTTTAGC AT C CTA - ------- CC ----
GAM25365 19816 GCCAAGAGGCTGTCCAGGAG - AAG -- A TG--------- A TG T TCAT
4 CTGCCCAGTGGGTCCTCATG G CC AGGCTGT CC GGAGC CCC G GG CC
GCCTGCGGGATACCTCAAGT C GG TCCGACG GG CCTCG GGG C CC GG
GCTCCCGGAGGCAGCCTAGG A A-- GA C TGAACTCCATA - GT - ----
AC
GAM25365 12391 GCCAAGAGGTCACGACTTCC - ACGAC ---- GCCT - GGC
6 CTCCTGCCTGCAGCCTGGGC GCCAAGAGG TC TTCCCTC CT GCAG CCTG
CAGGACTGCTCTGAGATTTG CGGTTTTCC AG AAGGGAG GA CGTC GGAC
AGGGAAACATGGACCCTTTT C GTACA TTTA GTCT A ---
GGC
GAM25367 4509 GCCAAGCAGCCCTTCAAGTT C CTTCAA CT GGTAA
2 CTTTTATTTCTGGGTAACAG GCCAAG AGCC GTT TTTATTTCTG
AAGTAGACAGACAGGCTACT TGGTTC TCGG CAG AGATGAAGAC
TGGT A A----- AC -----
GAM25367 6478 GCCAAGCATATGTTCTTCAC A -- CAC C A GTATTT T ATTG
3 AGAGCCCACATCTGTATTTT GCC AGCATA TGTTCTT AGAGC CAC TCT TGTGG GATTT
GTGGTGATTTATTGGAATCC TGG TCGTAT GTAAGAG TTTCG GTG AGA ATATC CTAAG
TATATGAGAGTGTGCTTTAC G TA TCA T - GT---- - ----
TGAGAATGATTATGCTGGGT
GAM25368 3432 GCCAAGCTGTCTTCATGGTG AA G T -- CTC- CAC A ACAA
0 TATTCCTCTTACTGGTGCAC GCC GCT TCT CATGG TGTATTC TTACTGGTG CTAAT GTG
CTAATAGTGACAATACATTA CGG TGA AGG GTATC GCGTAAG GGTGACCAC GATTA CAT

GCCACCAGTGGCAAAGAATG -- G T TT AAAC C-- - ----
CGTTCTATGTGGAGAGTGGC
GAM25368 18248 GCCAAGGAGACTGTAAAACT GA AAA CC--- TTC
6 TGCCGAGGAGTTCTTCCTTT GCCAAG GACTGTA CTTG GAGGAG
CTACCGAGGGTACAGTTCTT CGGTTC TTGACAT GAGC TTCCTT
GGC -- GG- CATCT ---
GAM25370 8632 GCCAAGGGCCAGTCGGGGGG - --- -- - - TG C TCT
4 TGCTGCGCTCTGCCAGTGTC GC CAAGGGC CAG TCG GG GGG CTG GC

CACCACGAGTCTGCCTGCCC CG GTTCCCG GTC AGC CC CCT GAC CG
TTGAGC A TCC TG A A GT - ---
GAM25371 12392 GCCAAGGTTTGTACACGACT AGGTT ------ CA- CTGAAAA
6 CCCATCTAGGCTGAAAACCT GCCA TGTACACGAC TCC TCTAGG
AGAAGTGGACCTTGTGTTGT TGGT ACGTGTGTTG AGG AGATCC
GTGCATGGT ----- TGTTCC TGA -------
GAM25372 18773 GCCAAGTGGACCCAGGAGAG --- - - AGAGGAG T AT- GAATCCA
4 GAGGGATGCTATGAGCGAAT GCCA AGT GG ACCCAGG GGA GCT GAGC
CCAGCTTTGAGGCTTCAGGT CGGT TCA CC TGGGTTC CTT CGG TTCG
GCTTGGGTACCAACTGGATG AGG A A GTGGA-- - AGT -------
GC
GAM25378 12894 GCCACACAACAACACACCTC C C-- ACC CC-- CTT CACACAGCA
0 CCCTCCTTGAGCCTGGCACA GCCACA AA AACAC TCC TC GAGCCTGG
CAGCACCGGGCTCTCTGAAT CGGTGT TT TTGTG AGG AG CTCGGGCC
TTGGAAAGTGTTTCATTTTG T ACT AA- TTTA TCT ---------
TGGC
GAM25379 8415 GCCACAGAGACCGTCTCAGC C CCG C C CGAA CTTT
8 CCCCGAAGCCTTTGCACCTG GC ACAGAGA TCT AG CCC GC
GGTCTCAGAGCATCTCTGTT CG TGTCTCT AGA TC GGG CG
GC T ACG C T TCCA ----
GAM25382 19785 GCCACAGTGCGGAATAAATG A C-- A A GGCA TATTGC
0 AGGCACGGCTTATTGCAGCT GCC CAGTG GGA TAA TGA CGGCT
GGAAATCAATTATCCTCACG TGG GTCGC CCT ATT ACT GTCGA
CTGAGGT A ACT - A AAAG ------
GAM25382 6492 GCCACAGTGGGGCACCATGG - T A A -- A A-- ACA TACG
1 TGGAGTGCCAGCGTCACACC GC CACAG GGGGC CC TGGT GG GTGCC GCGTC CC
TACGGGGACGTCGAGGCGCC CG GTGTC TCCCG GG ACCG TC CGCGG TGCAG GG
TAAGCCAAGGCGCCCTCTGT C - C A AA - AGC --- ----
GCGC
GAM25385 4373 GCCACCACTCGGGTACGGAG G TA- AG CAG ACTA
7 GCTCAGAGACTACTATAGCA GCCACCACTC GG CGG GCT AG
GCCGGAGTCAGAGTGGTGGC CGGTGGTGAG CT GCC CGA TC
A GAG GA TA- ----
GAM25388 18132 GCCACCCAGGACCTCGGACC CC CC- A T A C C T CTCG
2 TTGGAGCCTGCGGGGTGCCT GCCA CAGGA TCGG CCT GG GC TG GGGG GC
CGGCCCCTCCAGCCCCGGGC CGGT GTCCT GGCC GGG CC CG AC TCCC CG
CGGACCTCCTGCTGGC C- CCA - C - - C - ----
GAM25388 18353 GCCACCCCTCAAATGAGCCA C ---- AAT - CCTTTTTGCTTTCATC
8 TTCCTTTTTGCTTTCATCAA GC ACCCC TCA GAG CCATT
TGGTCTCTGTGAAGTTGGGG TG TGGGG AGT CTC GGTAA
TCGT C TTGA GT- T ----------
GAM25389 19279 GCCACCGAGAAGCAGAAGAA G AAG AAGAA G AGTT TCCCG
6 GGCCCTGGAGAAGTTGCTCC GCCACC AG CAG GGCCCT GAGA GC
CGGCCTCCTCTTGAGGGCTG CGGTGG TC GTC TCGGGA TTCT CG
CCTGAGCTGGTGGC - GA- CG--- G CCTC -----
GAM25390 4036 GCCACCGTGTAAGGTGTGGG - G A TGT G TCTTC TTC- GGGACAGCG
7 CACGGTGCTCTTCAGGAGTT GCC ACC TGTA GG GG CACGGTGC AGGAG ACAAC
CACAACGGGACAGCGGTTGT CGG TGG ATAT CC TT GTGCTACG TTCTT TGTTG
ATTGTTCTTTTTGCATCGTG G - - TTT G TTT-- GTTA ---------
GTTTTTCCTATAGGTGGGC

GAM25394 3455 GCCACGACGGGCGCCTGGTG A G T C - - C G CACT AC- TTCCG
1 GCGCGCCCCGAGCCGGCCAC GCC CGACGG CGCC GGTGGCG GCCC CG AG CG C GGCTAC
GCTGGAG
TGGCTACACGCTGGAGTTCC CGG GCTGCC GCGG CCATTGC CGGG GC TC GC G CCGGTG
CGGCCTC
GCTCCGGCAAGGTGGCCTTC G - T - A G A - CCTT GAA -----
CGCGACTGCGAGGGCCGTTA
CCTGGCGCCGTCGGGGC
GAM25397 6541 GCCACTCTCAAAATCACGCT ------- AAA GA ACGCCTACA
7 GTGATAACGCCTACATGGAA GCCAC TCTCA TCACGCTGT TA
CAGTGTGACTGAGAACATCC CGGTG AGAGT AGTGTGACA GT
TGTGGC TCCTACA C-- AG ---------
GAM25400 4344 GCCACTGCGGCAGCTGCGAT CGGCA GA-- GT A GAT
8 GTGTAGTAGGTGATGATGAT GCCACTG GCTGC TGT AGTAGGTG TGAT
GTCAGCACCTGCTCTGCGGA TGGTGAC TGACG GCG TCGTCCAC ACTG
AGGCAGTCAGTGGT ----- GAAG TC G ---
GAM25401 21097 GCCACTGGCTCCCTGCACTG -- - T A--------- GTGCT
2 TGTGTGCTGCACAGAGGATG GC CACTG GC CCCTGC CTGTGT
GTAGGTAGGGGCTCAGTGCC CG GTGAC CG GGGATG GACACG
GC CC T - GATGGTAGGA -----
GAM25403 8727 GCCACTTTCCAGCTCCACTT A TT AG- TT A CTTAAAATATAACT
2 CAAATTCCTTAAAATATAAC GCC CT CC CTCCAC CAA TTC
TGAAATTGCTGTGGGGAGGG CGG GA GG GGGGTG GTT AAG
GGGAGGGC - GG GGA TC A ----------
GAM25403 13038 GCCAGAAACTATATTTGTTC GAAACT ---------- ATATA
9 AAATATATTGAAAAGGTATA GCCA ATATTTGT TCAA
AGAATACAAATAGATATTAA CGGT TATAGATA AGTT
CAGTGGC GACAAT AACATAAGAATATGGAAA -----
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3 TCTATCAGGGATCCTAATCA GCCA TTATC GCA TC GAT
GAACGTGAAATGCAAGATAG TGGT GATAG CGT AG CTA
TGGT ---- AA AA TGCAAGA ----
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4 TGTATTCGCAGAGATCAAAG GCCAGAAC TG GT TATTC
AGAGAGTAGGCACGTCAAAA TGGTTTTG GC CG ATGAG
GTTTTGGT AAAACT-- A G ----------
GAM25404 16742 GCCAGAAGGGAAAAAAATAG CAG AAAAA C- T AATAAGTCA CTTTT
8 CTTGTGGTTAATAAGTCAAT GC AAGGG AATAG TTG GGTT ATTTT
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AAACCCCAAAACTATTCCCC TTA C---- AA C ATAAAAAA- -----
TTATTGC
GAM25405 3978 GCCAGACACCTCCCCTCCCA ACC ----- CCAG C CCGG
2 GCCAGCGCCCGGGCCTGGAC GCCAGAC TCCC CTC CCAG GC
GAGCCCCAGGGACAGTCTGG CGGTCTG AGGG GAG GGTC CG
C AC- ACCCC CA-- - ----
GAM25406 1284 GCCAGAGAATCCAGAACCAC GAA AA--- CA- CCGCTGAAGA
6 ATGAGTCCGCTGAAGAACTC GCCAGA TCCAG CCA TGAGT
GCTCTGGAACACCTGGGATC TGGTCT GGGTC GGT GCTCA
TGGT A-- CACAA CTC ----------
GAM25411 20863 GCCAGATTTGCAGCTACGAA GA - TACG TCAT TCCAGAC

5 ATCATCACTCCAGACGTGCC GCCA TTTG CAGC AAA CAC
CTTTACTGTTGACAAAGATG TGGT AAAC GTTG TTT GTG
GT AG A TCA- CCC- -------
GAM25415 19781 GCCAGCCCCCATTTCGAGCG A --------- A- CTTCT
0 GGGCTTCTCCCTGCGCCGAG GCC GCCCCCATT TCG GCGGGG
CCTGACAAAATGGGGGCGGC CGG CGGGGGTAA AGC CGTCCC
- AACAGTCCG CG -----
GAM25416 3579 GCCAGCGCCCCTACGCAACG C C C --- - - - A ACT T- TGTTCC
8 TGGAGTACTACCAGAGCAAC GCCAG GCC CTA GCAACGT GGA GT ACTAC CAG GCA ATG
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TATGTGTTCGTGTTCCTGGG CGGTC CGG GGT CGTTGTA CCT CA TGGTG GTC TGT TAC CGGGT

CCTCATCCTGTACTGTGTGG T T - TCC G G T A CC- TC ------
TGACGTCCCCTATGTTGCTG
GTGGCTCTGGC
GAM25416 17948 GCCAGCGCTTGCAGTTTGCA C C TTT TTTATG CA TAC
9 TTTTATGTGGTTGAGCAGGT GCCAGCG TTG AG GCAT TGGTTGAG GGTTGG
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GAGCCATGCTTTTCAACGTT - - TT- CCGA-- C- ---
GGC
GAM25422 17954 GCCAGGAGCCCCACACCCGC A- - ACACCC C CCGA
4 TGCCGCTGTCCCCGAGGGCA GCC GGAGC CCC GCTGCCG TGTCC
CGGCAGCCGAGGGCGCTCCC CGG CCTCG GGG CGACGGC ACGGG
AGGC AC C AGC--- - ----
GAM25431 8649 GCCAGGCTTGGCAGTGCTAA TG GTG - ATTG CTTTTAA CTCGCAT
5 GTGCATTGTCCCTTTTAATC GCCAGGCT GCA CTA AGTGC TCC TC
CTCGCATGAACTCTTTGGAA CGGTCCGA CGT GAT TCATG AGG AG
TAGGTACTATAGGTGCTGAG GT G-- A GATA TTTCTCA -------
CCTGGC
GAM25433 18508 GCCAGGGCTGCATGCGGAAG AG GCA G - GA TG ---- CGGGACC
3 AGATTGATGTGAAAGTCTCG GCC GGCT TGC GA AGAGATT TG AAAG TCTCGTGGCGG

TGGCGGCGGGACCTTGCTAC CGG CCGA ACG CT TTTTTGA GC TTTC GGAGCATCGTT
GAGGGGCCCTTTTGCGGGAG AA G-- A G GG GT CCGG -------
TTTTTGTCAGCAGAGCCAAG
GC
GAM25433 3147 GCCAGGGGGAACCACGCTTG GGAACCAC - TGA- C--- AACTGCATCCTACCA

5 CTTGAGGGCTCTGGAACTGC GCCAGGG GCTTG CT GGGCT TGG
ATCCTACCACCAACTCGGCC CGGTCCC CGAAC GG CCCGG ACC
CAACTGGACAAGCCCCTGGC -------- A TCAA CTCA ----------
GAM25435 12186 GCCAGGTGGGTTTCAGGGCG AG AGG G A G T GGC
5 CTGAGAAAGCCGCTGGTCGG GCC GTGGGTTTC GC CTG GAAAGCC CTGG CGGTC
TCGGCGACCGTCAGGGTTTT TGG CGCCTAAGG TG GAC CTTTTGG GACT GCCAG
CCAGGGTGGGAATCCGCGGG GG G-- G - - - ---
GT
GAM25436 19274 GCCAGGTTCCACAGCTGCAG CCACA CA- CCCTACAAGTCCATC
3 TTGAGCCCTACAAGTCCATC GCCAGGTT GCTG GTTGAG
CTCAACCACCAGTACAACCT CGGTCCAA TGAC CAACTC
GGC CA--- CAC ----------

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GAM25436 8602   GCCAGTACACAGTTCATTCT  -    A       CTACCTGT      AAGAGTTGAA
9           ACCTGTGAGAGTATAAGAGT GC CAGTAC CAGTTCATT      GAGAGTAT
            TGAAATATTTTTTAATACCA CG GTTATG GTCAAGTGA      TTTTTATA
            GTGAACTGGTATTGCGC    C    -       CCATAAT-      ----------
GAM25437 4460   GCCAGTACAGAAGTTTTTAA  C      A  TTTAAACCAAACT       A C   A  CAAAGACACAT
TAC
0           ACCAAACTGAGGCATAAAGC GC AGTACAGA GTT          GAGGCATAA G AGAA GAG         GAA
            AGAAAGAGCAAAGACACATG TG TCATGTTT CAA          TTCCGTATT C TCTT CTC         CTT

            AATACCCTTCTTAACAATCT  T      C  TGCCAC-------       - A   -  TAACAATT---  ---
            CTTCTACTTATGCCTTCACC CC
            GTAACCTTTGTACTTGT

                        --
GAM25439 18247  GCCAGTCTTAGGTTTTTGAA   A T  A    ----   ACA-    GTAGG
3           CAGGATAGTAGGTATCCGGA GCC G CTT GGTTT   TTGA   GGATA
            GTCGATTGAGGGCCAGAGCA CGG C GAG CCGGG   AGCT   CCTAT
            GGC              A -  A    AGTT   GAGG    -----
GAM25440 5783   GCCAGTGGCCGTGCAACCCA   --     -  AACCCA   AAAG--   ATA   ACGTGCCC
6           GAGAAAAGCCTGATAGGTCA GCCA  GTGGCCG TGC     GAGA     CCTG   GGTC
            CGTGCCCGACCAGCGGGAGA CGGT  TATCGGC ACG     CTCT     GGGC   CCAG
            TCATCTCCTTCGGCAGCGGC    GG      G   GCTTC-   ACTAGA   GA-   --------
            TATGGTGGC
GAM25441 9759   GCCAGTGTCATTTTATAGCA    T    TTTATAGCAA       TTTCTTCAAAGT
5           AATTGCCATTTTCTTCAAAG GCCAG GTCAT        ATTGCCAT
            TGTGGCAGTATCTTGTGACT TGGTT CAGTG        TGACGGTG
            TTGGT               T    TTCTA-----       ------------
GAM25443 1781   GCCAGTTTCTATTATTTGAC   AG-      ATTTGA  --    CCATTT
7           TGGTGCCCATTTGTATTAAA GCC   TTTCTATT     CT  GGTGC
            GGACTAAGATGGAAAAGAGG CGG   AAAGGTAG     GA  TTATG
            C                AGA       AATCAG  AA    ------
GAM25447 18665  GCCATATCACAAAAGTCCTA      CA     TCCTATCAT   TAAT    A  C   TTTT
6           TCATGGGTAATGAAAAGTCT GCCATAT  CAAAAG       GGG    GAAA GT TTA
            TATTTTTAATATATTTCTGT CGGTGTA  GTTTTC       CCT    CTTT TA AAT
            TTCCTTTTTCTTTTGACATG       CA     TTTTT----   TTGT    A  T   ----
            TGGC
GAM25448 3373   GCCATCAAAAGTGCAATTCA   A  A-      AATTCAGGC       TGGC
7           GGCCGGGTGTGGTGGCTCAC GCC TC  AAAGTGC       CGGGTGTGG
            ACCTGTAATCCCAGCACTTT CGG AG  TTTCACG       GTCCACACT
            GGGAGGC             -  GG      ACCCTAAT-       ----
GAM25449 21277  GCCATCACCCCGTCTGTCTC       -    TGT     C  AGCTT   CTCC
8           CCGCACCAGCTTCACCTCCG GCCATCACC CCGTC   CTCCCG ACC     CAC
            TGTCCCGGTCCGGGGGTGGC CGGTGGTGG GGCGG   GGGGGC TGG     GTG
            GGTGGTGGTGGC             T    T--     C  CCCT-  ----
GAM25449 16539  GCCATCACTGCCACCCAGAA       T    CCAGAAGA   TT  ATGGCC
9           GACTGTTGGATGGCCCCTCC GCCATCAC GCCAC       CTG  GG
            GGGAAAACTGTGGCGTGATG CGGTAGTG CGGTG       GGC  CC
            GC                   -    TCAAAAG-   CT  ------
GAM25451 18566  GCCATCCGGAAGCGGCTCTT   A-  GGA  -    -----     GGACG
4           GTTCAGGACGTGGACGCAAC GCC  TCC   AGC GGCTCT    TGTTCA
```

CAGGGCCGGCTGGGAGCGGC CGG AGG TCG CCGGGA GCAGGT
CG G-- G CCAAC -----
GAM25452 5687 GCCATCGGAACTACCATGCA T AACTA GCT TTT CT----- CACCGT
2 GGCTACTCCATGTTTGGGGC GCCA CGG CCATGCAG ACTCCATG GGGG GGCCT
TGGCCTCACCGTAGGCCTGT CGGT GCT GGTGCGTC TGAGGTGT CTCC CCGGA
CTAACCTCTTCTGTGGAGTC - ACG-- --- CTT AATCTGT ------
TGCGTGGGCATCGTGGC
GAM25452 20248 GCCATCTAGTTTGACGCGGA AGT CGC C-- G CAATTTCGCT
7 TTCTCTTGCCCACAATTTCG GCCATCT TTGA GGATT TCTT CCCA
CTTGGGAAGACCAAGTCCTC CGGTAGG AACT CCTGA AGAA GGGT
AAGGATGGC --- --- ACC - ----------
GAM25453 5820 GCCATCTGATCTATAAATGC AT GA TATAAATG CA- GACAAA
5 GGTGGCATCGACAAAGAGAA GCC CT TC CGGTGG TC
CCATTGAAAAATTTGAGAAG CGG GA AG GTTACC AG
GAGGC AG AG TTTAAAAA AAG ------
GAM25453 3192 GCCATCTGCCACTTTGTGAG CCAC - CATCATC C AAGT
6 CTCATCATCAGTCCCAAGTG GCCATCTG TTTGTGAG CT AGT CC
GAACTAGACTCACAGACCTT CGGTAGAT AGACACTC GA TCA GG
AGATGGC TCC- A ------- A ----
GAM25456 8814 GCCATGATTATGAGACTTCC TT CTTCCC A T A TT TCCAATTAAACATCTTTTT

0 CCAGCCATGTGGAACTGTTA GCCATGA ATGAGA CAGCC TG GGA CTG AAG
AGTCCAATTAAACATCTTTT CGGTGCT TACTCT GTTGG AC CCT GAT TTC
TCTTCTTAGTCCCAGGTTGT -- T----- - - - TC ----------
TCTCATTCGTGGC
GAM25456 6061 GCCATGCAGACCTGGCACGG CATG CC G C GGGCCTACGAG
3 CGGTTCCTGGGGGGCCTACG GC CAGA TG CACGG GGTTCCTGGG
AGTCCAGGGACCCCGTGGCG CG GTCT GC GTGCC CCAGGGACCT
CATCTGGACAGC ACAG AC G - ----------
GAM25456 12755 GCCATGCCACCGCCTCGCCA CCAC - - ACCT A CCATGCATC
8 ACCTGCATACTCCCATGCAT GCCATG CGCCT C GCCA GC TACTC
CGAGTAGCCTGGCTGTAGGT CGGTAC GTGGA G CGGT CG ATGAG
GACACATGGC ACA- T T C--- - ---------
GAM25457 12304 GCCATGCTGTCTAGTCTTGA T T GT- AGTC ATTTAAACA
9 AGTCCCTCATTTAAACAGAG GCCA GC GTCTA CTTGA CCTC
GTCAAGCAATAGGCGCCTGG CGGT CG CGGAT GAACT GGAG
C C - AAC ---- ---------
GAM25459 6335 GCCATGGCTTCATGGCATTC - -- TG - A G GGTAAT
3 AGTGATTAGTGGTAATGGTA GC CAT GGCTTCA GCAT TCAGTG TTA T
AACACTGGTGTGTTTTGAAG CG GTA TTGAAGT TGTG GGTCAC AAT G
TTGAATGTGC T AG TT T A G ------
GAM25460 12371 GCCATGTACGTTGCTATCCA T--- TTGCTAT - TATCCCT
5 GGCTGTGCTATCCCTGTACG GCCA GTACG CCAG GCTGTGC
GCTCTGGCCGTACCACTTGG CGGT CATGC GGTC CGGCATG
C TCAC C------ T -------
GAM25461 8373 GCCATGTCTTAAGAGCGGGA A---- TA G--- A AAA C AAACAG
2 AGAAAAGGCAGCAAACAGGC GCC TGTCT AGAGC GGA GA GG AGC
TCTATCTCCACAGGCTCTGG CGG ACAGG TCTCG CCT CT TC TCG
GGACAGTGACGGC CAGTG GG GACA - A-- - ------
GAM25461 6451 GCCATGTGTCTGACCCCATC - T CC-- TCG A C-- C - C TAT

6 GGGTACGACGAGATGTCGTC GCCAT GTG CTGAC CA GGT CGA GAGATGT GT CGA GGG

GACGGGTATCCCTTGTGCCG TGGTA CAT GACTG GT CCA GTT CTCTGCG CG GTT CCC
CGTCTCCATTTGACCATTGT T - ATTT TA- - TAC C T - ---
TTAGTCAGTACTATGGT

GAM25461 18951 GCCATGTTCATGATTGAGAT - G A A- -- A C AAGCTTTTG

9 CGCAGGCGTGAAGCTTTTGT GCC AT TTC TG TTGAGA TCGC GG GTG
ACACTGGTGATTTCTCAAGA CGG TA AAG AC AACTCT AGTG TC CAT
CAAGAAGATAGGC A G A AG TT G A ---------

GAM25462 1323 GCCATGTTGGTTTCAAATTT - GT AAATT TGA AGGT

8 AGATAAAATGAGAAATGAGG GCCA TGTTG TTC TAGATAAAA GAAATG
TCATTTTAATTTTTGTCTAC CGGT ACAGT AAG ATCTGTTTT TTTTAC
CGAATATGACAGTGGC G AT CC--- TAA ----

GAM25464 20505 GCCATTCATGTTTGGTCAGT TT-- AG- AA AT - GTTTATCG

5 TAAAGTATTGGTTGGCCATG GCCATTCATG TGGTC TTA GT TGGT TGGCCAT
TTTATCGATGGCCAGATCAA TGGTAGGTAC ACCAG AAT CA ACTA ACCGGTA
CCATAAAAAGACCATGCCCA CCGT AAA AC -- G --------
TGGATGGT

GAM25466 12820 GCCATTGAGAGCTGGGTGAG ATT- G GA-- TT - ---------- ACT TTA

3 GTTACAGGATGAATATGACT GCC GA AGCTGGGT GG ACAG GATG AATATG CTGTA
CTGTATTATACAGCATGTTG CGG CT TCGACCCA CC TGTC TTAC TTGTAC GACAT
ACCTCCACTCCATTACTGTC CTTC G GAAC CC A CTCACCTCCAG --- ---
CCCCAAGACCCAGCTGTCCT
TCGGC

GAM25466 9581 GCCATTGATGACCTGCCCTT T TG G- T-- A G TTGT

7 CAATAATTGTTTTGTAAGAG GCCA TGA ACCT CCC TCA TAATT TT
TTGATGACCCGGGAGAGGTT CGGT ACT TGGA GGG AGT GTTGA AA
GTCACTGGC C GT GA CCC A G ----

GAM25467 20271 GCCATTGCTTAGAGGGCTTT C --- --- - C TTT

7 CTGTTTTATTTTTAATGAAA GC ATTGCT TAGA GG GCTTT TGTTTTATT
CAAAAAGCACCAGATCTGAC CG TAATGG GTCT CC CGAAA ACAAAGTAA
AGGTAATGC - ACA AGA A A ---

GAM25478 3169 GCCCACAGAAAAGGTTACCT - AAA--- A TT C TCGA

1 TTTCCCATCATCGATGATAG GCCCA CAG AGGTT CC TTCC ATCA
GAATCGGGAGCTTGCCATCC CGGGT GTC TTCGA GG AAGG TAGT
TGTTGGGC T CTACCG G CT A ----

GAM25481 732 GCCCACCTCTCCAACCCAAA - TC AA AA-- - TGA AAAACCAAAAACC

2 CTGGCTGTGATGAAAACCAA GCCCA CC TCC CCCA CTGG CTG TG
AAACCCAGACCAGACCAGCA CGGGT GG AGG GGGT GACC GAC AC
ACTGGGAAGGAACGGATGGG A CA AA CAAC A CAG ----------
C

GAM25485 740 GCCCAGACTTTCCATTTCCC CAG --- AT AATTATTAGG GAAAAA

1 GTAATTATTAGGTCAGAAAA GCC ACT TTCC TTCCCGT TCA
ATGAAAGCAGCGGGAGGGAA CGG TGG AAGG GAGGGCG AGT
CGCGGTAAGGC AA- CGC -- ACGAA----- ------

GAM25487 5892 GCCCAGCCCTCACCCCTAAG AGC----- C AAGGG A GCAC

8 GGGGGGCCGAACGTGCACAC GCCC CCTCACC CT GGGGCCG ACGT
GTGTGGCCCCAGCGGTGAGG CGGG GGAGTGG GA CCCCGGT TGCA
ACAAAACGGGGC GCAAAACA C ----- G ----

GAM25488 6125 GCCCAGCCGCGAGCCCCCCA CGCGAGCCCC A TGAACC TGGAG

```
1          AGATGAACCCAGTGGTGGAG GCCCAGC        CCA GA     CAGTGG
           CCACTGTCCTGGATGCTGGG CGGGTCG        GGT CT     GTCACC
           C                   TA--------  C ------     -----
GAM25494 18652  GCCCAGGATGTGGGCCGCAT    AG   -    C      CAA  AAT-  AACA  TTAA
1          GTTCAAGCAATTCAACAAGT GCCC  GATG TGGGC GCATGTT   GC    TC    AG
           TAACTGAGGACAAGGCAGAC TGGG  CTAC ACCTG CGTGCAG   CG    AG    TC
           GTGCAGTCCATCATCGGGT    --   T    A      A--  GAAC  GAG-  ----
GAM25494 14427  GCCCAGGCCACCCGTGCACC  C--     A---     GCAC      G  -    C      AC-     GCCTCCTTT
5          TGTCCTGCTTCCTGCAGTCC GC   CAGGCC    CCCGT    CTGTCCT CT TCCTG AGTCCCC   TCCCT

           CCACTCCCTGCCTCCTTTGA CG   GTCTGG    GGGCA    GACAGGG GA GGGGT TCAGGGG   AGGGA

           GGGACTGGGGGACTTGGGGT   TAA     GAAA    ----      G  T    -      GTC    ---------
           AGGGGGACAGACGGGAAAGG G
           GTCTGAATGC

                      -
GAM25505 3850   GCCCAGGGAAGGCCAACCGA     ------   A-    AA   AA     CACGGC
7          ATTGCTCACGGCAGCAGAAT GCCCA     GGGA  GGCC  CCG  TTGCT
           GGAGGGCCAGTCCCGGAATC CGGGT     CCCT  CCGG  GGT  GACGA
           TGGGC                CTAAGG    GA    GA    AA    ------
GAM25505 9404   GCCCAGGGCCAGCTGTATGA     -      ---- -   T-    TAC  - -    TGGCC
9          GGTACTGCGGGCTGGCCGCC GCCCA GGGCCAG    CT GTA  GAGG   TG C GGGC
           CTGTCACCCCCTCCTTACTG CGGGT CCTGGTC    GG CAT  CTCC   AC G CCCG
           GTTGACTGGTCCATGGGC       A      AGTT  T   TC    CCC  T T    -----
GAM25506 21431  GCCCAGGGCTCGGCGGGCTG     G   TC--   GG-----      A  TG   G    AGCAAG
0          GTCAGGTGGCGGCAGCAGCA GCCCA GGC    GGC      GCTGGTC GG  GCG CAGC
           AGGCTGCGCTCCCGGCCAGC TGGGT TCG    CCG      CGACCGG CC  CGC GTCG
           AGGATGTGCCATATGCTGTG     G   TATA   TGTAGGA      - CT   -    ------
           GGT
GAM25507 18053  GCCCAGGTGGTGCAGTGGGT        G  CAG    TGA  -    C  ATTC
4          GAGCTTGTGCTGATTCCGAT GCCCAGGTG TG   TGGG   GC TTGTG TG
           ATAGTGCCCCCCAGCCAGTA TGGGTCCAT AC   ACCC   CG GATAT GC
           CCTGGGT                 G  CG-    CC-  T    A  ----
GAM25508 4356   GCCCAGTCCCTGTGTGACAT    CA    CT     CATA     A-      A  GGAAG  ACTTTGGA
4          ACTTATACCCTCAATGGGAA GCC  GTCC  GTGTGA    CTTAT  CCCTCA TG     GA
           GGAACTTTGGATCAACATGG CGG  CAGG  CATATT    GAATA  GGGGGT AC     CT
           GGGACATAAGACCTTATACC    TA    C-     CCA-     CA     -  AA---  --------
           GGACATGGC
GAM25511 1177   GCCCATCATTGGCATCATGG     ATCA    C  C    GG  G     CCATAT
5          GAGGGCCCCCCATATGGGGT GCCC    TTGG AT ATG  AG GCCCC
           GCTGGCATCATACCAAGGGC CGGG    AACC TA TAC  TC TGGGG
                          ----    A  C    GG  G     ------
GAM25513 1240   GCCCATGGATGACAGTCTCA     T  AT    GTC-  TT-     C-   CGCG
2          TTGCATTTCGAACGCGTTCT GCCCA GG  GACA    TCA   GCATTT  GAA
           AAGATGCCCCTGAAAGATGT CGGGT CC  TTGT    AGT   CGTAGA  CTT
           TCCCCTGGGC             - CC    AGAA    CCC     AT    ----
GAM25514 9022   GCCCATTGTGTGCCTGCAAG        TGT-  CT   ---- G     TAATTT
6          GAGGGCTAATTTGCCTTTGT GCCCATTG    GC  GCA    A GAGGGC
           TAATTGCCTGTCTTTCAGTG TGGGTGAC    TG  CGT    T TTTCCG
```

GGT TTTC TC TAAT G ------
GAM25516 9755 GCCCCAACGTGGGGATGCGC GGGGA G TT ACACG AACAGGCA
3 ATTCCACACGGTGGAACAGG GCCCCAACGT TGC CA CC GTGG
CACCACAGAAAGGTTGGGCG CGGGGTTGCA GCG GT GG CACC
ACGTTGGGGC ----- G T- AAAGA --------
GAM25518 3072 GCCCCACTCGCTCCGGTAGT CCAC C- T---- CT GCAGA
8 TGCCTTTGCGCAGAGCGATG GCC TCG TCCGGTAG TGC TTGC
CACTCGCCTACCGGAACTGA CGG AGT AGGCCATC ACG AGCG
AGGC A--- CA CGCTC T- -----
GAM25520 8711 GCCCCAGCTGTGTGGCCTCA CCCA CCTCAA C CGCTCCTT
9 AGCCAGCCTTCCGCTCCTTG GC GCTGTGTGG GCCAGC TTC
AAGCTGGTCTCCACACAGTG CG TGACACACC TGGTCG AAG
C ---- TC---- - --------
GAM25525 6210 GCCCTTTGTACCCCATATGG --- TG ATATGGA G GGG
2 AGCCGGTAAGGGTTACAGGC GCCCT T TACCCC GCC GTAA
AGGAAGGGGGTATGATCTGG CGGGG A ATGGGG CGG CATT
GGC TCT GT GAAGGA- A ---
GAM25525 8316 GCCCTTTGTTCCCAGGACTT CCTTT C - G- T AAAA- TTGCAAAAT
5 TAAGGCAAATATTAAAAATT GC GTTCC AGGAC TTTAA GCAAATA TA TTA
ATTGCAAAATTAAGAATATA CG TAAGG TCCTG AAATT TGTTTGT AT AAT
CTGTTTGTGATTAAATGTCC TT--- T T AG C ATAAG ---------
TTGGAATTTGC
GAM25526 16752 GCCGAAGCTCTGTGCCCTGG AGC GC- TGT - ATATCAAA
7 GTGTGCAGTGATATCAAACA GCCGA TCTGT CCTGGG GCA GTG
CATGCTCCTAGGTAGACGGA TGGTT AGGCA GGATCC CGT CAC
AAATTGGT AAA GAT T-- A --------
GAM25530 1753 GCCGAGAGTGTGTGGCAGGC G- TG TG AG CCA ATC G ATCGTC
7 CCCAACATCGCCGCCATCGT GCCGA AG TG GC GCC AC GCC CC
CGGGGGCACCGTGGCAGGCA CGGCT TC GC CG CGG TG CGG GG
TCGTGCTGATCGGC AG GT TA GA --- CCA G ------
GAM25530 2731 GCCGAGCACTCTTCTTCTTT GAGC- TTTTG -- TTTCTTTGTTTCT
8 TGGGAGTCTTCTTTTATTTC GCC ACTCTTCTTC GGAGTCT TCTTTTA
TTTGTTTCTTAGAGGGTTGG CGG TGAGGAGAGG TTTTAGG GGGAGAT
ATTTTGATTTGGAGAGGAGT AAGTA TTTAG TT ----------
ATGAAGGC
GAM25533 19970 GCCGAGGGCTGGATGGGGCC - G G CC G - - GGG
9 GTGACATGGGGGCCCGGGGG GC CGAG GCTGGAT GGG GT ACATG GG GGCCC
GCTGCCGCATGTGACCCTGG CG GTTC CGACCTG TCC CA TGTAC CC TCGGG
TCCAGCGCTTGTGC T G G -- G G G ---
GAM25534 5442 GCCGAGGTTGCGCGGTTTGA G GT G - TG - T TCGT
9 GTGTTCGGTGGCTCGTGCTT GCC AG TGCGC GTTTG AG TT CGG GGC
TCGCAATCCTATGAATGGCG CGG TC ATGCG TAAGT TC AA GCT TCG
TACTGGGC G -- G A CT C T ----
GAM25535 5859 GCCGATCAAATAGCCTAGTG TCAAATAG TG CA GAATCCCG
5 AGAGTCAGTGAAGAATCCCG GCCGA CCTAG AGAGT GTGAA
TTCATATGCTTTGCCTAGGA TGGCT GGATC TTTCG TACTT
CAGGTTTTCGGT TTTGGACA CG TA --------
GAM25537 18701 GCCGCACAGCCAGATGCGCC - CA AGATG- ACTG- - - AGAAGAAG
1 TGACTGCCGCGTGCGCCAGA GCC GCA GCC CGCCTG CCG C GTGCGCC
AGAAGGGCGCACTGATGGAG CGG CGT CGG GTGGAC GGT G CACGCGG

ATCCAGGTGAACGGAGGCAC T CA AGGCAA CTAGA A T --------
TGCTGGC
GAM25537 12985 GCCGCACCCGTTAGAGGCGC CA-- TTAG - C CACT TCCTCTT
3 TCTCCACTGCTGTCCTCTTC GCCG CCCG AGGC GCT TC GCTG
AGCTCAAGATGGTGGCCTGC CGGT GGGC TCCG TGG AG CGAC
CGGGCGATTGGC TAGC CG-- G T AACT -------
GAM25537 20685 GCCGCACCGAGTGTGTGCTG ACC G T G AACC GG - C TACACCTTC
5 AGCAACCTGCGGGGCCGGAC GCCGC GAGT TG GCT AGC TGCG GC CGGACG GC
GCGCTACACCTTCGCCGTCC CGGCG TTCG GC CGA TCG ATGC CG GCCTGC CG
GCGCGCGTATGGCTGAGCCG GC- A - G GT-- G- C - ---------
AGCTTCGGCGGC
GAM25539 16678 GCCGCATCTTCTTGTGCGTC G- - TG C- GC C GCCACA
3 GCCAGCCGAGCCACATCGCT GCC CATCTTC T TG GTC CAGC GA
GAGACACCATGGGGAAGGTG TGG GTGGAAG G AC CAG GTCG CT
AAGGT AA G GT CA A- - ------
GAM25539 1293 GCCGCATCTTCTTTTGCGTC G- - C- GCC C GCCACA
4 GCCAGCCGAGCCACATCGCT GCC CATCTTCTTT TG GTC AGC GA
CAGACACCATGGGGAAGGTG TGG GTGGAAGGGG AC CAG TCG CT
AAGGT AA T CA AC- - ------
GAM25539 8302 GCCGCATTTGCGAGGCTCTA GCATT- CT AAAACA GGTG
6 AAACATGGGGGGTGCTCCAG GCC TGCGAGG CT TGGGG
AAAGGTTCCTCGCGCAAAAA CGG GCGCTCC GG ACCTC
GGC AAAAAC TT AAAG-- ----
GAM25540 14444 GCCGCCCCCCGAGGAGAGCT C GAGG G GC GG CCC CCCTGC
4 GCCCGGCCAAGCCCGTGGCC GCCGCCC CC AGA CT CC CCAAG GTGGCCCCCGGG

CCCGGGCCCTGCTTCGGGGG CGGCGGG GG TCT GA GG GGTTC CGCCGGGGGCTT

CCGCACCTTGGAGGAGATCT A ---- A -- A- CA- ------
GGAGGGCGGC
GAM25540 9352 GCCGCCCCGGCATCTGGATC -- CGG - AGG C GG GGAT
8 GGCTGGGGCGTCAGGGGCCG GCCGCCCCGGCA TCTGGAT CTGGGGCG TC GGC GCCCC
AGTCG
CCCCGGAGTCGGGATCGGCT CGGCGGGGTCGT AGATCTG GGCCCCGC GG CTG CGGGG
TCGGC
GGGGCGTCAGGGGCCGCCCC CT A-- C GGA - -- ----
GGAGTCTAGATCTGCTGGGG
CGGC
GAM25542 8973 GCCGCCGCAGGCTCCATCTG AGG ------ AGG GA-- TGAGGCT
2 CAGGGCTGAACCTGAGGCTG GCCGCCGC CTC CATCTGC GCT ACC
GTGAGGAGCAGGCAGGTGAC CGGCGGTG GGG GTGGACG CGA TGG
GACAGGGACAGTGGCGGC ACA ACAGCA GA- GGAG -------
GAM25545 9572 GCCGCCTGCCCCAACTGGTC CCT AA - - ACACC AG--- TCGAACAGTGCC
2 GGAGTCTCCACACCGCTGCA GCCG GCCCC CTGGTC GGAG TCTCC GCTGC GGCGGC

GGGCGGCTCGAACAGTGCCG CGGC CGGGG GGCCAG CCTC AGGGG TGACG CCGCCG

CCGCCATCGGGCAGTCCTCC C-- A- G G CCTCC GGCTA ----------
GGGGAGCTCCGGACCGGAGG
GGCCCGGC

GAM25547 18076 GCCGCGGCGTAACGGCAGCC GTAA A A G - GAGT
6 ATCTTGTTTGTTTGAGTGAA GCCGCGGC CGGC GCC TCTT TTTG TTT
TCGGAAAGGAGGCGCCGGCT CGGTGTCG GCCG CGG AGGA AGGC AAG
GTGGC ---- - - A T ----
GAM25549 21368 GCCGCTCCTCGCGCTTCTTC - C C TTCTT C C AGCCTT
6 CGGGCCAGCTCAGCCTTGAC GC CG TCCT GCGC CCGGG CAG TC
CTGTCCTGGGTGCTGGGACG CG GC AGGG CGTG GGTCC GTC AG
TGC T - T ----- T C ------
GAM25552 18126 GCCGGACATGTCTTCCAGGT -- A TCTT TACA----- - TACCG
6 ACACCAGCTGCGTACCGCGC GCCG GAC TG CCAGG CCAGC TGCG
ACGTTGGACAACAGCTCCTG CGGC CTG GC GGTCC GGTTG ACGC
GTATTCGGTCAGCGGC GA - TTAT TCGACAACA C -----
GAM25553 1110 GCCGGAGGAAGAGATTCCCA - A A G - CA G A CGTA
2 AGTGATAAAGCGTACTTCAT GC CGG GG AGA ATT CC AGT AT AAG
AGCTAAGGAAGTGTCTACCA CG GCC CC TCT TGA GG TCG TA TTC
CCGAGC A A A G A AA A C ----
GAM25554 8985 GCCGGCCTGCTTTCCCATCT G C ----- CA- TA TATCT
6 GTCTATCTATCTGGCTGGCA GCC GC TGC TTTCC TCTGTC TC
GGGAAGGAAAGAATTGCATG TGG TG ACG AAAGG GGACGG GG
TGGGT G T TTAAG AAG TC -----
GAM25554 8680 GCCGGCCTGGGTGCTTACCA T TACC-- TCTC GAACG
7 GCTGTCTCAGGATCCAAGGA GCCGGCC GGGTGCT AGCTG AGGATCCAAG
ACGTTTGGGTTTTCCTAGCT CGGTCGG TCCATGG TCGAT TTTTGGGTTT
ACATCTGGTACCTTGGCTGG T TCTACA CC-- -----
C
GAM25555 16521 GCCGGCGAGTGGCCCCAGCG - G TG TCCTCGC TGTT
0 TCCTCGCGCGGCTGTTGCCG GCCG GC AG GCCCCAGCG GCGGC
CTGCTGGGGCTGCTGCTCGG CGGC CG TC CGGGGTCGT CGCCG
C T - GT ------- ----
GAM25555 3296 GCCGGCGGGCCGGTGAGCTC CG - G T CTAG CGGCA
9 ACTAGCTGACCCGGCAGGTC GC GCGG GCCG TGAGC CA CTGACC
AGGATCTGGCTTAGCGGCGC CG CGCC CGGC ATTCG GT GACTGG
CGCGAGC AG G G - CTAG -----
GAM25556 19350 GCCGGCTCATCCCAGATGGC G T C--- T TG -- TCAAGTACATCC
3 TGTGGAGGTCAAGTACATCC GCC GC CAT CCAGA GGC TGGA GG
CCAGTCCGTGGCCCTCTGGA CGG CG GTG GGTCT CCG GCCT CC
CAAGTGGCGGGC G - AACA C GT GA ----------
GAM25557 12822 GCCGGGACGGCCTTCGGGCA G- A - CGG T- A T GCAAT
6 GTGATGGAGTGTCGCAATGT GCC GG CGGC CTT GCAG GATGG GTG C
CACCCATCTCCTGCAACAAG CGG CC GTCG GAA CGTC CTACC CAC G
AGCTGACCGAGGC AG A A CAA CT - T -----
GAM25558 2878 GCCGGGATGCATGTGGGCCG - - TG - TG G GCGG
5 TGGGCCGGCGGTGGGCTGTG GC CGGGATGCA TG GGCC G G CCG
GGCCTGCGCTGCGTCCTGTG CG GTCCTGCGT GC CCGG T C GGT
C T C GT G GT G ----
GAM25560 20870 GCCGGGCCGGAAACCTCCAC -- A TCCACAGC AAAAA AACC
0 AGCTGTTGAGAAAAAGGAGA GCCGGG CCGGAA CC TGTTGAG GGAGA
AACCTCTTCCAAGACTTAAT CGGTTT GGTCTT GG ATAATTC CTTCT
ATCCATTCTGGATTCTGGAT TA A TCTTACCT AGAAC ----
TTTGGC

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GAM25561 9511   GCCGGGGCAGCGACTGGCGC      --      --  CGCTAC       G  GGGG
6           TACTGGGGCCAGCGGGGGCG GCCGGG  GCAGCGA  CTGG     TGGGGCCA CG
            GTGGCCCCATCAACCCGGCC CGGCCC  CGTCGCT  GGCC     ACCCCGGT GC
            TCGCTGCCTCCCGGC          TC      CC    CAACT-      G ----
GAM25562 18331  GCCGGGTGGTGGCAGCAACA         G AGCAACA  -  G      T    G   A-    TGCTGCTCC
6           GAGGGTTGGTGGCGGCTGGG GCCGGGTGGT GC      GAG GGTT GTGGCGGC GGGGAC CCCG
GGCCG
            GACGCCCGAGGCCGTGCTGC TGGCCCATCA CG      CTC CCAG CGCCGCCG TCCCTG GGGT
TCGGT

            TCCCCTGGCTGGTGGGGTCC         G -------  G   A      -    -   GG    ---------
            CTGCCGCCGCAGACCGCTCG CC
            CGACTACCCGGT

                        --
GAM25563 21645  GCCGGGTGTGGTGGTGCCTG   CG-     ---    GC-       C    G-     AGGCTGAG
1           TAGTCCCAGCTGCTCAGGAG GC   GGTGTG   GTGGT   CTGTAGTC CAGCT  CTCAGG
            GCTGAGCCTGGGGAGGTTGA CG   CCACAC   TACCG   GACGTCGG GTTGG  GGGTCC
            GGCTGCAGTGAGCCATGATC   TCA     TAG    AGT      A    AG     --------
            ACACCACTGC
GAM25564 20166  GCCGGTGGGAGGAAAAGAGG   ---     A    A-----  G     CTAAAATA
3           TATCTTCTAAAATAGAGATA GCC   GGTGGG GGAAA      GAG TATCTT
            GTTCACATTATTTCCCTCAT CGG   CTACTC CCTTT      CTT ATAGAG
            CTTAGGC              ATT    -   ATTACA  G     --------
GAM25564 19989  GCCGGTGGGGGGGTACACCAG   G        CA--   GGGCCAA--   G ATAAAAT
4           GGGCCAACCGGGATAAAATT GCC GTGGGGGGGTA    CCAG        CCG G
            GCGGGAAACAAAACTGGGTT TGG CACTTCCCGT    GGTC        GGC T
            TTGCCCTTCACAGGT       A        TTTG    AAAACAAAG   G -------
GAM25565 3178   GCCGGTTGGGGGCCAACACC    GGT       AACA   G    G  GAAAACAGG
3           TGGGTGGCCGAAAACAGGGG GCC   TGGGGGCC    CCT GGTG CC
            GCACCGAGGGCGGGTCCCCA TGG   ACCCCTGG    GGA CCAC GG
            GGT                 ---       GCG-   G    G  ---------
GAM25565 1304   GCCGGTTTGTGGGTGCAGTG     T     GT       CCCATCA    GAAG
4           GACCCCATCATGGAGAAGTT GCCGG TTGTGG  GCAGTGGAC      TGGA
            CAACGCGTCCATTGCCTACG CGGCC AGCATC  CGTTACCTG      ACTT
            ACCGGC                -     --        CGCA---    ----
GAM25566 16844  GCCGTCCAGCTCTCCGGTCA   ----- C    CTCC    TC    CAG    TCA   C   A--  ATTCAA
3           TCTTTGCAGGTGGTCAGGCC GCC    GT CAGCT    GGTCA  TTTG   GTGG   GGC TAT   CC
            TATACCATTCAAGGACAGTA CGG    CA GTCGA    CCAGT  AGAC   CACC   CCG ATG   GG
            TGCCATTCCACAGCCAGATT    TTGAC  C    A---    TT    CGA    TTA   T   ACA  ------
            TGACCAAGCTGCACCAGTTG
            GC
GAM25567 14540  GCCGTCCTACTGAGCAAGAT   - GT   ACTG    A   G  -   CACTTGGA
0           GGCGCCCCACTTGGAGGGCG GC C  CCT    AGCA GAT GC GCCC
            GTGGTCTGTTACCAGGGTGT CG G  GGA    TTGT CTG TG CGGG
            GC                  T TG   CCA-    -   G  G    --------
GAM25567 20021  GCCGTCTCCGCCTCGGGGTC    T      TC     C--   -   -    T ----  A    T  CCACGTGC
6           CGCCGGGGGCGCCCTGCTGA GCCG CTCCGCC  GGGGTC   GCCG GGGG CGCCC GC    TG GCGC
AC
            GCGCTACCCACGTGCGTCGC CGGC GAGGCGG  CCCCGG   CGGC CCCC GCGGG CG    AC CGCG
TG
```

GCCACCTCGCGGGCGACCCC - C- AAC G A - CTCC - C --------
GCGGCCAAGGCCCCCGGCGG
AGCGGC
GAM25569 3771 GCCGTGCGCGGGCCTCGGAC GT-- G G -- AGAGAGGC
1 CCTCAGAGAGGCGAGGGTTC GCC GC CG GCC TCGGACCCTC
GAAGGGCACGAGTTCGAGGC CGG TG GC CGG AGCTTGGGAG
AGCT A A GA --------
GAM25569 6113 GCCGTGGAGTGGGAGAGCAA C TG -- AA- --- C-- AACAACTACAAGACCACGC
9 TGGGCAGCCGGAGAACAACT GC GTGGAG GGA GAGC TGGG CAGC GGAG
ACAAGACCACGCCTCCCATG CG CATCTC TCT CTCG GCCT GTCG CCTC
CTGGACTCCGACGGCTCCTT A CT TC GCA CAG TAC ----------
CTTCCTCTACAGC
GAM25571 5569 GCCGTTAGCTTGTGGGAGAA C C - AGAAC TTCTTA G CAGGCT
7 CGTGCTTCTTATTCCTGGGC GC GTTAG TT GTGGG GTGC TTCCT GG
AGGCTTCAAGGAACAGCTTG CG CAGTC AA CGCCC CACG AAGGA CT
CACATGTGCCCGCTAAACTG C A T GTGTA TTCGAC A ------
ACCGC
GAM25579 14413 GCCTACTCCATATTTTCCAG AC TATTTTCC CAAT TCTCA
3 CTTTTCAATTTCTCTCAGAA GCCT TCCA AGCTTTT TTC
CAAAGGTTTTATTTCTGGGC CGGG GGGT TTGGAAA AAG
AGGGC AC CTTTATT- C--- -----
GAM25579 14651 GCCTACTTGGCCTACATGCC TT ---------- GC TGCCCGT
9 TTCTGCCCGTGAAGCGATGT GCCTAC GGCCT ACAT CTTC
TTCCCCTCGAAAGGCCGTAG CGGATG CCGGA TGTA GAAG
GC -- AAGCTCCCCTT GC -------
GAM25580 3641 GCCTAGACTTAGGGGCACTA ------ TTA CAC---- GAAAAAAA
9 GTTTCAGAAAAAAATGAAAC GCCT AGAC GGGG TAGTTTCA
TATATATATTTCCATGTTTT CGGA TTTG CCTT ATCAAAGT
TTCCAAGGC ACCTTT TA- TATATAT --------
GAM25585 5976 GCCTAGGTCTGGTGTCTTCA T TCT TCAAAT- TTCACTT
7 AATTGGATTCACTTTTTATA GCC AGG GGTGTCT TGGA
CATACAGACACTCCCTTGGC CGG TCC TCACAGA ATTT
T C-- CATACAT -------
GAM25588 18572 GCCTATCTCAGCGTGTAGGC TCAGCG- A CAAGAAA- GAAA
2 AAGAAATTCGAAAGAGAAGA GCCTATC TGT GG TTC
TGACCCAGCAAACCAATGGT CGGATGG ACG CC GAG
AGGC TAACCAA A CAGTAGAA ----
GAM25590 1513 GCCTATTTCTAGTTTTGTAT TT- - TT A AAAAA TTAAAATGTTGTT
3 TTTAAAAAGTTTTCATTAAA GCCTA TCT AGT TGT TTTT GTTTTCA
ATGTTGTTTGAGGATCAGGA CGGAT AGA TCA ACA AAAG TAGGAGT
AAAACAACTAAGATACTAGG CAT A -- A GAC-- ----------
C
GAM25590 20825 GCCTATTTGGGTGAGAAAAT TATT G A AA-- C-- TA- CGAT
5 CCCATGTTACAGTGCGATCA GCC TGG TG GAA TCC ATGT CAGTG
CTGGGCACGTTTTGGAGTAA CGG ACC AC CTT AGG TGCA GTCAC
TTCCAGCCACTGGC TC-- G - AATG TTT CGG ----
GAM25592 4234 GCCTCAAGTTATTTCATGCG T - T ---- GA GAAG
8 CACAGAGGGAAGCCATGTGG GCCTCAAG TATTT CA GCG CACA GG
GGTTGCTGAAGATGCCTTGA TGGAGTTC GTAGA GT CGT GTGT CC
GGT C A - TGGG A- ----

GAM25594 20760 GCCTCACCCCTGCGGAGAGC C A -- G A G G CGACA CAT AC GGTC
1 ACCGTGGCGGGGCGACAGCG GC TC CCC CT CGGAG GCACC TGGC GGG GCG GCAGGA
GGG
CATGCAGGAACGGGGGTCTC CG AG GGG GG GTCTC CGTGG GCCG TCC TGC CGTCCT CCT

CTCTCCTGCCCGTCCTGGCC C C CA G - G G ----- C-- CT ----
GGGGTGCCTCTGGGGACGGG
CGACGC
GAM25594 2953 GCCTCACCCTTAGAAGTTCC A- TCCACCTCCT - C-- - GCGCA
4 ACCTCCTAGGCTGGGCACGG GCCTCACCCTT GAAGT AG GCTGGG AC GGTG
TGGCGCACACCTGTAATCCC CGGAGTGGGAG CTTCA TC CGACCC TG CCAC
AGCACTTTACTTCGGGAGGG GG TT-------- A TAA T -----
TGAGGC
GAM25595 6013 GCCTCACTGCCGGCGTCTAC CACT G AGTCA --- AGTC
4 GAGTCAGCCAAAGTCTTGAA GCCT GCCG CGTCTACG GC CAA
CGTGTAAGTGTAGACGCGGC CGGA CGGC GCAGATGT TG GTT
CCAGGC CC-- - GAATG CAA ----
GAM25596 6284 GCCTCAGAAGCTAATTCAGT AGAA A CA C TT CATG
0 TCTCCTTTGGCATGCCACTG GCCTC GCTA TT GTT TCC TGG
GATAACAAGATAGTGAGGGG CGGGG TGAT AG CAA AGG ACC
GC GAG- - AA T TC ----
GAM25598 3796 GCCTCAGCCTTCAGAGTAGC G --------- ACCA GAT TAC
5 TGAGACCACAGATGTGTACC GCCTCA CCTTC AGAGTAGCTGAG CA GTG
ACTATGCTCAGCTACTTTTT CGGAGT GGGGG TTTCATCGACTC GT CAC
TTTAGAAGGGGGGTGAGGC G AAGATTTTT ---- AT- ---
GAM25604 6314 GCCTCCCAAAGCACCATTAA AAA A TTTCA AGGG- CAAGGAGTA
9 TCTTTTCAAGCAGGGCCTCA GCCTCCC GC CCATTAATCT AGC CCT
AGGAGTAAGGACAAAGCTAA CGGGGGG TG GGTAATTGGG TCG GGA
TGGGTTAATGGGTGGGGGGC --- - TAA-- AAACA ---------
GAM25605 8457 GCCTCCCAAAGTGATTGCAG CCAAAG- G ----- GAGCCACT
0 ATTACAGGTGTGAGCCACTG GCCTC TGATT CAGATTA CAGGTGT
CGCCTGGCCTATGGTTTGGA CGGAG ATTGA GTTTGGT GTCCGCG
GTTAATGTAATGAGGC TAATGTA G ATCCG --------
GAM25607 6051 GCCTCCCAGTCTCCTCTTCC - A- CTT-- AC T CTGTTT
0 AACTCTGTCCTGTTTGATGA GCC TCCC GTCTCCT CCA TC GTC
TGGCCTCAGGGAGACAAGGG CGG AGGG CAGAGGG GGT AG TAG
ATGGC T AA ACTCC -- - ------
GAM25608 18838 GCCTCCCGCCTCTCCTGCAT CCCGC T TG CCT TACT GTCC
4 GGCCTCGTACTGGAAGTCCT GCCT CTC CC CATGG CG GGAA
TCCTCCGCTCCGTGTGGGTG CGGA GAG GG GTGCC GC CCTT
AGATAGGC TA--- T GT TC- CT-- ----
GAM25609 19898 GCCTCCCTCCCGGGTATGGA CT CC T CTT A CACGA
6 ATCTTGGGGGATCCACGAGA GC CCCT CGGG ATGGAAT GGGGG TC
ACCCCCTTAATTCCATCCTG CG GGGA GTCC TACCTTA CCCCC AG
AAGGGTGC T- A- - ATT A -----
GAM25613 8518 GCCTCCTCTCCCTTCTGTGG - CTC C --- CCA
3 GTCGCTCCCAGAGCCATGGC GC CTC TCC TTCTGTGGGTC GCTC
CCATGGGAAGGACAGAGTGT TG GAG AGG AGGGTACCCGG CGAG
T AC- A TAC ---
GAM25617 6370 GCCTCGGCCTCCCAGGGTGC TC-- TCCCA TC- A TG AGAC

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3          TCGGATTGCAGACGTGAGCC GCC   GGCC    GGGTGC  GG T  C
           ACTGCGCCCGGCCCGTTGGC CGG   CCGG    CCCGCG  CC A  G
                      TTGC   -----    TCA  G GT ----
GAM25617 19169  GCCTCGGGCCGGTGCAGATA   --    CG  G   ATA     G    TTGCTAT
6          CGGGGTTGCTCTTTTGCTAT GCC  TCGGGC  GT CAG   CGGGGTT CTCTT
           AAGAGGGGCTTCGCTGGCAG CGG  AGTCTG  CG GTC   GCTTCGG GAGAA
           TCTGAACGGC          CA    A- -  ---     G    -------
GAM25619 12913  GCCTCTAAGAAGTCCCGACT   TCTAAGAAG   G    CTCCTCTTCTATCATT
3          GTCCTCCTCTTCTATCATTG GCC       TCCC ACTGTC
           ACAGTGGGAATAATGTTGGC CGG       AGGG TGACAG
                      TTGTAATA-   -    ----------------
GAM25619 8653   GCCTCTAATATCTTTGGGAC   T  A  TC    GA    AA  AAA---    CTT
6          ACCTGAAGAAAATCAAGCTT GCC CTA TA  TTTGG  CACCTG  GA    TCAAG
           CTTGGGCCAAGTCAGCAGGT CGG GGT AT  GAACC  GTGGAC  CT    GGTTC
           GCCAAGTCTAGTGGTGGC    T  G  CT   --    GA  GAACCG   ---
GAM25624 6209   GCCTCTGACTCGAGCATTAT   TC   ---- G      GGGA    G  GAAACG    T-  GCAGC
2          GGGGAGCCAGGAGCCCGAAA GCC  TGAC   TC AGCATTATG   GCCAGGA CCC    GCCGAG  GCT
 TCC
           CGGCCGAGTGCTGCAGCTCC CGG  ACTG   AG TCGTGGTGC   CGGTCCT GGG    CGGCTC  CGG
 AGG
           CGGGGGCCCCTTCTCCCCTG   T-   TAGA  A      ----     -  ------    TC   AAA--
           GAAAAGGCCTCTCGGCGGGT C    CCCCTTC
           CCTGGCCGTGGTGCTAGAAG  GGGGG
           ATGTCATGGC          CCCCT
                      T    -------
GAM25625 14489  GCCTCTGGATGACCTTTTTC   CT    GA   TTT   CAATGATGAAGACGACCCA
8          CCCAATGATGAAGACGACCC GC  CTGGAT  CCTT   CCC
           AGGGCAAGGAATCCAGCAGC CG  GACCTA  GGAA   GGG
                      AC    A-   C--  -------------------
GAM25627 19031  GCCTCTGTCCTTTATCAGTC   -    TCC       CGTCTTAGC   TCTG
1          GTCTTAGCAGATCTGTCTTA GC CTCTG   TTTATCAGT       AGA
           TTTTTCAGCTGATAAACGTA CG GAGAT   AAATAGTCG       TCT
           GAGAGC              A    GC-       ACTTTTTAT   ----
GAM25627 9807   GCCTCTGTGTTCCTGGGACA   TC    CC   ACAC   GA  GAG   CT    TCTAA
2          CCGCTGACTGGAGGCTGCTC GCC  TGTGTT  TGGG   CGCT  CTG   GCTG  CCTCT
           CTCTTCTAAGGGGGTCCGGC CGG  ACACGA  ACCC   GCGA  GAC   CGGC  GGGGG
           ACAGAGCGCCACCCAAAGCA   T-    A-   ACC-   --  A--   CT    -----
           CATGGC
GAM25628 12730  GCCTCTTCAGAATGCTGCTT   TCTT---   --  -    TCCTAGAGCAACCATT
4          TCCTAGAGCAACCATTGAGC GCC      CAGA  ATG CTGCTT
           AGTCATTATCTGTTGTCTTG CGG      GTCT  TAC GACGAG
           GC                TTCTGTT   AT  T    ----------------
GAM25628 2749   GCCTCTTCCAAATTATGGGA   T  CCAAATTA      ---- GA  T   A   GTTAG
5          TATCCGAGATGGCATGTGTT GCC CTT       TGGGATAT   CC  GA GGC TGT
           AGACAGTCTTCCAGGGGACA CGG GGG       ACCCTGTA   GG  CT CTG ACA
           TGTCCCAGATATCAAGGGTG   T   AACTATAG       CAGG  AC  T   -   -----
           GC
GAM25630 9275   GCCTCTTGTCAGTTATGGTC   T   TCAGTT   G   G      --   ACACATGAAGCA
0          AGTTTTTGCTGCTACACATG GCC CTTG     ATG TCA TTTTTGCT  GCT
           AAGCAAGCTTAGTAAAAAGT CGG GAAC     TAT AGT AAAAATGA  CGA
```

GAGTATTTCAAGGGC - TT---- G G TT ----------
GAM25633 8589 GCCTGAATGGCGAATGGAAA -------- - - G TTG - TT ATTTTG
5 TTGTAAGCGTTAATATTTTG GCCT GAATG GC GAAT GAAA TAA GCG AAT
GTTTCGCGTTAAATTTTTGG CGGA TTTAC CG CTTG TTTT ATT CGC TTG
TTCAGCTCATTTTTTAACCT TCCAATTT T A G TAA G T- ------
AGGC
GAM25634 16686 GCCTGACCCTTAACGCCCTC A TTAAC CCTC CCTTCTTATTTTTCT GA AT A
G
4 GGAGCGGCCTTCTTATTTTT GCCTG CCC GC GGAGCGG TGAT TGTTG GCCCC CGG
CTTGATGATGTTGATGCCCC TGGAC GGG CG CCTCGTT ACTG ACGAC CGGGG GTT

ACGGGGTTTTGGGGGCTGCA - ----- TC-- CCT---------- TC GT - -
GCACTGTCATCCTTGCTCCC GTT
TGCGGGCAGGT

GAM25634 8615 GCCTGACGGTCACTTTGATG TGAC A- T ATCCT ACA
7 GGATCCTGTACGACACGTAC GCC GGTC CTTTGA GGG GTACG
CCACTCTCGGAGGAGACCTG CGG CCAG GAGGCT CTC CATGC
GC T--- AG - ACC-- ---
GAM25637 3306 GCCTGAGGAGCTGCTGCGAC - A GCT-- --- C AC TTTC
6 AGTCCACTACCTTTTTCGAG GC CTG GGAGCT GCGAC AGTC ACT CTT
AGTGACTCCCGTTGTCCCAA CG GAC CTTCGG TGTTG TCAG TGA GAG
GGCTTCCCAGAGC A C AACCC CCC - -- ----
GAM25639 2747 GCCTGATAAAGCGCGCCTAC - TAAA G ----- TACAA- AG A --- TTATATAT
1 TGGGCTACAAGGCCAAGCAA GCC TGA GCGC CCT ACTGGGC GGCCA CA GGT TACG
GGTTACGTTATATATAGGAT CGG ATT CGTG GGA TGACCCG CCGGT GT CCG GTGC

TCGTGTTCGCCGTGGTGGCC C CAA- - ATCCT CAAAAG G- G CTT --------
GAAAACGCCCAGTTCCTAAG AGGATT
GGTGCAACTTACGGC

GAM25639 8319 GCCTGATCATCCTACTGCAG CTGA ACT GCC G CC GTAA
2 GGCCTCCAGGGCCGGGTAAC GC TCATCCT GCAGG TCCA GG GG
CACTGTGGACCTGCGGGATG CG AGTAGGG CGTCC AGGT TC CC
AGAGC AG-- --- --- G A- ----
GAM25641 5572 GCCTGCACCGTTGCCAGGCG CA G - CTG T TGACTGCTGCCTT
9 TATGGGGCTGCCTGTGCTGA GCCTG CCGTT CCAGGCGTA TGGGG CCTG GC
CTGCTGCCTTGCCCGGGACC CGGAC GGTAG GGTCCGTGT ATTCC GGGC CG
CTTACTGTGCCTGGGATGGC C- - C CA- C ----------
CAGGC
GAM25642 12267 GCCTGCAGCAGTGTGTGGCC G GCAGTG CCATT TC AAGA
7 ATTAGTATCCAGCAAGAGCT GCCT CA TGTGG AGTA CAGC
GTACTCCCCGCAAGAGATGG TGGA GT ACGCC TCAT GTCG
AGGT G AGAGA- CC--- -- ----
GAM25643 9732 GCCTGCATAGGCTGTAGCAA GCAT G GCAAA T A AAAACA
3 AGTTTGCACCATAAAACAGT GCCT AGGCT TA GTT GC CCAT
GGGCCAGCGTAATGGGGCTT CGGA TTCGG GT CGA CG GGTG
CATAAGGC ATAC G AATG- C - ------

GAM25644 2797 GCCTGCCACCGCTGCCCGAG T CGCT- C - AC A- TCCAG
3 CCCGACGCTATGTCCAGCAA GCC GCCAC GCC GAGCC CG GCT TG
AGGCTCCGTGGTTCTGGCCT CGG CGGTG CGG CTTGG GC CGG AC
ACAGTGGCGGC - ACATC T T CT AA -----
GAM25647 16721 GCCTGCCTTCTTCCCTGCTC - C- T TCCCCTAAGCTCCCTC
5 TGTCCCCTAAGCTCCCTCCA GCCTG CCTT TTCCCTGC CTG
GGCAGGGAAAAGAGGCCAGG TGGAC GGAG AAGGGACG GAC
T C AA - ----------
GAM25648 8969 GCCTGCGGTAGGGCCGGCGT CT TA --- GTT G C CCT AGCACTC
6 TGTTGGGCCTGGCCTTCGGG GC GCGG GGGC CGGC GTT GGC TGG TCGGG
AGCACTCTCCGATCTCGTGC CG TGCC CCCG GCCG TAA CCG GCT AGCCT
CGAATGTGCCGTCCGCCCGT TC TG CCT TG- G T CT- -------
CCGTCTGC
GAM25650 12307 GCCTGCTCTAGAGCGCTTCC AGA--- CT C GA GTG
1 TGCGGAGACTTCAGGTGCTG GCCTGCTCT GCG TCCTG GGA CTTCAG
AAGTCCACAGGGGATGTGGC CGGGCGGGA TGT GGGAC CCT GAAGTC
CGGAGGGCGGGC GGCCGG AG A -- ---
GAM25652 6097 GCCTGCTTGAGAGGCTCTGG TT G C G TT- CCC - CCCA TCCGTTCC
6 GCATTGGGTTCCCTTCCGAC GCCTGC GAGAG CT TGG CA GGGTT TTC CGA AGT
CCAAGTTCCGTTCCACTTTG TGGACG CTCTC GG ACC GT CCCGA AAG GTT TCA
AGAAAGCCCCTTTGGCCATG C- G T G TTC --- A ---- --------
GGCTCTCCGCAGGT
GAM25653 14374 GCCTGGAAGAACTGTGTACA T AAGA- G- A- TG AGA ACCAGCAAGACA
8 TGGTCTAGAACCCACCAGCA GCC GG ACT TGT CA GTCT ACCC
AGACAGGGTAAGATTGTGAG TGG CC TGA ATA GT TAGA TGGG
ATAGAAGTGGGAACCTGGT T AAGGG AG GA GT A-- ----------
GAM25655 21279 GCCTGGACATTGTGGTGCAC GACAT CA GCC ATG-- TCAAT
3 TGCCGCTGATGTCTCAATGA GCCTG TGTGGTG CT GCTG TC
ACTTGCAGTCAAAGACCACC CGGAC GCGCCAC GA TGAC AG
GCGCAGGC ----- CA AAC GTTCA -----
GAM25656 8428 GCCTGGAGCAAATTCTTCTC AAAT-- C T CTAC ACCTCA
3 CTCTGCTCTACGCCACCTCA GCCTGGAGC TCTT TCC CTGCT GCC
GGCAGCAGGGACAGGGCAAA CGGACCTCG GGGA AGG GACGA CGG
GGGCTCCAGGC GGAAAC C - ---- ------
GAM25661 12815 GCCTGGCCGCCGATGAGGAA GC GATG TCAAT CAATCT
1 CTCTTCAATGCCAATCTGCC GCCTG CGCC AGGAACTCT GC
AGTAGAGTTCCTGGGTGACA CGGAC GTGG TCCTTGAGA CG
GGC A- G--- TGAC- ------
GAM25661 9224 GCCTGGCGATTGAGAGTGAC CG- G CG A GGAGCAAAG
6 GGCAAGAAGGGGAGCAAAGT GCCTGG ATTGA AGTGA GCA GAAGG
TTTCATGTATTACTTCGATA TGGGCC TAGCT TCATT TGT CTTTT
ACCCGGGT CAA - A- A ---------
GAM25662 4391 GCCTGGCTAATTTTTGTATT TTT T TTGTT A GGT
8 TGTTGTAGAGATGGTGTCTC GCCTGGCTAAT TG AT GT GAGAT
GCTTTGTCATGTTGGCCAGG TGGACCGGTTG AC TG CG CTCTG
T T-- - TTT-- - ---
GAM25668 8885 GCCTGGGCCTGAGCAGCATC T T C CATC - TG ACCT GAGGA
3 GTTGGCGTCTGGTACCTGCT GCC GGGCC GAG AG GTTGGCG TC GT GCT
GAGGAAGCACTGGATTGCCA CGG TCCGG TTT TC CAACCGT AG CA CGA
ACAACCTTTTTGGCCTGGC - T - CAA- T GT ---- -----

GAM25668 8406 GCCTGGGCTTCGCGGGCCGC CTTCG--- --- CCCA G GCA CCAGCA
9 TCACCCACCCGCGGGCAGCC GCCTGGG CGGGCCGC TCA CCC CGG GC
CAGCAGTAACCGGGGGCCCT CGGACCC GCCCGGTG AGT GGG GCC TG
GAACCGTGGCCCGAACTTCA CACTTCAA CCA CCC- G AA- ------
CCCCAGGC
GAM25669 6046 GCCTGGGGTTCCTCACACTT GT C T- ACAAAA AA TCA
6 TTCAGACAAAAGGGAAGGGC GCCTGGG TCCT ACACT TTCAG GGG GGGCTG
TGTCACAGCTCCCCCGGCCT TGGACCT AGGA TGTGA GAGTC CCC CTCGAC
GAGTCAGTGTCAGGATCCAG -- C CT CGG--- C- ---
GT
GAM25673 6283 GCCTGGTTCCACCAGACTGG TG TCCA CT T --- ACAGATAAA
7 CGTGCCATTGGACAGATAAA GCC GT CCAGA GGCG GC CATTGG
CCAGTGTTAGCTTGCCTCTG TGG CG GGTCT CCGT CG GTGACC
GGCTGGGT GT ---- -- T ATT ---------
GAM25678 14342 GCCTGTCAGTGGCCCTCCCT T GG C TG T CT- CCCCGAA
2 GGTGCACTGTCCCCGAAACC GCCTG CAGT CCCT CC G GCA GT
CCTGCTTGGGAAGGGAAGCT TGGGC GTCG GGGA GG T CGT CA
GTCGGGT T AA A GT - CCC -------
GAM25678 3135 GCCTGTCCTCTGGGAGTGAC G GGGAGTGA ATTAG -- GA - - ATCCT
9 CTTTATTAGTCCACCCCTTG GCCT TCCTCT CCTTT TCCACC CCTTG GCTA G AC
GAGCTAGACATCCTGTACTT TGGG AGGAGA GGAGA AGGTGG GGGGC TGAT C TG
AGTCACGGGGATGGTGGAAG A AGAG---- ----- TA AC T A -----
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GAM25680 18854 GCCTGTGACAACTGAGTGCT ACAACT-- TCCACAAT GTAA
2 TCCACAATGTCTGTAAAGAT GCCTGTG GAGTGCT GTCT
TGCCTACAGCGCTCCTTTAA TGGACAC CTCGCGA TAGA
GGCACAGGT GGAATTTC CATCCGT- ----
GAM25682 21072 GCCTGTGGTAGGAACCCGCT G AG A GCTACAAG - T C ACTACGAC
2 ACAAGTGCAGCGTCTGCCCA GCCT TGGT GA CCC TGCAG CG CTGC CAG
GACTACGACTTGTGTAGCGT CGGG GCCA TT GGG GCGTC GC GATG GTT
CTGCGAGGGAAAGGGCTTGC G CG C AAAGGGA- T - T --------
ACCGGGGGC
GAM25682 20096 GCCTGTGTCCACAGTGCTGT GTC CA TG CCC----- AAG
9 GATCCCGAGGGAAGTCCTCC GCCTGT CA G CTGTGAT GAGGG
AGTCTAAGTCACAGTGCCCT TGGACA GT C GACACTG CTCCT
GACAGGT --- CC GT AATCTGAC ---
GAM25684 17964 GCCTGTTCCTGCTGCAGCAG TCCT - - CA CCCT C C C ACGCT
5 CCCCTGGCGCCCTCGGGCCT GCCTGT GCT GC AG GC GG GCC TCGGGC TC
CACGCTGAAGTCCGAGGCCC CGGACA TGA CG TC CG CC CGG AGCCTG AG
TTCGCAACTGGCAAGTTTAC TT-- A G AA CTT- - - A -----
AGGC
GAM25687 14571 GCCTTAATTTGTACTGTCTG TA A G CG- TTTTT - ATATAGTGACTG
8 CGGCATTTTTTATAATATTG GCCT ATTTGT CT TCTG GCA TATAATATT GT
TATATAGTGACTGACAAATA CGGG TGGACA GA AGAT TGT ATGTTATAA CA
TTGTATTACTGTACATAGAG -- - G ACA CATT- A ----------
AGACAGGTGGGC
GAM25688 16487 GCCTTACTATTTCTTCTCTA ACTATTTCTTCTC-- A CTTA
3 AGAGGATGGCTTATCATCCC GCCTT TAAG GGATGG
TTACTCAAAACAAAATCGAA CGGAA ATTC CCTACT
GGC GCTAAAACAAAACTC - ----

GAM25688 1185 GCCTTAGCCCTGGATTCCAA CT G A CATT A TG A GCAC
9 GGCATTTCCACTTGGTGATC GC TAGCCCTG ATTCCA GG TCC CT GTG TCA
AGCACTGAACACAGAGGACT CG GTCGGGGT TGAGGT CC AGG GA CAC AGT
CACCATGGAGTTGGGGCTGT T- - A ACTC A -- A ----
GC
GAM25690 4095 GCCTTATGAGCTTTCCTACA TA A TACAAAA A G C- GCAGTG
0 AAATGGAATTGGAGGCCGGG GCCT TG GCTTTCC TGG ATTG AGGC GGGC
CGCAGTGGCTCACGCCTGTA TGGA AC CGGAGGG ACC TAAT TCCG CTCG
ATCCCAGCACTTTGGGAGGC -- - TTTCACG C G CA ------
CAAGGT
GAM25690 8356 GCCTTATTGGAGGAATTGTT - G C- T TTGTCCTGACTTCTTTC
2 CCATCTTCTGTTGTCCTGAC GCCT TATTGGAGGAATT TT CATC TCTG
TTCTTTCCAGGTGATGTCAA CGGG ATAATCTTTTTGA AA GTAG GGAC
GAGTTTTTCTAATATGGGC T G CT T ----------
GAM25691 5508 GCCTTCACTACCGCCTGGAG - TACC C GAGAAG- - A GCCCGATG
2 AAGCACGAGCGAGCCCGATG GC CTTCAC GC TG CA CG GCGA
TCGCCGTTGACCTGGACAGC CG GAGGTG CG AC GT GC CGCT
ACTTGTGGAGAGC A TTCA - AGGTCCA T - --------
GAM25696 12491 GCCTTCTAATTATTTTGGTG C ---- TTTG G- GTG AG AA AGCACATAACAT- A
4 GGTGGGAGTGGGTAGATAAT GC TTCT AATTAT GTGGGT GGA GGT AT TGAT AAG
GATAGCACATAACATAAGAC CG AAGA TTAATG CACTCG CCT CCA TA ATTA TTC

CATCTTTAACTTTAATTAGA A CGAA TA-- AA AAA AA AG GATTAATTTCAAT -
TTAGAATAAACCAAATCCAA CCAT
GCTCACATGTAATTAAGCAG
AAAGC

GAM25700 20533 GCCTTGAGATTGTGCCATAT T GTGCCATA A A A GTCTTTCC
AAAGTCACATCCTA
9 CAAACCTAGCTCCTGAGAGT GCCT GAGATT TCA ACCT GCTCCTG GA AGCTT
CTTTCCAGCTTAAAGTCACA CGGG CTTTAA GGT TGGA CGAGGAC CT TCGAG

TCCTAGAGCTTCCCAGGAGC - ATCTAG-- C - C -------- ----------
AGGTCTGGGATCTAAATTTC
GGGC

GAM25702 20371 GCCTTGCCGAGGAGGACTCC TG- -- - A AGGA G G CCT
3 GAGGACTGTGTTGCTGTGCC GCCT CCG AGG AGG CTCCG CT TGTT CTGTGC
CTGCATGGGACGGAGGAGGT CGGG GGC TCC TTC GAGGT GA GCAG GGTACG
GGAGCTTGCCTTGCGGATTG TTA GT G - GGAG G - ---
GGC
GAM25707 20071 GCCTTGTATCTCTGTCCCCG A - G---------- GCTC
1 GGAGGCTCCTCCTTGCCTTC GCCTTGT TCTCTGTCC CC GGAG
GGCACTGGCGGGCAGAGAGA TGGAACA AGAGACGGG GG CCTC
CAAGGT G C TCACGGCTTCCGTT ----
GAM25709 16600 GCCTTTAACAAAGTCCTGTG TAA AAG- T AA AATT ACTTTCA
3 AAATTAAATTTCTTACTTTC GCCTT CA TCCTG GA TTA TCTT
AAAGATTGTGATCCAGGAGA CGGAA GT AGGAC CT AGT AGAA
AGTGAATAAGGC TAA GAAG - -- GTT- -------

GAM25711 16573 GCCTTTCCTGATTTTGCATG ---- A - TCTCA CCA A T -- TTAC
4 TTCTCATTCCCAAAGTAGTC GCCTTT CCTG TTTTG CATGT TTC AAGT G CTACCTT AGT
TACCTTAGTTTACACTCAAA TGGAAA GGAC AAGAC GTACA AAG TTCA C GATGGAA TCA
GGTAGCACTTGTTGAAACTA CGTC A A TCA-- TTG - - AC ----
CATGACAGAAACAGGCTGCA
AAGGT
GAM25715 20283 GCCTTTTAAACTGGAGAGTT TTT C -- AGT- TC TCCT
0 AAGTCATAATCCCTCCTGGC GCC TAAA TGGAG AGTTA CATAA CC
TTTGTGTGAATAGCTTGCTC CGG GTTT ACCTC TCGAT GTGTT GG
CACTTTGCTGGC TC- C GT AAGT TC ----
GAM25715 12900 GCCTTTTAGACAAGAAAAAA - TT AGAAAA CTTT- TCTT TTTT---- T TGAT
5 AAATCTTTCCACTCTTTAGT GC CTT AGACA AAAAAT CCAC TAG TGA TC
TTTTGATTCTGATGACTCGT TG GAG TTTGT TTTTTA GGTG ATC GCT AG
TTTTCTTCTACTCTGTGGCC T TT GAAATA ACCCC TCTC TTCTTTTT C ----
CCAATTTTTATAAAGTGTTT
TTGAGTGT
GAM25717 9397 GCCTTTTGCCTGGGAATTGC TG C GA- -- -- AC-- TAACATTT
2 CTCAGCTACTCTAACATTTG GCCTTT C TGG AT TGCCTC AGCT TC
ATCACAGTTTAGAGGCACAG CGGAAG G ACC TG ACGGAG TTGA AG
TGGACCAAGTGGAAGGC GT A AGG AC AT CACT --------
GAM25722 21168 GCGAATCAGGGACCCTCGGG T GGAC- ---- - --- ACT CGA CGTG
8 CGCGTTCGGACTGTCGAGGG GCGAA CAG CCTCG GG CGCGT TCGG GT GGG
CGTGTCCAAACCCGAAACAC CGCTT GTC GGAGC CC GCGCA AGCC CA CCT
GCGACCAGGTCGAGGCGAGA - AGAGC TGGA A CAA --- AA- ----
CTGTTCGC
GAM25724 12167 GCGACATGGGCCTCTATAAA AT--- ATAAAA AACCATC
8 AGGTTCTTAAAACCATCTTG GCGAC GGGCCTCT GGTTCTTAA
GGGGCCGGGGGGCCCTGATG CGTTG CCCGGGGG CCGGGGGTT
GTTGC GTAGT G----- -------
GAM25726 19222 GCGACGAGCTGGTACGCCTG - C C T C CA AC GT AATTC
1 CAGGTACCGGTCCGGAATTC GC GA GAG TGG ACGC TG GGT CG CCGG
CCGGGTCGACCCACGCGTCC CG CT CTT GCC TGCG AC CCA GC GGCC
GATTCTTCTGC T T A - C -- -- TG -----
GAM25726 14438 GCGACTGCAGCTCTGGGACA G C-- C G CAC TCA G- TCCGCA
9 CAGCTGGTCAGGAGAGGTTC GC ACTG AG TCT GGA AGCTGG GGA AGGT
CGCAGCCTGATCCCCAGCTA CG TGGC TC AGG CCT TCGACC CCT TCCG
CATCCGGGACTCCACGGTGG G ACC - G ACA --- AG ------
C
GAM25727 8559 GCGACTTCGCCGTTCGAGGC - C - G CATCCAGCAAGTTACCCAC
2 TCCATCCAGCAAGTTACCCA GC GA TTC GCCGTTC AGGCTC
CGAGCCTGAGCGGCAGGACT CG CT AGG CGGCGAG TCCGAG
CAGC A C A - ----------
GAM25727 19352 GCGAGAAGGATTCTGTCATG AA- TTC- T- - CAATGGGAA
8 TCGGCCAATGGGAAGTCAGA GCGAG GGA TGTCA GTC GGC
TCCTGACACTGTTTCGGACT TGCTC CTT ACAGT TAG CTG
CGT AGG TGTC CC A ---------
GAM25729 8544 GCGAGAGTGTGCGTTTGTGT AG - T TG - TATG
1 GTGTGAATGTATGCGTTTTG GCGAG TGTGCGTTTG TGTG G AA TG
CCCACAGTAAATGTACAACT CGCTT ACATGTAAAT ACAC C TT GC
TCGC CA G C GT T ----

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GAM25729 5798   GCGAGCAGACCATGCGTACG   AG  GA   T---   ACG   TG       TAAAGAAGTCACT
5               AGTTGAAAGGATCCTAAAGA GCG  CA  CCA    GCGT   AGT  AAAGGATCC
                AGTCACTGGATTTTTTATAC CGC  GT  GGT    TGCA   TCA  TTTTTTAGG
                TAGACGTTCTTTGGAATGAG   GA  AA   TTCT   GA-   TA       ----------
                CGC
GAM25729 20527  GCGAGCAGTCTGAATGCCAG        CT-     -----       ATAA
8               AATGGATAACCGTTTTGCTA GCGAGCAGT   GAATGC    CAGAATGG
                CAGCATTTGTAATTGCTTGT TGTTCGTTA   TTTACG    GTTTTGCC
                                ATG     ACATC       ----
GAM25731 1580   GCGAGCTGATGCCTTCCTCC    - T-  T -    TCCAGACTGT    CCT
0               AGACTGTGGAGCCTCTCCTA GCGA GC  GA GC CTTCC        GGAG
                TACCAAATGGAAGTGCCTCC CGTT TG  CT CG GAAGG        CCTC
                TGTATTGC              A  TC  C  T    TAAACCATAT    ---
GAM25731 19336  GCGAGGATTCACGCGCCCGC       T  AC    CC   ACCCC   C     GG    ATGTGAAA
9               CACCCCGCCCGGCCCGGGCT GCGAGGA TC  GCGC  GCC    GCC GGCCCG  CTTC
                TCATGTGAAAGAGGGACGGG CGCTCCT AG  CGCG  CGG    CGG CCGGGC  GGAG
                CCTGGCCCCAAGGCCCGCGC       C  CC    CC   AACCC   T     AG    --------
                CCGACTCCTCGC
GAM25732 20101  GCGAGGCCGGTTCTCACACC   G  G    TT T   AC   --   GAGGATGTA
9               GTCCAGAGGATGTATGGCTG GC AG CCGG  C CAC  CGT  CCA
                CGACGTGGGGTCGGACTGGC CG TC GGCT  G GTG  GCG  GGT
                          G  A    GG -   CA   TC   ---------
GAM25733 19015  GCGAGGCGCTAGGGGGAACG    A   --       GAA--   T    T   AAA   GCTC
2               CTGGCCTCTGAAACTAGCTC GCG GGC  GCTAGGGG     CGC GGCC CTG   CTA
                TGGGACCGGGGTCTGCGGCC TGC CCG  CGATCCCC     GCG CTGG GGC   GGT
                GGCCCCTAGCTGGCCCCGT    C   GT       GGCCG   T   -   CAG   ----
GAM25733 6565   GCGAGGCTGAACGCCTGACG   GA-    A-----       C   AA    CATCGCCAAACC
5               TCAAGGCGACATCGCCAAAC GC   GGCTG     ACGCCTGA GTC  GGCGA
                CTCGCCCAGATTCAGGCGTG CG   CCGAC     TGCGGACT TAG  CCGCT
                TAAACCAGCCGGAGC       AGG    CAAATG       -  AC    ------------
GAM25734 4049   GCGAGGGTCAGGTTCTCGGC    -       G   T    TTT    T    GGA
2               TTTAGGCTCCATGGAATGGG GCG AGGGTCAG TTC CGGC   AGGC CCAT
                CTTCGCCGGAGGTTGGCCCT CGC TCCCGGTT GAG GCCG   TTCG GGTA
                ACGC                A       G   -   C--   -    ---
GAM25734 12666  GCGAGTGCCGGGTGGTGCAC       -  G  T GT  A     AA-     ACTG
8               GGCGAAATGAGACTGTTCGT GCGAGTG CC GG G  GC CGGCG   ATGAG
                GAGTGCTGGCGTCCCGGGTT CGTTCGT GG CC C  CG GTCGT   TGCTT
                GCTTGC                T  G  - TG  -    GAG    ----
GAM25735 12606  GCGATAGGTAAATAACTCAA    ATA    ATA   CAATG    ACAA    TAAATT
5               TGGACAACAATTGATAAATT GCG   GGTAA   ACT    GACA    TTGA
                TCAACTATGTCAAGGTCCTT CGC   CCGTT   TGG    CTGT    AACT
                GCCAACCGC             CAA    CC-   AA---    ATC-    ------
GAM25737 20481  GCGATGATGGACGCGTGTGT     G   GA  C-   TG     CTATCACA  TTCCCACCT
7               TCAACTATCACAGCTTCCCA GCGAT ATG  CG  GTG  TTCAA       GC
                CCTGCATACTCTTTGAAACC CGCTG TAC  GC  CAC  AAGTT       CG
                ACCACGACATGTCGC         -  A-  AC   CA    TCTCATA-  ---------
GAM25737 9568   GCGATGCTGAGAACTCCCTG     --------   AG    CCTG-   TTTGTAGT
9               CGTTTTGTAGTATGATATCG GCGAT       GCTG  AACTC    CGT
                AGTTAACAGCCAGAGAAAAT CGCTA       CGAC  TTGAG    GTA
                CGC                 AAAGAGAC    AA    CTATA   --------
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GAM25738 12218  GCGATGTTTCCATCTCTAAT C  GTTT  CTCTA  ACTCA  CAG  AG-      CTG  A  TT
6        GCCACTCAGCTCAGGAGCAG G GAT  CCAT  ATGCC  GCT  GAGC  GCTTCAGACA  CCTTT
TCT
         GCTTCAGACACTGCCTTTAT C CTA  GGTA  TACGG  CGA  CTCG  TGGAGTCTGT  GGGAA
GGG

         CTTTACAGAAAGCCATGGGA A  ATC-  TAC--  GTTG-  ---  AGA      AAA  -  --
         AGGGAAATGTCTGAGGTAGA ACAGAAAGCCAT
         GCTCAGCGTTGGGCATCATA
         TGGCTAATCAC
                  ----------
GAM25741 5753   GCGCACCCGATGGTAGTGCC  A  - G -  T -    -  GGACG
0        CCTGGCTCGAGGACGTCGAT GCGC CCCG AT G TAG GC CCCTGGC TCGA
         GCCAGGGTGTCTAGTGATAC CGCG GGGC TA T ATC TG GGGACCG AGCT
         GGGGCGC          -  A G G  - T    T  -----
GAM25741 21043  GCGCACGTCCAGGTAACGCG  ACG  G  AA  CAAG  C--  AGCT  GGGA
5        CTTCAAGGGGCCGCGGCTCG GCGC  TCCA GT  CGCGCTT  GGGC  GCGGCTCGG  GG
         GAGCTGGGGGACCCCGGGCC CGCG  AGGT CG  GCGTGAG  CCCG  CGCCGGGCC  CC
         GCCCTGCCCATACGAGTGCG  AG-  G A-  CATA  TCC  ---- ----
         AGCGTGGAGAGCGC
GAM25741 20615  GCGCAGACCCCTCGGTCTTG  A  CCC  G  TGCTATG  -  - CCCG
9        CTATGTCTGAGCTCACCCGT GCGC GAC  TC GTCT  TCTGA GCT CA
         GAAGCGTCAGAGGATGGAGT CGCG CTG  AG TAGG  AGACT CGA GT
         CCGCGC          C  --- G  -------  G  A ----
GAM25742 22227  GCGCAGCATCTGCTTCTTGC  AGC  TT-- T-  G  AG  -- -  CACG
5        TGTTGTCGGAGGTGTCCGGC GCGC  ATCTGCTTC  GC  GTT TCGG  GTG  TC CGG
         ACGTTGAGAACCGCTCCCGA TGCG  TAGATGAAG  CG  CAA AGCC  CGC  AG GTT
         GAACTTGCTCTTGAAGTAGA  AAC  TTCT  TT  G  CT  CA  A  ----
         TCAAGCGT
GAM25743 3412   GCGCAGGCCATTCCGCAGCT  A  CATTC--  ----  C-  TCGT
6        CATTGGTCGTCCAGTCCAGC GCGC GGC  CGC  AGCT  ATTGG
         TCCTCGCGTCCGACCGCCGC CGCG CCG  GCG  TCGA  TGACC
         GC          -  CCAGCCT  CTCC  CC  ----
GAM25745 18167  GCGCCAAAGAGACCAACAAG  CAAAGA  AACA  ---  TAGC  ACT  -  C  AACCTAAGAA

2        ATGATTTTAGCGTGGACTAG GCGC  GACC  AGA  TGATTT  GTGG  AG GA ACTT
         GACACTTAACCTAAGAAGAG CGCG  CTGG  TCT  ACTAAA  TACT  TC CT TGAG
         TTTCACTTAATCATTCAAAT  AGGCA-  GAAG  ATC  CT--  AAT  A  T  ----------
         CACTATCTGAAGGGTCACGG
         AGCGC
GAM25746 9534   GCGCCATGCTCGTCCTCAGA  T  TC  TCAGA---  TGACTC
6        AGCGCCCTGACTCGGGCGCT GCGCCA GC  GTCC  AGCGCCC
         GGCCTCACGGACGCTGGCGC CGCGGT CG  CAGG  TCGCGGG
                  -  --  CACTCCGG  ------
GAM25751 20039  GCGCCCTGGCCGCGGCTGCC  CT  C  C  GA  -  AAGGTC
0        GCCGACCCGGAAGGTCCCGA GCGCC  GGCCG GGCTGC GCC  CC CGG
         GGCGGGCTGCAGCCTGGCCT CGCGG  CCGGT CCGACG CGG  GG GCC
         GGCGC          T-  -  T  GC  A  ------
GAM25751 20350  GCGCCCTTGGCGGCCCCTGC  C  CC  CCT-  CCTT
1        GCCTGCAGCCCTTGTTGCTC GCG CCTTGGCGG  CCTGCG  GCAGC
```

CCTGCGGGCCCCGCCGAGGC CGC GGAGCCGCC GGGCGT CGTTG
CGC C CC CCCT ----
GAM25751 19313 GCGCCGACTGGGCTACAAGG ------ TACAA- AG A --- TTATATATAGGATT
2 CCAAGCAAGGTTACGTTATA GCGCC GACTGGGC GGCCA CA GGT TACG
TATAGGATTCGTGTTCGCCG CGTGG TTGACCCG CCGGT GT CCG GTGC
TGGTGGCCGAAAACGCCCAG GAATCC CAAAAG G- G CTT ----------
TTCCTAAGGGTGC
GAM25752 20859 GCGCCGCCTCCTTGAAACTT - T-- AAAC C ACC
4 AGCGCTCTGACCCAGAGTCT GCGCC GCC CCTTG TTAG GCTCTG
GACCAGGGTACGGCAGGCGC CGCGG CGG GGGAC AGTC TGAGAC
A CAT C--- - ---
GAM25754 5708 GCGCCGGGGGCTGCGGGAGC G G GGGA GT A - GA G- ATTTTAG
4 GTCAGCTGCTGTGGGAACGC GC CCGG GGCTGC GC C GCTGCTG TGG AC CCA
CAATTTTAGTGGAAGTGTCA CG GGTT TCGACG CG G TGGCGGC ACT TG GGT
CCGGCGGTGGGAGCGGCGGC G G GCGG AG G C G- AA -------
AGCTGTTGGGGC
GAM25755 8048 GCGCCTACTTCCTGGTGCTG -- - - - TGAT TCGT
2 ATGGTGTTCGTGCACCTGTA GCGCC TAC TT CCT GGTGC GGTGT
CCTGGGTAACGTGCTGGCGC CGCGG GTG AA GGG CCATG CCACG
TC C T T T--- ----
GAM25758 8164 GCGCCTTGTGTCGCGTGCTG T TCGCG TTCCTTTC GTTC
3 CTCTTCCTTTCGCAGTTCTG GCGCCT GTG TGCTGCTC GCA
CATTCTGTCGGGCGGTGAGA CGCGGA CGC GTGGCGGG CGT
ATCGCAGGCGC - TAAGA CTGTCTTA ----
GAM25758 6618 GCGCGAGGGACGTGCGCGAT - CGT TGCGCT T ACCCG
9 GCGCTCGGTCTGAGGGTTAC GCG CGAGGGA GCGCGA CGG CTGAGGGTT
CCGGGCTCTCGGCCCGTTCC TGC GCTCCCT TGCGCT GCC GGCTCTCGG
TCGCGTTCCCTCGACGT A --- CCTT-- C -----
GAM25760 3674 GCGCGCGCCCCGCCGCCGCC G - CC CA T GCG C C CCCCTC
4 GCCCGGCCAGGTGCGCGGGC GCGCGCGCCCCGCC CCGCC GC GGC GG GC GGC GTG CC

CGTGCCCCCCCTCGGACACC CGCGCGCGGGGCGG GGCGG CG CCG CC CG CCG CAC GG

GCCAGGCCCGAGCCCAGCGG G G AC AG - GA- C A ------
GCGGGGGCGGGGCGCGCGC
GAM25761 8829 GCGCGCGGGCTTCCTGACCG GG-- T CG -- - GGCGA
0 ACTTGTTCCTCGGCGAGAGC GCGCGC GCT CCTGAC ACT TGTTC CTC
GAACAGCGGTGAGTCAGGAG CGTGCG CGA GGACTG TGG ACAAG GAG
CAGGAGCGTGC AGGA - AG CG C -----
GAM25761 18137 GCGCGCGGTGGTGGTGGGCT C GG GACCC ACTTCA
1 TTGACCCGCACTTCAGCTAC GCGCG GGT TGGTGGGCTTT GC
ATGAAGCTCACCAAGGCCCT CGCGT CCG ACCACTCGAAG CG
GCGC C GA TACAT ------
GAM25761 3362 GCGCGCTGAGCCCCGCGGCG G - C GGC---------- TCCA
3 CCTCCAGGCCGTGGGAGGGA GC C GCTGAGCCC GC GCC
ACCGACGAGCCGGGCTCGGC CG G CGGCTCGGG CG CGG
TGGGC G T C AGCAGCCAAGGGAGGGTGC ----
GAM25761 1596 GCGCGCTGGCCGTGGGAGTC CGCTGG - GT - C TTTTTGATTT TTCC
5 TGCTACACCATTTTTGATTT GCG CCGT GGGA C TGCTACA CA GGGC
GGGCTTCCGCTTTGATGTGG CGC GGCA TCCT G ACGGTGT GT TTCG

CATGGTTCCTGACGGAGACT TTCAGA G TG T A ---------- ----
TCGC
GAM25763 4200 GCGCGGCTGTGGCACATGTC - - T C AT- TCT--- TTTGTT
2 GTCTCTTGCTTTGTTGTACT GCG CG GC GTGG AC GTCGTC TGC
CGCCGACGGCTAAGTCCATT CGC GC CG TACC TG CGGCAG ATG
GCACGCCGC C A T - AAT CCGCTC ------
GAM25763 8869 GCGCGGGGCGGCGAGGGGGG - GG -- AGGGGG---------- GGAGG
7 CGGAGGGCAGGCAGACGCCA GC GCG GCG GCG GC
ACGGACACGCAATGCGACGC CG CGC CGT CGC CG
AGC A AG AA ACAGGCAACCGCAGACGGA -----
GAM25763 3602 GCGCGGTACATCGCGGAAGT ACATC GA C-- TT ACGCC
8 CGGTGCTTTAGTACGCCGCT GCGCGGT GCG AGT GGTGCT AGT
GGCACCTTTACTCTCGCCGG CGCGCCG CGC TCA CCACGG TCG
CCGCGC GC--- TC TTT -- -----
GAM25765 1241 GCGCTCACTTGTCTTCAGGA TG AGGAAG AG TTTGGT
4 AGCTCGGAGCCTTTGGTGGA GCGCTCACT TCTTC CTCGG CC
GCCGGGGAGAGGAAGGGTGG CGTGGGTGG AGGAG GGGCC GG
GTGC GA AG---- GA ------
GAM25765 18730 GCGCTCATATACGTGCAATC T- C- A CCAC GAC ACC
6 TACCACCATAGACGGTGACC GCGC CATATA GTGCA TCTA CATA GGTG
CACCAAATATGTTAGATGTA CGTG GTGTGT CATGT AGAT GTAT CCAC
CATTGTGTGCTGTGC TC TA - T--- AAA ---
GAM25766 21384 GCGCTCCTGCTGGTGAGGCC C GGTGAG CC ACCTGACAAA
4 CCAGACATACCTGACAAAGT GCGCTC TGCT GC CAGACAT
GTCTGAGCGAAGCACGAGTG TGTGAG ACGA CG GTCTGTG
T C AG---- A- ----------
GAM25767 3281 GCGCTGAATGATGTCACGGC AAT TG CAC- GT AACACA
4 AGTCGTTGAACACACGGCGG GCGCTG GA T GGCA CGTTG
ATGTTCTCAGTGTCCACAGC CGCGAC CT G TTGT GCGGC
GC AC- GT ACTC AG ------
GAM25767 6074 GCGCTGAGGCCGGCGGAGGC T G G AG G TG C- - GACG
5 GGTGTCCGAGCCCACGACGG GCGC GA GCCG CGG GC G T CGAGC CCAC
TGGCGTTTGACGTGCGGCCC CGTG CT CGGC GCC CG C G GTTTG GGTG
GGCGGCGTCGTGC - G G -- G GT CA C ----
GAM25768 18130 GCGCTGCCACACCCCGCTAA G -- -------- - AATTT TATTTT
0 TTTTTGTATTTTTAGTAGAG GC CTG CCAC ACCCCG CT TTG
ACGGGGTTACACCATGTGGG CG GAC GGTG TGGGGC GA GAT
TCAGGC - TG TACCACAT A GAT-- ------
GAM25768 5778 GCGCTGCCCAGATAGCAGCA CCC TA A A TA G AACTCACA
1 CGGTATGAGCAACTCACAGT GCGCTG AGA GC GC CGG TGA C
CACGCTGCGCGGTGTTCTCA CGTGAC TCT TG CG GTC ACT G
GTGC --- TG G C GC - --------
GAM25769 20827 GCGCTGGCTGGGGTCGGGCT G --- -- T TG TGGAT
8 CCATGCTCTGGATGGGACTG GCGCTGGCTGG GT CG GGC CCA CTC
GGCCGTCGCACACGCCAGCC CGTGGCCGACC CA GC CCG GGT GGG
GGTGC G CAC TG - CA -----
GAM25772 5453 GCGCTTCCGCAAGTTCCTGG TC C T C T TGTGG AACTTCGA
0 TGTTTGTGGCAAACTTCGAT GCGCT CG AAG TC TGG GTT CA
GAGAATGACCCCAAGACCTT TGCGG GT TTC AG ACC CAG GT
TGAGGGCGT GA - C A C TAAGA --------

GAM25773 14287 GCGGAACGGGCAGATTTGCC G- ATTT -- - A GGAG
3 TGCTGAGGGTGGAGACCCAC GCGGAACG GCAG GCCT GCT G GGGT
GAGCCGAGGCCTCCTGCAGT CGTCTTGT CGTC CGGA CGA C CCCA
GTTCTGC GA CTC- GC G A ----
GAM25774 19132 GCGGACATTAAACACCATGA - TTAAACACCA C TA TCCA
9 CGGTTTACGTCCACGGGGGC GCGG ACA TGA GGTT CG
CTCACCAAACAATTGTCCCG CGCC TGT ACT CCGG GC
C C TAACAAACC- - GG ----
GAM25775 4412 GCGGACGGAAGGCTGGATGG GGA AG - ATGG - - TTGACTGGGT
7 ATGGTACCATTGACTGGGTT GC CGGA GCT GG ATG GTAC CA
GAGTACACGTAGACCAAGCA CG GCCT CGA CC TGC CATG GT
ATCCGAAGC AA- AA A AGA- A A ----------
GAM25776 932 GCGGAGCAATTGCTAGACCG - A- --- A A- - ACCCAATCA
8 AGGCATTCACCCAATCAGAA GCG GAGCA TTGCT AG CCG GGC ATTC
TAGCCGATGGCTATGAGCAG TGC CTCGT GACGA TC GGT CCG TAAG
GCTGCTCGCGT G CG GTA - AG A ---------
GAM25777 4196 GCGGAGCCCCGGGGCACACC G C - ACA - GA G CCC AG A GCTCG
2 CTCCGTGACGTGGCGGCCCT GCG AGCCC GGG GC CC CTCCGT CGTG CGGCCCT GGG CCC
GGGGAG
CCCGGGAGCCCAGGGGAGGC TGT TCGGG CCC CG GG GGGGCG GTGC GCCGGGG CCC GGG
CCCCTC

TCGCGGCTCCCCGGGACCCC G - G GCC A GA - CAC CA - -----
CACGGGGCCGCGTGAGGCGG CGG
GGAGGCCGGCGCCCGGGCTG
TGT

GAM25777 9227 GCGGAGCCGGTAGCCCGCAG A C C AA- CC A- CACGTGCC
6 AAGCCCGGTCAGCGCACGTG GCGGAGCCGGT GC CG AG GC GGTC GCG
CCCGCGAGACCTGCAAACTT CGTCTCGGCCA CG GT TC CG CCAG CGC
GTGCCACCGGCTCTGC C T - AAA T- AG --------
GAM25779 5359 GCGGAGGCTGGACTGGAGTG - GA AG CA TGGCCCAACT
3 ACAGCCTGGCCCAACTGGCT GCGGAGG CTG CTGG TGA GCC
CAAGCCAGGGCAGCCCTCTG TGTCTCC GAC GACC ACT CGG
T C GG GA -- ----------
GAM25779 16499 GCGGAGTCCATCCCGGATGG - AT C G C T T- GCT
9 CCTGCAGGGTGTGTCGCTTC GCGGAG TCC CC GGATG CCTG AGGGTG GTCGCT CTC

TCGCTGAGCCAGTGGCCGCC CGCCTC AGG GG CCTAC GGAC TCCCGC CGGTGA GAG

CTCCAGGCATCCTGGTGGGA C GT T - C - CC ---
CCTCCGC
GAM25780 20908 GCGGAGTGGAGCTACCGCCA A- A- T CG A CC CG ATTC
2 CCGCCGCCGCCGATTCCGGA GCGG GTGG GC AC CC CCG GC CCG
GCCGGGGTAGTCGCCGCCGC CGCC CGCC CG TG GG GGC CG GGC
CGCCGC GC GC C AT - -- A- ----
GAM25780 18760 GCGGATCGTGTCTCGGCTGC GAT T G AT GG A ACC
5 GGCGATTCGGGACAGTGCTC GCG CGTGTC CGGCT CGGCG TCG AC GTGCTC
ACCGAGCACGTGGCGGCCGC CGC GCGCGG GTCGA GCCGC GGC TG CACGAG
CGAGCTGGGCGCGCGC --- - - C- GG - ---

GAM25781 3093 GCGGCAACGATATTGGGGTT ACGATATT TTT AA- ACTCAAA
3 TTCAGGAAGAACTCAAATCG GCGGCA GGGGT CAGG GA
CCCCTGCGTACCCTTGCTGC CGTCGT TCCCA GTCC CT
-------- TGC CCG -------
GAM25781 14469 GCGGCACGAGGGCAGCGGCC A-- CAGC C CCC GT CC-- TGTCCC
8 CCGGCCCGCGTCTGCGCCCC GCGGC CGAGGG GGCCC GG GC CTGCGCC TCGC
TCGCTGTCCCGCGACCCCGG CGCCG GCTCCC CCGGG TC CG GGCGCGG AGCG
CGCGGGTGCCTCGGGCCCCC CGC C--- C --- TG CCCC ------
CTCGCGCGCCGC
GAM25781 21374 GCGGCACGCTGTCCAGCAGC A T C CC G - TCG ACTT
9 CTGCTTCGCCCCGTCGTCAA GCGGC CGCTG CCAG AG TGCTTC CC CCG TCA
CTTTGAGCTGGAGGAGAAGC CGCCG GTGAC GGTT TC ACGAAG GG GGT AGT
AACTTTGGCAGTGGCCGC - - - A- A A CG- ----
GAM25782 18769 GCGGCAGCAGCGCGGGCCCC C- -- A A CT AGCCACA
5 AGCAGCCTCGGCAGCCACAG GCGGCAGCAGCG GG GCCCC GC GC CGGC
CCGCTGCAGCCGGGGCAGCC CGCTGTCGTCGC CC CGGGG CG CG GCCG
TCCGCTGCTGTCGC CT GA C A TC -------
GAM25782 12694 GCGGCAGGCGGCCTCCCCGA AG - CCGAAG A-- G A A GGTAGGCG
9 AGGGCCAGCGCTGGCCACGC GCGGC GC GGCCTCC GGCC GCGCTG CC CGC GGT

AGGTGGTAGGCGATCCGCGG CGCCG CG CTGGAGG CCGG CGCGAC GG GCG CTA
GGGCAGCGCCAGGGCCAGCA A- A ACGA-- GAC G G C --------
GGAGGTCAGCAGCCGC
GAM25783 678 GCGGCCAGCACATGGCGGTG AGC ---- - - GGA T TGG
6 TTGCAGTGGAGCGTGCTGGG GCGGCC ACATGG CG GT GTTGCAGT GCG GC
CCGCGAGCTGCAGCTGCACG CGCTGG TGTACT GC CG CGACGTCG CGC CG
AACATCATGTGGTCGC --- ACAA A T AG- - ---
GAM25784 18860 GCGGCCCAGGACGTGTGGAT CCCA C ---- TG - C CT T CC CTG
5 GCTGCTGGGGGGCCGCCTCC GCGG GGA GTGTGGAT GC CTGGGG GGC GC CC CA GGC

TCACCGGCCTGGCCTGCGGT CGCT CCT TACATCTG CG GATCCC CCG TG GG GT CCG
GTTGCCTCCCTAGTGGCCCC AAAG C GCCC GT T T T- C -- ---
GGTCTACATCTCCGAAATCG
C
GAM25785 12495 GCGGCCGCAGACAGTCCGGG G GACAGTC A A- C ATCA
9 AGCACCAGCTCGCTATCAAG GCGGCC CA CGGG GC CCAGCT GCT
CAGCTGGACGCCCCGCGTGA TGCCGG GT GCCC CG GGTCGA CGA
GGCCGT A GC----- - CA - ----
GAM25786 9472 GCGGCCGCATTCCTGCAGGG C AT TGCA - A-- GCTT
0 GATGACTGTGAATGGCTTCA GCGGC GC TCC GGG GATGACTGTG ATG
TCAACACAGTCATCACCTCC CGCCG CG AGG TCC CTACTGACAC TAC
CTGGAGCGCCGC - -- TCCC A AAC ----
GAM25788 3906 GCGGCCTCCTTCCCAGGCTC C- --- GGG- AGC
0 TGGGGCAGCGCACGAGGGGT GCGGC TCCTTCCCAG GCTCT GC
AGGCTGGGAGGGGCTGCCGC CGCCG GGGGAGGGTC TGGGG CG
TC GGA AGCA ---
GAM25788 21627 GCGGCCTTCTTCCATGAACA - TCT GAA - - G ATG TGT
5 GAAGGGCAGGCTGCTGTTCA GC GGCCT TCCAT CAGAAGG GCAGG CTGCT TTC GAGG

TGGAGGTGTCCTCAGAAAGG CG CCGGA AGGTG GTCTTCT TGTCC GATGG AAG CTCC

TAGCCCTGTGTCTTCTGGGT A C-- G-- G C A A-- ---
GGACAGGCCAGC
GAM25790 13013 GCGGCGCGGGCCTGCAGGGC G G- GCA CC G ACGTG
1 CTGCCGGGCGCACGTGGCGG GCGGC CGG CCT GGGCCTG GG CGC
CCTCGGGCCTGGGAGCCGGG CGCCG GCC GGG TCCGGGC CC GCG
CCGC G GA --- T- G -----
GAM25790 2718 GCGGCGCTGGGCGAGCGGCA GCT - C C --- -- CACT T- TC GC
4 CACCATGGACCTCACTGTGG GCGGC GGGC GAG GG AC ACCAT GGACCT GTGGG GAG
GGGAGTG CC
GTGAGTCGGGAGTGGCCCTG TGCCG CCTG CTC CC TG TGGTG TCTGGG TACCC CTT
CCCTTAC GG
GCATCTGGACATTCCCCTTT GTC T - C CGA AG CCC- TC TC A-
CCTCCCATCCCGGGTCTGAG TGGCATCT
TGGTAGCGTCCCCTCTGTCC
CTGGCCGT

GAM25790 21580 GCGGCGGCAGGAGAGGTGTG - GA ----- GC TTGT
7 GTGCTAGTTGTCTAAGCCAT GCGGCGGC AGGA GGT GTGGT TAG
CCAGTGCCATCCTCGTCGCT CGTCGCTG TCCT CCG TACCG ATC
GC C A- TGACC A- ----
GAM25790 8388 GCGGCGGCAGGAGAGGTTGT - GA TG T-- - TTTCT
8 GGTGCTAGTTTCTCTAAGCC GCGGCGGC AGGA GGT TGG GCT AG
ATCCAGTGCCATCCTCGTCG CGTCGCTG TCCT CCG ACC CGA TC
CTGC C A- TG TAC A -----
GAM25791 5801 GCGGCGGCCAGGTGACCGCG CA GT A- C G- TAGT G G GTGG
0 GTCGAAGCCACTGCCGCGGT GCGGCGGC GGTGACCGCG CGA GC ACT CCGCGG CGGC
TTGGTG CACG
AGTCGGCGTTGGTGGCACGG CGCCGCTG CCGCTGGCGC GCT CG TGA GGCGCT GCTG
AGCCAC GTGC

TGGTACGCGTGCACCGAGTC -- -- CA C AG CCT- - - ----
GTCCTCGCGGGAAGTCGCAC TACG
TCGCGCGGTCGCCGTCGCCG
C

GAM25792 9853 GCGGCGGCTTTCTTCGCTTT - TTT- CTTTCTTC TTCTT
4 CTTCGGTGTTTTCTTAGCGC GC GGCGGC CTTCG GGTGTT
TCTTCTTCGGAGTTGCGCCG CG CCGCCG GAGGC TCGCGA
CCAGC A CGTT TTCTTC-- -----
GAM25793 4337 GCGGCGGTGACGAAAACAAC C A AAACAA AC A- TCG
1 GACCAGGACGCTCGGCGCCC GCGG GGTG CGA CG CAGG CGC
CTGTCCGCAGAGTCGCCACT CGCC TCAC GCT GC GTCC GCG
CCCGC C C GAGAC- CT CC ---
GAM25793 6405 GCGGCTCAGCCTCGAGCGTG CT AG-- ACTAT C- G- C --- ATT
8 ACTATCACAGCCTGTGCGAG GCGGCTCAGC CG CGTG CACAG CT TG GAGCGGCA GCCC

CGGCAGCCCATTGGGCGCCT CGCCGAGTCG GC GCAC GTGTC GA GC CTTGTCGT CGGG

GCTGTTCCGAGAGTTCTGTG AG CGGA C---- TT GA - CCG ---
CCACGAGGCCGGAGCTGAGC

CGC
GAM25793 4467 GCGGCTCATCCCAGATGGCT G CATC T ---- TCAAGTACAT
9 GTGGGGTCAAGTACATCCCC GC GCT CCAGA GGCTG TGGGG
AGTCGTGGCCCTCTGGACAA CG TGA GGTCT CCGGT ACCCC
GTGGC G ACA- C GCTG ----------
GAM25794 9432 GCGGCTCATCCCAGATGGCT G CATC T ---- TCAAGTACAT
0 GTGGGGTCAAGTACATCCCC GC GCT CCAGA GGCTG TGGGG
AGTCGTGGCCTCTGGACAAG CG TGA GGTCT CCGGT ACCCC
TGGC G ACA- - GCTG ----------
GAM25794 3939 GCGGCTCATCCCAGATGGCT G CATC T TG --- TCAAGTACATC
1 GTTGGGTCAAGTACATCCCC GC GCT CCAGA GGC T TGGG
AGTCGTGGCCCTCTGGACAA CG TGA GGTCT CCG G ACCC
GTGGC G ACA- C GT CTG ----------
GAM25794 8476 GCGGCTCCCGCGCGCGCGCT C G G G GTCGCCGA
6 CCGTGGCCGTCGCCGAGGCG GCGGCT CCGCGC CGC CTCCGTG CC
CGGGGGTGGGCGCGGAAGTC CGCTGA GGCGCG GTG GGGGCGC GG
GC A G - - --------
GAM25795 3567 GCGGCTGCAGCAACCAGTAC GG G A-- AGTA T GAC ACAA
4 CTGGTGACGCACAAGCAGAG GC CT CAGCA CC CC GGT GC
CCTGGAGGACATGCTGGAGA CG GA GTCGT GG GG CCG CG
AGC AA G ACA A--- T AGA ----
GAM25796 21009 GCGGCTGGGGCCCTCTTTCC GG TCTT -- GG CGCAG
2 CGATGGGCGCAGTTTGTTTC GC CTGGGGCCC TCCCGA T G
GGGGCTCCGGGCCCTAGAGG CG GATCCCGGG GGGGCT G T
C GA CCTC TT TT -----
GAM25796 9499 GCGGCTGGGTACATGGCGTC GGTACA--- T TTCT C - GA CG- CTGGGTAA
3 TGTTTCTCAGCCAGCGGGAG GCGGCTG TGGCGTC GT CAG CAG CGG GC CGTGGC
CCGCGTGGCCTGGGTAAGCC TGCCGGT GCCGTAG CG GTC GTC GCC CG GCACCG
ACGACAGCACCGTCTGCCTG AGAAGAACA T ---- C T A- ACA --------
GCTGATGCCGACAAGAAGAT
GGCCGT
GAM25799 21145 GCGGGAGAGCGGCGGGGCCG - A - CC - ACTCGCCCGCTC
6 AGAGCGTGACTCGCCCGCTC GCGGG AG GCGGCG GGG GAG AGCGTG
CGCGCTGCTTCCCCCGCGCC CGCCC TC CGCCGC CCC TTC TCGCGC
GCCTCCCCGC C - G CC G ----------
GAM25802 14523 GCGGGCAGGCTGGGCGGCTC G --- --- GC A CCGG
2 CTCACCCCGGGGGGGGACAC GCG GCA GGCT GGGCG TCCTC CC
GCTTTTTGGCCACTTGCGCG CGC CGT CCGG TTCGC AGGGG GG
C G TCA TTT AC - ----
GAM25802 12211 GCGGGCAGGTGAGAGTGTAC A-- - G TG GGTGA G GCTAC
6 TGTCTGGTGATCTGGGGCTA GCGGGC GGTGAGAG T TAC TCT TCTG G
CTGTAGAAGGTGGTAGATTT CGTCCG TCACTCTT A ATG GGA AGAT T
CTCACTCAGGCCTGC GAC T G GT ----- G -----
GAM25803 18434 GCGGGCCGGGGCGAGGAGCT C C T CGC C GGAG
6 CGGCGCGGCCGGGGAGCCAG GCGGGC GGGG GAGGAGC CGG GGC GG
CCCCCCGGCTCCTCCCCCGC CGCCCG CCCC CTCCTCG GCC CCG CC
CCGC - - - CC- A ----
GAM25804 6430 GCGGGCGGAGCTGGCCCTGC GGAG C- G T - C - --- --- - CG
7 CTCTGCCTGGCCGGCGCCGC GCGGGC CTGGC CT CCTC GCCT GGC GGCGC C GCAGT
CGGCG CGGGC

AGTCGGCGCGGGCCGTGCCC CGTCCG GGCTG GA GGAG CGGA TCG TCGCG G CGTCA
GCCGC GCCCG

GCCGCCGCCAACTGCCCTGA G--- CA G C G T A TCC ACC C --
GCGCTTGCTGAGGCCGAGGG T
AGACGTCGGGGCCTGC

-

GAM25805 3909 GCGGGCTCCACGATGATCGC CCAC TGATC ACA-- TGCCCAT
5 CAACAGCATGCCCATTGCGA GCGGGCT GA GCCA GCA
CCATGGCCGCCTTCCAGTCC TGCCTGA CT CGGT CGT
GT C--- TCCGC ACCAG -------
GAM25806 21657 GCGGGGAGCTGGTGCCCCTG AG GC TG C G TCAGT
8 GCCCGGGCCTCAGTGGACTG GCGGGG CTGGT CCC GC CGG CC
TGTTTGGGAACCGGACTCTG CGTCTC GGCCA GGG TG GTC GG
C A- A- TT T A -----
GAM25808 19271 GCGGGGCGTGTCGCTCCGCC - - TC GCC AG CGGC
5 CCATGGAGAGCCGGCGCTAC GCGG GGCG TG GCTCC CCATGG AGC
CATGGAGGAGTACCATCGCC CGTC CCGC AC TGAGG GGTACC TCG
ACTGC A T CA A-- A- ----
GAM25809 21122 GCGGGGGGAGCAGCAGCCAA A -- - A- CCG- GAAA
6 GTCCGCGGGAAACCGAGCTG GCGGGGGG GCA GCAG CC AGT CGG
CTCGGGCCTGCCCTGCACCC CGCCCCCC CGT CGTC GG TCG GCC
CCCGC A CC C GC TCGA ----
GAM25809 9405 GCGGGGGTCTCTGCCACACC ------ CT CACCTT ACCA
9 TTTGGAGACCACTCTACTCC GCGGGGGT CT GCCA TGGAG
TGGCTCAGTTTCCAACCCCT TGTCCCCA GA CGGT ATCTC
GT ACCTTT CT CCTC-- ----
GAM25810 18633 GCGGGGGTGCGCGCGCCGGG G C G G - A G TG GTGGT
0 GTGCCGGGCGGGGATGGGTG GCGGGGGTGCGC CGC GGGGT CCG GCG GGG TG G CCCCGC

CCCCGCGTGGTGTGGGGTGT TGCCCCCGCGCG GCG CCCCG GGC TGC CCC GC T GGGGTG

GCGCCCCTCGTGCGGGGCCC - - G G T C G GT -----
CGCGGCGCGCCCCCGT
GAM25810 14386 GCGGGGTCGCAGCTGCCGGG GG G T --- TG AA TCGC - GAC
6 TGTTGGGGAAAGAGTCGCCT GCGG TC CAGC GCCGGGTG T GGG AGAG CTGC CTCCG

GCCTCCGGACCGGAGTGCAG TGCC AG GTCG CGGCTCGC G CCC TCTC GACG GAGGC

ACCTCTGACCCTGGAGTCGC A- G C TGA GT AG CA-- T ---
TCGGCCGCTGGGAACCGT
GAM25810 18446 GCGGGGTCGCAGGGTTGGGA TC - T A CG GA- TCATGGT
7 TGGCGGCTGGAGGCGATCAT GCGGGG GCAGG G TGGG TGG GCTG GGCGA
GGTTCGCCCGACAGCTACCG CGCCCT CGTTC C ACTC GCC CGAC CCGCT
CTCACCTCTTGCCTCCCGC C- T C - AT AGC -------
GAM25812 21071 GCGGGTTCTGGAGACTCAAC - T- A AACA- CT- GGCCA
8 ATGAAGCTACCGGCCAGGTT GC GGGT CTGG GACTC TGAAG ACC
TTCTTTACTCTGGGGTCCCG TG CCCG GGCC CTGGG ATTTC TGG
GCTGCCCTGT T TC - GTCTC TTT -----

GAM25813 9444 GCGGTAATGATCAGAGACCG - TAA- AGAG A A AGAG T GGGCGGA
2 AGGCTGCACCGGCAGAGGCT GC GG TGATC ACCG GGCTGC CCGGC GC GCG
GCGGGGCGGACGCGCGGGCC CG CC ATTAG TGGT CCGACG GGCCG CG CGC
GGCGCAGCCATGGTGAAGAT A TTCG AAG- A C GG-- - -------
TAGCTTCCAGC
GAM25813 4294 GCGGTACTTTCTGGCTGGCT T CT CTT T T- ATGTG
6 TGAGGTTGATGTATGTGGCC GCGG ACTTT GGCTGG GAGG TGA GT
TTCATCTTCTCGGCCTCAGG CGCC TGGGA CCGGCT CTTC ACT CG
GTTCCGC T CT --- T TC -----
GAM25814 21604 GCGGTCCAACCCAGATCAAC CCAACCCAGATCAACCAA TCATCCAAACCAGCCT

3 CAAGTGGTGAGTCATCCAAA GCGGT GTGGTGAG
CCAGCCTCTCACCATCACCG CGCCA TACCACTC
C C---------- ----------
GAM25814 20578 GCGGTCCGAGGTGGAAGAAG C AG AAGAA GATT - -- - AAACCC
7 TGGATTTGCCGGCTGGTTGT GCGGT CG GTGG GTG TGCCGG CTGGTT GT GTA
GTAAAACCCTGCGGCTGAAC CGCCA GC CACC CAC ACGGCC GACCAA CG CGT
CAGCCCGGCACACCCACGCG C G- ----- ---- C GT G ------
CACCGC
GAM25815 19108 GCGGTCTTGAAACAACTCCC G- AAACAA GAG GA AGAG ACAAC
3 GAGAGGAGATCCAGAGCGAC GCG TCTTG CTCCC AG GATCC CG
AACCGGGGGTCAACTAGAGG CGC AGAAC GAGGG TC CTGGG GC
GAGCCAAGAGACGC AG C----- AGA AA G--- -----
GAM25816 21420 GCGGTGCGCTCGGCCTATTC T----- CTCG CC- CGAG
6 CTGCCCCGAGGGGCGTCTGG GCGG GCG GCCTATT TGCCC
TAGGCACCCCGCCCTCTCCC CGCC CGC CGGATGG GCGGG
GC CTCTCC CCCA TCT ----
GAM25817 6351 GCGGTGGAGGTAGAGACGCT GGA TA G ---- - TAA
0 GACCTGGCTAAGCTTAGGAG GCGGT GG GAGAC CTGA CCTG GC
TCTCAGGTCTCCCCGGGCCG CGCCG CC CTCTG GACT GGAT CG
C GG- C- - CTGA T ---
GAM25819 18686 GCGGTTTAATAAAGTTGACG TAATAAAGT - CG TTCATTCTCATTTCCTT
9 GGATTGCGTTTCATTCTCAT GCGGTT TGACGGG ATTG T
TTCCTTATACAATACCTGTT CGCCAG ATTGTCC TAAC A
ATGGCCGCTGACCGC TCGCCGGT- A AT ----------
GAM25820 1055 GCGGTTTTATGTCTTTAGAA G T AAAT-- TGCCTTTCT
2 ATGTTTTGCCTTTCTAAGCC GC GTT TATGTCTTTAG GTTT
TTGTGCTAAAGGCGTATAAC TG CAA ATGCGGAAATC CGAA
GGT G T GTGTTC ---------
GAM25823 3601 GCGTCACCAGCAGCGAGGTG - GCGA T C T CC AA AGTT
1 CCCGCCGTCTCCGTTGAAGT GCGTCACCA GCA GG GCC GCCG CT GTTG GT
AGTTGCCACGACCAGTTGGC CGCGGTGGT CGT CC TGG CGGT GA CAGC CG
AGGTTCCGATGCTTGGTGGC T AG-- T A T C- AC ----
GC
GAM25824 1018 GCGTCAGTTGCGGGGAGCCC T- - TT - A A T- A AGCG
2 TTCGGAGATGAGGGTTTCCA GCG CAGTTGCGGGGAG CCC CGG AG TG GGGT TCC CG

CGAGCGCGAGGGCCGCCCCT CGC GTCGACGTCCTTC GGG GCC TC AT CCCG GGG GC

ACTGCCGCCGGGACTTCCTG TT A CC G - C CC A ----

CAGCTGTTCGC
GAM25827 6136 GCGTCGGGGTGCTGGCAGAG - - CA A -- -------- A AGGT
5 ACCGCGGCGAGGGCCGGAGC GCGTCGG GGTG CTGG GAG CC GCGGCGAG GGCCGG GC

AGGTGCACTGGCCGCTGCAC CGCGGTC CCAC GGCC CTC GG CGCCGCTC CCGGTC CG

ACTCGCCGCTAGGCTCCCGG G A -- - AT ACACGTCG A ----
ACACCGCTGGCGC
GAM25827 4215 GCGTCGTAGCAGCCATGCCC AGCAGCCA CC CC--- ACACTAATCTACTCCTA

7 TAGACCGTCATACACTAATC GCGTCGT TGC TAGA GTCAT
TACTCCTAATGACCAAGATC CGCAGTA ACG ATCT CAGTA
TATTGCACGATACATGACGC CATAGC-- TT AGAAC ----------
GAM25828 20963 GCGTCGTCCGAGTGAGCAGC G A- AGC T -- - GTGTG
0 GGTGCTGGCCGTGTGGGACC GC TCGTCCG GTG AGCGG GCT GG CC
CGGGCCCGCTTAGCACCATG TG GGCAGGT CAC TCGCC CGG CC GG
GACGGGGT G AC GAT - GC A -----
GAM25831 9546 GCGTGACCTGGCAGCTGTAG A T --- CT---------- ACT
2 CTTCTGTGGGACTTCCACTG GCGTG CC GGCAGCTGT AGCTT GTGGG
CTCAGGCGTCAGGCTCAGAT TGCGC GG TCGTCGATA TCGGA CACCT
AGCTGCTGGCCGCGT C - GAC CTGCGGACTCGT ---
GAM25831 14583 GCGTGACCTGGCAGCTGTAG A T --- CT---------- ACT
3 CTTCTGTGGGACTTCCACTG GCGTG CC GGCAGCTGT AGCTT GTGGG
CTCAGGCGTCAGGCTCATAT TGCGC GG TCGTCGATA TCGGA CACCT
AGCTGCTGGCCGCGT C - TAC CTGCGGACTCGT ---
GAM25832 3388 GCGTGATGGCAGCCTTGCAG AT GC C A ---- AC-- CTTAACT
1 AGCTAGACCTGCACTTAACT GCGTG GGCA CTTG AG GCT AG CTGCA
TGCAGCTGCCTCCCGAGCCT CGCAC CTGT GAAC TC CGA TC GACGT
CCAAGATGTCCACGC -- A- C - GCCC CGTC -------
GAM25833 16783 GCGTGCGGCCGCAAGCTTAT T ---- TATT---- TAGT
3 TCCCTTTAGTGAGGGTTAAT GCG GCGGCCG CAAGCT CCCTT
TTTAGCTTGGCACTGGCCGT TGC TGCCGGT GTTCGA GGGAG
CGT - CACG TTTTAATT ----
GAM25833 5547 GCGTGCTGCGGCCGTGGTCC G- C- GT C TTCCTCGGC
8 GCGCCCTTCCTCGGCGGGCC GCGT CTG GGCC GGTCCG GCCC
GGACTGGTCTCCAGAAATGC CGTA GAC CTGG TCAGGC CGGG
AA CT -- - ---------
GAM25839 6029 GCGTTGCTGCGGCCGTGGTC G C- GT C TTCCTCGGC
8 CGCGCCCTTCCTCGGCGGGC GCGTT CTG GGCC GGTCCG GCCC
CGGACTGGTCTCCAGAAATG CGTAA GAC CTGG TCAGGC CGGG
C A CT -- - ---------
GAM25840 13963 GCGTTGGCAGCGGATGCGGG G- G GGA G GACT GTCATGTACTACAA
0 AAGCCGGACTCTGGGCGTCA GC TTG CAGC TGCG GAAGCCG CTGGGC
TGTACTACAAGTTTAGTGGC CG GAC GTTG ACGC CTTCGGT GATTTG
TTCACGCAGAAGTTGGCAGG AG G AAG A ---- ----------
AGC
GAM25840 8138 GCGTTGGGGGCTTCTCCTCC T CTCCT G GGAA T G GCTC
2 GCGGCGGGAATGTCTGGCCG GCGT GGGGGCTT CCGCG CG TG CTG CCG
GCTCCGGCAGCACGGCGCGG CGCG CCCCTGGA GGCGC GC AC GAC GGC
CCCAGGTCCCCGCGC - CCC-- G ---- - - ----

GAM25841 14484 GCGTTTCTTCCTAGGATTTA TTCTTC --- A TAT- A- GCTA
4 GAAATTTATAATATGAGCTA GCGT CTAGG ATTT GAAATT AAT TGA
TCAGCATTTCCTAATTTTAA TGTA GATCC TAAA TTTTAA TTA ACT
AATTTCCCTAGTATATGT TAT--- CTT A TCCT CG ----
GAM25842 8903 GCGTTTTGCAAATTGGCGCA TT- A- C A AAACCTTG
3 CTCTGAAACCTTGCGGGGAG GCG TTGC AATTGG GC CTCTG
CCCCAATTACGCGATCTTGC CGT AGCG TTAACC CG GGGGC
TCT CA C A --------
GAM25842 3174 GCGTTTTTTGAAGTTATTGA T GA T TTCTAC ATTG GATT
5 GATTCTACATTGCATTGACT GCGTTT TT AGTTAT GAGA ATTGC ACTGG
GGGATTCCAGTAGCAATTTT TGTAAG GG TCAATA CTTT TAACG TGACC
CATAACTCTGGTGAATGT T TC - ------ A--- ----
GAM25849 8702 GCTAACCGTCCACGGGATGC A CACGG CAGAA ATATG
1 ATGCAGAACCTATATGAGGA GCT ACCGTC GATGCATG CCT
TATGCATTAACTAGACGGTA TGA TGGCAG TTACGTAT GGA
AGT A ATCAA A---- -----
GAM25851 8360 GCTAAGATAGTTCAGATTGA AG -- ATCT AATGGGTA
7 TCTTAGGTCAATGGGTAGAC GCTAAGAT TTCA GATTG TAGGTC
CTATGTAGTTCATGAAGTCT CGGTTCTG AAGT TTGAT ATCCAG
TGGC -- AC GT-- --------
GAM25851 18964 GCTAAGATAGTTCAGATTGA AG -- ATCT AATGGTAA
8 TCTTAGGTCAATGGTAAGAC GCTAAGAT TTCA GATTG TAGGTC
CTATGTAGTTCATGAAGTCT CGGTTCTG AAGT TTGAT ATCCAG
TGGC -- AC GT-- --------
GAM25853 3347 GCTAAGGAATGGCGCATCTA - A- TCTATAAATTT ACAATC
1 TAAATTTTCACACAATCGTG GCTA AGG ATGGCGCA TCAC
GTTTTTGTGCCATGCCCTGT TGGT TCC TACCGTGT GGTG
GGT G CG TTTT------- ------
GAM25858 3824 GCTAATGTCTGTAAACCCTG T TGT CTGAATC ACAAGGCC
6 CTGAATCTGTAACAAGGCCT GC AATGTC AAACCCTG TGTA
GCATTGCTCTAGGGTTTGAC CG TTACAG TTTGGGAT ACGT
ATTGC - --- CTCGTT- --------
GAM25858 20095 GCTAATGTTGTATTGTTTTA TATT TATT G- ATGG G T AATTTTAA
8 TTGTAGTTTTAAATTAATGG GCTAATGTTG GTTT GTA TTTTAAATTA ATTTAAT GAAT GT
ATTTAATGGAATTGTAATTT TGATTATAAT CAAG TAT GGGGTTTAAT TAAATTA TTTA CA
TAAACATTTAATTAAATGTA TT-- TTT- AG G--- A - --------
ATTTGGGGGATATTTTGAAC
TTTAATATTAGT
GAM25859 939 GCTAATTATTGCCCCTAAGT AA- CCCT TTG AC- TTTGAT
1 TGCGACCTAAATTTGATTTT GCT TTATTGC AAG CG CTAAA
GGAACCGATCTTGTAATAAG TGA AATAATG TTC GC GGTTT
AAAGT AAG ---- TA- CAA ------
GAM25860 16563 GCTACAACTTCTGAAGGGTC ACAA AA T AT C CTCC- CCTAAAC
9 TCAATGCCAGGAAGCCTCCC GCT CTTCTG GGGTC CA GC AGGAAGC CGCT
GCTCCTAAACAGCGTGTTCG CGA GAAGGT CCCGG GT CG TTCTTCG GCGA
CTTCTTGCTGGGCCCCATGG CG-- AC - -- - CTTGT -------
AAGGCAGC
GAM25861 4446 GCTACAATCTTCTCGAGTTT - TT C TTC G C ATCCG
1 CAGCTGGGCAGGATCCGCTT GCTA CAATC CT GAGT AGCT GG AGG
CCAGGCTCACTCAGTGGTTG CGGT GTTGG GA CTCA TCGG CC TTC

TTGGC T T- - C-- A - -----
GAM25861 18032 GCTACAATGTGGGCTGATCA --- T - CCCAA - TTCTTGTGCATT
4 CCCAAGGACTCTTCTTGTGC GCTACAA TGTGGGC GAT CA GGAC TC
ATTGATGTTCATAATTGTAT CGGTGTT GCACCTG TTA GT CTTG AG
TTGTCCACGATCTTGTGGC CTA T T TAATA T ----------
GAM25868 1497 GCTACCTGTACAGAATGGAT A- ACAGAAT ACA GCAAAA
8 TACATATGCAAAAATAAAAA GCT CCTGT GGATT TAT
TCTCAAGACCACAGGACAGC CGA GGACA TCTAA ATA
CA CCAGAAC AA- ------
GAM25870 9049 GCTACTCAGCTGCTTAAGCT A CAG - AAG-- CCCACAAGTACAGA
5 GGCCCACAAGTACAGACCAG GCT CT CT GCTT CTGG
AGACAAAGCAAGAGAAGAAG CGA GA GA CGAA GACC
C A AGA A ACAGA ----------
GAM25872 6496 GCTACTGCTCCAGAAGCTGC CCAGAAG AGCGAAGA A GGAG
4 TGCAGCGAAGACGCAAGGGA GCTACTGCT CTGCTGC CGCA G
GCTGCGGAGGAAGAGCAGCA TGATGGCGA GACGACG GCGT C
GGACAGCGGTAGT CAG---- AGAAGGAG - ----
GAM25872 18141 GCTACTGGGCATAGTCCCCT - ATAGTC AA - T GTCAC- TG ATGC- TTTGTCAT

7 GGAACTGGTGGGTCACTTGG GCT ACTGGGC CCCTGG CT GG GG T GAAGGG CC
AAGGGATGCCCTTTGTCATG CGA TGACTCG GGGACC GA CC CC G CTTCCC GG
GACTTGCCCTTCTGGAAATT G GGGAA- GA G - ATTAAA GT GTTCA --------
ACCCCGAGAGCCAGGGAAGG
GGCTCAGTGAGC
GAM25873 8041 GCTACTGTTTTCCCCAAAGT T TCCCCAAA ACATA CAG
2 GGAACATAGCCCAGGGCCTC GC ACTGTTT GTGGA GCC
CACCAGTCGATAAACAGTGC CG TGACAAA CACCT CGG
- TAGCTGAC C---- ---
GAM25873 2923 GCTACTTCAGCTGCTTAAGC A AG -- AAG-- CCCACAAGTACAGA
7 TGGCCCACAAGTACAGACCA GCT CTTC CT GCTT CTGG
GAGACAAAGCAAAGAGGAAG CGA GAAG GA CGAA GACC
AAGC A GA AA ACAGA ----------
GAM25875 9086 GCTACTTTGCTGGTAACCTG TA TTG AA --- --- C-- T-- CCACC
0 GCGTCCGGTGGGGCCGCTGG GC CT CTGGT CCTGGC GTCCGGTGGG GC GC GGGG

GGCCACCTCCCTTTGCTTTG CG GG GACCA GGATCG CAGGTCGCCC TG CG CCCT
TCTACCCGCTGGACTTTGCT TC TTG -- TTT ATC TTT TTT -----
AGGACCAGGTTGGCTGC
GAM25876 21364 GCTAGACAGTAGTGGGAGTA GA----- AG GA-- GAAGATAGAAA
4 TGAAGATAGAAAATATAGAG GCTA CAGT TGG GTAT
CCAAAATTGGATTAAATAGC CGAT GTTA ACC TATA
AAATTAG AA GAGA ----------
GAM25877 6133 GCTAGAGGATATGATGGGAA GA G GGG A AATGAAA GAA- A- --------
3 GATGCAAATGAAATCCAAGA GCTAGAG TAT AT AAG TGCA TCCAA GC CTGAGTCG
CAG
AGCACTGAGTCGCAGTTATG TGGTTTC GTA TG TTC ACGT AGGTT CG GATTTAGT GTC
GCACCCAGAACTGGATGAAG GA G GA- - ------- GAGA AA AGAAGTAG
ATGATTTAGAAGCAGAGTTG A CAC
GATGCACTTAGGTGATGAGC TT TGG
TTTGGT AA ACC

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                        G  ---
GAM25878 2908   GCTAGAGTGCAGATGGCATG   A      AT   T  TCT--  ACTCA
3           ATCTCAGACTCACTGCAACC GCT GAGTGCAG  GGCA GA    CAG
            TCTGCCTCCTGCGTTCAAGC CGA CTTGCGTC  CCGT CT    GTC
                        A      CT   -  CCAAC  -----
GAM25879 1020   GCTAGATGGTATGAAAACTT     ------   AT-     TTATT  GAAC
2           ATTAGGAACCTTTTTGTTTT GCTAGA     TGGT   GAAAAC    AG
            TGAGACCATTGCATTCTGGC CGGTCT     ACCA   TTTTTG    TC
                          TACGTT   GAG     TTTT-  ----
GAM25880 19022  GCTAGCACCTCCCCCAGGAG   TAGCAC   C  AG   A  -    G-  GG  A  CCCCTTC   A
GTAACCATG
1           ACCGTTGCAGTCGGCCAGCC GC     CTCC CC  GAG CC GTTGCA  TC  CC GC      TCC CG       TG
            CCCTTCTCCACGGTAACCAT CG     GAGG GG  CTC GG CAACGT  AG  GG TG      AGG GT       GT
            GTGCGACCGAAAGGCCGTGA  T-----   T  --   A  A     AG  AA  C  TAC----   C  AAAAACTA-
            TCAAAAATGCGGACATGTCG   A  GAAA
            GAAGAGATGCAACAGGACTC CG CC
            GGTGGAGTGC         GC GG
                        C  ----
GAM25881 8550   GCTAGCCAAGGGAGCAGCGT      AA-     A   TT  G   A    TTC---    GGCGCA
1           TGCGTCTCAGAGGGTTCTGT GCTAGCC   GGGAGC GCG  GC TCTC GAGGG     TGTTG
            TGGGCGCACAACACTTCTGT CGATCGG   CCTTCG CGT  CG GGAG CTCCT     ACAAC
            CCTCCGAGGGCTGCAGCTTC      ATA     A  --  -   C    GTCTTC    ------
            CATAGGCTAGC
GAM25882 9398   GCTAGCTTGTTTGTATAGGT   TA  TT   GTAT   AGA-- TG TT    CT    TTA
6           AGAATGATTCATCTCTCCAT GC  GC  GTTT   AGGT    A  A  CATCT  CCATT
            TTTAGATGGCTAGATGTTTT CG  CG  TAAG   TCTA    T  T  GTAGA  GGTAG
            GTGGAAGATCTTAGAATTGC   TC  T-   AT--   GAAGG GT TT    TC    ---
            CTGC
GAM25884 14526  GCTAGGCCTACTCTGGTTAT   A  --  AC     TA   GACACTGAC      CACC   - CATA
2           GGGGACACTGACGCCCGGGT GCT GG  CCT  TCTGGT  TGGG       GCCCGGGT   GCTG C
            CACCGCTGCCATAGCCAGTA CGA CC  GGG  AGGCCA  ATCC       CGGGTCTA   TGAC G
            ACATCTGGGCCGCCTACGAC   A  AA   CA    GC   GC-------      CAA-   C ----
            CGGAACGGGAACCAAGC
GAM25889 12449  GCTATAAATCCAGAACGGGA    T       --      GT-   C  C   CCTACTCTGA
5           AGTGTCCAGCAAGCCTACTC GCTA AAATCCAGA  ACGGGAA   GTC AG AAG
            TGACTTCTGACTTGTTTTTG CGAT TTTAGGTCT  TGTTTTT   CAG TC TTC
            TTTTCTGGATTTTTAGC       T       TT      GTT  -  -  ----------
GAM25889 9393   GCTATAAGTACAATCCCCCA   A      A   CCC  ATCA  A   TG GGCA
8           GATCACGATGTTGTGGCAAT GCT TAAGTACA TCC   AG    CG TGT  T
            GGCACGAAAGCTACAGGATG TGA GTTTATGT AGG   TC    GC ACG  A
            TATTTGAGT           -      -  ACA  GAAA  -   GT ----
GAM25896 21664  GCTATGCTATGAACACTATG    TGCT   AA   -   GA----      G   AAGAAG
9           GGATCAGGCTGCCCAAGAAG GCTA    ATG  CACT ATGG      TCAGGCT CCC
            GGGAAGCCTGAGCCAAACCA CGGT    TAC  GTGA TACC      AGTCCGA GGG
            TGAGTGGACATTATTGGC      TAT-  AG   G    AAACCG      A  ------
GAM25898 9272   GCTATGTTAGAGATTTGCAT      TT-     TT----------  T   TAAAA
9           ATGTAAAACATTGCCATTCT GCTATG   AGAGAT            GCA ATG
            TCTACTAAATGTTTCTTGTT CGGTAT   TCTTTG            CGT TAC
            ATGGC                TGT     TAAATCATCTTCTTAC  -  -----
GAM25899 6211   GCTATGTTGCCCAGGCTTGT   A  T   A   TGT   AACT    G TCA   ATCC
```

2 CTCGAACTGCTGGGCTCAAG GCT TGT GCCC GGCT CTCG GCTGG C AGGG
GGATCCTCCTGTGTCAGCCT TGG ACA CGGG TCGA GAGT CGACT G TCCT
CCTGAGTAGCTGGGGCTACA - T G T-- CCTC - TG- ----
GGT
GAM25899 20249 GCTATTAGGATGCAGGCCTT A- AT -- ---- AACTACCA
9 GCCAGAACTACCACTGGCAA GCT TTAGG GC AGGCCT TGCCAG
TACAGGTTTTGGTGCCCTGA CGG AGTCC TG TTTGGA ACGGTC
CAGGC AC CG GT CATA --------
GAM25902 2790 GCTATTGTTCTTTAACTGAC TA---------- TAAAAAT--- -- TAAA
3 TAAAAATGTTGGGCTAAAGC GCTATTGTTCTT ACTGAC GTTG GGC
CATTAACTTAAGAATTTGTC TGATAATGAGAA TGACTG CAAT CCG
AGTGTATCCTTTCCAAAAAG AAACCTTTCCTATG TTTAAGAATT TA ----
AGTAATAGT
GAM25902 12313 GCTATTTAATTCCTTTGTAT TT TTCCT TGATATC TCCTCTCC
6 ATGATATCCTCTCTCCTCTC GCTA TAA TTGTATA CTCTC
CGGGAGCTTGTACGATCTCT CGAT GTT AGCATGT GAGGG
TTGTTAGC T- TCTCT TC----- --------
GAM25903 12531 GCTATTTGGGAGGGAATAGA -- TG AATA A G T GG ACA- GAGG
5 GGACGGGGAGCGATGAGGGG GCT ATT GGAGGG GAGG CG GGAGCGA GA GG GTC

ACAGTCGAGGGGCAAGGCCG CGA TGA CTTTCC CTCC GC CTTCGCT CT CC CGG
ATCTCGCTTCGCGCCTCCCG GT GT GCC- - G - AG GGAA ----
CCTTTCTGAGTTGAGC
GAM25910 9064 GCTCAATTGAATGCACTATT C T A TT A A TTCTTATTT
7 TGAAGATAGTTAATTCTTAT GCT AATTGAA GC CTA TGA GAT GTTAA
TTTTAACATTGTCATTTGGG CGA TTAGCTT TG GGT ACT TTA CAATT
TTTCGATTCAGC C - - TT G - ---------
GAM25910 1220 GCTCAATTGATGACAAGGTT TG GA - ------- - AAAATGATC
8 GGTAGACATGTTAAAATGAT GCTCAAT AT CAA GGTTG GTAGACAT GTT
CGACAATGTCTATAATCCTG TGGGTTA TG GTT CCGAC TATCTGTA CAG
CAGCCATTGCTGTTGATTGG GT TC A GTCCTAA A ---------
GT
GAM25911 1187 GCTCACAATTTTGCTGGCTA T ATT- G--- - - TT T --- GAAA
1 GAAGGTTGGGCATCCGGTGA GC CACA TTGCT GCTA GAA GG GGGCA CC GGT
AAGCCTCAGGCTGCTTCCAT CG GTGT GACGG CGAT CTT CC TTCGT GG CCG
TCATAGCAAAGGGCAGCCAG T GACC GAAA A A -- C ACT ----
TGTGTGC
GAM25913 2837 GCTCACCCCTGGAGGACGGC A GAGGACG G ----- A A C ACGTGGG
5 CGGCTCTCTATAGCACCAGG GCTC CCCCTG GCCG CT CTCTAT GCACC GGG TC
GCTCACGTGGGGAACCCGGG CGAG GGGGAT CGGC GG GAGGTA CGTGG CCC AG
TGCCATGGAGCGACAGGACG C AGA---- A ACAGC C G A -------
GCAGATAGGGGCGAGC
GAM25916 12683 GCTCACTGCAACCTCTGCCT TG TTGCA G T G - C CAA CTG
5 TGCAGGTTGAAGCGATTCTC GCTCAC CAACCTCTGCC GGTT AAGCGA TCTCCT CCT CAG CTCC
GTAG
CTGCCTCAGCCTCCCAAGTA CGAGTG GTTGGAGACGG CCAA TTCGCT AGAGGA GGA GTC
GAGG CATT

GCTGGCATTACAGGAGACTG GT TGGAC G C - A A A-- ---
AAGGAGGAGACTCGCTTGAA GCA

CCCAGGTGGCAGAGGTTGTG
GTGAGC

GAM25919 21603 GCTCAGAGATGTTGGGGATA ---- GG-- A AGTAT TG TAATTT
6 AAGTATACTGGATTAATTTA GCTCAGAGAT GTT GG TAA AC GAT
TCTGGTTGAAATTACTATAA CGAGTCTCTG CAG TC ATT TG CTA
GACGGGGGTCTCTGAGC GGGG AATA - AAAGT GT ------
GAM25921 20804 GCTCAGCCTTTTCCCCACTC CCTTT- CC C AAATAC A - TTCACT
6 TTAAATACTGTACTACTTCA GCTCAG TCC ACT TT TGT CT AC
CTGTAAGAACGAAAGAATAG TGAGTT AGG TGA AA GCA GA TG
TTAGGATACCAATTGAGT AACCAT AT T GAAA-- A A ------
GAM25921 20649 GCTCAGCGTCACCTGGGTGG C A T --- A GTGCGTGCCA
8 ATGGAGCCGTGCGTGCCAGG GCTCAG GTC CC GGGT GGATGG GCC
CGCCGTCCCAAGCCTGGAGA CGAGTC CAG GG TCCG CCTGCC CGG
CTCTGAGC T A - AAC G ----------
GAM25924 12492 GCTCAGGGACCTTGGTACAA - - TT ACAA - T ACCTTGGTACA
4 CCTGGCTCAGGGACCTTGGT GCTCA GGG ACC GGT CCTG GC CAGGG
ACATCCTGGCTCAGGGACCT CGGGT CCC TGG CCA GGAC CG GTCCT
TGGTACCCTTGGGC T A TT G--- T - ----------
GAM25925 16432 GCTCAGTCAATAGTGTCACA TC T CA--------- ATTAA
8 GGTATTAAGCCATTTCGGAA GCTCAG AA AGTGTCA GGT
TTTGGCACTTTTTTCTGGGT TGGGTC TT TCACGGT CCG
TT T TTAAGGCTTTA -----
GAM25926 2684 GCTCAGTCGGTGATGATGAG GTCG G T- --- ACC---- G T A- CCC TGG
5 CTCGTCCACCCCCCAGTCTT GCTCA GT ATGA GAGCTC GTCC CCCCA TC TCAT GCT ATC

CATAGCTCCCATCTGGCAGG CGAGT CG TACT CTTGAG CGGG GGGGT AG AGTA CGG
TGG

TAACGGCGAATGATGATGGG AA-- G TC TTC CTTTCTA - T AG CAA ---
GATCTTTCGGGCCTTGAGTT CA
CCTTCATGGCAATGAGC

--
GAM25929 3905 GCTCATCAGCCTCGCCTTCC C CCT-- A CTA - GCAG
4 AGGACCAGTGCTACAGCGTG GCTCATCAGC TCG TCCAGGACC GTG CAGC GT
CAGACTGCTGACACGGTTCT CGGGTGGTCG GGC GGGTCTTGG CAC GTCG CA
GGGCACGACGGCGCTGGTGG C AGCAC - A-- T ----
GC
GAM25930 4171 GCTCATCTGCGCCTTTGTTT TCA CG T- T-- GCTTAAAA
0 AGAACGCTTAAAAGTTCTGA GC TCTG CCT TG TTAGAAC
TTCCACTAGGACCAGACTGC CG AGAC GGA AC AGTCTTG
TC- CA TC CTT --------
GAM25930 19398 GCTCATCTTGGTATGCGGGC T TTG G CC -- CAATTC CCTTTCTGCCA
1 CCCTGCTCGGGTCAATTCGG GC CATC GTAT CGGGCC TGC TCGGGT GGGGGAC
GGGACCCTTTCTGCCAGTCC CG GTAG TATA GTCTGG GCG GGCCCA TTCCCTG
CTTACCCGGCTGCGCAGGTC - --- - AC TC ------ ----------
TGATATGATGGC
GAM25932 12781 GCTCATGTGGCTCAGCAGTC AT- CAGCA AGGAG CCAGGA
7 ACCAGGAGGGGCCCAGGAGC GCTC GTGGCT GTCACC GGGC

TCAGGTGACGAGGCCACCCA CGAG CACCGG CAGTGG CTCG
GAGC ACC AG--- A---- ------
GAM25933 5736 GCTCATTATTGACTACTTAG ---- ACTACT A TCAATTCCAC
4 CTGAGTTCAATTCCACACCA GCTCA TTATTG TAGCTG GT
GCTGTCTTTACAATGATAAC CGAGT AGTAAC GTCGAC CA
TGAGC CAAT ATTTCT - ----------
GAM25933 14030 GCTCATTCGGAAGCCAAAAC - GA AAA GA TC G C T ACT
9 CAGTGGACTCCTGTGGGCTG GCTCATT CG AGCCA CCAGTG C CT TGGG TGGAT GGC

GATTGGCACTGCTGTCCATT TGGGTGG GC TCGGT GGTCAC G GG ACTT ACCTG TCG
CAGGGTGGGGCACTGGCCTG T AC CC- GG GT G - - ---
GCTCACGTGGTGGGT
GAM25938 3309 GCTCCAGCAGCGAGGGGTTC A C- TTCGC--- A TAGGAAC
4 GCGTTACTTAGGAACAGCAG GCTCC GCAG GAGGGG GTT CT
CTCTTTTTTCCCTTCTTCTG CGAGG TGTC CTTCCC CGA GA
TAGGAGC A TT TTTTTTCT C -------
GAM25939 6456 GCTCCAGGAATCCCTTCGAG A C TCGA AG - CCA TA- CCCAA
0 GCCCCAGTCCCTCCCCACTT GCTCCAGGA TC CT GGCCCC TC CCTCC CT GGAC
AGGACCCCAAGTCCACCAGA CGAGGTTCT AG GA CCGGGG AG GGAGG GA CCTG
CTGGAGGTGAGGGGGCCGAG G A CGAG G- T TCA CCA -----
CAGAGAGTCTTGGAGC
GAM25940 8054 GCTCCAGTCAACGTTTACAC C G C A C AA AAA TGTCC
4 GGGAAGTAAAATCTGTCCGA GCT CA TCAA GTTT CA GGG GTA TC
AATGCACCCTGAAAGCTTTG CGA GT AGTT CGAA GT CCC CGT AG
AGTGAAGC A G T A - A- AA- -----
GAM25942 19919 GCTCCCAATGTTGACGTTGG TC AA T C - AG--- TT AAACAA
4 CCAGGGCCTTTGCAAACAAG GC CC TGT GA GTTG GCC GGCCT GC
CCAGGCCAAAAAGGCTCAAC CG GG ACA TT CAAC CGG CCGGA CG
ATTTACACCGGCTGC TC CC T A T AAAAA C- ------
GAM25942 840 GCTCCCACCCCTTTCCCCCT CCCACCCCTT CCC CCCACCC AACTTC- TTAA
AAA
9 GCCCCACCCCCAGGCCTAAC GCT TCC TGC CCAGGCCT TTGGC GATAC AGGG
TTCTTGGCTTAAGATACAAA CGA AGG ACG GGTCCGGA GACTG CTGTG TCCC
AGGGCACTCTCTACTGGCCC AACAT----- TTT TA----- CTCCGAC CAAA G--
TGGTGTCAAACGTCAGCAGC ACTCTCTACTG
CTCAGGCCTGGATGCATTTG C
GATACAAAGC G

GAM25944 18160 GCTCCCAGGGGTACCTGGTG C GTACCT GA--- C TCCATGAT
1 GTGAGGCTCTCCATGATGAT GCTCC AGGG GGTGGT GG TC
CCACCCAGCCGCCTTCACTC CGAGG TCTC CCGCCG CC AG
TGGAGC - ACTT-- ACCCA T --------
GAM25944 9353 GCTCCCATCAGCCAGAATTG A AA-- CCAT- GTCC
5 CCCATCATGGTGTCCACTGT GCTCCCATC GCCAG TTGC CATGGT
GCTTTTGTAGCCCCCTGGCA CGAGGGTAG CGGTC GATG GTGTCA
GATGGGAGC A CCCC TTTTC ----
GAM25945 8804 GCTCCCCAAGTGAGCAATTC CCCAAG GCAAT C T - CT AACTCTAAGG
6 CTGTCCCTTTTAAGGGCTCA GCTC TGA TC TG CCCTTTTAAG GG CAC
CAACTCTAAGGGTGTCCGCT CGAG ACT AG GC GGGAGAGTTC CC GTG
TGAGAGGGTCGTGATCAATT TTA--- ----- T T G T- ----------

GAGC
GAM25947 724 GCTCCCCTTTGGTGCTCACT CTTT T- A CCT -- TGTA
8 ACCTGGTTGTCGATGTATCG GCTCCC GG GCTC CTA GGTTG TCGA
GATCAGCTTCTTGGGGGCCT CGAGGG CC CGGG GGT TCGAC GGCT
CCTTGGGAGC TT-- TC - TCT TA ----
GAM25949 1181 GCTCCCTCCCTCAGCCCCTG CCCTCCCTCA -- CTG T CTC C- TCAGG
5 TCTCTGCCAGGTGCCTCCTC GCT GCCC CTGTCT CCAGG GC CTCT AG
TCAGTCAGGCTTCAGAGCAG CGA CGGG GACAGA GGTCC CG GAGA TC
CCCTGGAGACAGGAGGGCCA ACATTGTAC- AG --- - AC- CT -----
TGTTACAAGC
GAM25951 21575 GCTCCCTGGGTGACTCTGAT TC G GA------ CAA TGAGAC
0 GGCAAGCATGAGACTGTGAA GC CCTGGGT ACTCT TGG GCA
CCAGGAAGAGAAGAGTGGCC CG GGACCCG TGAGA ACC TGT
CAGGTGC T- G AGAGAAGG AAG ------
GAM25952 9428 GCTCCGATTTGGCAGCCAGA TT CAG GATCTT A ACGTG
8 TCTTCATCGAGCACGTGGCC GCTCCGAT GG CCA CATCG GC
GATGTGGACACCTTGTTGGA TGAGGTTG CC GGT GTAGC CG
GT TT ACA ------ - -----
GAM25954 16414 GCTCCGGCGGCCCCCGGCGC TC C - - - - - - C GG G CTGTGCAT
2 CCGGCTGTTGCGGCTCCCGG GC CGGCGGCCC CGGC GCC CGG CT GTTG CG GCTCC GGT
AGCGG GC
TGGAGCGGGGCCTGTGCATG CG GCCGCCGGG GTCG CGG GCC GG CGGC GC CGAGG CCG
TCGCC TG

TGCCGCTGAGCCCGGAGCGC GT C T A A T C G C AG G --------
GCCGGCTGGACCGAGGCTGC
TGCGGGCCGCCGTGGC

GAM25954 12275 GCTCCGGGGGGAAAGATCAA G GGGA G AA CCC- AG- GAAGA
5 CCGGCCCCGAACGGAGCTGA GCTCC GG AA ATC CCGGC GAACGG CT
AGAAGAAGCTGTTCAAACGC CGAGG CT TT TGG GGCCG CTTGTC GA
CGGCGGGTGTTGAATCGGGA G AAG- G GC CAAA GAA -----
GC
GAM25957 22224 GCTCCTCAGTGGGAAGACAG C- -- AG- A--- - CAGA
8 AAGCACCAGAGTGGCTTCAA GCTC TCAGT GGGA AC GAAGC AC
AGGTGAGTCCTCAACTGACA CGAG AGTCA TCCT TG CTTCG TG
GAGC AC AC GAG GAAA G ----
GAM25961 22212 GCTCCTGGGAAATGTGCTGG T -- AAATGTG GG A TTT CAAT
8 TGACCGTTTTGGCAATCCAT GC CCT GGG CT TG CCG TGG
TTCGGCAAAGAATTCACCCC CG GGA CCC GA AC GGC ACC
TGAGGTGC T GT CACTTAA A- - TTT ----
GAM25964 17969 GCTCCTTCTGAGACTTTAAC T TTCT CTTTAACT- TG T AAC
7 TCCTTGGTGAGCATCAGAAC GC CC GAGA CCTTGG AGCA CAG
CTGTTGCTCCAAGGCTGCCA CG GG CTCT GGAACC TCGT GTC
CTTTCTCCTGGGC - TC-- TTCACCGTC -- T ---
GAM25965 19334 GCTCCTTGACCTGTGCATAC C C G AT CTTCT ATTTTC
0 AGCTTCTGCATTTTCGTTCA GCTC TTGA CT TGC ACAG GC
CTCTGTCGCAAAGATCAAGA CGAG AACT GA ACG TGTC TG
GC - A A C- TCACT ------

GAM25967 18393 GCTCGAGTATCAGGAAGAAA TC GTA AAATGAAA A-- ACAG
6 TGAAAGCCAACTACAGGGAA GC GA TCAGGAAG GCCA CT
ATGGCGAAGGAGCTTTCTGA CG CT AGTCTTTC CGGT GG
AATCATGC TA AA- GAGGAAG- AAA ----
GAM25968 20546 GCTCGCCGCGCTAGCCCTGC CGCG- A - A T AGCCT
8 TGACCTGCAGCCTGTGGCCG GCTCGC CT GCCC TGCTG CC GC
GCACGGGCAGACAACGCGAG CGAGCG GA CGGG ACGGC GG TG
C CAACA - C C - -----
GAM25969 19386 GCTCGCGTCCCCTCGTGCGG T - TC G CTCC C CTTA
4 GCTCCAGCCGCAGCCTTAGC GC CGCGTC CCC GT CGGG AGCCG AGC
TTCGGCTCCCGGCTTGGGTG CG GCGCGG GGG CG GCCC TCGGC TCG
GCGCGGC - T TT - ---- T ----
GAM25973 3976 GCTCGGTGGCATCAGGGGGC T T A- G- T A T GAGA
0 TCACATGGCTCTGAGAGGTG GC CGG GGC TCAG GGGC CAC TGGC CT
CCGAGTGGCCTGACTGGCAG CG GTC CCG GGTC TCCG GTG GCCG GG
CCCTGGC - - AC AG - A T ----
GAM25973 8834 GCTCGTATTTATTGGAAAAG ATTTA A G GAAC A GTAG
2 CAGAACAGTATGCACCTGTA GCTCGT TTGGA AA CA AGT TGCACCT
GGGGTGTAGCTTCCATGGTT CGGGCA AACCT TT GT TCG ATGTGGG
CTCCAAGCACGGGC CG--- C G ACCT - ----
GAM25977 691 GCTCTAGTGGTGGGTCTGAG - T -- G GT TG CTAGT
6 GTTTGCTCTAGTGGTGGGTC GCTCT AGTGG GGG TCT AG T CT
TGAGGTTTTCTCTACTGAGG CGGGA TCATC CTT GGA TC G GG
GC G T TT G TG GT -----
GAM25978 17978 GCTCTATTTGTATTACCCAG A TA-- A---------- ATGA
2 ATGACTGAAGCTTAAGAGAA GCTCT TTTGTAT CCC G
GGCAGGGAAGTATACAAGCA CGAGA GAACATA GGG C
GAGC C TGAA ACGGAAGAGAATTCGAAGT ----
GAM25981 19295 GCTCTCCGCCGCAGCTTCAG CC - A C CC-- GGCCCA
4 CACCTCGGCCCAGAACAATG GCTCT GC CGC GCTT AGCA TC
CTAAAGTAGCGTGCTAGGGG CGGGG CG GCG TGAA TCGT AG
C AT T A A AACA ------
GAM25981 12695 GCTCTCCGCCGCAGCTTCAG CC C TC--- CC-- GGCCCA
5 CACCTCGGCCCAGAACAATG GCTCT GC GCAGCT AGCA TC
CTAAAGTAGCTGTGCTAGGG CGGGG CG TGTCGA TCGT AG
GC AT - TGAAA AACA ------
GAM25983 19328 GCTCTCTCCCTGGGCGACCT CC CGA- G -- TGCAATAT
4 GCAGTTTGCAATATGACTTT GCTCTCT CTGGG CCT CA GTT
GGAGGAATTCTCGGCTGGAG CGAGAGG GGCTC GGA GT CAG
AGC TC TTAA G TT --------
GAM25983 12253 GCTCTCTGATGCAGGGTAGG CT G GCAA TTGTGATC
9 TGCAACCAGCTCTTGTGATC GCTCT GATGCA GGTAGGT CCAGCTC
GGGTTGGGACCTGCCATGCA CGGGG CTACGT CCGTCCA GGTTGGG
TCTTGGGGC TT A G--- --------
GAM25987 20739 GCTCTGAGCACAACCTGCTA CT- A ACCT TAG - AAGC
5 GTTTGGAAACCTGAAGCCAG GCT GAGC CA GC TTTGGAAA CCTG
GATTTTCAGAACGCTGGCTC CGA CTCG GT CG AGACTTTT GGAC
TTAAGC ATT - ---- CA- A ----
GAM25988 12397 GCTCTGATCGCTCCGATTTT TGA TCCGATTT - GATTTCA
1 GGTGATGGGGATTTCACTCG GCTC TCGC TGGT GATGGG

TCTACCACTGCTACTGCGAA CGGG AGCG ACCA CTGCTC
ATGGGC TAA TCATCGTC T -------
GAM25992 18900 GCTCTGGAGAGGTTCCTGCA --- G --- G - A - GGCA
1 GGATTACTTTGATGGCAATC GCTCT GGA AGGTTC CT CAGG ATT CTTT GAT
TGAAGAGATACCTGAAGTCT CGAGA CCT TCCAAG GA GTCC TAG GAAG CTA
GAACCTATCCCAGAGAGC GAC A TCT A A A T ----
GAM25994 12592 GCTCTGGTCAGTTACTTTCA C C - C --- AATCTTC
3 CTATCTCAATCTTCGAGCAA GCT TGGT AGTTA CTTT ACTAT CTC
GTAGTTAGGGTTAACTACCA TGA ACCA TCAAT GGGA TGATG GAG
AGT - - T T AAC -------
GAM26004 3047 GCTCTTCGTGATAATGAGAC ---- G- T GACT- GTACAAA
2 TTCCTGGGTACAAACCGGGA GCT CTTCGT ATAA GA TCCTGG
TTGAATCCTTATGAACGGAG CGA GAGGCA TATT CT AGGGCC
TTAAAGC AATT AG C AAGTT -------
GAM26004 1008 GCTCTTCTCGCGGATCCAGT C- CGGATCCAGT CC CCCCCAAT
5 GTTCCGTTTCCAGCCCCCAA GCTCTT TCG GTTCCGTTT AG
TCTCAGAGCGGAGCCGACAG CGAGAG AGC CGAGGCGAG TC
AGAGC AC ---------- AC --------
GAM26008 2855 GCTCTTTCCTTCTGTATATA CT-------- TACCA TCTTACTTT
0 CCATGGTCTTACTTTCCAAC GCTCTTTC TCTGTATA TGG
TCTGTACAGATTTATTTATT CGAGGAGG AGACATGT ACC
GGAGGAGC TTATTTATTT CTCA- ---------
GAM26014 1222 GCTGAACTTGGATTTCTAGT CTT- TTCTA- TCA A- AATC
5 TCATGAAGAAATCTCTCCCA GCTGAA GGAT GT TG AGA
ATACCCATTTATCCTATTTT CGATTT CCTA CA AC TCT
TAGC TTAT TTTACC TA- CC ----
GAM26015 8285 GCTGAAGCATCAGAAGAAAC A -- AAGAAACA A TG - A- AAG- GCAGG
5 AGATGAAAATGATTTGATCC GCTGA GCA TCAG GATG AAA AT TTG TCCTGG TAACT
TGGAAGTAACTGCAGGAGTT CGACT TGT AGTT CTAC TTT TG AAC AGGACT GTTGA
GGAGGTCAGGAGGCAATGTT A AT ATAGAGA- A GT T GG GGAG -----
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TATGTATCAGC
GAM26015 18090 GCTGAAGCCCCCTGAAGGGG A CCCCTGAA -- TCAG G CCGAA
8 CCCTGCAGGTCAGGCCCCTT GCTGA GC GGGGCCCT GCAGG GCCCCTT TC
GTCCCGAAGAGAGGGGCGTT CGACT TG CCCTGGGG TGTCC CGGGGAG AG
CCTGTGTGGGGTCCCCGTAT A C------- TG TTG- - -----
CAGC
GAM26019 20058 GCTGAATTACATTTACTGTA AATT TA ACAAAGAAC GGAGA
1 CAAAGAACGGTTCGGAGAGA GCTG ACATT CTGT GGTTC
ACCAGGAATGGCGGAGTGTC CGAC TGTGA GGCG CCAAG
TAACAGC AATC -- GTAAGGA-- -----
GAM26019 19814 GCTGAATTAGCCACCAAGTA T-- CCAA AC A TCAGAG
2 CGCAAACTTTTCAGAGGGAG GCTGAA TAGCCA GT GCAA CTTT
CTTGCAAGCCTGGCTATGCT CGACTT ATCGGT CG CGTT GAGG
TCAGC CGT C--- AA C ------
GAM26020 3486 GCTGACAATTAATGCTAGTC AA CTAGTCCTCA AAAAAATAATCTTAACTCA

4 CTCAGGATTTAAAAAATAAT GCTGAC TTAATG GGATTT
CTTAACTCAAAGTCCAATGC TGGCTG AATTAC CCTGAA
AAAAACATTAAGTCGGT -- AAAAACGTAA ----------

GAM26021 21534 GCTGACACGGGATGCAGTAC A- - GTAC ACCGATTTCACAGTTC
0 AGCACCGATTTCACAGTTCG GCTGAC CGGGAT GCA AGC
CTTATGCAATCCTGGAGTCA CGACTG GTCCTA CGT TCG
GC AG A AT-- ----------
GAM26021 19928 GCTGACACGGGTAACAAGAA T C - AACAAGAA C CGCACCC
1 AACCACGCCCGCACCCGGTG GC GA ACGG GT AAC ACGCC
TTGTTAAAATAACACTCCGT CG CT TGCC CA TTG TGTGG
TCCGC C - T CAATAAAA T -------
GAM26022 5886 GCTGACATTAACTACAATTA G TA AAT GG AT AAAA
0 TGGGAAATGCAAAAGCTGTT GCT ACAT ACTAC TAT GAA GC
TGGATATGGTAGTGTGTGGT TGG TGTG TGATG ATA TTT CG
- -- GT- GG GT ----
GAM26023 3376 GCTGACCATGCAGCAACTGA - TGCA AACT CT TACCAT
0 ACTGGCTCTGTACCATCAGA GCTGA CCA GC GAA GGCTCTG
GCCTTTCCCGGCGATCTGGC CGACT GGT CG CTT CCGAGAC
TCAGC C CTAG GCC- T- ------
GAM26024 6297 GCTGACGCCGGCTAGGGAGG TG G GGGAG AG ACAACATCGATCCAAGA

0 AGCAGCCCCCACAACATCGA GC ACGCCG CTA GAGC CCCCC
TCCAAGAGGGGGAGCTCAGT CG TGCGGC GGT CTCG GGGGG
GGGCGGCGTGTGC TG G GA--- A- ----------
GAM26024 16528 GCTGACTCCTATGGAAGGCC ACT GAAGG--- A AATG-- G CAG
6 TACCAAATGAGGAAATTTCA GCTG CCTATG CCT CCA AG AAATTT
GGAATTTGCTAATGCGTGGG CGAC GGATGT GGA GGT TC TTTAAG
AGGATTGAAAATGTAGGCAG --- AAAAGTTA G GCGTAA G ---
C
GAM26025 21344 GCTGACTGCCCGCCCCTGGC - GCCC C TC GA- TCAG
2 TCCATCTGCAGATGTCTTCA GCTGACTGC CC CTGG TCCA TGCA TGTCT
GAGACGAGATGTACTTGGAC CGGCTGACG GG GACC AGGT ATGT GCAGA
CAGAAGGAGCAGTCGGC A AA-- - TC AGA ----
GAM26025 3643 GCTGACTGCCCGCCCTTGGC - GCCC C TC GA- TCAG
3 TCCATCTGCAGATGTCTTCA GCTGACTGC CC TTGG TCCA TGCA TGTCT
GAGACGAGATGTACTTGGAC CGGCTGACG GG GACC AGGT ATGT GCAGA
CAGAAGGAGCAGTCGGC A AA-- - TC AGA ----
GAM26025 3300 GCTGACTGGGGAAGCCATAT ACT- A- C TTT A CTGTTTCCTT
7 TTACATCATCCTGTTTCCTT GCTG GGGG AG CATA AC TCATC
GATGAGTCCTGTGCCTGCCC CGAC CCCC TC GTGT TG AGTAG
CCTCTCCAGC CTCT CG C CC- - ----------
GAM26028 1568 GCTGAGACCTTTCCTTTTGT GA-- - TT TACTCCAA- CC- TG GTAT
0 CTACTCCAAGCCTTCCCCCT GCTGA CCTTTC CT TGTC GCCTTC CC C
GCGTATGTGGGATTGAGGGT TGACT GGAAAG GA ACGG TGGGAG GG G
CACATCATTGGCACTAGTGA GATG T TC TTACTACAC TTA GT ----
AAGGGTAGTCAGT
GAM26032 14695 GCTGAGCTCATATGCTAAGA A - A TAA AGAG-- TCA
4 CAGAGCTGGGGTCTCAGACT GCTG GCT CAT TGC GAC CTGGGGTC
CCAGAAAGTAGTCGCAGTGA CGAC CGA GTG ACG CTG GACCTCAG
AGCCAGC - A - --- ATGAAA ---
GAM26035 20181 GCTGAGGCAGGAGACTGGCG G A - -- ACCCAGGA GG CTTGTA
6 TGAACCCAGGAGGCGGACCT GCT AGGC GGAG AC TGGCGTGA GGC AC
TGTAGTGAGCCGAGATCGCG CGG TCCG CCTC TG ACCGCGCT CCG TG

CCACTGTGCTCCAGCCTGGG G A G TC AGAG---- AG ------
C
GAM26039 9601 GCTGAGGGCTGCAGCCCCCC GGG A C T CC - - TGCCT
0 TGGCCTGGGCATTGGGTGCC GCTGA CTGC GCCC CC GG TGGGCATTGGGTG CCTCTTAGGG
ATCT
TCTTAGGGATCTTGCCTGGG CGACT GACG CGGG GG CC GCCTGTGGCCCAC GGGGAATCCC
TGGG
TGCCCTAAGGGGTCACCCGG GA- C A T T- T G -----
TGTCCGTCCTGGAGGGCCGC
AGAGTCAGC
GAM26041 2673 GCTGAGTAAACTATAACTGT - AA-- TTAAACTT- TCCA
0 TAAACTTAAGTTCCAGCTTT GCT GAGTA CTATAACTG AAGT
TCTCAAGTTAGTTATAGGAT CGA TTCAT GATATTGAT TTCG
GTACTTAAGC A GTAG TGAACTCTT ----
GAM26044 4248 GCTGATAGGTTTAGGATACA - --- A CAGACTCTAAAGC
6 CTCAGACTCTAAAGCAGGTA GCTGATAG GTTTAG GATAC CT
TTAAACTGAACACTGTCAGC CGACTGTC CAAGTC TTATG GA
A AAA - ----------
GAM26044 5916 GCTGATAGTGTGAACACCAG G AA-- - CA AG ACAAC GG TGTTAAT
7 CACTAAGACTGGACAACTGT GCTGATAGT TG CA CCAG CTA ACTGG TGT GC
GGGCTGTTAATGTGAACACC CGATTGTCG GT GT GGTC GAT TGACC ACA TG
AGTACTAGGACTGGATGACT G GTCA A AG CA ----- AG -------
GTGGGCTGTTAGC
GAM26044 3924 GCTGATAGTGTGTCTGGATT - G T GATT -- --- A- C - AGCTGTGG
8 CTGCATCTGCTGCAGGAAGG GCTGA TAGT TG CTG CTGCA TCT GCTGCAGGA GG TG GG

CTGGGAGCTGTGGCCGCATC CGACT ATCG GC GAC GACGT AGG CGACGTCCT TC AC CC

TGCTCCTGCAGCTGAGGATT T G - AAAT TT AGT CG T G --------
TGCAGTAAACAGCGGGCTAT
TCAGC
GAM26044 9334 GCTGATAGTTGGAGCATTTT A AGCA T A AAAAATGA
9 TTTATTTTTTTAATAAAAAT GCTG TAGTTGG TT TTTT TTTTTTTAAT
GAGTTGGGAAAACAAAATAA CGAC GTCAACT AA AAAA AAAAGGGTTG
GATATCAACTGCCAGC C ATAG T C --------
GAM26045 8900 GCTGATATCTGTGAATTAGA T- A- A GA CTCATCT ACAGCGA
1 CAGAGTCCTCATCTGAGGTG GCTGA ATCTGTG ATTAG CA GTC GAGGTG
ACAGCGACACCTTCTATAAA TGGCT TAGACAC TAATT GT CAG TTCCAC
GACATGATTAATCGCACAGA CT GC A A- AAATATC -------
TTCTCGGT
GAM26047 9694 GCTGATGATATGATAAAGCT - - T TAAAGCT A GAA CC T GCACCA
3 CAGCATAGAAGGCCCTCAGG GC TGA TGA ATGA CAGC TA GG CTCAGG CCA
TCCAGCACCATGGCCCTGAG CG ACT GCT TACT GTCG AT CC GAGTCC GGT
CTCCCCATAGGCTGCCTCAT T C C CC----- G ACC TC C ------
CTCGCTCATGC
GAM26049 12866 GCTGATGGGGAGGCTGGAGG A GAG G CG- AG CCGGAC
1 ACGGCAGCCGCCGGACTGGG GCTG TGGG GCT GAGGA GC CCG
CAGATCCTCAAGCAGACCTA CGAC ATCC CGA CTCCT CG GGT
CAGC - AGA A AGA -- ------
GAM26050 9550 GCTGATTAGCAGATATCCAC T- A TATCC TA TATGAA GACT

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5          AAACATAGCTATGAAGTTCT GC  GATT GCAGA    ACAAACA  GC    GTTCT
           GACTGGGATAACCTTGCTGT CG  CTGA CGTTT    TGTTTGT  CG    TAGGG
           TTGTCTATTTTGCAGTCTTG  TT   -    TATC-     -- TTCCAA    ----
           C
GAM26051 20239  GCTGATTGAACTTTATGCCC  TG  GAA     CCC   T  GG  TT  AAGA
1          CTTGGTGTGGTCATTGTAAG GC  ATT  CTTTATGC  TTGG GT  TCA  GT
           AACCTGGAGCCCAAGTATAA CG  TAA  GAAATATG  AACC CG  GGT  CA
           AGAATTGGC          GT  ---      ---   - A-  C- ----
GAM26054 14376  GCTGCAAGTCCGTCCCACTG  G-   CC  CCACTGA    C  CACCACGCAGACCA
5          ACCTTCACTCCACCACGCAG GCT  CAAGT  GTC     CCTTCA TC
           ACCAGATGAAGGAAGGCAAC TGA  GTTCA  CGG     GGAAGT AG
           TTGGAAGT           AG   A-  AA-----     - ----------
GAM26054 5530   GCTGCAATACCCGGGAGATT     ATA -   AGA    GACAAA  GATTG
7          GCTGACAAACTGATTGAGCT GCTGCA  CC CGGG  TTGCT    CT
           CAAGGCAGAGATCTGAGGAG CGACGT  GG GTCT  GACGG    GA
           CTGCAGC              CGA  A   AGA    AACTC- -----
GAM26055 6303   GCTGCACAGCTGGGAGAAAC    CACA    GA  ACAGG    -   AATG  TGG
4          AGGTGTCTTCACAATGCCTG GCTG   GCTGG  GAA    TGTCT TCAC   CC
           GGGAAAGGTGAGAGATAAGG TGAC   CGATC  CTT    ATAGA AGTG   GG
           CTTCACTAGCATACAGT      ATA-    A-  CGGA-    G   GAAA  ---
GAM26055 1043   GCTGCACCTGGAGATGAGAG        ----  GA--  AGA TG  AGGTGTGG
8          TGGAAGGTGTGGTCTGCAAG GCTGCACCT   GGA   TG  G  GA
           CAAGTATTCAAGAAGGTGCA TGACGTGGA   CTT   AC  C  CT
           GT                  AGAA  ATGA  GAA GT  --------
GAM26056 5739   GCTGCAGAGGATGATTGCCG   -     GA-----     CG   CAC    CCCCCCGAGA
4          CCGTGGACACAGACTCCCCC GCTG CAGAGGAT     TTGCCGC  TGGA  AGACT
           CGAGAGGTCTTTTTCCGAGT CGGC GTCTTTTG     AACGGTG  GCCT  TCTGG
           GGCAACTGACATGTTTTCTG   A      TACAGTC     A-   TTT   ----------
           ACGGC
GAM26057 9900   GCTGCAGCATGGGAGGGTAA   C  C   -   T   A    TTG  ATCAA    ATGCATAAG
1          ATATTTTATTGCCAATCAAA GCTG AG ATGG GAGGG AAAT TTTTA  CCA    AAAAT
           AAATATGCATAAGGTTTTAC CGAC TT TATC CTTCC TTTA AGAAT  GGT    TTTTG
           TGGATTTAAGAAATTTCCCT   A -   A   C   A    TTA  CA---   ---------
           TCACTATTTACAGC
GAM26058 19229  GCTGCAGGAAGGTGCTCTCG    AGGAA  TG  T   G   GTCT  A  C  CAGC
4          CACGGGGGCGTCTTGAGGAC GCTGC    GG  CTC CGCAC GGGGC   TG GGA GGG
           GGGCAGCCCCTCCCAGCCCC CGACG    CC  GAG GTGTG CCCCG   AC CCT CCC
           GGTGTGGAGTCCCGAGGCAG    GAG--  CT  -   G   ---- -  -  ----
           C
GAM26058 8982   GCTGCAGGAATACAGGTCTG      GAATACAG    C  ---   CAAGTA
5          GCGATGTGCAAGTACACAGA GCTGCAG      GTCTGG GA  TGTG
           TTCACCAGGCAACAGCATTG CGGCGTT      CGGACC CT  ACAC
           CGGC                 ACGACAA-     A  TAG   ------
GAM26061 18088  GCTGCATGACCCCGAGACGC   G   - C-     C  T  AT-     - AC    CCATCTTA
5          CGTGGCATTTGCAGGCTACG GCT CATGA CC  CGAGACG CG GGC  TTGCAGG CT  GTGTG

           TGTGCCATCTTATACACAGC CGA GTACT GG  GTTTTGT GC CCG  AGCGTCC GA  CACAT
           CCTGCGACCGGCCTCGTTGT   -   T  AC     T  T  GCC     C  --   --------
           TTTGCAGGTTCATGAGC
GAM26067 3390   GCTGCCCCAGTGTATGTCTT    CCCA    G  TG  TC   - TCAT
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5          GCCTTCTCCGCGTCATTGTT GCTGC   GTGTAT TCT  CCT  TCCG CG
           GGAAGAGGAGAGATGCATCG TGACG   TACGTA AGA  GGA  AGGT GT
           AGCAGT              AGC-     G  --  GA   T ----
GAM26067 12761  GCTGCCCCCAGGAGCTCTGC    CCCC-          GC  - CT---  CCT
8          TGCCCTTGCTGGCCCTGCCC GCTG    CAGGAGCTCTGCT  CCT TG    GGC
           TTCCCACAGGTGAGCAGGGC CGAC    GTCCTCGGGACGA  GGA AC    CCG
           TCCTGTCCACCAGC         CACCT          GT  C  CCTTC  ---
GAM26073 4457   GCTGCGAATTCATGGCATCT   TG  ATTC   CATCTA      ACA  GC  AATT
9          ATTGTCCATACAGTAGCGGG GC  CGA   ATGG     TTGTCCAT   GTA  GGG
           AATTTCCATACAGTGGGCAG CG  GCT   TACC     GACGGGTG   CAT  CCT
           GCATTCCCATCTCGTGGC    GT  C---   CTTACG      A--  A-  ----
GAM26074 21460  GCTGCGATCCCACCCTCAGT     ATC  CCCTCAG  -    TTAAACATCT
4          CCAAGGGCTTAAACATCTGC GCTGCG   CCA      TCC AAGGGC
           TTTTCGGAACTGGAAGCGCA CGACGC   GGT      AGG TTTTCG
           GC                 GAA   CA-----  C     ----------
GAM26075 3762   GCTGCGGACTGATTTGAACC    CGG    TT-   CCCCC-- -    A  CTCATGGCAT
7          CCCTGCCCCAAAGTCTCATG GCTG   ACTGA   TGAA      TG CCCCA AGT
           GCATGCTCTGGGGACATCAC CGAC   TGACT   ACTT      AC GGGGT TCG
           TGCTTCATTTTCAGTATCAG    TA-    TTT    CGTCACT  A    C  ----------
           C
GAM26076 1724   GCTGCGGCTGCAGAAGTACC   TG      GAA   -  CT    --  A  GCAA
6          GCCTGCGGAGTAACTGCAAA GC  CGGCTGCA   GTAC CGC  GCGGA  GTA CT
           GATGCTGTCCGTGCGCGTGC TG  GCCGGCGT   CGTG GCG  TGCCT  CGT GA
           TGCGGCCGTGGT         GT      ---   C  --    GT   A  ----
GAM26076 3124   GCTGCGGGACGTTAATGACT        CGTTAAT    AC -     AT  CTGG
8          ACGTGTCCTATGCCTGGGTC GCTGCGGGA      GACT  G TGTCCT  GC
           GGGGACAGCAAGGTCTCCTG CGACGTCCT      CTGG  C ACAGGG  TG
           CAGC                  -------    AA G     GC  ----
GAM26077 12320  GCTGCGTAAGCAATATGACT       A-  AA----   A-   AT   GGAATCA
3          TGATTTCGGAATCAGAACAC GCTGCGTA  GC     TATG  CTTG  TTC
           AAGCACATACTGAAGGCACT CGACGCAT  CG     ATAC  GAAC  AAG
           ACGCAGC                CA  GAAGTC    AC    AC  -------
GAM26080 6197   GCTGCTCGATGACCCGTTTG      --   ACCCGTTTGCCTC    ATAATG
6          CCTCGTGGATAATGCCGCAC GCTGCTC  GATG          GTGG
           ATATTCTCCAACATCGTGAG CGACGAG  CTAC          CGCC
           CAGC                  TG    AACCTCTTATACA   ------
GAM26080 6280   GCTGCTCGCCCCACATGCCC   T        A      A-   CTGTTGTT
7          TCATGGCTGTTGTTCCAGGG GC GCTCGCCCCAC TGCCCTC  TGG
           GGGGCAGTGGGGTGGGCCGC CG CGGGTGGGGTG ACGGGGG  ACC
                        C         -      GG  --------
GAM26080 6393   GCTGCTCGCCCCACATGCCC   T        A      A-   CTGTTGTT
8          TCATGGCTGTTGTTCCAGGG GC GCTCGCCCCAC TGCCCTC  TGG
           GGGGCAGTGGGGTGGGCCGT TG CGGGTGGGGTG ACGGGGG  ACC
                        C         -      GG  --------
GAM26082 9359   GCTGCTCTTCGCCAGCTTCA        C--  AG    GCCAGAACAACACAGAAG
3          GCCAGAACAACACAGAAGTG GCTGCTCTT   GCC  CTTCA
           AAGGGGGCATCGAGAGCAGC CGACGAGAG   CGG  GAAGT
                           CTA   GG    ------------------
GAM26083 20091  GCTGCTGATGCCCGAAGAGG   T   AT   CGA   G     TCTTG   AGAT
6          CGCGGCTCTTGGCCGAGATC GC GCTG  GCC   AGAG CGCGGC    GCCG
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          GGCGCCGTGACTCTGGTCAG CG CGAC  TGG   TCTC GTGCCG    CGGC
          CGC              -   --  ---   A     -----   ----
GAM26084 9736   GCTGCTGCAGCCCGCGGGGT     G  CCCGC   --  CTC   CCTAC
1          CCCTCGGCTCCTACAGCTAC GCTGCT CAG    GGGG  TCC   GGCT
          CGGAGTCCCCACTGGGGCAG CGACGG GTC    CCCC  AGG   TCGA
          C                  G   A----   TG   CCA   -----
GAM26084 21644  GCTGCTGCCGTAATAGCTCA       CGTAAT     TCTTTG  TG-  TTA
6          TTCTTTGCTGTGCCCTTAGG GCTGCTGC     AGCTCAT     CTG   CCC
          GATCCAGGTGAGTTTTGTAG TGATGATG     TTGAGTG     GAC   GGG
          TAGT                TT----      ------  CTA   ---
GAM26084 4185   GCTGCTGCGGTTGCCATTGC    C    TTG---  T-    CT    TGTTCT
7          TTCTTGCCTGTTCTGGCATC GCTG TGCGG     CCA  TGCTT  TGCC
          AGGCACCTGGATTGAGTTGC CGAC ACGTT     GGT  ACGGA  ACGG
          ACAGC              -   GAGTTA  CC    CT   ------
GAM26084 3145   GCTGCTGCTGAAATTGGTGA   G       T   ATGTCAATGTT    TAACCT
8          TGTCAATGTTCGCATAACCT GCT CTGCTGAAAT GGTG         CGCA
          TGTGTCTTCTTCTGGCACCA CGA GATGACTTTA CCAC         GTGT
          TTTCAGTAGAGC        -       -   GGTCTTCTTCT   ------
GAM26084 3482   GCTGCTGCTGAAGCTACACC   T  T  T  A   A-   TCT--    C    G     CTT
9          TCTGGCCGCAGTTGCGCTGG GC GC GC GA GCT  CACC     GGCCG AGTT CGCTGG
          CTTCCGGCGGACTTGGCCTT CG CG TG CT CGA  GTGG     CCGGT TCAG GCGGCC
          TGCGGTGCGAGCTCTGTGCT   T  -  T  -   GC    CGTTT    -    -     ---
          GC
GAM26085 6349   GCTGCTGCTGGAAATGCTGA     T--   G    T  T  CT   AACCCACACAAGC
3          CTTTTAACCCACACAAGCGA GCTGC   GCT GAAA GC GA  TTT
          ATCTCTGCCTTTCGAGCTCT CGACG   CGA CTTT CG CT  AAG
          GCAGC               TCT   G    C  T  CT   -------------
GAM26088 18518  GCTGCTTACCCTTCCCGGAA     TTACC   CCC    CCACAA    TCAATGC
0          CCACAAGATTGTCAATGCCA GCTGC    CTT   GGAA     GATTG
          ATCAAATCTTTCTTGAGTTC CGACG    GAG   TCTT     CTAAC
          GTGCAGC              TGCTT   T--   TCTAAA    -------
GAM26088 21018  GCTGCTTCCCGGGGGGGTCT   T  TTCC         TT   CTTTTTTTTTC
4          GTTGGCCTTTTTTTTTCGCT GC GC    CGGGGGGGTCTG  GGC
          GTTGGGCCCCCCCGCCCGCC CG CG    GCCCCCCCGGGT  TCG
          GC               C  CCC-          TG   -----------
GAM26089 14303  GCTGCTTCTGGGACTCCTGT    G    TG  A-----     TT  -    AA TCTGA
0          TACCCGCAAGTCTGACCGGC GCT CTTC  GG     CTCCTG  AC CCGC  G
          GGTGTCGGGAGCCTGAACCT CGA GGAG  CC     GAGGGC  TG GGCG  C
          GGAGGAGC            -   GT  AAGTCC     --  T    GC -----
GAM26091 20736  GCTGGAAAACGCCGAAATGC   -  AA      AA  C    -------   T    GAAA
8          TTCCCAACTATCTGAAAAGA GCT GGA  ACGCCGA  TG TTCC      CAAC ATCT
          TGTTGTACTTGAGGAACACT CGA CCT  TGTGGCT  AC AAGG      GTTG TAGA
          CGGTGTTCCAAGC         A  --      C-  -   AGTTCAT   -   ----
GAM26093 8986   GCTGGAACTTTTGGACCTGG   T       TG  CCT---    ----    CTGAA
2          GTCATAGGCTGAACCTGTTA GC GGAACTTT  GA     GGGTC    ATAGG
          TGGACCCCCAAATTCTGAGA CG CCTTGAGA  CT     CCCAG    TGTCC
          GTTCCTGC            T       GT  TAAACC    GTAT    -----
GAM26095 8798   GCTGGAATGCCGACATGTGG   TG A-     ACATGTG     CC-   -   TGCTTGATTT
1          CCTTTCCTTGTAGATGCTTG GC  G  ATGCCG      GCCTTT   TTGT AGA
          ATTTTCTCACAACTTGGAGG CG  C  TACGGT      CGGAGG   AACA TCT
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CATCCTCGTGGCATGGCTGG GT GG GCTCCTA TTC C ----------
C
GAM26095 18257 GCTGGACACCAGATCTAAGA G CC - TA- ATT A ATC CATATTTCATTTT
7 ATTGTGACAGGATCTTCTCA GCTG ACA AG ATC AGA GTG CAGG TTCT
TATTTCATTTTAGAACACTT CGAT TGT TC TAG TCT CAT GTTC AAGA
GATACTAGTCTGATGATACT - AC A TAG GAT A AC- ----------
CATGTTAGC
GAM26096 20710 GCTGGACCAGCTCATGGGCA - GA ------- CA -- G C A GAAAC GAG
7 CGGCTCGGGACGGAGACGAA GC TG CCAGC TCATGGG CGGC TC GGA GG GAC CAGACA
GGTC
ACCAGACAGAGGGTCAAGTT CG GC GGTCG AGTACCC GTCG AG TCT CC CTG GTCTGT
CCAG
TACAGATGACCGTGTCTGCA C AG GTCCTAC CC TC G T A AGAAC G--
AGAGTCACCTTCTGGACTGC AGTTTACAGA
TGCCCCCATGACATCCTGGC A
TGGGACGCGC T

GAM26100 1099 GCTGGAGCCAGTGGGCAGTG AG AGT TG G GC-- GA TATCT
2 AGCATGCCCAGGATACCTAT GCTGG CC GGGCAG A CAT CCAG TACC
CTGGTGCTGGACAAATGGTT CGACC GG CCCGTC T GTA GGTC GTGG
GCTGCCCCGGAACCAGC AA C-- GT G AACA -- -----
GAM26101 6208 GCTGGAGGAGAAACCCTGGG GA A - AAGGC - TTGTCTAC
0 AAGGCTCCTGGTTGTCTACC GCTG GGAGAA CC CTGGG TCC TGG
CATGGACCCAGAGGTTCTTT CGAC TTTCTT GG GACCC AGG ACC
GACAGC AG - A ----- T --------
GAM26101 9276 GCTGGAGGAGAAACCCTGGT GA A - TAAG C - TTGTCTAC
1 AAGGCTCCTGGTTGTCTACC GCTG GGAGAA CC CTGG G TCC TGG
CATGGACCCAGAGGTTCTTT CGAC TTTCTT GG GACC C AGG ACC
GACAGC AG - A ---- - T --------
GAM26102 20289 GCTGGAGGCGAGGTGCACGC - - A C CGAG TC ACAGCCCA
1 GAGGCTCTCCACAGCCCAGG GCT GGAG GCG GGTG ACG GC TCC
AAGGCAGACTGTCACCCTGC CGA CCTC CGT CCAC TGT CG AGG
TCTCCGAGC G T C - CAGA GA --------
GAM26102 8671 GCTGGAGGTACTGTCAGAGG - - T TT A--- CATCT
4 TTGAATGCCATCTGCGAGTG GCTGG AGGT AC GTCAGAGG GA TGC
TCTTTCTTTGATGTCACCTA CGGCC TCCA TG TAGTTTCT CT GCG
CCGGC A C - TT GTGA -----
GAM26105 8792 GCTGGATAGTCTGGAGCAGC A G T- GC CTTA T T GGCAGA
7 TTAGTGTGTCTGGGGCAGAC GCTGG TA TC GGA AG GTG GTC GG
CGACCACCTTCTATCTTTGA CGACC GT AG TCT TC CAC CAG CC
GTGCCAGC - G TT A- TTC- - - ------
GAM26110 18317 GCTGGCCAGCTCCTCCGGGG C CTCC AG A T GGT
7 CCTCTAGGAGACAGTGGGGT GCTGGC AGCTC GGGGCCTCT GAG CAG GG
CCTTGGCTTTGGGAGGCTCC CGACTG TCGAG CCTCGGAGG TTC GTT CC
GAGCTGTCAGC - ---- GT G - ---
GAM26112 3505 GCTGGCGATCTTTTTTTTTT T C TTTTTT TTTTTTTTTTTTTT
7 TTTTTTTTTTTTTTTTTTTT GC GGCGAT TT TTTTTTTTT
TTAAAAAAAAATTCCCCGAA CG CCGTTA AG AAAAAAAAA
ATTGCCCGC C A CCCCTT ----------
GAM26116 9582 GCTGGCTGGGCGGGACTGAC G - CG- - GATAC - AGATCC

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7          CGATACCTCATGAAGATCCT GCT GCTG GG   GGACTG ACC    CTCA TGA
           CACTGAGCGAGGTACAGTTC CGA CGGC CC   CTTGAC TGG    GAGT ACT
           ACACCACGGCGAGC       G   A ACA    A  AGC--   C  ------
GAM26117 3895  GCTGGCTTTGGATCTGAACT     TT  GATCTGAACTA    T--   TAAGTGTT
8          AATGGGTTGTCTAAGTGTTG GCTGGC  TG        ATGGG   TGTC
           ACATTTCTCATAATACATTA CGATCG  AC        TACTC   ACAG
           CACATTGCTAGC           TT  ACATTACATAA    TTT   --------
GAM26117 20928  GCTGGCTTTTACAGGGAGGT     TTT  C  GG   TG   GG    TC--    CAATCAAAAC
9          GTCTGGGATTCCTCATTAGC GCTGGC   TA AG  AGG  TCTG  ATTCC    ATTAG
           AATCAAAACTTAATTACTGG CGACCG   AT TC  TCC  AGAC  TAGGG    TAATT
           GATGCAGAGTCCTTACTTTA     CT-  T  AT   TG   G-    TCAT    ----------
           TCGCCAGC
GAM26118 16672  GCTGGCTTTTGTCTTTTTAA     CTT   CTTTT-     TTTCTT    -    -   TC   TTT
0          AAATTTCTTGAATTTGTGGT GCTGG   TTGT     TAAAAA     GAATT TGTGGT TGTG  CAA
GCAAACATTT
           TGTGTCCAATTTGCAAACAT CGATC   AATA     GTTTTT     TTTAG ACACCA ACAT  GTT
CGTTTGTAAA
           TTCCAAAAATGTTTGCTTTG     TAT    CCATAT     TGTAAT    T     T    TC   T--
           CTTACATACCACATGATTTT CCAA
           AATGTTTTTTGTATACCATA
           ATATCTAGC
                      ----
GAM26118 12610  GCTGGGAAAACGTATCTGGT     -   A-  -   -      ----    TCCTAAGAGT
1          TTGGGTCCTAAGAGTCCCAG GCTGG GAA  AC GTA TCTGGTT    TGGG
           TGAGACCAGGTTGCTGTAGT CGACC CTT  TG CGT GGACCAG    ACCC
           TCTCCAGC               T   GA  T   T      AGTG   ----------
GAM26119 9042   GCTGGGAATACAGGCATGCA     -   CA    TGC   A    GC    TTTT
4          CCACCATGCCTAATTTTTTA GCTGGG AATA  GGCA   ACC CCAT  CTAA
           GAGATGGGGTCTTGCTATAT TGACCC TTAT  TCGT   TGG GGTA  GATT
           TGCCCAGT               G    A-    TC-   -    GA    ----
GAM26121 6530   GCTGGGACTTGTCTTTCGGG     -    ----     TT G--    T  TTGT
0          GTTCTTTGTAGGCCCGGGGG GCTG GGACT    TGTCT  C   GGGT CT
           GAGGCATCAAAGTCCACGGT TGGC CCTGA    ACGGA  G   CCCG GA
                           A     AACT     GG GGG    -  ----
GAM26125 9193   GCTGGGCATAGAAAGAAATC       TA     ----       G   -  CCGAAA-   T   AATAGGAA
4          AGAGGCTACACCGAAATCAT GCTGGGCA  GAAAGA    AATCAGAG CTA CA      TCA CTA
           CTAAATAGGAATAGTGAATA CGATTCGT  TTTTCT    TTAGTTTT GAT GT      AGT GAT
           CCTTTGATAGTTTTGATTGC       --     ACCG      -  A  TTCCATA   -   --------
           CATCTTTTTGCTTAGC
GAM26127 9442   GCTGGGCCTGCTCCTCCAGC          TCCT  A     -    CACC-  C  CAGCT
9          TTGGCGAGCACCTGCGCCAG GCTGGGCCTGC    CC GCTTGG CGAG     TG GC
           CTGCTCATTCACCTCGTCCA CGGCCTGGGCG    GG CGGACC GCTC     AC CG
           GGCGGTCGCGGGTCCGGC           CT--  -     T    CACTT  T  -----
GAM26128 14003  GCTGGGCGCTGGCTTCGGCC       --      TCG   TG -   ---   A   - TG    GGGAACTG
4          TGGGCCTGGGACGGGTGGGG GCTGGGC  GCTGGCT   GCC  G GCCT   GGG CGG G  GGGGT

           GTGGGAACTGACCCCTGCGC TGGCCCG  CGACCGA   CGG  C CGGA   TCC GTC C  CCCCA
           TGCCTCAGAGGCTCTGGGCA       AT      ---   GT T    GAC   -   G GT    --------
           GCCAGCTAGCCCGGT
GAM26129 9748   GCTGGGCTCAAAAGGCTCTG       ----------  A       TGGG   TGCT
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2 GGTCGTGCTTGAAAGTGAGC GCTGGGC TC AAAGGCTC TCG
CTTTCGAAGAGATACTCGCC CGACCCG AG TTTCCGAG AGT
CAGC CTCATAGAGA C TGAA ----
GAM26129 14510 GCTGGGCTTGGCTGCTGCAC G T CTG ACCAT - - -- ATC
9 CATGACCCTGGAGGCGATCC GCTGG CT GG CTGC GA CCCTG GAG GCG
GCTACTCGCGGGGCTCCCTG CGACC GA CC GACG CT GGGGC CTC CGC
GCAGATCCTAGACCAGC A T TA- GTCC- C G AT ---
GAM26132 3019 GCTGGGGGACCCATTTTGCA CCC CCATGAGTT T AT TTAAAAAATTACCTC

4 CCATGAGTTTGTGAAAAATC GCTGGGGGA ATTTTGCA TG GAAAA CTGGA
TGGATTAAAAAATTACCTCT CGATCTTCT TAAAACGT AC CTTTT GACTT
TCAGTGTTTTCTCATGCAAA TT- --------- T GT ----------
ATTTTCTTCTAGC
GAM26132 9591 GCTGGGGGACGGGAAGCCCA G AAG CA- A G GAT
6 CCGACTTTGAGGATCTGGAG GCTGG GGACGGG CC CCG CTTT AG
GACGGAGAGGACCTGTTCAC CGACC CTTGTCC GG GGC GGAG TC
CAGC A A-- AGA A G ---
GAM26137 4511 GCTGGTAAGCTCATCCATTA TA- CT -- TAG TG G - TTCCTT
9 GCTGCGTCCTTCAGCTATTC GCTGG AG CATC CAT C C TCCTTCAG CTA
CTTTAGATTGGAGGAAGTGG CGACT TT GTAG GTA G G AGGAGGTT GAT
ATATGAAGATGGATTGATTC TAG AG AA TA- GT A A ------
AGC
GAM26139 9462 GCTGGTCCCAGGTCCGCCAG TG - ---- GC T-- A-- C CAAGG
9 GTTCGAGCCGCCCGGTCAAG GC GTC CCAG GTCC CAGGT CG GCCGCC GGT
GGCCAGGTGGTCACCGTACA CG CAG GGTC CAGG GTCTA GC TGGTGG CCG
TCTGCAGGACGTCGCTGGAG GT A GCTG AC CAT CAC A -----
ACTGGC
GAM26140 3083 GCTGGTCCGGCCGTAGCACC G - TAGCACCT--- C CGCC
1 TCCGCGCCGTCGCCATGTCG GCTG TCCGG CCG CCGCG CGT
CGGTTTTTCACCACCGGTTC CGAC AGGCT GGC GGCGC GTA
GGACAGC - T CACCACTTTTT T ----
GAM26140 18716 GCTGGTCGCCGCCGGCAGCT - C C A T CAG- TT GACTGCTATA
3 ACCAGAGATTCACTGACTGC GCTG GTCG CGC GGC GC AC AGA CACT
TATAAGTGCTTCTACCAGTT CGAC CAGT GCG CCG CG TG TCT GTGA
GCAGCCTGCGATGACACAGC A A T A T ACCA TC ----------
GAM26142 8580 GCTGGTGACGGCGGCGGGCA AC C C C - CT- GT AC AAA
0 CTGCTGAGTCACGTGAAACA GCTGGTG GG GG GGG AC TG GA C GTG
CAGGTTCCCCCACGTTCCCC CGGCCGC CC CC CCC TG AC CT G CAC
CCACCCCCGCCGGC CC A C T C CCC TG A- ---
GAM26143 19355 GCTGGTGCCTGCCTTGCTGC TG CT CTT T T-- A TG AAT
3 TGTGAGTGCCAATGGTGCCC GCTGG C GC GC GC GTG G CC
ACCTTGCTGCTGTGAGTGCC TGACC G TG CG CG CAC C GG
AGT GT AG T-- T TTC C GT ---
GAM26144 1202 GCTGGTGGGCGCGTACCCCA T ----- - A - AA ACAACGAGG
8 ACTACAACGAGGAGGAGGAG GC GGTGG GCG CGT CC CC CT
GAGCGCCGCTACTACCGCCG CG CCGCC CGC GCG GG GG GA
C - ATCAT C A A AG ---------
GAM26145 2903 GCTGGTGGTGAACTTCGAGA TG AC- AG GACA--- TGAAG
0 GCGACAAGCTGAAGGCTGTG GC GTGGTGA TTCG AGC AGC
AAGGGCTTCCGGAATGTCAT CG TACTACT AGGC TCG TCG

CATTGGC GT GTA CT GGAAGTG -----
GAM26145 21153 GCTGGTGTGTGTTTCCTTTC - G C--- T ---- G TCCAC
6 AGCGTCAAGGGTTCCACACT GCT GGTGT TGTTT CTT CAGCG TCAA GGT
GTTGGGAGTCGCTGCAAGAA CGA TCGCG ACAGG GAA GTCGC GGTT TCA
TCGGACAGGCGCTGAGC G G CTAA C TGAG G -----
GAM26148 3519 GCTGTAAAGCATGCTGGGCC AAG G CCACATCT TTTGAT
8 CACATCTGCTTTGATGCTTC GCTGTA CAT CTGGGC GC
TCAAGCCCAGGATGGTGCAG CGACGT GTA GACCCG CG
C G-- G AACTCTT- ------
GAM26151 5774 GCTGTAGCATAGGTCCTGCT G A CCTGC- G T AAA CA ACATAC
8 CTGTGGATGGGGAAAGCCAG GCT TAGCAT GGT TCT TGGA GGGG GC GGGGGC
GGGGCACATACGTCCCCATG CGG GTCGTG TCG AGA ACCT CCCC CG CCCCTG
CCGCCCCCTCCAAAGACTCC A G CTCCTC A C GC- TA ------
TCGCTGGTGCTGAGGC
GAM26152 8314 GCTGTAGGGTAACTTTTGAA A--- TTT - TATATTACCTGGT
4 GTAGATATATTACCTGGTTC GCTGTAGGGT ACT GA AGTAGA
TGCTATCCTTAGTCATAACT TGGCGTCTCA TGA CT TCGTCT
CTGCGGT ATAC TTC A ----------
GAM26153 12873 GCTGTAGTGTTGCTGGTGAG GTA- T GAG CTT TATG
2 AGTGTCTTTTAGTATGCTAA GCT GTGT GCTGGT AGTGT TTAG
TACATTATAATTAGCACATA CGA TACA CGATTA TTACA AATC
ATAAGC ATAA - ATA T-- ----
GAM26153 8199 GCTGTATATAGGGGTCAATG ATAT- - AAT GCTGC G GA AAC G GAA
6 TGATGCTGCTGGAGACGAGA GCTGT AGGG GTC GTGAT TG AGAC GAATA TG ACTA
ATAAACTGGACTAGAATAGT CGATA TCCC TAG TACTA AT TCTG TTTAT AC TGAT
GCATTGTATTTAGTCTGTAT ATTCC G GG- GTT-- G A- GTT G ---
TGATCATGGGATGCCCTCCT
TAATAGC
GAM26153 9700 GCTGTATATGGTATCCTGAA ---- CCTG C- CCCTTCAAGA
7 GCACCTGCCCTTCAAGACAG GCTGTATA TGGTAT AAGCA CTG
AATGCTTGTACCACATTTAT CGACGTAT ACCATG TTCGT GAC
GCAGC TTAC ---- AA ----------
GAM26154 9727 GCTGTATCACCTTGGATCAG A GAT- GT --- ---- A GG TCCGG
1 TCAGGTAACCTCCCGCGAAT GCTGT TCACCTTG CA CAGGT AACCT CCCGCG ATCT TTGCT

CTGGTTGCTTCCGGGGCAGG CGACG GGTGGGAC GT GTCCG TTGGA GGGCGC TAGG
GACGG
GGATCCGCGGGCTGCAGGTT A GGCC TG AGT CGTC C G- -----
TGAGCCTGGTTGCCGGCAGG
GTGGAGCAGC
GAM26156 12960 GCTGTCAATGGAACGCAAAA T-- TG C AAAA C CTTTT
6 AAGACCAGAATCTTTTGTTT GCTG CAA GAA GC AAGA CAGAAT
TGATTTTCACAGCTTTTTGT CGAC GTT TTT CG TTTT GTTTTG
TGTTTCAGC TTT GT T ACAC A -----
GAM26158 14546 GCTGTCATATAATTGTCTCT - TAATTGTCTC TA- AGGAAAA
1 CCCCTAGATATTAGGAAAAA GCTGT CATA TCCCC GATATT
ATGTCACTGGGGATGTGAAC CGACA GTGT AGGGG CTGTAA
AGC A ---------- TCA -------
GAM26160 9383 GCTGTCCTGACTTTCTGCTG T GACTTTCT GA CACT ACTGG
2 AGCTGGCACTGCTACTGGGG GC GTCCT GCT GCTGG GCT

CTTCCGGTCTGGCTTCCAAA TG CAGGA CGG TGGCC CGG
AGGACTGT T AAACCTT- TC TT-- -----
GAM26160 3873 GCTGTCGGGGATTCTGCTGG G TTCT GCA-- CACCCTGACCGACA
8 GCAATGGCACCCTGACCGAC GCTGTCGG GA GCTGG ATGG
ACCATCCTCACCAGTCTCTT CGACAGCC CT TGACC TACC
CACCGACAGC A TCTC ACTCC ----------
GAM26160 18607 GCTGTCGGGGATTCTGCTGG --- TT C CAA-- ACCCTGCCC
9 GCAATGGCACCCTGCCCGCC GCTGTCGG GGA CTG TGGG TGGC
ACCATCCTCACCAGTCTCTT CGACAGCC TCT GAC ACTC ACCG
CACCGACAGC ACT CT C CTACC ---------
GAM26162 3005 GCTGTCTGATTTCAAACTCT T - AAACTCT AA- - TGACTCT
2 ACGAAAGCGAACTGACTCTG GCTGTC GATTT C ACG AGC GAAC
TTCAGCTCCCCGTTCTCCAC TGACAG CTAGA G TGC TCG CTTG
GAAGATCGACAGT - A CACCTCT CCC A -------
GAM26163 8297 GCTGTGAAACTAGATTTTCC - A TTCCTA GATCTTGA
9 TATAAATGATCTTGAATTTA GCTGTGAA ACT GATT TAAAT
GTTTACAATCAAGTATTTAT TGATATTT TGA CTAA ATTTA
AGT A A CATTTG --------
GAM26164 18210 GCTGTGAAACTGGAGGTGAA A G GAA AA TA GGTC
0 GCCAAGTTTATCAGGTCTGA GCTGTG AACT GAGGT GCC GTT TCA
GGCAGGGCGACCTCAAGTTA TGGTAC TTGA CTCCA CGG CGG AGT
CATGGT A A G-- GA -- ----
GAM26164 1139 GCTGTGAAGACCAAGAACAT C-- - TGAATAT GTGGATGA
7 TCGTGAATATGTGCGGTGGA GCTGTGAAGA CAAGAACA TTCG GTGCG
TGATGTACTGGATTGTTTTT CGGTACTTCT GTTTTTGT AGGT CATGT
GCACTCTTCATGGC CAC T ------- --------
GAM26165 20633 GCTGTGACTTGAACCAGCCA GAC ACCA GGGC CCCTACCCTT
9 GGGCCCTTTCCCCTACCCTT GCTGT TTGA GCCA CCTTTC
GGAAGGAAGATGGTGATCAG CGACA GACT TGGT GGAAGG
ACAGC --- AG-- AGAA ----------
GAM26168 6381 GCTGTGCAAGCCTTGGCAAG G C - GCCA- ACCAGCAACA
3 CCAGCACCAGCAACAGCCAT GCT TG AAG CCTTGGCAA GC
CATTGCCAAGGACTTCAAGG CGG AC TTC GGAACCGTT CG
C A - A ACTAC ----------
GAM26169 9001 GCTGTGCCACCATCTCCGTG --- ATC - TCTCT AAG - CAGTCC
0 ATCTCTGCCAAAGCGGCTCG GCTGTGC CACC TCCGT GA GCCA CGGCT CGG
GCAGTCCCTGAAGTCGGCGT CGACACG GTGG GGGCG CT CGGT GCTGA GTC
GGCTCGGCGGGTGGGTGTTT TTT GT- G ----- GCG A ------
GCACAGC
GAM26169 18737 GCTGTGCCCCCAAACTCTAC TG C- A-- TACT CT AGAAT
3 TGCACCTTCCAGAATGGGCT GCTG CCC CA ACTC GCAC TCC
GTGCTATGAGTACATGCAGG CGGT GGG GT TGAG CGTG GGG
GTGTGGC GT AC ACA TAT- TC -----
GAM26169 9107 GCTGTGCCCGCTCCCGTTCC GC GCTCCC T C TG T T G GAAG
4 AGCTCTGCCTGGGTGCTGCG GCTGT CC GT CCAG TC CC GGG GCT CGGGA
GGAGAAGTCCCGGAGCTTCT CGACG GG CG GGTC AG GG TCT CGA GCCCT
GGTGGATCTGGGCCCAGGAT TA ACC--- - T GT - T G ----
GCAGC
GAM26171 6679 GCTGTGCTTGCTGCTCTGTG TG T T TCTGT TG C GCTTGG
0 TGTTGCGCCCGTGCTTGGAT GCTG CT GC GC G TTGCGC CGT

GTGTGCGATGTTGCTGTTGC TGGC GG CG TG T AGCGTG GTA
TGGTGCGGT GT T T TCGT- GT T ------
GAM26173 2694 GCTGTGGGCAGGTCATCCCT T - ---- C- GAACGGGA
9 GAGCTGAACGGGAAGCTCAC GC GTGGG CA GGTCATCC TGAGCT
TGGATGGCTTCCGTGTCCCA CG CACCC GT TCGGTAGG ACTCGA
CTGC T T GCCT TC --------
GAM26174 18169 GCTGTGGGGCTGAACAGGGC GG- AA GGCAGG AGG AGAA
4 AGGGATTTCCAGGTATCAGA GCTGT GGCTG CAG GATTTCC TATC
AGGTAAAAGGAGGTCAGCTG CGACG CCGAC GTC CTGGAGG ATGG
AGCAGCCACAGCAGC ACA GA GA---- AAA ----
GAM26176 18940 GCTGTGTAGACCCTCCCCCC GTGTAG T C CT A AAA- CATC
0 TCCAAAAAAAAATCTCATCG GCT ACCC CC CC CCAA AAA TCT
GACTGCTTTCTTGGTGGCGG CGA TGGG GG GG GGTT TTT AGG
TGGGTAAAGC AA---- T C T- C CGTC ----
GAM26178 3846 GCTGTGTGCTATCGGATAAA - A G--- T C GAGCTACA
7 ATCTCTAAGAGCTACATTAC GCTGTG TGCT TC GA AAAATCT TAA
AGATTTTTTCAACAGGAAGT TGACAC ATGA GG CT TTTTAGA ATT
ATCACAGT T A ACAA T C --------
GAM26181 18713 GCTGTTACTCTTTTGTACTT TACTCT T- T TTTCTTTTATTTTCTTTT
8 TGTCTTTTTCTTTTATTTTC GCTGT TTTGTAC TTG CTT
TTTTGAGCGATTGTGCGAAC CGATA AAGCGTG AGC GAG
ATAGCATAGC CGATAC TT - ----------
GAM26184 770 GCTGTTGAAGAGGCATTCGT C AGAG TT TACCAGT A TGATG
7 ACCAGTTATTAAACTCTGTT G TGTTGA GCA CG TATTAA CTCTGTTT
TTGATGGGATAGAGATTGAT C ACGATT CGT GT ATAGTT GAGATAGG
ATTTTGTTTGCAAGATTAGC - AGAA TT TTT---- A -----
AC
GAM26187 19883 GCTGTTTATACTTGAGACCA --- AA---- TCAATGTGATTCTTCT
9 ACTTTTCAATGTGATTCTTC GCTGTTTATA CTTGAGACC CTTT
TAAAGGCACTGGGTTTCAAG CGGCAGGTAT GAACTTTGG GAAA
AACTATGGACGGC CAA GTCACG ----------
GAM26196 18830 GCTTAATATAGTGGTGAGAA ATA TG GAAGTGTATGG G GAGGGGGGGGAG

3 GTGTATGGTGTTTAACGGAG GCTTAAT G GTGA T TTTAACG
GGGGGGGAGTGTTAAGGGTT TGAGTTG T TATT G GAATTGT
ATTGTGGGTTGAGT GG- GT ---------- G ----------
GAM26198 8167 GCTTACCAGGAAGCATTTGA T- AGCAT AAATTA AAAGAACATGCAG
5 AATTAGTAAGAAAGAACATG GCT ACCAGGA TTG GTAAG
CAGCTTACAACCAATTCGTC CGG TGGTTCT AAC CATTC
TTGGTCTGGC TC GCTT- CAA--- ----------
GAM26198 5997 GCTTACCATCTAAACTAAAT C AA---- AATTA- T TAATGTCC
6 TAGGCAAATAGTAATGTCCC GCTTA CATCT ACTA GGCAAA AG
TTTTGCCAAAACGTGGTGGT CGGGT GTAGA TGGT CCGTTT TC
TAGAGATGATGGGC A GATTGG GCAAAA - --------
GAM26199 9879 GCTTACTAAAAGGGGGAAAA T AAAGGG A AG-- GGATTA
6 CGTAGGCTTGGATTAAGGCG GCT ACTA GGAAA CGT GCTT
ACAGCGATTTCTAGGATAGT TGA TGAT TCTTT GCG CGGA
CAGT C AGGA-- A ACAG ------
GAM26202 18180 GCTTAGATGGGAGAAAAATA TAGA - AAAATATTTTG GGCACA
0 TTTTGTCCCCGGCACAGGGG GCT TGG GAGA TCCCC

AAACATAAAATCTCACCAGC CGA ACC CTCT AGGGG
AGC CG-- A AAAATACAA-- ------
GAM26208 3769 GCTTATGGGATACAGCTGGA T CAG-------- GACAAGAAGATTATGA
5 CAAGAAGATTATGACAGATT GCT ATGGGATA CTG
ACGCCCCCTATCCTATCAGC CGA TATCCTAT GAC
C CCCCCGCATTA ----------
GAM26208 14715 GCTTATGGTAGTGGGTGAAT A T TGG TG GATT ----- C CATTAA
7 CTGGATTGGGAAAGTCGACA GCTT TGG AG G AATCTG GGGAA AGT GA
TTAATCAACTCATTATTCCT TGAG ACC TC T TTAGAC TCCTT TCA CT
CACAGATTTGTATTCTCCAG - - TTA GT AC-- ATTAC A ------
AGT
GAM26210 5480 GCTTATTTTCTAACTTAAAA TT AC- TTCA GGAA TTAAAT
6 TTCACCTGGAACTTTAAATG GCTTAT TCTA TTAAAA CCT CT
GGAAAGGATTCTTTTAATTG CGGATA AGGT AATTTT GGA GG
TGGATTATAGGC TT GTT CTTA AAG- ------
GAM26211 14680 GCTTCAACTTTGACTTTCTG A- T TG CAGA GTGA ACA G GCAC
9 CCAGAGGAGAGTGAGCACAA GCTTCA CTT GACTTTC C GGAGA GC ATATCT GG
TATCTGGGGCACCTAAGATG CGGAGT GGA TTGGAGG G CCTTT CG TGTAGA TC
TAGCATGTTTCCGAAAGTGG CA T GT AAAG GTA- A-- A ----
GAGGTTTAGGACTGAGGC
GAM26213 14470 GCTTCAATTTTCTCATTTGT C CA----- TTTA GACTTA
0 AATTTAGGGGACTTACCCAT GCTT AATTTTCT TTTGTAA GGG
TTTTATAGGATTTACTAGGA TGAA TTAAAGGA GGATATT CCC
AATTAAGT - TCATTTA TTTA ------
GAM26216 16501 GCTTCAGGGAAGGGGCGGGC T GAA - C TC C TCT ATC
8 GTGTCGCCGCCTCTGGCATC GCT CAGG GGGGCG GG GTG GC GCC GGC
GCCTCCGGTTGCCTTACACC TGA GTCC TTCCGC CC CAT CG TGG CCG
ACGCCTTCACCTGCAGT C AC- A A TC T CCT ---
GAM26217 6500 GCTTCAGTTTCCTCATCTAT C TT T AG- AGATAATATT TTAAT
9 AAAGTGAAGATAATATTCCT GCTT AG TCCTCA CTATAA TGA CC
TAATGGTCAGGGTTATAGTG TGAA TC AGGAGT GATATT ACT GG
AGGACTAAGT - -- - GGG ---------- -----
GAM26222 8675 GCTTCCATGAGTCACATGCT -- - -- CC A- TCCTCACAACAG
7 TCCCTTATGGGTCCTCACAA GCTTCCATGA GT CACAT GCTT CTT TGGG
CAGTCCAACGAGTTAGGTTT CGAAGGTATT CA GTGTG TGGA GAG ACCT
GTGTGTACGGTTATGGAAGC GG T TT TT CA ----------
GAM26223 20555 GCTTCCCACACTTCTGACTC CCA-- ----- CGTTCCT
4 GGACGTTCCTTCCGAGTGTC GCTTC CACTTCTG ACTCGGA
ACTAGAGGTGGACGTGAAGC CGAAG GTGGAGAT TGAGCCT
TGCAG CACTG -------
GAM26223 5693 GCTTCCCACTGGCACCCTGA ACT- A AAACCT C --- - CAGC
9 AACCTGCCCAGGCTGGGCGC GCTTCCC GGC CCCTG GCC AGGCT GGGCG C
CAGCGTCGTCCACAGGCCTT CGAAGGG CCG GGGGC CGG TCCGG CCTGC G
GGCCAGCGGGGGCCCTCAGG ACTC - GAC--- T ACA T ----
GAAGC
GAM26224 4449 GCTTCCCCACACTCAAGTTC - ACAC--- GTT T CCAGTGCCGA
5 TTTCCTGCCAGTGCCGACAG GC TTCCCC TCAA CT TCCTG
GACGGTCATTGATTACAACG CG AAGGGG AGTT GG AGGAC
GGGAACGC C CAACATT ACT C ----------
GAM26227 20890 GCTTCCTCAGTTCTTTCCAT CAG CCATCCTCC AAAGGCAAAACAC

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7          CCTCCTTCTAAAGGCAAAAC GCTTCCT  TTCTTT       TTCT
           ACAGAACAACCACCAAAAGA CGAAGGG  AAGAAA       AAGA
           AAAAGGGAAGC             AAA    ACCACCAAC  ----------
GAM26230 8909  GCTTCCTTAGCTTACCAAGT      -   T    TATTC--    AAATTC
2          ATTCACAAGGAAATTCTCTT GCTTCCT TAGCT ACCAAG     ACAAGG
           GTACCTCTTTTTGGTTGGCT CGAAGGG ATCGG TGGTTT     TGTTCT
           AGGGGAAGC               G   T    TTCTCCA     ------
GAM26231 9375  GCTTCGATGAGTACTGGACC    C--      AC  ACCT   A  C  ATCACCG
7          TTGATAGGCGGCATCACCGG GCTT  GATGAGT  TGG   TGAT GG GGC
           CCCCATCGCCAAACTCATCC CGAG  CTACTCA  ACC   GCTA CC CCG
           ATGAGC              TAC     A-  ----  - -  -------
GAM26232 738   GCTTCGCTTTATGACTCACC     CTTTAT   - A-   AT   TT   TACTC
4          TTATTTTGTTTTTCCGTACT GCTTCG    GACT C  CCTT  TTTGT  TTCCG
           CTGGGACTACAGACCAAGGA TGAAGT    TTGA G  GGAA  AGACA  AGGGT
           GGAAGTTTCTATTGAAGT      TATCT-   A GA   CC    TC    -----
GAM26235 16761  GCTTCTCCAGGTTAGGGTGA    C  A  TAG-  GA     T  GAT
3          GCCGCCGTCTGGATTAGTGG GCTT TCC GGT   GGT  GCCGCCG CTG
           TGGCGGGCCACACACCAGGA CGAG AGG CCA   CCG  CGGTGGT GAT
           TGAGC               T  A  CACA  GG     -  ---
GAM26238 974   GCTTCTGCCGAGGTGTCCCT   ----    GA  T  CCT   CAAGATTC
8          GATGCCAAGATTCGCATTTT GCT   TCTGCC  GG GTC  GATGC
           TGACCTGGGGCGGAAAAAGG CGG   AGGCGG  TC CAG  TTACG
           C                 AAAA    GG  -  TTT   --------
GAM26239 9740  GCTTCTGGCGCTGCTGGACT   T-  G-     G   --   C-   --- C---    CCCCTTCTTCTCCTC
6          GTGGCCCGCAGCCTGAGCAC GCT  CTG  CGCTGCTG ACTG  TGGC  CGCA  GC   TGAGCA
           CCCTTCTTCTCCTCCCTCTG CGA  GAC  GCGACGAC TGAC  ACCG  GTGT  TG   ACTCGT

           CTCATATTGTCTTTGTGCTG   CC  AG     -  CT   TC   TTC  TTAT    ----------
           CCATCCAGTCAGCAGCGGAC CCTC
           AGCCAGC

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GAM26240 8108  GCTTCTGGGCCAGTCCCCAG     TG GCCA   CCA    -  GAGTGTGT
1          CCTGTCATGAGTGTGTGTGT GCTTC  G   GTCC   GCCTGT CAT
           GCGGGCATGGATGTGACTGG CGAGG  C   TAGG   CGGGCG GTG
           GAGC                GT AGTG   TA-    T  --------
GAM26245 20381  GCTTGAACCAGAGTCGTGGT    GAAC  A   T  AAATACA  TACCAT
6          AAATACAGCGTACCATCGCA GCTT   CAG GTCG GGT     GCG
           GCGCAAACTTGACCTGCAAA CGAA   GTC CAGT TCA     CGC
           GC                 AC--  -  -  AACGCGA  ------
GAM26247 19361  GCTTGAACCCGGGAGGCGAG    A-    GG  CGA  T-     A  -  AGAT
4          GTTGCAGTGAGCCGAGATTG GCTTG  ACCCG  AGG   GG  TGCAGTG GC CG
           TGCCACTGCACTCCACCCTG CGAGC  TGGGT  TCC   CC  ACGTCAC CG GT
           GTGGGTACCGAGC          CA    GG   CA-  TC     -  T  ----
GAM26253 9142  GCTTGAGGTTTATTTATAAA  TT  -  TTAT-  T   TA  A  TA  CTTAC
9          GTACAAGGTACACTTACTGG GC  GAG GT    TTA AAAG  CA GG  CA
           GCCTGGCCTTTTTAATTTTT CG  TTC CA    AAT TTTC  GT CC  GT
           ACTCTTTTGC          TT  T  TTTTT  T   CG  -  GG  -----
GAM26255 19974  GCTTGATGACAGACAGTTTC     TG   A  TTTCCC  CC    C  CT    TCTG
0          CCTCTCCATTACTCTCCTGG GCTTGA  ACAG CAG    TCT  ATTACT TC  GGGAAT
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GAATTCTGATTCTCTGACGG TGAACT TGTC GTC AGA TGGTGG AG CTCTTA
TGGTATAGACCTCTCCTGGC -- G CTCTCC TA C T- ----
TGTTCAAGT
GAM26255 3758 GCTTGATGCTTGGCTGTCAG T A G AGAAGAC ACGCAC
2 AAGACATGAATTACGCACGG GC TG TGCTTG CTGTC ATGAATT
TTCATCACGGCAGCGAGCGC CG AC GCGAGC GACGG TACTTGG
ACGC C - - CAC---- ------
GAM26255 3011 GCTTGATTTGCTTGGTGACC G - GAATTAC CTAGT
9 GAATTACTAGTGACTAGTTT GCTTGATTT CTTGG TGACC TAGTGA
ACTAACTAGGTCATTCAAGG TGAACTGAA GAACT ACTGG ATCATT
AAGTCAAGT G T ATCA--- -----
GAM26256 3391 GCTTGATTTTTATTCCTAAT A-- ATGA--- GGAT
0 GAAATGGGGATCCATTGAAG GCTTGATTTTT TTCCTA AATGG
GAATAGGAAAAGAGGAGTCA TGGACTGAGGA AAGGAT TTACC
GGT GAA AAGGAAG ----
GAM26256 1050 GCTTGCACGCAGAGGCGGGC T G GC AGAC T C C AATC
5 GGCAGACGGTGCCCGGCGGA GCT GCAC CAGAG GGGCGGC GG GC CGG GG
ATCTCCTGAGCTCCGCCGCC CGA CGTG GTCTC CCCGCCG CC CG GTC CT
CAGCTCTGGTGCCAGC C - GA ---- T A - ----
GAM26256 19858 GCTTGCACTGGTTGGCCAGG G TTG G - CTG G T TAAAG
6 TCCTCCATCCTGTTGGATGG GCTT CACTGG GCCA GTCC TCCATC TT GA GG
TAAAGCCTCGGGATTGATGG CGGA GTGACC CGGT CAGG AGGTAG GG CT CC
ACGGACATGGCCCAGTGGAG G --- A C TTA G - -----
GC
GAM26257 20262 GCTTGCCATCCTGCAGTAGT TC-- G A AAT TGAA AATAA
6 ATAAATCATGAATAAAAAAT GCTTGCCA CT CAGT GTATA CA TAAAA
AATTTTGCTGTTGTAGTATA TGGACGGT GA GTTA CATAT GT GTTTT
CATTGGAGAAACTGGCAGGT CAAA G - GAT TGTC -----
GAM26258 19881 GCTTGCGCATTCCCAAGTCA TG AT- CAAG AGAT TGTACAC
8 GATGTCGTGTACACCGATTG GCT CGC TCC TC GTCG
GAAACAGGATAAGTGTGAGC CGA GTG AGG AG TAGC
GT AAT ACAA GT-- -------
GAM26260 988 GCTTGCTCTAGTAGCCGGTC TT AG TCT AA TCA
3 TGCAGAAGGAACTGTCATAG GC GCTCTAGT CCGG GCAG GGAACTG
TTTCACTGCCCGGAGGTTGG CG TGAGGTTG GGCC CGTC CTTTGAT
AGTGC -- GA --- A- ---
GAM26263 20711 GCTTGGAGCCTCCCCCAGAG T A CCCC A TG C GA C- CCC ACCCCCGC
0 GTGTGGCAGGTGCTGAAGAC GC TGG GCCTC AG GG TGG AGGTGCT AGAC CAC GGAG

CCACCCCGGAGACCCCCGCT TG ACC CGGAG TC CC ATC TCTACGG TCTG GTG CCTT
TCCAGTGCAGTCTCTGGCAT C A TA-- - CT - TC AC A-- --------
CTCTATCCCCTATGAGGCAC
CACGT
GAM26264 21312 GCTTGGCAGCAAGGTGCCTT CA AA- TG TTA A TT - GG AAG
4 AGCTAAGCTTCCTCTCAACC GCTTGG GC GG CC GCTA GC CC TCTCAACCCT TCAGG
CTGGTCAGGAAGCCTGGGAG CGAACT TG CC GG CGAT CG GG GGGGTTGGGA GGTCC

GGTTGGGGTGGCTGCATAGC TC GGG CA --- A TC T G- ---
GGACCCGGGGTCTTCAAGC
GAM26264 20793 GCTTGGCATGACCCTGACAG - AT CCC AG TA ATA GCAA

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6           GGTAGCATTCATACTGTGCA GCTT GGC  GA   TGAC  GG  GCATTC   CTGT
            AACAGAGAGTGTCGCCAGTC CGAA CCG  CT   GCTG  CC  TGTGAG   GACA
            GCATCCGCCGAAGC         G  C-  AC-    A-  GC     A--    ----
GAM26264 8346   GCTTGGCCAAGTATGCAGAC   T   AAGTAT   G    -   -   ACCTCC
9           CCTGTGGCTGACCTCCTAGA GCT GGCC      GCA ACCCT GTGG CTG
            CCGCTGGGGTGTGTTCCGGG CGG CCGG      TGT TGGGG CGCC GAT
            CCCGGC              C    GCCT--   G    T    A   ------
GAM26270 800    GCTTGGTTTTAGGGATTGAG    TG TTT     TT   A   T      AGGTT    CCTCAA
4           AACTTGCCTTGCAGGTTTCC GCT  G   TAGGGA  GAG ACT GCCTTGC    TCCTT
            TTCCTCAAAAGGAGCAGGGC TGA  T   GTCCCT  TTC TGA CGGGACG    AGGAA
            AGTCCTTTCCCTGTTGAGT    GT ---     --   C   -      -----    ------
GAM26277 1166   GCTTTAAATGATCCTGCTAA      A   TC   - AA   CTAC    TT    CTGCT
2           CTACTACATATTTGTTCTCT GCTTTA ATGA  CTG CT  CTA    ATAT  GTTCT
            GCTAGGATTATATTTTTTGG CGAAGT TACT  GAC GA  GGT    TATA  TAGGA
            AAAGTCAGAGTCATATGAAG      A    GA   T  AA   TTTT    T-    -----
            C
GAM26277 18957  GCTTTAAATTTTTGTACTTT  CT    AT     --     CT     TTCT
3           GCTGAAAATTCTTTTTCCCA G  TTAA  TTTTGT  ACTTTG  GAAAA
            GGGTCTATAAAACATTAATT C  AATT  AAAATA  TGGGAC  CTTTT
            C                TT   AC     TC     C-     ----
GAM26283 3620   GCTTTATGGGCATCTCCCCA   --        T        G-   TCA    CTTCTTTGCCAT
2           AGGGAAGGTCAGCACCTTCT GCT  TTATGGGCA CTCCCCAAGG  AAGG   GCAC
            TTGCCATGTGCCCTTGACTT CGG  AGTACCCGT GGGGGGTTTC  TTCC   CGTG
            TGGGGGGTTGCCCATGATGG   GT        T         AG    ---    ------------
            GC
GAM26284 8359   GCTTTATTTTCTTACTTCTA      T   C       AC      ATT   AAAAC
4           CTTTTCTATTTAAAAAACTT GCTTTA TTT TTACTTCT  TTTTCT   TAA
            GTAAAGAAAAAAGAAGTAAA TGAAAT AGA AATGAAGA  AAAAGA   GTT
            AGACTAAAGT              C  A       A-      AAT   -----
GAM26285 8551   GCTTTCAGAAGCTTGTCCCT    TT   AA   -      - -   GCCCACAGTGA
8           GGCTGCCCACAGTGAAGCAC GCT  CAG  GCT TGTCCCT G GCT
            GAGGGACAGAGCGACTGCAG CGA  GTC  CGA ACAGGGA C CGA
            C                 C-   AG   G      G A   -----------
GAM26293 18986  GCTTTCTTTAGGATCTCTCT    TC    GA   C  -   CACT    AC   G   ATTTCAAA
3           TGCACTGTCCAACTCAGAGA GCTT  TTTAG  TCT TC TTG    GTCCA  TCA AGA
            ATTTCAAATCTTGATGGATT CGGA  AAATC  AGG AG AAC    TAGGT  AGT TCT
            CCAATGATGGAGCTAAATCA    CT    G-   T  T   CT--    --   -   --------
            GGC
GAM26298 18700  GCTTTGCTTTATAGTTTTAT       TTTATA       A        TGTT   TTTGCAT
0           TAATGTGTTTGTGTTGGCTT GCTTTGC      GTTTTATT ATGTGTTTG    GGC
            TGCATGTTTTCAAATATATG TGAGACG      TAAAGTAA TATATAAAC    TTG
            AATGAAATCATGCAGAGT         TAC---       G        TT--   -------
GAM26304 14554  GCTTTTAACTTGGACTAGTG     TAAC     T    AA   C-    TGCAATAAAC
9           TAACTCCTTCATGCAATAAA GCTTT    TTGGAC AGTGT  CTC  TTCA
            CTGAAAAGAGCCATGCTGTC TGAAG    GATCTG TCGTA  GAG  AAGT
            TAGTCTTGAAGT           TTCT     -    CC   AA   ----------
GAM26313 8430   GCTTTTGGGTAGGACCCCAC   TTT  -    G    CACGATTTAG    A   TTATCAT
1           GATTTAGGGTAACTGTTATC GC   TG GGTAG ACCC         GGTA CTG
            ATCAGCTGCCATTTCTGATA TG   AC CCATC TGGG         CCGT GAC
            GGGTCTACCACATCTGT     TCT  A    -   ATAGTCTTTA    C   -------
```

GAM26314 19181 GCTTTTTAAAGGATAGTTCT TTAA - C TATCAA TATTT
3 CTCTGGTTATCAAGCATATT GCTTT AGGATA GTT TCTCTGGT GCA
TTGCCATCAGGGAAACATAT CGAAA TTTTAT CAA AGGGACTA CGT
TTTAAAGC ---- A - C----- -----
GAM26320 20241 GGAAAAAACTTAATCCAATA AA TA --- T A AG C GA AAA TGCAA
0 TACCAGTGACTTTGAGTCTT GGAA AACT ATC CAA AT CC TGA TTT GTCTT TGT
AAATGTTGCAAGCAAAGGAT CTTT TTGG TAG GTT TA GG ACT AAA TAGGA ACG
AAAAATTCAAGGGAATTTTG CA TA ACT T A GA T AA A-- -----
TCAGATATGGTTACTTTC
GAM26326 2870 GGAAAAGAAAAAAATTGAAC - A GAACT GCTTTAATGA
5 TGTAAGCTTTAATGATTACT GGAAAA GAAA AAATT GTAA
TTAAATTTGTTTTATTTTCC CCTTTT TTTT TTTAA CATT
A G ATTT- ----------
GAM26327 20737 GGAAAAGAGCGCGGCCGCCA AAA CCGCCACGC - - A CAG
8 CGCGGGTTTGGCATCTTCAG GGA GAGCGCGG GGGTT TG GC TCTT
GAGACGCTCGTAGCCCTCGC CCT TTCGCGCT CCCGA GC CG AGAG
GCTTCTCC C-- --------- T T C ---
GAM26330 3970 GGAAAATACAGGATTTGCAG AA ATT -- AAA-- GTAA
6 GATTGGAAACCTGTAAAGGG GGAA TACAGG TGCAGGA TTGG CCT
AAGGCCAACTTTTTGTATCT CCTT GTGTCT ATGTTTT AACC GGA
GTGGGTTCC GG --- TC GGAAG ----
GAM26334 16444 GGAAAATGGCCTTCCTGAAG AAA AAGCT G --- G- - - ATA
0 CTGAGTCCACTTTTGAGTAG GGA TGGCCTTCCTG GA TCC ACTTTTGA TAG TGG CC
TGGCCATAGGACCAGTTGAG CCT ACCGGGGGGAC CT AGG TGAGAACT GTT ACC GG
TCAAGAGTCATGGATCCAGG --- ----- - TAC GA G A ---
GGGGCCATCC
GAM26334 14021 GGAAAATGTGACCAGATGGA AAAAT -- A-- G ATTA TTATAT
2 GGTGCTAATTAGGCTTATAT GG GTGAC CAG TG AGGTGCTA GGC
GCCCTGGCATTTGCAGAACT CC CACTG GTC AC TTTACGGT CCG
GATGTCACCC ----- TA AAG G C--- ------
GAM26334 5932 GGAAAATTCGTAGATTAAAA A A AAA- G ACT GAGGA
6 GGATGGGTACTTTTAGAGGA GGAA ATTCGTAG TT AG ATGGGT TTTA
TGAAACCTATGTTGAAGAAA TTTT TAAGCGTT AA TT TATCCA AAGT
TTGCGAATATTTT A A GAAG G --- -----
GAM26339 9280 GGAAACTCATCTCCTTCCTG --- T - T GGA - -- A GACC
9 AGGAGCCGGGGAGGCTGGAC GGAA AC CATCT CCT CCTGA GC CG GGG GGCTG
CCAGTCCCCGTCGTGCAGTC CCTT TG GTGGG GGG GGACT CG GC CCC CTGAC
AGGTGGGCGGGTGTGTCTTT TTC T C T GA- T TG - ----
TCC
GAM26341 6076 GGAAACTTGCTGGATATGAT CT - T A ACC G GCACGA
1 GTACCGGGAGCCAGCACGAT GGAAA TG CTGGA ATG TGT GGGA CCA
GGTCCTACACATTCCAGACA CCTTT AC GACCT TAC ACA TCCT GGT
TTTTCC T- A - - --- - ------
GAM26346 4021 GGAAAGATTGTGCAGATGAC GTGCA T - A G TCGAG
2 TGAAGCAGAAGTTCGAGGCT GGAAAGATT GA GACT GA GCA AAGT
TATGTATCAAGTCTCGGGAG TCTTTCTAG CT CTGA CT TGT TTCG
ATCTTTCT AGGG- - A A A -----
GAM26347 9626 GGAAAGCCAAATACCTTCTT AATACCT CA C AATGAA
5 GCAGACTGTAATGAAGCATT GGAAAGCCA TCTTG GA TGT
CATTAAGATAAAGATGGCTT CTTTTCGGT AGAAT CT ACG

TTC AGAAAT- TA T ------
GAM26348 6305 GGAAAGCGGGTTATGAAAAC A C ATGAAAA G - GG TCT
3 AGGAGCGCTGGTTGAAGTCT GGA AG GGGTT CAG AGC GCT TTGAAG
CTTCAAGAAGCAGTTATTGA CCT TC CCTAA GTT TTG CGA AACTTC
GAATCCCTCTCC C - GA----- A A AG ---
GAM26348 19018 GGAAAGCTCCACACACCATA - C CA--- CAT AG- G TAAAT
7 GGCAGTGGTGCTAAATGCAA GGA AAG TCCA CAC AGGC TG TGC
CAGAAGCCTTAGTGCGAACT CCT TTC AGGT GTG TCCG AC ACG
GGAACTTCTCC C A CAAGC AT- AAG A -----
GAM26348 12605 GGAAAGCTGGCGGGGCCGAA T-- GCCGAAA AG CTATGTCT
9 AAGTAGGGTCTATGTCTGCC GGAAAGC GGCGGG AGT GGT
AACTCTAACAGCCTGCCCGT CCTTTCG CCGTCC TCA CCG
GCTTTCC TGC GACAATC A- --------
GAM26350 4125 GGAAAGGCCAGGCTGCCCAG AAA AGGCT CC CTCAT-- CT - CATAGAAC
6 GGCCCAGCCCCACTCATGGC GG GGCC GCCCAGGGC AGCCCCA GG GC AG
TGCAGCATAGAACCTCGCCA CC CTGG CGGGTCCCG TTGGGGT CC CG TC
CCTCCTCATTGGGGTTGCCC AAG GT--- -- TACTCCT AC C --------
TGGGCTGGGTCGAACC
GAM26350 19988 GGAAAGGCCATGATGAGAGC A - A GAGAG GA CCG
7 AATGAGCATTCCGAATGTGA GG AAGG CC TGAT CAAT GCATT
TTGATAGTCAGGGACCTTCC CC TTCC GG ACTG GTTA TGTAA
C C A G ATA-- G- ---
GAM26350 4186 GGAAAGGCCCTGCACAGGTG AG GC----- TG TTG TTATGT
9 GCTGTTTCTTGTCTGTTATG GGAA GCCCT ACAGG GCTGTTTC TCTG
TCAGAGGAACAGTCCTGTTC TCTT CGGGG TGTCC TGACAAGG AGAC
AGAAAGGGGCTCTTCT CT AAAGACT -- --- ------
GAM26352 21532 GGAAAGGTTCGGCCCCTTTC AG- TT --- TTT AAAAAA
4 GGTTTTTTTTAAAAAAAAAA GGAA G CGGCCCCT TTCGGTTTTT AAAA
TTTTTCAAAAGCCGGGGCTA CCTT T GTTGGGGA GGGCCGAAAA TTTT
GGGGTTGGGTAAATTCC AAA GG TCG CT- ------
GAM26355 3926 GGAAATAACTTATGTGTACT AAATAA A ACT ATTTCATCATA
8 TCTTGATTTCATCATACAAG GG CTT TGTGT TCTTG
ACAAGCACAAAAGCACCACC CC GAA ACACG AGAAC
C CACCAC A AAC ----------
GAM26360 19011 GGAAATCAATATTAGAACTT CAA- T A C CTT CTTG
3 CAACTTAGCTATCTTGATAG GGAAAT TA TAGA CTT AA AGCTAT
CTTTTTAAAGATTTGTTAGA CCTTTA AT GTTT GAA TT TCGATA
ATATTTCC TAAG T A A TT- ----
GAM26362 8886 GGAAATGATAGCATTGAAGG GA CAT GAC--- GATATCTAACAGCAATA
6 ACTCGGGGATATCTAACAGC GGAAAT TAG TGAAG TCGGG
AATACCTGATCGCTACTTCA TCTTTG ATC ACTTC AGTCC
CACTAGTTTCT -- AC- ATCGCT ----------
GAM26363 16438 GGAAATGGAAGTGAAACCCA G --- CCCAGTT-- T - AGCC
3 GTTCGGTGACTGCAGCCGCA GGAAATG AAGT GAAA CGG GACT GC
AGTCCTGTGTACCAGATTTC CCTTTAT TTCA CTTT GTC CTGA CG
AGAACTTATATTTCC A AGA AGACCATGT - A ----
GAM26367 4507 GGAAATTGACATCTATGCTA A GACA GCTAAC ---- - G TTTC
1 ACCTGTCTGATGAAAAGGCT GG AATT TCTAT CTGTC TGA TGAAAA GC
TTCGTGTTTTCAGTCGCCTT CT TTAA AGATA GACGG GCT ACTTTT TG
GGCAGAAATAAATAGAAAAA A AA-- AATAAA TTCC G G ----

TTATC
GAM26371 4360 GGAACACCATAGGAGTTGCC A T --- --- - CA ATAACA
4 ATCAGGGATAACACCCATGG GGAAC CCA AGG AGT TG CCAT GGG
ACACAAACTCTCCCTCTGGG CCTTG GGT TCC TCA AC GGTA CCC
GTTCC G C CTC AAC A -- ------
GAM26380 1713 GGAACCCTTTTGGGGCCCCG TTT CCCC AC GA----- - AACT
4 CTTTTACTTGGGACAAAAGG GGAACCCT GGGG GCTTTT TTGG CAA AAGGG
GAACTCCCTTCTTGGAAAAA TTTTGGGG CCCC CGAAAA GGCC GTT TTCCC
ACCGGAAAAAAGCCCCCCCC C-- CCCC AA AAAAAAG C ----
CCGGGGTTTT
GAM26381 8724 GGAACCTTGAGTTCGAATTG C- AG--- - A GG ACTTG
9 ATTGGTTTACTTGGAAAAAA GGAAC TTG TTCGAAT TG TT TTT
ACATGTTTGAAAATTGCAAA CCTTG AAC AAGTTTG AC AA AAG
AGTTCC AA GTTAA T A AA -----
GAM26382 4515 GGAACGAGATGGCGGTTCTC AAC GAT - CT -- TGCCGTTT - --- - A GC
2 TGGAGGCTGAGTGCCGTTTG GG GA GG CGGTTCT GGAG GCTGAG GC GGT GCC CT
GGAG C
CGGTGCCCTAGGAGGCCGAG CC CT CC GCCAGGA TCTT CGACTC CG CCA TGG GA
CCTC G
CTCTGTTGCTTCGAACTCCA --- AT- A CT TA TATACT-- T GAC T - AA
GTGGTCAGACCTGCTCATAT - TCTGTT
CTCAGCATTTCTTCAGGACC GA GC
GACCTATCCC CT CG
T ------
GAM26384 5491 GGAACTATGCCGCGTCGACA TAT C GA - TG GTAGG
3 GGGCGCCTGTGGTAGGCGTG GGAAC GC GCGTC CAGGGCGC C TG
GCGCGCCCTGGGACGTTGCC CCTTG CG TGCAG GTCCCGCG G GC
TGTTCC TC- T G- C GT -----
GAM26384 5549 GGAACTATTTGGTCATCTTT TTT TC - - AAATAT AAAGAA
5 TGAGAAAAAAATATACAAAG GGAACTA GG ATCT TTTGA GAAAA AC
AAGTCATCTTTTCATTAAGT CCTTGGT CC TAGG GAATT CTTTT TG
GGATTCCCTGGTTCC --- CT T A CTAC-- ------
GAM26388 19215 GGAACTTGAGGCTTCCTGTC AACT A T - CATGGG - A A ACATGAAA
6 TCCTCCATGGGCCCCACCAG GG TG GGCT CCTG TCTCCTC CC CC CCAGTCAC GGG
TCACAGGGACATGAAATCCG CC AC CCGA GGAC AGAGGGG GG GG GGTCGGTG CCT
TGGCTGGAGGAGGGAGAGGG AC-- A - G AGAG-- A A - --------
GAGAGCAGGAGCCACACACC
GAM26389 4150 GGAACTTTTGTGGCCTTTTT AC-- ---- TCTGTA CGC AGCT AATT
4 TCCTTTTTCTGTAGGCCGCC GGA TTTTGTGG CCTTTTTTCCTTTT GGC CTTA TTCTA
TTAAGCTTTCTAAATTTGGA CCT AAAACGCT GGGAAAAAGGGAAG TCG GAAT AAGGT
ACATCTAAGCAAGCTGAAGG CACT TTGG ------ AAC CTAC ----
GAAAAAGGGGGTTTCGCAAA
ATCACTCC
GAM26390 956 GGAAGAAAGCAAAAGGGACT AAA AAA A AACTA GTAGGATTG
9 GAACTAGCCTCTGGTAGGAT GGAAG GCA GGG CTG GCCTCTG
TGCAGGGGTCCAGCCTTGCC CCTTT CGT TCC GAC TGGGGAC
TGTTTCC GTC --- - C---- ---------
GAM26392 18972 GGAAGAAGCCCCCATCTCCC - CCA- -- CAG ACCC
5 CAGCATGGACCCCCATGAGA GGAAGAAG CCC TC TCCC CATGG
GGGACAGAGCCAGGGACTTC TTTTCTTC GGG AG AGGG GTACC

TTTT A ACCG AC AGA ----
GAM26392 5365 GGAAGAAGTAGACTAATCTC GAA C ATCTCT- C GGATGA
9 TGGCTGAGGGATGACTTACC GGAA GTAGA TA GG TGAG
TGTTCAGTACTCTACAATTC CCTT CATCT AT CC ATTC
C AA- C GACTTGT - ------
GAM26394 8751 GGAAGACATGGCTGTTGTGA AGA T G G CAA AGGA
9 GGATCAAATGGAAGGATCCA GGA CA GGCTGTT TGAG AT ATGGA
TGAGTGCTTAGAACAGTCCT CCT GT CTGACAA ATTC TG TACCT
GGGTCC GG- C G G AG- ----
GAM26395 8486 GGAAGACCGTAATTGTGGCT AGA G TT GCA- TGGGACCT
5 GCACTGGATGGGACCTTCCA GGA CC TAA GTGGCT CTGGA
GAGGAAGCCATTTGGGGCCA CCT GG GTT TACCGA GACCT
TCC ACC G -- AGGA --------
GAM26397 21200 GGAAGAGATATGCAACCTGG A AAC CT TC T - C TGCAAT
4 CTAGTCCTCTGCTGTCCTTG GGAAGAGAT TGC CTGG AG C CTGCT GT CT
CAATAGTACAAGTAGGAGCT CCTTCTCTA ACG GACT TC G GATGA CA GA
TCAGAAGCAATCTCTTCC - AA- -- GA - A T ------
GAM26397 1153 GGAAGAGATCATGCAGCTGG A TCATGC G AAT- A CCAACCCCTCCC
5 TGAATGCCTACTTGGCCAAC GGA GAGA AGCTG TG GCCT CTTGG
CCCTCCCCCGAGAGGCCCTG CCT CTCT TCGAC AC CGGA GAGCC
CAGCAGCTCTTCTCCTCC C TC---- G GTCC - ----------
GAM26397 4260 GGAAGAGATGGCCCATGAGA AG- CCCA A A--- A TAAAACACT
6 CTGATCTATAGTAAAACACT GGAAG ATGG TG GACTG TCT TAG
CTAAGAAATGCAGTCCAATT CCTTC TATT AC CTGAC AGA ATC
TTATACACTTCC ACA TTA- - GTAA - ---------
GAM26399 18398 GGAAGAGGGTGAGCATGATT --- TG CAT ---- --- C CTT TAACTGT
6 GCCTCCTGCCTTGGCTAACT GGAA GAGGG AG GATT GCC TC TGC GGC
GTGCCCTGCATGAATTGGCT CCTT CTCCC TC TTAG CGG AG ACG CCG
CCTGATTTTCTTGCCCTCCA GAC GT TT- TCCT TTA T TC- -------
GTTCC
GAM26402 19789 GGAAGATTGAATATTTATCT A TG TAGAGAA AAGACCCACA
9 AGAGAATACAAAGACCCACA GGA GAT AATATTTATC TACA
TGTAAATGATAGGTATTATC CCT CTA TTATGGATAG ATGT
TCC - -- TAA---- ----------
GAM26404 9362 GGAAGCACGACCACGATGAG A ACGATGAGG- GG- T- TTTTG
8 GAGGGGGGAAGGCTGTGTTT GGAAGC CGACC AGGGGGGAA CTG GTT
TTTGGATCTCAGAGATTCTC CCTTCG GTTGG TCTCCTCTT GAC TAG
CTCTGTGGGAAAGAGGTTGA A AGAAAGGGTG AGA TC -----
GCTTCC
GAM26405 9232 GGAAGCAGCGCGCAGCCCGC G -- C--- CC CCCA ACCCGCAGCA
4 GGCCCAGCGCACCCGCAGCA GGAA CA GCGCG AGC GCGG GCGC
GCGCCCGCAGCTCGTCCGCG CCTT GT CGCGC TCG CGCC CGCG
CCATGTTCC - AC CTGC A- ---- ----------
GAM26408 13960 GGAAGCCGCGGGGACAGTTG AA-- G G ACA ATTGT AA AG AAGAG
4 ACATTGTGGAATGGAGCGAA GG GCC CG GG GTTGAC GG TGG CGA
AGAGTCGACCGGGCCGTCGA CC TGG GT CC TAGCTG CC GCC GCT
TGGCCATGGGGTGTAGCC GATG G A GG- ----- GG A- -----
GAM26410 18359 GGAAGCTAAACCAGGCACAG AACCA CAGT T ACCA TT - TATTT
0 TAACTGACACCATGTAGGTT GGAAGCTA GGCA AAC GAC TGTAGG GAT TA
GATTATATTTTGCATCTCCC CCTTCGAT TTGT TTG CTG ACGTCC CTA GT

TGCAAGTCTGTTTTATGTTA ATTTA ATT- T A--- CT C -----
TTTATAGCTTCC
GAM26410 3890 GGAAGCTATCAGGGACCAAT A TAT ATTTA GA AT A AGATC
5 TTACATGACCAGATACGATG GGA GC CAGGGACCA CAT CCAG ACG TG
AGATCCGCGTCACTGGGGTG CCT CG GTCCCTGGT GTG GGTC TGC GC
CGCAATGGTCCCTGGCTCC - --- AACGC G- AC - -----
GAM26410 6356 GGAAGCTCATGCAGAGTCTG A-- T A - CT - - AG TTTCTTGTCCTT
7 GAGCTCGTGGGCCCTCAGGC GGA GCTCA GCAG GTCT GGAG CG TGGG CCCTC GCGCC

GCCTTTCTTGTCCTTGGTGT CCT CGGGT TGTC CAGG CCTC GT ACTC GGGAG TGTGG
GGAGGGACTCAGTGGCCTCC CTA C C G CG G A G- ----------
GGGACCCTGTCTGGGCATCT
CC
GAM26413 14428 GGAAGGAAAAAAAGTAAATA -- TGC - -- C TAGCCTTGAAAATAAAC
8 TGCAGGCTTTTAGGACTGAG GGAAGGAAAAAAAGTA AATA AGG CT TTTAGGA TGAG
TAGCCTTGAAAATAAACCTC TTTTTTTTTTTTTCAT TTGT TCC GG AAATCTT ACTC
ATTTCTAAAAAGGACCTTTT AT TT- A AA T ----------
GTTTATACTTTTTTTTTTT
T
GAM26417 12910 GGAAGGAGCGGTTGCGACTG -- GT TGTA AT CGGTGT
5 TAGAGGAGGATGGAGGCGGC GGAAG GAGCG TGCGAC GAGGAGG GGAGGCGG
GGTGTTCGTCTTCTCTCTCC CCTTC CTCGC GCGTTG CTCCTCT CTTCTGCT
TCGATTGTTGCGCGCTCATC TA -- TTAG CT ------
TTCC
GAM26417 21533 GGAAGGAGCTGGCTTTGTGG AA A --- - - TGCAA TTTA
8 GGCTGCAAAGGACTTTTAAG GG GG GCTG GCTTT GTG GGGC AGGACT
TCCTGCCTGTACTGAAGTTC CC CC CGAC TGAAG CAT TCCG TCCTGA
ACAGCCCACC A- - ACT T G ----- ----
GAM26419 20076 GGAAGGCACATCATGGCTTG A GC T TT---------- TATCT
8 GTATCTCCGTGCGAGAGCAG GG AG ACATCA GGC GG
CTGCTGCCTGGTGTACTCCC CC TC TGTGGT CCG CC
C A- - TCGTCGACGAGAGCGTG -----
GAM26420 14551 GGAAGGCAGCCAAGAGGAAG A C AAGA AG G ACA ACCAT
1 TGGGCGGCACAGACCATCCG GGA GG AGCC GGA TGGGC GC G
GCGGCTCATCCGAGGCTTCA CCT CT TCGG CCT ACTCG CG C
TCC A - AG-- -- G GC- -----
GAM26421 6518 GGAAGGCCCTCAAATAAAGC AG CTCAA TAT- TTTTATTAATT
0 TATTATTTTTATTAATTGTA GGA GCC ATAAAGC TAT
TCATGCTTTATAGGCTCTCC CCT CGG TATTTCG ATG
CT A---- TACT ----------
GAM26421 6425 GGAAGGCGGGAACCTAGGAG --- CC TTAA T C TGGTC CAG T
7 GCCTGATTAAGATGGTCCAT GGAAGGC GGGAA TAGGAGGCCTGA GA GGTC ATCTAC TTGT
GTGCC
CTACTGGTCTTGTCAGGTGC CCTTCCG CCTTT GTCCTTCGGACT CT CCAG TGGGTG AACG
TACGG

CTGGGGCATGCAAATGTGGG AAG TC CTG- T - TA--- --- -
TGACCTTCGTCTCAGGCTTC GG
CTGCTTTTCCGAAGCCTTCC

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                    --
GAM26425 2778   GGAAGGGGGTTATATTTCTA    GGG  TT         GA      A   C  TGTT
5           AGTGATTTACAAATTTCTGT GGAA   GG  ATATTTCTAAGT  TTTACAA TTT TG
            GTTCATAAAATTGTAGGGAT CCTT   CT  TGTAAAGATTTA  GGATGTT AAA AC
            TTAGAAATGTTCAAATTCC     AAA --         G-      A   T ----
GAM26425 3688   GGAAGGGTGACAGGAATAGA         AG   AGAGA   A   AAC   TGGA
9           GATGTGACATTAACTAGTTG GGAAGGGTGAC  GAAT    TGTG CATT   TAGT
            GAACTAAATGCATACATGAT TCTTCTCATTG  TTTA    ATAC GTAA   ATCA
            TTTGGTTACTCTTCT            GT   GTAC-  -   ---   ----
GAM26426 9826   GGAAGGTATCTGTAATCCTC  A   ATC  AATC-     -----    CGATTCTT
7           TATTCGTGGCGATTCTTCCA GG AGGT   TGT    CTCTATT    CGTGG
            CGTACTTAGTAGAGTTAAGG CC TTCA   ACG    GAGATGA    GCACC
            CAAAAACTTACC        A   AAA  GAATT     TTCAT    --------
GAM26430 16841  GGAAGTAGCTCTTTTTTTGT     TA       TTGTT         ATTGG
1           TTTTTGTTTTTTTTATTGGG GGAAG  GCTCTTTTT    TTTTGTTTTTTTT
            AGAGAAGCGGGGTTATAAAG CCTTC  TGAGAGAAA    GGGGCGAAGAGAG
            AGAGTCTTCC          --       TATT-         -----
GAM26432 18491  GGAAGTCGCGCTCGTGCCGC   A  C  GCT-  T    --   TCACAAC   GTCCA
6           GCCTGTCACAACAGCCGTCC GGA GT GC    CG GCCGCG  CCTG      AGCC
            AGGCTCGGGGTCGTGGCCGT CCT CA CG    GC CGGTGC  GGGC      TCGG
            CCAGCACCTCC         C  -  ACCT  -    TG    -------   -----
GAM26435 19802  GGAAGTGGGATTGTGGGAGG   A-      TG   ---  -    CT  ACA
5           GTACAGCTGAACATTGACTG GG  AGTGGGAT  TGGG   AGG GTACAG  GA
            TACTTCTATATCCATGATCT CC  TCACTCTA  ACCT   TCT CATGTC  TT
            CACTGGCC           GG      GT   ATA  T    AG ---
GAM26436 3308   GGAAGTGTGGTGCAGCTGAG    T      -----  GA  CA    CAAA
6           CCACAAAGCAAACTTTGGTG GGAAG GTGGTGCA    GCT  GC  CAAAG
            CGAGCCACAGTGCATCACTT CCTTT CACTACGT    CGA  CG  GTTTC
            TCC                -      GACAC   G-  TG    ----
GAM26436 9056   GGAAGTGTTGCTGCTGGGGA       TGCTGCT    TGAA   - -  TCCTCT
8           TGAAAGCAGCTGCTCCTCTG GGAAGTGT      GGGGA    AGCAG C TGC
            CACGCCTGCTGGTTTCCTCC CCTTCGCA      CTCCT    TCGTC G ACG
            TTCCACGCTTCC              CCTTC--     TTGG    C C   ------
GAM26444 20613  GGAATATAAGCTGGTGGTGG    ATATA     TG    G    CG  GG-  TGGG
1           TGGGCGCCGGCGGTGTGGGC GGA    AGCTGG  GTGGT GGCGC  GC   TG
            AAGAGTGCGCTGACCATCCA CCT    TCGACC  TACCA TCGCG  TG   AC
            GCTGATCC           AG---     --    G    -- AGA  ----
GAM26446 8859   GGAATCAAATTCAATATTTC    TCAAAT-  A-   T  AA    GTCCTG
7           TAATGGAGGTCCTGCTCCAG GGAA      TCA  TATT CT  TGGAG
            AAGCAATAACTGATAAAATT CCTT      AGT  ATAA GA  ACCTC
            TTCC               TTAAAAT   CA   C  AG    ------
GAM26450 8432   GGAATCGGGTGTCTCAGGAA   ATCG   -    GAA-  TGA   ATTCCACA
2           CCTTGAGCCCATTCCACAGG GGA    GGTG TCTCAG    CCT   GCCC
            GCAGGACAACTGAGGTCGCC CCT    CCGC GGAGTC    GGA   CGGG
            TCC               ----   T     AACA  ---   --------
GAM26451 12898  GGAATCTGCTTGATCAGAGA       GC--  A       T  GA    AAAACTCATCATAACTTGC
9           CTCTGAGGCCAAAAACTCAT GGAATCT    TTG TCAGAGAC CT  GGCCA
            CATAACTTGCTGGCCAGCGT TCTTAGG    GAC AGTTTCTG GA  CCGGT
            CTTTGACCAGTTTAGGATTC       ATTT   C       C --    ----------
            T
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GAM26455 13002 GGAATGATTATGTGTGGCAT TG TT GTGT CT ATCA
1 TGTACTCTTTCATCAGGAGG GGAA A AT GGCATTGTA CTTTC
TATATAATGTCTAGTTTTTG TCTT T TG CTGTAATAT GGAGG
TTCT GT TT AT-- AT ----
GAM26455 4102 GGAATGCAGAACTGGACCCC ATGCAG G-- C- TT ACAGAAGAACA
6 GTTACCACAGAAGAACAGGT GGA AACT GAC CCG ACC
TCTGGACGTCAAAGGTTACC CCT TTGG CTG GGT TGG
TATCC ATCCA- AAA CA CT ----------
GAM26458 3331 GGAATGGTGGAGTGCAATTT GGA AATTTTAAAC GG- TGGG
2 TAAACGTTTAATGGAGATGG GGAATGGT GTGC GTTTAAT AGA
GTTTATAATTAAATTATATA TTTTATCA TATG TAAATTA TTT
ATGGGTATGTGACTATTTT GTG GGTAATATAT ATA ----
GAM26467 20373 GGAATTTAACATTTGGAATT T C TT TG-- AATAACTCCA
2 TGGCAATAACTCCAGCAAAT GGAAT TAA AT GGAATT GC
AATTCCTTATTTTATATTCC CCTTA ATT TA CCTTAA CG
T T TT TAAA ----------
GAM26467 8112 GGAATTTACACTATAACACT TACA--- ACACTG C CAA
4 GACAAGCAGTGCCAAGTACT GGAATT CTATA ACAAG AGTGC
CTTGTAAACACTGTAGCTCA CCTTAA GATGT TGTTC TCATG
TTTAATTCC TTTACTC CACAAA - ---
GAM26467 20040 GGAATTTCAGAGTGAGAGCA TT-- --- CATAT TT AACAC
6 TATACAATTCAAAACACTTG GGAA TCAGAGT GAGAG ACAA CAA
CTTTGTCCCTTTTCTCAGAG CCTT AGTCTCG CTCTT TGTT GTT
CTCTGATATTTTCC TTAT AGA TTCCC TC -----
GAM26467 14326 GGAATTTCCTCTGTTATATA - G TTTCCCAATGC TTC CAACAACAAAATAAC

8 GCTTTTCCCAATGCTAATTT GGAATTTCCT CT TTATATAGCT TAAT CAAACAA
CCAAACAACAACAACAAAAT TCTTAGAGGA GA AATATGTTGA ATTA GTTTGTT
AACTTGTTTGCCTATTAAGT T A ---------- TCC ----------
TGTATAAAAGTAGGAGATTC
T
GAM26469 2810 GGAATTTGCGAACCAAACCA T CAAACCAGA T- A AAGT
0 GACCTGGAGAAGAAGTCTCT GGAATT GCGAAC CC GGAGA G
CCTTGGCCCAAAGAGTTTGC CCTTGA CGTTTG GG CCTCT C
AGTTCC - AGAAACCC- TT - ----
GAM26471 9503 GGACAAAGGGTCAATCCACA AAA -- ---- AATT CTTACCTGATTGC CCAACACTC

4 AATTTGTCCCTTACCTGATT GGAC GGGTCAA TC CACA TGTCC TGGCAT
GCTGGCATCCAACACTCATG CCTG CCCAGTT AG GTGT ACAGG ACCGTA
CCAGGACATTGTGTGCCAAG AA- CG AACC GTT- ---------- ---------
AGCTTGACCCAAGTCC
GAM26473 6464 GGACAACGAGCGGAGTGGCC - AA- A - C-- G TG AC--- T AGGA ACTGA
3 GGGCCCGAGTGCACGTGTCT GG AC CG GCGGAGT GGC GGGCCC AG C GTGTC G GGGC

GAGGAGGGCACTGAGCCCGA CC TG GT CGTCTCG CCG CCCGGG TC G CGTAG C CCCG

GGCGATGCTCCAGGTGCTGG A GAC C G AAC - GT GACCT - GGAG -----
GCCCCAAGCCGGCTCTGCCT
GCAGGTACC
GAM26474 18014 GGACAAGATCTTCAAGAAGA AAGA AG- GA A--- AGGATAA

```
3          TGGACCAGGATAAGGACGAC GGAC   TCTTCA  AA TGG   CC
           CAGATTACATGGAGGAGTTC CTTG   GGAGGT  TT ACC   GG
                        A---    ACA AG  AGCA -------
GAM26479 3118  GGACACCGACACCAAAAACC      AC-----    AACC      CCCCAA
6          CGTTTTTTTCCCCAAAGAAA GGACACCG     ACCAAA   CGTTTTTTT
           GGCGTGTTTGGTTTAAGAAC TTTGTGGC     TGGTTT   GCGGAAAGA
           GGTGTTT                AAGAATT    GT--      ------
GAM26479 19297 GGACACCTCGCTTCTGGACT    C-  G TC-  ACTTAC     TACGT
8          TACTGTTGTGTACGTCACAA GGACA  CTC CT  TGG    TGTTGTG
           CACCACTTAGGGAGAATGTC TCTGT  GAG GA  ACC    ACAACAC
           T                AA  G TTC  ------     -----
GAM26479 5608  GGACACCTGCCACTCCTCTA   C   GCCAC   --- A  CCT  TAGT
9          GGACCTCATTAGTGTGCTCC GGA ACCT   TCCT  CT GGA  CAT
           AGCCAGGGATCAAAGGTTTC CCT TGGA   AGGG  GA CCT  GTG
           C              T   AACT-   ACC -  C--  ----
GAM26480 9696  GGACACTATTCCTCCCTGCA     TATTC  C   CAGC   ---    CCCCCT
4          GCCCTTGCCCACCCCCTTGG GGACAC    CT CCTG   CCTT  GCCCA
           GCCATGAGGAATTCAGGCAG CCTGTG    GA GGAC   GGAG  CGGGT
           CTGTGTCC             TC--- C   TTAA   TAC    ------
GAM26481 12239 GGACACTTGTGGGGCACACG    A  G      CG  G       TAT  TGTGTC  T     GTAG
5          GGGCTTCCCTGTGTATTGTG GGAC CTT TGGGGCACA  GG CTTCCCTGTG  TG     GC GCCCCTT

           TGTCGCTGCCCCTTGTAGAA CCTG GGG GCCCCGTGT  TC GGAGGGATAT  GC     CG CGGGGAA

           GGGGCGCCCCTTCGTCTATA   -  -      TG  G       CT-  TTCCC-  -     ----
           GGGAGGGCTGTTGTGCCCCG
           GGGGTCC
GAM26484 3081  GGACAGCATTATTAGGAACC    -  ATTATTAG  C     GTATGATATTTAACAA
9          CTGTAGTATGATATTTAACA GGAC AGC      GAA CCTGTA
           ATATAGGCTTCAAGAAGGGC CCTG TCG      CTT GGATAT
           TGGTCC             G  GGAAGAA-  C    ----------------
GAM26485 4131  GGACAGCCACCTGCTGTCGG  A     CTG  TC-     G  G  CACGATCCA
1          GCCAGCTGCCCACGATCCAG GG CAGCCAC   CTG   GGGCCA CT CC
           GAGATGGTCCACTCGGAAGT TC GTCGGTG   GGC   CCTGGT GA GG
           GGCTGCT            -     AA-  TCA    A  -  ---------
GAM26487 2796  GGACAGGCAATTTAGTCATT    GGC  T  TCATTA  AT-       -  -----   TA    A  TCA
7          ATGATAATAAGGAAAACAGT GGACA  AAT TAG    TG  AATAAGGAAAA CAG   TGTTT  GATGAG
GA
           GTTTTAGATGAGAGATCATT TCTGT  TTA GTC    AC  TTATTTTTTTT GTC   ACGAA  CTACTC CT

           AATGCATTTTTCCCTCATCA    ATC  T  TCTTA- GTT       C  TATAT   --    C ---
           AGCATATATCTGCTTTTTTT TTAATGCATTTT
           TATTTTGCAATTCTCTGTAT
           TCTATGTCT
                      ------------
GAM26487 8626  GGACAGGCAGCTTTGAACAG    AG  A-  TTT-  ACA--    ACAAAACTCCAAC
8          AGGAAACAAAACTCCAACTT GGAC  GC  GC   GA   GAGGAA
           CCTCCAAACTCCTATGCAGG CCTG  CG  CG   CT   CTCCTT
           CAGGTCC             GA  GA  TATC  CAAAC    -------------
GAM26488 9551  GGACAGGCTCTTCAAACTCA   AG-  T   A   AAG   AAT-   C--  ATCA
```

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0          AGTGGAAATGAGACCTCATC GGAC  GC CTTCA ACTC  TGGA  GAGA  CTC
           AGAGTATTCTCCTGATCCAG CCTG  TG GGGGT TGAG  ACCT  CTCT  GAG
           TAGAGTGTGGGGTGTGGAGT  AGG T  G  ATG  AGTC  TAT  ----
           CC
GAM26492 4434  GGACATAGTGGAAGTGAGCT  A  A  GA TG  ACAA  G C TG  TAG
5          ACAACGTTAGTACGTGTCGT GG CAT GTG  AG  AGCT  CGTTA TA G  TCGTG
           GTAGTACGATGTCTAGTGAT CC GTA CAT  TC  TTGA  GTAGT AT T  AGCAT
           GAGTTTGCTAATACAATGCC  -  A  AA GT  ----  G  C GT  ---
GAM26498 14447  GGACATTGGAAATGACATTA  A  T  CATTAATATCT  GATTAGAAA
0          ATATCTTCTACTTGATTAGA GG CATTGGAAA GA  TCTACTT
           AAAAGTGGATCTTTTCCAAT CC GTAACCTTT CT  AGGTGAA
           GCC  -  T ----------  ---------
GAM26498 9532  GGACATTTGGGTTGTTGTGT  TT-  ---- T  C T  GCTA
9          ACTTTTGGGCTACCATGAAT GGACAT  GGGTT  GT GTGTA TT TGG
           ATGCTACTATGAACTTTCTG CCTGTG  TTCAA  CA CGTAT AG ACC
           TGTCC  TCT  GTAT T  A T  ----
GAM26502 18931  GGACCAGCTCATGGGCACGG  GA  -------  CA  -- G  C A  GAAAC  GAG  AGT
0          CTCGGGACGGAGACGAAACC G  CCAGC  TCATGGG  CGGC  TC GGA GG GAC  CAGACA
GGTCA
           AGACAGAGGGTCAAGTTTAC C  GGTCG  AGTACCC  GTCG  AG TCT CC CTG  GTCTGT  CCAGT

           AGATGACCGTGTCTGCAAGA AG  GTCCTAC  CC  TC G  T A  AGAAC  G--  ---
           GTCACCTTCTGGACTGCTGC TTACAGA
           CCCCATGACATCCTGGCTGG
           GAC
                  -------
GAM26506 8590  GGACCCATCTGGGACCTTTG  CCCA  -  GT-  T GA--  TCGA
4          TACAGTGTGATGCTCGAGCA GGA  TCTGGG ACCTTT  ACAG GT  TGC
           ATTGGCTCTGTTCAGAGGGT CCT  AGACCC TGGGAG  TGTC CG  ACG
           GCCCAGAGCTCC  CG--  G  ACT  T GTTA  ----
GAM26507 9289  GGACCCCAGTGTGACCGGCA  -  TGTGA  AAAA-  GCA--  ACATC
1          AAATTGGCACTGACATCCAG GGACC CCAG  CCGGC  TTG  CTG
           GACAACAAATGCAGCTGGCT CTTGG GGTC  GGTCG  AAC  GAC
           GGTGGTTC  T  -----  ACGTA  AACAG  -----
GAM26507 8524  GGACCCCCCCCCAATTAACT  A  ------  A-- G  TAAAAT
4          GTTTATTTAAAATGGTAAAG GG CCCCC  CCCCAATTA  CT TTTATT
           GGGAATAATTGGGGTTTTAA CC GGGGG  GGGGTTAAT  GG AAATGG
           GGGGGCCC  C  AATTTT  AAG G  ------
GAM26507 19044  GGACCCCCTCGGTCTACCAT  CCCCT  TCTAC  A TCAACAGTTT
8          GTTGGCATGTCAACAGTTTC GGAC  CGG  CATGTTGGC TG
           AGCCAATGTGCCCGTGAAGT CCTG  GCC  GTGTAACCG AC
           CC  AAGT-  C----  - ----------
GAM26508 3031  GGACCCGACAACCATCCTGG  CCGACAACCA-  GAA-  TCCCAT
5          GAGAATATCCCATTAGCAAT GGAC  TCCTGGGA  TA
           CTCAGGAGAGCAAGACCCGT CCTG  AGGACTCT  AT
           CC  CCCAGAACGAG  AACG ------
GAM26509 14522  GGACCCGGGGGGGGAGCGAG  ACCC  A--  A  -  AA -------  GG  AAA
3          CGAGCGTGAACGCGGGGCCA GG  GGGGGGGG  GCG GCGA GCGTG  CG  CG  GCC
           AAGGTACGAGATAAATGGAC CC  CCCCCCCC  CGC CGCT CGCGC  GT  GC  TGG
           GCGCGTCGCCCGCGTACCCC  CCC-  ATG  C  G  AG  AAATAGA  A-  ---
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CCCCCCCCC
GAM26510 8345 GGACCCTTGACTCTGTTCCC A C CT TTCAA- ACACACATA
7 TTCAAGATCACACACATAGG GG CC TTGACT GTTCCC GATC
TCACCACTGGGGACCAGTCA CC GG AACTGA CAGGGG CTGG
AAGGCC - A C- TCACCA ---------
GAM26510 12503 GGACCGAAGTAGTCTTCATT AC- AG TC AAG CTATGAAA
9 CAAGGAACTATGAAATTCAA GG CGA TAG TTCATTC GAA
GAATGAGAGCTAGATCGTGA CC GCT ATC GAGTAAG CTT
CC AGT AG GA AA- --------
GAM26512 16509 GGACCTAAACCCTTTTACGC -- CCT AC --- ---- -- ATTC
5 CTCTTGTAGGCATTCGGATT GGACCT AAAC TTT GCC TCTTGTA GGCAT TCGG
CCTGATCATGCTTTTATGCA CCTGGG TTTG AGA CGG AGAACGT TCGTA AGTC
AGACTTGGCTCAGATGTTTG AG T-- CT TTC ATTT CT ----
AGGGTCC
GAM26514 3341 GGACCTGCAGGGGAAGGAAG A G GGAAGC T C -- ATCCCC
3 CAGGGTGACGGTTTGGTATC GG CCT CAGGGGAA AGGG GA GGTTT GGT
CCCACCTAAGACCCTCCCCT CC GGA GTCCCCTT TCCC CT CCAGA CCA
TTCCCCTGAGGCC - - ------ - C AT ------
GAM26517 12719 GGACGAGCTCTTTGACCACA A ACCACAT - A C ACTT
4 TTGTCCAGTGCATCGCGGAC GGACG GCTCTTTG TGTCCA GTGC TCG GG
TTCCTCGAGTACATGGGCAT CCTGT CGGGAAGT ACGGGT CATG AGC CC
GAAGGGCGTGTCC G ------- A - T ----
GAM26522 6350 GGACGTGTGAAGGAGCACGG - AA GCA-- AGCACGACTCGAATACCAC
9 GGAGCACGACTCGAATACCA GGAC GTGTG GGA CGGGG
CTCCCGAAGGATCCGCACGC CCTG CGCAC CCT GCCCT
AGTCC A G- AGGAA ----------
GAM26526 882 GGACTATGCATATGGTCCAA CA - AATATCAAA TGA CAT GAC--- GATATCT
0 TATCAAAGGGAATGATAGCA GGACTATG TATGGT CC GGGAA TAG TGAAG TCGGG
TTGAAGGACTCGGGGATATC CCTGGTAT GTATCA GG CTCTT ATC GCTTC AGTCC

TAACAGCAATACCTGATCAC AC T --------- TG- AC- ATCACT -------
TACTTCGCACTAGTTTCTCG AACAGCAATA
GTACTATGCATATGGTCC

GAM26531 1593 GGACTCTCAGGAATCTTTCA C - - GA-- G AACTAA
0 GATTGCTGCAACTAAGCAGG GGA TCTCA GGA ATCTTTCA TT CTGC
AAGGGATGGAAGGTCTCCTT TCT AGGGT CCT TGGAAGGT AA GACG
GGGACTCT C T C AGGG G ------
GAM26533 3233 GGACTGAACGGGTGCGGAAC AA- T AAC CCT- CTCCAA
5 TGCTCAAGCCCTGAGTTCTC GGACTG CGGG GCGG TGCTCAAGC GAGTT
CAAGACTCTACAGCTTGAGT CCTGAC GTTT CGCC ATGAGTTCG CTCAG
ACCGCTTTGAGACAGTCC AGA - --- ACAT ------
GAM26535 1777 GGACTGCATCCTACCACCAA CA CC AA CCAACT- AA---------- CCTT
8 CTCGTCCAACTGACAAAGCC GGACTG TCCTA ACC CTCGT GACA GC
CTTGCGCCTGCCCTCTCCAG CCTGGC AGGGT TGG GGGTA CTGT CG
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GAM26536 21105 GGACTGCTTGGATTCTTTAC A GC GA---- C- A GGG -- T AGAAC
6 AGAAATGGGCAGTGTCGTTA GG CT TTG TTCTTTA AG AAT CAGT GTCG TAG

GAGAACCTGTTGACCAACTG CC GG AAC AAGAAGT TC TTA GTCA CAGT GTC
AAAATTCCTCCTGAAGAAAT A TA AAAGTA CC C AAA AC T -----
GAAACAAATGGACC
GAM26537 9712 GGACTGGCTTCCAGACATCC ---- C ACTCACA TCTCCT
6 ACTCACAGCATGTCTCCTCG GGACTGG CTTCCAGA ATCC GCATG
TGTCCAGGATCTCTGGGAGA CCTGACT GAGGGTCT TAGG TGTGC
TACTCAGTCC CATA C ACC---- ------
GAM26539 21499 GGACTGTCTTGTCCACATGT ---------- CACAT GA A- AAAAAAAAAA
4 GAGGAAAGATGAAAAAAAAA GGACTGT CTTGTC GT GGAA GATG
ACATTAATTCCAAGCTTAGA CCTGACA GGATAG CG CCTT TTAC
TAGGTGAAAATAAAAACAGT AAAATAAAAGT ATT-- AA AA ----------
CC
GAM26548 21545 GGAGAAAATAAATATCGAGT AAA CGA---- TTC GTTA
9 CTTCGCTGTTAAGTATGATG GGAGAAAAT TAT GTC GCT
TTAGCTGTAGGATTTTTTCC CCTTTTTTA ATG TAG TGA
GG- TCGATTG TA- ----
GAM26549 8188 GGAGAAACCCAGGGCTAAAG AAACCCA-- A ACGTGTTTTCCTCCTTTAA
9 TCACGTGTTTTCCTCCTTTA GGAG GGGCTAA GTC
AGACTTAGCTCAACACTTCA CCTC CTCGATT CAG
CTCC ACTTCACAA - ----------
GAM26550 9162 GGAGAAAGAGAAAATCGCTG GAAAATC- - ACA AGTGACCC
6 CAGCGACACAAGTGACCCTG GGAGAAAGA GCTGCA GCG CA
GGCGCGTGCAGCCCCCTGAA CCTCTTTCT CGACGT CGC GT
TCTTTCTCC AAGTCCCC G GG- --------
GAM26551 22282 GGAGAAAGCAAGCCCCTCCA A AA C A--- C T - CG- ATTGAG
1 CACTGCGTCCTAGACCGGAT GGAGA AGC GC CCTCC CACTG G CCT AGAC GAT
ATTGAGGTTGGTGTCTCAGG CCTCT TCG CG GGAGG GTGAC C GGA TCTG TTG
CCCAGTGCCCCGGAGGAGCG G GG A CCCC C - C TGG ------
GGCTGTCTCC
GAM26552 8812 GGAGAAATTGTTGGGGGCTT AATT G CT TCC A ATGACCTTTATAAACTCC
7 CAGGGGTCCACCACGATGAC GGAGA GTTG GGG TCAGGGG ACC CG
CTTTATAAACTCCCGGGTTT CCTTT CAAC CCC AGTCCCC TGG GC
CCCCCTGATCCCGCAACCTT C--- G T- CTT - ----------
TCC
GAM26553 8184 GGAGAACAAGGGGTCTGTGG AGAACAA GT T AAA GA AAGGAC
2 AAATCATGAGAAAGGACTTG GG GGG CTG GG TCAT GA
AATGACACCCGGGACCTGCA CC TCC GGC CC AGTA TT
TGGCC GGTACG- AG - AC- AG ------
GAM26553 9878 GGAGAACAAGGGGTCTGTGG AGAACAA GT T AAA GA AAGGAC
3 AAATCATGAGAAAGGACTTG GG GGG CTG GG TCAT GA
AATGACGCCCGGGACCTGCA CC TCC GGC CC AGTA TT
TGGCC GGTACG- AG - GC- AG ------
GAM26556 4517 GGAGAACTTTGCCTTCTGTG - TT- CT-- GAGGGG
0 GGGTCCCTGAGGGGGGGGGC GGAGAA CT GC TCTGTGGGGTCCCT
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TTCTCC A CTC TCTT ------
GAM26585 12613 GGAGAATGGCTATGTGACCA GA CTAT A TGTC AAAAGTCT
7 TGTCGGTGGGAAAAGTCTTT GGA ATGG GTG CCA GGTGGG
CACCCTGGTACTGCTCCATG CCT TACC CAT GGT CCACTT
TCC G- TCGT - C--- --------

GAM26591 3416 GGAGAATTGCTTGAACCCGG AA TG GA-- AGGC A A GCTGAGA
7 GAGGCAGAAGTGGCAGTGAG GGAG T CTT ACCCGGG AGA GTGGC GTGA
CTGAGATCGCGCCACTCTAG CCTT A GAG TGGGTTT TCT CACCG CGCT
TTTGGGTGACAGAGTGAGAT AG GT ACAG GA-- - - -------
TCC
GAM26597 6173 GGAGACACAGGTGTGGAAAC GACACA G AA G GG ATG CAAA GACT AG
TTCG
6 AGACGGCAGAATGCCTCCAA GGA GGT TGG ACA AC CAGA CCTC GGT TC AGCTGC
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CGGCAGCTGAGACAAGCCAT AG---- A AG A A- CAA TA-- AAC- AG ----
GAGGAACTCTGAGTATGTGA
CCGAACCGATCC
GAM26598 5950 GGAGACAGGGAGAGGCTCTT - A A GC - GTA GTT GAGCCTCA
7 CTGTGTGTAGTGGTTGTGCA GG AG CAGGG GAG TCTTCT GTGT GTG GTGCA
GAGCCTCATGCATCACGGAG CC TC GTCCC CTT AGAAGA TACG CAC TACGT
CATGAGAAGACGTTCCCCTG G - - GC G AGG --- --------
CTGCC
GAM26601 16608 GGAGACCTGAAGGCATTGAA CCTGAA TTGA ACA- GGAAGAAA
7 CGACAGTACAGGAAGAAATG GGAGA GGCA ACG GTACA
TGCAAAGTGTGGACTGCCGC CTTCT CCGT TGT CGTGT
TCTTC CG---- CAGG GAAA --------
GAM26602 20006 GGAGACGCAACCGTGTTTTT A C GTGT T AACCAAGGCAAAATG
1 CATTCTCCCTAACCAAGGCA GGAG CG AACC TTTTCA TCTCCCT
AAATGAGGGAGATTGAAGAG CCTC GT TTGG AGAAGT AGAGGGA
GTTCTGACTCC A C ---- T ----------
GAM26602 14561 GGAGACGGCCCAGCAGGTCT A- - A GG T AATGGT-- GG CTTG
3 GGGAAATGGTGCATCAGGTG GGAG CG GCCC GCA TC GGGA GCATCA TG
CTTGCAGGTGGTGTTGAGGA CCTC GC CGGG CGT AG CCCT TGTGGT AC
ACTCCCCGAAGTGCAGGGCT CG T A GA C CAAGGAGT GG ----
CGGCCTCC
GAM26604 20635 GGAGACTGCCTGGCTGTGTC A C--- G -- CTC T GTGTT
3 CTCTCAGCCAGGTGCCGTGT GGAG CTGC TGGCT T GTCCT AGCCAGG GCC
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GAM26605 1731 GGAGACTTTCTGTGAAGCAA CTTT TGAA AACCC - G ACTAGA
3 ACCCGAACTTTGCAACTAGA GGAGA CTG GCA GAAC TTT CA
TGAAGATGTTCTGTGTGTCA CCTCT GAC TGT CTTG AGA GT
GTTACTCTCC CATT TG-- GT--- T A ------
GAM26605 4314 GGAGAGAAAATTGTACCTCT G ATTGTA CT - C ACTGTTATG
6 TCTACTGCAATACTGTTATG GGA AGAAA CCT TCT ACTG AAT
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TTCTATCC A AA---- AT G C ---------
GAM26607 21654 GGAGAGAAGGTTTTTTTTTT TTTTTTAA-- CTGAA
0 TTTTAACATTCTGAAGATGG GGAGAGAAGGTTTTTTTT CATT
TGCTGTGTCAAGAAGGACCT TTTTTTTTCCAGGAAGAA GTAG
TTTTTTT CTGTGTCGTG -----
GAM26611 17979 GGAGAGCCACTTGAGGTCAT T-- - C ATGTTAA A TAAAA
3 ATGTTAAGGTATGTAAAACA GGAGAGCCAC TG AGGT AT GGT TG
CACTGTTCTGATCACTTACA CCTCTCGGTG AC TTCA TA TCA AC
TCTGTGGCTCTCC TCT A C GTCTTG- C -----

GAM26613 4096 GGAGAGGAGATTTCTCATCA AGATT AAAGTC T TG GTGTGT
0 AAAGTCCGTGGTGTGTGTGT GGAGAGG TCTCATCA CG GG T
GTGCCCGTGTGTGGTGGGAC CTTCTCC AGGGTGGT GC CC G
CTCTTC ----- GTGT-- - GT ------
GAM26613 14557 GGAGAGGCACCACTCAGAGG CA CT A C CC CAAGT T-- TGCT
7 CAGGCCCGGCTGCACAAGTC GGAGAGG CCA CAG GG AGG CGGCTGCA CC CCC
CTCCCTGCTGGGCCTGGTCA TCTCTCC GGT GTC CC TCC GTCGACGT GG GGG
CTGCAGCTGCCCCTCCCTGG TC CG - - CC CACT- TCC ----
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GAM26615 18632 GGAGAGGGGTGACCCTGAGT G TGAGT - AGA
8 GGAGCTCTGAGACAGATGCT GGAGAGG GTGACCC GGAGC TCTG
CTCGTTGGGTCACGCCTTTC CCTTTCC CACTGGG TCTCG AGAC
C G TTGC- T ---
GAM26617 14377 GGAGAGTAAGTAGGCCCTCT TA- AGGCCCTCTCAAG AAGTG
4 CAAGGGAGCGTAAGTGATGT GGAGAG AGT GGAGCGT
TCCATATTAACCACAGACTG CCTCTC TCA CCTTGTA
TCCTCTCC CTG GACACCAATTATA -----
GAM26623 3153 GGAGATCGTGCCAGTGGGCT CGTG T--- ------- - - AC- CA-
9 CCAGCTTGGGTGACAAGAGT GGAGAT CCAG GGGCTCC AGCTTGGG TGACA AGAGTGAA
TC TC
GAAACTCCATCTCAAAAAAA TCTTTA GGTT TTCGAGG TCGAATTT ACTGT TCTTATTT AG
AG
GAAAAGAAAAGAATGTTTAT AAGA TTCT GAAGTAA T A GTA AAA
TCTATGTCATTTTAAGCTAA CAAAAAAAGAAA
TGAAGGGAGCTTTCTTTTGG T
AGAAATTTCT A

GAM26624 19916 GGAGATGAAACGGAAGATGC A AA-- A ATG A T TCTCC ATAC
6 GCGAGGATGTGATCTCCTCC GGAG TGA CGG AG CGCG GGATG GA TCC
ATACGGAACTTTCTCATCTA CCTC ACT GTC TC GTGC TCTAC CT AGG
CGTGGCCCTCCTGCGAGTCA - GAGC C CCG A T TTCA- ----
CTCC
GAM26624 6220 GGAGATGAAACGGAAGATGC A AA-- A ATG A T TCTC ATAC
7 GCGAGGATGTGATCTCTTCC GGAG TGA CGG AG CGCG GGATG GA TTCC
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GAM26626 12220 GGAGATGCGGCAGTTCTGCC A CG TCT----- T C TTCCC
4 AGTCCCTGTTCCCCGTGGCT GG GATG GCAGT GCCAG CC TG
GGCCTATGCCTACTGCACCA CC CTAC CGTCA CGGTC GG GC
TCCCC C CA TCCGTATC - T -----
GAM26627 9497 GGAGATGGCTCCGGCGGCTT GATG CC C GAAAA CAAATT
8 GGGGAAAAGCCAAATTGCCA GGA GCT GG GGCTTGGG GC
AAACTCAAGTCACCTCAGTA CCT TGA CC CTGAACTC CG
CCATCC ACCA CT A AAAAC ------
GAM26633 6087 GGAGCAATGACTGTTGGTAT TGA- TG TAT TTC T GGGAA - AAAACCTAA
6 GGGCTATTCCATGTATCGGG GGAGCAA CTGT G GGGCTA CA GTATC TTCTG GGC
AATTCTGGGCAAAACCTAAG TTTCGTT GACG T TCTGGT GT CGTAG AAGAT CCG
CCTTAGAAGAAGAGATGCTG CGAG GT GT- TCT - AGAAG T ---------
TCTTGGTCTTGTTGGCAGGA

GCTTGCTTT
GAM26634 9471 GGAGCACATGTGCCGCCTGG A C - ----- T ACAT TCACCACCC
6 ACATTGATTCACCACCCATC GG GCA ATG TGCCG CC GG TGAT
ACAGCCCGGAACACTGGCAT CC TGT TAC ACGGT GG CC ACTA
CATCTGTACC A C T CACAA C GAC- ---------
GAM26638 8786 GGAGCAGCGGCGCTTGAGGA --- - - ACCC-------- GAGA
3 CCCGGGGAGACCCTCAAGAA GGAGCAGC GGCG CTTGA GG GGG
TCGACCCATCAGGACGCCAG CTTCGTCG CCGC GGACT CC CCC
AGCTGCTTC AGA A A CAGCTAAGAACT ----
GAM26639 1475 GGAGCAGTACGGGACCAACC A - ACG---- CAAC- TT C GACAG
9 CATTTGACTCGGCAGACAGT GG GCA GT GGAC CCAT GACT GGCA
GCTTAGTCCTATGGAGAACG CC CGT CA CCTG GGTA CTGA TCGT
TCCATGATAAACGTGCCC - G AATAGTA CAAGA TC T -----
GAM26640 18875 GGAGCAGTGGTACCGGCGGC CAGT T C GG-- T A TCAGG
3 CGCTGTGGGAGTCAGGCCCC GGAG GG AC GGC CCGC GTGGG G
ACCGTGGACATGCCAGTTCC CCTC CC TG CCG GGTG CACCC C
CTCC ---- T A TACA C - -----
GAM26641 8776 GGAGCATCCCTCGCGTCCTG AG - C C---- CA- CAGC
2 TCACTTCCAGCGAGGCACAC GG CATCCCT CG GTC TGT CTTC
AAAACTGACCGTAGGGATGG CC GTAGGGA GC CAG ACA GGAG
CC G- T - TCAAA CAC ----
GAM26645 3360 GGAGCCAGTTTGGATTTTTA T TTTTAACCTCC CCCACCTTCA
4 ACCTCCTTCCCCACCTTCAG GGAGCCAGT TGGAT TTC
AAAAACACTATTCATCCACA CTTTGGTCA ACCTA AAG
CTGGTTTC C CTTATCACAAA ----------
GAM26646 22286 GGAGCCATTGTGGACGTTCC TTG G-- G TG AGGA- T T GTAGTTG
2 AGTTGGTGAGGAGCTGTGGG GGAGCCA TGGAC TTCCA T GTG GCTG GGG CGT
TCGTGTAGTTGATGCCCTTG CCTTGGT ACCTG AAGGT A TAT TGGT CCC GTA
GTAATGCTATTGATGGAAAG TA- GGA - GT CGTAA T - -------
GGTCCAATTGGTTCC
GAM26646 3330 GGAGCCATTGTTGGACGTTC TT G-- GTT-- AGGA T T GTAGGTTG
3 CAGTTTGGTGAGGAGCTGTA GGAGCCA GTTGGAC TTCCA TGGTG GCTG AGGG CGT
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CTTGGTAATGCTATTTGATG -- GGA AGTTT AA-- - - --------
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GAM26654 21518 GGAGCCTTTTTTTTCAACTA CC ACTAG- CCT GG TAAACT
6 GCTTCCTGGGGTAAACTTTT GGAG TTTTTTTTCA CTT G G
CTAAAAGATAAAATGGAAAG CCTC AAGGAAAGGT GAA C T
GAACTCC -- AAAATA AAT TT ------
GAM26655 20441 GGAGCGCACCTTCATCGCCA ACCT--- A - A GACG GTGCA
2 TCAAGCCGGACGGCGTGCAG GGAGCGC TC TCGCC ATCA GCCG GC
CGCGGCCTGGTGGGCGAGAT CTTCGCG AG AGCGG TGGT CGGC CG
CATCAAGCGCTTC AACTACT - G C G--- -----
GAM26656 21338 GGAGCGGGGGCTCAGCTCTC A - -- TCTCT C- AA- - TTGATGGGCT
7 TGGACCGGAAATACCTTGAT GG GCG GGGGC TCAGC GGA CGG ATA CC
GGGCTGGATGTGTGCCGCTT CC CGC TCCCG GGTCG CCT GCC TGT GG
CCCCTTGCTGGATGCCCTAC - A TA TTCC- TC GTG A ----------
GCCC
GAM26656 19164 GGAGCGGGTTGAGAGGGGGG - T A -------- - ACC
9 CTCCGGGACCTCATGGAGCT GGAG CGGG TG GAGG GGGGCTCCG GG

CTGCACGTGACCTCCACCTC CCTC GCTC AC CTCC TCTCGAGGT CT
GACTCC A C - AGTGCACG A ---
GAM26657 21429 GGAGCGGTGGTGGCCAGACC A G T AGAC C CTTCAC
1 ACGCCTGCTTCACCAGGTCT GG GCG TGG GGCC CA GCCTG
GCATAGGCCTCTAGCGCACC CC CGC ATC CCGG GT TGGAC
A G T ATAC C ------
GAM26659 4213 GGAGCTATTAAATTTTGATG A TTTT- GTT- CTC TTCATT
1 TTGCCTCAGTTATTTTCATT GGAGCT TTAAA GAT GC AGTTATT
AATAACTTTTGCTAAAATTT TCTTGA AATTT TTA CG TCAATAA
ACCTTTTAAAAGTTCT A TCCAT AAAT TTT ------
GAM26660 9728 GGAGCTCCAGCGTCAAATCG -- - - AAATCGCT A GA- AGATG
2 CTCAGCCAGGAGATGAGATG GGAG CTCC AG CGTC CAGCC GGA TG
CACCATCCGGCTGCTGGACG CCTC GAGG TC GCAG GTCGG CCT AC
ACTCGGAGATCTCC TA C A GTC----- - ACC -----
GAM26661 2989 GGAGCTCTTTATATATTGCA T T TGCAG C AC TA A A TGA
2 GATTTAGTCTCTTACTGGTT GGAGCTCT TATA AT ATTTAGT TCTT TGGT TGT TGCTGC CC

ATGTATGCTGCACCTGAGGA CTTCGAGA GTGT TG TGAGTCA AGGA ACCG ACG ACGATG GG

GTAGCAGCACTGCCAAGGAC C C TTCTG C -- TC - A ---
ACTGAGTGTCTTGTCTGTGC
AGAGCTTC
GAM26664 13968 GGAGCTGGAGAGGTGCAGGC A AGAGGT A A CG TC A G GCGG
4 CCAGGGCGTCGTCCGAGTGA GG GCTGG GC GGCCC GGG TCG CG GT AGCA
GCAGCGGTGCTGGCCGTGTG CC CGATT CG CCGGG CCC GGT GC CG TCGT
GGACCCGGGCCCGCTTAGCA A ------ C - AG GT - G ----
CC
GAM26668 4045 GGAGCTTGAAAGGAGAAAGC A AAA-- - A C-- CGCCCCAA
4 ACGGGGTCGCCCCAAACCCC GG GCTTG GG AGAA GCA GGGGT
TTCTGCTTCTGCCCATCACA CC TGAAC CC TCTT CGT CCCCA
AGTGCC G ACTAC G - CTT --------
GAM26668 20794 GGAGCTTGAGAAATCACCTA ----- - C AGCCA GGG AA- TG TGTGCATT
5 GGGCAGCCAAGCTGGGGAAG GGAGCTT GAG AAATCA CTAGGGC AGCT GAAGGG G GC

GGAAGTGGCTGTGCATTGCT CCTTGGA CTC TTTAGT GGTCCTG TCGG TTTCCT T CG
GTGTGTCCTTTAAGGCTCTT AGATT C T GTTTC AA- GTG GT --------
TGGTCCTGGTTGATTTCCTC
TTAGAAGGTTCC
GAM26671 6638 GGAGGAACGCGCCGCCGAGC AG A C - ACCATCATG GGCACTTA
4 CACCATCATGCCTGGGCACT GG GA CGCGC GCCGA GCC CCTG
TACAGGAAGGCTTCGGCTGC CC CT GTGCG CGGCT CGG GGAC
GTGGTCACC A- G T T AA-------- --------
GAM26672 8773 GGAGGAAGAGGACTCAAAAG A A TCAAAA TG CA GAG- AGCA
2 TCTGGCCTTTCACTGAGCCC GG GGAAG GGAC GTC GCCTTT CT CCCCCAC
CCACAGCAGTGGGGGGAGAA CC CTTTC CCTG CGG TGGGAA GA GGGGGTG
GCAAGGGTTGGGCCCAGTGT C C TGACC- GT C- AGAG ----
CCCCTTTCCCC
GAM26674 19930 GGAGGAATGATGTGCTATGT --- A ---- AAAAT- AAGGTC
5 AAAATGGCTGTAAGGTCACA GGA GGA TGATGTGCT ATGT GGCTGT
GCCTTGAGGGCATTGGAAGT CCT CCT ATTATATGA TACG CCGACA

ATATTATCCTATTCC TAT - AGGT GGAGTT ------
GAM26674 20537 GGAGGAATGCGGGCCTGGCC GG G G A G- GACTCTG
6 TGGCATGTGGGGCGACTCTG GGAGGAATGC GCCTG CCTG C TGT GGGC
GTCTGGGCGGGCAGGCGGGC CCTCCTTACG CGGGC GGAC G GCG TCTG
AGCATTCCTCC A- - - G GG -------
GAM26677 3792 GGAGGACTTGGCCACCAGTG CT C -- ---------- TCTT
6 CAGGCTTCTTGGCCTTCTTC GGAGGA TGGC AC CAGTGC AGGCT
TCCGCGTACTGCCGTAGCCG CCTCCT GCCG TG GTCATG TCCGG
CTCCTCC C- A CC CGCCTCTTCT ----
GAM26678 19305 GGAGGAGATTGACTTTCTTC G ----- TTCTT ATCCCAAAATC
3 GTTCCAATCCCAAAATCTGG GGAGGA ATTGA CT CGTTCCA
AATGTTCATAGTGTCCTCAA CTTCCT TAACT GA GTAAGGT
TGTCCTTC G CCTGT TACTT ----------
GAM26679 5380 GGAGGAGCCTTAGCCCTGGA G TT--- TG A A CCC ACC A GCAC
5 TTCCAAGGCCCATCCACCCG GGAGGA CC AGCCC G TTCCA GG ATCC CGGTG TCA
GTGATCAGCACTGAGCACCG CCTTTT GG TCGGG C AAGGT CC TAGG GCCAC AGT
AGGATTCACCATGGAACTGG G TCACC GT - A ACT A-- G ----
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GAM26679 14453 GGAGGAGCGCAGCGGGATGG AG - GC- G G TTGTTGGT
6 CGTGGACCTTGTTGGTGGTG GGAGG CG CA GGGATGGC TG ACC
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CTTCC GA A AGA - G --------
GAM26682 9129 GGAGGAGGTCCTACAGTCGG A TC ACAG ACATGAA--- GAGA
7 GAACATGAAGGGAGACTGCG GG GGAGG CT TCGGGA GG
ATACCCGTCCCGAAGGGAGC CC CCTCC GG AGCCCT TC
CTCCCCC C GA GA-- GCCCATAGCG ----
GAM26684 8171 GGAGGATACTGCTGCAGTCT A AC GCA CT TATAA- - CCAC
2 TGGGAGTTATAATAGCAGCC GG GGAT TGCT GT TGGGAGT TA GCAG
ACTTGCATGGGCCTTACTTC TC CCTA ACGG CA ATCTTCA GT CGTT
TATAACAGGCAATCCACT A -- A-- AT TTCCGG A ----
GAM26684 14284 GGAGGATATAGCAATTTTAT GCAATTTTA A ACATGGTCA
4 AGATTACTACATGGTCAAGA GGAGGATATA TAGATT CT
ATCTACGCATCGGATGTATT TTTCTTATGT ATCTAA GA
CTTT AGGCTACGC - ---------
GAM26686 18026 GGAGGATCTATTCTCCGGTC --- TCT - CT A - GGAATA
7 ATTCCTGGTAGATATTTGGA GGAG GATCTAT CCGGTCAT TC GGT GAT ATTT
ATAAAATAATCACCTGACGT CCTT CTAGATG GGTTAGTG AG CCA CTA TAAA
GATTGGGTAGATCACATTCC ACA --- C T- - A ------
GAM26687 1108 GGAGGATGAGGAGGAGGGAG ATGA GGA- GA ----- TC CCCAGGAC
0 GTGGAGACGTGGACATCACC GGAGG GGAGGAG GGTG GAC GTGGACA AC
CCAGGACGTTTTGTCCGCTA CCTCC CCTCTTT CCAC TTG CGCCTGT TG
TCAGTTCACACCGGCATTTC G--- ACGG AC ACTAT TT --------
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GAM26688 5620 GGAGGATTGCTCGAACCTGG GA TG GA-- TG AGGC GT A CTAGATCAC
6 GAGGCGGAGGTTGCAGTGAG GGAG T CTC ACC GG GGAG TGCAGTG GC
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TCCAGCCTGGGTGACAGAGT AG GT ACAG GT GA-- -- - ---------
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GAM26694 705 GGAGGCATATGTGGCTTTGG C A G- CTCTCACCAAC-- ATATGAC
5 CTGCTCTCACCAACAGCAAT GGAGG AT TGTGGCTTTG CTG AGCA

ATGACTGCTAAAAGAACCAA CCTTC TA ACACCGAGAC GAC TCGT
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TTCC
GAM26696 20568 GGAGGCCGGAGCGGAGCCGC CC A-- GT- A AGG
8 GTCTGACTGAGGCGGGCAGC GGAGG GGAGCGG GCCGC CTG CTG
AAGCGGCCCCTCGCTCCTCC CCTCC CCTCGCT CGGCG GAC GGC
CTCC CT CCC AAC G ---
GAM26697 9840 GGAGGCGGAGCTTGCAGTGA - A-- A G AT----- CCAC
7 GCCGAGATTGCGCCACTGCA GGAGGCGGAG CTTGC GTG GCC AG TGCG
CTTCCACCTGGGCCACAGAG TCTCTGCCTC GAGCG CAC CGG TC ACGT
CGAGACTCCGTCTCT A AGA - G CACCTTC ----
GAM26699 3472 GGAGGCTAAGCCTTGGCTTG GCT A- TGC- TCCTACTCAT
6 CCATCTGCTGGAGAAGTCCT GGAGGCTAAGCCTTG TGCC TC TGGAGAAG
ACTCATCTTTTTCATACTGA TCTCTGATTTGGGAC ACGG AG ACTTTTTC
CAGGCACACAGGGTTTAGTC AC- AC TCAT ----------
TCT
GAM26703 8309 GGAGGCTGGGTATTGTCCTG AGG T CTCT CTTTTCT
9 CCTCTGCCTTTTCTGTCTCA GG CTGGGTATTG CCTGC GC
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CGA - ACTC -------
GAM26706 12570 GGAGGGAATGTGATGGTCAA A --- A AA TC-- TACCAAT
1 GGTCACTCTACCAATGAGTT GG GGGAAT GTG TGGTC GG ACTC
CCTCCCAGACCGACGCTTTG CC CCCTTG CGC GCCAG CC TGAG
TTCCCCC - TTT A AC TCCT -------
GAM26706 9704 GGAGGGACAGATAACATTGT G A TGTTTT-- GACTCAGAAAGA
6 TTTATGGGGACTCAGAAAGA GGAGGGACA AT ACAT ATGGG
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GAM26710 14313 GGAGGGCACGTGCGTGGAGT A CA - G G GCAGATA GAGAA
5 GGCTCCGCAGATACCTGGAG GG GGG CGTGCG TG AGTG CTCC CCTG
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GCGCACGGACCCCCC C AG G G A AA----- -----
GAM26712 12661 GGAGGGCGGTCAGGGGAACT G G- GAA- CA - GGGGAGGG
3 TCACAGTGCGGGGAGGGGTG GGA GGCG TCAGGG CTT CAG TGC
TCTGGAAAGGAAACTCTGAA TCT CCGC AGTCTC GAA GTC GTG
GCGCCGTCT G GA AAAG AG T --------
GAM26715 20331 GGAGGGGCTGGGCTCTACCC G - ACCC T TTCC CA CTATT
5 CTTTCTTCTTTCCATCCAGT GGAGGG CTGGGCT CT CTTTCT CT ATC GT
CTATTGCCAGATCCAGAGAA CCTCTC GACCCGA GG GAAAGA GA TAG CG
AGCGCGGAAGCCCAGCTCTC - A CGC- - CC-- AC -----
C
GAM26715 5858 GGAGGGGCTGGGCTCTACCC G CTA --- T TTCC CA CTATT
6 CTTTCTTCTTTCCATCCAGT GGAGGG CTGGGCT CCC CTTTCT CT ATC GT
CTATTGCCAGATCCAGAGAA CCTCTC GACCCGA GGG GAAAGA GA TAG CG
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CC
GAM26715 1485 GGAGGGGCTTCCTGGGGCTC - TGGGG - G A G CCT
8 GCTGGCAGAGCTGGCCCCCT GGAGG GGCTTCC CTC GCT GC GAGCT GCCC
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GAM26716 8575   GGAGGGGGCGGGCGGGGGGC       C  C     C   ACCGC   TGA
3           GCCGACCGCGGCCTGAGGCC GGAGGGGG GGG GGGGGG GCCG    GGCC
            CGGCCCCTCCCCTCTCCCTC CCTCCCTC TCC CCTCCC CGGC    CCGG
            C                   -  -    -   -----   ---
GAM26716 1165   GGAGGGGGTCACCCGACCTC       TC  C  C   GG--   TGTCT
7           AGGCCACTGTCTGTGGAACA GGAGGGGG  AC CGA CTCA   CCAC
            TGAGCTTGTGTTTTCTCTTT CTTTCTCT  TG GTT GAGT   GGTG
            C                   TT  T   C   ACAA   -----
GAM26716 14656  GGAGGGGTAATACACAAAAA      T   A-----   AA   A   CA    GATG
8           CAAAGGCATATTTGATGAAG GGAGGGG AAT     CACA  AACA AGG  TATTT
            TACCCTGTGTTATGTGAACA CTTCCCC TTA     GTGT  TTGT TCC  ATGAA
            CAATTTCCCCTTC           T  ACACAA   A-   G   C-   ----
GAM26721 20155  GGAGGTATGCAGCGACTAGA     A   A   ACT   T   TCCT    ACTGACCCAA
5           TTCTGTCCTGTTGCACTGAC GGAGGT TGC GCG   AGA TCTG    GTTGC
            CCAAGCAATCAGACTCTTGC CCTCTA ACG CGT   TCT AGAC    TAACG
            AGCAGATCTCC             G   A   ---   C    ----    ----------
GAM26722 8679   GGAGGTCTGTGGTCAGTATA   A     TG --    A- -    G  -      TC    CTGTACAC
7           CTTTAGGATTATCTATTCTA GG GGTCTG  G  TCAGT  TA CTTTA GAT TATCTAT  TATTT
            TTTCTGTACACGAGTATTAT TC CCAGAT  C  AGTTA  AT GAGAT CTA ATGGATA  ATGAG
            AGGTATATCATAGAGATAGC   G     GT TA    CG  A    A   T      TT    --------
            ATTGAATCTGTAGACCGCT
GAM26724 5855   GGAGGTGGAGCCCTCAGCCC    - GA  C  C      GAACAAG  TTCAG
3           TGGAACAAGGCTTCAGGCAG GGAGG TG  GC CT AGCCCTG       GC
            GCATACAGGGCTCAGAGCCA CCTTC AC  CG GA TCGGGAC       CG
            CAGCTTCC              G  AC  A  C      ATACGGA  -----
GAM26725 9207   GGAGGTGGCAGCGGCAGCTG          - CA     TTG   TG--     CC       CA   T  TACA
0           TTTTGGCCTGTGTCTCCCTG GGAGGTGGCAGC GG  GCTGTT   GCC    TGTCTC  TGATCGTT  AGC
CA
            ATCGTTCAAGCTCATACATG CCTTCACCGTCG CC  TGACGG   TGG    ACGGAG  ATTAGTAA  TTG GT

            GTTAATGATTAATGAGGCAG          A  TA     TG-   TGTG     TA      --   -  ----
            TGTGGTGTGGCAGTATCCAG
            CTGCCACTTCC
GAM26726 18152  GGAGGTGGTGACCCCACTCA    G   TG -     CATG    C    AC   GTGG
3           TGGCGGCGGACACCAGGTGG GGAG TGG  AC CCCACT    GCGG GGAC  CAG
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            CGTTGTCAGCTTC          G   GT  C     A---    -    GA   ----
GAM26727 19870  GGAGGTGTACAGACTGGAAG   A    ACAG     A AGATG  GAA     TG  AGGTTGGA
0           AGATGGAGAAGATTTTTGTC GG GGTGT    ACTGGA G    GA   GATTTT  TC
            AGGTTGGAGATGAAGATCAT CC CCACG    TGACCT C    CT   CTAGAA  AG
            CAAGGGCTCCAGTGGCACCC   -    G---     - GGGAA  A--     GT   --------
            C
GAM26729 2806   GGAGGTTGTATTCCTTTTAT        A     TTATATT  TG   AA  A   AAAT
5           ATTGCTGAGAAAACTAGTTA GGAGGTTGT TTCCTT      GC  AGAA  CT GTT
            AATGATCAGATTCTTGGCTG CTTTTAACA AAGGAA      CG  TCTT  GA TAG
            TTAAGGAAACAATTTTC          -     TTGT---  GT    A-  C   ----
GAM26732 8678   GGAGTACCAGATCAGGGCAG     ACCAGA      GAGA   -   AGCT
0           AGACTTCCCAGCTGGGTAAG GGAGT     TCAGGGCA    CTT CCC
            GCATGCTTTGAGGGAAGACT CCTCA     AGTTTCGT    GAA GGG
            CC                  GAAGGG       ACG-   T   ----
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GAM26732 14537 GGAGTACTTCACAAAGGGCG T T ACA C-- C- TT- GTTCG
6 CACCCCTTTGCTGTTTGCCG GGAG AC TC AAGGG GCACCC TTTGCTGT GCC
TTCGGGCCCCGCGGCAGGAT CCTT TG AG TTCCT CGTGGG GGACGGCG CGG
GGGTGCAATTCCTTCGATGT - T C-- TAA TA CCC -----
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GAM26735 9209 GGAGTATGCACGGGAGATCT GTA CAC A-- - G GCCC
0 GGGGTGTGGAGCCCTCCGAC GGA TG GGG GATCTG GGGT TGGA
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CATCC ACA CC- GCC G - ----
GAM26735 14686 GGAGTATTTTAGTCTAAAGG A TTT TCTA TC A AC TTTTT
8 CTTTTCCAAATTACTTGGAA GG GTA TAG AAGGCTTT CAA TT TTGGAA
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3 GAGTAGTGGAGACAGGTTTC GGAGT CG GGC GCC TGA TA GTGGAGA
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4 ACTGTCACACCGTAGCCCAC GGAGTCT TCT GC ACTGT CCGT
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9 AGCCTGGAGGGAAGTGGTGT GGAG TCGCT TG GCCCAG GG GGAAGT TGTAGTGG TG

AGTGGTGTGATCTCAGCTCA CCTC AGTGA AC TGGGTC CC TCTTCA ACGTCACT AC
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GAM26755 19991 GGAGTCTTCACTCTCTTGCC CT CTCTT C-- T -- CA ATCT
6 CAGGCTGGAGTGCAGTGGCA GGAGT TCACT GCC AGGC GGAG TGCAGTGG CA
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GAM26760 3025 GGAGTCTTGTGTTTCACCAA G AATGAGAGG ATTAA- ATGT
0 ATGAGAGGTTCCCATTAAGG GGAGTCTTGT TTTCACCA TTCCC GG
ATGTTCGAGGCGGGGAATGG CCTCAGAACG GAGGTGGT AAGGG CT
TGGAGGGCAAGACTCC G --------- GCGGAG ----
GAM26760 3002 GGAGTCTTTAGATTTTTACA TTTAG A---- - GATC
3 AATATATGATCATATCATTT GGAGTC ATTTTT CAAAT ATAT
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TCT TTTTA CAAGC C ----
GAM26761 9378 GGAGTGAGGGCAGGCGAGCC GG - CCACCC CCCG
9 CCACCCGGCCCCGGCCCCTC GGAGTGA GCAGGCGAG CC GGC
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C -- A TCCTCC ----
GAM26762 19921 GGAGTGCAATGGCACGATTT T AAT C TTTC GC GTAAC CCTCT
8 CGGCTTACTGTAACATCCAC GGAG GC GGCA GA G TTACT ATCCA
CTCTTGGGTTCAAGTGATTC CCTC CG CCGT CT C AGTGA TGGGT
TCCTGCCTCAGCCTCC - ACT C ---- TT ACT-- -----
GAM26763 2879 GGAGTGCAATGGCGCGATCT T AAT C TCTT GC GCA CCGCCTCCC

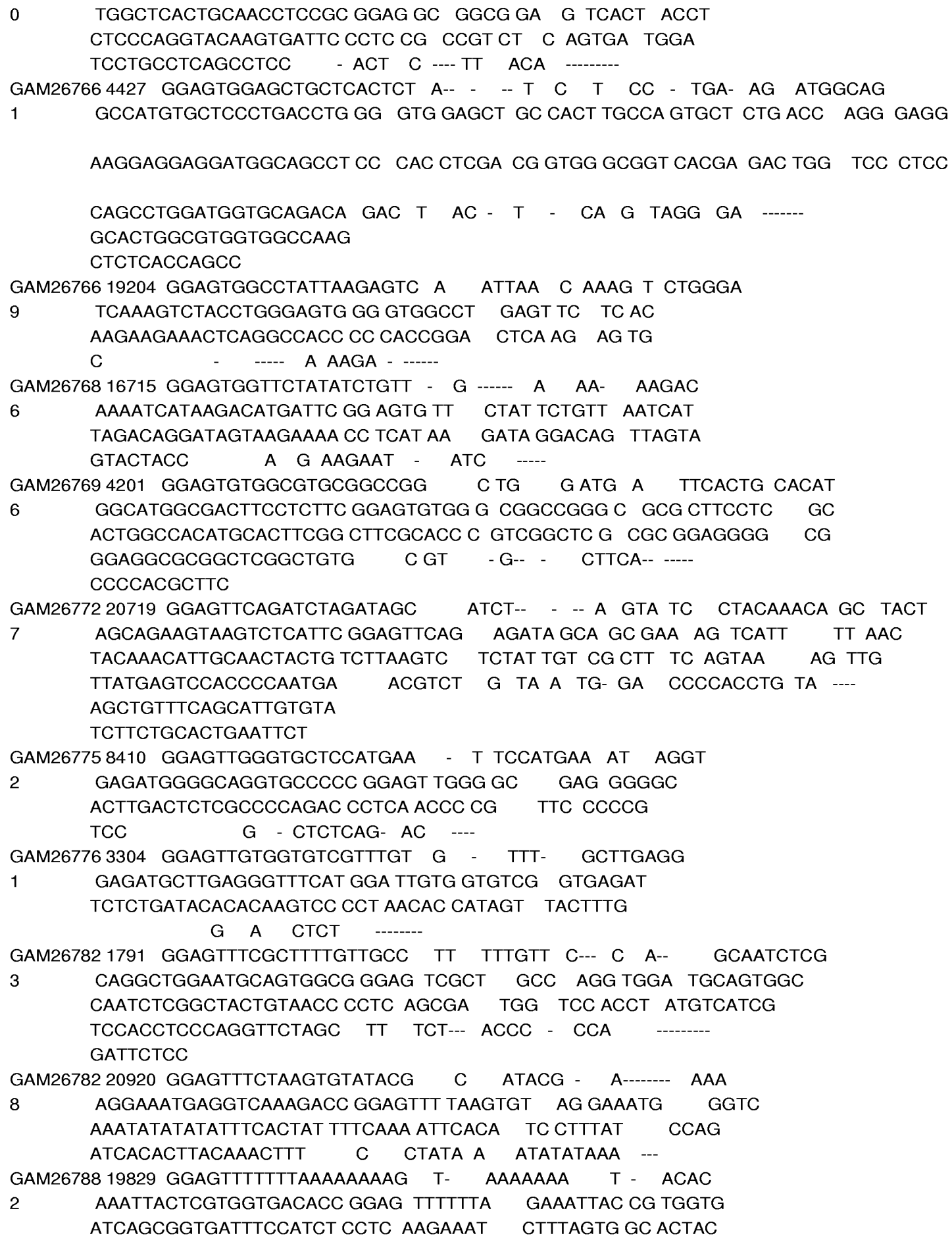
0 TGGCTCACTGCAACCTCCGC GGAG GC GGCG GA G TCACT ACCT
CTCCCAGGTACAAGTGATTC CCTC CG CCGT CT C AGTGA TGGA
TCCTGCCTCAGCCTCC - ACT C ---- TT ACA ---------
GAM26766 4427 GGAGTGGAGCTGCTCACTCT A-- - -- T C T CC - TGA- AG ATGGCAG
1 GCCATGTGCTCCCTGACCTG GG GTG GAGCT GC CACT TGCCA GTGCT CTG ACC AGG GAGG
AAGGAGGAGGATGGCAGCCT CC CAC CTCGA CG GTGG GCGGT CACGA GAC TGG TCC CTCC
CAGCCTGGATGGTGCAGACA GAC T AC - T - CA G TAGG GA -------
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CTCTCACCAGCC
GAM26766 19204 GGAGTGGCCTATTAAGAGTC A ATTAA C AAAG T CTGGGA
9 TCAAAGTCTACCTGGGAGTG GG GTGGCCT GAGT TC TC AC
AAGAAGAAACTCAGGCCACC CC CACCGGA CTCA AG AG TG
C - ----- A AAGA - ------
GAM26768 16715 GGAGTGGTTCTATATCTGTT - G ------ A AA- AAGAC
6 AAAATCATAAGACATGATTC GG AGTG TT CTAT TCTGTT AATCAT
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GTACTACC A G AAGAAT - ATC -----
GAM26769 4201 GGAGTGTGGCGTGCGGCCGG C TG G ATG A TTCACTG CACAT
6 GGCATGGCGACTTCCTCTTC GGAGTGTGG G CGGCCGGG C GCG CTTCCTC GC
ACTGGCCACATGCACTTCGG CTTCGCACC C GTCGGCTC G CGC GGAGGGG CG
GGAGGCGCGGCTCGGCTGTG C GT - G-- - CTTCA-- -----
CCCCACGCTTC
GAM26772 20719 GGAGTTCAGATCTAGATAGC ATCT-- - -- A GTA TC CTACAAACA GC TACT
7 AGCAGAAGTAAGTCTCATTC GGAGTTCAG AGATA GCA GC GAA AG TCATT TT AAC
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TCTTCTGCACTGAATTCT
GAM26775 8410 GGAGTTGGGTGCTCCATGAA - T TCCATGAA AT AGGT
2 GAGATGGGGCAGGTGCCCCC GGAGT TGGG GC GAG GGGGC
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TCC G - CTCTCAG- AC ----
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1 GAGATGCTTGAGGGTTTCAT GGA TTGTG GTGTCG GTGAGAT
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G A CTCT --------
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3 CAGGCTGGAATGCAGTGGCG GGAG TCGCT GCC AGG TGGA TGCAGTGGC
CAATCTCGGCTACTGTAACC CCTC AGCGA TGG TCC ACCT ATGTCATCG
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8 AGGAAATGAGGTCAAAGACC GGAGTTT TAAGTGT AG GAAATG GGTC
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GAM26788 19829 GGAGTTTTTTTAAAAAAAAG T- AAAAAAA T - ACAC
2 AAATTACTCGTGGTGACACC GGAG TTTTTTA GAAATTAC CG TGGTG
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AAAGAATTCTCC TT CTAC--- - G ----
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4 GGGGGTTGCCTTTTTTTCTG GG GTTT TTTT GGGGGG GGGGTT CCT
GGGGGCCCTTTGTACCTTCC CC CAAA AAAA CCTTCC TCCCGG GGG
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4 GTTCGGGACCACGCTTGGGG GGATA GGTGCA TC TTCGGG
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2 AGGTCTCCTAACTTGAGTAT GGATAT TTAA CTAG GGTC AC
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0 AATGTACAGTGTCTTGGTGC GG TCAGGTG TAGCC GGAA GTGTCTTGG
ACCAAGATGCCTTCTAAAGG CC GGTCCAT GTCGG TCTT CGTAGAACC
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GAM26808 14354 GGATCATCAGTCATACTGTG TCAT TC C T CAAAAAATT
6 AAGCCAACGATGCCAAAAAA GGA CAG ATACTGTGAAG CAACGA GC
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8 TCTCCTCCTCACGAGGAACC GGAT AGC CAT CAGG TCCT CTCACG GG CAG TG
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C AT AC A AAC -----
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GAM26823 18780 GGATGACTACATGGAGGCTT A ACA G ACA TTCACATTACT
9 TAACAAGACTTCACATTACT GG TGACT TG AGGCTTTA AGAC
GTTTCTAAAGCCTACAAAGT CC ATTGA AC TCCGAAAT TTTG
TAACC A A-- A C-- ----------
GAM26824 18702 GGATGAGAAGGAACTAATAT GAGAAGGAA ATAT- G A AGGA
3 ATGAGTCTATCTAGGAAGAA GGAT CTA ATGA TCT TCT
AGAATCATTGAGATAGGAGG CCTA GAT TACT AGA AGA
AAATCC AAGGAG--- AGAGT A A ----
GAM26830 9426 GGATGCCCAGGACAGCCAGC G C CAGCCCT CTCAGC
8 CCTGAGCTCTCAGCAGCTTC GGAT CC AGGACAGC GAGCT
ACTCAAGCTGTCCTAGGAAT CCTA GG TCCTGTCG TTCGA
CC A A AACTCAC ------
GAM26831 14067 GGATGCCTTTTATTTCTTTA TTTA T GTCTGAT TCT CT ATGTC
9 TTTTGTCTGATCACTCTGGC GGATGCCT TTTC TTATTTT CAC GG TGG
TTGGATGTCCCATACTGTGT CCTACGGG AAAG GGTGAGA GTG TC ACC
TGAATAAGAGTGGTGAAAGT TG-- T ATAAGTT --- AT -----
GGGCATCC
GAM26837 9711 GGATGGATAACATAGTTGTT ATA T TG ------ GGACCA
0 TCTCTGGGGACCACCAGACT GGATGG ACA AGT TTTC TCTGG
TCTTGAAGTGACTTGTGTCC TCTACC TGT TCA GAAG AGACC
CATCT CTG - GT TTCTTC ------
GAM26837 14034 GGATGGATATATCACCCACT A ATCA AC AGAAA TT C TGAT
2 GGTCAGAAAGGGTTACTGTC GGATGG TAT CCC TGGTC GGG ACTGT AC
ACTGATGTTGCAGTTGTCCA CCTACC ATA GGG ACTAG CCT TGACG TG
GGATCAACGGGATACCATCC - ---- CA GA--- GT T ----
GAM26837 12678 GGATGGATGAGCAGAGGGAG A AT A TA GGCA C CCTA CA GGTTCGATA
6 CGGGTACTGGCAGCAACTCC GG TGG GAGCAGAGGG GCGGG CT GCAACTC GGC GG GAG

GGCCCTAGGCAGAGGGTTCG CC ACC CTCGTCTTCC CGTCC GA CGTTGAG CCG CC CTC

ATACTCCCAGCCTGAGTTGC G CT - GG ---- T A--- -- ---------
AGGGCCTGCCCTTCTGCTCT
CCCAGCC
GAM26838 20462 GGATGGCGCCTCCGGACATG A T---- AC-- CAT CTCG
7 TCATAGCTGTTCTCGGACAG GG TGGCGCC CCGG ATGT AGCTGTT
CTTCATATTCACTCGGCCAA CC ACCGTGG GGCT TATA TCGACAG
TGGTGCCACC - TAACC CACT CT- ----
GAM26839 16697 GGATGGCTGAATTTCTAGAT C TTTCTAGAT - AC GACTG GACAACT

0 GACCAGGAAACTCGACTGTG GGATGG TGAA GAC CAGGAA TC TGT
TGACAACTGCAAAAAAGAAA CCTACC ATTT TTG GTCCTT AG ACG
TTCCTGTGTTTAACTTTACC - CAAT----- T AA AAAAA -------
ATCC
GAM26840 8929 GGATGGGAGTGGTGGCTCGT GA A T G AA A CTC GAGG
2 GTCTGTAATCCCAACACCTC G TGGG GTGG GGCTC TGTCTGT TCCCA CAC GG
GGGAGGCCAAAGTGCTGGGA C GCCC TACT CCGAG ACGGACA AGGGT GTG CC
CCACAGGCAGGAGCCTTCAT AG G T G CC C AAA ----
GCCCGGAC
GAM26846 6450 GGATGTAGCTGAGCTGATTC A A---- - G AGA - - GAGGGTGG
9 GGGCCAGAGCCTGCCAGAGG GGATGT GCTG GCTGAT TCGG CC GCC TG CCA
GTGGTGGTCATGGTGGGGGC CTTACG TGAC CGACTA GGCC GG TGG AC GGT
CGGCATCAGCACACCCAGTG G CCACA C G GG- T T --------
GCATTC
GAM26847 14006 GGATGTATTGTAAGCGCTCC ATTG--- A G A TC----- ACT
5 ATCTCCAGGACTCCTGCCAC GGATGT TA GC CTCC TC CAGG
AATGACGGAGGTATAACCAA CTTACA AT TG GAGG AG GTCC
AGACATTC GAAACCA A - C TAACACC ---
GAM26847 3102 GGATGTCAGTACTGGCATGT TGT T GG ------- A TCGT
9 GCTTATGACCCTCGTGGGCA GGA CAG ACT CATGTGCT TATG CCC
TGATAACTGGGTACGTGGAG CCT GTC TGA GTGCATGG GTAC GGG
TTCTGTTCC T-- T G- GTCAATA - ----
GAM26848 20749 GGATGTCTGAAGAAGCAGAA A- ----- G AAAAA TCAACAGAATT
7 AAACAATATCAACAGAATTT GG TGTCTGAA GAA CAG CAATA
ATTGCAGACTGATTCCATTG CT ACAGACTT CTT GTC GTTAT
TTCAGACAGATC AG GTTAC A AGAC- ----------
GAM26853 4282 GGATTAACACGGCAGAGGAA TT-- CA AACA TGCTC CTTC
8 CAAAGGTGTGCTCTGAGCTT GGA AACACGG GAGG AAGGTG TGAG
CTTCATATTTCACCTTCACC CCT TTGTGTC CTCC TTCCAC ACTT
CTCACCTGTGTTCTCTTCC TCTC CA CAC- TTTAT ----
GAM26854 19889 GGATTAATAGGTCCCCCGCT AATA-- C CTT TT ACCG
2 TTGTTTGACACCGGTCTGCA GGATT GGTC CCCG TGT GAC
CGGGAGACCAAAACGAGTCC CCTGA CCAG GGGC ACG CTG
GCAAAA A --- T- ----
GAM26855 8064 GGATTACAGGCTTGAGCCAC TTA GC G CAC---- CCCCT
9 CACGCCTGGCCCCTTCAGGC GGA CAG TT AGCCAC GCCTGG
TTCTTTTGTGGCTAAATCTG CCT GTC AA TCGGTG CGGACT
CTCTCC CTC TA - TTTTCTT -----
GAM26857 18537 GGATTAGTTCTTTTTTCCAG - TT - -- TTTACTTTATCT
6 TCTTCCTTTACTTTATCTGG GGATTAG TTC TTT TCCAGTCT TCC
ATAAGATTGGGCAGATTGAA TCTAGTT AAG AGA GGGTTAGA AGG
TTTGATCT T TT C AT ----------
GAM26857 16624 GGATTATACTCCGAGGGGGA --- GAGGG GGTTGAAAACGG
7 CAGGGGGTTGAAAACGGTTC GGATTATA CTCC GGACAGGG
TGTCCAAACAGGGGGCATAT CCTAATAT GGGG CCTGTCTT
AATCC ACG ACAAA ----------
GAM26859 18819 GGATTCAAGGTTCTTTTTGT A- A-- C -- GTT-- - ATTCCAAA
8 TCCAGTTGTCAGATTCCAAA GG TTCA GGTT TTTTTGT TCCA GTC AG
CTAGACCCCAATGGATTGCA CC AAGT CCAG AGGAACG AGGT CAG TC
AGGATGACCAAATGAAAGCC GA AAA T TT AACCC A --------

GAM26860 9722 GGATTCAGCTTTCAGTTAAA C C - AA- TG AAAGAGAAA
3 AAAGAAGAAGAAGAAATGGC GGATTCAG TTT AGTTAAAAAAGAA GAAG GAAA GC
AAAGAGAAAGTTTTTTCAAA CTTGAGTT AGA TTAATTTTTTCTT CTTT CTTT TG
TTTCTTTCTTTTTTAATTTA - T T AAA TT ---------
GATTGAGTTC
GAM26860 13972 GGATTCAGCTTTCAGTTAAA C C - TAA- TG AAAGAGAAA
4 AAAGAAGAATAAGAAATGGC GGATTCAG TTT AGTTAAAAAAGAA GAA GAAA GC
AAAGAGAAAGTTTTTTCAAA CTTGAGTT AGA TTAATTTTTTCTT CTT CTTT TG
TTTCTTTCTTTTTTAATTTA - T T TAAA TT ---------
GATTGAGTTC
GAM26867 5919 GGATTGGTGTGATCTTTTGG T G TC - AG-- AATTTA
9 TAGTTGTAATTTAACAGAAA GGA TGGT TGA TTTTG GT TTGT
AACACAAAATTTCAACCATT TCT ACCA ACT AAAAC CA GACA
CT T - TT A AAAA ------
GAM26869 9477 GGATTGTTGAACTTGTTACC A- AACT--- A A AT TTTCAGCAACATTTC
3 AGCACCATGCTTTTCAGCAA GG TTGTTG TGTT CCAGC CC GCT
CATTTCAGCGGAGTTGGAAA CC AACGAC ACAA GGTTG GG CGA
CATTTTTTACAGCAAAACC AA ATTTTTT A A -- ----------
GAM26875 17973 GGATTTGCTCATTGCTGTAC TT CAT -- CC CTGC GGAAT
1 CACATCTGCTCTAGGGAATC GGA TGCT TGCT GTA ACAT TCTAG
TGGATTATGTTATACAAGGC TTT ACGA ACGG CAT TGTA AGGTC
AAGCATTTTT TT --- AA AT TT-- -----
GAM26877 6141 GGATTTTACTAATGGACATT TACT- GA - AATA
0 TTCATCAAATATGTATGAGA GGATTT AATG CATTTTCAT CA
ATGCACATTTCTATAAATTC CTTAAA TTAC GTAAGAGTA GT
TATCT AC T ----
GAM26878 9188 GGATTTTGAGAGTTGTTTAT T-- --- TTAT --- AGTTC
0 TTATCTGGATACAAGTTCTG GGATT TGAGAGT TGT TTATCTG GATACA
TGTTGGACAGGTGATTTGCA TCTGA ACTTTTA ACG AGTGGAC TTGTGT
AGTATTTTCACCCAGTCT CCC TGA TTT- AGG -----
GAM26883 19995 GGCAAAGACGGCCATAGGGT AA C ATA GC T T A - ACAT
7 GCTCTGAGTTTTGGGATGGT GGCA GA GGCC GGGT TC GAGT TTGGG TG GTC
CACATGACACAATCCAGCAC CCGT CT CCGG TCCA AG TTCA GACCT AC CAG
TTGAACCTGGGGCCTCGTGC G- - GG- -- - C A A ----
C
GAM26886 18374 GGCAAATCATATGATGGCAA AAA- AT AAAAA A CTTAACAGCTGA T T GT--
7 AAATTGAGGGCTTAACAGCT GGC TCATATG GGC TTG GGG ATTTG GAACT AGA GCC
GAATTTGTGAACTTAGAGTG TCG AGTATAT TCG AAC CCC TAAAC TTTGA TCT CGG
CCTCAGTTTAATAAATGTAG AAAC CG ----- - TC---------- - C AGTT
GCTTGATCTCAGTTTCAAAT - GTTTAATAAA
CTCCCCAAGCTGCTATATGA T CA
CAAAGCT A GT
T ----------
GAM26887 19318 GGCAACAAAACAAGACTCTG - AA AAGAC T TACAAAAAGTTTAAGAAAT
8 TCTCTACAAAAAGTTTAAGA GGCA ACA AC TCTG CTC
AATGAGCCAGACATGGTGGT CCGT TGT TG AGAC GAG
GTATGCC A GG GTAC- C ----------
GAM26890 12354 GGCAACCATATAACAATCAG ACC ACAAT CA CTC CT G CAAG
1 TCACACTCAGGCTACTGGAT GGCA ATATA CAGT CA AGG ACTG AT
CAAGGTCAGTTCCTATGCCA CCGT TATAT GTCA GT TCC TGAC TG

CTGTCAAATATATCAGTGCC GAC AAACT CC A-- T- - ----
GAM26891 9640 GGCAACGTGAGTGCCTGTGC AC- T -- AG-- C ATTTG
6 GAGGTCCATCTTCATATTTG GGCA GTGAG GCCTGT GCG GTCCAT TTCAT
ATGAAATGGATAAGATGCAT CCGT TACTC CGGACG CGT TAGGTA AAGTA
GCAGGCCTCATAGATGCC AGA - TA AGAA - -----
GAM26893 18798 GGCAAGACCTTCGTTGTGGG A TTC-- --------- CCAGA
5 AGACCAGATCTCCTTCGCTG GGCAAG CC GTTGT GGGAGA
ACTACAACCTGCTGGACTTG TCGTTC GG CAACA TCCTCT
CT A TCGTC TCAGTCGCT -----
GAM26894 8347 GGCAAGAGCATCTGTTCGAC A- T TTCGACCTTA A AAGATGAAA
1 CTTAGACATGGCAAGATGAA GGCA GAGCA CTG GAC TGGC
AGCTAAGTCCAGTGCTCGCT CCGT CTCGT GAC CTG ATCG
GCC CG - ---------- A ---------
GAM26897 6050 GGCAAGGGAGTGGTGCCTGG A - G C- TTTCT CAAAA
8 GTTTTCTGACAAAATCTATA GGCA GGGA GTG TG CTGGGT GA
CTCAGACCAACATGTCCCCT CCGT CCCT TAC AC GACTCA CT
GCC C G A CA TAT-- -----
GAM26897 1047 GGCAAGGGATGGTATTTATG AA GG -- TAT - ---- CTTCCAGAC
9 CTCGCTTGCTGAGACTTCCA GGC G ATG GTATT GC TCGCTTG CTGAGA
GACTTTCAGATCTCAAGCGA CTG C TAT TATAG TG AGCGAAC GACTTT
TGTTTGATATTGTATTTCAG GA TT GT TT- T TCTA ---------
GTC
GAM26900 9308 GGCAAGTTGGTCCTTGCTGG C - TG G TCCA CC CAGCAT
1 CTGATCCAGCTTCCCCGTCA GG AAGT TGGTCCT CT GCTGA GCTT CCGT
GCATATGGTGAGCAGTTCGG CC TTCA ACCAGGA GA TGGCT CGAG GGTA
TGAGAGGACCACACTTCC - C -- G TGA- T- ------
GAM26900 3336 GGCAAGTTTAAGCTACTTCT A ------ - -- TGTA TT ATATT
2 GCAGTGTAGTAGACTTACAT GGCA GTTTA AGC TACTTCT GCAG GTAGAC AC
ATTGTTGTTTATCTTGTTTG CTGT CAAAT TTG GTGAAGG TGTT TATTTG TG
GAAGTGTGTTTCAAAATAAA A AAAACT T TT C--- T- -----
CATGTC
GAM26902 739 GGCAATCTGAAGTACTCCTG --- GAA TTGG GAAAG
0 TTGGTGCGAAAGGCGATATT GGCAAT CT GTACTCCTG TGC
GGGGGTGCGAAAGCCTATTG CCGTTA GA CGTGGGGGT GCG
CC TCC AAG TATA -----
GAM26902 19259 GGCAATCTTGAACTTCTATT A G - AACT AAGC CAAG
2 GAACTTGGAAAGCGGTCAAG GGCA TCTT AACTTCT ATTG TGGA GGT
ACTCACTCCATAATAAGAAG CTGT AGGA TTGAAGA TAAT ACCT TCA
TTAAGGACTGTC C A A ---- CAC- ----
GAM26902 20397 GGCAATCTTTTCGAAGTATG A- CGAAGTATG GA T T- GTTCATA
3 GCGAAATGTGGGCTGCTCTG GGCA TCTTTT GC AATG GGGC GCTCT
TTCATAAGGGCTTGCCTTCG CCGT AGAGAG TG TTGC TCCG CGGGA
TTCAGTATGTTAATGAGAGA AA TAATTGTA- AC T TT -------
AATGCC
GAM26905 21214 GGCAATTGTTGATGTTCCCA A- AT CAA T TGG A AG- A- CCCG
7 AAGTCCTTGGGGCAATGCAG GGC ATTGTTG GTTCC AG CCT GGCA TGC CC GCC
CCAGCCCCCGGGCAAGGACA CCG TGACAAC CGAGG TC GGA CCGT ACG GG CGG
GCAATGCCACTAGGCTGGAG AG C- --- - TCA A ACA AA ----
CCCAACAGTGAGCC
GAM26910 22232 GGCACAGGGCATCCCCTGGG TC G TTCAA CAATA

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2          GCTTCAAGGGCAATACCCCC GGCACAGGGCA  CCCTGGG C    GGG
           GTGCTTAGGGTTTGCCCTGT CCGTGTCCCGT  GGGATTC G    CCC
           GCC                  TT     - TGCC-  -----
GAM26911 18696  GGCACAGTGGCTCACGCCTG   AC--  ----    GC   AA  A  CACT
8          TAATCACAGCACTTTGGAAG GGC   AGTG   GCTCAC  CTGT  TC CAG
           GCAGAGGTGAGTGAATTACT CCG   TCAT   TGAGTG  GACG  AG GTT
           TGAGGCC            GAGT   TAAG    GA   GA  -  ----
GAM26913 6206   GGCACATGCGAAAATGCCCC   A    AAAAT     AATTTT   ATTTTTA
4          GTTAATTTTTTTATATTTTT GGC CATGCG    GCCCCGTT    TTTAT
           AGTAGAGACGGGGTTTCACC CCG GTGTGC    TGGGGCAG    AGATG
           GTGTGAGCC          A    CACTT     ------    -------
GAM26914 5366   GGCACATTGATCTATCTAAA    --------  -  A   A---  CTG     GAATTA
2          CCTGGTGGGGAGAATTATCC GGCACA      TTGA TCT TCTA   AC   GTGGGGA
           CCACATTGTCTCATGGAAAG CCGTGT      AACT AGA AGGT   TG   CACCCCT
           ACTCAACTTGCAACTGTGCC     CAACGTTC   C  A   ACTC  TTA     ------
GAM26914 1333   GGCACCAACCCCTACACAAC     A  CC TA   AA----   CAC   TCAGGAGATCAAT
5          CATCACGCCTCAGGAGATCA GGCACC AC  C  CAC    CCAT   GCC
           ATGGCAAATGGGACCACGTG CCGTGG TG  G  GTG    GGTA   CGG
           CGGCAGTGGGTGCC          G  AC GC   CACCAG   AA-  ----------
GAM26914 12312  GGCACCAAGCCTAGGGGACC      A  -   G  A   ACC    CCTTAC-   ACG
7          GTACCCGCCTCCCTTACACC GGCACCA GC CTAG GG CCGT   CGCCTC     ACCG
           GACGCGGTTCTGCATGAGGC CCGTGGT CG GGTC TC GGCG   GCGGAG     TGGC
           GCAGCGGCTGCTGGCGCTGG      - C   G  -   AC-    TACGTCT   ---
           TGCC
GAM26915 12301  GGCACCAGCAAGAGCCCAGG   ACCA  A    CA   ---     G   --  GTAAC
2          GCTCAGGTCGATGCGGGGTA GGC   GCA GAGCC  GGGC   TCAGGTC ATGC  GGG
           ACTCCGGGCATGGACCTGAT CCG   CGT CTCGG  TCCG   AGTCCAG TACG  CCT
           AAGCCTCGGCTCTGCGCAAG   AACG  -   C-   AAT     G   GG  -----
           CC
GAM26915 21046  GGCACCAGCTGCTGCACCTT    C    G     TT  CC    G   TTGATGAT
6          CTCCCACTTGGCAGTTGATG GGCA CAGCT CTGCACC  CT  CACTT GCAG
           ATTTGCGGGGTGACGGTGGT CCGT GTTGG GATGTGG  GG  GTGGG CGTT
           GTAGGGGTTGCTGCC        C    G     T- CA    G   --------
GAM26918 20506  GGCACCGTGACTGTGATCAG  G  C   CT  A    C-  G   TA    ACAA  T    --   ATGT
6          CCCCCTGGAGCTTATGCGGA G CAC GTGA  GTG TCAGCC  CCTG AGCT  TGCGG   AGC GCAGGC
TCAGC
           CAAAGCTGCAGGCTCAGCAT C GTG CACT  CGC GGTCGG  GGAC TCGG  ACGTC   TTG TGTCCG
GGTCG

           GTGTCGTACCGGGAGCTGGG  G  T   --  -    TA   -  TG   AAGC  -    TG    ----
           TGCCTGTGTTCGAACTGCAG GTCGTACCGGGA
           TGGCTCAGGATGGCTGGCGC
           TCACTGTGGC
                     ------------
GAM26920 19123  GGCACCTTTGCCCAAGCTGA    C  G   --   --   ------ A TG  C   GACAAGCT
7          GTGAACTGCACTGTGACAAG GGCAC TTT CCCA  AGCT  GAGT    GA C  CA TGT
           CTGCATGTGGATCCTGAGAA TCGTG AAA GGGT  TCGA  TTCA    CT G  GT ACG
           CTTCAAGCTCCTGGGAAATG    T  -  CC   AC   AGAGTC  A GT  -  --------
           TGCT
GAM26921 20581  GGCACGGCATGGAGAAGATC   A   -   AAGA   G   CC   CGAGT
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8 TGGAGGCCCAACCGAGTGTT GGC CGGCA TGGAG TCTG AGGC AAC
CAGCCTGCAGGACCTCTGCT CCG GCCGT GTCTC GGAC TCCG TTG
GCCGGGCC G C CA-- G AC -----
GAM26921 18077 GGCACGGCTCGGGGCGTGGT --- G TG G ACG
9 GGTGGCCACGGGCGACCGCA GGC ACGGCTCG GGCG GTGGT GCC
CTGTCATGGGCCGTATCGCC CCG TGCCGGGT CTGT CGCCA CGG
CTA A CA G ---
GAM26923 21409 GGCACGTGCCTGCTGCTTCC T C---- CTTCCT CCCGGC
3 TGAGAGCCCGGCCTCTCCCT GGCACG GC TGCTG GAGAG
CCAGTACTTCTGTTTGTGCC CCGTGT TG ATGAC CTCTC
T TCTTC CTCC-- ------
GAM26924 3181 GGCACTAGCTTAGCAAAGAA A TAG-- A TCACA GTGGA
1 GGTCACAGTGATGTGGAGTC GGCACT GCT CAAAGA GG GTGAT
GCCGCACCCATCTTTGAAGA CTGTGA CGA GTTTCT CC CGCTG
TAGCCAGTGTC C TAGAA A CACGC -----
GAM26926 8320 GGCACTGCAGCCTGAAATGG C CAG AA A---- GG- T ACGAT
2 CAGAGTCTGGTGCTGACGAT GGCA TG CCTG ATGGCAG GTCT TGC G
CCGCGAGAAGATCAATGCTG CCGT AC GGAC TACCGTC TAGA GCG C
CCATCCAGGACATGCC - A-- C- GTAAC AGA C -----
GAM26927 1776 GGCACTGGGTCAGATTTATT TG --- - GC- GCAACA
7 GCACTTGCAACAGAGTTTAA GGCAC GG TCAG ATTTATT ACTT
ATAAGTCCTGGGTGTCTGGT CCGTG CT GGTC TGAATAA TGAG
GCC GT GTG C ATT ------
GAM26927 20250 GGCACTGGTCAGCTGGGAGG A T - - G TG TCATCA GAAGA
8 TGTCCATTCATCATGGGGAA GGC CTGG CAGC TGG GA G TCCAT TGGG
GACTCAGAACACATGGGTGC CCG GACC GTCG ACT CT C GGGTA ACTC
ATCATCACGCTGCCCAGGGC G C C A A GT CACAAG -----
C
GAM26929 12535 GGCACTTGAGGTGGTACTGT G - -- ---------- A GAATTA
0 GAGCATCAGAATTATGACGT GGCACTT AGGT GGT ACTGT GAGC TCA
TTAAATTCCTTCTGCAGTTT CCGTGGG TCTA TCA TGACG TTTG AGT
ACTGATCTGGGTGCC - G TT TCTTCCTTAAA C ------
GAM26929 20574 GGCACTTGGAAGAAGCCGAG A- A AA GGAGGGGGA CGA
3 GAGGGGGAGGGCCGAGCCCA GGC CTTGGA G GCCGA GGGC
ACGAGTTGGCAGCTCCAGGG CCG GGACCT C CGGTT CCCG
GGCC GG - GA GAGCAA--- ---
GAM26930 1496 GGCACTTTTGTATACATTAC A TAT- TACTT-- T- TG AAAA TTACC AT A
4 TTATTTCATTTGAGAAAAAA GGC CTTTTG ACAT ATTTCA T AG AAATAT ATAGGA TTC
ATATTTACCATAGGAATTTC CCG GAAGAT TGTA TAAGGT A TC TTTGTA TATCTT AAG

ACCATGAATGTTCTATCATA - TTTT TATAGTC TT GT CAA- TAC-- GT -
TGTTTAACCTTGATTTGGAA CCAT
TCTGATATATGTTTTTTAGA
AGGCC

GAM26931 8858 GGCAGAAATGCAGGAGTGTA AA ----- GT- AAG ATTTTA
8 GCAAGCATCATTTTAGATGG GGCAGA TGC AGGA GTAGC CATC
CTATGGTTCCTCTTCCGCAT CTGTCT ACG TCCT TATCG GTAG
CTGTC -- CCTTC TGG --- ------
GAM26934 9753 GGCAGAATACGGGGTTCCAG A A - T TGAT CA CTGC

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6          TATGATGTCATCAGCTGCCT GGC GA TACGG GGT CCAGTA   GT  TCAG
           GAACTTGCTGGACCGCTGTG CCG CT GTGTC CCA GGTCGT   CA  AGTC
           ATCAGCC            A A   G  -    T--- --   ----
GAM26937 20363  GGCAGACTGCCTGCTGGTGC   A-   G      TG CAGAATG   CCAAAGA
6          CAGAATGATGCCAAAGACAT GGC  GACT CCTGCTGG  C      ATG
           AGAAAAGTCCCAGCAGGAGG TCG  TTGG GGACGACC  G      TAC
           TTGAGCT            AG   A      CT AAAAGA-  -------
GAM26940 9647   GGCAGAGCTGGGCTGACACA   ---   -    ACACAGAC  A    ATT    A  AAGATCA
5          GACGGACTGGGATTGGCTAA GGCA   GAGCT GGGCTG      GG CTGGG   GGCTA GG
           GGAAGATCACCTGGCCCCTC CTGT   CTCGG CCCGAT      CC GACCT   CCGGT CC
           CAGCCCTAGCCCTGGCTCTT   TTT   T   -------- C   CC-   - -------
           TTGTC
GAM26944 6522   GGCAGATAGGAAGTATGAAG    ATA  AGTA  A-  AGG      AAGTTG   ATCA  G   GAGA
6          AGGTGGCTCGTAAGTTGGTG GGCAG   GGA   TG  AG   TGGCTCGT     GTG    TT AAG
           ATCATTGAAGGAGACTTGGA CCGTT   CCT    AC  TC   GTCGAGCA     CAC    AG TTC
           ACGCACAGAGGAACGAGCTG    GC-   GAG-  GG  GA-      AGGAGA   GCA-  G   ----
           AGCTGGCAGAGTCCCGTTGC
           C
GAM26945 21623  GGCAGATGACATCATGGATC   AGA   C   -    A-   TTACCCGCC
8          ATCCCTTACCCGCCGGGACA GGC   TGA ATCA TGGATC  TCCC
           GATCTGCTGGTATCAGAAGC CCG   ACT TGGT GTCTAG  AGGG
           C                AAG   A   C     AC   ---------
GAM26949 4528   GGCAGCAGCAGATCCAATTG   C    A--  TC  -    TTTT    TCATAAGCCT
4          CGTTTTCTTTTTCATAAGCC GG AGCAGC   GA  CA ATTGCG   CTTTT
           TAAAAGCATCGCGGTGTGTT CC TCGTCG   CT  GT TGGCGC   GAAAA
           TCAGAGCTGCTTCC       T     AGA  TT  G    TAC-   ----------
GAM26949 5831   GGCAGCAGCTTCAATCTTCA   G  GC   TC   -    ----  C-   ATCTT    TA  TGATACT
8          GTTATTCCACAGCTATCTTG GGCA CA  TTCAA  TTCA GTTATT   CCA  AGCT    GAGGC  AT
           AGGCTAATTGATACTGTCTG TCGT GT  AAGTT  GAGT CAGTGA   GGT  TCGA    CTCCG  TG
           CCTCTTCAGCTTATGGTATC   A AA   TA   A    CTAT  AT   CTT--    TC -------
           AGTGACATGAGATTTGAAAA
           TGATGCT
GAM26951 12558  GGCAGCATTGGAACCATCGA      TTGGAA----    -  G  AAAAATATTTAAAA
5          TGGAAAAAATATTTAAAATT GGCAGCA       CCATC GAT GA
           GATCAGATGGGAAGATGGTT TCGTTGT       GGTAG CTA TT
           TGTTGCT              TTGGTAGAAG    A   G  ----------
GAM26953 18155  GGCAGCCCCATGCGCACTGC     CCCA   A  C    C  C-  TGG
3          GTTCTCTCCCGGTGGCCGCT GGCAGC   TGCGC CTG GTTCT TC  CGG
           GATAGAACCGGCGCGCAAGT CCGTTG   ACGCG GGC CAAGA AG  GCC
           TGCC               A---    C   -   T TC  ---
GAM26956 22281  GGCAGCGGCAGCAGCGGCAG  C  C  --  C  GGCA   TA   G   ----------  AGCT
4          CAGTAGCAGCCCCTCCCACA GG AG GGC  AG AGC   GCAG  GCA CCCCTC          CCAC
           GCTGTGGGCTCCCTCTCGGG CC TC CCG  TC TCG   TGTC  CGT GGGGAG          GGTG
           GGCGGAGGGGGTGCCTGTGA  T  A  AC  -  AG--  --  G   GCGGGGGCTCTCCCTCG  ----
           GCTCTCAGCCACTTCC
GAM26958 18955  GGCAGCTCCATCCTGCCCCA   A   CAT  T     C-    ACACTC     ACCTGGAAA
0          GGCGAGGCTACACTCCCAGC GGC GCTC  CC GCCCCAGG  GAGGCT    CCAGCGC
           GCACCTGGAAAGCGCTGGAC CCG CGGG  GG CGGGGTCC  CTTCGA    GGTCGCG
           AGCTTCTCCCTGGGGCTGGC   A   ACC  T     CT    CA----    ---------
           CAGGGCAGCC
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GAM26958 3544   GGCAGCTGAGAAGCACGATA      T  GA   A   TATGC    ACCTGAAGC
4          TGCTGGAGACCTGAAGCCTC GGCAGC GA  AGC CGA    TGGAG
           CACCCTTGGCTGTCGCTGCC CCGTCG CT  TCG GTT    ACCTC
                          - G-  -  CCC--    ---------
GAM26959 1239   GGCAGCTGGATCTTGCTGGG   AGC  - TCT      TCGA   AGT   A-   ATGATG
7          GTCGAAGCAGTTGGATTCCA GGC   TG GA   TGCTGGGG   AGC   TGG  TTCC
           TGATGGGAAGGCCATTGGCT CCG   AC CT   ATGGCTTC   TCG   ACC  AAGG
           CTTCGGTATTTCACAAGCC    A-- A  TT-      ----  GTT   GG   ------
GAM26968 14732  GGCAGGAGGAAGGATCTTGA     ---   A   TC    -  AA   TAATC-  TAGGCTT
3          ATCTAAGAGTTAATCTGATA GGCAGG   AGGA GGA  TTGAA TCT  GAGT     TGA
           GGCTTTCAACCAATACTCCA CCGTCC   TCCT TCT  GACTT AGA  CTCA     ACT
           GATTTCAGCCTCTATCCTCA      CAC   A   CC    T   C-   TAACCA  -------
           CCCTGCC
GAM26970 3224   GGCAGGAGTCCAGGAATATG     GA   A    T  G  T  CT     GAATCA     ---       CAAGT
1          TATGGCTTTGAGAGAATCAT GGCAG  GTCC GGAA AT TA GG  TTGAGA     TGCCTT   TTTACTGT

           GCCTTTTTACTGTCAAGTAC CCGTC  CAGG CCTT TG AT TC  AATTTT     GCGGGG   AGGTGACA

           AGTGGACCGGGGGGCGAATTT     G-   A    T  G  -  AT     AA----     GCC       -----
           TAATACTTAGGTTTTCCAGG
           ACGCTGCC
GAM26972 12525  GGCAGGCAGGGGTGGGGTGC      CA        T    --   -    TT  T  ACAGA
0          TACTGGCATTTTGTGAACAG GGCAGG  GGGGTGGGG GCTA  CTG GCAT  TG GA
           ATCCTATGGTGCACAGGATA CCGTCC  CCTCACCCC CGAT  GAC CGTG  AT CT
           GCCCCCCACTCCCCTGCC        --        C    AG   A    GT  C  -----
GAM26978 8606   GGCAGGGGGAAGTCCCAGGG   AG     -    A-   CGT    G  T-   -     AT  GGGCA
2          ACGTTGGTCGCTTTGTCTTC GGC  GGGGAA GTCCC  GGGA   TGGTC CT  TGT CTTCGG  GG

           GGATGGGGGCACCCCGAAGC TTG  TCCCTT CGGGG  CCCT   ACCAG GG  ACA GAAGCC  CC

           ACATTGGGACCACAATCCCG   GG     A    GG    AAC    - TT   C     -- -----
           GGGGGCATTCCCTGGGTT
GAM26980 3030   GGCAGGGTGTACACCTGTGG       T     CC   -   CT   GGCT    - TG    G---    TGTTT
1          TTCTCGGGGCTGCCCTTTGG GGCAGGG GTACA  TGT GGTT  CGG    GCCCT T  GCTTT    GAGA

           CTTTGGAGATGTTTTCTCGA CCGTTCT CATGT  ACG CCAA  GTT    CGGGA G  CGGGG    CTCT
           TGGGGGCTGGAAGGGCTTTG       T     TC   T    AG   GTTT     A GT     GTAG   -----
           TTGGAAACCTGCACTTGTAC
           TTCTTGCC
GAM26981 9761   GGCAGGTAGGGGAATTAGGG     G  -    A--       T  T  -       TAACCATGT    AAA
1          CCATGCTGGAAGAAGCTTAA GGCAG TA GGGGA   TTAGGGCCA GC GG AAGAAGCT       GTTC

           CCATGTGTTCAAAGAACGGT CCGTC GT CCCCT   GGTCCTGGT CG TC TTCTTTGG        CAAG
           TTCTTGCTTGCTTGGTCCTG     G  T     CAA       T  T  G       ---------   ---
           GAACTCCCCTTGGCTGCC
GAM26984 22219  GGCAGTAGTAGCTTCTGTGG   -     A    CT  GG   T   ATTGCTC
7          GACTTCCATTGCTCGGGCGT GGC AGTAGT GCTT  GT  GAC TCC
           CAGGCTCAGGTAGCTGCTGG CCG TCGTCG TGGA  CG  CTG GGG
           CC                 G     A    CT  GA   C   -------
GAM26985 17981  GGCAGTATTACAGGAACCTG          A  AAC--    - A   GCACT
```

2 GCAGCCGCACTGGCCGCCCA GGCAGTATTAC GG CTGG C GCC
GAAACGTCAGTGGTGCTGCC CCGTCGTGGTG CT GACC G CGG
A GCAAA C C -----
GAM26985 6277 GGCAGTCACTTCCCATGAGG CAC---- CATG -- -- CCACCC
8 GCCTGGCCCACCCGCTGCAG GGCAGT TTCC AGGGC CTG GC
TTGCCCTAAGGAAAAATAAA CCGTCG AAGG TCCCG GAC CG
GCTGCC AAATAAA AA-- TT GT ------
GAM26986 8371 GGCAGTCCTACAACCAGTAT GTCCT ACC A--- A GATACCA
5 TCTCAGAGATACCATCAGAG GGCA ACA AGT TTCTC GA
AACAAAACTAATGTTAATAT CCGT TGT TCA AAGAG CT
GCC ATAAT AA- AAAC A -------
GAM26986 12580 GGCAGTCTAGAATACCAGAA - -- - C AACA TT CT GTGC
9 ACATCTACTTGGGTAGCTTG GGCA GT CTAGA ATA CAGA TCTAC GGGTAG TG
GTGCCATTATCCTGTGGAAT CTGT CG GGTCT TAT GTCT AGGTG CCTATT AC
CTGATATGTCTGGTAGCATG A AT G A A--- T- -- ----
TC
GAM26989 18230 GGCAGTGGCTGATTGACACC ------ - ATT C - --- TTCAACAGT
1 CTCTATGCCTTCAACAGTGG GGCAGT GG CTG GA ACC CTCTA TGCC
CAACGTAGAGCGGTTCCAGA CCGTCA TC GAC CT TGG GAGAT ACGG
CTCTGAAGACTGCC GAAGTC A --- - C GCA ---------
GAM26989 3414 GGCAGTGTACCAGGCCCTGG AG CA GC G - G A GGTCTAA CCATC
8 CCCGCGAGGGCGCCGAGCGC GGC TGTAC GGCCCTG CCGC AGGG C CCG GCGC GCG

GGTCTAAGCGCCATCCGTGA CCG GCGTG CCGGGAC GGTG TCCC G GGT CGCG TGC
GCGCCTGGGGCCCCTGGTGG G- TG AA G C G C AG----- -----
AACAGGGCCGTGTGCGGGCC
GAM26993 8274 GGCATAAGTAGAAGAGATTG - - ATTGTT AG--- TAT
4 TTAAGAAGGGTATTCATGTG GGCATAA GTAGAA GAG AAGA GG
TCTTTGCTCTTTCTGCTTTA CCGTATT CGTCTT CTC TTCT CT
TGCC T T GT---- GTGTA ---
GAM26994 8677 GGCATACGTCCGAGCGTTCA TACGTCC TC AC- CA CTCACC
0 CTGACATGCAGCTCTCACCA GGCA GAGCGT ACTG ATG GCT
GTCACATCACCAGTATGCTC CCGT CTCGTA TGAC TAC TGA
TCCCCTTGCC TCCCCT- -- CAC AC ------
GAM26994 5703 GGCATACGTGCAGGGAGGGG AC--- GGA CC ACTCCAGCA
1 ACCAGGACTCCAGCACCTTC GGCAT GTGCAG GGGGA AGG
CCTGGCTGCATCAACAATGC CCGTA TACGTC TCCCT TCC
C ACAAC GG- -- ---------
GAM26998 12843 GGCATCAGAGTAGGTATATG TA TATAT TT TTTTTT
0 ACTTTTTTTTTTTTTTTTTA GGCATCAGAG GG GACT TTTTTTTT
GGAGAGATGGGTCCCCGCTC CCGTGGTCTC CC CTGG AGAGAGGA
TGGTGCC GC ----- GT ------
GAM26998 9832 GGCATCATCACTGCTATCAT C C A C TA----- GCG T A- ATTTA
7 CATTAACAGCGTAAATTATA GG AT ATC CTGCTAT ATCAT ACA TAAATTA AC AGCAT
CAAGCATATTTAATGCTGAG CC TA TGG GATGGTA TGGTA TGT ATTTAAT TG TCGTA
TTTAATTTAATATGTAATAC A A - A TACATAA ATA T AG -----
ATATGGTAATGGTAGGGTAA
TACC
GAM27000 5531 GGCATCCGGCGGAACTGGAT C-- G C- CGA- C GAGAA
1 CGAGGCTCTGAGAAAGACCG GGCATC GGC GAA TGGAT GG TCT

TACGTCCAACTTCAGCCCCA CTGTAG CCG CTT ACCTG CC AGA
GATGTC ACC A CA CATG - -----
GAM27001 4428 GGCATCGGGAAGAGCCTAAG CA AGA----- AA ATTATAAAATAGGAA
4 TCCACATTATAAAATAGGAA GG TCGGGA GCCT GTCCAC
GTGGATGCGGGTACAGTTAC CC GGCCCT TGGG TAGGTG
TCCCGGGACC AG CATTGACA CG ----------
GAM27001 19405 GGCATCGGGTGGTGCCGCAG --- T- ----- CCACA
6 GGGCCACATCCCTGTGTTTG GGCA TCGGG GGTGC CGCAGGGG
TGTACCCTCTTGATTTTGCC CCGT AGTTC CCATG GTGTCCCT
TTT TC TGTTT -----
GAM27002 8941 GGCATCTAGCCTAATGGGAT CTA- AT G AAACGTCGC
1 TGTTTGAAAAACGTCGCTTC GGCAT GCCTA GGGATT TTTGAA
AGGAAATTCCTAGGTGTATG CCGTG TGGAT CCTTAA GGACTT
TGCC TATG -- A ---------
GAM27002 21275 GGCATCTCTGAGGAGACCAC C GA CGACTGG T - A CTACA
4 GACTGGGGTCCACAACTCTA GGCATCT TGAGGA CCA GG CCA CA CT
CAAGATGATGGCCAATGGGA CCGTGGA ACTCCT GGT CC GGT GT GA
TCCTCAAGGTGCC - AG AA----- - A A -----
GAM27004 21107 GGCATGACCATTGTGCTATG --------- A T --- - GTAACA
6 CCTGTAACAAGAGCATCAGA GGCATGA CC TTG GCT ATGC CT
GCCAAGGAAGCCCTCATCGT CCGTGCT GG AAC CGA TACG GA
GCC ACTCCCGAA - - GAC A ------
GAM27009 3089 GGCATGCTGGCCAACCTAGT -- AA A GA AGA ATCTCC
2 GGAGCAGAACATCTCCGTGC GGC ATGCTGGCC CCT GTG GC AC
GGCGGCGCAAGGGGTCAGCA CCG TACGACTGG GGA CGC CG TG
TCGGCC GC -- A GG GCG ------
GAM27010 6176 GGCATGGCTAGCAAGCCCCT AT - AG - -------- ATGTTA
2 TCATGTTAGAAGGCTGCAGA GGC GG CT CAA GCC CCTTC
AGGCTTTGAGAGACTGGGTC CTG TC GA GTT CGG GGAAG
GG A GA T AAGACGTC ------
GAM27010 8385 GGCATGGCTTCTGTTTCCTT ATGG - G AG-- TGTAAC
6 GGGGCCTCAGTTCTGGTGTA GGC CTTC TGTTTCCTT GGGCCTC TTCTGG
ACCCGGGAATACGGGGTTTG CCG GAGG GCGAAGGAG TTTGGGG AGGGCC
GAGGAAGCGCGGAGGGGCC GG-- C G CATA ------
GAM27010 6650 GGCATGGGCAAGGGGGGTCC - CAA GT - -- -- AAACT - GTGGG
8 CCAGGTAGTAAACTCCCCAG GGCA TGGG GGGGG CC CC AGGT AGT CCC CAG
GTGGGCTGAGGGCTAGGGCT TCGT ACCC TCCTC GG GG TCCA TCG GGG GTC
GAACCTCAGGTGGGTCTCCT G TTG TG T AC AG GGATC A -----
GTTCCCAGTGCT
GAM27012 14545 GGCATGTAGAAGGTGAATAA A ----- --- ATA ATTTTCTA
9 TGGGGATTTTCTATCTCATC GGC TGT AGAA GGTGA ATGGGG
ATCGCTTATTTCTTGAAGAC CTG ACA TCTT TCGCT TACTCT
AGGTC G GAAGT TAT AC- --------
GAM27013 20448 GGCATGTGCCACCACACCCA - CCACCAC AAT A G TTTT
6 ATTGACTTTAGTATTTTTAG GGCATG TG ACCC TG CTTTA TA
TAAAGACAGGGTTTCACCAT TCGTAC AC TGGG AC GAAAT AT
GCT C TT----- --- A G ----
GAM27014 21655 GGCATTAAAATTTGTAATTG - TTT GCTTT GAAAA
8 AAATGTTGCTTTCACTGAAA GGC ATTAAAA GTAATTGAAATGTT CACT
AAGTGTCTTGATGTTTCAGT CCG TAATTTT TATTGACTTTGTAG GTGA

TATTTTTAATCGCC C --- TTCT- -----
GAM27016 6320 GGCATTAGCTAGATAAGGTA ---------- A TATAATAAAACTT
3 TAATAAAACTTCCTTACCTA GGCATTAGC TAG TAAGG
CAAATTTGAAACATGTTGAT CTGTAGTTG ATC ATTCC
GTC TACAAAGTTTAAAC C ----------
GAM27016 3524 GGCATTATCGAGACCTGGAA TC- CC AA A - AGAATCACA
8 GCTATGGCCAGAATCACAGG GGCATTA GAGA TGG GCT TG GCC
CGCAGAGCCCATCTTCATTG CCGTAGT TTCT ACC CGA AC CGG
ATGCC TAC -- -- G G ---------
GAM27018 21656 GGCATTCTTTTGAAATGTGC ---- T AATG A--- AAAACCTCTGAACC
3 AACAAAATAAAAACCTCTGA GGCAT TCT TTGA TGCA CAAAATA
ACCTGTTTTGACACTGCAAA CCGTA AGG GACT ACGT GTTTTGT
CTCAGTGGATGACATGCC CAGT T CAA- CACA ----------
GAM27021 9741 GGCATTTGCGGGCTCATTTG GCGGG AT AA-- TTC
1 CTGTCAAGCTTTTTCAAAGC GGCATTT CTC TTGCTGTC GCTTT
ATGGGATGGCAGGAGAAAGA CCGTAGA GAG GACGGTAG CGAAA
TGCC AA--- -- GGTA ---
GAM27023 5773 GGCCAAACAGAAATTCAAGT CA- AA-- A- A CCTCCT
2 GAATTGTCCTCCTGCAGTTA GGC AACAG ATTC AGTGA TTGT
CTGAGAATAAAACTGTTACA TCG TTGTC TAAG TCATT GACG
GCT ACA AAAA AG - ------
GAM27023 21142 GGCCAAACTGCAGTCATCCA A CAGTCATCCA GT C- TACCT
3 AGGTGGTTTCCAGCTTCAAG GGCCA ACTG AGGTG TTC AGCTTCAAG
TACCTCTTGGGGTTTTGAAG TCGGT TGAC TCTAC AAG TTGGGGTTC
TCATCTCAGTCTGGCT C ---------- TG TT -----
GAM27023 9500 GGCCAAAGCCTTGATCAGGG CAAA GA AGG- G TAA ACACT TGAGTATT
5 ATCAGTCATTAAAGGACACT GGC GCCTT TC GATCA TCAT AGG CT
CTTGAGTATTAGTAAACCCT CCG CGGGA AG TTAGT AGTA TCC GA
CTTATGATGATTAAAAGAGA A--- AG AAAA - TTC CAAAT --------
AGGGCAGCC
GAM27027 12348 GGCCAAGCTGGATGACCTCG A TGACCTC AC CGC GTTC
1 TCAACTGGGCCCGCCGGAGT GGCCA GCTGGA GTCA TGGGCC CGGA
TCTCTGTGGCCCATGACCTT CCGGT CGGCTT CAGT ACCCGG GTCT
CGGCCTGGCC C C------ -- T-- ----
GAM27028 1267 GGCCAAGGCAGTCGCCAGGG CA TC-- C- CTT CCCC CTTC CCTTC
8 CTTCTTGTCCCCACCTTCTG GGC AGGCAG GC AGGG CTTGT AC TGAA
AACCTTCTTCAAACAGTAGT CCG TCCGTC CG TCCC GAACA TG ACTT
ACAAGCTCCCCTCAGCCAGC -- CGAC AC CTC TGA- ACAA -----
CTGCCTGCC
GAM27030 12529 GGCCAAGGTCAGGCTGGAGG - C -- ACTTT - CTAG
3 AGGTGGACTTTGGCCCCTAG GGCCAAGGT CAGG TGGAGG AGGTGG GGC CC
GGAGCCCCCACCTGACCTCT TCGGTTCCA GTTC ATCTCC TCCACC CCG GG
ACTTGCACCTTGGCT C - AG C---- A ----
GAM27031 4042 GGCCAAGTGCAGCGGCTCAT - CAGCGG A CTATAA- CATT
9 GCCTATAATCCCAGCATTTT GGC CAAGTG CTC TGC TCCCAG
GGGAGGCCAAAGCAGGAGGA CCG GTTCAC GAG ACG AGGGTT
TCACTTGAGCC A TAG--- G AAACCGG ----
GAM27032 2780 GGCCAATGACGTCTGAATGG TGACGTC T CTTCAAT TCTG
9 AAGCTGACTTCAATGCCTAT GGCCAA TGAATGGAAGC GA GCCTA
CTGTGGGTTCTGCTTTCATT TCGGTT ATTTACTTTCG CT TGGGT

TACCTTTTGGCT TTCC--- T ------- ----
GAM27033 20070 GGCCAATTGAAACAAACAGT T ACAAACAG G GTT T A GATTAAG
4 TCTGAGACCGTTCTTCCACC GGCCAA TGAA TTCTGA ACC CT CC CCACT
ACTGATTAAGAGTGGGGTGG CCGGTT ACTT GGGATT TGG GG GG GGTGA
CAGGTATTAGGGATAATATT T ATAATA-- A AC- T - -------
CATTTGGCC
GAM27037 20174 GGCCACCCAGATCCATTTTT CA TTTTT TT AG G TTT CTGAAGATATA
4 GTTTTTGAGTCTGGCTTTTC GGC CCCAGATCCA GT TTG TCTG CT CTGTGG
TGTGGCTGAAGATATACCGC CCG GGGTTTAGGT CG AAT GGAC GA GACGCC
AGTCAGCAGGTAATGGCTGG C- ----- GT -- - CT- ----------
ATTTGGGCGCC
GAM27038 3459 GGCCACCTCCCTGACCCTCA A--- TC C- C-- G CC GTCTTTGCCA
1 TATTTGTAAGGCCGTTTCTG GGCC CC CCTGA CCT ATATTT TAAGG GTTTCTGG
GGTCTTTGCCACCAGGAGCT TTGG GG GGATT GGA TATAAG GTTCC CGAGGACC
CCTTGGAATATCACAGGCCT AGAA TC CC CAC - T- ----------
TAGGCTGGAAGAGGTT
GAM27038 18583 GGCCACCTTTTCCCCGGGGG A TTTT-- - C- CCA
4 CGCCGGCCCAGCCGGTCCCC GGCC CC CCCCGGG GG GCCGGC
GCCCGGGGCCCCTCGGCGGC CCGG GG GGGGCCC CC TGGCCG
C C CTCCCC G CC ---
GAM27039 6608 GGCCACGTACACCGACAAGT AC GACAA AG------ AATAACCG
0 TGTTCAAGTTCCGCAATAAC GGCCACGT ACC GTTGTTCA TTCCGC
CGGTGGGAAGACATCCTGAG CCGGTGCA TGG TAGCGAGT AGGGTG
CGATGAGGTCAACGTGGCC AC AG--- CCTACAGA --------
GAM27042 16707 GGCCAGAATTGCTCAGTTGC CAG TG T- TT- TT-- GGA TAGAT
1 ATTTGATCCAGGACTATAGA GGC AAT C CAG GCA TGATCCA CTA
TTGGAAATGGGTCATCATTG CCG TTA G GTC TGT ACTGGGT GGT
TTTTCTGTTGTGATTATAGC ATA GT TT TTT TACT AAA -----
C
GAM27044 1514 GGCCAGCAGAGTGGCCTCAG AGC G- AGA T -- A GCC
6 ATGTTCCTGCACCTGGCCCA GGCC AGA TGGCCTC TGT CCT GC CCTG
GGAGCCCAGGACAGAGGTCA CCGG TCT ACTGGAG ACA GGA CG GGAC
AATCTAGGGCC GA- AA --- - CC A ---
GAM27044 9467 GGCCAGCATAGGCGCTGGGT CATA C - TAC TTAGGTC
8 TCATTTACCCTTAGGTCGGA GGCCAG GGCG TGG GTTCATT CC
ACGATGAGCACCATGCCAGG CCGGTC CCGT ACC CGAGTAG GG
ACTGGCC AGGA - A CAA -------
GAM27045 4199 GGCCAGCCCTGGGGCCTGCT AG TGG - AA C CAG
5 TCAAGCTCTTCCAGGAAAAG GGCC CCC GGCC TGCTTC GCT TTC
CAGAAGTGTGGCCACGGGAG CCGG GGG CCGG GTGAAG CGA AAG
GGCC GA CA- T A- A ---
GAM27045 3529 GGCCAGCCGGAGGGCCTCCA C C ---- CT TCC CGCA
9 GGTCCCGCCGCAGCGCCTGG GGC AGC GGAGG GC CCAGG CGC
CGCTCAGCCTCCAGCTCGCC CCG TCG CCTCC CG GGTCC GCG
C A GACT C- --- ----
GAM27046 8762 GGCCAGCCGTGCTCACTGTC CGT AC T GA CAGGCCC
0 CTGCTGACCCAGGCCCGGCA GGCCAGC GCTC TG CCTGCT CC
GGCAGGTCATCGGGTGCTGG CCGGTCG TGGG AC GGACGG GG
CC --- CT T AC -------
GAM27046 20799 GGCCAGCTGATCGCTCCCTC AGC CGCT - - AGAGG

9 CTAGCCCCAGAGGGGTGGCT GGCC TGAT CCCT CCTAGCC CC
GGGCAGGGCCATGTCACGGC TCGG ACTG GGGA GGGTCGG GG
T C-- TACC C T -----
GAM27047 6657 GGCCAGCTGGTCGAAAGTGA T- AA GAGG ---- CCCCT
1 GGATCTTGCCCCCTGCCCTG GGCCAGC GGTCG AGT ATCTT GC
AAGATGCGGCTGCCGACCCT CTGGTCG CCAGC TCG TAGAA CG
GCTGGTC TC CG GCG- GTCC -----
GAM27047 18933 GGCCAGCTTGGAGAACAGCT TGGAGAA TG A GG G -- - ACGATG
4 GGGGAGGTGGGGGCCGCTAC GGCCAGCT CAGC GGG GGT GGGCC CT AC GCCT
GCCTACGATGGGGCAGTCAA CCGGTCGA GTTG TCC TCG TCTGG GA TG CGGG
GGGGTCTGCTGCCTTGGTTG ------- GT G -- G AC A ------
AGCTGGCC
GAM27048 4266 GGCCAGGATCAGTGCACAGG TCAG ACA A- ---- - TCACG
6 GAGGAAGCGCTCACGGACGC GGCCAGGA TGC GGG GGA AGCG C
TCCGCTCCAGCCCGGGCATC CCGGTCCT ACG CCC CCT TCGC G
CTGGCC ---- GG- GA CGCC A -----
GAM27049 12465 GGCCAGGCACGGTCGCTCAC AC ---- A - --- C CAA GAGG
6 GCCTGTCATCCCAACACTTT GGCCAGGC GGTC GCTC CG CCT GT ATCC CACTTTGG
GGGAGGCCAAGGTGGATGGA CCGGTCCG CCAG TGAG GC GGA CA TAGG GTGGAACC

TCACTTGAGGTCGGGAGTTC A- AACT G T GTT C TAG ----
AAGACCAGCCTGGCC
GAM27052 19975 GGCCAGGCTGGCTGTGTCCC G T- -- CA T - GACG T ATG
6 TGTCATGGTTGGGCCGTGAG GGCCAG CTGGC GTGT CCCTGT TGG TGG GCCGTGA TC
CTGGG
ACGTCTCTGGGATGTCCAGT CTGGTC GACCG TACG GGGACG ACC ACC CGGTACT AG GACCT

GAACATCATGGCTCCACCCA G TC GT -- C T ACA- T ---
GCAGGGTGGCATCTGCCAGG
CTGGTC
GAM27057 16709 GGCCAGGCTGGTCTTGAACT - CTTGAA C A T ACC - C CCTC
4 CCTGACCTTGTGATCCACCC GGCCAGGC TGGT CTC TG CCT GTGATCC CAC CT GG
ACCTCGGCCTCCCAGAGTGC TCGGTTCG ACCA GAG AC GGA CATTAGG GTG GA CC
TGGGATTACAGGCATGAGCC C CC---- T - - GTC A - ----
ACCACGCTTGGCT
GAM27060 4521 GGCCAGGTGTCGGGCGCTGT GG-- -- C CTC TCATCATAT
3 TTCTCGTTTTCATCATATAG GGCCA TGT CGGG GCTGTTT GTTT
ACAAAACAGCCCTGCTGCAA CTGGT ACG GTCC CGACAAA CAGA
AGATGGTC AGAA TC - A-- ---------
GAM27060 12808 GGCCAGGTTCTCGCTCTGGT - CT -- T GT T TCAAA
9 CGTGTCTGTCAAACCGGCAC GGCCA GGTT CGC TC G CGTGTC G
GGTCTGATCGCGGAAATTAT CCGGT TTAA GCG AG C GCACGG C
GGCC A AG CT T TG C -----
GAM27061 6217 GGCCAGTAAATCTTAGCAGG C AAT- TAG GCAAACTTCATT- ATGTTT T ATG
2 TGCAAACTTCATTCAAATGT GGC AGTA CT CAGGT CAA GGAG CATAA
TTGGAGTCATAAATGTTATG CCG TTAT GA GTCCA GTT TCTT GTATT
TTTCTTTTTGTTGTATTAAA - AAGT TAA AAAAAAAAATTAT GTTTT- T ---
AAAAAAACCTGAATAGTGAA
TATTGCC
GAM27066 3364 GGCCATCTGATCTATAAATG AT GA TATAAATG CA GACAAAA

5 CGGTGGCATCGACAAAAGAA GGCC CT TC CGGTGG TC
CCATTGAAAAATTTGAGAAG TCGG GA AG GTTACC AG
GAGGCT AG AG TTTAAAAA A- -------
GAM27066 3756 GGCCATCTGATCTATCAAAT A GATCTA G--- - A GACAGAAGA
6 GCGGTGGCATCGACAGAAGA GGCC TCT TCAAAT CGGTGG C TC
GAAGCCCATTGAAAAATTTG TCGG AGG AGTTTA GTTACC G AG
AGAAGGAGGCT - AAG--- AAAA C A ---------
GAM27067 4100 GGCCATCTTTACCGTGCAGC AT-- C A - ATGA A TGAAC
0 TGGATGACGTACCTGAACGG GGCC CTTTAC GTGC GC TGG CGT CC
ACGGGCCGTGCAGCACCGTG TCGG GGAGTG CACG CG GCC GCA GG
AGGTCCAGGCT ACCT C A T GG-- - -----
GAM27070 8713 GGCCATTAAAATCCATAACT TAAAAT - ATT AA GG TGTT
9 GATTTCCAAGCTGGTGTGTT GGCCAT CCATA ACTG TCC GCT TG
CAAGGCGAGGACGGTGTGTG CCGGTG GGTGT TGGC AGG CGG AC
GGTGGCC ------ G --- AG A- ----
GAM27073 20377 GGCCCAACTGCGATTGTCCA AA ----- TGTCC --- - AGTGAA
7 CCTTGTGTCTTCAGTGAAGA GGCCC CTGC GAT ACCT TGTG TCTTC
AGAGCATACCCAGGTCCCTT TCGGG GACG CTG TGGA ATAC AGAAG
GTCACCAAGCAGGGGCT -- AACCA TTCCC CCC G ------
GAM27074 1033 GGCCCAAGCTCTATCACGAT A- TATCACG T AA T- GTCT
0 CTGGTGTGCAATGCATCTGT GGCCCA GCTC ATCTGG GTGC TGCA CT
CTGGCCTGCAGCACTCAGGT CCGGGT CGAG TGGACT CACG ACGT GG
AACACGAGCACTGGGCC CA CACAA-- - -- CC ----
GAM27076 870 GGCCCACGCGTACACTCCTC C - A CT- TT ATGC
1 TGGTTCAATGCTGCCCCAGC GG CCACGC GTAC CTC CTGG CA
CTGAGCGTACAGTGTGGTCC CC GGTGTG CATG GAG GACC GT
T A C TCC CC ----
GAM27076 948 GGCCCACGGGGAAAATTTTC A T ----- CCCCG
3 CCCCCCCCCCCCGGGGTTTAC GGCCC CGGGGAAAA TTTCCCCC CCC
GGGGGAAATTTTTCCTCGGG TCGGG GCTCCTTTT AAAGGGGG GGG
GGCT G T CATTT -----
GAM27078 16599 GGCCCAGAGTACGTGCACTG A- T GTG G--- C GAG--- GCCA
3 CCTGCTGCCACCGCTGGAGT GGCCC GAG AC CACTGCCT CTGC ACCGCTG TCGCTG

CGCTGGCCACAGTGGAGGAG CCGGG TTC TG GTGACGGA GGCG TGGTGAC GGTGAC

ACAGTGGTGCGGGACAAGGC CA C AG- ACAG - AGAGGA ----
AGTGGAGTCCTTACGGGCC
GAM27085 936 GGCCCCACGTGGAGTTTTTC C GGAG -- C CGTAT AGAGGA
0 CGAGCTCACCGTATTGGGAG GGC CCACGT TTTTTCCGA GCT AC TGGG
AGGACCCGTTTGTTAGTATT CCG GGTGCA AAGAGGGCT TGA TG GCCC
CGGGAGAAAAACGTGGCGCC C AA-- TA T TTT-- ------
GAM27088 1459 GGCCCCCCGTGCCCTGGGCC CCCC CCT -- T- CCTGTGTTCT - TG CTCT C
0 ACTGTGCTGTCCCCTGTGTT GGCC GTGC GGGC CACTGTGC GTCC GC TGG CATG
AGA
CTGCTGGTGCATGCTCTAGA TCGG CACG CCCG GTGGTACG CAGG CG ACC GTAC TCT

CCACTCTCCATGTGCCATGC TT-- TGT TA TC TCC------- T GT C--- -
CCTGGACCTGCATGGTGATG CAC
CCCTGTGCACTTGGCT

```
                        ---
GAM27090 19194  GGCCCCGGGTTCCCGTGGCT    -    T    GT    ACCG      CGCCC
8               ACCGGGCGCGGCGCCCCCGC GGCC CCGGG TCCC  GGCT    GGCGCGG
                GCCGCAGGCCGGGACCCCGG CCGG GGCCC AGGG  CCGG    CCGCGCC
                TGGCC               T    C    --   ACG-      -----
GAM27091 3552   GGCCCCTCCCTGCCCTCCAT   C    CCT    - -  TC---      AACC
5               TCAGGGAGAAACCTCTCCTT GG CCCTC   GCCCT C CAT     AGGGAGA
                CCCGTGTGAGAAGGGCCAGA CC GGGAG   CGGGA G GTG     TTCCTCT
                GGGTCC              T    AC-    A A   TGCCC      ----
GAM27092 5993   GGCCCCTGGGAGATGACGAG    - TG G    G  GAG TT  -   AAAG
6               GTTGGTGCAAAGGCAGCTGG GGCC CC  G AGAT AC   G  GG TGC
                TAGGTGGTCTGCTGGGTGGC TCGG GG  C TCTG TG   T  TC ACG
                T                   T  GT G    G  GA- GG  G   ----
GAM27092 19329  GGCCCCTGGGTCCACGTGGC  -   T    CCAC-     C  AAGT    GAA       CC   GAGCCAGA
7               GCGAAAGTAGGAGGAAGACA GG CCCC GGGT    GTGGCG GA    AGGAG   GACATAGG  AAG

                TAGGCCAAGGAGCCAGACTT CC GGGG TCCA    CACCGT CT    TCCTC   TTGTGTCC  TTC
                CCTGTGTTAACTCCTTCCTC   A    T    TTTTT     -  CCT-    AA-       --  --------
                TGCCACTTTTTACCTTGGGG
                ACC
GAM27093 19185  GGCCCGACGTTATCTCGCGC    - A    --       T  TGTG-    C-   GCT
8               TCGTGTGCAGGCCCGGCTCG GGCC CG CGTTA  TCTCGCGC CG     CAGG  CCG
                GCTCCTGGTCCCCGGTGCGA CCGG GC GCAAT  GGAGCGTG GC     GTCC  GGC
                GGGTTAACGCGAGGCC       A -    TG       -  CCCTG    TC   ---
GAM27094 4423   GGCCCGATTTACAGGGAGAA     ---     CA       CTC   A    -----  A     TTATGTC
4               GCTCGGCAACGTGGAGTCGG GGCCC   GATTTA  GGGAGAAG   GGC ACGT    GG GTCGGT

                TTTATGTCATCGACCCTGAA CCGGG   CTGAAT  TTCTCTTC   CCG TGTA     CC CAGCTA
                GATGTGGCCCTTCTCTTTAA     AGC     --       ---  G    GAAGT  -     -------
                GTCCGAGGGCC
GAM27094 5953   GGCCCGCACACCTGGGCCGA      C   C--         CC     C   T       CCTCGCT
5               GCCGGGGCCGCCTCGGGAGC GGCCCG ACA   CTGGGCCGAG  GGGGC GCC CGGGAGCC

                CCCTCGCTGGCTCCTGGGCG CCGGGC TGT   GACTCGGCTC  CCCCG CGG GTCCTCGG

                CCCCACTCGGCTCAGCAATG      C   AAC         A-     -   -       -------
                TCCGGGCC
GAM27095 3616   GGCCCGCGGTCTTGGCTCCC     GC    TT     CCTTTCT-       G   -  G---  ----    GTA
0               CTTTCTTCCTTCTGGCTGGC GGCCC  GGTC  GGCTCC       TCCTTCTG CTG GCC    GCC    GCAGG
GGG
                CGGCCGCAGGGTAGGGGGTC TCGGG  CCGG  CCGAGG       GGGAAGGC GAC CGG    CGG
TGTCC   CCC
                CGTGGACCTCCCGGCCTGTA     A-   T-     CCTCGTCC      -  G   GCTG   GGGA    GG-
                GGGGGCGTCGGGCGCAGCGG -   CGTG
                AAGGGCCTGCTCCGGAGCCT  GGTC
                GGCCAGGGCT          CCAG
                           T    ----
GAM27097 8290   GGCCCGTCGGCGGCGCGCCC    C    -------   G   C    GAAAGAATGA
3               GCAGAAAGAATGATGCGAGC GGCC GTCGG       CGGC CGC CGCA
```

GGCCGGAAACGATCGGCGGC CCGG CGGCT GCCG GCG GCGT
C - AGCAAAG - A ----------
GAM27099 8273 GGCCCTCATTTTGTATTTTT TCATTTT TAAA ATT--- GTGA
8 TAAATTTGGGTTTTATTGAA GGCCC GTATTTTT TTTGGGTTTT GAAA
AGTGATTTCTTGTGGAAAGC CTGGG TATAAAAA AGACTCGAAA CTTT
TCAGAATGTAAAAATATTAT TAT---- TGTA GGTGTT ----
GGGTC
GAM27100 9342 GGCCCTCGAACTGGCTGTTC T AA CTGTT - T GG TTGTT
6 CAGGCGGCGTCGGGCTGGTT GGCCC CG CTGG CCAG GCGGCG CG CTGG
GTTCCAGGGCGCGTCGCGCT CTGGG GC GACC GGTC CGCTGC GC GACC
GGCCGTTCCAGCCGGGGTC - C- TTGCC G - GG -----
GAM27100 21190 GGCCCTCTCAGGGCCCTAGG C A- A CCTT T TCCTG
8 AGCCTTTGTGTGTCCTGCTC GGCCCT TC GGGCCCT GGAG TGTG G
ACATTGTCTCCAGGGCCTCG CCGGGA AG TCCGGGA CCTC ACAC C
GACAGGGCC C GC - TGTT T -----
GAM27102 19257 GGCCCTGCAGCTGTTGCTGG -- - GCTG-- G AAG
8 TGGGGGACAAGGTGCCCCAC GGCCCT GCAGC TGTT GTGGGG AC
GACCTGGACATGCTGCTGAG CCGGGA CGTCG ACAG CACCCC TG
GGCC GT T GTCCAG G ---
GAM27103 1524 GGCCCTGCGGTTGGCGGCCT CC -- CTCCTC AG G- A- AGGC
1 CCTCGTGGAGCGGAGCAAGG GG CTGCGGT TGGCGGC GTGG C GAGCA GGCC
CCAGGCGGCCCCTGCTCGAG CC GGCGCCG ACCGCTG CGCC G CTCGT CCGG
TCCCGCGTCGCCATGGCCGC TT GT ------ CT AG CC ----
GGTTCC
GAM27103 18992 GGCCCTGGACCGCCAAACAG T ACC A CTA A --------- AAG--
CCCACAAGTACAG
5 CTACTCAGCTGCTTAAGCTG GGCCC GG GCCAA CAG CTC GCT GCTT CTGG
GCCCACAAGTACAGACCAGA CCGGG CC CGGTT GTC GAG CGA CGAA GACC

GACAAAGCAAGAGAAGAAGC - --- - A-- A AGAAGAGAA ACAGA ----------
AGAGACTGTTGGCCCGGGCC A

-
GAM27103 16840 GGCCCTGGACCGCCAAACAG T ACC A - AC--- AG-- AAG---
CCCACAAGTACAGA
6 CTACTCAGCTGCTTAAGCTG GGCCC GG GCCAA CAG CT TC CTGCTT CTGG
GCCCACAAGTACAGACCAGA CCGGG CC CGGTT GTC GA AG GACGAA GACC
GACCAAAGCAGAGAAGAAGC - --- - A GACGA AAGA ACCAGA ----------
AGAGACTGTTGGCCCGGGCC
GAM27104 8497 GGCCCTGGTACAGCGGCTGC - ---- GC---- - GCAATCTCTA
3 CCGAAGCAATCTCTATTTGG GGC CCTGGTACA GCG TG CCCGAA
GACACATTGACGTCAGGTGT CCG GGACCATGT TGC AC GGGTTT
ACCAGGTGCC T GGAC AGTTAC A ----------
GAM27105 1584 GGCCCTTCTTTTTCCTTTGC CTTCTT- --- TG TTCTTT- TT-- C CC- TTTCTCTCTA
8 TTTCTTTTCTTTTTGTCCAG GGCC TTTCCT T CT TC TTTGTC AGTA GTG
TACCGTGTTTCTCTCTAGCT CCGG AAGGGG A GA AG AGACAG TCAT TAC

TATCATTCATACTGACAGAT AAACTTT TTC GT CATCTAT TCCT - ACT ----------
CCTGATATCTACAGTGACTT GCTTAT

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          GGGGAATTTCAAAGGCC

                        ------
GAM27106 3534   GGCCCTTGTGCCCTGTCTCT   - T     CT     T     C  CTTT
5           TCTCAGGCGTCTTTACACCT GGC CC TGTGCC  GTCTCT CTCAGG GT
          GGGTAGGGATTGGCACACGG CCG GG ACACGG  TAGGGA GGGTCC CA
          CGCC              C  C     T-     T     A ----
GAM27107 1598   GGCCGAAGCGGACAGGGGAG   -  -------    ACAG   -  T   TCGA
7           TATCCTTCGAAGGTGCATCT GGC CGA      AGCGG    GGGA GTA CCT
          CAGCCGCTAGAAGCCTTGAG CCG GTT      TCGCC    CTCT CGT GGA
          CC                A   CCGAAGA    GA--    A   -   ----
GAM27108 9659   GGCCGACGTCCGTGAGCTCT     A    GTGAGC      CAA TA     CCGCGAT
4           GCTCCAAGTATGCCTCCCGC GGCCG CGTCC      TCTGCTC   G  TGCCTC
          GATGAGGCACGCCGAGCAGG CCGGC GCGGG     GGACGAG   C  ACGGAG
          GGGCGGCGGCC           G    ------      C-- GC     -------
GAM27108 12623  GGCCGACTCCCAGCTTCTGC    CGAC   CAGCTT     C   TC   A    ACA
7           TTCATTTCATCATGTGTACA GGC    TCC     CTGCTT ATT  ATC TGTGT
          ATACAGATTAATAAGCAGTA CCG    AGG     GACGAA TAA  TAG ACATA
          AGGAGCC             ----  AAT---     -  T-  -    ---
GAM27110 21209  GGCCGAGGCAGGGTGATCAC    CGA---  -     ATCA     GGCAGGAG
5           TTGAAGGCAGGAGTTCGAGA GGC     GGC AGGGTG    CTTGAA
          CCATCCTGGCCAACATAGTC CTG     CCG TCCTAC    GAGCTT
                        ATACAA   G     CA--     --------
GAM27114 4432   GGCCGAGTATCCATCAGAAG     AG   -   -------- A  T    GCAAG
8           TAGACGCAAGGTCTCTCCTT GGCCG  TATC CATC       AG AG AGAC
          TGATAAAGATGCGATGGTGG CCGGT  GTAG GTAG       TC TC TCTG
          CC                G-   C    AAATAGTT  C  -   -----
GAM27117 8738   GGCCGCCCCAGCCGCTGCTA       CA    TGCTA   A   AG    GGGCT
4           CCCACGCAGAGCCGGGCTGG GGCCGCCC  GCCGC    CCC CGC  AGCC
          CTTCGCGGGGGCGGCGGGCG CCGGCGGG  CGGCG    GGG GCG  TCGG
          GCC                   --    -----  -  CT   -----
GAM27118 16768  GGCCGCGATACACCAGCACG       ATACACCA  A  C  A   CGACA   CGACCA
9           CGCACGGCGACACCGCGACC GGCCGCG       GC CG GC CGG     CCG
          ACGGGACCTGGCCGAGCACA TCGGCGT       CG GC CG GTC     GGC
          AACCTGCGGCT             CCAAACA-  A  -  -   CAG--   ------
GAM27119 1482   GGCCGCGGCCGGGCGGGCGC     -   -         AG    GA  -  --   GTGGT
9           AGTCGGGAGCCGGCCGTGGT GGCCG CGGC CGGGCGGGCGC  TCGG  GC CG  GCC
          GGCTCCGTGCGTCCGAGCGT CCGGC GCCG GCCTGCCTGCG  AGCC  CG GC  CGG
          CCGTCCGCGCCGTCGGCC       T    C          --    TG  T  CT   -----
GAM27122 18764  GGCCGGCCCCGGTGATCGGC        C-     ATC  CC    C  CTCTTCCACTCACATCCT
2           CGCAGCGGCTCTTCCACTCA GGCCGGCC  CGGTG   GG  GCAG GG
          CATCCTCCCTGCCTTCTACT CCGGTCGG  GTCAT   CT  CGTC CC
          GTCGGCTGGCC              CT     ---  TC    -  ------------------
GAM27122 1010   GGCCGGCCCGGGAAATATCT     G   GGGAAATA      --      AGGGAAATA
3           TCTTAGGGTAAGGGAAATAT GGCCG CCC       TCTTCTT  AGGGTA
          GCCCTATGAGAGGGGGGGCG CCGGC GGG       GGGAGAG  TCCCGT
          GCC                 G  --------       TA     ---------
GAM27124 9138   GGCCGGGCAGCATTCTGGGG        AGCA    G-    GTAA-   TGGTT
6           CTTGTAACACTTGGTTGGTG GGCCGGGC    TTCTG  GGCTT     CACT
          GGCGAGAGCCAGCAGGAGGT CCGGCCTG    AGGAC  CCGAG     GTGG
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          CCGGCC                G---    GA    AGCGG   -----
GAM27124 18944  GGCCGGGCATGGTGGCTCAC       A  GT---    AC-   - A   CAG   TGA  AGT
7          GCCTGTAATCCCAGCACTTG GGCCGGGC TG    GGCTC   GCCT GT ATCC   CACT   GG
          AGGAGTCCGTGGTGGGTGGA CCGGTCCG AC    TTGAG   TGGA CA TAGG   GTGG   CC
          TCACGAGGTCAGGAGTTCAA       A  AGAAC    GAC   G  C   TGG   TG-  ---
          GACAAGCCTGGCC
GAM27127 6514   GGCCGGGGCCGGGGCCGGGG     G   -   CG-     TG --    - G  G  - CTG
1          CCCTGACGTCCCCGCGGGGC GGCCG GGCCG GGGC   GGGCCC  A  CGTCC CC CG GG CC

          CCTGGGACCGCGAGGAGGAC CCGGT TCGGC CCCG   TCCGGG  T  GCAGG GG GC CC GG

          GGCTTGGGGCCTGGAGCCCG     G    G   AGG     GT CG    A  A  G  A  ---
          CGGCTGTGGCC
GAM27129 18961  GGCCGGTGGTGATCCTCCTC    C  TG   AT    -----   GA-  GGTA
4          CGAGCGGTAGTAGAGGAGAT GGC GG  GTG  CCTC    CTCC   GC
          ATCGAGGGGCACTGCCTGCC CCG CC  CAC  GGAG    GAGG   TG
                        T  GT   GG    CTATA    AGA  ----
GAM27129 9412   GGCCGTCGCGACTCTGGCCT    C    CGACTC     -  AAACA     CT    GCG-   ACCTTCATCA

7          CTGAAACACTACCACTGCTG GGC GTCG     TGGCCT CTG    CTACCA  GCTG    CTG
          GCGCTGACCTTCATCACAGA TCG CAGC     ACCGGG GAC    GGTGGT  CGAC    GAC
          CAACAGCCTGGTGGCAGCGG    T   ------     C   -----     C-    AACA  ----------
          GCCACGACTGCT
GAM27130 5679   GGCCGTGACGCAGACGGTCC    C    C   GA            A-  G   GAG
2          TGCTGTTGTAGCGTTGGAGC GGC GTGA GCA  CGGTCCTGCTGTTGT  GC TTG
          AGAGCCGACAGCAGCGGGGC CCG CACT TGT  GTCGGGGCGACGACA  CG GAC
          TGGGTGTTCACGCC        -   -   GG            GC  A   ---
GAM27130 16529  GGCCGTGCAGCAGTGCATTG    G  C     T  A  GAGG    GGACA  A  ACCA
4          AGGCTGCAGGACATGAGCAC GGCC TG AGCAG GC TT    CTGCA     TG GC
          CAGCCAGACATGCAGAAGAG CCGG AC TCGTC TG AG    GACGT     AC CG
          TCTGCTCAGGGCC          G  -    -  -  AA--     ACAG-  -  ----
GAM27130 1287   GGCCGTGTAGGCAGAGGCAC    GT---   G  AGA   AC----------------  GACAGATA
8          GAGACAGATATCAGTTCGGG GGCC     GTA GC   GGC              GA
          ACCGCACCACGCCAGCGTAC CCGG     CAT CG   CCG              CT
          CCAAAGGCC             AAACC   G  A--   CACCACGCCAGGGCTTGA  --------
GAM27130 19396  GGCCGTGTCTCAAGTAACCA    -  G  T     AA--   -  AA  A         GT      CGACT
9          CCAAGTACGTGCTGTGGGTG GGC CGT TC CAAGT    CCA CC  GT CGTGCTGTGG  GGACGA

          GACGACGACTTCGTCTTCAC TCG GCA GG GTTCG    GGT GG  CA GCGCGGCACT  TCTGCT

          GGCGCGGACGCGGCTGGAGA    T   -  T     GAGA   C  CG  G         --      -----
          GGCTTGTGGACGTGCT
GAM27131 19999  GGCCGTTGGCTTGATCACTC    -  TT  CT    C   C   A  CTATTAC
4          ACGACACTATTACTGACGTT GGC CG  GG  TGAT ACT ACG CA
          AGTTATTATACTGCCGTGCC CCG GC  TC  ATTA TGA TGC GT
                        T  CG  AT    T   T   A  -------
GAM27131 22288  GGCCTAAAGAGGACTGTGCA    C  AAG     GTG  T      -     AG--  A   CAAA
7          TTTTTGCTATTTAAAGGAAT GGC TA   AGGACT   CA TTTTGCT ATTTAA    GA TCA
          CACAAATGATCATACTTAAG TCG AT   TTTTGA   GT AAAACGA TGAATT    CT AGT
          TGAGCAAAATTGACAAGTTT    -  CA-     ACA  T      G      CATA  -   ----
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TACTAGCT
GAM27132 2966 GGCCTAAGGTTTGACAGGCG AAG TT AG GG-- CAAA
1 GTAGAAAACAAATTTTTTAA GGCCT GT GAC GC TAGAAAA
AATGTTCGTTTTATAAAGGG CCGGG TA TTG TG ATTTTTT
CC AAA TT CT TAAA ----
GAM27132 1562 GGCCTACAGGGGGCACCCCT - A AC G - --- CTCAA-- CATTT
9 GGTCTTGATGCCTCAAGCCC GGC CTAC GGGGGC CCCTG TCT TGA TGC GCCCAG
AGCATTTCTGGGTCCCCTCT TCG GATG TCTTCG GGGAC AGA ACT ACG TGGGTC
GCAAGCTCAGAGAGCAGGGA T G GA G G CGA TCTCCCC -----
GGCTTCTGGTAGTGCT
GAM27134 18836 GGCCTAGTTTTCTTCTGTGG T - C- ATCTATTAAATAAAAA
1 TGATCTATTAAATAAAAACA GGCC AGTTT TCTT TGTGGTG
CTATATTAAGATAAATTGGC CCGG TTAAA AGAA ATATCAC
C - T TT ----------
GAM27140 21606 GGCCTCCAGGTTCATGCCAG -- TTCA AG- G A ACT- G TCAG
0 GGATGCTGTCACAAGACTCA GGCCT CCAGG TGCC GGATGCT TC CAAG CAAA TCT
AAGTCTTCAGGGAATTTGCC CCGGA GGTCC ACGG CCTACGG AG GTTC GTTT AGG
GACTTGGAAGGCATCCATGG GT C--- GTA A - AGCC A ----
GCACCCTGGTGAGGCC
GAM27143 4082 GGCCTCCTGTTCTGCTGATG TC- - AT CA TCCGCATC
8 GCACCGTCCGCATCTGGGAC GGCC CTGTT CTGCTG GG CCG
CCCAGCAGCAGCAGCCCGGC CCGG GACGA GACGAC CC GGT
C CCC C C- AG --------
GAM27144 5684 GGCCTCCTTTGTGTTCCCAG T TT G-- ATG----- AGTGA
2 CATGGCAGTGAGCAAGAGAA GGCC CCT GT TTCCCAGC GC
GGCTGGGGAGAAACCGGGGT CCGG GGG CA AGGGGTCG CG
GGCC T GC AAG GAAGAGAA -----
GAM27145 20219 GGCCTCGCGGTCGTACACCT TC G G - CA ----- T GGCAGTG
2 GCACGGTCTTGGAGAAGGCA GGCC GCG TC TACA CCTG CGGT CT GGAGAA
GTGTTCTCCCAGCTGTAGCC CCGG CGT AG ATGT GGAC GCCG GA CCTCTT
GCCCAGGATGTAGATGCGGC -- - - A CC ATGTC C -------
C
GAM27148 9202 GGCCTCTTAGATTGTCCTTG CT- TG - ACTTATCTGC
3 TTTTGACTTATCTGCTAAGG GGC CTTAGAT TC CTTGTTTTG
CGAGAGAATGTCTGGGTTTG CCG GGGTCTG AG GAGCGGAAT
CC TTT TA A ----------
GAM27151 9170 GGCCTGATCCTGGCCTGTGG GA CC AGC AT CCATC
5 GAGCTCGGATGGGGCCATCT GGCCT TCCTGG TGTGGG TCGG GGGG
CCCTGCTGACTTACACCGGG CCGGA GGGGCC ACATTC AGTC CCCT
GAAGGCC A- -- --- GT -----
GAM27152 12902 GGCCTGCAGCGAAGGGCTGG G G- - TG C G-- -- TG T- TGCAT
3 CCGGGCCTGCTGAGCTGCTG GGCCT CA CGA AGGGC GC GGGCCT CTGA GC CTG TC

TTCTGCATGACTCAGTGGTT CCGGA GT GTT TTTCG TG CCCGGG GGCT TG GAC AG
TTCGGAGAGGGCCCTGTTGG - GA A GT T AGA TT GT TC -----
CTTTATTGAGTGAGGCC
GAM27152 8586 GGCCTGCAGGCGCTGTGAGG ----- C GTGA - CCGGT
5 TCCCAGGCCGGTCTTGGCGG GGCCT GCAGG GCT GGTC CCAGG
CCGAGAGCCCCTGCACTCAA CCGGA CGTCC CGA CCGG GGTTC
GGCC ACTCA C GAG- C -----

GAM27152 8084 GGCCTGCAGGGCGTGGTGGT C C G TG - A GCACTG
7 GCTGGAGCAGTACCTGCACT GGC TG AGGGCGT GTGG CTGGAGC AGT CCT
GAGGAGCTGGCTCTAGGCCT TCG AC TTCCGCA CATC GATCTCG TCG GGA
ACGACGCCTTCACGCT C - G CG G A ------
GAM27155 8124 GGCCTGGACAACTTCGGGGA - GA - GA -- TGG
6 CTTTGACTGGGTCATCGAGA GGC CTG CAACTTCG GG CTT TGAC
ACCATGGAGTTGAACAGCGC CCG GAC GTTGAGGT CC GAG ACTG
C C AA A AA CT ---
GAM27156 20406 GGCCTGGCCACGCTCTCACG -- CCAC TC GGA - GCAT
3 GAACCACTGGCATCAGATGG GGC CTGG GC TCAC ACCA CTG
TGAAGTGACTGCTACCCGGT CCG GGCC CG AGTG TGGT GAC
TGCC TT CAT- TC AAG A ----
GAM27156 3588 GGCCTGGCCCAGAGCGAGCT G CCA GA A G GCCC
5 TATGCGACTGCCCAGTGGCA GGCCT GC GAGC GCTT TGC ACT
AAGTGGGCTTCAGCAAGGCC CCGGA CG TTCG TGAA ACG TGA
A AC- GG - G ----
GAM27159 3932 GGCCTGGGGGTTGCATGTGT TG - T--- T TCAC A- - CACTAACCAT
0 CACCTGGAGCTGGGCACTAA GGCC GG GGT GCA GTG CTGG GCT GGG
CCATTCCAAGCCGCCGGCAT CCGG CC CCA TGT CGC GGCC CGA CCT
CGCTTGTTTCCACCTCCTGG GT T CCTT T TAC- GC A ----------
GCC
GAM27160 6116 GGCCTGGTGAAAGGAGCCTG T -- - CCTG AAGACAC GACCTGAA
0 CCAGAAGACACTCAGCGACC GGCC GGTGAA AGG AG CCAG TCAGC
TGAAGCTGGACTACCTGGAC CCGG TCACTT TCC TC GGTC GGTCG
CTCTACCTTATTCACTGGCC - AT A TCCA CATCA-- --------
GAM27164 20348 GGCCTTATGACGAGGAGTGC TAT G - ------- T TTAT
2 CTGTGGGTTATCCTTCGTTG GGCCT GAC AGGAGTG CC TG GGG
TCTTGGTCACTCTTGGTTGG CCGGG TTG TTCTCAC GG GC TCC
GCC --- G T TTCTGTT T ----
GAM27165 18852 GGCCTTCCAGAAAGGCAGTT TC AA TT TT C TT TC TG TCATTTTT
5 GGAGTTGGCAGGTTACTCTT GGCCT CAG AGGCAG GGAG GG AGG AC T CT
GCTTCATTTTTGGTGGTGTT TCGGG GTC TCTGTC TCTT TC TCT TG G GG
TTCTCTTTTTCTCTGTCTAC T- A- -- TT - TT T- GT --------
TGTGGGCT
GAM27167 16827 GGCCTTGAACGTCATCTTTA ----- CGTC - GCA-- CTTT
5 CTGTGCATTTCCTTTGAAAA GGCC TTGAA ATCTTTA CTGT TTTC
TAAAGCAGCTGAAGATTTCA CCGG AACTT TAGAAGT GACG AAAG
ACACATGGCC TACAC ---- C AAATA ----
GAM27170 14634 GGCCTTGTGCAGTCAGCTTA - TGTG C A- --- CCA - CC- ----------
4 TGCTCAGCCCATTGATTCCA GG CCT CAGT AGCTT TGCTCA GC TTGATTC CA ACA TC
CCACATCCCTGATCGAGGGG CC GGA GTCA TTGAA ACGAGT TG AATTAAG GT TGT AG
ACGTTAATTACCTGTCTTTG A ---- - CG ATT ACG T TTC CCATTAATTGC
TGAATTAAGCAGTTTATGAG GATCGA
CAGCAAGTTACTGAGGACC CCT
GGG

GAM27174 1550 GGCGAAGGTGACCGGGGACC CGAA - G-- TTTCAGATC
4 GAGCATTTCAGATCTGCTCG GG GGTG ACCGGG ACCGAGCA
GTAGACCTGGTGCACCACCA CC CCAC TGGTCC TGGCTCGT
CC ACCA G AGA ---------

GAM27174 14005 GGCGACACAGGTGTTGGTAA - C AGG- G CAT- TTATT
9 ATCATGCTTATTGCTACAGT GGC GA AC TGTT GTAAAT GC
TTACAGACAAGAGGTTTCAG CCG CT TG ACAG CATTTG CG
CC A T GAGA A ACAT -----
GAM27176 19915 GGCGAGAACGACCGTGGCGT - GAC GTC - A-- - -- T - C
5 CTCTTTTACCTTTGGAGCCG GGCGA GAAC CGTGGC TCTTTTACC TTTGG GC CG AGGTGG GG
CCAAGTT
AGGTGGTGGCCAAGTTCCTC CCGTT CTTG GCATCG AGAAGATGG GGACC CG GC TCTACT CC
GGTTCAG

CACAAGCACGACTTGGACCT T A-- GC- T ACA A CG - A -
CATCTGCCGAGCACACCAGG CTCCACAAGCAC
TGGTAGAAGACGGCTACGAG
TTCTTTGCC

GAM27177 13043 GGCGAGAGAGCGGCAGGGTG AGA G AGGG C CCGTGGC
1 AGGCCCGGCCGTCCGTGGCA GGCGAG GCG C TGAGGCC GGCCGT
TGGCCAGGCCTCAGCGCGAC CCGCTC CGC G ACTCCGG CCGGTA
CTCGCC CAG - ---- A -------
GAM27177 18687 GGCGAGCGACAGCCCCTGCT G A C---- - TCCCCCTGAG
4 GGGTCCCCCTGAGTCCATGC GGC AGCGAC GC CCTGC TGGG
GGGAACATGTGGTCGCTGCC CCG TCGCTG TG GGGCG ACCT
- G TACAA T ----------
GAM27179 5923 GGCGAGTGCCTCAATGGAAG C CC T A-- T TT CT T TT TATGTGGCCTT
3 CGGTACTTTCTGGCTGGCTT GG GAGTG TCAA GGA GCGG ACT CTGG GGCT GAGG GATG

GAGGTTGATGTATGTGGCCT CC CTCGC AGTT TCT CGCC TGG GACT CCGG CTCC CTAC

TCATCTCCTCGGCCTCAGGG C TA - ACA T -- -- - T- ----------
TTCCGCACATCTTTGAATCG
CTCCCC
GAM27179 9145 GGCGAGTGGAACCGTAAAAG -- G A TAAAAG AAT AGC
4 CCCCAATCTTAGCAAGTGCG GGC GAGT GA CCG CCCC CTT
GGGAAGAGCTGGGTCGACTC TCG CTCA CT GGT GGGG GAA
AAGCT AA G G CGAGAA CGT ---
GAM27185 2833 GGCGCCGTCGGGCCCCAGAG G G - AAA- TTTA
4 AAAAAGTTTTTAAACCCCAT GGC CC TCGGGCCCCAG AGAA GTT
TCTGTTGGGGCCCGGGGGGG CCG GG GGCCCGGGGTT TCTT CAA
CC G G G ACCC ----
GAM27185 18295 GGCGCCTAGGGCTGCGGCAG - CTA-- - ACTC CT-- A
TTACCTCGCCCCCACTTGT
6 GGACTCGGCCTCTGGGAGGT GGC GC GGGCTGCG GCAGGG GGC CTGGG GGT
TTACCTCGCCCCCACTTGTG CTG CG CCCGACGC CGTCCC CCG GACCC CCG

CCCCCAGCTCAGCCCCCCTG A ATCAG A C--- ACTC - ----------
CACGCAGCCCGACTAGCAGT
C

GAM27186 21635 GGCGCCTGTGCTGGGGGCTT C-- T----- T TT -- CG AA- AG GAGAG

5 TCTGTTCCAGCGTCAAGGAT GG GCCTGTGC GGGGGCTT CTG C CAG TC GGATGG
GAGGGG
GGAGGAGGGGGAGAGGAGCC CC CGGACACG TCCCCGAA GAC G GTC AG CCTGTC
TTCCCC

CCTTACTGTCCCAGGAAACT CAC TGTCTC - CG AC AA GAC A- -----
GCAGGCCAGAAGCCCCTCTC GAG
TGTGCACAGGCCACCC

GAM27189 3582 GGCGCGGGCTCGGCGGGCTG G --- G CT GGGA
3 CGTGCTGGCTGGGAGGCTCA GGCGCG GCTCGGCGGG CT CGTG GGCT
CGGAGGACCCCGCCGAGCGC TCGTGC CGAGCCGCCC GA GCAC TCGG
GTGCT G CAG G -- ----
GAM27189 22307 GGCGCGGGGAAGACCCGGGA - AGACCCG GT T A GTTGAG
4 GGGCAGTGGGTGAGGAGGTC GGC GCGGGGA GGAGGGCA GGG GAGG GGTCG
GGTTGAGTGGCCCCCTCCCC CCG TGCCTCT CTTTCCGT CCC CTCC CCGGT
TGCCTTTCTCTCCGTAGCC A ------- -- - C ------
GAM27193 3720 GGCGCTGCTGCTGTGGGGCC T GT G C CTTT
0 GCCGCCTGCGGCCTTTGCTG GGCGC GCTGCT GG GCCG CGCCTGCGGC
CGGGCGCCGGCGCTGGCGGC CCGTG CGGCGG TC CGGC GCGGGCGTCG
GTGCC - -- G C ----
GAM27193 8057 GGCGCTGTGTCTCCTACGCA ----- T T AC A GAGGGCT
7 ACTTCTGAGGGCTGGAGGGT GGC GC GTGTC CCT GCA CTTCT
GCCAAGGGACGCTGCTGACC CCG CG CGCAG GGA CGT GGAGG
GCC CCAGT T - AC G -------
GAM27194 14706 GGCGGAACACTGGCCAATTA AACACT ATTAC CG CCCCTTT
8 CAGCGGGCGGGGCCCCTTTT GGCGG GGCCA AGCGGG GGG
TTTATCCGCTTAGCATGGCC CCGCC CCGGT TCGCCT TTT
CCCGCC C----- ACGAT AT -------
GAM27195 8847 GGCGGACAACAGTCTTCACG CA--- -- T-- -- ACTGAAC
2 GCCACTGAACGGAACCGTGA GGCGGA AC AGTC TCACGG CC
TTCGACTACGTCAAGCTCCG CCGCCT TG TCAG AGTGCC GG
CC CGAAC CA CTT AA -------
GAM27195 18754 GGCGGACCAGTGCGAGGTAT A T A--- A- GCCCCTAAGAAACA
5 GCTGCCCCTAAGAAACAAGC GGCGG CCAG GCG GGT TGCT
GAGGCCAGGCCGCTCTGGAC CTGCC GGTC CGC CCG GCGA
CGTC A T CGGA GA ----------
GAM27196 21385 GGCGGAGCAGACTCGGGAGC ------ A - CTCT- TT ACTCATTACGCCC
1 TCTGGTTCGGACTCATTACG GGCGGA GCAG CT CGGGAG GG CGG
CCCCCGCTCTTCATTCTCCT CCGCCT CGTC GA GTCCTC TC GCC
GCAGCTGCTCATGATCCGCC AGTACT - C TTACT TC ----------
GAM27196 5354 GGCGGAGGCACTCAGAGAAG A CAC AGAA A TT A CCAA
8 GTAAAGCTTTCCTAGCCCAA GGCGG GG TCAG GGTA AGC TCCT GC
GCAAGGATGCTCTGCCCAGC TCGCC CC GGTC CCGT TCG AGGA CG
TGGCCACCACCGCT A ACC GAC- C T- A ----
GAM27197 8044 GGCGGAGGGACCAAGCTGAC AG CCA C TCCTAA T CAA
5 CGTCCTAAGTCAGCCCAAGG GGCGG GGA AG TGACCG G CAGCC
CTGCCCCCTCGGTCACTCTC CCGCC TCT TC ACTGGC C GTCGG
TTCCCGCC CT C-- - TCCCC- - ---

GAM27201 1756 GGCGGCCCGGCGGAGACCAC C ----- GGA CCT G- AGA GAG--- C CTA
5 CTGGCTGGGAGAAGGCGGAG GG GGC CCGGC GACCA GGCT GG AGGCG GAGG GATGG

GAGGCGATGGCTACTATCCC CC CCG GGCCG CTGGT CCGA CC TCCGC CTCC CTATC
TCGGGAGGCGCCTGGCCAGA A AAGGA AG- --- GA GG- GGAGGG - ---
GCCTGGTCGAGCCGGAGGAA
GCCACC
GAM27201 20388 GGCGGCCGCGGGCCCCCCAT G GCG------- CATTG A---- TA- - GCCC
8 TGGTTCTAGGGTACACCGTT GGC GCC GGCCCCC GTTCT GGG CACCGT TG
GGCCCCATGCGGTGGTTCCC TCG TGG CCGGGGG CAAGA CCC GTGGCG AC
ACAAGAGAACACCCCGGGGG G AACACAGGAA CCCCA GAACA TTG T ----
CCAAGGACACAAGGTGGCT
GAM27203 20680 GGCGGCGGCGGCGGAGGCAG C C C C CA A T AA TA----- AATATCCAC
7 CAGTCTTAGAATGAGTAGCA GG GG GG GG GGAGG GC GTCT AG TGAG GC
ATATCCACGCGAACCATCTC CC CC CC CC CCTCC CG CAGA TC ACTC CG
AGCCTAGACGCGTCCTCCTC T T T T TG - - CG TACCAAG ---------
CTCCTCCTCC
GAM27205 1743 GGCGGCTCGCGCCTGTAGTC C G C CCAA GAATCAC G TGAA
0 CCAGCACTTTGGGAGGCCAA GG GGCTCGCGCCT TAGTCCCAGCA TTTGGGAGG GGCAGGT
GAG TCT
GGCAGGTGAATCACGAGGTC CC CCGAGTGTGGA ATCAGGGTTGT AAGCCCTCC CCGTCTA
CTC AGG

TTGAACTCCGGAGCTCAAGC A G A AC-- GCGAA-- G ----
GATCTGCCCACCTCCCGAAA CTCC
TGTTGGGACTAGAGGTGTGA
GCCACC

GAM27205 4221 GGCGGCTGAGGCGGCATGGA TGA A GA------- - CGAG
5 TCTCAGCGAGCTGGAGAGAG GGCGGC GGCGGC TG TCTC AG
ACAATACAGGCCGCTGTCGC CCGCTG TCGCCG AC AGAG TC
C --- G ATAACAGAG G ----
GAM27205 12944 GGCGGCTGGCCTGGGTGGCC T-- C--- - AT TCTGCT
8 ATCCTCTGCTGGGCGGCCAC GGCGGC GGC TGG GTGGCC CC
ACCGACATGCCCATGCCGCC CCGCCG CCG GCC CACCGG GG
TAC TACA A CG ------
GAM27207 3867 GGCGGGAGGACAATATTATT G- GGACAA C TTCCTTCGACATCCATAGT
4 CATTCGATTTTTCCTTCGAC GGCG GA TATTATTCATT GATTT
ATCCATAGTGAATCAGTGAG CCGC CT ATAATGAGTGA CTAAG
TAATAATTAATCAACGCC AA AATTA- - ----------
GAM27209 8951 GGCGGGGACAGCAGTTGCAT G A TGC GA CTTTC AGC
8 GGACAGCTTTCCTTGTGAGC GGC GGG CAGCAGT ATG CAG CTTGTG
CACAGGTCCCTCTGGACATA CCG TCC GTCGTCA TAC GTC GGACAC
CTGCTGCCTGGCC G - --- AG TCCCT ---
GAM27211 20543 GGCGGGTGGGGGGCCTTTGG C - AA-- T- AA- A CTG
5 AAGGTTTGCAAGGAGTTGCT GG GGGTGG GGGGCCTTTGG GGT TGC GG GTTG
GCGGCCCAAGGCATCACCAA CC TCTACC CTCCGGAAATT CCA ACG CC CGGC
GATTAAAGGCCTCGCCATCT T G AGAA CT GAA - ---
TCC
GAM27212 20474 GGCGGTGAGGCTCACGCATG T CTCAC - TTAC CAAGAA

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5          TGCTTACGGGCAAGAACCTG GGCGG GAGG    GCA TGTGC   GGG
           CACACTGCACCACTTCCCGT CTGCC CTTC    CGT ACACG   TCC
           C                -  ACCA-  C    ----  ------
GAM27213 4450  GGCGGTGCCTCGGGAGGAGC    TG-------     A-  A  GTTT  ACA   AGCTG
1          TGTTTGTGACATCCAAGCTG GGCGG      CCTCGGG  GG GCT   GTG  TCCA
           TGGAACACCAAGCACCACCC CCGTC      GGAGCCC  CC CGA   CAC  AGGT
           CGAGGATGTGGAGCCTGCC     CGAGGTGTA     CA  A  AC--  A--   -----
GAM27216 12430 GGCGTCATGTCTCCCGATGG        T   AT   - T  --  --    G  TGTT
8          GCGCTGCTCCGTGGCGCGCT GGCGTCATGTC CCCG  GGGC GC GCT  CCG  TGGCGC CTC

           CTGTTGAGGCGCCGGCCGGC TCGCGGTGCGG GGGT  CCTG CG CGG  GGC  GCCGCG GAG

           TGGCGCAGTCCTGTGGGCGG        C   GT   A  -  TC  CG    -  ----
           CGTGGCGCT
GAM27218 5629  GGCGTCTCCGCTCCCCGCAG    - C--  T--    -  TTCT  TTT
4          GTTTCTGCTTTGCCCACCTG GGCGT CT  CGC  CCCCGC AGGT   GC
           GTGGGGTACGCGCCTGGCAC CCGCA GG  GCG  GGGGTG TCCA   CG
           GCC               C  TCC  CAT    G   CC--  ---
GAM27218 1585  GGCGTCTGCTGGAGTGGCCC    -  TGGA--   --  TG  AT--  G  AGTT
8          AATGCTATATGTCAGTTGAG GGCGT CTGC    GTGGC  CCAA  CT   AT TC
           GTTCTAAGACTTGGAAGCCA CCGTA GACG    CACCG  GGTT  GA   TG AG
           CAGAAATGCAGAATGCC      A   TAAAGA   AA   CA  ATCT  G  ----
GAM27223 21380 GGCGTGGTGGCTTATGCCTG                T   AAGTGC
2          TGTTCCCAAAGTGCTGGGAT GGCGTGGTGGCTTATGCCTGTG TCCCA
           TACAGGCATGAGCCACCGCG CCGCGCCACCGAGTACGGACAT AGGGT
           CC                          T    ------
GAM27223 12303 GGCGTGGTTCCGGGAAACGC   T  T    AA   A   C  C  CCT-  TCTCGCACAT
4          AGCGGCGCCGACCCTGGGTC GGCG GG TCCGGG  ACGC GCGG GC GAC   GGG
           TCGCACATTCTTCACGTCCG CCGC TC AGGCCC  TGCG CGCT TG CTG   TCT
           TTCGCAGCGTCACCCGGATC   T  T    AC   A   - C  CACT  ----------
           TTCGCC
GAM27225 22319 GGCGTTACTCAACCGGAAAG  C  T  T     AA  TTC  AG   --- -  -  TCCCCA
1          TCTTCAGGAGGGCCTTCCTG GG GT AC CAACCGGA  GTC  AGG  GGCCT  TC CTG ACC
           ACCTCCCCAGGTCCAGTGGC CC CA TG GTTGGTCT  CGG  TCC  TCGGA  GG GAC TGG
           CCAGGCTTACCTTTGGCTCT  T  C  T     --  TT-  AT   CCC  T  C  ------
           GGTTGTGTCACTCC
GAM27225 5665  GGCGTTGACCGGCGAGAACC      AC   GAGA   --- A   TGCT
3          TGGAGCAGCTGCTGTTGCAC GGCGTTG  CGGC   ACCT   GG GCAGC
           CTGAAGGTGCTGTATGACGC CCGCAGT  GTCG   TGGA   CC CGTTG
           C                  AT   ----   AGT  A    ----
GAM27229 20789  GGCTAAGATAGTTCAGATTG       AG   --   ATCT    AATGGTAA
9          ATCTTAGGTCAATGGTAAGA GGCTAAGAT  TTCA  GATTG   TAGGTC
           CCTATGTAGTTCATGAAGTC TCGGTTCTG  AAGT  TTGAT   ATCCAG
           TTGGCT                --  AC   GT--    --------
GAM27236 19346  GGCTACCTCGGACCTGAACA   AC  C-   CTGAA    CC-      TGAAAGGTTGTGATGT
4          GCTGCCTGACTGCCTGAAAG GGCT  CT  GGAC   CAGCTG  TGACTGCC
           GTTGTGATGTGGTAGTTATT CCGA  GA  CCTG   GTCGGC  ATTGATGG
           CCGGCTGGAGTCCCCAGAAA   AA  CC   AG---    CTT     ----------
           GCC
GAM27237 16565  GGCTACGTATCCCGGAGGGT    C   CCC     GCTCCTTTT   CGTTTC
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2          TGCTCCTTTTGCCCCGTTTC GGCTA GTAT  GGAGGGTT      GCCC
           GGGTTCTTGACCCTCCATGC CCGGT CGTA  CCTCCCAG      TGGG
           TGGCC              -  ---      TTCT-----  ------
GAM27237 22220  GGCTACTGTGCGCTGTGCTG      -------  -  G ---  --  CA  C-    GTGC
7          GGCGCTGTCATGATCGTGAT GGCTACTG     TGCGC TGT CT  GGGC  GCTGT  TGAT  GTGATG

           GGTGCCGTCGCTCATCAAGC CCGATGAC     ACGCG GCA GA  CCTG  CGACG  ACTA  CGCTGC

           AGCAGGTCCTTAAGAACGTG      CCCAGCT   T  A  ATT   GA   A-   CT    ----
           CGCATCGACCCCAGTAGCC
GAM27238 9897   GGCTAGAAAAGCCAAGGCCA    AGAAAA  A   AA      GGGG--  AGGACAG
1          AAGGCTGGAGGGGGGAGGAC GGCT    GCC AGGCC  AGGCTGGA    GG
           AGTCAGCATGTCCAGCCTGG TTGG    TGG TCTGG  TCCGACCT    CT
           GGTCTGGGTGTAGGGTT      GATG--  G   GG      GTACGA  -------
GAM27240 20563  GGCTAGCCACGAGTGTCACT     CCACG-   CA--   TG--  G  AGCA
2          GGGTGCGTGTGGAGCACCAA GGCTAG    AGTGT   CTGGG   CGT TGG
           ACGAACTCCCGGGTTAACGC CCGATC    TCGCA   GGCCC   GCA ACC
           TGCTATACTAGCC          ATATCG   ATTG   TCAA  A  ----
GAM27242 20640  GGCTAGGTACGACGCTGGGT   T     AC-   GT--    TCGG--   G  GAGG
0          GTGGAATCGGCCGAGGGGAG GGC AGGTACG  GCTGG   GTGGAA    CCGA GG
           GTCGTTGGAGTCACTTCCGC CCG TCCGTGT  CGACC   CGCCTT    GGTT CT
           GTCACCAGCTCCTGTGCCTG  -    CCT    ACTG    CACTGA   G  ----
           CC
GAM27242 8875   GGCTAGTAGAGGCGGTGTGT   T  TA  G   TGTAT    - GCGT
8          ATCGGCCGAGGCGTCTCCGG GGC AG  GAG CGGTG   CGGCCG AG
           CTGTCTACCGTTCCGCTGCC CCG TC  CTT GCCAT    GTCGGC TC
                      - GC  -   CT---    C  ----
GAM27247 18297  GGCTCAAAAACCAGTTCCAT  G   AAA     CCA    AA  TTGTCCT
1          TTCTAATGTTGTCCTCACAA G CTCA  ACCAGTT  TTTCT  TG
           GAAGGCTAATTGGTGGTGAG C GAGT  TGGTTAA  GAAGA  AC
           AC              A   GG-     TCG    AC  -------
GAM27248 1606   GGCTCAACAGTTTTCTCGGG     A  TTTTCT-    A  TCA  G  TTTT
3          GGAGTTCAGTGACCTTTTGG GGCTCA CAG     CGGGGG GT  GT ACC
           TGGCCACCCTCTGTTCTCAC TTGAGT GTC     GTCTCC CA  CG TGG
           CTGTGAGTT             -  CACTCTT    -  C--  G  ----
GAM27252 9517   GGCTCACATGACTCTAGACA     ---  GA-----  TAGA    GGTGGA
0          CTTGGTGGAAAGTGAGGCGA GGCTCA  CAT     CTC   CACTT
           GAAAAACAATGACTTGGGCC CCGGGT  GTA     GAG   GTGAA
                      TCA  ACAAAAA  CGGA   ------
GAM27253 20904  GGCTCACGCCTGTAATCCCA     C  C   AA   A  T   AG  AGG
7          GCTCTCAGGGAGGCTAAGAG GGCTCA GC TGT  TCCC GC CTC  GG
           GCGGGAGGATAGCTTGAGCC CCGAGT CG ATA  AGGG CG GAG  TC
                      T  -  GG   -  -  AA  ---
GAM27260 20990  GGCTCATGCATGTAATCCCA      CA  A   C          GA    CG    --   CAG  GT
0          GCACTTTGGGAGGCTGAGGT GGCTCATG  TGT ATCC AGCACTTTGGGAGGCT  GGTGGG  GATCAC
GAGGT  GG
           GGGCGGATCACGAGGTCAGG CCGAGTGC  ACA TAGG TCGTGGAACCCTCCGG  CCGCCC  CTAGTG
 TTCCG  CC

           GGTTTGAGACCAGCCTTAAG      CA  C   A          AG    AA    AA    A--  --
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TGATCAACCCGCCGAGGCCT TTGAGA
CCCAAGGTGCTAGGATCACA
ACCGTGAGCC

GAM27265 18866 GGCTCCATTCTGACCTCCCT - TCT C - AA ---- AC ACCATCA
1 GAAGCGCTGGGTTAGACGGG GGC TCCAT GA CTC CCTG GCGCTGGGTT AG GGGC
CACCATCAGCCCACCTCACA TCG AGGTG CT GAG GGGC TGCGGCTCGG TC CCCG
GGCTCGGCGTCGGGTGAGCT C --- C T -- ACAC CA -------
CGTGGACGCT
GAM27265 1532 GGCTCCCAATGTTGACGTTG CTCCC CG---- AG AT CAAA
3 GCCAGGGCATTTGCAAACAA GG AATGTTGA TTGGCC GGC TTG
GCCAGGCCAAAAAGGCTCAA CC TTACAACT AACCGG CCG AAC
CATTTACACC ACAT- CGGAAA A- -- ----
GAM27265 9220 GGCTCCCAATGTTGACGTTG CTCCC CG---- AG TGCAAAC
4 GCCAGGGCTTTGCAAACAAG GG AATGTTGA TTGGCC GGCTT
CCAGGCCAAAAAGGCTCAAC CC TTACAACT AACCGG CCGAA
ATTTACACC ACAT- CGGAAA A- -------
GAM27266 5862 GGCTCCCAGCCTGAGGCCTG CCC-- - T - CGCCCATCA
1 CCCCACCGCCCATCAGTGGA GGCT AGCCTGA GGCC GCC CCAC
GGTGGCTATCGGGCTCGTCC CCGA TCGGGCT TCGG TGG GGTG
AGCC CCTGC A - A ---------
GAM27266 5567 GGCTCCCATACTTAGAATGT CTCC AGAAT - AAGGTAATA
2 TTCTAGTTAAGGTAATAAAT GG CATACTT GTT TCTAGTT
TAGGCAACCCAAGTGTGACT CC GTGTGAA CAA GGATTAA
CC TCA- CC--- C ---------
GAM27266 6233 GGCTCCCATGCTTCCCAGAA -------- A - - GG TATCT
6 TGGCCGCTATCTGTGGAGTT GGCTC CC TG CTTCC CAGAAT CCGC
CTGTGGAGGACAGGCCTAGT CCGAG GG AC GGAGG GTCTTG GGTG
TTGAGCC TTTGATCC - A T A- -----
GAM27267 12593 GGCTCCCGGATCAAAGGCTG ATCAA CT TG TCCATCACTAC
4 GTGGGTGTTCCATCACTACG GGCTCCCGG AGG GGTGGG T
TGTCCACCTTCCTGTCGGGA CTGAGGGCT TCC CCACCT G
GTC G---- TT GT ----------
GAM27270 21406 GGCTCCTCTGTTCCGACCTT C TC- - TCCC CAGATTTC
7 TCCCGTGCCCTGCAGATTTC GGCTC TCTGT CGA CCTT GTGCCCTG
TAGGGCGCACTGAGGCTCGA CCGGG AGGCA GCT GGAG CGCGGGAT
CCACGGAAGGGCC A CCA C TCA- --------
GAM27273 14683 GGCTCGGTGCAGGGGCCACC TGC CACC A GA ACT CCCG
6 CGGAGCGGAGTGGGGACTGG GGCTCGG AGGGGC CGG GCG GTGGGG GG
CCCGCCCTCCCCCATCGCCC CCGGGCC TCTCCG GTC CGC TACCCC CC
TGCCGCCTCTCCGGGCC --- CC-- C -- CTC ----
GAM27273 9735 GGCTCGTCGCTGCCGAGCGC C T T C C GCACC AC- C GCTC
8 CGCACCAGGACGTGCGCCGG GGCT G CGC GC GAG GCC AGG GTGCG CG
CTCCGCCGTACAAACCTTCC CCGA C GCG CG CTC CGG TCC CATGC GC
GAGGCCCTCGCTGCGCAAGC A - T - C AGCCT AAA C ----
C
GAM27274 20623 GGCTCGTTCTCCCGTGTTCA TTCT CAGT G CAGC
4 GTTCTTCCGACGGCAGCCTG GGCTCG CCCGTGTT TCTTCC ACGG
TGGGAGACAGTGGCGCGGGC TCGAGT GGGCGCGG AGAGGG TGTC
TCTGAGCT CTC- TGAC - ----

GAM27275 13988 GGCTCTATTACTCAGGATTG TATTA GAT AATTCT T CTTGACTAA
5 GAATTCTGCTGCCCTTGACT GGCTC CTCAG TGG GC GCC
AAGGCTGCCTGCCGCTGAGA CCGAG GAGTC GCC CG CGG
TGAGCC TA--- --- GTC--- T ---------
GAM27276 8891 GGCTCTCGGGAGACCAGAGG TC C --- ------- - TTCCT
7 CATGGCCTTCCTGGATCACA GGCTC GGGAGA CAG AGGCA TGG CC
CAAATTGCCTGAATTGCTCT CCGGG CCCTCT GTT TCCGT ACT GG
CCCTTGGGCC TT C AAG TAAACAC A -----
GAM27280 9482 GGCTCTGCTCCTCACATTGC - C ACATTG T ATCT-- GTGT
9 CAGTTAATCTTCGTGTGACT GGCT CTG TCCTC CCAG TA TC
ACAGTACCTGGAAAAACGGG CCGA GAC AGGGG GGTC AT AG
GACAGCAGCC C - CAAAAA C GACATC ----
GAM27283 12975 GGCTCTGTGTGTGGGTCGCT T G G A GGAGC GAAA
1 GATTTCTTGGAGCCTGAAAA GGCTCTG GT TGG TCGCTG TTTCTT CT
GAAGGAGCAGCGACTGGACC CCGAGAC CA GTC AGCGAC GAGGAA GA
CAGAGCC C G - - ----- ----
GAM27283 9441 GGCTCTGTTTCCTCCTTCCT CTGTTT TC T --- CC- A TCCTCTTCCTT
6 TCCTTGGCTCTGTCCTTTTG GGCT CCTCCT CT CCTTGGCTCT GT TTTTGCTG CT
CTGACTTCCTCTTCCTTAGC CCGG GGAGGG GA GGGGCTGGGG CA AAGACGAC GA
CAGCAGAACTCACCCTGGGG ------ GT C TCC CTC C ----------
TCGGGGCAGTGGGGAGGGGC
C
GAM27284 22217 GGCTCTTCGCCCACCAACCA TC AC T TACAA C-- AATG
6 GGTGTTACAAGCCCCAGAAT GGC TTCGCCC CAACCAGG GT GCC CAG
GCTGCCCGGCCTGCCCTGGT CTG AGGCGGG GTTGGTCC CG CGG GTC
TGGGGCGGACTGTC TC -- - TC--- CCC ----
GAM27285 14684 GGCTCTTGGTAACTGTTTTG TCT- T GTTTT GC-- GCAG T GGCC
7 GAGCTGCTCTGCAGTGGTCC GGC TGG AACT GGAGCT TCT TGG CCTG
TGGGCCCAGGCCAGAAGAAA CCG ATC TTGA CCTCGA AGA ACC GGAC
GAAGCTCCCAAGTTCCTATC TCCT C AC--- AGAA AG-- - ----
CTGCC
GAM27285 12765 GGCTCTTGTGTTCACTTTAA - TG-- TAAAA AT GTCTTA
9 AACCCATTGGTCTTACAGGG GGC TCTTG TTCACTT CCC TG
ATTCAGGTGAAATTCCAAGG CCG GGAAC AAGTGGA GGG AC
TGCC T CTTA CTTA- -- ------
GAM27286 18767 GGCTCTTTCTGTCCTTCAGC - TT AGCC---- AGGTGC
5 CCCTGGAAGGTGCTCCAGGA GGCT C TCTGTCCTTC CCTGGA
TAACAAAGAAGGGCAGGTTG CCGA G GGACGGGAAG GGACCT
AAGCC A TT AAACAATA ------
GAM27288 9474 GGCTGAAGGAGCTGGAGCCC GAA CT GA CC C A CAA G CCAT
5 GCGCCAGAGCCAAAGCTGGA GGCT GGAG G GC GCGC AG GC AGCTG AGC
GCCCATGCTGTAGCTGACGC CCGG CCTC T TG CGTG TC CG TCGAT TCG
CTGTGCTTGTGATGCCTCCA ATA CG AG TT - - CAG G ----
TAGGCC
GAM27289 12460 GGCTGAAGTGCAGTGGTGCA AAG G AA- T ACACTGCA
0 AACATGGCACACTGCAGCCT GGCTG TGCAGT GTGCA CA GGC
TGCCGTGCACGGCTGCAAGT TCGAT ACGTCG CACGT GT CCG
AGCT GA- G GCC T --------
GAM27291 19940 GGCTGACCCAGGCAGTGGCG CCC CA TG C G GT TGGCA
3 AGCTGGGTGAGGGTGGCATC GGCTGA AGG G G GA CTGG GAGGG

CTCGTCCAGGTCCTGCATTC TCGACT TCT C C CT GACC CTCCT
TCTTCAGCT TC- TA GT - G TG -----
GAM27295 12359 GGCTGAGCCTACAGGATGTG AGCCTA ---- GAG-- - GGAC
3 CCCGAGCTCGTGGACGCGAA GGCTG CAGGATGT GCCC CT CGT
GAAGAAGGGCGACGGCGTCC CCGAC GTCCTGCG CGGG GA GCG
TGGACAGCC AG---- GCAG AAGAA A ----
GAM27299 8380 GGCTGAGGCAGGGGGATCAT CT A GA - A- GATCGAGACCA
3 GAGGTCAGGAGATCGAGACC GG GAGGC GGGG TCA TG GGTCAGGA
ATCCTGGCTAACACTGAAAC CC CTCTG CCCC AGT AC TCGGTCCT
CCCGTCTCTACC AT - AA C AA ----------
GAM27300 4300 GGCTGAGGCCTTTGCGCGTA A---- C ACAGGAAA G GGAGAAAG
6 CAGGAAAGTCCATTGAGCAG GGCTG GGCCTTTGCG GT GTCCATT AGCAGCT
CTGGAGAAAGAGTTGCTGGA CCGAC CCGGGGACGT CA CGGGTAG TCGTTGA
TGGGCAGAAACTGCAGGGGC AGACC - AAGA---- G --------
CCCAGACAGCC
GAM27305 20148 GGCTGAGGGGGCGGGGCCCG - CGG CG AATCAG G GGC
2 GCGCTTCGTCCAATCAGGGG GGCTGAGGGG GCGGGGCC CGCTT TCC GGGCGCT GGCGG

CGCTGGGCGGGGCCTGCCGA TTGGCTCCTC CGTCCCGG GCGGG AGG CCTGTGA CCGTC

GTGTCCATCGGGGAGGGCGA T AA- -- GGCTA- G ---
AGGCCCTGCTCTCCTCGGTT
GAM27305 16691 GGCTGAGGTCTCTTGAAATT C---- T--- A- A AAATTT
9 GCTAAAGGGAAATTTTTCTA GGCTGAGGT TCT GA ATTGCTA AGGG
TGGTAATGCTCTTACGGATA TTGACTCCA AGG CT TAATGGT TCTT
TAAACCTCAGTT AATAT CATT CG A ------
GAM27311 21160 GGCTGAGTGTATGATGGCAT T T T CA A AT CT- AACCTTGA
4 GACTATAGCTCACTGTAACC GGCTGAG GTA GA GG TG CT AGCTCA GT
TTGAACTCCTGGGCTCAAGC TCGACTC CAT CT CC AC GA TCGGGT CA
AATCCTCCTACCTCAGCT - C - TA - AC CCT --------
GAM27313 2818 GGCTGATTCTGCATCTGGAA ATTCTGC- AA GC- - ATCTT
3 ACTGCCTTCATCTTGAAAGA GGCTG ATCTGGA CT CTT C
AAAGCTCCAGGTCCCTTCTC CCGAC TGGACCT GA GAA G
CAGCC CTCTTCCC C- AAA A -----
GAM27313 6031 GGCTGATTTAGAAACGCGTC ATTTA AC --------- GGAAA
6 CTCAGCGGAAAGCTGACTCG GGCTG GAA GCGTCC TCAGC
TAGAAGGGCGCCTTCCACTA CCGAC CTT CGCGGG AGTCG
CAGCC ATCAC C- AAGATGCTC -----
GAM27314 4242 GGCTGCACTCTGTATTGTCT ACT - -- TACGTCAGC
6 ATAACGATACGTCAGCTTGT GGCTGC CTGTAT TGTCTAT AACGA
TAGGTAGACATGTACAGTTA TTGACG GACATG ACAGATG TTGTT
GCAGTT ATT T GA ---------
GAM27319 730 GGCTGCCGGGGCCATGAGGT CGGG AT GA - GGACCTGGA
0 GGAGGACGTGGACCTGGAGC GGCTGC GCC GAGGTG GGAC GT
TGTTCAACACCTCGGTGCAG TCGACG TGG CTCCAC CTTG CG
CT ---- -- AA T ---------
GAM27319 12336 GGCTGCCTCCGGTAACCACA G C AACCA - C C CCT C CTA
5 GTCCTGCCACTGTCCCTTCC GGCT CCT CGGT CAGT C TGCCA TGTC TC TCC
TCCCTAGGATGACGCGGCAT CCGG GGA GCCA GTCA G ACGGT ACGG AG AGG
GGCAAGAACTGCACCGCAGG - C C---- A A - CGC T ---

GGCC
GAM27320 8824 GGCTGCCTTCTTTTGTCGTT T TT TCGTT - G CTTC
2 TCCCAGCGCTGCGCAGGACT GGC GCC CTTTTG TCC CAGCGCTGC CAGGA
TCTCCTGGCGGCGCTGCGGA CCG CGG GGGGAC AGG GTCGCGGCG GTCCT
TCCAGGGGTCGGCTGCC T CT CT--- C - ----
GAM27320 2992 GGCTGCCTTTCACCGACAGC CTTTCACCGAC AG C TGTGACC
5 AGCGCAGTGGCCTGTGACCG GGCTGC AGC CG AGTGGCC
GCTATTCCGAGGCTGCAGCC CCGACG TCG GC TTATCGG
---------- GA C -------
GAM27321 861 GGCTGCGTTTTTTTTAGTTT --- GTTT AG TG C TTGGGC
8 GGCAGGTGTAGACTTTTTAA GGCT GCGTTTTTTTTA GGC G TAGA TTTTTAAG
GTTGGGCTTTAGAAAATCTG CCGA CGTAAAAGAAGT CCG T GTCT AAAGATTT
GGTTAGCCTGAAGAAAATGC CTC ---- AT GG A ------
CTCAGCC
GAM27322 14688 GGCTGCTAGAGGGGATTAGT T -- T ------ GGAG GAGA G CA- AG
1 TCCGGAGACTGAGACTGTTG GGC GCTA GAGGGGA TAGT TCC ACT CTGTT GCTC
CCTCCA CT
GCTCCACCTCCAAGCTGAGC TCG CGGT CTCTCCT GTCG AGG TGA GACGG TGGG
GGAGGT GA
TAGGGTGGAGGGCAGGGTGG T CC T AATTGA ACAG AG-- G ACG GG
GCAGGAAGTGACAGGAAGTT AGC
AAGCTGTTCCTCTCCCTGGC G
TGCT T

GAM27322 12737 GGCTGCTCAACAACTGTCAC CT ACAACT ------- G CCGGACT
6 CCGACTCCCGGACTGAGTGG GGCTG CA GTCA CCC ACTC
GATCAACCTGACCACCTATG CCGAC GT CAGT GGG TGAG
TTCAGCC TT ATCCAC CCAACTA - -------
GAM27322 984 GGCTGCTCAGAAAAGGATAA TCA AA TAA T TTTCTCCTCC
9 GAAGTGGTTTCTCCTCCCCT GGCTGC GA AGGA GAAG GG
CTTCCCTTCCTCATCCTGCA CCGACG CT TCCT CTTC CC
GCC TC- AC TCC T ----------
GAM27326 18114 GGCTGGACCCAATGGCACTG GA-- AA- CA- CGCTATCGAAT
5 CCACGCTATCGAATTGGCAG GGCTG CCC TGG CTGCCA
AACCCAACGGGGGCAACAGC CCGAC GGG ACC GACGGT
C AACG GCA CAA ----------
GAM27331 4117 GGCTGGAGTGGGACGATCAC GA C CACA C--- CA- TCGA
8 AGCTCCCTGCAGTGTCGACA GGCTG GTGGGA GAT GCT CCTG GTG
TCCCCAGGCTCAAGCATCCT CCGAC TACCCT CTA CGA GGAC TAC
CCCATCTCAGCC TC C ---- ACTC CCC ----
GAM27334 5644 GGCTGGCAGTTCCAGTTGGC CA TT TT G---------- AACT
0 GCCGAACTCGGGGACACCTT GGCTGG G CCAG GGC CCG
CCGGCTTCTGGGGTCCAGCC CCGACC T GGTC TCG GGC
-- GG T- GCCTTCCACAGG ----
GAM27334 19390 GGCTGGCCCCCAAAGTTTCC TG CAAA- C ------ AAGT
2 GGTTCTCCCCCAAGTGGGAA GGC GCCCC GTTTC GGTTCTCC CCC
AATAGGGGGGCCGAAACCAA CCG TGGGG CAAAG CCGGGGGG GGG
CAGGGGTTTGCC TT ACAAC - ATAAAA ----
GAM27335 1483 GGCTGGCGGAGCCGTGATAA C -- - TAATG GGG- - GGGGTGGTA
1 TGGAGGGCGTGGGGCCCGTT GGCTGG GG AGCC GTGA GAGGGCGT GCCC GTT

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          GGGGTGGTAAATGGGGCAAT TCGGCT CC  TCGG CACT    TTCCTGCG   CGGG TAA
          AGCGTCCTTTCACAGGCTAA     - AA   A   -----      ATAA   G  ---------
          CCTCGGCT
GAM27335 18995  GGCTGGCTATGTCCTAAACA    --  AT-   TAAACATCTA    AACCA
4          TCTACTTCTAACCAGGAAGA GGCT  GGCT   GTCC        CTTCT
          ACCACTGGATTGGAGCCAAA CCGA  CCGA   TAGG        GAAGG
          GCC               AA   GGT   TCACCAA---    -----
GAM27338 4436   GGCTGGGATTGGAACTGTGT   -   TT  A   -   G   CCTCATCA   TTATG
5          TTGGGAGCCTCATCATTGGT GGC TGGGA  GGA CTGT GTTT GGAG       TTGG
          TATGCCAGGAACCCTTCTCT CCG ATCCT  TCT GACA CGAA TCTC       GACC
          GAAGCAACAGCTCTTCTCCT   C    CT  C   A   G   TTCCCAAG   -----
          ACGCC
GAM27339 14547  GGCTGGGCAGTGTGGAGGTC     GC   T    ----  -   - T  TTCC  GTCACCA
1          GTTGGAGTCACTTCCGCGTC GGCTGG  AGTG GGAGG   TCG TTGG AG CAC   GC
          ACCAGCTCCTGTGCCTGCCA CCGACC  TCGC CCTCC   GGC GACC TC GTG   CG
          GTCGGTGCCCCTCCCGCTCC     --   -    CCGT   T   G  C   TCCT  -------
          AGCC
GAM27341 21424  GGCTGGGGCTCATTTGCAGG   -   CT   T       A  CAAA   TCATCAT
2          GGGGAGCCAAAAGGGTCATC GGC TGGGG  CATT GCAGGGGGG GC   AGGG
          ATCTCTGCCCCCTCTGCTGA TTG ACCCC  GTAG CGTCTCCCC CG   TCTC
          TGCCCCCATGTT         T   C-   T       - ----   -------
GAM27341 985   GGCTGGGGGAGAAAGGACCT     GG AGAA  GA       AACT  CTTCT
9          CCTGGAACTGACTTCTTCTG GGCTGG  G   AG  CCTCCTGG    GA
          TCAGGAGGACTGGTTTCCAG CCGACC  T   TC  GGAGGACT    CT
          CC                TT GG--  A-       GT--  -----
GAM27342 4135   GGCTGGGGTAGCTTGGGGCC   CT     - T   -   ----  G   TG  A  GGAC
6          CTGGGTCGTGGCACGGGACC GG  GGGGTAG CT GGGG CCC    TGG TCG  GC CG
          GGTTGTGGGCCGGCGTGGGA CC  TTCCGTT GG CCCC GGG    GCC GGT  TG GC
          CCCCTGGTTTGCCTTTTCC   TT     T  T   A   TGCG   G   GT  -  ----
GAM27352 18947  GGCTGTCTGAATGGAAGGAG   TGTCT    AA   TCATTC   TTTC
1          TCATTCTGCATTTCTGTATC GGC    GAATGG  GGAG    TGCA
          CTCTCCCTTATTCTCCCTGT CTG    CTTATT  CCTC    ATGT
          C                TCCCT    C-   TCCT--   ----
GAM27353 3885   GGCTGTGATTGCAGCCTGCT   --   T-    T-    AGT   ACAG
3          CTAGTGGGACAGCCCAGAGC GGCT  GTGAT  GCAGCC  GCTCT   GGG
          CTGGCTGCCCATCATGTGGC CCGG  TACTA  CGTCGG  CGAGA   CCC
          C                 TG    CC    TC    ---   ----
GAM27355 14662  GGCTGTGGGCAAGGTCATCC   TGT-    ---    A  --  A  GAAACGGA
0          TGAGCTGAAACGGAAGCCAC GGC   GGGCA   AGGTC TCC  TG GCT
          TGGAGGGCCTTCGTGTCCCC CCG   CCTGT   TCCGG AGG  AC CGA
          CTGCC             TCCC    GCT   G   TC  -   --------
GAM27355 8414   GGCTGTGTCCTTATTTTATT   CT    --------  A  T      TTTTTT
4          TTATTTTTTTGTAGAATGTA GG  GTGTC      CTT TT TATTTTAT
          AAAAGTCATTTTAGATGCCA CC  CGTAG      GAA AA GTAAGATG
          CC                AC    ATTTTACT   A  T      ------
GAM27357 5754   GGCTGTTATGGGGATAAGCT     TATG    AA  TG  GA   CCAAATATT
0          GGTGAGGTCCCAAATATTGA GGCTGT   GGGAT  GC  GT  GGTC
          CCAACTGGCATCCCACAGCC CCGACA   CCCTA  CG  CA  CCAG
                          ----    --  GT  A-   ---------
GAM27359 12740  GGCTTAAAGGGTATGTCCTT     AAAGGGTA     GA-  TGGAA-  GACAAT     G     GTTGGAA
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3 GAACTTGGAACCTGACAATG GGCTT TGTCCTT ACT CCT GTTGGT TGTCGT
TTGGTGTGTCGTGTTGGAAA CCGAG ACAGGAG TGA GGA TAATCA ATAGTA
TGATAAACTAATTAAGGAAG G------- AAG TATAGA AGGAAT A -------
GAGATATAGTGAAGAGGACA
GGAGCC
GAM27359 3693 GGCTTAAAGGGTATGTCCTT AAAGGGTA GA- TGGAA- GACAAT G
GTTTGGAA
4 GAACTTGGAACCTGACAATG GGCTT TGTCCTT ACT CCT GTTGGT TTGTCGT
TTGGTGTTGTCGTGTTTGGA CCGAG ACAGGAG TGA GGA TAATCA AATAGTA
AATGATAAACTAATTAAGGA G------- AAG TATAGA AGGAAT - --------
AGGAGATATAGTGAAGAGGA
CAGGAGCC
GAM27362 6610 GGCTTAGAGCACAGCCCCGA TA- CA CCCGA C -- C-- T CCTCCCC C--
7 GGCGCCGTCTACCAGGCCCC GGCT GAG CAGC GGCG CGTC TACCAGG CCCG CC
CGGCT C
GTCCCCTCCCCCGGCTCCTG CCGA CTC GTCG CCGC GCAG GTGGTCC GGGC GG
GCCGG G
TCGGCCTGGGCAGCATGGCC TCC CG ----- A TC TCT T CCTTAT- TAC
GTATTCCGGTCGGGTCTCCT GGCCTG
GGTGCTGACGACGCCGCTGG TGTC
CCTCCCTAGCC ACGG

GAM27364 9191 GGCTTAGGACTTCAAAAGGT - CAAAAG TAA TAAT
0 GATTAAATATTTAATGATGT GGCTT AGGACTT GTGAT ATATT
GTCATATGAGTCCTCAAGCT TCGAA TCCTGAG TACTG TGTAG
C TA---- --- ----
GAM27368 6254 GGCTTCAGTTTCTCCCCAAC CTTC C-- A -- AGTGTTAA
6 TCTCACTTAGTGTTAAGAGT GG AGTTTCT CCCA CTCT CACTT
GGCAGAGGTGGGTGTGGGAG CC TCGAGGG GGGT GAGA GTGAG
CTTCCC CT-- TGT G CG --------
GAM27374 14373 GGCTTCTGGCATACCTGCTG T C--- G GGAT TGGACTGT
8 GCTGGATGGGCTTGGACTGT GGCTTC GGCATAC TGCTG CT GGGCT
GGTCCTGAAAGCAGCAAGAA TCGGAG TCGTATG ACGAC GA CCTGG
GTATGCTGAGGCT - AAGA - AAGT --------
GAM27381 20766 GGCTTGGGAATGCATTATGT T G --- AT TT--- - G AGAAA
1 AATTGTCCTTAGTCTTTTTG GGCT GGGAAT CAT TATGTA TGTCC AGTCT TTTTGTT TTTT
TTGTTTTAGAAAAAAAAAAC TCGA TCCTTG GTA ATGCAT GTAGG TCGGG AGAACAA AAAA

AAGATGGGCTCAGATGGATG - - AAA CC TAGAC T A -----
CCTACGTAAAAATGGTTCCT
AGCT
GAM27381 20573 GGCTTGGGACCAACCCGTCC TG CCAA- TT TG A AC -- A TGAACA
2 TTAAGCACTGGGAGGCCCAG GGCT GGA CCCGTCC AAGCAC GG GGCCCAGG CAA TCCAG
TCCC
GACCAATCCAGATCCCTGAA CCGG CTT GGGCGGG TTCGTG TC CCGGGTCC GTT GGGTC
AGGG

CAACGGGAACTGGGCTTTGT GT ATAGG -- -- - GT TC A ------
GCCTGGGCCCTGTGCTTGGG AC
CGGGGGATATTCTGGGCC

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                    --
GAM27385 21682  GGCTTTAAAGTTGAACATTA   -   AAGTTGA    AC    TT    GATC
8               CCACTTTAGGTGATCACTTA GGC TTTA      ACATT  CACT  AGGT
                GTGTCAGTGTAGTTGTAAAT TCG AAAT      TGTGA  GTGA  TTCA
                GCT                T   GTTGA--    CT    --    ----
GAM27386 1447   GGCTTTACTTCTGTCTCGTC   C    C          GC    -   CTAGCCT
3               TGCCCCAACCGCTAGCCTCG GG TTTA TTCTGTCTCGTCT  CCCAA CCG
                GCTTGGGTAAGGCGAGGCGG CC AAAT AAGGCGGAGCGGA  GGGTT GGC
                AATTAAACC          -   T          AT    C   -------
GAM27386 19178  GGCTTTACTTCTGTCTCGTC   C    C          GC    -   CTAGCCT
4               TGCCCCAACCGCTAGCCTCG GG TTTA TTCTGTCTCGTCT  CCCAA CCG
                GCTTGGGTAAGGCGAGGCGG CC AAAT AAGGCGGAGCGGA  GGGTT GGC
                AATTAAACCC         C   T          AT    C   -------
GAM27387 3449   GGCTTTATTCGTCACCGTCT     TA   ----  CA    TT--   C   AAA    ACCC
0               TGGGCTGAAAAAGAAACCCT GGCTT  TTC    GT   CCGTC    GGG TGA    AGAA
                TCTGATTACCTTCATGACGG CCGAA  AGG    CA   GGCAG    TCC ATT    TCTT
                GAACCTAAGGACGAAGCC       GC   AATC  AG     TACT   -   AG-    ----
GAM27394 5894   GGCTTTTCTCCCAGTCAGCA     TTCT  -    C    ------     TTCAAACTAT
5               GCTCTTTCAAACTATGGGGC GGCTT    CC CAGT AGCA      GCTCT
                ATCATTTGTTCACTGTGGCG CCGAG    GG GTCA TTGT      CGGGG
                AGCC               C---  T    C    TTACTA     ----------
GAM27397 4377   GGCTTTTTTAAAACTGGTTT         -----      TTT   TT   GTT
2               TATTTTAAGTTTTATTATAT GGCTTTTTTA    AAACTGG   TAT  TAA
                TTTCAGTTTTTCCATAAAGG CCGAGGAAAT    TTTGACT   ATA  ATT
                AGCC                   ACCTT      TTT   TT   ---
GAM27400 13029  GGGAAAATCTAAAACAAGGC     A--    A-    AAGG     T-  GGAA
4               GTTTTTGTGGAAACTTAGAA GGGAA   ATCT  AAAC    CGTTTT  GT
                TGGGCGGTTTAAAGGTGTCT CCCTT   TGGA  TTTG    GTAAGA  CA
                TCCC               CTG    AA    GCGG     TT  ----
GAM27403 9609   GGGAAAGAGGAACAGGAGTG      ---   AA    A--  G    A    --       A--  T    AAAGGC
4               CCAGACTCCTGGTCTTTCCA GGGAAAG   AGG  CAGG   GT CCAG CTCCT  GGTCTTTCC   GT TAGA

                GTTTAGAAAAGGCTCTGTGC CCCTTTT   TCC  GTCC   CA GGTC GAGGA  CCAGGGAGG   CG GTCT

                CAAGGAGGGACCACAGGAGC      CTG   CC    GTC  G    -    CA       AAC  T    ------
                TGGGACCTGCCTGCCCCTGT
                CTTTTCCC
GAM27404 20727  GGGAAAGCTGGTACGCCTGC    AA   T  T    C  CA   AC  GT    AATTC
1               AGGTACCGGTCCGGAATTCC GGG  AGC GG ACGC TG  GGT  CG  CCGG
                CGGGTCGACCCACGCGTCCG CCC  TCG CC TGCG AC  CCA  GC  GGCC
                CTGGCCC            GG   -  -    C  --   --  TG    -----
GAM27409 12637  GGGAACAAAAAAAGGGGGGG    AACAAAAA          ACCCCCCCCCCCCAAAAA
7               GCCCACCCCCCCCCCCCAAAA GGG       AAGGGGGGGGCCC
                AGGGCCCCCCCCCTTCAAAAA CCC       TTCCCCCCCCGGG
                ACCCC              CAAAAAAC          -----------------
GAM27411 9834   GGGAACAGTGTTTCCCATAA    ACA    TCCCA-   TT     T  AA   CATCT
1               TTTTCTTCATGCAATGACAT GGGA   GTGTT     TAAT  TCTTCA GC  TGA
                CTTCAAAGCTTGAAGATCGT CCCT   TACAA     ATTG  AGAAGT CG  ACT
                TAGTATCTAACATGTATCCC    ATG    TCTATG   CT     T  AA   -----
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GAM27413 4276 GGGAACTCTATTTGTTTGAT A ATTT TG TG CTCC - ATCGAACTA
6 GTTCTCCGCGCAGATCGAAC GGGA CTCT GTT A TT GC GCAG
TACTGCTGCCCATGGTCTTG CCCT GAGA CAA T GG CG CGTC
AACTGAGAGTCCC - GT-- GT CT TACC T ---------
GAM27414 8999 GGGAACTTAGGAAGTGAGAA AC GA GAG CAGATT TCCT
7 GTCAGATTACCCTAGTCCTC GGGA TTAG AGT AAGT ACCCTAG
TAGGGTGCTTAAAGCTAACT CCCT GATC TCG TTCG TGGGATC
AGTCCC -- AA AAA ------ ----
GAM27416 6438 GGGAAGAAGGAATGCTGCAC AGA G GCACACAGATG GAATTAA
5 ACAGATGCCGAGAATTAATC GGGA AG AATGCT CCGA
GGAACAGACAGGCATTGCTG CCCT TC TTACGG GGCT
GATCCC AGG G ACAGACAA--- -------
GAM27422 852 GGGAAGCTTGTCATCAATGG - CT TCAA AATC C CAT TC GA G - C AAATC
9 AAATCCCATCACCATCTTCC GG GAAG TGTCA TGGA CCAT AC CT CAG GC AG ATC CTCCA

AGGAGCGAGATCCCTCCAAA CC CTTC GCGGT ACCT GGTG TG GA GTC CG TC TAG GGGGT

ATCAAGTGGGGCGATGCTGG A T- C--- GA-- C CAT -- G- G G C -----
CGCTGAGTACGTCGTGGAGT AAG
CCACTGGCGTCTTCACC

GAM27424 18373 GGGAAGGCCAGAGGCAGGCT G AGA TT G- - GGTCTGGG
7 TAGCTTCGGGCGGCAGCGGT GGGAA GCC GGCAGGC AGCTTCGG CG GCAGC
CTGGGGCTGCTCGGACTGGA CCCTT TGG CCGTTCG TCGAGGTC GC CGTCG
GCTGCTTGCCAAGGTATTCC A AA- -- AG T --------
C
GAM27425 5762 GGGAAGGGAAACACAGCTTC GAAGG CA GCT- AATG A ----- CTT--- GAGA
3 ACAATGGCCATGAACGCCTT GG GAAA CA TCAC GCC TGAA CGC TG
TGGAGACATGACCAGTGAAG CC CTTT GT AGTG CGG ACTT GTG AC
AATTCAGGCAGGTGATGAAT AAAA- CG AAGT GA-- - AAGAA ACCAGT ----
GGCTTTCAAAACC
GAM27431 4257 GGGAATATTGGTTTGTATCC TT--- ATCCTCAG AGATA
9 TCAGTGCTTATAGATAGTAG GGGAATA GGTTTGT TGCTTAT
GTAAGTAATAAACTTTCTTT CCCTTGT TCAAATA ATGGATG
GTTCCC TTCTT ATGA---- -----
GAM27432 3509 GGGAATCTCCAGGTGACCTA AAT ACC CTCA TG T T CT TAT
7 ATCCTCATTGGTGGCTTGAT GGG CTCCAGGTG TAATC TTGG GCT GA GTTTG GG
GTTTGCTGGTATCTTCCAAA CCC GAGGTCCAT GTTAG GACC TGA CT CAAAC TC
CTCAGTTCCCAGACTAGATT --- A-- ATCA CT - - CT ---
GATACCTGGAGCCC
GAM27433 9350 GGGAATGATAGCATTGAAGG TGA CAT GAC--- GATATCTAACAGCAATA
5 ACTCGGGGATATCTAACAGC GGGAA TAG TGAAG TCGGG
AATACCTGATCACTACTTCG CTCTT ATC GCTTC AGTCC
CACTAGTTTCTC TG- AC- ATCACT ----------
GAM27437 20490 GGGAATTTTTGAACACTTTT TT G CTTTTGCT C TATTAGC
3 GCTTTAACAGTTATTAGCAC GGGAA TTT AACA TTAA AGT
TATTGATTATTTTGTTAAAA CCCTT AAA TTGT AGTT TCA
TTTTCCC TT A TTTATT-- A -------
GAM27439 14036 GGGACACAATCTTGCCTTCC ACA G A ------ C CCACTCTCTCA

0 ATGCCCCAGCCACTCTCTCA GGGAC ATCTT CCTTCC TG CC CAG
CTGCGGAATCACCAAGGAGG CCCTG TAGAA GGGAGG AC GG GTC
GAAAGATGAGTCCC AG- A A CACTAA C ----------
GAM27440 12568 GGGACACGCTACGCCCGGCC ACACGCTA - A TCCC - A ATCCCCCC
0 ACCTCCCGGTGGCACGAATC GGG CGC CCGGCC CC GGT GGC CGA
CCCCCTTGCGCCTACCCTTG CCC GCG GGCCGG GG CCA CCG GTT
GAGGCCGGCGCGCCCCCCCC CCCCCCC- C A TTC- T C --------
CC
GAM27442 20936 GGGACAGGCCGGCGACACCA A CGACACCA GTTTCC AAGGATTC
8 CGTGTTTCCCCACGGGGAAG GGG CAGGCCGG CGT CCACGGGG
GATTCCCCTGTGGACATAAG CCC GTTTGGCT GCG GGTGTCCC
CGACCACATATCGGTTTGCC - ATACACCA AATACA --------
C
GAM27443 1464 GGGACAGGGTCTTGCTATGT CTT T TT C GGCTCTTG
2 TGACCAGGCTGGCTCTTGAG GGGACAGGGT GC ATG GAC AGGCT
TCTGTTTTTGTGCTTTATTC CCTTGTCTTA CG TGT TTG TCTGA
TGTTCC TTT - TT - --------
GAM27447 1231 GGGACCAGGTGTCGCGCAGA C - TC- -- T TG CTCATTCT
0 GATGTGCCTCATTCTGTGCC GGGA CA GGTG GCGCAGA GA G C
TCCTTCTGTGCCTCTACCAT CCCT GT CCAT CGTGTCT CT C G
GTTCCC T A CTC TC C GT --------
GAM27451 21319 GGGACCTAGGGGCGCCGCAA ---------- C CAAA ACACT
6 ACCACACTGGACTCCGGCCC GGGACC TAGGGG GCCG CC
TCCTACCCTGCGCCCGGTCC TCCTGG ATCCTC CGGC GG
T CCCGCGTCCC C CTCA -----
GAM27452 3452 GGGACCTCTTATTCTCAAAT - -- - C A A TCTCC
2 AGTGACATATTCTCCGTAGT GGGA CCT CTTA TTCT AAAT GTGAC TAT
CACAGTTTCAGAACTGAGTA TCCT GGA GAGT AAGA TTTG CACTG ATG
AGGATCCT A AT C C A - -----
GAM27453 19886 GGGACCTGGAGCATCCTCAG GA -- -------- GTCGGGA
3 ATGTCGGGAGTCTGAGGGTT GG CCTGGA GCA TCCTCAGAT
GACGGTTGCAGTCCGGGAAC CC GGGCCT CGT GGGAGTCTG
C AA GA TGGCAGTT -------
GAM27453 18796 GGGACCTGGCATGGGGCTGG TG CAT T GA A---- AACA CTTCCA
4 AAGGGGGGATGGAACAGCGC GGGACC G GGGGC G AGGGGGG TGG GCGC
CTTCCAGCGTCCCAGTAGCC TCCTGG C TCCTG C TCCCCTC ACC TGCG
TCCCCTGACGTCCTTCTGGG GT T-- - AG CGATG C--- ------
TCCT
GAM27457 3130 GGGACTACAGCCATGTGCCA TA A T C ------- GATAA TG ATTTTTA
0 CCATTCCCGGATAATTTTTG GGGAC CAGCC TG GCCA CAT TCCCG TTTT T
TATTTTTAGTGGAGGCGGGG CTCTG GTCGG GC CGGT GTG GGGGC GGAG G
TTTCACTGTGTTGGCCGGGC -- - - T TCACTTT ----- GT -------
TGGTCTC
GAM27457 1454 GGGACTAGGCCCCAGAGGGA TA C- A- - AT TGCGA
5 GGCGATGGTCTGCGAGGCTC GGGAC GGC CCAG GGGAG GCG GGTC
CCGTGTTCCCGGCTGGTTGT CTCTG CTG GGTC CCCTT TGC TCGG
CCTGTCTC TC TT GG G CC -----
GAM27458 8276 GGGACTCACTGCTGCAGGAT A C A--- - A TAGCAT
4 GGGGAATTTAGCATGGATCT GGG CTCACTG TGC GG ATGGGGA TT
TCGTACCAAGAGCACCGGTG CCC GGGTGGC ACG CC TGCTTCT GG

GGGCCC G C AGAA A A ------
GAM27461 5447 GGGACTGCTTCACAGAAGAA GA TC GA AAAA CT CATAAA
5 AAGCCTGGTTCATAAAAACT GG CTGCT ACA AG GC GGTT
TTGCCTGATGTCTAGCAGAA CC GACGA TGT TC CG TCAA
CC AA TC AG ---- TT ------
GAM27461 4261 GGGACTGCTTCCGGATCCGT A- TCC CGTTA- AAA - A CAGTT
6 TACAGAAAAGGAGGAGGTGC GGG CTGCT GGATC CAGA GGA GG GGTG
AGTTCACCACCGTCCTCTGC CCC GACGA CCTAG GTCT CCT CC CCAC
TCCAAGATCCAGCAGGACCC AG --- AACCTC --- G A -----
GAM27463 21372 GGGACTTACATGGAATTGGT T CA T T GAAAAAACAGA C GTCTTCCTCA
4 AGATATAGAAAAAACAGATA GGGAC TA TGGAA TGG AGATATA TAT TTTATGA
TCTTTATGAGTCTTCCTCAT TTCTG AT ACTTT ACC TCTGTAT ATA AAATACT
CATAAAAATAGTATGTCTCC T TC - - G---------- A ----------
ATTTCACTTATGTCTT
GAM27466 19071 GGGAGAAACTTCTTTTTTTA ACT ---- - TTTTCAT
6 CCCTTTTTCATAGGCGTGCC GGGAGAA TCTTTTTT TAC CCT
TTAAAAGAGATAATTTTCCC CCCTTTT AGAGAAAA GTG GGA
AAT TTCC C -------
GAM27467 14486 GGGAGAAATGAGGAGGCTTT AA GA-------- TT ACACCA
3 AAAAATAGACACCACTGTTT GGGAG AT GGAGGCT AAAAATAG
TTGGCCTTTGTTTAAAATAG CCCTT TG TTTCCGG TTTTTGTC
TGATTCCC AG ATAAAATTTG -- ------
GAM27468 3863 GGGAGAAGCTGTGGTACGTC GCT- TA-- G GATTTCGAG
7 GCCTGGATTTCGAGCAGGGG GGGAGAA GTGG CGTC CCTG
ATGGCCCCCGCCGAATTCTC TCCTCTT CGCC GTAG GGAC
CT AAGC CCCG G ---------
GAM27471 6386 GGGAGACATTTATGATTAAA GG A TATGATTAAA T CTACA
1 CCATTTATGCTACATATAAC G AG CATT CCA TTATG
TGGGGAAAACTATGATGCTT C TC GTAG GGT AATAT
TC TT - TATCAAAAGG C -----
GAM27477 5475 GGGAGATGACATTATCGTGC GAT TTA- - - - A ----- TAAC
2 TGGGATGGTGGGTAACTCCT GGGA GACA TC GTG C TGGG TGGT GGG
TCAAACCAATCCATGTCACA CCTT CTGT AG CAC G ACCT ACCA CCT
GAACACTGTCTATTCC AT- CACA A T T A AACTT ----
GAM27477 8587 GGGAGATGGCTTCCGCTCAT TG TTCC GCAA -- GG GTTAGAGG
7 GCAACAGGCAGGTTTGGGAG GGGAGA GC GCTCAT CAGGCAG GTTT GA
TTAGAGGTCAAAAGCAGCTG TCCTTT TG TGAGTA GTCCGTC CGAA CT
CCTGAATGAGTTGTTGTTTC GT T--- A--- GA AA --------
CT
GAM27479 12494 GGGAGCAACCAAACTTCTGG CAAACT C TATTTTTAAACC
7 GGCATGTGTATTTTTAAACC GGGAGCAAC TCTGGGG ATGTG
TACGTCTCCCGGGTCTCTGT CTCTCGTTG GGGCCCT TGCAT
TGCTCTC TCTCT- C ----------
GAM27480 21192 GGGAGCAGAACAGAGATTGA G AACAGA AGACG - ACAGGAGTAA
7 AGACGGGTGGGCACAGGAGT GG AGCAG GATTGA GGTGG GC
AAGCGCCACCATCGATCCCG CC TCGTC CTAGCT CCACC CG
GCTGCTGCC G GGCC-- A---- G ----------
GAM27481 2935 GGGAGCAGCAGGAAGCTGCC AGC T A - ----- TGCGGGTCCT
2 AGCCCACTGCCTCCATGCGG GGGAGC AGGAAGC GCC GC CCACTG CCTCCA
GTCCTTGGAGGGCAGACGGT CCCTCG TCCTTCG CGG CG GGTGGC GGAGGT

GGAGCGGCGCTTCCTCAGCT AC- - - A AGACG ----------
CCC
GAM27481 1049 GGGAGCAGGCAGCCACACAC - CCACACAC CAA- GTCAGAGAA
6 GGGCCTTGCAACCTTGTCAG GGGAG CAGGCAG GGGCCTTG CCTT
AGAAAAGGCGAACAGGGCCC CCCTC GTCCGTC CCCGGGAC GGAA
TCACCCTGCCTGTCTCCC T CCACT--- AAGC ---------
GAM27481 5663 GGGAGCAGTCTCAAAATCAC GCA AAAA GGATTAACG TACAT
8 GCTGGATTAACGCCTACATG GGGA GTCTC TCACGCT CC
GAAAAGTGTGACGAGACCAT TCCT CAGAG AGTGTGA GG
CCT AC- C--- AAA------ -----
GAM27485 12353 GGGAGCGGCGGCGGCCATCG GC- C ATCGA- --- ACCCAA
2 AGACCCACCCAAGGCGCGTC GGGAGCG GG GGCC GAC CC
CCCCTCGGCCTCCCAGCGCT CCCTCGC CC CCGG CTG GG
CCC GAC T CTCCCC CGC ------
GAM27487 4039 GGGAGCTCGACGAATCCCTC G ACGAATCCC A - GAGA
0 CAGGTCGCTGAGAGGTTGAC GG AGCTCG TCC GGTCG CT
CAGGAAATACAACGAGCTGC TC TCGAGC AGG CCAGT GG
T G AACATAA-- A T ----
GAM27503 21010 GGGAGGGGACCCAAAGAGGG ACCCAAAG GTCGTT -- TCGAAT
2 TAGTCGTTGCCGGCTCGAAT GGGAGGGG AGGGTA GCC GGC
GCCTGGGTTTATATCCTGAT CCCTCCCT TCCTAT TGG CCG
CATTGTCCCTCCC GTTACTAG ATT--- GT ------
GAM27504 18134 GGGAGGGGGGCCTCACTATG -- CTCACTAT CC- TCGCAAACAC
7 TTGCCCAGGCTGGTCGCAAA GGGAGG GGGGC GTTGC AGGCTGG
CACCCAGCCTCAAGCAATCC CCCTCC CTCCG TAACG TCCGACC
TCCTGCCTCAGCCTCCC GA TCCTCC-- AAC ----------
GAM27505 19842 GGGAGGGGTGCGCAGCAATG - G C AATGT TG AAT-- ACT
3 TGCGTGACAAATGACGGACT GGGAG GGGT CG AGC GCG ACA GACGG
CTGTCTTGAGTGTTGCGCCT CCCTC CCCA GC TCG CGC TGT CTGTC
CGGCTCCGGACCCGCTCCC G G C GCTC- GT GAGTT ---
GAM27505 14712 GGGAGGGTATGCGACGCGTG G G ATG C T CCTATCGA
5 TTTAAAGCCTATCGATTTTG GG AG GT CGA GCGTGT TAAAG
TACATGTTTGAAGATGCTGC TC TC TA GTT TGTACA GTTTT
T G G GAA - T --------
GAM27506 8271 GGGAGGTACACATAGTCGGT - T - ATA T-- T G AA AGGCG
2 TGCTCCCGGCACCAAGGCCG GGGA GG AC AC GTCGGT GC CCC GCACC GGCCGC
CAGGCGGCGGTCGGTGCAGG CCCT CC TG TG CGGTCG CG GGG CGTGG CTGGCG
GCGCCCCGCTGGCGTAGTAG A - A ATG CCC C A -- -----
TCCATCCC
GAM27507 6168 GGGAGGTGGGCCCTCGATGT CC GA - - - C CCCT --
4 GGCCTTTTTGTGGAAGGCGG GGGAGGTGGG CTC TGT GGCC TTT TTGTGGAAGG GGTGTTGA
GGGGC TGGTG
TGTTGACCCTGGGGCTGGTG CCCTTTACCT GAG ACA TCGG GAA AACATCTTCC CTACGGCT
CTTCG ATCAT
CTTCTCTACTACTGCTTCTC TC AA G T C A ACCT TC
CATCGGCATCACCTTCTACA CTTCTC
ACAAGTGGCTGACAAAGAGC
TTCCATTTCCC

GAM27509 5449 GGGAGTACGTGAGGAAAGGA AC- - GAAA A CAC ---- AATCAGCA

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0          TTCCACTCAAGTATAATCAG GGGAGT  GTG AG   GG TTC  TCA   AGTAT
           CAATACTCTATTGAATGAAA CCCTCA  CAC TC   CC AAG  AGT   TCATA
           CCATAACTCCACTTCACTCC     CTT  C  AATA  A  TA-  TATC   --------
           C
GAM27511 8325  GGGAGTCTGCTACACCATTT    TCT   CA  TTTT  A  TG  CTT--   TT  TGT  AT  -  TGAC
8          TTGATTTGGGCTTCCGCTTT GGGAG  GCTA  CCA   TG TT  GG   CCGC  TGA  GGC  GGT TCC
           GATGTGGCATGGTTCCTGAC CCCTC  CGAT  GGT   AC GG  CC   GGTG  ACT  CCG  TCA AGG
           GGAGACTTCGCCCTTCATGT    TAT   CC  T---  -  GT  AACCT   T-  TC-  CT  G  ----
           GGTCCAACCTGGGCATTGGC
           CTAGCTATCTCCC
GAM27514 19337  GGGAGTGGGTGAGAAATCTT  -  -      AAATCTTTA   T     C  -  C  CG  CGTTT
0          TATGGCTTTTCGGTGCGCCC GG GA GTGGGTGAG      TGGC TTTCGGTG GC CC GA  GTG
           CGACGGTGCGTTTTATTTTC CC CT CGCCCGCTC      GCTG GGAGCTAC CG GG CT  TAT
           AGGTGCCCATCGAGGTGTCG  G  A      ---------  T     C  T  A  TT  -----
           CTCGCCCGCATCGCC
GAM27517 8139  GGGATAAATGGACTTTGGCA    A--   CTT--  GC    C  CTCT   ACAA
9          CATATCTAACTCTAGTAACA GGGATA  ATGGA   TG  ACATAT TAA   AGTA
           ATATTTTACATATGTACACT CCTTAT  TACCT   AC  TGTATA ATT   TTAT
           TATTCCATATATATTCC       ATA   TATTC  A-    C  ----  ----
GAM27524 8282  GGGATCCTGGAGCACTCGGT    C  ----------  C  -  ATG   C  TGGA
5          CATGTACCCGGTGGACTCGG GGGATC TGGA       GCA TCG GTC  TACC GG
           TGAAGACACGAATGCAGAGT CCCTAG ACCT       CGT AGC CAG  GTGG TC
           TGGAGTCCAGATCCC        -  GAGGTTGAGA  A  A  AA-  C  ----
GAM27526 14432  GGGATCTGCTGTGCACACCG  GAT   -  ACA   T   CT  ATCCC
1          GGTTCCTTCTTAATCCCTGC GG  CTGCTG TGC  CCGGG TCCTT  TA
           TGAGGATCTTGGGAAGCAGC CC  GACGAC ACG  GGTTC AGGAG  GT
           AGCAGCACC          AC-    G  AAG   T   TC  -----
GAM27528 4152  GGGATGAGTACTTAAATAAA   T   CTTAA    TAT   CAA  AAGCTC
4          TCTATGAAGCAATCTAAGCT GGGA GAGTA   ATAAATC  GAAG  TCT
           CAGAAATTTTCTTGATTTGT CCCT TTTAT   TGTTTAG  CTTT  AGA
           ATATTTTCCC          -   A----     TT-   TAA  ------
GAM27529 3013  GGGATGCACGGCCTCGTGGG    GC   CT  T    CG  -  TCCTC  CCCCG
1          GGCCGGGCCGTCCTCCAGCC GGGAT  ACGGC  CG GGGGGC  GGC CG   CAG
           CCGCTGCTCCCTGTGCCAGC CCCTG  TGTCG  GT CCCCCG  CCG GT   GTC
           CCCCTTGTCGCTGTCGGTCC    GC   CT  T    A-  T  CCCTC  -----
           C
GAM27529 19393  GGGATGCCAAAGGCCTTGGC      CAAA-   TG  AG  ATGCAGTGTC
5          CAGGTAATGCAGTGTCTACA GGGATGC   GGCCT  GCC  GTA
           GGCTGAGGTTGACATGCATC CCCTACG   TTGGA  CGG  CAT
           CC                  TACAG    GT  A-  ----------
GAM27529 21056  GGGATGCGCGTGAGCCGCAG     C  ---  G-  C  -     GGG-  -  GTACA   AG  ACTCA
9          GGTGTGGGGGCCCGTACACG GGGATG GC  GT  AG CGC AGGGTGT   GG CCC    CGGC  GC

           GCAGGCACTCAGCAGGCTGC CCCTAC CG  CA  TC GCG TCCCACG   CC GGG    GTCG  CG
           CAGGGACCACAGGCACCCTC     -  ACC  AG  T  C     GACA  A  ACC--   GA  -----
           GCGTCTGAACCCAGCCATCC
           C
GAM27530 16727  GGGATGGAAAGTCACCCGTA     GAA   ACCC  AAAGAT   AT  CA   GGAA
8          AAGATGGCAATGCCAGTGGG GGGATG   AGTC   GT    GGCA  GC  GTG
           AACACGCTGCCTGAAGCTCT TCCTAC   TCAG   CG    CCGT  CG  CAC
```

GGACTGCATCCT G-- GTCT AAGT-- -- -- ----
GAM27534 14382 GGGATGTCCTGCTCCAATAC TGTC T A C A TG CT - GC CTTTCCCA
1 CCGCACTGCTCTGGAGTATT GGGA CTGC CC ATACC GC C CT GG AGTATT CCT
GCCCTCTTTCCCAAGGAGAT CCCT GGCG GG TATGG CG G GG TC TCGTAG GGA
GCTGCTGGTGGAGCTGGTAT TCT- T G T A GT -- G A- --------
GGGTGCGGTCTTCCC
GAM27534 19401 GGGATGTGCTGTTGTTGAAT GTG T GAA AGA GAAGAGAG
8 TCAAGATGGAAGAGAGCATG GGGAT CTGT GTT TTCA TG
AAAAAAGCTGCGGAAGTCCT TCCTG GGCG CGA AAGT AC
AA- T AAA --- --------
GAM27535 8378 GGGATGTTGCATGCCATTGG G --- - - TGAAGCTCTAAGT
5 ATTTTGAAGCTCTAAGTGAG GG ATGTT GCAT GC CATTGGATTT
TTCAATGTGCTGTGCCATGA CC TACAG CGTG CG GTAACTTGAG
CATGCC G TAC T T ----------
GAM27538 9510 GGGATTCCCGGACTGTGAGC A C C G TAGTGCGTC
8 GGCTGTTAGTGCGTCGCAGC GGG TT CCGGA TGT AGCGGCTGT
TGCTGGCGATCCGGCGACCC CCC AG GGCCT GCG TCGTCGACG
- C A G ---------
GAM27540 5738 GGGATTCTGTGACAGGCAGC TC CA---------- AACCTA
0 TGAACCTACGGCTGCTGAAG GGGAT TGTGA GGCAGCTG
AAACACAATTACAATATCCT TCCTA ACATT TCGTCGGC
TA AACACAAAGAAG ------
GAM27543 19217 GGGATTTCTCTACAGGCTGG GA CT A- T AAC-- TTGTT
3 CCCGAACCAGTTGTTTTGTC GG TTTCT AC GGC GGCCCG CAG
TTGCGGGTCTGTCAGGTTTG CC AAAGG TG CTG CTGGGC GTT
GAAAGTCC TG TT GA T GTTCT -----
GAM27545 9821 GGGCAAAGTCTCTGGGGAGC AA C GGG G AGGA GGAAA
6 GGTTAGGAGGTGGAAAGCCA GGGCA GTCT TG AGCG TT GGT
GAAGTGCTGACACAGATGGT CCTGT TAGA AC TCGT AA CCG
GTCC GG C AG- G GA-- -----
GAM27546 4233 GGGCAAATGAGTCCTCTGTG AA A CTC GCCAA GG AA TCCC
2 GCCAAGAGGTCAGAATCGTC GGGC ATG GTC TGTG GA TCAG TCG
CCTGAGGCTGAATCGAACAC CCCG TAC CAG ACAC CT AGTC AGT
AGACCCATGGCCC G- C --- AAG-- A- GG ----
GAM27546 19127 GGGCAAATTAAAAACATAAT TAAA C TTAT TAC AAAC
6 TTTTTTTATAACTACACAGA GGGCAAAT AA ATAATTTTTT AAC ACAG
AACCTGTATGTTTTTTAAAA TTTGTTTA TT TATTAAAAAA TTG TGTC
AATTATCTTGTTTATTTGTT TTTG C TTTT TA- ----
T
GAM27547 3377 GGGCAACACCCTTACACGCT - - T CA C AT - TCATCACGCCCT
1 AGATGGTTGGGGCACTCATC GGGCA ACAC CC TA CG TAG GGTT GGGGCAC
ACGCCCTGTGCTTCAAACCC CCCGT TGTG GG AT GC ATC CCAA CTTCGTG
TAACGGCTATGGTGTGTGTG G T T CG A -- A ----------
CCC
GAM27553 18557 GGGCACCGCGAGAGCGTACT C A ACTTACATC TC GACA
6 TACATCGGGGTCCCGACAGG GGGCA CGCGAG GCGT GGGG CC
TGTCCCTCCCGGCGCCTCGT CCCGT GTGCTC CGCG CCCT GG
GTTGCCC T - GCCCT---- GT ----
GAM27554 8952 GGGCACCTGGGCCTGACGGC - AC TCCCCC GTCAT
4 CTCCCCCCAGGTGTCATGCT GGGCA CCTGGGCCTG GGCC CAGGT

TGCTGTGGCTCCCAGGCCTA CCCGT GGATCCGGAC TCGG GTTCG
GGCTGCCC C CC TGTC-- -----
GAM27554 3086 GGGCACGACAGGGCGCGGGG CACGA CG T - C TTAAAACC
7 TTCCCCCCCTTAAAACCGGC GGG CAGGGCG GGGT CC CC CC
GGCGGCACCCACGCTCTGAC CCC GTCTCGC CCCA GG GG GG
AACCC AACA- A- C C C --------
GAM27556 21316 GGGCACGTGCGTGGAGTGGC GCA-- - G G GCAGATA GAGAA
0 TCCGCAGATACCTGGAGAAC GG CGTGCG TG AGTG CTCC CCTG
GGGAAGGAGACGCTGCAGCG CC GCGCGC AC TCGC GAGG GGGC
CGCGGAAAACC AAAAG G G A AA----- -----
GAM27559 6362 GGGCAGAATACTCTAAAAAC C- AC--- ACTTGATAAAAT A G TTAAT ACCTTCCA

1 TTGATAAAATGAAATATAGA GGG AGAAT TCTAAAA GAA TATA AT TTATGA
TTTAATTTATGAACCTTCCA CCC TCTTA AGGTTTT CTT GTAT TG AGTACT
TCATGATGTTGTGTATGCTT AC CTCCT ---------- C G TTGT- --------
CTTTTGGATCCTCATTCTCA
CCC
GAM27559 20077 GGGCAGACAGGCTGCTTAAC - GAC - TA - GGAGGTG
5 CTGCTTCTGGAGGTGAGCGA GGG CA AGG CTGCT ACCTGCTT CT
GCGGGTAGCGGACCTTGACC CCC GT TCC GGCGA TGGGCGAG GA
C A --- A -- C -------
GAM27565 9106 GGGCAGCTCTCTGCACAGTT - TC-- ACA----- GA GTACACTAACTA
4 GGAGCAGGTACACTAACTAC GGG CAGC TCTGC GTTG GCAG
TGCCGCAATGATGAACCGCA CCC GTTG AGACG TAAC CGTC
GAACATGTTGACCC A TACA CCAAGTAG GC ----------
GAM27569 9437 GGGCAGGGGAGCAGCAAGGT A GG- --- - GAAAA AAAG G ATG
7 GAGGAAAACAGAAAGGCTGG GGGC GG AGCAGCA AGGT GAG CAG GCT GC
CATGGCGAGCATCCTTGGCA CCCG TC TTGTCGT TCCA CTT GTT CGA CG
ATTCAACCTGCATGCTGTTA A ACA ACG A AACG- CCTA G ---
CACTAGCCC
GAM27570 9164 GGGCAGGGGTGGCAGAAGAC G G- ---- C----- A CCA
3 ACGAGCAGCCACTGCCCGTA GGGCA GGGT GCAGA AGA ACG GCAG
CCCCCTCTCCTCTCTGTAAG CCCGT CCCG TGTCT TCT TGC CGTC
CCCATGCCC A AA CTCC CCCCCA C ---
GAM27573 16847 GGGCAGTGCACAGATGACAG AGT AT - CCTC- T- TGCCCTGT
1 CCCTCCCTCACTGCCCTGTG GGGC GCACAG GACA GC CC CAC
TGCTGGCTACCGCATGTCCT TCCG CGTGTC CTGT CG GG GTG
GTGCCAGCCT AC- -- A CCATC TC --------
GAM27573 21560 GGGCAGTGGCAAGACAGCCT -- CAAGAC T CCTCCTCCCAATGTTC
2 GCTTCCTCCTCCCAATGTTC GGGCA GTGG AGCC GCTT
GAGCGGCTCAAGACCCACAG CCCGT CACC TCGG CGAG
TGCCC GA CAGAAC - ----------
GAM27575 18238 GGGCATCATCCTCTTCCCCT A CT CC T TGCT
3 TTGGGTTCATTTGCTGGTGT GGGCATC TC CTTCC TTTGGGT CATT
GCCTAGAGGAAGCGACGATG CCCGTAG AG GAAGG AGATCCG GTGG
CCC C C- -- T ----
GAM27575 3276 GGGCATCCTGGCTGCAGATG GCA - C CAGA A - C A- TT AAGC
9 AGTCCACTGGGAGCATTGCC GG TCCT GG TG TG GT CCA TGGG GCA GCC
AAGCGGCTGCAGTCCATTGG CC AGGA CC AC GC CA GGT ACCT CGT CGG
CACCGAGAACACCGAGGAGA AAG G - AAGA - C T GA -- ----

ACC
GAM27576 21479 GGGCATCTACAGAAGCAACG A A- --- A- GTACTCTCTCCA
1 GCGTACTCTCTCCAGCTGGC GGGC TCT CAGA AGCA CGGC
TGCTCCTTCTGGAAGAGCCC CCCG AGA GTCT TCGT GTCG
- AG TCC CG ----------
GAM27576 19312 GGGCATGAGGGACTAGAGCG A- - A --- A ATTC
6 CATTGGATTCCCAAGTGTTA GGGC TGAGGG ACT GAG CGC TTGG
CTCAAGTGTTCTCAGAGTCC CCTG ACTCTT TGA CTC GTG AACC
AG G A ATT - ----
GAM27577 940 GGGCATGGGGTGCAGCTAGA - - T T C TGTA CCCTCAAT
1 ACAGTGTAGGTTCCCTCAAT GGG CATGGG G GCAGC AGAA AG GGTT
AACCCCTTTCTGCTGTTCTC CCT GTACCC C TGTCG TCTT TC CCAA
CCATGATCC A T T - - C--- --------
GAM27579 14524 GGGCATTGCAGCTGATGCAC G GCAG - A AG ACGT
2 TGATAGACGGCACGTGCTGT GG CATT CTG ATGC CTGAT ACGGC
GGATCAGGGTATATAGACAG CT GTAA GAT TATG GACTA TGTCG
AATGGTC G GACA A G GG ----
GAM27579 3212 GGGCATTTGAAGTCATGGTC G CA- CA- AAATGATTG
5 ATCAAAAAGAAATGATTGTT GGGCATTT AAGT TGGT TCAAAAAG
TTTTGAAAAGCTAAATGCTT TTCGTAAA TTCG ATCG AGTTTTTT
AAAATGCTT A TAA AAA ---------
GAM27583 2688 GGGCCAGAGGAGGCGGTCCT C-- A - TCCT ---- T A TG AGTCG
4 GGTAGGGAGTGCGTACCAGG GGG CAG GGAGG CGG GGTAG GGAGTGCG ACC GGG G

GTGGAGTCGCTGTCCGGTCG CCC GTC CCTCC GCC TCGTC CTTCGCGC TGG CCT C
CGCTTCACTTCTGCTCCGCC CTC - C ---- TTCA - - GT -----
CTCCCTGCTCCCC
GAM27584 6604 GGGCCAGGACGTAGCGCCAC A----- AGCGCCA CTAACCCAGTTCCACA
2 CTCCTAACCCAGTTCCACAG GGGCC GGACGT CCTC
AGGACGTCCCCCACAGGCCC CCCGG CCTGCA GGAG
ACACCC ------- ----------
GAM27587 4136 GGGCCATCGGCTGGCCTGCC CA GGCTG C CAG ------ AACACAAA
3 AGATCCCCAACACAAAGGAC GGGC TC GC TGC ATCC CC
ACGAGGATACGCAGCAAGAG CCCG AG CG ACG TAGG GG
CCC -- AA--- - CA- AGCACA --------
GAM27588 12863 GGGCCCACCCGGTGGGACCC G GACC ------ A - CGACAT
7 CCGTGGGGCAGGGAGCTGGG GGGCCCACCC GTGG CCCGTGG GGCAGGG GCTGG GCC

CCCGACATGGCTCCGGCCTC TCCGGGTGGG CACT GGGCACC CCGTCTC CGGCC CGG

TGCCTTTGCACCACGGGACA A ACA- ACGTTT - T ------
TCACAGGGTGGGCCT
GAM27589 3569 GGGCCCAGACTTGTTTGGGG A- TTGTTTG GCCAG -- GAGTGTG
0 AGGCCAGGGTGTGCTCGGAG GGGCCC GAC GGGAG GGTGT GCTCG
TGTGCGAGCCAATACCATCA CCCGGG CTG TCCTC CCATA CGAGC
CTCCTATGTCAGGGGCCC GA TA----- ACTA- AC -------
GAM27589 8514 GGGCCCAGGCTTCTTCCTTG AGG CT TT G --- TT- TCACGAAC
5 GTGGTGGAGACCCCCGTTGA GGGCCC CTT TCC GGTGGT GAGACCC CCG GAC
CTCACGAACGTTTTTCGGGC CCTGGG GGG AGG CCGCCG CTCTGGG GGC TTG
CGGGTCTCGGCCGCCGGATT A-- TT -- G CCG TTT --------

GGGAGGGTCC
GAM27592 18339 GGGCCCGCTTAGCCAAAGCG CTTA - TTTT C TTT
3 TTTTGCCCCGGTTTCTCGGG GGGCCCG GCCAAAG CG GCCC GG
TTTCTCGCCTTTGGCCGGGC CCCGGGC CGGTTTC GC TGGG TC
CC ---- C TCTT C ---
GAM27592 4448 GGGCCCGGCCCTCCCTGGAT G TC T G CC- CCTCCC
4 CTCCTCCCTCCTCCCAGGGG GGGCCC GCCC CC G ATCT TCCCT
TTCAGATGTGGTGGGGTAGG CCCGGG TGGG GG T TAGA GGGGA
GCCC A GT - G CTT ------
GAM27594 4035 GGGCCCTGCGCCTGATGAGC - -- ---- T - T GAAA
6 TGCCATGAAAGTGGCCGCCT GGGCC CTGC GCC TGA GAG C GCCAT
CTCACACTGGCAGGCGGTGG CTCGG GGCG CGG ACT CTC G CGGTG
CTC T GA TCAC - C C ----
GAM27595 5700 GGGCCCTGGCGTTACCCAAC GC CCAACTTAATC CT- A CATCCCCCTTT
1 TTAATCGCCTTTGAGCACAT GGGCCCTG GTTAC GC TTG GCA
CCCCCTTTTGCCAGTTTGCG CCCGGGGC TAATG CG GAC CGT
TAATAACGGGGCCC AA ---------- TTT - ----------
GAM27595 2906 GGGCCCTTCACCTCCCACTC CTTCACCTCCCACTCCT T- C-- TCTGTA CTTACTC

5 CTGTGCGCTGCTTCCGGCTT GGGCC GTGCGC GCTTC GGCT TGGA
CTGTATGGACTTACTCTCCA CCCGG CGCGCG CGAAG CCGG ACCT
GGCCATCGAAGCTCGCGCGC CCACTC---------- CT CTA ------ -------
CTCACCGGCCC
GAM27596 21350 GGGCCGAGATTAGAGCTCGA - G AGC AA- -- TT TCGGAGAATGCT
3 ATGGGCATTGGGCTCGGCTC GGG CCGA ATTAG TCG TGG GCA GGGCTCGGC
GGAGAATGCTGCCGGGCCCT CCC GGCT TAGTC AGC GTC CGT CCCGGGCCG
GCAACTGGGACGAAGCTGAT A A GA- AGG AA -- ----------
ATCGGACCC
GAM27596 9089 GGGCCGAGGCTTCCTGCGGG GA - G G - GC - GCTGC
9 CCGCGGGGCGGCGGTGCCGG GGGCC GG CTTCCTGC GGCC CGGG GCG GGTGC CGGG

GGCTGCTCCGCGCGCCTGCT CCCGG CC GGAGGACG TCGG GCCC CGT CCGCG GCCT

CCCGGGGCTGGCAGGAGGTC GG T G G T -- C -----
CGGGGCCC
GAM27597 12296 GGGCCGCCTGGGTGGTGCAG - C - T GT A A T CC C-- CCGCTCTAC
2 GAGCTGCCCTCGCTGGCCCT GGGC CGC TG GG G GC GG GC G CTCGCTGGC CTG
GCCGCTCTACCAGTACGCCA CCCG GCG AC CC C CG CC CG C GAGCGACCG GAC
GCGAGTCCGCCCCGCGTCTC C - G T TG C - - CT CAT ---------
CGCAGCGCGCCC
GAM27597 9672 GGGCCGGAAAGAGTGGGGGG GAAAGA- TG G GTTA AAGA GAA TG G
AAAAAC
7 TCGGTTAGCAAAAGATGGGG GGGCCG G G GGGTCG GCAA TGGG TGTGGAT T TGG
AATGTGGATTGTGTGGAAAA TCTGGT T T TCCAGT TGTT GCTC ATATTTG G ATC
ACCTAGGTTGTTTATAACTC AGAGTAG GT G ---- AG-- A-- TT G ------
GGATTGTTGACCTGTTGTGA
TGAGATGGTCT
GAM27597 20785 GGGCCGGAAGCCGCGCCTGC AA CG --- G ----- ATCGC
8 ACCGGCGACATCGCGTCTAT GGGCCGG GC CG CCT CACCGGC GAC
AAGCTGGTGGAGGACACGAA CCCGGCT CG GC GGA GTGGTCG CTG

GCATCGGCCC A- AA ACA G AATAT -----
GAM27598 12322 GGGCCGGGCACCACCCACCT CG- - - GA----- TTCACCT
5 GAGCTTCACCTGCCAACGGA GGGC GG CACCAC CCACCT GC
AGGTGGTGTGGTGACCACAG CCCG CC GTGGTG GGTGGA CG
CCC ACA A T AGGCAAC -------
GAM27598 6678 GGGCCGGGGGCTCGCTTTGC - T ---- T G C A CACG
9 GCGCGCCGCAGCATTCACGG GGGCCGG GGGC CG C TTGCGC CGCCG AGC TT
GGGCTCCGGCGGGCGCGGCG CCCGGCC CCTG GC G GGCGCG GCGGC TCG GG
TATCCGTGTCCTCCGGCCC T T CTAT C G C G ----
GAM27599 2828 GGGCCGGGGGTGAATGCGGC GGG AATG GC CTTTCAA
0 CGAGGCCCTTTCAAGGCTTT GGGCC GGTG CG CGAGGCC
GAATGATACCACTAAGGCCC CCCGG TCAC GT GTTTCGG
AA- CATA AA -------
GAM27599 16794 GGGCCGTGGCGGAGGAGGAG G AGGA - TGGA- C GCCGACCTCA
3 CGCTGCACGGTGGAGCGTCG GGGCC TGGCGGAGG GC GCTGCACGG GCGT GG
GGCCGACCTCACCTACGCGG CCCGG ACTGCTTCC TG CGACGTGCT CGCA CC
AGTTCGTGCAGCAGTACGCC - GCA- A TGAGG T ----------
TTCGTCAGGCCC
GAM27599 19406 GGGCCTAAACTAAGGATCTG AAAC GGA GC TCATA TAA CCCA
5 CTGGCTCATAATTGAATAAA GGGCCT TAA TCT TGGC ATTGAA AACT
ACTCCCAAGTTACTTCAATG TCCGGA ATT AGA ATTG TAACTT TTGA
TTAAAGACAATTAAGGCCT ---- AAC A- ----- CA- ----
GAM27599 8310 GGGCCTAACCGGGAGAATAG - AA A TAGT-- CT TGTG
7 TGAACTTTCTGTGGAACATT GGG CCT CCGGG GAA GAA TTC
TTTTTTTTTCCCCGGGGGAC CCC GGG GGCCC CTT TTT AAG
CC A -- - TTTTTT AC ----
GAM27601 2902 GGGCCTCACTTGTCCACCTT C CACC A AGA GGATTA
0 CCAGCAGATGTGGATTAGCA GGGCCT ACTTGTC TTCC GC TGT
AGCAGGAGTACAGACGAGTC CCCGGG TGAGCAG GAGG CG ACG
GGGCCC C ACAT A A-- ------
GAM27606 16542 GGGCCTGTGACCCCAGCATC C- T ATCCT GA- CCACGT
5 CTGGGAGCTCCACGTAGCCC GGGC TG GACCCCAGC GG GCT
ACCTTAGCGCTGGGGTCCAA CCCG AC CTGGGGTCG CC CGA
AGCCC AA - CGATT ACC ------
GAM27608 12940 GGGCCTTTCATGTAGAGGAA T -- AG-- AAC - A AGTT
4 CCACACCAGGAGTTCTAGGC GGGCC TTCA TGT AGG CACA CC GG
TGTGACCTGCAGGCAAGTGA CCCGG GAGT ACG TCC GTGT GG TC
GTGGCCC T GA GACG A-- C A ----
GAM27608 5987 GGGCGAACGAGGCTCCCCGG - C G C G-- AAGGGTGAGAA
9 GACCCAAGGGTGAGAAGGGT GGGC GAA GA GCT CCCGG ACCC
GAACCGGGCAGCATCTTCAG CCCG CTT CT CGA GGGCC TGGG
CCC A - A C AAG ----------
GAM27609 14395 GGGCGACGACCCCAAAAAGA GACGACCCCAA GGCCCCAGAATTTAA

3 GGAGGGCCCCAGAATTTAAC GGGC AAAGAGGAG
TCCTTTTTACCATTTTACAG CCTG TTTTTCCTC
TCC ACATTTTACCA ----------
GAM27609 12289 GGGCGAGATGGGCGGATCAC GC CGGA AA---- GA AGA
7 AAGGTCAGGAGATGGAGACC GG GAGATGGG TCAC GGTCAGGA TGG
ATCCTGGCTAACATGGTGAA TC CTCTGCCC AGTG TCGGTCCT ACC

ACCCCGTCTCTACT AT CAA- GTACAA -- ---
GAM27610 12915 GGGCGAGGGTGCACACTTCG C GT-- A- T ACC A TCA A- CAGCTCTT
3 GACCTCTACAAGCTGTCAGC GGG GAGG GCAC CT CGG TCT CAAGCTG GCCCC AGG
CCCAAGGCAGCTCTTCCTGG CCC CTTC CGTG GG GTC AGG GTTCGAC CGGGG TCC
GGGGCCCAGCTTGAGGAACC T GTGT GC T CA- A C-- GG --------
TGTGGCGGTGCTGTGCTTCT
CCC
GAM27610 21535 GGGCGAGGTGCTTGGCGCGC GC C TT GTG - CGT CC A- T G
5 CTTGCGTGTTGAGCCCGTGG GGGCGAGGT TTGGCG GCC GC TTGAGCCC GTGG GCGAGA
CGCG GC GGC
CGTGCGAGACCCGCGAGCTG CCCGCTTCG AGCCGT CGG TG AGCTTGGG CGCC TGCTCT
GCGC CG CCG

GCGCTGCCCGCGACGCGTTC GC - -- G-- T C-- T- AG C -
TCGTCCCGCTGGGTTCGAGG CT
TGGCTGCCGACGGCTTCGCC
C
--
GAM27612 9540 GGGCGCCGTCAGCCTCATGG G GT CTCAT-- - AGGCTCAA
4 AGCGGCGGAGGCTCAACCAG GGGC CC CAGC GGAGCGGC GG
CTGCTCCTGCCCCTGCTGCA CCCG GG GTCG CCTCGTCG CC
GGGCCC - AC TCCCCGT A --------
GAM27613 19952 GGGCGCGCTGGAGCTGCTGC G G T A G - C-- T C CTAC TGGG
1 AGGCGGCGGCCGGCTCGGGC GGGCGC CTG AGCTGC GC GGCG CG GCCGG TCGGGCT GG
AGC GCGGTG
TTGGCAGCCTACGCGGTGTG CCCGTG GAC TCGGCG CG CCGT GC CGGCC GGCCCGA CC TCG
CGTCGC

GGCGCTGCTGCTCCAGCCCG - G T - - G TTC - - T--- ----
GCTTCCGGCGCGTGCCGCTG
CGGCTGCAGGTGCCC

GAM27613 12187 GGGCGCGGCGCCGGGGCGCG C GCC - C A GA A- GCGTAG
3 CGGCTGCAGCGGAGCAGGCT GGGCG GGC GGGGC GCG GGCTGC GCG GC GGCTGGGAA

GGGAAGCGTAGTTCCCGGCT CCCGC CCG CCCTG CGC CCGGCG CGC CG TCGGCCCTT

GAGCCTCGCCGCGGCCCCGC C ACC A C C TC AG ------
AGTCCCCCAGCCCCGCCC
GAM27614 9776 GGGCGCTGGGTGCTGGCGTG T T GT G CGG
8 GTACCGTGCGCGGCGGGCGG GGGCGC GGGTGC GGCGTG ACCGT CG
TCACGCTGCACTCCGCGCCT TCCGCG CTCACG TCGCAC TGGCG GC
C - -- G ---
GAM27616 9371 GGGCGGCAGGTAACGAGTCA C C TAACG ATT CT CGCCACC
9 TTGCCTCTCACGCCACCTGG GGG GG AGG AGTC GCCT CA
AAGGCTGGACTACTTCCTCC CCC CC TCC TCAG CGGA GT
TCCC T - TTCA- GT- AG -------
GAM27617 14584 GGGCGGCGTGGGGGTGGGGC G TGGGGCAG G G TTA GGTGAACA
9 AGGGGGTGGTGCTTACCGGT GGGCGGC TGGGGG GGG TG TGC CC

GAACAGGGGTGCAGCAGCTC CTCGTCG ACCCTC CTC AC ACG GG
GGACGTTCTCCCAGCTGCTC - TTGCAGG- G G TGG --------
GAM27618 1444 GGGCGGCTCTGGCCCCGGAG C - ------ AAAA- TTTTT
2 AAAAGTTTTTTACCCCCCCT GGG GGCTCTG GCCCC GGAG GT
CCGGTTTGGGGGCGCGGGGC CCC CCGGGGC CGGGG CCTC CA
CCCC - G GTTTGG CCCCC -----
GAM27618 3728 GGGCGGGCACATCACTTGAG CACA - A- A-- CAA
9 GCCAGGAGTTCAAGACCAGC GGGCGGG TCACT TG GGCCAGG GTT
CTGGCCAACATAGTGAAACC TCTGCCC AGTGA AC CCGGTCC CAG
CGTCT AA-- T AA GAC ---
GAM27620 9816 GGGCGGGGGGCGAGGGCCGT ---- C- TC AC GG CTTCCTTGGCTACTT
4 CGCGACGCGGAGGGGGCCCT GGGCGGGGGGC GAGGG CG GCG GCGGAG GGCC

TCCTTGGCTACTTGGCTGAC TCCGCCCCCCG CTCCC GC CGC CGTCTC TCGG
TCTGCAGCGCCCCGACCCCT ACTT CA CC GA AG ----------
CTTCAGCCCCCCGCCT
GAM27621 5780 GGGCGTATGCCTTTCCTGGA C A --------- GG GGGA
5 GGCGGGGACGATCCGGGTAG GGG GT TGCCTTT CCTGGA CG
GAGACAAAGGGCGAGCTCCC CCC CG GCGGGAA GGGCCT GC
T A ACAGAGGAT A- ----
GAM27621 18520 GGGCGTCACGTTGCAATGAC ACGT- AA A-- C AGG GACA
7 TATCCTAGGGTGACAACAGA GGGCGTC TGC TG CTAT CT GT
ATAGAAACACAGCATTAACG CCCGCGG ACG AC GATA GA CA
GCGCCC CAATT AC AAA A --- ----
GAM27621 9080 GGGCGTCCCAGTTCCCTTTC TCCC - CC TT TGAGCCTGAT
9 CCATTCCTGAGCCTGATGGT GGGCG AGTTCC CTTT CA CC
TGTAAGAGTGGAATTAACTG CCCGT TTAAGG GAGA GT GG
CCC CAA- T AT T- ----------
GAM27622 1560 GGGCGTGGAAGTGCGAGCCA -- GA TG AG A- - ACAT
9 AGGACCAGGACATCTTGGAT GGG CGTG AG CG CCA GGA CCAGG
CTGGTGGGTGTGCTGCACGA CCC GCAC TC GT GGT TCT GGTTC
TCCC TA G- GT G- GG A ----
GAM27626 18482 GGGCTAGGCATCTCATCTTG TAG CTCA G TG GG GG-- -
ACCTCAAATCCCAATA
7 CTGGGGCTGTTGGGTCCCCT GGGC GCAT TCTT C G CTGTT GTCC CCTGG
GGACCTCAAATCCCAATACC CCCG TGTG AGGA G C GACAA CAGG GGACC
AGGAGGACAAGAAACAGAGC --- CTG- G GT GA AGAA A ----------
TGGGAGGAGTCGTGTGCCC
GAM27629 12853 GGGCTCAAGTAATCCTTTTG TCAA ATC T - CC AAGTGC
5 CCTCAGCCTCCCAAAGTGCT GGGC GTA CTT TGCCT CAG TCCCA
GGGATTGCAGGCATGAGCTA CCCG CAT GAG ACGGA GTT AGGGT
CGGTGCCC TGG- C-- T C -- ------
GAM27629 14678 GGGCTCAATCAGTCCACCTG ATCAGTC C--- - CCCAA
8 CCTCGGCCTCCCAAAGTGCT GGGCTCA CACCTG CTCGGC CT
GAGATTATAGGTGTGAGCCC CCCGAGT GTGGAT GAGTCG GA
------- ATTA T -----
GAM27631 21373 GGGCTCAGGCAGTTCTCTCA G A ---- T- C CCCT
9 CCTTGGCCCTCCAAAGTGCT GGGCTCA GC GT TCTC CAC TTGG
GAGATTACACGCATGAGTCC CCTGAGT CG CA AGAG GTG AACC
A - CATT TC A ----

GAM27632 9082 GGGCTCATTTGCAGGGGGGA - TTT A CAAA TCATCAT
7 GCCAAAAGGGTCATCATCTC GGGC TCA GCAGGGGGG GC AGGG
TGCCCCCTCTGCTGACGCCC CCCG AGT CGTCTCCCC CG TCTC
C --- - ---- -------
GAM27632 9575 GGGCTCATTTGCAGGGGGGA - TTT A CAAA TCATCAT
8 GCCAAAAGGGTCATCATCTC GGGC TCA GCAGGGGGG GC AGGG
TGCCCCCTCTGCTGATGCCC CCCG AGT CGTCTCCCC CG TCTC
T --- - ---- -------
GAM27634 21243 GGGCTCCTATTTGGAGGATT CC T ATT A - A ACGG- AACA
6 GCCAAGGCGCACGTTACGGG GGGCT TATT GGAGG GCC AGG CGC CGTT GCT
CTAACAAGCGGGGGGACGCG CCCGG ATGA CCTCC CGG TCC GCG GCAG CGA
CGACCTCGGCTGCCTCCAGT AA - GT- C A C GGGGG ----
AAAGGCCC
GAM27635 19806 GGGCTCGGCGCTGGCGGCAG TG - - G -- G T- T CGG
9 TGGCGAGCGGCGGAGACCTC GGGCTCGGCGC GCGGCAG TG GCGA CGG CGGA ACC CT CC

TTCCCGGGGCAGCCGGTGTC CCCGAGTCGCG CGTCGTC AC CGCT GTC GCCT TGG GA GG

CGAACTGATCGCGCAGCTGC -- G G A AA G CC C ---
TGCGCGCTGAGCCC
GAM27639 5861 GGGCTCTGGCCCCCAACGTG C AC - A CTTT
1 TCTAGGAGAGCTTTCTCCCT GGGCTCTGGCCC CA GTG TCTAGG GAG
AGATCGCACTGTGGGCCGGG CCCGGGGCCGGG GT CGC AGATCC CTC
GCCC T CA T - ----
GAM27644 18470 GGGCTGCGGCTGTAACTGCA - T-- ACT-- - CT C ACCG
9 GCAGCTGCCGGCGCACCGGC GGGCT GCGGC GTA GCAG CAG GC GGCGC
GCCGCCTGCCTGCCCTTCTA CTCGG CGCCG CAT CGTC GTC CG CCGCG
CTCCGCCGCTGGCTC T CCT CTTCC C -- - ----
GAM27645 3450 GGGCTGCGGGCGACCTTTAC TGCGGG TT ATAGG A-- - TCGG
0 CATAGGACGAAGTAACCTTG GGGC CGACC TACC ACG AGTA ACCTTGCAT
CATTCGGATGCAAGGTGTAC CCTG GCTGG GTGG TGC TCAT TGGAACGTA
TGTACGTACACAGGTGCTGG TA---- TC ACACA ATG G ----
TCGATGTCC
GAM27645 3859 GGGCTGCTCCCTGCATGAGG - T A A- - ACACC GAGACA
9 AGGACACCCAGAGACATGAG GG GCTGC CCCTGC TG GG AGG CA
ACCTACCACCAGCAGGGGCA CC TGACG GGGACG AC CC TCC GT
GTGCC G - - CA A AGA-- ------
GAM27646 20980 GGGCTGCTGGTCTGGCCCAC C- --- CAC- GG C - G CTGCT
4 CCTGGGCCGCTGGGGAGCCT GGGCTG TGGTCT GGCC CCT GC GCTG GG AGC
GCTGCTGCCACAGCTGCAAG CCCGAC GCTAGA CCGG GGA CG CGAC CC TCG
GACCAGGCCAAGAGATCGCA AC GAA ACCA A- T A G -----
CAGCCC
GAM27646 4475 GGGCTGCTGTTCGGCAGCGA ------ A- CTAC - CC GACCT
6 TGGCTACTACGTGGCGCTGG GGGCTGCTGTTCG GC GCGATGG TACGTG GCGCTGG TG

CCTGGACCTCATCGGCGCTC CCCGACGACAGGC CG TGTTACT ATGTAC CGCGGCT AC

ATGTACTTCATTGTGCGCTC GTTTCT CG TC-- T -- -----
TTTGCGGACAGCAGCCC
GAM27646 8546 GGGCTGCTTGTGGCTTCCAT --- -- G T TTTCA- - G AA GAAA

8 TTTCAATTGCCAGGAAAGAG GGGCT GCTT GTG CT CCAT ATTG CCA GA GAGGTA
GTAGAAATATCTTGTCATGG CCCGG CGAG TAC GG GGTA TGAC GGT CT TTCTAT
ACAGTCGTTCTATGGTGGGC TTT TT G T TCTTGC A A G- ----
ATTTGAGCTTTGGCCC
GAM27648 2846 GGGCTGGAGGTTCGTGCAGA G TC G AA - TCCCGGAGT
1 TCAAGGAGATGGTCCCGGAG GGGCT GAGGT GT CAGATC GGA GATGG
TTCGTCGTCCCGGATCTGAC CTCGA CTTCG CA GTCTAG CCT CTGCT
CGGCTTCAAGCTC A GC - GC G ---------
GAM27649 4290 GGGCTGGCCTTCCGGGCAGA CCTTC A- - --- TTTGA
9 TGACACCTTTGAGGCCCTGT GGGCTGG CGGGC GATG ACA CC
GCATCGAGCCCGTTTTCCAG CCCGACC GCCCG CTAC TGT GG
CCC TTTT- AG G CCC -----
GAM27651 20122 GGGCTGGGCTCAGGAAAAAC T GAAA AG A - TTACA
4 CAGCCACTGCTTTACAGGAC GGGC GGGCTCAG AACC CC CTG CT
AGGGGGTTGAAGCTGAGCCC TCCG CCCGAGTC TTGG GG GAC GG
CGCCT C GAAG -- - A -----
GAM27653 5880 GGGCTGGTGTGCAGGAAGTT G CAGGAA CAG AGGA
1 CAGCCGGAATCCAGGAGGGT GGGCTGGT TG GTT CCGGAATCC
TCTGGGACCACGACAGACCA CCCGACCA AC CAG GGTCTTGGG
GCCC G AGCAC- --- ----
GAM27654 6063 GGGCTGTGCAGCTGGAGGCC - G CA - --- G TAAT G G - TGCAGC
7 TAGCGAGGAGCTAATGTTCC GGG CT TG GCTGGA GGCCT AGCGAG AGC GTTCCT TTT AGGTC
CT
TGTTTGAGGTCCTTGCAGCT CCC GA GC CGACCT CCGGG TTGTTC TTG CGAGGA GGG TCCAG
GG

GGAGACCTGGGGAGGAGCTG A G -- T AGT - TAGT - G A ------
ATGTTCTTGTTTGAGGGCCT T
TCCAGCCGGAGACCC

-
GAM27657 1175 GGGCTTAGCGGCCTTGGGTT C--- TT CAC- T C- ACTTTTGGCA
1 CACAGCCTTAGCAGCACTTT GGGCTTAG GGCC GGGTT AGCCT AG AGC
TGGCAGCTTTCTTGGGCTTC CTCGGGTT CCGG TCCAA TCGGG TC TCG
GCAACCTTGGCCTTCTTTGG TCTT T- CGCT T TT ----------
GCTC
GAM27661 8140 GGGCTTGGAGCATTAAGGCC -- - TAA--- ACG CTGCATT
8 ACGCCCATAGCTGCATTCTA GGGCTT GGAG CAT GGCC CCCATAG
TGGGGGCCCTAGTTATGCCT CTCGGG CCTC GTA CCGG GGGTATC
CCTCGGGCTC CT C TTGATC --- -------
GAM27663 3197 GGGCTTTACGAGGGCCTTGA TAC ------ T- A TC A CACT
0 TAGCCTCGGCACGTGCACTC GGGCTT GA GGGCC TGAT GCC GGC CGTG
ATGGCCTTGGCATTGTTGGC CCCGGA CT TCCGG GTTA CGG CCG GTAC
CTGCATCTTCTTTAGGCCC TTT TCTACG TT - TT - ----
GAM27668 4435 GGGGAAAGCCGCTGGGAGGT - CG GG A G AAAGGATAAAAG T- CAGA
0 AATGGAGTAAAGGATAAAAG GGGGAA AGC CT GAGGT ATG AGT TATTATCT TAGAA
CAGAC
TATTATCTTTAGAACAGACA TCTCTT TTG GA TTCCA TAT TCA GTGGTAGA ATCTT GTTTG
GACGAGGGTTTGGATTCTAC A AT AA G G ---------- TC AG--
TAGATGGTGACTGTATGACC GAGG

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          TTAAAGTAGTTATTCTCT

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GAM27670 9041   GGGGAACCGCGGTGGCTTCC   GAA   GGTGGCT  G  AG--    G AGT  A   G   GG   G   G
3          GCGGAGGTTTCGGCAGTGGC GGG   CCGC      TCC CGG   GTTTC GC   GGC TTCG GGCC  GGTC
CGGCC
          ATTCGGGGCCGGGGTCGCGG CCC   GGTG      AGG GCC   CGGAG CG   TCG AGGC CCGG  CCGG
GCCGG

          CCGTGGACGGGGCCGGGGCC   GTA   AGGAAT-  A  GGAA    G C--  -   G   AG   G    -
          GAGGCCGCGGAGCTCGCGGA TGGACGG
          GGCAAGGCCGAGGATAAGGA
          GTGGATGCCC
                        -------
GAM27670 6537   GGGGAACGACGGAACCACAT   GGAA-  AC--  AA  A-    AGG-  ACAAAGGAGAACAGA

5          CTAGGCCACAAAGGAGAACA GG    CG   GG  CC  CATCT   CC
          GAGGAGACAGATGGAGGACC CC    GC   CC  GG  GTAGA   GG
          CAGAACGATACACC        ACATA  AAGA  CA  AG    CAGA ----------------
GAM27674 8301   GGGGAAGGGGGAGCTGCTGA       - G-   G---  A-    TTCTT
9          CCTTCTTCTTGAAGGGGCGG GGGGAAGG GG  AGCT   CTG  CCTTC
          GATAAGCTAGCCACCTTCCC CCCCTTCC CC  TCGA   GGC  GGAAG
          C                    A  GA    ATAG   GG    -----
GAM27679 847    GGGGACACTCTTCACTGCAG      ACTCTTCA   A   - C-   TCCAT
3          TTGGACCCGGTCCATCCGGC GGGGAC       CTGC GTTG GA  CCGG
          ATCACAGCGGCAGCCGGTCT CCTCTG       GACG CGAC CT  GGCC
          CC                   GCC-----   G   A  AC    -----
GAM27682 9159   GGGGACCAAAGAACTCTGAA      CAAA  AC      GG   T   - ATCGAATG
0          CGGTTTTTTGTCAATCGAAT GGGGAC    GA  TCTGAAC  TTT TTGT CA
          GTGCACAATAAAAGGTTCGG CCCCTG    CT  AGGCTTG  AAA AACA GT
          ATCGTCCCC              ---- --      GA   T    C --------
GAM27682 8993   GGGGACCAGGGGAAGGGGGA     CC    AA  - A      A   A   CCCA
3          GGAGGGGAAGTGAGGCCCCA GGGGA  AGGGG  GGG GG GGAGGGG AGTG GGC
          GCCCCACTACCCCTCCCCGC CCCCT  TCCCC  CCC CC CCTCCCC TCAC CCG
          CCACCCCTTTCCCC          T-    A-  G -      A   C  ----
GAM27684 4506   GGGGACTCTGGGAGGCTGGT     -- -         GTGC-    GAAGGCA
7          GCAGCCAGAAGGCATGGCTC GGGGA  CT CTGGGAGGCTG     AGCCA
          TTGACAGCCTTCTAGTAGAA TCTCT  GA GATCTTCCGAC     TCGGT
          TCTCT                AA  T         AGTTC    -------
GAM27687 18048  GGGGAGAAGCAGCCGTGCTG    G  AA-- -    T   CC---    ACCCA
9          CCAGGTCACCCAGACCTCCA GGG AG    GC AGCCG GCTG     AGGTC
          GACAGCCGGCTAGCCCCACT CCC TC    CG TCGGC CGAC     TCCAG
          GCCC                 G  ACCC  A    -   AGACC    -----
GAM27691 3971   GGGGAGCCGCCTGCCCCTGG          T  C   G      CCCG     C-   TTGC
8          CGCTGCCCCCGGCCTCCCAG GGGGAGCCGCC GCC CTG CGCTGCC    GCCTCC  AGGG

          GGTTGCTCTTCAGGGGGCGG CTCCTCGGCGG CGG GGC GCGGCGG    CGGGGG  TTCT

          CGGCGGCGGCGGCGGCGGCT          -  C   G      ----      AC    ----
          CCTC
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GAM27693 3662   GGGGAGCGTGCAAGTGCCTC     G       --------    -   AGC   A   GG      -       CACAGA
2           TCGAGCGCTACGTGGAGCCT GGGGA CGTGCAAG       TGCCT CTCG   GCT CGT  AGCCTCG
CCTTCTG
          CGCCTTCTGCACAGACTCTC CCCTT GTACGTTT       GCGGG GAGT   CGA GTA  TCGGGGC
GGGAGGC

          GGAGGGCCGGGGCTGGATGG     G       CTGTAGGT    T    CAA   G   GG      C       ------
          AGCAACTGAGTGGGCGTGGA CTCT
          TGTCTTTGCATGGTTCCC

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GAM27695 3369   GGGGAGGAGGTGGGTCGCAG       -       TCG     GGGCT     GAG
0           AATGGGCTGACTCGGAGCGA GGGGAGG AGGTGGG   CAGAAT    GACTCG
          GTTTTTAATTTTGGCTTTAC CCTCTTC TCCATTT   GTTTTA    TTGAGC
          CTGCTTCTCC              G      CG-     ATTT-     ---
GAM27695 16411  GGGGAGGCAAATCCCTGGAA      GCAAAT     AA        CCTGCA
3           GGGTTGAACCCTGCAGTTCA GGGGAG     CCCTGG  GGGTTGAAC
          ATCTCCCGGGGTAATCACTC CCCCTC     GGGGCC  TCTAACTTG
          CCC                  ACTAAT     C-        ------
GAM27701 18503  GGGGAGTCCGGTATTAAGGG      T     ATTAAG   TT TG  CGGAATTC
1           CTTTTGTGCGGAATTCCATG GGGGAG CCGGT     GGC  T  TG
          GTGCCAAAAGACTGGTTTCC CCCCTT GGTCA     CCG  G  AC
          CC                   T     GAAAA-   T- GT  --------
GAM27702 3411   GGGGAGTTTGTGCTGGGCCT     AG  TG  - TG ------------      CGTC
4           GGCGTCCCAGGCTGTGGACT GGGG  TT  TG C  G          GCCTGG
          GGAACTGGACATGAGAACCC CCCC  GA  AC G  C          CGGACC
          C                  AA  GT  A GT AAGGTCAGGTGT     ----
GAM27703 20446  GGGGATCCTGGGGTACCTGG     TCCTGG   A    - CAC     TTT
9           GGCACCGGGGGGTTTCCTCTG GGGGA     GGT CCTGG GG   CGGGGG
          ATTCCACCAGGGACCATTCT CCTCT      CCA GGACC CC   GTCTCC
          CC                   TA----   G     A  TTA     ---
GAM27704 8520   GGGGATGAGCTCTTCTCCGT    GA   G      CCGTC       -   A   TTAA
3           CTTTGGGGCCCCATTTTTAA GGG  TGA CTCTTCT     TTTGGGGC CCC TTT
          AAGAGGGTGCCTCAGAAGAG TTC  ACT GAGGAGA     AGACTCCG GGG GAA
          GAGATCAGACTT          AG   A      -----       T   A   ----
GAM27709 22297  GGGGCAAACTTACTCTGGGC      AACTTAC---   G    CCT   TCTCCCT
0           ACCTATATCTCCCTTATTGC GGGGCA        TCT GGCA   ATA
          CGAGAACTCCACAAATGCTC CCTCGT        AGA CCGT   TAT
          C                    AAACACCTCA   G    ---   -------
GAM27711 674    GGGGCACGGACATCTCTCAC  GG    GGACA---      A  AA    AAAAAAAG
6           CAAGTGTAAAAAAAGGCGCC G  GCAC       TCTCTC CC  GTGT
          GGGGGGGACACACAGAGTGT C  TGTG       AGGGGG GG  CGCG
          TTC                TT    AGACACAC     -  C-    --------
GAM27714 8937   GGGGCAGGAGGGTGTCAAGT      G  ----   TG   AGTG----   TGAACT
5           GGTCTGAACTGATAAAAATT GGGGCA GA    GGG  TCA       GTC
          GTGATGTCTTGGTTCGTGTC CCCTGT CT    TCT  AGT       TAG
          CC                   G  TGGT   GT   GTTAAAAA   ------
GAM27714 21149  GGGGCAGGCATGACAGTCTC         T         T    -   TTTTCCTCTC    CA    ATTACATTCCCCC
8           ACTGTTGCTACTTTTCCTCT GGGGCAGGCA GACAGTCTCAC GTTG CTAC        AGGG  GCCT
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          CAGGGCAGCCTATTACATTC CTCTGTCTGT CTGTCGGGGTG CAAT GGTG        TCCC  CGGA

          CCCCCAAAGGCCCCTGTGGT        -        C   T   ----------   --   ----------
          TAACCGTGGGGCTGTCTGTC CAA
          TGTCTC

                        ---
GAM27716 5540   GGGGCATACCAACCTTACAA          CCTTACAA   TCCT-  T    T   TGCA
6          ACCTCCTGGCTCAGGTGGCT GGGGCATACCAA       ACC    GGC CAGG GGC
           GCAGTCCCTGGCCCTTCTGG TCCTGTATGGTT       TGG    CCG GTCC CTG
           TGCGCATTTGGTATGTCCT           TACGCG--   TCTTC  -   -  ----
GAM27717 851    GGGGCATGGCGTGGTGGCCC     ATG   TG T    TG--------     TGGCG
8          TGAGGCGCTGGCGGCGCCTG GGGGC   GCG  G GGCCC        AGGCGC
           TTACGACGTGGGCCTCTGTG CCCCG   TGT  C CCGGG        TCCGCG
           TGCCCC              ---  GT T    TGCAGCATTG     -----
GAM27718 19147  GGGGCCACGGCTTCTCACAG       GGCTT    AGG     CG   -   GTA   - C   AAAGCAC
5          GGTGGGGCGGGCCTGGTGTA GGGGCCAC    CTCAC   GTGGGG  GGCC TGGT   CCCT C CCG

           CCCTCCCCGAAAGCACTGGA TCCCGGTG    GGGTG   CACTCT  TCGG ACCG   GGGA G GGT

           GAAGGGGGCCACGGCTTCTC       -----    GGA     --    C    G--    A A   -------
           ACAGGGTGGGGTGGCCCT
GAM27718 18884  GGGGCCAGAGACCCACCTCG      AGAG    A---    GCTAC         AG  ATCTT
7          CTACTTGGCGTACTCAGTCA GGGGCC    ACCC    CCTC    TTGGCGTACTC  TC
           TCTTGAAGGGTGTGTTAGAA CTCCGG    TGGG    GGAG    GATTGTGTGGG  AG
           GAAGAGGATCCGGGTGGCCT      ----    CCTA    AAGAA         A-  -----
           C
GAM27720 5688   GGGGCCATCAAGCTAGCAGA    GCCATCAA  T    --    TG  CT   CAGA
0          CTTTGGACTAGCCAGAGCTT GGG       GC AGCA  GACTT  GA  AGC
           TTGGAGTCCCTGTTCGTACT CCC       TG TTGT  CTGAG  TT  TCG
           TACACCC             ACATTCA-  C    CC     GT  --   ----
GAM27720 14406  GGGGCCCAATATGAACGAAG      CAATATGAACGA    GG--    AGAA
5          CTGGCTCGGAGAACCGAGAA GGGGCC          AGCT    CTCGG
           GAAGCTAAAACAAGACCTGG CCCTGG          TCGA    GAGCC
           TCCC                TCCAGAACAAAA    AGAA    ----
GAM27720 21048  GGGGCCCACTTTGCTGTCAT         TT   GTCA    CGATCGTCCCT      AA    ACCAG  TGT
7          CCGCCGATCGTCCCTGGAGA GGGGCCCACT  GCT    TCCGC         GGAGAAG  CCCGT    GC
           AGAACCCGTACCAGGCTGTG CTCCGGGTGG  CGA    GGGCG         TCTCTTC  GGGTA    CG
           CACCAATGGGCCTTCTCTGC         TC   GTTG    -----------      C-    ACCA-  ---
           GGGGTTGAGCCTGGTGGGCC
           TC
GAM27721 2799   GGGGCCCAGGAGGACGCGGC      CA    A   GG  - AG  AC    G-    ATTGAGA
0          AGAGTCACGGTGGCAGCATT GGGGCC  GGAGG CGC  CA G  TC  GGTG  CAGC
           GAGAGTTGGACACCCGGGTC CCCCGG  TCTCT GTG  GT C  GG  CCAC  GTTG
           CTTGAAGTGATCTCTAGGCC      A-    A   AA  T CT  GC    AG    -------
           CC
GAM27723 20150  GGGGCCCTGTGCCTTCCTGA    CCCT     TC    A  G    C  ACCA   GCAC
2          AGTGCTGGCAGACCAGAGGC GGGG    GTGCCT  CTGA GT CTGG AG    GAG
           ACCTCCTTCAGGACCTTAGA CCCC    TATGGA  GATT CA GACT TC    CTC
           GAGGTATTCCCC          T---     GA    C  G    -  ----   ----
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GAM27724 14059  GGGGCCGGCCGGCCCCCGCC    C  C--    -   ---  -    CCCCCG
3               GGGGGGGCCCCCGCCCCCGC GGGGC GG   CGGCCC CCGC   CGG GGGGG
                CGCCCGCGGAGGGCCGCCCC CCCCG CC   GCCGGG GGCG   GCC CCCCC
                CCGCCCC              C CCC    A   CCC  G    ------
GAM27724 21224  GGGGCCGGGGACCCCTGCCG     G G    G G    CG   CGGAC
6               CGCCCCCGTACCCGGACGGT GGGGCC GG ACCCCT CC CGCCCC  TACC
                GATGGGGCGAGGAGGGGTGC CCCCGG TC TGGGGA GG GCGGGG  GTGG
                TGGGCCCC             G G    - A    TA   -----
GAM27726 9229   GGGGCCTCTAGTGGGCACCT     TCTA   C  T   T    ATTTTTC
5               TTATTTTTAGATTTTTCCTG GGGGCC   GTGGG ACC TTAT TTTAG
                AACATGGCGGTCTCGCCTCT CCCTGG   CGCTC TGG GGTA AAGTC
                GGTCCC               TCTC   -  C   C    -------
GAM27728 18678  GGGGCCTTTATTTGGTTTTG  -   TT   - TT  G  TT    ATA-  GTTTTA
4               GGCTTTAGCTGGATAATGTT GG GGCCT  ATTTG G  TTG GCT  AGCTGG   AT
                TTAGTGATGTCAGCTAGTGC CC TCGGG  TAAAC C  GAC TGA  TCGACT   TG
                AGTTCTCAAATGGGCTGCC   G   --   T TT  G  --    GTAG  ------
GAM27730 4502   GGGGCGCCCAGGTGTGGGGT   C   G   GGG-  AACA  G   ACCA
3               AACAGGCGGACACCAGTTGG GGGG GCCCA GTGT   GT   GGC GAC
                CCACATTAGCGCGTGGGTTC CCCC TGGGT CGCG   CA   CCG TTG
                CCC                  T   G   ATTA ----  G  ----
GAM27730 6408   GGGGCGCGCAAAGCCACGAA       AAA----   C   AG-   CTT
8               AAGCAAACTTTTTGATGTTT GGGGCGCGC     GCCA GAAA  CAAA
                CTGGTCCATGGGGTGCGCCC CCCCGCGTG     TGGT CTTT  GTTT
                C                    GGGTACC   -   GTA   ---
GAM27731 972    GGGGCGGAAGGTCGAGAGGG      AA      -----   A   TT-  TTTCCCCCCCCACCAC
1               CGAGGCCTTGCTTTCCCCCC GGGGCGG  GGTCGAGA    GGGCG GGCC  GC
                CACCACGCCTTGGTCCCGCC CCCCGCC  CCGGTTCT    CCCGC CTGG  CG
                CCTGCATCTTGGCCCCGCCC      --      ACGTC   C   TTC  ----------
                C
GAM27731 20237  GGGGCGGCATCCCCAGCCTG     G A   -- -  TGGTTCGG    GACG
4               GTTCGGGCCGTGACGGCGGC GGGGCG C TCCC  CA GCC      GCCGT
                GGCATGCAGGGACGCGCCCC CCCCGC G AGGG  GT CGG      CGGCG
                          - C   AC  A  --------    ----
GAM27732 5706   GGGGCGGGAAGGGCCCCCGG     G  AA-    -  GGAA    G GGCGC
3               AAGTGTGGGGGCGCTGCATG GGGGC GG  GGGCC CCC   GTGTG G
                CGAAGGGTGGCTCGCGCTGG CCCCG TC  CTCGG GGG   CGTAC T
                CCCC                 G  GCG   T  AAG-   G -----
GAM27733 12471  GGGGCGGGTAAGGGGGCGGG   G   AA  G    A   A----   GGAG
6               AGAGGCAGAGGCGGAGGCCT GGG CGGGT  GG GGCGGG GAGGC    GAGGC
                TAGAGAGCCTCCCCCGCCGC CCC GCCCG  CC CCGCCC CTCCG    TTCCG
                CGGCCCGGCCC          G   G- G    C   AGAGA   ----
GAM27733 3808   GGGGCGGTTCCTATCAGGAC     GTT--  A         A  TCTGAT
7               TGTGTATGTCTGATCACATG GGGGCG    CCT TCAGGACTGTGT TG
                CGGTTCTGAGGGGCAGAACG TTCTGC    GGG AGTCTTGGCGTA AC
                TCTT                 AAGAC  G         C  ------
GAM27736 18471  GGGGCTCATTTGCAGGGGGG    -  TTT      A  CAAA   TCATCAT
1               AGCCAAAAGGGTCATCATCT GGGGC TCA  GCAGGGGGG GC   AGGG
                CTGCCCCCTCTGCTGATGCC CCCCG AGT  CGTCTCCCC CG   TCTC
                CC                   T  ---       -  ----   -------
GAM27737 4424   GGGGCTCTGGGGTCCATCAC  G    G G  ATC  GG  AAGAA    GCATG
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4          GGCACAAGAACAACACGCAT GG GCTCTG G TCC  AC  CAC    CAACAC
           GGTGTTGGTGAAGTCGGAGC CC CGGGAC C AGG  TG  GTG    GTTGTG
           CAGGGCGCC          G    - G  C-- AA  -----     -----
GAM27738 21492  GGGGCTGCCCCGCCAGTGGC   CT    CCAG  CA-   C   CG   A--    TCGCC  CCAA
6          AGAGCCTGATCGAGGCAGTC GGGG  GCCCCG   TGG  GAGC TGAT  AGGC  GTCGGC   GGC

           GGCTCGCCGGCCCAAGCCCC CCCC  CGGGGC   ACC  CTCG ACTA  TCCG  CAGCTG   CCG
           TCGTCGACCCCGCCTGCATC   --    CCG-  TAC   C   CG   CCC    CTCC-  ----
           ACGCTCCATCCAGCCCGGGG
           CCCCC
GAM27739 14529  GGGGCTGCTGCACCGCGTTT     G    - C-----    A  CAGCATGTC
3          CCATAGCAGCATGTCCTACG GGGGCT CTGCAC CG     GTTTCC TAG
           GAAACCCAGCACGTGTGTAG CTCCGA GATGTG GC     CAAAGG ATC
           AGCCTC               -    T  ACGACC    C  ---------
GAM27739 9731   GGGGCTGCTGCCCAGTGCAT   G   T   G  AT-- -   -   ACCACA
4          GGGCTGCCTCTGACCACACA GGG CTGC GCCCA TGC   GG GCTGC CTCTG
           GGGTGCAGCTCCTCCGGCGG CTT GGCG TGGGT GCG   CC CGACG GGGAC
           TGGGTGCGGGTTC        G   -   G  GCCT T   T   ------
GAM27740 8820   GGGGCTGCTTACTATAGGGT  GG  T  T-     G    ATGT  TTCAT
0          TAACTATGTATATTCATTGT G  GC GCT  ACTATAGG TTAACT   ATA
           TAAGAGTTAACTTGTGGTTT C  TG CGG  TGGTGTTC AATTGA   TGT
           GGCTGTTTC          TT  T  TT     -    GAAT  -----
GAM27741 3933   GGGGCTGGGAGCAAGCATGG    -   GCA  AT   G GG  CG  G  AGATG
2          CGGCGGCGCCGGCGGCAGAT GGGGC TGGGA  AGC  GGCG C  CGC  GC GC
           GGCGGCAGCGAAGCGCCCGC CCCCG ACCCT  TCG  CCGC G  GCG  CG CG
           TTCCCACGCCCC          C   ---  C-   - AA  A-  G  -----
GAM27742 16663  GGGGCTGTGGTTACCTCTCT      -  T-   CTC  T   A  CCCT
8          CTTCATGACACCCCTGTGAC GGGGCTGT GGT  ACCT  TC TCATG CAC
           GTGGTGAAGGTTCGCCTGCA CTCTGACG CCG  TGGA  AG GGTGC GTG
           GTCTC                T  CT   --- T   A  ----
GAM27743 19819  GGGGCTTGCCCTGGCTCTCT      GC--          C      ATC
1          GTCTCCTCCCATCGGGAGGA GGGGCTT   CCTGGCTCTCTGT TCCTCCC
           ACAGAGAGCCAGGACCAAAG CCTCGAA   GGACCGAGAGACA AGGAGGG
           CTCC                 ACCA        -     ---
GAM27744 12921  GGGGGAAAGCCTGGTTTTGG    AAA-  T-    GG      AG-    ATT
6          CTGCTTTGAGGCTTTCATTG GGGGG   GCC  GGTTTT  CTGCTTTG  GCTTTC
           AAAGCAAATGAGGCAGAAAG CCCCC   TGG  CCGGAA  GACGGAGT  CGAAAG
           GCCCCGGTCCCACCCCC       ACCC  CC    A-      AAA    ---
GAM27745 9290   GGGGGAAATGTTGCTGGTGA   -  ATG-   TGGTGA  TTTT   CAA
0          CCGTTTTTGGGCAATCCATT GGGG GAA   TTGC    CCG   TGGG
           TTCGGGCAAAGAATTCACCC TCCC CTT   AACG    GGC   ACCT
           T                A  AAGA  ------  TTTT   ---
GAM27746 18981  GGGGGAATAGTGGGGGGGCC    AAT-     GG---   AT-  CAACGCA
3          CATGGCAACGCACTTGGGGG GGGGG   AGTGGGG   GCCC  GG
           TATACACCCCGCTTTCACCC CCCCC   TCGCCCC   TGGG  TC
           CC                 ACTT     ACATA   GGT  -------
GAM27747 959    GGGGGACCCTGGAAAAGTTT    A   GGAAA  TT   AACAC   GTTCCAAA
4          ACCGCAACACCTGGGTTCCA GGGGG CCCT   AGT  ACCGC   CTGG
           AACCGGCCGCGGTGCTAAGG CCCCC GGGA   TCG  TGGCG   GGCC
           AGGGCCCCC            -  GGAA-  --   CC---   --------
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GAM27747 18009 GGGGGACTGAATGGCGCATT - AAT C C A- C AACCCCACTG
8 CCGGGCGGGAGGGCAAAACA GGGGGAC TG GGCG ATTCCGGG GGG GGG AAAAC
ACCCCACTGGTTTTCCCCGC CCCCCTG GC CCGT TAAGGTCC CCC CCC TTTTG
CCCCCCTGGAATCTGCCCCC T CCC C C CG C ----------
CGTGTCCCCC
GAM27748 22233 GGGGGACTGGACGCTGCTAT - C GC---- GA ATTAAAAAAAGAAAA
0 TGATTCATTAAAAAAAGAAA GGGGGAC TGGA GCT TATT TTC
AGAAAAATACACCAAGGCTC CCCCTTG ACCT CGG ATAA AAG
CATGTTCCCC T - AACCAC A- ----------
GAM27749 3491 GGGGGAGCTCATCGGCTACT T TC TC AACG AAGGTGCC
9 CTGAACGCGGCCAAGGTGCC GGGGGAGC CA GGCTAC TG CGGCC
GGCCGACACCGAGGTGGTTT CCCCCTCG GT TTGGTG GC GCCGG
GTGCTCCCCC T -- GA CACA --------
GAM27750 20223 GGGGGAGGACCACGTTGGTT GG CACG GTT A A CAC GGGAGAA
0 TGGCTTGCCGAGCATGTCAC GG GAGGAC TTG TGGCTTGCCG GC TGT GGGT
GGGTGGGAGAAGCTCACAGC TC TTCCTG AAC GCCGGATGGC CG ACA CTCG
CCGGTAGGCCGCAAGTCCTT TT ---- --- C - --- -------
TTCT
GAM27750 3496 GGGGGAGGGGAAGAAGCACT G C CTAGAGA AATAG
8 TTTTCTAGAGATGGAAAATA GGGGGAGGGGAA AAG ACTTTTT TGGAA
GTTCCAGTAAAAAGTTCTTA TCTTCTTTCCTT TTC TGAAAAA ACCTT
TTCCTTTCTTCT A T TG----- -----
GAM27750 3440 GGGGGAGGGGCCGGACGCTT G GA CT GC CGTG
9 GCCCGCCTTCGTGGAGAAGG GGGGGAGGG CCG CG TGCCC CTT
GTGTTTGGATGGGCCCTCCT CCTCCTCCC GGT GT GTGGG GAG
CC G AG TT AA ----
GAM27751 20507 GGGGGAGTCAGGTTGTCAGC GTC TCAG AG- GCAGAAA
5 TCAGCAAGTGTGCAGAAAAC GGGGGA AGGTTG CTC CAAGTGT
ACTTGGAAGAGGGTCGGCTT CCTCCT TTCGGC GAG GTTCACA
TATCCTCC AT- TGG- AAG -------
GAM27751 18131 GGGGGAGTTGTGGTGCTTCT AGT TG G TCTCT -- -- TGCT
8 GGGTCTCTGGGCCCCGCCTG GGGGG TG GTGCTTCT GG GGGC CCC GCC
CTGGCCTGGGATGCCCTCAT CCCCC GC TACGAAGG TT CCCG GGG CGG
GTTGGGAAGCATTCCGTGCC GT- CT G GTACT TA TC ----
CCC
GAM27753 1319 GGGGGCAAGAGAGGCCACGC AAG-- G C - CAAAGTCA
5 ACTTTTCAAAGTCAAAGACG GGGGGC AGAG CCACG AC TTTT
TATGTGGGTTCTAGAAAGTC CTCCTG TCTT GGTGT TG AGAA
CTC AAAGA G A C --------
GAM27753 18427 GGGGGCACCTGAAAACCTTA A T AA ATTAAAAA TTCC
8 TTAAAAAACATTCCTGTGGC GGGGGC CC GAA CCTT ACA
CTCCAAAGGGGTTTTGGGTC CCCCTG GG TTT GGAA TGT
CCC - T GG ACCTCCGG ----
GAM27755 1002 GGGGGCATGCCCTTAAATCC GG ---------- AT - - TATA
7 CAGTATACTCGGAGGGTTGA GGG CA TGCCCTTAA C CC AG
GGGCACGAGATTCATTTGAA CCC GT ACGGGAGTT G GG TC
CCC AA TTACTTAGAGC GG A C ----
GAM27756 8228 GGGGGCCAGGATCAGTGCAC - CA- ACA- GA- AAGC - C A C TCCA C GC
0 AGGGAGGAAGCGCTCACGGA GGGGGC CAGGAT GTGC GG GG GCT CA GG CGCT CGC
GCC GG

CGCTCCGCTCCAGCCCGGGC CCCCCG GTCCTG CGCG CC CC CGA GT CC GCGA GCG
CGG CC

ATCCTGGCCACGCGCAGCGC C CCC ACGA ACG GA-- C - - C CAC- T --
CTGCAGCAGCCGCACCAGCA AT
GCGCCCCGTCCTGCGCCCCC

--
GAM27756 14068 GGGGGCCCTGGCCTCATACC CC C A CCACCT TTGTCT
4 CACCTGGATTGTCTTCCTCC GGGGGC TGG CTC TAC GGA
AAGTGAGAGACCACAGCTTC CCTTCG ACC GAG GTG CCT
C AC A A AACCT- ------
GAM27757 3968 GGGGGCGCGCTTTTTTACGT -- TTTTACGTT ----- ACCACC
7 TTCCGCAAAAGACCACCCTT GGGGGC GCGCTT TCCGC AAAAG
TTCATCCGCGGGCAAACTAT CCCTCG TGCGGA GGGCG TTTTC
AGGCGTATGCTCCC TA TATCAAAC- CCTAC ------
GAM27758 4454 GGGGGCGGCTGGGGGCCTGA GC - TGG --- A - A TCATCAACC
1 GCGGGAGGCCATCATCAACC GGGG GG C GGGCCT G GC GGG GGCCA
TGGCCACCCAGCCCAAGAGG CCCC CC G CCCGGA C CG CCC CCGGT
CCCATGTCCATCCCC TA T TA- GAA C A A ---------
GAM27758 22276 GGGGGCGGGGGTTGGGTTAG GC- ---- - CT A TGAACTTT
5 AGCTACAGTCATGAACTTTT GGGG GGGGGTTGG GTTAG AG AC GTCA
GGCGTCTACTGATTCCTCCA CCCC TCTCTAACC TAGTC TC TG CGGT
ATCTCTCCACCCC ACC TCCT A -- - --------
GAM27758 3511 GGGGGCGGGGTGCGGCCCTG C C CCCT A GCTGG
6 GGCAAGGAGGGCTGGTCTCC GGGGG GGGGTG GG GGGC AGGAGG
TGGCCCCCCGCCCCTCCCCT TCCCC CCCCGC CC CCCG TCCTCT
T - ---- G -----
GAM27761 16578 GGGGGGAAGGGTGGTCACCG AG G G CAG TCCAGA CACG
4 CTCAGACGTCCAGATAGGGA GGGGGGA GGT GTCACC CT ACG TAGGGAAG
AGCACGCTTCCCTAACGCCG CCCCCCT CTA CGGTGG GA TGC ATCCCTTC
TGCCAGGGTGGCGATCTCCC -- G - CCG CGCA-- ----
CCC
GAM27764 6201 GGGGGGGAAAAAACCGGGGG CC CC --------- C CAAAAAAAA
2 GGTTTTTTTCCTTCCCCCGG GGGGGGGAAAAAA GGGGGGGTTTTTTT TTCCCCC GGGGGG
GT
GGGGCGTCAAAAAAAAATTC CCTCTCTTTTTTT TTCCCCCAAAAAAA AGGGGGG CCCCCC TA

CCCCCCTTTTTTTTGGGGGG -- A- TTTTTTTTC T ---------
AAAAAAAAACCCCCTTTTTT
TTTCTCTCC

GAM27764 20009 GGGGGGGAATAATTGGGGCC --------- GG T G CG T CTATA
3 GGCTCTCCCCTCTATAAGGG GGG GG AATAAT GG GC GCTC CCCCT
GGGGCGCGTTATTATTTTCC CCC CC TTATTA TT CG CGGG GGGGA
TAAAAAACACCC ACAAAAAAT TT - G -- - -----
GAM27765 16662 GGGGGGGCGGGAAAAAAAAA C AAAAAAAACC T TGTT AAAAAAGGGCCC

1 AAACCGGGGCCCCTTCTCTT GGGGGGG GGGAAAA GGGGCCCCT CTCT CCAGG

GTTCCAGGAAAAAAGGGCCC TCCCCCC CCCTTTT TCCTGGGGA GAGG GGTCC
CCTGGGGAGAGGGGTCCTTT - ---------- - ---- ----------
TTCCCCCCCCCT
GAM27765 16453 GGGGGGGCTGTGCCTGGGTG G -- - AAAG GCCACACA
2 AAAGCGGGCCACACACCGGT GGG GGGCT GTGCCT GGGTG CGG
GCACCCAAGGTACCTGGTCT CTC TCTGG CATGGA CCCAC GCC
GCTC G TC A GTG- --------
GAM27765 3378 GGGGGGGGACGCATATAGGC GA----- AT- AACCC CT ATAATA
3 GAAACCCGGCTGGATAATAC GGGGGGG CGCAT AGGCGA GG GG
CCCAAGTTGCCTTAAGTGTG CCCCCCC GTGTG TCCGTT CC CC
GGAAAAACCCCCCC AAAAAGG AAT GAA-- -- ------
GAM27765 18901 GGGGGGGGCGCGCGCGCAAA GG - AAAGAGAAGA CGC
4 AGAGAAGACTCCCCCGCGGG GGGGG GCGCGCGCG CA CTCCCC
GGGCGCCCACAATGTCGCGC CCCCC CGCGCGCGC GT GGGGGG
GCGCGACCCCC AG T AACACCCGC- ---
GAM27765 14642 GGGGGGGGGGGGGGGGGGCG - - G G GG GCCGG
7 GCGGGGGGGGGGCCGGCCCG GGGGGGG GG GGGG GGGGC GCGGGG GGG
GCCCCGCGGCCCCGCCCCGC CCCCCCC CC CCCC CCCCG CGCCCC CCC
CGCCCCCCC G G G G GG -----
GAM27765 5765 GGGGGGTAAACAAATTTCTT AA TT -- GGTCAATAGAAAAAAAAA
9 TCCTGGTCAATAGAAAAAA GGGGGGTA CAAA TCT TTCCT
AAAAGGAAACGGGTTTTTGG CCCTTCGT GTTT GGG AAGGA
GTGCTTCCC GG TT CA ----------
GAM27766 9434 GGGGGGTAGAGATAGGATCT A A TC- A TT C CT CCTTGAA
0 CACTATGTTGCCCAGGCTAG GGGGGGT GAG TAGGA TCACT TG GCC AGG AG
CCTTGAACTCCTGGCCTCAA CCCTCCG CTC GTCCT AGTGA AC CGG TCC TC
GTGATCCTCCTGCCTCAGCC A C CCT - TC - -- -------
TCCC
GAM27766 3839 GGGGGGTCCCCAGGTTAGTA GT - -- - AAACT - GTGGG
1 AACTCCCCAGGTGGGCTGAG GGGGG CC CC AGG TTAGT CCC CAG
GGCTAGGGCTGAGCCTCAGG TCCTC GG GG TCC AGTCG GGG GTC
TGGGTCTCCT TG T AC G GGATC A -----
GAM27766 4114 GGGGGGTGACAATGACCTCA CAAT CTCAT - C CAGGTT
2 TAGAGCGTATCCAGGTTGAT GGGGGGTGA GAC AG AG GTATC
GCCTACTTCAGTCCCATTCA CCCCTCACT CTG TC TC CGTAG
CTCCCC TACC ACT-- A - ------
GAM27767 21349 GGGGGTAAATTCACACTTCC GT A TCC - T CA GAGC
2 TGCTGTTTGACAAGGAGCCT GGGG AAATTC CACT TGC TGTT GA AG
ATCAACGTGCAAGTGGGATT CCTC TTTAGG GTGA ACG GCAA CT TC
TGTCTCC TG - --- T - A- ----
GAM27768 21240 GGGGGTCCCTGCGAATTTGA G --- ATT TGA- ACA
6 TTGATCCCTAACATAGGGAG GG GGTCCCT GCGA TGAT TCCCTA
AATGTTGCAGTTGCGGAGGG CT CCGGGGG CGTT GTTG AGGGAT
GGCCGTC G AGG GAC TAAG ---
GAM27768 19186 GGGGGTCGTCCTTGGCACGC GT TT A G G GTGCTAG
9 GCTGGGGAGTGCTAGTCCTG GGGGGTC CC GGC CGC CT GGGA
AGGCGAGCCGGTAGATCTCC CCTCTAG GG CCG GCG GA TCCT
AT -- A - G -------
GAM27770 19400 GGGGGTGACAATTGACCTCA CAATT CTCAT - C CAGGTT
1 TAGAGCGTATCCAGGTTGAT GGGGGTGA GAC AG AG GTATC

GCCTACTTCAGTCCCATTCA CCCTCACT CTG TC TC CGTAG
CTCCC TACC- ACT-- A - ------
GAM27770 5500 GGGGGTGCAAGGCCCTGTGG C- CTG --- AC- CCTCTTAGCAC
4 TTGGACTTCACCTCTTAGCA GGGGGTG AAGGCC TGG TTGG TTCA
CTGAAAACCCAAAACCCAAC TCTCCAC TTCCGG ACC AACC AAGT
TGGCCTTAACACCTCT AA TCA CAA CAA ----------
GAM27771 9535 GGGGGTGGTAAGGAGGAGGC GG GG A CGGG GACAGAAGGA
5 GGGTTTGGACAGAAGGACAA G GGT TA GGAGGAGG TTTG
GATACTTCCTTCTAAAGCTT C TCG AT CTTCCTTC GAAC
TC TT AA - ATA- ----------
GAM27773 6293 GGGGGTTGCTCGGCTCCTGT T T CTGT TG A- T -- TC G TTACC
3 GTGCAGCTAATGGTCGTCGT GGGGGT GC CGGCTC G CAGCTA TGG CGTCG TCGGCATCC
CTTG CC
CGGCATCCTCCTTGGCCTTA CCCCCG TG GTCGGG C GTCGGT GTC GCGGT GGTCGTGGG
GGAC GG

CCTGGCAGGCTGGGTGCTGG T C T--- GT CG - GA TC - -----
AGTGGCGCTGGCTGGCTGTG T
CTGGGCTGCGTTGCCCCC

-
GAM27773 843 GGGGGTTTGGAACATCAGGT TT ACATCAG ATT - AG GCATGGA
7 AATTTCCTCTGCACAGCTGC GGGGGT GGA GTA TCCTC TGCAC CT
ATGGAAGAGGTGCAGGAGGG CCCCCG TCT CGT GGGAG ACGTG GA
CAGTGCAGTCTTTGCCCCC TT GA----- GAC G GA -------
GAM27773 5610 GGGGGTTTGTCAAGATTTGT TTGTC T- TA- TTGTC TGCAATT
8 AGGCTTTGTCATTTTTATGC GGGGGT AAGA TTG GGCT ATTTTTA
AATTTGGAAATATTCTAGCT CCTCCG TTCT GGC TCGA TAAAGGT
ATTCGGTCTCTTCCCCTGCC TCCCC CT TTA TCTTA -------
TCC
GAM27775 8100 GGGGTAGATTTTCGCTGCAG - G ---------- G CGA - TAGAC
7 TGTTCCCCGAGCCTGTTAGA GGGGTAG ATTTTC CTG CAGT TTCCC GC CTGT
CGCAGCGCGCCGGGAGACTG TCCCGTC TGAAGG GAT GTCA GAGGG CG GACG
AGAGAGGAAAGGATAGAGGA G A AGGAAAGGAGAGA - CCG C -----
AGTGCTGCCCT
GAM27776 12658 GGGGTATCCTGTAATAAGGC A GTAATAA - - G- CTCGAACA
8 AGGGCAGGGCTCGAACACCA GGGGT TCCT GGCAG G GCA GG
GTGCTCGCTGCCACTAGGGA CTCCG AGGG CCGTC C CGT CC
GGCCTC G ATCA--- G T GA --------
GAM27777 8735 GGGGTCAAAGATAAGAGGTC CAA A ---- A-- AATC
7 ATTTATCTAATCAGAAAGAA GGGGT AGATA GAGGT CATTT TCT
GTGCTCAATCTCTATCTAAC CCCCA TCTAT CTCTA GTGAA AGA
CCC A-- - ACTC GAA ----
GAM27778 21641 GGGGTCAAGTACATCCCAGT CA CCCAGTCGT - CAA G GCCC
2 CGTGGCCCTCTGGACAAGTG GGGGT AGTACAT GGCCCTC TGGA GTG CGG
GCGGGCCCCTGCACTCCATG CCCCG TCGTGTA TCGGGAG ACCT CAC GTC
AGGGCTTCCCAATGTGCTGC -- ACCCT---- T --- - ----
CCC
GAM27779 12946 GGGGTCAGCACCTGGATGAT C A GATGA- A T -- CT G C- GAAA
0 GACTTCTTTTGCTTTATATT GGGGT AGC CCTG TG CTTCTTT GCTTTA TATTC CTT CAGGGC
TTG

CCTCTTGCAGGGCCTTGGAA CCCTA TCG GGAC AC GGAGAGA TGAGGT ATGAG GAA GTTCCG
AAC

AATGCGCACACAAACGCCTT - - AAAGGA C - AC TC G CA ----
GGAAGCTGAGTACATGGAGT ATGCGCACA
AGAGAGGCCAAGGAAACAGG
GCTATCCC

GAM27781 3803 GGGGTCGGCTAAGTGGGACA CG A ---- CAT AACTGCAC
8 TTAGTAACTGCACACTATTT GGGGT GCT AGT GGGA TAGT
CCCGTCTACTGAGTAAACCC TCCCA TGA TCA CCCT ATCA
T AA G TCTG TT- --------
GAM27782 20603 GGGGTCTATGGTGGTCGCCA CT GT TCTT CCGGTG AACTGC
0 AGTCTTGGTGCCGGTGCCAG GGGGT ATGGTG CGCCAAG GGTG CCAGGGG
GGGAACTGCTTCTTGGAAAC TCCCG TGCCAC GTGGTTT CCAC GGTTCTT
ACCTTTGGTGGACACCGTTG T- AG ---- AAA--- ------
CCCT
GAM27784 6000 GGGGTCTGGGGGCACCCCTC GGCA- CA AGG C- C CAA GGAG
5 AGTGCCAGGCACTGTCTGCC GGGGTCTGGG CCCCT GTGCC CACTGT TGCC TG GG
CTGCAAGGGGAGCCCAGGCA CCCCAGACCC GGGGA CGCGG GTGACG ACGG AC CC

CTGCAGTGGAGGCGCAGGGG GAGAC -- AG- TC - --- ----
CAGAGCCCAGACCCC
GAM27785 6394 GGGGTCTTGCTGCCGGGGAG - CC - - T TG GGAGG
5 GCCCAGTCCTGGTGGGGGAG GGGGTC TTGCTG GGG GAGG CCCAG CC GTGGG
GCTCATTGGGCTGGGACCTC CCCCAG AACGAC CCC CTCC GGGTC GG TACTC
TCCCCTCAGCAATGACCCC T TC T A - GT -----
GAM27786 18710 GGGGTGACTGGTCTCAAACA T CT CA- AACT C CTGCCAA
6 ACTGTTGGTCATTGTGACTG GGGG GA GGTCT AAC GTTGGT ATTGTGA
CCAATTATAGTACCAACTTT TCCC CT TCAGA TTG CAACCA TGATATT
GGTTGCCAGACTTTTCCCCT - TT CCG GTTT - -------
GAM27789 1233 GGGGTGGATCAGGGCTCTAT AT---- CTCTA- - T TCACCTT
5 CACTTGGTCCCCACCTCACC GGGGTGG CAGGG TCACT TGG CCCCACC
TTGGTGGGGCCAGAGTGAGC CCCCACT GTCCT AGTGA ACC GGGGTGG
CCCTTCCTGCCACAGTCACC GACACC TCCCCG G - -------
CC
GAM27791 2940 GGGGTGGGTATGCGCCAACC G ---- G AC CA AGC
3 CTATTTCAGGCAGCGCTCAA GGGGTGG TAT GC CCA CCTATTT GGC
AGTAGGTGGAGCCGATGTAG CCCCACC ATG CG GGT GGATGAA TCG
CCACCCC G TAGC A -- AC ---
GAM27791 1027 GGGGTGGGTGGGGTGCTTTG G GG T TGTTA T T- C TTGTTTTT
6 TTAGGGCTGTCTGGCTTTCA GGG TG TGGGG GCTT GGGCTG CTGGCT TCA TTC
CTTCTTGTTTTTGAGCTGAT CCC AC GCTTC CGGA CCTGAC GACCGG AGT GAG
TGGCCAGCCAGTCCAGGCCT G AT - ----- C TT C --------
TCGTACAGCCC
GAM27793 8303 GGGGTGTGGGAGGATCGCTT G A A- TGAAA-- TTCAAACCAGC
7 GAAACCAGTTCAAACCAGCC GGGGT TGGG GG TCGCT CCAG
TGGGCAATATGGTGAGACCC CCTCA GTCC CC AGTGG GGTC
CTGACTCC - - AG TATAACG ----------
GAM27796 3313 GGGGTTATATTTCTAAGTGA --- GA TT CTGTTTCTA

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1          TTTACAATTTCTGTTTCTAA GGGGTT  ATATTTCTAAGT  T  ACAATTT
           AATTGTTGGGATTTAGAAAT CCTTAA  TGTAAAGATTTA  G  TGTTAAA
           GTTTCAATTCC            CTT        G- GT     ---------
GAM27797 18366  GGGGTTCTGGCCCCCAGCAC    TT  G    CAGCA  TGAGA   ---     TGT
4          TGTGAGAACCCCCCAGGTGT GGGG  CT GCCCC    CTG    ACCC  CCCAGG
           CCTGGGCCAGGGTCAGGAAA TCCC  GG CGGGG    GAC    TGGG  GGGTCC
           GGGGCGGGCTCCCT         TC  G    AAAG-  -----   ACC     ---
GAM27797 18550  GGGGTTCTTCAGGGTTGCCA        CAGG     A  GAA  A  GAT
6          TGAGAACCAGGGATCCGGGG GGGGTTCTT   GTTGCC TGA  CC GG
           ATTGGGCAGCAGAGGGCCCC CCCCGGGAG   CGACGG GTT  GG CC
                          A---     -  AG-  G  ---
GAM27798 4324   GGGGTTGAGTCCCAATTTAT      A  -  AA      ATTAAT TG  TTTAGT
2          CCAATTAATTTGGGTTTAGT GGGGTTG GTC CC  TTTATCCA     T  GG
           TTTGATATGGATAAGGGAGA CTTCGAC CAG GG  GAATAGGT     A  TT
           CCAGCTTC               -  A  --      AT---- GT  ------
GAM27799 9658   GGGGTTGGGAGCGGGATGCG     GGG    - ---    GG   G  TG-  TG -   AACAGGG
3          TGGCAGGGCCATGTGGTGGT GGGGTT   AGCGG GA   TGCGT  CAGG CCA   TGG  G TGGT
           GGTAACAGGGGCCATTTGTT CTCCAA   TCGTC CT   ACGTA  GTTT GGT   ATT  T ACCG
           AAATTGGTTTGAAATGCAAA     AAA    T  GAA    AA   -  TAA   GT T   -------
           GTCTCTGCTAAAAACCTC
GAM27803 8714   GGGGTTTGTGGAGCGCTGTG   GT    A  CTG   -  GTCCA  -   T    TACTT
7          GGAGCGTCCAGCCTGGGTGT GGG  TTGTGG GCG   TGGG AGC    GCC TGGG GTCGT
           CGTTACTTGCGGCTCCGTGG CCT  AACACC CGC   ACTC TCG    TGG GCCT CGGCG
           TGAAGCTACTCAATACGCGC   GC    G   ATA   A  AAG--  T   -    -----
           CACAACGTCC
GAM27805 3464   GGGGTTTTTTTACACCCCCC          ACACC----          AAAAAAACA
0          CCGGGGGGGGAAAAAAACACC GGGGTTTTTTT       CCCCCCGGGGGGG
           CCTCCGGGGGGTTTTTTTTG CCCCAAAAAGG        GGGGGGCCTCCCC
           GGAAAAACCCC                GTTTTTTTT          ---------
GAM27808 14500  GGGTAAGCTAGGTGGCTCAG   T  - AGG   TC    ---    AGAAGG
8          GGAGTGGCAGAAGGGCCATT GGG AAG CT   TGGC  AGGGA   GTGGC
           TTTCCCTCTGCCAAAAAGAC TCC TTC GA   ACCG  TCCCT   TACCG
           TTCCT             -  A  AAA   TC    TTT    ------
GAM27818 3498   GGGTAGGTTTCCTATTTGAA    -    TCCT-   GAAA  G    TCATGT
2          ACAGTGGAATCATGTTTCCA GGGT AGGTT    ATTT   CA TGGAA
           GTGATAAAGTTTAATGACCT CCTA TCCAG    TGAA   GT ACCTT
           CATCC               C    TAATT   ATA-  G    ------
GAM27820 5726   GGGTATGAGCTTGGCGACAC     GAG--    CGACA  G    ACA  GG-  GTGGTG
3          GGGCGTACACAGCGGGCGTG GGGTAT    CTTGG    CGG CGTAC   GC   GC
           GTGGTAAAGCAGGTGCGGCT CCCGTA    GGACC    GTC GCGTG   CG   TG
           GCCCCAGGACACAATGCCC      ACACA    CC---  G    GA-  AAA  ------
GAM27824 20199  GGGTCACATGGGGTGGTGGC     CA    T  T   CT   C-    ACGGTTC
9          CTGCGCGCGGGACGGTTCCC GGGTCA  TGGGG GG GGC  GCG  GCGGG
           CGTTTCGCTTGCCCCCCCCA CCCAGT  ACCCC CC CCG  CGC  TGCCC
           ATTGACCC               TA    -  -  TT   TT    -------
GAM27828 2711   GGGTCATACATTAATTCAAT     ATACATTAATTCAA      A   AGGAACTGG
3          TGCTGAGATTGAGGAACTGG GGGTC           TTGCTGAG TTG
           CAGGCTCAGCGAAGAAGGAC CCCAG           AGCGACTC GAC
           CC                 GAAGA---------      G   ---------
GAM27830 5682   GGGTCCACTATCATTTAATT     C------   A   TTAATTTCCC     CT  TCT
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1          TCCCTTGAACCTGCTCTGCT GGGTC      ACT TCAT        TTGAAC  GC
           AGTTTAATCTGCTAATATGA TCCAG      TGA AGTA        AATTTG  CG
           AAGTTAATTAAGACCT        AATTAAT   A   TAATCGTCT-     AT ---
GAM27831 12448  GGGTCCATTGGAATGGATTT    CC      T  AT    AACCCACCTT   AA    AAACCCCGAA
6          GGAACCCACCTTGGCAAGGT GGGT  ATTGGAA GG  TTGG        GGC  GGTT
           TAAACCCCGAAAACCCGGCC CCCA  TGACCTT TC  AACC        CCG  CCAA
           CCACAGACCAACGCTTTCCA    AT     - GC    AGACACC---   GC   ----------
           GTTAACCC
GAM27833 8880   GGGTCCCTGCCCTCCCCCCA    -    -    ----   AG   G    --------- -  GGCCCCCA
7          GGTTTGGTTCCTCCCGGGGC GGGTC CCTGC CCTCC    CCCC  GTTT GTTCC        TCC CGG
           CCCCACTGTGGAGATAAGAA CCCGG GGACG GGAGG    GGGG  TAAG TAGGG        AGG GTC

           GGGGATGGAATGGGGGAAGA    A    A    AGAA   G-   G    GAAGAATAG  T --------
           GGAGGAGCAGGAGGCCC
GAM27834 18857  GGGTCCGACCCTCCTGGGCT    CC    T     TTT    A  G  TG   G  --   G  A    - GCAC
1          TTCTGGCACTGTCTGAGCTG GGGT  GACCC CCTGGGC   CTGGC CT TC  AGCT TCA  CCAG CC
GGGGT CT
           TCACCAGGCCAGGGGTCTGC CCCG  CTGGG GGACCTG   GACCG GA GG  TCGG GGT  GGTC GG
CCCCA GG

           ACCTGGCACCCCGGCTGGCA    TC    -      ---    - - TA    -  AC    - -    C ----
           TGGGGCTATGGAGGCCAGGT CT
           CCAGGGGGTCCTGCCC

                      --
GAM27835 4132   GGGTCCGTCTTCTTCCTGCT      G-       CTGCT-    C   ACCT
0          GCTGCCGGGACCTTCTGCGG GGGTCC  TCTTCTTC     GCTGC GGG
           CCGATGAGAAGAAGAAGGGG CCCGGG  AGAAGAAG     CGGCG TCT
           CCC                  GA       AGTAGC    -  ----
GAM27836 8236   GGGTCCTGGAAGCCCATGTG   G   T  AA    T   TG----    AGCT
2          TGTTGAAAGCTTTTAAACTA GG TCC GG  GCCCA GTG     TTGAA
           ATCACCTGGGTCGCTTGGGG CT GGG TC  TGGGT CAC     AATTT
           TC               G   T  GC    C   TAATCA    ----
GAM27837 21625  GGGTCGCAGGTTGGGATGGC    TC    TT  -  -  CG    GA-    TCATGGT
3          GGCTGGAGGCGATCATGGTT GGG  GCAGG  GG GA TGG  GCTG   GGCGA
           CGCCCGACAGCTACCGCTCA CCC  CGTTC  CC CT GCC  CGAC   CCGCT
           CCTCTTGCCTCCC         TC    T-  A  C   AT    AGC    -------
GAM27847 9293   GGGTGAAACATGAACATTTG       ACAT  ACA     GC   ---  CTGT
5          AGGCTGATTCCCTGTGGAAA GGGTGAA    GA   TTTGAG  TGAT   TCC
           AATCATTCAAATCTATTCAC CTCACTT    CT   AAACTT  ACTA   AGG
           TC                   AT--  ---     --    AAA   ----
GAM27848 18563  GGGTGAAGATGGCGGCAGCC    GAAGATG-  GGCA-   GA      AACT    ATGGA
9          GAGGCCGCGAACTGCATCAT GGGT       GC    GCC  GGCCGCG    GCATC
           GGAGGTGTCCTGTGGCCAGG CCCG       CG    CGG  CCGGTGT    TGTGG
           CGGAAAGCAGTGAGAAGCCC    AAGAGTGA  AAAGG   A-      CC--    -----
GAM27849 21183  GGGTGACAACATGCTGGAGC    -  AA--     G--     A T  TTACAT
8          CAAGTGCTTACATGCCTGGT GGGT GAC    CATGCT   GAGCCA G GC
           TCAAGGGCATGGAAAGTCAA CCCA CTG    GTACGG   CTTGGT C CG
           CCC                  A   AAAG     GAA     - -  ------
GAM27850 20494  GGGTGACCCTCGCCATGGTA    T    C--         AAT   T   TTGCT
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4          AATACATGGCTTGCTGCCTG GGG GACC  TCGCCATGGTA  ACA GGC
           TTGTACCGTGGTGACGTGGT CCC TTGG  AGTGGTGCCAT  TGT CCG
           TCCC             -  TGC       GT-  -  -----
GAM27854 21217  GGGTGAGGTTTTTGGGGAGC      TTTTT    CTCAAG    - ACTT   T----     A-    GGT
8          TCAAGGGCTGGTCACTTGCT GGGTGAGG   GGGGAG   GGCTGG TC   GCTG   AGGTCTT
GAGCCT
           GTAGGTCTTAGAGCCTGGTT CTCACTTC   CTCCTC   CCGACC AG   CGAT   TCTAGAG  TTCGGA

           CCTGGAGGCTTAGGAGATCT      TC---    AACTG-    T ACC-   TCTCT    GA    ---
           TCTCTTAGCCCAGATCCAGC TCCTGG
           CGTCAACTCCTCCTCTTCAC
           TC
                      ------
GAM27855 20200  GGGTGATGTCATGTGATGGG  G  AT   G  A  G   ---  ATGTGATG
8          TGATGCCATGTGATGGGTTA G GTG  GTCAT TG TG GTGAT  GCC
           TGTCATGCGATGGGTGATGC T TAC  TAGTG GT GC TACTG  TGG
           CATGT            G  CG   G  A  G   TAT  --------
GAM27856 16547  GGGTGCACACTTTGTCTGTG     --  TT   G  ACC  A   A   ATGACA
9          ACCGAATGAAAATCGATGAC GGGTGCA  CACT  GTCT TG  GA TGAA ATCG
           ATGATGTTCGTCCTGCAAGG TCCGCGT  GTGA  CGGG AC  CT GCTT TAGT
           GCAGTGGATGCGCCT          AG   --   A  GTC  -   G   ------
GAM27860 16450  GGGTGCCCTATGCTGACCCA   G  T    ACCCA---  AA   AGACT
6          GGAAAGGGCAGACTGCCCCT GGGT CCC ATGCTG      GGA  GGGC
           CCAAACTCCACAGTATTGGG CCCA GGG TATGAC      CCT  CCCG
           ACCC             -  T    ACCTCAAA  C-   -----
GAM27861 20112  GGGTGCGACTGGGCGTGCTC   T  ACT   G  T  AG T   A  T  GAGGCA
5          GGAGCTCGCAGACGCTCGGA GGG GCG  GGGC TGC CGG  C CGCAG CGC CG
           GGCATGGCGGCTGCGGAGCC CCC CGC  CCTG GCG GCC  G GCGTC GCG GT
           GGCGGTCCTTGCGCTCCC    T  GTT   -  -  GA -   G  - ------
GAM27861 815   GGGTGCGGACGATGGGGCAG   T-   A  A      --  T-     C  T  ---    AC TG  ACGCGA
8          AAGCTGAAGCAGCGGCTGCG GGG  GCGG CG TGGGGCAGA  AGC  GAAGCAG GGC GCG  ACTGG
G  GG
           ACTGGACGTGGGACGCGAGA CCC  CGCC GC ACTCTGTCT  TCG  CTTCGTC TTG CGC  TGACC  C
CT

           TCTGCCGCCAGTACCCGCTG   TC   - G       CG  TC     -  T  CCA    GC GT  ------
           TTCTGCTTCCTGCTGCTCTG GA
           TCTCAGCGCCGCCTCCC

                      --
GAM27862 22343  GGGTGCGGCGAGGCGGAATG      G  GG-    G  G GG   A T  TCTCAG
0          GCGGCGGTGCGGACTCGTTC GGGTGCG CGA  CGGAAT GCG C  TGCGG C CGT
           TCAGGCGGCCCGCGGGGTGC CTCACGC GCT  GCCTTG CGT G  GCGCC G GCG
           GGTTCCGAGGTCGCGCACTC      -  GGA    G  - GG   C -  ------
GAM27862 8226   GGGTGCGGCTCCACCCCTTC    C  C  --- -   TTC   TCATCC    AACAA
2          CACGTCATCCGCATCAACAA GGGTG GG TC  CA CCCC  CACG    GCATC
           GATGTTGTCCTGTGCTGGGG TCTAC CC AG  GT GGGG  GTGT    TGTAG
           CTGACAGATCCACATCT       A  T  ACA  C   TC-   CCTGT-    -----
GAM27863 12616  GGGTGCTCCTTGGGGCACGC      C-   G  A   GAC   TG GAA    GGGC
2          AGACGGTTGTGAACCTCCGG GGGTGCTC  TTGG GC CGCA  GGT  T  CCTCCG
```

GGCTGGGGGGAATGGCCTGC CCTACGGG AGCT TG GCGT CCG A GGGGGT
GGTGTCGACAGGGCATCC AC G - --- GT AG- ----
GAM27866 6562 GGGTGGAGGCGATGCGCCTA - A A - CTAG CG TG CCA
0 GGGCCGGGCTGGAGCCACTC GGGT GG GGCG TGC GC GGC GGC GAG
GTGCCACGCCATGCTGTACG CCCA CC CCGC ATG CG CCG CCG CTC
CCGCCAACCC A G - T TA-- CA TG ---
GAM27867 18645 GGGTGGATCACAAGGTCAGG A--- AA---- A-- CAA
5 AGTTCAAGACCAGCCTGGCC GGGTGG TCAC GGTCAGG GTT
AACATAGTGAAACCCCACCT TCCACC AGTG CCGGTCC CAG
CCAA ATACAA GAC ---
GAM27867 8685 GGGTGGATCACCTGAGGTCA TG A- - A- A-- CAA
9 GGAGTTCAAGACCAGCCTGG GGG G TCACC TG GGTCAGG GTT
CCAACATGGTGAAACTCCCC CCC C AGTGG AC CCGGTCC CAG
CT AA T AA GAC ---
GAM27871 14630 GGGTGGCCTCTCCCTGGAGC TC - TG CCCACC ACCCT ATCATGCC
4 TGAGCCCACCCTGGGGGACC GGGTGGCC TCCCTG GAGC AG CTGGGGG GG
CTGGATCATGCCCCTTTGCC TCCGCCGG AGGGAC TTTG TC GACCCCC CC
CCCAGCCCTTGGTTTGCAGG -- G GT CC---- GTTT- --------
GAGGCCGCCT
GAM27873 3501 GGGTGGGACCCGTTCAATTT GA T- T- A TCCTAAGCCATT
0 CAAGCTCCTAAGCCATTGCC GGGTGG CCCG TCAATT CA GC
TGCTGGTTGACCTGGGGCCG CCCGCC GGGT AGTTGG GT CG
CCC G- CC TC C ----------
GAM27873 22289 GGGTGGGATTTTTTTGTGGG T TTTTTTTGT ATGC AA CTC
7 AATGCGGGAAGGCGGGGGCT GGG GGGA GGGA GGG GGCGGGGG
CCCCCCGCCCCCCCCCCCTC CCC CCCT CCCT CCC CCGCCCCC
CCCCTCCCCCC - CC------- CCCC CC ---
GAM27874 4016 GGGTGGGCGCGCGGGGGGCT TG GC G T GGCGT G C- - AGAG
3 GGTGAGGCGTGGGAGGGGCG GGG G GCGC GGGGGC GGTGA GGGAGGGGCG GG GG GAGG

GGGCGGGAGGAGAGCCTCAC CCT T TGCG TTTTCG TCACT TCCTCTTCGT TC TC CTCC
TTTCTGTGCTTCTCCTCTTT GT GT G - GTTTC G TT A ----
GTCACTGCTTTTGGCGTTGT
TGTCC
GAM27876 14597 GGGTGGGGGCTGGGGGTTGG G TG AAAAGC CTGA
5 GAAAAGCCATTTCCTGAGAA GGGTGGGG C GGGGTTGGG CATTTC
GTGTCCGGCTCCTGGGTCTC CTCACTCT G CCTCGGCCT GTGAAG
ACTC G GT ------ ----
GAM27876 18793 GGGTGGGGGGCATCCATATA GG CA AT CA------- GGTTTA
7 GTCACTCCAGGTTTATGGAG GGGTG GGG TCC ATAGT CTCCA
GGTTCTTCTACTATTAGGAC TTCGC TTC AGG TATCA GAGGT
TTTTCGCTT TT -- AT TCTTCTTGG ------
GAM27877 2978 GGGTGGGTGGAGGCCCACAA - GGA- - AG- AT ACGA
8 GGAATTGACGACATCTTATG GGGTGG GT GGCCC ACA GA TG
TGTAGGGCTGGAAGCATTAC CCCATT CG TCGGG TGT TT AC
CC A AAGG A GTA CT ----
GAM27878 3458 GGGTGGGTGGGACAGAGGGA -------- ACAGA A AATGCACTCCA
0 GAGAGCAATGCACTCCAGCT GGGTGGGT GGG GGGAG GAGC
CCTCCCGGAGCCCTTAGAGA CTCACTCA CCC CCCTC CTCG
GACTCACTC GAGAGATT GAGG- - ----------

GAM27879 20014 GGGTGGTGCAGCTGGCGACC GGTG - A- - G TGAT
8 TGGGCGGGAGCTGATGTTCT GGGT CAGCTG GCG CCT GGGC GGAGC
AGTTTGAGGACTGTGCAGCT CCCA GTCGAC TGT GGA TTTG TCTTG
GGAGACCC GAG- G CA G A ----
GAM27880 3339 GGGTGGTGCTCGGCGACGGC C C CG AGCTCC C ACTACAGCACGA
0 GTGCAGCTCCCGCCCGGGGA GGGTGGTGCT GG GA GCGTGC CGCC GGGG
CTACAGCACGACCCCCGGCG CCCACCACGA CT CT CGCACG GCGG CCCC
GCACGCTCTTCAGCACCACC - T -- ------ C ----------
C
GAM27880 18670 GGGTGGTGGGAGAAGGAGGA GG AGAAGGAGGA G AATCACTTATAAA

2 GGCGGCGAATCACTTATAAA GGGT TGGG GGCG CG
TGGCGCCGAAGCAGGACCCG TCCG GCCC CCGC GT
AAGCCT AA AGGACGAAG- G ----------
GAM27882 6070 GGGTGTCATAAACACCATTG T AA C- T TT AGCT TG CCTGGA
6 GCTTGGGAGCTGAGTGCACC GGGTG CATA CA CA TGGC GGG GAG CA
TGGATGTCCTCTGGGCCCTG CCCGC GTGT GT GT GCCG CCC CTC GT
CCGCTGACTGGCTGTGCGCC - CG CA C T- GGGT CT ------
C
GAM27884 18663 GGGTGTGCTGATGGAGCGGG T A - GG---------- CAGATGA
6 CTGCAGATGACAGCAAAGAG GGGTG GCTG TGGA GC GCTG
GTTGAGAGCTTCCAGCAGCT CTCGT CGAC ACCT CG CGAC
GCTC - G T AGAGTTGGAGAAA -------
GAM27885 9480 GGGTGTGGGGGATGCTAACC T TG AT AAC CA --- AG T A G TCAAGAA
0 ACAGGGCCTGAGAAGTCTTG GGG G GGGG GCT CA GGGCCT GAGA TCT GCTTT TG GC
TGCCA
CTTTATGGGCTCAAGAATGC TCC C CTCC CGA GT TCTGGG CTCT AGA CGAAA AC TG
ACGGT
CATGCGCTGGCAGTACATGT T GT -- C-- CC AGA A- - C G TACATG-
GCACAAAGCAGAATCTCAGA TGCGC
GGGTCTCCTGCAGCCCTCTG
CTCCT

GAM27885 1279 GGGTGTGTGCTTTGGTGGTG TG --- G A CTCAGT
8 TTGAGATGCTCAGTCATCCA GGG TGTGCTTTGGT GGT TTG GATG
AAACCTATACTAAAGTATAG TCC ATATGAAATCA CCA AAC CTAC
TCCT TG TAT A - ------
GAM27886 12880 GGGTGTGTTAGCCCCGCCTC TGTT- CC CT TC G TGC- TATTCT
1 TTCTCCTTGTGGGATGCGTC GGGTG AGC CGC CTTC CTT TGGGA GTCCGGCA
CGGCATATTCTTGCTGGGCT CCCAT TCG GCG GAGG GGA ACCCT CGGGTCGT
TCTTCCCAGAGGTTGGAGCC TTTTT T- CC TT G TCTT ------
GCGTGCTTTTTTTACCC
GAM27886 19020 GGGTGTTAACTAATGCACTC - AAT - AATA A ACAAA
5 AATAGTGATCACAAAGAATA GGGTGTT AACT GCACT C GTG TC
CAGGAAGTGCCAAGTTCAAT TCCGTAA TTGA CGTGA G CAT AG
GCCT C AC- A GA-- A -----
GAM27887 8855 GGGTGTTCTCTCGTAAAGCC T - TA- TGA CCCT
2 TGTGAGACCCCTGTTCCTCA GGGTGT CTCT CG AAGCCTG GAC
GGTTTGTTTGTAGAGCATGC CCCGTA GAGA GT TTTGGAC TTG
CC C T TTG TCC ----

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GAM27890 9406   GGGTTAGCTCAGTATGTTGG  G  -   A   --- TG  TATCACGTGGCATGG
0          GTATCACGTGGCATGGTCTG GG TTA GCTC GTAT  GT  GG
           ATGGAATACGAGCATAGGTC CT GAT CGAG CATA  TA  CT
                      G  A   -   AGG  GT ----------
GAM27890 20922  GGGTTAGTATAGAGATGTGG  GT A  T   A   GA   GTCTCAAAATA
6          ATGTAGTCTCAAAATATACA GG  T GTA AGAG TGTG  TGTA
           AATATAATTCTTTACAGTCC CC  A CAT TCTT ATAT  ACAT
                      TG -  T   A   AA  ----------
GAM27891 16865  GGGTTATTTTTAGGTGCTTT  GG   T  GG     ---    C  ACAAAAAAACCA
6          GTTTTGGTCTATACAAAAAA G  TTATT TTA  TGCTTTGT  TTTGGT TAT
           ACCAATAACCAAAAACATAA C  AATAA AAT  GCGAAATA  AAACCA ATA
           AGCGATAATAATAAAAC   AA   T  A-     CAA   -  ----------
GAM27893 18784  GGGTTCAGTGTAGTGTGTTC   TTC  GTA  T  TC  ACC   G  A-   AGATG
5          TCTACCGAAATGGTTATATA GGG  AGT  GTG GT  TCT  GAAAT GTT  TATAC
           CAGATGGTATGGAAATGGTT CCC  TCA  TAC CA  AGG  TTTTG TAA  GTATG
           TTAAAGGATTACTCATAAAC  TA-  AA-  T TT  AAA   G  AG   -----
           TATCCC
GAM27894 9430   GGGTTCCACACTGTTGGGAG      ACAC-     --    ---  A-  AA  GGACA
1          TCGCTGCAAGAATCGGACAG GGGTTCC    TGTTGGG  AGTCGC  TGC  AG  TC
           GCGCTGAGCACCTGTGGCTG CCCAGGG    ACAGCCC  TCGGTG  ACG  TC  GG
           ACCCGACATCTCAGGGACCC      ACTCT     AG    TCC  AG  GC  -----
GAM27894 18255  GGGTTCCATCTCCTGACCTC       CTCCT A  C     ACC    C  CCT
3          GTGATCCACCCGCTTCGGGC GGGTTCCAT    G CCT GTGATCC  CGCTT GGG
           CTCCCAAAGTGCTGGGATTA CCCGAGGTG    C GGA CATTAGG  GTGAA CCC
           CAGGCGTGGAGCCC           ----- -  -     GTC    A  ---
GAM27896 5358   GGGTTCTCGACGGCAGCAGA    -     CAGCA  C   C   T  -- C   T  AAGT
4          GCGGGGCTTCTTGGCAGCGG GGGTTC TCGACGG    GAG GGGG TTCT GGC  AG GGGC CG

           GCTCGAAGTCGGCCTCCTCG CTCGAG AGTTGCT    CTT CCTC AGGA CCG  TC TCCG GC
           GCCCAGGACTCCTTCACCTC     T     CCA--  -   -   C  GC  C   - ----
           GTTGATGAGCTC
GAM27897 5469   GGGTTCTTCAAAGGTTCTTT      C  AG      A  G GGA   TCTT
4          TATTGTGGAACTTTCTTAAG GGGTTCTT AA  GTTCTTTT TT T  ACTT
           TAGGAGGAAAGGATTGTTAA CCCGGGAA TT  TAGGAAAG AG A  TGAA
           GGGCCC                - GT      G  G ---   ----
GAM27901 16647  GGGTTGCTTATGTTAACTTT      TAT  AA  TT    GTACATT  TCCG
0          CCAAATGTACATTAACTCCG GGGTTGCT  GTT  CT  CCAAAT     AAC
           GTTTAGAATTTGGGGGGAAA TTTAACGG  TAA  GG  GGTTTA     TTG
           ATTTGGCAATTT            TT-  AA  GG    AGAT---  ----
GAM27903 19808  GGGTTGTTCTCTGGTGGGCA         GG  G-     GG-------  T  AAG
4          GGGGTGGGGGTCACAAGGTG GGGTTGTTCTCT  TGG  CAGGGGT      GGG CAC
           CTCAGTTGGGGAGCTTCTGA CTTAACAAGAGG  ACC  GTCTTCG       CTC GTG
           GCCAGGAGAACAATTC            --  GA     AGGGGTTGA  -  ---
GAM27910 991    GGGTTTCCATCTAACTTTAG      CA   -    -----  CCA-  TAAAAT
2          CTCCAGGGTAAAATCCCGAA GGGTTTC  TCTA ACTTTA    GCT   GGG
           CAGTCCAAATAAAGTCTGGA CTCAAAG  AGGT TGAAAT    TGA   CCC
           AGAAACTC              A-   C    AAACC  CAAG  ------
GAM27912 5794   GGGTTTGAGTTCAACCTTGG    TT  TT  CCTT  TTT   C    A   CTGAT
9          GTTTCTTCACTGGAGCAGCA GGGT  GAG  CAA   GGG  CTTCA TGGAGC GCAA
           ACTGATTTGCCGTTTCATGA CCCG  TTC  GTT   CCC  GAAGT ACTTTG CGTT
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AGTGTCCCTTCTTGCCCTTG -- CC CTT- TGT - C -----
CCC
GAM27913 22203 GGGTTTGGGTCAACCTTGGG TT T CCTT TTT C A CTGAC
8 TTTCTTCACTGGAGCAGCAA GGGT GGG CAA GGG CTTCA TGGAGC GCAA
CTGACTTGCCGTTTCATGAA CCCG CCC GTT CCC GAAGT ACTTTG CGTT
GTGTCCCTTCTTGCCCTTGC TT - CTT- TGT - C -----
CC
GAM27915 21252 GGGTTTTCAGTGTTTGGTTG T G---- TT TT TTAT
2 GTTTTATTATTATTATTAAT GGGT TTCA TGT GGTTGGT TA
TTTGCGTGATGTGAATACCC CCCA AAGT GCG TTAATTA AT
T GTAGT TT TT ----
GAM27915 16658 GGGTTTTGCCATGTTGGCAG TTTT CA TT T TTGAACT ACCT
8 GCTGGTCTTGAACTCCTGAC GGG GC TG GGCAGGC GGTC CCTG
CTCAGGTGATCCGCCTGCCT CCC CG AC CCGTCCG CTAG GGAC
CAGCCTCCC TC-- -- T- C T------ ----
GAM27916 18845 GGGTTTTGTTATACAGATTA TTTTGTTATA TTATTTT CCA-- AAGCCC
4 TTTTATCACCCAGGTATTAA GGG CAGA ATCAC GGTATT
GCCCAGTACCCAATAGTGAT CCC GTCT TAGTG CCATGA
CTCTTCTGCTCCTCTCCC TCTCCTC--- TCTC--- ATAAC ------
GAM27916 2785 GGGTTTTTCAGAGTCGGAGA T G- GA AA CTATGTTGA
8 GGAACAAGCTAGCTATGTTG GGGT TTTCA AGTCGGA GGAAC GCTAG
ACTGGTGTTCTTCTGGCTAA TTCA AAGGT TCGGTCT TCTTG TGGTC
TGGAACACTT C AA -- -- ---------
GAM27917 6337 GGGTTTTTCTTCACCTCCTC T A CC T GTCTT C - A- TATCAATGACCTTCCT
1 TCAGTCTTGGCATGGTCACA GGGTTTTTCT C CCT TC CA GG ATG GTC CACC
CCTATCAATGACCTTCCTGG TTCAAAAAGA G GGA AG GT CC TAC TAG GTGG
TGCAGATACATCCTCATATG - - -- T ATACT - A AC ----------
TGAAGGGAGAAAAACTT
GAM27920 9065 GGTAAAATGCTTTTTGTTCA TAA C T TCT----- G --- GCC
3 TTTCTGGTGGTGGGAGGGGA GG AATG TTTTTGT CATT GGT GTG GGAGGGGACTGAA

CTGAAGCCTTTAGTCTTTTC CC TTAC AAGAACA GTGA CCA CGT CCTTTTCTGATTT
CAGATGCAACCTTAAAATCA --- A - CTAAAATT A AGA ---
GTGACAAGAAACATTCC
GAM27920 22278 GGTAAAATTTAATAGACAAC AAATTT GACAAC- A T G AA A CTC G
6 TGGCTGGGAGTGGTGGCTCG GGTA AATA TGGCTGGG GTGG GGCTC TGTCTGT TCCCA
CAC GG
TGTCTGTAATCCCAACACCT CCAT TTAT ACCGGCCC TACT CCGAG ACGGACA AGGGT GTG
CC

CGGGAGGCCAAAGTGCTGGG AATTC- AAATTAC G T G CC C AAA -
ACCACAGGCAGGAGCCTTCA AGG
TGCCCGGCCACATTAAATAT
TCTTAATACC

GAM27922 8363 GGTAAAGCTGCGTCTGAGGT AAA GC TGA AAA TG ATGAACCCC
2 AAAAGGTGCAATGAACCCCT GGT GCT GTC GGTA GG CA
GACCCAAGTACCGTGACAGC CCA CGA CAG CCAT CC GT
ACC --- -- TG- GAA CA ---------
GAM27924 6520 GGTAAATGGTGTTGTTAGGT T TAG AG TTCT AGTTCTTAG

```
6          AGGTTCTGTCCAGTTCTTAG GGTAAA GGTGTTGT  GT  G   GTCC
           GGACTTTTTTCACATTATAG CCATTT TTACGATA  CA  T   CAGG
           CATTTTTACC           -      TTA  CT TTTT  ---------
GAM27929 905   GGTAAGAATTTTATGGTCAT  T     TT-   T  TCT   CAACTTAAATC
7          CTGGGACAACTTAAATCTCC GG AAGAATT  ATGG CA  GGGA
           CTTCTGCTGTCATAGTTCTT CC TTCTTGA  TGTC GT  CCCT
           CC             -     TAC   - CTT   -----------
GAM27931 12650  GGTAAGATTACCAGTGTAGG   AAGA  CC   AGGC   GT---  T  CTCA
0          CTGGGAGTGGTGGCTCACCC GGT   TTA  AGTGT   TGGGA   GG GG
           CTGTAATCCCAACGCTTTGA CCG   AGT  TCGCA   ACCCT   CC CC
           GAGGCC             GAG-  T-    ----    AATGT  -  ----
GAM27934 8519   GGTAATAAAGATGATACTGT  TA  AA     CTGT TG   G       T  CAGA
6          TTGTCTTGTTTTACATTTTG GG  AT  AGATGATA   T  TCTT TTTTACATTT GTT
           TTCAGAAACCAAGTGTGGAA CC  TA  TTTATTAT   A  AGAA AAGGTGTGAA CAA
           AAGATGATGTTATTATTTGG  CC  GG      TGT- GT   -       C  ----
           ATCCCC
GAM27934 20986  GGTAATACAGCTTTAGTTAG      CAG    TT  AT   TC-   GTAATAA
9          ATTTGATCCTTTGTAATAAA GGTAATA  CTTTAG  AG  TTGA  CTTT
           GAGTCTTCAACCTTCTGAAG CCATTAT  GAAGTC  TC  AACT  GAGA
           ATATTACC             A--     T-  C-   TCT   -------
GAM27937 14505  GGTAATGGAGGAGCTTCTGG   AT-  A  A   TCT   AA  ---  C--   TGATT
1          AAAGTGCTCTTGATGATTTC GGTA  GG GG GCT  GGA  GT  GCT  TTGA
           GATAAAGCCAAACCCTCCCC CCAT  CC CC CGA  CCT  CA  CGA  AGCT
           AGCACCCCCTTCTACC       CTT  C  A  CC-  CC  AAC  AAT  -----
GAM27937 3417   GGTAATGTCTCTGGCCGCCA   AA  CT    GCCACC---    ACCC
5          CCTCCAGGACCCCCTGGGCC GGT  TGT  CTGGCC       TCCAGG
           TCCTCCAGGCCGGTACAGCA CCA  ACA  GGCCGG       GGGTCC
           CC               CG  T-    ACCTCCTCC    ----
GAM27940 21396  GGTACAAGATTTTTAAAATT   ACA    TTTAAAAT-       AAT  A    TTACACAAACAAGCCATT

6          TTTCTTTTAATAAAAAAGCT GGT   AGATT       TTTTCTTTT   AAA AAGCT
           TTACACAAACAAGCCATTAG CCG   TCTGA       AAAAGAAAG   TTT TTCGA
           CTTATTTCAAGAAAGAAAAT   GAA    TTAAAAGCT       AAC  A   ------------------
           CGAAAATTAGTCTAAGGCC
GAM27941 18576  GGTACAGAGAATGCAAGCGC   A--  - A   AA  G   CA  GG  CCACC
7          ACGCAAGGGGTGTCCACCAC GGT   CAG AG ATGC  GC CACG  AGG  TGT
           AGACCTCGTGGGCCGCATGC CCA   GTC TC TACG  CG GTGC  TCC  ACA
           TGCTGGTAACC          ATG  G  G   C-  G   --  AG  -----
GAM27942 18443  GGTCAGCAGTCCTAGCCCCC   -   AG   TAG--    AAC----     AGAGCA
3          AACAGCCCCAGAGCAGGGGT GGT CAGC  TCC    CCCCC      AGCCCC
           TCTCCAAAGGGGGAACTTGG CCA GTCG  AGG    GGGGG      TTGGGG
           AGGGCTGAACC          A   GG   TTCAA    AAACCTC    ------
GAM27942 19846  GGTCAGCATCTATGGAACCC   CA-     A   ACCCA-    A CCCACA
4          ACCACAACCCCACAGTGTGG GGT   GCATCT TGGA     CCACA C
           CCTGACTCCAAGGTGTACAA CCA   TGTGGA ACCT     GGTGT G
           CC               ACA    -   CAGTCC    - ------
GAM27942 18191  GGTCAGCCACCTCCAAGTTC   TCA      CCAA  T  TACGGT     CAGC
7          CTACGGTGCCCAGCAGCCTG GG   GCCACCT    GT CC     GCCCAG
           GGCTTTATGGACAGGGTGGC CC   CGGTGGG    CA GG     CGGGTC
           GCCCC             CCG      A---  -  TATTT-     ----
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GAM27943 17963 GGTCAGCTGTGGAGGAGCAC C TG A AG T A AG GAAAG
6 TGCACAGGAGTCAGAAAGTG GGTCAG TG G GG CAC GC CAGG TCA
GAGTCTGGGCGTGACCTTGC CCAGTC AC T CC GTG CG GTCT GGT
ATCTGACC T GT - A- - G GA -----
GAM27950 9253 GGTCATCTTGTGTCTGTTCA A- T GTCT T- TA GAGAAAAAC T TT AGC
7 TGGAGTACTTGGAGAAAAAC GGTC TCT GT GT CATGGAG CTTG CGCT CACT GTC
CGCTTCACTTTGTCAGCGAC CCAG AGG CA CA GTACTTC GAGC GCGG GTGG CAG
CTGGTGGGCGTGCAACACAC AG T AAAC TT -- ACACAACGT - TC ---
GAGCTTCATGTTACCAAAAC
TGGAGAGACC
GAM27951 21000 GGTCATGATTGCAGAAGAGG -- GAAGAG A AA GAA ACATGATC
0 TGACTGGAATTGAATGACAT GGTCATG ATTGCA GTG CTGG TT TG
GATCCAGGGGAGGCCGGCCA CCAGTAC TGACGT CAC GGCC AG AC
CAAATGCAGTAACATGACC AA AAA--- C GG GGG --------
GAM27951 21447 GGTCATGCCTGAATCTGTAC TGA CTTCT AGA AAGCAGA GAACA
2 CTTCTACAGAGATCCTGAAG GGTCATGCC ATCTGTAC ACAG TCCTG TT
CAGATTGAACAAAGAAAGAG CCAGTGCGG TAGACGTG TGTC GGGAC AA
CAGGGCTGTCGTGCAGATGG --- C---- --- GAGAAAG -----
CGTGACC
GAM27951 12280 GGTCATGGCTGGAGTCCTGC GGAG TG G AGGCTT T CAGA
8 ATCTGGTCTAAGGCTTTGAT GGTCATGGCT TCC CATCTG TCTA TGA GCTT
GCTTCAGAAGGCTCATATTG TCGGTGTCGA AGG GTGGGC AGAT ACT CGGA
TAGAGCGGGTGTGGGAAGCT ---- GT G GTTAT- - ----
GTGGCT
GAM27952 1481 GGTCATTCTGGGCTTTCCCT AT C - CAA AAT GGAA
8 GCAACCAATTTGGAAAACAG GGTC TCTGGG TTTC CCTG CC TT
GAACCAGGAGAGAACTCAGA CTAG AGACTC AGAG GGAC GG AA
GATC -- A A CAA AC- ----
GAM27953 14448 GGTCATTTTTTTCTTCTGCT T TCTTCT CGTTT TTT TGTGT
4 GCGTTTGAGTTTGGTGTGTT GGTCAT TTTT GCTG GAG GG
CTCTCTCTTTAGTTCCTTGA CCAGTG GGAG TGAT CTC CT
GGCGTGACC C TTCCT- TT--- TCT -----
GAM27954 9241 GGTCCAACTGTGTCACCCAG T ACTGTG - CACAACT- ATTACTA
0 GCACAACTGCTGATTACTAC GG CCA TCA CCCAGG GCTG
AGCTTCGATCTCCTGGGCTG CC GGT AGT GGGTCC CGAC
AAGTGGTCC T GA---- C TCTAGCTT -------
GAM27961 1188 GGTCCCCGGTTTGCTTCACG ---- AC- ACC A- GG CAGA
5 GGAGAACCCGGACCGGTTAC GGTCCCC GGTTTGCTTC GGGAGA CGG CC TTACT
TCAGAGGTGGAAGGGCCCGT CCAGGGG CCAGGCGGGG CCCTTT GCC GG GGTGG
TTCCCCAGGGGGCGGACCCA GAAC GAC --- CG AA ----
AGGGGGACC
GAM27962 20699 GGTCCCCTGCCCCTGGAGGT -- C --------- G - TAA
1 GCTTTAAGAGCAGCGTCCAG GGTCCCC TG CC CTGGA G TGCTT
ATGAAGCTCGGACATTGGGG CCAGGGG AC GG GACCT C ACGAG
ACC TT A CTCGAAGTA G G ---
GAM27962 8394 GGTCCCCTGTCCTTCGAAAT TC- T TTCGA G AAG ATA
2 GTTGGAAAGTGGATACCATC GG CCCTG CC AAT TTGGA TGG
TAAGATTACTGGCGGGGTAT CC GGGGC GG TTA AATCT ACC
CC TAT - TCA-- G --- ---
GAM27963 9627 GGTCCCGGTGTCCCGGAGGC C TGT G CG- - CTTCCTT

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5          GCTGTTCCAGGCTTCCTTCC GGTC CGG  CCCG AGG  CTGT TCCAGG
           TGGGTATGGAATCTTGCGGG CCAG GCC  GGGC TTC  GGTA GGGTCC
           TTCCCGAGACC          A  CTT  G  TAA  T    -------
GAM27965 6196  GGTCCGGATAAAAGGAGCTG      ATAAA-  A  TG GAGG-  TGATTAT
0          GGAGGTCCTGATTATGGAAA GGTCCGG    AGG GC  G    TCC
           AAGTTGGCCCTAAAATGCTG CTAGGTC    TCC CG  T    AGG
           GATC                GTAAAA  -  GT GAAAA  -------
GAM27966 6311  GGTCCTATGTTCAGCCCCTA  TC  TG   CC--    CGAA-   ACAAT
7          AACGAATGGCACAATGCCAC GG  CTA  TTCAG   CCTAAA    TGGC
           CAATTTTGGGATTCCTGAGT CC  GGT  GAGTC   GGGTTT    ACCG
           TTGGTTCC            TT  TT    CTTA    TAACC   -----
GAM27969 3436  GGTCCTGGATGTGGTGCGGA   --   T  GG   A-  GA  -  GAAA
0          AGGAGTGTGAAAACTGCGAC GGTC  CTGGA GT  TGCGG  AG  GT GT
           TGCCTGCAGGGCTTCCAGCT CCAG  GACCT CG  ACGTC  TC  CG CA
           GACC                TC    T  GG    CG  AG  T  ----
GAM27969 9661  GGTCCTGGTAGGGAGTGCGT  TCCT      T  T    C-    T  TGTCCGGTC
5          AGCAGGCTGGAGTCGCTGTC GG   GGTAGGGAG GCG AGCAGG  TGGAG CGC
           CGGTCGCGCTTCACTTCTGC CC   TCGTCCCTC CGC TCGTCT  ACTTC GCG
           TCCGCCCTCCCTGCTCCCC  CC--       C  C     TC   -  ---------
GAM27971 21502 GGTCGAAAGTGGTTCTTGGA  GT   A-- G   ----   AA--   GG   TGG
0          AAACTTTGGTGGGTGGTCCG G  CGAA  GT GTTCT   TGGAA   CTTT  TGGG
           TGGAGGGTGGTTTCGGTGGG C  GCTT  CA TAAGG   GCTTT   GGAG  GCCT
           GAATGACAAATTCGGTC    TG   AAA G   GGTG    GGTG   GT   ---
GAM27972 2738  GGTCGAGGTGATTGGGGGAG   -   GA--    G    CAA  AC-  TCCGT
5          CAGACAAGTACCACTCCGTG GGTC GAGGT   TTGGGG AGCAGA  GT   CAC
           TGTCGGCTCTGCTACTTCAA CCGG CTCCG   AACTTC TCGTCT  CG   GTG
           GAAGGCCTCAGGCC       A   GAAG    A    --- GCT  -----
GAM27973 8710  GGTCGCAACTGTGTTTATTA   - AAC    AT-  -   GT   TGGAG
1          TACTTGTTTGTGGAGCAGTT GGTC GC  TGTGTTT  TAT ACTT  TTG
           GAGTGATGTTGAAGCATAAG CTAG CG  ATACGAA  GTA TGAG  GAC
           GCAGATC              A  GA-    GTT  G   TT  -----
GAM27973 848   GGTCGCAGAGGAGACACCGC  T  C     CACC   T-   G   TACA
4          CGTAGTTGCCGGTACATCGG GG CG AGAGGAGA   GCCG  AGTT CCGG
           GGATTTCTGGCTCTTTCCTC CC GC TCTCCTTT   CGGT  TTAG GGCT
           TTCGCC            - T     CT--  CT   G   ----
GAM27973 8725  GGTCGCAGGTTGGGATGGCG  TC   TT  -  -  CG   GA-    TCATGGT
5          GCTGGAGGCGATCATGGTTC GG  GCAGG  GG GA TGG  GCTG  GGCGA
           GCCCGACAGCTACCGCTCAC CC  CGTTC  CC CT GCC  CGAC  CCGCT
           CTCTTGCCTCC         TC   T-  A  C  AT   AGC   -------
GAM27973 18649 GGTCGCATCGACGGAAGTGG   C      GAAGTGGA  ---   AAG  AGCAAC
6          ACCCAGTCGAAGCAGAGCAA GGT GCATCGACG      CCC  AGTCG  CAG
           CCTGACGCGACTTTAGGGAA TCA TGTGGCTGC      GGG  TCAGC  GTC
           AGAAACGTCGGTGTCACT    C      AAAGAAA-  ATT   GCA  ------
GAM27974 8121  GGTCGCTGGTGGATTGTGGG   C   --  G  TG -     -  CTGGA
6          GTCCGCCTGGAGTGGGGCCC GGT GCTG  GT GAT  T GGGGTCC GC
           CGATGATCGACAACAGTCAC CCA TGAC  CA CTA  A CCCCGGG TG
           C                C   AA  G  GT G     G  -----
GAM27974 6203  GGTCGGACGTCGTGGATCCG      C  CG   ------  G      C  T C    AGT
9          CGGGTCTGTCTCTTGCTTCA GGTCGGA GT  TGGA    TCC CGGGTCTGT TCT G TTCAAC
           ACAGTGTTGGACGGAACAGA CCAGCCT CG  ACCT    AGG GCCTAGACA AGG C AGGTTG
```

TCCGGGGACTCTCTTCCAGC C -- TCTCTC G - - - ---
CTCCGACC
GAM27977 20702 GGTCGTCCAGGGAGAACTTC C CAG----- C-- TT A T ---------- TCCA
0 CTTTCCAGGGCTCCATCCTC GGT GTC GGAGAA TTCC TCC GGGC CCAT CC
CAGGTATCGGAATTCCGTAT CCG CGG TCTCTT AAGG GGG CCTG GGTA GG
GGGTCCAGGGTGGAAAACTT A ATATAAGA CAA T- A - TGCCTTAAGGCTAT ----
CTCTAGAATATAGGCAGCC
GAM27977 16442 GGTCGTGTTTTCCTCCTGGG TC TG CAA AGAGGCAATA
5 GCCAATCACAGAGGCAATAG GGTCGTGTTT CTCC GGGC TCAC
TGGGAGTCCTGGGGGAGGGG TCGGTACGGG GGGG CCTG GGTG
CATGGCT GA GT AG- ----------
GAM27977 8242 GGTCGTTACAACGCAATTCC GT TACA AT- T C GAT
6 TTTGTCGCGATGCCACACAG G CGT ACGCA TCCT TGT GC
GACTATGCGTAACCACGCTC C GCA TGCGT AGGA ACA CG
TC CCAA ATC C C ---
GAM27979 5849 GGTCTACCTTGTTCTACTGC -- TT - ---- -- T A ---------- AT
4 ACCCTGGTTGTCAGCACCCT GGT CTACCTTG CTAC TGC ACCCT GG TGTC GC
ACCCTCC
CCATCACTTCTCCCTGCACA CCA GGTGGAAT GATG ACG TGGGA CC GCAG TG
TGGGAGG

GGAGGGTTGGAATACTGTGG AG -- T CCTC TA C C GTGTCATAAGGT --
TCGACGCCCATAGGGTCTCC CACTTCTCCCTGCACA
GCATGTAGTAAGGTGGGAAC
C

GAM27980 20630 GGTCTATGATTGCCTCTTAG TAT T CCT G TT - ACAT
7 TTGTTCAGTAAGACATCTTA GGTC GAT G CTTA TTG CAG TAAG
GTTGTTCAGTAAGTTCATCT TCAG CTA C GAAT GAC GTT ATTC
TGACT TT- - TT- - TT G ----
GAM27984 12933 GGTCTCATTGACAGGATAGT - A TG G A ---- - GATG
7 GGCCAGGGATGCTTGTGCAG GGT CTC T ACA GAT GTG GC CAGG
AACATAATCATGTTGACGAG CCG GAG A TGT CTA TAC CG GTTC
TGCC T C GT A A AAGA T ----
GAM27986 6517 GGTCTCCTACTAACTTGCTA A A- - T- T TCT ---- TTAATT
5 TATGATCTTTGGTAGAGTTA GGTCTCCT CT ACTT GC ATA GA TTGGT AGAG
ATTTTCTGAGTATCAATTTT CTAGGGGG GA TGAA TG TAT CT AACTA TCTT
CTTATCTGTGAAGTGAAGAG A AG G TC T TTT TGAG ------
GGGGATC
GAM27986 6049 GGTCTCCTCAATGGCATACA GT - - T A - TCTCTCTC
6 GCAGCTTCTCTCTCAGCTGT G C TCCT CAA GGC TAC AGCAGCT
TCGTAGCTCTTGTAGGGTGG C G GGGA GTT TCG ATG TTGTCGA
TC TG T T C - C --------
GAM27987 19045 GGTCTCGCAAGCTCCCCTGC CTCGCAA - TG G CCTTA
8 TGGTGAGGGGGTGGGGCCTT GGT GCTCCCCTGCTG G AGGGGGTG GG
ACCGCATCCTTTTGCGCGGC CCA TGAGGGGACGGC C TTTCCTAC CC
AGGGGAGTGTACCACACC CACCATG G GT G -----
GAM27990 19389 GGTCTCTTGTTGAAATCCGA TTGTTGAA AT - AAAAATA
9 AATTTCTTGGGTGAAAAATA GGTCTC ATCCGAA TTCT TGGGTG
CATCCGCAGGGTTCGGATGA CCAGAG TAGGCTT GGGA GCCTAC

GACC -------- -- C -------
GAM27991 3706 GGTCTGAAACCTCCTCCACC CT-- CC CA-- TAC AAA TGAT
0 CTACAGAAAATATGATTGGA GGT GAAA TCCTC CCC AGA TA
TCTCGGGACTTGAGGATTTT CCA CTTT AGGAG GGG TCT GT
CTTATACC TATT T- TTCA C-- AG- ----
GAM27994 16636 GGTCTGCGGCTCGGGGTCCA - - T GTCCA AGAAGCTCAC
3 TGTCAGTGCAGAAGCTCACG GGT CTGC GGC CGGG TGTCAGTGC
CGCTGGCACAGCTCGGTCAG TCG GACG CTG GCTC ACGGTCGCG
CAGCGCT C A - GAC-- ----------
GAM27995 21387 GGTCTGGCATGAATTCTGCC T GAA- CC----- TC ATCCACC
8 AGTCTGATGATCCACCCATC GG CTGGCAT TTCTG AG TGATG
ATTCTTCAAGAACAGAAAAC CC GATCGTG AAGAC TC ACTAC
AGTGCTAGCC - ACAA AAGAACT TT -------
GAM27997 16483 GGTCTGGTCCCCGTGTTGCC T ---- CCTATTA CCTTTACCCTGA
0 TATTAGCCCTTTACCCTGAG GG CTGGTCCCCG TGTTG GC
CACCACCCCAACAGACTTGG CC GACCAGGGGT ACAAC CG
GGACCAGCC - TCAG CCCACCA ----------
GAM27999 20516 GGTCTGTTTGATTTTTAAAA TTG AAAGGAAAG TTT
6 GGAAAGGATTTGTTTCAGAT GGTCTGT ATTTTTA GATTTG
TATACAAGAATAAAAGTATT CCAGATA TGAAAAT TTAGAC
ATAGACC TTA AAGAACATA ---
GAM28006 3099 GGTCTTGTCAATTCTGTTAC G ----- TACTA CTGGCTTA
2 TAGAGGACTGGCTTATCTTC GGTCTT TC AATTCTGT GAGGA
ACACAGAATTACCACGAGGA CTAGAG AG TTAAGACA CTTCT
GATC G CACCA CA--- --------
GAM28006 21503 GGTCTTGTGGAAAGGAGGAG AA-------- -- C CG AGCGTGCAG
5 CGACCGCCTGAGCGTGCAGC GGTCTTGTGG AGG AGGAG GAC CCTG
AGGACGTCCTCCTGACCTGA CCAGAACACT TCC TCCTC CTG GGAC
AGTACAAGTCACAAGACC GAACATGAAG AG - CA ---------
GAM28008 6299 GGTCTTTTATTGGAGAGTAT --- A ATAC AA----- TCAT
6 ACAGTACAAGCAGATCATTC GGTCTTTTA TTGG GAGT AGTAC GCAGA
TGCCTTAGAGGTGCTAATTC CCAGAAGAT AGCC CTTA TCGTG CGTCT
CCGAAATTAGAAGACC TAA - A--- GAGATTC ----
GAM28009 19798 GGTGAAAACTGACCGTGTGA AAA GATGTTTGATT CTTCAT
7 TGTTTGATTCGGGCTTCATT GGTGA CTGACCGTGT CGGG
TCGTGTGTAGGAGCACGGTT TCACT GATTGGCACG GCTT
AGACTCACT CA- AGGATGTGT-- ------
GAM28016 20211 GGTGAACGGATTATGGTGGC GAACG GG AA- C AAAA
2 CGCAACACTGGGAAAACTCA GGT GATTATGGT CCGC CA TGGG
TTGGTGGTGGGACCATAATC CCA CTAATACCA GGTG GT ACTC
ATTAACC ATTA- G- GTG T ----
GAM28016 19813 GGTGAAGACAAGGCCGTCAG AGACAAGG ------ - - CCATCACGC
9 GAGCCACCATGTCTGCCCCA GGTGA CCGTCAGGAGC CA CCATGTCT GCC
TCACGCGGCGAGACATGGTT CCACT GGTAGTTCTCG GT GGTACAGA CGG
GCCATCAGCTCTTGATGGAT GTA----- ACTACC T G ---------
GTCACC
GAM28018 1289 GGTGAAGGAGGAGACCAAGG GAGG-- CC -- TGCT C- TCGTCTTAT
2 AGGATGCTGAGGAGAAGCAA GGTGAAG AGA AAGGA GGA GAGGAGAAG AATAAA
TAAATCGTCTTATTTTATTT CCATTTT TTT TTCCT CCT CTCCTTTTC TTATTT
TCTTTTCCTCTCTTTCCTTT AAAAAA TT TT TTCT TT ---------

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          CCTTTTTTTTAAAAAATTTTA
          CC
GAM28019 4225   GGTGAATAATTTTTCAATTG    AA-      CAATT    CT  CATAATTCA
7          GGAATCTTTTCATAATTCAA GGTG   TAATTTTT    GGGAAT  TTT
          AATAGTTCCTGAAAATTAAT CTAC   ATTAAAAG    TCCTTG  AAA
          GCATC              GTA      -----     AT  ---------
GAM28021 9260   GGTGACAAACATGCTGGAGA      AAA--  G  GGA      GCTACAT
5          CCAAGTGCTACATGCTTGGT GGTGAC    CAT CT   GACCAAGT
          TCAAGGGATGGACAAGTCAC CCACTG    GTA GG   TTGGTTCG
          C                  AACAG   G  AAC      -------
GAM28021 4370   GGTGACAACATGCTGGAGAC     AA---  -   GA     CTT  TAACAAT
6          CAACTTGCTAACAATGCCTT GGTGAC    CAT GCTG  GACCAA   GC
          GGTCCACGGCGATGCGCAAG CCACTG    GTA CGGC  CTGGTT   CG
          TCACC               AACGC   G   AC     C--  -------
GAM28021 18560  GGTGACAACATGCTGGAGCC     AA--  G  G-  G    T  TAACAT
7          AAGTGCTAACATGCCTTGGG GGTGAC    CAT CT  GA CCAAG GC
          TCAAGGGATGGAAAGTCACC CCACTG    GTA GG  CT GGTTC CG
                             AAAG   G  AA  G    -  ------
GAM28021 1105   GGTGACAACATGCTGGAGCC     AA--  G  G-      T  TAACAT
8          AAGTGCTAACATGCCTTGGT GGTGAC    CAT CT  GAGCCAAG GC
          TCAAGGGATGGCAAGTCACC CCACTG    GTA GG  CTTGGTTC CG
                             AACG   G  AA      -  ------
GAM28021 20126  GGTGACAACATGCTGGAGCC     AA--  G  G-    C   T  TAACAT
9          CAAGTGCTAACATGCCTTGG GGTGAC    CAT CT  GAGCC AAG GC
          TTCAAGGGATGGAAAGTCAC CCACTG    GTA GG  CTTGG TTC CG
          C                  AAAG   G  AA    -  -  ------
GAM28022 19800  GGTGACAACATGCTGGAGCC     AA--  G  G-    C  T  TAACAT
0          CAGTGCTAACATGCCTTGGT GGTGAC    CAT CT  GAGCC AG GC
          TCAAGGGATGGAAAGTCACC CCACTG    GTA GG  CTTGG TC CG
                             AAAG   G  AA    T  -  ------
GAM28022 18220  GGTGACAACATGCTGGCAGC     AA--  G   GC  -    T  TAACAT
1          CAAGTGCTAACATGCCCTTG GGTGAC    CAT CTG  AG CCAAG GC
          GTCTCACGGGATGGAACGTC CCACTG    GTA GGC  TC GGTTC CG
          ACC                CAAG   G   AC  T    C  ------
GAM28022 3650   GGTGACAACATGCTGGCAGC     AA----     ---  C      T  TAACAT
2          CAAGTGCTAACATGCCTTGG GGTGAC     CATGCT   GG AGCCAAG GC
          CTTCAAGGGCATGGAACACG CCACTG     GTACGG   CT TCGGTTC CG
          TCACC               CACAAG     GAA  -      -  ------
GAM28022 5560   GGTGACAACATGCTGGGAGC     AA---  G  GG    -  T  TAACAT
3          CAAGTGCTAACATGCCTTGG GGTGAC    CAT CT  GAGCC AAG GC
          GTTCAAGGGATGGGAAAGTC CCACTG    GTA GG  CTTGG TTC CG
          ACC                AAAGG   G  AA    G  -  ------
GAM28022 22193  GGTGACAACATGCTGGGAGC     AA--  G  GG      T  TAACAT
4          CAAGTGCTAACATGCCTTGG GGTGAC    CAT CT  GAGCCAAG GC
          TTCAAGGGATGGAAAGTCAC CCACTG    GTA GG  CTTGGTTC CG
          C                  AAAG   G  AA      -  ------
GAM28026 19160  GGTGACCTGGCATGTGAGGC    A   -  -   GAG  --  C    CCGACGT
2          CCACGGGATCCGACGTGTCC GGTG CCTG GC ATGT   GCC  CA GGGAT
          CTGCAGGCACGACATAGCAC CCAC GGAC CG TACA   CGG  GT CCCTG
          AGGGCACC             G   A  A   GCA   AC  -    -------
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GAM28026 5995 GGTGACCTGGTGTTGCACTG TG G GT A ------ A AG ATTG
4 CATGGAGGGCATTGGCCGCC GG ACCTG T TGC CT GC TGG GGC
AGCTTCTCAAGCGCAGTGGC TT TGGAC G ACG GA CG ACC CCG
AGGTTGTT GT G TG C ACTCTT - G- ----
GAM28026 8687 GGTGACGCCCAGGTCCTTGA -------- - GT- A-- GCATGG
6 GCTCCTGCATGGGGGGGCCC GGTGAC GC CCAG CCTTG GCTCCT
ACAGGGTCGCTGGAGCCGCC CCACTG CG GGTC GGGAC CGGGGG
ATCTGTCACC TCTACCGC A GCT ACC ------
GAM28026 22329 GGTGACGCTGCGGGGCGGGC CT - C - CAG T A- CG- TG TGGGAC
9 GGACAGACTGCGGGACGGAC GGTGACG GCGG GG GGG CGGA AC GCGGG CGGA G GACGC

GGTGGACGCTGGGACGCGTT CCGCTGC CGCC CC CCC GCCT TG CGCCC GCCT T TTGCG

TGTAGCTCCGGCCCCGCCGT -- G - A --- C CG CGA GT ------
TCCGACCCCCGCCGCCGTCG
CC
GAM28027 5985 GGTGACTACTAGGGCCAAGT GAC AG AA CAAGA A TAGAA
4 CAAGAGGGAAGAGTAGAACT GGT TACT GGCC GT GGGA GAG
CATCCCCCACGGCCTCAGTA CCG ATGA CCGG CA CCCT CTC
AAAGCC AAA CT -- CC--- A -----
GAM28027 20938 GGTGACTAGCATGCTGGAGC AG- G G- T TAACAT
6 CGAGTGCTAACATGCCTTGG GGTGACT CAT CT GAGCCGAG GC
TTCAAGGGATGGAAAGTCAC CCACTGA GTA GG CTTGGTTC CG
C AAG G AA - ------
GAM28030 19375 GGTGAGACGCTAGCATGCGA AG CT G GGGAAAG T- T- - TAG
9 GGCTTGGGAAAGGAGCTGTC GGTG ACG AGCATGCGAG CTT GAGC GTC GGG CTCGG

TGGGCTCGGTAGCCGAGACC CCAT TGC TTGTGCGCTC GAA CTCG CAG CCC GAGCC
CCTGACTCGCTCGGCGAAGC CA -- - GCGG--- CT TC A ---
TCGCGTGTTCGTACTACC
GAM28033 6358 GGTGAGCCCTGCCGCTGTCC C- C CATG - GGAGCCA
7 CATGGCCCAGGGAGCCACTG GGTGAGC CTGCCG TGTCC GC CCAG
GTGCGGACGCCGGCAGATGT CCATTTG GACGGC GCAGG CG GGTC
TTACC TA C ---- T -------
GAM28034 18392 GGTGAGCTCACTAGCTGACC A CT GAC ----- CA TC TA CGC A TCCA
3 CGGCAGGTCAGGATCTGGCT GGTG GCTCA AGCT CCGGCA GGT GGA TGGCT GCGG
CGCG GC
TAGCGGCGCCGCGAGCTCCA CCGC CGGGT TCGA GGCCGT CCG CCT GCCGG TGCC
GCGC TG

GTGCGCGCACCCGTGGCCGC - C- GCA TTCTC AC CC -- CAC G ----
CTCCCAGCCCTCTTTGCCGG
ACGAGCTCTGGGCCGCC

GAM28034 6323 GGTGAGCTTGCTGGACTTGC AGCTT TTGCTTGT - - GAGA
9 TTGTCGGACTGGCTGAGAAG GGTG GCTGGAC CG GACTGG CT
CCCGGTCACGTTGTCCAGCT CCAC CGACCTG GC CTGGCC GA
CCACC CT--- TT------ A C ----
GAM28036 3837 GGTGAGGCAAATCCCTGGAA T GCAAAT A T CCTGCA

0 GGCTTGAACCCTGCAGTTCA GG GAG CCCTGG AGGCT GAAC
GTCTCCCGGGGTAATCACTC CC CTC GGGGCC TCTGA CTTG
CCC C ACTAAT C - ------
GAM28037 3279 GGTGAGGGCCACCACCCCAC T ----- CACT TG GCTCA
3 TGTGGGGGCTCACCTTCCGG GG GAGGGC CACCACCC G GGG
GTGGTGAAAAAGCCCTCCTC CT CTCCCG GTGGTGGG C TCC
C AAAAA ---- CT -----
GAM28039 9133 GGTGAGTCTAGTGGTATGTA TCTA- GT AGT TACTGT
5 GTTTGTTTACTGTGACAACA GGTGAG GTG ATGT TTGTT
AACATGTCACCCCTTTTCAC TCACTT CAC TACA AACAG
T TTCCC TG AAC ------
GAM28040 19941 GGTGAGTTGGGTGCCGGTGG T- TGC-- AGT TA CCTCAGA
4 AGTCGTGTAGGTCCTCAGAA GGTGAG TGGG CGGTGG CGTG GGT
TCCCCGCGTAGCCGCTGCTC CCGCTC ATCC GTCGCC GCGC CTA
CTCCTACCCTCGCC CC TCCTC GAT CC -------
GAM28040 16429 GGTGATAAGTGTCGCTTTCT G-- CG TTT C- ATT GTTGGA
9 ACGTATTGCAGGTGGTGTTG GGTGATAA TGT C CTA GT GCAGGTGGT
GAATTACCTGTTGGATTTTA TCGCTGTT ACA G GAT TA TGTCCATTA
GTCTGTAACAAAGTTGTCGC GAA AT TCT TT GGT ------
T
GAM28044 3736 GGTGATCGAGGAGTTCTACA T -------- - ACAA CA GTCCA
4 ACCATACATGGGTCCACCGC GGTGA CG AGGA GTTCT CCATA TGG
TATGGGGAGAGCATCCTGCC CCACT GC TCCT CGAGA GGTAT GCC
CACCACGCTCACC C ACCACCCG A GG-- C- -----
GAM28044 863 GGTGATCTGCCTGCCATATG C-- ATA TG CT TATG
7 TGGCTTCCTATGGGACTCTG GGTGATCTG CTGCC TG G TCC
CAAAGGTAGCACCAGGTCAC CCACTGGAC GATGG AC C AGG
C CAC AA- GT TC ----
GAM28045 12984 GGTGATGAAAATGTTCTAAA GATG AA TAA CC C GATA
2 ACCAGCTGTGGTGATAATCA GGT AA TGTTC AA AG TGTGGT
CACTATTTGTGAACACATTA CCA TT ACAAG TT TC ACACTA
AAAACC AAAA AC TG- TA - ----
GAM28045 980 GGTGATGACGGTAAGAGCAA AT-- A CAAGTGT T TGTGAT
5 GTGTCCCATGAATGTGATTT GGTG GACGGT AGAG CCCA GAA
CCTGGGTTCTCACTGTCTTT CCAC CTGTCA TCTT GGGT CTT
GCACC GTTT C ------- C ------
GAM28046 1119 GGTGATGCAGGCTGTGGCGC TG -------- C TGT CT CTGAGCCC
2 GACTGGGAGCTGAGCCCTTC GG A TG AGGC GGCGCGA GGGAG
CCTTTGCGCCTGCCTCAGAG CC T AC TCCG CCGCGTT CCCTT
GATTGTTGCC GT GTTAGGAG - T-- T- --------
GAM28054 12805 GGTGCACTCCTCAATCTCTC - CTC A TCTCCAA AAC
1 CAAAAACGGAGAACCTCTGT GGT GCA CTC ATC AAACGGAG
TTCAGCTCTGATCGAGTCAT CCG CGT GAG TAG TTTGTCTC
GCGGCC G ACT C TCTCGAC ---
GAM28054 20438 GGTGCAGAAGCAGACCCGTG T GA- AG T CA- G CCA- AA--- TTTGT
7 CCGGCCAGCGCACCAGGTTC GG GCA AGC ACCCG GCCGGC GC CA GGTTC GGCA
AAGGCATTTGTTGCTATCGG CC CGT TTG TGGGT TGGCTG CG GT TCAGG TCGT
GGACTACAATGGCCACGTCG T GAA -- C CAC - AACA GGCTA -----
GTCTGGGTGTTAAGTGCTCC
GAM28055 9305 GGTGCAGAGGAAGTGGAAGG - -- GG GCAT C-- ATG TT TACAC

1 CATCAGACCCTATGTATTTG GGTGCAG AGGA AGT AAG CAGA CCT TA TGCAG
CAGTACACCTGCACTTAAGG CCATGTC TTCT TCA TTT GTCT GGA AT ACGTC
CACTCTGTTATTTAGACTCA A AC GA ATT- CAC --- TC -----
TCTTACTGTACC
GAM28055 952 GGTGCAGGCCTCACTTGAGC TG CC A G TAACT
8 CTGGGAGGCGGAGGTTGGCT GG CAGG TC CTTGAGCCTGGGAGGCGGAGGTTG C
AACTGCAACCTCTGCCTCCC CC GTTC AG GAACTCGGACCCTCCGTCTCCAAC G
AGGCTCAAGCGATTCTTGTG GT TT C - -----
CC
GAM28056 20810 GGTGCAGGCTCGTCTTGATC AG T- TGA C T TGTT
1 TGCGCGTGCATGTTTGCCGC GGTGC GCTCG CT TCTG GCG GCA
CCGGAACTGGCTCGGGCACG CCGCG CGGGC GG AGGC CGC CGT
CGCC CA TC TCA C - ----
GAM28059 12918 GGTGCCAAAAGTACCCAGCA CAAA- A CAGC AA -- AATTTTTAGTACC
2 CAATACTTGTATAATTTTTA GGTGC AGT CC AC TACT TGTAT
GTACCATACAGAAGTAAAGT TCACG TCA GG TG ATGA ACATA
CCCAGGAACTATGAAGCACT AAGTA A ACCC AA AG ----------
GAM28059 19946 GGTGCCACAGTGAATAAAAG TG CAC - AAA-- AG AGACA
8 AGAAAGTAGACAGCTTTTGC GG C AGT GAAT AG AAAGT
TGGAAGATTCAACTAAAGTG CC G TCA CTTA TC TTTCG
CC GT AAA A GAAGG GT -----
GAM28060 16765 GGTGCCACGGTGGCCCCCAG T- CGGT CC- C CA- GACTTTA
1 CAGCAGAAGGGACTTTACCT GG GCCA GGCCC AG AG GAAGG
TTGACCTCTACAGGGCCTTG CC CGGT CCGGG TC TC TTTCC
GCTTCC TT T--- ACA - CAG -------
GAM28060 19324 GGTGCCAGCAGGGTGGGGGG - --- G - ATTGT
7 GGGGGTTCATTGTGAGGCTT GGT GCCA GCAGG TGGGGGGGGGGGT TC
CTCCTCTTGGCTTGTAGGTG CCG CGGT TGTTC GTTCTCCTCTTCG AG
GCTGCC T GGA G G -----
GAM28061 9055 GGTGCCAGTCAAGGGATGAG - AAGGGATGA T AAT
2 TGGGGTCTGGAATCTAGCCT GGTGCCA GTC GTGGGG CTGG
CACGAGGGGGATGTGGCACC CCACGGT TAG CACTCC GATC
G GGGGAG--- - ---
GAM28061 3267 GGTGCCATGTCTCGTCCCTT G ATG ---- TG GTAGCATTATTA
7 TGGAGTAGCATTATTATTTG GGT CC TCTCGTC CCTT GA
GAGGAGTTGATGAGAAAGGA CCA GG AGAGTAG GGAG TT
CC - AA- TTGA GT ----------
GAM28064 2881 GGTGCCGCTGGTCTGAATCA - GT AATC AAAA C - CC AGTT
6 GAGTAAAAGGCAGGCAGCCG GGTGC CGCTG CTG AGAGT GG AGGC AG GG
GAGTTCCCACTCGCCTTCCA CTACG GCGAC GAC TCTCG CC TCCG TC CC
TGAGCTCTCCGCAGCTCAGC A TC GCC- AGTA T C AC ----
GAGCATC
GAM28064 20698 GGTGCCGGCAACCTTGGTGA AAC T -- CT A ACGTTGAA
9 CCTTGAGCACGTTGAAGCGC GGTGCCGGC CT GGT GAC TG GC
ACTGTCTTGCTCAGAGGCCG TCACGGCCG GA TCG CTG AC CG
GCACT GA- C TT TC G --------
GAM28066 9171 GGTGCCTTAACTGAGTCATC T A-- AGTC T ATTC A AAA AACATAAGAAA
9 TTTTTTCCATTCCATTCATG GG GCCTT ACTG ATCTTTT TCC CATTC TG GC
AAAGCAACATAAGAAAGCCA TC TGGAA TGAC TAGAAAA GGG GTGAG AC CG
AGAGTGAAAGGGGTAAAAGA - ATA AC-- T GAAA A --- ----------

TCACAGTATAAAGGTCT
GAM28068 8158 GGTGCGCGGGGCCGGGGCGG CC GC A AGT TCCCC
3 AGCAGTCGCGTTCCCCGCGT GGTGCGCGGGG GGG GG GC CGCGT
GTGAGCCCCCACCCATCCCT CCGCGTGTCCC CCC CC CG GTGCG
GTGCGCC TA AC C AGT -----
GAM28068 9361 GGTGCGCGGTGTGTTCCAGC C G ------- G TCCT - TTCTTTAT
4 CTCAGTCCTCCTGGGTTCTT GGTGCG GGT TGT TCCA CCTCAG CCTG GG
TATCCACAGGCATCTGGGGG CCACGT TCA ACG AGGT GGGGTC GGAC CC
TGGATGTGACGGCAGACTTG - G GCAGTGT G TAC- A --------
CACC
GAM28070 21422 GGTGCTATCTGTCTGCTCTA CTA GTCT CTA ATAA ATTGTAGA
7 GTAATAAGCCGGCTATTGTA GGTG TCT GCT GTA GCCGGCT
GAAGCTGGTGGAATGCAAGC CCAC AGG CGA CGT TGGTCGA
TTTAGGACTTCACC TTC ATTT A-- AAGG --------
GAM28072 3096 GGTGCTCGTGTATTGGTGGT G T- TG-------- TGTATTGG
7 GCTCCGTGTATTGGTGGAGC GGT CTCG GTATTGG GTGCTCCG
ACACTTGTAATCCCAGTACT CCG GGGT CATGACC CACGAGGT
TTGGGAGCC A TT CTAATGTTCA --------
GAM28075 2716 GGTGCTGCTTCCAGAGACTT C CT A-- ----- TG GTTGCAA
5 CCTTGGGGTTGCAACCTGGG GGTG TG TCCAG GA CTTCCT GG
GAAGCCACATCCCACTGGAT CCAC AC AGGTC CT GAAGGG CC
CCACACC - CT ACC ACACC GT -------
GAM28078 17957 GGTGCTTCCTGGACGCCATC TC AC - ------ CC TCGCTT
6 ACTGCCAGTCGCTTCTACAG GGTGCT CTGG GC CA TCACTG AG
TGATCGACCTGAGCCCAGTG CCACGA GACC CG GT AGTGAC TC
AGCACC GT -- A CCAGCT A- ------
GAM28081 19054 GGTGGAAGAGGACTGGTGTC T A- A G - TCCTCCGCTCCTAC
6 TGTCTGTCCTCCGCTCCTAC GG GGAAG GG CT GTGT CTGTCTG
CAGGCAGAACACGGGCCCGA CC CCTTC CC GG CACA GACGGAC
CTTCCCC - AG C G A ----------
GAM28083 3240 GGTGGACAGAAAGAGTTTGT CAGAAAGA AA TATT
3 ATGCCGCAAGACAATATTTT GGTGGA GTTTGTATGCCGC GACAA
GTTCAGTGGTGTGCAGACAG CCACTT CAGACGTGTGGTG TTGTT
AAATTTCACC TAAAGA-- AC ----
GAM28085 902 GGTGGACTTGTGGGTAGGCA TG - TG TAG------ CAGACA
2 TGTGCAGACACACATGTGAG GG GACTT G GG GCATGTG
AACATTCCTGCAAAGTCTCC CC CTGAA C CC TGTACAC
C CT A GT TTACAAGAG ------
GAM28094 12480 GGTGGCACAGGTAGAAAAGA T A--- GAAAAGA--- GA GAAA
0 CAGATGGAAACAATGCCCAT GG GGCAC GGTA CA TG
GAATATACCCAAAGTGTCCC CC CTGTG CCAT GT AC
- AAAC ATAAGTACCC A- ----
GAM28094 18953 GGTGGCACGGCTGCGGGCGC G CG G- AGAC -- AA ACA- GTCA
1 GGGCCTAGACTCGCTGCACA GGTG CA GCTGCGGGCGC GGCCT TCGCT GCAC AGA GC

AAGAACAGCGTCAGCCAGAT CCAC GT TGACGCTCGTG CCGGA GGCGA CGTG TCT CG

CTCGGTGCTCAGCGGCGGCA - CT AA CGGC CT GC AGAC ----
GGCCAAGTGCTCGCAGTTCT
GCACC

GAM28094 12799 GGTGGCACGGCTGCGGGCGC - CG G- AGAC ACAA A G TCAGCCAGATCT

2 GGGCCTAGACTCGCTGCACA GGTGG CA GCTGCGGGCGC GGCCT TCGCTGC GA CA CG

AGAACAGCGTCAGCCAGATC TCACC GT TGACGCTCGTG CCGGG GGCGGCG CT GT GC

TCGGTGCTCAGCGGCGGCAA A CT AA AAC- A--- C G ----------
GGGCCAAGTGCTCGCAGTTC
TGACCACT
GAM28097 19286 GGTGGCATGGAGCCTCTCCG GCA A CTC T-- ATCTT TCTT
2 GGTGCTCATCTTACTCTTGT GGTG TGG GC TCCGGG GCTC AC
CACAGAGTCTGTCCGGAGCC CCAC ACC CG AGGCCT TGAG TG
CACAACACC AAC - --- GTC ACAC- ----
GAM28101 20145 GGTGGCGCTGCTGCGCCTGA TG - T---------- GGAGCG
2 GCTGGAGCGAGCTCTTCGTG GG GCGCTGC TGCGCC GAGCT
CTGAACGCGGCGCAGGCGGC CC CGCGGCG ACGCGG CTCGA
GCTGCC GT G CGCAAGTCGTGCTT ------
GAM28101 21284 GGTGGCGGGCCAGGGGCTTT -- CCA- TTGCTGAATTGACGACTCC
6 CTTGCTGAATTGACGACTCC GGT GGCGGG GGGGCTTTC
GAGAGCCCTGACTCCCGCCT CCG CCGCCC TCCCGAGAG
TGCC TT TCAG ----------
GAM28102 3802 GGTGGCGGTTTCTGTCTATG GGTTTCTGTCTA T TCTCC TATT
0 TGGGGGATGTTCTCCGTTAT GGTGGC TG GGGGGATGT GT
TACCAGTTACATCCTCTTCA CCATCG AC TCTCCTACA CA
GAGCTACC AG---------- T TTGAC ----
GAM28102 8911 GGTGGCTATTCCCAGTGTGG G A A-- G G CCAACCC
4 GGTGGTTTTCCAACCCAAAA GGT GCT TTCCC GT TGGGGTG TTTT
GCGCCCCAGATGTGGGGAAC CTA CGA AAGGG TA ACCCCGC AAAA
AGCGATC G C GTG G G -------
GAM28102 21063 GGTGGCTATTGCTATAGCAA - -------- - AAT T CCTTAAGTTTCATT
5 TGATGTGGAGTGGCATTTCC GGTGGCTATT GCT ATA GC GATGTGGAG GGCATTT
TTAAGTTTCATTAAATGTTT TTATTGGTGA TGA TAT CG CTATACCTT TTGTAAA
TCCATATCTAGCATATTATA A ACTTATAT A AT- - ----------
TTCAAGTAAGTGGTTATT
GAM28109 3245 GGTGGCTCCTTGGGCAGCAA TG C TTG AA AAC GTGA
2 CGAACGGGTGTGAACCTTCC GG G TCC GGCAGC CG GGGT
TGGGGCTGCTGTGGACTTGC CC T AGG TCGTCG GT TCCA
C GT C TG- GG CCT ----
GAM28109 1288 GGTGGCTGCTATGACATCGT A C C A TAAAG GTAT- CAC AAACAAAC
9 CATCTTAAAGGAAGCGGTAT GGTGGCTGCT TGA AT GTC TCT GAAGCG CTAGA TGC
CTAGACACTGCAAACAAACG TCACCGATGA ATT TA CAG AGA CTTTGT GGTCT ACG
CAAATTCTGGTTTAATGTTT A T - A ----- AATTT TAA --------
CAGAAGACATTTTAAAGTAG
CCACT
GAM28110 18858 GGTGGCTGCTCTGGCGGCTG TGGCTGC G - --- AA A G GTGAG - AA
0 CTGCTGGCCCCAAGGAGCCA GG TCT GCGGCTG CTGCT GGCCCC GG GCCACG G GCT
GGTC AC
CGGGGTGAGGCTGGTCAAAC TC AGG CGTCGAC GGCGG CCGGGG CC CGGTGT C TGG
CTAG TG
CAAAGGGGCTTGTTTGGTGG TT----- A A GGC -- - G ----- T GG

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          GATCTGGTCGTGTGGCCCGG    GGGGCTTG
          GGCCCGGGGCGGACAGCTGC CAAA
          AGGATTCT          GTTT
                            --------
GAM28112 20138  GGTGGGAAGGCATAATATCA   G   A    AATA  AACACCA    GCGGCAAG
0          ACACCACGGGGGCGGCAAGT GGT GGA GGCAT   TC      CGGGG
          CCCGAAGAAACGAGGGGGTG CCA CCT CCGTG   AG      GCCCT
          CCATCCAACC          A  A    GGGG  CAAAGAA    --------
GAM28113 1251   GGTGGGAGATGAGGAATGGG    GG  A     ATG---      A-  C     GGGTA
0          ATCAGATATCGAGGGTGGGT GGTG  AG TGAGGA      GGATCAG  TAT GAGGGT
          AATTCTCCATAAACTGATTT CCAC  TC GTTCTT      TTTAGTC  ATA CTCTTA
          AGAGGATTCTTGCTAACACC    AA -     AGGAGA      AA  C     -----
GAM28115 4066   GGTGGGCAATGATGAGACTG   G  A-       ACT   CAC     CCT
4          TGGCACTCACAGCCTTTGTG GGT GGC  ATGATGAG   GTGG   TCACAG
          ACCATCGCCCTTCATCATGG CCG TCG  TACTACTT   CGCT   AGTGTT
          GCTGGCC             G  GG       CC-   ACC     ---
GAM28117 19309  GGTGGGGAAAGGTCGGCATG   -    AAG  - CAT      GGCTCA    T  GGCT
8          AGCTCCGGCTCACAGGGTAG GGT GGGGA   GTC GG   GAGCTCC     CAGGG AGG
          GGGCTTCTCCTTGAAATAGG CCG CCCCT   CGG CC   CTCGAGG     GTTCC TCT
          AGCTCTCCAGGCAGTCCCCG   G    GA-   A  T--      ATAAA-    -   ----
          GCC
GAM28118 2777   GGTGGGGAAGACTGAAGAAG    GG--        AA  A---     A   AAAA
1          TGTTAACTGAAAACAGGTGA GGT    GGAAGACTG  GA    GTGTTA CTG
          CACAGAGTCACCAGTTTTCC CCA    CCTTTTGAC  CT    CACAGT GAC
          GAGAACC             AGAG       CA  GAGA     G   ----
GAM28118 22195  GGTGGGGACCCCGGGCCGCA   T    C    G---- -    C --       G   AAT-   A     GCCTAAA
9          TCCTGGCGCTCGTGCGGAAT GG GGGGA CCCGG     CC GCATC TG  GCGCTCGT CGG    AGG
GCTTCA
          AGGAGCTTCAGCCTAAAGAA CC CCCCT GGGTC     GG CGTAG AC  TGTGAGCA GTC    TTC
CGAAGT

          TGTGAAGCACTTTGTGCTGG   T    C    GACGA  T    A  AG       G   GTGT   A     -------
          ACGAGTGTGACAAGATGCTG GAATG
          GAGCAGCTGGGCTCCCCTCC

                            -----
GAM28120 20046  GGTGGGGCGCCCGAAAAAAC   TG    CCC  AAAAACCAGC   T   AAGAAAACCA
8          CAGCTGCTGCGAAGAAAACC GG  GGGCG   GA         TGC GCG
          ACGCGCAAATCCTCAACTGC CC  CCCGT   CT         ACG CGC
          CCTGCC              GT     CAA  CCTAA-----   -   ----------
GAM28121 18282  GGTGGGGGAGCGAGTCTGGG        AG  A T     AGAT    T  GA    CTGTTGCC
5          AAGATTGGCTTTGACTCTCT GGTGGGGGG  CG G CTGGGA    TGGC TT  CTCT
          GTTGCCAGAGGAGATGCCAT TCACCCCC  GC C GACCCT    ACCG AG  GAGA
          CCCAGCACGGCCCCCACT          G-  A -      ----    T  AG    --------
GAM28121 12591  GGTGGGGGCCATCTTTATTG   T   -   A--       T-----    GGT       GGGG
8          GGCGGTGGTGGGAGGGGGTT GG GGG GGCC   TCTTTAT      GGGC   GGTGGGAG
          CCCACCTAAGCCCTGTGCTA CC CCT CCGG   AGAAATA      CCCG   CCACCCTT
          TAAAGAGCCGGCCGTCCTCC   T   G    CCG       TCGTGT    AAT       ----
GAM28123 19135  GGTGGGGTGAGGGGGCGAGG        -       C   ------     AGCTAGG
2          CCGCAGCTAGGGCGGCGAAA GGTGGGGT GAGGGGG GAG      GCCGC
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CTCTCCTCCCCTCGGCCCCA CCACCCCG CTCCCCT CTC CGGCG
CC G C TCAAAG -------
GAM28125 14017 GGTGGGTGGATCACCTGAGG TGGA - A- AGCTCGAGACCAG
1 TCAGGAGCTCGAGACCAGCC GGTGGG TCACC TG GGTCAGG
TGGCCAACATGGTGAAACCC CTACCC AGTGG AC CCGGTCC
CATC CAA- T AA ----------
GAM28129 20255 GGTGGTCTTTTGTGCTGCTG T CTTT C TGT T A GG T T CCG
5 TCATCCTAGTCAGGGCTGTG GG GGT TGTG TGC CA CCT GTCA GCTG GCT GGG
CTTGGGCCGCCCAGCCAGCA CC CCG ACGC ACG GT GGA CGGT CGAC CGA CCC
TGGCCAGGTGCCTGCACCGC - ---- C TCC - C A- - - ---
AGCCCC
GAM28130 21530 GGTGGTGATTCTCAAACTTG GG ATTCTC AT- -- AAC GAAA
0 ATCAGGTGCAACCTTCTCGG GGT TG AAACTTG CAGG TGC CTTCTCG
AAACGGGAAGCAGCATTCCT CCA AT TTTGAAC GTCC ACG GAAGGGC
GTCCCAAGTTTCTTGTAAAA AA GTTC-- CCT TT AC- ----
CC
GAM28130 1603 GGTGGTGCGCCCATCGCTGA T CCA A GGA ACC GATC
9 CTGGAGAGGACCTGGGATCC GGTGG GCGC TCGCTG CT GAGG TGG
CACCTCGGCCGGCGAGCGCG CCGCC CGCG AGCGGC GG CTCC ACC
CCCGCC - CG- C --- --- ----
GAM28133 18342 GGTGGTTCCTGCTGCCCTCA G T GC AA- T -- A-- CT AAGAAA
7 AGGTCGTGCGTCTGAAGCCT GGTG TTCC GCT CCTC GGTCG GCGTCT GA GC AC
ACAAGAAAGTTTGCCTATCT CCAT AAGG CGG GGAG TCGGT CGCGGG CT CG TG
GGGGCGCCTGGCTCACGAGG G T TT CAC C GT ATC TT ------
TTGGCTGGAAGTACC
GAM28135 9699 GGTGTACAGGGTAAATGACG -- - TAAATGA GA- TGC
6 GCGTGGAGTAGCTGCGCTGC GGTGT AC AGGG CGGCGTG GTAGC
AAATACGTCGCCCTCGTCTA CCACA TG TCCC GCTGCAT CGTCG
CACC TC C ------- AAA ---
GAM28138 18246 GGTGTCACAGAGGTTGAAGT TCAC GAAGTTAATAA C T -- - GT AACAG
9 TAATAAGTTTCCAGTGGTTG GGTG AGAGGTT GTTT CAG GGTT GCAG TCAT C
CAGTCATGTCAACAGGGAAT CCAT TCTCCAG TAGA GTC CTAA CGTC AGTA G
GAGCTGCTAAATCCTGAAGA ---- ---------- A - AT G AG -----
TGACCTCTTACC
GAM28139 18642 GGTGTCACCACGTTGGCCTG A AC TG-- TGAAGACG CATCA
1 AAGACGGCTTTCATCAAAAG GGTGTC CC GT GCC GCTTT
CGGCACCTACAGGGGGACAC CCACAG GG CA CGG CGAAA
C G GA TCCA -------- -----
GAM28140 19403 GGTGTCAGCGCTGTCGGGGG TCAGC C AC--- CATCC
1 CCACGGCCGGCATCCTCGGC GGTG GCTGT GGGGGCC GGCCGG
CTCACCGGCCTCTACGGCTT CTAC CGGCA TCTCCGG CCGGCT
CATC TT--- - CCACT -----
GAM28140 22256 GGTGTCATTTTAAGAGAGGT AGA- AT AGCATCATGTACCAA
7 AATCCAGCATCATGTACCAA GGTGTCATTTTAAG GGTA CC
GGCCTACCAATGTTTAAAAT TTACAGTAAAATTT CCAT GG
GACATT GTAA CC ----------
GAM28141 14331 GGTGTCCAGCATCCACATCA GTC ATCAT CGG TGT- TTTTCCTT
2 TCGGCGGAGTCATTGCTGTG GGT CAGCATCCAC CGG AGTCATTGC GGGAG
GGAGTTTTCCTTCTCCTTAT CCA GTCGTGGGTG GTC TCGGTGACG TCCTC
TGCAGTGGCTGGACTGGTGG ACT ----- AGG TTAT --------

GTGCTGTCAACC
GAM28145 8216 GGTGTCTGTCAGGGTGGGCA T - T CA--- GTCCTCTCCAAA
9 CAGGGTCCTCTCCAAACCTG GG GTCTG TCAGGG GGG CAGG
CTTCTCCCTCCCTGGTCAGG TC CGGAC GGTCCC CCC GTCC
CCT - T T TCTTC ----------
GAM28146 4167 GGTGTGACAAGGTCAGCCCG GACAA CA G CAAG- GAAGG
9 CTGCAAGGAGAAGGTCACGA GGTGT GGT GCCC CTG GA
ACAGGGGGTAAGCCCAACGC CCGCA CCG TGGG GAC CT
C AC--- AA G AAGCA -----
GAM28149 6345 GGTGTGCGTTGGATGGTTGA - G GTTGAC --- TGTGA
5 CCCAGTATCCTGTGAGGACT GGTGT GCGTTG ATG CCAGTA TCC
GTGCTGGCTACATGTGATGC TCACG CGTAGT TAC GGTCGT AGG
TGCACT T G ATC--- GTC -----
GAM28150 4492 GGTGTGGAGCGGAGGCCGCG A- GA- C A CTC C TCCT
0 GAGGCTCCTCGGTCCTTCAG GGTGTGG GCG GGCCG GG GG CT GG
CACCCCTCGGCCCGACGCAC CCGCACC CGC CCGGC CC CC GA CT
CCACGCC CA AGC T - AC- - ----
GAM28150 20417 GGTGTGGCAGCTAACGCCTG CA A G G --- CA TC
6 TAATTCCAGCACTTTGGGAG GGTGTGG GCT ACGCCTGTAATTCCAGCACTTTGG AGGCCAAGGT
GGT GGAT CT
GCCAAGGTGGGTGGATCACT CCACGCC CGA TGCGGGCATTAGGGTCGTGAAACC TCCGGTTCCG
CCA CTTA GA

TCAGGTCAGGAATTCGAGAC AC G A A GAG AG --
CAGCCTTGGCCTACCAAAGT AGGTC
GCTGGGATTACGGGCGTGAG
CCACCGCACC

GAM28151 8471 GGTGTGGCTCACGGCCATCG CTCAC-- A TG CTA TCTATGTGT
1 TGCTGTTCTGCTAGGTTCTA GGTGTGG GGCC TCGTGC TTCTG GGT
TGTGTACCGCTCAGAGTGGC TCACACC CTGG AGTACG GAGAC CCA
ATGAAGGTCTACAACTCCAC TCAACAT A GT TCG ---------
ACT
GAM28153 1536 GGTGTGTATAAAGATGGGGG TGT AAGAT A C- A GTTAAG
6 GAGCTTCGCTGAACGTTAAG GG GTATA GGGGGG GCTT GCTG AC
GTGTAGTAAAGGCACCTCCT CC TATGT TCCTCC CGGA TGAT TG
TGTATTCCC CT- ----- A AA G ------
GAM28154 5612 GGTGTGTGGAGAAGATCATC - AGATCA T TAT TAA
2 TGTGTTATACTGTAATAGTT GGTGTGTG GAGA TCTG GT ACTG
GCTAGAGTAATCTCACACAC CCACACAC CTCT AGAT CG TGAT
ACC A AATG-- - T-- ---
GAM28158 20652 GGTGTTGAAGACATGGATAC AA-- --- ATA G AAACACCT
7 TGGGGAAACACCTTCTGAGA GGTGTTG GACA TGG CT GGG
CCAAAATGTCAAAATAATAC CCATAAT CTGT ACC GA TCT
C AAAA AAA A-- G --------
GAM28160 20012 GGTGTTTACAGTGCTGCAAA TTA -- T - A- TGGGAGCT
1 TTACACCAATGGGAGCTTTG GGTGT CAGT GC GCAAA TTAC CCAA
GAAGTAATTTTGTGTCTGCT CCATA GTCG TG TGTTT AATG GGTT
GGTATACC TG- TC - T AA --------
GAM28160 20197 GGTGTTTCTGGTGGGAGTGC T T T- GG - CCTTT CAT GATA

8 CCCTTTTCTCCATGTGATAA GG GTTTC GG G AGT GCC TCTC GT
TTTAGGGACCAAGGCTACTT CC CGAAG TC C TCA CGG AGGG TA
TCTTCTTGAAGCTCC T T TT TT T AACC- ATT ----
GAM28165 5838 GGTTAACTCATAATGAATTA - CTC TT A-- ----- TACATTGT
1 TAAAACTTTGATAGTTACAT GGT TAA ATAATGAA ATAAA CTT TGATAGT
TGTACTATCATTTATGAGGC CCA ATT TATTACTT TATTT GAG ACTATCA
ATTTATTTTTCATTATTTAC C --- TT ACG TATTT --------
ACC
GAM28167 18315 GGTTAATACGAGCAACAGGG GT - - GGAT - T TG AAGGA
4 ATACGTACAAAGTGTGTGTA G TAATAC GAGC AACAG ACGTA CAAAG G TGTAG
GAAGGATTGCATGTTTTTGT C ATTATG TTTG TTGTT TGCGT GTTTT T ACGTT
TGCGTTAGTTGTTAGTTTAG TT A A GAT- T - GT -----
TATTATTC
GAM28168 8772 GGTTACAGTCTCTAGCTTCG AG A CG CCCTT
9 CCATGTACATGGCCCTTCCG GGTTAC TCTCT GCTT CCATGTACATGG
TGTACATGGATGGGCGGGGA TCAATG AGGGG CGGG GGTACATGTGCC
GGTAACT G- - TA -----
GAM28169 20667 GGTTACCCTAACAGCTAATG TA T GCTA AGACAA TTT C CCCTCCC
8 ATAAGACAAGTGTTTCCTTC GGT CCC AACA ATGATA GTG CCTT TCCT
TCCTCCCTCCCGGGACAAGG CCA GGG TTGT TACTGT TAC GGAA AGGG
TGTCATATACAATGTCATTG -- T ---- AACATA TGT C -------
TTTGGGACC
GAM28170 4166 GGTTACCTGTGCATGACAGA A G G AGATG--- G TCTGA
0 TGAGGGGTGCTCTGAGTATG GGTT CCTGT CAT AC AGG GTGC
TCTACGAAGTGGTGGTGGAC CCAA GGACA GTG TG TCT TATG
AGGAACC - G G GTGAAGCA G -----
GAM28173 6423 GGTTAGGGAAAACCATGGGG A ACC G -- C GA - TCTCTTTTT
3 TAAGGGACGGGACTCACTTC GGTTAGGG AA ATG GGTAA GGGA GG CTCA CT
TCTTTTTAGTTGAGGGCCTT CCGGTCTC TT TAC CCATT TTCT CC GAGT GA
CTTAGTTACCACATTTACTC A --- A GA T GG T ---------
TGGCC
GAM28176 21092 GGTTATCTACAGCACTGAGA TATC -- A A TACT CTAAG CACG
1 TACACTACTCTTCTAAGGGC GGT TACA GCACTG GAT CAC CTT GG
ACGCCATCTAAGTTTGTGAT CCG GTGT TGTGAC CTA GTG GAA CC
CCCAGTGTCATGTGCTGCC TC-- AC C - TTT- TCTA- ----
GAM28177 21194 GGTTATGAGGGTTGGTTAAG A GT T ACGAGAGG AAA
0 GTACGAGAGGCACAAAGTGA GGTT TGAGG TGGT AAGGT CAC
AAGAAGCCTTCACTACTTTA CCAA ATTTC ATCA TTCCG GTG
AACC - -- C AAGAAA-- ---
GAM28187 9255 GGTTCAGTATTCTCTTAGGT CAGT TC- GATT--- CTC--- A CAGT
9 GATTATATTCTCTCATGTAC GGTT ATTC TTAGGT ATATT TC TGTA
AGTTACAGGAAATTAAAATG CCAG TAAG AATCCA TGTAA AG ACAT
TTAAAGTAACCTAAAATGAA ACT- TAA ATGAAAT AATTAA G ----
TTCAGACC
GAM28191 9669 GGTTCCCGGATCTCCGTGTC T TC ACCAGCTTCA
8 CCGCTCCACCAGCTTCAGGG GGTTCCCGGATC CCGTG CCGCTCC
GCGGCATGGGGTCCGGGGGC CCGGGGGCCTGG GGTAC GGCGGGG
C - -- ----------
GAM28193 21151 GGTTCCGTCATCATCAAAGT TC T- A AAAG- GGAAG
3 CAAAGATGCGGAAGGCATAA GGT CGTCA CATCAA GTC ATGC

TGGGACTTGATGTCTGGCGT TCG GCGGT GTAGTT CAG TACG
GGCT GT CT - GGTAA -----
GAM28195 6648 GGTTCCTTTGGTCGCTCGCT -- G G CTC - A-- ATAA G TAATT
6 CCTCTCCTACTTGGATAACT GGTTC CTTTG TC CTCG CTCT CCT CTTGG CT TGG
GTGGTAATTCTAGAGCTAAG CCGAG GGAAC AG GAGC GAGA GGA GAATC GA ATC
ACAAGGTAGAGCCGAGAGAC AT - A C-- T ACA ---- G -----
AAGGTAGAGCC
GAM28196 16564 GGTTCGCCGTGGGCCTGGGG CC - - ---- T - G A ATC T T
0 ACCCGCGGTCCAGGGCGCCA GGTTCG GTGG GCC TGGGGA CCCGCGG CCA GGGC CC
TGCGGGC GC GC GC
TGCGGGCATCGCTGCTGCTG CCGAGT CACT CGG GTCCCT GGGTGTC GGT CCCG GG
ACGCCCG CG CG TG
TCGGTGCTGCTGGCCCGCAA CC T T CTAC - G - A GT- T -
GGGCCCGTGGCTGTGGGCAT TGTCG
CTCCCTGTGGCTTCACCCTG
AGCC

GAM28196 18351 GGTTCGGTACCACACGAAGG TA ACGAAG CGC ---- AGCCTGGA
1 TGCGCGCCGGCCGCGGCTTC GGTTCGG CCAC GTG GCCGGCCGC GGCTTC
AGCCTGGAGGAGCTCAGGGT CCAGGCC GGTG CAC CGGCCGGTG TCGAGG
GGCCGGCATTCACAAGAAGG C- GAAGAA TTA GGAC --------
TGGCCCGGACC
GAM28199 16853 GGTTCTCTCGTGAGTCCACG TC- - T TC TCT CTTCAATTACCC
4 GTCTGGTCTTCAATTACCCG GGT TCT CG GAG CACGG GGT
CCTATTCGTGCCTCCGCAGA TCG AGA GC CTC GTGCT CCG
TTTGCT TTT C - C- TAT ----------
GAM28201 14638 GGTTCTGGGTTCACCTCCCT CT- C CCCT CA CGTCTCTCA ATT-- CA G AA
0 GCTCATGGAACGTCTCTCAG GGTT GGGTTCA CT GCT TGGAA GTTG ATGG AGAA TCC
TTGATTATGGCAAGAAGTCC TCAA CCCGAGT GA CGA ACCTT CGAC TACC TCTT AGG

AAGCTGGAGTTCTCCATTTA CAT T TGT- C- TGGACCCCA CCATT -- G --
CCCAGCACCCCAGGTTTCCA GCT
CAGCTGTAGTTGAGCCCTAC
AACT

GAM28201 20845 GGTTCTGGTGTTTGGCGTCG TC ---------- C AATTAAACAACCA
1 GAATTAAACAACCACCATGT GGT TGGT GTTTGGCGT GG
CGAGCAAAAAGGCAAAGACC CCA ACCA CGAGCTGTA CC
AAGACC GA GAAACGGAAAAA - ----------
GAM28201 19251 GGTTCTGTACAGGAGAAAGG GTACA AAGGA ACA G GGACA
3 ACTCACAGGAGGGAGGGACA GGTTCT GGAGA CTC GGAGG AG
CTGTCTTCAGGGGGCTCTCT CCGAGG TCTCT GGG CTTCT TC
GGAGCC ----- CG--- GA- G -----
GAM28202 6089 GGTTCTTCTCTTTCTTTAAA TCTT--- T TTAA - CATCAA
5 TGTGTTGCCATCAAGTAGCA GGT CTCTT CT ATG TGTTGC
GCGTCAGTAGGAGTTATAAT CCA GAGGA GA TGC ACGATG
ACC TAATATT T C--- G ------
GAM28205 6407 GGTTGAAGGTGAGTGGTCAC GA--- T T TCACAAAAA- AGTC
2 AAAAAAGTAGTCACTATACA GGTT AGG GAG GG AGT
ACTCCCCTCTCCCTGCAAAA CCAA TCC CTC CC TCA

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          ACC                AAACG  -  T  CCTCAACATA  ----
GAM28207 21524  GGTTGAGACAGGATTTCGCC  ------  -    TT  ---  G TTGCCA
0          ATGTTTGCCAGGATGGTCTC GGT    TGAG ACAGGA  TCG  CCAT T
          GATCTCTTGTGCTCATAATC CCA    ACTC TGTTCT  AGC  GGTA G
          TACC               TCTAAT  G    CT  TCT  G ------
GAM28208 8633  GGTTGAGGGCAAAGGCAATG      G  AAAG    G-   A---  AGTTATA
6          GAATCAAGACAGTTATAGTC GGTTGAG GC   GCAATG  AATCA   GAC
          AACATGGTTGACGTTGCAAA CTAATTC CG   CGTTGC  TTGGT   CTG
          GGCGCTTAATC            G  GAAA    AG    ACAA  -------
GAM28210 8218  GGTTGATGTTGTTATTTATA       TTGT  --    -   TAAAATC
1          TTTCGGTAAAATCCCGGCAA GGTTGATG   TATT  TATATT TCGG
          TGTACCGGTATTCGTTAATT TTAATTGC   ATGG  ATGTAA GGCC
                        TT--  CC    C  -------
GAM28211 9331  GGTTGCAGGAACCCAAGGCG    CA  AA--   A-  GTGAA  -  GTGA
2          TGAACGATGGTGACATGCGG GGTTG  GG   CCCA  GGC   CG ATG
          CTGGCCGATGGGGGCGCCAC CCAAC  CC   GGGT  CCG   GC TAC
          CAACC               CA  GCGG   AG  GTCG-  G  ----
GAM28215 2958  GGTTGCTGTGTCTAGGGTGA  TT  GT   A-   GA  ---    AACG
0          AGTAGGCAAAACGTTGCCTT GG  GCT  GTCT  GGGT  AGT  AGGCAA
          AAACTGGGCCTGAAGACGGT CC  TGG  CAGA  TCCG  TCA  TCCGTT
          TCC             T-  --   AG   GG  AAT    ----
GAM28215 12837  GGTTGCTTCAAAAAAGAGTG   T---    AAAAAGA--  AT   TTTTC
3          AATGGCATTTTCTGCTTATT GGT   GCTTCA      GTGA  GGCA
          ATGTCAAAAGCTGAAGCTCT CCA   CGAAGT      TATT  TCGT
          TACC               TTCT    CGAAAACTG   AT  -----
GAM28215 12925  GGTTGCTTTGTTAACTCTAC  TT    TTAA---  TAC---   CTTCACTT
5          CTGATCTTCACTTGTCAGTA GG  GCTTTG    CTC    CTGAT
          ATTTGAGACCACTTCAAAGC CC  CGAAAC    GAG    GACTG
          CC              --    TTCACCA  TTTAAT   --------
GAM28217 3070  GGTTGGCCTGACAAATTATG  TT    ACAAATTAT  -    TAT  ACTG
7          CTGCAGCATATGGTACTGGC GG  GGCCTG      GCT GCAGCA  GGT
          CTGCTGCTGGCCCGCAGGCT CT  TCGGAC      CGG CGTCGT  CCG
          TCTC               CT    GCC------  T    ---  ----
GAM28219 20408  GGTTGGGGGGGAAGGAACCC      G  GAA  AA  A   GAATGAA  AGTT
6          AGTTGGGAATGAAGGAAGTT GGTTGGG GG  GG  CCC GTTGG     GGA
          TCCAGAAACCAACCGGGCCC CCAATCT CC  CC  GGG CAACC     CCT
          ACCGTCTAACC             G  AC-  --  C    AAAGA--  ----
GAM28226 20259  GGTTGTTTAAAATACAAGCG    TTTAAAATA  A   TTC-  CATC
1          CTTTCTGACATCTCACCCTA GGTTG      CA GCGCT   TGA
          GCGTGTGAGCCCCACTCAAC CCAAC      GT TGCGA   ACT
          C                  TCACCCCGA  G   TCCC  ----
GAM28229 6119  GGTTTACCATATGTGAAATT   TT  A     AATTT--     ACTTA
6          TGTTTTTGACTTACAAAAAT GGT  ACC TATGTGA     GTTTTTG
          GCCCATGTCACATGGGTTCA CCA  TGG GTACACT     TAAAAAC
          CC               CT  -    GTACCCG     -----
GAM28230 12703  GGTTTAGGATTTTTGGAATG   TT  ATTTT   A-  T  A   CA  TCTT
4          GTATATGAGCATTGTCTTCA GGT  AGG    TGGA  TGG AT TGAG  TTG
          ACCTCAAGTTCCAGCTTCAT CCA  TCC    ACTT  ACC TG ACTC  AAC
          CAGCCTTTACC          TT  GACT-   CG  T  A   C-  ----
GAM28234 16781  GGTTTCACATCACGACAGCA   TC  TCAC  A    GGA  TTTTGCTTT
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1 ACGGGATTCTTTTGCTTTGA GGTT ACA GAC GCAACG TTC
AAATGTTGCAGTCCACCTGT TCAA TGT CTG CGTTGT AAG
CCAACT CC CCAC A AA- ---------
GAM28238 12724 GGTTTCCAGCTGCAACGGCT C AAC CTC- AGGCTT
9 CCACTTTGCAGGCTTGCAGG GGTTTCCAG TGC GG CACTTTGC
GTGTATACCTGCGCATTGGG TCAAGGGTT ACG CC GTGGGACG
AACT - CGT ATAT ------
GAM28239 21632 GGTTTCCTGAATACACCGAC GAATAC-- GAC- TG - -- AGTTA
9 ACCTGGGGGGGTCCCAGTTA GGTTTCCT ACC ACC GGGGG GTC CC
GGATGACATCCTCTGGGTAA CCAGAGGG TGG TGG CTCCT CAG GG
AAGGTAACAAACTGGGAGAC TCAAACAA AAAA GT A TA -----
C
GAM28244 20593 GGTTTCTTACTTTGATGGGA T TTGA CAAGT AC- TCTT
1 ACAAGTCTCCACCTGGTCTT GGTT CTTACT TGGGAA CTCC CTGG
CCAGATGGGAGTCATATTCC CCGA GAATGA ACCCTT GAGG GACC
CACAGTAAGCAGCC C C--- ATACT GTA ----
GAM28245 9533 GGTTTGAATATGAAGGCACA GT A AG CACCACTG TTAT AATT
4 CCACTGAAATGGCATTATCC G TTGAAT TGA GCA AAATGGCA CC
AATTGGTTTGCTATTTGATC C GACTTG ACT CGT TTTATCGT GG
TTCTTGCATCAAGTTCAGCT TC A A- TCTTCTAG TT-- ----
C
GAM28246 3423 GGTTTGACTGTCAGAAATTA T A CA TTA TCT T- CACT
2 TTGGTCTGCGTTCACACTTG GGTT G CTGT GAAA TTGG GCG TCA
ATTTGCTCAACTTTCCACAG CCGA C GACA CTTT AACT CGT AGT
ACAGCC - A C- C-- --- TT ----
GAM28247 21064 GGTTTGATTTCACTGGAGCC TGATT- TG CTGCT AACGTGACCTCTGAC
7 TGCTGGGAACGTGACCTCTG GGTT TCAC GAGC GGG
ACCCCTGATGCTTTCGTGAT CCAG AGTG TTCG CCC
CACGTGACC TGCACT CT TAGT- ----------
GAM28249 9668 GGTTTGGAGAGTCCCTTCAG -- TT AT A CTTG
1 ATCTCCAATAAACTTGTTTG GGTTTGGAGAG TCCC CAG CTCCA TAAA
TGGAGGCCTGGGGAGTTTCT CCAGACTTCTT AGGG GTC GAGGT GTTT
TCAGACC TG -- CG - ----
GAM28249 6560 GGTTTGGGCAGTGGTGGGGG --- - G - AGA G TCA GCCC
9 AGGGGGCCAGAGAGGCGGCT GGTTTGGGC AGTGG TGGGG AGGGGG CC GAGGC GC GGTT

CAGGTTGCCCAGCTCTGTGG CCGGACCCG TCGCC ACTCC TCTCTC GG CTCCG TG TCGA

CCTCAGGACTCTCTGCCTCA ACT C G A A-- G TC- ----
CCCGCTTCAGCCCAGGCC
GAM28251 4028 GGTTTGTGATCCTGAGAGTC TT-- CC - -- TG AGG
6 TTGCTGGAGGCTGGCGAGGG GGT GTGAT TGA GAGTCT TGC G
ACTCGTTACCATCACTCCCA CCA CACTA ATT CTCAGG GCG C
CC CCCT CC G GA GT ---
GAM28252 9319 GGTTTGTTATCGTAACCTGT T TA- AA AA CTTC
3 ATTGCCAACTCTGCTTCCAG GGTT GT TCGT CCTGTATTGCC CTCTG
AGGGGTAGTGCAGGATGAAA CCAG CG AGTA GGACGTGATGG GAGAC
TGCTGACC T TAA -- G- ----
GAM28252 6631 GGTTTGTTTTTTTTTTTTTT TG T TTTT GACCG AATTC
7 GGACCGGAAAAAATTCTTTT GGTT TTT TTT TTTG GAAAA

TATTACGAGTTGAACAGATG CCAA AGA AAG GAGC TTTTT
AACC GT C TT-- ATTA- -----
GAM28253 1742 GGTTTTAAGACTTTGCAAGA ACTTTGC-- AAT CAA
3 ATTGTCATCAAATGATATGC GGTTTTAAG AAG TGTCAT
TTTTACTTCAACTTAGAACT TCAAGATTC TTC ATAGTA
AACTTCATT GT- ---
GAM28253 12170 GGTTTTACGATGCATTGTTA C GCA A TTAA- GTCT-- CTAC
9 TCATTAACCAGTCTTTTACT GGTTTTA GAT TTGTT TCA CCA TTTA
ACTAAACTTAAATGGCCAAT CCAGAGT TTG AACAA AGT GGT AAAT
TGAAACAAACAGTTCTGAGA C ACA - TAACC AAATTC ----
CC
GAM28254 4369 GGTTTTATCTGATGGGTTGA TCT T -- TT- - T TAATTTACCTCCCCTCTT
9 AATTGAAGTGATGGAAAGTA GGTTTTA GA GGGT TGAAA GAAG TGA GGAAAG
ATTTACCTCCCCTCTTCTTT CTAGAAT CT CTCA ATTTT CTTC ACT TCTTTC
CTTCATCTTCTTTTTTTACT TTC C TC TTT T - ----------
ACTCCTCCTTTAAGATC
GAM28255 9671 GGTTTTCAAAATACCTTTTA TC TACCT AAAA T CCCA- TTTT
7 AAAAGTATTCTAGCCCAAGA GGTTT AAAA TTTA GTA TCTAG AGA
TTTTTCTGTAAACTAGATTA CTAAA TTTT AAAT TAT AGATC TCT
TGTTGTAAACTTTTTTCTAA TC TTC-- GTTG T AAATG ----
ATC
GAM28258 20620 GGTTTTCTGCTCCTTGGTCC TG TCCTTG --- C GAA TCTTTTCGTTCCTT
1 TGGGTGTCAGCAGCCGAAGC GGTTTTC C GTCCTGGGT GTCAG AGCC GCT
TTCTTTTCGTTCCTTGGCGA CCGAGAG G CAGGGCTCG TAGTT TCGG CGG
GGCTTTTGATGGGGCTCGGG GT TA---- GGG T AG- ----------
ACATGTGGAGAGCC
GAM28258 18086 GGTTTTGAAAATGTACAATA TT AATG GTATA TTTTAT
7 TGTATAATTTTTAAAATGTT GGT TGAA TACAATAT ATTTTTAAAATG
TTATTATTTTGAAAATAATG CCG ACTT ATGTTGTA TAAAAGTTTTAT
TTGTAATTCATGCC T- A--- A---- ------
GAM28261 16791 GGTTTTGTATGTCAAGGAGG T TGTC A TT CCTTTCCGACCA
1 AGTTTAAGGCCTTTCCGACC GGTT TGTA AAGG GGAG TAAGG
ACCTTGTGTTCCCCTTTTCT CCGA GCGT TTCC CCTT GTTCC
GCGCAGCC C CTT- - GT ----------
GAM28261 20696 GGTTTTGTATGTCAAGGAGG T TGTC A TT CCTTTTCGACCA
2 AGTTTAAGGCCTTTTCGACC GGTT TGTA AAGG GGAG TAAGG
ACCTTGTGTTCCCCTTTTCT CCGA GCGT TTCC CCTT GTTCC
GCGCAGCC C CTT- - GT ----------
GAM28262 18173 GGTTTTTAAAGACTAGGATA TTAA CTA T TG AAACATC
3 TTGAATGTGAAACATCCGTT GGTTT AGA GGATA TGAA TG
TTCATTGTTCACTTCTAAAC CCAAA TCT CTTGT ACTT GC
C ---- TCA T TT -------
GAM28263 18748 GGTTTTTCTCTTGCATTTTC CTTGCATT TACAT ATCAAGG--- TAAAAAAT
7 CTTACATGGAGAACATCAAG GGTTTTTCT TTCCT GGAGAAC CTG
GCTGTAAAAAATCAGAAAAT CCAGAAGGA AAGGA TCTCTTG GAC
TTTAGGTTCTCTCAATAGGA -------- TAAC- GATTTTAAAA --------
AAGGAAGACC
GAM28273 4438 GTAAACCCCACAAACCACAG AC- ACAAACCACA A CAAAGTACA
2 GCTATTCCAAAGTACAGAGA GTAA CCC GGCT TTC
GCTGAGAAAGAAGGGATGTT CGTT GGG TCGA GAG

GC GTA AAGAAAGAG- - ---------
GAM28280 6042 GTAAATACATTTGTTCAAAG CATTT AA TAAAAC CATT
1 TTATAAAACAACGGCATTCC GTAAATA GTTC AGTTA AACGG
GTTCTAACTGGGACTATTTA CATTTAT CAGG TCAAT TTGCC
C ----- G- C----- ----
GAM28282 12205 GTAAATCGCGATGTGTGCAG C---- T CC TTGCTCATTCTG
0 CCCGTTGCTCATTCTGTGTC GTAAAT GCGATG GTGCAG CG
TTGCACCGTTGCCAGCCATT CGTTTA CGTTGC CACGTT GT
TGC CCGAC - CT ----------
GAM28291 8312 GTAACGTCGGGGCATTCAGG GGG- -- GGATA AGA G T GAAGTA
2 ATAGTCAGAGAAAGTGTTGT GTAACGTC GCAT TCA GTCAG AAGT TTG TG
TGGAAGTACGTTAGATTTAC CGTTGTAG CGTG AGT TAGTC TTTA GAT GC
GCTGATGAATATGATAGTGC GTGA AT ATAAG GCA - T ------
AGTGGATGTTGC
GAM28293 12860 GTAACTGCTAAGATGCTGTC C CT CTG TGC G C- GT C TTCCTCGGC
3 CGTGCGCGTTGCTGCGGCCG GTAA TG AAGATG TCCG GCGTT CTG GGCC GGTCCG GCCC

TGGTCCGCGCCCTTCCTCGG CGTT AC TTCTAC GGGT CGTAA GAC CTGG TCAGGC CGGG

CGGGCCGGACTGGTCTCCAG - T- TT- TT- A CT -- - ---------
AAATGCTTTGGGTTCATCTT
TCATTGC
GAM28294 20410 GTAACTTAGAGAAATAGCCA AC - CCACA A CACT
2 CATTCAATGCACTTAATGAA GTA TTAGAGAAA TAG TTCA TG
ATCCTGTTTTCTTTGGAGTA CAT GGTTTCTTT GTC AAGT AT
C GA T CTA-- A ----
GAM28295 3353 GTAACTTTGCTCTTTTAATA A T CT TG--- GCCTATGA
0 ATTATGTTCAGCCTATGATG GT AC TTGCT TTTAATAATTA TTCA
AAGTATTTGATTATTAGACA CA TG AACGA AGATTATTAGT AAGT
GCAATGTCAC C T C- TTATG --------
GAM28299 8391 GTAAGCAACTTTTCCATGCT CAA GC-- TAA----- T TTTTAGT
0 CTTAATGTATTCCTTTTTAG GTAAG CTTTTCCAT TCT TG ATTCCT
TAGGAATCCGGAAGTATTAG CGTTC GAAAAGGTA AGA GC TAAGGA
ATTGAATGGAAAAGCACTTG AC- AGTT TTATGAAG C -------
C
GAM28310 3843 GTAATAGTTATTTCTCTAAA GT-- TTC CATATA
8 ATGAAACATATATTTCATTT GTAATA TAT TCTAAAATGAAA
TAGATATATATATATATTAC CATTAT ATA AGATTTTACTTT
ATAT TAT ------
GAM28318 16773 GTAATGTATATGAGGTACTA TATA A A A T ATAAATAA
1 AGCTTTTATAAATAAAATGG GTAATG TG GGT CT AGCT TT
CTCAGAGCTACAATTTATTA CATTAT AC TCG GA TCGG AA
C TTA- A A C T --------
GAM28319 6617 GTAATTAATCATGTTCCGTC ATC CCG GT- AAAACATTAATTCA
5 TGTGGTGCAAAAACATTAAT GTAATTA ATGTT TCT GGTGCA
TCATGCATCTCAAGAATAAC TATTGAT TACAA AGA CTACGT
ATTAGTTAT --- TA- ACT ----------
GAM28328 14623 GTACACTCGCCTATGTCACT TCGCCTAT CTT TCCAATCTTAAT
4 TTACCTTCCAATCTTAATGG GTACAC GTCA TACCT
GTATTCTGACCCCAATTTGT CATGTG CAGT ATGGG

GTAC TTTAACCC CTT ----------
GAM28329 5934 GTACAGAACATATGACTGAG AACATATG TT- T G C AGGCCAGC
2 TTTCTGGAGTCCCACAGGCC GTACAG ACTGAG TC GGA TCC AC
AGCGTTGGAGTCCTGACACC CGTGTC TGACTC AG CCT AGG TG
TCAGTATAGCTGTGC GATA---- CAC T G T --------
GAM28330 9608 GTACAGAGATTGCTTTTTAA AT---------- AA GATTT- TAAG
2 TGGATTTCTATAAGTAGTAT GTACAGAG TGCTTTTT TG CTA
TAATAGGAAAAAGCATATAA TATGTCTC ACGAAAAA AT GAT
TACAATCTACTCTGTAT ATCTAACATAATAT GG AATTAT ----
GAM28332 12200 GTACAGGAATGCTTGGAGTG --- AAT TT A TTCT-- TTATA
1 TCTTTTCTGTTATTTATAGT GT ACAGG GC GG GTGTCTT GTTAT
GATTCTCTTAAGGCACACCT CG TGTCC CG CC CACGGAA TAGTG
GCTGCCTGTTTTGC TTT GT- T- A TTCTCT -----
GAM28334 18388 GTACATAGAAATAATCATTT A- AA- A A AGCATGGTAC
3 GCACTAAGCATGGTACTAGA GTACAT GAAAT TC TTTGC CTA
GCAGAAGAGCAGTTTTAAAT TATGTA TTTTG AG AGACG GAT
GTAT AA ACG A A ----------
GAM28335 16670 GTACATCATTGATTTTTTTT ---- T TTTTTTTTTGT
4 TTTTTTTTTTTTTTTGTGGG GTACAT CAT GATTTTTTTTTTTTTT
AAAAAAGAGAATTTGTGCCT CGTGTG GTG TTAAGAGAAAAAAGGG
CGTGTGC CTCC T ----------
GAM28337 6262 GTACATTTTAATTCTAGAAT C TC-- TTACC TTTTTCTT
7 TACCAAATTATTTTTCTTTG GTA ATTTTAAT TAGAA AAATTA
ATTTTTCTAATTTATTGAGA CGT TAGAGTTA ATCTT TTTAGT
TTTGC T TTTA ----- --------
GAM28339 21425 GTACCAGCACTTAAATTTGT A GCA TAAATT TGA AAGAG
0 CAGCAGGCTGACCAAAGAGT GT CCA CT TGTCAGCAGGC CCA
GGCCTGTCTGTTGGCATTCA CG GGT GG ACGGTTGTCTG GGT
TCGGACATGGGC - ACA CTACTT TCC -----
GAM28339 21146 GTACCAGGACCAGAGAACAG AC GAACAGTTCTTTTT TT - TTTTT
4 TTCTTTTTTTTCTTTTCTAT GT CAGGACCAGA T CT TTTCTA
TTTTTGGAGACAGGGGTCTG CA GTTTTGGTCT G GA AGAGGT
GTTTTGTCAC CT ---------- GG C -----
GAM28339 12305 GTACCAGGCTTTGATGGACG - G TG C CTTTCCC C GC GCTTCG
5 GCCTTTCCCTTGAGTCTCTG GTACCAGGCT TT A GA GGC TTGAGT TCT TGA
CTGAGCTTCGTCAAAGAATT CATGGTCCGG AG T TT TCG AACTTA AGA ACT
CAAATCCCAGCTCTTTGTGG G G GT C ACCCTA- - A- ------
AGGGCCTGGTAC
GAM28340 8246 GTACCCAGGGGCAAGTTAGC AGG AA AGCG G AAAGGC
6 GTCCCGTTTTGAAAGGCCAA GTACCC GGC GTT TCCC TTTTG
GGGGGGGTAAAACGAGCCGG CATGGG CCG CAA GGGG GGAAC
GGGTAC GG- AG AAT- G ------
GAM28341 1003 GTACCCTTAATTGAGTTACT AC- TAATT T T GTTAATATTTTCTACACTA
5 ACTATGGTATTGTTAATATT GT CCT GAG TACTAC ATGGTATT
TTCTACACTAAATACCATGT CA GGA TTC GTGGTG TACCATAA
GGTGTCTTTATAGGTTGAC GTT TAT-- T - ----------
GAM28341 5582 GTACCGAAGATGTTAGTTAA CGAA TTA - TAGT
7 TAGATATTTTAGTGGATAAT GTAC GATGTTAG ATAGAT ATTT
CTGTCATCTGACATCCAGTA TATG CTACAGTC TGTCTA TAGG
T AC-- TAC A ----

GAM28341 9427 GTACCGCCTGCGGAGTAACT A GCC GG C C CTG TGC G C- GT C
8 GCAAAGATGCTGTCCGTGCG GT CC TGC AGTAA TG AAAGATG TCCG GCGTT CTG GGCC
GGTCCG GC
CGTTGCTGCGGCCGTGGTCC CA GG ACG TCGTT AC TTTCTAC GGGT CGTAA GAC CTGG
TCAGGC CG
GCGCCCTTCCTCGGCGGGCC A A-- -- - - TT- TT- A CT -- -
GGACTGGTCTCCAGAAATGC TTCCTCGGC
TTTGGGTTCATCTTTCATTG CC
CTGCAAGGAAC GG

GAM28342 8683 GTACCGGCTGGGTGGCCCAC CCCACAAC- TGT
2 AACTTCGGGTGTTCCGAACC GTACCGGCTGGGTGG TTCGGG
AACTTCTTCATTCAGCTGGT CGTGGTCGACTTACT AAGCCT
GC TCTTCAACC ---
GAM28347 21318 GTACGGCCGCCCGGAAAACT A -- AAAACTGAAG C GAAA
1 GAAGTTGGCCTGAAAAGCTA GT CGGC CGCCCGG TTGGC T
AAATGACTGGGTGAAGCCGA CA GCCG GTGGGTC AATCG A
AC A AA AGTAA----- - ----
GAM28347 18384 GTACTAAACTGGACTAAGAA AAC TAAGAA TG GTTAACTA
8 GGTGTGTTTGGTTAACTACA GTACTA TGGAC GG TGTTTG
AATATGTCATGTTCACATAG CATGAT ACTTG CT ATAAAC
TAC AC- TA---- GT --------
GAM28348 12803 GTACTACAGATTTTGCCAGT - GATTTT- AG-- A GGATTTTAGACA
0 AAGGGGGATTTTAGACACCC GTACTA CA GCC TA GGG
GTAAGTGGGCTATCAAATGT TATGAT GT CGG AT CCC
TAGTAT T AAACTAT GTGA G ----------
GAM28349 12383 GTACTATGCATATGGTCCAA T CA - AATATCAAA TGA CAT GAC--- GATATCT
0 TATCAAAGAGAATGATAGCA G ACTATG TATGGT CC GAGAA TAG TGAAG TCGGG
TTGAAGGACTCGGGGATATC C TGGTAT GTATCA GG CTCTT ATC GCTTC AGTCC

TAACAGCAATACCTGATCAC - AC T --------- TG- AC- ATCACT -------
TACTTCGCACTAGTTTCTCG AACAGCAATA
GTACTATGCATATGGTC

GAM28350 3088 GTACTCCGAGTGCAGCTCAT C - TGCA T AC-- TCCTATC
3 CCTGACTTCTCCTATCGAAC GTA TC CGAG GC CATCCTG TTC
AACCAGGATGGCGACCCTCG CGT AG GCTC CG GTAGGAC AAG
CGATGC - C CCAG - CAAC -------
GAM28356 14056 GTACTTCTGTGGAAGAGAAC CT T AGAGAACATG GT TTGTAC
0 ATGGTGGTGTCACTGTTGTA GTA TCTG GGA GTG GTCACTG
CCAGTGATGACACAAAATCC CAT AGAC CCT CAC TAGTGAC
CAGATCTAC CT - AAAA------ AG ------
GAM28358 5452 GTAGAAAAATAAGAGAGTGT AAAAAT T-- A A- AATCAA
7 CTTTAAAAAAAATAATCAAA GTAG AAGAGAG GTCTTT AAAAA AT
TGCTTTTTGAAAGACCTGTT CGTC TTCTCTT CAGAAA TTTTT TA
CTCTTCACTGC AC---- GTC G CG ------
GAM28359 9225 GTAGAAACAGGGTCTCGGTA AAAC CTC A TTA C GTCTTGA
3 TGTTACCCAGGCTGGTCTTG GTAG AGGGT GGT TG CCCAGG TG
ACATCCTGGGCTCAACCTAT CATC TCCTA CCA AC GGGTCC AC

CCTCCTAC C--- T-- - TC- T -------
GAM28361 1487 GTAGAAGAAGATGAATACAA AA A CA TTCTACAA AAAG
5 AGCTTTCTACAAATCATTTT GTAG GAAG TGAATA AAGCT ATCATTTTC
CAAAGGAAAGTGATGACCCC CGTC TTTC ACTTAT TTCGG TAGTGAAAG
ATGGCTTATATTCACTTTAC A- - A- TACCCCAG ----
TGC
GAM28361 8220 GTAGAAGACAAAAGCAACAA ACA AAC ATAT TACT ACCAGCACTACAAA
7 CTAATATTCTACTATGCCAC GTAGAAG AAAGC AACTA TC ATGCC
CAGCACTACAAAGGCATTGA TATCTTT TTTCG TTGAT AG TACGG
TGTAGTTTGGCTTTCTTTCT C-- GT- GT-- T--- ----------
AT
GAM28363 20715 GTAGAATCCAGGCGTTTAGT A CA AGT--- C ATCATAA
9 TGGATCATATCATAAGTATC GTAGA TC GGCGTTT TGGAT AT
CATGAAGAAAACGTCATGAT CGTCT AG CTGCAAA ACCTA TG
CTGC - TA AGAAGT - -------
GAM28365 16477 GTAGACAAAAATAACACAAT AAAAA C A G A CCAT
2 AACAGGAGACTTCCATAAGC GTAGAC TAACA AATA CA GAG CTT
TTGTGTATTATGTTAGTCTA TATCTG ATTGT TTAT GT TTC GAA
T ----- A - G - ----
GAM28365 14389 GTAGACAAGTCCTCCAGCAC CAA C CA-- TA GAGCT
6 AGCCTATATGGAGCTCACTA GTAGA GTCCTC AG CAGCCTA TG
GGCTGACATCTGAGGACTCT CGTCT CAGGAG TC GTCGGAT AC
GC --- - TACA C- -----
GAM28366 8876 GTAGACAGAGCGTAAAAGGA A CGTAAAA AT G TACAT
1 GATGGTGTGGCGTACATTGC GTAG CAGAG GGAG GGTGT GCG
GGCATCCCTCCGGATTCTGC CGTC GTCTT CCTC CTACG CGT
TGC - AGG---- C- G -----
GAM28366 16826 GTAGACAGCACCCCCTTGAG A GCACCCCCTT T AA- CCTTTC
2 TCCAATTCCTCCCCTTTCGG GTAG CA GAG CC TTCCTCC
AGGAAGCCGGTTTCTCCTTT CATC GT CTT GG AAGGAGG
CTATGCTAC - ATCTTTCCT- T CCG ------
GAM28367 19902 GTAGACGCTGCTGGCCAGCC G TGGCCA CCC- C -- ACC
3 CTCCCCAGCCGAGGTTCTCG GTAGAC CTGC GCCCT CAGC GAGGTTCTC GGC
GCACCGCCTTGAGAGCTTCA CGTTTG GACG TGGGA GTCG CTTCGAGAG CCG
GCTGCCCCAGGGTGTGCAGG - TG---- CCCC A TT ---
TTTGC
GAM28369 3273 GTAGAGAACTTAATGAACCT A CT GA C AAC - TCTCT
2 GAACCCAGGCTTCTCTAGCT GTAG GAA TAAT AC TG CCAG GCT
CTGGTAACGTGTGATTGTTT CATC CTT GTTA TG GC GGTC CGA
TCACTAC A TT G- T AAT T -----
GAM28371 3798 GTAGAGACAGGGTTTCACCA G- TCACCATGTT AGGAT
1 TGTTGGCCAGGATGGTCTCG GTAGA ACAGGGTT GGCC
ATCTTTTGACCTTGTGATCT CGTCT TGTTCCAG CTGG
GC AG TTTTCTAGCT -----
GAM28383 12286 GTAGATATTACAAGCAGCAT ATA -- C GA T AAGAG
4 TACCAAGACATGGCAAAAAG GTAG TTACAA GCAGCATTAC AA CA GGCAAA
AGTTTGTCTGAATTGTAATG TATC AGTGTT CGTTGTAATG TT GT CTGTTT
TTGCGTTTGTGAACCTAT CA- TG - AA - -----
GAM28385 3669 GTAGATGTAACCGGTGCCCC G A - CCCC- - GTTGTGACTGA
5 CTCCCCGTTGTGACTGAGGG GTA ATGTA CC GGTG CTC CCC

CGAGTGTTATACCTGGCTGC CGT TGCGT GG CCAT GAG GGG
GTGTGC G C T ATTGT C ----------
GAM28393 3815 GTAGCGCGTGGCGGAGATGG C - ------ GA- GTG CCTGC
8 TTGGTGACCCCTGCGGTGCA GTAG GC GTGG CG GATGGTTG ACC
ATCATCCAACGAAAACTTCA CGTC CG CACT GC CTACTAAC TGG
CTGCTCTGC T T TCAAAA AAC G-- -----
GAM28394 18774 GTAGCTAACATTAGATCTAG TAGATCTAGCTT AG TTAA
2 CTTATTATTTCAGAAATTAA GTAGCTAACAT ATTATTTC AAA
TTTAGGAAATAATTATTAAA CATCGGTTGTA TAATAAAG TTT
ACATGTTGGCTAC CAAAATTAT--- GA ----
GAM28399 16606 GTAGGAATGGCAGTACAATA T CA TACA TCTCTCCTAAT
9 CAAAGTAATCTCTCCTAATT GTAGGAA GG GTACAA AAGTAA
TATTTCTTGTACATCTTTCT CATCTTT CT CATGTT TTTATT
AC - A- C--- ----------
GAM28401 16687 GTAGGAGGGCGACCCTCCGG TA TCCG GG GGG G GAATG
8 AGGTCGAGAGGGGGCGTTCT G GGAGGGCGACCC GA TCGAGA GGC TTCTCCC
CCCGAATGGGGGGGGGGCCG C TCTCCTGCTGGG CT GGTTCT CCG GGGGGGG
GTCTTGGAATCACCGGGTCG TC CCA- AA GG- G -----
TCCTCTCTC
GAM28404 9624 GTAGGCAACCTTCCCTCTCT GC C CC CTC T AGAACA
1 CCTTGGTGAAGAACATCCCA GTAG AAC TTC TCT CTTGG GA
AGCCAGAAAGAAGTTAACTA CATC TTG AAG AGA GAACC CT
C AA - AA CC- - ------
GAM28404 20067 GTAGGCACTTAGGATGGCAC - A AG - -- G ACA- GG TG ATGGG
3 CATGCCAGACACGGGTTGAG GTAG GC CTT GATG GC ACCAT CCAG CG T AGTTG
TTGATGGGCAATTTGGATGG CGTC CG GAA TTAC CG TGGTG GGTC GT G TTAAC
TTGCTGGAGTGGTGAGCGCA A - GA G AG A GTTG A- GT -----
TTAGAAGGCACTGC
GAM28405 8288 GTAGGCCCTGTTGGCTTTGG CCCTGT --- - -- A AGTCAC
3 CCCTGGTGATCGGAGTCACC GTAGG TGGCTTT GGCC CTGG TG TCGG
TGGACAGCCCAGAGGCTCGA CGTCC ACCGAAG TCGG GACC AC GGTC
GAAGCCATGTTCCTGC TTGT-- AGC A CG A ------
GAM28405 5462 GTAGGCGAGTTGGTCTGAAA AG -------- GCCCCC TATCATT
6 GCCCCCGGTATCATTCCTCG GT GCGAGTTGGT CTGAAA GG
AATTTCAGTGCGCGGAACCA CA CGTTCAACCA GACTTT CC
ACTTGCAGAC GA AGGCGCGT AAGCT- -------
GAM28408 18150 GTAGGGGAGGGACTTTGTTC GG AC TCA- A AATCC CTCAACC
1 AGGAAGAAATCCGTGTCTCA GTAGG AGGG TTTGT GG AGA GTGT
ACCACACTATCTACCCATCA TATCC TCCC AGACA CC TCT CACA
CAGAACCCTTTCCTAT TT A- CTAC A AT--- -------
GAM28411 1540 GTAGGTGTTCGCTAAAGGTG A T T T - CCT GG TTGT
7 GCCTGTGGGGGCCCTTGTGG GT GG GT CGC AAAG GTGG GT GGGCCC
GTTCAAACCTCCACTCTTTT CA CC CG GCG TTTC CACC CA CTTGGG
GCGGCCCCAC C - - T T TC- AA ----
GAM28413 1737 GTAGTAAATTTTTAGTATTT TTTTTAG G G AT- TATT
0 TTTAGATTGAATTTGTATCA GTAGTAAA TATTTTTTA ATT AATTTGT CA
TATTTGCTAGCAAATTGAGT CATCATTT ATGAGAAAT TGA TTAAACG GT
ATAAAGAGTAGCATATTTTT TTATACG A G ATC ----
ACTAC
GAM28414 14620 GTAGTACTGTAATGGGTTTG TA- TA T CCAAA- TCTT

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6          GCCAAATATCATCTTTGATG GTAG  CTG  ATGGGTT GG    TATCA
           ACCTCTCCTAACTCATCAGC CGTC  GAC  TACTCAA CC    GTAGT
           ACCTGC             CAC  --    T  TCTCCA   ----
GAM28415 16758  GTAGTAGATTCTCATTTCCA      ATTC  TTT  - -  C    ATTC  TGAA
1          GTTGGCACGTATATTCTGGT GTAGTAG   TCA  CCA GT TGG ACGTAT   TGG
           GAACCAAATATGTTCACACA CATCATT   AGT  GGT CA ACT TGTATA   ACC
           TGGTGATTACTAC          ----  ---  A  C  -    A---  ----
GAM28418 836   GTAGTCTCCATTGAAGAAGT    C-  AT  A    AATTGA   ATTACCCTAA
9          TAATTGATGATTATTACCCT GTAGT  TCC  TG AGAAGTT    TGATT
           AAAATCAGGTTCAAGCTTCT CATTA  AGG  AC TCTTCGA    ACTAA
           CCAGGAACATTAC          CA  --  C     ACTTGG   ----------
GAM28430 21307  GTATAAGGCAGGTTTTATAG  ATAA   ---      AA-  T-    T  A-   AA--      GGC
0          AACCATTTAGATTCAACATT GT   GGCAG  GTTTTATAG  CCA  TTAGAT CA  CATT   TGGTAGAGT

           AATGGTAGAGTGGCATTTTA CA   TCGTT  CGGAATGTC  GGT  AGTTTA GT  GTAA   ACCATTTTA

           CCAAAAAAATGGGTGTATTT  GGA-   TAA      GTG  TT    T  GG   AAAA      ---
           GATTTGGGTGCTGTAAGGCA
           ATTTGCTAGGAC
GAM28430 6599   GTATAATCCTTTTCTTTTCA  ATAAT        AAGA-  -  GAGGA
8          AGATGCCTGAGGAAGTGCAC GT    CCTTTTCTTTTC    TGC CT
           CATGGAGAGGAGGAGGTGGA CA    GGAGGAGGAGAG    ACG GA
           GAC               GAGGT        GTACC  T  -----
GAM28432 9726   GTATACAGGTCCTTCAGGGA  A-    T  TT  G--     AG---    TTTCGACT
3          GGCAAGAGACCTTTCGACTG GT  TACAGG CC  CA  GGAGGCA    AGACC
           GTCTGCAGGTGCCTCCAAAT CA  GTGTCC GG  GT  CCTCCGT    TCTGG
           GCTGGTCCTGTGGAAC     AG    T  TC  AAA    GGACG    --------
GAM28437 20131  GTATAGTGCCCAATAACTAG    ---    AAT   ---  TT-  TTTTTTATAT
6          TTTTGTTTTTTTATATATAT GTATA  GTGCCC  AACT  AGT  TGT
           ATACTTTAAGTTCTAGGGTA CATGT  CATGGG  TTGA  TCA  ATA
           CATGTGTAC           GTA    ATC   ATT  TAT  ----------
GAM28438 9558   GTATATAAAACATACCCACA   A  AA-     ACA     CT  CTTTAAAA
0          TGAGATTCTTACTTTAAAAT GTAT TAA  CATACCC  TGAGATT  TA
           GCAGATTTTAAGGGGTATGA CATA GTT  GTATGGG  ATTTTAG  GT
           TGTTGAATAC          A  GTA     GA-     AC  --------
GAM28439 6443   GTATATATATATATATATAT                TG    GTGA
4          ATATGTATGCGTGAGTGTGT GTATATATATATATATATATATA  TATGC
           GTGTATATATATATATATAT TATGTATATATATATATATATGT  GTGTG
           GTAT                        GT    ----
GAM28442 19376  GTATATTAGCCAAGCTACAG    T----   CAAGCTA   --  AGTAGAA
3          GAAGCAGTAGAAGCTAATCT GTATA    TAGC     CAGGA  AGC
           TGGAACCGCTATGACCTATA CATAT    ATCG     GTTCT  TCG
           C                  CCAGT   CCAAG--    AA  -------
GAM28443 20049  GTATATTTCCGTTTCCCCAA      C      C   CT  ACCTGTCCCCATCTACCCA
7          GTCTTCACCTGTCCCCATCT GTATATTT CGTTTCCC AAGT  TC
           ACCCAGATCATTTGGGAAAT CGTGTAAA GTAAAGGG TTTA  AG
           GTAAATGTGC             T      -   CT  --------------------
GAM28451 5721   GTATCGACGGAGCATGTACA    GAC       CAG  G  A   C--  CA   GTGAATA
1          GGGAGGCATGCACCGCAGTG GTATC  GGAGCATGTA  GGA GC TGCA  CG  GTG
           GTGAATACACGTCGAGCTGC CATGG  TCTCGTACGT  CTT CG ACGT  GC  CAC
```

AAGCATTCACTGCATGCTCT --- CA- A A CGA TG -------
GGTAC
GAM28451 21115 GTATCGGAACCAAGGAGATG G A AA AAGGCAC ATAGATA
2 AAGAAGGCACAGAGATAGAT GTATC GA CC GGAGATGAAG AGAG
ACTCTACAGTTTCGTCTCCA CGTAG CT GG CCTCTGCTTT TCTC
GGTCAGATGC A - A- GACA--- -------
GAM28451 19256 GTATCGGAACCAAGGAGATG G A AA GGCAC ATAGATA
3 AAGGGCACGGAGATAGATAC GTATC GA CC GGAGATGAAG GGAG
TCTACAGTTTCGTCTCCAGG CGTAG CT GG CCTCTGCTTT TCTC
TCAGATGC A - A- GACA- -------
GAM28451 12828 GTATCTACAGCCACTGTAAG A CCA AAG AG-- AG ATGG
8 CATCCAGTAGGCAGGAAGAT GTATCT CAG CTGT CATCCAGT GC GAAG
GGCTTTGGGCAGCGGCTGGA CATAGA GTT GACG GTAGGTCG CG TTTC
TGAAAGCAGATTTGAGATAC - TA- AAA GCGA GG ----
GAM28453 19370 GTATCTCTGTTTACTATCCT T C CCTCTT-- TCTT ATTGAA
1 CTTGGCTCTTGGTGGAATTG GTA CTCTGTTTA TAT GGC GGTGGA
AATTCATCTTGTGTCTTATT CGT GAGGTAAAT ATG CTG CTACTT
CAAGTAATAAATGGAGTGC - A AACTTATT TGTT ------
GAM28453 6292 GTATCTGGGAGTCAGGATGG - TCAGG---- -- TATGTGAT
7 TCCAGCTATGTGATGCTTAG GTATC TGGGAG ATGGTCC AGC
GATCATGGTTAACGTTTCCC TATGG ACCCTT TACTAGG TCG
ACGGTAT C TGCAATTGG AT --------
GAM28455 20430 GTATCTTTCCAAAAGGGCCG - -- A - ACTCTT TGGAAGTT
5 AACTCTTGGTGGAAGTTCCT GTA TCT TTCC AAAGGG CCGA GG
TAACTTGGTCCCTTTAGGAA CAT GGG AAGG TTTCCC GGTT CC
ATGGGTTAC T TA A T CAATT- --------
GAM28456 16831 GTATCTTTTTTACATTTTCC T TTA TCCTGA AAATTTGAA
0 TGATGAGAATATAAATTTGA GTA CTTTT CATTT TGAGAATAT
AATATTCTCAGTAAGTGATT CAT GAAAA GTGAA ACTCTTATA
AAAAGTAC - TTA TG---- ---------
GAM28456 2891 GTATGAAAGGGGGAAACAAA AA G AA AAA C TTAGGT
4 GAACAGCCTTTTAGGTAAGG GTATGA GG GG AC GAA AGCCTT
CTTTTCAGTACCTGCCTCGT CGTGCT CC TC TG CTT TCGGAA
GC -- G CA A-- T ------
GAM28456 1503 GTATGAAGCTAGTTGATTTC GAA A- T C TT - ATTTCC
8 CAGTTGCACTATTTCCAGTT GTAT GCT GT GATTTC AG GCA CT
GCCTCTGAAGTTCACAGGGC CATA CGG CA TTGAAG TC CGT GA
AATAC A-- GA C - TC T ------
GAM28458 20301 GTATGATCGAAGACGCGGGA ATC-- ACGC AA -- AGCCA
7 CAATGTTTCAAGCCATGACA GTATG GAAG GGGAC TGTT TCA
AACAGGGTTCCTTACTTCCC CGTAC CTTC CCTTG ACAA AGT
CAACATGC AACCC ATT- GG AC -----
GAM28458 22221 GTATGATCTAAGGTCTGGGG TCT---------- C A TG GCCCGGCCTCCA
8 AGGGTGGCTGGCCCGGCCTC GTATGA AAGGT TGGGG GGG GCTG
CACAGCACCCCACCCCATAT CATGCT TTCTA ACCCC CCC CGAC
CTTCTTTCCATTTATTTCGT TTATTTACCTTTC T A CA ----------
AC
GAM28460 1786 GTATGCAGAAAGAATAGCTG AG GAATAGCTG AACAAA ACAAC
1 GCAGAGATAACAAATGACAA GTATGC AAA GCAGAGAT TG
CTAGGATTGATTTTTGTAAC CATACG TTT TGTTTTTA AT

ATTTAAGCATAC AA ACAA----- GTTAGG -----
GAM28462 20663 GTATGCTGGAGCAGAGGACT T GG AG TTG- AT GTCA ACA-- T TGACT
4 TTGAGAAATGGAGGTCATGT GTA GCT AGCAG GACT AGAA GGAG TGTGG GCAG GT
GGACAGCAGTGTTGACTACC CAT CGA TCGTT CTGA TCTT CCTC ACACC CGTC CA
TGCCTCTACCACAGTACTCC - -- CA TATA -- ATG- ATCTC - -----
TTCTATATAGTCACTTGCTA
GCTAC
GAM28463 8948 GTATGGAATCTTGCGGGATC AA G -- AGGAGA C ACTCCATCA
2 CAAGGAGACCACCTTCAACT GTATGG TCTTGC GGA TCCA CCAC TTCA
CCATCATGAAGTGGGACGTG CATGTC GGAACG CCT AGGT GGTG AAGT
GACATCCGGCAAGGACTGTA A- G AC GCAG-- - ---------
C
GAM28464 6187 GTATGGTACGGAGGAGGCCA -- TA GG ACAGAAGCAAGCACCAA
8 TTACAGAAGCAAGCACCAAG GTAT GG CGGAGGA CCATT
ATGGAATTTTCTGGGCCGAA CATA CC GTCTTTT GGTAG
TAC AG GG AA ----------
GAM28473 21244 GTATTAAACCTATTCTTTAT T CCTA TAAACT-- TATTAC
1 AAACTCATATTACTGTTCTA GTA TAAA TTCTTTA CA
AATTGAAGAAATTATTTATT CAT ATTT AAGAAGT GT
AC T ATTA TAAATCTT ------
GAM28473 18547 GTATTAAATTGTGTGAAATA TT- T AT- CCC TG TTGA
5 GTCTCCCGTGGGTTGATTTG GTA AAA TGTGTGAA AGTCT G GG
TATAGACTTCATTCATATAT CGT TTT ATATACTT TCAGA T TT
TTTTTCTGC CTT T ACT TA- GT ----
GAM28482 22295 GTATTGCTGGGTTGATTCTA TT TG A T GTG CTAACTCT CTCTTTT
9 GTTGTGTGTGTCCTAACTCT GTA GC GGTTG TTC AGTTGT TGTC GG
GGCTCTTTTCCTTACTGTGA CAT TG CCAAC AAG TCAATG GCAG CC
CGAAGTAACTGAAACAACCT CG GT A - AA- TGTCATT- -------
GGTGCTAC
GAM28483 20530 GTATTGGTGAAGAAACCAAG GAAGAAACCAAGTA A - TTCT
8 TATGAAAGCATCAGACTTCT GTATTGGT TG AAGC ATCAGAC
GTTTGATGGCTTACAGCAAC CATGACCA AC TTCG TAGTTTG
CAGTAC ACG---------- A G ----
GAM28485 9124 GTATTGTTTCTGGATATCAA T TTCT T-- TTAAA TA C TGTGAT
2 GATGTTAAATATATTTCTTG GTAT GT GGATA CAAGATG TA TTTCTTG TAT
CTATTGTGATATGACAAGAG CATG CA TCTGT GTTCTAT AT AGAGAAC GTA
ACTTAACTTATCTTGCTCTG T CCT- CTC TCA-- TC A ------
TCTTCCACTGTAC
GAM28485 13977 GTATTTAAGCTAAATTGCCT A A TG TTAAATT TTCAAGCTT
6 TTTAAATTCCTTCAAGCTTG GTATTTA GCT AAT CCTT CC
GTTCATTGAGGTGGTTAAGT CGTAAAT TGA TTG GGAG GG
ATAAATGC A A GT TTACTT- ---------
GAM28486 12997 GTATTTACCTCAAACCTCTC C----- AACCTC TC- AA AACCCCCGTTATAAAA
1 CTCTTGCACAACCAACCCCC GTATTTAC TCA TCC TTGCAC CC
GTTATAAAAGGAAGTGCAAA CATAAGTG AGT AGG AACGTG GG
ATGGAATAAACTGATTTTAA AATTTT CAAATA TAA AA ----------
GTGAATAC
GAM28488 3946 GTATTTCTAGTTCTAGATCC TTT TA CC A - CCACAC
2 CTGAGGAATCACCACACTGA GTA CTAGTTC GATC TG GGAA TCA
CTTCCACAATGGTTGAACTA CAT GATCAAG TTGG AC CCTT AGT

GTTTAC TT- -- TA A C ------
GAM28492 5701 GTATTTTATAGCACTAAAAT TTA ACTAAAA A CAGA A-- CCA-- TTC
8 ATTAATACAGCCAGAAATAT GTATT TAGC TATT ATACAGC AATATT TCAATTGGT AGAT
TATCAATTGGTCCAAGATTT CATAA ATCG ATGA TATGTCG TTGTAA AGTTAATCG TCTG

CTGTTTATAAAATGTCTAGA C-- ATA---- A ---- AGA TCAGA ---
CTGCTAATTGAAGAAATGTT TGTTTATAAAAT
GCTGTATAAGTAATAGCTAC
AATAC

GAM28493 18038 GTATTTTATTAGTATTTTTC TTA TTTT------ TG CAGAAGA
1 CGGTGAACAGAAGATTTGTT GTATT TTAGTA TCCGG AA
GGATTTAAACATTTACTAAG CATGA AATCAT AGGTT TT
ACAGTAC CAG TTACAAATTT GT -------
GAM28493 8749 GTATTTTATTTAAATAAATT TT AAATAA C T- GTTTGA
3 TTTCTTTTGTGTGTGTTTGA GTAT TATTT ATTTTT TTTTGTG GT
ATTTTACAGAAAAAAATACT CATA ATAAA TAAAAA AAGACAT TA
GACAAATACTATAC TC CAGTCA - TT ------
GAM28494 2898 GTATTTTGACAAAATACGAA T - -- GAAG A- A --- GTA AGGGAA
8 GTGGAGATTTACACTACATT GTATTT GACA AAAT AC TGGAG TTTAC CT ACATT CA
GTACAAGGGAATGAAAGTGT CGTAAA CTGT TTTA TG ATCTC AAATG GG TGTGA GT
CACGGGTAAAAACTCTAAAA - C AT GAAA AA - CAC AA- ------
GGTTAATTTCTGTCAAATGC
GAM28499 12908 GTATTTTTTATGTTGGCACG GGCACGAA A G CA AAAAGCAG
8 AATTGGAGACCTGAGCCAGT GTATTTTTTATGTT TTGGAG CCT AGC GT
AAAAGCAGACGCTGGGCTCT TATAGGAAGTGTAG AATCTC GGG TCG CA
AAGAGATACAGATGTGAAGG ACATAGAG - - -- --------
ATAT
GAM28502 3152 GTCAAAGAAAATAGGGCTTT - AT CTTTT CATTAGT GAAA
8 TGGCATTCTCATTAGTTAGA GTC AAAGAAA AGGG GGCATTCT TA
AATATATTTAGGATGTCTTC CAG TTTCTTT TCCC CTGTAGGA AT
CCTTTTCTTTAGAC A -- TT--- TTTAT-- ----
GAM28504 2811 GTCAAATGCTTCTTGTGGGG T TTGTGGG TG TG GTGTGT
6 GTGTGTGTGTGTGTGTGTGT G CAAATGCTTC GGTGTGTG TG T
GTGTGTGTACATGCCGGGGC C GTTTACGGGG CCGTACAT GT G
ATTTGC - ------- GT GT ------
GAM28507 6399 GTCAACTCTGCCAGGACTGT A----- GC ACT - CAACCTT
9 GATGCTGTTCAACCTTGGCA GTCA CTCT CAGG GTGA TGCTGTT
GCGCTTACTGCCTGAGGAGC CAGT GAGG GTCC CATT GCGACGG
GAATATGAC ATAAGC A- GT- C -------
GAM28509 942 GTCAAGATGCAGATTTGCCT AAGA AG TG TG------ GGACT
6 TCTGGCCGGACTGGCAAGAG GTC TGC ATT CCTTC GCC
ACTGAAGGTGGGTACGTAGA CGG ATG TGG GGAAG CGG
AAGGC AAAG CA GT TCAGAGAA -----
GAM28510 811 GTCAAGCCATCCCCAAGCTC --- C - AGCT T G AAAA
0 ATTGGGCAGGAAAACCTGAC GTC AAG CATC CCCA CAT GG CAGG
CTGTGTTGGTGGGAGATGAC CAG TTC GTAG GGGT GTG CC GTCC
TTACAGAC ACA A A GGTT T A ----
GAM28510 21294 GTCAAGCGCCTTTCCTGGTT A- C TT AGAAA ACTT
4 GAGAAACCACTTGGGTCCCC GTC AG GCCT CCTGGTTG CC

AACCAGGGGGGGCCCTCGGG CGG TC CGGG GGACCAAC GG
C GC C GG CCCTG ----
GAM28512 1315 GTCAAGTCTTAAAGCATGTT CA TA C T --- GAAACA
8 GGATTTCAGAAACATGAGTT GT AGTCT AAG ATGT GGAT TTCA
TATTCATATCTTCTGGACTG CG TCAGG TTC TATA CTTA GAGT
AGC AG TC - - TTT ------
GAM28515 21435 GTCAATGAACTATAGGGTGG ATAGG GG--- T - - A TTT
7 GGTGCCTAGGATTCTTAGCT GTCAATGAACT GT GG GCCT AGGATT CTT GC
TTGCAGGAAATCCTGAGGCT TAGTTATTTGG CA CC CGGA TCCTAA GGA CG
CCAGGGAACATGGGTTTATT GTA-- AGGGA T G A - ---
GAT
GAM28516 1244 GTCAATGTCACCTTCACCAG A T TTCA A- AATATTCAGTCTAAAAGCA
7 CAATATTCAGTCTAAAAGCA GTCA TG CACC CC GC
GCAAGGCCGTGGTGCATGGC CGGT AC GTGG GG CG
- - TGCC AA ----------
GAM28518 18284 GTCACAAGAATTTGGATGGT C A G- - TAATG TACAGC
5 GCAGTTAATGTTGAAGTTAC GT ACAAG ATTTGGATG TG CAGT TTGAAGT
AGCATTTCAGATTTTATTGT CA TGTTT TAGATTTAT AC GTTA GACTTTA
CAGATATTTAGATGTTTGTT T G AG T TTTTA ------
AC
GAM28521 21270 GTCACAGCTGCCTGGTACCT T GGTACCTC T CTGTAATTC
0 CCATTTGTTTCTCTGTAATT GTCACAGC GCCT CA TTGTTTCT
CAGGAATAATTGCATCTAGG CAGTGTCG CGGG GT AATAAGGA
GGCTGCTGTGAC T GATCTAC- T ---------
GAM28521 5815 GTCACAGGGGCAGGATCATC CA ATCA CACCTT TC-- TTCCACATC
4 CATGTCACCTTCTTCCACTT GTCACAGGGG GG TCCATGT CT CAC
CCACATCGTGTCCCAGTAAC CAGTGTCCTC CC AGGTACA GA GTG
ACACATGGAGCTGCCACCTC CA GTCG CACAAT CCCT ---------
CTGTGAC
GAM28521 22201 GTCACAGTCTCCTGACAGCT ACA - ACA-- AAGATCT GAGAG
7 AAGATCTCCTCATGAGAGAT GTC GTCT CCTG GCT CCTCAT
GGGGCAGCAACAGCAGGAAG CAG CGGA GGAC CGA GGGGTA
GCGGGAC GG- A GACAA C------ -----
GAM28524 1449 GTCACCCAGGCTAGAGTGCA C C A G TG - TG CCCA
8 GTGGTGTGATCTTGGCTCAC GT AC CAGGCT GAGT CAGTGG TGATCTTGGCTCACTGC
AACCTCTGCCTCC GG
TGCAACCTCTGCCTCCTGGG CA TG GTCCGA CTCA GTCACC ACTAGAGCCGAGTGACG
TTGGAGGCGGAGG TC

CCCAAGAGATTCTTGGGAGG - A C G CG G GT ----
CGGAGGTTGGCAGTGAGCCG AGAGATT
AGATCAGCCCACTGGACTCC
AGCCTGAGTAC

GAM28527 3165 GTCACCTCAAGTCTATAGTT CCTC GT TT-- - TTCA
2 TACATTAGAGTTCACTCTTG GTCA AA CTATAG TACATTA GAG
GTGTACATTCTGTAGGTTTT CAGT TT GATGTC ATGTGGT CTC
GAC ---- TG TTAC T ----
GAM28528 20473 GTCACGAATCACATCGTTGA CG A AAAC AG CTAA
6 AACCAAAGCTCTCTAAAGGG GTCA AATCAC TCGTTG CAA CTCT

AATTGTGAACAGTGGGTGAT CAGT TTAGTG GGTGAC GTT GGGA
TATTGAC TA - AAGT AA ----
GAM28532 9623 GTCACTGCTAGCTGTCACCA C ---- TC A CC CCACCA
8 TTGCCCTGGTCCCACCAGAC GTCA TGCT AGCTG ACC TTG CTGGTC
CAGCCTGAGGTCCAGCTGTC CAGT ACGA TCGAC TGG AGT GACCAG
CAGCATGAC - CCTG C- - CC ------
GAM28535 751 GTCACTTGTCTGGAGCTTGA A G TG A AA---- T TATT
8 AGAAGTGGGTATTCCCCTTC GTC CTT TC G GCTTG GAAG GGG
CCACCCCAGGCACTGGAGGA CGG GAG AG C CGGAC CTTC CCC
GCGGC C G GT A CCCACC - ----
GAM28538 2819 GTCAGACTCCTGCCTCAAGC AC -- AAG G - GAAG
8 CTGAGTGGAAGCACCTGAGG GTCAG TCCTG CCTC CCT AG TG
ACCGGGGATCGGGACCTGAC CAGTC AGGGC GGGG GGA TC AC
C- TA CCA G C ----
GAM28539 1344 GTCAGAGCTCATTCGACAGT - T TT G T- C TG AAAG
7 TAAAGCCATTGTTTAAAGAA GTCAG AGC CA C ACAG TAAAGC AT TTT
ATGGTGCTTTGCTCTGTGTT TAGTC TCG GT G TGTC GTTTCG TG AAA
TGTGCTCCTGAT C T TT - TC - GT ----
GAM28543 8881 GTCAGCCAAGGGAAATGGTT CAAGGGAAATG G TT - A ACTCT
6 GGGGATTATGGCTTCAGCAC GTCAGC GTT GGGA ATG GCTTC GC
TCTGCCGGAGCACATTCCTG CAGTCG CGA TCCT TAC CGAGG CG
AGCGCTGAC ---------- G -- A C -----
GAM28544 12830 GTCAGCCTCGTGGTGGAATT C G G ATTA GA GTTC
3 ATTTTTTTCTTTATGATGGT GTCAGC TC TG TGGA TTTTTTTCTTTAT TG
TCCAAGGTAAAGGAAGAAGG CGGTCG AG AC ACCT GAAGAAGGAAATG AC
CGATCCAACAAGAGCTGGC - A A AGCG GA ----
GAM28552 18676 GTCAGTATGTTAAACATTGA TATGTT TGAAGT GG C TGTTAC
8 AGTTAGGGGGAGGGTGCATA GTCAG AAACAT TAGG GAGGGTG ATA
TGTTACTATTGCTTTCAATT CAGTC TTTGTG ATTT CTTTCGT TAT
TATCCACTGTGTTTCTGAC ------ TCACCT AA - ------
GAM28555 9288 GTCAGTGTAATTTTATGAAA C T T CC AAT C TTTGT
7 CCTGTAATGGCCACATTTGT GT AGTGTAATT TA GAAA TGT GG CACA
TGTGTCTCCGATGTATTTCT CA TTACGTTAA AT CTTT GTA TC GTGT
ATAATTGCATTAAC A T - AT GCC T -----
GAM28563 8839 GTCATCTCTGGTTATTGTTT --- GG A G - TT GTGTTTTA
6 TTTCCTTGTGTTTTAAAGGG GTCA TCTCT TT TT TTT T CCTT
GACAAAAAAAAAAAAGGGAT CAGT AGGGA AA AA AAA A GGAA
TGTGAC GTT AA A A C GG --------
GAM28568 5809 GTCATGTAAGAAATAAGAAT G AATA C C CCATG - AAAACCTCCCAC
7 CATCACCTGTACCCATGGAC GTCAT TAAGA AGAAT ATCAC TGTAC GAC CGTA
CGTAAAAACCTCCCACTACG CGGTA GTTTT TTTTA TAGTG ACGTG TTG GCAT
AGTTGTGCAGTGATAATTTT - CAG- A - ----- A ----------
GACTTTTGATGGC
GAM28568 19771 GTCATGTCACCTTTCACCCA T TTTCA CA AATATTCAGTCTAAAAGCA
9 GCAATATTCAGTCTAAAAGC GTCATG CACC CC GC
AGCAAGGCCGTGGTGCATGG CGGTAC GTGG GG CG
C - TGCC- AA ----------
GAM28571 18463 GTCATTCATCACCGACATAG - CA GA A---------- CCCA
4 ACCCATCAACGCACTGCAGC GTCATT CAT CC CAT GA
TGCCATGGAGGGTATGAAGT CAGTGA GTA GG GTA CT

GAC A TG AG CCGTCGACGTCACGCAA ----
GAM28572 2739 GTCATTGATCATGACATCAA -- TG C A ACTTG
7 CAATAGGTACTTGATCAATT GTCATTGA TCA ACATCAA AAT GGT
TTTGGTGTATTGATTTCAAT CAGTAACT AGT TGTGGTT TTA CTA
GAC TT TA T A -----
GAM28573 18120 GTCATTGTACTAGTTAGAAG TT A G C--- A AATTCAGT ATGT
7 CTTATTATCTTAATTCAGTA GTCA GTACT GTTA AAG TTATT TCTT AGGTTT
GGTTTATGTAGACCTTAACA CAGT TATGA TAAT TTC AATAA GGAA TCCAGA
AAAGGAAATAAATATCTTGT -- G G TATA A AACAAT-- ----
AATGAGTATTGAC
GAM28574 3540 GTCATTTATCTCTGATGGCA TAT GGC TTGAG AA T CA- TACAGTTTT
5 CTTTGAGGGAAAAGAATGTC GTCATT CTCTGAT ACT GGA AGAA GTC CA
CACATACAGTTTTTGAAAGA CAGTGA GAGATTG TGA CCT TCTT TAG GT
TCTTCTCTCCAAACCAGTTA CC- AT- CCAAA C- C AAA ---------
GTTAGAGCCAGTGAC
GAM28574 3447 GTCATTTATTTATACAATAG TTATTTA A ---- T- AAAAAGTGTTTTTCA
6 GCTTGGTCAAAAAGTGTTTT GTCAT TACA TAGG CT GGTC
TCAGACCTCGGTATTCCTAA CAGTG GTGT ATCC GG CCAG
TGTGGGATGTGAC TAGG--- A TTAT CT ----------
GAM28578 5686 GTCCAACACTGAAACCGCCT CAC-- AAA - CCG- T- CTTTGT
0 GACCGCTGCTGTCTTTGTGC GTCCAA TG CCGCC TGA CTGC GT
TTGCAGAAAATCACGGTGGG CAGGTT AC GGTGG ACT GACG CG
CACAAAATTTTGGAC TTAAA ACG C AAAA TT ------
GAM28584 9309 GTCCAGAGGCCGCATATCTG AGA-- CATATCTG GACCTGCAACG
4 CTGGATGGCTGACCTGCAAC GTCC GGCCG CTGGATGGCT
GAGTCATCCAGACTGGCCCC CAGG CCGGT GACCTACTGA
AGAGGAC AGACC CA------ ----------
GAM28584 21306 GTCCAGCAAAAGGTTGCCAA GCAAAA CCAA-- A ATGGAC
9 AGAGTTTATGGACAGACCTG GTCCA GGTTG AG GTTT
GAATCCAACCGCACAATGGA CAGGT CCAAC TC CAGA
C AACACG CTAAGG - ------
GAM28587 2952 GTCCAGGACTGTATCAAAGC AG GTA- CATATGG ATGA
1 CATATGGCCATGAGGATTTT GTCC GACT TCAAAGC CC
GCTTTGAGTAAAGTTGGGAT TAGG TTGA AGTTTCG GG
G- AATG TTTTA-- ----
GAM28588 9087 GTCCAGGGGTGGGAATACAG C GGGAA AG G GAGG A AGAGGTGA
5 GGGGTGGGAGGTGTGCATAA GTC AGGGGT TAC GGG TGG TGTGC TA
GAGGTGATAGGCACAGGCCA CGG TCCCCA ATG CCC ACC ACACG AT
GCCCGGTACAGACCCCTAGG A GAC-- G- G GG-- G --------
C
GAM28590 20591 GTCCAGTTTCTTTTCAATAT TTTCT A A T GAAAA TGATC
0 AGGATAGGTGAAAATGGTGA GTCCAG TTTC AT TAGGA AGGT TGG
TCCCAAAGCCTTCTTAATAG CAGGTC AGAG TA ATTCT TCCG ACC
AGATTTCCTGGAC CTTT- A - - AA--- -----
GAM28592 21118 GTCCATGGTTCCCTGGCCCG A--- - -------- CG- GGAAA
4 TGCTGGAAAAGTGAGAGGTC GTCC TGGTT CC CTGGCC TGCT
AGACTCCTAAGGTGGCCAAA TAGG ACCGG GG GACTGG GTGA
CAGGAT ACAA T AATCCTCA AGA -----
GAM28593 18823 GTCCCAAAAGCCACCCAAAA -- ----- CAAAAATT AAGC
6 ATTGTAGAGAAGCTTTTACT GTCC CAAAAGC CACC GTAGAG

GCTGATGGTGATCAAGTTTT CAGG GTTTTTG GTGG CATTTT
TGCAGGAC AC AACTA TAGTCGT- ----
GAM28599 18418 GTCCCATCAGCTTGGATGAC CCATCA T A GATAT TCAC
0 AAATGATATGGTCACCCTAA GTC GCTTGGA GAC AAT GG
ATTGGTCTTCCAGGTGCTTG CAG TGGACCT CTG TTA CC
AC TTCG-- T G AAT-- ----
GAM28601 9345 GTCCCCATGGCTCACCAAGC CCAT- CACCAA CA-- AGAGTAGC
7 CCTGCTCCATGAGAGTAGCC GTCC GGCT GCCCTGCTC TG
AGCAAGAGCAGGGCCACAGC TAGG CCGA CGGGACGAG AC
CCAGAAGGAT AAGAC CAC--- AACG --------
GAM28604 18350 GTCCCCTTCTGACCTGTCCC C- GACCTGTCCCCA CCTAT
6 CAGAGAGCCCTATGCTCTCC GTCC CTTCT GAGAGC
TCCCCACCCAAGAAGAAGGA CAGG GAAGA CTCTCG
C AA ACCCACCCCTC- -----
GAM28604 5594 GTCCCCTTTGGAACCATCTT CCT AACCA GACA - - AACATG
7 GACACCCACGAACATGCGTT GTCC TTGG TCTT CC CA CG
GAGGAAAAGACCCCCCAACA CAGG AACC AGAA GG GT GC
AGGAC AAC CCCC- AA-- A T ------
GAM28604 1741 GTCCCGAAACAAGCTTTCAC GAA TT A CGT A CCCTG
8 CGACGTGGCCACTGGCTCCC GTCCC ACAAGC TC CCGA GGCC CTGGCT
TGGGCCAGGGCCTCGGGGCC TAGGG TGTTCG GG GGCT CCGG GACCGG
GCTTGTGGGAT --- CC - --- - -----
GAM28605 6234 GTCCCGGCGGCGGCCCAGCC C CG C- T CCA -- CAAC
6 TCAGTTCCAGCGCCAACGCC GTC CGGCGG GCC AGCC CAGTT GC GC
AGCACCGGCTGCGGCTCCGG CGG GTCGCC TGG TCGG GTCGG CG CG
TTCCCGCTGCGGC C CT CC C CCA AC ----
GAM28606 8042 GTCCCGGGTGTTTTAATGTA - G A G- ATCTAA--- GGCATAA
0 GGCATCTAAGAATGGCATAA GTC CC GGTGTTTT AT TAGGC GAAT
ATTTAAAATAAAGGCTTAGA CGG GG TCGCAAAA TA ATTCG TTTA
ATAAAAACGCTGGGTGGC T G A AG GAAATAAAA -------
GAM28606 5912 GTCCCGTGCCCCACACTCTG - CC-- CTCT TCT TATCCACAGCTGCT
5 AGTCTGCCCTATCCACAGCT GTC CCGTG CCACA GAG GCCC
GCTGGGCCTCTCTGTGGCCA CAG GGTAC GGTGT CTC CGGG
CCATGGTGAC T CACC ---- TC- ----------
GAM28611 21467 GTCCCTGGTTTTTAATTTTC - - T-- G- A AGATCA TGCAC
3 TGTCTGATGTCACAGATCAT GTCCC TGGTTTTT AAT TTCT TCTG TGTCAC TTGT
TGTTGCACACAAACGTGGCA CGGGG ACCGAAGA TTG AAGA AGAT ACGGTG AACA
TAGAAAAGAACATGTTCAGA T C TAC AA - CA---- -----
AGCCATGGGGC
GAM28612 9810 GTCCCTTCTCGCCATGTCCC ---- CAT TC A- A- AC CGC
2 AGAGCAGGCACCGCGCCGAG GTCCC TTCTCGC G CCAG GC GGC CG
GCCCCGCCGCTGGAGCGCGA CAGGG AGGAGCG C GGTC CG CCG GC
GGACAGTGGGAC TGAC --- GA GC CC GA ---
GAM28614 20449 GTCCGATGGAGGAGGATGGA GA GA GATGG AAT GACGA
0 CTGTAATTCAGAGACGATCT GTCC TG GGAG ACTGT TCAGA
GATGGCAGTGAAAACTTTAA TAGG AC TTTC TGACG AGTCT
CAGAGGAT AG AA AAAAG GT- -----
GAM28614 14454 GTCCGCTTCTCGCCCAACAG - -- A - AACCCTATCATC
4 GAGCAACCCTATCATCGTCT GTCC GCT TCTCGCCCA CAGGAG C
CCTGTGGGTGGGACAAGCTG CGGG CGA AGGGTGGGT GTCCTC G

GGC T AC - T ----------
GAM28615 4137 GTCCGTATGGTGATTGAATA TAT A TG A- C - A GAA
6 TGCCAGATTACGAGGAATTC GTCCG GGTG T AAT TG CAG ATT CGAG
GAGTCCTGCCAGAATTTGAT CGGGT CCAT A TTA AC GTC TGA GCTT
ACCCCTGGGC CC- - GT AG C C - ---
GAM28615 8247 GTCCGTCGACCGCTGGATTT G CC TT- CTCA-- --- C AGCA
8 GACTCAGAGAGGACCCCCAG GTCC TCGA GCTGGA TGA GAGA GGAC CCC
CAGGGTGTCTCCATCTTCCC CGGG AGTT CGATCT ATT TTCT TCTG GGG
TATTTATTTTCTAGCCCTTG - CC TTT TATCCC ACC T ----
AGGGC
GAM28615 20596 GTCCGTCTGCCCGTAGCTAA G-------- T A- - GGCC
9 TCCACAGGCCTGTGAGAACT GTCCGTCT CCCG AGCTA TC CACA
GGCTCCGGGGAAAGAATAGG TAGGTAGG GGGC TCGGT AG GTGT
ATGGAT ATAAGAAAG C CA A ----
GAM28617 3589 GTCCTACCGACTCCTGCCTG T C GC--- CAG AGGAGC
3 GCAGCTGGAGGAGCCCAGGT GTCC AC GACTCCT CTGG CTGG
TCCAGCACAAAGGAGTCTGT CAGG TG CTGAGGA GACC GACC
GGAC - T AACAC TTG ------
GAM28618 763 GTCCTATGTCACGTGGGGCT TG A T TT GA GCTTGA
5 TATAGGACGGACGGGGCTTG GTCCTA TC CG GGGGC ATAGGACG CGGG
ATCTGGATGTTCTGTGCCCC TAGGGT GG GT CCCCG TGTCTTGT GTCT
TTGCGGTCTGGGAT CT C T -- AG ------
GAM28619 4254 GTCCTCAATGAGCCACGAGC CC A GCCAC CCTCCACCTTC TTCATT
3 TCTCCTCCACCTTCACTTCA GT TCA TGA GAGCTCT AC
TTGTAGAGCTCCCCATCAAT CG AGT ACT CTCGAGA TG
GATCGC CT A ACCC- ---------- ------
GAM28619 3048 GTCCTCACCCTGGCCCAGCG C CC C CTCATAA C AACCATGA
7 ACTCATAAAGTCATGCAACC GT CTCAC TGGCCCAG GA AGT ATGC
ATGAGCATCACTGCCTCCTG CA GAGTG ACCGGGTC CT TCA TACG
GGCCAAAGTGAGCAC C AA - CCG---- C --------
GAM28624 18186 GTCCTCTCTGTCTTTTCTGT TCTCTG G CA- G AAATGTAT
0 CCATGCCAGGGAAATGTATT GTCC TCTTTTCT TC TGCCAG G
GCTGGTGCTAGAGGGAGAGG CAGG AGGAGAGG AG GTGGTC T
AAACGTGGAC TGCAA- G ATC G --------
GAM28624 6186 GTCCTCTGCCTCCACCGCCC T CCA - TC GC TC- C- ACGT
3 CGGGATCTCCTTGCGCTCGG GTCCTC GCCT CCGCCCCG GGA TCCTT GC GGT CTCT
TCCTCTACGTGGAGTCACCT CAGGAG CGGG GGCGGGGC CCT AGGAG CG CCA GAGG

ATGCAGAGGAATTCCACGGG - --- A TA A- TAT CT ----
GCGGGGGCGAGGAC
GAM28626 20087 GTCCTGCACAATCAAATCCG - T AA - TGA GAG
9 TGACACTGGAGCAGTGGGCT GTCCTGCA CAA CA TC CG CACTG
GTGAGCTGCTTGTTGCAGGA CAGGACGT GTT GT AG GT GTGAC
C T C CG T CGG ---
GAM28627 2767 GTCCTGCCTCAAAGAGAAGC - AAGAGAAGC AAATAA AGGA
8 TGCCAGAAATAAACAGGAGT GTC CTGCCTCA TGCCAG AC
CCCCATTGGCACACAGTGGG CAG GACGGGGT ACGGTT TG
GCAGTGAC T GACAC---- ACCCC- ----
GAM28630 19058 GTCCTGTAAAAGCCGAGAAT AAAAGC G G- A - AAAATA
3 GGGAAATGGAAAATACTGAT GTCCTGT CGA AATG GA AT GG

ATCAACATTGTCGTCATAGG CAGGATA GCT TTAC CT TA TC
AC CT---- G AA A G ------
GAM28632 19835 GTCCTTAAGGTTCAGCACAG - A- GT A---- C--- T CACGTCTTA
5 CCTTCATCAGGCACGTCTTA GT CCTTA G TC GCACAG CTTCA CAGG
CCTGTGGAGCCCTCTGTGTA CA GGAGT C AG TGTGTC GAGGT GTCC
TTCCGAGTCGGTGAGGTAC T GG TG CCTTA TCCC - ---------
GAM28635 22334 GTCCTTGAACTTGGAACCTG GA- TGGAA- GACAAT G GTTGGAA
3 ACAATGTTGGTGTTGTCGTG GTCCTT ACT CCT GTTGGT TTGTCGT
TTGGAAATGATAAACTAATT CAGGAG TGA GGA TAATCA AATAGTA
AAGGAAGGAGATATAGTGAA AAG TATAGA AGGAAT - -------
GAGGAC
GAM28638 6325 GTCCTTTCTTTCGCCAGGCT T T - C GG C CTT
1 GGGGACCCGCTTCGCGTTAT G CCTTTCTT CG CCAGG TG GAC CG
CATCCTGGTCGCAGGGAAGG C GGAAGGGA GC GGTCC AC TTG GC
C - C T T TA C ---
GAM28639 16809 GTCGACCCAGGGAGGAAGAT ACCCA - A--- A AAC AGCCT
2 GACCAAGAACCAGGTCAGCC GTCG GGGA GGAAG TGACCA G CAGGTC
TGACCTGCCTGGTCAAAGGC CAGC CCCT TCTTC ACTGGT C GTCCAG
TTCTATCCCAGCGAC GA--- A GGAA - C-- -----
GAM28640 6482 GTCGAGCATGGCACCGCGGA T ACC ATG CT GGCGA
5 TGCGCTGCGTGGCGAATGTC GTCGAGCA GGC GCGG CG GCGT
TCGAACTGCACGCCCTGCTC CGGCTCGT CCG CGTC GC TGTA
GGC C CA- AA- TC -----
GAM28641 9679 GTCGAGTTCCTGACAAGCCA G- GA C CC TA ATTTT
2 CCCAGTAGATTTTCCGCTGT GTCGA TTCCT CAAG CA CAG G
CTGTCTTGGAGGAGGATCGA CAGCT GAGGA GTTC GT GTC C
C AG G- T CT GC -----
GAM28641 14595 GTCGATCACCCTGGACCGCG C CC ACC GAA--- - AC TGAAA
4 AAGTCGCTCACCTGAAAGAC GT GATCA CTGG GC GTC GCTC C
GAGCTGATGCCCAAGTACGC CA CTAGT GACC TG TAG CGAG G
CAGCCTGATCTAC T CC GCA AACCCG T CA -----
GAM28641 12971 GTCGATTTAAACCATGTAGA G C A TAAG------- AAAAGTC
9 AATAAGTATGCAAAAAGTCT GTC ATTTAAAC ATGT GAAA TATGCA
GCATAACAAAACATACTTTT TAG TGAATTTG TACA TTTT ATACGT
AACATGTTTAAGTAGAT A - A CATACAAAACA -------
GAM28642 20160 GTCGCCATGACCAGTGAGCT A-- G TG CATCTTCGT G - AC ATCGAC
9 GGACATCTTCGTGGGGAACA GTCGCC TGACCA TGAGC GA GG GA ACACG CCTT
CGACCCTTATCGACGAGGAC CAGTGG ATTGGT GCTCG CT CC CT TGTGC GGAG
GTGTATCGCCTCTGGCTCGA CTC A GT --------- G A A- ------
TGGTTACTCGGTGAC
GAM28644 21339 GTCGCGGCCGACCCCGTCGC G CGAC ----- CC C TACCAT
4 CTCCGCCGGCTACCATGTCC GTC CGGC CCCGT CGCCT GC GGC
GCCCAGGCGCAGATGCGGGC CAG GTCG GGGCG GCGGA CG CTG
CCTGCTGGAC - TCCC TAGAC CC C ------
GAM28645 20731 GTCGCTCACTTTTTCACACT C T TTTTTC - A- C TCCGCT G TCCTCTTT
2 AGGGGCCGCCGTCCGCTCGC GT GC CAC AC ACT GGGGC GCCG CGCC CCGGC
CGCCGGCTCCTCTTTGTCGG CG CG GTG TG TGA CCCCG CGGC GCGG GGCTG
GGCGCTCCGGCGCCCCGGAG C C TTTT-- C GG - CTC--- - --------
TCGTTTTTGTGCGCCGC
GAM28645 9088 GTCGCTGCCGCATGTGTGAC C CGC G C - ---- AT CAACCA

8 AAGCTGCTTAATGCCAACCA GTCG TGC ATGT TGA AAG CT GCTTA GC
GCCATGAGCTTCCAGATTTA CAGC ACG TACA ACT TTT GA CGAGT CG
TCAGACATATTGCACCGAC C TTA G A A CCTT AC ------
GAM28647 13024 GTCGGCCTGCAAGGAAGACA C - G A ACATCC - AAA-- - GGAGA
0 TCCCCAGCGAAAAGAGTGAG GT GGC CT CA GGAAG CCAG CG AG AGTGA
GAGATCACTACTGGCAGTGC CA CCG GA GT CCTTC GGTC GT TC TCACT
CTGGTTTAGCTTCCTGGAGA - A G - GATTT- C GACGG A -----
GCCAC
GAM28647 758 GTCGGCGATGGAGCGAGCGG C - T GA ----- CT TCGATGT
2 ACTCCTTCTCGATGTGAGGG GT GG CGA GGAGC GC GGA CCTTC
TTTCCCGACAGCAGCTCCTC CA CC GCT CCTCG CG CCT GGGAG
GACCAC - A - A- ACAGC TT -------
GAM28649 9451 GTCGGTCTGAAAGCCCCCGG AAAGCC-- G C--- CTC
6 TATCATTCCTCGAATTTCAG GTCGGTCTG CCCG TAT ATTC
TGCGGGAACCAATGCAGACT CGGTCAGAC GGGC GTG TAAG
GGC GTAACCAA - ACTT ---
GAM28649 1506 GTCGGTGGGGACGGGGGTCC - GGG--- TG G TG AGA
9 TGGGCTGGGCAGAGCCTGGG GTC GGTGGGGAC GGTCC G C GGC
CTGGGGCCACACTAGTCCCC CGG CCACCCCTG CCGGG C G CCG
ACCAGGC A ATCACA GT G GT ---
GAM28650 681 GTCGTCGCGCGCCCTAGTGG - GCGCGC AGT - AAAAA AAACACTTG
8 CCCCGAAAAAGCCTTCAGAA GTC GTC CCT GGCC CCG GCCTTCAG
ACACTTGTTGAGGGCACCGG CAG CAG GGA CCGG GGC CGGGAGTT
CGGCCCAGAGGTAGACAGAC A AT---- GAC C CA--- ---------
GAM28650 16854 GTCGTCGTTGTAGTCTTTTT CG A C- CCA C G TT AG TATCTCCAGTTCCTT
9 GCCCAAGGCTGTTGTGTTTT GT TCGTTGT GT TTTTTGC AGG TGTT TGTT TAG GTGC
TAGAGGTGCTATCTCCAGTT CG AGCGACG CG GAGAGCG TCC ACGA ACAA GTC CACG

CCTTGCACTCCTGTTAACAA AT A AC AC- - - TT CT ----------
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GCAGCGATAGC

GAM28651 3264 GTCGTGACTTGGTTACTCGC CG - -- TC TT------ A CGGA
2 TAGCTTAGGGATCCCGGAGG GT TGA CT TGGTTAC GCTAGC AGGG TCC
ACCCTTCACTTCTGCTGGTG CG ACT GG ATCAGTG TGGTCG TCCC AGG
TGACTATTGGATCATAGC AT A TT -- TCTTCACT - ----
GAM28652 14610 GTCGTGGCTCTAAGATAATA GG- ------ ATAAAT-- ------- T GGTTG
2 AATCAAATGTTGTGTTATCT GTCGT CTC TAAGATA CAAATGT TGTGT ATCTTT
TTGGTTGAAAGATACACAGA CAGCA GAG ATTTTAT GTTTATA ACACA TAGAAA
TCAAAATATTTGTTGGAATA AAA TTAAAA ATAAGGTT AAACTAG - -----
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CGAC
GAM28652 18559 GTCGTGGGTGTTTGGTGTGA C TT-- TGA T GA C-- C GTTC
5 GGCTGCGAGCCGCCGCGAGT GT GTGGGTG TGGTG GGC GC GC GCCG GA
TCTCACGGTCCCGCCGGCGC CG CACTCAC GCCAC CCG CG CG TGGC CT
CACCACCGCGGTCACTCACC C TGGC CA- - GC CCC A ----
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GAM28653 1764 GTCGTTACAAAAAGTTTTTT ACAAAAA TAAATAAATTCACAC
3 TTTCTTTTAAATAAATTCAC GTCGTT GTTTTTTTTTCTTT

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          AGCGAC               AAGA---     ---------------
GAM28664 21296  GTCTATGGTCCAAACTCTCA   TAT    AAAC   A  -------       -   GA-  - TG GG  A
9          CGTAAGCTGAGTGCCGGAAC GTC   GGTCC    TCTC CGT      AAGCTGAGT GCCG   AC T  C  GG
ATTGGC
          TTGCGGGGAATTGGCAGTCC CAG   CTAGG    AGAG GTA      TTCGGCTTA CGGC   TG A  G  CC
TGACCG
          CAGCACAGATGCCAGTGCCA   T--    CATA   -  CGGGAGC       A   ACC  T GT A-  G
          GTGATGTCCACGGCAATTCG  G  CCAGCACA
          GCTTCGAGGGCATGGAGAAT A TC
          ACGGATCTGAC         T AG
                      -  --------
GAM28668 4366   GTCTCACCTGCTGACCTCTG     A  T-  TGA   C    A  C-   ---  T      CTATAAA
8          AGAGCCTCAGTTTTCTCGTC GTCTC CC  GC   CCT TGAG GC  TCA   GT TTCTCGT
          TATAAAATGGGGATACAAAT CGGAG GG  TG   GGA ACTC CG  AGT   CA AGGGGTA
          GACTGCCTCACAGGATTGTT     -  TT  TTA   C    -  TC   AAA  T      -------
          TGGGAGGC
GAM28671 5448   GTCTCAGGGACACCATGTAG       G AC    GTAGAGAATT   T   GA   AGAAAAGA
8          AGAATTTGGTCTCGATTCAG GTCTCAG G  ACCAT         TGG CTC  TTC
          AAAAGAGAAAGAGCCAGTGG CAGAGTT T  TGGTG         ACC GAG  AAG
          TTGTTGAGAC              G --     ----------   -   A-   --------
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9          ATGTCTTTATCAATTTACAT GTC    GAGCTATG    AAATGT
          TTCAAATATAGTTTTAATGA CAG    TTTGATAT    TTTACA
          C                  TAAT       AAAC     ------------
GAM28673 12261  GTCTCATGATTCTTCTAGTC     A   T      TCTCTCTT    ATAAAAAA      --- TCACT
0          TCTCTTGATAATAAAAAAAT GTCTC TGAT CTTCTAG       GATA       ATCCTGG   GG
          CCTGGGGTCACTTCTAGCCA CGGAG ACTG GAGGGTC       CTAT       TAGGACC   CT
          GGATCCGTCTATCTGTGCTG     A   T      CGTCGTGT    CTGCC---      GAT  -----
          CCTGGGAGTGTCAAGAGGC
GAM28673 18209  GTCTCATTATTCTGCCCAGG      -     TGCCC      TCT   ACCCCTAA  TCAA
3          CTGATCTCAAACCCCTAAGC GTCTCA TTATTC     AGGCTGA   CAA       GC
          TCAAGTGTTCCAATTGCCTC CAGGGT GATAAG     TTCGACT   GTT       TG
          AGCTTCCTGAATAGCTGGGA      C     TCC--      CC-   AACCTTG-  ----
          C
GAM28677 16490  GTCTCCGCGTTCTGGGTGAA      GCGT  TG    AA-----   TG    TTGG
8          GGGTGGCTGTTGGTAGTTGT GTCTCC    TC  GGTG      GGG  GCTG
          CCACAGATGCACCTGGGTAG CGGAGG    GG  CCAC      CCT  TGAT
          GAGGC                  AT--  GT    GTAGACA   GT    ----
GAM28678 8980   GTCTCCTATCACGCATACAA      T   AC--   TACAA--       AAG
7          TTTTCAGCAAGGCTGAAGGG GTCTCC ATC    GCA      TTTTCAGC
          CCATCCTGCAACAGATGGAG CAGAGG TAG    CGT      GGAAGTCG
          AC                   -   ACAA   CCTACCG       ---
GAM28681 8343   GTCTCGCTTCTGCCGAGGTG    CGC      GA  T   CCT    CAAGATTC
7          TCCCTGATGCCAAGATTCGC GTCT   TTCTGCC  GG GTC   GATGC
          ATTTTGACCTGGGGCGGAAA CGGA   AAGGCGG  TC CAG   TTACG
          AAGGC                AA-      GG  -  TT-    --------
GAM28681 19316  GTCTCGCTTCTGCCGAGGTG    CGC      GA  T   CCT     AATGATTC
8          TCCCTGATGCCAATGATTCG GTCT   TTCTGCC  GG GTC   GATGCC
          GCATTTTTGACCTGGGGCGG CGGA   AAGGCGG  TC CAG   TTACGG
```

AAAAAGGC AA- GG - TTT --------
GAM28686 3621 GTCTCTCAGCTGACCAGCGA TCA TG A G TCAA ATCAA
2 GCTCAAGTTCATCAAGAATG GTCTC GC ACC GCGA C GTTC
CTGTCGCCGGTGTGCGCGAG CAGAG CG TGG CGCT G TAAG
AC CG- TG C - TCG- -----
GAM28687 21543 GTCTCTCGAGGTCACCATGA - A- - A --- CA-- TCCC
3 TCCCATCCATCCCTGGACCT GTCTC TCG GGTCA CC TGA TCC TCCA
AGGACCCTCAGGCTGGCCGA CGGAG AGC CCGGT GG ACT AGG AGGT
CGATGAGGC T AG C - CCC ATCC ----
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6 GGTTTGTTAAAGTTGTTAAG GTCT CTG CA TGG TTT TTAAAGT GTT
AATAAGGCCTACTTTAAGAG CAGA GAT GT ACC AGA AATTTCA CGG
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GAC
GAM28695 21671 GTCTGAAAAGTGCCAGGGGC G - CA AA- ACAGTA ACATGCAAAGGGGAAA

8 AATTTCTTCACAGTATTTCA GTCT AAAAGT GC GGGGC TTTCTTC TTTC
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GAM28696 21574 GTCTGAAAGCCCCCGGTATC G A CCCG- CA- T A TTCA
2 ATTCCTCGAATTTCAGTGCG GTCT AA GCC GTAT TTCC CG AT
GGAACCAATGCAGACTGGCA CGGA TT CGG CGTA AAGG GC TG
TTAAGGC A A TCAGA ACC - G ----
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3 TTCCTCGAATTTCAGTGCGG GTCT AGCC CCGGT CAT TCC CG AT
GAACCAATGCAGACTGGATT TAGG TCGG GGTCA GTA AGG GC TG
AAGGCTGTGGAT TG- AATTA GAC ACCA - G ----
GAM28700 4191 GTCTGATCAGTCGAACTAAG GA TCGAA AA TGAGTACACATAAT
6 ATTTTTGAGTACACATAATA GTCT TCAG CT GATTTT
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A- TCAG- -- ----------
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1 AGGAACCTGAGGAGACCCTG GT CTGCA AAATCAA CAGG CT
GACTTTGATTTCTGCAGCAC CA GACGT TTTAGTT GTCC GA
C C TCAG CA- ----
GAM28701 18842 GTCTGCAAGTCAGAGTCCGT G - A- C- -- - ACT
5 GCCACCTGTCACTGACTGGG GTCT CA AGTCAG GTC GTGCCA CCT GTC
CCTGGTACAAGATCACTGAC CAGG GT TCAGTC TAG CATGGT GGG CAG
TCTGAGGAC A C AC AA CC T ---
GAM28702 4205 GTCTGCAGAAACAGTGCAAG -------- ACAGT A GGCAGCGA
2 GAAGGGCAGCGACTTCCTGG GTCT GCAGAA GC AGGAAG
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GGAC TACAAAAT CGAGT G --------
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5 AGAAAAATGAGGAGGATTCA GTCT CG TGAAGA GCT TGAG
GAAGGCTCTTCAGAATGAGG TAGG GT ACTTCT CGG ACTT
AT A AAG - AAG----- -----
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6 GTTTGTGGCGGCTGCTGCTA GTCT GTGC GGCTGGT TGT CGGCT

GAGCTGGAGCATTGCCGGTC TAGA TATG CTGGCCG ACG GTCGA
AGTATTAAAAGAT AAAT-- A TT AG --------
GAM28709 9307 GTCTGGCCATTGGGCACAGC T G C CAT --- G A- C GCAG
7 CAGGCATGCCAGCTGTGGCA GTCTGGCCAT GG CACAGC AGG GCCAGC TGTG C GGG AG

GGGCAGGCAGCTCCCAGGCA CAGATCGGTG TC GTGTCG TCC TGGTCG ACAC G CCC TC

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8 CATGCCACAGACCAAATTGA GTCTGG GT CGA CGTTTC TGC CA
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AGAT T T - AA-- A ----------
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9 TAAGTATTTTGGGGTGGGAT GTCTG GG GT GT TTTT TATTTT
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ACAGAC A T A AGAG GGA -----
GAM28718 8083 GTCTGTGCTTTATTATGGCC GCTTTAT CTT TTAT ACTGA
8 TTGTTTATATATCACTGAGG GTCTGT TATGGC GT ATATC
TATACTATGCCATGTAAATA CAGATA GTACCG CA TATGG
GAC AAT---- TAT ---- -----
GAM28723 12196 GTCTTAAAACAATTTGTTTG C GA GT CGGAAAAAG GATA
0 GGAGTAAGTTTTAGTCGGAA GTCTTAAAA AATTTGTTTGG GTAA TTTAGT GTGAA
AAAGGTGAAGATATTTATGC CAGAGTTTT TTAAACGAATT TATT GAGTCG TATTT
TGAGTTATGTTAAGCAAATT A G- -- --------- ----
ATTTTGAGAC
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7 GTACAACGCGTACCGACACC GTCT AGC GTGGA GCG GGTAC
AACGTTTCCACAGTTTCGGA CAGG TTG CACCT TGC CCATG
C CT A T AACCACAG -----
GAM28727 21356 GTCTTATGCTCTTTGAAAGA - CT AAG GAGA CAAC
1 TAGAGATTAAGTACAACTAC GTCTTA TGCT TTGA ATA TTAAGTA
TTAAAAAATATAGTCAATAG TAGAAT ATGG AACT TAT AATTCAT
GTACTAAGAT C AT GA- AAAA ----
GAM28729 4354 GTCTTCAGGTGATGGCAGAG - GATGG A A A AAAAGG
0 GAGGGGACCCAAAAGGGGGC GTCTTCAG GT CAG GG GGGG CCC
CCCCCACTGAAAACATTGGG CAGGGGTT CA GTC CC CCCC GGG
GAC A AAA-- A - - ------
GAM28730 6172 GTCTTCCAGCAGACCATCTC GCA-- A T T - AGGGC
5 CTGCCCGGAGGGCCTGCGGC GTCTTCCA GACC TC CC GCC CGG
TGGTGGGGTCCGAAGTGGGA CAGAGGGT CTGG GG GG CGG GTC
GAC GAAGC - T T C -----
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8 CTCTTGCCACCTCTGTGGTC GTCTTCC CTTC CCC CTC GCCAC
TGAGCTGGGGGAGGGGGAGG CGGGAGG GGAG GGG GAG TGGTG
GC G- G- TC TC ----
GAM28731 2917 GTCTTCCTCACCCTGTCCGT T CCCT T T T--- CTG
4 GACGTGGATTGGTGCTGCAC GTCTTCC CA GTCCG GACG GGAT GGTG
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GAM28735 14369 GTCTTCTTTAATAGAGTATC T- AATAG A TT CACAAC
3 TTTCAAACACAACTTTGCTA GTC TCTTT AGT TCT CAAA
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C CT CCTGG A TC ------
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1 GTCCTGTTTGCCCTTCTTAT GTCTTG TCAG AATGT CTG TGC
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TCTGACAGGAT ------ - TC CTATCT ----------
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1 CCTTATTGTTACAATGCACA GTCT TGT TTA AAGTA CCTT ATTGT
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CACAGAC C A A CA G --------
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2 TGCAATACCACTAGGAGAGA GTCTT TCC TTCAG TTT CC
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6 TGTCTTTAAATACAGTCTCT GTGA AT GA TATTTGTTT GTCTTT TA AG
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7 CCACTTGAAGAAAAGGGTGA GT AAC GAAGATTCG GCC CTT
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AT G A GGAGGAAG - ------
GAM28765 700 GTGAACTCTGCCCTAAAGTC T - AAA- CCTC-- CAT
7 CTCCTTCCAGCATTTGGAAG GTGAAC CTGC CCT GT CTTCCAG
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GTTTAC - A GTAC CCTTAC ---
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4 TAAAGGACTGACTGAAGGCC GTG GG GGGGA AGGAC TG ACTG GGCCTGC TG
TTCCA
TGCATGGATTCCATGTTCAT CAC CC CTCCT TCCTG AC TGAC TCGGACG AC GAGGT
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AGGCTGTACCAGTGCAGGTC TG CATG
CTCACTTTAATCCTCTATCC TT
AGAAAACAC GA
TT ----

GAM28774 16719 GTGAAGTGAATCCAAATACC TG AT CAAATA T AA- GGGTATG
8 CGTGTCATGAACAGCCGGGG GTGAAG A C CCCGTG CATG CAGCCG
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GGGGAGATAGGCTTGCTTCA GT CG ATAGAG - ACA -------
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4 GTTTACACAACTTTCTGGGT GTGAAG G AGTT ACACA TTCTGGG
ATCAGATTCCGGGATATGTG CATTTC T TCAA TGTGT AGGGCCT
TAACTTTAGGCAAATTGCTT GT AAACGGATT- - AT- --------
TAC
GAM28776 3896 GTGAAGTTCCTTATGCTGTT GTTCCT -- CA TGTT T ---- T AATGT
4 ATTTCAAAAGTGTTTCCTGG GTGAA TATGCTGT TATTT AAAG TCCTGGTT CTT TTTAA G
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TAAAATACAAGCAATCAGGA ------ GA -- CC-- C CATA - -----
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GTTCAC
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1 CTGATCTAAAAATGAAAGCC GTGAATGT AGCT GAT TAAAAAT GAAAGC TC TGTAGAAA
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TGTCTTAAGTTTCTTTGCTG TATT
CGTTTAT ATAA

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2 CCAGAAAGACAGAAGTTAAT GTGAA GCTA GT ACCA GAAAGA GAAGTT TCCC
CCCCAGATGGGAAATTTCAG TACTT TGGT CG TGGT CTTTTT CTTTAA AGGG
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TTTGGTTTTTCAT
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2 AAGTGCTAACATGCCTTGGT GTGAC CAT CTG GACCAAG GC
TCCACGGGATGGGAAAGTCA CACTG GTA GGC TTGGTTC CG
C AAAGG G ACC - ------
GAM28795 9452 GTGACCTACCATTCTTAGAG - A GA - GG GATT
3 TCCTGGCTGGATTTAGGGAG GTGACCTA CC TTCTTA GTC CT CTG
AGGCATAAGAAAGGATAGGT TATTGGAT GG AAGAAT CGG GA GAT
TAT A A A- A GG ----
GAM28795 5981 GTGACCTGAGAATCCATTTA C AATCCAT -- TCGG CCTCC
7 ACCTCTCGGTCTAGAACCTC GTGAC TGAG TTA ACCTC TCTAGAA
CTTCTGGAAAGTGAGGTATT TATTG ACTC AAT TGGAG AGGTCTT
AATACTTGACTCATGTTAT T AGTTCAT TA TGAA -----
GAM28796 12162 GTGACGCAGACGGTCCGCGT C GA G AGC AGCAGAG
8 TGTAGCGTTGGAGCAGAGCC GTGA GCA CGGTCC CGTTGT GTTGG
GACAGCAGCGGGGCTGGGTG CACT TGT GTCGGG GCGACG CAGCC
TTCAC - GG - A-- -------
GAM28797 4362 GTGACGGGAGCTTAGGTCGG A T T AAG--- A T AGCCGA
5 GAAGGGATGGATCGCTGAGC GTGACGGG GCT AGG CGGG GG TGGA CGCTG
CGATAGCGTCCGCTAGGCTG CATTGTCC TGG TCC GTCT TC GCCT GCGAT
TCTGCCTCGGTACCTGTTAC A C - GTCGGA - - ------
GAM28801 20926 GTGACTGACGAGGAGATCTC AC -- T-- A C AGTTGT GA AGACGA

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2          CCCACAGCTTAGTTGTAGTG GTG  TGACGA  GGAGA   CTCCCC CAG TT     AGT  GCC
           AGCCAGACGAGGCAGCTTAT CGC  ACTGTT  CCTCT   GGGGGG GTC AA     TCG  CGG
           GGAACCTGGGGGGGTTCTCT  C-     TA    CTT    -  C GGTAT-  A-  ------
           CCATTTGTCACCGC
GAM28806 6331   GTGAGAAAAAGGAGGTGCGG    A  AAAA  -      CAGAT  A-     CA   CCAGGA
9          CAGATCCATGCGGGCAGTCC GTG GA    GGA GGTGCGG    CC  TGCGGG  GTC
           CAGGAGGCAACCCGCAGCGG CGC CT    CCT CCGCGTC    GG  ACGCCC  CGG
           CACTGCGCCGTCCGGTCCGC   - GG--   G      AC---  CG     AA  ------
GAM28807 19151  GTGAGAAACTGGAGGACATG    - AA TG    A  TGCT   GA    AAC
1          CTGGAGAGTGGGAACCCCGC GTGA GA  C  GAGG CA    GGA  GTGGG
           CATCTTTGCCTCTGGGATCA TACT CT  G  CTCC GT    TCT  CGCCC
           TCAT                A  AG GT   - T---   AC    ---
GAM28812 18697  GTGAGAGATGGAAATGGGAC       -   -----   GG  AGTTAGGGTCTCTCA
3          AGTTAGGGTCTCTCAGTTTC GTGAGAGA TGGA    AATG  AC
           ATTTTTTCTCCATTCTTTCA CACTTTCT ACCT    TTAC  TG
           C                   T   CTTTT   TT ----------
GAM28812 12949  GTGAGAGCGGTAAGATGGCG   A  C   AA-    C  GG--  -    G  G  TCC    GCCCAG
8          GCGGCGGCGGTGGTGGAGTT GTG GAG GGT   GATGG GGC    CGG CGGTG TG AGT   AGAGA

           CCAGAGAGCCCAGTCTCTAC CAC CTC CTA   CTACC CCG    GCC GCCAC AC TCA   TCTCT
           TCAGCACCGACCGGGAGGCC   -  -  CAG    T  GAGG  A    G  -  ---    ------
           TCCATCGACATCCTCCAC
GAM28813 12386  GTGAGAGGCCACGTCTATTC   A   CCAC    TTCTG    A--  AAGACAAA
2          TGATTTTATCAAGACAAAGA GTG GAGG   GTCTA    ATTTT   TC
           CCCAAAATACCTAGACCTTC CAC CTTC   CAGAT    TAAAA   AG
           ACAC                A   ----   CCA--    CCC  --------
GAM28818 3282   GTGAGCAGGCCCTCTATGAG   A  A   C    A  A  A   GCAACTT    CCG
6          CAGCAGCAACTTGAGGCCGC GTG GC GGC CTCT TG GC GCA      GAGG
           CTCTGCAGCCGAGGAGAGTC CAC CG CTG GAGG GC CG CGT      CTCC
           CGCCAC              - C   A    A  - A   -------    ---
GAM28822 4303   GTGAGCTACAGTAATGTACG       ACA  AA      -    AGG    ACGTGC
7          GGCGCCAGGTCCGACGTGCC GTGAGCT   GT  TGTACGG GCGCC   TCCG
           GGGGGGTGCGCTGTGCAGCG CGCTCGG   CG  ACGTGTC CGTGG   GGGC
           AGGCTCGC                AG- --      G    G--    ------
GAM28824 22304  GTGAGGAAAGCTGGGCGCTG   A  A       --      TCG   TG -   ---  A  - TG    GGGAACT
6          GCTTCGGCCTGGGCCTGGGA GTG GGA AGCTGGGC  GCTGGCT   GCC  G GCCT   GGG CGG G
GGGGGT
           CGGGTGGGGGTGGGAACTGA CGT CCT TTGGCCCG  CGACCGA   CGG  C CGGA   TCC GTC C
CCCCA

           CCCCTGCGCTGCCTCAGAGG   A  C       AT      ---  GT T    GAC   -  G GT    -------
           CTCTGGGCAGCCAGCTAGCC G
           CGGTTCTCCATGC

                      -
GAM28828 20135  GTGAGGATTCCTTGCAATGA     GATT---   -  -   T   T    TTCCC
2          GTAGAATTCCCTTCTCTCCT GTGAG      CCT TG CAA GAG AGAA
           TGTCACAGGTTTAAAACTCA CACTC      GGA AC GTT CTC TCTT
           C                   AAAATTT   C  T   C   -    -----
GAM28828 8995   GTGAGGCATGACGGCTCCGA   G   -   A-  G       CC    TGGA
```

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8          GCCCTGCGTGGACGTGCTGT GT AGGC ATG  CG CTCCGAGC  TGCG
           TCGGAGACGGGCATCGCCTG TA TCCG TAC  GC GAGGCTTG  GTGC
           AT              G   C  GG A      TC   ----
GAM28829 8681   GTGAGGCGAGGGAAAGAGCG      GA-  AAA  GCG   A  A  TTGAT
5          GATTATTGAGTTTGATGCCC GTGAGGC  GGG  GA  GATT TTG GT
           AGAATCAGATCAACCCATAG CACTCTG  CCC  CT  CTAA GAC CG
           TCTCAC              ATA  AA-  AGA   -  C -----
GAM28830 8754   GTGAGGCTGCAGGAAGAGGC   AG   C    - CAGG--  -  -   ACGTTCCTCCCTCCTCA
7          AGGTGTGAGTTGACCACGTT GTG  GCTG AGGAAGA GG     TGT GAGT TGACC
           CCTCCCTCCTCAGGTCATGC TAC  CGAC TTTTTCT CC     ACG CTCG ACTGG
           TCTGCAAGCATTCCATCTTT   CT   -     A  TTACGA  T   T   ----------
           TTCAGCTCCAT
GAM28834 18502  GTGAGGTCTGAGGAGGAGAC     TCT   AG  ACGTT  GG   ACCCCT
5          GTTGGCGGGCGCACCCCTGT GTGAGG   GAGG  GAG   GGC  GCGC
           GCAGCCTCATACTCACCTTC CGCTCC   TTCC  CTC   CCG  CGTG
           CTCGC               ---   A-  ATACT  A-   ------
GAM28837 20854  GTGAGTAGACAGATTACAAT   A     GA    ATTC-    TAA      TT  AAAATAA
3          TCTATTTTAAATATAAAGTT GTG GTAGACA  TTACA    TATTT  ATATAAAG  TAT
           TATAAAATAAATACTTTTTG TAC CATTTGT  AATGT    ATAAA  TATGTTTT  ATA
           TATCCAAATACTTGGTGTAA   A    --   GGTTC    CC-      TC  -------
           TGTTTACACAT
GAM28841 14339  GTGAGTGGGGAGAAGGCAGC  GAG-   AGAA   ---  GCCCT   ATCGATA-----  CACCC
8          AGCCCTGGTGGATCGATACA GT   TGGGG   GGCA  GCA   GGTGG        CAG
           GCACCCCTGCCAGCCTCCTG CA   ACCCC   CCGT  CGT   CCGCC        GTC
           GCCGCCTATGATGCCTGTGC  AGGA   CA--   GTC  AGTAT   GGTCCTCCGACC  -----
           CACCCCCAAGGAAC
GAM28842 9035   GTGAGTGTATATAATGTGGA      T      TG   GTG  CT   ATTATG
6          TTGTGGCCCTGTGTATTATG GTGAGTG ATATAATG  GATT  GCC  GTGT
           ATATTTGGTAGTTTGTGTTA CATTTAT TATATTGT  TTGA  TGG  TATA
           TATTATTTAC            -      GT   ---  TT   ------
GAM28843 20352  GTGAGTGTTAAATGATCTTA      TTA-    CT  TA    CA  GGT GG  ATTAAATTCA
2          TATTTTTACACTGGTGGGAT GTGAGTG   AATGAT  TA  TTTTTA  CT  G  AT
           ATTAAATTCAATTTCTAAGC CACTTAC   TTACTG  AT  AAAAAT  GA  C  TA
           ATAAAAAATTACTGTCATTC      TCTC    TC  TA    AC  AT- TT  ----------
           TCTCATTCAC
GAM28845 6100   GTGATAAAAGTATCAGCTTG    AAAAGTATCAGC  TT   T    AACCA
9          TTTTCTTTTTTTAACCAAAA GTGAT        TTG  TTCT TTTTT
           AATGGAATTCAGAAAATTGT TACTA        GAC  AAGG AAAAA
           AAAGATCAT             GAAATGTTAAAA  TT   T    -----
GAM28847 8141   GTGATACACTACTTGAGAGA    AC   A   -    ------  TT TTGCG
2          TGGATTGTTGCGCTTTCTTC GTGAT  ACT CTTG AGAGAT    GGA  G
           TACAGTCTTTACAAGGAGTA TATTA  TGA GAAC TTTCTG    TCT  C
           GATTAT              GA  G   A    ACATCT  TT -----
GAM28847 893    GTGATACCTCTGTTGATCTT  TG    - TGTTG-     A  AA-  TGG
9          GAAGAAAGCTGGGCGTGTCT G  ATACC TC     ATCTTGA GA   GC
           TAAGATATTGGTGATGGTAT C  TATGG AG     TAGAATT CT   CG
           TGC             GT    T  TGGTTA     - GTG  ---
GAM28848 1718   GTGATAGAGGCTTGTTTGTT       GCTTGT    AG    TTGGTTTT
5          AGTCAGGTTGGTTTTTTTGA GTGATAGAG     TTGTT  TCAGG
           GGCAGTCTTAACTCTGTCAC CACTGTCTC     GACGG  AGTTT
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                              AATTCT    --    --------
GAM28853 8549   GTGATCATGTATGCTCACTA   A-    TAT    -     T   AAACCGGTA
7               TTTTAGTAAACCGGTAACTG GTG  TCATG   GCTCA CTATTT AGT
                AATAGCTGAGTTCATGAAAC CAC  AGTAC   TGAGT GATAAG TCA
                AC                  AA    T--    C     -   ---------
GAM28855 1013   GTGATCCTACACATCCTTCC   GA     -------        TGTCTGAT     AAATCACTC
7               TTGTCTGATTCACTGAAATC GT  TCCTACA      CATCCTTCCT       TCACTG
                ACTCCAGTGGGGGAGGGATG CA  AGGGTGT      GTAGGGAGGG       GGTGAC
                CAAGACATGTGGGAAAAC    AA      ACAGAAC        --------     ---------
GAM28856 3617   GTGATCTATTATTTTTATAA      T       A--     TT     AATTATATCTAC
9               TTTTATAATTAATTATATCT GTGATC ATTATTTTT   TAATT  ATAATT
                ACAATTATTAATTGCAAAAG TACTAG TGATAAGAA   GTTAA  TATTAA
                AATAGTGATCAT            -       AAC    T-     ------------
GAM28857 1727   GTGATCTCTGTGGGCATTTA   GA    T   - A    AATC   TCC  A    CTCA
9               TAATCTGGTCCAGAAGGCTC GT  TCTC GTGG GC TTTAT    TGG   AG AGGCT
                TCAAGCCTCCTCCAATAAAG CA  AGGG TATC CG AAATA    ACC   TC TCCGA
                CTCTATCGGGAAAC        A-    C    T -    ----   ---  C     ----
GAM28861 6279   GTGATGAGCACGACGGGACG     -   C  C   AC   C     CAT     AACCG
1               GGCAGATCCATTCATGCAAC GTGATG AGCA GA GGG  GGG AGATC   TCATGC
                CGGTATGAGATCTCCTTACC TACTAC TTGT CT CCC  TCC TCTAG   AGTATG
                CTCTGTTGCATCAT          G   - -  AT   -    ---      -----
GAM28861 6584   GTGATGATGTCACTAGTACT       GTCA    -    C   CT     TTAC
7               ACCTTTCTAGTATTTACATA GTGATGAT    CTAGT ACTAC TTT  AGTAT
                CTTAAAAGTAGTAACTAGAA CACTATTG    GATCA TGATG AAA  TCATA
                CAGTTATCAC              ACAA     A    -  AT     ----
GAM28863 16512  GTGATGCTGAAGCTGTGGCT    AT  TGA    T   TG TG  ----  GTGG
7               GGTGTCCCTGTGGAGGATTC GTG  GC   AGCTG GGC  G  TC    CCT
                GGTGCTGGCCCCGGTTGCCC CAC  CG   TTGGC CCG  C  GG    GGA
                AC                C-  ---     C   GT GT  CTTA   ----
GAM28864 19843  GTGATGGACAGGTTCGAGCA   AT  ACA  --     AGCAGG      C     A    CATACACCACGC
1               GCAGGTGCAGACCCCGGAAC GTG  GG   GGT  TCGAGC      TGCAGAC CCGGA CGTC
                GTCCATACACCACGCGATGT CGC  CC   CCA  AGCTCG      GCGTTTG GGCCT GTAG
                CCGGAGTTTGCGAGCTCGAA   CC  CCC   TA     A-----      A    -   ------------
                TACCCCCCCCCCGC
GAM28864 1172   GTGATGGCTTATTTGTTTTG   -      TATTT     TATT--   -   T  TCTTTCCC
7               TATTCAATGATTGTCTTTCC GT GATGGCT     GTTTTG      CAA TGA TG
                CCATTCATTTGTCTTTTTAG CA CTACCGA     CGAGAT      GTT ACT AC
                AGCAGCCATCTAC        T      -----      TTTTCT   T   T  --------
GAM28866 1266   GTGATGTCCCCTCCCCGAGC       CCC    C--  AG--  -    TTTCTT
6               CTCAGTTTCTTCTGGTGGAT GTGATGT   CTCC   CG    CC TCAG
                GACGTTTGGAGACACATCGC CGCTACA   GAGG   GC    GG GGTC
                                CA-    TTT  AGTA  T    ------
GAM28867 8665   GTGATTAACAAAACATTTTG       A  AA-   T-     GC   --    TGAA
9               TGCAGAAGGCTGAAGTCTAA GTGATTA CA   ACA  TTTGT  AGA  AGGC
                TCTAAGCAAATTTGTGTCTG TATTAGT GT   TGT  AAACG  TCT  TCTG
                GTGATTAT                G  CTG   TT    AA   AA    ----
GAM28870 6332   GTGATTCAGCTCTGCCAGGC        GC-        C----  TT     CTTACCTGCCTCC
0               CATTGTTTCACTTACCTGCC GTGATTCA   TCTGCCAGG     CA  GTTTCA
                TCCTGAAACTCTGCAAGACT TACTAAGT   AGATGGTTC     GT  CAAAGT
                TGGTAGAAAATGAATCAT          AAA        AGAAC  CT     -------------
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GAM28871 16818 GTGATTCCTTTCCTAAAAGT T C A---------- AAGAAA
0 GTAAGAAAGCATAGAGATTT GTGATTCC TTC TAAA GTGT
GTTCGTATTTAGAATGGGAT CACTAGGG AAG ATTT TACG
CAC T - ATGCTTGTTTAGAGA ------
GAM28874 5597 GTGATTGGTTTAATTTGTGT TTAATTTGTGTAT TGTCT
1 ATGAATCATGTCTTGATTTT GTGATTGGT GAATCA
AAATGTTGTCTTACCAATTA TATTAACCA TTTAGT
T TTCTGTTGTAAAT -----
GAM28877 5945 GTGATTTTATTATTATCAAC TATT ACTATAACAT- AAATCA
1 TATAACATTCAAATCAGATT GTGATTTTAT ATCA TC
ACATAAAAATGGTTCTATAA TATTAAAATA TGGT AG
AATTAT TCT- AAAAATACATT ------
GAM28888 8390 GTGCACTCAAAGCAGCTGCT - CAAA- - C CC G C GAAGT
2 CCCGCGCACGTGTGCTAGGA GTGC ACT GCAGC TG TC GC CA GTGTGCTAG
AGTCTGGCGCACCTGGGCAG CACG TGA TGTTG AC AG CG GT CACGCGGTC
ATCACGTTGTCAGCCAGTAG A CCGAC C T A- G C -----
CAC
GAM28888 9723 GTGCACTCCAGCCTGTGTGA C - GC - -- CGAGA
5 GCAGAGCGAGACTCTGGCCT GTGCA TC CA CTGT GTGAG CAGAG
CACTACAGATGAGAATGCAT TACGT AG GT GACA CACTC GTCTC
A A A- T CG -----
GAM28889 9418 GTGCAGAATGGCCAATGCTG GA CAAT- - A--- CC CCCCCT
8 GCTGGATGCTGCCGCCCCCC GTGCA ATGGC GCTGGC TGG TGCTG GC
TGCACAGTGCTGACCATGCT TACGT TACCG CGATCG ACC GTGAC CG
AGCCTGGTGCCATGATGCAT AG TGGTC T AGTC A- ------
GAM28891 22337 GTGCAGATCTCAGTGGGCTG TG A CT TG TGGAT CA TAC
0 GATGCATGCAGGGTACCCCA G C GAT CAG GGC GCATG GGG
TCATGTGCCATCTGGAGTCA C G CTG GTC CCG TGTAC CCC
GTGC GT A AG TA ----- TA ---
GAM28891 18377 GTGCAGCAGGATGTTGCCTG T CA T --- TG TG CTATATGT
5 ATATGGTCCTATATGTGACG G GCAG GGA GTT GCC ATA GTC
CTGTTGGGCTTGAACTTCCC C CGTC CCT CAA CGG TGT CAG
CTGCC - C- T GTT GT CG --------
GAM28893 18776 GTGCAGCTGCTGCGGTCCTT -- - CCT - AG -- A G TC CGCT
0 GCCCAGCTCGTTCTCCACCA GTGCAGCT GCT GCGGT TGC CC CTCGT TCTCCACC GCACGCT
TAA GC
GCACGCTGTAATCGCCGCTG CATGTTGA TGG CGCCG ACG GG GAGCA AGGGGTGG CGTGCGA
GTT TG

TCCTTGAGCGTGCAGGTGGG GG T CAC T -- GT A - CC ----
GATGACGAGGGTGCACACGC
CGCTGGTGGAGTTGTAC

GAM28897 8465 GTGCAGTGTACAATGTGAAG T ACAA- TATT TT TAAAGTCCAT
3 TATTATTTATTGCTAAAGTC GTGCAG GT TGTGAAG ATTTA GC
CATGCTTTGAGTCTTTACAG TACGTC CG ACATTTC TGAGT CG
AAAAGCCTGCAT - AAAAG ---- TT ----------
GAM28904 18458 GTGCCAATGTCCTACCAGCT CAA TCCTACCA CCC- - ACTAC
7 ACCCCAGACCTACTACAGGA GTGC TG GCTAC AGA CCT

TTTTTACGTGGCGATTTCCA CACG AC CGGTG TTT GGA
AGCAC A-- CTTTAG-- CATT A -----
GAM28910 12150 GTGCCCACCTATACCAGTGG CACCTATAC T--- - AGAACCAG
8 TGGACACAGTAGAACCAGAT GTGCC CAGTGG GG ACACAGT
TGTGTACCTTGTCCACTGTG TACGG GTCACC CC TGTGTTA
GCAT T-------- TGTT A --------
GAM28912 21649 GTGCCCAGGATGATATTTTT C- AT TTACACAA AAATA AGGATT
1 ACACAAGCTGTAAATATGGC GTGC CAGG GATATTT GCTGT TGGC
AGGATTGCCAGCAGTGAGTA CACG GTCC CTATGAG TGACG ACCG
TCCCTGTTGCAC TT -- -------- ----- ------
GAM28915 14360 GTGCCCTCTTTCTAAGCTTA --------- ACCATCTATGAATCTCAC
6 CCATCTATGAATCTCACAGG GTGCCCTCTT TCTAAGCTT
TTTAGACTCCATATTAAGGG CATGGGGGAA AGATTTGGA
GGTAC TTATACCTC ----------
GAM28917 5891 GTGCCGAGGCGGGTGTGACC GGC- A T- TCTCCCCATTT
1 CTCATCTCCCCATTTTGTTG GTGCCGA GGGTGTG CCC CA
GGCGCATCCTTGATTGGCAT TACGGTT CCTACGC GGG GT
AGTT - TT ----------
GAM28920 6403 GTGCCTCTTGTCCGTGGCCG TT C- G- T AG GTT
2 TGACGTTCAGGATGCCGTTG GTGCCTC GTC GTGGCC TGACG TC GATGCC
GCATCGATTGTCGAAGGTCA CACGGGG TAG CACTGG GCTGT AG CTACGG
CTCGATCTGGGGCAC TC CT AA T -- ---
GAM28922 3321 GTGCCTGGTAATGGAATAAT - TAA---- AATAG C GAT
0 AGGGTCGGCGATGCCCGCCA GTG CCTGG TGGAAT GGT GGC
AGATTCCAAAGTAAGTCAGG CGC GGACT ACCTTA CCG CCG
TCGC T GAATGAA GAA-- C ---
GAM28926 16461 GTGCGCTTGCGGCCCCTTAA CT---- C C TTAACACA CACCGTT
9 CACATTGCGCCCACCGTTGG GTGCG TG GGC CC TTGCGCC
TGCGACAACTGCGGCGCCAC CACGC AC CCG GG AGCGTGG
ACAAATTCGCAC TTAAAC A C CGTCAAC- -------
GAM28930 22186 GTGCGTTTTCTCTTGTGGGC - TC G GGG GGTAACA T GGTGAG
0 AGGGGTGGGGGTAACAAGGT GTG CGTTT TCTT TGGGCA GTGGG AGG GCTT
GCTTGGTGAGGAGCTCCTGA CAC GTAAG AGAG ACCTGT TACTC TCC CGAG
GACTCATTGTCCAGGAGAAG T GA G --- AGAG--- T ------
GAATGTCAC
GAM28930 5720 GTGCTAACATGCCTGGTCAC A--- TGG - A A CAAGT
6 ACGGATGGCAAGTCCACCCG GTGCTA CATGCC TC AC CGG TGG
GTAGGATGGCATGCCAGTGG CACGGT GTACGG GG TG GCC ACC
CAC GACC TA- A - C -----
GAM28932 18958 GTGCTAGTACAAGTCGTTCT AC--- CG -- T TATCT
5 GTTATTCATATCTTGACTAA GTGCTAGT AAGT TTC TGTTA TCA
CACTGGAAGCTTTACTAATT CACGATTA TTCG AGG ACAAT AGT
AGCAC ATCAT A- TC C -----
GAM28932 4505 GTGCTATATAAAGAAATGAT TATAAA- TGAT--- CA CTT
9 GATGGAGACAAAAGCCTTGC GTGCTA GAAATGA GGAGA AAAGC
TTTCCTCTTTTTAGAATTTA TACGAT TTTTATT TTTCT TTTCG
TTTTCGATTTTTAGCAT TTTTAGC TAAGATT CC ---
GAM28933 18846 GTGCTATTAAAGAATATGTG T GA T CCTTTTTATTATATTATCA
4 TTCCTTTTTATTATATTATC GTGC ATTAAA ATA GTGTT
AGATACTTATGTTTAATTGT CATG TAATTT TAT CATAG

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          AC                T    G-  T    ------------------
GAM28934 21611  GTGCTCACGACACAACCAAA  TG T  GACA  - AAATGG    AACA
8          TGGGCTTACAACAGTGGGCA G  C CAC   CAA CC    GCTTAC
          AAACGGGCTTGCCAGTGGTG C  G GTG   GTT GG    CGGGTG
          C              GT -  ACC-  C  GCAAAA    ----
GAM28936 12647  GTGCTCAGGTCTGGCACCTG   TC  TCT   -   CT   TCACGTGCTCAT
0          GCCTTCTTTCACGTGCTCAT GTGC  AGG  GGCAC CTGGC  TCTT
          AAGGCAGCCAGCGTGTCTCC CATG  TCC  CTGTG GACCG  GGAA
          CTAGGTAC           GA  CT-   C    AC  ----------
GAM28937 16703  GTGCTCCGCCGCTGTCCATT   C    C   T AT   A  TCCCGTGCCAAAAAGT
1          GAAGCTCCCGTGCCAAAAAG GTG TCCGC GCTG CC  TGA GC
          TGCTCACAGGCCAGCTGCGG CAC AGGCG CGAC GG  ACT CG
          ACAC             -   T   C AC  - ----------------
GAM28937 1106   GTGCTCCTAGTGCCAACAAT   G      GC- A A T   A   TATTCAACCACT
4          GTGCGACATTATTCAACCAC GT CTCCTAGT   CA CA TG GCG CAT
          TGTGACGCCAATGATGACTG CA GAGGATCG   GT GT AC CGC GTG
          CTAGGAGGAC         G      TCA  A  A  -  A  ----------
GAM28938 3311   GTGCTCGTCGGGCCCCCTTC   T   GGG      G    A  -  - CCCCCA   TTCCCCACAC
2          GGGAGGTGAGCGCTGCGCCC GTGC CGTC   CCCCCTTCG GAGGTG GCG CTG CG    GGCAG

          CCAGGCAGTTCCCCACACCT CACG GCAG   GGGGGGAGC TTTCGC CGC GAC GC    CCGTC

          GCCCTTCCCGTCAGACGCCC   C   G--      G    C  A  T  CCTTC-   ----------
          GCTTTGCGAGGGGGGGGACG
          CGCAC
GAM28939 18166  GTGCTCTTCAGTGCACGATG  TG  -   T  A   C   CGG   TC   GGCCCTGG
6          CTGCACCGGGAACTTCGCTT G  CTC TTCAG GC CGATG TGCAC   GAACT  GCTT
          GGCCCTGGAAGCTGGTTTGA C  GAG GAGTT CG GCTGC ACGTG   TTTGG  CGAA
          TGTGCACGTCGGCTTGAGTG  GT   T   - -   -   TAG   T-  --------
          AGTGC
GAM28939 18788  GTGCTCTTCATGCAAGGTTG   --    GC    C  CCTA    ATG--  ATA    ACTTTTCCCCAA
7          CAAACCTACCAAGAATGCAT GTGC  TCTTCAT  AAGGTTG AAA   CCAAGA    CATA  GTCTC
          AATAGTCTCACTTTTCCCCA TACG  GGGGGTA  TTCCAAT TTT   GGTTTT    GTGT   TAGAG

          ATAAAGAGATGCGTGTGACT   TT    A-    -  CA--    GATCA   GCG    ----------
          AGTTTTGGACTTTTAACCTT TAAA
          AATGGGGGTTGCAT

                    ----
GAM28941 3777   GTGCTGATAGCATCATCATT   CT   ---    CA      C-  TACTGCT
8          GTTCTACTACTGCTGTGATA GTG  GAT   AGCAT  TCATTGTT  TAC
          ATAATGAAATGTTTCCATTT CAT  TTA   TTGTA  AGTAATAA  GTG
          TTAC             TT  CCT   A-      TA  -------
GAM28945 14346  GTGCTGGAATTACAGGCCAT   TG  TTACAG  A  AAA    A  T  -  TTTG
0          CTAAATCTTTTATCTCAGGT GTGC  GAA    GCC TCT   TCTTTT TC CA GG
          TTGCCTTGTGACAAAAGGAG TACG  CTT    TGG GGA   GGAAAA AG GT CC
          GGGTACTTTTTCTGGCAT     GT   TTTCA-  -  ---    C  T  T  ----
GAM28946 9864   GTGCTGGCTCCTGGGTGGGC     G- -   GGT   AG   C   CCT    ACATC
1          AGGCCCAGGACCTTCACAAC GTGCTG  CT CCTG   GGGC  GCC AGGA   TCACA
          ATCTGTGATCTTGGCAGGCT TACGAC  GG GGAC   CTCG  CGG TTCT   AGTGT
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CTGACAGGCGGAGCAGCAT GA C AGT GA - --- -----
GAM28949 20747 GTGCTGGGTAGCTGTGAGAG GGGTA TGAG-- TC TGGA
4 GTTACTCACTGGAGTAGGTA GTGCT GCTG AGGTTAC AC
GCCTAGTAATTAGTGGTAAG CACGA TGAT TCCGATG TG
CAC ATGG- TAATGA GA ----
GAM28949 1520 GTGCTGGTCATGTGAGGGTC G G- ATG A T GAGT TGGAG
8 TCTGTGAGTGACTGGAGGTC GT CTG TC TG GGGTC CTGT GAC
TGGACAGGACCCACGAGGAG CA GAC AG GC CCCAG GACA CTG
ACAGAC - AG GA- A - GGT- -----
GAM28952 4063 GTGCTGTGGCTAAATTGATG G T AAA ATCGA TTGCA
8 ATCGACTTCATTTGCAGTGG GT CTG GGCT TTGATG CTTCAT
AGGTGCATCAAGAGCCCGGG CG GGC CCGA AACTAC GAGGTG
GC G - G-- GTG-- -----
GAM28954 14601 GTGCTTAAGATTCAGGTTCA TTAAGATTCA GT C TTA G GGCA
3 CTATTATGAAGATGGCAATG GTGC G T ACTA TGAA AT
TTCAGTTGGTTAGTCATAAA CATG C A TGGT ACTT TA
GATGTAC TAGAAATA-- TG T TG- G ----
GAM28956 6246 GTGCTTCATTGTGTTTTCTC - -- TTT- AGAAAC AAAA
4 AGAAACTAATCAAAAGATTA GTG CTTCA TTGTGT CTC TAATC
CAGAGTCCTACACAATTTGG CAC GAGGT AACACA GAG ATTAG
AGACAC A TT TCCT AC---- ----
GAM28959 18853 GTGCTTTCCTACAAAATGGA T TACAAAA A G C- GCAGTG
6 ATTGGAGGCCGGGCGCAGTG G GCTTTCC TGG ATTG AGGC GGGC
GCTCACGCCTGTAATCCCAG C CGGAGGG ACC TAAT TCCG CTCG
CACTTTGGGAGGCC - TTTCACG C G CA ------
GAM28965 20965 GTGGAAATTTTTAAATTTGA AAATT A - AGAAAATTCT GCATCTGAA
1 AGAAGCAGAAAATTCTCTGT GTGG TTTA ATTTG AAGAAGC CTGTT
TGCATCTGAAAACAGTCAAA CACT AAGT TGAAC TTCTTCG GACAA
CATGAGCTTCTTCCAAGTGT ACAGT G C AGTACAAACT ---------
GAATGACATCAC
GAM28965 22222 GTGGAACCACGCTGCTTGAG -- --- T- - TCTGGACGT
6 GCTCTGGACGTGCATTCCTA GTGGAACC AC GCTGCT GAG GC
GCAGCAAAGTCCGGTTCCAT TACCTTGG TG CGACGA CTT CG
CC AAA TC A ---------
GAM28966 13990 GTGGAACTGGGCGCCTATGG - ---- C GG A - CTACC
4 GCAGGCCGGTTCGCTACCCG GTGGAAC TGG GCGC TAT GC GGC CGGTTCG
GGCCGCGCCGCAATGCGTGC CACCTTG ACC CGTG GTA CG CCG GCCGGGC
TGCACCACGTTCCAC C ACGT C A- - C -----
GAM28967 19083 GTGGAAGATCTTAGAATTGC AG TT T C ATTTG GAAAAA
5 CTGCCTCATTTGCTGGGAAA GTGGAAGATCTT AA GCC GC TC CTGG
AATCAGATAGGAAGTGGCCT CATTTTCTAGGG TT CGG TG AG GACT
TTAGGGGATCTTTTAC GA TC - A GATA- ------
GAM28969 21266 GTGGAAGTGGGCTACAACGT GA TG ACAA AGTA - GAG
0 AGTACGTGTCGTGGAGTACG GTG AG GGCT CGT CG TGTCGTG
ATGTCGAGTGATGAGTTTGC CAT TC TTGA GTA GC GTAGCAT
TAATAC AA GT ---- GTGA T ---
GAM28974 17947 GTGGACCCAAGTTAGGTGTG ACC --- G ACGT ATAA T GCACA
7 ACACGTTCACATAACTGTGC GTGG CAAGTTAG GT TGAC TCAC CTG GCA
AGCACATGCCGGGAGTGATC CACC GTTTAATT CA ACTG AGTG GGC CGT
AGTCAGACATTTTAATTTGA AA- TTA G ACT- AG-- - -----

ACCAC
GAM28974 20622 GTGGACCCATACGCATGCGC AC C--- - C TGCC
9 CTCTTATGCCTGGGAAGCAG GTGG CCATA GCATGC GC TCTTA
TATGCAAGATATGGAACCAC CACC GGTAT CGTATG CG AGGGT
AA AGAA A A ----
GAM28982 1446 GTGGAGCCAGCCCAGTAGTA GCCA A AAC G A TCTT
5 CGTAACGTGGCATGGTCTTC GTGGA GCCCAGTAGT CGT GT GC TGG
CACGCAACCGGGCGACTGCT CACTT TGGGTCGTCA GCG CA CG ACC
GGGTGATTCAC AG-- - GGC A C ----
GAM28982 8451 GTGGAGCCCAGACGATCATC CAGACGA A G GACT CCCCG
8 AGGCTCGACTGGGTCCCCGG GTGGAGCC TC TCAG CTC GGGT
CCCCCCAGAGCTGAGGAGGC CGCTTCGG AG AGTC GAG CCCG
TTCGC ------- G - ACCC -----
GAM28983 20994 GTGGAGCGAGCCAAATGAAG G- AG AAATGA A ATCAAG GTGTG
3 AAGAGCTGATCAAGTTCATG GTGGA CG CC AGA GAGCTG TTCAT
TGTGGTGAAAAGCAGTTCTC CGCCT GC GG TCT CTTGAC AAGTG
TGAGGAGCGAATCCGC AA GA AG---- - GAA--- -----
GAM28983 9643 GTGGAGCGTAAGGACCACCG A A- - ----- GAT- CCTT
5 ATGGTACCCTTGTGCCTGCA GTGG GCGT AG GACCA CC GGTAC
GGAATTCTGGTCTCTACACG CACC TGCA TC CTGGT GG CCGTG
TGCCAC G CA T CTTAA ACGT ----
GAM28984 18874 GTGGAGCTGTCTTAAACGAA A CT------- G GAAC GAGCA
6 GAGAACCATGAGCAATGAAT GTGG GCTGT TAAAC AAGA CAT
CTTGTTTACCTTATTACACA CACC CGACA ATTTG TTCT GTA
GCCCAC - CATTATTCC - AA-- -----
GAM28986 20189 GTGGAGGCAGGGGAGGAAGT A----- A A TA GAGAATGG
3 TAAGGTGAGAATGGACCTGC GTGGAGGC GGGG GG AGT AGGT
TGCCGCTCCACATGGGCCTC CACCTCCG CCTC CC TCG TCCA
CAC GGTACA G G -- --------
GAM28986 18485 GTGGAGGCGGGGTTTCACTG G- TCACT GTT- GGGCT
9 TGTTGGCCGGGCTGGTCTCG GTGGA GCGGGGTT GT GGCC
AACTCCTGACCTTGTGATCC CACCT TGTTCCAG CA CTGG
AC AG TCCT- AGCT -----
GAM28990 5599 GTGGAGTGCAGGCCAGAGCA TG AG CCAGA G - T- CC AGCACCCA
6 GGGTGTGCGTAGCCCCAGCA G G TGCAGG GCAGGGT TG CG AG CC
CCCAGGTTCTTCTGTCAGAC C C GCGTCC TGTCCCA AC GT TC GG
CCTGTGACCTGCGAGCTGC GT GA AG--- G T CT TT --------
GAM28992 18817 GTGGATAGCTTGGGTGCCCA G TT--- G--- - G- ---- CGTGAAA
4 TTTGGGGTCGTGGTCAGCGT GT GATAGC GGGT CCCA TTTG GGTC GTGGTCAG
GAAACTGATTATTGGTGACC CA TTATCG CCCA GGGT AGAC CCAG TATTAGTC
GACAGACTGGGAAAAACCCT G TTACT AAAA C AG TGGT -------
CATTGCTATTGAC
GAM28992 21049 GTGGATAGCTTGGTGCCAAT G TT---- G--- A G T G - ACTGA
5 TGGTCGTGGTCAGCGTGAAC GT GATAGC GGT CCA TT GTCG GGTCA CG TGA
TGATTATTGGTGACCCGACA CA TTATCG CCA GGT AG CAGC CCAGT GT ATT
GACTGGGAAAACCTCAATTG G TTAACT AAAG C A - G T -----
CTATTGAC
GAM28994 9662 GTGGATCGGCGGCTCCATCC TC - - CA----- GC C - CT CAGCA
1 TGGCCTCGCTGTCCACCTTC GTGGA GGC GG CTC TCCTG CT GCTG TCCAC TC
CAGCAGATGTGGATCAGCAA TACCT CCG CC GAG AGGAC GA CGAC AGGTG AG

GCAGGAGTATGACGAGTCCG CC G T CAGTATG -- A T T- -----
GCCCCTCCAT
GAM28996 9026 GTGGATGGAAAGCAGGTAGA G - G AG - TTTG GACACAG C A----------
0 GTTGGCTTTGTGGGACACAG GT GATGGAAAG CA GT AGT TGGC TGG CTGGG AGGA
CTGGGCAGGAAGATTATGAT CA CTACCTTTT GT TA TCA ATTG GCC GACCC TCCT
CGCCTGAGGCCCCTCTCCTA G T G G- T TA-- ATA---- A CTCCCCGGAGTCC
CCCAGATACCGATGTTATAC - TATG
TGATGTGTTTTTCCATCGAC GAT
CTA
G ----
GAM28997 9235 GTGGATGTCGGCGACAGCTT A- C GA T AG C CAGCAGC
0 GGAGGCCGGTCAGCAGCACC GTGG TGT GGC CAGCT GG GC GGT
CGCTCCTCGGCTGGCCCGCA CACC ACG CCG GTCGG TC CG CCA
GCCCAC CG C -- C CT C -------
GAM28998 3737 GTGGATTCGTGTGTGTGTGT T GT-- - TG G- TG CTTGT
2 GTGTGTGTGTGTCTTGTATA GTGGA TC GTG TG T TGTGTG TGTGT
TGTGTGCGCAGAGTGCATCA CATCT AG TAC AC G ACGCGT GTATA
TTTCAGACTCTAC C ACTT T GT AG GT -----
GAM28999 3882 GTGGATTTGACCCTCCTGTT CCTCCTG GTTA TCAGAAT
0 GGTTAGTTAGCTTCAGAATG GTGGATTTGAC TTGGTTA GCT
GTCTATAACCAGACAAAGTC CACTTAAACTG GACCAAT TGG
AAATTCAC AAACA-- ATC- -------
GAM29001 4184 GTGGCAAGTTCTTTAGCCTT - TTAG TTGCCTTTTC - - GATACGA
5 TGCCTTTTCGAGCTTGGCGA GTGGCAA GTTCT CCT GAG CT TGGC
TACGAGCCACAGACTTAGGA CACCGTT CAGGA GGA TTC GA ACCG
CCCAGGACATTGCCAC A CCCA ---------- A C -------
GAM29002 19159 GTGGCACAATTTAATTGTTT CA TGTTT- TA AAATACA
8 TGTATCAGAAATACACTGAC GTGGCA ATTTAAT TG TCAG
CCACCTTTTATTGAGTCCTG CACCGT TGAGTTA AC AGTC
CCAC CC TTTTCC CC -------
GAM29002 20981 GTGGCACACAAGTGTGAGAC A C - AG ----- G GTCTCAAA
9 AGGCGGGTTGTCTCAAAAGC GTGGC CA AAGTG TG AC AG CGGGTT
CCGGCTATTGCGTTGCACCA CACCG GT TTCAC AC TG TC GCCCGA
CTTTGCGCCAC C - C GT CGTTA G --------
GAM29003 6039 GTGGCACATGCCTATACTGA ---- - ATAC ACGGGA ACTT
6 GACGGGAGGGTCACTTGACT GTGGCA CAT GCCT TGAG GGGTC
CCAGGAGTTCAAGGCTATGA CACCGT GTA CGGA ACTT CTCAG
TCATGCCAC ACTA T ---- GAGGAC ----
GAM29005 16620 GTGGCAGCAGCCTGAGAAAG GGC - C AAA TG - CGGGAGAAC
2 TGCCCTGACGGGAGAACTTA GT AGCAG C TGAG G CC CTGA
GCGGTGCCCTCATGCCTGCT CA TCGTC G ACTC C GG GATT
CAAC AC- C T C-- GT C ---------
GAM29006 2723 GTGGCAGGACTGGAGTGGCA G T - TCCCAAG TCTCTCCTCCAACATGT
3 GTGGCTCCCAAGGCTCTCTC GTGGCAGGACTG AG GGCAG TGGC GC
CTCCAACATGTGCATCTGCC CGCCGTCCTGAC TC TCGTC ACCG CG
ATCTGCTCTGCAGTCCTGCC G - T TCTA--- ----------
GC
GAM29009 3608 GTGGCATTCGGGGCCGGGGT - A G GG G GTGGACGG
3 CGCGGCCGTGGACGGGGCCG GTG GC TTCG GGCC GGTC CGGCC
GGGCCGAGGCCGCGGAGCTC CGC CG AGGC CCGG CCGG GCCGG

GC T - G AG G --------
GAM29010 20139 GTGGCCAGCGGAGGGCAGGA C C - - A- TA C CCTT-- TTCCA
9 GAGGTAACCAGCGGCCTTCA GTGG CAG GGAG G GCAGGAG GG ACCAG GG CAG
GTTCCACTGTCCTCACCTTG CGCC GTC CCTT C CGTCCTC CC TGGTT CC GTC
GTCCGGCTCCTGCACTTTCC T A T A GG -- - ACTCCT -----
ACTGTCCGC
GAM29013 5392 GTGGCCGAGGTAATTGCATT GA AATT GC TG AACA AACT
5 GCCTGTGGAACAGGGGAACT GTGGCC GGT GCATT CTG G GGGG
TTCCGTACCTGCAGTGGGTG CACTGG CCG CGTGG GAC C CCTT
CGCCAGGTCAC A- ---- GT GT CATG ----
GAM29016 14356 GTGGCGAGTGGCGGCGACCG - T CGACCG G AG CC GCGC
0 AGGCGGCGAGCGGGGCCCGG GTG GCGAG GGCGG AGGC GCG CGGGG CG
CGCCGACCCTGAGTGCAGCC CGC CGCTC CCGCC TCCG CGT GTCCC GC
TGACCCGCCCTCGCGCGC G - CAG--- A GA A- ----
GAM29016 3615 GTGGCGAGTGTGGCATTCGA GA TG G A G CTCGCGTT
1 GGACAGGAACCTCGCGTTGT GTGGC G TG CATTCG GGACA GAAC
TTATGTCCCGAGTGGCATGT CACTG T AC GTGAGC CCTGT TTTG
GTCAC -- GT G - A --------
GAM29016 5556 GTGGCGCAGAGTGTGGGCCG C A G CGCC C AGTACTA
3 CGCCTTCCTGGAGTACTACC GTGG GCAG GTGTG GCCG TTC TGG
AAGAGCACCTGGCGTACGCC CACC CGTC CGCAT CGGT GAG ACC
TGCCCCAC C - G CCAC A -------
GAM29016 8787 GTGGCGGATGCGCTGGAGCC TG --- CT A AGTT A - AAAA GG GAG
8 CGTCCAGTTTGAAGATGGAG G GC GGATGCG GG GCCCGTCC TGA GATG GAGAG TTGT
TCCAGG
AGAAAATTGTGGTCCAGGGA C CG CCTGCGT CC CGGGTAGG ACT CTAC TTTTC AGCA
GGGTCC

GAGCCTGGGGACGACTTTTA GT TGT -- A C--- A A ---- G- ---
CATCATCACGGATGGGCACC AG
TGCGTCCTGTGCTGC

--
GAM29017 3429 GTGGCGGGGCCCCGGCGGCC CG - C-- C CCT TCCTG
2 TGGGGGGTCTCCTGGGCCCC GTGG GGGC CC GG GG GGGGGGTC
CCCCCACCCATGGAGCCCAC CGCC CCCG GG CC CC CCCCCCGG
CGC A- A TAC A C-- -----
GAM29022 21276 GTGGCTCACGCCTTCCAGAG -- C AGA - A A- G GAAATAAAA
8 CCACATCATCGGGGCGAAAT GTGGCT CACG CTTCC GCC AC TC TC GGGC
AAAAGCCCAGAGAGAGGTAG CACTGG GTGC GGAGG TGG TG AG AG CCCG
GTGTAGGAGGCCGTGCAGGT AC C ATG A G AG A ---------
CAC
GAM29025 5800 GTGGCTCCTTCTTGAAGCAT ----- AA A AGAGACTGAGGCA
7 CTGCCAGAGACTGAGGCAGG GTGGCTCCT TCTTG GC TCTGCC
CAGAGCCCAAGACCCAGGGG CACCGAGGG AGAAC CG AGACGG
AGCCAC GACCC C- - ----------
GAM29027 18042 GTGGCTGAGACAGAAGCTCC - G A - GG - T- GAAG
1 TGGTGCTGGGAAGCCTTGCC GTGGCT GA ACAG AG CTCCT TG C GG
GTTGGGAGTCTCCTGTATCT CGCTGA CT TGTC TC GAGGG GC G CC
AGTCGC T A C T TT C TT ----

GAM29028 8377 GTGGCTGCTTGGATTTAAAT CT--- - A CAAATTA
3 TAATTCAAATTAAATAAATT GTGGCTG TGGA TTTAAATT ATT
TAAATTCCATTCCTCAGTCA CACTGAC ACCT AAATTTAA TAA
C TCCTT T A -------
GAM29029 20540 GTGGCTGGGACAAGCTGGTC C GACA- ------- A ATGGA
1 AAGGTATGGAACCTGGCTAA GTGG TGG AGCT GGTCA GGT
CTGCAAGCTGAAGACCAACC CACC ACC TCGA TCGGT CCA
AC A AGAAG ACGTCAA - -----
GAM29029 20024 GTGGCTGTTGAGGGGCGTCT AGGGG T AA GC-- GCGTT
9 TCCAATCTCGCACAGCTGCG GTGGCTGTTG CGTC TCC TCTC ACAGCT
TTGGCTGTAGAAGAGAACGG CGCTGGCAGC GCGG AGG AGAG TGTCGG
ACGGCGATGGCGACGGTCGC GGTA- C CA AAGA -----
GAM29030 12256 GTGGCTGTTTCACAGTTTGG - TTTCACAG TTTGGGGT
0 TGAGATGTTTGGGGTCATCT GTGG CTG TTTGGTGAGATG
CACCAAAGAACAAACCAGAC CACC GAC AAACCACTCTAC
CAC A CAAACAAG --------
GAM29031 20168 GTGGCTTCTATGGCAAGGGT CTAT C - CT TAA TT - -- TCGCTACC
1 CCCTCCATTAAGCAGTTCAT GTGGCTT GG AAG GGTCC CCAT GCAG CA TGGA CATCTTC

GGACATCTTCTCGCTACCGG CACCGGG TC TTC TCAGG GGTG TGTC GT GTCT GTAGAGG

AGATGGCTCTGCTGTCCTGT ---- T A T- --- CT C CG --------
GTGGTGGACTACTTTCTGGG
CCAC
GAM29033 3477 GTGGGAAAGAACAGTTTTGT AAGAACA GAG-- GA- TC AAAGAAGAAAA
7 GAGGGGAGGAATTCGTCAAT GTGGGA GTTTTGT GG GGAATTCG AAT
AAAGAAGAAAAATTACTGAA CACCCT CAAAATA TT CCTTAAGT TTA
TTCCAAATTAAAGAATAAAA CGAG--- AGAAA AAA CA ----------
CGAGCTCCCAC
GAM29033 9639 GTGGGAAAGTCAGGATAGGA AAA A ---- ACAAGTAACAA
9 CCCTACAAGTAACAAAGGTC GTGGG GTCAGGAT GGAC CCT
CAGTCCAGTCCTGGCCCCAC CACCC CGGTCCTG CCTG GGA
--- A ACCT ----------
GAM29034 19220 GTGGGAAATCAGGGGTCTCA - ------- G CA CTTCAGA
1 CAGCCTTCAGAGCTGAGAGC GTGGG AAA TCAGGG TCTCA GC
CCTGAACAGAGATTTACCCA CACCC TTT AGTCCC AGAGT CG
C A AGAGACA G -- -------
GAM29038 20780 GTGGGAGCGGCCGCGTTTTT GGCCGC T TTTT-- AGTT
8 TTTTTTTTTTTTTGCAGTTG GTGGGAGC GTTTTT TTTT TTTTGC
CAAGATTTAATAGAGTGAAA TACCCTCG CAAAAG GAGA AGAACG
ACAGAGCTCCCAT AGA--- T TAATTT ----
GAM29040 8386 GTGGGAGTAGCTGCTGTAAC TA T T AACCT AACCTTACC
7 CTGGAGAAGGTATGAACCTT GTGGGAG GC GC GT GGAGAAGGTATG
ACCCATACTTTCTCCCAAGA CACTCTC CG TG CA CCTCTTTCATAC
CGTGCCTCTCAC -- - - GAAC- ---------
GAM29040 21187 GTGGGAGTAGGGGATGGGGA A AG--- T G - C AGGT
8 GGGCGGGGGGCAGGTGCCCT GTGGG GT GGGA GG GAG GG GGGGGGC
CTCCACTCACCTTCCCAGAA CACCC CG CCCT CC CTC CC TCTCCCG
GGCCCCAC - GAAGA T A A - ----
GAM29041 20694 GTGGGAGTGGGAGCGTTTCC AGT C- TCCTAA- CACTGAAGATAA

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5          TAAGCTCCACTGAAGATAAG GTGGG  GGGAG  GTT     GCTC
           AGCCCAACCCAACCCCTCCC CACCC  CCCTC  CAA     CGAG
           CCCAC              ---   CC  CCCAACC  ----------
GAM29048 844   GTGGGCGTCTTCCATGACCT      TCT    ACCT  ----   TAGCCGG
0          TGACCTCGTAGCCGGTGAGG GTGGGCG  TCCATG   TGA   CCTCG
           AACTTCATCTCTATGGATTT CGCCCGC  AGGTAT   ACT   GGAGT
           CGCCCGC              TTT    CTCT  TCAA   -------
GAM29048 5455  GTGGGCTCGGCCATCAGCAG    T   C    - ---- C    -   C-   TG  CTC-   CTGC
7          GCCCGGTGGGTTGGCCGGGC GTGGGC CGGC ATCAGCA G   GC CGGTGG GTTGG  CGGGC  GCC
 CCAGG
           TGGCCCTCCCAGGCTGCCTT CGCCCG GCCG TGGTCGT C   CG GCCACC CGGCC  GCCCG  CGG
GGTCT

           TCTCTCTGGTCGCGGCTGGC    C  -    A TTAA  C    T   CC   GT  CGCT   ----
           CCGCCCCGGCTCCACCGCGC CTTTCTC
           AATTCATGCTGGTGCCGCGC
           CCGC
                     -------
GAM29050 9127  GTGGGCTTCGCCACACTGCC       G  CA-  CCCA   GTG   CA  CG    AAAGGCTTTGA
5          CAACCAGGTGCACCGCAAGT GTGGGCTTC CCA  CTG   ACCAG  CACCG  AGT  GTGAAG
           CGGTGAAGAAAGGCTTTGAC CACCTGAAG GGT  GAC   TGGTC  GTGGT  TCA  CACTTC
           TTCACACTCATGGTGGCTGG       G  CCG  TGAG   G--   AC  --    ----------
           TGAGTCAGGCCTGGGGAAGT
           CCAC
GAM29053 8627  GTGGGGAGTCACTGTGCTAT      GTCAC-- T      C---  C  C-  C   ACAATATCCAC
9          CACCGACCGGCGGCGCACAC GTGGGGA     TG GCTATCAC   GAC GG  GG GCAC
           AATATCCACGTGCCCCTACC CGCCCCT     GC CGGTAGTG   TTG CC  CC CGTG
           CGTTATAAGTGATGGCCGAA      AACTTAA -      AATA  C  AT  C   ----------
           TTCAATCCCCGC
GAM29054 12739 GTGGGGCAGAGGCCAGGAGG     -  A--   AG    --   TG--  T   ACCT
9          GGACCTGGTGTGTCACCTGG GTGGGG CAG  GGCC  GAGGG  GACC   GTG GTC
           CCCACAGCTGGTCATCCCTC CATCCC GTC  CCGG  CTCCC  CTGG   CAC CGG
           AGGCCACCCTGACCCTAC       A  CCA   A-    TA   TCGA  C   ----
GAM29064 5413  GTGGGTCCAGGGGGCCAATG     --   -----     AA  T  ATAGAG
5          CTAGTATAGAGGCTGTGAAG GTGGGT  CCAG    GGGGCC  TGC AGT
           GCCCTGAACTCTGGGAGCCC CACCCG  GGTC    TCCCGG  GTG TCG
           AC                 AG   TCAAG    AA  -  ------
GAM29066 1113  GTGGGTGCATCACATGAGGT    TGCA   -  A-     AGTTCGAGATCAG
1          CAGGAGTTCGAGATCAGCCT GTGGG   TCAC ATG  GGTCAGG
           GGCCAACATGGTGAAATCCC TACCC   AGTG TAC  CCGGTCC
           AT                 TAA-   G  AA     -------------
GAM29071 4239  GTGGTACAATCCACATGACC   G   A   ACA  -  C  TT  T  CCTG
3          CACTTTCTCCCCTGGGTGAC GTG TAC ATCC   TG ACC AC  TC CC
           GTTGGTACAGAGGATGGTAG CGC ATG TAGG   AC TGG TG  AG GG
           CGC              G  G   AG-  A   T  C-  T  ----
GAM29074 8612  GTGGTATACTTTCACATATT      AC-    C   -     TTCTAT  ACAGAAGTTCAA
0          TTGAGCATTCTATGTGACAG GTGGTAT   TTTCA ATATT TTGAGCA    GTG
           AAGTTCAACACTCTACTTGT TATCATG   AAAGT TGTAA GACTTGT    CAC
           TCAGCAATGTCTGAAATGGG      GGT    C    C     TCATCT  ----------
           TACTAT
```

GAM29074 20080 GTGGTATCCTGGTTGCTGGG T CT GC- GGCC GC GCA C CCTG
4 AGGGCCTCTGCTCTTGGCAA GTGG ATC GGTT TGGGAG TCT TCTTG AGCC GGGT
GCCCGGGTCCTGGCCTGGCT CACC TAG CTAA ATCCTT AGA AGAAC TCGG TCCG
GACAAGAAGACATTCCTAAT - AT GTA AC-- -- AG- - ----
GAATCTAGATCCAC
GAM29075 4079 GTGGTCAACATCGGTACTCT AACATC TACTCTT C A AAACA
5 TGGCAGGAAAGAAACACTGT GTGGTC GG GG AGGA AG
CCTTCCTTCTCCACATAAGG CACCGG CC CC TCCT TC
CCAC AATACA TCTT--- T G -----
GAM29078 8249 GTGGTCCGTATCTTCTCCTC TC T C - CAA- CTCTAGTCTCT
3 CAAAGCCTCTAGTCTCTGTT GTGG CG AT TTCTCC TC AGC
CCACGATGGAGAAAATCCGC CACC GC TA AAGAGG AG TTG
TCCAC TC C A T CACC ----------
GAM29078 8927 GTGGTCCTCAAGTGTCTGAA T AA G AATTC-- TAGA
4 AAAAATTCACTTTTAGAGGA GTGG CCTC GTGTCT AAAAA ACTTT
GTATCAACGTTTTTGGGACA TATC GGAG TACAGG TTTTT TGAGG
TAAGAGGCTAT - AA G GCAACTA ----
GAM29078 18517 GTGGTCCTGGCACGTGGGCC -- A T CAC - TGAAT
5 ACCAGTCTTCTGAATGAAGA GTGG TCCTGGC CG GGGC CAG TCTTC
GTTGAGTCCCGGGTCAGGAG CACC AGGACTG GC CCTG GTT AGAAG
TCCAC TG G - A-- G -----
GAM29079 1281 GTGGTCGTCGTGGTTTTCCT CGT G - T TT G TGA
1 TGTAGTTCGTGGTCTGAGAC GTGGT CGT GTTTTC CTTG AG C TGGTC
CAGGCCTCAAGTGGAAACGG TACCA GCG CAAAGG GAAC TC G ACCAG
CGTCACCAT CT- G T - CG - ---
GAM29079 1059 GTGGTCGTGCCTGTGTGTAT CG - G TATC TA ATCTT
2 CAGAAGGGATAGGTATCTTG GTGGT TGC CTGT TG AGAAGGGA GGT
CCTCCTTTCTCTCAGGCAGT CACTA ACG GACG AC TCTTTCCT CCG
GCAAATCAC A- T G TC-- -- -----
GAM29080 6494 GTGGTCTGAAAGCCCCCGGT TG A CCCG- CA- T A TTCA
2 ATCATTCCTCGAATTTCAGT G GTCTGAA GCC GTAT TTCC CG AT
GCGGGAACCAATGCAGACTG T CGGATTT CGG CGTA AAGG GC TG
GCATTTAGGCTGT GT A TCAGA ACC - G ----
GAM29081 6268 GTGGTCTTCATAAACTATAC T AAA ATA CCTTG T CC GAAA
0 TGCCTTGTGATGCCTCCCTA GTGGTCT CAT CT CTG TGA GCCTC TA
GAAATGAGAGGTCTCAATAC CGCCAGG GTA GA GAC ACT TGGAG GT
CAGCTCAGACCATGTGGACC T CCA CTC CATA- C A- ----
GC
GAM29081 3343 GTGGTGAAGACAGGCCGAGT AAGACA C-- GA T GAGACCAA
6 GATGCTTGGGGAGACCAATC GTGGTG GGC GAGT TGCT GGG
CAGCAGATTCAAAGCCAGGC TACCAC CCG CTTA ACGA CCT
ACCAT GGA--- AAA G- - --------
GAM29081 3242 GTGGTGAAGACAGGCCGAGT AAGACA C-- GA --- GAGA
7 GATGCTTTGGGAGACCAATC GTGGTG GGC GAGT TGCT TTGG
CAGCAGATTCAAAGCCAGGC TACCAC CCG CTTA ACGA AACC
ACCAT GGA--- AAA G- CCT ----
GAM29085 20627 GTGGTGCCGAGTCCCTCCAG CC G C A ACCTACTGACCCCCTCA
3 AGCACCTACTGACCCCCTCA GTGGTG GA TCC TCCAG GC
GCCTTGGAAGGAGTTTCACC CACCAC TT AGG AGGTT CG
AC T- G A C ----------

GAM29085 16627 GTGGTGCCTCTTCTCTCTTT - TCTCTCTT GA ATGTTGTC
4 TGACTTAAGGATGTTGTCCC GTGGT GCCTCT TT CTTAAGG
TTAAGGAAACCTGGAGGCTA CATCA CGGAGG AA GAATTCC
CTAC T TCC----- AG --------
GAM29086 18714 GTGGTGCTGTCTGAAGTTGG GC AGT GC G A -- TCT
6 CGCTGCGGTAGTTGGGGTCT GTGGT TGTCTGA TG GCT CGGT GT TGGGG
CCCCAGGGCATCGAGGCACA CACCA ACAGGCT AC CGG GCTA CG ACCCC
TATCGGACAAACCAC A- AT- A- A - GG ---
GAM29088 20740 GTGGTGGCCACTGCGCAGAC T CCACT C ACC ACTT TACT
2 CAGACTTCGCTCGTACTCGA GTGG GG GCG AG AG CGCTCG
GCGCCTCGCTTCGCTTTTCC CGCC CC CGC TC TC GCGAGC
TCCGC T TTTT- T GC- C--- ----
GAM29088 8055 GTGGTGGCCGACACGGGCGA CGACAC G--- CCA CCAT
5 CTTCCACGCCATCGACGAGT GTGGTGGC GGGC ACTT CG
ACAAGCCCCAGGATGCTACC CACCATCG CCCG TGAG GC
AC TAGGAC AACA CA- ----
GAM29093 4374 GTGGTGTTATTTAATGTTTT - GT- TGTT C T -- TAAA- AGAT
8 GCATCTGTATCTTCTAAATT GT GGT TATTTAA TTG ATCTG ATCT TC TTCAG
CAGAGATCTGGAGGATTGAT CA CCG GTGAGTT AAC TAGAC TAGA AG AGGTC
AAGATTCAGATTCAATTTTG T AAT TT-- T T AT TTAGG ----
AGTGTAAGCCTAC
GAM29093 1232 GTGGTGTTGTTTTTGGTCCT - TTTTT CCT- A - TGAA
9 GATAAGAAGCTGAAGCTGTC GTGGT GTTG GGT GATA GA AGC
TATCCTCTACCCAGCTACCA CACCA CGAC CCA CTAT CT TCG
C T ----- TCTC - G ----
GAM29094 5436 GTGGTTAAGTTAATGAATAG - AA-- A TT--- TT AGAA---------- GCAA
3 TTTTTGTTTTATCAGAATGG GTGGT TAAGTT TGA TAGTTT GTT ATC TG
CAACAGACAGAAGTACTTTG CACCA GTTCAA ATT ATCGAA CAG TAG AC
TAGAGATTGACTTCCTAAGC C CAGA C TCCTT T- AGATGTTTCATGAAGACAG ----
TACTTAAGACAACTTGCACC
AC
GAM29094 6346 GTGGTTAATGTTTGAAAAAG A --- AA CTT T GTC T AAT
4 CTCTTGCAATCAAGTCTGTG GTGGTT ATGT TTGAAA GCT GCAA CAA TGTGA GTATT
ATGTATTAATAATGCCTTAT TACCGA TACG AATTTT TGA TGTT GTT ATATT CGTAA
ATATTGTTTGTAGTCATTTT G ATG AC --- T AT- C ---
AAGTAGCATGAGCCAT
GAM29096 5727 GTGGTTCACGCCTGTAATCC C A CG ACCTGAT TCG
2 CAGCACATTGGGAGGCCGGG GTGGTTCACGCCTGTAATCCCAG AC TTGGGAGGCCGGGG
GGTGGATC GGTC
GCGGGTGGATCACCTGATGG CACCGAGTGCGGGTATTAGGGTC TG GACCCTCCGGCTCC
CCGCCTAG CCAG

TCTCGATCTCCTGACCTTGA A A AT AGTT--- ---
GATCCGCCTACCTCGGCCTC ATCTCCT
CCAGAGTACTGGGATTATGG
GCGTGAGCCAC

GAM29099 19048 GTGGTTTGCTGCCTACATTC GCTGC C T G AATGCTAA
7 ATGATGGAAGAAATGCTAAT GTGGTTT CTA ATTCA GAT GAAGA
TTTCAGTTTGAGTTTAGTGA CATTAAA GAT TGAGT TTG CTTTT

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          AAAAATTAC              AAAGT  T   -  A   --------
GAM29101 6355  GTGTAAAATATTTTCATAAA      TAT   A     ACA    TGT
6          GTCACAGTAAGATGTTTTTA GTGTAAAA  TTTC TAAAGTC  GTAAGA
          TGAGGCTTTGGAGGCTTTTT TACGTTTT  GGAG GTTTCGG  TATTTT
          TGCAT                TTC   -     AG-    ---
GAM29103 3868  GTGTAACTGTAACCGAAAGT      TG-  C  A  T  TCAAAAATCCT
8          TTTTTCAAAAATCCTAGATG GTGTAAC  TAA CGA AGT TTT
          CTGTTGTTTGAATGTTACAT TACATTG  GTT GTT TCG AGA
                          TAA  T  G  T  ----------
GAM29105 3709  GTGTACACCATGGGCGCTAT   A   T   G  TTC     GCAAG
9          TCCAATGTTGCAAGGACATT GTGT CACCA GGGC CTA  CAATGTT
          GCACTGGGCCTTGGTGGCAC CACG GTGGT TCCG GGT  GTTACAG
                          -   -  -  CAC     -----
GAM29109 21057 GTGTAGCAGCATTGGTTTTC      A ATT   -   -  T TGAGA
9          CAAAAAATGTGAGACTTTTT GTGTAGC GC  GGTTT TCCAA AAAA G
          CTTGGACGAATTCAGGTAGC CACATCG TG  TTAAG AGGTT TTTT C
          TACAC                A GAC   C   C   T -----
GAM29110 5852  GTGTAGGAACGAATCTCCAA     G   ATCTC  AATAAAA   CCATCTTTAGCCT
4          AATAAAATTGTCCATCTTTA GTGTAG AACGA    CAA     TTGT
          GCCTGCAAAACAAATTGTCG CACATT TTGCT    GTT     AACG
          TTGTTACAC            G   -----  AAACAA-   -------------
GAM29111 3059  GTGTAGGTGTGGGAAGGTGG      T   AA--    AT  GGAT   TATCTT
6          AATCTGGATTTCGGTATCTT GTGTAGG GTGGG   GGTGGA  CT   TTCGG
          TCGGATAAAGTATTCGCTGC TACGTCT CATTT   TCGCTT  GA   AGGCT
          TGTTTACTCTGCAT        -   GTCG    AT  AAT-    ------
GAM29114 4159  GTGTATATGCCTCATACACA     ATGC  C    CAT      GCATGA
0          TAATTTTGTGCATGAACAGA GTGTAT   CT ATACA  AATTTTGT
          GTTTTTGTATAAGAAGATAC CACATA   GA TATGT  TTGAGACA
          AC                GAA-  A    TT-      ------
GAM29114 21075 GTGTATATGTGTATATATAT    A            CG  ACACA         ACAC
2          GTACGTAACACATATACATA GTGT TATGTGTATATATATGTA  TA    TATACATATATAT
          TATATACACATATATGTGTG CACA ATGTACATATATATACAT  AT    ATGTGTGTATATA
          TATATATACATATATATACA    C            AT  -----         ----
          TGTACACAC
GAM29115 5702  GTGTATCATAGATAATCCTA    --    A  TCCTAAA   TATA  A-      CCCAAAGTCAATGCCCT

1          AAACAATATAACAATCATTT GTGTA  TCATAG TAA     ACAA   ACA  TCATTTAA
          AACCCAAAGTCAATGCCCTT CATAT  AGTATC GTT     TGTT   TGT  GGTAAATT
          TAAATGGAATGTATCTTTGT    AA    G  TATTAC-   TCTA  AA     ----------
          CATTATTTGGCTATGAAATA
          TAC
GAM29117 18959  GTGTATGGGTCAATAGTTTA      GGTCAA    TAC--       T  CCGACC
3          CTTTTTATTATCTCCGACCA GTGTATG     TAGTT    TTTTTATTA CT
          GCTGATAAAAGACAATAATT TACATAC     ATTAA    GAAAATAGT GA
          AAATACATACAT           ATAA--    TAACA       C  ------
GAM29118 21110  GTGTATTATTGTTTATTGAA    ATTA    A   A  AT---  C   TACCAT
4          GCATAGCCTATTACCATGTA GTGT    TTGTTT TTGA GC    AGC TAT
          GCTTAGTGGCTCAAAAGCAG CACA    GACGAA AACT CG    TCG ATG
          CACAC              C---     -   - GTGAT  -  ------
GAM29118 21449  GTGTATTCCACAGTGTTTAA    ATTC  C     AA  A  -   CCCCAA
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9          AAAATAGTTTCCCCAAAAAT GTGT   CA AGTGTTT  AA ATA GTTT
           ATATCTTGAAAGCATTTGAC CACA   GT TTACGAA  TT TAT TAAA
           AC                 ---- -     AG  C   A   ------
GAM29119 19106  GTGTATTTATCTGAGAAAGA    A        AAGATC   --------   ACAAAG
2          TCCTGTCAATACAAAGATTG GTGT TTTATCTGAGA     CTGT      CAAT
           CCCTAATTACAGTTTCAGAT CACA GAATAGACTTT     GACA      GTTA
           AAGGACAC            G        ------   TTAATCCC   ------
GAM29119 22274  GTGTATTTGTAATCACTGGC    AT     CACTG--   T-   CTAG
4          AATGTCTCTAGAGGCTCTTG GTGT  TTGTAAT     GCAA  GTCT
           CAGCCTTTATTGCAATGGCA TACG  AACGTTA     CGTT  CGGA
           T                GT     TTTCCGA   CT   ----
GAM29120 20420  GTGTCACACAGCAAAATGAC    A   ------  AAA   CAATAAA   TAGG
8          AATAAAATCTAGGGATCCAA GTGTC CACA     GCA   TGA     ATC
           TCAGATGCAGAGAATGTGGA CATAG GTGT     CGT   ACT     TAG
           TAC               -   AAGAGA   AG-   AACC---   ----
GAM29121 1556   GTGTCACTGTAGACCCCAAA   TC-    AGA   AAATACCA   AAGATTATC
7          TACCATCCCAAGATTATCGG GTG   ACTGT   CCCC      TCCC
           GAGAAAAGGGGGCAGTAATT CAT   TGACG   GGGG      AGGG
           AC                TAA    ---   AAAAG---   ---------
GAM29122 6348   GTGTCAGCCTCTGGCCGGCT   TCA      C-  CTC     AGCCTGC
9          CACAGAATAGCCTGCATTCT GTG   GCCTCTGG  CGG   ACAGAAT
           GTACTCTGTTCCAGAGGTCG TAC   TGGAGACC  GTC   TGTCTTA
           TCAT              TGC      TT   TCA     -------
GAM29127 12422  GTGTCCCATTCCTGACTGAC       -----------     A  GA  TT   CACCTGAC
4          ATTTTGCACCTGACCGATTT GTGTCCCA         TTCCTG CT  CA  TTG
           GCTGGGCAGGAACTATACTT TACGGGGT         AAGGAC GG  GT  AGC
           GACTGGGGCAT             CAGTTCATATC     G  TC  TT  --------
GAM29127 12752  GTGTCCCCACAGGTTCCCGT   T   A     C----------  T     AAT
7          TGTCCTCAATGAGGACCACG GTG CCCC CAGGTTC         CGT GTCCTC
           TTGTTGGAGTCGAATCTGGG TAC GGGG GTCTAAG         GCA CAGGAG
           GGTCAT             T   -     CTGAGGTTGTT   C     ---
GAM29128 8183   GTGTCCCCTTGCACAAGTGG     C-    ACAA       CCA    - AGTCTATGA
4          GGGGTCCAGGGTCACAGTCT GTGTCC  CTTGC    GTGGGGGGT   GGGTC AC
           ATGAGTAGGCCTCAGCCCCC CACAGG  GAACG    TACCCCCCG   TCCGG TG
           CATGCGGCAAGCTGGACAC       TC    GCG-       AC-    A ---------
GAM29128 6027   GTGTCCCTAAAATGTGTCGC     C---    ATGT   GCG-    GAA  GTAG
6          GCGAGGGAATGGTAGCAGAC GTGTC    CTAAA    GTC    CGAGG   TG
           CTCGAGAAGGCTTTGGATTT CACAG    GGTTT    CGG    GCTCC   AC
           GACAC               TTTA    ----   AAGA    AG-  ----
GAM29130 9248   GTGTCCTCAGTCTCCCCAGA    C------       CCCCAGAGC      CACCATCACCCCCC
0          GCGGTGGCTCACCATCACCC GTGT      CTCAGTCT       GGTGGCT
           CCCAGCCATTAGACTGAGCC CACG      GAGTCAGA       TTACCGA
           AGTTTGCAC            TTTGACC       ---------       ----------
GAM29131 12888  GTGTCCTGCTTTTCCAACAT        TTTT   A    A------------------ ATCTT
1          CAAGATCTTCCTGGTGTCCG GTGTCCTGC    CCA CATCA               G
           AGTGCGCCCTGATGCTGGCG CACGGGACG    GGT GTAGT                C
           CAGGGCAC                C---   C    CCCGCGTGAGCCTGTGGTC -----
GAM29135 12690  GTGTCTCACCCATGGGCCCC      CACC     CCCCACGC    C  CACG
1          ACGCAGGGACGCCACGGTTC GTGTCT    CATGGG       AGGGA GC
           CCTCCCACCCCGTGATCAAG CACAGA    GTGCCC       TCCCT TG
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          ACAC                ACTA     CACCC---    - ----
GAM29136 5561   GTGTCTCGTGTCCCGGGCTC      G GT    - TCA      GTGCT
0          AACGCCCCGTGCTGGGGCGT GTGTCTC T  CCCGG GC   ACGCCCC
          GTCGTGCCGGGGTAAGGGGC CGCGGGG A  GGGCC TG   TGCGGGG
          GC                  A TG    G  CTG      -----
GAM29140 12281  GTGTCTTGATATATTTATAA   GTC     ---    AT-    T  ATTAT
3          ATATGTGATTATCATTTATT GT   TTGATA   TATTT   AAATA GTG
          TTTAAAATAATTTATCAAAA CA   AACTAT   ATAAA   TTTAT TAC
          AAC              AAA     TTA     ATT     T  -----
GAM29140 4372   GTGTCTTGGCCTTCACGAGC   T   GCCTT   GAG      GG-   GCCT
7          AGCCTCTGGACGGCCTTGTA GTG CTTG    CAC   CAGCCTCT   ACG
          GAGGAGGCTGAAGTGCTTGA CAC GAAC    GTG   GTCGGAGG   TGT
          CAAGCAC             -   AGTTC   AA-       AGA   ----
GAM29142 2774   GTGTGAAATGGGCCAGCTGC   G   AA   -   -- T  CT    T   CT  TCCCT
1          CTGCCTGTCTGCTCCTCCCT GT TGA  TGG GCCA  GC GC  GCCTG CTG  CC
          GGCTCGGCCGGGCGCTGCCA TA ACT  ACC CGGT  CG CG  CGGGC GGC  GG
          TGGCTCCAGCTCAGAT      G   CG   T    AC  T --    C   TC  -----
GAM29144 18415  GTGTGACAGTGGCCGGGCTC    T    T   C--    ---  -  T  GTCCT
4          CCTGCGTCCTGCTGGTGACC GTG GACAG GGC   GGGC   TC CC GC
          TGCCCACCGTCCCTGTCCAT TAC CTGTC CTG   CCCG   AG GG CG
                        -    C   CCA    TCC  T  T  -----
GAM29149 12136  GTGTGAGTGGCTTTGCAGGC   G    T   TTTG-    CCT--  T  TG  A    TCA
0          CTGGTGGTGGGAGAGCCTCA GT TGAG GGC     CAGG     GG GG  GG GAGCC
          GGCTCCCTCCTTCTTCGTTC CG GTTC CCG     GTCC     TC TC  CC CTCGG
          CTGACCATGCCCTTGGGC    G   -   TACCA    TTGCT  T  CT  -    ---
GAM29149 18500  GTGTGAGTTGGGATGTATGG     AG        A  GA   GT    GT     TTCAA
3          ATATGTGATAGTCATATTTT GTGTG  TTGGGATGT TG  TAT  GATA  CATATT
          CAAGGTATGGATGTTTGGTG CGTAC  GACTCTGCA AT  GTG  TTGT  GTATGG
          ATAACGTCTCAGAGCATGC      GA       - A-  GT    AG     -----
GAM29150 9580   GTGTGATGACCCTAGTAAGC    GA   CCC    AAG     ATTG   -  CTTT
4          ACATATTGGTAGCCTTTGCA GTGT  TGA   TAGT   CACAT    GTA GC
          TACAAGAATGTGAAATTGTT CACG  ACT   GTTA   GTGTA    CAT CG
          CTCAAGCAC            A-  CTT    AA-     AGAA   A  ----
GAM29152 3949   GTGTGCACGTCACCACAAAA      AC     CAC     CACCCCT   AACAATC
1          ACACCCCTGCAAACAATCTG GTGTGC  GTCAC   AAAAA      GCA
          CCAACAAATTTTTCGTGACA TATACG  CAGTG   TTTTT      CGT
          GCATAT               A-    C--     AAACAAC   -------
GAM29154 3821   GTGTGCCCTAATGGAAGAAC   T  ---  AA-   AAGAA  AG     AGTGAAGG
4          GAGTGGGTGAGTGAAGGTAT GTG GC   CCT   TGG     CG  TGGGTG
          CCAACGCCAAGGAGGAAAGC CAC CG   GGA   ACC     GC  ACCTAT
          TCAC              T  AAA   GGA   -----  A-     --------
GAM29156 21376  GTGTGCTAAAACAGAAATAG     CTAAAACAGAAA    GT-------    TCCCATTT
2          AGGTAGAATCCCATTTTTCT GTGTG          TAGAG        AGAA
          TAAGTACCACTCTACAAGCC CACAC          ATCTC        TCTT
          AGTTCCACAC            CTTGACCGAAC-    ACCATGAAT   --------
GAM29161 18496  GTGTGGCCTTGCCGAAAAAT      CCTTGCCGAAAAA    AA    -   AGCCAGACAAAGAGA

7          CGCCAACTTGCTGAAGCCAG GTGTGG           TCGCC  CTTGC TGA
          ACAAAGAGATCGTGCAGGAC TATACC          AGTGG  GGACG GCT
          GGTGACCATAT            -------------     CA    T  ---------------
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GAM29164 3238 GTGTGGGGCGTGGACCAGGG G- -------- C CG AGCGG
0 CGGCGGGCAGCGGGTTTTCC GT TGGGGCGT GGACCAGGG GG GGC
TCCTGGTCCTCCAAAATGCG CA ACTTCGCG CCTGGTCCT CC TTG
CTTCAGAAC AG TAAAACCT - TT -----
GAM29164 6544 GTGTGGTACATTTACATGCT ACATTTA T- AATACAC AATCGG
6 CATGGAATACACTGCGTCAA GTGTGGT CATGC CATGG TGCGTC
TCGGGATGCATTTTACCATG CACGCTA GTACG GTACC ACGTAG
CTGCATGGAATCGCAC AG----- TC ATTTT-- ------
GAM29164 20751 GTGTGGTCGTTGATTTAGAT TGA ATGAA - C ----- A TAT-
9 GAAACATTGGTGCACAGTTC GTGTGGTCGT TTTAG ACAT TGGTG ACAGTTC GTTT AGCC
TAGTAA
GTTTAAGCCTATTAGTAATG TACACCGGCG AAGTC TGTG ACTAC TGTCAAG TAAA TTGG
GTTATT
CTGATTTTATTGTTCCGGTT --- GTGTA G A GTAGC G CCTT
GAAATCGATGGAACTGTACA TGCTGATT
TCAGGTGTATGTGCTGAAGC
GGCCACAT

GAM29166 12389 GTGTGGTGTTTCTAGTCAAT TGTT - ---- --- GTGAGCA
7 GATATTGGTGAGCACAATGT GTGTGG TCTA GTCA ATGA TATTG
ATTCATTTAATGGCATAGAC CATACC AGAT CGGT TACT GTAAC
CATAC ---- A AATT TAT -------
GAM29168 3556 GTGTGTAGACAGTATGTTAG GACAGTA TTAG C - AATT
7 GGCCTAGCTCAAAATTTTGA GTGTGTA TG GGC TAGCT CAA
AGCTGAGTCAATTCAAGATA TACGCGT AC CTG GTCGA GTT
ATGCGCAT AATAGA- TTAA A A ----
GAM29169 18206 GTGTGTAGTGGTTGTGCAGA T T-- TT CAGAGC ATCACGGA
3 GCCTCATGCATCACGGAGCA GTG GTAG GG GTG CTCATGC
TGAGAAGACATTCCCCTCCT CAC CGTC CC TAC GAGTACG
GCCAC - CTC CT AGAA-- --------
GAM29169 3299 GTGTGTATGCCGAGAACGCC G C A A CA--- A - GAAG
6 ATCCGCAAGATCAACGAAGG GTGT TATGC G GA CGCCATCCG AG TCA AC
TGTGAACTGGCTTCGGATGG CGCA ATGCG C CT GCGGTAGGC TC AGT TG
CGTCCCGCGTAGACGC G - C - TTCGG A G ----
GAM29172 9417 GTGTGTGAAGCCCGTGTACT -- A G AC AG G TAGTTT
9 CTAGTGAGCAGTAGTTTTTG GTGT GTGA GCCC TGT TCT TGA CAG
GTCAAGGGAAAACGGGGGTA CACG TACT TGGG GCA AGG ACT GTT
TCATAAGCAC AA A G AA GA G ------
GAM29173 8943 GTGTGTGCAAGTGTGCAGGT T GT TG TTG TGTG
8 TCCTTTGTATGTATGTGTAC GTGTG GCAA G CAGGTTCCT TATGTA
GTGTGGGAACCTGTGTTTGT TATAC TGTT T GTCCAAGGG GTGCAT
CATAT - -- GT T-- ----
GAM29174 4430 GTGTGTGCGTCCGGACTCTG - ACT A CC GGGAA
2 GAGCCCAGCGGGAAGCTAGC GTGTGTGCG TCCGG CTGG GC AGC
ACCAGCCTGGGCCGCACACA CACACACGC GGGTC GACC CG TCG
C C C-- A A- -----
GAM29176 20959 GTGTGTGTGGTCTTTCACTC GTG-- - ------ A A- A- - A- A ACAAGG
5 TCAGATAGTGAATGTACGTC GTGT TGGT CTTTC ACTCTC GAT GTG ATGTACGT C CC CA

ACCACAACAAGGAAAAAGCG CACG ACCA GAAGG TGAGAG CTG CAC TACGTGTA G GG GT

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          CTGAGGAAGAATGTGCATCC    AGATG   T    ACGAAC     A   GA   CC      A AA  A ------
          CACAGGTCAGAGAGTCAAGC AAAAAGCGC
          AGGAAGTACCAGTAGAGCAC


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GAM29181 18081  GTGTGTTAGGATGTATTATA         AT  --     A    T   TATT
0          ATTTGTCAGTATTCTGTAGG GTGTGTTAGG  GT  ATTATA TTTG CAG
          ATATAGTCAGCTCCTTAGCA CACACGATTC  CG  TGATAT GGAT GTC
          CAC                    CT  AC     A   -  ----
GAM29182 16864  GTGTGTTGTTGTGGGCGATG   G     T    CGAT--  T-  -   GGTAA
1          GTGCTGTTGGTAAAACATGT GT TGTTGT GTGGG     GG  GC TGTT
          CTCCTGATATCCTACACAAC CA ACAACA CATCC     CC  TG ACAA
          AAAC              A     -    TATAGT  TC  T   -----
GAM29182 4401   GTGTGTTTAGGGGGGGCGTG   - TTT-      C    TAGCGCCCTTTCCCTTAC
2          GCTAGCGCCCTTTCCCTTAC GTG TG    AGGGGGGG GTGGC
          GTCACCCCCCCTCTTGGTCA CAC AC    TCTCCCCC CACTG
          CCAC               C  TGGT      C    ------------------
GAM29187 20705  GTGTTATCAGTCTGCACACA     A   -   CACAC  C-   G--   GC   TGGCTTCT
0          CTCCCTGGACAGGCTCACTG GTGTT TCAG TCTG    ACT  CCTG   ACAG  TCAC
          GCTTCTGTGACTCTGTACGC TATAG AGTC AGAC    TGA  GGAC   TGTC  AGTG
          AGGTCAGTCTCAGATCTGAA     A   T   TC---  CT   GCA   TC   --------
          GATAT
GAM29187 3733   GTGTTATGACAGGGAGAACT   G    A  GG--    CT   CAT   GGC----   AGTTT
1          GGACATGGAGGCCCACAGTT GT TTATG CA    GAGAA  GGA   GGA     CCAC
          TGTGGCAGATCATCCTTTTC TA AATAC GT    TTCTT  TCT   CCT     GGTG
          TTTTTCTTATTATGCATAAG   G    - ATTA    TT   TTT   ACTAGAC   -----
          AT
GAM29189 8145   GTGTTCCAGTGGGGGACTGG    TTC--         --   G  T-    CA-   GGACG
4          TTTGGCATCATGTGGACGAC GTG    CAGTGGGGGA  CTG TT  GGCAT   TGT
          GGTTGTGCCCTGGGCAGACT CAC    GTTACCTTCT  GAC GG  CCGTG   GCA
          CTTCCATTGTTTTTCAC      TTTTT        CA   G  TC    TTG   -----
GAM29189 9128   GTGTTCCATGGTCAAAAAAT    TT   -   CAAAAAA    GA    AT  AAGCT
6          GGCAGACAATGATTGAAGCT GTG  CCAT GGT      TGGCA  CAATG  TG
          CACGTTGATGTCAAGACTAC CAT  GGTA CCA      ACTGT  GTTGC  AC
          CGATGGTTAC            T-   G   TCAGA--    A-    --  -----
GAM29190 18721  GTGTTCCTGAATGAAGCTGC    TT   G   GAA     TTTGAATT      G--   AAATG
7          TTTTGAATTTTGTTATGTTG GTG  CCT AAT   GCTGCT      TTGTTAT   TTG
          AAATGCAAGAAATAACAATG CAC  GGA TTA   CGACGG       AACAATA   AAC
          ATGGCAGCAATTAAGGTCAC   T-  A  A--     TAGT----      AAG   -----
GAM29191 2977   GTGTTCTAACCAATTGCCTT    TC   CCA--  TG-   T-    --------        CTCTCCTATATTATCATA
8          TTCTTGTTATCTGAGCTCTC GTGT  TAA     AT   CCT  TTCTT       GTTATCTGAG
          CTATATTATCATACTCAGAT CACA  ATT     TA   GGA  AAGAA       CAATAGACTC

          AACCAAATTAAAAGAATTAG    TA   TTTAG  TAA   TT    AATTAAAC        ------------------
          GAATATGATTTTTAATACAC



GAM29192 18111  GTGTTCTCTACTCCAACCGA   GT    ACTCCAACCGA   ----     ACTTGAA
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2          GCAGCATGTCACTTGAAGGC GT  TCTCT        GCAG   CATGTC
           ATGGAAACTGCAGAGACTGC CG  AGAGA        CGTC   GTACGG
                        TC    ----------   AAAG    -------
GAM29193 19142  GTGTTCTGGGGCGGAATCTG   TTCT     AATC  T  -  T    TTTGTGCT
0          TGCTGTCTAGGTTTGTGCTT GTG   GGGGCGG   TG GC TG CTAGG
           CTAGCCATGCCCATTCCCGC CAC   CCCCGCC   AC CG AC GATCT
           CCCCAC             ----     CTT-  C  T  C    --------
GAM29195 3516   GTGTTGACCGTTCCTCTCCC       GTTCCTCTCCCCT    TA--   C   CC     A--   G  G  T  TGA
1          CTGTACATAGCCCGAGCCAG GTGTTGACC         GTACA   GCC GAG  AGTCCTG   GTG GT AC CC

           TCCTGAGTGGGTGACTCCTG TACAGCTGG         TATGT   TGG CTC  TTAGGGC   CGC CA TG GG

           AGTGGGTGACGCGCAGACGG       ----------    TTAC   A   T-     AGA   G  G  -  ---
           GATTTCTCAGGTCATTTGTA GT
           TGGTCGACAT

                      --
GAM29196 5667   GTGTTGCAGCTTTATAGTTT     C--  C       TTAAAA   TTA
0          TTAAAATATTTTAGATAATT GTGTTG   AG TTTATAGTTT     TATT
           CTTAAACTATGAACCTTCTT TACAAT   TC AAGTATCAAA     ATAG
           AACAT              TCT  C       TTCTTA   ---
GAM29197 8691   GTGTTGGAAAGGTTTCCTTG     GA     T   TGAGCTATT  TTTT
0          AGCTATTGTTTTTACTTGAT GTGTTG  AAGGTT CCT       GT
           TATAGGCAGCCTTGATAACA TACAAT  TTCCGA GGA       CA
           T                  AG     C   TATTAGTT-  ----
GAM29197 9094   GTGTTGGCAGCAGGTGCCTC    TG--  A     G   -  ---   TGGT
7          TCAGCTGGTGCTGGACAGAA GTGT    GC GCAGGT CCT CT   CAGC
           GGGGCTTGCAGTATTTGCAC CACG    TG CGTTCG GGA GA   GTCG
                       TTTA  A     G   A  CAG    ----
GAM29198 3535   GTGTTGGGCCCGCGGGCGCG   G         G -------       C    CGCG
7          GGCTCCCGGGCGCGCGTGCC GT TTGGGCCCGCG GC      GCGGGCTCC GGGCG
           CCGGGGTCTGCTGTGCAGGC CG GGCCCGGGCGC CG      CGTCTGGGG CCCGT
           GCGCGGGCCCGGGGC       G         G  GACGTGT       C    ----
GAM29202 20162  GTGTTTACTATATTCAGAGT    TTTACTATATT     T-   -   TAT   T---    CACCCCCAAA
7          TGTGCAACTATCATTTTTCT GTG         CAGAGT  GTGC AAC   CAT    TTTCT
           CACCCCCAAAAGAAACCCTA CAC         GTCTCA  TATG TTG   GTA    AAAGA
           TGCCCGTTAGTATTCACTCT    TCTTTT-----     CT    A   CCC   TCCC    ----------
           GTTTTCTCAC
GAM29203 2873   GTGTTTATGATAAGAAGCGT         TA  AA    G T   CC   TGCTGTT
7          TGGTCTTCCTCCTGCTGTTG GTGTTTATGA  AG  GCGTT G CTT  TCC
           GAATAAGTGGATGTCTTCGT CGTAAATGCT  TC  TGTAG T GAA  AGG
           AAATGC                  --  --    G -   TA   -------
GAM29205 3751   GTGTTTCCAGGGACTTTAGG   GT    ----  -   TTTA--          TTTTTTTT
0          AATTCTTTTTTTTTTTTTTG GT  TTCCA    GG GAC     GGAATTCTTTTTT
           GAAAGGGATTCTCGTTTTGT CG  AAGGT    CC CTG     TCTTAGGGAAAGG
           CGCCCAGGTGGAATTGC     TT    GGAC  G   TTTTGC          --------
GAM29205 21411  GTGTTTCTCCCTCAATCAAA   G        AA-  AAA    CAAATCA    TATGTT
6          AGTTCAAATCAGCTTTATGT GT TTTCTCCCTC   TC   AGTT      GCTT
           TAAGCAGCTGGGAGGAGAGG CA AAGGGGGGAG   AG   TCGA      CGAA
           GGGGAAGAC           G        AGG  GG-    -------    ------
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GAM29208 3705 GTGTTTGGGAGCTCACGTGT GTT-- C CATGT G TGC TG T TG GG
4 GCATGTGTGTGCATACACAT GT TGGGAGCTCA GTGTG GT TGCATACACA AGGCATA TG CG
T GC
GCAGGCATATGTGTCGTGTG CG ATCCTCGGGT CATAC CG ACGTGTGTGT TCTGTGT GC GT
G CG
GGCGTGTTTGCAAGTGTGCG AAATT T CC--- G --- GT - GT AA
TGTGTGTCTTGTGTGTGCAG TGTT
GCCCCATACTTGGGCTCCTA G
TTAAAGC T

GAM29212 3354 GTGTTTTGACAGTTTATTTT A- A GA CA- AAACAAAG
1 GAAGGTCATTTTAAAAACAA GTGTTTTG CAGTTT TTTT AGGT TTTTAA
AGTTAAAGACAATCTGAGAA CATAAGAC GTTAAA AAAG TCTA GAAATT
AAAAATTGCACAGAATAC AC A AG ACA --------
GAM29212 20305 GTGTTTTGATTAGTCCTGTC ATTAGTC T T ATTTA
2 ACTGTTTTTATTTAAAATGC GTGTTTTG CTG CACTGT TTT
AGTGTCAGCAAACCGAAATG CGTAAAGC GAC GTGACG AAA
C CAAAC-- T T -----
GAM29214 8115 GTGTTTTTGCCGTTACTCCC TTT C ACTC TA- GAAAGAAAGACG
3 TTAGGAGGAAAGAAAGACGC GTGT TGC GTT CCT GGAG
TCCCCCAGGAACAGCACTAC CACA ACG CAA GGA CCTC
AC TC- A ---- CCC ----------
GAM29214 18005 GTGTTTTTTTAAATGTAGAT T - GA- G CTTTGT
7 TGAAATCTTTGTATTTGAAG GTGT TTTTTAA ATGTA TT AAAT
CATACATGTTGAAAGTACAC CACA GAAAGTT TACAT AA TTTA
T G ACG G ------
GAM29215 6308 GTTAAAAAAAATTGTATAGA AAAT-- A- CT- TCA
1 TCTTTAGTGTCACATTGACT GTTAAAAA TGT TAGAT TTAGTG
TATCTGGGACATCGCTATTT TAATTTTT ACA GTCTA AGTTAC
TTAAT ATCGCT GG TTC ---
GAM29218 9262 GTTAAACTGAATATACAATT AC TATAC TCCC- CCAACTT
7 GTTCCCTAGGCAACCAACTT GTTAA TGAA AATTGT TAGGCAA
TTGCTTATAACTACAATTTA CAGTT ACTT TTAACA ATTCGTT
ATTTCACGTTGAC GC TAAT- TCAAT -------
GAM29220 899 GTTAAATACTGTCAACTAGT AA TT A AG TGTAGC
6 TGTATACAAGATTGTAGCGT GTTAAATACTGTC CTAG GT TACA AT
TCTGTAATCCCTAGGACAGT TAGTTTGTGACAG GATC TA ATGT TG
GTTTGAT -- CC - CT ------
GAM29225 21389 GTTAAGATAAACATGAGAAA AG CATG AC TCTA TTAAT
6 CTTGATCTAATATTTAATAT GTTA ATAAA AGAA TTGA ATAT
ATATTCAGTTCTACACTTTA CAAT TATTT TCTT GACT TATA
TTAAC -- CACA -- TA-- -----
GAM29228 16601 GTTAAGTGGTAAAAATTATG G AAAAA T A C- CCT TTT
5 AGAGTGATTTATAGAGCTGT GTTAA TGGT TTATGAGAGTGA TT TAGAG TGTG TAAATA
GCCTTAAATATTTTATTTAT TAATT ACTA GGTACTTTTACT AA ATCTT ATAC ATTTAT
CCATATCTTCTAAATTCATT G AC--- T - CT CT- ---
TTCATGGCAATCAGTTAAT
GAM29235 14644 GTTACACCAAATATTCGTAG - A CG CTG GCCCG
5 TCTGGTTGCCCGAATATAAC GTTACA CC AATATT TAGT GTT
TAATAGTATTAGGATGTAGC CGATGT GG TTATGA ATCA TAA

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                          A A    TA   ATA  -----
GAM29235 4414  GTTACACTGATCATGGGTCT   - C A    G   AC    TTACAGAGGAAAGAGAGA     -  AATGA

7          GACCATCATTACAGAGGAAA GTTA CA TG TCATGG TCTG  CATCA            TGATTTCT TCT
           GAGAGATGATTTCTTCTAAT CAAT GT AT AGTACC AGGT  GTAGT            ACTAAGGA AGA
           GAAGACAGGAATCATGATGA   A - C    G   CA   ------------------     C  -----
           CTGGAGCCATGACTATGATA
           AC
GAM29237 3753  GTTACATATTTTTGTTGATT    A   TTG    --- AAA A     TCA-   TTAAA
2          TTGAAAGTACTTGAATTCAG GTTAC TATTT  TTGATTT  TG  GT CTTGAAT   GTTT
           TTTTTAAAGAACAATTATTT TAATG ATAAA  GACTAAG  AC  TA GAATTTA   CAAG
           AAGATGGCAGGTGAATCAGT    A   T--     TGG  GG- -     TTAA   -----
           AAATAAGTAAT
GAM29237 21269  GTTACATGGACGGCATGACC   A  T        CC    GT- - C  AGGTGC
6          GTGGGTGTCGTGCGCCAGGT GTT CA GGACGGCATGA  GTGGGT  CG TG GCC
           GCGGCCATCGTGGGCCCATT CGA GT CCTGCCGTACT  TACCCG  GC AC CGG
           TCATGCCGTCCTGAAGC     A -        T-    GGT  T -  ------
GAM29240 6449  GTTACGACGTTCGTTAGAAC   AC       TA  CA   T  C  ACCT   CACCAC
5          AAGGTTGTCACACCTCTCTC GTT  GACGTTCGT  GAA  AGGT GT AC   CTCT
           ACCACAGAGTCGCGTTACAC CAG  CTGCAAGCA  CTT  TCCA CA TG   GAGA
           CTATTCACGAACGTCACGAC   CA       --  A-   - T  CGCT   ------
GAM29241 15910  GTTACGTAGAGGATGTGTAC      A   -  G   TAGTGGA   TG  CTTAAA
0          TAGTGGAAGAGTGTCCTTAA GTTACGT GAGGA TGT TAC      AGAG  TC
           AGAATCTCTGTAGGCATTTC CGATGTA CTCTT ACG ATG      TCTC  AG
           TCGATGTAGC             G    T  G  -------   TA  ------
GAM29246 19944  GTTAGACATGGGAACAGCTT  TT   A    ACAGCTTTT    AACATATGATTCACAG
6          TTCCTACAACATATGATTCA G  AGAC TGGGA       CCTAC
           CAGGTAGGTTAATACATCTT C  TCTG ATTCT       GGATG
           AGTCTCCC          CC   -   ACATAATT-    ----------------
GAM29253 8646  GTTAGGGATAAGTGCTTATT      AT     TATT------       GTGG
6          TTTAAGAGCTGTGGAGCTCT GTTAGGG  AAGTGCT       TTTAAGAGCT
           TAAATATCAACCATGGCACT CAGTCCT  TTCACGG       AAATTCTCGA
           TTCTCCTGAC             CT     TACCAACTAT       ----
GAM29256 8607  GTTAGTCAGATCTAGAGGAT     -  AT  A   GA    CT   T  ACCG
2          CCCACTTGCATGTACCGGCT GTTAGT CAG  CT GAG  TCCCA  TGCA GT
           TGCATGGGAAGCTTGAGTAT CAGTCA GTT  GA TTC  AGGGT  ACGT CG
           TGCACTGAC             C  AT  G   GA    --   T ----
GAM29256 3633  GTTAGTCATCTGTGACTTTT      T-    CTTT   -----   AATA
3          GTTCTGGAATACCGGTTTTT GTTAGTCA  CTGTGA   TGTT   CTGG
           AATATATCTTACAGTCTGAC CAATCAGT  GACATT   ATAA   GGCC
           TAAC                CT    CTAT   TTTTT   ----
GAM29259 12184  GTTAGTTTTTGGAGTGTGGG     TT-  G   G    TT  TTTTGTTTT   ATTTTTTATTTTGTTCTAC

2          TTTTGTTTTGTTTTTTGAAT GTTAGT   TT GAGT TGGGT  TG       TTGA
           TTTTTATTTTGTTCTACTCG CGGTCA   GA TTCG ACTCG  AT       GGCT
           GTTTTATTCTTATTGCTCAG     CGT  G   G    TT  TCTTATTTT  ----------
           GCTTGAGTGCACTGGC
GAM29262 18409  GTTATATTCCCAGAGGATGT   A-  T   AG--       CCCA----   -   TA   CCAT
8          CAGTCCCAAGGACCAGTAGC GTT  TAT CCCAG   GATGTCAGT      AGGA CCAG  GCTG
           TGCCATCAGTTTGGATTCTG CAA  ATG GGGTC   CTACGGTCA      TCTT GGTT  TGAC
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AAAACTAACTGGCATCAACA AG T ACAA ATCAAAAG A -- ----
CTGGGTGTAGAAAC
GAM29263 5622 GTTATCATTGTCCTCAGTCT -- T CCTC TCT CT- AG AAATA
7 CACTGGCGAGTTTAAATAAA GTT ATCA TGT AG CA GGCG TTT
GTCCGCCTCTTGTTCTCACA CAA TAGT ACA TC GT CCGC GAA
CTGATCAAAC AC C C--- TT- TCT CT -----
GAM29279 3251 GTTCAACTTTGAGAGTTTCC CAAC- - - GAG CTG
4 CGGAGTCCCCTGGGGAGAAC GTT TTTG AGAGTT TCCCG TCCC
GGGGCAACTTTGCAAACCCT CGA AAAC TTTCAA GGGGC AGGG
AAGC ATCCC G C AAG ---
GAM29280 8213 GTTCAAGCGCTTGTCCAACC AA- T--- AA CC TC ACTCAGTG
2 TCCTTAGTCTGACTCAGTGC GTTC GCGC TGTCC CCT TTAG TG
ATTCTAACTGGGGGGGACAT CAGG CGTG ACAGG GGG AATC AC
CTCGTGCAGGGGAC GGA CTCT GG TC TT --------
GAM29285 4033 GTTCACGGCCTTGGCGATCA TTG -- C TAGAG TCACTG ACGAT
7 TCTTAGAGAGTTGGTCACTG GTTCACGGCC GC GAT ATCT AGTTGG TG
TGACGATCGATCCCCCGACT CAAGTGTCGG CG CTA TAGG TCAGCC GC
ACACTGGATATCCTGCACTG TCA TC - TCACA CCCTA- -----
GCTGTGAAC
GAM29285 8313 GTTCACGTACAGCAGAACAT GTA C --- T TT TTGCTCTTT
9 GTAGTTATGCTTGCTCTTTG GTTCAC CAG AGAA CA GTAG ATGC
CATCTACTTGACATTCTTTG CAAGTG GTT TCTT GT CATC TACG
AAGTGAAC AA- - ACA T -- ---------
GAM29286 8069 GTTCAGACTGCCACAATACA TT T- C ACAA--- GAG - TTTCTTTGT
8 AGTCAGGAGAGGGCGTTTTC G CAGAC GCCA AAT GTCAGGA GGC GT
TTTGTGCTGCCAATTCTGAT T GTTTG TGGT TTA TAGTCTT CCG CG
CATTTAAATTTTGGTTTGTT GG TT T AATTTAC AA- T ---------
TGGGT
GAM29287 19152 GTTCAGAGAGTTGGCCAGAA A T CCAGAA A- - T- ATTATTCCC
0 GAACAACAGAGCTTCTCATT GTTC GAGAGT GG GAACA CAGAG CT CTC
ATTCCCGGGTTGGACTTTGG CAGG CTCTTA CC CTTGT GTTTC GG GGG
GTGTTCCCCATTCTCGGAC - C ------ GG A TT ---------
GAM29291 901 GTTCAGTTCCAAGGAGTCCC G A AGTC GC-- GGCTA
4 AGCGGGGCATGGGCTACATG GTTCA TTCCA GG CCA GGGGCATG
CCCCAACGTGGCCTGGAGGT CAAGT GAGGT CC GGT CCCCGTAC
GAAC G - ---- GCAA -----
GAM29293 20163 GTTCATCTCAGCCACAGACA G A- GACACCA A AAGAA
6 CCATCCGGAAGATGAAGAAC GTTCATCTCA CC CA TCCGGAAG TG
GATTTCCGGAAGATGGAGGA CAGGTAGAGT GG GT AGGCCTTT GC
TGAGATGGAC A AG AGA---- A -----
GAM29294 14700 GTTCATGCAGCTGTGGCAGA T- GCT- G- -- T- -- TTCATGTTAGTT
3 GTTACAGTTCTGTGGTTTCA GT CATGCA GTGGCA AGT TACAGT CTGT GGT
TGTTAGTTACCTTATAGTTA CA GTATGT CACCGT TTA GTGTCA GATA CCA
CTGTGTAATTAGTGCCACTT TT AATT GA AT TT TT ----------
AATGTATGTTAC
GAM29295 3768 GTTCATTAATCAGTGTAGCA A AA AGCATTG CCGAC- ATTCAC
8 TTGGTCACCGACTCATTCAC GTTC TT TCAGTGT GTCA TC
GAACAGATTGACAATTACAA TAAG GA AGTCACA CAGT AG
CACTGAAGAGAGAAT A GA ACATTAA TAGACA ------
GAM29299 19264 GTTCCAAGAAAGACAGTTCT GA CA C TCA CTAAA

1 GGTCAGGCCTAAAGCTCTTC GTTCCAA AAGA GTT TGG GGC
CGCAATATTCTTCTTTGGAA TAAGGTT TTCT TAA GCC TCG
T TC TA C TTC -----
GAM29300 3774 GTTCCACCCTGAAGTTGGCC CC AAG TG CT - GA T AGTAATACTGAAGAA
6 TTACAGAAAATGGAAAAGTA GTTCCAC TG T GC TA CA AAA GGAAA
ATACTGAAGAATTTCCTTTA CAAGGTG AC G CG AT GT TTT CCTTT
TGATATAGCTGGATGCAGTG -- GTA GT AT A A- - ----------
GAAC
GAM29302 13969 GTTCCAGTTGCACCTGGGCT GTTGC - CT ACT GTT
6 GCTGTGGACTGTTGTTGATT GTTCCA ACCT GGGCTG GTGG GTT
CCTCACTACGGCCCAAGGTT CAAGGT TGGA CCCGGC CACT TAG
GTGGAAC GT--- A AT CCT ---
GAM29303 5414 GTTCCATGACGGGGACTCAG ATGA GA- - G G GAC
1 TGGTGTTTGCAGGACCTGCA GTTCC CGGG CT CA TG TGTTTGCAG
GGCAACAGTGTGGAGACCCG CAAGG GCCC GG GT AC ACGGACGTC
GGGGGAAC GGG- AGA T G A ---
GAM29306 18546 GTTCCCATCTTCACCTTGGT C -- - T A- C ACC - TTAA
0 GGCAGCCCTACCTCTGAGAT GTTCC ATCT TCAC CTTGG GGC GC CT TCTG AGATT
TTTAAGGTCTACGGAAAGTG CGAGG TGGA AGTG GGACC TCG CG GA AGGC TCTGG
CAGGCTTCCAGGAGTGATGA - GT A T GA T A-- A ----
GGTGGAGC
GAM29307 3160 GTTCCCGCATCTGGAGTTCA T C A CA A A C GAAA
8 GGAGTATTCGGGGAAACCTC GT CC GC TCTGGAGTT GG GT TT GGG
AACACCCGGCTTCGGAAGCT CA GG CG AGGCTTCGG CC CA AA TCC
GGAC - T A -- - C C ----
GAM29307 3126 GTTCCCGCATCTGGAGTTCA -- - A CA A A C GAAA
9 GGAGTATTCGGGGAAACCTC GTTC CC GC TCTGGAGTT GG GT TT GGG
AACACCCGGCTTCGGAAGCT CGAG GG CG AGGCTTCGG CC CA AA TCC
GGACGAGC CA T A -- - C C ----
GAM29310 21496 GTTCCGATGATGCAAAAGGC TGA AAAA- A--- AATG
3 CAATCCAATGGGAAAGATGG GTTCCGA TGC GGCCA TCC
CCAGGTGGCGAATTCGGGAC CAGGGCT GCG CCGGT AGG
TAA GTGGA AGAA ----
GAM29310 3698 GTTCCGGGACACGTGTGTGT -- TG TG GTG TAAGTTAGT
6 GTGTGTGTGTGTAAGTTAGT GTTCCGGGAC ACG TG TGTGT TGTG
TACGGGACACGTGTGTGTGT CAGGGCCTTG TGT GT GCACA GCAT
AAGTTCCGGGAC AA GT GT GG- ---------
GAM29313 1440 GTTCCTCTCCCAGCTCCATC TT T C - TC CC- AG ACC CA ATGGCGGG
1 TCTTTCCCTAGGGACCAGGC G CC CTCC AGCTCC A TCTTT CT GG AGG CTCAT
ACTCATATGGCGGGGTGGGG T GG GAGG TCGGGG T AGAAG GA CC TCC GGGTG
TCCTAGCCTCAGTTTGAAGA GG C - G GA TTT CT GA- TG --------
AGTGGGGGCTGGAGCGGGGT
GAM29320 3466 GTTCGAGGGTGCGCCGTGTC A CG G TT---- G GTAC
3 TTTTGCGTGGTACCAGCGGT GTTCG GGGTG CC TGTC TTGC TG
GACATGACGGGGTACACTCC TAGGC CTCAC GG GCAG GGCG AC
GGAT - AT G TACAGT - ----
GAM29320 2732 GTTCGCCTGTGCCCGCGGTG ---- - C TGTGC GAGC
6 TGCCGCAAGGAGCCTTGCGT GTTCGCCT G TGCCCG GG CGCAAG
CCTGGGCGTCGATGAGGCGG CGGGCGGA C GCGGGT CC GCGTTC
GC GTAG T - T---- ----

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GAM29322 4020   GTTCGTTGTACCTGATACTG   CGT  TA   ATACTGT  A    CTAAGAT
3          TTGACATGACTAAGATTCAT GTT   TG  CCTG      TG CATGA
           GCATTGATCACAGGCCCATT CAG   AC  GGAC      AC GTACT
           TGAC              TTT  CC    ACTAGTT  -    -------
GAM29327 18298  GTTCTCACGTAACCTGTAAC     CA   AA  TGTAA   -  ATT  -------   TT   A   CTGTTA
6          ATAAGCATTTCCCAAGTTGC GTTCT  CGT  CC    CATA AGC   TCC      CAAG  GCT TTAT
           TATTATCTGTTAATAACAGT CGAGA  GCA  GG    GTGT TCG   AGG      GTTT  TGA AATA
           GGTTTGATTAATTGGATTGG     AG   A-  TGTAG   G   GTT   TTAATTA   GG   C   ------
           CTGTGTGGATGTGGAACGGA
           AGAGC
GAM29328 20074  GTTCTCAGCTGGCTGGAAAA     --------     G TG   -   T  GTTGA
1          ATTGGTTGACATTTTCTTTT GTTCT       CAGCTG C  GAA AAA TG
           GGTAGTTGTTTCTTAAAGAA TAAGA       GTTGAT G  TTT TTT AC
           T                  AATTCTTT     - GT   C   T  -----
GAM29328 16488  GTTCTCAGTTAGGTACAAAA   TC   -   AG    AAAATGA    A-   AA   AAAAAG
7          TGAACTAAATTAAGCCAAAA GT  TCA GTT  GTAC      ACTA  ATT  GCC
           AGGGCAGTGCTAGTGTAAAC CA  AGT CAA  TATG      TGAT  TGA  CGG
           AGTATGAAACATGAAGAC    GA   A   AG    ACAAATG    CG   --   ------
GAM29334 18023  GTTCTGCAAACAATGTCCAA     ---   A  AA       GTAT    AACCACCA
5          GGTATTTTCAACCACCAGGA GTTCT   GCA AC  TGTCCAAG    TTTC
           ACTTGGATACAGTGTGCTTT TAAGA   CGT TG  ATAGGTTC    AAGG
           AGAAT               TTT   G  AC       ----    --------
GAM29337 2835   GTTCTGGCTGCTGAGGTGCT  T       CT     C    CC-    CA  GAGA
2          TGTCCATGGCATCGAGAGAC G TCTGGCTG  GAGGTG TTGT   ATGG  TC
           CCATACCGCGATATTTCTTT C AGGCCGAT  CTTTAT AGCG   TACC  AG
           AGCCGGATC          T       TT     -    CCA    C-  ----
GAM29338 2970   GTTCTGTAAGATGGGAGGAT      TA    - A    GA   G  -   TC  CCTAG
6          GAATTGGACCTTCCTCCTAG GTTCTG  AGATG GG GGAT  ATT GA CCT  CT
           GGTGAGGCTTAGATGAGTTC CAGGAC  TCTAC CC CTTG  TAG TT GGA  GG
           CCACATCTCAGGAC          --    A  -   AG   A  C   GT  -----
GAM29339 709    GTTCTGTATAAACTGGGGGA       ATAAACTG-    ACA       TTCCTTTGTT
0          CAGTAAGTTAGTTCCTTTGT GTTCTGT       GGGG   GTAAGTTAG
           TTTAACTTATAAGCCTCAAC TAAGACG       CTCC   TATTCAATT
           TTCACCGCAGAAT            CCACTTCAA    GAA       ----------
GAM29340 6231   GTTCTGTTCATGATTTGCCT     -  T  T  TTT   TC--       TTTCTCATCT
8          CTGGTCCAGTTTCTCATCTC GTTCT GT CA GA   GCC    TGGTCCAG
           TGGACTGCAATGGTCTTCTT CAAGA CG GT CT   TGG    GTCAGGTC
           GTGCTAGAAC            T  T  T  TC-   TAAC       ----------
GAM29341 8093   GTTCTGTTCTTTTTCTGTTT   - --   T  T  T   TT   GATGA    T TG -   CT-      AGGAG--
0          TCCTGATGAGGCTTCTGTAC GTT CT  GTTC TT TC GTT  CCT     GGCT C  T ACTT   CCCTTTA      GC
           TTCTCCCTTTAAGGAGGCAA CAA GG  TAGG AA AG TAA  GGA     TTGA G  G TGGG   GGGGAAT
CG
           CTGAATAGCATGAAAATAAG   T  TT    T  C  -   GG   GTCG-    T GT G    TAT      AAAAGTA
           GGGTATGGGTGGTGGTAGTT AACTGAATA
           GCTGAGGGGAATGACAATGG
           ATTTGGTAAC
                      ---------
GAM29341 8408   GTTCTGTTTTGTTTCTGTTT   C   T- TG    G     G  TC-    GCCAATTA
4          TCTGTGTCTAGTGCCAATTA GTT TGT  T  TTTCT TTTTCT TG   TAGT
           GCTAAATCAGGGAGAAAGAA CAG ACA  A  AAAGA AAGAGG AC   ATCG
```

ATGATCACATGAC T CT GT - G TAA --------
GAM29343 5973 GTTCTTCAATTTTGTGCCCT ATTTT CCC C T A ATTGT
3 TCTCTAGTGCCAGCCATTGT GTTCTTCA GTG TTCT TAG GCC GCC
GGTAGGCCCTGAAGAACACC CGAGAGGT CAC AAGA GTC CGG TGG
CTCATGGAGAGC ACTCC --- A C A -----
GAM29344 6669 GTTCTTCTATTATTCCCATT ATTATTCCC ATAA AAA- ACATAGAG
4 TTATGGATAAAGAAACAAAG GTTCTTCT ATTTTATGG AGAAAC GAC
ACACATAGAGGTTAAAAGTT CAAGAAGG TAAGGTACC TCTTTG TTG
TCTGCCCATGGAATATAGCC ACCGATA-- CG-- AAAA --------
AGGAAGAAC
GAM29346 3375 GTTCTTGCTCTCGTACTGGG - A GG-- G A-- A T GTGA
0 CCTGGATGTAAGCCACGGCT GTTCTTGCTC TCGT CTG CCTG ATGTA GCC CGGC TCT
TCTGTGAAGGCGCTGGGGCC CAGGGGCGAG GGTA GAC GGAC TATAT CGG GTCG GGA

TGTATATACAGGAAAGCAGA T - GAAA A GTC G C ----
TGGTGAGCGGGGAC
GAM29356 3159 GTTGACAGGGCATCTTGAAA GCA T AA - C- CT-- CTTCC
8 CCTGCTTCTTCTAATGCCTT GTTGACAGG TCT G ACC TG TTCTT AATGC
CCGCATTTCATAGGAATTCA CAACTGTCC AGA C TGG AC AAGGA TTACG
TGGTACCAGACCTGTCAAC --- - CA T TT TACT -----
GAM29362 19062 GTTGAGCATCTGTTGCACTA CATC CT -- TTCTATATTC
2 AGTGCTTTCTATATTCAGTA GTTGAG TGTTGCA AAG TGCT
ATCTTTTGTAACAAGCCTCA CAACTC ACAATGT TTC ATGA
AC CGA- T- TA ----------
GAM29363 9090 GTTGAGCTGCGGATCCACCC AG ------ A CTCA AGCA
0 TCAGCAGCAGCCCCAGGAGG GTTG CTGCGGA TCC CC GC
AAAGCTCTCCGCAGTCCGAC CAGC GACGCCT AGG GG CG
CT CTCGAA A ACCC ----
GAM29364 20025 GTTGAGGTGGCTGCTGACCC - CT CCCT-- TC TCTCC
5 TGGGTCTCATCTCCTGAATT GTTGAGGTGGC TG GA GGG TCA
CCTTAACCTCCTCATGCCGC CGGCTCCGCCG AC CT CCT AGT
CTCGGC T TC CCAATT TA -----
GAM29367 19796 GTTGATATTTGAACTACGAG T GA GA------- GGACATTAATAGAAA
3 AGAAGGACATTAATAGAAAT GTTGA ATTT ACTAC GAGAA
TCTCAGTGACTGAGTAGTAA CAACT TGAA TGATG CTCTT
GTTCAAC - -- AGTCAGTGA ----------
GAM29368 8125 GTTGATGATCCCACCTTGAG G GATC CTT - TGCA
3 GGAGAAGCGGTTGCAGCTGT GTT AT CCAC GAGGGA GAAGCGGT
TTCATCTCTTGTGGACAGTG CGA TG GGTG TTCTCT CTTTGTCG
AGC G ACA- --- A ----
GAM29371 3003 GTTGCAAAGGCAATTTGATG G G ---- A GACA TATCTC
0 TGGACATTCTTATCTCGGAA GTT CAAA GC AATTTG TGTG TTCT
CACACACACAAATTTGAAGC CGA GTTT CG TTAAAC ACAC AAGG
ATTTGAGC - A AAGT - ACAC ------
GAM29371 21615 GTTGCAAGCAAACTTGTATC C ACTT A G ATTTTGAC
3 TGGGTCTTCAAGATTTTGAC GTTG AAGCAA GT TCTGG TCTTCAAG
TTTGAGGACCAGAGGCCCTA CGAC TTCGTT CG AGACC AGGAGTTT
TTGCTTCAGC - ATCC G - --------
GAM29372 18505 GTTGCAATGTAGAATATAAA T AATATAAAACCATAT ATAATTTC
1 ACCATATCGAATAATTTCTC GT GCAATGTAG CGA

GTAGCCTGTTACATTGTTAC CA TGTTACATT GCT
T GTCCGAT-------- --------
GAM29372 20216 GTTGCACAGCCACAGACTTC AGCCAC T GCACAGA ACTGCC
6 TCAGCACAGAGTGGGGACTG GTTGCAC AGACTTC CA GTGGGG
CCTTCCATTGTGAAGTCTCT CGACGTG TCTGAAG GT TACCTT
TATGGTGCAGC GTATTC T ------- ------
GAM29374 3875 GTTGCAGTTTTCCGGCAGCA TG GTT ----- G GTATGAGA
7 TGGTAGTATGAGATAGTATG GT CA TTCCGG CAGCATG TA
TTGTGTCTCTGGAATATGTG TA GT AAGGTC GTTGTAT AT
AT GT AT- TCTGT G --------
GAM29377 8258 GTTGCCCAGGCTGGAGTGCA T- --- T - G AATCT
6 GGGGCTCAATCTGGGCTCAT GT GCCC AGGC GGAGT GCA GGGCTC
GCAACTCTGCCTCCGGGGTT CA TGGG TCCG TCTCA CGT CTCGGG
CAC CT GCC - A A -----
GAM29381 5935 GTTGCGGCCCCCAATCCCAG CCCAAT ACA- C CTCA
7 ACAGTCAGCTCTCAAGCTTG GTTGCGGCC CCCAG GT AGCT
CCCACCTGGGTTTGGCTGCA CGACGTCGG GGGTC CG TCGA
GC TTT--- CACC T ----
GAM29386 2675 GTTGCTGTAGCCAAATTCGT T CAAATTCG TAC- GGAAA
5 TGTCATACCAGGAAATGAGC GTTGCTG AGC TTGTCA CA
TTGACAAAGTGCTCGGCGGC CGGCGGC TCG AACAGT GT
- TGA----- TCGA -----
GAM29386 19066 GTTGCTGTAGCCAAATTCGT ---- TA AATTCG TAC- GGAAA
6 TGTCATACCAGGAAATGAGC GTTGCT G GCCA TTGTCA CA
TTGACAAAGTGGTCGTTGAG TAACGG T TGGT AACAGT GT
GGCAAT GAGT GC GA---- TCGA -----
GAM29387 12981 GTTGCTTGGTCACTTCGTGG TT TT T -- - TG- TTGG
8 CTCACGGTAATAACGTGCTT GTTGC GGTCAC CG GGCTCAC GGTAATA ACG CTT
TTGGAAGACTTGTCTGTTGC CAACG TCGGTG GT CTGAGTG TCGTTGT TGT GAA
TTGGTGAGTCTGTGTGGCTG -- T- - GT C TCA ----
CAAC
GAM29390 3000 GTTGGACTTGTGTTTATCTT CTT A AACCAC TCATTCCT
6 AACCACCAGATCATTCCTTC GTTGGA GTGTTT TCTT CAGA
TGTAGCTCAGGAGAGCACCC CAACCT CACGAG AGGA GTCT
CTCCAAC CCC - CTCGAT --------
GAM29391 9827 GTTGGAGAGTAGAGTTAAGA AGA TTAAGA CCA T GTTA
3 CAAGGCCCAGTTTGTGTTAG GTTGG GTAGAG CAAGGC GTT GT
CCGACCGTCTTGGCCCACCT CGACC TATCTC GTTCTG CAG CG
CTATGACCCAGC CAG CACCCG C-- C ----
GAM29392 21613 GTTGGAGGGAGGGAGAGCCA AGGGAG AG ATACACTA GATTA
3 ATATACACTATGGGCTGATT GTTGG GG AGCCAAT TGGGCT
AAGCCCGGTTGGCTGCCATG CAATT CC TCGGTTG GCCCGA
TTGTTAAC GTTGTA G- -------- -----
GAM29393 19258 GTTGGAGTTTATTTGCTGCA GGA A CTGCAGTT GCGCTAGTTTA
1 GTTCCTTGGCGCTAGTTTAC GTT GTTT TTTG CCTTG
AAGGCAAAAACAAACAAACA CAA CAAA AAAC GGAAC
AAAAC AAA C AAAAAC-- ----------
GAM29395 9831 GTTGGCAAATCACTTTTACA T AATCA GT-- T-- AA TCCA
2 GGTGCTTGTAACCTCCAGGA GT GGCA CTTTTACAG GCT GT CC
GACCTCAGCTTGACTGTAGA CG CCGT GAAGATGTC CGA CA GG

AGATGCCTGC T A---- AGTT CTC GA ----
GAM29398 12215 GTTGGCTAGGAATGAGTCGT AGGA T TC - GT A C TA - GCAC
3 CGATGGCTGGTGACAGCACT GTTGGCT ATGAG CG GA TGGCTG GAC GCA T GC TCT
TAGCTCTGCACGGATGTCGG CGACCGA TACTC GC CT ACTGAC TTG CGT G TG AGG
ATGCAGTTCTCAGTCAGTCT CGGG - TT G TC A A GC T ----
TCGCTCATGGGCAGCCAGC
GAM29399 12832 GTTGGGAAATCATCTCTAAA TG AA-- TCTAA T-- TTTC
7 TCCCATCCTCTTTCGAGGTG GT GGA TCATC ATCCCA CCTC
TTGGGATGGTGGCCGATCCT TA CCT GGTGG TAGGGT GGAG
GAT GT AGCC ----- TGT ----
GAM29403 6115 GTTGGGCATCGCCCGAAATG TG AT CC A AG CA- TG CGA
0 AGACCAGTGCTGGCCGAGCC GT GGC CGC GA ATG AC G CTGGC
AGTGCCGAGTTCTATGTCCA CA CCG GTG CT TAT TG C GACCG
GTGCAGCCTGAC GT AC AC G CT AGC GT ---
GAM29406 4067 GTTGGGTTTTTCCCCCTATT T CCCCC C GGTACCC CCCA
7 TCCTAAAAATGGTACCCTTC GT GGGTTTTT TATTTC TAAAAAT TTCCTTT
CTTTCCCAAAAGGAAAAGTT CA CCCAAAAG ATAAAG GTTTTTG AAGGAAA
TTTGTGAAATATTTGAAAAC C TTT-- T AA----- ----
CCCAC
GAM29408 14293 GTTGGTCCTTCTGGCAACAC CTG CACT - GATACTA
3 TTGAGGGGAGATACTATCAC GTTGGTCCTT GCAA TGAGGG GA
CCTTATCTTTGTAGGGACCA CGACCAGGGA TGTT ATTCCC CT
GC --- TCT- A -------
GAM29408 12168 GTTGGTCTGAAAGCCCCCGG TG AAAGCC- G C-- CTC
4 TATCATTCCTCGAATTCAGT GT GTCTG CCCG TAT ATTC
GCGGGAACAATGCAGACTGG CG CAGAC GGGC GTG TAAG
C GT GTAACAA - ACT ---
GAM29408 20645 GTTGGTCTGAAAGCCCCCGG G AGCCC A -- T AAT C GA AAT AGA- TG
5 TATCATTCCTCGAATTTCAG GTTGGTCT AA CCGGT TCATT CC CG TTCAGTG GG ACC GC C
G
TGCGGGAACCAATGCAGACT CAGCCAGG TT GGCCA AGTGG GG GC GGGTTAC CC TGG CG
G C
GGCATAAAGCTGGGATAGCT G AAT-- - AC T --- - G- GGT ATAG GT
GGGGTGCCCATTGGGCGTGG ATAAA
CAGGTGAACCGGTAATTGGG C
ACCGAC G

GAM29409 18468 GTTGGTGACACGTTGTTCCA - AC--- TGTTC - AGAATCA
1 AGTGGGGGAGAATCACCCCC GTT GGTGAC GT CA AGTGGGGG
ATTCTGTCCCTGCCCCTAGT CAA CCACTG CG GT TTACCCCC
CACCTAAC T ATCCC TCCCT C -------
GAM29410 3252 GTTGGTGTGGACAGACGATA GACAGAC ACCA CTGAA GTGGACTG
7 AGCTCCACCATTACCCCTGA GTTGGTGTG GATAAGCTCC TTACCC GCTT
AGCTTGTGGACTGGGGCCAT CAGCCACAC TTGTTCGGGG AGTGGG CGGG
TTGGGTGAGGGGCTTGTTAC A------ ---- TTTAC --------
ACACCGAC
GAM29415 9612 GTTGTATAATCATCAAAGCC A CATCAA CCA TCTCC CTCTTTTCATC
2 ATTCATCTCCATAACTCTTT GTTGT TAAT AG TTCA ATAA
TCATCTTGTAAAACTGAAAC CAACA ATTA TC AAGT TGTT
TCTGTACCCATTAAACAAC A CCCATG TCA CAAAA ----------

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GAM29416 18309  GTTGTATCCGAGGCTGTTGA   GTAT  AG   T  AA      CAAGC
0               AGCTGCTGTCAAGCATAGCA GTT   CCG  GCTG TG  GCTGCTGT
                GTCATCAGTTCCGGTAAAAT TAA   GGC  TGAC AC  TGACGATA
                          AAT-  CT   T --      -----
GAM29417 955    GTTGTCAATCGTTTTAAATG    T  ATC--    AATGG    TTTATTT
6               GTTTCACTTTATTTGTGAAA GTTG CA    GTTTTA    TTTCAC
                AATAAAGCCAAAATGCCAAC CAAC GT    CGAAAT    AAAGTG
                          C  AAAAC    AA---     -------
GAM29420 2782   GTTGTCCTGAAGTCGGGCTC    -----   A    G  CTC--    GCATCTCCA
6               TCCCGGCTGCATCTCCAGGC GTTGT    CCTG AGTCGG CT    CCGGCT
                CGGACTCTGGCCGACTCCAG CAACA    GGAC TCAGCC GG    GGCCGG
                GTCCCAACAAC           ACCCT   C    - TCTCA    ---------
GAM29421 16498  GTTGTCGTGCAGGTAGAGGC       GCA  AG      TAAAAGT  GAAA
2               TTACTAAAAGTGTGAAAACG GTTGTCGT   GGT  AGGCTTAC      GT
                TAGGCTTGGATTAAGGCGAC CGACAGCG   TTA  TTCGGATG      CA
                AGC                    GAA  GG      ------- ----
GAM29421 3451   GTTGTCTGCTTTTAAAAGTA   -   C   -     CTGT     TCTA
5               CTGTGTAATTTCTAAATTAC GTT GTCTG TTTT AAAAGTA    GTAATT
                TATTTTTCAAAATCAGGCTA CAA CGGAC AAAA TTTTTAT    CATTAA
                AC               T    T   C     ----     ----
GAM29422 6609   GTTGTGAACATACGTCCAGT     -   AC  CC-  T   -      CCAAAAATTCATAAGA
4               GGTACCATGTGCCAAAAATT GTTGTG AACAT  GT   AG GGTA CCATGTG
                CATAAGATACGTGGTTACCC TAACAC TTGTG  CG   TC CCAT GGTGCAT
                CTATAGCAAGTGTTACACAA      A    AA  ATA  C   T     ----------
                T
GAM29422 18357  GTTGTGAATGACTCTGTGCT    -  T   CTG  C   C   AA  -  GAA     ATATTTCTTTCGTTCATA
6               GGCAAAAATGCTTGAAACCT GTTGT GAA GACT   TG TGG AAA  TG CTT   ACCTCT
                CTATATTTCTTTCGTTCATA CAATA TTT CTGA   AC ACT TTT  AC GGA   TGGAGA
                AGAGGTAAAGGTCAAATTTT     A   T    AA-  A   T   AA  T   AA-     ----------
                TCAACAAAAGTCTTTTAATA
                AC
GAM29429 18622  GTTGTTCTCAGATATCAGTT   T   TCA  ATC    TTCCCA     CA-   TGAAT
6               CTTCCCAGGTGAACAGCAGT GT GTTC   GAT   AGTTC     GGTGAA   GCAG
                GAATCTGTGACTTCACCAAA CA CGAG   CTG   TTAGG     CCACTT   TGTC
                TGGATTAAAGTCAATGAGCC   C    TAA   AAA    TAAA--     CAG   -----
                AC
GAM29429 19822  GTTGTTCTGTTAGTCGCTAA       T    TCGCTAACTTA    TGCTTTT
9               CTTAGTAAGTGCTTTTCTTA GTTGTTC GTTAG         GTAAG
                TAGAACCCCTTCTGACTGAG TAACGAG CAGTC         TATTC
                CAAT                   T    TTCCCCAAGA-    -------
GAM29430 16776  GTTGTTGCTGTTTGTTATCC    T  -  G     A    AGG   - A    AA--  AAGATTTA
8               TGAGGTATGACTTAAATGAA GTTG TG CT TTTGTT TCCTG   TAT G CTTA    TG
                GATTTACGGAGATGAGACGA CGAC AC GG GGATAA AGGAC   GTA C GAGT    GC
                TGATGCAGGAAAATAGGAGG    T  A  A     A    GTA   G A    AGAG --------
                ACATCAGC
GAM29434 8785   GTTGTTTGCTTTGAACTTTA   -    GC    -  -      GAGAAAAACAGA
9               TTTGAGAAAAACAGAAGATA GT TGTTT  TTTGA AC TTTATTT
                AATGTATCAAAAGAACACAC CA ACAAG  AAACT TG AAATAGA
                          C    A-    A  T      ------------
GAM29435 4030   GTTGTTTTACCTGTGGTGAC     TTTA  -      A   C     AGGGAG
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4          TTTCAGATTTAGGGAGAGAT GTTGT   CC TGTGGTG CTTT AGATTT
           TTAGAGATATCACATGGACA CAACA   GG ACACTAT GAGA TTTAGA
           AC                  ---- T     A   -    ------
GAM29436 16797  GTTGTTTTTTTCTAACAGTA  T    T-  AA       GTATATATTT  -  CTCT
7          GATATGTATATATTTTTCCC GT GTTTTT  TCT  CAGTAGATAT       TTC CCT
           TCTCTAGGTGAATCAATTCA CG CAAGAG  AGA  GTCGTTTATA       AAG GGA
           GATATTTGCTGAGATTGAGA  T    TT  --       GACTTAACT-  T  ----
           ACTGC
GAM29441 12733  GTTTAATCTGGGCATCAAGG   A    GCA  AG   AT   - TTT
8          ACCCATGGAAGCTTTGCATT GTTT ATCTGG  TCA  GACCC  GGAA GC
           CCGGGTTATGGAACTAGATG CAAG TAGATC  GGT  TTGGG  CCTT CG
           GAAC               G    AA-  A-   --   A ---
GAM29444 14304  GTTTACCACCAAGTCAGATG     CACCAA   -  T-  ---    GG-  --   TCTG
9          TGTGGTCCTTTGGCGTGCTC GTTTAC    GTCAG ATG  GTGG  TCCTTT  CGT  GCTCC
           CTCTGGGAGCTGATGACAAG CAAATG    TAGTC TAT  CACC  AGGAGA  GTA  CGAGG
           AGGAGCCCCACCTTATCCTG     ------   C  TC   CCG    ACA  GT   ----
           ATGTAAAC
GAM29445 21208  GTTTACGCCTCCTTCCTGAA      - C-----   TC   A  CC   GCCCA
3          CCCCTCTGCCCAGGACCGGT GTTTACG C    TCCT  CTGA CC  TCT
           CAGTTGGGAATTGTCGTCGT CAAGTGC G    AGGG  GACT GG  AGG
           GAAC                T CTGTTA   TT   -  CC  -----
GAM29446 8466   GTTTAGAGAGTTCGGCATGC       AG--  GC   TA   C   TTGTTCTAGGTGT
9          TTACAGGCAGTTATTGTTCT GTTTAGAG   TTCG  ATGCT  CAGG AGTTA
           AGGTGTTAGCTTTCTGGGTG CGAATCTC   AGGC  TGTGG  GTCT TCGAT
           TACGGAGCAGCTCTAAGC         GACG   A-   --   T   ----------
GAM29447 20464  GTTTAGATTGAAACTGAACT    A  TT       CTGACTTATTT      AAA  AAAT
2          GACTTATTTAGCACTTAAAC GTTT GA  GAAACTGAA        AGCACTT   CAA
           AAAAATTTGACAAGTGTTTT CAGA TT  TTTTGACTT        TTGTGAA   GTT
           CAGTTTTTTTTAAGAC       A  TT       ----------      CA-  ----
GAM29448 9538   GTTTAGTAAATACAATTTCG       AATACAAT   CTCATACA   AACA
9          CTCATACAAAACAACAGTTT GTTTAGTA      TTCG      AAAC
           ACAACAATCGAGTGCTGGAC CAGGTCGT      GAGC      TTTG
                              --------   TAACAACA   ----
GAM29451 5554   GTTTATAGCAGCTTTATTCA      AGCAG       AATTGCCAAAA    AAGCAA
4          TAATTGCCAAAACTTGGAAG GTTTAT    CTTTATTCAT         CTTGG
           CAACCAAGATGTCCCTTAAT CAAATA    GAAGTAGGTA         GAACC
           GGATGAAGAAATAAAC         AA---        ATTCCCTGTA-    ------
GAM29453 12189  GTTTATCCTGATGTCGCTTG      CT  T   CTTGTAATGC  A    TATTC
3          TAATGCAGTAGAGGCTATTC GTTTATC  GA GTCG        AGT GAGGC
           GCTTCGGCTTTCCTTTCCTC CAAATGG  TT CAGC        TCG CTTCG
           GACTTTTTGGTAAAC          TT  T   TCCTTTCCTT  G    -----
GAM29456 20437  GTTTATGTTCTTCAAGGTAA       T  TCAAGG     AAAAT   TAGTAAATGAT
0          AGAAAAATGACATAGTAAAT GTTTATGT CT     TAAAGA    GACA
           GATTGTTTAAAATTTTTAAA CAAATACA GA     ATTTTT    TTGT
           TCCAGACATAAAC            - CCTAA-     AAAAT   ----------
GAM29457 2717   GTTTATTGGAGCTAGCAATA   TA    GCTA  A    ------  --    AAGTTTG
1          ATTGGTTTCTGGCAAGTTTG GTT  TTGGA   GCA TAATT     GGTT  TCTGGC
           GCCAGACTGACTTCAAAAAA CAG  GACCT   TGT ATTAA     TCAG  AGACCG
           TTAATGTGTATCCAGGGGAC   GG    ATG-  A    AAAACT   TC    -------
GAM29457 8469   GTTTATTGTGGTGAGTGCCT    A   G G    C   --   A-  GA   AAATGAAAC
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9 TCTGTACAGTCGACTGCAAA GTTT TTGT GT AGTGC TTCT GTAC GTC CTGC
TGAAACGCAGAGGATGGGTG CGGA GACG CG TCACG AAGA CGTG TAG GACG
CCCAGAAGCACTGCGGCAGA - G - - CC GG GA ---------
GGC
GAM29460 12426 GTTTCAAGAGTTCAGATATA T C- T C T AATTTAAAAAAA
8 CAGATAAAGCAATTTAAAAA GT TCAAGAGTT AGA ATA AGA AAAGC
AAGCTTTTCTTATTCTAAGG CA AGTTTTCGG TCT TAT TCT TTTCG
CTTTTGATAC T AA - - - ----------
GAM29463 5394 GTTTCACTTTGGGAGGCCAA C T GGA AGGC A ACAA AGGA
6 GGCGGGTGGATCACAAGGTC GTTT ACT TG GGCCA GGGTGG TC GGTC
AGGAGATCGAGACCATCCTG CAAA TGA AC CCGGT CCTACC AG CTAG
GCCAACATAGTAAAAC A T AA- ---- - AG-- ----
GAM29463 8684 GTTTCAGAAAGAGGAACAGA AA GGAACAGA - CAACAT
7 TAACCTCAGTCCAACATGAT GTTTCAG AGA TAACCTC AGTC
TGGAGGTTGGCAAAATCTAC CGAAGTC TCT GTTGGAG TTAG
TGAAGC A- AAAACG-- G ------
GAM29464 1441 GTTTCAGAGCAGCGATGGAG AGAG C GAAATTAAATA - AATTA
1 AAATTAAATACTTGCAATTA GTTTC CAG GATGGA CT TGC
GCAGAGGAACTGATTCGTCC CAAAG GTC CTGCTT GA ACG
TGAGAGAAAC AGA- - AGTCAAG---- G -----
GAM29466 21382 GTTTCATATAGTTTTTGTGC TAG TGAGA GATACCAA
3 TGAGAACAGATACCAATGTA GTTTCATA TTTTTGTGC ACA
TGTGTACGAAAGACTGTGAA CAAAGTGT GAAAGCATG TGT
AC CA- TGTA- --------
GAM29467 12968 GTTTCATGGAAGTTGTTTAT A --- AAA GGTATT AG AAGTCTTA
4 AAAATTCAAAGGTATTTCAT GTTTC TGGAAGTT GTTTAT ATTCAAA TCATTT GTGAA
TTAGGTGAAAAGTCTTATTT TAGAG ACCTTCAA TAGATG TAAGTTT GGTGAA TATTT
ATTAAAGTGGTTTGAATAAA - AAC AAA ------ AT --------
GTAGATCAAAACTTCCAGAG
AT
GAM29470 1203 GTTTCCACAGTTTCGGACGC TT AC ACGCA ATCC CAGCT C AGAA AATG
2 AGTATATCCGCCGGCGCAGC GT CC AGTTTCGG GTAT GCCGGCGCAGC GCTG GGG
TGCC
CAGCTGCTGCGGGAGAATGC CG GG TCGGAGTC CATG CGGCTGCGTCG CGAC CCC
ACGG

CAATGCTGGGCACCCCCCAG GG CT ----- A--- ----- - CC-- ----
CGCTGCGTCGGCAGTACCTG CTG
AGGCTTCGGGGGC

GAM29471 8150 GTTTCCATTGTGTTTTGCCG TC TT TTT C TCTTCTG -- TATCCT
8 ATCTTCTGGCTAATCGTGGT GTT CA GTG TGC GA GCTAAT CGTGG
ATCCTCCATGTTATTAGTAA CAA GT TAC ATG CT TGATTA GTACC
TTCTGTATTCCATTTTGTTA TT TT CTT T TAA---- TT ------
AC
GAM29473 1529 GTTTCCCGGGCGGCTTGGGG C - A T CCAC AAATTTGA
3 ATCTTGGCCACGGTAAATTT GTTTCC GGGCGG CTTGGGG TCT GG GGT
GAGCCTCCAGACCTCAAGTT CAGAGG CTTGTT GAACTCC AGA CC CCG
TGTTCCGGAGAC C T - - T--- --------

GAM29475 9530 GTTTCCTAGGAATGAACTTA C TA A---- - AGTA AAAA
0 GTAGGCCAAAAGGTTCAAAG GTTT C GGA TGAA CTT GGCC
TTTCAATAAATCCCGGAAAA CAAA G CCT ACTT GAA TTGG
C A GC AAATA T AC-- ----
GAM29475 3073 GTTTCCTCAGGAACTGGGTC TC GA -- TTCCTGATTGTTGAACCCT
5 TTCCTGATTGTTGAACCCTG GTT CTCAG ACT GGGTC
ACCCGAAGTCTCTGGGCTAG CGA GGGTC TGA CCCAG
C TC TC AG ----------
GAM29478 19184 GTTTCCTTTCTTAGCTGATG T- TT --- - T GCAGAACA
2 TCTTTGGGCAGAACACCGTG GTTTCC TTC AGC TGAT GTCT TGG
GGCTGTTACTTGCTTTGAGT CGAAGG GAG TCG ATTG CGGG GCC
TGGAAGC TT TT TTC T T --------
GAM29479 19937 GTTTCTAAGATCAAACATTT T TA TCAA T A CATGT
4 TAATATGTGCATGTTATATA GT TC AGA ACAT TT ATATGTG
TAAATATGTAAATTCTCTGA CA AG TCT TGTA AA TATATAT
TAC T TC TAAA T A -----
GAM29481 19933 GTTTCTCAGGCATCATGATG --- A T GATGC AACAACA TGGTACT
7 CTTATAGTAACAACAGTTCT GTTT CTC GGCA CAT TTATAGT GTTCTTC
TCTGGTACTGGAGAATAATA CAAA GAG CCGT GTA AATATCA TAAGAGG
ACAACTATAAATGTTGCCAG AGT A T ----- ACAATAA -------
AGTGAAAAC
GAM29482 16448 GTTTCTCCCAGCAGGACCCT T --- -- C TGTTTT
3 CTTTTTGTTTTGAAAGATGG GT TCTCCCA GCAG GACC TCTTTT
TCGGCTGCTTTTGGGAGGCA CA GGAGGGT CGTC CTGG AGAAAG
C C TTT GG T ------
GAM29483 13011 GTTTCTGATAGACACTAGAA GACACTAGAAAGG- TTTGAT
8 AGGACAAGTTTGATCTTGTG GTTTCTGATA ACAAG
ATAAATTGATTAATGTTAGA CGAAGATTGT TGTTC
AGC AATTAGTTAAATAG ------
GAM29484 19145 GTTTCTGATTGCATGCAGTC T AT A---------- T CCCTT
1 TTGCCCCTTGCCAGACCTAA GTT CTG TGCATGC GTCT GC
TAATGTAGCATGCAGCCAGT CGA GAC ACGTACG CAGA CG
AGC T CG ATGTAATAATC C -----
GAM29484 1561 GTTTCTGCTCTCGAGAGCCC C GA - - GTCA CA TCTG
7 GGCGGCGTCAGGCATTTCTG GTTTCTG TCTC GAGCC CGGC GGC GG TT
GGGACCAACAGCTGGCCGAG CAGAGAT AGGG CTCGG GCCG TCG CC GG
GCTCAGGGATAGAGAC - A- A G ACAA AG ----
GAM29484 8790 GTTTCTGCTGGGAGGGGTTC T AG CCATATCCA CC GAATTTG
8 CATATCCAGTGGCCTAGAAT GTTTC GCTGGG GGGTT GTGG TA
TTGTATCCCACAACCCACCC CGAAG TGACCC CCCAA CACC AT
AGTGAAGC - A- --------- CT -------
GAM29486 12423 GTTTCTGTTATTGCATGTTT T --- CAT TCTTC G TATCCTTAACCT
5 ATTTCTTCTGGGCATATCCT GTTTC GTTA TTG GTTTATT TGG CA
TAACCTTGGCCAAATAAACT CAGAG TAGT AAC CAAATAA ACC GT
TCAAAACTGATTGAGAC T CAA TT- ----- G ----------
GAM29493 13034 GTTTGAAGGCTCAAATTGAG TG A CAAA T TCAGC TACAAT
0 TCCATCAGCTGTAAATACAA GTT A GGCT TTGAG CCA TGTAAA
TTTTATATTTGGCTCAAGTG TAA T TCGG AACTC GGT ATATTT
GCTGTTGAAT GT G TG-- - TT--- ------
GAM29494 5893 GTTTGACTGAATTCTTCAAA - ---- T AAATG AA ATAGAA

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7          AATGTCAATGTCATAGAAGA GTTTGA CTGAA   TTCT CAA    TC  TGTC
           CAAAGAAAGGTTGTGGAAAT TAAATT GACTT   AAGG GTT    AG  ACAG
           GTTTCAGATTAAAT         A    TGTA   T  GGAA- AA   ------
GAM29494 20359  GTTTGAGAAATGTTTCTCAA   T  G      C---  A-    CT     --     T  TCAC
9          TGGCTCTTTGAAGGGAAAGC GTT GA AAATGTTT   TCA  TGGCT  TTGAAGG  GAAAGC GTG
           TGTGTCACTACTGCTTTCTG CAA CT TTTATAAA   AGT  ATCGG  AACTTTC  CTTTCG CAT
           CTTTCAATGGCTAGGTGACC   C  A      CCCC  GG    T-     GT     T  ----
           CCAAATATTTATCCAAC
GAM29497 16570  GTTTGATCACTGAATTTGGC     T   GAATT     TATTAT  CTAG
8          AGTTATTATTACCTAGGTAC GTTTGA CACT    TGGCAGT     TAC
           CCCCGCTGTTACACAGGTGT TAGATT GTGG    ATTGTCG     ATG
           TTAGAT               T   ACAC-     CCCCC-  ----
GAM29498 14437  GTTTGATCCTCGCCCTGTTT  TT  TCC  -     T----   AAAC-  GTACAG
0          CCAAAAACGCGTACAGGCTC GT  GA  TCG CCCTGTT    CCAA    GC
           ATCTTGGCAGCCAACAGGGA CA  CT  AGT GGGACAA    GGTT    CG
           TGAATTCTAC          T-  TA-  A     CCGAC    CTACT  ------
GAM29498 8248   GTTTGATGAAGGCCGGAACA         G   AACAA-   GAA  -  AGG
7          ACTTTGAAGGGGAGGTCACC GTTTGATGAAG CCGG    CTTT   GG GG
           AAGGAGAACCTGCTGGACTT CAAACTATTTC GGTC     GAGG   CC CT
           TATCAAAC                A   GTCCAA   AA-  A  ---
GAM29500 18635  GTTTGCATACACTGGTTGCT    G  AC  G     CCATGATG   AAGG
7          GCCATGATGAGGGAAGGTCC GTTT CAT  ACT GTTGCTG       AGGG
           TATACAGCGATGGGTAGTGG CGAA GTG  TGG TAGCGAC       TCCT
           AAGC               G  A-  G     ATA-----   ----
GAM29501 12561  GTTTGCCACTGACGACATTC    G  A   A  ACA-     A     TATCATCTGTACAT
4          CACACCCTATTATCATCTGT GTTT CC CTG CG    TTCCAC CCCTAT
           ACATATGGGGGTGGGGGGGG CAGG GG GGC GC    GGGGTG GGGGTA
           CGGCGGGGGGGAC         G  -  G  GGGG    -     --------------
GAM29501 18599  GTTTGCCCTGCTAGGAATTA      C  TAGGAAT     CA-    CA   CCAG
9          GAAGACAGACACCATGTCCC GTTTGCC TGC      TAGAAGA   GACAC  TGTC
           AGGACAGTGTTACTTCTTCT CAGATGG GTG      GTCTTCT   TTGTG  ACAG
           GCATGATGTGTGGTAGAC        T  TAGTAC-     TCA    --   ----
GAM29502 8245   GTTTGCGAGGGTGTTTTAAA   TG    G    TAAAGAT  GA-  T    GGGGGA
9          GATGCGAGTATCGCACGGGG GTT  CGAGG TGTTT      GC   GTA CGCAC
           GAGTGTGTTATAAAGTGGGC CGA  GCTCC GCGGG      TG   TAT GTGTG
           GCCTCGTGAGC          GT   -   ------- AAA  T   ------
GAM29507 3322   GTTTGGCAAGGCATCATAAC      CAA----------     ATA   CCAACTTGAC
3          AACCAACTTGACTTGTGGGA GTTTGG          GGCATC   ACAA
           TGCCCCCCCTTTTCAAACCA CGAACC          CCGTAG   TGTT
           AGC                  AAACTTTTCCCCC     GG-   ----------
GAM29516 21258  GTTTGTGACTTTGGTGTTTC   T  ACTTT     TCGGC   A  CGAA
8          GGCATGGAGACCGAAGTCCC GTT GTG    GGTGTT    ATGG GAC
           ATTGACACCTTTCCCACTGA CAG CAC    CCACAG    TACC CTG
           C                T  CCTTT     T----   -  ----
GAM29519 14520  GTTTGTGTCCCTGGGTACTT   T    CCT---   ACT-  A      A     AT-  CT--  AA-     --
0          GAGATTAGGGAGTGGTGATG GTT GTGTC     GGGT    TG GATTAGGG GTGGTG   GA    CTT
TGAGCA  T
           ACTCTTAATGAGCATGCTGC CGA CACAG     CCCA    AC CTAATTCC CGCCAC   CT    GAA   ATTTGT
A
           CTTCAAGCATCTGTTTAACA   -    TTGAGT    ATTT  -      -     GTT  ACAC   ACA     CT
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AAGCACATCTTGCACCGCCC GCCTTCA
TTAATCCATTTAACCCTGAG GCT
TTGACACAGC CGA

GAM29523 21593 GTTTTAAAAGAGACAGGACC AA- ACAG GA ATGAG- ATAG
3 TGATGATGAGTGGATAGCCA GTTTTAA GAG GACCT TG TGG
AAGAGGCAAAGGTCAACTCC CAAAATT CTC CTGGA AC ACC
AATTAAAAC AAC AA-- A- GGAGAA ----
GAM29525 21665 GTTTTAAGCCTGCCTGAAAA TAA CT- - AAA GA - AG CTTCACAGCTTTTA
6 TCGACAAACAGATGAATGGA GTTT GC GCC TGA TC CAA AC ATGAATGGA
CTTCACAGCTTTTATCTATT CAAG CG TGG GCT AG GTT TG TACTTATCT
CATGGTATTGAAGAAGTCGT TC- TAG T GA- AA A G- ----------
GGTGATGCCTGAAC
GAM29526 14031 GTTTTAAGTTGTCCAAAGTT AG CCA- TTA AACATCATCAG
1 AATTGTAAACATCATCAGTA GTTTTA TTGT AAG ATTGTA
CAGTACTCTTAGTTACAGTA CGAAAT GACA TTC TGACAT
AAGC -- TTGA TCA ----------
GAM29530 9487 GTTTTAGTTTACTTTTTTTC ACTTTT- GAAGCC AATTCTA
4 TGAAGCCCTGGAATTCTACC GTTTTAGTTT TTTCT CTGG
AGAGAGATATTTTGAGACTG CAAAGTCAGA AGAGA GACC
AAAC GTTTTAT ------ -------
GAM29531 12956 GTTTTATCCTAGATCCTGAG TA GA AGAG CAAAG--- G AGTCAG
5 AGGCCCTCAAAGTGGGAGAG GTTT TCCTA TCCTG GCCCT TGG AG
TCAGCTGCCAAGGATTAAAG CAAG AGGGT AGGAC CGGGA ACC TC
GGCAAGCAGGAATGGGAGAA -- A- GAA- AATTAGGA G ------
C
GAM29534 5624 GTTTTATTTAAACTTTTTTG AA- - TCA A AAGCTG
0 TAATTCAAGTAAAAAAAAAG GTTTTATTT ACTTTTT TGTAAT AGT AAAAAA
CTGTTTTTTAACTACTGTTA CGGAGTGAA TGAAAAA ACATTG TCA TTTTTT
CATAAAAAGTGGAAAGTGAG AGG T TCA A ------
GC
GAM29534 12629 GTTTTATTTTTGTAAAGGTA ATTT G AG -------- T ATCA
8 TGTAAGTTATTAAATGGTTA GTTTT TTGTAAAGGTAT TA TTAT TAAA GGTTA
ATCATGGCCTTTTAAAAATA CAGAA AACATTTCCATA GT AATA ATTT CCGGT
AAATAAAGTGATACCTTTAC GT-- - GA AAATAAAA T ----
AATGAAGAC
GAM29537 18498 GTTTTCCCCCTCCCCTGTGT CCCC CC G T T CTTG
9 CCTCTGTCACCTTGGTGATG GTTTTC TC CT TG CCTC GTCAC
AGGCCAGAGTGATGTGAAGA CAGAAG AG GA AC GGAG TAGTG
C TGT- T- G C - ----
GAM29540 12920 GTTTTCTAACTTGTCTTGGT T GTCT A A TAACT
2 AATTGCAATTTAACTAGGTG GTTTTC AACTT TGGT ATTGCA TT
CGGTGGCTACTAAAGTTCGA CGGAAG TTGAA ATCG TGGCGT GA
AGGC C ATC- G G -----
GAM29542 19036 GTTTTCTGGACAGCCGCACA T A- C CAC- TTCG TATGG
1 CGGATTCGGTATGGCACATT GTT TCTGG CAGC GCA GGA G
CCTTATTGCGTTGGCCCAGA CGA AGACC GTTG CGT CCT C
CAGC C CG - TATT TACA -----
GAM29543 9873 GTTTTCTTTATTACGGATTC A- ACGGA AAA- ATTTTGA
6 AAAGACTTATTTTGAAAGTT GTTTTCTTT TT TTC GACTT

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          GGAAGGAGAAGGGAGGGAAG CGAGAGAAG  AG    AGG   TTGAA
          AGAGC                GG  GGAAG   AAGG   -------
GAM29544 21510  GTTTTCTTTTTTTTTCAAAA        TTTTTC    TT   A  TTTATTTTATTTT
8          TTTGACACATTTATTTTATT GTTTTCTTTT     AAAAT  GAC CA
          TTTGAGTTTCATTTTTACAA CAGAAGAGAA     TTTTA  TTG GT
          GAGAAGAC               CAT---    CT   A ----------
GAM29545 16837  GTTTTGAAAGCTGTACAATT   TT     TG--   A-     GA   -   TGACCAAC
0          TGGTGAATGGAGTGACCAAC GT  TGAAAGC    TACA  TTTGGT  ATG GAG
          CTCGCATAACCAAAGATGTG CG  ACTTTTG    GTGT  AAACCA  TAC CTC
          ATTTGTTTTCATGC       T-      TTTA   AG     A-   G  --------
GAM29549 9292   GTTTTGCTCCTTGAGAGCAG   --   C  C    A    TT---    A---   CCCT
5          ATTGGCTGATGCCCCTGCAA GTT  TTG TC TTGAG GCAGA    GGCTG    TGC
          CCCCAGCCCAAGCTCTGCCT CAG  AGC AG AACTC CGTCT    CCGAC    ACG
          CAAAGACCGAGTGAC       TG   C  A    -    CGAAC    CCCA   ----
GAM29553 8502   GTTTTGTCAGGCACTCAGAG       CA---     -   AGAATCT ATTTT
2          AATCTCATTTTGTACTTGGT GTTTTGT     GGCACT CAG      C
          TGTGGTGCCACTAAACAAAA CAAAACA     CCGTGG GTT      G
          C                    AATCA     T   GGTTCAT -----
GAM29555 6619   GTTTTGTTTTGTTTTTTTTT   TT  T     T    TTGACG     G   T   T     AGCT
4          TGACGGAGTTTGGGCTCTGT GT  TG TTTGTT TTTTT      GAGTTT GGC CTG CACTCC
          CACTCCAGCTGGAGTGCAGT CG  AC AGACAA AAGGG     TTCAGA CTG GAC GTGAGG
          GTCGAGACTTACACCTGGGA   TC  T     C    TCCACA     G   T   -     ----
          ACAACAGATCACTGC
GAM29555 12507  GTTTTGTTTTTCTTACTCTG        TTTCTTAC    G     ATCT-    TATA
5          GTTGTTTATCTAGGTATATA GTTTTGTT       TCTG TTGTTT    AGGTA
          TGCTTTGTAAAAACAAACAG CAAAACAA       AGAC AACAAA    TTCGT
          AAACAAAAC              --------   A     AATGT    ----
GAM29555 22187  GTTTTTAAAAATTGTTATAA      AAAAA   T      A   AAAAATAAA
8          TTAAGTAAAAATAAAGCTGA GTTTTT     TTG TATAATT AGT
          ATTGTGTCAAAAAAAAAAAC CAAAAA     AAC GTGTTAA TCG
                          AAAA-   T      G   ---------
GAM29556 20389  GTTTTTAAAAGTCAGAATAA     TAAAA     -   AAAAA--        -       AAAGTATAGATCAAG
0          AAAAAAAGAAATCAACAATT GTTTT     GTCAGAA TAA      AAGAAATCAA CAATTCTC
          CTCAAAGTATAGATCAAGGA CAAAG     TAGTTTT GTT      TTTTTTGGTT GTTGAGAG
          GAGTTGTTTGGTTTTTTGTT     CG---      T   GTTGTTG        T      ---------------
          GTTGTTGTTTTTGATGCGAA
          AC
GAM29560 22255  GTTTTTATTTTTCAATTTTT      ATT----   C      A   TG TT       AAG    ACATTTTCCA
4          ATTTTGGTTTTCTTACAAAG GTTTTT       TTT AATTTTT TTT  G  TTCTTACA   GTTG
          GTTGACATTTTCCATAACAG CGAGGG      AAA TTAAAAA AAA  T  GAGAATGT   CAAT
          GTGTAAGAGTGTTGAAAAAA      GCTTTTT   C      A   GT GT      GGA   ----------
          AAATTCAAATTTTTCGGGGA
          GC
GAM29560 8096   GTTTTTATTTTTCAATTTTT      ATT----   C      A   TG TT       AAG    ACATTTTCCA
5          ATTTTGGTTTTCTTACAAAG GTTTTT       TTT AATTTTT TTT  G  TTCTTACA   GTTG
          GTTGACATTTTCCATAACAG CGAGGG      AAA TTAAAAA AAA  T  GAGAATGT   CAAT
          GTGTAAGAGTGTTGAAAAAA      GGTTTTT   C      -   GT GT      GGA   ----------
          AATTCAAATTTTTGGGGGAG
          C
GAM29560 20409  GTTTTTATTTTTCAGTTTTT      ATT----   C      A   TG TT       AAG    ACATTTTCCA
```

6 ATTTTGGTTTTCTTACAAAG GTTTTT TTT AGTTTTT TTT G TTCTTACA GTTG
GTTGACATTTTCCATAACAG CGAGGG AAA TTAAAAA AAA T GAGAATGT CAAT
GTGTAAGAGTGTTGAAAAAA GGTTTTT C A GT GT GGA ----------
AAATTCAAATTTTTGGGGGA
GC
GAM29565 12355 GTTTTTGGGTGGCCTGAAAG ---- AAA GCTG-- - G TTGGTTAAT
8 GAGCTGTGGACTGGAGGGTT GTTTTTGGG TGGCCTG GGA TGGA CT GAGGG
GGTTAATCCCTCAAGTTCCA CGAAGGCCC ATTGGGC CCT ACCT GA CTCCC
AAACGATCCCGGGTTATGAT TAGT --- AGCAAA T A ---------
CCCGGAAGC
GAM29567 1610 GTTTTTGTTTTTGTTTTTGT TT TTT T- TT---- CT TT TGTTTT
3 TTTTTTTTTCCTGCTTGCTA GTTT GTT GTTTT GTTT TTTTTC GC GCTAC
CTGTTTTGTGGTGTTGAAAA CAAA CAA CAGAG CAAA GAAAAG TG TGGTG
GTGGTTTAAACCTGAGACTA TT T-- TC TTTGGT T- -- ------
ACTTAAAC
GAM29568 6621 GTTTTTTCCAGCCAGCTTTC TT CC CCAAATC - ACCA
9 CAAATCGACAGTACCAGCTG GTTTT CCAG AGCTTT GA CAGT
CTCTTCACACAGGGTTCTGG CAAAA GGTC TTGGGA CT GTCG
GGAAAAC GG -- CACACTT C ----
GAM29571 12554 GTTTTTTTTTATTTATTTTG TATTTA G GG- CACTCCA - GGTGA
7 GTTTGGAGACGGAGTTTCAC GTTTTTTTT TTTT GTTT AGACGGAGTTT GC CTG
TCCAGCCTGGGTGACAGAGC CAAGAGAAA AAAA CAAA TCTGCCTCAAA CG GAC
AAAAAAACTCCGTCTAAAAA CC---- G AAA AAAA--- A -----
ACGAAAACCAAAGAGAAC
GAM29572 16762 GTTTTTTTTTTTTTTTTTT - AAAGGA GCTTTCA
1 AAAGGATCATAAGGCTTTCA GTTTTTTTT TTTTTTTTTTT TCATAAG
TTTATGGAAAAAAGAAAGCA CAAAAAAAA GAAAGAAAAAA GGTATTT
AAAAAAAC C ------ -------
GAM29572 14433 GTTTTTTTTTTTTTTTTTT TT TT- TGCCC
2 TTTTTTTTTTGAAAAATGCC GTTTTTTTTTTTT TTTTTTTTTTTTT GAAAAA
CTTTTTCTTTAGGGGGAAAA TAAAAAAAAAGGG AAAAAAAGGGGGA CTTTTT
AAACGGGGAAAAAAAAAT GC TTT -----
GAM29575 8603 TAAAAAGTATTTTCTTTGCC - GCCT AAA-- AAAA T - TGA
0 TTAAAAATGATTAAAATTAT TAAAAAGTA TTTTCTTT TAA TGATT TTAT TGA ACTCC
TTGAACTCCTGAGGAGTGTT ATTTTTTAT GAAAGGAG ATT ATTAA AGTA ATT TGAGG
ATATGAATAAAATTAGTAAG T GTTT GAATG AATA T G ---
TTATTTGGAGGAAAGTTATT
TTTTA
GAM29579 9766 TAAAACTTTCATGCCATAGA - A- CATAGACCA--- GTGA
7 CCAGGGGTGACCCAATCCAA TAAAACTT TC TGC GGG
CAACAGCAGAGACAGGTTTT ATTTTGGA AG ACG CCC
A C AG ACAACAACCTAA ----
GAM29583 19064 TAAAAGTCTTCAACATCTAA G TCAACA AATTTA C TATTTAT
0 TTTATAAGCTTTACAAGTAT TAAAA TCT TCT TAAGCTTTA AAG
TTATTTTATAAGGCTTAGAC ATTTT AGG AGA ATTCGGAAT TTT
AGAATTATTGGAGTTTTA G TTATTA CAG--- A -------
GAM29584 12171 TAAAATACTTTTACTCTGCC A - AA CAGA
4 TACAGGAACTTCAGAAAGAC TAAA TACTTTTACTCTGCCTAC AGG CTT
TTGGTAGGTAGGGTGGGAGT ATTT GTGAGGGTGGGATGGATG TTC GAA
GGTTTA G G A- ----

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GAM29586 3725   TAAAATTACATGGCTCTTAG        A ---------      G    AC  CAAACAT
9           GAATGACGCCAAACATGCAA TAAAATTAC TG       GCTCTTAG AATG  GC
            CATTTTAAGAGTAATATTAA GTTTTAATG AC       TGAGAATT TTAC  CG
            ACAGTAATTTTG              - AAATTATAA      -   AA -------
GAM29589 12269  TAAAATTTTTATATGTTTAG         T  TTTAG   A     GACATGA
4           TTAAAAGATTTGACATGAAA TAAAATTTTTA ATG     TTAA AGATTT
            ATTTATTAGATACCATTTAA ATTTTAAAAAT TAC     GATT TTTAAA
            AAATTTTA                  T  CATA-   A     -------
GAM29589 12991  TAAACAAAGAAGCAGGTGGT     AAAG    GG    AG   G    GG  AAAA
7           GAGGACGTGCTGGTCAAAAG TAAAC    AAGCA  TGGTG  GAC TGCT  TC
            GAAGCAGTCACATCAAGTGT ATTTG    TTTGT  ACTAC  CTG ACGA  GG
            TTAGTTTA             A---     GA    A-  -   A-  ----
GAM29594 9099   TAAACCTGTATCCCAAGGAG    C        A-----      TA     AGTGT
1           TCCTATACGTCAGTGTGATG TAAA CTGTATCCCA     GGAGTCC  TACGTC
            TGCTGGACTCTGAATTCTGG GTTT GACATGGGGT     TCTCAGG  GTGTAG
            GGTACAGCTTTG          C        CTTAAG      TC     -----
GAM29596 5565   TAAAGAAAAGTTACAACCAA     AAA---     AACCA  AAC    AGATTT
7           GAACTGGGAGATTTTCCAAA TAAAG     AGTTAC     AG   TGGG
            GCTCTAAAGTGACTGAACAG ATTTC     TCAGTG     TC   ACCT
            CTTTA                 GACAAG     AAATC  GAA   ------
GAM29598 12343  TAAAGACTAAAATTCATGAG       TAA  T      AGAA     AAATCA
3           TAGAACAGGAAAATCATCCT TAAAGAC   AAT CATGAGT    CAGGA
            GACTCATGTGTTGTGTCTTT ATTTCTG   TTG GTACTCA    GTCCT
            A                   TG-  T      ----    ------
GAM29603 8329   TAAAGGGTCATGGGAGAGAA   AA     TG    GAAAAGGTA   GTGGGA
0           AAGGTATCTGTGGGAAGAGA TA  GGGTCA  GGAGA        TCT
            ATAATCTCTTTTGACTTCGT GT  TTCAGT  TCTCT        AGA
            G                GC     TT     AATAAG---   ------
GAM29604 16615  TAAAGTAGAAAGTTGGAGTC     T      --     ---     CA--  GATG
2           AAACACTGGATGCAGAAATT TAAAG AGAAAGT  TGGAG   TCAAA    CTG
            TTGGATTTTTCATCACTTTC ATTTC TCTTTCA  ACTTT   GGTTT    GAC
            TCTTTA               -      CT     TTA     TAAA  ----
GAM29609 12180  TAAATATAAGGAACATAACA       A  GA    A-   CT---    TTCTAATTTT
4           CTTGCATTCTAATTTTTGCA TAAATAT AG  ACAT  ACA     TGCA
            TATATTGTAAATGTGTCTGG ATTTATG TC  TGTA  TGT     ACGT
            TATTTA                 G  TG    AA   TATAT    ----------
GAM29610 8058   TAAATATTTCTAATTCTTTT        CTAAT   T   TT      --  TCCCT
8           TTTGTTTTCAGTTCCCTACT TAAATATTT     TCT TTT  GTTTTCA  GT
            GTGAAAATTTAAGTAGATTC GTTTGTAAA     AGA GAA  TAAAAGT  CA
            TTAAATGTTTG               TTCTT   T   TT      GT  -----
GAM29614 5929   TAAATGCACATTCTCTAATT      C   TTCT--   A     T     AATTTACAA
2           TGGTAAAATAATTTACAAAT TAAATG ACA      CTA TTTGG AAAAT
            TTTCTAAAATAGTTTTTCTG GTTTAC TGT      GAT AAATC TTTTA
            TCCATTTG               C  CTTTTT   A    -     ---------
GAM29617 6473   TAAATTAAGGAATGTTTCAA     TT      G      AATT-       GGGCTA
4           AATTCATAAATGGGCTAATT TAAA  AAGGAAT TTTCAA     CATAAAT
            TGTGTCCACTTGAAGAGTTT GTTT  TTCTTTG GAAGTT     GTGTTTA
            CTTTCTTTG             CT      A      CACCT      ------
GAM29619 9181   TAAATTTCATATGTAAATAT     T    AT--      TTTAACA      TT--     - C   TTTT
2           TTAACAAATATGTTTGTATT TAAAT TCAT    GTAAATA      AATATGT    GTATTC TT TAT
```

CTTCTATTTTTATACAATGA ATTTA AGTA TATTTAT TTATACA TATAAG AA ATA
ATATTAATACATATTGCATT C ATTT TTACG-- TAAT T C ----
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A
GAM29620 2831 TAAATTTTTACATTCATCAT TTT AT ATGG TA GTAGAA
0 GGCTACAGGTAGAACTGGGG TAAA TTACATTC C C CAG
AGGGGGGAATGTAATTTTTT ATTT AATGTAAG G G GTC
A TTT GG GGA- GG ------
GAM29622 12587 TAACACCAGATTAGTGTGTT - ATTA T TA C AAC--- CTAG C AAGGA
9 ACCCCAAATGAACGGTTCTA TAACAC CAG GTG GT CCC AAATG GGTT CCCT TATT
GCCCTCTATTAAGGAAATAA ATTGTG GTC TAT CG GGG TTTAC CCAG GGGA ATAA
AGGGGACCATAAGGCATTTT T GGG- T TC T GGAATA ---- A -----
GGGCTGCTTATGGGCTGTGT
GTTA
GAM29625 14707 TAACATGATGTACACTCATT TG -- TTTT-- TTTTGCAGT
9 TTAAAATAGTTTTGCAGTCT TAACA ATGTA CACTCA AAAATAG
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ACATTGTGTTA GT CG TATCTC ---------
GAM29626 20346 TAACATTCACATAAGTACTG ACAT---- T C TAGT CTTAAAC
3 TAGACAGTAGTAGACTTAAA TAACATTC AAGTACTG AGA AG AGA
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TTTAGCTAACGAATGTTA CAATCGAT - C TGCC -------
GAM29627 18071 TAACCAGGATGAAAAATAAA GA TAA - TTATAT TTGA
7 CAGATTATATATAGTTTGAA TAACCAG TGAAAAA ACA GA ATAGT
CTATTTTCGTGTGCTTTTTT ATTGGTC ATTTTTT TGT CT TATCA
AAACTGGTTA AA CG- G TT---- ----
GAM29632 21602 TAACTATTTAAGTTTTCCAA TATTT TT CAA TAT - TTCCCATTT- TA TCGT
1 ATTTATGAACACAGGATGTC TAAC AAG TTC ATT GAAC ACAGGATGTC ATT AG
TTCCCATTTATTTAAGTCGT GTTG TTC AAG TAA TTTG TGTTTTATAG TAA TC
CTCTAATTTCTTTCAATGAT TC--- TT ATG CT- A TAACTTTCTT TC ----
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GAATTCTTCTGTTG
GAM29638 6594 TAAGAAAAGGAGAGACAAAC AA A CAAAA ATA GGTTGTA
2 AAAACAATAGGGAGGTTGTA TAAGAA GG GAGACAAA CA GGGA
TCCCATGGAATTTGTCTCCT ATTCTT TC CTCTGTTT GT CCCT
TTCTTA -- - AAG-- A-- -------
GAM29640 20790 TAAGAATACGCTTTTCCTAA AT - TTT AACAGG C --- TAGAG A - GCA
5 CAGGCTACTCCTTCCTGTAG TAAGA AC GCT CCT CTA TCCT TCCTG CAG AATTGTAT TTT

AGCAGAAATTGTATTTTGCA ATTCT TG TGA GGA GAT AGGA AGGAT GTT TTGACGTA AAG

CGAACATGCAGTTATTGAAG AT A TAT ACA--- - ACT TAGAA A C ---
ATTAGGATCAAGGATAGACA C
AGGTATAGTAGTTATCTTA

-
GAM29645 8579 TAAGAGGGAAGTAAGACTTT AC AAAGAAAAAGTTAT T TCCTC
8 TAAGAAAAGAAAAAGTTATG TAAGAGGGAAGTAAG TTTTAAGA GCC CAT
CCTCATTCCTCATGTGGCTT ATTTTTCCTTTATTC AGGATTCT CGG GTA
CCAATAAGTATCTTAGGAAC A- ATGAATAACCTT-- T -----

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          TTATTTCCTTTTTA
GAM29647 14532  TAAGATATTTATTACATGCA      ATTTAT  A  ATA   TA    TTTTCAAAATAACCTT
1          TAATCTTACTTCCTTTTCAA TAAGAT     TAC TGC  ATCT  CTTCC
          AATAACCTTGGAAGGTAGGT ATTTTG     ATG ACG  TGGA  GAAGG
          AAAGCAGGTATCGGTTTTA      GCT---  G  AAA   TG    ----------------
GAM29647 20390  TAAGATCCCTACCCTCATCC          C--  A   GA  CACGAGGAAAGAA
4          TGACCCACGAGGAAAGAAGG TAAGATCCCTAC  CTC TCCT  CC
          AAAGGAAGAGTTTGTGGGGA GTTTTAGGGGTG  GAG AGGA  GG
          TTTTG                    TTT  A   AA  -------------
GAM29647 19100  TAAGATCTTTATTATTAAGT       TT   A  A    TCA--- GG      AAA  TGTTATAAAAT
6          AACTCACTGGGGTTGTCAAA TAAGATC  TATT TTA GTAAC     CT  GGTTGTC  GTA
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          GATAATTAGAGATATATGTT      TC   A  A    TATATA  GA     ACA  -----------
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GAM29650 16846  TAAGCACCAGATCATATGGG        GA   TA---   A     ATA   CTTC-   TAAGCTT
3          ATGTGGATATACTGGCTTCA TAAGCACCA  TCA    TGGG TGTGGAT  CTGG    AGTG
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          CAGGGTTCACACTCAACAAT       --  TAACA  -     G--   TTATC   -------
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GAM29654 18456  TAAGCTAGCAATGAATGCTA     A  A-   TGCTA   GGAAG    A  AGT
0          GGGTGGGAAGCTGGTGAGCC TAAGCT GCA  TGAA    GGGTG    CTGGTG GCC
          AGTGGCCATTAGATAAATAC ATTCGA TGT  ACTT    TCCAT    GATTAC CGG
          CTTTCAAGTGTGAGCTTA       G  GA   -----    AAATA    -  ---
GAM29654 12417  TAAGCTGAGTGTGACCCCAG     G  -  GA  -  GAA   CGA   C   TATC
9          AAGCCACGATGTGCTCTGTA TAAGCT AG TGT  CC CCA   GCCA   TGTG TCTG
          TCCAGAACACACTTGGCAGA GTTTGA TC ACG  GG GGT   CGGT   ACAC AGAC
          TGGAGGAAGCATCTGAGTTT     G  T   AA  A   AGA   TC-   A   ----
          G
GAM29655 6340   TAAGCTGTGAATCAGCACTA       GAAT   ACTAGGTTTT    TT   AATT
4          GGTTTTTTTTTATTGGATAA TAAGCTGT   CAGC       TTTTTA  GGAT
          TTATCCTTTAAAGAGTTGTT ATTTGACA   GTTG       AGAAAT  CCTA
          TAACAGTTTA              ATTT   ----------    TT   ----
GAM29658 19811  TAAGGCAGTGAAATTCACAA     A   ATTCACAAT-   AG   AAATA
3          TCTGCAGTTAAAATATAAAA TAAGGC GTGAA       CTGC  TTA
          GCAGCAATTCTATGTTCATA GTTCTG TACTT       GACG  AAT
          GTCTTG               A   GTATCTTAAC   AA  -----
GAM29659 18751  TAAGGCTCTTAGATAGAAAG        AGATAGAAA  -   GCAACAA
0          TGAATAGCAACAATATTACA TAAGGCTCTT      GTG AATA
          TAAATTGAGGAAGAGCTTTA ATTTCGAGAA       TAC TTAT
                          GGAGTTAAA  A   -------
GAM29663 3967   TAAGGTCTTCGAACCTTATG        GAA   TG    GTTGGAGG
0          TTAGGGGTTGGAGGTCTTGG TAAGGTCTTC  CCTTA  TTAGGG
          TGTGAGGAAGGAAGACTTTA ATTTCAGAAG  GGAGT  GGTTCT
                          GAA   GT    --------
GAM29663 8767   TAAGGTGTATACCTAGTCTG     TGTA   T G   T---   ATTAGTAAAAAAATAACA
4          TGCTGATTAGTAAAAAAATA TAAGG    TACC A TCTG   GCTG
          ACACAGCCTTTCAGAGTGGT ATTTC    ATGG T AGAC   CGAC
          AGATCTTTA              TAG-   - G   TTTC   ------------------
GAM29663 16534  TAAGGTTAGAAATCATATAT      T   -     TATC   TA--      ATGAAGC
8          CTGTATAATCTACAATGAAG TAAGGT AGAA ATCATA   TGTA   ATCTACA
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CTGTAGATAGTCTACATTAT ATTCTA TCTT TAGTAT ACAT TAGATGT
GATATTCTATCTTA - A T--- CTGA -------
GAM29665 18917 TAAGTACTGCTTCCATTCAT AC C ATT---------- TTAC
2 TGTTTACGCTGGAATTTTTC TAAGT TGCTT CATTC GT
TCCCCATGGAATGTAAGTAA ATTCA ATGAA GTAAG CG
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GAM29665 4327 TAAGTAGATGGGAGAATATG TA GG T AAAATAT AAT
5 TTTAAAATATTAGGAATCCT TAAG GAT GAGAATATG TT TAGG
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CTTA TA AA C ------- ---
GAM29668 2748 TAAGTCTTTTATTTATTTTT - TT TT TCTAT
2 TTTTTGGGTCTATCCTAAGG TAAG TC TTATTTATT TTTTTTGGG
GACCAGTAAATAATGATCTT ATTC AG AATAAATGA AGGGAATCC
A T T- CC -----
GAM29670 3502 TAAGTGTAGACTTAATACCA GA AAT-------- -- - ATCCAGATTG
4 TGTGACATTTAATCCAGATT TAAGTGTA CTT ACCAT GTGA CATTTA
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TA
GAM29670 6094 TAAGTGTATATAACAGTATA T - AC AG TAG
5 GTAAGTTTTAGAAATTTAAG TAAG GTAT ATA AGTAT TAAGTTT
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T G CA GA ---
GAM29675 20229 TAATAAATTTTTGTAGATAG A GTAGA TGATGTG - TT CT T TAAAA
2 TCTTGATGTGTGATCTTTAT TAATAA TTTTT TAGTCT TGAT CTTTA TTGTATTT CTG G
TTTGTATTTCTCTGTGTAAA ATTATT AAAGA ATTAGG ATTG GAAAT AATATAAG GAC C
ACCAGTGAATATAACTAAAG C AA--- TTAGGTG T C- T- - -----
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GAM29681 14666 TAATATATTTAATAGAGAGA - - GAGAGA- A ATGA
9 CGCCAGCATGAGTGGGTGGA TAATA TATTTA ATA CGCC GC
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A C A ATGCCAG G ----
GAM29684 3255 TAATATTTTAGGTGTAAAAT TTT - AAAATAATTAA T TTAAC
4 AATTAAGGGTATGATTAACT TAATA TAG GTGT GGGTA GA
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TA CCT A ---------- - -----
GAM29687 13975 TAATCCTTCGGAGTATCTGG - C AT- GACCA AGCACC
5 GACCACAGGCTAGCACCAGC TAATC CTT GGAGT CTGG CAGGCT
CTGGCCAGCTGATTCCAAAG ATTAG GAA CCTTA GACC GTCCGA
TGATTA T A GTC G---- ------
GAM29695 6167 TAATGGTTGATATTGCTAGG G CTAGG TG C T - GTGC
8 GTGGCGCTTCCAATTATGTG TAAT GTTGATATTG G G GCT CCAA TTAT
CATGAGTTGGTGGCCTGCAA ATTG CGATTGTAAT C C CGG GGTT AGTA
TAATGTTAGCGGTTA G AA--- GT - T G ----
GAM29696 18161 TAATGTCAGCTCCTTTTCCT ACCAATT T A ATATAA
4 ACGTATGAAAACCAATTGAG TAATGTCAGCTCCTTTTCCTACGTATGAAA GAG GTT CCA

TGTTACCAATATAATGGAAT ATTACAGTCGAGGAAAAGGATGTATACTTT CTT TAA GGT
TTTCTTTCATATGTAGGAAA ------- T - ------

AGGAGCTGACATTA
GAM29701 6191 TAATTCACATACCACACAAT TC T C - ---- CTAAAGT
7 TCATGTATCTAAAGTATACA TAAT ACA ACCACA AATT CA TGTAT
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TTGGTTA GT - C T CTTG -------
GAM29705 4014 TAATTGCAATGGAGTTGACG ATG- G TG C-- TTTTGGTTTT
0 TTTCCCTCCTTTTTGGTTTT TAATTGCA GA T A GTTTCCCTCCT
AGGAGGGGAATTATTTGAAT GTTAATGT CT A T TAAGGGGAGGA
CGTGGTGTAATTG GGTG A GT TAT ----------
GAM29709 3661 TAATTTGAAAATATTTCCTT AAAA- - TTA CA TGA
2 TAAAGACAGAGTTTGAAACT TAATTTG TATTT CCT AAGA GAGTT
CATCTTGGGTAAATAAATTG ATTAAAC ATAAA GGG TTCT CTCAA
CAAATTA GTTAA T --- A- ---
GAM29711 17960 TAATTTTATGTGGGATTCTG ATGT GA- - ----- GTGAA
0 AGGTATCGAGTGAATTGAGG TAATTTT GG TTCTG AGGTA TCGA
TTTTATCTATAGAAACACCT ATTGAGG CC AAGAT TCTAT AGTT
TTGGGAGTTA GTTT ACA A TTTGG -----
GAM29714 14046 TACAAAAACAGACAGTCCAC AA ACAGTCC - - - G -------- CAG GA TC
1 GGTGGCTGCAGGCACATGCA TACAAA CAG ACG GT GG CT CAGGC ACATG GCGG
CTGGG
GGCGGGACTGGGTCAGACAC ATGTTT GTC TGC CA CC GA GTCCG TGTAC CGTC GACCT

TCCAGGGCTGCACATGTTCC CG GATAC-- A G T - GTCGACCT A-- GG --
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GTCATAGCTGGCTTTGTA

GAM29719 20496 TACAACATGACACCAACAGA CAT C C TCA TGTG GAAATT
3 AGGGATCAAAGTGTGTCGTG TACAA GA ACCAA AGAAGGGA AAG TCGT
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TTTTTCTTGGTTCTTTGTA T-- - C TAC TG-- ------
GAM29719 20720 TACAACCTACTTCACTCATT TACTTCAC- TTATA TT C TGAA
6 TATATTATTTGCCAGGCCCC TACAACC TCAT TTAT GCCAGGC CC
TGAAGGCGTCTGGTTTGTGA ATGTTGG AGTG AGTG TGGTCTG GG
CTTCTGTGATTTAATACTGG TCATAATTT TCTTC TT C ----
TTGTA
GAM29722 16460 TACAATACTGAGCATCCACT -- T CAC C CACT
7 GGGTCCTGGGCACTCCCAGA TACAA TAC GAGCATC TGGGTC TGGG
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TA CC - A-- - ----
GAM29722 18139 TACAATATATTTTTTAATTT - TAA CACC A- AAGAAA
8 TACACCTGAAACAAAGAAAT TACA ATATATTTTT TTTTA TGA ACA
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TGTA
GAM29727 3439 TACACCTGCAACGTGAAGGC GCA A - AT TGCGAGA - CT- GCCC

2 TCGATCCTGCGAGAAGGAAG TACACCT ACGTGA GGCT CG CC AGGAAG TGGT CT
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ACCTTCCTGGCCCGTAGCCC --- C T CC ------- C TCC ----
TCACGTGGGTGTG
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GTATATATATATA ACTA
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TATATATATGTAT TGGT

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TATGTATATATATACACTAA
AAGTGGTATA

GAM29728 1069 TACACTCAAGCGCGGTCGTA T -- T ACC GTGCCTTCTG
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GTA T AG - C-- ----------
GAM29730 9488 TACAGAATAGAATACATTGA A TAC T ----- CAGAAAAA
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TTTGATTTTTATCCATTTCT GTGTCT ATTTT TA CTAT GTTTCAT
TTTACTCTGTG C CTT C TTTTA --------
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6 ATTTGGTTACCTGCAATGGC TACAGA TGCTAGG GGC TGGT CCT GC TGGC
TGCTTTTGCCAGCGAGGCCA GTGTTT ATGGTTC CTG ACCA GGA CG ACCG
CCATTCATTGGTCATCTTGG - TA GTTACTT CC G -- -------
TATTTGTG
GAM29734 3969 TACAGCAAACACTCTTTAAG AACACTC- AAA CAATACACTAA A A
AATTTTTAG
3 AAAAATATCCAATACACTAA TACAGCA TTTAAGA ATATC AT GGTACTAT GT
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TAGACATGGTACCCATGATA CATTTTCC ACG ---------- C - ---------
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GCTGTG
GAM29735 20105 TACAGCCACGCGGCAGGAGA AC - AG A T A CCAC ACCCACTACAC
5 GTGTGCTCGCAACGCCACCT TACAGCC GC GGC GAG GTG GCTCGCA CG CTGC
GCACCCACTACACGCAGCTC GTGTCGG CG CCG CTC CAC CGGGTGT GC GACG
GTGTGGGCCACCTCAAGCCA GT A AA - - - TC-- ----------
GCTGGGCTGTG
GAM29735 9891 TACAGCCTAGAAGGAAAGAT ---- AG A -------- G TCCTGTCGCCTC
9 CAAAGTGTAAAAGTGGTTAG TACAGCC TAGA GAAAGATCAA GTG TAAAAGTG TTAG
TCCTGTCGCCTCCTGAGCAT ATGTCGG GTCT CTTTTTGGTT CAC GTTTTTAC AGTC
TTTTGTATTATATCACTTGG TGAA G- - TATATTAT G ----------
TTTTTCGTCTGAAGTGGCTG
TA
GAM29736 18278 TACAGCGGCTGCGTCTCTCT ------ - TAC A-- GA G TGAG
3 GTGTACTTGACCGTGATGGG TACAGC GGCTGCGTC TCTCTGTG TTG CCGT TG GGC
GCTGAGGTCGTAGCGGAACC ATGTCG CCGGCGTAG AGGGACGT GAC GGCG AT CTG

```
          AGATTGCAGGGATGATGCGG     GTGTGC       T      TA-  CAA   -- G  ----
          CCCGTGTGGCTGTA
GAM29736 14589  TACAGCTGCTACTTTACCTT    CT---    TT     T A--     GTAATTA    AT     CA
7          CTTGTAACCTGGTGTAATTA TACAG    GCTACT  ACCTTCT GT   ACCTGGT     CATGGT  TTTTAAG
TTA
          CATGGTATTTTTAAGCATTA ATGTC    CGATGG  TGGGAGA CG   TGGATTA     GTATTA  AGGATTC
AGT
          TGCAATTTGAGCCTTAGGAC     ATTCC     --     - GTA     AAC----     AC     CG
          AATTATGCAAATTAGGTATG TGCAATT
          GCAGAGGGTGGTAGCCCTTA
          CTGTA
                       -------
GAM29736 20877  TACAGCTTAGAAAATGCAGG     CTTAG  AAT-      ACCCCCCCTCCCCGCC
9          TTACCCCCCCTCCCCGCCAG TACAG     AA   GCAGGTT
          CCTGCTTTGTTACATCCTGT ATGTC    TT   CGTCCGA
          A                  CTACA  GTTT      ----------------
GAM29738 19391  TACAGGCACATACCACCACG    G      -  -    C  -  AATTTG
1          CCCAGCAAATTTGTGTGTGT TACA GCACATAC CAC CACGC CA GCA
          GTGTGTGTGTGTGTGTGTGT GTGT TGTGTGTG GTG GTGTG GT TGT
          GTG                G      T  T    T  G  ------
GAM29739 6065   TACAGGTGGTTGCTTTGAAC   AG  -  GC    - -     GAGAAAAACAGA
4          TTTATTTGAGAAAAACAGAA TAC  GTG GTT  TTTGA AC TTTATTT
          GATAAATGTATCAAAAGAAC GTG  CAC CAA  AAACT TG AAATAGA
          ACACAGGTG           GA  A  GA    A  T      ------------
GAM29740 22332  TACAGTAAATATTCATTGCT      AAAT    TTG --    -----  TCAAGCC
3          GTCCTACTTCAAGCCAGTCT TACAGT    ATTCA   CT  GTCCT    ACT
          CAAGGGATATAGAATTGAAT ATGTCA    TAAGT   GA  TAGGG    TGA
          CAGACTGTA             GAC-    TAA  TA    AACTC  -------
GAM29741 6109   TACAGTATCTTAAGTGTCGA                                        TT  TTA
0          CCAGTTATATACCTAATCTG
TACAGTATCTTAAGTGTCGACCAGTTATATACCTAATCTGGTTTTTTATAACTTCTGT  GA
          GTTTTTTATAACTTCTGTTT
ATGTCATAGAATTCACAGTTGGTCAATATATGGATTAGACCAAAAAATATTGAAGACA  CT

          GATTATGCTCTTACAGAAGT                                          TT  ---
          TATAAAAAACCAGATTAGGT TGC
          ATATAACTGGTTGACACTTA
          AGATACTGTA
                       ---
GAM29743 9144   TACAGTTTATATTCTTAATT         ATT   AATTCCCCATT-   AAAATATCG
7          CCCCATTCAATAAAATATCG TACAGTTTAT   CTT         CAAT
          ATTGCCAATTTAATAAAAGT ATGTCAAGTA   GAA         GTTA
          AAATGAACTGTA              AAT   AATAATTTAACC   ---------
GAM29745 5507   TACATAATCAGTTTATAAGA    TAATC    ATA-    AA   A  AATTAAA
5          TAAAAGTACTAATTAAAAGA TACA     AGTTT    AGATA  AGT CT
          CTATATCTGTAGAAACTTTA ATGT     TCAAA    TCTAT  TCA GA
          TTTGTA              TTATT     GATG     A-  -  -------
GAM29747 21004  TACATATACTTACCATACAT    A      - ATACA   G      CACA
7          TTTGTAAAAAACACATTTTT TAC TATACTTA CC     TTTT TAAAAAA
          TAAAGAAATAGGGATGGGTA GTG GTATGGGT GG     AAGA ATTTTTT
```

TGGTG - A GATA- A ----
GAM29760 3628 TACATTTGGAAGAAGATAAG A AA AA- ---- CAAAATT
3 GCAACAAGGCAAAATTTCTA TAC TTTGG GAAGAT GGCAACA AGG
AAATGTTGCTAGCATTTTCC ATG GAACC CTTTTA TCGTTGT TCT
CAAGGTA - -- CGA AAAA -------
GAM29764 8939 TACCAATTTTCTTTCAACTC C CT AAAATGATCTGC
4 ATGATAAAATGATCTGCATC TACCAATTTT TTTCAA CATGAT
ATGGATTGAGAAAGGATTGG ATGGTTAGGA AGAGTT GTACTA
TA A AG ----------
GAM29765 20814 TACCAGAGTCATTTCTATCA -- TTCTA AGATA TT AGGATCC
8 AAAGATATATTTCAGGATCC TACCAG AGTCAT TCAAA TAT C
GGGATAATTTGACCATATGA GTGGTC TCAGTA AGTTT ATA G
CTTCCTGGTG CT TACC- A---- GG -------
GAM29766 1073 TACCAGGTGCAAAGTCCTTC - AA- TCCTTC A CAACCT
7 GTGGATGCAACCTCAACCAT TACCAGG TGC AG GTGG TG
ATATTCTACAGCACCCTGGT GTGGTCC ACG TC TACC AC
G C ACA TTATA- A ------
GAM29767 8553 TACCATCTTGAGCAAGTTGG ATCT A T-- - GAAAACCAATTA
7 TCACGAGGAAAACCAATTAT TACC TGAGCA GT GGTCA CGAG
TTGATGGCTTTCACATGCTC ATGG ACTCGT CA TCGGT GTTT
ATTCAGGTA ACTT A CTT A ----------
GAM29769 9636 TACCCAGAGTCCCTTTAACT A CCCTT AAAT TTAAGTTTTTT
7 AAATATCATTTTAAGTTTTT TACCCAG GT TAACT ATCATT
TAATGGTGGTTAACCTTGGG ATGGGTT CA ATTGG TGGTAA
TA C ----- ---- ----------
GAM29770 19175 TACCCATGTGTCAAAGTTTT T- TCAA TTAT AA GAAT
4 ATGCTAAATTCTGAATAGAA TACCCA GTG AGTT GCTA TTCT
TAGTTGTAACTCCCACTCTG ATGGGT CAC TCAA TGAT AAGA
GGTA CT CC-- TGT- -- ----
GAM29771 3437 TACCCCTGCAGATCCGTAGG ------- ATCC AG TA--- ATGA
2 TATTAAGGATGACCTTAGGA TACCC CTGCAG GT G TTAAGG
AGTCTCACACTGTAGCCACA GTGGG GATGTC CA C GATTCC
AAGGGTG AAACACC A--- CT TGAAG ----
GAM29771 3860 TACCCTATAGCTTGTTTTAT CT- TT-- T CATTCC TTCT
6 TAGCATTCCGGATATTCTTG TACC ATAGC GTT TATTAG GGATA
TCCATATTTCTAATATAACC GTGG TATCG CAA ATAATC CCTGT
GGTGCTATTAAGGTG AAT TGGC T TTTATA ----
GAM29773 9214 TACCGAACTTTTGTTCCCAT TTGTT CCA- TT TTCGCT
2 ACCAGTTTGGTTTCGCTACC TACCGAACTT CCCATA GT GGT
TTATAAGCTATGGGGAGTTT ATGGTTTGAG GGGTAT TA CCA
GGTA ----- CGAA TT ------
GAM29776 22188 TACCTCCACAGTACAGACTG C T A C CCCCAACTT G CAACTTA
2 TCCCCAACTTAACAGTGGTT TACCTC ACAG AC GA TGT AACA TGGTT
CAACTTAAACCATGTTTCAA ATGGGG TGTC TG TT ACA TTGT ACCAA
CTTTACAATTGGTCTGTTGG T - G A TTTCAACT- - -------
GGTA
GAM29778 14730 TACCTGGAGGCATGGGCAAG G ATG AAGGGG GT--------- TAAA
6 GGGGGTCCTCAGGTAGTAAA TACCTG AGGC GGC GGTCCTCAG AG
CTCCCCAGGTGGGCTGAGGG GTGGAC TCCG TCG TCGGGAGTC TC
CTAGGGCTGAGCCTCAGGTG - AG- GGA--- GGGTGGACCCC ----

GAM29780 21402 TACCTTAAATTTAAAATATT T TTT T C TATAAACTTTAACAGT
3 TTTTGCTATATAAACTTTAA TACCT AAA AAAATATT TTTG TA
CAGTTATTAAACAGTGTTTT ATGGG TTT TTTTGTGA AAAT AT
CTTTTTGGGTA T TC- C T ----------
GAM29782 17959 TACGAAAACCTCACGGCCAA AAC AC- AG GG- T GGCCT
5 GGTGCTGGCCATGCTGGCCT TACGAA CTC GGCCA GTGCT CCA GCT
GGCTGGACGAGCACGTGGCC GTGCTT GAG CCGGT CACGA GGT CGG
TTCGAGTTCGTG --- CTT G- GCA - -----
GAM29784 3619 TACGCGGCGCAGCGCGGCAG G -- C- CCTGAT CC - GTTA
3 TCCTGATGGCCCGGCATGGG TACGCG CG CAG GCGGCAGT GGC GGCA TGG
TTACCGCTGCTGCCCCTGCT GTGCGC GC GTC CGCTGTCG CCG TCGT GCC
GTCGCTCCTGGTCGGCGCGT G TG CT TCC--- -- C ----
G
GAM29785 18741 TACGGGACTGGCCTCTGGAA --- T C TG AAA T GC GGAAA
0 AGGGTGGTAGCCCTGGAAAA TACGG GAC GGC TC G GGG GGTA CCT
GGTACCTCCCACACTGGAGC GTGCC CTG CCG AG C CCC CCAT GGA
CGTCTGTCCGTG TGT - - GT ACA T -- -----
GAM29785 1219 TACGGGCTGGCGCGACCTTT C ACC G G T CCGCCTGC
1 CAGGCCTGTGCTGCCCCGCC TACGGGCTGG GCG TTTCAG CCT TGC GCC
TGCGGCTGCGAGGGGTTGAG GTGCCCGATC CGC AGAGTT GGG GCG CGG
AACGCCTAGCCCGTG - A-- G A T --------
GAM29786 18597 TACGTGGTGCACGATGGCTT G ACGATG GAAG AG AAG
1 CGAAGGCCTAGCCAAGGGTC TACGT GTGC GCTTC GCCT CC
AGGTGCAAGAAGTAGGCTGG GTGCA CACG TGAAG TGGA GG
CACGACGTG G GTCGGA AACG CT ---
GAM29787 8721 TACTAAAAATACAAAAATTA TAAAA-- AAT- ----- GG G TG T TG GTGTGCT
1 GCTGGACGTAGTGGCATGTG TAC ATACAAA TAGC T ACGTA TGGCATG TGC CG T
TGCTCGTGTGTGTGCTGTGT GTG TGTGTTT GTCG G TGCGT GTCGTGT GCG GT G
GTGCGTGTGTGCTGTGCGTT TCGTGTG GCGT TGTGT TT - GT T GT -------
TGTGTGTGCTGTGCGTTTGT
GTGTGTGCTGTG
GAM29789 20443 TACTAATTTCCCAGGGCAAA AAT GGC TTTATAA C GC AAGGTTTTA
3 CTTTTATAATGGCAGGCTCA TACT TTCCCAG AAACT TGG AG TC
AGGTTTTAGATTCTACCAGG ATGG AGGGGTT TTTGG ACC TC AG
TTTAAATTGGGGATCGGGTA GCT AAA ------- A TT ---------
GAM29790 8092 TACTACTGCTGTGATAATAA TGCT - TAAT-- - TTCCATTTTT
0 TGAAATGTTTCCATTTTTAC TACTAC GTGA TAA GAA ATGT
ATATTCTTTGCTTTATTCAC GTGGTG CACT ATT CTT TACA
TCCTGTGGTG TCCT T TCGTTT A ----------
GAM29792 18303 TACTATCATCTTATCGGAGT CA A- G GTGC- AGCGGC
7 GCTCTCTTAGCGGCAAGGGA TACTAT TCTT TC GA TCTCTT
AAGAGTTGGAAGAAGAAAAT ATGGTA AGAA AG TT AGGGAA
GGTA AA GA G GAGAA ------
GAM29796 16807 TACTCAGGGGCTTATTATGC A ATTATGCACC TAAT CAGACC
0 ACCGTGGTAATACTCAGACC TACTC GGGGCTT GTGG ACT
AGTTACTCCACAGAAGTTCC ATGAG CCTTGAA CACC TGA
GAGTA - GA-------- TCAT ------
GAM29798 1174 TACTCCCTTAATAGCTTTAA CC AATAG CAT GCCTGA
0 AGACATGCTCGCCTGAGAGT TACT CTT CTTTAAAGA GCTC
TAATTTTTGGGGAAAAAGCA ATGA GAA GGGGTTTTT TGAG

AGTA AC AAA-- AAT ------
GAM29798 3395 TACTCCTCAGTGCCTTGCAG AG - GCAGTC - - AGAAGA
2 TCTCCCAATCACAGAAGAGT TACTCCTC TG CCTT TCCCA ATC AC
AGATATGGGAAGGGCCAAAG ATGAGGAG AC GGGA AGGGT TAG TG
AGGAGTA AA C ------ A A ------
GAM29800 6093 TACTCTCATCTGGAGAGGGT A TG GA - G TG GGT A TG - TGTTGGGGT
0 GCTGTTGGGGTGTACTCTCA TACTCTC TC GA GG GTGCT T G GTACTCTC TC GA GAGGGTGC

TCTGGAGAGGGTGCTGTTGG GTGGGAG AG CT CC CACGG G T CGTGGGAG AG CT CTCTCATG

GGTGTACTCTCATCTGGAGA - GT AC T G GT GT- - GT A ---------
GGGTGCTGTTGGGGGCACTC
CCATCTGGAGAGGGTG

GAM29801 3195 TACTCTGGGTGTGTACATTC T - ACA ACG- C CCTGATC
7 TCACGACCGGCCTGATCCCT TACTC GGGT GTGT TTCTC AC GG
GTGCTGGAGAAAGAACACGA GTGAG CCCA CACA AAGAG TG CC
CCCCGAGTG C G AGA GTCG T -------
GAM29804 21253 TACTGACGAAGGTGCATGCG C AGGT G ------- - CACG
0 CTGAATGATGTCACGGCAGT TACTGA GA GCAT CGCTG AATGA TGT
CGTTGAACACACGGCGGATG GTGACT CT TGTA GCGGC TTGCT ACG
TTCTCAGTG - ---- G ACACAAG G ----
GAM29806 5974 TACTGCCAAAACTTTAAATA G A- CT - T - A G CCACATTTTAAACACAT
8 TCTCAAGAGCATACCACATT TACT CCA AA TT AAATA CT CA GA CATA
TTAAACACATTATGGTCATG GTGA GGT TT AA TTTAT GA GT CT GTAT
TAGCTATTTCAATATTCCTG G CC AT C C T A G ----------
GGAGTG
GAM29810 8066 TACTGTACCTTTTCTATATT TTTTCT TAA TCA--- - GTACTTA
7 TAAGTATGTTCAGATACACA TACTGTACC ATATT GTATGT GATACA CAA
AGTACTTATTGTTGTATTAC ATGATATGG TATGA CGTGCG TTATGT GTT
AGTCGCGTGCAGTATTTGGT TT---- --- CTGACA T -------
ATAGTA
GAM29813 16523 TACTGTGTCTAGTCTTAAAT - TCTA T TAT C TCCAAAT
5 TATATTTTGCAATTCCAAAT TAC TGTG GTCTTAAA TA TTTG AAT
ATTCAAACTTTGTTTTAAGA ATG ACAC CAGAATTT GT AAAC TTA
CCACATGTA T ---- T TTC - -------
GAM29813 1274 TACTGTGTTTCTCTTTTGGG TTTCTCTTTTG TT TGCTT
9 GGAGCTTAACTGCTTGTTGC TACTGTG GGGGAGC AAC
TCCCTGTCGTCTGCACCATA ATGATAC TCCCTCG TTG
GTA CACGTCTGCTG -- -----
GAM29814 8521 TACTTAAATAAGCCAATACT ATAA A- C - A GTAA
8 TAGATCTACTGTAAGGCAGA TACTTAA GCC ATA TTAG ATCT CT
TGCTAATTATAAGGCATTAA ATGAATT CGG TAT AATC TAGA GG
GTA A--- AA T G C ----
GAM29815 12229 TACTTACCAAGGTTCTCCAC A AA TT - CT CTTT AGTG
5 TGCTTACCTTTTCCAGTGGG TACTT CC GG CTC CACTG TAC TCC
ACAGTACAGTGTGAGCCCCC ATGAA GG CC GAG GTGAC ATG AGG
GGGAAGTA - GC CC T -- AC-- ----
GAM29815 950 TACTTAGACGACTGAACTGG TT AC TG - --- T AAT- TTGAG

7 CCTCTGTGTTCTAATGGTTG TAC AG GAC AACTG GCCTC TGTGT CT GG
AGCCTCAGAGTACATATTTG ATG TC TTG TTGGC TGGGG ATACA GA CC
GGGTGCGGTTTGGTTTGCTT TT GT GT G TTT T GACT -----
TGTA
GAM29823 6287 TACTTTCAGGGTTTGGGTTG T- GG GGGT- TT TGTTTT
8 TTTTTTGTTTGTTTTAATAA TAC TTCAG TTT TG TTTTGTT
AAGGTATGTAAAAGAGCTGA ATG AAGTC GAA AT AAAATAA
ACTGTA TC GA AATGT GG ------
GAM29825 18999 TACTTTGTTTGACTTGGTGA ---- C AC AA C ATGC TACCTCCTAATTTT
6 ACTTAATTTGCATTTATGCC TACTTTGTT TGA TTGGTGA TT TTTG ATTT CATTA
ATTATACCTCCTAATTTTTA ATGGAACAA ACT AACCACT AG AAAC TAAA GTGAT
GTGAAATTCAAAAAGACCTC TCAT - CC AA T ---- ----------
ACCAATCATACTAACAAGGT
A
GAM29826 20292 TACTTTTATGAATGGGTGTA A A G TCCTCTCT CCCCAAAT
2 GTCCTCTCTTCTCAAGGTCC TACTTTT TGA TGGGT TAG TCTCAAGGT
CCAAATATCTTGAGGTTCCT GTGAAAG ACT GCCCG GTC GGAGTTCTA
GGGCCCGTCAGAAAGTG - - G CTT----- --------
GAM29828 3471 TACTTTTTTTTTTTTTTTT TTTTTTTTT C CTTTT
2 TTCAATAGATCTTTTATTTG TACTTTTTTTT TT AATAGAT
TTTAATAACTTATGAAAAGG GTGAGGAAAAG AA TTGTTTA
AGTG TATTCAAT- T -----
GAM29830 1077 TAGAAAACATTATAGAGAAT A CA AG A AAA TA AAAT
0 AAAATGTTAACAGTAAATGC TAG AAA TTAT AG AT ATGT ACAGT
TGTCTGCATGGATCCTTCGT ATC TTT AATG TC TA TACG TGTCG
AAATTTACTA A A- CT C GG- TC ----
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9 GTTTATGCTTTAAATATAGT TAGA AAAGT TATTAC TTGGT GCT
TACCACCAGAGTAGTAATTT ATCT TTTTA ATGATG GACCA TGA
TCCAATCTA AACC - A CCAT --------
GAM29831 3143 TAGAAACATGCTTGCCTTAT C C TT - AAGA CA TCA
9 GTATCAAGAGGACATGCTCA TAGAAA ATG TTGCC AT GTATC GGA TGC
GCAGATCCAAGAGATACTAT ATCTTT TAC AACGG TA CATAG CCT ACG
TTGGCAACATTTTTCTA T - TT T AGAA AG ---
GAM29832 20676 TAGAAACATGCTTGCCTTAT CATGC TT AGA- CA TCA
0 GTATCAGAGGACATGCTCAG TAGAAA TTGCC ATGTATC GGA TGC
CAGATCCAAGAGATATATTT ATCTTT AACGG TATATAG CCT ACG
GGCAACTTTTTCTA TTC-- TT AGAA AG ---
GAM29837 19371 TAGAACTATTGAATGGTACA ----- TT A GA CTTCGAAACC
5 GTTTGAGATCTTCGAAACCA TAGAA CTA GAATGGT CAGTTT GAT
TCAGGACTGATCATTTTCTG ATCTT GGT TTTACTA GTCAGG CTA
GCTACTTTCTA TCATC CT - A- ----------
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7 GGCACTTATAGCCACAAAAA TAGAA CTTGATA TAT TGGC
CATATTATCAAGAAATTTTC ATCTT GAACTAT ATA ACCG
TA TTAAA T CAAAAAC -------
GAM29838 6047 TAGAAGAGAGGAGGCATGTC A A---- G -- TG CTTGAAAT
5 AGTGACTTGAAATTTGCAAT TAGA GAGAGG GGCAT TCA G A
GAAATGCTACACACCTCTTG ATCT TTCTCC TCGTA AGT C T
TCTA G ACACA A AA GT --------

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7 CTGGCATAAGATAATCAGAT TAGAAG TGGA TTCCT G GCA
TGCACAAGGAACCTCTAAAT ATCTTC ATCT AAGGA C CGT
CTAACTTCTA A AAATCTCC A A ----------
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3 TTTTTCAAAAAAATGTTTTG TAG AAATT AGTATTTTT CAAAA
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TTCCTA C-- AACTG CAT -----
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7 ATTTGGAGATAAGTACTCAA TAGAA ATG GTG TGATTT GAG
AATTACATAGTTCATTTCTA ATCTT TAC TAC ATTAAA CTC
- TTGA- - A -------
GAM29859 1064 TAGAGAGAGAGAGAGAGAGA AGA--- A GCG CAGA
2 ACGCGAGCAGACTAGGTCCT TAGAGAGAG GAGAGAG AC AG
TTCTTGAAAGACTCTCTCTG GTCTCTCTC TTCTTTC TG TC
AGAAAG C GA- ----
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0 TGGTTTGTGACTTTAGGGTA TAGAGGT CATT GGTTT TGACT
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TGTACCTTTA T TTCATCTT- G -------
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4 CCAAGGTGTTCTGCAGGCTG TAGAGT AACCAAG G TTCTG AGGCTG
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GCATTTTTTTTTTTGGTTCA GTAAC TTTTTTTTA- GT TCA -----
ATGATTTTA
GAM29868 18215 TAGAGTCCTAGGCTCTGTCT C- A - T TT TCCA AT GTTCCAATTACCAG
3 TTTGTCTCTTCCAGCTGGAT TAGAGT CT GGC TCTG CTT GTCTCT GCTGG GT
GTGTTCCAATTACCAGACTC ATCTCG GA CTG AGAC GAA TAGGGA CGACC CA
CCAGCCACCAGGGATCAAGC AC A T - C- CCAC CT ----------
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6 TGGGCTCACTGCAACCTGCG TAGAGTGCGGTGGCGT ATCT GGCTCACTGCAACCT CGCC
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GGGCCC TTCGTT
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GCACTCTA

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5 CTCCAAGTGTTGAAGACTGA TAGATATATA GA CTGAT AGT
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TA - ATA AAAG- -------
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7 TTTGGGTTTTGGAGGGGGGT TAGATG GGAAATGT TG GTTTT GAG GGGG
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2 AGACAGATTTCACATAGTAG TAGATTTGAGA AGGAGAG AG TTTC
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3 AGCTGCAACGTACATGGTTT TAGATTTTTTTT TGTTAAGCT
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TTA CAACAAC ----------
GAM29889 18039 TAGCACAATTTGAGACTGAA -- T -- AA T ACTAT
2 ATTTAGTACACTATGTTCTA TAGCA CAA TTG AGACTGA TTTAG AC
GGTCAGTCTAACAGTTTGCC GTCGT GTT GAC TCTGACT GGATC TG
TGCTG CC T AA -- T -----
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8 GGGACAGCTGGTATTAAGCC TAGCA CCCACTGGC CTGGG GCT
TCGGAGCCGGTGGGCCATGT GTTGT GGGTGGCCG GGCTC CGA
TG ACC A- --- -------
GAM29893 6659 TAGCAGGTGGTGGGGCTATG T -- TAT AA A GCATT
4 ATCTAAACACAGGCATTCTG TAGCAGG GGT GGGGC GATCT AC CAG
GGTCCAGGTCCATGCTCTGA GTCGTCT CCA TCTCG CTGGA TG GTC
ACCTCTGCTG - AG TAC CC G -----
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3 ATAGTGTTAAACACTGATAG TAGCAT GCTA AC AG TAAACACTGAT GCA AG
CATCAGTACCTGTTCTAATT ATCGTA CGAT TG TC ATTTGTGACTA CGT TC
GCATCAGTGTTTACCTCTCA ------- C AC TCC - TAA --------
GTCTAGCATGCTA
GAM29895 2713 TAGCATCTGGTATGCACCTA A GT- --- C A- G TCCCA
5 GACATAAAATAGTTCCCAAG TAGC TCTG ATGCACC TAGA ATAA ATA T
TATGATTATTTCTAAGTGGT ATCG GGAC TATGTGG ATCT TATT TAT A
GTATTTACAGGGCTA - ATT TGA T AG G -----
GAM29896 14727 TAGCATTGTGGGACATTAGG ACATTA CCCC CTCG G CCGC
8 GCCCCCGGCCTCGGGGGAGG TAGCATTGTGGG GGGC GGC GGGGAG TG
TGCCGCCAGCTTCCCATGCC GTCGTGACACCC CCCG CCG CCCTTC AC
AGCCCGGAGCCCACAGTGCT GAGG-- A--- TA-- G ----
G
GAM29897 20198 TAGCATTTGAAAGACAGTAT C A -- TAT--- ATTAAGAATGC
3 AATTGAGATTAAGAATGCCT TAG ATTTGA AGA CAG AATTGAG
CAATTCAAACTCTGACTCTA ATC TAGACT TCT GTC TTAACTC
TCAGATTCTA T A CA TCAAAC ----------
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5 TGGTTGGAATGGTGACAACA TAGCATTTTG GC TCTG GT TG
TGCTCGGAGCCAAAGTGCTA ATCGTGAAAC CG AGGC CG AC
- ----- T TACA- ----
GAM29897 14482 TAGCCAACAAACCCAAGATA AAC AGATA AGATC - T AA GTG-- G
9 CAGTGCAGATCACCTTTCCA TAGCCAACA CCA CAGTGC AC CTTTCCA TTCT ACA TGTAGA
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TTTCTAAACAGTGTGTAGAG ATTGGTTGT GGT GTCGCG TG GGAGGGT AAGA TGT
ACGTCT TT
AGCATAGTATTGTCTGCAAG AGA G---- ATGCC A T C- AGAGA G
AGATGTCAGAATTGGGAGGA CATAGTA
GTCCGTAGCGCTGGTGGAGA
TGTTGGTTA

GAM29899 16619 TAGCCAGAGGATTGGAGGAG -- T C-- ---- - TTAATTTGC
1 CTTCCTCACATTAATTTGCT TAGCCAG AGGA TGGAGGAG TTC CTC ACA
GTAGAGAAAAGAATTTTTTT GTTGGTC TCCT ACCTTTTT AAG GAG TGT
TCCATTCCTTCCTGGTTG CT T TTT AAAA A ---------
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7 TCGGTGCGGGCAGGGAGAAT TAGCCAGG GAG GACTC CGGGCA
GCCTGGGGGTCCCTCACCTG ATCGGTCC CTC CTGGG GTCCGT
GCTA A---- C G--- -------
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9 CGGTGCGGGCAGGGAGAATG TAGCCAGGTGA G GACTC CGGGCA
CCTGGGGGTCCCTCACCTGG ATCGGTCCACT C CTGGG GTCCGT
CTA --- C G--- -------
GAM29900 3559 TAGCCATACACATGGTAACA A- GGTA----- TT ATGG
2 TTGACTATGGAGTCTTGTGA TAGCCAT CACAT ACA GACT
AAGTGTAATGTGCGATGGCT ATCGGTA GTGTA TGT CTGA
A GC ATGTGAAAG T- ----
GAM29901 2803 TAGCCCGCACCGCTTTCGCG A CTTT C CCT C CCCGCT
8 CCCTGCCCGGTCCCGCTACC TAGCCCGC CCG CG GC GC CGGT
GTGCCTGCCGCCTGGGCGGG ATCGGGCG GGT GC CG CG GCCA
CTA - CC-- - TC- T ------
GAM29902 3235 TAGCCGCGTGCGCGAGGAGT - G G AG ---------- ATCT
9 GCGGCCCTCTATCTGGAGGC TAGCCGC GTGC C AGG TGCGGC CCTCT
GGTGAATACAGACACATCGC GTCGGTG CATG G TCC ACGTCG GGAGG
TGCAGGCCTGGTACTGTGGC T - - GG CTACACAGACATAAGTGGC ----
TG
GAM29903 18143 TAGCCTAGCTCCCTGGGGTC C - G- C --- TTCTGT
5 TCCCATGCTTCTGTGTAATC TAGCCTAG TC CCTGG GTCT CCA TGC
TGGCAGACAGCCAGGCGATT GTCGGATT AG GGACC CAGA GGT ATG
TAGGCTG T C GA C CTA ------
GAM29903 4043 TAGCCTCAAAATTTTAATAT T TTTAAT- AAAA CATATATACACACACAAA
8 AAAAAAGTGTATGCATATAT TAGCC CAAAAT ATAA GTGTATG
ACACACACAAACATGCACAA ATTGG GTTTTA TATT CACGTAC
ATTATTTAACTTATTTTGGG - TTCAATT AAA- ----------
TTA
GAM29915 6472 TAGCTGGGATATAGGATTTT GG A - GTTTTTGTT - ATTT
3 TGTTGTTTTTGTTTTTGTTT TAGCTG AT TAGGATTTTTG TTGTTTTT TGTT TTGCT
GTTTTGCTATTTAGCAATAA ATTGAC TA ATTTTAAAGAC AACGGAAA ACAA AACGA
CATGGTCAAAAAGGCAATCA A- A T AACTGGT-- T ----
GAAATTTTAAATACAGTTA
GAM29915 18097 TAGCTGGGATTACAGGTGTG G T - TGT A CG G CTTTTTGTATTTTTTT
5 TGCCACCACGCTCGGCTACT TAGCT GGAT ACA GGTG GCC CCA CTC GCTA
TTTTGTATTTTTTTTAGTAG GTCGG CCTG TGT CCAC TGG GGT GAG TGAT
AGATGGGGTTTCACCATGTT A T A TT- - A- A ----------
GTCCAGGCTG
GAM29919 9466 TAGCTTCTTCAAACAAGTTA C AAGT AAAG AAGTATC
2 AAAGGTGGCAAAGTATCTGC TAG TTCTTCAAAC TA GTGGCA
TACAGTAGTTTGGAGGACTA ATC AGGAGGTTTG AT CATCGT
- ---- GA-- -------
GAM29922 5757 TAGGAAATATTGGAAAAAAG A T AAA- GCATGG TGAACAC

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4          AAATGGGCATGGGTACTGAA TAGG AATA TGG   AAAGAAATGG     GTAC
           CACGTACAGACCGTTTTTTT ATCC TTAT ACC   TTTTTTTGCC     CATG
           CTGGCCATTATTCCCTA      C   T  GGTC       AGA---   -------
GAM29922 20203  TAGGAAATTTTGACAGTATT     AATT    -      GTA    CATTT
9          TTTGTACAAAACATTTTTTT TAGGA   TTGACA GTATTTTT  CAAAA
           GAAAAAATACTTGTTAATTT ATCTT   AATTGT CATAAAAA  GTTTT
           ATTCTA              ATTT    T      A--   -----
GAM29926 12385  TAGGAATGAACAGAAAGAAT       AACAGAAAGAAT   A  A  TGAAA
1          TATAAATTTAAGTGAAACTC TAGGAATG         TATAA TTT AG
           AAGTTGTATGCCAAAAATAA ATCCTTAC         ATGTT GAA TC
           CATTCCTA               AATAAAAACCGT   -  C -----
GAM29926 8947   TAGGACAAGACAAATTACAG     AAGACAAA    A    C    A-  AAATGA
9          ATTGTCTCAGAGAAAACAAA TAGGAC      TTACAG TTGTCT AGAGA  AAC
           TGAGTTACTCTCTCGGACAA ATCCTG      GATGTC AACAGG TCTCT  TTG
           GCTGTAGGTCCTA          --------    G    C    CA  ------
GAM29927 22283  TAGGACAGGCTCTGGGGGGG    AC---   T    GG  --  -  ACCAGGTTG
4          ACAGGGCACCAGGTTGGCCG TAGG    AGGC CTGGGG  GA  CAG GGC
           CTGGCTTTTCCTCAGGCCTC ATCC    TCCG GACTCC  TT  GTC CCG
           AGGACCTA             AGGAC   -    TT  CG   G  ---------
GAM29927 4253   TAGGACCTAGTGGACATCTG        TGGACA   TA     AATCTCAGGAAAAACAAG
9          GTATTAATTTAATCTCAGGA TAGGACCTAG     TCTGG  TTAATTT
           AAAACAAGAAATTAACCCAG GTCTTGGGTC     AGACC  AATTAAA
           AGAGAGTCTGGGTTCTG           TGAGAG    C-     ------------------
GAM29929 3446   TAGGAGAAGGGGGTGCCAAT    G-    GT  CAA    - GAG    GG-   CA-  ACA
2          GCCTGGTGAGGCGCTGGACC TAGGA  AAGGGG  GC   TGCCTG GT   GCGCT   ACCG   GCC
           GCAGCCACAGGCAGATGGTG GTTCT  TTCTTC  CG   ACGGAC CG   TGCGG   TGGT   CGG
           AAGGCGTACAGCTCAGGCAG    AG    TG ---    T  ACA    AAG   AGA  ---
           CGTCTTCTTGATCTTG
GAM29931 12144  TAGGAGCTGGCAGGTGTCAA    A  GGCA   G  AA   AAA  A-  AAAACC
1          GCTGAAACCAAGCAAAACCG TAGG GCT   GGT TC  GCTG   CCA  GC
           CGATGGGGCAGCCGAGGCCC ATCC CGA   CCG AG  CGAC   GGT  CG
           AGAAGCCCTA           -  AGAC   G  C-   GG-   AG  ------
GAM29936 20689  TAGGATTGCCTACCAATTCT    TT   A    TC   A  AAATTAGGATTGGCA
8          TGTAACTAAATTAGGATTGG TAGGA  GCCT CCAAT  TTGT ACT
           CAAGTAGCAAATATTGGAGG ATCCT  TGGA GGTTA  AACG TGA
           TCTCCTA              C-   -    TA   A  ----------
GAM29940 21147  TAGGCATGTGATTTCAGGTT   GG   T      T--    TTC    ACATTGAGA
1          TTTCTTTCTGAGAACATTGA TA  CATG GATTTCAGG   TTTTCT   TGAGA
           GATTTCACTTGGAAGACTCC AT  GTAT CTAAAGTCC   AGAAGG   ACTTT
           CTGAAATCTTATGAGTA    GA   T      CTC    TTC   ---------
GAM29940 8467   TAGGCATTTCTGAAGTGCAC      T   -  --  CTTTTT   AACA
5          TTTTTTGAAACATCATTTTG TAGGCATT CTGA AGT  GCA     TGA
           CTAACTCTCAGCAGTGTCTA ATCTGTGA GACT TCA  CGT     ACT
                          C   C  AT   TTT---  ----
GAM29943 18105  TAGGCTGATGTCCCAGAAAT   G   -----  ---    ATA   -  TT-     AGGTTA
1          AGGACTCTTTAAGGTTGAGG TAG CTGAT    GTC   CCAGAA   GGAC TCT   AAGGTTG
           TTACAACTTTTATGGGTGTC GTC GACTA    CAG   GGTTTT   CCTG GGG   TTTCAAC
           CAGGTTTTGGCCTGACTTTT   A   ATTTT  TCC    GGA   T  TAT     ------
           AATCAGACTG
GAM29944 20857  TAGGGAAAGCTGGTACGCCT    AA  -  GG  C   --  -   -  T   ATTCCC   TCGA
```

8 GCAGGTACCGGTCCGGAATT TAGGG AG CT TA GCCT GCA GGTAC CGG CCGGA GGG
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CGGTCCGTGTGCTGTGCCAG CC A AA C AC G T T GCGCA- ----
GGCCTGAAGGACTCCCCCTG
GAM29945 20111 TAGGGAAGAAAACAAGTATT - AACAA- - TCA CT AAA CAT
3 AGTATCAGTTATCTTAGAAA TAGGGAA GAA GTATT AGTA GTTAT TAG TGG
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CATTTGCTCAGTATGATATG T GTATAG C TTA AG AA- ---
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6 AGTGGGTGGAGGGAGGGAGC TAGGG TG AGC CTGG GTGGGTGGA GGGAGGG GCT GGCAG

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GCTTCACCAGCCCTG

GAM29948 4480 TAGGGCCAAACTTTTGTAGG - AAACTTT A C CACA
8 TTGGACAAAACACATTTTAT TAGGG CC TGT GGTTGGA AAAA
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TCCTA A GTCATTT C A ----
GAM29949 3396 TAGGGCGCCTGGCAGTGGTC GC CAGT CAAGCC C AG AATACCC
4 AAGCCTGAAACCAAGCAATA TAGGGC CTGG GGT TGAAA CA C
CCCGTCTGTTTTCACCCAAG ATCCCG GACC CCG ACTTT GT G
CCCCAGAGCCCTA A- ---- AACCC- T CT -------
GAM29951 12689 TAGGGGGAATGGACATATGC AAT-- C A TAC A - CACATATA
8 GGGGTACGGGCACCAGGCAC TAGGGGG GGA AT TGCGGGG GGGC CCA GG
ATATACTGTGGAGCCCCCCC GTCCCCC CCT TA GCGCCCC CCCG GGT TC
CGCGAATTTCCTGCGACCCC AGCGT T A C-- A G --------
CTG
GAM29953 8147 TAGGGTGTGGTCCCCTGGCA G ------ - CGT ACCATCATGTCTA
7 CGTGGCCACCATCATGTCTA TAGGGT TGGT CC CCTGGCA GGCC
GGCCTATGCTAGGAGGCAAA GTCTCG ACCG GG GGATCGT CCGG
TGGCCAGGCTCTG G GTAAAC A AT- ----------
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1 CATAGACAGATAGGCCCAGG TAGGT GCA ACAGAG CAG GGCC
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GCAAACCTG AA C GCC------ AC- ----
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4 TACATAAAAGGGAAGTATCA TAGGT TACTAC TTTTA GG
ATAAACTTTAGAAAGTAGTA GTCCA ATGATG AAGAT CT
AATTCACCTG CTTAA A TTCAAATAA -----
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1 CTATGACGTCGCATGCACGC TAGGTG CT TAGA GA CTA ACGT CGC
GTACGTAAGCTTGGATCCTC ATCCGC GA ATCT CT GGT TGCA GCG
TAGAGCGGCCGCCTA CGGC G C A TCGAA T ------
GAM29968 19992 TAGTAAGAACAGAAATGCAG - -- GCA-- TACACAC TTCGTC
7 CCTACACACCCAATTCGTCT TAGTAAGA AC AGAAAT GCC CCAA

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CAGTCTTTTACTA C AC AATCA TCT---- ------
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9 CCCTTCAAAGATTTCTGTAG TAGT AATTTGATT GCT AGA CTGTAGAAATA
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8 CTCAGGTGGCTTTGCTGAGT TAG TAGCACAG GCT AC CAGGTGGC TGCT
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CAGTAAGCCTGTGTTATCTA T - A ACACAC TCC -----
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5 GGTCAAAGTGAAGTATATGC TAGTA ATGGA AAAC GGTCA TG
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TTCCATTTTATTA TT TTT TTTTA AAA ---------
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6 GGTCAGAGTGAAGTATATGC TAGTA CATGGA AAC GGTCA TG
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TTCCATGTTATTA T TTTG TTTTA AAA ---------
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0 TAGTAGATCTTGTGATTTCT TAGT TGA TTAG TTTTAG AGATC
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4 GCAGGTCTGATTCCAAACTG TAGTA GAGA AAG GAGCAG TG
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TT TC A-- AA- ----
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9 TTTTGTGTTTTGTTTGGTTT TAG TGTGGGG TTT TTTTGTGT TTTG TTGGTTT
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0 TCAAGGGTGTTACACTGGGC TAGTCATGTACAGA CATGATCAAGGGTGTTACACTGGG CGTT
GATG GG GT
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CTAC CC CA
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GTACATGACTA C

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2 ATTGCATGTGTGTCTATTAC TAGTCTGCTAA TCAG GCAT TGTG
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6 AATCCAGTACATTAAGAGTC TAGTGAA TTGAGGCAGCAAT CA GTA CA AGAGT
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7 AATTTTTTACAAAAAGGTCA TAGTGAA TTGAGGCAGCAAT AAGGT AT
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CTTGTTATTGCTGTCTCAAC AC- TTG------- T ----------
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2 TAACATATGGACAACAATAT TAGTGGTGG TAGA TTTA TATGGA
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8 CCACACCTACTTAGTGGCTC TAGTGT GA TGTGC TCCAC CTAC
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A - ---- AA ACTC ---
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2 TAAAGTTAACATATAATGTA TAGTGTTTTATAG AAAGTTAA AT
GATATTAATTTTTTCCTCGG ATCGTAAAATGTC TTTTAATT TA
CTGTAAAATGCTA GGCTCCTT A ---------
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6 TTGGAAATCGTGCCAAATGG TAGTTCA TCAA GTTG TCGT
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A AGC--- A- AG-- -----
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AT- - T--- -----
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8 TTTAGTGACCTTTTAAAAGT TAGTTT TCCAG AACTTT TG AAGTTG
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8 TTATTTTTCCTTTAGAGGAT TAGTTTC CT CTTAT TCCT
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9 TTACAATTTTTAATAAATTG TAGTTT AT TATG TATTAC TTTAA
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7 TTATTAAGGATTTCAGGTTA TATAAAATT TTTTA GGAT TCAG GTT CAT TTC TTCTAGAA
CATACTTCAAATTTCTAGAA ATATTTTAA AAAAT CCTG AGTC CAA GTA AAG AAGGTTTT
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ACTGGAAAAATGGCATAAAC AATGGAA
ACTGACGTCCCTTAAAACTT TGG

CAATTTTATA ACT

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0 TTCTGTCATTGTCTTTGACC TAT AG ATATGC GC AT GTCA

TATCTGTTTGTGTATCCTAA ATA TC TATGTG TG TA CAGT

TA A C TT TC TC-- -------

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A A ---- A A ---

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GTG TCCA GTA CTCTA ------

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CCTTGTA ---- G TACTA ----------

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ATTCTATA TTAACA C-- ACCG -----

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TAGACATGGAAATAGTTGGC G- TCAC- GA TTAC - CTCGGT---- ----

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CA AGAAACCT -- --------
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TATGATATG

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AATATA
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TAAATGTG T - CT ----------
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TA G GT A T G -- ----
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AAATGATA T A A -- ----------
GAM30084 16689 TATGAAATGTTATCAAGGCA A---- G C CA ACTACATTAA
8 GAAAACTACATTAATTTCGA TATGA AT TTAT AAGG GAAA
CTTTAATAAGATGTAACTCA ATACT TA AATA TTTC CTTT
TA CAATG G A AG ----------
GAM30085 20354 TATGAAGAGAGAGATGAAAT GAAGAG GAAATTT GAA GAAT AG GCTC
6 TTAGTGAACAGAATTGAAAA TAT AGAGAT AGT CA TGAAA GT
GGTGCTCATAATTTCACTAT ATG TCTCTG TCA GT ACTTT TA

GCAAACTTACCCCAGTCTCT AAAAAA ACCCCAT AAC ATC- AA ----
AAAAAAGTA
GAM30086 18438 TATGAATAAATGAACATTTG AAA - T TTTTAAAATCCCAATTCAC
6 CAATTTTAAAATCCCAATTC TATGAAT TG AACATT GCAA
ACTTGCCAATGTTGCAAATT ATACTTA AC TTGTAA CGTT
CATA A-- G C ----------
GAM30089 5571 TATGACTTTATATTCTAAAT TAT TAAATTA - GGTC TTTATCCCATT T CC
5 TATGTCCAGTTGGTCTATAA TATGACTTTA TC TGTC CAGTT TATAAGTA ACA TTA T
GTATTTATCCCATTACATTT GTATTGAAAT AG ATAG GTCAA ATATTTAT TGT AAT A
ACCTAGTTATTTTATTAATT TT- TACTG-- T AA-- TAGATCCATT- T T-
GTTTACCTAGATTATTTATA TTATT
AAAACTGTGATAGTCATGAT AG
TTAAAGTTATG TT

GAM30090 19150 TATGAGAATGATCCAGAATT GAATG AAT GA GAAGAGAGA
2 AGGATCCGAAGAGAGAGGAA TATGA ATCCAG TAG TCC
CTACTCCTGGATGGACATCA ATACT TAGGTC ATC AGG
TA ACAGG CTC A- ---------
GAM30091 12282 TATGAGGCAATGCTTATAAT AG CAAT TAATTTA -- ATTC
2 TTAAAGCTACCAATTCTGGT TATG G GCTTA AAGC TACCA
ACTGCTTACCTTTAAGCTCT ATAC C CGAAT TTCG ATGGT
TCTCCATA CT TTCT TTCCA-- TC ----
GAM30093 21517 TATGATAGATGTGGTTATTG A - TTA-- A CTCT TA G T AAGAAGA
2 ACATCTCTTGTATTTATGGT TATGAT GA TGTGG TTG CAT TG TTTATG TC CA
CTCAAAGAAGATGGAGCATG ATACTA CT ACACC AAC GTA GC AAGTAC AG GT
AACCCGCTATGACAAGGAAT - G TAAGG A TC-- CC G - -------
CCACAGTCATCATA
GAM30095 1326 TATGATTTATTATTATTATT ATTATT TGTTGTCC
8 TTTTAGCTTTGTTGTCCAGG TATGATTTATTATT TTTTAGCTT
CTGGAGTGCAGTGATGAATT ATATTAAGTAGTGA GAGGTCGGA
ATA CGT--- --------
GAM30097 20733 TATGCAGAAGCGAGAGAAGC AGAAGCG G CG AG ATATCTC
8 TCGGCGGCCAGTCATATCTC TATGC AGA AAGCT GCGGCC TC
GAAGGTTGTTTGGCTTGTTT ATACG TTT TTCGG TGTTGG AG
AACAGCATA ACAA--- G TT A- -------
GAM30097 3087 TATGCAGAGTGGACAAAGAT GAGTGGACAA T GCTACATTTGAAGAA
9 ACCTGGAGGCTACATTTGAA TATGCA AGATACC GGAG
GAACTCCTGGTGTCTTGCGT GTGCGT TCTGTGG CCTC
G ---------- T ----------
GAM30100 3168 TATGCCTGGACATTGATGCT G TG ATTGAT --- GA TGCT
5 AACATGACCATGCTTGGGGA TAT CC GAC GCTA ACAT CCA
TGTCTCTAGCTGGTCTGGGG ATA GG CTG CGAT TGTA GGT
ATA G GT GT---- CTC GG ----
GAM30102 18477 TATGCTGATGCTGGGAGGCG - GA AG ------ TTACA
0 GTGGTTACACCATTCGTAAC TATG CT TGCTGGG GCG GTGG
GTTGCCCGGTGCTGGACATA ATAC GG GTGGCCC TGC TACC
A TC GT AATGCT -----
GAM30105 18018 TATGGCAACTCTTTGCTGTC AA G CCTCAT A GCCAAATCA
6 CTCATTGTACTCTTTGCCAA TATGGC CTCTTT CTGT TGT CTCTTT
ATCAAGAGAGATATCAACAG GTACCG GAGGAA GACA ATA GAGAGA

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          AAGGAGAGCCATG          A-    -   ACT---  -    ---------
GAM30108 21483  TATGGGGGTCTCTCAACAAC      G  TCTCAACAAC-  A    AG    TTAC
2          CCAACCCTTAGGGAGTTTAC TATGGGG TC         CCA CCCTT  GGAGT
          ACTCTTGGAGGGGTGGACAA GTACTCC AG         GGT GGGAG  TCTCA
          TCATCACGAGCCTCATG        G  CACTACTAACA  G    GT    ----
GAM30116 8165   TATGTCCTGCATGTTGTGCC     CC  C   ----   C      CAGCA
8          ATATTGCAGCACAATGTGTC TATGT  TG ATGT    TGTG CATATTG
          ACATTAGACATCATTACATA ATACA  AC TACA    ACAC GTGTAAC
                          TT  -   GATT    T      -----
GAM30116 8507   TATGTCCTTGTGTTGCTGGT     CCT    TGCTG     TT  - TT    A  ATA    GAAT
9          TGGATTAATCTTTAATAACA TATGT   TGTGT    GTTGGA  AAT CT  AATA CA   TATA
          ATATATAGAATTGTAGACTG ATGCA   ACACA    CAACCT  TTA GA  TTGT GT   ATGT
          ATGTTTTAGCATTTTTCCAA     ---    CA---     TT   C  TT    A  CAG    ----
          CACACACAACGTA
GAM30119 8838   TATGTGATATGCTTATACAC     -    GC    CA     C   ATGCACA
0          TTACACTTTATGCACAAAAA TATGT GATAT  TTATA  CTTACA TTT
          TGTAGGGTTATAATAATGTT GTACA TTGTA  AATAT  GGATGT AAA
          AACATG                A    AT    TG     A  -------
GAM30119 9281   TATGTGCTCATCGGAACTGG     - T---   G    T   ACC--  TATTGTT
7          CACCACTATTGTTGTCTTTG TATGT GC    CATC GAAC GGC     AC
          GCCTGTTTGGATGCTTTGCT GTACA CG    GTAG TTTG CCG     TG
          ACATG                T  TTTC    G    T   GTTTC  -------
GAM30124 16682  TATGTTCTGAATAGATTTGC    G   TGAAT   -    - GATT  -     TGTTT
2          TGATTGTTGAGTATGTTTTG TAT TTC     AGA TTTG CT    GT TGAGTA
          CTTACACTTAAGGCCAAATT GTA AAG     TCT AAAC GG    CA ATTCGT
          CTTCCTTGAAGATG        G   TTCCT   T    C  AATT  C     -----
GAM30128 12619  TATGTTTGGGTCTTTGATCC     TT   TCTT     ATTT  GG    TTTTGCATAT
0          ATTTTGGGTTCACTTTTGCA TATGT  GGG    TGATCC    TG  TTCAC
          TATGTGAGTTCGGGATCATT ATACA  TTC    ACTAGG    GC  GAGTG
          CTTTTACATA            TT   TT--     ----  TT    ----------
GAM30128 3226   TATGTTTGTATGTGGTTCTC    TTT    T-  TTCTCC   T   --    -  CCATT
1          CAATTGTTTTAGCACCATTT TATG   GTATG  GG     AAT GTT  TTAG CA
          GTCTAAAAGACTGTTATTTC ATAC   TATGC  CC     TTG CAG  AATC GT
          TCCTTCGTATTATCATA       TAT    TT  TCTTTA   T   AA    T -----
GAM30129 4329   TATGTTTTTGATAATTTTTA          A     TTTTT    TTAAATGT
4          TTTTTGAAGCTTAAATGTGT TATGTTTTTGATA TTTTTA     GAAGC
          TTCTTCTGAAAGCTGTTAAA ATGTAGAAATTGT GAAAGT     CTTTG
          GATGTA                    C     CTT--    --------
GAM30131 2944   TATTAACATCCTTTTTTTCA                      AAT    GAGT
6          TGTAGATTTCAATAATTGAG TATTAACATCCTTTTTTTCATGTAGATTTC   AATT
          TAATTTTAGAAATCTACATG ATAATTGTAGGAAAAAAAGTACATCTAAAG   TTAA
          AAAAAAAGGATGTTAATA                        ATT    ----
GAM30134 9370   TATTAATTTATTTTCAAATC     -  T    CA   C  ----    AGTTT
6          ATACTCAGTTTGAGTTCAAA TATTA ATT ATTTT  AAT AT    ACTC
          TAGTTCAAAAATCAATATAA GTAAT TAA TAAAA  TTG TA    TGAG
          TG                  A   C    AC   A  AACT    -----
GAM30145 12943  TATTCACAAAGTTATCTGAT   TT     --    CT-----   A      GGAGGAG
0          AGGGCCTTGGAGGAGAAGGT TA  CACAAA  GTTAT      GAT GGGCCTT
          CCAGTTTTAAAAAATGACAG AT  GTGTTT  CAGTA      TTG CCTGGAA
          TTTGTGTTTA          TT     GA    AAAAATT   A      -------
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GAM30148 21505 TATTCATTCTGTATTTTGCA TTC TGC TCGAA- ATAC
3 AGCCTCGAAACATACGTGAA TATTCA TGTATTT AAGCC AC
GTTGGCTTTGAATACATGAA ATAAGT ACATAAG TTCGG TG
TA --- T-- TTGAAG ----
GAM30148 1766 TATTCCACGTGGATTGGGGG ACGTGGA - GCCTCCCT ACA
9 CTCCATCTTTGCCTCCCTGG TATTCC TTGGGGGCTC CATCTTT GG
ACACCTTTAAGAAGATGTGG ATAAGG AACCTCTGGG GTAGAAG CC
GTCTCCAAAAAGGAATA AAA---- T AATTT--- ---
GAM30152 12967 TATTCTATTTTCATTTTCTG -- TT TT AG CT - CAGA
0 CAAGCCTGCGTTCTTGTGAC TATTCT AT TCA TTCTGCA C GCGTTCT TGTGA
AGATTATACAGAATGTGTCT ATAAGA TA AGT AGGACGT G TGTAAGA ATATT
GCAGGATTGATTATGCAGAA CG TT T- CT -- C ----
TA
GAM30154 4001 TATTCTTATACATGTTGATC ATA- GA A A-- GTACAA
0 TAATATAAACGTACAAGTAA TATTCTT CATGTT TCT ATATA AC
ATATATCAGAAAATATGGCT ATGAGAA GTATAA AGA TATAT TG
AAAGAGTA ATCG A- C AAA ------
GAM30154 1249 TATTCTTGGCCTCAATATCT G- -- ACCAC T T CAGACAA
2 ACCACCTATTTTTTAACCAG TATTCTT GCCTCAA TATCT CTAT TTT AAC
ACAAGTTTGAATGTAGCAAG ATGAGAG CGGGGTT ATAGA GATG AAG TTG
ATAATTTGGGGCAAGAGAGT AA TA AC--- T T -------
A
GAM30156 3622 TATTGAAGAGATAGTTTTTC TGA TTTTTCC-- T- TTCTT GTGTTAT GATTT-
7 CCCAATGTACATTCTTGGCA TAT AGAGATAG CCAATG ACA GGCAGCT CAAG CA
GCTGTGTTATCAAGGATTTC GTG TTTTTGTC GGTTAT TGT CTGTTGA GTTT GT
ACTGTAGGTGTATGGATTTG TA- TGTGTATCT CT TTTAT GTCTTT- AGGTAT
TTTCTGAGTTGTCTATTTTG TGTAG
TTCTATTGGTCTATGTGTCT C
GTTTTTATGTG G

GAM30158 14343 TATTGATGAAGTCTCTCATT ----- TCTCT T TT CC- TCTTCT
8 TTTGAAAGGCCATAATCTTC TATTGA TGAAG CAT T GAAAGG ATAA
TTTATTTCCCTTTTTGGCAT ATAACT ACTTC GTA G TTTTCC TATT
GTTTCTTCAACCATTCAATA TACCA TTT-- C GT CTT ------
GAM30161 20311 TATTGCCGTGCTGTGTAGGG CCG GTA CTAACAA AC AGAA
4 GCTAACAATGGACACCCAGA TATTG TGCTGT GGGG TGGAC CC
AGGACGTTCAACCTCCAAAG GTAAC ACGACG CCTC ACTTG GG
CAGCAACCAATG CA- AAA CA----- CA ----
GAM30167 12351 TATTGTGAATGAACTCAGTG A T TG C A- ATAC AAATGA
3 TCAAATAACTATATACTGAA TATTGTGA TGAAC CAG T AAAT ACTAT TGAA
AAATGATTCAAATGGTAAAT ATAACACT ATTTG GTT A TTTA TGGTA ACTT
TTTATGTTGTGTTTAATCAC A T GT T AA A--- ------
AATA
GAM30169 14281 TATTGTTGTTAATCACTTAC AA ACT T ATTT TTAAAC
0 TGTGCCTAATTTATAAATTA TATTGTTGTT TC TAC GTGCCTA ATAAA
AACTTTATTGTAGGTATGTA ATGATAATAA AG ATG TATGGAT TATTT
TAGGAAAAATAATAGTA AA GAT - GT-- ------
GAM30171 12284 TATTTAATGTCTTTTTAGGA - CTT- ATAAACATAAAT TGATATT
2 TCATAAACATAAATAGGTCT TATTT AATGT TTTAGGATC AGGTCTG
GTGATATTCAGGCCTTCAGA GTAGA TTACG AAATTTTGG TCCGGAC

ATTTAAGGGTTTTAAATATA C ATAT GAATTTAAGACT -------
GCATTCAGATG
GAM30177 2997 TATTTATTTCAAGGAGACAG TCA- GA AAATTAAAAACTTCAA
3 ATCAAATTAAAAACTTCAAG TATTTATT AGGAGACA TC
AATGTTTTCTGCCTGGTAAA ATAAATGG TCTTTTGT AG
TA TCCG A- ----------
GAM30177 4283 TATTTATTTCCTATGTGTTA TT TAT TAAT- AGATCAGAAA
5 ATATGAAGATCAGAAATTAT TATTTAT CC GTGT ATGA
TTTTTGCACTTTGGCATAAA ATAAATA GG CACG TATT
TA C- TTT TTTTT ----------
GAM30177 5395 TATTTCAAAACGATGTGGGG AA A- GT TTT GAAA
8 GCTTTTTACGAAAGTTAAGT TATTTCAA CG T GGGGGCTT AC
CTTCGTGGATGGCTTGGAGT GTGAGGTT GT G CTTCTGAA TG
G CG AG TG T-- ----
GAM30185 12147 TATTTGCAAAATAAACAATT ATAA T TAAAAA AA- AAGAGAGA
1 ATAAAAAAAGAACATAAGAG TATTTGCAAA ACAA TA AAG CAT
AGAATGGTACTTAATTACTT ATAAACGTTT TGTT AT TTC GTA
GTGTGGTTTGCAAATA GGTG C TAA--- ATG --------
GAM30187 13025 TATTTGTACAGCATGTACAA A- CAT A A--------- AAG
5 TGTTTATGCTTCACAAGGTG TATTTGT CAG GT CAATGTTT TGCTTCAC
GGGTAGAGACTGCAAAACAT ATAAACA GTC CA GTTACAAA ATGGGGTG
TGAACCTGGGACAAATA GG --- A ACGTCAGAG ---
GAM30198 8159 TATTTTGGTGTTGTGGAGAC T T G ACT TGAAGCTAAT
1 TCAGTCTGTGAAGCTAATCA TATT TGGTG TGTG AG CAGTCTG
GATTGCCTCATATTACCATA ATAA ACCAT ATAC TC GTTAGAC
ATA T T - C-- ----------
GAM30198 1308 TATTTTGGTTGCTGTCACTG TT TG CACT -- C ACAAA-- AGGAT
2 CAGAAAACCCTGCTTCACAA TATT GGTTGC T GCA GAAAA CCTGCTTC GAT
AGATAGGATGTTGGAAATAG ATGA CTAACG G CGT CTTTT GGACGAAG TTG
AAGCAGGTTTTTCAGTGCTT CT GT CTTT GA T ATAAAGG -----
TCGTGGCAATCTCAGTA
GAM30200 3036 TATTTTTATATTTTTGTTTA ATT TATA AG - TTTTCAAAG AATAAC
0 TATTAGGATATTATACAATT TATTTTTAT TTTGTT TT GATAT TATACAA CT
TTCAAAGCTAATAACAGAAA ATGAAAATA AAACAA AA TTATA GTATGTT GA
TCTTTTTGTATGTATATTTA --- TACG AT T TTTCTAAA- ------
AAGCATAACAAAATAAAAGT
A
GAM30204 18906 TCAAAAACATGATTACAGGG AA GATTA G TC - TGACTGTGCT
5 ACATCTCAGGCTGACTGTGC TCA AACAT CAG GACA TCAGG C
TGTCCTGATTGTTGCTGCTG AGT TTGTG GTC TTGT AGTCC G
GTGTTGGTGA GG GTC-- G T- T ----------
GAM30204 12520 TCAAAAACTATGCTTTAAAG TATG T G AAA TTAT
7 GAATTAAAGTCTTATGATCC TCAAAAAC CTT AAAG AATT GTC
AAATTACTTTCAGGATGTTT AGTTTTTG GGA TTTC TTAA TAG
TTGA TA-- C A ACC ----
GAM30205 20812 TCAAAACAGAAGAAGGCTAC AAGAA ACATTTG TGTC
1 ATTTGTGGGAGTGTTGTCAT TCAAAACAG GGCT TGGGAGTGT
ATTCTCAGGCCAACTGTTTT AGTTTTGTC CCGG ACTCTTATA
GA AA--- ------- ----
GAM30207 16536 TCAAAATCAAATCTATTCAG TC TC C - CACTGTT

7 GTTTCTTCACTGTTGAGAAC TCAAAA AAA TATT AGGT TTCTT
ACCTAAATGTTTTTATTTTT AGTTTT TTT GTAA TCCA AAGAG
GA TA TT A C -------
GAM30208 9100 TCAAAATGGTTTCTGTTCCT AAA TTTCTGTTCCT A ATAACATA
3 AGAAAAGTAATAACATATGC TCA TGG AGA AAGTA
TTATCTTTATTCTTTTTCCA AGT ACC TCT TTCGT
GGTGA GG- TTTTTCTTATT A --------
GAM30209 8097 TCAAACACCAGCTTCCCATC AA-- - TCA- -- C TCTTCT
1 ACGTGTGTCGATCTTCTTCA TCA CACCAGCTTC CCA CGTG TGT GA
CAACCACGGCCCTGGAGGAG AGT GTGGTCGAGG GGT GCAC ACA CT
CTGGTGCGGCTGA CGGC A CCCG CA - ------
GAM30213 3865 TCAAAGCCAGCTGAAGGAAA - CA AAAGAGGAA AGAGAG
6 GAGGAAGTGCTAGAGAGAGC TCA AAGC GCTGAAGG GTGCT
ACCCTTCAGTGTGCTTCTGA AGT TTCG TGACTTCC CACGA
C TG --------- ------
GAM30214 12702 TCAAAGGACTGTTCTGATGG A GA GATGGCTACAT CAAAATA
4 CTACATGTGCAAAATACACT TCA AG CTGTTCT GTG
TTCAAATTAAGAATGGGTCT AGT TC GGTAAGA CAC
GTGA G TG ATTAAACTTT- -------
GAM30216 19112 TCAAAGTTCCTTCTGTTGAT CCTTC TT- AG ATT ATTGT
0 TTCTAGTTTTATTCCATTGT TCAAAGTT TGTTGA TCT TTTT CC
GGTCAGAAAAGATACTTAAT AGTTTTAA ATAATT AGA AAGA GG
ATAATTTTGA T---- CAT A- CT- -----
GAM30218 3614 TCAAATCACATTTGTAAGGG A--- TTGTA - ACTAT C TGTT
0 AACTATTATGTCCATGTTTG TCA ATCACAT AG GGA TATGT CA
CACATACTCGTCCACTGTGT AGT TAGTGTG TC CCT ATACA GT
GTGATCACCTGA CCAC TG--- A GCTC- C ----
GAM30226 3325 TCAACTGAAAGAGTTTAGGA A AAA TT - ---- C GAAC
9 ACTTACTCACTGAACAGTAG TCA CTG GAGT AGG AACT TACT ACT
TATAACAGTTATCTTACTTA AGT GAC TTCA TCT TTGA ATGA TGA
ACAGCTGA C AA- T- A CAAT - ----
GAM30228 4251 TCAACTTAGAGAATTGGAGA AC- GA G- G CAA GATTAGA
7 TACAACAGATTAGATGAAAT TCA TTA GAATT GA ATA CA
ATGTCAGAGTTCGATAGAAA AGT GAT CTTGA CT TAT GT
TGA AAA AG GA G AAA -------
GAM30231 22315 TCAAGAAGTTCACCTTCGGC AAGA AC ---- - A GG AAGA AT- CATC
2 TTAGACTGGGTGCCCAAGAA TC AGTTC CTTC GGCT TAG CT GTGCCC AACTGG GTGTC
GAG
ACTGGATGTGTCCATCGAGA AG TCGAG GGAG CCGA GTC GG CACGGG TTGACC TACAG
CTC
TGCCAGAGGAGCTCGACATC ACCG GA AGGC C - GA GAG- CTC ----
TCCCAGTTGAGGGGCACAGG ATG AGA
GCTGCAGCCCGGAGAGGAGG CC
AGCTGCCAGA GG
GA- ---
GAM30232 20551 TCAAGACCCATATATTCCGA CATATA--- CAG GTAATA
2 CAGTTTCAGTAATATGAAGA TCAAGACC TTCCGA TTTCA
TTTCGGAAATTCTAAAAGGT AGTTTTGG AAGGCT GAAGT
TTTGA AAAATCTTA TTA ------
GAM30236 18600 TCAAGCCCCGGACAGGGTCT A - GACAG TTACA ACTATTACGACA

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4          TACATCAACTATTACGACAT TC AGCCC CG    GGTC    TCA
           GAACGCGGCCAATGTGGGCT AG TCGGG GT    CCGG    AGT
           GGA              G    T  AA---   CGCA-  ----------
GAM30238 6215  TCAAGGAAGGGCAGGCGTAT     AA---------      G---   GC    GGTTTTG
8          GGCTAATTGGTTTTGAATTA TCAAGG        GGGCAGGC   TATG  TAATT
           CATGATTGGCTTGCCCAATA AGTTCC        CCCGTTCG   GTAC  ATTAA
           CATTTGGCCTTGA          GGTTTACATAA      GTTA   --    -------
GAM30239 20325  TCAAGGAGATTGTCGTTCAT          TCGT--  T  GAAC  T  GCTC
3          CCAGAACTCTTGCAGCTCTG TCAAGGAGATTG    TCA CCA   TCT GCA
           TTAGATGGCTGATATTTTCA AGTTTTTCTAAC    AGT GGT   AGA TGT
           ATCTTTTTGA                TTTTAT  C  ----  T  ----
GAM30241 19860  TCAAGGGGGTCTCCTACGGA   GG   ------    GGATGA   CCAT
4          TGACAGCTCCATAGCTGGAG TCAA  GGGTC    TCCTAC    CAGCT
           TGGGACAACCAGACCCGATT AGTT  CCCAG    AGGGTG    GTCGA
           GA               AG    ACCAAC    AG----    ----
GAM30244 4250  TCAAGTCCATGAACCACATG   A-  C--    CAC--   AT-- -   CCAGCCA
0          AATTACCTCCCCAGCCAGGA TCA  GTC   ATGAAC    ATGA   TA CCTCC
           GGATATGCCTCATAACCAGT AGT  TAG   TACTTG    TACT   AT GGAGG
           TCATCAAGATGATGA       AG   AAC    ACCAA   CCGT  A   -------
GAM30245 3563  TCAAGTTCTGAGATTTTTGC     TC----    TTT---  C   TGACCTAAAATCCTGT
9          TCCCTGACCTAAAATCCTGT TCAAGT    TGAGA    TTG TCCC
           GGGAATAATTGATTTCTCAT GGTTCA    ACTCT    AAT AGGG
           CTTTTACTTGG            TTTTCT    TTAGTT  A  ----------
GAM30248 18833  TCAATAGGATTACATCTGGC   AT    CA   C    TCCCTTCCT  TTCA
6          TGGCAGTCCCTTCCTACTTC TCA  AGGATTA  TCTGG TGGCAG       AC
           AGTCCATTATCCTGCTACCA GGT  TTCTAGT  AGACC ATCGTC       TG
           GAATGATCTTCATGG       AC    A-   -    CTATTACC-  ----
GAM30250 17955  TCAATCAAATTTGGGATTCT   A  A    G-    CA     C  GTCA
8          CAACATTTTCTGTGTCAATA TCA TC AATTTG  GATTCT  ACATTTT TGT
           AAAGGTGTGGAATTAGTAGA AGT AG TTAGAT  TTAAGG  TGTGGAA ATA
           TTCGATGA           -  C    GA    --     A  ----
GAM30251 1577  TCAATCAATGAAATGCAAAG     AATGAAA   A-   -  GTAG   CA  GTCC
0          CGCACAAGTAGGCTCCAGGG TCAATC      TGCAA  GCGCA CAA   GCTC  GG
           TCCCCCAGGGCAGAATTGAT AGTTAG      ACGTT  TGTGT GTT   CGGG  CC
           GTGTGATTGCAGCACTGGGA     GGTCACG    AG    A  AAGA   AC  ----
           TTGA
GAM30254 13035  TCAATGGAAGCGGTACTTTC    T  A--   T  TT   CT   T   TT   TATGTGGCCTT
3          TGGCTGGCTTGAGGTTGATG TCAA GGA  GCGG ACT  CTGG  GGCT GAGG  GATG
           TATGTGGCCTTCATCTCCTC AGTT TCT  CGCC TGG  GACT  CCGG CTCC  CTAC
           GGCCTCAGGGTTCCGCACAT   -  ACA   T  --   --   -   T-   ----------
           CTTTGA
GAM30255 18291  TCAATGTCTTCTACTTAAGC   AT     ACTT  C-- GG-     TAA
5          TGGGTGCATTTAAAATGCAA TCA  GTCTTCT   AAG   TG   TGCATT
           CACAATTCTTTGAAAGGAGA AGT  CAGAGGA   TTC   AC   ACGTAA
           CTATGA             AT     AAGT   TTA  ACA    ---
GAM30258 12857  TCAATTGTAATTTATTTTCT   A    ATTTA      TAACACTGTATCATCAT
3          TTTAACACTGTATCATCATA TCA TTGTA    TTTTCTTT
           AAGAAAACTGGTATAAATGA AGT AATAT    AAAAGAAA
                        A    GGTC-      ----------
GAM30259 8072   TCAATTTTTATTTTTTATTT   -         A   TTTT    TAAATGAT
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4 TTTTTATTATTAAATGATGT TCA ATTTTTATTTTTT TTTT ATTAT
GGTCTATGGAAAAAAAAATA AGT TAAAAATAAAAAA AAGG TGGTG
AAAATCTGA C A TATC --------
GAM30265 3587 TCACACGTAAATGGGTTCAA C A -- --- GA-- G ACAAC
7 ATTCTGGAGATCACGGTTAC TCACA GTA ATGGGT TCAA ATTCTG GATCACG TT
AACAAGCGTGGTCCGTACAG GGTGT CAT TGTCCA AGTT TGAGAC CTGGTGC AA
AGTAACTTGATAACCTGTGT - G AT CAA ATGC G -----
ACTGTGG
GAM30266 21005 TCACACTCAGAGTGGGGCAA CT --- GG AATT CATTTATC
2 TTCCAGCATTTATCCTGGCT TCACA CAG AGTG GC CCAG
GCGTTTCATTGCATTGTCTG AGTGT GTT TTAC TG GGTC
TGA CT ACG TT CGTC --------
GAM30267 5522 TCACAGACTTCCTGGGATAC AGACT- G CAAA G--- CTCACA
5 AAAGGCTGGCATGACTCACA TCAC TCCTGG ATA GGCT GCATGA
TCGTGCGGGAAGTCGACATG AGTG AGGGCC TGT CTGA CGTGCT
TGCCGGGATCCAAGGTGA GAACCT G ACAG AGGG ------
GAM30270 6105 TCACAGGGGTTTCCCCGGGC TTTCC GG GT AAACCTAAG
3 TGTTGGCAAACCTAAGGCCA TCACAGGGG CC GCT TGGC
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TTAC- AT -- ---------
GAM30273 5379 TCACATGATGATCCAGCGCT A----- GA C-- -- CC T - AACAAG
6 TTGAGAGGCCATATACTGTT TCAC TGAT TCCAG GCTTTGA GAGG ATA AC TGTT
AACAAGAACATGTCTATATC AGTG ACTA AGGTC CGGAATT TTCC TAT TG ACAA
CTTTTTTAAGGCTTACTGGA ATACAA AC ATT TT TA C T ------
CAATCAAACATAGTGA
GAM30274 19791 TCACATGTAGAATACCAAGT G CAA AA A GTCCT
0 CCAAGGCACGCGTCCTGCGG TCACAT TAGAATAC GTCC GGC CGC
TCAGGACAGTGTTCTAGGTG AGTGTG ATCTTGTG CAGG CTG GCG
TGA G A-- A- - -----
GAM30276 12996 TCACCAACTCCTTCCTTAGG ACTC ----- A TAGGG
6 GACAAAAGGTAGGGCTTTAT TCACCA CTTCCTTAGGG ACA AAGG
GTACAAGCCTTAGGGAAGAA AGTGGT GAAGGGATTCC TGT TTTC
ATGGTGA AAA- GAACA A -----
GAM30279 21003 TCACCAGGGTCCTTCCCAGT A ---- TC ATT- TGAAT
8 ATTACTTGAATAGTCCCAGC TC CCAGGGTC CT CCAGT ACT
TGGAGAGTCCAGGCCCTGGG AG GGTCCCGG GA GGTCG TGA
A - ACCT GA ACCC -----
GAM30281 5457 TCACCATTGCGTTACAGCTA A GTTACA TA CA--- TTC AACAAC
4 CCCACAGTATTCAGCACAAC TCACC TTGC GC CCCA GTA AGCAC
AACGTGCTTTACAGGTTTGG AGTGG AACG CG GGGT CAT TCGTG
GGCCCAGTAGCAAAGGTGA A ATGACC -- TTGGA T-- ------
GAM30283 19090 TCACCCGCTTTGTGAAATGG C TGT A- C----- A TCAGGT
5 CCCCGCTATATCAGGTTGCA TCA CCGCTT GA ATGGC CCGCT TA
GCGGCAGAGAGCCATCCTCT AGT GGCGAA CT TACCG GGCGA GT
ATAAGCGGCTGA C TAT CC AGAGAC C ------
GAM30284 18403 TCACCGAGACCGCGGCGGAG G A- G AG A - C ------- G GCTG
7 CCTACGGTCCCTGCAGTGCC TCACC AG CCGCG CGG CCT CG GTCCCTG AGT GCCT CT

TGCTGCTGAGGAGGCCACCG AGTGG TC GGTGC GCC GGA GC CAGGGGC TCG CGGA GA

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          AAGCTCGGGGACGCGAGGAG    G CC    G  GA  - G     -  AAGCCAC   G ----
          CCGGCGTGGCCCTGGGTGA
GAM30289 2864   TCACCTGGGCCGCACCCTTG    CT   C AC    -- CT ATGGGA
4          GGCTCTATGGGAAGGACCAG TCAC  GGGC GC  CCTTG  GG  CT
          CAAGGAGGCAGCCCTAGTGG GGTG  CCCG CG  GGAAC  CC  GA
                          AT   A GA    GA AG ------
GAM30289 3470   TCACCTGTAAACCTGAGTCG    CT  AACC    CGTAC----      GCC  TATAT
6          TACAGAAAGCTGCCTGGTAT TCAC  GTA   TGAGT       AGAAAGCT   TGG
          ATCCAAAAGCTTTTTATTCC AGTG  TAT   ACTCG       TTTTTCGA   ACC
          TCCTGCTCATATTGTGA      T-  ----    TCCTCCTTA      AA-  -----
GAM30291 20865  TCACGCCTGGAGCGCCTTCT    ---    A ---  T-   CA--   CCTG
9          GCAAGGCCCTGGCCTAAGAC TCAC   GCCTGG GC   GCC  TCTG   AGGC
          AGGCTGGCACAGCCCCAGGC AGTG   CGGACC CG   CGG  GGAC   TCCG
          TTGGTGA             GTT     C ACA  TC   AGAA   ----
GAM30294 6628   TCACGTCTGCAATCCCAGTA   C   GC          C       A   T- T      TGC   CTGCTC
2          CTTTCGGAGGCTGAAGCGGT TCA GTCT  AATCCCAGTACTTT GGAGGCTGA GCGG  GG TCACTTGA
 CAGG
          GGTTCACTTGATGCCAGGCT AGT CGGA  TTAGGGTCGTGGAA CCTCCGGCT CGCC  CC AGTGGACT
 GTCC

          GCTCTTGAATTCCTGACCTC   A   AA          C       C   CT  T      CCA   ------
          AGGTGATCCTCCCGCCTCGG TTGAATT
          CCTCCCAAGGTGCTGGGATT
          AAAGGCATGA
                       -------
GAM30295 5984   TCACTAAGGATGCTGAGGAA     AA  ---   GA       C  AAGAA
6          GGAGGCATAAGAAGTCCTTT TCACT  GGA   TGCT  GGAAGGAGG AT
          CTTCCAGGCACTGTCCAGTG AGTGA  CCT   ACGG  CCTTCTTTC TG
          A                  --  GTC   A-       C -----
GAM30303 4207   TCACTCTTGTGCAGGCGATG       GTG   C   T-  AA    CATG
9          TTTCAATGTTTCATGGGGCA TCACTCTT   CAGG GATG  TTC  TGTTT
          AGAGTTTATCTCTGGAGAGT AGTGAGAG   GTCT CTAT  GAG  ACGGG
          GA                  ---   -   TT   A-    ----
GAM30306 3105   TCACTGATGTCTCCTTAGGG     GA   ---    A  GA   C   AAAT
1          ATCTCTTCAAATGAGCAGGA TCACT  TGTC   TCCTT GG  TCT TTC
          CCAAGGATCAGACAAAGGTG AGTGG  ACAG   AGGAA CC  GGA GAG
          A                  AA   ACT    - A-  C   ----
GAM30308 6226   TCACTGGACAGGGATGTGGG     GGACA        AACTCA-    AAA
1          AACTCAATGTTAAAGATATC TCACT    GGGATGTGGG      ATGTT
          ACTCCCCCCACATCCCAGGT AGTGG    CCCTACACCC      TATAG
          GA                 A----        CCCTCAC    ---
GAM30308 679    TCACTGGGGATGCTCTTGAC   -       C TTGA-     T   - CGAGTC
7          CGGGATCTTCGTCGAGTCAC TCA CTGGGGATG TC    CCGGGA CTTC GT
          TGAAGTCCTGGACCTTGACC AGT GGCCTCTGC AG    GGTCCT GAAG CA
          GTCTCCGGCTGA         C       C  TTCCA    -   T ------
GAM30323 5512   TCACTTTTCAGGAGTCCTTG     TT      TC-     GGT     CTAAGATT
9          GGGTTTTCCACTAAGATTTG TCACT  TCAGGAG   CTTGG   TTTCCA
          GAAGCTAAGAATCTCCTGGG AGTGG  GGTCCTC   GAATC   GAAGGT
          GTGA                --      TAA    ---     --------
GAM30324 9856   TCACTTTTTTAAAAACCAAG   AC      AAAACCA      ACT-    AG--   AAAT
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1            AAAAAACTTTAATAGAGGAA TC  TTTTTTA      AGAAAAA    TTAAT    AGG
             ATCTTATTCATTAATTTATT AG  AAAAAAT      TCTTTTT    AATTA    TTC
             TTTCTGAGTAAAAAAACGA   CA      GAG----      ATTT    CTTA  ----
GAM30326 20673  TCAGAAAGCTGGCAAAGAAA     AA-   GCAA   A     GGTACAAAAAGAAA
1            AAGATGGTACAAAAAGAAAA TCAGA   GCTG    AGA AAAGAT
             TCTTTATCTGACAGTGAATC AGTCT   TGAC    TCT TTTCTA
             TGA                 AAG    AG--   A     ----------
GAM30328 2932   TCAGAACCTCGAGGATTCGG   A     ----    G TT    C-  TATT     TGCT
3            TCACTATTGGAATTGCTGTT TC GAACCT    CGAG A  CGGT  AC    GGAAT
             CCTGATGTATACCGTGCTTG AG TTTGGA    GTTC T  GCCA  TG    CCTTG
             TGACAGGTTTGGA         G     CAGT    G --    TA  TAGT     ----
GAM30328 6156   TCAGAACGCTGTGCCCAATA    A    T    CAATACA-    GATGGTGCTGA
4            CAAGAAGGATGGTGCTGACT TCAG ACGC GTGCC       AGAAG
             TTTGCCAAAGTGGCGCTGTG AGTC TGTG CGCGG       TTTTC
             TGCTGA              G    T     TGAAACCG     -----------
GAM30329 4357   TCAGAAGATTGAATTGAAAC     AGA    AT  AAA-   TAAAA     CATA
6            CTTAAAAACTATCATAATAG TCAGA   TTGA  TG    CCT     ACTAT
             TAGGAATGCATGTTAAGATT AGTTT   AATT  AC    GGA     TGATA
             TGA                 AG-    GT  GTAA  -----     ----
GAM30336 12193  TCAGACTGCGGGTCACGTTG    G    -    ---   C    A     AACA  ATG
2            AGAGCCAACACCATGGGCTC TCA ACTG CGGG   TCA GTTG GAGCC    CC
             GGTTCCGGCTGAAAACCCGC AGT TGAC GCCC   AGT CGGC CTTGG    GG
             CAGTGTGA            G    C    AAA   -    -     CTC-  ---
GAM30337 1015   TCAGAGAACAGAAGGGGTTC      AA  A       T    AGGTA    GG  GGACA
7            CTGAGCAGGTAGCCTGGGGG TCAGAG  CAG AGGGGTTCC GAGC     GCCT  GG
             GACACCAGAGGTGGCTCTGG AGTCTC  GTC TCCTCGGGG CTCG     TGGA  CC
             GGCTCCTCCTGCTCTGA         --  C        T    G----    GA  -----
GAM30342 8613   TCAGAGTCTTCTCATCTGTG      ------------      A  G    A   CC   C  GGATTT
8            CCAGCACCCTTCATGGATTT TCAGAGT          CTTCTC TCT TGCC GCA  CTT AT
             GTAAAGTTTGTCGGCAAAGA AGTTTCA          GGAGAG AGA ACGG TGT  GAA TG
             AGAGAGGCTTGTTCTTGACA       CAGTTCTTGTTC     A  A    C   TT   A ------
             CTTTGA
GAM30351 1708   TCATAATCATCTGCAATGCC     ATC--   -     CCCT    A    TC  TGT
9            CTGAACAGTAGTCAGTGTCT TCATA     ATCT GCAATG    GAAC GTAG  AG
             TTCTGCCGTTCCGTTGCTGG AGTAT     TAGG CGTTGC    CTTG CGTC  TC
             ATTCTTATATGA           ATTCT    T     ----    C    TT  ---
GAM30352 19817  TCATAATGGTCAGGGCTGAA       ---    - CT    G    ---     TGACTT
1            TAGTGGTAAGAATGACTTTT TCATAATG   GTCAG GG  GAATA TGGT   AAGAA
             CTTGGAATCAGTATTTTTCC AGTATTAC   CGGTT CC  TTTAT ACTA   TTCTT
             TTTGGCACGCATTATGA          GCA    T  TT    G   AGG    ------
GAM30358 1715   TCATATATTTATTAGTGAAT     T    A   GTGA  TG       AAAA
5            TGTGCTTTTTAAAAAAAAAG TCATA ATTT TTA    AT  TGCTTTTT
             CGTTATGTTAACAGATTTGT AGTGT TAGA AAT    TA  GCGAAAAA
             GA                  T    C   TG--  TT       ----
GAM30360 12467  TCATATTTAGAAAATGTAAA   -       AAATG    GT-     CACTTTC
5            TGTCTGTAGCACTTTCTTGC TCA TATTTAGA     TAAAT   CTGTAG
             AGTTAATTTGAAAACTTTGG AGT GTAGGTTT     GTTTA   GACGTT
             ATGCTGA             C       CAAAA     ATT     -------
GAM30362 6582   TCATCAATGGCGTGCTGTTG         C-    T  TGCCT    AGAA-    G   TCCTG
7            CCTGGAGGAGAAGGTTGCGG TCATCAATGG  GTGC GT    GGAGG    GGTT CGG
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TCCTGCTGGAGCCGTGCGCC AGTAGTTACT CACG CA CCTCC CCGA GTC
TCCACTGCACCTTCATTGAT TC T ----- GCGTG G -----
GA
GAM30364 9151 TCATCAGGCCATGCCATGGA TCAG - AAA---- CGGTAAC
6 AAGGGGCGGTAACTCCCAGG TCA GCCAT GCCATGG GGGG
TGTGCCATGGTGATGGTAAA GGT TGGTA TGGTACC CCCT
CTGG CAAA G GTGTGGA -------
GAM30367 21245 TCATCCCTGACATCCCTATC C - CC----- A ACG- AGAGCG
9 GTGGACGCCCAGAGCGGGGA TCATC CTG ACAT CT TCGTGG CCC
GGACTACGACAGCTTCCTTA AGTAG GAC TGTA GA AGCATC GGG
TGTACAGCGATGA C A TTCCTTC C AGGA ------
GAM30369 20951 TCATCGATGGCAAGGGTGTC G CAAG TCGC- CTGTTAA
0 CTTCGCCAGATCACTGTTAA TCATC ATGG GGTGTCCT CAGATCA
TGATTTGCCTGTGGGACGCT AGTAG TGCC TCGCAGGG GTTTAGT
CCGTGGATGA G ---- TGTCC -------
GAM30370 1042 TCATCTACTAAAGTACAACA A AA CA A TCT AAG
4 GGAATTCTTCTGAAGCAGAT TCATCT CTA GTA AC GGAAT TCTG
TATTCTAGTCTTATGCTAGA AGTAGA GAT TAT TG TCTTA AGAC
GATGA - CG TC A TT- ---
GAM30376 12157 TCATGAAGAGACAGCCCAGA AA GA CAGAAA CCAAA ACAAAC
6 AATCCCAAAACAGACAAACT TCATG GA CAGCC TC ACAG
TGTGAATGAGCGGCTGATCA GGTAC CT GTCGG AG TGTT
GCATGG GA A- CG---- TAAG- ------
GAM30377 4333 TCATGAAGTTCAAGCCTGAC A TC ---- AAAC T AGGTC
3 TGTGTAAACGTTGAAGAGGT TCATG AGT AAGCC TGACTGTGT GT GAAG
CCTTCCACACATGGTTGTCT AGTAC TCA TTCGG GTTGGTACA CA CTTC
TGGCTTCCACTACATGA A CC TTCT ---- C -----
GAM30385 5498 TCATGGATAACTGTGAGGAG - AC GA CTA- - ATA A- ATTAGA
6 CTAATCCCTGAATATCTGAA TCATGG ATA TGT GGAG ATCC CTGA TCTG ACTTC
CTTCATTAGAGGGGTGGTAG AGTGCC TAT ACA TCTC TAGG GGCT AGAT TGGGG
ACTCGGAGGATCTCCCTCTA C -- AA CCTC A C-- GG ------
AACATATCCCGTGA
GAM30389 1142 TCATGGTTTAAATGAGGAAC TTAAAT---- AC- AGTAAATCA
3 AATCAGTAAATCAGATTCTG TCATGGT GAGGA AATC
TCCTCTTCTCTGCATACCGT AGTGCCA CTCCT TTAG
GA TACGTCTCTT GTC ---------
GAM30393 5532 TCATGTTACATACGTCTTAC ACATACGTC TGCACGTTACCCCAAT
4 AGTGCACGTTACCCCAATCT TCATGTT TTACAG
GTGAAAATAAACCAACATGA AGTACAA AGTGTC
CCAAATAAA ----------
GAM30394 19199 TCATTAAATCTTTCTTCCTG AAAT TCTTCC TT TA AGTACCT ACG
9 AATTTTCTTATCTTAATAGT TCATT CTT TGAA TTCT TCTTAAT CTGGAT
ACCTCTGGATACGGTTCAGT AGTAA GAA ACTT AAGA GGAATTA GACTTG
CCCCATTAAGGCCAGAATTT AT-- TTAA-- T- CC CCCCT-- ---
CAAATTAAGTAAATGA
GAM30399 20851 TCATTCAAAAATCCTTCATC AT AAAA CCT- G AAGGGA
0 CTTTGAGGGGAAGGGACCGC TC TCA TCCTTCAT TTGAG GG
TCAGTTATGTGAAGGAGATG AG AGT AGGAAGTG GACTC CC
ACAGA AC AG-- TATT G ------
GAM30402 3842 TCATTCCTATGCTCAATGTC - CT A T TTT AACC

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0          AAGGTTTAAATTAACCAATT TCATT CCTATG  CA TG CAAGG   AAATT
           TTCCTTGCAGTGTCATGGGA AGTGA GGGTAC  GT AC GTTCC   TTTAA
           AGTGA               A     T- G -    T--    ----
GAM30402 8907   TCATTCCTCCTCCTGCCCAC   TTCCTC  C    CCAC    CCTCCCTTTAAATATTT
1          ACCTACCTCCCTTTAAATAT TCA     CT CTGC    ACCTA
           TTTAGGTTGCAGAAGCACAG AGT     GA GACG    TGGAT
           CTGA              CGACAC  A   T---    -----------------
GAM30409 2689   TCATTGTGTACTTTGATATC    T---    CT   T-     ATTTTCTTAACCTTGTGTG
7          AGTATTTTCTTAACCTTGTG TCAT    GTGTA  TTGA  ATCAGT
           TGACTGGTTTTCAATATATA AGTG    CATAT  AACT  TGGTCA
           CCCCCGTGA            CCCC    AT    TT    -------------------
GAM30409 6521   TCATTGTGTTTGCTCTGATT      G-      TGATT   ACAT     -   AGTCT      ACTG
9          GTCTACATTAGCTCATATCA TCATTGT  TTTGCTC    GTCT    TAGCTCA TATC     TTTGAAC
           GTCTTTTGAACACTGGTTCA GGTGATA  AGATGAG     TAGG    ATTGGGT GTGG     AAACTTG
           AATCTGGGTGTTGGGTTAGG      AG      TAGTC   ----      T   GTCT-      ----
           ATCTGATGAGTAGAGAATAG
           TGG
GAM30410 1162   TCATTGTTAAATTAAAATTT     G   A   AAAA    T    A    ----   GCTTAA
1          TTTTTTTTACTTGGATGGCT TCATT TTA ATT    TTTTT TTTTT CTTG    GATG
           TAACATTTTTGCAAGAAAAA AGTAG AGT TAG    AAGGA AAAAA GAAC    TTAC
           TAGGAAGATATGAAGATGA      A   A   ----    T    -    GTTT    ------
GAM30414 9870   TCATTTCACATAAGGCCCTT    TT--   AT-     --------    ATATAGA
3          AATATAGATAAGTAACATTT TCAT    CAC   AAGGCC       CTTA
           GGCCTTTTGGTGTCTCGTGA AGTG    GTG   TTCCGG       GAAT
                            CTCT   GTT     TTTACAAT    -------
GAM30414 9399   TCATTTCATCTTTGTGCTTT    T    CTTTGTGCT      -    -    G   CAAG
7          GGTTAACAAGCAGGCTCAAG TCA TTCAT        TTGGTTA ACAA GCAG CT
           AGACTGCTTTGTGTAATTAA AGT AAGTA        AATTAAT TGTT CGTC GA
           ATGAATTGA            T    ---------      G    T    A    ----
GAM30415 21398  TCATTTCCTAAGAGTTCTGG      CC     TT     TACATA   T    ATTTT
2          TTTACATACTATAGTAGATT TCATTT  TAAGAG  CTGGTT     CTA AGTAG
           TTCTACTTGGGGGACTAGCT AGTAAA  ATTCTC  GATCAG     GGT TCATC
           CTTATAAATGA             T-     --     GG----   -     -----
GAM30415 20038  TCATTTCTACCAATAATTTC         ------  A  AA      T    AATG
5          AGATGTTTAATGGGACTTTG TCATTTCTA      CC AT  TTTCAGA GTTT
           AAAAGATAGGAAAAAATAGA AGTAAAGAT      GG TA  AAAGTTT CAGG
           AATGA                   AAAAAA  A  GA      -    ----
GAM30417 4087   TCATTTGCTGGCCATCGGAT     T  TG    --      GG   A    A    TG     C T   ACAACCTCTAC
3          TGGGGATCTATATTGGAAGG TCATT GC  GCCA  TCGGATT  GG TCT TAT  GAAGG G CTG
           CGTCTGACAACCTCTACCAG GGTGA TG  TGGT  AGTCTGA  TC AGA GTA  TTTCC C GAC
           CACCTTTTGATGAAGAACTG     T  CT    TC      GG   A    A    GT     A -   -----------
           GAGTCTGACTTGGTTCGTTA
           GTGG
GAM30419 18569  TCATTTTACAGATGAGTTTA    TT--    G          CTAG    T   CTTT
2          TGCTAGCTGTGCCTTTGCTC TCA    TTACA ATGAGTTTATG    CTG GC
           AGAGATCATAAATTTATGTG AGT    AGTGT TATTTAAATAC    GAC CG
           TGATCTTTGA            TTCT    G          TAGA   T   ----
GAM30419 5566   TCATTTTCGAATAAAAATAC     -   G     A    -    T    -   CTAGGGA
7          TATGTCTTGTACTAGGGATA TCATT TTC AATAA AATA CTA GTCTT GTA
           CAAAGACTTGGTTATTCTTG AGTAA GAG TTGTT TTAT GGT CAGAA CAT
```

TTGGAGTAATGA T G C T T A -------
GAM30423 6368 TCCAAAAGTGAGCCCAGGGT GTGA G G G GGTAGAGGAGA
9 GTTGGGTGGTAGAGGAGAGC TCCAAAA GCCCAGG T TT GGT
TGGAGACCTGGGCGAGTTTT AGGTTTT CGGGTCC A AG TCG
GGA GAG- - G G ----------
GAM30424 9216 TCCAAACCCGGTACATTGTC CA C AC AG TTTCCTCGGTTCACCT
7 AGTTGCTTTCCTCGGTTCAC TC AACC GGT ATTGTC TTGC
CTGCAGTCGGCGATCCACCA AG TTGG CCA TAGCGG GACG
GGTTCTGA TC A CC CT ----------
GAM30431 3675 TCCAACTTTGTGGAATGGTA T-- GAATG- AGG AGGG GGCCA
3 AGGATTTTTAGGGTTGTTTG TCCAACT TGTG GTA ATTTTT TTGTTT
GCCAGAACAAGAGAAATAAC AGGTTGG ACAC CGT TAAAGA AACAAG
TGCAGAAAACACATATGGTT TAT AAAAGA CAA G--- -----
GGA
GAM30431 9431 TCCAAGAAGCACATTGCATT A- C TG TTT T TCTCCTTAGTCT
6 TGGCTCACATGTCTCCTTAG TCC AGAAGCA AT CA GGC CACATG
TCTCATGTGGTCTGTGATTG AGG TCTTTGT TA GT CTG GTGTAC
TTTCTCAGGA AC - GT --- - ----------
GAM30432 21361 TCCAAGAGATAGCAAATCGA AGATA AA TAAATA GAGAAAGACG
7 GTCTTAAATAATCCGGGGAG TCCAAG GCA TCGAGTCT ATCCGGG
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GAGGTGCAGCCTTGGA CGA-- GG ------ ----------
GAM30435 6552 TCCAAGTACCACGGGGTATC GTA G A- -- AGCTTTTTA
9 CTAATAGCTTTTTAATTAGA TCCAA CCAC GGGT TC CTAAT
TGAAAGCCCAGTGGGAATTG AGGTT GGTG CCCG AG GATTA
GA AAG A AA TA ---------
GAM30437 18602 TCCAAGTTCCTTTTTATTCA A TC TCAA AT- GAAC
2 AATGAATCAGAACTGCAATC TCCA GT CTTTTTAT ATGA CA
ATAAACATAAAAAGACCTGG GGGT CA GAAAAATA TACT GT
G C -- CAAA AAC ----
GAM30440 1563 TCCAATTGTGCTCAAATCTA --- TCAA CATT CTTC
6 TAGCATTTTGTTGCTTCCAA TCCA ATTGTGC ATCTATAG TTGTTG
CAATTTATGGGTGTTTGCGC AGGT TGACGCG TGGGTATT AACAAC
AGTGAGTGGA GAG TTTG T--- ----
GAM30441 19896 TCCACAATGAACACAAGTGT A AA-- - GTG T T A-- T TCAT
6 GTTGTTGTCTTCTATCTTCT TCCAC ATG CA CAAGT TTGTTG CT CT TCT CT
TCATGGCAGACTCAGTGGTC GGGTG TAC GT GTTCA GGCGAC GG GA AGA GG
AGCGGAAACTTGATGATAGC A GATA A AA- T T CTC C ----
ATAGTGGG
GAM30444 8163 TCCACATCTAAGCTATGCAG CA -- A TG CATCCCCAC
3 TGCCTCATCCCCACAGGTGC TCCA TCTAAGCTA TGC G CCT
AGCGATTGGTTTAGGAATGG GGGT GGATTTGGT GCG C GGA
G AA TA A GT ---------
GAM30444 3861 TCCACATGCGTGTGGCAGCC AC TG C AG ----- TG AGGA
9 CAAGGCTTTGTTGTAGGAGC TCC ATGCGTG G AGCCCA GCT T TTGT
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ATTCCATGTATCGGGA GC CT A A- TTGTC GT ----
GAM30446 5529 TCCACCAGTACAGGGAGCAG AG- A GA AA GAAGG
9 ATCAAACGGGTGAAGGACTC TCCACCAGTAC GG GCA TCA CGGGT
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TGGTGGG GTA - GC AG -----
GAM30451 6269 TCCACGATGAAAATTCGGAT - GAAA GT CTGA CGTG
TAAAATTCTTGGACAAGCT
0 GTCGCTGATCCCGTGGGCGG TCCA CGAT ATTCGGAT CG TCC GGCGGGG
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GAM30454 14349 TCCACTGTCAAAGGAACATG C AA---- C ATGTG ACCTGTA
2 GTATGTGTCCTACCTGTAAG TCCA TGTCA GGAA ATGGT TCCT
GAACCATTTCCCAAATCTGA AGGT ACAGT CCTT TACCA AGGA
CATGGA - CTAAAC - ----- -------
GAM30456 3913 TCCAGAAACTCCCTGGAATT AAA- T ATTAA TGTT G CAAG
1 AATCTGTTATGGTAGCAAGC TCCAG CTCCC GGA TC ATG TAG
TGACATTTTGAACTGTCCTG AGGTT GGGGG CCT AG TAC GTC
GGGGGCTGTTGGA GTCG T GTCA- TTT- A ----
GAM30456 16455 TCCAGAAAGCTGATGGTGTG AG- TGA --- -- - CTACCTGAA
4 CCCGTCTACCTGAAACGAGG TCC AAAGC TGGT GT GCC CGT
CCTGCCTGACCAAATGCTTT AGG TTTCG ACCA CG CGG GCA
ACCGGA CCA TAA GTC TC A ---------
GAM30463 18124 TCCAGATCTTCAGTGTCTAT G T CTATT T C AGAAAG
9 TGGATTTTTCCAAGAGAAAG TCCA ATCT CAGTGT GGA TTTT CAAG
TTTGTAAAATTCCTTACACT AGGT TAGA GTCACA CCT AAAA GTTT
GTAGATGTGGA G T TT--- T T ------
GAM30469 6524 TCCAGCTGCATAGTAATCCA CT TAATCC TATAT TA ATA
9 GTGTATATATGTACCATAGG TCCAG GCATAG AGTG ATG CC
CCATTCAATCACTCTCTATG AGGTT CGTATC TCAC TAC GG
CTTGGA -- TC---- TAACT C- ---
GAM30470 20943 TCCAGGAAAACCCACAAAAG - AA AAAGGGGGTGA TG TGTGGGTTAAGT

7 GGGGTGAGTGGGCTGTGGGT TC CAGGA ACCCACA G GGC
TAAGTGCCTGTGATATTGAG AG GTTCT TGGGTGT T CCG
AATGTGGGTGCTCTTGTGA T CG AAGAGTTATAG GT ----------
GAM30474 12335 TCCAGGCCATGGGGCAGCCC - G- A TGG - - AC - CCGCGCA
6 TGGGCGGCTGGGAGCACGGA TCCAGGCC ATGG GC GCCC GCGGC TGG GAGCACGG GGGGC
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CGGGGCGCCCGCGCAGCTGC AGGTCCGG TGCC CG CGGG TGTCG GCC CTCGTGCT CTCCG
CG
CTCTCGTGCTCACCGCGCTG G GG C --- C A -- T -------
TGGGCCGCGGCCGTGGGCCT
GGA
GAM30474 18044 TCCAGGCCCTGAGTGAGACC - AG A A GTAATGGGGGAG
8 ATGTTGTAATGGGGGAGAAC TCCAGGCC CTG TGAG CC TGTT
AGGCTTGGCAGCGGTCTGGG GGGTCTGG GAC GTTC GG ACAA
C G- - - ----------
GAM30477 19060 TCCAGGGTTAGTTTTTGTAG - --- TT A- TC- CCCG
8 CCTCGGCTGGCCCGTCGGCC TCCA GGGTT AGTTT GT GCC GGCTGG
TTTGGCACGCTCGAACTTCC AGGT CCCGG TCAAG CG CGG CCGGCT
GGCCCTTGGA T CCT CT CA TTT ----
GAM30477 1461 TCCAGGGTTAGTTTTTGTAG - AGTT- T C G - CGTC
9 CCTCGGTGGCCCGTCGGCTC TCCA GGGTT TTTG AGC TC GTG GCC

ATGGACGCTCGAACTTCCGG AGGT CCCGG AAGC TCG AG TAC CGG
CCCTTGGA T CCTTC - C G T ----
GAM30478 22340 TCCAGGTCGGCTGGAGTCAG - - ------ ---- C TTCTAA ACACTTTTA
2 GGCACCTTCTAACCTTACAC TC CAGG TCG GCTGGAG TCAGGG ACC CCTT
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TTGGTTTCTTCCAGCTTCAA A G TAACTT CTTT - TACACA ---------
TCGAGCCTGAGA
GAM30480 22306 TCCAGTATTGAGACCAGTTC TATT C-- - AA - AAACATT- CAT
7 ACTAGAAGAAACAAACATTT TCCAG GAGA CA GTTCACTAG GA AAC TCTGC
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GAM30482 4078 TCCAGTGACCTGGGAAGCGA TGA GGAAG - AGG AATTTGGG
8 AGAAGAGGAGGTGGAATTTG TCCAG CCTG CGAAGAAG AGG TGG
GGCCAGGACTTACTTCTTTG AGGTC GGGT GTTTCTTC TTC ACC
ACATGGGGATCTGGA TAG ACA-- A AGG --------
GAM30484 9177 TCCAGTTCATATTGTTCCAG AGT ---- AGAG A TAACAT
8 AGTCATGTAACATCAAGGGG TCC TCATAT TGTTCC TC TG
GGGACACAAAATATGATAGG AGG AGTATA ACAGGG GG AC
GA GAT AAAC GG-- A ------
GAM30486 16724 TCCAGTTTTTGGACAGAATG A- C- TG--- -- CAAG
6 CGGGCTGCCGGCAAGTTGGA TCC GTTTTTGGA AGAA CGGGCTG CCGG
CCAGCCTGATCGTTTCTCTT AGG CAGAAACTT TCTT GTCCGAC GGTT
TCAAAGACCAGGA AC TC TGCTA CA ----
GAM30487 20424 TCCATAAATCCTTGATGATT TAAA - A --- TTTTTC CCGACCC
0 GACAACACCCATTTTTCCTT TCCA TC CTTGATGATTGAC ACA CCCA CTTTTG
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GGGAGTTGTAGTTAATCATC TTA- A A TGA TTT--- -------
AAGAGAATTTGGG
GAM30487 2714 TCCATACTCCAAGGCCAAAG C AAG- CAAAG GA- AGTT
8 TTCTTGATCTGGAGAGTTTT TCCATA TCC GC TTCTT TCTGGAG
CTAGAGATGAGAAGCAAAGG AGGTGT AGG CG AAGAG AGATCTT
GAATGTGGA A GAAA ----- TAG ----
GAM30488 1582 TCCATAGCCCTGGTTTGGGG A T T --- TTCGTTGTTTC
1 CCCGGGTTCGTTGTTTCCCC TCCAT GCCC GGTT GGGG CCCGGG
GGGGCTTCCCAGCTGGGTGG AGGTG TGGG TCGA CCCT GGGCCC
TGGA G - - TCG ----------
GAM30489 20867 TCCATATTTATTTATGGATT -- TG GGT GCAA G- AAA T AGTTAA
4 TTTTTGGTACCTTTTTGCAA TCCAT ATTTATTTA GATTTTTTT ACCTTTTT ATGAT GT CA GG
ATGATGGTAAACATGGAGTT AGGTA TAAATAAAT TTGAGAAGA TGGAAGAG TATTA CA GT CC

AAAACCTGAGAACAGATTAT AT -- AT- AAAA GA AGA - ------
AAAAGAGAAGGTTAAGAAGA AA
GTTTAAATAAATTAATGGA

--
GAM30489 19013 TCCATATTTGATTGAATATC T TGATT A A CCC - AGAA AGATCGA
5 CTATAGACCCTGTTACACAA TCCA ATT GAAT TCCT TAGA TGTTAC ACA TTTA
GAATTTAAGATCGATGAAGA GGGT TAG CTTG AGGG GTCT ACAATG TGT AAGT
ATGTGGTAACAAATTCTGGG T TT--- A - TAA G AAG- -------

GAAGTTCTTGATTTGGG
GAM30491 9888 TCCATCATGTCTGGAGTTAC TC - TG G -- T - T TATT - C- CTTGT
1 GCTGTTCTTTATGTATTGAG TCCA ATGT C GA TTAC GC GTT CTT ATG GAGA GAA TGTTT
AGAACTGTTTCTTGTAAGCA GGGT TACA G CT AATG CG CGA GAA TAC TTCT CTT ACGAA
TCTTCATCTTCTTCCATTAA CT A GT - TA - T T CTTC A CT -----
GTAGCGCATGTAATCTGGAA
CATTCTGGG
GAM30491 9641 TCCATCCAGTTGGGCAGCAG T GC C A T - GGCC
5 GGAAAGGCTAGGTGGGCCCA TCCA CCAGTTGG AG AGGGAA GGC AGG TG
GCCTGCCCTTCCTTCCTCCA AGGT GGTCGACC TC TTCCTT CCG TCC AC
GCTGGCTGGA C -- C C - G ----
GAM30492 19861 TCCATCCCTTCCGGCTCCCT C - CTACCCCT TC--- -- TTCTCTCT
1 ACCCCTCACTTCCAAGGGTT TCCATC CTTC CGGCTCC CACT CAAG GG
CTCTCTCCTGCTTGCGCTTA AGGTAG GAAG GTTGGGG GTGA GTTC CC
GTGTCCTACATGGGGTTGTG C T TACATCCT TTCGC GT --------
AAGCGATGGA
GAM30494 20647 TCCATGACAACCTTAGGTCT ACA T C-- AC- AATCTGC
7 CTTGACAGGAATCTGCCCTA TCCATG ACCT AGGTCT TTG AGG
AACAGCCAGGACTTGGGTCA AGGTAC TGGG TTCAGG GAC TCC
ACATGGA AAC - ACC AAA -------
GAM30495 21673 TCCATGCAATGTGAGCCGTG T AAT - -- AAT AATACA
4 TGGCAATCCAATACAGGGCC TCCA GC GTGAGC C GTGTGGC CC
ATACCCGCGCTTATTTGGCT AGGT CG TATTCG G CATACCG GG
GGA - GTT C CC --- ------
GAM30497 6412 TCCATGGATTTAAATAAATA - TG A -- TT CTTTTATAACAT
1 AAATTTAATTCTGCCTTTTA TC CA GATTT AATAA ATAAAAT AATTCTGC
TAACATGCAGGGTTGTTTTA AG GT TTAGA TTGTT TATTTTG TTGGGACG
TGGTTGTTGAGATTTGTGTG T GT G GG -- ----------
A
GAM30498 8924 TCCATGTGGATGCTGCCTCA T CT - ---- ACA AGTGA
8 GACAAAGGCAGTGAGCCTTC TCCATG GGATG GC CT CAG AAGGC
CCTGCCAAAGTGCCCATCCC GGGTAC CCTAC CG GA GTC TTCCG
ATGGG - C- T AACC CC- -----
GAM30503 20486 TCCATTGGATGTTGTTTATC C - CAATATCA AC TTACAATT
2 AATATCAACAGTACCCAGTT TC ATTGGATG TTGTTTAT ACAGT CCAG
ACAATTCTGGACTGTCATAA AG TGACCTAC GATGAATA TGTCA GGTC
GTAGTCATCCAGTAGA A T C------- -- --------
GAM30503 3652 TCCATTGTTTAAAAATAAGT GTTTAAAA AG AAA ATA - TA CTCT
7 CTTGGAAACTATAGTATTGT TCCATT ATA TCTTGG CT GTA TTG GCTGTT
AGCTGTTCTCTAACAGCACC GGGTGA TAT AGGACC GG TAT AAC CGACAA
AATTATGACGGGAACCAGGA AG------ CA AAG CAG T CA ----
ACTATGAAGTGGG
GAM30504 18683 TCCATTTCAGTTTTATAGAG -- T GAGGG TAATTATT
4 GGCAGTAATTATTCTGATGA TCCATTTC AGTTT ATA CAG
ATGTTGAATTAAGAAATGGA AGGTAAAG TTAAG TGT GTC
AA T AAGTA --------
GAM30506 18148 TCCCAAACTGCTAGGATTAC ---- AG TTAC G A CACTGC
9 AGGCGTGAGCCACTGCGCCA TCCCA AACTGCT GA AGGC TG GC
GGCCTTCTCAGCAGTTCTTG AGGGT TTGACGA CT TCCG AC CG
TGGGA GTTC CT ---- G - ------

GAM30510 18454 TCCCAAGCCTGCCAACGTGA C CAACGTGAA A ATCAG
4 ATGGCTTGCAGAATCAGTCA TCCCAAG CTGC TGGCTTGC GA
GCAGGCCAGCGGCCTTGGGA AGGGTTC GGCG ACCGGACG CT
C --------- A -----
GAM30510 9851 TCCCAAGCTTGGGGTGGGCA GCTT GG A- AAG GATC
6 ATGTAGGCAAGTCGATCGAG TCCCAA GGGGTG CA TGTAGGC TC
CTTGCGGCTGACACCCTTTG AGGGTT TCCCAC GT GCGTTCG AG
GGA ---- A- CG --- ----
GAM30511 8506 TCCCAATGCTACACAACCAG CA C AAC TA----- T A GAAAATGA
8 AAAGTAAGGTGTTCTACTTG TCC ATGCTA AC CAGAAAG AGGTG TCT CTT
AAAATGAAAGGAGATTATTT AGG TACGGT TG GTCTTTC TTTAT AGA GAA
GCGGTATCTTTCTGAAGTTG TC - AA- TATGGCG T G --------
GCATCTGGA
GAM30514 20402 TCCCACCCCCATGATTCAGT ---- - ATTC TT TCCCCCCG
7 TACCTCCCCCCGGGTCCCTC TCCCA CCCC CATG AG ACC
CCACATGTGGGGATCATGGG AGGGT GGGG GTAC TC TGG
A ACTA T ACCC CC --------
GAM30515 18558 TCCCACGTTGAGGGTCTCGA - - GA C AGGAC A-- TCTCTT
9 GGACGCCTAGATCTCTTTCC TCCCA C GTT GGGT TCG GCCT GA
CAGGGCCATGGCGAACCCGA AGGGT G CGA CCCA AGC CGGG CT
AGCTGCTGGGA C T AG - GGTAC ACC ------
GAM30518 2845 TCCCAGAGTGTACTTAGAAA - TAC AAACATGAAAA TGAA
9 CATGAAAACTTCTTTGAAAG TCCCAGA GTG TTAG CTTCTT
GGAGCTGATCACTTTTGGGA AGGGTTT CAC AGTC GAGGGA
T T-- ---------- ----
GAM30520 21393 TCCCAGCACTTTGTGGAGTG --- A -- G A GCAA
5 CCTGATGTGCAAGCGCGGGA TCCC AGC CTTT GTGGAGT CCTG TGT
CTCCACGGGAAGGGCTCCAG AGGG TCG GAAG CACCTCA GGGC GCG
GGA ACC G GG - - ----
GAM30524 9646 TCCCAGGCTATGTGGCCACT ATGT AC GTA AGTGA
1 GGATGTAGGCAGTGAGCTGA TCCCAGGCT GGCC TGGAT GGC
GTCCAGGCTTTCGGTCTGGG AGGGTCTGG TCGG ACCTG TCG
A CTT- -- AG- -----
GAM30527 5602 TCCCAGTTTGGTAGCTGAGG TTT TA GA CTAAAAAAACAA
1 AGGAGTCTAAAAAAACAAGC TCCCAG GG GCTGAGGAG GT
CATTCCTCAGTATCCCTGGG AGGGTC CC TGACTCCTT CG
A --- TA AC ----------
GAM30527 21132 TCCCATAGGGGAGGCAGACT AT- GCAGA- G CC C AGTGT
5 GCTGTGCATCACCCTGCTGA TCCC AGGGGAG CTGCT TGCATCAC TG TG
GTGTCATCAGTGATGCAGAG AGGG TCTCCTC GATGA ACGTAGTG AC AC
TAGCAGAAGCTCCTCTCAGG GAC GAAGAC G -- T -----
GGA
GAM30528 18056 TCCCATCCTCCGTGCCCCCG CA- C----- C-- TTACCTACTC
1 CTTACCTACTCGCGACTGGG TCC TCCT CGTGCCC CGC
TACGCACCCCAGGACCCGGA AGG AGGA GCATGGG GCG
CCC CCCCAC TCA ----------
GAM30529 12521 TCCCATTAGGTGCCTTTGCA T--- TT ATTG T TTTG
9 TTGGTTTGGCTTTGGCTACA TCCCATTAGG GCC TGC GT TGGC
CAGCACTGGTTGTTTCTGGT AGGGTGGTCT TGG ACG CA ATCG
GGGA TTGT TC A--- C ----

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GAM30531 20204  TCCCCAAAGCCCTTCTTCAC  -   ---  - -----   CT-  - CCCCTT
4          TTTGTGTCCCCTTGCTGCGA TC CCCAA  AGCC CT   TCTTCA  TTGT GT
           TCATGGAGAGTTAAAGAGGC AG GGGTT  TCGG GA   AGAGGT  AGCG CG
           TTCCTTGGGAGA        A   CCT   A AATTG    ACT   T ------
GAM30532 5864   TCCCCAAGGAGAACTTCAGT    AA    CTT GTTG   -    A--   A   C- - TCAAAT
6          TGCTTGACTCGTTGGATCAC TCCCC  GGAGAA  CA   CTTGAC TCGTTGG  TCACA CCGAG  TAA
AGC
           AACCGAGCTAAAGCTCAAAT AGGGG  TCTCTT  GT   GAACTG AGTAATC  AGTGT GGTTC  ATT TCG

           TGCTCTTAAACTTGGTGTGA    G-    ACT  AA--    T    GTC   -   AA  C ------
           CTGCTAATGATGTCAAGAAT T
           GTCATTCTCTGGGGGA


                    -
GAM30533 3134   TCCCCACGTGCCTGTGGCAA   - ACG   G  C     G    AGCAGAGA
9          GGTCTGTGGTGAAGCAGAGA TCC CC   TGCCT TGG AAGGTCT TGGTGA
           TTATCAAGGCTTTCCAGAGG AGG GG   ACGGA ACC TTTCGGA ACTATT
           CAGAGGAGGA          A AG-   G  -    -   --------
GAM30534 8558   TCCCCAGACTTCCAAGCAAG   -    CTT  AA  A--     CT  - TAAC
9          GTGGGCTGGCTAACGTCCCT TC CCCAGA   CC  GC   AGGTGGG  GG C
           CCTACCTGTCGCAGGTTATC AG GGGTCT   GG  CG   TCCATCC  CC G
           TGGGTGA            T    ATT  A- CTG     TC  T ----
GAM30535 6428   TCCCCAGCTGATTAGTGTCT   -  - TGAT   -  T    TGATC   ACT
7          AAGGAATGATCCAATACTGT TCC CCAG C   TAGT GTC AAGGAA    CAAT
           TGCCCTTTTCCTTGACTATT AGG GGTC G   ATTA CAG TTCCTT    GTTG
           ACACTGCCTGGAGGA       A   C TCAC   T  -    TTCCC   ---
GAM30536 12646  TCCCCAGGTATTAATTTTCA    AG--    AATTT  A  TACTAATAACTTATC
1          ATGGTACTAATAACTTATCC TCCCC   GTATT    TCA TGG
           CAATGGTAAAAAATGCAGCC AGGGG   CGTAA    GGT ACC
           GGGGA               CCGA    AAAAT  A ----------
GAM30538 786    TCCCCCAGTTCTCCTACTCG    -    C  CTAC    A   --  G   AGG
8          GCAGCGGCACGGCTGAGGCG TCCC CCAGTT TC   TCGGC GCGG  CAC GCTG
           GCGGTGGACTGCGCTGGACG AGGG GGTCGA AG   GGTCG CGTC  GTG CGGC
           ATAGCTGGAGGGA         A    T CA--   -   AG  G   ---
GAM30539 3082   TCCCCCCAACAAAAGGATAG  CCCCCCAACAAA  -  TGT   GCTCA-   AT  A C  C
TACCC
4          TGTCACATGCTCAAACCATT T         AGG ATAG   CACAT    AACC  TTA GT TTG AGTGTAGT
           TAAGTCTTGCAGTGTAGTTA A         TCC TATC   GTGTG    TTGG  AAT CA AAT TTACATCG

           CCCTCTGTTGTTACTGCTAC  CAAAAAATAAA-  A   CTT   TTACTC   --  A  -  C     -----
           ATTCTAAACATAAGGTTCTC TCTGTTGTTACT
           ATTGTGTGTTCCTATACCTA
           AATAAAAAACA
                    ------------
GAM30540 19818  TCCCCCGACGGGCGGCTCAT   CCGACG  G   ATCG   GC   GA   AGAC
1          CGTGTCTGCCAGTGATGACA TCCC     GGC GCTC   TGTCT  CAGT  TGACA
           AGACTGTTAAGCTGTGGGAC AGGG     CCG CGAG   ACAGG  GTCG  ATTGT
           AAGAGCAGCCGGGA        ------ A   A---    GT   A-    ----
GAM30540 18571  TCCCCCGCCCCCCGGGAGGG   -    C-  ---------        T    ATT    CAAC  GAAA
3          GGAATGGGATATTGATTTTC TCC CCCGCC  CCC       GGGAGGGGGAA GGGAT   GATTTT   CC
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          AACCCGAAAGGAGAAGTTGT GGG GGGTGG  GGG       CCCTCCTTCTT CCCTG   TTGAAG   GG

          CCCTTCTTCCTCCCCCGCTC   A     AA   AGACTCGCC         -    ---     A--- ----
          AGAGGGAAGGTGGGAGGG
GAM30541 18895  TCCCCGAAGGTCCCACCATC      AA---     A-     CCGC   AACTC
3          CCCGCAGGAACTCCCTGGAT TCCCCG    GGTCCC  CCATCC    AGG
          GGAGGGGGCCGATCCCGGGG AGGGGC    CCGGGG  GGTAGG    TCC
          A                  CCTAG     GA     ----  -----
GAM30545 4334   TCCCCTCTTTCTGTACCCCC           A----------      -  TTTTCAC
7          CACCATTTTCACTGGCTGGG TCCCCTCTTTCTGT         CCCCCCA CCA
          GGGCTCTCTTTTTCGCGGGA AGGGGGGAAGGGCG         GGGGGGT GGT
          AGGGGGGA                  CTTTTTCTCTC      C  -------
GAM30547 3116   TCCCCTGGGCTGGCCTGGCT   C TG    GC--     GACG-- A    AA-   -  C    TG --  AGGA
4          GACGGCAGCTGCAAGGGGAT TCC C  GGCTG    CTGGCT     GC GCTGC   GGGG ATG GCAC  C
AGG
          GCGCACTGCAGGAGGACCTG AGG G  CCGAC    GACTGG     CG CGACG   CTTC TAT CGTG  G  TCC

          GGTGGTGCTATACTTCACAG    T GT    AGTC     AGAAAA  A    ACA    A  -   GT GG  ----
          CAGCAGCAAAAGAGGTCAGC
          TGACAGCCTGGTGGA
GAM30547 14653  TCCCCTGGTGAACATACTGG    C      C    T----------------- AGGC
7          AGGCCCACACGAGCCTAACA TCCC TGGTGAA ATAC              GG
          GGCTGTGTCTTTACCAAGGG AGGG ACCATTT TGTG              CC
          A                 A      C    TCGGACAATCCGAGCACA  ----
GAM30547 4529   TCCCCTGGTTTCTTGTCGGC   C  T   T    G    C  --      A  CTTG
8          TGTGCTTGATTCTTGAACAG TC CC GGT TCTT TCGG TG  TGCTTG TT
          GTAACCACTTGAGAGGATGC AG GG CCG AGGA AGTT AC  ATGGAC AA
          CGGCGA             C  -  T    G    C  CA     -  ----
GAM30548 12804  TCCCCTGTGATAATGTCAGC     ---     TAA  T     C    CCTCCTCC
0          AGCTGTCCCTCCTCCGATAC TCCCC   TGTGA   TG CAGCAG TGTC
          CTGCTGCCAACTCACGTCTG AGGGG   GCACT   AC GTCGTC ATAG
          GGGA                TCT     CA- C     C    --------
GAM30550 6601   TCCCCTTTAATTTTAACCCC        ----     TAA        GAATTTCTG
1          GGGGCGAATTTCTGGCCCCG TCCCCTTT    AATTT   CCCCGGGGC
          GGGGCAAATTCCCCAGAGGG GGGGGAGA    TTAAA   GGGGCCCCG
          GG                  CCCC     CG-        ---------
GAM30554 9358   TCCCGGCCGAGAGGCATCAC     --    A--     ATCACA   T    TTC
6          ACCCTTGGGTTCTCCACGGG TCCCG  GCCG   GAGGC     CCC TGGG
          CAGGCTTCAAGCGGCACCGG GGGGC  CGGC   CTTCG     GGG ACCT
          GG                  CA    GAA    GAC---   C    ---
GAM30555 8955   TCCCGGGACTGGCGGAGGCC        CTGGC  A     --     - GACC
2          CCGCCCTGCGACCGCCGGGG TCCCGGGA     GG GGCCCC  GCCCTG C
          CTCGGGGCCACCTCCCGGGG GGGGCCCT     CC CCGGGG  CGGGGC G
                             -----  A     CT     C ----
GAM30556 9038   TCCCGTCCACGTTGCTGTGT     TC    TT    T  C   A   -    --       CCT
0          CGTGAGGTGCAGCGGGTCAC TCCCG  CACG  GCTG GT GTG GGT GCAG  CGGGTCAC
          CCTGTGGCCCGTCCTGTGAC AGGGT  GTGC  CGAT TA TAC CCA TGTC  GCCCGGTG
          CCATATTTAGCCGTGTTTGG     TT    --    T  -   -   G    CT       ---
          GA
GAM30556 12574  TCCCGTTTCCCTGCTTTGGC    --     C   TT     AA--     A-    CGAAT   A   CCTGC
```

8 CAATGGAGGAGCTACGAATG TCCC GTTTCC TGC TGGCC TGGAGG GCTA GGC CGA
GCACGACCTGCTCGAGCTTG AGGG CGAAGG ACG GTCGG ACCTCT CGGT TCG GCT
GCAGTCTCCAGTTGGGCTGT TT T T- GTTG GA ----- A -----
GCATGGAAGCTTGGGA
GAM30559 20052 TCCCTAGCCTGCAGCGCGCC - T A G C G G C - ---- - G --
5 GCGCCCCCGGCCCCGCGCCT TCC CTAGCC GC GC CG CGC CCCCC GCC CG CGCCTG CACGAC
GCC CCG CC
GCACGACGCCGCCGCCTCCT AGG GGTCGG CG CG GT GTG GGGGG CGG GC GTGGGT GTGCTG
CGG GGC GG
GGTTCGGGGCTGTCGTGACC T T G G C A G C C CCCA T - TT
CTGGGTGCCGCGGCGGGGGG TCCT
AGTGCTGGGCGGCTGGCTGG
TGGA

GAM30560 14694 TCCCTCAACATGGATTTGTT CAACAT TTGA TT CCTA
9 TGATGTTTCCTCCTAAGGAT TCCCT GGATTTGT TG TCCT
TCAAGTTATAAATTTTTCAC AGGGA TTTAAATA AC AGGA
AGGGA CACTT- TTGA TT ----
GAM30563 3738 TCCCTCCTGGCCGACCCAGC T ---------- A- TT GGCC
6 CTTCATCCGGGCCTGGGTGG TCCC CCTG GCCGACCC GCC CATCCG
GCGGGGGTCGGCAACTACAA AGGG GGAT CGGCTGGG CGG GTGGGT
GTTAGGTGGGA T TGAACATCAA GG -- ----
GAM30565 8053 TCCCTCTAACACATTCTTCC AACACATTCTTC T ACAA GCCCA
0 CTTCTTCACAAACGGCCCAT TCCCTCT CCTTC TC ACG
GTCAGACGAAGGCTCAAGGG AGGGGGA GGAAG AG TGT
GGA ACTC-------- C AC-- -----
GAM30572 6620 TCCCTGGTGTGCTCCTGGAA - T A---------- AAGAT
8 GGAAGATCTTGGGGACCCCC TCCCT GGTGTGCTCC GG AGG
CCACCGGAGCACACCTAGGG AGGGA CCACACGAGG CC TTC
A T - ACCCCCCCAGGGG -----
GAM30573 22262 TCCCTGTCCAGCCTAAGCGT CT - ---- TA ---------- T AG AG CTCT
4 GCTTCTGTGTCCAGCTTTAA TCC GTC CA GCC AGCGTGCT TCTGTG CC CTTTA GC
GGCCTCTGCGTGAGGAAGGC AGG CAG GT CGG TCGCACGA AGACAC GG GGAGT CG
CACAGACTCCCAGCTGTCAG TT A AGTA -- CTGTCGACCCTC C AA G- ----
CACGCTGGCATGATGAGACT
TGGA
GAM30576 14629 TCCCTTCAGCTCTCCAGTGA TC- C GTTT---- TTCA C TTTCA
4 GTTTCAAGTTCAGAGCACTT TCCCT AGCTCT CAGTGA CAAG GAG AC
TCAGTCCTTGTCTTGTTTAT AGGGA TTGGGA GTCATT GTTC TTC TG
CTATTACTGAAGGGTTTCTA TCT A ATCTATTT TG-- C -----
GGGA
GAM30576 5592 TCCCTTCCCCAGATCTGCTC CT- A TC CC - TTCACA
9 CTCCCCTTTCACAGGTGGGA TCC TCCCC GA TGCT TCCC CT
TCGGCACTCAGGGGGTCTGG AGG GGGGG CT ACGG AGGG GG
A TCT A C- CT T ------
GAM30578 8672 TCCCTTGGGGGCAGCCTCGA --- ----- C T - C G C TC- TG A
1 GTGTAGTCCATTAGTAATCA TCCCTT GGGGGC AGCCT GAG GTA GT CATTA TAAT AGAT
CAGTT G C
GATTCCAGTTTGGACAGGGT AGGGGA TCCTCG TTGGA TTC CGT CA GTAAT ATTG TCTA
GTTAG C G

GGCTGGATTGTATATCTCGT TTG GGATC C T A T G C TAT GT G
TAGTAATGTACATGCTCTTC AGGGT
AGGTTCTAGGGCTCCTGTTA
GGGGA

GAM30579 4169 TCCCTTTATAATTTCAAAGT CC ATTT AA- CC TTC G TA- GTACAC
2 GCCCTATACTTCCACTGTCA TC TTTATA CA GTGC TATAC CACT TCATAG CTTATATTAATT

TAGTACTTATATTAATTGTA AG AAGTGT GT TATG GTGTG GTGA GGTGTT GAATGTGATTAA

CACTTCTCTAAATTAGTGTA AA GTGT GTG T- TGT G TGA ------
AGAGTTTGTGGGAGTGTGTG TTCTCTA
TGTGTGTATGTGTGTGTGTG
TGAAAAGA

GAM30579 3793 TCCCTTTCTGCCCACGACTC C CCCA AC- AGATA AAAAAGAAGGA
6 GAAGATAGGCAGCCAAAAAG TCC TTTCTG CG TCGA GGCAGCC
AAGGAGGCTGCCAAAGCTCG AGG AAAGAC GC AGCT CCGTCGG
ACAGCGGCCCAGAAAAGGA A CCG- GAC CGAAA ----------
GAM30581 21020 TCCGACCCAAGGGGGGTACA A C---------- G CA CAA C C AAACA
4 TGCAAGGCTTCCTCTAGTAA TCCG CC AA GGGGGTA TG GGCTT CT TAGT
ACAATTGTAGAAAGTCCACC AGGC GG TT CTCCCGT AC CTGAA GA GTTA
TGCCCTCGTTCACTTTTTAA C TCTACAAATTTTTCAC G CC --- A T -----
ACATCTGGCCGGA
GAM30584 9754 TCCGCATGTCCCTTCGCGGG CA T CGCG A GTG TG- GCAAGAACA
8 AAGGCTGTGGTGCTGATGGG TCCG TG CCCTT GGA GGCT GTGC ATGG
CAAGAACACCATGATGCGCA AGGT AC GGGAG CCT CCGG CGCG TACC
AGGCCATCCGAGGGCACCTG CC - ---- A AA- TAG ---------
GA
GAM30585 3430 TCCGCCCGCGGCTGCCGGTG ---- T C - A CCC CTCCCCT
0 CGAGCGGGGCCCGGCTCCCC TCCGCCC GCGGC GC GGTG CG GCGGGG GG
TCCTCCCCCGCCCGCCGCCG AGGTGGG TGTCG CG CCGC GC CGCCCC CC
CCGCTGTGATTGGGTGGA TTAG C - C C CT- -------
GAM30585 12316 TCCGCCTTCTGCAGGGTTCC C CA - --- C C TCC GC CTGA
7 CAGGCCCCCGCTCCAGGCCG TCCGCCTT TG GGGTTC CCA GGC CC GC AG CGGG
GGCTGACCCGACTCGCTGGC AGGTGGAA AC TTCAAG GGT TCG GG CG TC GCCC
GCTTCATGGAGAACTTCCAA A C- A ACT C T C-- A- ----
AAGGTGGA
GAM30587 9737 TCCGGAAAAGTGAGTTTTAA AAA A- AAACAAGT- TGC
1 ACAAGTAGATTATGCTAATC TCCGGA GTG GTTTT AGATTA
TTATCAGAAAAAAACGACAT GGGCCT TAC CAAAA TCTAAT
GGTCCGGG GG- AG AAAGACTAT ---
GAM30587 20294 TCCGGAAGGGAGATGAATCC ---- A --- C GG GAGT GGAGAA
3 CCGCCCAGGAGGGGGGAGTA TCCGG AAGGGAG TGAATCCC CGCC AGGA GGG AGGGCGGG

GGGCGGGGGAGAACTTGTCC AGGCC TTCCCTC ATTTAGGG GCGG TTCT TCC TCCTGTTC

TTGACCTGGTCTTTGGCGTC CTAA - ACT T GG AGT- ------
AGGGATTTACTCCCTTAATC
CCGGA

GAM30587 2869 TCCGGAGTAACGGTCTTCAT T TCTT GA G - ACAGCAC
8 TAGCTTGGAGTGGCGCAGGT TCCGGAG AACGG CATTAGCTTG GT GCGCAGGTC CGTG

CCGTGACAGCACCGCGAGAC GGGTCTC TTGCT GTAGTCGGGT CA CGTGTCCAG GCGC

CTGTGCGACAGTGGGCTGAT T C--- GA G A -------
GCTCGTTTCTCTGGG
GAM30588 3026 TCCGGAGTCGCAGTGTCTTC A-- CG T ----- G GGAA
0 GGCCGCCGGAAGGTGGGTGA TCCGG GT CAG GTCT TCG CCGCC
CGTGCGGATCTTGTAGCAAC AGGTC CG GTT TAGG AGT GGTGG
CTGGA CAA AT C CGTGC G ----
GAM30589 20182 TCCGGCCCGGCTTCTCTTCC C CTTC TTA AA G TTGGC
0 TTAACTTAAGTTGCGCGTTG TCCGGC CGG TCTTCC ACTT GTTGC CG
GCCGGCAACCGAGTGGAAGA AGGTTG GCC AGAAGG TGAG CAACG GC
TATCCGAGTTGGA A TAT- --- C- - -----
GAM30591 19342 TCCGGTAGCAATAGGAGATC T CAATA CTA -- TAAACAATT
8 TATACTATGTTTGTAAACAA TCCGG AG GGAGAT TACTAT GTTTG
TTTAAACTGATGGTGACATT AGGCC TC TCTTTA GTGGTA CAAAT
TCTACTCTCCGGA - TCA-- CA- GT ---------
GAM30592 9061 TCCGGTGTGCGCAGTTGCCA A-------- ---- A CCTATCAT
3 GGATCCCTATCATGAACTTG TCCGGTGTGCGC GTTGC CAGG TC
CGATGCAACAATTCACCCGT AGGCCGTACGTG CAACG GTTC AG
GCATGCCGGA CCCACTTAA TAGC A --------
GAM30592 6035 TCCGGTTAGAAATGTTACTT AAA TT TT GTT TG TTTT
4 GGTGTTTTTTGCTTTTGTGA TCCGGTTAG TG AC GGT TTT C
AACGGCCGTCCCAAAGCTGG AGGTCGGTC AC TG CCG AAA G
CTGGA GAA CC -- GC- GT ----
GAM30594 8661 TCCGTTGGCCACATTGGGCC -- A CC T CACA
7 ACTGTGCACCACAGTGCCAG TCCGT TGGCCAC TTGGG ACTG GCAC
TCCCCAGGTGGCCAGGGCGG AGGCG ACCGGTG GACCC TGAC CGTG
A GG - C- - ----
GAM30596 5921 TCCTAAATTATTGACAGATA TATTGA G G A AGTG AACTTAAG
3 GATAGATAGTGACCAACTTA TCCTAAAT CA ATA AT GAT ACC
AGGGTAATCATATATGTGAC AGGGTTTA GT TAT TA CTA TGG
TAACATTTGGGA CAATCA G A - A--- --------
GAM30598 20577 TCCTAATGTATCAAAAATAG TAAT AA TT AC--- ----- - TG GC GCCC
1 ATAGTTGGTGACTGCCCTGT TCC GTATCA AATAGATAG GGTG TGCC CTGT G CAGA CCA

GTGCAGAGCCCAGCCCTGGA AGG CGTGGT TTGTCTGTC TCAC ATGG GACG C GTTT GGT

TTTGTGCCGCAGTTGTTGGT T--- C- CT ACATA TTGTT C GT A- ----
AATACACACTTCCTGTCTGT
TCTGGTGCTGGA

GAM30600 9385 TCCTAGACAACAACTGATTT AACAA A AA ---- ATAC
8 AATATCCTTGATACCAAGCT TCCTAGAC CTG TTT TATC CTTG
ATGATAGAGGACCAGCGTCT AGGATCTG GAC AGG ATAG GAAC
AGGA C---- C AG TATC ----
GAM30605 5735 TCCTATGTGGGCGACGAGGC T G C G CAGA AA GA CATCC ACCCT

6 CCAGAGCAAGAGAGGCATCC TCCTA GT GG GACGA GCC GC GA GG TC
TCACCCTGAAGTACCCCATC AGGGT CA CC CTGCT CGG CG CT CC AG
GAGCACGGCATCGTCACCAA - A A A CA-- AG AC CATGA -----
CTGGGA
GAM30607 6547 TCCTCAACCCGTTTGGTGGT CCCG GG- T- G CAAGTTCC
7 CACTTTGGTCCGTCAAGTTC TCCTCAA TTTGGT TCAC TTG TCCGT
CACGGAGTAATTGTGAAAGG AGGAGTT AGACCG AGTG AAT AGGCA
CCAGAATTTGAGGA TA-- GAA TT G --------
GAM30609 20109 TCCTCACTGTAGCATCTTGT - CA T- - TGGC - AA AATGATTCCC
8 CAGTGGCACTACTTTTAAAA TCCTCACT GTAG TCT GT CAG ACTA CTTTT AAA
AAATGATTCCCTTTAGAAAA GGGAGTGA CATT AGA TA GTT TGAT GAAAA TTT
GCTAGTATATTTGTATTCAG A AG CT T TATA C GA ----------
AGATTACAAGTGAGGG
GAM30611 5678 TCCTCAGCTGGAGCAACAGC - A--- AA GGGGGCAGGA
1 AGGGGGGGGGGCAGGACCCC TCC TCAGCTGG GC CAGCAGGGGG
CTGCTGGGGCAACACCAGCT AGG GGTCGACC CG GTCGTCCCCC
GGTGGA T ACAA GG ----------
GAM30615 5467 TCCTCCATTCTCCCGTGTGT T CT CGT - C - - TGCTA TG AGC
9 CGTAGGCCCTGGCCTGGGAG TCC CCATT CC GTGTCGTAGG CC TGGCCT GGGAG C G TGG

CTGCTAGTGTGGAGCCCGTG AGG GGTAA GG CACGGTATCC GG GCCGGA CCCTT G C GCC

CCCTCTGTTTCCCAAGGCCG - AC AT- C T A T TCTCC GT ---
TGGCCCTATGGCACTAGGCA
AATGGGGA
GAM30618 20152 TCCTCCCTTTCCATACTCTG TC CATACTC TCT AG TCA
0 TTCTTTGGAAGTTAGTCACT TCC CCTTTC TGT TTGGA TTAG
AAGTCCAGCCCACACTCAAG AGG GGAAGG ACA GACCT AATC
GAAGGAGGGA GA AACTC-- CCC G- ---
GAM30618 3653 TCCTCCTCCCCCTCCTCCTC T T CCTCCTCCC-- T CACCACTC
8 CCGCTGTCACCACTCACCGC TCC CC CCCCCT GC GT
TCATAACCTCAAGGGGGTGG AGG GG GGGGGA CG CA
GGA - T ACTCCAATACT C --------
GAM30619 971 TCCTCCTCCTTTCTCTGGAG - TT---------- G TGGGG T CACTCT
1 CTGTGCTTGGGGCTACTCTG TCCTCCT CCT CTCTG AGCTGTGCT CTAC CTGA GTC
ACACTCTGTCTCTTCATCAC AGGAGGA GGG GGGAC TCGATACGG GATG GGCT CGG
CAGCCAAGGAAAGGGGCTTT A TTCATGAAGTTCCTCC G ----- - TT----
CGGGTAGGGCATAGCTGCAG CATCA AGCCAA
GGCCTCCTTGAAGTACTTGG TCTT CC
GAAGGAGGA GGAA GG
A---- ------
GAM30620 18869 TCCTCCTGGCCGTCCTCCTC CT- CCTCCTCA -- - GT TATACACCTGGT
6 ACGGTCCTCCTGGCTGTGCT TCCTC GGCCGT CGGTCCT CCTGG CT GCTCA
CATATACACCTGGTTGAGTG AGGGG TCGGTA GCCAGGG GGGCC GG TGAGT
GACCGGGCTGGGACCGCCAT TTC CC------ TC A -- ----------
GGCTCTTGGGGA
GAM30621 21141 TCCTCCTTGCTGGAGCAGCT --- TG ------- A- AG TATAA
5 GAACGAGCAGTATAACTGGG TCCT CCTTGC GAG CAGCTG ACG CAG
TGTCCCGGCTGGCAAAACCT AGGA GGAACG CTC GTCGGC TGT GTC
CACGCAAGGCGAAGGA AGC CA CAAAACG CC GG -----

GAM30622 8257 TCCTCGCTGTTTTGTGCCCA - G TGT ACCTT TG TGCTTT
3 GGCTACCTTGTGATGCTTTT TC CTCGCT TTT GCCCAGGCT G A
TGCTGAAGCCTGGGCTTTGA GG GGGTGG AAG CGGGTCCGA C T
AAGGTGGGTGG T A TTT AGT-- GT ------
GAM30624 3050 TCCTCTCCTCCCCGGGCCAG - T - C CCA ---- TGCTG
3 CGGGCAGTGCTGCTGGCCGA TC CTC CCT C CCGGG GCGGGCAGT GC
AGCTGCCCGCACCCTGGAGA AG GGG GGA G GGTCC CGCCCGTCG CG
AGGTGGGCGA C T A A CA- AAGC -----
GAM30630 6142 TCCTCTTTATTTCCTCCGTT C CCGTTCCAAT A TAT
0 CCAATGAGAGGCCTATGGCT TCCT TTTATTTCCT GAG GGCC
GCTCTCCAATCCCGGGAAGT AGGG GAGTGAAGGG CTC TCGG
GAGTGGGA T CCCTAACCT- G ---
GAM30632 12260 TCCTGAATTTTGGCTTATAA TTGGCTT ---- T AAGA
9 TCAGAAGTTCTATTAAGAAA TCCTGAATT ATAAT CAGAAGTTC ATT
TTGGATTTCTGTCCAATTAT AGGACTTGA TATTA GTCTTTAGG TAA
TTCATTTAGTTCAGGA TTTACTT ACCT T ----
GAM30638 18729 TCCTGATCAGCTTTTAATAT TCAG TTAA-- G CATAAAAATTGAAAT
9 CTGTCACATAAAAATTGAAA TCCTGA CTT TATCT TCA
TTGAAGATGGTATATAAGAT AGGACT GAA GTAGA AGT
TTCAGGA TTA- TATATG - ----------
GAM30640 18990 TCCTGCAGACGGTGAGCAGT T A G - A---- TCCGCT
7 GAGAAGGTCCGCTCCACTAA TCC GCAG CG TGAGCAGT GAGA GG
TCTCAACTGCTCAGTGATTG AGG CGTT GT ACTCGTCA CTCT CC
CGGA - A G A AATCA ------
GAM30642 21089 TCCTGCCAAGAGAATATTTG CAAGAGAATA T TGATCC
5 GTGATAATTTTGATCCAGAT TCCTGC TTTGGTGA AATTT
TTTATTAAACAAAGACGAGC AGGACG AAATTATT TTAGA
AGGA AGCAGAAAC- - ------
GAM30643 4031 TCCTGCCTCACCACTGTGCA - CA A AG G-- G G- A AAGT
8 GGTGGGTGGCGTGGAGACCG TCC TGCCT CC CTGTGC GTGGGT GC TG AG CCG
AAGTCGGGCTGGCAGGCAGG AGG ACGGG GG GACACG CATTCG CG AC TC GGC
GCTTACAGCACAGAGGGAGG T AG A A- GGA G GG G ----
GCATGGA
GAM30643 3651 TCCTGCCTCAGACTCCCGAG C - ACTCCC G -- CCCGCCACCA
9 TAGCTGGGATTACGGGCGCC TCCTG CTC AG GAGTA CTGGGATTA CGGGCG
CGCCACCACGCCCGGCTAAT GGGAC GAG TC CTTAT GATTTTAAT GCCCGC
TTTAGGTATTCTTACAGCTA A A GACATT G CG ----------
GAGACAGGG
GAM30647 4024 TCCTGCTCTGTGCCTCAACC G TGTG AC CATAA- TCTAATCCTATTCC
3 TATTCTCCATAATAGGGAGT TCCT CTC CCTCA CTATTCTC TAGGGAG
CTAATCCTATTCCTTCCCTG AGGA GAG GGAGT GGTAGGAG GTCCCTT
CCTGATGAGGATGGTGTGAG G TA-- GT TAGTCC ----------
GATGAGGAGGA
GAM30649 20916 TCCTGGAAGGCAGCAAGGTT AA- A- ----- -- CTAG
5 TTGTGGATCTAGATTCATTA TCCTGG GGC GCAAG GTTTT GTGGAT
GGAATGTCTTCTTGTCAGCC AGGACC CCG TGTTC TAAGG TACTTA
AGGCCAGGA GGA AC TTCTG AT ----
GAM30650 12604 TCCTGGAGTCCGATGTGTTT - A CC T CCAACT T TTTT C TTCT
6 TTCCAACTTCTAGTTTTTTC TCCT GG GT GATGTG TTTT TC AG TT CATT
CATTTTCTGATGCAATATTC AGGA CC CG CTATAC AGAA AG TC AA GTAG

TGATGCCAAGACCATATCAT A C TA C CCGT-- - TTAT C ----
GCCCCAAGGA
GAM30653 8098 TCCTGGCTCTGGACTGAACC CTC A - - TCA CCAA TCCT
7 CTGAGTCACCCCAATGCTCC TCCTGG TGG CTGA ACC CTGAG CC TGC
TGCACACTGGCCTTCAGTGG AGGACC ACC GACT TGG GACTT GG ACG
TATCAGCCACCCAGGA C-- - A T CC- TCAC ----
GAM30654 20213 TCCTGGGAGGAGATGACCAA - -- A--- A AAC AGCCT
7 GAACCAGGTCAGCCTGACCT TC CTGGG AGGAG TGACCA G CAGGTC
GCCTGGTCAAAGGCTTCTAC AG GACCC TCTTC ACTGGT C GTCCAG
CCCAGCGA C CA GGAA - C-- -----
GAM30658 18092 TCCTGGTCATGAAGGCCCTG ------- C-------- T GCAGA
2 TGGGTGCAGAACCCTCAGGA TCCTGGTCA TGAAGG CCTG GGGT
TGTGAATACCTTCAATATAG AGGACTAGT ACTTCC GGAC CCCA
ATGATCAGGA AGATATA ATAAGTGTA T -----
GAM30660 16858 TCCTGTACTGGGACCAACTA TA----- G CTACA ACACCT
1 CAACATCGGGACACCTTCTG TCCTG CTGG ACCAA ACATCGGG
ATGTATATTGGTACCAGCAG AGGAC GACC TGGTT TGTAGTCT
ATTCCAGGA CTTAGAC A ATA-- ------
GAM30660 20983 TCCTGTAGCATCAGTAGAAC A GT AAC T AAAATATTA
3 TATTTTTGAAAATATTACAA TCCTGT GCATCA AG TAT TTTG
ACATGCTTATGATGCATAGG AGGATA CGTAGT TC GTA AAAC
A - AT --- C ---------
GAM30664 3532 TCCTGTGGGTGGTATTCTGA -- TATTCT--- GG GGATT
7 TTGGGAAGGGATTTTTTTCA TCCTGT GGGTGG GATTG AAG
ATTGTTTACATTCTACCTGA GGGACG TCCATC TTAAC TTT
GCAGGG AG TTACATTTG TT -----
GAM30669 12565 TCCTTAAGTCTTTAGATTAT T --- - TA- AA A TT CGTC
6 CATAATTTCAGATTATCGCA TCCT AA GTCTTT AGAT TCAT TTTC GA ATCGCA
CGTCTGTGATTCGAGAGGTG AGGA TT CGGAGA TTTA AGTG AGAG CT TAGTGT
AGTTATTTAAGAGGCCGTTT C TGC A TTG G- - -- ----
CAGGA
GAM30670 8424 TCCTTACAGTCGTTTTTTTA TTACAG-- T A AA------ T TTTTTT
0 CAGAGAAAAGGGGCATTGTT TCC TCGTTT TTTACAG GAA GGGGCA TG
TTTTCACTGCTTTCTCAACA AGG AGTAAA AAGTGTC CTT TTTCGT AC
GTTCCTGTGAATAAATGAAA CTTTACAA T - GACAACTC C ------
CATTTCGGA
GAM30678 20743 TCCTTCTGATCAAGAAGTTA TC A ---- A TTTGATC GCACAA
7 CCCAGTTTGATCAGGGCACA TCCT TG TCAAGA AGTT CCCAG AGG
ACCTTTCTGGGGAGCTTGAT AGGA AC AGTTCT TCGA GGGTC TCC
TCTTGAACAAGGA -- A TAGT G TT----- ------
GAM30681 3161 TCCTTGCCGACCTTGGTGGC C A TG A CAG AGAT
4 CAGCCAGGCCCAGATGGGCG TC TTGCCG CCT GTGGCC GC GCCC
CGGCCGCACAGGCCGGCGAT AG AGCGGC GGA CGCCGG CG CGGG
GA T C CA - --- ----
GAM30682 20316 TCCTTGGAAGCAGAGTGAAG G GA GAACACAATA TG TGC
4 AACACAATATGTTGAGATGT TCCTTG AAGCA GTGAA TGT AGATG
GCTATTTTGACAACACTTAT AGGGAC TTCGT TACTT ACA TTTAT
TCATCTTGCTTCAGGGA - TC ATTCACA--- GT ---
GAM30683 6593 TCCTTGGCGTGGCACCCAAC TT CA---- AACTC-- - ACCGTG
1 TCACCCCAGCACCGTGGCTG TCC GGCGTGG CCC ACCC CAGC

TGGGTTCCAAAGGGGGAGAT AGG TCGTACT GGG TGGG GTCG
ATCATGCTCTGGA TC ATAGAG GAAACCT T ------
GAM30683 18903 TCCTTGGGGGCGCTCTGAGC - G G C TGAG T TCGT TG CTGCT
4 CTGACCTTCGTGCTGGGGCT TC CTTG GG CG TC CC GACCT GC GGG
GCTTTCTGGCTTTTGGGTCT AG GGAC CC GT AG GG CTGGG CG CTT
GGAGACGATGCCGCAGGAGA A G - - CAGA T TTTT GT -----
GAM30683 14518 TCCTTGGTCATGCCTTCCCG G GCCTTC-- T A--- AACATAGCCATA
9 GTAGGTAGCATCAACATAGC TCCTTG TCAT CCGG AGGT GCATC
CATAGATGTAGGAGCCTCCG AGGAAT GGTA GGCC TCCG TGTAG
GAGCCTCCAATGGGTAAGGA G ACCTCCGA - AGGA ----------
GAM30685 14462 TCCTTGTGGTCGGTGGTGAC --- TCG GT - - TG CACG
8 GATGGTGAAGTACACGTACT TCCTT GTGG GTG GA CG ATGG AAGTA
TGCCCGTGCGCTCCACGCAG AGGAG CACC CGC CT GC TGCC TTCAT
TCCACCTTGAGGA TTC TGA AC C G CG ----
GAM30690 6258 TCCTTTGGAGACCACATTTT GA- ACA G AAATTGAG
8 ACCCGTGAAATTGAGCAGGG TCCTTTGGA CC TTTTACCC TG
GTGAAAGGCTATTCAAAGGA AGGAAACTT GG AAAGTGGG AC
ATC --- G --------
GAM30692 8867 TCCTTTTAGAAGTGTGTTAT A --- G GTACCTGTCTGA
5 GTCTGTACCTGTCTGAAGAG TCCTTTTAGA GT GTGTTAT TCT
TGACATTAAACTTTGAAAGG AGGAAAGTTT CA TACAGTG AGA
A - AAT - ----------
GAM30693 20718 TCCTTTTCCCATACTCAATA TT CCA- AATATAAAA AGCA
1 TAAAAGACAGCAGTTCTAAG TCCTT C TACTC GAC
GGAAGAGTAGACAGGGAAGG AGGAA G ATGAG TTG
A GG ACAG AAGGGAATC ----
GAM30695 20589 TCGAAACCATCATTTAGCAT CCATCAT A ---- AA--- T GTGA
6 CATTTGGGAAAGTCAAGCAG TCGAAA TTAGC TCATTTGG GAAAGTC GCAG GT
TGTGTGAATTTTGTGATTGG AGTTTT AGTCG GGTGGATT TTTTCAG TGTT TA
ACTTTTGAAATTAGGTGGGC TTAATT- - AAAG GTTAG T ----
TGATTAATTTTTTGA
GAM30695 9414 TCGAACAACTGAAAGAACAA GAA AAGAACAAGC AAC GAAAA
8 GCAGCAACTGGAAAACAGCT TC CAACTGA AGC TG
AGAAAAAAATCAGTTGGAGA AG GTTGACT TCG AC
AG- AAAAAAAGA- --- -----
GAM30696 8238 TCGAAGGGGGAGAACCCTTG GAAC G AA G AAGGA
7 GCAACCGGCAAGGAGTAGGG TCGAAGGGGGA CCTT GC CC GC
CAAAGGACATCTTCCTTTGA AGTTTCCTTCT GGAA CG GG TG
ACA- A -- A -----
GAM30696 18225 TCGAAGGTATCTCAACGGAA CT C A A----------- TCAA
8 CCAGGGGTCAACCCCTAAGA TCGAAGGTAT CAA GGA CC GGGG
CAATTCAGGTCCATTGTTGT AGTTTCCGTG GTT CCT GG CCCC
GCCTTTGA TT A - ACTTAACAGAAT ----
GAM30697 12374 TCGAATGCAACTCTCTTTTG CAA AG - TG CTC
8 AGATTGAGCTCCTTGACTTC TCGAATG CTCTCTTTTG A T AG
CAAAGGAGAGATTTATTTGA AGTTTAT GAGAGGAAAC T A TC
TTA CT C GT ---
GAM30697 3510 TCGAATGCAACTCTCTTTTT C CT TG CTC
9 TGAGATTGAGCTCCTTGATT TCGAATG AA CTCTTTTTTGAGAT AG
TCAAAGGAGAGGATTTATTT AGTTTAT TT GAGAGGAAACTTTA TC

GA - AG GT ---
GAM30700 18637 TCGAGACCATCGCCAATGAG ACC--- G - CGACA TGTA
1 TACAGCGACAGGTGTACCCC TCGAG ATC CCAATGA GTACAG GG
GGCCTGTATATCATTGGGAT AGCTC TAG GGTTACT TATGTC CC
CAAGAACTCGA AAGAAC - A CGGCC ----
GAM30701 19219 TCGAGGAGCGTGGTGTACAC AGGA G C - - GTATA
3 CTGTTGGCGCAAGTATATTG TCG GCGTGGT TACAC TGTTG GCG CAA
CCGTGCGACATGTGTAATCA AGC CGTACTA ATGTG ACAGC TGC GTT
TGCCGA ---- - T G C -----
GAM30703 5748 TCGATATCGAAATTACGCCC AA-- ------- - GTGGA
2 GATCGCGTGGAGTGATCGTG TCGATATCG ATTACG CC CGATCGC
GGAGGAATCGTGGTGGTGTG AGTTGTGGT TGGTGC GG GCTAGTG
GTGTTGA GTGG TAAGGAG T -----
GAM30703 22223 TCGATCTGTAGCTCCCTATG T G T CTAT GG AAAT
5 CCAAGGGTGGCAAAATTGGG TCGA CT TAGC CC GCCAAGGGT CA
CTTTTGGTGGTGCTGGAGTT GGTT GA GTCG GG TGGTTTTCG GT
GG - G T ---- G- ----
GAM30705 6041 TCGCACATGGGCACCAATCA A GGC ATCACG CATAAAC C GCAACA
2 CGGGGTCATAAACGTCAGGC TCGCAC TG ACCA GGGT GT AG
AACACTTACAACAGCACCCA AGTGTG AC TGGT CCCA CA TC
ATTGTGGTACAGTGTGA - A-- GTTAA- CGACAA- T ------
GAM30708 4316 TCGCCCACCTCACACAGCTG A T- --- - -- A GCTG
4 CTGCAGGTGCTGGCCGGCGG TCGCCC CC CAC ACAG CT GCTGC GGT
CCGGGTCTGTGCCGTGCTGG GGCGGG GG GTG TGTC GG CGGCG CCG
AGGGCGG A TC CCG T GC G ----
GAM30709 1184 TCGCCCGTGTGCAGAGCGGA CG-- - --- AAG AAAATCTCA
2 CAAGGCAAAATCTCAGCAAG TCGCC TGTGC AGAG CGGAC GC
TTCGGACCTCTAGTACAATA AGCGG ACATG TCTC GCTTG CG
AGGCGA AATA A CAG AA- ---------
GAM30710 3599 TCGCCTTCCCAAAGTGCTGG CTT A CT- TA- A AGCCAC
5 GATTACAGATGTGAGCCACC TCGC CCCA AGTG GGGAT CAG TGTG
ACACCTGGCTGTCTTTTCCA AGTG GGGT TTAC TTCTG GTC ACAC
TTATGGGTGTGA T-- A CTT TCG C ------
GAM30711 8716 TCGCGCGGGGGGTAATTCGG G AAT TCT TCTG CGC
8 GGTCTGGGTTCTGGTGCCGC TCGCGCGG GGGT TCGGGG GGGT GTGC
GCATGCTTTCCCCGATGGCC AGTGCGTC CCCG AGCCCC TTCG TACG
CACTGCGTGA A GT- T-- ---- ---
GAM30714 3216 TCGCTCCTCAGCGGATTGCT G G ATT T TAAG AGTTTTCTCA
0 GGATAAGGTCAGTTTTCTCA TC CTCCTCA CGG GC GGA GTC
GACTCCCGCCACTGATGAGG AG GAGGAGT GTC CG CCT CAG
AGAGA A A AC- C ---- ----------
GAM30717 14733 TCGCTGGATTAATGTTTGAC - G A- GA- GGAAAAAACACGAAA
1 AGGAAAAAACACGAAATGGA TCG CT GATTA TGTTT CA
TGAACAGCTGATCGAGTCGA AGC GA CTAGT ACAAG GT
T G CG TAG ----------
GAM30717 3838 TCGCTGTCGTGACTACACAG - T ACAC A A CAC TT TCTTCC
2 AGTTACTGGGCACAAGTTTA TCGCT GTCG GACT AG GTT CTGGG AAG TATCT
TCTTCTTCCAGATATCCTTT AGTGA CAGC TTGG TC CAA GACTT TTC ATAGA
TCAGAACACTCAAAGGTTCG T - AAAC A - --- CT ------
ACTAGTGA

GAM30718 6580 TCGCTTACCAGGGCCGTGTC T--- GC - CAA ACGA GC AC GCA-- GT C
1 AAGGTACGAGCCAGCCTACT TCGC TACCAGG CGT GT GGT GCCA CT TACT ACGA G
GATGT
ACTGCAACGAGTGCGATGTG AGCG ATGGTCC GCA CA CCG CGGT GA GTGA TGCT T
CTACA
GAGGTGTTTAACATCCTGTT TCAC AT G ACG A--- AA -- ATCAG TG C
CGTGACTAAGTGAGAATGGC GGAGGTGTTTA
AGCCGCAACGACGTACCTGG
TACACTGCGA

GAM30725 18653 TCGGAAGCATTTCGGGGCGT - AT - GGA--- CTCT
4 TGGAGGCCGCTCTTGGCCAA TCGGAA GC TTCGGGG CGTT GGCCG
AATAAATGACCCTGAAGCTT GGCTTT CG AAGTCCC GTAA CCGGT
TTCGG T -- A ATAAAA ----
GAM30727 20472 TCGGCAGTGGCATCCGGGGC G - A - -- G G G ACGGG
4 CGGGGGTCGCGGCCGTGGCA TCGGCA TG GC TCCG GGGC CGG GGTC CGGCC TGGC
CGGGGCCGGGGCCGAGGCCG AGCCGT AT CG AGGC CTCG GCT CCGG GCCGG GCCG
TCGGAGCTCGCGGAGGCATA G A G G AG G A G -----
GTGCCGA
GAM30728 12993 TCGGCCTCCCAAAGTGCTGG CCCAA -- ATTACA ATGA
5 GATTACAGGCATGAGCCACT TCGGCCT AGT GCTGGG GGC
GCACCCAGCCAACTAGGTCG AGCTGGA TCA CGACCC CCG
A ----- AC ACGTCA ----
GAM30730 16812 TCGGCTCAGGGACAGCTGGG TC ---- AAG AGA TGCCA
2 CCAAGGCTCTAGACTCTGCC TCGGC AGGGACAGCTG GGCC GCTCT CTC
AGGGATGGGAGCGGCTCACA GGTCG TCCCTGTCGAC TCGG CGAGG GGG
CAGCTGTCCCTGCTGG -- ACAC --- GTA -----
GAM30732 5671 TCGGGCACCGGGGTCGGGTG A G G C G C- AGGGG
3 CGCGCGCGCCCCCAGGGGGG TCGGGC CCGGG TC GGTG GC CG GCCCCC
GGGCTTTGGGCCACCGGGCC GGCTCG GGCCC GG CCAC CG GT CGGGGG
CGGAGCTCGG A - G - G TT -----
GAM30732 19936 TCGGGCATTATTCATGATGC - ATTA TGC CC ACACGACATACA
4 ACTAGAGCCAGACACGACAT TCGG GC TTCATGA ACTAGAG AG
ACACTATTTTAGTACTCATG AGCC CG AAGTACT TGATTTT TC
AACCACGCACCGA A CACC CA- A- ----------
GAM30732 3782 TCGGGCCGGTGCAGATACGG CG G ATA G TTGCTCAT
5 GGTTGCTCTTTTGCTCATAA TCGGGC GT CAG CGGGGTT CTCTT
GAGGGGCTTCGCTGGCAGTC AGTCTG CG GTC GCTTCGG GAGAA
TGA A- - --- G --------
GAM30733 1517 TCGGGGAAATGTGCGCGGAA AA ------ C - CCC TT-- TTCT
2 CCCCTATTTGTTTATTTTTC TCGGGG AT GTG GCGGA AC TATTTG TATTT
TAAATACATTCAAATATGTA AGTCCC TA TAC CGCCT TG ATAAAC ATAAA
TCCGCTCATGAGACAATAAC AA ACAGAG T A T-- TTAC ----
CCTGA
GAM30735 8779 TCGGTATCCCCGCGGATGGC TATCCC --- C CACCCCCC
2 GGGCGGGGGCACCCCCCCCC TCGG CGC GGATGGCGGG GGGGG
CCCCCCGTTATTCCTTGCGC AGCC GCG CTTATTGCCC CCCCC
CTACCCCGA CCATCC TTC C --------

GAM30736 12676 TCGGTGCTGCCCTGGGCCGC C- - CCGCGA AT- CCC CT TG AA T
2 GAGCCTTCATCCCTCTCCCC TCGGTG TGCCC TGGG GCCTTC CCCTCT CAGCG GTGG C
GCTGTC
AGCGCTGTGGTGCAAGCTGT GGTCAC GCGGG ACCC TGGAAG GGGAGG GTCGT TACC G
CGACAG

CTTGTGGGCGACAGCGTGCC AA C TAG--- ACC TC- AC GT -- -
ATCATGCTGCTGGAGGGCCA TGTGGGC
GAAGGTGATCCCACGGGCGA
ACACTGG

GAM30737 3177 TCGGTGGGTGACTATAAGCG - GACTATAAG ACACAA ACGA
0 TACACAACCCGACGACGGGA TCGGTGG GT CGT CCCG
GAACACGAAGGAATAACACC AGCCACC CA GCA GGGC
ACCGA A ATAAGGAA- CAAGA- ----
GAM30737 16630 TCGGTTCCGGTCTCTGCAGC - - CTCTG A G T AGTG
3 AGCCGTGATCGCTTAGTGGA TCGGT TCC GGT CAGC GCC TGA CGCTT
GTGCTTAGGGTAGTTGGCCA AGCCG AGG CCG GTTG TGG ATT GTGAG
GGATGCCGA T A ----- A G C ----
GAM30737 19208 TCGGTTGCACGCAGCTGAGC GTT- G C- A---- A CTCAA
5 AGGAGAGCCTCAAGCGCTCC TCG GCAC CAG TGAGC GGAG GC
AAGGAGCTCAACCTGGTGCT AGC CGTG GTC ACTCG CCTC CG
GGACGA AGGT - CA AGGAA G -----
GAM30737 12767 TCGTACACGCCCGCGCCGCT T- --- -- C C TCG G TCTCCCAC
9 CGCTCGCCGGCTTGCTCTCC TCG ACACGC CC GCGC GCT GC CCG CTTGC
CACGCAAGCGGAATGCAGCA GGC TGTGCG GG CGCG CGA CG GGC GAACG
GCGCCTGGAGAGCGTGTCTC TC AGA TC A - TAA - --------
GG
GAM30739 3166 TCGTATCCCTCGGTCCGGCG ATC C GG GCG G G AGACGGTTTCAGG
1 GCGGCGGCGGCGGCGGCGGT TCGT CCTCGGTCCGG GGC CGGCG GCGGC GTA CGGAGG

AGCGGAGGAGACGGTTTCAG AGCG GGAGCCGGGCC TCG GTCGT CGTCG CGT GCCTCC

GCCTCCGGTGCGGCTGCAAT GC- C A- AA- G G ----------
GCTGAGCTCCCGGGCCGAGG
CGGCGA
GAM30739 6391 TCGTCAATGGAAGAACCGCC AA A GCC ---- ACC AT CCGGTCA
6 TTTCGGGGCGTTGGACCTTC TCGTCAATGG GA CC TTTCGGG GCGTTGG TTCCA TC
CAATTCCCGGTCAGATGGAG AGCAGTTGCC CT GG AGAGCCC CGCGACC GAGGT AG
AACCAGCGCAGTACCCGAGA CG G AAA ATGA AA- -- -------
AAAGGGTCGCCCGTTGACGA
GAM30739 14664 TCGTCACGCCGCGGACGCCT CA - - GA - CAACAGACG CTATA
7 CAACAGACGCTCTATAAGAC TCGT CGC CG CG C GCCT CT
CACTCAGGCTGGACGACGAG AGCA GCG GC GC G CGGA GA
CGCCACGA CC A A AG T CTCACCA-- -----
GAM30740 9804 TCGTCCGAGTGAGCAGCGGT A- AGC T -- - GTGT
7 GCTGGCCCGTGTGGGACCCG TCGTCCG GTG AGCGG GCT GG CCC
GGCCCGCTTAGCACCATGGA GGCAGGT CAC TCGCC CGG CC GGG
CGG AC GAT - GC A ----
GAM30741 14531 TCGTCTCTGAAAGCCACTCG CT CA- A --- TCTCAGAT

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2          GAATTTCTCCATCTCAGATT TCGTCT  GAAAGC  CTCGGA TTT  CTCCA
           GGAGCAAGAACTTTGAGGTT AGTAGG  CTTTTG  GAGTTT AAG  GAGGT
           GTTTTCCAGGATGA         AC     TTG     C  AAC    --------
GAM30743 3581  TCGTGCGCATCGTTGCTGGC  G       TT  TGGCCT  TG  C   TG     CTGTC
2          CTGGCTGTCCTGGCTGTCCT TC TGCGCATCG  GC     GGC  TC TGGC  TCCTAG
           AGCTGTCCTAGGAGCTATGG AG ATGTGTAGT  TG     TCG  GG ATCG  AGGATC
           TGGCTGTTGTGATGTGTAGG  G       GT  ------  GT  T   --     -----
           A
GAM30745 20470  TCGTTATCCAGAAGCACAGT   -  C   A  CAG     GCTA  AC   TACGAAT
7          CTGTGGCTAGTGACATTCTA TCGT TAT CAGA GCA  TCTGTG   GTG  ATTC
           CGAATGGATTCCACCAATGC AGCA GTA GTCT CGT  AGACGT   CAC  TAGG
           AGATGCTCTGTATGTACGA    T  T   -  ---     AAC-  CT   -------
GAM30746 1768  TCGTTCTGCAGATTGACAAT      --       ACA-    C-----     C   GA    TTAG
2          GCCCGTCTTGCTGCTGATGA TCGTTCT  GCAGATTG   ATGCC     GTCTTG TGCT  TGACT
           CTTTAGAGTCAAGTATGAGA AGCAAGA  TGTCTGAC   TACGG     CAGAGT ATGA  ACTGA
           CAGAGCTGGCATGCGCCAGT      GG      CGCG    TCGAGA    -   --    ----
           CTGTGGAGAACGA
GAM30746 5639  TCGTTTCATCTACACCAGAG     CA--  TACAC  A     AGA-  AAGT
8          AAGGCAGACCAAGTGGCGAG TCGTTT   TC    CAG GAAGGC   CC
           GCTTTTGTTGAACTTGAATC AGCAAG   AG    GTT TTTTCG   GG
           AGAACGA              ACTA  TTCAA  G     GAGC  ----
GAM30756 14619  TCTAAGAGTGAAGTAGGTGT       TG   T  -----  TG -  TGAACT
1          GACTTGAACTAGATTGCATG TCTAAGAG  AAG AGG    TG  A CT
           CTTCCTCCTTTGCTCTTGGG GGGTTCTC  TTC TCC    AC  T GA
                          GT   C   TTCGT  GT A  ------
GAM30761 8746  TCTAATTCATAGCAACCATA    A    AGCAACCATAT    TT    AGGTG
7          TCTGCTTTATCCTAGGTGAG TCTA TTCAT         CTGCT  ATCCT
           GGTAGCAGTCCACAATGGAA AGAT AGGTA         GACGA  TGGGA
           TAGA               A    ACACCT-----    --    -----
GAM30761 14729  TCTAATTCCATACAATTTCT    AT   AT    TTCTG     TAAAAGATACCCCC
8          GCAATTTTAAAAGATACCCC TCTA  TCC  ACAAT    CAATTT
           CAAATTGATTGTTAGGATAG AGAT  AGG  TGTTA    GTTAAA
           A                --  AT    -----     --------------
GAM30762 22316  TCTACAAAGTGCCGTCCACT   A   -   -  CACTG  CT-    CTTG
9          GAGACTGAGGCCTTGGCTTC TCT CAAA GTGCC GTC    AGA   GAGGC
           CAATCTGATGGGCATGTTTG AGA GTTT TACGG TAG    TCT   CTTCG
           AGA              -   G    G  -----  AAC    ----
GAM30763 5486  TCTACAACCCAAACCGGGCG  - A   AAACC    GTCA     GTGCTA
4          GTCATTCCACAGTGCTATGT TCT AC ACCC    GGGCG    TTCCACA
           GGAAACGCCTAGAGGGGTAG AGA TG TGGG    TCCGC    AAGGTGT
           TCAGA             C  A   GAGA-    A---      ------
GAM30764 6392  TCTACACATTGCAGACAAAG      CATT  AGACAAAGA   AA-   CAGA
3          ATCCAATCCCAGAGGAGCAG TCTACA    GC       TCC   TCC
           GAATTAGAAGCTTATGTAGA AGATGT    CG       AGG   AGG
                          ATT-  AAGATTA--   ACG   ----
GAM30764 18549  TCTACACTGTGGAGTACGCC     A     -  C  -   AG--    T  AGAA
7          TGCAGCGCCGTGGAGAACCT TCTAC CTGTGGA GTA GC CTGC    CGCCG GG
           GGTGGACAGCAGCGTCTACT AGGTG GACGCCT CAT TG GACG    GTGGT CC
           TCCGCAGCGTGGA          C      T  C  C    ACAG    - ----
GAM30765 1031  TCTACAGGATGATGTGTGCA  T   GATGA   TG      -    AA  AGA     A  -   TTCCAGTTCC
```

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1          AAGGGCTACTCAAAGAAAGA TC ACAG    TGTG  CAAAGGGC TACTCA  GAA   CTTCTC TC CGTG

           CTTCTCATCCGTGTTCCAGT GG TGTC    GCAC  GTTTCCCG GTGAGT  CTT   GAGGAG AG GCAT

           TCCTACGAGAGGAGGAGACC  T   ACAG-   CG      T    --  CCA    G  A  ----------
           TTCTGAGTGTGCCCTTTGGC
           CACGGACACTGTTGG


GAM30767 3934   TCTACCGGCCCGTTGCTGTG     GGCC  T    G    A  CACTAAAGGACC   A   GAACT
7          GCTCTAGACACTAAAGGACC TCTACC    CG TGCTGT GCTCT GA          TGAG TCC
           TGAGATCCGAACTGGGCTCA AGGTGG    GT ACGGCG CGGGA CT          ACTC GGG
           TCAAGGGCAGCGGCACTGCA     AGAC  C    A    A ------------   -  -----
           GAGGTGGA
GAM30769 21336  TCTACGGAGAAGCTGGGACA   A  AGA  C   GA      AAGCATTA   AATAC   ---    T  ATC
2          GGAGGAAAAGCATTAGGCAA TCT CGG   AG TGG  CAGGAGGAA      GGCA    AGTCA   GTTTGT
GTC
           ATACAGTCAGTTTGTTGTCA AGA GTC   TT ACT  GTTCTCCTT      CCGT    TCAGT   TAAACA CAG
           TCTGATGCAATACTCTGGAC   -  CCG  T  TC       ATTAC---   C----    AAA    -  GT-
           ACAAATAAATGACTCTGCCC T  TGCAATAC
           ATTATTCCTCTTGCTTCATT  GA
           TGCCCTGAGA          CT
                      -  --------
GAM30770 6190   TCTACTATACTTTTATAGTT    AC     ----   AG    --    TTCCTTC
3          ATTTTAGGTATTCCTTCTAC TCT  TATACTT    TTAT  TTATTT  TAGGTA
           TTAAAAAATAAAAATAAAGT AGA  ATGTGAA    AATA  AATAAA  ATTCAT
           TAAGTGTAAAAGA         AA      TTGA    AA     AA     -------
GAM30774 20905  TCTACTTTTACTACTGTGCC     TT-   A  GT   T    AT--    TTAGGAC
1          TTGCTTATGTTTGTTAGGAC TCTACT   TACT CT  GCC TGCTT    GTTTG
           CAAACCTCAAAGCATGGCTA AGATGA   GTGA GA  CGG ACGAA    CAAAC
           AGAGTGTTCAGTAGA          CTT   -  AT   T    ACTC    -------
GAM30774 6538   TCTAGAACTTGGATTAACCT   ---  A    ----     ---   GGC    AT   AAACTCTA
9          GAGGGCATTTATAGCAAACT TCT   AGA CTTGG    ATTAACC   TGAG   ATTT  AGC
           CTAGCTCCAGATATACTCAC AGA   TCT GAACC    TAATTGG   ACTC   TAGA  TCG
           CTGGTTAATTCTGCCAAGCT   ATT   C    GTCT     TCC    ATA    CC  --------
           CTTTAAGA
GAM30780 8887   TCTAGCTCTTTTGTGTCTCC          GTG   C   ATTTA    TCTGAG
6          TAATTTAGCTTTCTGAGGAG TCTAGCTCTTTT   TCT CTA    GCTT
           TGACAGTGGCAGAGAGAAGA GGGTCGAGAAGA   AGA GGT    TGAG
           GCTGGG                  G--   C   GACAG    ------
GAM30780 6574   TCTAGCTTAGCTACTCACGG    A      ACTC-    ---    C--    CCTCCACAGCAC
9          ACGCACTGCAGCCTCCACAG TCT GCTTAGCT    ACGGA   CGCA   TGCAG
           CACCTGCACCTTGCGGCCTC AGG CGAGTCGA    TGCCT   GCGT   ACGTC
           CGTACCTGAGCTGAGCGGA   -      GTCCA    CCG   TCC    ------------
GAM30783 5915   TCTAGGCCTGGTGATTTTTT    -   -   TTTTT-    --   ATTTTTGA
0          TGTATGTAGATTTTTGACTA TCTAG GCCTG GTGA     TTGTAT  GTAG
           TTGATACAATTTCTTTCATG AGATC TGGAT TACT     AACATA  TATC
           TAGGTACTAGA           A    G   TTCTTT     GT   --------
GAM30783 9813   TCTAGGCGGGGTTCCCCCTT      G   --   --   ATA     GCCGATATAA
1          ATAGGGAAGGCCGATATAAT TCTAGGC GGGT  TCCC  CCTT   GGGAAG
```

TTCCCGAAAAGGCCGGGGTT AGATTTG CCCA GGGG GGAA CCCTTT
ACCCGGTTTAGA G TT CC AAG ----------
GAM30786 14053 TCTAGTGGAGAACAATTAGG GAACA A --- -- T GTAA
6 CCTATTTCACTGGTGTGTAA TCTAGTGGA ATT GGCC TATTT CACTGG GT
GCCTCAGTGCTAAATGGGTG AGATCGCTT TAA CCGG GTAAA GTGACT CG
GCCAATAAATATTCGCTAGA ATAAA - TGG TC C ----
GAM30787 8610 TCTATAAATGCAGATATGTG AA GA T C TATGTAT
8 TGTGCGCTTCTATGTATGGA TCTAT ATGCA TATGTGTG GCG TTC
TGCTTACATGTACATGCATA AGATG TACGT ATGTACAT CGT AGG
GGTAGA GA AC T - -------
GAM30790 12597 TCTATATCACCTTGAAGAAG TC GAAGAAGT AC CGAACCAA
0 TATGACGGTCGAACCAAACC TCTATA ACCTT ATG GGT
CATTCCAAAGAAAGGTACTG AGGTGT TGGAA TAC CCA
TGGA CA AGAAACCT -- --------
GAM30792 6658 TCTATCTGGTCTTTGCAAGC TC A TCTTC TT GA TC CAGG
7 AGTCTTCAGGTTAAAGATAC TCTATCTGG TTTGCA GCAG AGG AAA TACT TAA
TTCTAACAGGTTACAGTACA GGGTAGACT AAATGT TGTC TCC TTT ATGA ATT
TTTCCTCTGTATGTAAATTC T- A ----- -- AC C- ----
AGATGGG
GAM30794 8831 TCTATGAGCATCTTCAACAA A A - AACA -- GTTG TG ATGTG
4 TATTCCTACAGTTGTATGAG TCT TG GCAT CTTC ATATTC CTACA TA AGTGGC
TGGCATGTGGCCATTTGTGA AGA AC CGTG GAAG TATAAG GATGT GT TTACCG
TGTAGCCGAATATAGGAAGT A - T GA-- CC A--- GT -----
GTGCCAAAGA
GAM30795 18055 TCTATGCTTAAGGAAGTCAA C-- A CAAAA ATCA GC ACAACTA
6 AATAATATCACTTTAGGGGC TCTATG TTAAGG AGT TAAT CTTTAGGG TAGGA
TAGGAACAACTATTTTAAAC AGGTAC GATTCT TCA ATTA GAAATCTC ATTTT
TCTAAAGATTACATACTATC TAT A TAC-- ---- AA -------
TTAGTATCATGGA
GAM30799 5914 TCTATTGCTGGAGGTGATTT G- G - T ACT ACGC- A TCCCAATT
7 GTAGACTCATACTACGCTAA TCTATT CT GAGGTGA TTTG AG CATACT TA TGA
TGATCCCAATTTCAATAAAT AGATAA GA TTTCGCT GAAC TC GTGTGG AT ACT
AGGGTGTGCTCAAGTTCGCT AA A T - --- GATAA A --------
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GAM30801 18507 TCTATTTTCAACCTCAAAGA CAACCTCAA A G T --- TATGC
6 AAGTTGGAGAGGACTCCTGC TCTATTTT AG AAGTT GAGAGGAC CCT GCA
ATATGCTGTAAAGGGTGTCC AGATAAAG TC TTTAG CTCTCCTG GGG TGT
TCTCAGATTTACTGATCGAA CTAG----- A A T AAA -----
ATAGA
GAM30806 1107 TCTCAAGGCCTGACAGACAG GC- C A GGGCTT TTTTT
5 AAGGGCTTGGAGATTTTTTT TCTCAAG CTGA AGAC GAA GGAGA
TCTTTACAATTCAGTCTTCA AGAGTTC GACT TCTG CTT TCTTT
GCAACTTGAGA AAC - A AACATT -----
GAM30806 3454 TCTCAAGGGCACCTTTGCCC A CA TT- CC ----- AACTG
6 AGCTTGAGTGAACTGCACTG TCTCA GGG CC TGC AGCTTG AGTG
TGGACAAGCTTGCATGTGGG AGAGT CCT GG ACG TCGAAC TCAC
ATCCTGAGA - AG TGT T- AGGTG -----
GAM30807 21140 TCTCAATCATTGCTTTGTGC CAATCATT- TTT C GA- TTCG
2 ACGCGGATCAGGTTCGCCTG TCT GC GTG ACGCG TCAGG
GACATGCGTCATTGCTATTC AGA CG TAC TGCGT GGTCC

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          ATCCAGA              CCTACTTAT  T--  -    ACA    ----
GAM30808 9752   TCTCACAGTGTCATTGTTGC     CA    ATT  TG TATTG   TGAAGCT
9          TATTGGTCTGAAGCTGGCAA TCTCA  GTGTC   GT  C    GTC
          AGTGTGATGGACACATTGGG AGGGT  CACAG   TA  G    CGG
          A                  TA    G--  GT TGAAA  -------
GAM30813 22191  TCTCAGAAAACAGTTAAGAA       AAAC     -----  -    GCA
0          GTCAAGGCATTTGATCTTTC TCTCAGA    AGTTAA    GAAG TCAAG
          CCCTTTAATTTGAATTTGAG AGAGTTT    TTAATT    TTTC AGTTT
          A                  AAGT     TCCCC   T    ---
GAM30818 21394  TCTCAGGCCAGTTGCAGCCT     -  CC---   GCAG   C-  A  CAAAC
5          TCTCAGCCAAACGCCGACCA TCTCA GG    AGTT   CCTT  TC GC
          AGGAAAACTCACTACCATGA AGAGT CC    TCAA   GGAA  AG CG
          GA                 A  ATCAC   AA--   CC  C  -----
GAM30819 22345  TCTCAGGGTCCCTCTGTACC   T   G   CTCT  ACC   T  T TG AAT          A   T  TTAT   TT
0          ATCTGCTGTGGAATGCAGGA TC CAG GTCC   GT   ATC GC G  G   GCAGGACCCTCTGTG CAT CT
CCC
          CCCTCTGTGACATTCTTTAT AG GTC TAGG   CA   TAG TG C  C   TGTTCTGGGAGGTAC GTG GG
GGG

          CCCTTCTTCCCCGGGTTGGT   T   G    TCT-  GCT   -  T GT ---          -   T  TT--   --
          GTGCATGGAGGGTCTTGTCT CTTCCCC
          GCTGTGATTCGACTCTGGAT
          GCTGTGA
                    -------
GAM30820 18036  TCTCAGTGTTGCTTCATAGT        T ------    AG     AA   T  AGTCTC
7          TTTCAAAGCTTGAAGTCTCT TCTCAGTGT GC     TTCAT  TTTTCA  GCT GA
          CTAGCAGTGGAGGATGAGAA AGAGTTACA CG     GAGTA  GGAGGT  CGA CT
          TAATGCCACATTGAGA          C  TAATAA    --     GA   T  ------
GAM30835 20823  TCTCCCAATCATGTCTCATT      -    G   CA--    TAAA  C--  TAC   C    ACTTTTA
0          ACGTAAAGACAGGTACATGC TCTCCCA ATCAT TCT    TTACG    GA   AGG   ATG AAAC
          AAACACTTTTAGTTTACATC AGAGGGT TGGTA AGG    AATGT    CT   TCC   TAC TTTG
          CCTCATTCACAGTGTAAAGC       G    A   ACGA    GACA  TAC   C--   A   -------
          AGGAAATGGTGTGGGAGA
GAM30836 18094  TCTCCCATCCCATAAGTTGC    CCATCCCAT      C-  T    TT    ATTCCC    AACA
4          CCATTTTATTGATTATTCCC TCTC        AAGTTGC  CA TTTA  GATT     TTTG
          TTTGAACACAGAAGTTTTTA AGAG        TTTAATG  GT GAAT  TTGA     AGAC
          AGTTGATGTAATTTTTTTTT     AATTTTTTT      TA  T    TT    ------    ----
          TAAGAGA
GAM30839 20509  TCTCCCGCAGTCCTACCCAG       C  TC-  ----  C        AA   GCTAA
0          CCTTTTAACTTGCTAAAAGG TCTCCCG AG   CT    AC CAGCCTTTT  CTT
          AGAGGCTGTGTTTTTAGCAT AGAGGGT TC   GA    TG GTCGGAGAG  GAA
          CTTTGGGAGA               T  TAC  TTTT  T        --   -----
GAM30839 20156  TCTCCCTCAGGACCAGCTGT          -----     C  TCA    -     CTGA  T    CCTG
9          CAGTCCCCAGGCCCTGAGGT TCTCCCTCAGG     ACCAG TG   GTCCC CAGGCC    GG GGTG

          GGTGCCTGCATCCTAGGTCT AGAGGGAGTCT     TGGTC AT   CGGGG GTCTGG    TC CTAC
          GTGGGGCATTACTGGTGTCA          CACTG    -  TA-    T     A---  -    ----
          CTCTGAGGGAGA
GAM30841 18707  TCTCCCTGGACCAGCCCGGT     C    CCAGCCC    -   CCT    TGACCCT
0          GGCACCCTGGATCTGACCCT TCTCC TGGA      GGTGG CAC   GGATC
```

GATCCGTGCCCGCCTCCAGG AGAGG ACCT CCGCC GTG CCTAG
AGA - ------- C --- -------
GAM30841 4272 TCTCCGAGCTCGCCTGCATC A- -- G TAC - CCTCACT
8 TACTCGGCCCTCACTGCACG TCTCCG GC TCGCCT CATC TCG GC
ACGATGAGGTGACAGTCACG GGAGGC TG AGTGGA GTAG AGC CG
GAGG AC AC - C-- A -------
GAM30842 20611 TCTCCGCTTCCAGCTCAAGC CG- CCAG AAGC - TG TG GTGTGT
6 CTCTGTGTGTGTGTGTGTGT TCTC CTT CTC CTCT G TG T
GTGTGTGAGAGAGAGAGAGA AGAG GAG GAG GAGA T GT G
GAGAGAGAGA AGA AGA- AGA- G GT GT ------
GAM30843 5971 TCTCCGGGGGCTGGCAGATG G CTG AGA AG ATGAC
1 GAGGAGGCCGATGACTGGCT TCTCC GGGG GC TGG GAGGCCG
TCGCTACGGCAACCCCTGGG AGAGG TCCC CG ATC CTTCGGT
AGA G CAA GC- G- -----
GAM30843 16449 TCTCCGTGCTCTGGGGCCGG TGCTC C-- TC TTA
7 GCCTCGCTGCTTAGCAGCGG TCTCCG TGGGGC GGGCC GCTGC
CCTCTAGCTCCGTCTCCCGG AGGGGC GCCTCG TCCGG CGACG
GGA CCTCT ATC -- ---
GAM30843 18865 TCTCCGTGTGCAGTACCTCC GT TA TC- - A- CA AA A G ACACTG
8 GCCAGATCCACGCCAACCAC TCTCC GTGCAG CC CGC CAG TC CGCC CC C AG
GAGACACTGCTGCGGGAGGT GGAGG CACGTC GG GCG GTC AG GTGG GG G TC
GCAGACCCTGCGCGACCGGC -- TC CCA C CC AC AG C - ------
TCTGCACGGAGG
GAM30843 20763 TCTCCGTTACTGACATTTAC ACTGA A - AAGAAA AGAGTAAGG
9 TCCAAGAAAACCATTAGCAA TCTCCGTT CATTT CT CC ACCATTAGCA
GAGTAAGGTGCTAGTGGTGG GGGGGCAG GTAAG GA GG TGGTGATCGT
AAGAGAATGGCTGGACGGGG GTCG- A A ------ ---------
G
GAM30845 4197 TCTCCTCCCCCTTGGGGAAA CC - G-- AA TG ATT GGCAA
5 TGTGCCTCATTTGTGGCAAA TCT TCC CCCTTG GGA TG CCTC TGT
TGTAGGGGGTGCAGGTCTGA AGA AGG GGGAAC TCT AC GGGG GTA
ACAAGGGTGGACAAGA AC T AAG GG GT GAT -----
GAM30853 16796 TCTCGCAGGTGGCATGACAG G TG - - A C GA TGAT
5 AGGCTCTGAGGCCTGATGGC TCTCGCA G GCA TGA CAG GG TCT GGCC
TGGACCCTGCTCACTGCTGT AGGGTGT T CGT ACT GTC CC AGG TCGG
TGTGGGA - GT C C - - -- ----
GAM30853 1706 TCTCGCCTCTCTCCTGACTG C ------- A CTCA C TGC
9 TCCACTCAGCCTCTGTGCCA TCTCGCCT TC TCCTG CTGTCCA GCCT TG
AAGGCCTGGGCAGGCGGGGA AGAGTGGA AG GGGGC GACGGGT CGGA AC
CTCTTTGAAGGTGAGA - TTTCTCA G C--- A ---
GAM30855 9306 TCTCGGCCCACTGCCAATAG C A---- AATA - AC- A- CCCT
1 TCGGTGCACTTTGACGATAC TCT GGCCC CTGCC GTCGG TGC TTTGACG TACAAGT
AAGTCCCTATTTGTACACGT AGA CCGGG GATGG CGGCC ATG AGATTGC ATGTTTA
TAGAATGGTATCCGGCGGTA - CCAAA ---- T GTA AC ----
GAAACCGGGCCAGA
GAM30857 790 TCTCGTGGGCATTTATAATC - - A AATC TCC A CTCA
4 TGGTCCAGAAGGCTCTCAAG TCTCG TGG GC TTTAT TGG AG AGGCT
CCTCCTCCAATAAAGCTCTA AGGGC ATC CG AAATA ACC TC TCCGA
TCGGGA T T - ---- --- C ----
GAM30858 14421 TCTCGTTGTAACCTGTATAT AA T TAATCA CCAAACTTA

0 TAATCATACAAATCCAAACT TCTCGTTGT CCTG ATAT TACAAAT
TAATTTGTAGTATCAGGACA AGAGTGACA GGAC TATG ATGTTTA
GTGAGA -- - ------ ---------
GAM30859 3597 TCTCTAAGCTGGGGGCGGCG AAG- G G AA- GTTAGACGA
4 CCAAAAGATGTTAGACGAAT TCTCT CTG GG CGGCGCCA AGAT
TTGAGTGGTGTTGTTGCAGA GGAGA GAC TT GTTGTGGT TTTA
AGAAGAGG AGAA G - GAG ---------
GAM30862 731 TCTCTAGCCGCAGCTTCCAA CT C C A- G TTTCA GG AT ACA- A-
2 ACCAGCGCCATTTCAAGGGA T CTAG CGCAG TTCCAA CCAGC CCA AG AC CGAC GCAGCC
AGTTC
CATCGACACAGCAGCCAAGT G GGTT GTGTC AAGGTT GGTCG GGT TC TG GTTG CGTCGG
TCGAG
TCATTGGAGCTGGGGCTGCC AG T - AG G CTTGG GG GG ACAC GG
ACAGTTGGGGTGGCTGGTTC ATTG
TGGGGCTGGGATTGGAACTG
TGTTTGGGAG

GAM30869 6260 TCTCTCTCCTCGGCAGCAGC C--- CA- ----- G A C CAGAAGAT C
4 GGGAGGCAGAGGAAGGCGGC TCTCTCT CTCGGCAG GCGGGA GGCA AGGA GG GG
GAAGAG TT
AGAAGATGAAGAGCTTTCCC AGGGGGA GGGCCGTC CGCCCT TCGT TTCT CC CC
TTTTTC AG
ATCCAGGGTGACTTTTTTAA CTTT CTC ACCCA G - A CAAGAAT- -
GAACCCACCTCTTGTGCTAC T ATCCA
CCATCCCGCCTCCTGCCGGG CCC
TTTCAGGGGGA GGG
T -----
GAM30871 21354 TCTCTCTGCCGGAAGTCTTT T TCTTT CTTTT ACAGACATTT
3 GGCCCTTTTGGGACAGACAT TCTC CTGCCGGAAG GGCC GGG
TTTCCTTGGCCTCTTCTTTC AGAG GACGGCCTTT CCGG CCT
CGGCAGGAGA - CTTCT TT--- ----------
GAM30878 6302 TCTCTGGAAAGACCAGCGTG AAAGA- GTGGAGA-- TG CGGGA
8 GAGATTGCTGCGGGACAGTG TCTCTGG CCAGC T CTG
AAGGACGGAAGCTGGAGAAG AGAGACC GGTCG A GAC
GCCAGAGA GGAAGA AAGGCAGGA GT -----
GAM30879 20210 TCTCTGGACTATCTAAGGCA T AC TAA A G AAGGTCAAAGA
1 AGCATGGCAAGGTCAAAGAG TCTC GG TATC GGC AGCAT GC
CGGTGCTGGCTCCGATAACC AGAG CC ATAG TCG TCGTG CG
TGAGA T A- CC- G G ----------
GAM30879 16591 TCTCTGGCCGGTTCCGAAAA - -- CG AA- AG G GTGGG
7 GTGAGGATCAGGTAGTGGGT TCTCTGG CC GGTTC AA GTG GATCAG TA
GGCTGATTGCACAAGTTTAG AGGGATT GG CCAAG TT CAC TTAGTC GT
AACCCAGGATTAGGGA A AC AT GAA G- G -----
GAM30879 20784 TCTCTGGCGCGACAAGTGGG T A- GT TG - ACAGA
9 TGTGTGTCTCTCCACAGAGG TCTC GGCGCGACA GTGG G TG TCTCTCC
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GTCGCGCTCGAGA C AA TC GT G -----
GAM30880 21293 TCTCTGGGGTCAAGAGAGAG G- CAAGAG G GC TAGGA
3 CCTGGGCCTAGGAGATCTAG TCTCT GGGT AGA CCTGG C
GGTCTAAAAAAGCTCAAAGG AGGGA CTCG TCT GGATC G

GA AA AAAAAA G TA -----
GAM30880 21292 TCTCTGGGGTTTCAGTTGGC CAGT --- - GTTT
6 CCTATTGTTTGGTGAGGGAA TCTCTGGGGTTT TGG CCCT ATT
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TGAT AAA G ----
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6 ATGAGTGCACTTTTCCTTGG TCTCTGTCCTC TGCATC GGA GAG
TGTGGGAGTGAGGGCAGAGG GGAGACGGGAG GTGTGG CCT TTC
TGAGG TT T ----
GAM30884 21249 TCTCTTAGCGGTATCATGGG C T GG AA-- TGAC
9 TGGTAACATTGACGTGGCCA TCTCTTAG GGTA CATG TGGT CAT
ACTAAACATGTACCATTGAG AGGGAGTT CCAT GTAC ATCA GTG
GGA A - AA ACCG ----
GAM30887 21452 TCTCTTGACTCTGTGTACAT TCT A CAT- C-- - T CCCTCC
8 CCTACCCACTTTTTGGCCCT TC TG CTCTGTGTA CCTAC CAC TTT TGG
CCCCACAAGTGTGCCTGTGG AG GC GGGACACAT GGGTG GTG GAA ACC
GCAATTACACAGGGCGTATG TAT - TAAC TCC T C ------
A
GAM30889 3467 TCTCTTGTTCGTGGTGGATC T G-- TTTC C CCGTGGA
4 TTTCTCAGCCTGAGCCGTGG TCTCT GTTCGTG TGGATC TCAGC TGAG
ACTCAAGTTGACGATTTAAA AGAGG CAAGTAT ATTTAG AGTTG ACTC
ATATGAACTGGAGA T AAA C--- A -------
GAM30890 16716 TCTCTTTCCAAGTAATGTCA C---- TGTC - A TTTA TTCTT
1 GCTTCACTTTTTATTCTTCT TCTCTTTC AAGTAA AG CTTC CTT TTC
TGAAGATAAGAGAAGACTCT AGAGAAGG TTCGTT TC GAAG GAA AAG
CCTTGCTTTAAGTGGAAGAG TGAAT CCTC A A TAG- -----
A
GAM30892 3841 TCTCTTTTGTGAGCAGTGAG - - - -- T CTATT A TACCT
3 TGCCTATTTGATTACCTACC TCTCTTT TGTG AG CAG TGAG GC TG TTACC
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G
GAM30892 19372 TCTCTTTTTTGGTTAATGCC T- TT TGCCT G TATTT
7 TAAAAATGCCTATTTGGGAT TCTCTT TTTGG AA AAAAAT CC
TTTTTTTTTTTTTAAATTAA AGAGAA AAATT TT TTTTTA GG
GAGA TT TT TTT-- G -----
GAM30893 8734 TCTGAAAACTACACCGCTGT AACTACA G -- ACTGTGAAC
2 GGCCCAGACTGTGAACCTGC TCTGAA CCGCT TGGCC CAG
TGGCCGAGTGGCTCATTCAG AGACTT GGTGA GCCGG GTC
A ACTC--- - TC ---------
GAM30894 18658 TCTGAAAGCCCCCGGTATCA AAAG- - GT TTCCTCGAA G GG A AT A C
7 TTCCTCGAATTTCAGTGCGG TCTG CC CCCG ATCA TTTCA TGC GA CCA GC GA
TGGCATTAA
GAACCAATGCAGACTGGCAT AGAC GG GGGT TAGT AAAGT GCG CT GGT TG CT
ACCGTGGTT
TAAGGCTGTGGATAGCTTGG AGCCA T AT C-------- - A- - GC G A
TGCCAATCGGTCGTGGTCAG G TGGA
CGTGAAACTGATTATGGGTG G CTG
GACCGACAGA C GAT
- ----

GAM30900 14066 TCTGACAGGGCCCATGTCCC GA G CAT - A- GCTT
4 ACAAGGCTGCTTGGCCTCAG TCT CA GGCC GT CCCAC AGGCT
TGGGTGCTTGGCTGTGCTGG AGG GT TCGG CG GGGTG TCCGG
A TC G TT- T AC ----
GAM30907 1193 TCTGAGATGTACAGTCATCC ACA CAT TCCTC TCCTCCTCAAATGAT
2 TGGATCCTCTTTAGCTCCTC TCTGAGATGT GT CCTGGA TTTAGC
CTCAAATGATGCTAAATATT GGGCTCTACG CA GGACTT AAATCG
TCAGGTACACAGCATCTCGG A-- CAT TAT-- ----------
G
GAM30907 1207 TCTGAGCAGCAGCTGACAAA GA AG GA AAG CA GAAA
7 GTTTGCAGAGAAATTCCAGG TCT GCAGC CT CA TTTG GA
AGGTGAAAGAAGCTGCCAAG AGA CGTCG GA GT GGAC TT
A AC AA AA GGA C- ----
GAM30909 12156 TCTGAGCTCGTCCGCGCATG C ---- ---------- ATCGTCCTCCA
4 GCTTCATCGTCCTCCAGAGG TCTGAG TCGTCC GCGCA TGGCTTC
CCGCACTCCACTACCTGCGT GGACTC AGCAGG TGCGT GCCGGAG
TATTGGACGACTCAGG - TTAT CCATCACCTCAC ----------
GAM30913 827 TCTGAGTGCAAGCATGGCCT - AA-- G- -- G A GGCTT
8 GGGGTGACCATGTTGGGCTT TCTGAGTG C GCAT GCCTGG GGT ACC TGTTG
CAGCAAGGTGCCTTCCAGGT AGACTCAC G TGTA TGGACC CCG TGG ACGAC
AGATGTGGTGGTCACTCAGA T GTGG GA TT - A -----
GAM30916 18118 TCTGATCTGGTGGAATATAG --- GGAA TAT GACCA
9 TAGTATGGAGACCATCCTTC TCTG ATCTGGT TATAGTAG GGA
CTATTATGAACCAGGTATAC AGAC TGGACCA GTATTATC CCT
AGA ATA A--- CTT -----
GAM30917 16583 TCTGATGGCTGTTGCTTGTT A - TG - G TT GAGAGGTGGTG
7 TTATTTTTTGTCCAAGAGAG TCTG TG GC TTG CTT TTTTATTTT GTCCAA
GTGGTGTTGGACCGAGGTAG AGAC AC TG GAC GAA GAGATGGAG CAGGTT
AGAAGACAGTGGTACACCAG C A GT A - C- ----------
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GAM30918 14442 TCTGATGTGGACCGGTCTTA - G CG AATGTA CTTCTTCC
2 ATGTACTGACTTCTTCCTCA TCTGAT GT GAC GTCTT CTGA
GGAGAGACAGTCGACAATCA AGACTA CA CTG CAGAG GACT
GA A G A- AG---- --------
GAM30921 5487 TCTGCAATGGCTGCCAGGCG G- G GA A CCT- C CATCCC
3 GATCACTCCTCCACTGGAGC TCTGCAAT GCTGCCAG CG TC CT CCA TGGAGC
CATCCCGCTCCATGGCCAAA AGACGTTA TGACGGTT GC AG GA GGT ACCTCG
GCGAGACGATTGGCAGTGAA AG A AG C AACC - ------
TTGCAGA
GAM30927 6533 TCTGCATCCTGTCGGCAATG T--- - G C - ACA- GTGC
2 CCAGGTACATGGTGGTGCCG TCTGCA CCTGT CG CAATGC AG GT TGGTG
CCAGACAGCACTGTGTTGGC AGGCGT GGACA GC GTTGTG TC CG ACCGC
GTACAGGTCTTTGCGGA TTCT T G - A ACAG ----
GAM30927 14534 TCTGCATCTTTTAGCAACCC G C- CAACCC-- G A AAGTCTAAG
6 ACCAGGTGATTCTCAAAAAG TCT CAT TTTTAG ACCAG TG TTCTCAAA
TCTAAGTTTGAGAACCACTG AGA GTA AGAGTC TGGTC AC AAGAGTTT
GTAGAGATAACTGAGAAAAT G AA AATAGAGA - C ---------
GGAGA
GAM30932 20565 TCTGCCGATATTTTTTTTTG - ATATTTTTTTTT G TGGGA
2 TTATCTGGCTGGGAGCAAGA TCT GCCG GTTATCT GC

TGACCTCACTAACCAGTGGC AGG CGGT CAGTAGA CG
TGGA T GACCAATCACTC A -----
GAM30935 16739 TCTGCCTTTCTTTGGAACGT CCTTTC CGTT C CTTCAGTCCA
3 TGTCCTGGACTTCAGTCCAT TCTG TTTGGAA GT CTGGA
CCAGTACTTCTTTCCAGAAC AGAC AGACCTT CA GACCT
TTCAGA TTCA-- TCTT T ----------
GAM30937 14528 TCTGCTACTGGGCTCAGTCC - --- G T -- TTTCTT
3 CAGGCCTTTTCTTGGGCTTT TCTG CTA CT GGC CAGTCCC AGGCCT
CGGGACTGGCTGAGGCCTAG AGAC GAT GA TCG GTCAGGG TTCGGG
ACAGA A CCG G - CT ------
GAM30938 12750 TCTGCTCAGCCTTAACTTCT CT TA CA TTT- AGCAC
7 CAACTTTGCCTTAGCACAGG TCTG CAGCCT ACTTCT AC GCCTT
GTTTCTGTAGGGAGTGGGGG AGAT GTCGGG TGAGGG TG TGGGA
CTGCTAGA C- GG A- TCTT -----
GAM30939 14345 TCTGCTCCATAGGTTTCTGT - CATAG TTC T TTCAAT
1 TTTTAATTTCAATGTTAAAT TCT GCTC GT TGT TTTAAT
ACAACTACAATATGAGCGAG AGA CGAG CA ACA AAATTG
A G TATAA TCA T ------
GAM30940 16860 TCTGCTGAGGAGCCCCCGCT TG AGC GG C GCT
8 GGTCCCTCTGGGCATGCTGT TCTGC AGG CCCCGCT TCC TCTGGGCAT
GCTCGGACGGAAAGCGGGGC GGGCG TCC GGGGCGA AGG AGGCTCGTG
CTGCGGG -- --- A- C ---
GAM30942 13041 TCTGCTGGCTTCACGGCCTG -- ACG GTT- AG T ACATGA
4 TTCTGTTCTCTTAGGCTCCA TCTGCT GGCTTC GCCTGTTCT CTCTT GC CC
CATGAGGGCACAGGGGTGTG GGGCGG CTGGAG TGGGCGAGG GGGGA CG GG
GGAGCGGGTGGGGAGGTCGA AG GGG GTGT CA - ------
GGCGGG
GAM30950 16502 TCTGGAGAAAAGTCAGAATG - AAAA AATGAACAA GCTA
7 AACAAGAAGCTATTCGCAAT TCTG GAG GTCAG GAA
AACCTGACGACACTCTTAGA AGAT CTC CAGTC CTT
T ACAG CAATAACG- ----
GAM30952 13979 TCTGGAGGCATCGGGCAGCC - CA A - TTTCA------ TCCT
2 ACTTTCACTTCTCCTGAAGA TC TGGAGG TCGGGC GC CAC CTTC
ACAGCCCCTGGTGAGCCGCC AG ATCTCC AGTCCG CG GTG GAAG
TGACCCTCTATGA T C- C A GTCCCCGACAA ----
GAM30952 19122 TCTGGAGGCATCGGGCAGCC - CA A - TTCA------- TCCT
3 ACTTTCACTTCTCCTGAAGA TC TGGAGG TCGGGC GC CACT CTTC
ACAGCCCCTTGGTGAGCCGC AG ATCTCC AGTCCG CG GTGG GAAG
CTGACCCTCTATGA T C- C A TTCCCCGACAA ----
GAM30952 20114 TCTGGAGGCTGGGAGGTCCA G TG ---- AAG A TG GCAGACA
7 AGATCAAGGTGCCAGCAGAC TCTG AGGC GGA GGTCC ATCA GG CCA
ATGGTGTCTGGTGAGGGCCG GGAC TTCG CCT CCGGG TGGT CT GGT
TCTTCCTGGCTTGCAGG G GT TCTG AG- - GT -------
GAM30953 21173 TCTGGATAATAGAGCACTCG - T AG --------- A ACAAAGATTC
6 TATAGAGTTTTACAAAGATT TCT GGA AAT AGC ACTCGTAT GAGTTTT
CGGGGCTCGGTATGGGTTTA AGA CCT TTA TCG TGGGTATG CTCGGGG
CACAAGGCTGGATTTCCAAG A - GG GAACACATT G ----------
A
GAM30956 1084 TCTGGCAGCGGAGCTGCAGG G G GGCCTGAG C- TT GCAC
3 CCTGAGGAAACATGCTCAGT TCTGGCA CGGA CTGCA GAAACATG TCAG CAT

TCATGCACATGTGTTGACCC GGACCGT GTCT GACGT CTTTGTAC AGTT GTA
ATGTTTCAGATGCAGTCTGA A - AGA----- CC GT ----
TGCCAGG
GAM30956 19218 TCTGGCAGCGGTACCCGAAT - C - CGAA TATAGCAA - GACGG
4 CCCTATAGCAAACATGTCTT TCTGG CAG GGT ACC TCCC AC ATGTCTT
GACGGAAGACATAGTACACC AGACC GTC CCA TGG AGGG TG TACAGAA
GGGAGGTGACCCCTGACCAG A C G ---- CCACA--- A -----
A
GAM30958 8818 TCTGGCGCTGGCGCGGCTCC G G - AAGAA- TCCGCATT
7 AAGAAGGCATCCGCATTTGC TCTGGC CTG CGCGGCT CC GGCA
TACCAGCGGCGGCCGCGGCG GGACCG GGC GCGCCGG GG TCGT
GAGCCAGG A G C CGACCA --------
GAM30961 14459 TCTGGGACCTGCCAGCACCG CCT - GCACCGTTTTG A TCCTTCTT
9 TTTTGTGGTTAGCTCCTTCT TCTGGGA GC CA TGGTT GC
TGCCAACCAACCATGAGCTC AGACCCT CG GT ACCAA CG
CCAGA --- A ACCA------- C --------
GAM30962 18324 TCTGGGACCTTTGTACAGTG - GTACAGTG T TC AATTG
1 TGATGCTCGAGCAATTGGCT TCTGGG ACCTTT TGA GC GAGC
CTGCTTCAGAGGGTGCCCAG AGACCC TGGGAG ACT CG CTCG
A G -------- T T- -----
GAM30964 21638 TCTGGGCCTTCCGTCATGGG --- T TC C A TA- GCCGGCCA
3 CGTGATGCATAGGGGCGGCC TCTGG GCCT CCG ATGGG GTG TGCA GGGGCG
GGCCACGCCCTGTCTGTACA GGACC CGGG GGT TACCT TAC ATGT TCCCGC
TTCCATCCTGGTGGGCGACC CAG T CC - - CTG --------
CAGG
GAM30965 9587 TCTGGGGCGCCTGGTCACGA TG C- G CGAG - - GGCA
6 GGTTGGGCTGGCAAGTACCA TC GGG GCCTG TCA GT TGG GCT
GGCAGTTGACAGGCCACCCT GG CCC CGGAC AGT CG ACC TGA
GGG GT AC - TGA- G A ----
GAM30969 21640 TCTGGGTTCCTTACATTAAA T- A TTAAA -------- TCCTGT
1 GTTCCTCTTTCCAGTCCTGT TCTGGG TCCTT CA GTTCCTC TTTCCAG
CTGGAAGTGCTTCACGAGGA AGATTC AGGGA GT TAAGGAG GAAGGTC
ATGCCTGAGGGATTCTTAGA TT - CCG-- CACTTCGT ------
GAM30971 6043 TCTGGTGAAAAACCAGGAGG G AAAA T GA GTGGA
3 GTATTGAAGGTGGACTAAAA TCTG TGA CCAGGAGGG ATT AG
TTTCCTTCTGGGATTAACAG AGAC ATT GGTCTTCCT TAA TC
A A AG-- T AA -----
GAM30982 5536 TCTGTATGCTTTGAGCAAGA GTATG AGCAAGATC G-- GGAGG
0 TCGTGGCCAGCAAAGGAGGT TCT CTTTG GTGGCCA CAAA
TTGAAATGGTCACCAAAGAG AGA GAAAC CACTGGT GTTT
AAGA AGA-- --------- AAA -----
GAM30982 19289 TCTGTATTTTAAAGGATCCA TGT -- ATCAGTATTTTTTC
5 ACAGATCAGTATTTTTTCCT TC ATTTTAAAGGATCCA ACAG
GTGATGGGTTTTTTGAAATT AG TAAAGTTTTTTGGGT TGTC
TGA TT- AG ----------
GAM30987 6157 TCTGTCTCAACTGGTCTCTG ACT TCT AGCCTCTG TGAAT
4 CAAGCCTCTGACTGAATGTA TCTGTCTCA GGTC GCA AC
TCCGTGCTGGCCCTATGAGA AGGCAGAGT CCGG CGT TG
CGGA ATC T-- GCCTA--- -----
GAM30992 12995 TCTGTGACCAGTGGGACGCC GA--- GT ACG - CTCTGACACAT

3 CTCGGCTCTCTGACACATAG TCTGT CCA GGG CCCT CGGCT
TCGCAGGGAAGCCCTGGAGA AGACA GGT CCC GGGA GCTGA
AAACAGA AAAGA -- GAA C ----------
GAM30993 20382 TCTGTGAGCCGCTCCAGCAA T CG CAGCAA AA AA- A- TGG
1 ATTAATTGAACCAAAAGAGG TCTG GAGC CTC ATTAATTG CC AAG GGGGGTTG
GGGTTGTGGTAACTCCCAAC AGAC CTTG GAG TGATTGAC GG TTC CCCTCAAT
TTGAAGGCAGTTAGTGAGAA - AA ------ -- AAG AA ---
GTTCCAGA
GAM30994 3952 TCTGTGCCAGGTATATTTGT - CA A AT- --- AATC
8 ATATGTAACCAAATCTGGTT TCTGT GC GGT TATTTGT ATGTA ACCA
TTTGCATCCCACGAGTGACC AGGCG CG CCA GTGAGCA TACGT TGGT
CCGCTGCGGA T CC - CCC TTT ----
GAM30997 12161 TCTGTGGGTTACGCCATCTT GG - - A T G AAATGAGA
6 TAAGGTTCTAAATGAGAAGA TCTGTG TTA CG CC TCTT AAG TTCT
AACTTCAAGAGGTTGATAGT AGGTAT GAT GT GG AGAA TTC AAGA
TTATGGA TT A T - C A --------
GAM30998 3207 TCTGTGTCTCCACCTGGTTC T CCAC C GAACAG C TCT
9 GTGAACAGCTCGGGTCTTCC TCTGTG CT CTGGTT GT CT GGG
AGAATCCAGCCAGCCAGTCC AGACGT GA GACCGA CG GA CCT
AAGTGCAGA - ACCT C ACCTAA - ---
GAM31001 2772 TCTGTTACAAGACTTTCAAT T C CTT------ -- TC CTTCAT
5 ATCAGCCTTCATGCTCTTAA TC GTTA AAGA TCAA TA AGC
TTTGATTTTCTTTTTCTTCT AG CAAT TTCT AGTT AT TCG
AACTGA T C TTTTCTTTT TA TC ------
GAM31005 1303 TCTGTTCTTCCGCCGCTCCG G C T- C T CGTTCTA
3 CCGTCAGCGTTCTACTGCGC TCT TTCTTCCG CGC CCGC G CAG
GGTCGCGATGGAAGAAGAGA AGA AAGAAGGT GCG GGCG C GTC
G A CT - - -------
GAM31006 9396 TCTGTTGAATAGATGAATTG GAA TGAATT CTG G GTGAACAG
1 ATACCTGAGGTGCAGTGTGA TCTGTT TAGA GATAC AGGT CAGT
ACAGGCTGGACCTAAGTGTC AGACGA ATCT CTGTG TCCA GTCG
TCTAAGCAGA --- ------ AA- G --------
GAM31007 18630 TCTGTTGCTGAGATGTCGGC TT TG --- TC C - GAGAACAAG
8 TTATCATCATGGAGAACAAG TCTG GC AG ATG GG TTATCATCA TG
CATTGATGATGACTATTGTG AGAC CG TT TGT TC AGTAGTAGT AC
AATTTGGCTCAGA T- GT AAG TA - T ---------
GAM31009 2888 TCTGTTTAGAAATATGAATT T AAATATGAATT ACAATTAAGCAAGCAATAC
8 ATGATATAAAAACAATTAAG TCTGT TAG ATGATATAAAA
CAAGCAATACTTTTATGTTA GGATA GTC TATTGTATTTT
TTTAAAACCTTGCTGTATAG T GTTCCAAAATT ----------
G
GAM31010 4029 TCTGTTTCTGAAACCAGACT TTT AAACCA- TGTT A TT-- ATTAATTA
6 TTGTTAATTAACAGTTTTAA TCTG CTG GACTT AATT ACAG TTAAAAT
AATATTAATTAGTTTTGACA AGAC GAC CTGGA TTAA TGTT AGTTTTG
TCTTGTAAATTTTAGGTCAA CT- ATAAAAA TT-- A CTAC --------
AAATACAGTCCAGA
GAM31012 21595 TCTGTTTTGTTTTTTGGTAT G T T - CTTAT G AACTTCAGTAGCAAACC
4 CACTTATGTAGTGTGAACTT TCT TTT GTT TTTGG TATCA GTA TGTG
CAGTAGCAAACCCACAATAC AGA AAA TAG AAACT ATAGT CAT ACAC
CAGCTTGATATTCAAATGAT G C T T TCGAC A ----------

CAAAGAGA
GAM31014 3067 TCTTAAAGAAATTGGACAGC AAAGAA GA G- AA CAGGACA
6 ATATGAAGACAGGACATCAC TCTT ATTG CA CATATG GA
ATATGAATGCACGATATGAA AGAA TAGC GT GTATAC CT
GA GTA--- AC AA A- -------
GAM31017 6253 TCTTAACTTGATTATATTTG C GAT- ATT AA- C TCCA
0 CAAAGACCCTATTTCCAAAT TCTTAA TT TAT TGCA GACC TATT
AAGGTCACATGCACAGGTAC AGGATT AA ATG ACGT CTGG ATAA
TGAAAATTAGGA A AGTC GAC ACA A ----
GAM31018 20608 TCTTAAGTCCTGGTGTTGTG - TCC GTTGT- TGACA--- A-- GA ACA GAT
0 TGGATGACAAGCAGAAGGCA TCTT AAG TGGT GTGGA AGCAGA GGCAGTTAT TG GGT

GTTATGATGACAGGTGATAG AGAA TTC ACCA TACCT TTGTTT CCGTTAATA AC CTA

ATCCAAAATAATTGCCACAT A CT- AATCTT TTTTACAA ACA AA --- ---
TTGTTAACATTTTTCCATTT AG
CTAAACCATCCTTAAAGA

--
GAM31018 21412 TCTTAAGTTATTTATTTCTG T TTTAT TG TTT AAAT
1 GGTTTTAAACATAAATATGT TCT AAGTTA TTC GGT AAACAT
TTACTTGGGATTTAGCTTTG AGG TTCGAT AGG TCA TTTGTA
GA T TT--- GT --- ----
GAM31020 18082 TCTTACACAATGAAAAAATA A A A C GA-- TAGC
7 CTTGCAGATAATTAGCATTA TCTT CACA TGAAAA ATA TTGCA TAAT
AGAATGCAAATATATTTTTA AGAA GTGT ATTTTT TAT AACGT ATTA
CTGTGGAAGA G C A A AAGA ----
GAM31020 6334 TCTTACAGAAATGTTTAAAC -- TAAACAACC AAATACA
9 AACCCAAAATACATGAATAA TCTTACA GAAATGTT CA
AAATGACATTTCTTTGTAGG AGGATGT CTTTACAG GT
A TT TAAAAATAA -------
GAM31022 5661 TCTTACGGAAGGAGCAGCAG A -- AGCA- A ----- - AAA
7 GGGACAGGAAACCTAGTGGA TCTT CGG AAGG GC GGGG AC AGG
CGCCCCGCCACCACCTTTCC AGAA GCC TTCC CG CCCC TG TCC
CGAAGA - CT ACCAC - GCAGG A ---
GAM31026 9043 TCTTAGCTCTTGGGATGCAG C G-- - - - GCT
2 GCTCAGCCCGCTGGAGCATG TCTTAG TCTTGG ATGCAG GCTCA GC CC
AGCTCTGTGTGTACCGAGAA GGGGTC AGAGCC TGTGTC CGAGT CG GG
CTGGGG A ATG T A A ---
GAM31027 14563 TCTTAGTAACCTAATGTAGT - A TA TAC---- T CCTACTACATAT
5 TACTTACTTCTTTTATCCTA TCTTAGTAACC TA TG GTTACT TTCT TTAT
CTACATATATAATAGAACCA AGAATTATTGG GT AC CAATGA AAGA AATA
AAATAGTAACGTCAATGTGG T A TG TAAAACC T ----------
TTATTAAGA
GAM31033 18306 TCTTATTGCTGCAGCAAGGC - C C TT G - --- --- A TCCCCAAAAC
0 TTGAAGAGATGTGTGTCAAT TCTTATT GCTG AG AAGGC GAAGA ATGT GTG TCA ATGAGG CT

GAGGACTTCCCCAAAACGGC AGAGTGA TGAC TT TTCTG CTTCT TACA CAC AGT TATTTC GG

CTTTATAGATGATCCCACAA A C - T- A A CCT AGA C ----------

CATATCTTCTGTCTTTTCCA
GTAAGTGAGA

GAM31033 22213 TCTTATTTTTGTAATCAGTC A T CA A-- C A TG TGAAGGCT
8 ATTGGCTTCTTATCTGGATG TCTT TTTTTG AAT GTC TTGG TTCTT TC GA
AAGGCTTTTGGAGGAGAACC AGAA AAGAAC TTG CAG AACC AAGAG AG TT
AAAACGACAAGTTCCAAGAA G C AA CAA - G GT --------
GAAGA
GAM31034 20153 TCTTCAAAAACAAATTGCAC AACAAATT CTGA AAA AAAA
2 TGATAAAACAAAAACAAAAG TCTTCAAA GCA TAAAACA AC
TATGTTTTAAATGCTTTGAA GGAAGTTT CGT ATTTTGT TG
GG -------- AA-- A-- ----
GAM31035 14555 TCTTCAAGGGCACCTTTTGC CA TTT CC ----- AACTG
9 CCAGCTTGAGTGAACTGCAC TCTTCAAGGG CC TGC AGCTTG AGTG
TGTTGACAAGCTGCATGTGG AGGAGTTCCT GG ACG TCGAAC TCAC
GATCCTTGAGGA AG TGT -- AGTTG -----
GAM31036 3144 TCTTCACAGAGTGCCTTTAT CAGAG ATG---- GT GAGAATTA
8 GACCAGTTTGGAGAATTACG TCTTCA TGCCTTT ACCA TTG
ATGGTAAGGGGAAGAGGCAG AGAAGT ACGGAGA TGGT AGC
ATATGAAGA ATAG- AGGGGAA -- --------
GAM31037 21188 TCTTCACCCTAAAATATTTT CCCTAAA TTT TATA - G AAGATAC
4 GCTATATATCTCATAAGAGC TCTTCA ATA TGC TATCT CATAAGA CA
AAAGATACTGTCTTATGTAG AGGAGT TAT ACG ATGGA GTATTCT GT
GTACAATGCATTTATCAAAT TAAAC-- TT- TAAC T - -------
TGAGGA
GAM31038 4244 TCTTCAGATACCAAGATGAG A AAGA CT TG GTTTG
6 GTCTTTGGTGGGTTTGTCAC TCTTCAGAT CC TGAGGT T GTGG
TGAGCCTCAGGAGGAGTCTG AGAAGTCTG GG ACTCCG A CACT
AAGA A AGG- -- GT -----
GAM31042 9238 TCTTCATGGAGATTGCAGCT A- AGA GC A AA GCTG
0 GACAAACTGCTGAGCCTGCC TCTTC TGG TTGCA TG CA CT
AATGCAACAGCCACGGAAGA AGAAG ACC AACGT AC GT GA
GC GAC A- C CC ----
GAM31043 3201 TCTTCCAATGACTGTAAATC CAAT CTGT CTA A ----- ATTCT
7 TTTTTCTATTCTGTAGTATT TCTTC GA AAATCTTTTT TTCTGTAGT TTTTT CTG
TTTCTGATTCTCAGGGCATG AGAAG CT TTTAGGAAAA AGGGTATTA AAAAG GAC
AAAACATTATGGGAAAAAAA CAT- ---- AAA C TACGG -----
AGGATTTTCTACGAAGA
GAM31044 3355 TCTTCCAGAAGTGTGATTGG - --- TT ATAAATATGCCTC
4 GAATAAATATGCCTCTCCTT TCTTCC AGAA GTGTGA GGGA
TTTATATTATTTCTAGGAAG AGAAGG TCTT TATATT TCCT
A A TAT TT ----------
GAM31047 9009 TCTTCCCTTCCTCCTCCATG T C CAT- CC-- CACTC
5 TTCCCTGCACTCCAGTTCCG TCTTCCCT CCT CTC GTT CTG
ACCCCAGAGCAGGAGGGAAG AGAAGGGA GGA GAG CAG GAC
A - C ACCC CCTT -----
GAM31050 9157 TCTTCGGACAAAGGCAGCAG - ---------- - AAGCTAAAAACAAAATCA
8 TAAGCTAAAAACAAAATCAA TCTTCGGACAA AGG CAGC AGT
CTGGCTGAATTTTCCTTCTT AGGAGTCTGTT TCC GTCG TCA

TACCTCTTGTCTGAGGA C ATTTCTTCCTTTTAA G ----------
GAM31051 8277 TCTTCGGGGGCCTCTTCATC GG CA A G AC TCA C TGGAC
0 ATCTTGCTCTGGCGGACGCT TCTTC GGGCCTCTT TC TCTTGCTCT GCGG GC AGTAC TG

CAAGTACCTGTGGACCGTGT AGAAG CCCGGAGGA AG AGAACGGGG CGTC CG TCGTG GC

GCTGCCACTGCGGGGGCAAG A- -- C G AC --- T -----
ACGAAGGAGGCCCAGAAGA
GAM31054 9221 TCTTCTCTCTTCTTAAAGTT TCT TTGCTATATAT- CAATT
6 GCTATATATTTACACAATTT TCTTCTCTCT TAAAG TTACA
GTGATTCCTAACCTTTTTTT GGGGGAGAGG GTTTT AGTGT
GTTGGAGAGGGGG TT- TTTCCAATCCTT -----
GAM31057 3974 TCTTCTGGTTCAAAGAACAC AAAGA A AGAT ATAATA
2 ATCAGATGCAAGGATAATAT TCTTCTGGTTC AC CATC GCAAGG
CTTGTGGTGGTAGAGCCAGA AGAAGACCGAG TG GTGG TGTTCT
AGA A---- - ---- ------
GAM31057 16637 TCTTCTGTGGTTGCCCGGAG T -- GG AGGAT G GAG- - G AGTCTGAC
9 TGAGGATGGTGATGAGGCTG TCTTC GTGGTTGC CC AGTG GGT AT GCTGTAT G GCT
TATGGGCTAGTCTGACAGTG AGAGG CACTAGCG GG TCGC CCG TA TGGCGTA T TGA
TGATGCGGTAATGATGGCCT C AA GA AGGT- G GTAA G G --------
GGACGCTAGGGAAGCGATCA
CCGGAGA
GAM31060 12796 TCTTCTTTTTGTATTTGGCA T T AT G T - C C ATTCAG
8 TCTATTTGGCTGCGGTATTC TCT CTTTT GT TT GCA CTAT TTGG TG GGT
AGGCCTCATCAACATAGCTG AGA GAAAG CG AA CGT GATA AACT AC CCG
CGAAGCTGAAAGCAGA C T -- G C C - T ------
GAM31062 14536 TCTTGAATTACAGGGGGGTT T C GG GG - TC TTGT
2 TGTAGCTTCTCTTTGTAGAT TC TGAATTA AG G TTTGT AGCT TCT
AGCTAATAAAATCACTTAAT GG ACTTAAT TC C AAATA TCGA AGA
TCACGG C - A- TA A T- ----
GAM31065 4092 TCTTGATATTTTTGACAGAT AT- T -------- GATT - TCTGG
2 TCCTCCCAAGTCTGGCTCTG TCTTG AT TTTGA CA CCTCCCA AG
GGAGGTATGTACCCATCTCA AGAAC TG AAACT GT GGAGGGT TC
AATGTTCCCAAGA CCT T CTACCCAT AT-- C -----
GAM31066 6649 TCTTGATTCCTGGGCAGTCA T T - A - --- TT A AGCG
0 GTATCTTTCAAGCAGCGGTT TCTTGAT CC GG GC GTCA GT ATCT C AGC
AGGGGGATTCAACATGGCGC AGAACTA GG CC CG CGGT CA TAGG G TTG
ACCGGATCAAGA - - A - A ACT GG A ----
GAM31069 22341 TCTTGCGGCATCCACGAGAC - CA- AGAC - ACTCCATCA
0 CACCTTCAACTCCATCATGA TCTT GCGG TCCACG CAC CTTCA
AGTGTGACGTGGACATCCGC AGAA CGCC AGGTGC GTG GAAGT
AAAGA A TAC A--- T ---------
GAM31072 6007 TCTTGCTTTGCACATCAATG C ACATCAAT T A T C AG TCAAGTCAT
4 GTTCAAAATTTATAGCTGCA TCTTG TTTGC GGT CAA ATT ATAG TGC AATATTC
GAATATTCTCAAGTCATGAA AGAAT AAATG CCG GTT TAA TGTC GTG TTATAAG
TATTAGGTGTCTGTCAATCT A CAAAAT-- - C C T GA ---------
TGGCCTAAAACGTAAAATAA
GA
GAM31073 9802 TCTTGGAGTTGTGAAGGTCC A T AA T - TC AAATC - CAG GTCCAACTAC
7 GCCTTATCTATAAATCTGCT TCTTGG GT GTG GG CCGCC TTA TAT TGCT TGGGCGA CCG

TGGGCGACAGCCGGTCCAAC GGGACC CA CAC CC GGCGG AAT GTA ACGG ACCCGTT GGC

TACTAAACGGGATTGCCCAC C - -- - T GA AAATA C AG- ----------
GGCAATAAAATGAGTAATGG TAAA
CGGCCCACACCCCAGGG

GAM31076 8189 TCTTGGGATAAAAGCCTTTG A-- TTT - GTCAGG
4 ACCAGGCAGGTCAGGCTGAC TCTTGGGATAAA GCC GACCAGG CAG
CTGGTTTTTGGTCAGTTTAT AGGGCCCTATTT TGG TTGGTCC GTC
CCCGGGA GAC TTT A ------
GAM31076 8440 TCTTGGGCAACGGTCATGAT G AAC TG G G ATCAGAGG
7 GGGAGGAGTAATCAGAGGTG TCTT GGC GGTCA ATG GAG AGTA
CTCTTGTGTTGTGATCAGGC AGAG TCG CTAGT TGT TTC TCGT
TGGAGA G GA- GT G - --------
GAM31078 21470 TCTTGGTGACAAAATATGTT TG A T TG AGAG AGGG
6 GTGTAGAGTTCAGGGGAGAG TCTTGG ACAA ATATG TG T TTC
TGCGTCATATGTTGTTCCTA AGGATC TGTT TATAC GC G GAG
GGA CT G T GT A--- ----
GAM31079 12498 TCTTGTAAAGATTAGATGAT T- AGATGATA ATAAA
6 AAAATGTATATATAAAGTAT TCT GTAAAGATT AAATGTATAT
ATATTTGAAACAAAAATTTT AGA TATTTTTAA TTTATATATG
TATTTAGA TT AAACAAAG -----
GAM31081 19117 TCTTGTGAAATTTCTGGTAC G AA ACT ATATAAAATACATAAA
8 TTTGTATATAAAATACATAA TCTT TGA TTTCTGGT TTGT
AACAATAGATTAGAAATCAA AGAA ACT AAAGATTA AACA
AAGA A -- GAT ----------
GAM31083 20913 TCTTGTGTTGAGACTTCGTG GAGA GT--- CTA AAAAGGAAGAAAAAG
5 GTGGTGCTAAGAAAAAGGAA TCTTGTGTT CTTC GGTGGTG AGA
GAAAAAGTCTAACACCACTC AGAACACGA GAAG TCACCAC TCT
CCAAGAAGAATAAGCACAAG ATAA AACCC AA- ----------
A
GAM31083 3831 TCTTGTGTTGAGACTTCGTG GAGA G -- C AAAGGAAGAAGAAG
6 GTGGTGCTAAGAAAAGGAAG TCTTGTGTT CTTC TGG TGGTG TAAGA
AAGAAGTCTTACACCATCCC AGAACACGA GAAG ACC ACCAC ATTCT
AAGAAGAATAAGCACAAGA ATAA A CT - ----------
GAM31085 20607 TCTTGTTTCTCATTGGGACG TT GACGGTGA ATAGTGGAAA
6 GTGACTGTGTATAGTGGAAA TCTTGT CTCATTGG CTGTGT
GCACAGAGCCAATGAGGGAC AGGACA GAGTAACC GACACG
AGGA GG GA------ ----------
GAM31086 20185 TCTTTAAAAAGTTAAATGTT TTAAA A TTTTTTAA- TTCAA
7 TTTTTAATCTTCAAGAAATC TCT AAGTTAA TGT TC
ATGCTACACTTAACTTCTCC AGA TTCAATT ACA AG
TAGA TCCTC C TCGTACTAA -----
GAM31087 8166 TCTTTAAAGATTCTTTTGGT TA TCTTTT CATCAC TCTGT
0 TCATCACAAGCCTCTGTGGC TCTT AAGAT GGTT AAGCC
TTCTTCTCAACCTGTATCTT AGAG TTCTA CCAA TTCGG
CTGAGA TC TGT--- CTCTTC -----
GAM31087 5938 TCTTTAACACAGTGTCCCAT T C TCC TG AATTTTTAG
4 TGAAATTTTAATTTTTAGAG TCTT AA ACAGTG CAT AAATTTT

AATTTATGAATCACTGTTTC AGAA TT TGTCAC GTA TTTAAGA
AAGA C - TAA -- ---------
GAM31089 6361 TCTTTAGGAAAGAAAATGAA TAG T - CATTTTCTTTTTTT
9 ATAAAGACATTTTCTTTTTT TCTT GAAAGAAAA GAAA TAAAGA
TTCTTTACTTTTTTTTTTTT AGAG TTTTTTTTT TTTT ATTTCT
TTATGAGA TA- T C ----------
GAM31090 5860 TCTTTAGGTGTGGTTTTTGT TT-- - C CA TTATGT
0 CATGTAGCAGTTTTTATGTA TCT AGGTGTGG TTTTTGT ATGTAG GTTT
GATCTATATATAAAAGTCCA AGA TCCACACC GAAAATA TATATC TAGA
CACCTCCTCAGA CTCC T - -- ------
GAM31090 9386 TCTTTAGTAGCCACCTCATA T - ACCTC GTAACTGAAAAACTGACTA
4 TTTAGTAACTGAAAAACTGA TCTTTAG AG CC ATATTTA
CTATAAATATTTGAAGGACT AGAAATC TC GG TATAAAT
CTAAAGA - A AAGTT ----------
GAM31090 18436 TCTTTAGTGTTTTTTGTTGT A TTTTT GA TAACTC- TCTCTCACCT
7 TTCTGATAGTAACTCACTTC TCTTT GTG TGTTGTTTCT TAG ACTTC
TCTCTCACCTGAAGTTAAAA AGAAA TAC ACAGCGAAGA GTC TGAAG
TTCTGGAGAAGCGACATATC A TAT-- G- TTAAAAT ----------
ATAAAAGA
GAM31097 12546 TCTTTCGAGCCAATATGAAC C- AATATG-- G-- ACCCTTCTAAG
5 ACTGGGGACCCTTCTAAGCC TCTTT GAGCC AACACT GGG
CAAGAGTGTTATTCTCAAGG AGAAA TTCGG TTGTGA CCC
CTTTAAAAGA AT AACTCTTA GAA ----------
GAM31101 21634 TCTTTGAAGTGTTTTTCTTA AAGT-- TAGA ACAT
2 GAGTCTGGCACATGCTAGGC TCTTTG GTTTTTCT GTCTGGC
ATTGGAGAAATTAAGAACGA AGGAGC TAAAGAGG CGGATCG
GGA AAGAAT TTA- ----
GAM31101 16569 TCTTTGACTCTGTTTTCTCA G TCTGTT- AAT-- ACTT AACA
9 TCTATAAAATGGACTTTTGA TCTTT AC TTCTCATCTATAA GG TTGAG
GAACATTCAACTAACTTGCA AGAAA TG AAGAGTGGGTATT TC AACTT
ATTATGGGTGAGAATTAATA G TATAATT AACGT AATC ----
TGTGAAAGA
GAM31105 18733 TCTTTGGGCTTCCTGGATTT TTT TG A CTTTCTATCTCCTTCC
9 GGCTTTCTATCTCCTTCCCC TC GGGCTTCC G TTTGG
AGGCTTGGGAAGTTTTCTGA AG TTTGAAGG T GGACC
TCT GT C ----------
GAM31108 21686 TCTTTGTGAAATGTCAAAAT GAAAT C TG AT CAGGAACTTTA
2 ATGGCTATGGTTTCAGGAAC TCTTTGT GT AAAATA GCT GGTTT
TTTAAAATCGGTTGTATTTT AGAGATA CA TTTTAT TGG CTAAA
ACTTTAAATAGAGA AATTT - GT -- ----------
GAM31109 19195 TCTTTGTTTGAAAATCTATA GAAAATCTATAT CAACT TTTTA
2 TAAAGTACAACTTGCTTTTA TCTTTGTTT AAAGTA TGC
GCATGATTATTTTCCTAAAT AGAAACAGA TTTTAT ACG
AAAAAGACAAAGA AAAATAAATCC- TAGT- -----
GAM31110 832 TCTTTTAATATAGCCTATAA T CTA - CTCAACA
2 TTCGTATGCTCAACATATAC TCTTTTAATA AGC TAATTC GTATG
AGAATTAATGCTTTATTAAA AGAAAATTAT TCG ATTAAG CATAT
AGA T TA- A -------
GAM31110 6111 TCTTTTACTACTAAACTTAA TTTA CT A AAT C T ACAAACAG G GTT T A
6 ATGGCCAATTGAAACAAACA TCT CTA AA CTTA GGC AA TGAA TTCTGA ACC CT CC
CCACT

GTTCTGAGACCGTTCTTCCA AGA GGT TT GAGT CCG TT ACTT GGGATT TGG GG GG
GGTGA
CCACTGATTAAAAGTGGGGT CG-- CT C CTT A T ATAATA-- A AC- T -
GGCAGGTATTAGGGATAATA GATTAAA
TTCATTTAGCCTTCTGAGCT
TTCTGGGCAGA

GAM31110 6505 TCTTTTACTACTAAACTTAA TTTA CT A AAT C T ACAAACAG G GTT T A
7 ATGGCCAATTGAAACAAACA TCT CTA AA CTTA GGC AA TGAA TTCTGA ACC CT CC
CCACT
GTTCTGAGACCGTTCTTCCA AGA GGT TT GAGT CCG TT ACTT GGGATT TGG GG GG
GGTGA
CCACTGATTAAGAGTGGGGT CG-- CT C CTT A T ATAATA-- A AC- T -
GGCAGGTATTAGGGATAATA GATTAAG
TTCATTTAGCCTTCTGAGCT
TTCTGGGCAGA

GAM31113 5533 TCTTTTCCATCGCCTTCATC CC - GTCCTT T--- AG T TCAAGT
3 ACTGTCCTTATCTTCAAGGT TCTTTTCCATCG TTCAT CACT ATCT CA G CTACATGT
CTACATGTTCAAGTGCGTGT AGAGGAGGTGGC AAGTA GTGA TAGA GT C GGTGTGCG
GGCGGTGCTACAGATTGATC TC C ACTAGT CATC GG - ------
AAGTGCATGAACTCGGTGGA
GGAGA
GAM31113 20499 TCTTTTCGAAGTATGGCAAA ---------- - T AAAA TGCTCT
9 ATTGTGGGCTGCTCTGTTCA TCTTTT CGAAG TA GGC TTGTGGGC
TAAGGGCTTTGCCTTCGTTC AGAGAG GCTTC GT TCG AATACTTG
AGTATGTTAATGAGAGA TAATTGTATGACTT C T GG-- ------
GAM31118 12826 TCTTTTGTTGTTTGTTTTGT TT T T TTTTTC AA TTA TTAATGTAT
4 TTTTTTTTTCTGAGGGAAGC TCTT GTTGTT GTT TGTTTTT TGAGGG GCC GC
CTTAGCTTAATGTATGCCGG AGAG TAACGA TAG ACAGAAA ACTTCC TGG CG
TCCTTCAAAAGACATGATAG TT - T ------ -- C-- ---------
CAATTTGAGA
GAM31124 18073 TGAAAAACTAGATTTAAAAT AG- AAA GTG- TAGA
8 AGTGGTTTTAGAAAACAGGA TGAAAAACT ATTT ATA GTTT
TATCACAAGTAACAGTTTTT ACTTTTTGA TGAA TAT CAAA
CA CAA CAC AGGA ----
GAM31126 20032 TGAAAACACACCTCTATAAA CACA TAAA -- TG AATAAG
7 ATGTGTACTGGGAATAAGCT TGAAAA CCTCTA ATGT GTAC GG
TTGTATTTACATACATTAGG ATTTTT GGGGAT TACA TATG TC
GGAATTTTTTA TAA- TACA TT TT ------
GAM31131 20416 TGAAAATGGAGGGCACTCTA TG ------- ATCA CTATA CAAC
2 TCAGTCTATAACTATCAACG TGAAAA GAGG GCACTCT GT ACTAT
TAGTGCAACAGGGTGTTTTG ACTTTT TTCC TGTGGGA CA TGATG
ATACCTTTGTTTTCA GT ATAGTTT ---- ACG-- ----
GAM31134 19969 TGAAACATAAATGAATGCAA CATAAA A A G-- T TG T CAG
4 TTGTTTGTTGTTAACTTGTA TGAAA TGA TGC ATTGTTT TTGT AACT TATA TG
TATTGCAGCATTATAATGGT ACTTT ACT ACG TAACGAA AACA TTGG ATAT AC
TACAAATAAAGCAATAGCAT AAAC-- - A ATA - TA T ---
CACAAATTTCA
GAM31138 6077 TGAAAGAAGAACTACTTGTG A AACTAC AAGG- AAC A CAAGAA

0 AAGGGCAAACAGTTTAGTTC TGAA GAAG TTGTG GCA AGTTT GTT
AAGAAAGCAAGGCTATGCAA ACTT CTTC GACAC CGT TCGGA CGA
TACCACAGCAAACTTCATTC A AAAC-- CATAA A-- A ------
A
GAM31141 8789 TGAAAGGAAATATTGCACTT AAATA CAC ATGACTAA
3 TCTGTTCTCATGACTAAGGG TGAAAGG TTG TTTCTGTTCTC
GACAGGAGTTCCAGAAGAAC ACTTTCC GAC GAGGACAGGGG
CTTTCA AAGAA CTT --------
GAM31142 9037 TGAAAGGTTCAAAAAGTAGA AG AAAA AG- ACAA AAC TACTT
5 TCTTACAAGATGTAACGAAT TGAA GTTC AGT ATCTT GATGT GAA
ACTTTTCTAAACATCAAGAT ACTT CAAG TCG TAGAA CTACA CTT
ACAGCTCAGAACACTTCA CA AC-- ACA ---- AAT -----
GAM31143 9637 TGAAAGTATGATTCAATGTG TAT- - T GCAAA G GGTC- ATAA
2 CAAATACAGGTAGGTCTTCA TGAAAG GAT TCAA GT TACA GTA TTCAGC
GCATAAGCTGAAATATATGC ATTTTT CTA AGTT CA ATGT CGT AAGTCG
ATGTAAAAACTTTGACATCT TTTT C T AAA-- A ATATA ----
TTTTTTTTA
GAM31143 18879 TGAAAGTGTCAGCATCTTTA -- A C AGTT ATCCTTG
8 GTTCAGCATCCTTGGCTGTG TGAAAGTG TC GCAT TTT CAGC
GAATATGTAGATTCACTTTT ATTTTCAC AG TGTA AAG GTCG
A TT A T GT-- -------
GAM31145 9751 TGAAATACAGCATTTTTGTT G -------- CCA TTT
4 GCCAATGTTTCGTACCAGCA T AAATACAGCAT TTTTGTTG ATG
GAATCTTCTGGGTGCTGTAT A TTTATGTCGTG AAGACGAC TGC
TTGA G GGTCTTCT CA- ---
GAM31163 13966 TGAACTTATACCCCACTCAT A CC A ------ - TGAAG - TTAGTT
7 CTCCTGAAGTCCCCAGTTAG TG ACTTATA CC CT CATC TCC TCC CCAG
TTCTGGAGGAGATGGATGAT AC TGAGTAT GG GA GTAG AGG AGG GGTC
GTCTTAAAGAGGTTTATGAG C TT A AATTCT T TAG-- A ------
TCCA
GAM31164 21111 TGAACTTTTAAATGACAAAC C-- A AC- TTT CATAAG G TTCAAA GATTTCC
7 TTTTGGCTCATAAGAATGGC TGAA TTTTAA TG AAACT GGCT AATG CACC AGGGGC
ACCTTCAAAAGGGGCGATTT ACTT AAAATT AC TTTGA TCGG TTAC GTGG TCTCTG

CCACTCAGTCTCTGGTGGCA CCA G CAC --- ACCTTA G ------ -------
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CAGTTAAAAACCTTCA

GAM31165 2957 TGAAGAAGGAGAGACCCCAG AGAGA - G C- GAA ATGA
9 CGTGGCTGGAACAGATGATT TGAAGAAGG CC CCA CGTGG TG CAG
GCACATACCACGTGGCGGGA ATTTTTTCC GG GGT GCACC AC GTT
CCTTTTTTA AG--- C - AT AC- ----
GAM31171 9716 TGAAGAGGCTTTGATTTCTT GCTT ATTTCT TCA-- TATTCT
0 TCTCTTTATCAGGATATTCT TGAAGAG TG TTCTCTTTA GGA
TCCACCTCTGAGGAGAACAT ACTTCTC AC AAGAGGAGT CCT
TAACTCTTCA AATT ------ CTCCA ------
GAM31173 2920 TGAAGATTTTTAAGACAATT TTTA AT-- T TACA AA ACCTGG
7 ATTGAGTAAAATACAAAGAA TGAAGATT AGACA TAT GAGTAAAA AAGAAT GATG
TAAGATGACCTGGCATTCCA ACTTTTAA TCTGT ATA TTCATTTT TTTTTA TTAC

TTTTTTTTTACTTTATATAT ---- GTAT T ---- CC ------
GTGTCTAATTTTCA
GAM31174 1754 TGAAGCACTACGGGCCTGGC C AC GCTG AGCATG AACGCA
6 TGGGTGAGCATGGCCAACGC TGAAG ACT GGGCCTG GGTG GCC
AGGCAAAGACACCAACGGGT ACTTC TGA CCTGGGC CCAC CGG
CCAGTTCTTCA T -- AA-- AGAAA- ------
GAM31178 1341 TGAAGGAATAATGGAAAATA GAATAA AAAATAATG- ATT
7 ATGGCAATTTATTAAATTGT TGAAG TGG GCAATTT
AGAAAATGTGCTAGCTGCTT ACTTC ATC TGTTAAA
CA GTCG-- GTGTAAAAGA ---
GAM31181 3424 TGAAGGCTGAAGATTTTATA AA TGA A T TCA G -- ATGCAAGAAAAGAA
5 GTGGATGTTATCAACATGGA TG GGC AG TTTTATAGTGGA GTTA ACATG ATTA TGGA
TTATGGAATGCAAGAAAAGA AC CCG TC AGAATGTTATCT CGAT TGTAC TAGT ACCT
ATCCAATTGATCATGTTAGC CC --- - T --- - TA ----------
TTCTATTGTAAGACTGCCCC
CA
GAM31183 5538 TGAAGGTATAAGGAGTGTGT ATA GTGTGTT GA TTGAT
4 TTCTGAATTCAATTGATTTG TGAAGGT AGGA TCT ATTCAA
AATAGATGAAGTCCTAGGCC ACTTCCG TCCT AGA TAAGTT
TTCA GA- GAAGT-- -- -----
GAM31186 2759 TGAAGTCATATTTGTTGATG - A G TT - AGC
4 GTTTGACAAAGCTTGTTCAC TGA AGTCAT TTT TTGATGG TGA CAA
TCCATCAGAGAATGACTATC ACT TCAGTA AGA GACTACC ACT GTT
A A - - TC T ---
GAM31199 21345 TGAATCCTTGCCTCCCTCAA T TG - C- AGC - - GAACA
0 GGAAGCCCACACAGAACATG TGAA CCT CCT CCCT AAGGA CCA CA CA
TTGCTGGTAATCTTTCCAGG ACTT GGA GGA GGGA TTTCT GGT GT GT
GTAGGAGGCTTCA C -- T CC AAT C T -----
GAM31207 6432 TGAATGTGTCTTCCAAAGTT T --- AG- A AAACTTGATCC
5 CATGTGTTGGAAACTTGATC TGAA GTGT CTTCCAA TTC TGTGTTGG
CCCAATGCAGAAATGTTGGA ATTT CACG GAAGGTT AAG ACGTAACC
AGGTGGCACCTTTA C GTG GTA - ----------
GAM31209 9808 TGAATTCAGTGATATCCCTA TC- ATATC- A CCATT
9 TACACTGCCATTTAGTGGAT TGAAT AGTG CCTAT CACTG
AGGTTATTGTACTTCCATTC ACTTA TCAT GGATA GTGAT
A CCT GTTATT G -----
GAM31213 4426 TGAATTTTATCTCAGAAATT CT AA--- - CAAAA
9 TTTTTACCCAAAAGGTGCAG TGAATTTTAT CAGA TTTTTT TACC
AAAAACATATCTGGTAAAAT ACTTAAAATG GTCT AAAAGA GTGG
TCA -- ATACA C -----
GAM31217 16484 TGACAAGTTCGATAAAAGTG AG G AA-- G- GACCAAGAAAATTAA
9 TGCAGACCAAGAAAATTAAT TGACA TTC AT AAGT TGCA
GCAAAACTTCATGATGGAGT ACTGT GAG TA TTCA ACGT
ATGTCA AT G GTAC AA ----------
GAM31220 3546 TGACACCTTCCTCGAAGGGT -- CC GAA G G AA CCCAAGTC
0 GGGCGTGGGCCTAAGGCTCC TGA CACCTT TC GG TGGGC TGGGCCT GGCT
CAAGTCGGCCAGGGGCTCGG ACT GTGGAG AG TC GTCCG GCTCGGG CCGG
CCTGGCTCAGAAGAGGTGCT TC A- AC- G - GA --------
TCA
GAM31220 21314 TGACACTGTCTCTTTTTCCT C-- TTTTT ---------- C TATAC

```
5          CCCTCTATACGAAGGATGTA TGACA  TGTCTC    CC            TCC TC
           TTTAAATGAATGCTGGTCAG ACTGT  ACAGGG    GG            AGG AG
           TGGGACATTTTGTCA       TTT    TGACT  TCGTAAGTAAATTTATGT  A -----
GAM31225 12513  TGACAGTGGATCACAACTTG       G  ACAA- -    CA   GTAGCCTCA
0          GTTCAATGGGTAGCCTCACC TGACAGTG ATC    CT TGGTT  ATGG
           ATGAAATCACAGCTTCAGAT ACTGTCAC TAG    GA ACTAA  TACC
           CACTGTCA              -  ACTTC  C    AG   ---------
GAM31227 4444   TGACATCCACAAATTGTACA    ATCCA  A    ACA       CAAA  ACAGG
1          TTATTTACACCAAAAGCACA TGAC    CA ATTGT  TTATTTACAC   AGC
           GGGCTCGTGTGGGTGAACAG ACTG    GT TGACA  AGTGGGTGTG   TCG
           TCTGCAGTCA           AC---  C    ---       C---  -----
GAM31233 19077  TGACCATGTTGGGCTTCAGC    A------     --  - A     GCT  CA  A  GTGGTG
4          AAGGTGCTTCCAGGTAGATG TGACC     TGTTGG  GCT TC GCAAGGT   TC  GGT GAT
           TGGTGGTCACTCAGAGCCTT ACTGG     ACGACC  CGA AG TGTTCCG   AG  TCA CTG
           GTAGACAGCAGCCAGCACCT    CTCTTCC    GA  C  A     --- AC  -  ------
           TCTCGGTCA
GAM31233 20684  TGACCCAAATCTCTTCCACA     AAA---    -   CAAGA-  A  ACCAAA
8          AGACTTAAAACCAAATTCAG TGACCC     TCTCT TCCA     CTT AA
           GGACAAATGGATAGAGAAGA ACTGGG     AGAGA AGGT     GGA TT
           AAAGGGTCA             AAAAGA    T   AAACAG  C ------
GAM31237 8666   TGACCTCAGGTGAAGCTCAG    -  A-   A  T    AAA  T  TCCC
1          GTGAAAGTTTCTTTCCCAAG TGAC CTC  GGTG AGC CAGGTG   GTT CTT
           CAGCCCATCTGTGTTCCATC ACTG GAG  CTAC TTG GTCTAC   CGA GAA
           AAGAGAGTCA           A  AA   C  T    C--  C  ----
GAM31248 3329   TGACTCCAGCTCAGTCGGTG  GA   CA    GTCG  G   T-    ---   ACC----    G  T   A-  C
2          ATGATGAGCTCGTCCACCCC T  CTC  GCTCA   GT ATGA  GAGCTC   GTCC      CCCCA TC TCAT
GCT
           CCAGTCTTCATAGCTCCCAT A  GAG  CGAGT   CG TACT  CTTGAG   CGGG     GGGGT AG AGTA
CGG
           CTGGCAGGTAACGGCGAATG  G-   A-    AA-- G   TC    TTC   CTTTCTA   - T   AG   C
           ATGATGGGGATCTTTCGGGC CC   TGGCA
           CTTGAGTTCCTTCATGGCAA   ATC
           TGAGCAGAGGA          TGG
                      AA   -----
GAM31253 18237  TGACTGTACAAACCAGTTTT    T---  CA    TTT--  TA   AACTGC
1          ATTAGGGAACTGCCCCAGGT TGAC    GTA  AACCAG    TAT  GGG
           GCACCTCTGGTTCATGCTCT ACTG    CGT  TTGGTC    GTG  CCC
           TGTCA                TTCT   AC    TCCAC   GA  ------
GAM31254 21680  TGACTGTTTAGAATATGGTT       T  AATATGG    T    C  -   GGGAAAA
6          TTCTTAATTAGCAGTCATGG TGACTGTT AG      TTTTCT AATTAG AGT CATG
           GGAAAACATGCATTTTTAAT ATTGACAG TC      AAAAGG TTAATT TTA GTAC
           TTGGAAAAAACCTGACAGTT       -  CAA----     T    T  C   -------
           A
GAM31259 18536  TGACTTTGATACACTGAAGC     T  TACACT   CT   A   ----   AACGCAAG
3          TTCAATGAAACTTGAACGCA TGACTT GA     GAAG  TCA TGAA   ACTTG
           AGCAAGTAATCTTCGTGATT ACTGAG CT     TTTT  AGT GCTT   TGAAC
           TTTTTTTTCTCTGAGTCA       T  CTTTT-   TT  -   CTAA   --------
GAM31259 21165  TGACTTTGGTGGTACTTTGA   C-  TG T   A  T   TTTT  TC    TAAAA
6          TTTTTTTCTTCTGTAAAACA TGA  TT  G GGT CT TGA   TT  TTCTG
           GGAATAATATTTCATAGACT ACT  GA  T TCA GA ACT   AA  AGGAC
```

TTTGAGAATCA AA GT T - T TTAT TA -----
GAM31261 21484 TGACTTTTTTTTTTATTTGG TTTTT - A C TTGAATCC
2 AAAAGAGACAGTTGAATCCC TGACT TTTTAT TTGG AAAGAGA AG
TTTTCTTTACCAGCATAAGG ACTGA GGAATA GACC TTTCTTT TC
CAGTCA C---- C A - --------
GAM31261 5454 TGAGAAAAAAGAGGGCCATT AAAAAA - ------ AA G- GCA---------- AAC
4 TAAAGGGGCCTGGGGCACCA TGAG GAGGG CCA TTT AGGG CCTGGG CCA
AACAATGGAACCTTTGGAAA ATTC CTCCC GGT AAA TCCC GGGCCC GGT

CGGAACCCGGGGACCCTCGA GTG--- T CAAAAA GC AG AAGGCAAAGGTTTCCAA ---
AAAAAAACTGGTCCCTCGTG AA
CTTA

--
GAM31266 8179 TGAGAAGGTCATTACTTAGA GT- - TT A GTAGAAA
9 AGTAAGAATGTAGAAAATGC TGAGAAG CA TTAC AGAAGTAAG AT
TTACTTTTTGTAATTGTAAC ATTCTTC GT AATG TTTTCATTC TA
TTCTTA AAT T T- G -------
GAM31269 9506 TGAGAATGATGATTTCCAAT T CAATTTCATCC CTACAAA
1 TTCATCCATGTCCCTACAAA TGAGAATGATGA TTC ATGTCC
GGACATGAACTCATCATTTT ATTTTTACTACT AAG TACAGG
TA C ----------- -------
GAM31272 2757 TGAGACAGAGACTCGCTCTG CA- C C T C C-- -- C ACCTC
0 TAGCCCGGGCTGGAGTGCAG TGAGA GAGA TCGCT TG AGCC GGG TGGAG TGCAGTGG GCC

TGGCGCCACCTCGGCTCACT ACTCT CTCT AGCGA AC TTGG CCC GCCTC ACGTCACT CGG

GCAACCTCCGCTTCCCTGGT ATG T - - T TTC CA - -----
TCAAGCGATTCTCGTATCTC
A
GAM31281 16548 TGAGACGGAGTCTCGCTTTG A - TC T TC T--- T -- - A ATCT
6 TCACCCTGGCTGGAGTGCAG TGAG CGG AG TCGCTT G ACCC GGC GGAG TGCAGTG GC TG

TGGCATGATCTCAGCTCACT ACTC GCC TC AGTGAA C TGGG CCG TCTC ACGTCAC CG AC

GCAACCTCTGCCTCCCGGGT C C TT - T- CCCT - CA T - ----
TCAAGTGATTCTCCCGCCTC
A
GAM31285 14344 TGAGAGAAAGATTTATAAAG GAAA--- TATA T AGGATTTTTACA
9 GCATCATTCAAAAGGATTTT TGAGA GATT AAGGCA CATTCAAA
TACATTTGGGTGTGCCTTAC ACTTT TTAG TTCCGT GTGGGTTT
TCGATTACAAAAATTTCA AAAAACA CTCA - ----------
GAM31286 5982 TGAGAGAAGGTGATGGGAGT GGGA CC GGCAC TTGA
3 CCTCCACCTGGCACTGATTT TGAGAGAAGGTGAT GTCCT ACCT TGAT
GAGTCATTCAAGGGTTAGGA ACTTTTTTCTACTG TAGGA TGGG ACTG
TGCAGGTCATCTTTTTTCA GACG T- AACTT ----
GAM31288 21450 TGAGAGCCACAGGGCACGGG A C ------ GGT ACAAGC
4 TGAGGCACAAGCGCCTTCGT TGAG GCCA AG GGCACG GAGGC
GCCGAATTTCTTTGGCCTTC GCTT CGGT TC CCGTGC TTCCG
G C T TTTAAG --- ------

GAM31288 20372 TGAGAGCGTCTGCTTGATAA G G- TG A G CTGAATT
6 TGGATTCTGAATTAATGCAT TGA AGC TCTGCT AT ATG ATT
AGTATAGTAGGAAGCTATCA ACT TCG GGATGA TG TAC TAA
A AA TA A G -------
GAM31289 14716 TGAGAGGGAGTCTTGCTCTG A- TC GC TT --- T -- T AATCTCA
7 TTGCCCAGGCTGGAGTGCAG TGAG GGGAG TT TCTG GCCC AGGC GGAG TGCAGTGG GC

TGGTGCAATCTCAGCTCACT ACTC TCCTC AA GGAC TGGG TCCG TCTC ACGTCACT CG
GCAACCTCTGCCTCCCGGGT CG TT A- T- CCC - CA - -------
TCAGGAAATTCTCCTGCCTC
A
GAM31290 4341 TGAGAGGTCGGCTTGGAAGT A GG- G ------- A TTG
1 GTGGACAGTTTTGAACGGTC TGAG GGTC CTT GAAGTG TGGAC GTT
CAACAGTCTTGCTTCAGAGA ACTC TCAG GAG CTTCGT ACCTG CAA
AGGACTACTCA A GAA A TCTGACA G ---
GAM31294 12899 TGAGATGCCAGAATCGAAAA A GAA AAAA- TCATCA GAAG
4 GGCTCATCAGAGGCGAAGGC TG GATGCCA TCG GGC GAGGC
CTCGCCCAGGATGAGGATGG AC CTACGGT AGT CCG CTCCG
CATCCA - AGG AGGAC ------ ----
GAM31294 21138 TGAGATGCTAAATACATATA A AAA ----- ACT C TTAGAT
6 TCACTTTGCACTTAGATGTC TG GATGCT TAC ATATATC TTG AC
AATAGATATATCGAACGTAA AC CTGCGA ATG TATATAG AAC TG
GCGTCCA - --- CAAGC AT- - ------
GAM31294 1103 TGAGATGGAATTTCACTCTT AT- ATT CT TT C-- -- A C AATCTCA
9 GTTACCCAGGCTGGAGTGCA TGAG GGA TCACT TG ACCCAGG TGGAG TGCA TGG GC

ATGGCGCAATCTCAGCTCAC ACTC CCT AGTGA AC TGGGTCC ACCTC ACGT ACT CG
TGCAACCTCCACCTCCTGGG CGT CTT -- T- TCC CA C - -------
TTCAAGTGATTCTCCTGCCT
CA
GAM31296 19408 TGAGATGGAGTCTCGCTCTG AT- TC C TT C-- C-- C - ATGATCTTG
4 TTGCCCAGGCTGGACTGCAG TGAG GGAG TCGCT TG GCCCAGG TGGA TGCAG G GC

CGGCATGATCTTGGCTCACT ACTC CTTC AGCGA AC TGGGTCC GCCT ACGTC C CG
GCAACCTCCGCCTCCTGGGT CGT TT - T- TCC CCA A T ---------
TCAAGCGATTCTTCTGCCTC
A
GAM31302 5373 TGAGATTTCATCACTCAGGA AC TGGCTTGT TTTATTTTATTTTAT
1 TGGCTTGTGATTTATTTTAT TGAGATTTCATC TCAGGA GA
TTTATTCTTTTTTTTTTTTG ACTCTGAGGTAG AGTTTT CT
AGATGGAGTCTCA -- TTTTTTTT ----------
GAM31314 3586 TGAGCGAGGGGGTCACGAAC GAGGGGG AA GTTCC AG AGT
8 TGGTTCCGTGTCAGTCCAGT TGAGC TCACG CTG GTGTC TCC
GGAAGGATACTCATAGACTG ACTTG AGTGT GAT CATAG AGG
TGAATGATAAGTTCA AATAGTA CA ACT-- GA ---
GAM31316 21391 TGAGCTCAAGCAATCTGCCC A AA ATC C CTTA ----- AAGTGC
1 ACCTTAGCCTCCCAAAGTGC TG GCTC GCA TGC CAC GCC TCCCA
TGGGATTACAGGCGTGAGCA AC CGAG CGT ACG GTG CGG AGGGT
CCATGCCGAGCCCA C C- ACC A ---- ACATT ------
GAM31316 9135 TGAGCTCTCATTTTTTCACC T T C- AC CCATCTA AACAATTAA

9 TTGACTGGCCATCTAACTTA TGAGCTC CA TTTTTCA CTTG TGG ACTTA
AACAATTAATAAGTGTAATT ATTTGGG GT AGAAGGT GGAC ACC TGAAT
TCCAAGCAGGCCTGGAAGAC - C CC GA TTTAATG ---------
TGGGGTTTA
GAM31321 20083 TGAGGAAGCAGGGCCCCGGG AGCA GG AAGC TGAGCAAT
1 TGGCCAAGCGGGCTGAGCAA TGAGGA GGGCCCCG TGGCC GGGC
TGCCCTGGAGGCTGAATGGG ACTCCT TCTGGGGT GTCGG CCCG
GTCTCGTCCTCA GC-- AA AGGT --------
GAM31321 21008 TGAGGAAGTTCTTTCTGTGG TT TTC A C T TTTTT--------- AATCAATGTT
9 ATAGTCTGCTGTGAGTTTTT TGAGGAAG CT TGTGG TAGT TGCTG GAG ATTGGG
ATTGGGAATCAATGTTAAAT ATTTCTTT GG ATACT ATTA ATGAC CTC TGACCT

CCAGTTAAATGTTTTTTTTC TC T-- A T - TTTTTTTTGTAAAT ----------
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GCTTTTCTTTA

GAM31323 8033 TGAGGACCCAGGCCCATCCA A- C CCA G ATCTCT CT C C- AA
1 GGGATTTCATCTCTAAGCCT TGAGGACCC GG CCAT GG ATTTC AAGC GG AGTG
TGGGGGGA TGTGT
GGCAGTGCTGGGGGGAAATG ACTTCTGGG TC GGTG TC TGAAG TTCG TC TCAC GTTCTCCT
ATATA
TGTTTCTGTGTATATAGCTC GG T --- G GCT--- -- - CT CG
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GGAAGTGCTGTGGTCTGGGG
GTCTTCA

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7 TGAGTAATACTTACCTGAAA TGAGG CTTTA GGTATT GTA ACTT
GTTGCCAAATGCTTTTGTGA ACTCC GGAGT TCGTAA CGT TGAA
GGCCTCA - GTTT AC -- ------
GAM31323 19841 TGAGGAGAAGAACTCCCTGG - A TG -- AA GAGACA
8 GGCCAATAGAGACATAGGGG TGAGGAGA AGA CTCCC GG GCC TA
CGGCTTGGGGAGTCTCTCTC ACTCCTCT TCT GAGGG TC CGG AT
CTCA C - GT GG GG ------
GAM31323 12963 TGAGGAGAGGAGCGTCAACA A GGA -- A- GC AC- T AGCTAAGA
9 GCAGCACCATGGTAGCTAAG TG GGAGA GC GTC ACA AGC CA GGT
AACCTTGAAGGCTATGTGGG AC CCTCT CG TAG TGT TCG GT CCA
ATTTGCCAATCTCCCA - AAC TT GG A- GAA T --------
GAM31338 18747 TGAGGCAGGAGAATCACTTG A AA GAA-- AGGC GT AGC AGAT
3 AACCCGGGAGGCGGAGGTTG TGAGGC GGAG TCACTT CCCGGG GGAG TGCAGTG CG

CAGTGAGCCGAGATCGCACC ACTCTG CCTT AGTGAG GGGTCT CCTC ACGTTAC GC
ATTGCACTCCAGTCTGGGCA - AG ACAAC GA-- -- CAC ----
ACAGAGTGAGATTCCGTCTC
A
GAM31359 21087 TGAGGCAGTATATAAGAGTC TATATA - AAAA A- AAAAAAACAGACAAA
2 ATGGAAAAAGACAGAGAAAA TGAGGCAG AGAG TCATGGA GACAG GA
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CAGTATCCATGGCCTCTGAT TTAG-- C ATGA GA ----------

TCTGTCTCA
GAM31361 819 TGAGGCCGGAGAATTGCTTG C AA GAA--- AGACAGA T GA - AGAT
5 AACCCGGGAGACAGAGGTTG TGAGGC GGAG TTGCTT CCCGGG GG TGCAGT GC CG

CAGTGAGCCGAGATCGTGCG ACTCTG TCTC AACGAG GGGTCC CC ACGTTA CG GC
ATTGCACCCCAGCCTGGGCG - AA AACAGC GAC---- C G- T ----
ACAAGAGCAAAACTCTGTCT
CA
GAM31367 3318 TGAGGGGAGCAGTCGGCATC - ---- CCAC-- CCTCCA
9 CACGGCCTCCACCCTCAAAA TGAGGGGA GCAGT CGGCAT GG
TGCTGTCGTACTGCTTCCCC GCTCCCCT CGTCA GTCGTA CC
TCG T TGCT AAACTC ------
GAM31379 12916 TGAGGTTTCCCTCCAGGAGT T CTC-- - A CGA GC-- GGGATG
3 CAATCCGATACGCCCCTGGG TGAGGT TCC CAG GAGTCA TC TAC CCCTG
GATGCAGGGAGAAGTGGCTG ACTCCG AGG GTC TTCAGT AG GTG GGGAC
AATGACTTGCTGTGCCTGGA T TCCGT G A TCG AAGA ------
TGCCTCA
GAM31380 16710 TGAGTAAATTTGTATGCAGT TAA AT A CCC - G TTT
2 ATAAAGCCCAAGTAGAGGGT TGAG ATTTGT GCAGT TAAAG AAGTAGAG GGT TATT
GTATTTTTAATGACTACTTT ACTC TAAACG TGTTA ATTTT TTCGTTTC TCA GTAA
GCTTACATTTTAGATTGTGC TG- -- G ACA A - ---
AAATGTCTCA
GAM31381 18288 TGAGTAGAAGAGATGAAAGA AG AAAGA-- AGAA TATTAT
7 GTAGAACAATGTATTATCGT TGAGTAGA AGATG GT CAATG
TGGAGGCAAAGGGACGTCTA ATTTATCT TCTGC CG GTTGC
TCTATTTA A- AGGGAAA GAG- ------
GAM31383 4245 TGAGTATAGCAAAGGACTAA GCAA -- TAT- CTTG
0 GATATTTTCTTCTTGAAGAG TGAGTATA AGGACTAA GA TTTCTT
ACTTTTCGATTAGTCCTCAT ATTTATAT TCCTGATT CT AGAGAA
ATATTTA AC-- AG TTTC ----
GAM31383 18016 TGAGTATGGGTGGGCCCTTC A GG TT- A C AAA CTGGA
5 CCATAGGCCTGAAATTTTCC TGAGT T GTGGGCCC CCC TAGGC TG TTTTCCTC
TCCTGGAGGGGAGAAGCCAG ACTTA G TACCCGGG GGG GTCTG AC AAGAGGGG
TCTGGGGCTTGGGCCCATTT G TT TTC - - CG- -----
GGATTCA
GAM31383 6188 TGAGTCAAAGAAGTAAGATG TCAA G--- G - AATTAAG
9 GTGAAAATTAAATTAAGTAA TGAG AGAA TAAGAT GTGAAA ATTA
TATTTCATAATCTTAGGAAT ACTC TCTT ATTCTA TACTTT TAAT
TCTCTCA ---- AAGG A A -------
GAM31389 4262 TGAGTGAGCACCCCGCGCAG T CCCC GCAGCA - CTC CGCAACCATTT
6 CACAAAGTCTCAAGGACGCA TGAG GAGCA GC CAAA GT AAGGA
ACCATTTTCCTTTTCACGTT ATTC CTTGT CG GTTT CA TTCCT
TGGATAGCTTCTGTTCCTTA - CTT- ATAG-- G CTT ----------
GAM31407 2771 TGATACCTTACAGTGCTACA A - T TT- - CTTTCA TTCAT
5 TTATCTCCTTTCAGGATTTC TGAT CCTT ACAG GCTACA ATC TC GGAT
ATATCTGCCGATGATTTTTG ACTA GGGA TGTT TGATGT TAG AG TCTA
TAGTCTTGTCAGGGCATCA C C C TTT T CCG--- -----
GAM31408 12257 TGATACTATTATAAATGGTA A - A- G T TT- TTTT
3 TTGTTTTAAATTTTTATTTT TGAT CTAT TATAA TG TAT GTT AAAT
CTAATTATAGCAACTTGTAT ACTG GATG ATGTT AC ATA TAA TTTA

GTAGAGTCA A T CA G T TCT ----
GAM31409 3817 TGATAGAATTTATCCGCTCC A A TA- AG CACT GAGTGAG
2 AGACTTTAGTCACTAGGTTC TG TAGA TT TCCGCTCC ACTTTAGT AGGTTCTAG
TAGGAGTGAGCTGGGGCCTG AC GTCT AG GGGTGGGG TGGAGTCG TCCGGGGTC
CTGAGGTGGGGGTGGGGCTG - C TCG G- ---- -------
ACTCTGCA
GAM31412 22344 TGATATCGCGCGGACGGCTT - G ACG---- T T CC ATACTGACCA
9 TCCTGGATCCTGAGGATACT TGAT ATCGC CGG GCT TCC GGAT TGAGG
GACCACTTCACCATTCGGAC ACTA TAGCG GCC CGA AGG CTTA ACTTC
AGCAGATCCACCGGCGATCA C - ACCTAGA C - CC ----------
TCA
GAM31418 19088 TGATCATCATCGTGCAGTGC --- GT A -- G - C- TGGCA
8 TGCCTGTATGAGGTGAGACC TGATCA TCATCGTGCA GCTGCCTGT TGA G TGAGACC AG CC

AGCCCTGGCAGGACCTAGGT ACTAGT GGTGGCATGT CGATGGACA ACT C ACTCTGG TC GG

CTCAGCTATCAAACAGGTAG TTC -- A AT G A CA -----
CTGTACGGTGGCTTTGATCA
GAM31419 14323 TGATCATGACTTTCAAAAAT TCATG- C AA C AATA CCTCCAGTT
1 TCAACTACCTAGAAATAGTT TGA ACTTT AAA TTCAA TACCTAGA GTTA
ACCTCCAGTTTAGCACATTT ACT TGAAA TTT AGGTT ATGGATTT CGAT
AGGTATTTGGACATTTAAAG TTATCA - AC T ACA- ---------
TACTATTTCA
GAM31423 20753 TGATCGCACACCCATCCTTC - - CA ----- AA AA AAGCAAGCA
8 CATAATATCAATTTCAAGCA TGATCGCA CA CC TCC TTCCAT TATC TTTC
AGCAGAAAAGATGATGGAGA ATTAGTGT GT GG AGG GAGGTA GTAG AAAG
CCATGGACAGGCTGATGTGA A C AC TACCA -- A- ---------
TTA
GAM31424 12473 TGATCGTATCTTCACCACCA A GTA- CCACCACCGC AACCATTAA
0 CCGCCTTCAGGGAACCATTA TG TC TCTTCA CTTCAGGG
ATTCTGAAGATGAAGAACTA AC AG AGAAGT GAAGTCTT
GACA - ATCA A--------- ---------
GAM31430 14057 TGATGAACGCAACCCAGAGA C - C GAA-------- CCA
3 AGTGCCCAGCACAGAGTTAA TGATGAA GC AAC CAGA GTGC
CTGTCTGCGTTAGCCTTTAT ACTATTT CG TTG GTCT CACG
CA C A C GTCAATTGAGA ---
GAM31433 14614 TGATGAGAGCCTGAGGAGCC A G GAG ATTT AA- ----- ACG CGG GTGT
5 ATTTGAGCAATGGGGAACGC TG TGA AGCCT GAGCC GAGC TGG GGA CTCA ACT
TCACGGACTGTGTGGTAATG AC ACT TTGGG TTCGG CTCG ACC CCT GAGT TGG
AGAGATCCAAACACCAAGCG - G --- GGAC CGA ACAAA AGA AA- ----
CTCCAGGGGCTTGGGTTGTC
ACA
GAM31436 9287 TGATGCAATGGGTGGAATGA A A GAA- A CG A - TACCAC
3 TGCACGTGGACAGGATACCA TG TGCA TGGGTG TG TGCA TGG CA GGA
CTCTATGCCGGATGCACCAG AC ATGT ACCCGT AC ACGT GCC GT TCT
GTATGCCCACTGTACA - C ATGG C AG - A ------
GAM31436 1173 TGATGCAGAGGGAGCAGGAG T GCA T - - C CACT
7 CTGAGGTGGAGACGGCCACT TGA GCAGAGGGA GGAGC GAGG TG GAGA GGC
GCCTCTCTCACCCTCTGTTC ACT CGTCTCCCT CCTTG CTCC AC CTCT CCG
CATCCCTCTGCTCA - A-- T C T - ----

GAM31438 18318 TGATGCCATTTGCTATGTTT GCC ---- T TTT TAGTA
1 TATTTTGCTAGTAGCTTATT TGAT ATTTGC TATGTTT AT GC
AAACATAACATGCAAATAAT ACTA TAAACG ATACAAA TA CG
CA A-- TACA T TT- -----
GAM31440 19981 TGATGCTTTTGGACATAAAT CTT TG A AT A TAG GTCTT A AACTGA
6 CTAATATTAGCCTTGTCTTT TGATG T G CATAA CTA TAT CCTT TGATTTT TGGA
GATTTTATGGAAACTGATCT ACTAC A C GTGTT GAT ATA GGAA ATTGGAG ATCT
AGAGGTTATAATAAAGGATA CAC GT - CT A --- ATAAT - ------
ATAGTCTTGTGCTGACACCA
TCA
GAM31441 18766 TGATGGAAGTGGAAGAGCAT A G G TGAAG TA- GACTCA
4 GAAGTCTTACAGGACTCACT TGATGGA GT GAA AGCA TCT CAG
GGATAGATGTTATTCGACTC ACTGCCT CA CTT TTGT AGA GTC
CGTCA - G A ----- TAG ------
GAM31443 18987 TGATGGGCACATGGACAGGC -- CAT C A- CTC T GGG GGCTGAGA
6 TGCAGAGGGCTCCAGGTTCT TGAT GGGCA GGA AGGCTGCAG GGG CAGG TCT CCCCT

GGGCCCCTGGCTGAGAAGGG ACTA CCCGT CCT TCCGATGTC TCC GTCC AGG GGGGA

GAGGATCCTGTCCTGGCTGT AC --- - GG T-- T A-- --------
AGCCTTCCTGCCCCAATCA
GAM31444 6002 TGATGGGGATACCACCACCA GGAT AA---------- AAA
3 ATCAGGTAAAATCTGAGCAT TGATGG ACCACCACC TCAGGT
TGGTCTTGGTGGAGGTGGTG ACTACT TGGTGGTGG AGTCTA
GTTCATCA ---- AGGTGGTTCTGGTTACG ---
GAM31444 18801 TGATGGGTAGGCACATGATG G -- C CC CCGTC
7 CCAGCCAAGCCGTCCTTCTG TGAT GGTAGGCACA TGATGC AG AAG
TATTACCTGTGTTTGCCGAT ACTA CCGTTTGTGT ATTATG TC TTC
CA G CC - -- -----
GAM31445 21281 TGATGGTAAACTGAATGGAA T AA- GA - ------- TTTTTTTT
0 GTAAGGACTTTTTTTTGTTT TGA GGT ACT ATGGAA GT AAGGAC
TTTACAGTAACTTTCCATGA ACT CCA TGA TACCTT CA TTTTTG
AGTCTCACCTCA - CTC AG T ATGACAT --------
GAM31446 16507 TGATGGTGTTGGTGTCGCGT TG- TG-- -- TG G AGCAT
0 GCTGTGGAGCATCCGAGTGT TGATGG TTGG TC GCG CT TGG
GCCAGAGTCTCCAGAATCCG ACTGCC GACC AG CGT GA GCC
TCA TAA TCTG AC GT - -----
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0 AAACTGCTGAATGCCTTGTT TGATGT TG TTGT AC GCTGAAT
TAGTTGTCACAAACAAATTC ACTATA AC AACA TG TGATTTG
ACATATCA C TTA- AACAC T -----
GAM31449 20772 TGATGTCCATTTTATGTTAG T ATG CT ATT AATTTA
1 CTGTATTCTTCAAATTTATG TGATG CCATTTT TTAG GT CTTCA
AAGGCCCTAGAAAGGTGGTC ATTAC GGTGGAA GATC CG GAAGT
ATTA T A-- C- --- ------
GAM31450 9598 TGATGTGTTTGATTTCCTTC TGATTTC T T T A TGTGTT
9 TATATGATTCAAGATGTGTT TGATGTGTT CTTC ATA GA TCA GA
TCTGATTCTGTGAAGAACAT ACTATACAA GAAG TGT CT AGT CT
ATCA ------- - - T - ------
GAM31453 3629 TGATTAAATGGTTGGTTTTC TT-- GT C AG TATGTTAC

0 ATAGATGATATGTTACTCAT TGA AAATG TGGTTTT AT ATGA
GGTAAAGACCACATATTTTT ACT TTTAT ACCAGAA TG TACT
ATTCA TATT AC A G- --------
GAM31453 9149 TGATTAACCTTTAGCAATAA ---------- AA--- GAAA
4 ACGAAAGTTTAACTAAGCTA TGATTAACCTT TAGC TAAAC
TACTAACCCCAGGGTTGGTC ACTGGTTGGGA ATCG ATTTG
A CCCCAATCAT AATCA ----
GAM31453 2856 TGATTAATCACACGCTAATA TT CAC A-- ATTA C AA -- T- GGCAATG
6 TAGATTACTGCCTCTAACTT TGA AAT ACGCT ATATAG CTGC TCT CTTTG TAAG GT
TGTAAGTGTGGCAATGACTT ACT TTG TGCGA TGTATT GACG AGA GAAAT ATTC CA
CTTAATTAAAGAAAGATGCA TT ACT ATC GAG- T AA TA TT -------
GGAGTTATGTCTAAGCGTTC
AGTTTTTCA
GAM31454 20686 TGATTAATTTCTTAGGCCTA ATTTCTT TAT T A TTAT
0 TTTAAGATACATATTTATAT TGATTA AGGCC TTAAGA AC TAT
AGTTCTTAACGGTTTTTCTC ACTAGT TTTGG AATTCT TG ATA
TGATCA CTCTT-- C-- - - ----
GAM31456 8656 TGATTATCGTCGTCTATGCA A ACACAC ATATCCTGGT GGT
5 GACACACTCTTCTGATATCC TG TTATCGTCGTCTATGCAG TCTTCTG GGCGTAGGCAT

TGGTGGCGTAGGCATGGTAT GC AGTGGTAGTAGATACGTC AGGAGGT CCGCGTTCGTA

GCTTGCGCCCGTGGAGGAAC - GCA--- GC-------- ---
GCTGCATAGATGATGGTGAC
G
GAM31458 14071 TGATTATTTGCATGTTATGT -- - A AATAA TACTA
1 TTAATAAGCTACTAGCAAAA TGAT TATTTGC ATGTT TGTTT GC
TAAAACATAGCAAATGGCAT ACTA GTAAACG TACAA ATAAA CG
CA CG A A A---- -----
GAM31459 18259 TGATTCACTTTGCCATGTTT TTC TTGCCATGTTTCCTT ATC ATCC
2 CCTTCACATCCAGATCCCTG TGA ACT CAC CAG
TCGGTGTTAGTTCCACTCTT ACT TGG GTG GTC
GGTCTTTCA TTC TTCTCACCTTGATT- GCT ----
GAM31461 18669 TGATTCTCTTTATATCTGAT CTT- - GATT TTTTTAAACAGCT
6 TTTTTTTTTTAAACAGCTAA TGATTCT TATAT CT TTTT
AATGTAAGTATGTATCTCAG ACTGAGA ATGTA GA AAAA
AGTCA CTCT T ATGT ----------
GAM31466 4442 TGATTGTGAAAAACAAAAAC AAAAA- A A -- AGATA
2 AAAAACAGATAGTCCTTATG TGATTGTG CAAAA CA AA AC
ATTTTGGAATGATACAGTTA ATTGACAT GTTTT GT TT TG
AGTAAG A A CC -----
GAM31466 8500 TGATTGTGGACTTCACCTCA -- TG C CTC ACT AC T TCGTTGTGT -
3 TCCACTTTGGCCACCATGTT TGATT G GA TTCAC ATCC TTGGCC CA GTTT GTGAG
CAGGGAA
TTCGTTGTGTGTGAGCAGGG ACTAG C CT AGGTG TAGG AGCCGG GT CAAA TATTC
GTCCTTT
AAGGGAACTTTCCTGCCTTA TT GT A CT- --- -- C TT------- C
TTTAAACCTGGGCCGAGGAT GGAA
TCGTGGAATCTGCTTGATCA G
C

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                    ----
GAM31471 12514  TGATTTGCTTGGTGACCGAA   -  TT   CCGAATTACTA   -   TACT
3          TTACTAGTGACTAGTTTACT TGAT TTGC  GGTGA        GTGAC TAGTT
           AACTAGGTCATTCACCGCAA ACTG AACG  CCACT        TACTG ATCAA
           GGTCA              G  --   ----------   G   ----
GAM31471 20892  TGATTTGCTTGGTGACCGAA   T   -   GAATTAC    CTAGT
4          TTACTAGTGACTAGTTTACT TGATT GCTTGG TGACC      TAGTGA
           AACTAGGTCATTCAGGCAGT ACTGA CGGACT ACTGG      ATCATT
           CA                 -   T   ATCA---    -----
GAM31471 8768   TGATTTGGACACAAAGACTA        ACAAAGACTAAACA-    GCAG
7          AACAGATTCAGCAGTGGATT TGATTTGGAC           GATTCA
           AAGAAAAAACACCTAGTCCA ATTAGACCTG           TTAGGT
           GATTA                ATCCACAAAAAAGAA    ----
GAM31472 1212   TGATTTGTCCAAGATATCTG     GTCCA       AAAA--  AAACAAAAG
2          AAAAAGGAAACAAAAGCCTG TGATTT    AGATATCTG    AGG
           ATTTGCAGGTATTTATAAAA ACTAAA    TTTATGGAC    TCC
           ATCA               AATA-       GTTTAG  ---------
GAM31478 21256  TGCAAACAAATATCAAAGTG    AA  ATATC-   T   TT   AGTTAA
2          TATTTAATAGTTAAATTTGT TGCA  CAA     AAAG GTAT  AAT
           GCCCTTTCCCTTCTTGCTGC ACGT  GTT     TTTC CGTG  TTA
           A              C-  CTTCCC   C   T-  ------
GAM31480 4038   TGCAAAGATGCTGTCCGTGC  C     CTG   TGC    G  C-   GT    C   TTCCTCGGC
2          GCGTTGCTGCGGCCGTGGTC TG AAAGATG   TCCG   GCGTT CTG  GGCC  GGTCCG GCCC

           CGCGCCCTTCCTCGGCGGGC AC TTTCTAC   GGGT   CGTAA GAC  CTGG  TCAGGC CGGG
           CGGACTGGTCTCCAGAAATG  -     TT-   TT-    A  CT   --    -   ---------
           CTTTGGGTTCATCTTTCA
GAM31480 14014  TGCAAAGCGCTCAAATGTGG      C  T  AAT     C--     TTGG  TTTTTATTTTTTAT
5          AAGCCAGTCATTGGCATTTT TGCAAAG GC CA   GTGGAAG   CAGTCA   CA
           TATTTTTTATTGATTGATTG ATGTTTT CG GT   CACTTTT   GTTAGT   GT
           ATTTTTTCACCAGTGGCTTT      T  -  GAC      TTA     TA--  ----------
           TTGTA
GAM31482 19055  TGCAAATTACTTTCAAATAC      TTACT   AAT     ----      AAAG    CAATTCA
9          ATTTTGACATTAAAGTCAGG TGCAAA     TTCA  ACATTT    TGACATT    TCAGG
           CAATTCACTTGGAAGAATGT ATGTTT     AAGT   TGTAAG   ATTGTAA    GGTTC
           TATAATGAATGTCACTGAAT      TT---   CAC     TAAT     GAA-    -------
           TTTTGTA
GAM31485 20899  TGCAACGGAGAGACTGTGGT   AA    --   T     A   --  AGT--    TACCCT
5          CTACTGGGAAGTGAAGTACC TGC  CGGAG  AGAC GTGGTCT CTG  GGA    GAAG
           CTTTTCCCATGTCCAACAGA ACG  GCTTC  TCTG TATCAGA GAC  CCT    CTTT
           GACTATGTCTACCTTCGGCA   --   CA   -    -  AA   GTACC   ------
GAM31485 12838  TGCAACGTGGATCAGAACCG    A G    CAGAA--   CTAGAACA    GTGCAACG
7          GCTAGAACATCCAGTGCAAC TGCA C TGGAT      CCGG       TCCA
           GTGGAACAGAACCGGCTAGA ACGT G ACCTA      GGCC       AGGT
           ACATCCAGTGCA          - -    CAAGATC    AAGACA--   --------
GAM31493 869    TGCAATCCGCTTGACAGTGA    T     ACAG     --     T     ACAG     -    T
0          GCGGTTGCAATCCGCTTGAC TGCAA CCGCTTG   TGAGCGG  TTGCAA CCGCTTG   TGAGCGG
TTGCAA CCGCTT
           AGTGAGCGGTTGCAATCCGC ACGTT GGCGAGT   GTTCGCC  AACGTT GGCGAGT   GTTCGCC
AACGTT GGCGAG
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          TTGACAGTGAGCGGTTGCAA    -     GACA     TA    -     GACA     T    -
          TCCGCTTGACAGTGAGCGGT GACAGT
          TGCAAATCCGCTTGACAGTG
          AGCGGTTGCA
                     ------
GAM31498 5724   TGCACACCAGGAACCCAAGT   ACA--- A-  AAC     - TTT-- -      CTT  AGAA     --     AT
3          CTTTCAACGGATCCTTGAAG TGC     CC  GG   CCAAGT C     CA ACGGATC   GA    TGTGGC  TGTAG
          AATGTGGCTGTAGATGAACT ACG     GG  CC   GGTTCA G    GT TGTTTAG   CT    ACACTG  ACGTC
          GAGCAGGCAGGGCTGCACCG    GAACCG  AG  GA-     A TACCC  A      T--  GTG-     CC     GG
          TCACAGTGTCTGATTTGTAT GAA   AGCAGG
          GCCCATGAACTTGGAGCCGA    CTG
          GGGCCAAGGCA           GAC
                     ---   ------
GAM31504 9691   TGCACGAGGCCGCCACACCG    C   -   --------    CA-----    C     - TCCCT
0          GCGCTGGCTCCCTGCCCGGC TGCA GAG GCC       GCCA      CCGG GCTGG C
          CCGGCCCTCCCTGGCAATCC ACGT CTC CGG       CGGT      GGCC CGGCC G
          CTGGGCTCTCTTGCA         T   T   GTCCCTAA    CCCTCCC    -    C -----
GAM31504 12413  TGCACGCATATGCGGCCAAT       ATA  -  GCCAAT    TT    A---  -   ATAAATA
2          GGTTTTCTCAACCCTGATAA TGCACGC   TG CG     GGTT  CTCA    CC CTG
          ATACAGCGGAATATGGGTTG ACGTGCG   AC GC     CCAG  GGGT    GG GAC
          ACCTACGACACACGCGTGCA       CAC  A  AT----    TT    ATAA  C   -------
GAM31504 18587  TGCACGCCTGAAGAGACTCG    ACG    AA-    C   GT A    GCCAA
3          GTCACGGAGCCAATCTGGGT TGC   CCTG   GAGA TCG  C CGGA
          TGACTTTTGAGCAGGAGGCA ACG   GGAC   TTTT AGT  G GTCT
                       GA-    GAG    C   TG -    -----
GAM31507 9650   TGCACTGGATGTTCTAGCCG    - -    GTTCT       CTGT--    CGTTGCAC
8          GTTCTGTTCCACGTTGCACT TGCA C TGGAT     AGCCGGTT     TCCA
          GGATGTTCTAGCCGGTTCTG ACGT G ACCTA     TTGGCCGA     AGGT
          ATCCACGTTGCA          T C     GTC--       TCTTGT    --------
GAM31514 6036   TGCAGAGCACTGAAAGTCTC      GCAC  AA   C   TAA  T-  --- -    ACAACA
0          TTAAGTTACAGCTTCACAAC TGCAGA    TG  AGT TCT   GT  AC   AG CTTC
          AGAAGTCTAAAGTCTGCGCA ACGTCT    AC  TCA AGA   CG  TG   TC GAAG
          GAACTAGCACATCTGCA         AC--  GA   -   CG-  TC  AAA  T    ------
GAM31515 837    TGCAGAGTCAGAAGATGACG    AGAG     AGATG  GAG      GATGTGAA
2          AGGAGGAGGATGTGAACTTC TGC    TCAGA     AC   GAGGAG
          TTAAGTATATCTGGAAGGCG GCG    GGTCT     TG   TTCTTC
                       GAA-     ATA--  AA-      --------
GAM31516 20861  TGCAGATGTAGCTGCTTTCC          G T   TT     TCTGTCTGTCTTAC
7          TAAATCTGTCTGTCTTACTT TGCAGATGTA C GCT  CCTAAA
          TAGGTTAGCTGTATGTCTGT ATGTCTGTAT G CGA  GGATTT
          A                      - T   TT      ----------
GAM31517 1070   TGCAGATTCCCAAGGAAATG    AG   - A  G    G           A   CCAGCATTAT
2          TCAGAAAGGCAAAATGGCCA TGC  ATTC CC AG AAAT TCAGAAAGGCAAA TGG
          GCATTATCCATTTGCTTTTT ACG  TAAG GG TC TTTG GGTTTTTTCGTTT ACC
          TGGGTTTACTGGGTGAATAG    A-    T  G  A    -           -   ----------
          CA
GAM31517 20842  TGCAGATTTCATATATTTCT     GAT---       ATTTC    T-    AACACC
4          GAATCAAAAACACCTTTGTC TGCA      TTCATAT     TGAA  CAAA
          TTCACAGTATGAGTTAGAAT ACGT      GAGTATG     ACTT  GTTT
          GCA                 AAGATT      AC---    CT    ------
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GAM31525 3917 TGCAGGGATATTTAAACTCA - AAACTCAATCACC GCTGA
4 ATCACCATAGCTGATATAAC TGCAGGGA TATTT ATA
TCTACCCTTAAAATATTCCC ATGTCCCT ATAAA TAT
TGTA T ATTCCCATCTCAA -----
GAM31525 3822 TGCAGGGCCATGCCTTCGAA ----- A TTCGAA TA -- A - AAGATC
7 GCTAGAATATATGCAGAAGA TGCA GGGCC TGCC GC GAA TAT TGC AG
TCCTAGCAATAACTTCATGC ACGT CCCGG ACGG CG CTT ATA ACG TC
CTGTGGCAGGCCCATTAGTG GATTA - TGTC-- TA CA - A ------
CA
GAM31526 14371 TGCAGGGCTCTGGGGGCCGG GGCTCT - ---- G GCGCA
1 GGCGGGGGGCTGCGCAGGCC TGCAG GGGGGC CG GGGC GGGGGCT
CCCAGCCCGCTTTGTGCCCC ACGTC CCCCCG GT CCCG CCCCCGG
CTCACGACTGCA AGCACT T TTCG A -----
GAM31532 3799 TGCAGTGGCCGGTACAGCTG G CC- C----- AGCGCC
1 GGAGGAGCGCCCCTTCCGGC TGCA TGG GGTA AGCTGGGAGG
TACACATTACCATTCCGGTG ACGT GCC CCAT TCGGCCTTCC
CA G TTA TACACA ------
GAM31532 21329 TGCAGTGTCTCGGGACTTCG G C ACTT CA T CA---------- - TGTA
7 TCAGTGTCCTGCACACGGAC TGCA TGTCT GGG CGT GTG CCTGCA CGG AC
TGTAGTGCCGAAAAAACAAA ACGT ACAGA CCC GCA TAC GGACGT GCC TG
GAGACATGCAGGCCATCACG A - ---- C- C ACAGAGAAACAAAAAA G ----
CCCAGACAATGCA
GAM31534 18106 TGCAGTTGGAAGGGGTTTAT ---- A GGT TGTATAGC AAAT
1 ACGTGTATAGCCTTCAAATG TGCAGT TGG AGG TTATACG CTTC
AAGCGTGTGATTGCCTGCCA ACGTCA ACC TCC AGTGTGC GAAG
GAAAACTGCA AAAG G GTT -------- ----
GAM31534 5625 TGCAGTTGTAATTTAGATTC TAA AGA G AAGT- TTTAT
4 GAGAAGTGGTTTATCCTTTG TGCAGTTG TTT TTC AG GG
ACTGGAAAAGAAAAGTAGCT ACGTCGAT AAA AAG TC CC
GCA GA- GAA G AGTTT -----
GAM31538 8723 TGCATAGTTAAAAAAATGAA - AAAAAA G-- AT TT GCAGTA
4 GCGAGATGGCAGTTTGTGCA TGCAT AGTT ATGAA CGAG GGCAG TGT
GTAATATCTGCCCTTCGAAG ACGTA TCAA TACTT GCTT CCGTC ATA
TTCATGCAACCAACTAATGC A CCAACG GAA C- T- ------
A
GAM31542 3043 TGCATCTCCCTCTTGAGCTA CTCCC TT A AC GG - GC AATA
3 GGAACCCAGAGGAGGAGGCC TGCAT TC GAGCT GGA CCAGA AGG AG CTC
TCAATAGAGCACTGCCTATT ACGTG AG TTTGA CCT GGTTT TCC TC GAG
TGGTATCCAGTTTCTGAATG TA--- TC - AT A- G AC ----
TGCA
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4 CTTTGAAAATCTCATATTGT TGCATC GG TTG GGA TGAAAA CTC
TTCGAGTTTTCATTACTTCC ATGTAG CC AAC CCT ACTTTT GAG
ATACAAAGCAATCCTGATGT T T GAAACATA TCATT - ----------
A
GAM31547 19157 TGCATGGGATTTGAATTTCT C T- ATTTCTTAAA A - GCTT
6 TAAATCTAAGGATGGTGGGC TG ATGGGAT TGA TCTA GGAT GGTGG
TTTCATCAATCCTAGAAAAT AC TACTCTA ACT AGAT CCTA CTACT
TGTGTCATTATCTCATCA - TT GTGTTAAA-- - A ----
GAM31548 5645 TGCATGGTTTCCAGCAGCTG GTTTCC GC GTTCT CAGATCCA

0 AGTTCTTCAACAGATCCATT TGCATG AGCA TGA TCAA
GATTCAATCGATGCTTTACA ACGTAC TCGT GCT AGTT
TGCA ATT--- A- AACTT --------
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6 CTTTCGGTCCCGTCATTATC TGCATG TGCCG CTG GGTC CA
TCTGTATAGACCCAGTTGGC ACGTAC ACGGT GAC CCAG GT
AATCATGCA TA--- T ----- ATAT -------
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0 CTCCAGTATGACCCCATCTG TGCA AGG CCC CAG ATG
AACTGCAAAGGGCCTATTTG ACGT TCC GGG GTC TAC
CA TTA - AAACGTCAA - ----
GAM31551 6290 TGCATTAGTTGGTTGCATGA T TTGC CTT AG- ATATTACTGCACAAA
1 ACTTCGAAGGGCAGATATTA TGCAT AGTTGG ATGAA CGA GGCAG
CTGCACAAACTGCCATCTCG ACGTA TCAATT TACTT GCT CCGTC
CTTCATTTTTTTAACTATGC - TTTT C-- CTA ----------
A
GAM31554 8307 TGCATTTAGAAAATTCAAGC - TTAG A A GATTACT A T GTAAAAACTG
9 TGATTACTGAAGATGTTCAG TG CAT AA ATTCA GCT GAAG TG TCAGG
GGTAAAAACTGCCTGACTAA AC GTG TT TAGGT CGG CTTC AT AGTCC
CTTCCATGGCATGGATCTTA A CCCA C A TAC---- A C ----------
CCCGTGACA
GAM31556 22280 TGCATTTTAGTTAATATGTG TAG- ----- T AA TAAG
8 TATTAAAGGATAAGTCTTAA TGCATTT TTAATA TG GTATTA GGA
TGCTCAAAGTATGTTAAAAA ATGTAGA AATTGT AC CGTAAT TCT
TAGATGTA TAAA ATGAA T -- ----
GAM31559 5766 TGCCAACCTTGAAGCCAGTG A - TG - G - ATCCACAAAC
3 GGGCACCAATCCACAAACTG TGCCA CC T AAGCCA GTG GGCA CCA
GATGCTGCGCTTGGTTTTGA ACGGT GG A TTTGGT CGC TCGT GGT
TGGTGGCA - T GT T G A ----------
GAM31561 21044 TGCCAATTACCCCTATCTGA A A CTAT A A C A TATTGAA TATT
9 TTACTATACATTATATGTAT TGCCA TT CCC CTG TT CTATA ATT TATG ACAT
TGAAACATTATTATGTACCC GCGGT GA GGG GAC AG GATGT TAA ATAC TGTA
CATAAATATGTAGAGAGCAG C - AACT G A A - CCCA--- ----
TCAAGGGAGCTGGCG
GAM31567 21463 TGCCAGAAAATCAACAGGGT AAAATCAA TC C C TGCA
2 CTTCGGGTCGGACGTTGCAA TGCCAG CAGGGTCT GGGT GGA GT
CATTCATTCAGGCCCTGAAT ACGGTT GTCCCGGA CTTA CTT CA
AAGAGTTGGCA GAGAATAA -- - A ----
GAM31568 17977 TGCCAGATTCCTTTTATCAT AGA- - A- - GAGGAAAAGAGAA
6 CTGCGAGGAAAAGAGAAGCA TGCC TTC CTTTT TCATC TGC
GGATGAGGAAGAGTGAGGGA GCGG GAG GAGAA AGTAG ACG
AGGCG AAGG T GG G ----------
GAM31572 6062 TGCCAGTGAGTGCCACACCT A-- CACA GCAATC CAAAAC
0 TCGCAATCCCGCAAAACCGG TGCC GTGAGTGC CCTTC CCG
CCGGAAGGGCTCGCACTCAT ACGG TACTCACG GGAAG GGC
ACAGGCA ACA CTCG GCC--- ------
GAM31573 19155 TGCCATATGCACTCTCCTTT T ACTCT TTTTACAAG ACA
8 TTACAAGGCAATCACAGATT TGCCATA GC CCT GCAATC
GCAAATTCCATAGGGCTGTG ACGGTGT CG GGA CGTTAG
GCA - ----- TACCTTAAA ---

GAM31576 5446 TGCCATGCTGTGGGCACCTT A GTG T GCAG- A CAG
4 CTGCAGGACCAGCCAGGTAG TGCC TGCT GGCACC TCT GACC GC
GTCATCTTGGACGGTGCCAG ACGG ACGA CCGTGG AGG CTGG TG
CAGGCA - --- C TTCTA A ---
GAM31578 18855 TGCCATTCGGTGTTCCCAAC TTC G AACA CTGGAA
1 AGTTAATCTCCTGGAAGAGG TGCCA GGT TTCCC GTTAATCTC
TTGACAGGGGAGGCCTTGGC ACGGT CCG AGGGG CAGTTGGAG
A T-- G A--- ------
GAM31579 2822 TGCCATTTGTTAAAGACTGT C- TTAAA TT - AACTA AGAAAAAC
1 TGGAGCAGAACTACTGAGAA TGC ATTTG GACTG GGA GCAG CTG
AAACCAGGCATTGTATCTTC ACG TGAAC TTGAC TCT TGTT GAC
AGTTGTCATCAAGTTCGCA CT TACTG T- A ACG-- --------
GAM31579 3248 TGCCATTTTGACTTATGACT -- AT-- C CA TGTAT
4 GCAGGACCAAGTGTATTTCT TGCCATTTT GACTT GA TGCAGGAC AG
GTCCTGTATTCTACCGAGTC ATGGTGGGA CTGAG CT ATGTCCTG TT
CGAGGGTGGTA GC CCAT T TC -----
GAM31581 19109 TGCCCAGAGGACTCCCAAAC A A T A - G T G- CAAGAA
8 CTGGCTTGGGGTCAAGAAAC TGCCC GAGG C CCC AAC CT GCT GG GT
AGCCAGCAAGAGTTAGGGGC ACGGG TTCC G GGG TTG GA CGA CC CA
CTTAGGGCA A - - A A A - GA ------
GAM31583 20183 TGCCCAGGCTGGAGTGCAGT - ---- T -- CGCCATCTTGAT
6 GACGCCATCTTGATTCACTG TG CCC AGGC GGAG TGCAGTGA
CAACCTCCGCCTCCCAGGGT AC GGG TCCG CCTC ACGTCACT
CA T ACCC - CA ----------
GAM31587 13961 TGCCCCTAGGAGGGTCGCCA CT AG-- T TT AAT ACCTG
8 TTGAGAATGGGAACCTGTCC TGCCC AGG GG CGCCA GAG GGGA
CCCCCTCCTTGGCGCCAAAG ACGGG TCC CC GCGGT CTC CCCT
CCTTTGGGCA TT GAAA - TC CCC -----
GAM31588 3699 TGCCCCTGTTGGATGCAGTG - -------- T AG - GG CTT A TCCTG
8 TCTCGGGACTTCGTCAGTGT TG CCCCTG TTGGA GC TGTCT C GA CGTC GTG
CCTGCACAGGCGCATCAAGA AC GGGGGC GGCCT CG GCGGA G CT GCGG CAC
AGGCGGGGCTCCGGAAATTA A TCATTAAA - GG A AA AC- A -----
CTCGGGGGACA
GAM31589 9282 TGCCCGCCTGAGTGATCTTG C GAGTGA AAA TT T ACAAAG
6 AAATGATTAGTCCGACAAAG TGCC GCCT TCTTG TGA AG CCG
CGGTCTTCAGCAAGAAGGTG ACGG TGGA AGAAC ACT TC GGC
GCA - ------ G-- -- T ------
GAM31590 1190 TGCCCTAATTGCTTCCTGAG AATTGCTTCC A CCA-- ATAA A TATCTGCC
6 AATTCCCATATTAATAAAGA TGCCCT TGAGA TTC TATTA AG AGAAAAT
AGAAAATTATCTGCCATTTT ATGGGA ATTCT AAG ATAAT TC TTTTTTA
TTCCTACTATAATAACGCTG GATTTA---- - TCGCA ATCA C --------
AATCTTAATTTAGAGGGTA
GAM31593 18192 TGCCCTGTTCTCTCCTTCCT - CTCTC------ TTGC TCTTCTT
9 TGCCCTCTTCTTGGAATTGG TGCC CTGTT CTTCC CC
AAGTATTTTTCAAAGACAGA ACGG GACAG GAAGG GG
GGCA A AAACTTTTTAT TTAA -------
GAM31597 19284 TGCCGCAGGAGACATCCTCA GCA A - AATGA------- CAT
6 ATGATAGCCATGCTGAGGTC TGCC GGAGAC TCCT C TAGC
ATAGCCAGAAGGAGTTTCCA ATGG CCTTTG AGGA G GTCG
AAGGTA AAA - A ACCGATACTGGA ---

GAM31598 18453 TGCCGCTCACAGAGTCCGGA C TCA GAG CA - A AGAA CCGCCTTGACA
3 CAGGATGTCTTTGATGGAGA TGC GC CA TCCGGA GGATGTCTT TG TGG GC
AGCCCGCCTTGACAGCCACC ACG CG GT GGGCCT CCTGTAGGA GC ACC CG
ACGCAGGATGTCCCATCCGG A TAA AGA AC C - AC-- ----------
GAGATGAATGCAGCA
GAM31599 1102 TGCCGTCCCTGGGCACTGGC TCCCTG- --- CCTGTTCC
6 CTGGGCCTGTTCCCCCAGGC TGCCG GGCACTG GCCTGGG
TCTCAGTGCCACCACCCCGG ACGGC CCGTGAC CGGACCC
CA CCCACCA TCT --------
GAM31607 1217 TGCCTCTGAGAACATTGGAC C - - CATT CCAT CC- GAAAA
7 CATGCACCCTTGAAAAAAGC TGC TC TGA GAA GGA GCA CTT
TTTGCCTCCTTCATCACGAG ACG AG ACT CTT CCT CGT GAA
CA - C A ---- C--- TTC -----
GAM31608 6578 TGCCTCTGGATATTTAAGGA -- AT AG ACA CA A ACT
3 CAGTGTCAGGACCGACTCGG TGCC TCTGG ATTTA G GTGT GG CCG
CCAACGCACTCTAAATCCCC ATGG AGACC TAAAT C CGCA CC GGC
AGATAGGTA AT CC CT A-- A- - ---
GAM31609 4160 TGCCTGAAGGAGCACGTGGC TG A GC-- T -- - CGAG
6 AGCTGTGGCGGGCGAGCCCA TGCC A GGA ACG GGCAGCTG TGGC GGG
GCCAGCCAGCTGCCTGTCAC ACGG T TCT TGT CCGTCGAC ACCG CCC
GTCTGTTGGGCA GT G GCAC - CG A ----
GAM31610 16571 TGCCTGATGTCCAAAGTGAG TGA T- AA GA A A G T AA AGAAGTG
6 CGATACGAATAGTCTCTGCA TGCC TG CCA GT GCG TACG ATA TCTC GC GT
AGTAGAAGTGACGAGCTGGG ACGG GC GGT CG TGC ATGT TGT GGGG CG CA
GGTGTATGTACGTAGCGATG TG- TC AG A- - A G T AG -------
GCTCGGTGGCA
GAM31610 19824 TGCCTGCAAGAGGTCAGGCC CC AAGA C CT C CCT ACGAA
7 CCTGCCGCCCTACACGAAGT TG TGC GGT AGGCCC GC GC AC
TGAGCGCTCGGGCCTCACCC AC ACG CCA TCCGGG CG CG TG
CGCATCCA CT CC-- C CT - AGT -----
GAM31611 8996 TGCCTGCTCCGTTTCTGCTC - - - C - GA- G TG AAT GCT
6 AGGCTCCTGAGGGGCTGCCT TGCCTG CTCCGT TTCT GCT AGGCTC CT GGG C CCTC GGCCC

CAATGGCCCGCTGGGCCTCG ACGGGC GGGGCG GGGA CGG TCCGGG GG TCT G GGGG
CCGGG
GGGTGGGTCTGGAGGAGGGC C T A T A AGG G GT CT- ---
CTTGGCAAGGGTGCGGGGCC
GGGCA
GAM31612 18886 TGCCTGGAATGGCAGCATCT TGGA G TCTA TTCA CAC
6 ACATGTTCAACTGGCACCCA TGCC ATG CAGCA CATG ACTGG
GTGCTTATGGTTGCTGGCAT ATGG TAC GTCGT GTAT TGACC
GGTGGTA TGG- G TG-- TCG- ---
GAM31614 1024 TGCCTGGGGGAACACAGATG TG GA--- A CA GGGTTACAGGGGAA
3 TCACCGGGTTACAGGGGAAG TGCC GGG ACACAG TGT CC
GAACAACTGTGTAAAGACCC ATGG CCC TGTGTC ACA GG
TGGGTA GT AGAAA A A- ----------
GAM31614 14402 TGCCTGGTGCTGCCAGTAAG CT - C GGC CAC
7 GGCGAGGGCACTCCTCATAC TGC GGT GCTG CAGTAAG GAGGG
TTACTGCCGGCTGCCCCGCA ACG CCG CGGC GTCATTC CTCCT
CC T C ATA ---

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GAM31618 3415   TGCCTGTGTAAGTGCTCATG     -   ---- T-    T - GC    TTTTGCT
0          GCTGCTGTGCTTTTGCTGTA TGCCTG TGTA    AG  GCTCA GG CT  TGTGC
           CAAGTCCCTGAGTTTCTCAT ACGGGC ACAT    TC  TGAGT CC GA  ACATG
           CTACAGCGGGCA           G    CTAC  TT    C  T --    -------
GAM31620 22207  TGCCTTCCCGGGCAGCACCA    TTCCC       CCAACTCCCT    A  A  ACCA
1          ACTCCCTGCACAGGATGACC TGCC    GGGCAGCA        GCAC GG TG
           ACGACCAGTGCTGCTGCCTA ACGG    TCCGTCGT        CGTG CC GC
           TGGCA               TA---       ----------    A  A  ----
GAM31620 13982  TGCCTTCTCAGGAAAGCTGG    TCTC    AGCTGGT   T  TTT    TCA   TCTGAC
9          TGTCTGATTTTGGCCATCAG TGCCT   AGGAA     GTC GAT   GGCCA   GGAC
           GACTCTGACGTCTCTTTGGT ACGGG   TCCTT     TAG TTG   CTGGT   TCTG
           CTTGTTGATTTCCTCTGGGC    TC--    -------  -  TT-    TTC   ------
           A
GAM31624 14419  TGCCTTTGGGCTAAGCCCTG    TT-  CTAA-    ----  T   ACAAGC   CA    CATTAGT
7          GCTGTCTACAAGCCCGCAGT TGCCT   GGG    GCCCT    GGC GTCT     CCG  GTAC
           ACCATTAGTGTACAACGGAG ACGGA   CCC    CGGGG    CCG CAGA     GGC  CATG
           ACTGCCTACTGGGGCCCGTT    CGT   TTGCC    TCAT   T   ------   AA   -------
           CCCTGCAGGCA
GAM31625 6249   TGCCTTTTCCAGACTGCCAG      TTC   AC      GC-----       --- TTTGA
5          CGCGGAGCACTAGTTTGACT TGCCTT   CAG  TGCCAGC      GGAGCACT   AG
           TTGGGTGCTCTTCAAATAGC ACGGAA   GTT  ACGGTCG      TCTCGTGG   TC
           TGGCATTGATAAGGCA         TA-  --      ATAAACT       GTT  -----
GAM31626 19210  TGCGAAGCCGAGCAGAACGG     A  C  -    --  G   - AG     CTCTAAT      TAGAGCT
6          CAATCCAGGGATTCCTCTAA TGCGA GC GA GCAGA  ACG CAAT CC  GGATTC      GGTAGGA

           TGGTAGGATAGAGCTTTTTG ATGCT TG CT TGTCT  TGC GTTA GG  TTTAAG      CCGTTTT
           CCTGAATTTTCGGCATTGGC     A  C  A    TC   G    C  CT     T------      -------
           GTCTTCTGTATCCGTATCGT
           A
GAM31627 16683  TGCGAGACCGAGGCTGGAGC    AGA   A    GGAGCC      CAA  TCACA
3          CCTAGGCACAAGGTCACACC TGCG   CCG GGCT     CTAGGCA   GG
           CTGTCTAGAGTCATGGGAGC ACGC   GGT CTGA     GATCTGT   CC
           GCA                GAG   A   ------       C--  -----
GAM31627 3710   TGCGAGGCTCAGACGAGGAT    GA---       CGAGGA    C    CCAC
8          CACTCGAGCCCACGCTTTAG TGC     GGCTCAGA      TCACT GAGC
           TGAACACTCTGGGCCCCCTA ATG     CCGGGTCT      AGTGA TTCG
           GTA                 ATCCC       CACA--     T    ----
GAM31630 20770  TGCGCCTCCGGATGACATCT    G  -         ---  G    ----     GGGAGGAA
3          GATTCATTCGTGGGAGGAAA TGC CCT CCGGATGACA   TCT ATTC    ATTCGT
           TGGATTGTAGAGTAAGGTTT ACG GGA GGTTTACTGT   GGA TGAG    TAGGTA
           TGTCATTTGGAAGGGGCA     G   A        TTT   A    ATGT     --------
GAM31631 8156   TGCGCGGATAACATGGGCCA       ATAACATG    ACAAC   TTCAAGAT
1          CAACTACTTCAAGATGTGCA TGCGCGG       GGCC     TAC
           CACGGCCATTTCCACTCGCG ATGCGCT       CCGG     GTG
           TA                   CACCTTTA    CACAC   --------
GAM31631 2725   TGCGCTGAATGATGTCACGG       AAT  TG CAC    GT     AACACA
5          CAGTCGTTGAACACACGGCG TGCGCTG   GA  T   GGCA  CGTTG
           GATGTCTCAGTGTCCACAGC ACGCGAC   CT  G   CTGT  GCGGC
           GCA                   AC-  GT ACT    AG     ------
GAM31632 9649   TGCGGAGTAACTGCAAAGAT    GG    C  C      CTG    TGC    G  C-   GT     C    TTCCTC
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3          GCTGTCCGTGCGCGTTGCTG TGC  AGTAA TG AAAGATG   TCCG   GCGTT CTG  GGCC  GGTCCG
GCCC
           CGGCCGTGGTCCGCGCCCTT ACG  TCGTT AC TTTCTAC   GGGT   CGTAA GAC  CTGG  TCAGGC
CGGG

           CCTCGGCGGGCCGGACTGGT  --   - -     TT-   TT-    A  CT   --    -   ------
           CTCCAGAAATGCTTTGGGTT GGC
           CATCTTTCATTGCTGCA

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GAM31632 1011   TGCGGATCTCCTCCCGGGGG     A  CC----    --  ---      C  ACGCGACA
4          AAGCTGGCTGAACGCGACAT TGCGG TCT     TCCCGG  GGG   AAGCTGG TGA
           CGTCCAGTTTGTACCCTTCC ACGCC AGG     AGGGCC  CCC   TTTGACC GCT
           GGGACTACGTGGACCGCA      -  TGCATC     TT  ATG      T  --------
GAM31633 6528   TGCGGCCGATGGCGGGCTGC      CGAT  G  T     A-   T  -  T TGGGT
0          GGGCAAGCGTCACCCTGCTG TGCGGC    GGC GGC GCGGGC  AGCG CA CCC GC
           GGTGCCGGGCTGCTGCTGAG GCGTCG    CCG CCG CGTCCG  TCGT GT GGG CG
           CCTGCTGCCGGCCCTGCTGC      TC--  G  T     AG    C  C   C  -----
           G
GAM31633 21588  TGCGGCCTCTGGCAGGGTCC       CTG  GGG-   TG TGT      -  ACA   GGGTG
2          CTGGTGTGGCCGAGGGTACA TGCGGCCT   GCA   TCCC  G   GGCCGAGG GT   TCCC
           TCCCGGGTGGGGGGGGACTCT ACGTCGGA   CGT   GGGG  C   TTGGTTTC CA   GGGG
           TTGGTTCTGGGGGAGAATGC       ---  AAGA   GT ---      T  GG-    -----
           AGGCTGCA
GAM31633 13992  TGCGGGAACCATGCTGCAAG   C      AT---    AAG----    ACCT
9          CCTTTACCTGAAGGACACAG TG GGGAACC     GCTGC      CCTTT
           CGCAGCCACAGGGTTCCCCA AC CCCTTGG     CGACG      GGAAG
                        -      GACAC    CGACACA    ----
GAM31634 5472   TGCGGGACTCCTCCAGGCTG       TC   AG      CAGAG    CCGGC
3          CCATCAGAGGGGCCCCGGCG TGCGGGAC  CTCC  GCTGCCAT    GGGCC
           GCCCACGTGGTAGTGGGAGA ACGTCTTG  GAGG  TGATGGTG    CCCGG
           TGTTCTGCA               TA   G-      CA---    -----
GAM31635 21647  TGCGGGTCACCACGGTGGCT   C     C---  C  T     CCA--     --   -    CGTTCCT
4          TCCCACACTTCTGACTCGGA TG GGGTCA    CA GG GGCTTC     CACTTC  TGAC TCGGA
           CGTTCCTTCCGGTGTCACTG AC CCTAGT    GT TC TCGAAG     GTGGAG  ACTG GGCCT
           AGGTGGTCGTGAAGCTCTTT  -     CTCA  T  -     TGCTG     TC   T    -------
           GACTCTGATCCCA
GAM31636 8774   TGCGGTGGGGATGGGGGAGT   C  TG      GGG   ----      CTCA-   G
TCTCTGTTGTTTTTTTCC
8          TGGGGGCCCTCACTTGGTCC TG GG  GGGATGG   AGTT    GGGGGCC     CTT GTCCT
           TTCTCTGTTGTTTTTTTCCA AC CC  CCCTACC   TCGA    TCCCCGG     GAA CAGGA
           GGACAAAGCCAAAGGCCCCT  C  GT      GG-   TTGT      AAACC   A    ------------------
           TGTTAGCTGGCCATCCCTGC
           CCCA
GAM31640 21080  TGCGTTTGCTGGCTGGGAGC    TTT    C  G    AG   G  -  G   --- -      CCGT
6          CTAGAAGGGATAGTGGGCGA TGCG   GCTGG TGG AGCCT  AAGG ATA GT GGCG   AG GCTCCGCC

           GGCTCCGCCCCGTGGTGGGG ATGC   CGGCT ACC TTGGG  TTTT TGT CG CTGC   TC CGGGGTGG

           CGCTTTCCGTCGGCGTGTGT    C--    -  G    G-   G  G  G    CTT  G       ----
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TTTGGGGTTGCCATCGGCCC
GTA
GAM31645 6127 TGCTAATTGTTCCTCTAAAG AA TG C TAATC ATG TTCTT
8 TAATCGCCATGCGTTCTTCG TGCT T TTCCT TAAAG GCC CG
GGCTTCATCTTTAAAGGAAT ACGA A AAGGA ATTTC CGG GC
GAAGCA -- GT A TACTT --- -----
GAM31648 6114 TGCTACTATTTTATTGCAGG ACTA T AGGA GG- TATG
0 AGGTGGGGGTGTATGCACCG TGCT TTTTAT GC GGTG GGTG
CACACCGGGGCTATGAGAAG ACGA AGAGTA CG CCAC CCAC
CA ---- T GGG- ACG ----
GAM31648 18179 TGCTAGAAGGGAGGGTGGGT A-- A A- - AG AG AG G - A AAACAAAATAA
8 AGACAGCCACCAGCCTTGTT TGCT GA GGG GGGTGG GT AC CCACC CCTT TTTA TA ATTC

TATAAATTCAAACAAAATAA ACGG CT CCC CCCACC CA TG GGTGG GGGA AGAT GT TAAG

GAATCTGCTAGAAGGGAGGG ACA G CG G GA -- GA - C C ----------
TGGGTAGACGCCACCCGCCC
CGTCACAGGCA

GAM31655 9057 TGCTATTGTGAATAGTGCTG ------ A G A A GTGC
4 CAATAAACATAAGTGTGCAT TGCT ATTGTGAAT GT CTGC ATAAACATA GT
GTGTGTTTATAGCAGGATGA ATGG TAATATTTA TA GACG TATTTGTGT TA
TTTATAATCCTTTGGGTA GTTTCC G G A G ----
GAM31657 20454 TGCTCAATTTTGATACCAAA ATTT------ A AAACC- ACATTTA
6 CCATAGCACATTTAGCTATA TGCTCA TGAT CC ATAGC
CTACCGGATCATACAATTAA ACGAGT ACTA GG TATCG
CTGAGCA CAATTAACAT - CCATCA -------
GAM31658 18720 TGCTCAGAACACATGAAGTG GAACA GAA A- ACCACAGAACAAA GAGC
8 CAGCACCACAGAACAAACGG TGCTCA CAT GTGC GC CGG
GAGCCCGAAGCAGGCACAAA ACGAGT GTA CACG CG GCC
TGCATGAGCA AC--- AA- GA AA---------- ----
GAM31660 3849 TGCTCAGTCAGACCTGTTCA T GTCA- G AG --- AGA C G ACTTATATAAT
9 AGTAGTAGAGCTTGGAGAAT TGC CA GACCT TTCA TAGTAGA GCTTGG ATGC AT AAAT
GCCATGAAATACTTATATAA ACG GT TTGGA AAGT ATCATTT CGAATC TACG TA TTTA

TTAATTTGATTGCATGAACT T ATATG A A- TAA AAG T G ----------
AAGCAATTTTACTAATGAAA TA
AGGTTGTATATGTGCA

--
GAM31661 13031 TGCTCATAGACCCCCTTGAC CAT- CC TTGA --- ACTTGGA
4 TCTAGCACTTGGAGCCCTTA TGCT AGA CCC CTCTA GC
GAGATGGGAATCTTGACAGC ACGA TCT GGG GAGAT CG
A CAGT AA TA-- TCC -------
GAM31664 21039 TGCTCCCTGATTAAAGTGCC TCC A- - - G A CCATCTCTCCC
7 TTCAGCCAAGACCATCTCTC TGC CTGATT AAGT GC CTTCA CCA GA
CCTCCTGGTGAAGTGTGACT ACG GATTAA TTCA TG GAAGT GGT CT
TCGAATTAGTTTGCA TTT GC G T - C ----------
GAM31666 6309 TGCTCCTGCTGCAGGGCCTC TCCT--- ---- CT T-- TGCCT

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7          GGCGTGCTGCCTGTTCTCGC TGC      GCTGCAG   GGC  CGGCG   GC
           TGTGCCACATCTGCAGCTCA ACG      CGACGTC   CCG  GTCGC   TG
           TTCTGCA            TCTTACT     TACA  T-    TCT -----
GAM31668 9708   TGCTCGCCGTCCCCGCCATG   T -----   -  -  GC    CTAGACTTTT
3          CTGTCTCTAGACTTTTGGAC TGC CGC    CGTCC CCGC CAT  TGTCT
           GATGTGCGGCGGATGAACAA ACG GCG    GTAGG GGCG GTA  GCAGG
           GCGGCA             -  AACAA    C   T  --    ----------
GAM31669 8207   TGCTCTAGATCACGTCTACA     A--  TCAC    C     ACTTTCCTTCTC
9          AGTCAACTTTCCTTCTCTGA TGCTCT   GA   GTCTA AAGTCA
           TTTTAGATCTATTCAAGAGA ACGAGA   CT   TAGAT TTTAGT
           GCA                GAA  TATC    -     ------------
GAM31675 6300   TGCTCTTCATGCAAGGTTGC   -     GC     C  CCTA    AATG-   ATA    ACTTTTCCCCAATAA
9          AAACCTACCAAGAATGCATA TGC TCTTCAT  AAGGTTG AAA    CCAAG    CATA   GTCTC
           ATAGTCTCACTTTTCCCCAA ACG GGGGGTA  TTCCAAT TTT    GGTTT    GTGT   TAGAG

           TAAAGAGATGCGTGTGACTA   T     A-     -  CA--    GATCA    GCG    ----------
           GTTTGGACTTTTAACCTTAA A
           TGGGGGTGCA

                      -
GAM31685 19360  TGCTGCCACCATTTTTCTCA   -   ACCATTTT     ACTT    GAGTA
9          GACTTCGGAGGAGTATTTTG TGC TGCC       TCTCAG    CGGAG
           CTGCTGAGACTCAGGCATGC ACG ACGG       AGAGTC    GTTTT
           A                  T   ACTC----     GTC-     -----
GAM31687 16526  TGCTGCCGATGACCAAGCAC   C     A  ACCAA--   C     ATTGACCCCG
4          GCCTTATTGACCCCGAAGGC TG TGCCG TG      GCA GCCTT
           TGCGACGCTGCACGGCACCA AC ACGGC AC      CGT CGGAA
                        C    -  GTCGCAG   -    ----------
GAM31688 6001   TGCTGCTATGAAATCAGATA       TGA    GATAG   C   GACAACATTATTAG
8          GCAACAACGACAACATTATT TGCTGCTA   AATCA    CAA AAC
           AGGTTTTGAACTATGATTTA ACGATGAT   TTAGT    GTT TTG
           GTAGCA                 ---     ATCAA   -   --------------
GAM31689 9812   TGCTGCTCTTTGTCAGAATA     CT    T    TATG    A  AAAACAAAA      AAATGCTA
1          TGTCAGAAAACAAAACAAAA TGCTG  CTTTG CAGAA    TCAGA AAC       AAAGTTTT
           AAAGTTTTAAATGCTAAAGA ATGAC  GAAAT GTCTT    AGTCT TTG       TTTTAGAA
           TTTTAAAAATTAGTTCTCTG     C-   -    TAA-    C  ATTAAAAA-      --------
           AAATTTCTGTAAAGCCAGTA
GAM31689 8706   TGCTGCTGCTTGGCCTCTGC       C   -   -    CT  C  CTCTA
9          ATCTTCCTGCTCTACAAGAT TGCTGCTG TTGG CCTC TGCAT  TC TG
           CGTGCGCGGGGACCAGCCGG ACGGCGGC GACC GGGG GCGTG  AG AC
           CGGCA                  C   A   C    CT  A -----
GAM31690 20923  TGCTGCTTCTAACAGATGGC     CT   AA-      C--  GA  TGACA
9          CAGGAGGTGACACCGATTTC TGCTG  TCT   CAGATGGC   AG  GG
           AGCCATTTGCCAAGGTTTAG ACGAT  GGA   GTTTACCG   TT  CC
           CA                 TT   ACC      ACT  AG  -----
GAM31694 5570   TGCTGGCACATTACTCATAG   -  CACAT   C-     AAGAAA   -  T  ACTGAG
0          ATAAAGAAAGATTGATGGAC TGC TGG    TACT  ATAGATA     GATT GA GG
           TGAGCCCTCAAATCACAGTA ACG ACC    ATGA  TATCTAT     CTAA CT CC
           TCTATACAGTACTAGACCAT   T   AGATC    CA      GACA--    A  C  ------
           GCA
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GAM31694 2889 TGCTGGCATGCTAGGTTTCT GG T TA T TG TT T TCCCT
4 GGGTTCTCTCTCCCTGAGCG TGCT CA GC GGTT C GG C CTC
GTCCTGGTGACCCTGCTTGA ACGA GT CG CCAG G CC G GAG
AGCA A- T TC T GT TG C -----
GAM31695 3936 TGCTGGCCTTGGGAAGGCCG CT GGAA -- AG TGAC
2 CGGAGCTGGTGACCCAGAAC TG GGCCTTG GGCC GCGG CTGG
TGCGAGGCTTATGAGGCCCA AC CCGGAGT TCGG CGTC GACC
CA AC AT-- AG AA ----
GAM31695 14474 TGCTGGCTCAAGTGTGATAA AAG G - GCACAACCACAAAGATA
5 GGATGAGCACAACCACAAAG TGCTGGCTC TGT AT AAGGATGA
ATATCATTTTTAATGACAAG ATGATCGAG ACA TA TTTTTACT
AGCTAGTA A-- G A ----------
GAM31696 18078 TGCTGGCTTTTATGTATGAT T A - ATA TAA GAC AAAAA
0 ACCTAATCAGAGCATTGACC TGC GGCTTTT TGT ATG CC TCAGAGCATT CAG
AGAAAAATTGAAAGTGTTCT ACG TCGAGGA ACG TAC GG AGTCTTGTGA GTT
GAGGCACATAGCAGAGGAGC - G A AC- --- AA- -----
TGCA
GAM31696 21471 TGCTGGGAATACCATAGCCA T A A T- CACCT GAAA
4 CCTTTTAGGGAAACTTAAAT TGC GGG AT CCA AGC TTTAGG
TATGTTTTTGGATACCCTGT ATG CCC TA GGT TTG AAATTC
A T A - TT TATT- ----
GAM31697 2687 TGCTGGGCCCCCGCCCCCGG - CC CCCCC TC - CA - CATC
6 CTCCCCCGCACGCATGCATC TGCT GGGC CCG GGC CC CCG CGCA TG
CACTGCGGCCGGAGGAGGCC ATGA CCCG GGT CCG GG GGC GCGT AC
ATGGAGCCCGAGTA G A- A---- GA A CG C ----
GAM31698 704 TGCTGGGTGGACCAGCGTGT GGTG G TTGCTCCAG GTTGAA
7 TTGCTCCAGGCTATGTTGAA TGCTG GACCAGC TGT GCTAT
ATAGTATGCAGGTTGGTCAG ATGAC CTGGTTG ACG TGATA
GGCAGTA GGGA G TA------- ------
GAM31699 5853 TGCTGGTGGTCGGTGGGTTT C TT G C TAA T-- AG AG CGCG
9 GAGGCCTATTAAGGGGTGCT TGCTGGTGGT GGTGGG TGA GC TAT GGGGTGC GC CTGGTGG
GCT
GCAGCTGGTGGAGGCTCGCG ACGACTACCA CTACCC ACT TG GTA TCCTACG CG GACCATC
CGG
GGCGCTACCAGGAGCTCTGC C T- G T C-- TCT AG G- ----
ATCCTCATGTGTGTCATCCC
ATCCACCATCAGCA
GAM31704 20115 TGCTGTGCTTATAAAAGAGG -- AAA CCCCTGA TGTT
2 CCCCTGAGAGCATGTTTGCT TGCTGTG CTTATA GAGG GAGCA
CCTTCCTCCATGTGAGGACA ACGACAC GAGTGT CTCC CTCGT
CAGCA AG AC- TTC---- ----
GAM31715 9685 TGCTTCAGATTTACCAACAG AG -- AAC A ATCAAGAAA AGCCA
9 CATGAATCAAGAAAAGTTAG TGCTTC ATTT ACC AGC TGA AGTT
CCAAACTTCAGGCTCAGGTC ACGGGG TAGG TGG TCG ACT TCAA
CGGATAGGGGGCA GA CC AC- G --------- -----
GAM31716 2756 TGCTTCAGTGCTGCTCCTGA T T CT- AG AGCAGGTTACC
3 GAGAGTAGCAGGTTACCACT TGCT CAG GCTG CCTG AGAGT
CTGGCAGGCCCCAGCCCTGC ACGA GTC CGAC GGAC TCTCA
AGCA C C CCC GG ----------
GAM31718 14045 TGCTTCCTCTTGAGTGCAAC CCTCTT C C AA C ATC GTTT

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7          GGAAAGGGCTATCAGATATC TGCTT     GAGTG AA GGA  GGGCTAT AGAT   TGCAC
           TGCACGTTTGTGCAATTTAT ACGAA     TTCAC TT CCT  CTCGATA TTTA   ACGTG
           AGCTCCTCCATTACACTTCT     TACTTC     A A   C-      -    ---     ----
           TCATAAGCA
GAM31726 18365  TGCTTGGATGGTCTGCTTCA        GG--  T    CAAGC    GTTCAAAATAA
0          AGCCCGTGGTTCAAAATAAT TGCTTGGAT    TC GCTT    CCGTG
           ACGGAAACAAGTGAAAAAGT ACGAACCTG    AG TGAA    GGCAT
           CCAAGCA                AAAA  -    CAAA-     -----------
GAM31733 5846   TGCTTTGATACTGTGGGTGT      GATACT      TC    A   C--   A  ACGTTTAC
3          CTCTCAGTTCCTGACTACGT TGCTTT     GTGGGTG  TCTC GTT   CTG CT
           TTACAGCAGTTTGATAGAGA ACGAAG     CATCCAC  AGAG TAG   GAC GA
           ATCACCTACTAGAAGCA        AT----      TA    A   TTT   -  --------
GAM31738 9261   TGCTTTTTCTTTAAGGAGCT   C   TT       AGCT-     GCACCTA
4          GATGTTGCACCTAAACATTC TG TTT  CTTTAAGG     GATGTT
           CAACCCTTAAAGCTAAAACA AC AAA  GAAATTCC     TTACAA
                        A   TC       CAACC     -------
GAM31739 19960  TGGAAAAATAGGTATTTTTA     A--   A   A   -     -    TTA---   TTTTTT
9          AATTGTTTTTAATCTTTTTT TGGAA   AAT GGT TTT TTAAAT TGTTT     ATC
           GGTGCTTTTAAACATGTTTA ACCTT   TTA CCA AAA GATTTG ACAAA      TGG
           GCAAAAACCAATTCAGTTCC     GAC   A   A   C     T    TTTTCG   ------
           A
GAM31743 20532  TGGAAACCACACTCCTTTAG      CC  A     TAGA--    GG---   GAGGA
5          ATGGGGGGCCGAGGAGGCGA TGGAAA  AC CTCCTT     TGGG     GCC
           CAACCCAACAATTGAGGAGA ATCTTT  TG GAGGAG     ACCC     CGG
           GTTATTTCTA             AT  A     TTAACA    AACAG   -----
GAM31745 868    TGGAAAGATTCTTCAAGGGA     AAGAT       GGA  TG   G-----------------    AGAGA
2          TATGGACGGATAAGAGATAT TGGA     TCTTCAAG   TA  GAC              GATA
           TGATCTGAAAAGAGGCTTGG ACCT     AGGAGTTT   GT  TTG              TTAT
           TTTGTGGAATTTGAGGATCC    -----       AAG  GT   GTTCGGAGAAAAGTCTAG    -----
           A
GAM31749 9545   TGGAAATGTGATTTTCTTAA        TGATTTTCTT      G  TT A  GT GCTTGA
3          TAGCTGAGTTCATGGTTGCT TGGAAATG         AATAGCT AG  C TG  T
           TGAAGTCAGGCCTGGCTATT ACCTTTAC         TTATCGG TC  G AC  A
           CATTTCCA               ----------       -  CG -  TG ------
GAM31752 16527  TGGAACCAAGGCCAGTGAAT    AACCAAG   A   AA--     AACTTTCTACA
0          AAGCAACTTTCTACAGTTTA TGG      GCC GTG    TAAGC
           GCACCACGGCAAGAAAACCA ACC      CGG CAC    ATTTG
                        AAAAGAA   -   CACG     -----------
GAM31757 12222  TGGAAGCAGTCAGCTAACAC  GG    AG     T   ACACAAGGAAG     GAGGAAGA
5          ACAAGGAAGCCTGTGAGGAA T  AAGC  TCAGC AAC         CCTGT
           GAACAGGAAGTTGCTGAGCT G  TTCG  AGTCG TTG         GGACA
           TTTG               TT   --    -   AA---------     --------
GAM31758 12861  TGGAAGCGCACGCAAGATGG    AAG-    C     A  GA   TGT     CTAAGC
7          AAGCTGTGCGAGCTAAGCCT TGG    CGCA GCAAG TG  AGC   GCGAG
           TGCTTTGCTACGCCTTGCTG ACC    GCGT CGTTC GC  TCG   CGTTC
           CGACCCCCA            CCCA   -    C  A-   TTT     ------
GAM31760 18809  TGGAAGGCTTCTTTTACCCA    AG     TTTA-   G--      GG  --   TTCCTGGACT
8          GCTGGAAGGGACGGATTCCT TGGA  GCTTCT     CCCA   CTGGAAG  AC  GGA
           GGACTTCTATGTGACTTCCA ACCT  CGAGGA     GGGT   GACCTTC  TG  TCT
           GAAATGGGGAAGTAGGAGCT     CT     TGAAG    AAA      AG  TA  ----------
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CTCCA
GAM31760 12983 TGGAAGGGAAGGCAGGACAT AAGG CA--- CA ----- CCTG
9 GGGCCGGGCCCTGGCCCAGG TGG GAAGG GGA TGGGCC GGGC
ACGGCCCAAATCCAAAAACC ACC CTTCC CCT ACCCGG CCCG
TTCAGCCCA CGA- AAAAA AA CAGGA ----
GAM31761 1260 TGGAAGGTGGGTATAAAAGG A -- ATAAAA AA ATACAGTTC
4 TAATCAGATACAGTTCCTGA TGGA GGTG GGT GGT TCAG
AGCCCAGACTGACACCTCCA ACCT CCAC TCA CCG AGTC
- AG GAC--- A- ---------
GAM31762 3573 TGGAAGTGAGCGGTTGACCC A G - GACCCTCC-- C CC-- -- ----- AGA
1 TCCTGGCTCCCCTGAATTCT TGGA GT AGC GGTT TGG TCC TGAATTCT GTAT TCAA TG
GTATTCAAAGATGGAACCCC ATCT CG TCG CCAG ACC AGG GTTTAAGG CATA AGTT AC
TCCAATTGATGCCCATACAA C G A AAATTAATAC A CTTC AA CCCGT A--
GGAATTTGCTTCGGAACCAC ACCCC
ATAATTAAAGACCAGCTGGC GA
CTCTA CT

GAM31763 1205 TGGAAGTTATGACAGACTTC GACAGACT AACTACAT TTGTAAAC
0 GAACTACATGTACTTTGTAA TGGAAGTTAT TCG GTACT
ACAGTACCGACACATTAATA ACTTTCAATA AGC CATGA
ACTTTCA ATTACAC- -------- --------
GAM31767 21357 TGGAATCTCGGAGGGCCACT TC GG A AACC TC TT TCAA
1 AACCGGGGTCCTTTCTCAAG TGGAA TCGGAG CC CT GGGG CT C
GGGGTTCCCCAGAGGAACTC ACTTT AGCCTC GG GA CCCC GG G
CGATTTCA -- AA A ---- TT GG ----
GAM31769 4472 TGGAATTACCTTTGGCAATA A A TTTG ATA T A TGCT
6 AGTAGATTTAGGTGCTTTTG TGGA TT CC GCA AG AG TTTAGG
AACTCTAGTGCATGGCAAAT ACCT AA GG CGT TC TC AAGTTT
CCA A C TA-- GA- - - ----
GAM31773 4384 TGGACACATACTAAAGCGCC A C AAAGC CAAA CCTTTAACATTT
1 AAAAGACCTTTAACATTTTC TGG CA ATACT GC AGA
TGAGAGCCACCGAGTATTTG ACC GT TATGA CG TCT
CCA - T GCCAC AGAG ----------
GAM31774 12534 TGGACAGATGGATGACTTGG A AT T --- TG - TG GGAA
9 TGTGCTTTGAGGAATTGACA TGG CAG GGA GACT TGGTG CT T A
GATTACCAGTTGGTCTCCCC ACC GTC CCT CTGG ACCAT GA A T
TGCCA - C- - TTG TA C GT ----
GAM31775 19095 TGGACAGATTTATCAGTCCT TTTA T TG CTA--- AA - C TACAC
0 GGCTAGACAAGTCCACACCC TGGACAGA TCAG CC G GAC GTC CACA CC
TACACGGCTGTGCGATGGGT ATCTGTTT AGTC GG C CTG TAG GTGT GG
CGTGACACTGGGCCTGAGCT CG-- C GT ACAGTG GG C C -----
TTGTCTA
GAM31775 3935 TGGACAGGCAGAGGCTGAGG AC A- CT CT GCTA A - ACAC- CAC-- C
6 CTGCTGCTATCCAGGGAAGA TGG AGGC GAGG GAGG GCT TCC GG GAAG ACCCT GCTG
GTGC
CACACCCTCACGCTGCGTGC ACC TCCG TTCC CTTC CGG AGG CC CTTC TGGGA CGGC
CACG
CCTCTAGGTGCACTCGGCAA C- GG T- T- ACC- A A GACCT CCGAA T
GCCAGGGTTCCAGCTTCACC - TCTA
AGGACCAGGCTCTTCTCCTT CC

GGGCCTCCCA GG
T ----
GAM31780 2895 TGGACCTATAACTTGTCATG - CTTG G CA GACAAGTAGG
5 AGAACATTTCGACAAGTAGG TGGACCT ATAA TCAT AGAA TTTC
GAGGGATTTTGGTGAACTTA ACCTGGA TATT AGTG TTTT GGAG
TCAGGTCCA C CA-- G AG ----------
GAM31785 20497 TGGACTGGAAGGGACAGGCA ---- GA C C- TAGG GACA
2 GGGACTAGGTCTGACAGGAG TGGA CTG AGGGA AGG AGGGAC TCT
TGTCCCTTTCCTTCCCTGGC ACCT GAC TCCCT TCC TCCCTG AGG
AGGGTTTCCA TTGG GG - TT TG-- ----
GAM31785 12618 TGGACTGGCAGTCTTTAAAG -- AA----- TACC
4 GTTGGTACCCTAACTTGATG TGGACT GGCAGTCTTT AGGTTGG
AAAGAAGATTGTCTTAGTCC ACCTGA CTGTTAGAAG TTCAATC
A TT AAAGTAG ----
GAM31790 18619 TGGAGAATCTCCTCAAGGGC -- CAA- CT- C CGAAA
2 TCAGCTGCGAAACACCTGTC TGGAG AATCTCCT GGG CAG TG
ACTCAACCAGGAGATTTACT ACCTC TTAGAGGA CTC GTC AC
CCA AT CCAA ACT C -----
GAM31792 12749 TGGAGACGAGTTCTTACTAT A C CTTA A TT CA CTCAA
6 GTTGCCCAGGCAAGTCTCAA TGG GA GAGTT CT TG GCCCAGG AGT
ACTCCTGGGTTCAAGCGACT ACC CT CTCAG GA AC TGGGTCC TCA
CTCCCA - - C--- - T- -- -----
GAM31793 6471 TGGAGACTTGGGACGGTCAG A C - C-- CACC GG A - -- TGATCT
4 CCACCCATGCCCTGGGTCAG TGG GA TTGGG ACGGT AGC CATGCCCT GTC GGC CC AGC

GCCCAGCTGATCTGCTCAGG GCC CT AACCC TGTTA TCG GTACGGGG CGG CCG GG TCG

AGCCAGGCGGGGGCATGCAC - - G TTT CAC- G- A A AC ------
GCTTTTATTGTGCCCAATCC
CG
GAM31793 14697 TGGAGACTTGGGACGGTCAG GAC G C-- CACC GT A - -- TGATCT
5 CCACCCATGCCCTGGTCCAG TGGA TTGG ACGGT AGC CATGCCCTG CC GGC CC AGC

GCCCAGCTGATCTGCTCAGG GCCT AACC TGTTA TCG GTACGGGGC GG CCG GG TCG
AGCCAGGCGGGGCATGCACG --- G TTT CAC- -- A A AC ------
CTTTTATTGTGCCAATCCG
GAM31796 12864 TGGAGATGGCTCCGGCGGCT GATG CC C GAAA- CAAATT
3 TGGGGAAAGCCAAATTGCCA TGGA GCT GG GGCTTGGG GC
AAACTCAAGTCACCTCAGTA ACCT TGA CC CTGAACTC CG
CCATCCA ACCA CT A AAAAC ------
GAM31798 4228 TGGAGCCACTCCCTGACTAC GCCA ----- A A - C- GGACAGA
8 AAGGACCCCCGGCGGACAGA TGGA CTCCC TGACT CA GGAC CC CGGC
GCTGATGGTGTCCATGGGTT ACCT GAGGG ATTGG GT CCTG GG GTCG
ATACACGGGAGGAGATCCA AGAG CACAT - A T TA -------
GAM31801 18031 TGGAGCTGACTGAAGCATCT A CA ATTTTA A AACTTT T TAAATT
9 TATTTTATAGTATATCAACT TGGAGCTG CTGAAG TCTT TAGT TATC GG GTT
TTGGTGTTTAAATTGACCCT ACCTTGAC GATTTT AGAA GTCG ATGG CC CAG
GCAAGGTAGCTGAAGAACTT A CA ------ - AACGT- - ------
TTAGACAGTTCCA
GAM31802 16556 TGGAGCTTCTCGCAAGGTGT CTTCTCGCAA TGG GA - CACCAA

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9          TTGGGAGCAGAGGATGGAGC TGGAG       GGTGTT  GAGCAGAG  TGG AG
           ACCAACTACTAGTTCTGCTC ACCTC       CCACAA  CTCGTCTT  ATC TC
           AGTAACACCCTCCA        ----------    TGA     G-  A ------
GAM31803 1296  TGGAGGAACTGTGTCAGTGC        T  CAGT  ACA   G  G  ACCCC    CC  TCTG
9          CACAGAGGAGGAGGTCACCC TGGAGGAACTG GT   GCC  GAGGA GAG TC   CCAGCA  GGC

           CCCAGCACCGGCTCTGGCCA ATCTTCTTGAC CG   CGG  TTCCT CTC AG   GGTCGT  CCG
           TTGCTGGAAAAAGACTCATC        - CT--  AGG   A  - AAAAA    TA  ----
           CTTGGAGGCTCGCCAGTTCT
           TCTA
GAM31806 12539  TGGAGGCCAAGCTGATAAAA  GAG  AA--  ATAAAACACAAGAA  GG   CAATGA

8          CACAAGAAGGGGATTGTCAA TG  GCC  GCTG         GG  ATTGT
           TGAACAGTTTCTGCTGCAGC GC  CGG  CGAC         TC  TGACA
           GGTGGGCAGACG        AGA  GTGG  GTCG---------- TT   ------
GAM31808 20808  TGGAGGCTGCCCGAATTTGT       ------  -  A  G   ATAAGTACA
2          GCCAATAAGTACATGGTAAA TGGAGGCT    GCC CGA TTT TGCCA
           AAGTTGTGGCAAAGATGGCT ACCTTCGG    CGG GTT AAA ATGGT
           TCCA                TAGAAA  T  G  A   ---------
GAM31810 18194  TGGAGGGGGGGTCGATCTTT      G  G  A-   TAT     G -   GG  -  GGTT
7          ATTGTGGCGGTGGGTGGGAG TGGAGGG GG TCG  TCTT  TGTGGCG T GGGT  GAG GGG

           GGGGGTTCCCACTTGAGCCC ACCTCCT CC GGC  AGAG  ATATCGT G CCCG  TTC CCC
           TGGTGCTATAGAGAGCCGGC      G  -  CG   ---     G T   AG  A  ----
           CGTCCTCCA
GAM31811 12241  TGGAGGGTGACATGGCAAGG     -  G     CAAGGAAAGGGAAGGTGT     TCAAATT

2          AAAGGGAAGGTGTTCTCTGT TGGAGG GT ACATGG             TCTCTG
           CAAATTCAGAGACCATGTGC ACCTCC CG TGTACC             AGAGAC
           ACCTCCA              A  -    ------------------    -------
GAM31813 8624   TGGAGGTGGCTGACGAGCTG   A  ------    CGA  ---  TG AAAAT
1          CTGGAAAATCTGGCTAAAGT TGG GGT    GGCTGA  GCT  GC  G
           GTTCAGCCTGATGGACCCCA ACC CCA    CCGACT  TGA  CG  C
                       -  GGTAGT    TG-  AAT  GT -----
GAM31815 20821  TGGAGTATTTCACACTGAGG  -   TTTCA      AC  AT--  CT  CTTC
2          ACTAATCTGCTATCTTCATT TG GAGTA    CACTGAGG  TA   CTG  AT
           CCAGTCCCTACCCCTCAGTG AC CTCGT    GTGACTCC  AT   GAC  TA
           CCTGCTCTCA         T   CC---      CC  CCCT  CT  ----
GAM31815 6257   TGGAGTCCCCTGCGGTGCCG   G  CC    TGCC  G   -   AAGT
8          TGGTACCCCTCCAAGTGGAG TGGA TC  CTGCGG   GTG TACC CCTCC
           GCGGTAGTACTCCGCAGCCG ATCT AG  GACGCC   CAT ATGG GGAGG
           AGTCTA              G  CC    T---  G   C    ----
GAM31818 18734  TGGAGTGGGGCGGCGGTTGC   A    C  -----  --    G   AGACATGCAGAAGGGGAC
3          CGGTGGCCTCAGACATGCAG TGG GTGGGG GGC    GGTT  GCCGGTG CCTC
           AAGGGGACGGGGCGCCGGCC ACC CACCCC CCG    CCGG  CGGCCGC GGGG
           GGGCCACGAGGCCCCCCACC   -   -  GAGCA   GC    -   ----------
           CA
GAM31821 4491   TGGATAACAGTATAATAGCA       A    TA   TAC--   TTTCACTCTT
8          TTTACAATATTTCACTCTTT TGGATAAC GTATAA  GCATT    AATA
           GTTCTCTTAATGTCTTATAT ATTTATTG TATATT  TGTAA    TTGT
```

AGTTATTTA A C- TTCTC ----------
GAM31826 18428 TGGATATGTTGCCATCAATG - T- ---------- CCCCT
0 ACCCCTTCATTGACCTCAAC TGGA TATGT GCCA TCAATGA
TACATGGTTTACATGTTCCA ACCT GTACA TGGT AGTTACT
T TT ACATCAACTCC -----
GAM31828 21388 TGGATCTATAGCTTATTTTG CTAT - TT- GGAAGT CAATA
7 GGAAGTATATTAACAATATT TGGAT AG CTTA TTG ATATTAA
AATATTCAACAATATTAAGT ACCTA TC GAAT AAC TATAATT
CTTCCAATCCA ACCT T TAT AACT-- -----
GAM31831 2988 TGGATGAGTACGACCCCGAG T CG CC GACA AGGA AGTA
3 GACACGTGGCAGGATGAAGA TGGA GAGTA ACC GAG CGTGGC TGAAG
GTACTTCGGCAGCTATGGAA ATCT TTCGT TGG CTC GTATCG GCTTC
CTCTGGTATTGCTTTCTA - TA T- AAG- ACG- ----
GAM31832 5842 TGGATGCTTAGTAAAAATTT GA AAAATTT AAT A ATATT
7 TCCAAATGAATTATATTGAA TG TGCTTAGTA TCCA GA TT
TCCTGGGCCAGATATTGAGT AT ATGAGTTAT GGGT CT AG
AGATA AG AGACC-- C-- A -----
GAM31834 12687 TGGATGGTTGCAGTGAGCTG - TG AGCTGA TGAGA
5 AGACCAGGCTGAGAGCCTGG TGGATGG T CAGTG GACCAGGC
TTGACACACTGAGGCCCATC ATCTACC G GTCAC TTGGTCCG
TA C GA ACAG-- -----
GAM31837 22239 TGGATTACCAGTGAACTGGA A G CT- T GAG CACT
1 ATCATGAGGGCTCACTGGTC TGGATT CCAGT AA GGAA CAT GGCT
AAATGCTTCTGAATTGACTG ACCTAA GGTCA TT TCTT GTA CTGG
GAAATCCA A G AAG C AA- ----
GAM31838 5759 TGGATTCCGGATGACACACA TTCC A C CA--- CA --- TTAC
1 CAGTCACCACCATCAGTTAC TGGA GG TGA ACA CAGTCAC CCA TCAG
CTGAACCTGGCCGTGGCTGA ACCT CC ACT TGT GTCGGTG GGT AGTC
CTTCTGTTTCACCTCCA ---- - T CTTCA CC CCA ----
GAM31839 5756 TGGATTGAGTCCCCACTTGG T CCCC T T AA A TAGAT
3 TTTAAATCAATTTCTAGATG TGGA TGAGT AC TGG TTA TC ATTTC
AGATAGGCTAATCCATGTTC ACCT ACTCA TG ACC AAT GG TAGAG
AACTCACTCCA C ACT- T T C- A -----
GAM31841 22208 TGGATTTATTAAATATTTTC - TT --- - ----- G TTAAATCCACAGACAT
2 TGTGGTGTGAAGTGACTTAT TGGATTTATTA AATA TTCT GTGG TGT GAAGT ACTTA
TAAATCCACAGACATTGAGT ACTTGAGTAAT TTGT AAGA CACC ACA CTTCA TGAGT

GACTTCTTACAACATCCACA G TT ATA T ACATT G ----------
TAAGAATTTGTTGTAATGAG
TTCA

GAM31843 9828 TGGATTTTTAGTTATTTTCT TTAG-- TTTCTCTTC TATT
2 CTTCAGTTTTATTAGACTTC TGGATTT TTAT AGTTT
TTTTTTATAAAGCAATAAAT ACCTAAA AATA TCAGA
CCA TAACGA TTTTTTCT- ----
GAM31845 5785 TGGCAAATTGTAAGCGTTAA C-- TT GTTAAAT T CGCGTTAA
8 ATATTTGTTAAAAATCGCGT TGG AAA GTAAGC ATTTG TAAAAAT
TAAATTTTTGTTAAATCAGC ACC TTT TATTCG TAAAT GTTTTTA
TTATTTTTTAACCCA CAA TT AC----- T --------

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GAM31846 2857   TGGCAACCATATAACAATCA     ACC    ACAAT   CA CTC  CT   G CAAG
4          GTCACACTCAGGCTACTGGA TGGCA   ATATA    CAGT  CA   AGG  ACTG AT
           TCAAGGTCAGTTCCTATGCC ACCGT   TATAT    GTCA  GT   TCC  TGAC TG
           ACTGTCAAATATATCAGTGC     GAC    AAACT   CC  A--   T-   - ----
           CA
GAM31847 21239  TGGCAACTTAGAGGTGGGGA      -   A   - TG  -  GCA   A  ---  TAT   C  CAAC
2          GCAGAGAATTCTCTTATCCA TGGCAA CTT GAG G  GG GA   GAGA TTC   TCT   CCAA AT
           ACATCAACATCTTGGTCAGA ATTGTT GAA CTC C  TC CT   TTCT AAG   AGA   GGTT TA
           TTTGAACTCTTCAATCTCTT      C   A   A GT  T  AAC   C   TTT   CT-   C ----
           GCACTCAAAGCTTGTTA
GAM31850 20616  TGGCACATATAATAATTAAC    ----   AT    TT   AAC    AAGA
9          AACAGCAAAGATGCTTGGTT TGGC    ACAT  AATAA  AAC   AGCA
           TCTTGTTTCATGTAATGGCC ACCG    TGTA  TTGTT  TTG   TCGT
           A                GTAA    CT    CT   GT-   ----
GAM31851 14708  TGGCACCCAGAAGACTGTGG    -   GA   -  T     GCCC  C    A-    G  TTGA
9          ATGGGCCCTCCGGGAAACTG TGGCA CCCA  AGA CTG GGATGG    TC GGGAA  CTGTG CG

           TGGCGTTGATGGCGCGGGGT ACCGT GGGT  TCT GGT CCTACT    AG CTCTT  GGCGC GT
           TCTCAGAACATCATCCCTGG     C    AA   C   C     ACA- A    GG    G ----
           CTCTAATGGGCTGCCA
GAM31852 6122   TGGCACGCCTGCTGTGGAGC     CGCCTG   -    -    - C  CATAT
9          CCGCGCCGGCATATCCTGCA TGGCA     CTG TGGAG CCCGC GC GG
           GTGGGACTCCACCGGATCCT ACCGT     GGC ACCTC GGGTG CG CC
           TGCCA               TCCTA-  C    A    A  T -----
GAM31855 14608  TGGCAGCAATGAGGAAGGCG      AAT   AA    ---    GGCGACTG
0          CTTCCGCGGCGACTGGTGGG TGGCAGC   GAGG  GGCGCT   TCCGC
           CTTGGCGTCCCTCCGGGCTG ACTGTCG   CTCC  CTGCGG   GGGTG
           TCA                 GGC   --     TTC    --------
GAM31859 1071   TGGCAGTCCTCTGGGGCAGT    AG--     ---       TG     G CTGG
9          TTGTTGAAGGCCTGGGCTTC TGGC    TCCTCT   GGGGCAGTT  TTGAAG C
           GAAACTGTCTCTCAAGGGGA ACCG    AGGGGA   CTCTGTCAA  AGCTTC G
           GAAGGCCA            GAAG     ACT       --     - ----
GAM31863 14314  TGGCATCATGCCCGGACAGA      AT----  CC-  AC  A    AGAAGAA
9          CCTGAAGAAGAATCGGGACT TGGCATC     GC   GG  AG CCTGA
           ACCCATAGCTCCAAAGATGC ACCGTAG     CG   CC  TC GGGCT
           CA                  AAACCT  ATA  CA  A    -------
GAM31865 12745  TGGCATGATCCAAGAGATCC   -  GA     G  C       -    CGCC GG    AACTTT   -  -
9          AGCAGGCTGCTGAGCGCCTG TGG CAT  TCCAAGA AT CAGCAGGCTG CTGAG    T  AGCGG
GTGG ACA GC
           GAGCGGAACTTTGTGGACAG ATC GTA  AGGTTCT TG GTCGTCCGAC GGCTC    G  TCGTC     CACC
TGT TG
           CCGGCAGCTCAAGGTATGTG   A  G-     G  C       T    TCCA TT    ------   G   A
           CCACCTGCTTTGACCTCTCG  GGCAGCTCAA
           GTCAGCCTGCTGCGTGTCTT C
           GGAGATGACTA        G
                      ----------
GAM31874 2680   TGGCCAGTCAAGGGTCCACA    CA--  AAGGG  CAC     CCAGCCTCT
3          GGGTGCCAGCCTCTCACCCT TGGC    GTC    TC   AGGGTG
           CAGAATAAAGACATCAGCCA ACCG    CAG    AG   TCCCAC
                       ACTA   AAATA  AC-     ---------
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GAM31875 5430 TGGCCATGGCATCTCCTCAT G - CAT AAAA - - G -- TGG
4 GAGAAAACTTCTGAGTGCAG TGGCCAT GCATCT CCT GAG CTT CTGA GT CAGCATG GCC

CATGGCCTGGGGTGACATGT ACTGGTG TGTAGA GGA TTC GAA GACT CG GTTGTAC TGG

TGGGCTTCAGCAAGGTGCTT G T CC- GTG- C T G AG ---
CCAGGTAGATGTGGTGGTCA
GAM31876 6422 TGGCCCAAAGGGCTTGGATG -- GC TGC G - C CCAG GAA
6 CCTTGCCGGGTCCCCCGAGC TGGCCC AAAGG TTGGA CTT CCG GGTCCCC GAG CCCTGGG

CAGCCCTGGGGAACTCAGGG ACCGGG TTTCT AATCT GAG GGT CCAGGGG CTT GGGACTC

AAATTTCCGGGGACCTTGGG AA AA TTA G T C TAAA ---
GAGATTTCTAAAATCTTTAA
GGGCCA
GAM31877 20056 TGGCCCAGGAGCAGGTACGA CC A AC GGC G AGAAACTG
7 GGCTCGCCTGAGAAACTGCA TGG CAGGAGC GGT GA TC CCTG
GGAGACATCTAACTGGCTTC ACC GTCTTCG TCA CT AG GGAC
TGTCCCA CT G AT AC- A --------
GAM31880 18620 TGGCCCTCCAGGCCCCCGCC CCT GGCCCC- CCCCA TC TT T C A - --
0 CCCATCCCGTCCACGTTGCT TGGC CCA CGC TCCCG CACG GCTG GT GTG GGT GCAG
CGGGT
GTGTCGTGAGGTGCAGCGGG ATTG GGT GTG AGGGT GTGC CGAT TA TAC CCA TGTC
GCCCG
TCACCCTGTGGCCCGTCCTG TTT AACTTCT CCTC- TT -- T - - G CT
TGACCCATATTTAGCCGTGT CCT
TTGGGACTCCGTGTCTTCAA CAC
TGGTTTGTTA GTG

GAM31880 3029 TGGCCCTGACCCAGCTCTTC CCT -- T ------- - GGCC - - G AG
2 TCCCTGGTGGCCCTCAACTG TGGC GAC CCAGC CTTCTC CCT GGT CTCAA CTGC CTTCA
CCTC
CCTTCAGCCTCAGCTCCAGC ACTG CTG GGTCG GGAGAG GGA TCA GAGTT GACG GAAGT
GGAG
TGGGGAGGAGGGTGAAGAGC TTC CC T AACGTAA G GACT C A G GA
AGCTTGAGTCAGACTGAGGA AGCT
ATGCAAGAGAGGTGCTGGCC CTCC
GTCCTTGTCA GGGG

GAM31882 20907 TGGCCGCGTCCTCCCTGTGT - GT TCC TCCCCC- - TTATGTC
6 CCCCCCGTCCGATTATGTCT TGG CCGC CC CTGTG CG TCCGA
CGGATCGAATCCCTCACAGC GCT GGCG GG GACAC GC AGGCT
GGGTGCGGATCG A TG C-- TCCCTAA T -------
GAM31886 5440 TGGCCTCAGGCGAGATAGGG T -- TAGG--- CTTCAAGT - ACTATTGA
3 TGTGACTTCAAGTCCGGTAG TGGCC CAG GCGAGA GTGTGA CCGGT AG
ACTATTGACTGGCCGGTCCT ACTGG GTC TGCTCT CATATT GGCCG TC
TATACAGTAAATTCTCGTCT T TC TAAATGA CCT----- G --------
CTGTGGTCA
GAM31887 20792 TGGCCTCTAATAGTCAATGA TAGTC A G- AATGCCTTATTCA
6 TTGTGTAGCCAATGCCTTAT TGGCCTCTAA AATG TTGT TAGCC

TCAGGTTAAAACAGCATTTT ACCGGAGGTT TTAC GACA ATTGG
GGAGGCCA ----- - AA ----------
GAM31890 5716 TGGCCTGTTTGATTCCTGTC G---------- TC AGA TGCT
8 AGAGGTTTGCTGACCCAAGA TGGCCT TTTGAT CTGTC GGTT
CAGTATCGAAAATGCATATT ACTGGA AAGCTA GACAG CCAG
AAGGTCA ATTATACGTAA T- AAC ----
GAM31890 1152 TGGCCTTAATTTCCTGATCC C ATT - CC C TG TCTC
9 TCCTTCCTTGGTCTCCTGAG TGGC TTA TCC TGATCCT TT CT G
TAACTGGGATTACGGATGTG ACCG AGT AGG ATTAGGG AA GA C
AGCCA - GT- C TC T GT ----
GAM31892 897 TGGCCTTTTCCCCATTCAGC CC TTCA AT C- CCT TACCC
8 ATCGCCAGCCTCCTTACCCA TGG TTTTCCCCA GC CG CAG CCT
GGTCCTGCTCGGGGCTGGGG ACC AAGAGGGGT CG GC GTC GGA
AGAACACCA AC ---- GG TC CT- -----
GAM31897 4204 TGGCGGTGGAGGGCATCTGG - G----- - AGATGACACGC
8 TAGATGACACGCGCCTGGAT TGGC GGT GAGGGCATCT GGT
GCCTTTGAAGTAGCCGGCCA ACCG CCG TTTCCGTAGG CCG
G ATGAAG T ----------
GAM31899 4053 TGGCTAAATTCGTGATCCGC AA G C - C---- CGCCGACT
5 CCAGCCACTGCCGCCGACTG TGGCTA TTC TGATC GCC CAG CACTGC
CAGTGACATACTGCGGCTGA ATCGGT AGG ACTAG CGG GTC GTGACG
TCAAGGAGCTGGCTA CG A T C ATACA --------
GAM31900 3425 TGGCTAAGTTGGTTGCTTTT CTA T CTTTT- T A- AAAGA
1 TGGTGATTAGTCAAAGAGAC TGG AGTTGG TG TGG GATT GTC
CAAATCCCATATCCTCGTCC GCC TCAGCC GC ACC CTAA CAG
GACTCCTCCG TCC T TCCTAT - AC -----
GAM31902 19296 TGGCTATTAAATTGATATTT TT G -- ATA- TGC CATGGCA
5 ATATCTTGCATCCTATATCA TGGCTA AAATT AT ATTT TCT ATCCTATAT
TGGCAATATGGGATATAGAA ATCGAT TTTAA TG TAGA AGA TAGGGTATA
AAGAGATACGTGAATTTTTT TT G CA GAAA TA- -------
AGCTA
GAM31903 3919 TGGCTCAAGCACAAACCAAT T AG C TTG TTCTGATT
6 TTGTGTTGTTCTGATTCAAT TGGC CA CA AAACCAAT TGTTG
AATTGGTTTCTGGGTGGCCA ACCG GT GT TTTGGTTA ATAAC
- GG C --- --------
GAM31905 1509 TGGCTCAGATCTGCTGAGGT GC A T-- AG GAG - A- GAGGAGCAAATGACA
5 TCTGGAGTGGCACAGGAACA TG TC GA CTGCTG GTTCTG TGGCACAG GA CAG
GGAGGAGCAAATGACACTGG AC AG CT GGCGAC CAGGAC GTCGTGTT CT GTC
GTCTTTGTGCTGAGGCAGGA AA C TTC A- GGA T GG ----------
CACAGCGGCTTTCCGAAACA
GAM31906 20798 TGGCTCATTTCGGCTTGTAG AT TAG CATCTCTT CAAG
8 GACCATCTCTTCTTTTCTCA TGGCTC TTCGGCTTG GAC CTTTTCT
AGGGAAAAGTGTCAATCAGG ACCGGG AAGTTGGAC CTG GAAAAGG
TTGAACAGGGCCA AC TAA T------- ----
GAM31909 9333 TGGCTCTGCTGGGCGTGAGG GGCG A GT --- CA AGGAGC
5 CCGTCGGTCACAGCGAAGGA TGGCTCTGCTG TG GGCC C GGTCA GCGA
GCTTGCCTGGCCCTGGGAGG ACCGGGACGAT AC CCGG G CCGGT CGTT
CCCAAGGATAGCAGGGCCA AGGA - AG GTC C- ------
GAM31912 8418 TGGCTGATGACAGAGGCCCT G G - GC GA GG TGA
0 AGACGTGGTCCTGAGGAATG TG CT ATGAC AGAG CCTA CGT TCC

ATAGGTTCTCTCGTCGTGAG AC GA TGCTG TCTC GGAT GTA AGG
GCA G G C TT A- -- ---
GAM31914 9687 TGGCTGCTGCCCTGTGGTGC GCT ---- T T CA TGCTCCT
5 TGCACACAGCTGCTCCTGCT TGGCT GCC CTG GGTGC GCA CAGC
GCTGCGCACCCCAGCTAAGG ACCGA TGG GAC CCACG CGT GTCG
TTGAAGCCA AGT AATC C - C- -------
GAM31917 22291 TGGCTGGTGCTGGTGGCCGT G- T T C A - GT CT AT CC TGCTG
0 GGGTGCAGGGCTGCTGTTGC TGGCT GTGC GG GGC GTGGGTGC GGGCT GCT TG GGGGCTG
CAT TCC
TGGGGCTGATCATCCTCCTG ATCGA TATG TC CCG CGCTCACG CCCGA CGA AC CTTCGGC GTG
AGG

CTGTGGAAGTGCGGCTTCTT AG - - - - G -- TT -- A- -----
CAAGCGAGCCCGCACTCGCG T
CCCTGTATGAAGCTA

-
GAM31920 6654 TGGCTTATGGGCGGGCCCCG ATG- G CGGGGG ATAT
2 GGGGGACAGGATATTCTGTC TGGCTT GGCGG CCC GACAGG
ATGGATGGGCCGTCAATGAA ACCGAA CTGCC GGG CTGTCT
GCCA GTAA - TAGGTA ----
GAM31926 20941 TGGCTTTCCCTCTCTTATGT - C- TC A G C- GTA
3 GCTGCCTCTACGTAGTGATA TGGC TTTCC TC TT TGT CTGCCT TAC
GGCAGACAAAAAGGAAAGGA ACTG AAAGG AG AA ACA GACGGA GTG
AATGTCA T AA GA A - TA ---
GAM31928 835 TGGCTTTTTTAAAACTGGTT ----- TTT TT TTT
4 TTATTTTAATTTTTATTATA TGGCTTTTTTA AAACTGG TAT TAA
TTTTCAGTTTTTCCATAAAG ACCGAGGAAAT TTTGACT ATA ATT
GAGCCA ACCTT TTT TT ---
GAM31929 6189 TGGGAAAAGTATTTTAAAGA A AT A AAAT - CATGC
2 AAATGGCCAAACATGCTTTG TGGG AAAGT TTTA AGA GG CCAAA
GACCCTCTATGAACGACTTT ACCT TTTCA AAGT TCT CC GGTTT
ATCCA A GC A C--- A -----
GAM31929 19287 TGGGAAACATCATTAAATCA ATCATTA T CT--- TTCCCCTTC
6 CGTGCCTGCTTCCCCTTCGC TGGGAAAC AATCACG GC GC
CTTCTGCCGTGATTGTCAGT GTCCTTTG TTAGTGC CG CG
TTCCTG ACTG--- - TCTTC ---------
GAM31930 16736 TGGGAAAGGAAAAGACTCAT GAAA AAAGA AT A A GTCATG
6 ATCAACATGTCGTCATGGAC TGG GGA CTC ATC AC TGTC
ACGTAGATTCGGGCAAGTCC ACC CCT GGG TAG TG ACAG
ACCA A--- GAAC- CT A C ------
GAM31930 4188 TGGGAAAGGAAAAGACTCAT GAAA AAAGA AT A A GGCATT
7 ATCAACATGTCTGGCATTGG TGG GGA CTC ATC AC TGTCT
ACACGTAGATTCGGGCAAGT ACC CCT GGG TAG TG ACAGG
CCACCA A--- GAAC- CT A C ------
GAM31931 12754 TGGGAAAGTCTTTAGTTATA AA---- TA CAGCTCCTCAACC
2 GTCATGGCAGCTCCTCAACC TGGG AGTCTT GTTATAGTCATGG
CCATGATTGTGATGAGATTG ACCC TTAGAG TAGTGTTAGTACC
GGAAGCCCA GAAGGG -- ----------
GAM31932 9392 TGGGAACCACGTCACCACGG - ------ ACG A C CA- - AGCAAA

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4          TACAACAGGCAGCAAAGCCA TGG GA     ACC   TC CCA GGTA   ACA GGC
           TGTATTTACCATGGCGAGGG ACC CT     TGG   AG GGT CCAT   TGT CCG
           TCACATTTCACCA         A  TTACAC   G-- C   A    TTA   A  ------
GAM31932 20653  TGGGAACCACGTCACCACGG   - -----  ACG  A   C    CA-   -   AGCAA
5          TACAACAGGCAGCAAGCCAT TGG GA     ACC   TC CCA GGTA   ACA GGC
           GTATTTACCATGGCGAGGGT ACC CT     TGG   AG GGT CCAT   TGT CCG
           ACATTTCACCA           A  TTACA   G-- C   A    TTA   A  -----
GAM31932 16459  TGGGAACCACGTCACCACGG   G  A  A    CCAC    CA-   -   AGCAA
6          TACAACAGGCAGCAAGCCAT TG GA CC CGTCA    GGTA   ACA GGC
           GTATTTACCATGGCGAGGGT AC CT GG GCGGT    CCAT   TGT CCG
           CACA                A  G  A    A---    TTA   A  -----
GAM31933 12366  TGGGAAGAACTTTGAAGACG    A---     TT A--     GGC-   GATGA
4          TGGCTTTCGATGAGAAAAAA TGGG    AGAACT  G   AGACGT    TTTC
           AACGTCTATGTGGAGTTCTA ACCC    TCTTGA  T   TCTGCA    AAAG
           TGCCCCA              CGTA     GG GTA     AAAA   -----
GAM31933 19823  TGGGAAGAACTTTGAAGACG    A---       --       GG-----   TGAT
5          TGGCTTTGATGAGAAAAAAA TGGG    AGAACTTT  GAAGACGT      CTT
           ACGTCTTTGTGGAGTTCTAT ACCC    TCTTGAGG  TTTCTGCA      GAG
           GCCCCA               CGTA       TG       AAAAAAA   ----
GAM31938 9570   TGGGAATTAACAATCAAATA    AA   CA         GG--      -----   T   GAA  TTAA
9          TTTGGAAATTTTTAAATTGA TGGG  TTAA  ATCAAATATTT    AAATTTT    TAAA TGA   AG
           GAAAGTTAACTGTATCATTT ATCC  AGTT  TAGTTTATAAA    TTTAAAA    ATTT ACT   TC
           TAAACTCAAAATTTAAAAAA    CC   --         AAAA      CTCAA    T   ATG  ----
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GAM31939 18718  TGGGACAAGAGCCACAGGTA    ACA  A   C    TTG-------    AAGT
8          TTGGAAGAAGTCTTCAAGAA TGGG   AG GCCA AGGTA        GAAG
           AATATTGCCTATGGCCTGAC ACCC   TC CGGT TCCGT         CTTC
           CCA                 AG- -   A    TATAAAAGAA    ----
GAM31942 14434  TGGGACCACGCTAAATCGGT    A-   -    AT G  A-    AGAACCTG
0          ACGGCAGAACCTGGCCGAGA TGGG  CCAC GCTAA  C GT  CGGC
           TGGGGTTGGCTGTGGACCCC ACCC  GGTG CGGTT  G TA  GCCG
           A                   CA   T    GG G  GA   --------
GAM31944 13042  TGGGACTGTGGTCATGAGTT   G   G    A   T  T   C   CCAAAGT
6          CTTCCACGATACCAAAGTTG TGG ACT TGGTC TGAG TC TCCA GATA
           TCATGGATGACCTTGGGCCA ATC TGG ACCGG GTTC AG AGGT CTGT
           GGTGCTA              G   -   -   C  T   A   -------
GAM31948 18144  TGGGAGATTGGATGACTGTT       ----- GATGA   TT-     CCAG
5          ACAGATCCAGGTCTGTCTTC TGGGAGAT    TG    CTG   ACAGAT
           AGGAAAGCAAAACTATCTCT ACTCTCTA    AC    GAC   TGTCTG
           CA                    TCAAA  GAAAG   TTC     ----
GAM31949 9806   TGGGAGCCATTGCCTCTCGC        TT  CTCTC---   TG--       ---   CCACACGTCT
4          TTTGTCTGCTTCGGGCCACA TGGGAGCCA  GC       GCTT    TCTGCTTC   GGG
           CGTCTCCCGTTGAAGCAGAA ACCCTCGGT  TG       TGGA    AGACGAAG   CCC
           ATCAGGTCCCTTTCAGTTCT         CT  ACTTTCCC    CTAA       TTG  ----------
           GGCTCCCA
GAM31950 8315   TGGGAGCTGTGTCCCTTTCC     A          T      G      GA-  ATTC
9          TCTTGACCCCGTGAAGATTC TGGG GCTGTGTCCCTT CCTCTT ACCCCGT   AG
           CTAGGGCGGGGTGGGGAGGA ATCC TGACACGGGGGA GGAGGG TGGGGCG   TC
           GGGGGCACAGTACCTA       A         -     G      GGA  ----
GAM31954 8525   TGGGAGGGGGAACTTGGTTC    AG---       G  T       CCACGTC    TC    AACG   TCTCA
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2 TTGGGTTCCACGTCCCTGCT TGGG GGGGAACTT GT CTTGGGTT CCTGC ATGG GTC
CATGGAACGGTCTCTCAGAT GCCC CCTCTTGAG TA GAACCTAA GGACG TATT TAG
GATTATAGGCAGGAAATCCA ATTAA G C A------ GA AG-- -----
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CCCG
GAM31955 5955 TGGGAGTATGTTGTCATAAC G GT A TTTAA-- TTCCCT- TTT-- TAAATTACT
2 ATTTAAAGAGATTTCCCTTC TG GAGTAT TGTCAT ACA AGAGAT TCA AAAC
ATTTAAACTAAATTACTGTT AC TTCGTG ACAGTA TGT TCTTTA AGT TTTG
TTATGTTGATCTGCATATTT G -- C TTATATG TACGTCT TGTAT ---------
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TGCTTGCA
GAM31955 4143 TGGGAGTGCTACTAAAGATA ----- CTACTA-- ATA AGACTT
8 TATGAGACTTCAACATCTTG TGG GAGTG AAGAT TG
ACCACATCACTTTTTCTCCA ACC TTCAC TTCTA AC
TCTTT TACACCAG CA- ------
GAM31957 12551 TGGGATAGGTTCAGACTTCA T A- CTTC A T T - CATCAAA
7 GGTATCTCTTCAGATTGCCA TGGGA AGGTTC GA AGGT TC CT CAG ATTGC
TCAAAGTAATCCTGCAGGAA ACCCT TCCGAG CT TCCA AG GA GTC TAATG
CCTCTCCAGAGCCTTCCCA - AC C--- - - C C -------
GAM31961 20028 TGGGATGTAGTTTTTACCCA G TTT G CTA AATCTATG
6 GGTTCTATCCAAATCTATGT TGGGAT TAGTT ACCCAG TT TCCA
GGGCATGAGTTGGGTTATAA ATCCTA GTCAA TGGGTT AG GGGT
CTGGATCCTA G TAT G TAC --------
GAM31966 22314 TGGGCACGAGGGAGAGAGAG - A T AGTCTCG
9 AGAGTACTAGTCTCGAGTTT TGG GC CGAGGGAGAGAGAGAGAG ACT
TTTTTTTTTTTTTTTGGCAT ACT CG GTTTTTTTTTTTTTTTT TGA
CA A - - -------
GAM31967 12748 TGGGCACGTTCCGCATGGTA AC ------ TA-- AAGAGGAA
4 CCTGAAGAGGAACAGGAGCT TGGGC GTTCC GCATGG CCTG
CCGTGCCCAACTGGAGCAGC ACTCG CGAGG CGTGCC GGAC
TCA A- TCAACC TCGA --------
GAM31967 12363 TGGGCACTGGTCTCCTGGAA A CT- TG AAA GCCA CT- C CGCGCCTTC
6 AGTGGGCGCCATTACCTTGC TGGGC CTGGT CC G GTGGGC TTAC TGCTG CAGC
TGCCAGCCGCGCCTTCGTTG ACCCG GACCA GG C CGCCCG AGTG ACGGC GTTG
TCGGCATTTGTGACCTGGCC A CCT GT --- GTCC TTT T ---------
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CA
GAM31975 18133 TGGGCCCTCGATGGCACGTG C CGATGG C - AG CGT
1 GGAGTGGGAGCGTTTCCTAA TGGGC CT CA GTGG G TGGGAG
GCTCCACTGAAGATAAGAGC ACCCG GA GT CACC C ATCCTT
CCA A ATAGAA - T GA ---
GAM31976 5653 TGGGCCTCAGTGTATTGGTC - - T GGTC C G G CCT TACATCTT
1 GGGCTTGACCGTGGTCTCCT TGG GC CTCAG GTATT GGG TT ACC TGGTCT GG
GGTACATCTTCCCAGATCGA ACC CG GAGTC CGTGG CCC AA TGG GCTAGA CC
GGTGAATCCCTTCAGGTGCT T A T ACTT T G A C-- --------
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GAM31976 4455 TGGGCCTTTATTTGGTTTGG CT TTTG- T ATGTTTAGTGA
6 CTTTAGCTGATAATGTTTAG TGGGC TTATTTGG GC TTAGCTGATA
TGATGTCAGCTAGTGCAGTT ATCCG GGTAAACT CG GATCGACTGT
CTCAAATGGCTGCCTA TC CTTGA T ----------

GAM31977 20431 TGGGCGGATGGATTCTACAA G GATGGA TA AGGGCAA G A A-- G G
CCAACCC
4 GGGCAAGGTGGCTATTCCCA TGG CG TTC CA GGT GCT TTCCC GT TGGGGTG TTTT
GTGTGGGGTGGTTTTCCAAC ACC GC GAG GT CTA CGA AAGGG TA ACCCCGC AAAA
CCAAAAGCGCCCCAGATGTG G AGAG-- GG GG----- G C GTG G G -------
GGGAACAGCGATCGGTGGGG
AGGAGACGGCCA
GAM31977 4017 TGGGCGGCAGGTAACGAGTC C C TAACG ATT CT CGCCACC
5 ATTGCCTCTCACGCCACCTG TGGG GG AGG AGTC GCCT CA
GAAGGCTGGACTACTTCCTC ACCC CC TCC TCAG CGGA GT
CTCCCA T - TTCA- GT- AG -------
GAM31981 20330 TGGGCTGGAGGCCTGTGTTC GC CT A AGGG TGTG
5 CTTCCCATAAGCAGGGCCTG TGG TGGAGGCCTGTGTTC TCCCATA GC CC
TGGGGTGTATGGGGCAGAAC ACC ACCTCCGGATACAAG GGGGTAT TG GG
ATAGGCCTCCACACCA AC AC G ---- ----
GAM31986 3141 TGGGGAAGGGGAGGGTGTTC - TGTTC A CA ACCACCACACA
1 AGAGGCAGCACCACCACACA TGGGGAAG GGGAGGG AG GG GC
GTCACCCCTCCCTCCCTCTT ACCCTTTC CCCTCCC TC CC TG
TCCCA T ----- C AC ----------
GAM31992 8692 TGGGGAGTTCTTTCCAGTGC GTT-- CA- CCC-- TCCATT
4 CCGAGTCCATTCTCACATCC TGGGGA CTTTC GTG GAG
ATGAAGAAGGTAAAATCCCT ATCCCT GGAAG TAC CTC
A AAAAT AAG CTACA ------
GAM31994 3055 TGGGGCACTGAGGCCCGGGA A TG - C A AG ACTGGACA
5 TGTAGGCACTGGACAGCAAC TGGGGC C AG GCC GGG TGT GC
AACCCAGGCATTTGGGCCCC ACCCCG G TT CGG CCC ACA CG
A - GT A A A A- --------
GAM31996 20461 TGGGGCCCAGGTGCCCCCTG GC T--- TG C A TGCTTCCT
1 GTCGGCACCTGCTTCCTGGG TGGG CCAGG GCCCCC GT GGC CC
CCCACGGGGGCCCCCCCCTGG ACCC GGTCC CGGGGG CA CCG GG
AACCCA AA CCCC -- C - --------
GAM31996 1021 TGGGGCCCCCCATCCTTTGC CCC TTTG------- AG TATG
3 TTCAGGTCTATGGACAGAAG TGGGG CCCATCC CTTC GTC
AATTGAAAATCGGATGGGAA ACCCC GGGTAGG GAAG CAG
CCCCA AA- CTAAAAGTTAA A- ----
GAM31997 3244 TGGGGCTGAGAGATGAAGTG G - --- - ATTAAAGTACTA
9 AGATTAAAGTACTACTCAGC TGGGGCT AGA GAT GAAG TGAG
TTTTGGGTCATCTGGGTCCC ACCCTGG TCT CTG TTTC ACTC
A G A GGT G ----------
GAM32001 6591 TGGGGGCAGGGCTTCAACCG GG---- TTCAA G A CA- CTCAC
6 GCACCCAGGGCTCACTCCAG TGG GCAGGGC CC GC CC GGG
CGGGCAGGGCTGCCCTGTAA ACC TGTCCCG GG CG GG CCT
CAGACCA AGACAA TCG-- A - CGA -----
GAM32001 6615 TGGGGGCATTTTTTTTTTTT - A T T TA AAA A AAAAA
9 TTCAATAAATGAAAGCATTT TGGGG GC TTTTTTT TTT TTCAA AATG GC TTT
AAAAAAAAGGCACGTATTCC ACCCC CG AAAAAAA GGA AAGTT TTAT CG AAA
TTGAATAGGTAAAAAAAGCT T - T T CC GCA G -----
CCCCA
GAM32003 3624 TGGGGGCTCTGGTTCCCGGA G CT T TC ACCAGCTTCA
0 TCTCCGTGTCCCGCTCCACC TGG GGCT GGTTCCCGGATC CCGTG CCGCTCC

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          AGCTTCAGGGGCGGCATGGG GCC CCGG  CCGGGGGCCTGG GGTAC  GGCGGGG
          GTCCGGGGGCCTGGCCACCG   A   T-        -   --     ----------
GAM32004 21206  TGGGGGGCGGCATCTCCTTC      C  AT - TTCTA   ATGT  A    TCAT  A   G    GCTGAGTC
0          TAGCTGATGTCCATGGCCTC TGGGGGG GGC  CT CC    GCTG   CC TGGCC   GGT GGCT ACCGG

          ATGGTAGGCTGACCGGGCTG ACTTCCC CTG  GA GG    CGAT   GG ACCGG   CCA CCGG TGGCC

          AGTCAATGATGCGCTTCTTG      A  AT  T -----   ---- -    CT--  -   -    --------
          TCGTCACCGGTGGCCACCTC AA    C  TTCTT
          GGCCAGGTAGCGGTAGTAGT   TGATG GC
          CACCCTTCA           ACTGC TG
                     --    - -----
GAM32004 12692  TGGGGGGGCTTTCCAAATTG   ---    TT       AGA----  AA-- T    TT   G   GACTCACT
5          GAGAACCAATCTTTCCTTTC TGGG   GGGGCT  CCAAATTGG     ACC   TC TTCCT  CCGC TTTG
          CGCGTTTGGACTCACTTTGG ACCC   CCCCGG  GGTTTAACC     TGG   AG AAGGG  GGCG GAGC

          CGGCACCGCTAACCACAACG    AAG    --       AACGGAG   GCGG T    C-   -   AACACC--
          AGGCGGCGGGAATGAGGCGG      GCAC
          GTGAGGCAACCAATTTGGGG TTGGCG
          CCCCGAACCCA         AATCGC
                          ----
GAM32004 4240   TGGGGGGGGCGGCGGGAAGC    GG    GC   AAG   GG A    A  G    AGAGCC
6          TGGGAAGGCTAGTGCTTGGA TGGG  GGGCG  GGG   CTG  A GGCT GT CTTGG
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          TTCAGGGCCCTGCCTTTCCC    TT    --  GG-   TT A    A  G    ------
          A
GAM32005 2678   TGGGGGGTGTTGCTATGTTG       GT    A  TTGCCC    TG  TCTTGAACT
0          CCCGGGTTGGGTCTTGAACT TGGGGGGT  TGCT TG     GGGT  GG
          CCTGACTTCAAGCAATCCCC ACCCCCTA  ACGA AC     TTCA  CC
          CA                    --    -  ------    GT  ---------
GAM32006 13000  TGGGGGTTGTCCTCTTTAAG     GT G       AAGAAC     ATGAACGCCGGAA
1          AACAGTTGATGAACGCCGGA TGGGG  T TCCTCTTT     AGTTG
          ACAACTTTGAAAGGGGAGGG ACCCC  G AGGGGAAA     TCAAC
          TCCCCA                TG G       GTT---     ----------
GAM32007 9800   TGGGGTCCTCATGAGCAAGT    -    CATGAGCA   G    GT    GAGGTCAG
7          GCGGGGTGCTGGAGGTCAGC TGGG GTCCT       AGT CGGG  GCTG
          AGCTGCCTGGGCTGGGAGGC ACCC CAGGA       TCG GTCC  CGAC
          AAGGACACCCA           A    ACGGAGGG   G    GT   --------
GAM32017 2674   TGGGTATGATGGATGTGGCG     A        TG    AATGAA-   ATT
3          AAATGAACATATTATGGATT TGGGT TGATGGATG  GCGA      CAT
          TTGTTGTGTCATCTATTAAC ATCCA ATTATCTAC  TGTT      GTA
          CTA                 -        TG    GTTTTAG   ---
GAM32017 19037  TGGGTATGGAATCTTGCGGC    -     AA    -   CA-     AG    C    ACTCCACTCA
4          ATCCACGAGACACCTTCAAC TGG GTATGG  TCTT GCGG   TCCACG  ACAC TTCA
          TCCACTCATGAAGTGTGACG ACC CATGTC  AGAA CGCC   AGGTGC  TGTG AAGT
          TGGACATCCGCAAAGACCTG   G     C-   A    TAC     AG    -    ----------
          TACGCCA
GAM32017 1573   TGGGTATGGAATCTTGCGGC    -     AA    -   CA-     AGAC   -    ACTCCATCA
5          ATCCACGAGACCACCTTCAA TGG GTATGG  TCTT GCGG   TCCACG    CAC CTTCA
          CTCCATCATGAAGTGTGACG ACC CATGTC  AGAA CGCC   AGGTGC    GTG GAAGT
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TGGACATCCGCAAAGACCTG G C- A TAC A--- T ---------
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GAM32019 2885 TGGGTCCTAAACCAGTGAAC AC-------- ACCTT CATCGTATCTT
7 CTTTGGCATCGTATCTTCCA TGGGTCCTAA CAGTGA TGG
TGAATTACTGAGCTCCAAAA ACCTAGGGTT GTCATT ACC
TTGGGATCCA AAAACCTCGA AAGT- ----------
GAM32020 3734 TGGGTCGTTTCCCGTTTGGC - TT- TTT C A- - A GGTATG
3 AAGATGATGAAGAAAGCTGG TGGGT CGT CCCG GG AAGATG TGAA GAA GCT
TATGAGCATTCTTTCACACG ACTCA GTA GGGT CT TTCTGC ACTT CTT CGA
TCTTTTCTTGGGCATATGTA T TAC T-- T AC T A ------
CTCA
GAM32022 14055 TGGGTGAAGATATAAGAACA ATATAAGAA TT- ATT-- AAGGAA
7 GAAGTTGTCTGATTGCATAA TGGGTGAAG CAGAAG GTCTG GCAT
GGAAATGCCTTTCCAGATTT ACCCGCTTC GTCTTC TAGAC CGTA
TCTTCTGGCACTTCGCCCA ACG------ TTT CTTTC ------
GAM32025 18101 TGGGTGCCAGGAGAGGGGAA - GGGAA A TGTC GCGTTA
0 GGACCTTTGTCTGGGCGTTA TGGGTGCCAGG AGAG GG CCTT TGG
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CTGGTACCTA A AAAGG - ---- ------
GAM32026 20414 TGGGTGGCATCTCCTATATC - - - -- ATTCCATCATTTC
0 TAATTCCATCATTTCTAGAT TGGGTGG CA TC TCCTA TATCTA
ACTTAGGGTGAGTGCCCATC ACCTACC GT AG GGGAT ATAGAT
CA C G T TC ----------
GAM32026 6250 TGGGTGGCCAGGCTGGTCTT T C- T CTT ACT ATCT
1 GAACTCCTGATCTCAGGTGA TGGG GGC AGGC GGT GA CCTG
TCCACCCGCCTCAGCCTCCC ACCC CCG TCCG CCA CT GGAC
A T AC C C-- AGT ----
GAM32027 8757 TGGGTGGTCCTTGGTCCCTT T C TCCCTTT--- GTATCCTA
5 TGAATTTGTATCCTAAAGTT TGGG GGT CTTGG GAATTT
TTACATTTATTTTAAGTACC ACCC CCA GAATT TTTGAA
CCCCA C T TTATTTACAT --------
GAM32028 8899 TGGGTGTGCAGGCTGTAATT G ---- GC AAT-- T TAAATTCTGCAAATC
3 TTCTTTCTTTATAAATTCTG TGGGT TG CAG TGT TTTC TTCTTTA
CAAATCTAAAGAACGAAATT ACCCA AC GTC ACA AAAG AAGAAAT
ACCACACTCTGTAAACAGAC G AAAT TC CCATT C ----------
CCA
GAM32030 21282 TGGGTTCGGTGGTCATGCTG T G G-- AA TCACTT
9 TAATCCCATCACTTTGGGAG TGGGT CGGTG TCAT CTGT TCCCA
GCAGAAGGTGATACTGATTC ACTTA GTCAT AGTG GACG AGGGT
A - - GAA G- ------
GAM32031 18530 TGGGTTGAAGAATCTGTTTT TG CT T CTT GTTT
2 GTTCTTTTGGTAGTTTTATT TGGGT AAGAAT GTT TGTT TTGGTA
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TCA -- TC T --- ----
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9 TCCAGGGTATTGGAACCTGG TGG GTTGG CAAC GCC TG CCAGG
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GAM32034 13028 TGGGTTTTGTGTTTGATCTG TTT- TG CT AA TG A AAATTCA
5 GAAAAACACTTGTACAATGA TGGGT G TTTGAT GGAA ACACT TACA TGA

AAATTCATCAATGTAGGTGT ACTTA T AAATTA TCTT TGTGG ATGT ACT
CATTCTGAATTAAATGTCTG TGTC GT AG AC -- A -------
TATTCA
GAM32035 781 TGGTAAAATTGCATGGGTTT G GGG G A TTTTG
6 GTAGGTACTTTTGGAATCTA TGGTAAAATT CAT TTT TAGGT C
GAAGAAATGAAATTTTACCA ACCATTTTAA GTA GAA ATCTA G
A AA- G A -----
GAM32037 18912 TGGTAACTACACTTTATGGT T TAC TAT- T-- CTGACT
6 ATAGGGTTCTGACTAACCTT TGG AAC ACTT GGTA AGGGTT
TATTACCCCATAAGTTTGTT ACC TTG TGAA CCAT TTCCAA
TCCA T TT- TACC TAT ------
GAM32038 18863 TGGTAACTTGTTCGGAGATC AC - - AT CG- CTTTTAAA
0 TCGCACGCTTTTAAACGTGA TGGTA TTG TTCG GAG CT CACG
CAAGGGCTCACGAGTCGAAA ACTAT AGC GAGC CTC GA GTGC
TATCA AA T A GG ACA --------
GAM32046 4309 TGGTAGGAAAGCTGCTTGGA GGAAA GCTTG ATAA- GACGAA
1 AATTCATAAAGGACGAACTG TGGTA GCT GAAATTC AG
GGAAGAATTTTATAAGCGAT ACCAT CGA TTTTAAG TC
ACCA AG--- ATA-- AAGGG ------
GAM32047 4280 TGGTAGTTTTGATTAAACTC TT- CTCTC AACTG TCTCTTCCATTT
6 TCTACTCTGATTTAACTGTT TGGTAG TTGATTAAA TACTCTGATTT TTC
CTCTCTTCCATTTGAAAAAT ATCGTT GACTAATTT ATGAGACTAAA AAG
CAGAGTACTTTTTAATCAGT TCT TTC-- ----- ----------
CTTTGCTA
GAM32048 9778 TGGTATATGTGTATTAGTGA GTA TGAA TT- A TGAA
9 AACATTGTAAAGGTGAACTT TGGTATATGT TTAG ACA GTA AGG
CTACCTCTGTATCTAAATGT ACCATATGTA AATC TGT CAT TTC
ATACCA --- TA-- CTC C ----
GAM32049 21564 TGGTATCGACTGCCTTGCTA CT-- - - ACACCTCA - -- TGCCTT
9 CACCTCAGGCCCGGGGCTGC TGGTATCGA GC CTTG CT GGCC CGGG GC
CTTGCCACCCGTGGCCACTT ACCGTAGTT CG GAAC GG CCGG GCCC CG
CGGCCAAGTGCCCTTTTGAT TTCC T C CTTCA--- T AC ------
GCCA
GAM32053 1032 TGGTATTTGCCAGTATTTGT - ATTTGTGTTCC CC TCTA
2 GTTCCTCTTGTGCCAGATCT TGGTATTTGC CAGT TCTTGTG AGA
ATTTTTTACAAGAACTGTGC ACTATAAACG GTCA AGAACAT TTT
AAATATCA T ---------- TT ----
GAM32054 20948 TGGTCAAAGCTTAACATTTG AA AA AAAC- TTTTAAAATT
2 AAACCTGATTTTAAAATTTC TGGTCA GCTT CATTTG CTGA
AGTTTAGTAAGTGACAGGCT ACCAGT CGGA GTGAAT GACT
GACCA -- CA GATTT ----------
GAM32061 839 TGGTCCCTAAAACCCATCTG T TAAAA ATC G AAT -- GAAT
6 ATGTCTGAATCTGAATGGAG TGG CCC CCC TGAT TCTG CTGAATG GAG
GAATCTTGGCGTTCAGCAGA ACC GGG GGG ACTG AGAC GACTTGC TTC
GTCAGGGATGGGTCCA T TA--- --- - --- GG ----
GAM32062 9294 TGGTCCGCCTTGAACACGCG GT C G A C GAACTAAAATTCGCGGCA
6 TGGAACTAAAATTCGCGGCA TG CCG CTT AAC CG GTG
CACTCGGTTGAAGACGGGTC AC GGC GAA TTG GC CAC
A TG A G - T ----------
GAM32062 881 TGGTCCGGAACACGCTGTCC - GAACA C - G GG GGACA G ACGAGAA

7 TCGCGCTTCCGCCGGGTGGA TGG TCCG CGCTGTC TCGC GCTTCC CC GT TC ACGAATTTG

CATCGACGAATTTGACGAGA ACC AGGC GCGGCGG GGCG CGGAGG GG CG AG TGTTTAAAC

ACAAATTTGTGGACGAGCAG G G---- C G A A- AGC-- G -------
GAGGAGGCGGCGGCGGCGGC
GGCGGAGCCA

GAM32062 1757 TGGTCCGTGAAATCTGAAAA CG AAA TG AAA- ---- GCAACA
9 GTTCTAGGGTCCGCAACAGG TGGTC TG TC A GTTCT AGGGTCC
ACCTTTCCGAGGACGACATT ACCGG GC GG T CAGGA TTCCAGG
GGGCGCGTAGGCCA AT GC- GT ACAG GCCT ------

GAM32064 5681 TGGTCCTTTGTAACCTCATA TTG- A ATAAAGT GA AGCAG
3 AAGTGTCCGATGAGCAGCAG TGGTCCT TA CCTC GTCC TG
GGGCTGGAGGATAATTTAGG ACCGGGA AT GGAG CGGG AC
GCCA TTTA A GT----- G- -----

GAM32065 22185 TGGTCGTGGTCATTGTTGCT T ---- - TGCTTCC-- ATATT
1 TCCTTCTTCATATTGAAGAA TGG C GTGGT CATTGT TTCTTC
CTTCAACCCACAGTGAACTA ACC G CATCA GTGACA AAGAAG
CATATGTCCA T TATA A CCCAACTTC -----

GAM32067 1739 TGGTCTCCTCTCCTCCTCAC CT - C T CACTCT CT CAC CCTG CCA TGTATT
3 TCTCCTCGCTCACTGCACAG TGGT CC TCT C CCT CCTCG CACTG AGGGT GGC GTC
GGTCCTGGGCCCAGTCTGTA ACCA GG AGA G GGA GGGGT GTGAC TCCCG CCG CAG
TTGACGCAGCCGCCCTCAGT CT C C - TCCC-- CT --- ---- ACG ------
GTCTGGGGCCCTAGGGCAGA
CGGTCACCA

GAM32067 12214 TGGTCTCCTTCAATTCTCAT C TT TACCACCA AA --- - TTATTACT
4 ACCACCACTAATATCTGAGA TGGTCTC TTCAA CTCA CT TATCTG AG ATG
TGTTATTACTCATACTTTAC ATTAGAG AGGTT GAGT GA ATAGAC TC TAC
AGATAAGCAAACTGAGGCTT - CG CAAAC--- -- ATT A --------
GGAGAGATTA

GAM32071 699 TGGTCTTTTTGTGTTATTTG T T-- T TATTT AA TCATGTCAT
7 GAAGTGTAATCATGTCATTT TGG CT TTTG GT GG GTGTAA
ATACCCTTGCTACTCGAATA ACC GG AAGC CA CC CATATT
TGGTCCA T TAT T TCGTT -- ---------

GAM32072 8372 TGGTGAAATGTGACCTCGCC T GTG C AAT T TTGCT
9 ATGGTAAATACATGGCTTGC TGG GAAAT AC TCGCCATGGTA ACA GGC
TGCCTGTTGTACCGTGGTGA ACC CTTTG TG AGTGGTGCCAT TGT CCG
CGTGGTTTCCCA - G-- C GT- - -----

GAM32076 12816 TGGTGAGGGTCGGGATCACC - A - AC-- -- AGG
8 TGGACCAGGGGTCAACAGTC TGG TG GGGTCGGG ATC CTG GACC
AGGATACCCGACTCCATCCA ACC AC CTCAGCCC TAG GAC CTGG
T - A GACT AA ---

GAM32082 19411 TGGTGCTCTCTGAGCTGAAG G - GCTGAA A GGG AATGAAGAACG
8 TCCCAGAAGGGGTTGAATGA TG TGCTC TCTGA GTCCCAG AG TTG
AGAACGCAGGGACTACTGGG AC ACGAG AGACT CAGGGTC TC GAC
ACAAAAATCAGATGAGCAGC G T AAAAA- A AGG ----------
A

GAM32084 20180 TGGTGCTTGGGGCAGGGTCT - T-- CA T AT T AGGCAG
1 GATGGGGGCTACAGGCAGGT TGGT GCT GGGG GGG CTG GGGGGC AC
GCTCCCCGGTCCCCACCCCT GCCG CGA CCCC CCC GGC CCCTCG TG

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          ACAGCTGCCG           T  CAT   AC  T  --    - ------
GAM32085 8795  TGGTGGAGGTGATGGCTCAA      G  A  -  AA  GACTTA  ATCTG
3              GGGACTTAGGAATCTGTCTG TGGTGGA GTG TGG CTC  GG    GGA
               GAATGCTGAGAGACCAACAC ATCACCT CAC ACC GAG  TC    TCT
               GTCCACTA             G  A  A  AG  GTAAGG  -----
GAM32086 682   TGGTGGATGTCGATACAATC   TG -  CGATACAATCC    GTC  AG     A      TTC---  C  A
2              CTGGGTTGTCCGAGTCCTGT TGG  GA TGT        TGGGTT  CG  TCCTGTG ATGTCACT    TGG ATA

               GAATGTCACTTTCTGGCATA ATC  TT GCA        ACTCAA  GC  AGGACAC TGTAGTGA    ACC TAT

               AATGTAATATCCACACTTTA   GT  C  TCATTCATTGT    AC-  AA     C      TTTCAC  -  -
               GTGATGTCCACAGGAAACGC ATGTAA
               AAACTCATGTTACTTACTAC
               GCTTTGCTA
                        ------
GAM32086 2980  TGGTGGCATGTGCCTGTAGT   ---  TGTG-   AGTCC    ACTCAGGA
6              CCCAGCTACTCAGGAGGCTG TGGT  GGCA    CCTGT    CAGCT
               AGGCAGGAGAATTGCTTGAA ACCA  TCGT    GGACG    GTCGG
               CCA                AGT   TAAGA   GA---    --------
GAM32086 20387 TGGTGGCCCCTGCCACGGAT   GGCC   CCAC  T    CC-  AACCT
9              GGTGGCCTCAACCTGACCTC TGGT   CCTG   GGA GGTGG  TC
               CACCTTCCTCAGGAAAAACC ACCA   GGAC   CCT CCACC  AG
               A                  AAAA   T---  T    TCC  -----
GAM32089 2971  TGGTGGGGAATGGAGAGAGA   T       AGAGAC  ---   AAACAGAAACAAC
9              CGCCCCGTAAACAGAAACAA TGG GGGGAATGGAG    GC  CCCGT
               CATGGGAAAGCCTCCATTTC ACC CCCTTTACCTC    CG  GGGTA
               CCCCA              -       ------ AAA   -------------
GAM32091 6647  TGGTGGTGAGTAAAGACGCT   GG   AAA  C  -   GCC    ATC
4              GAGAGGCCCTCAGGATCCCT TGGT  TGAGT  GA GCT GAGAG  CTCAGG
               GAGCGATTCTCTGGCTCCAG ACTA  ACTCG  CT CGG CTCTT  GAGTCC
               CTCAGGATCA           GG   AC- -  T   AGC    ---
GAM32091 12530 TGGTGGTGCCGGACCAGCCA      C  ACCA  CAAAAGAAA  -  G  AAACC
6              AAAGAAATCCTGTGGTCAAA TGGTGGTG CGG   GC       TCC TGTG TCA
               ACCTGAGCACACGGAATAAG ACCACTAC GCC   CG       AGG ACAC AGT
               CCCGTCATCACCA            T  ---- AATA-----  C   G  -----
GAM32094 20231 TGGTGTGGGAGATGCGTGTG   G -  AT    GAGCGAGA    CAGCTCCA
5              AGCGAGACACCCTCAGCTCC TGGT TG GGAG  GCGTGT      CACCCT
               AAGGGTGGCACGCTGCTCCG ACCA GT CCTC  CGCACG      GTGGGA
               TGGACCA            G G   GT    --------    --------
GAM32095 21189 TGGTGTGTATATTTGTTCTC       ATTT   CGAG   AG   GAG
2              GAGGACCAGCTTACGAGGTG TGGTGTGTAT   GTTCT   GACC  CTTAC
               AGAGGTTGAAGAATTGTAGT ACCATACATG   TAAGA   TTGG  GAGTG
               ACATACCA               ATGT   AG--   A-    ---
GAM32097 16692 TGGTTAAAAGCTGTTCAGAG   T  A  GTT--   GG  AACTGG  CCCACTA
5              GGATAACTGGACTCCCACTA TGGT AAA GCT    CAGAG  AT    ACT
               AGTATTCATTTCTCTGTAGT ACCA TTT CGA    GTCTC  TA    TGA
               GAGCATTTCACCA        C  A  GTGAT    TT  CTTA--  -------
GAM32101 18319 TGGTTCAATTAAAATTACTA   -   AAAATTAC  G      A  GAAATATA
8              TGCTCCTTTTATGAGAAATA TGGT TCAATT      TAT CTCCTTTT TGA
               TATTAAGAAAGGAGATAAAT ACCA GGTTAA      ATA GAGGAAAG ATT
```

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          TGGTACCA            T    --------  -      A  --------
GAM32106 20536  TGGTTGCTGTGCCATATTAC   -   ------      TTA    G    CCTAAA
6          TGAAGGTTATACCTAAATGT TGG TTGCT    GTGCCATA  CTGAAG TTATA
           AACTTCAGCTTTATGGCACC ACC AATGA    CACGGTAT  GACTTC AATGT
           TATATAGTAATCCA       T    TATATC      TTC    -   ------
GAM32107 21343  TGGTTGGTTTTTACCATCAT   T   TTTT - TC    ---   GATTTCAA
8          GTTACTTGGATTTCAACAAG TGG TGGT   AC CA  ATGTTA  CTTG
           GTATAGCATTTGTGTTTTAC ACC ACCA   TG GT  TACGAT  GAAC
           CATCCA            T   TTT- T T-    ATG   --------
GAM32109 13956  TGGTTGTGTAATTCTGAACA      GTAA    AA   GCG--    CTGCAC
1          CTGCGTGAGTCTGCACATTT TGGTTGT   TTCTG  CACT    TGAGT
           AAATAAAGTGGCTAGAGACA ACCAACA   GAGAT  GTGA    ATTTA
           ACCA                ----   CG   AATAA    ------
GAM32114 3097   TGGTTTCTTTTCATTAGATC    TTC---     TT----    T      TTTCCCAC
0          TGATTTACGTTTCCCACTGT TGGT     TTTTCA     AGATC GATTTACG
           AGATCTGATTTTGTAGTTGA ACCA     AAAAGT     TTTAG CTAGATGT
           AAACATTTCACCA         CTTTAC     TGATGT    T      --------
GAM32115 19027  TGGTTTGTGTTTAAATGCTG       G   AATGC    TTACTAC     GAT
7          TACTTACTACAAGAAGGATC TGGTTTGT TTTA     TGTAC      AAGAAG
           TTTTTTCAAGCTGTACATTT ACTAGACA AAAT     ACATG      TTTTTC
           ATAAAAACAGATCA          A   ATTT-    TCGAACT    ---
GAM32116 8722   TGGTTTTACAAAGCTTTCTT  G     AA      G  CAA    ATAAAAGA   ACCGAGTTCACCA
8          GTGACAACAGGTATAAAAGA TG TTTTACA  GCTTTCTT TGA   CAGGT       GTCT
           GTCTACCGAGTTCACCAAGA AC AAAGTGT  CGAGAGAA ACT   GTCTA       CAGA
           CATCTGCTTCAAAGAGAGCT  G     --      -  TC-    --------  ----------
           GTGAAAGCA
GAM32117 3742   TGGTTTTCACTTGTCTGAGG   TTTT  CT   TG    C    GTTTTAAAGTTCTA
5          CCCCGGGAACGTTTTAAAGT TGG   CA  TGTC  AGGCCC GGGAAC
           TCTAGTTCTTGGGCCTGGCA ACC   GT  ACGG  TCCGGG TTCTTG
           CTGTCTCCA           TCT- C-   --    -    ----------
GAM32117 8803   TGGTTTTCTTAAAGTTTTTG     TCTT-    TTTT--- CTC      ATTA   CCTT   GTAACG  A  A
8          TCTCAATTTGGGATTACTGT TGGTTT    AAAGT     GT  AATTTGGG   CTGT   AGG    TGG CTC
           CCTTAGGGTAACGTGGACTC ACCAGA    TTTCA     CA  TTAAACCC   GACG   TCC    ACC GAG

           ATTCCAGAGACCAAACCTTC     CACCT    CCTGTCT  TC-      GTC-   ACT-   AA----   A  -
           AGCAGCTGCCCAAATTCTAC TTCCA
           TCTGTCCACTTTTCCACAGA
           CCA
                     -----
GAM32125 18314  TGTAAAGTTCAGACATAAAA  T    TCAG   TAAAAAG      AAGAA    AACT
4          AGGGGCAGTAAAGAATCTGT TG AAAGT   ACA     GGGCAGTA    TCTGT
           AACTGCAGAAAGTGCTGCCT AC TTTCA   TGT     TCCGTCGT    AGACG
           GAGCACTGTAAATACTTTTC  T    TAAA   CACGAG-      GAA--    ----
           A
GAM32128 18856  TGTAACAGTGACACTATTCC     CAGTG   CTA    A  ACA    ACTTA
3          ACAACAAAATTACTTAGATT TGTAA     ACA   TTCC CA   AAATT
           TCATGAGGAAACATGTATTT ACGTT     TGT   AAGG GT   TTTAG
           GCA                 TA---   ACA    A  AC-    -----
GAM32141 13010  TGTAATTGCAGCTGGTAGGA   A       G  AG  T   TGGT    ATCC-       AGAGC
3          TGTCTGGTGCCAATCCAGGA TGT ATTGCAGCT GT  GA GTC    GCCA     AGGAAGTG
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AGTGAGAGCCATTTCTTTGT ATA TAATGTCGG CA TT CAG TGGT TTCTTTAC
ACTGGTTTATGACTTTGAAC A G AG T TATT CATGT -----
GGGCTGTAATAATA
GAM32141 9830 TGTAATTGTTAAATGTGCAT TAAATGTGCAT TAA G CCTGT
6 GACTTAAATGTTAAAATCCT TGTAATTGT GACT AT TTAAAAT
GTATTTTAAGATAGTCTTCT ACATTGACG CTGA TA AATTTTA
GCAGTTACA TCTT------- --- G -----
GAM32149 12886 TGTACGGCCCAAAAGTAACC C CAAAA - ---- ACTA
2 AGATTTACTAGAATCTGTAA TGTA GGCC GTAA CC AGATTT
GGTTTACACTCAGGCTTTAC ACAT TCGG CATT GG TCTAAG
A T ACTCA T AATG ----
GAM32150 8300 TGTACTAACTGGTCATCAAG TAACTGGTCA - ---- TTTAAGAT
0 TGGTCCATGCTTTTAAGATG TGTAC TCAAGTGG TCCAT GCT
GCTGACATGGATCTATTTGA ACATG AGTTTATC AGGTA CGG
GTACA ---------- T CAGT --------
GAM32151 3989 TGTACTGACAACAGCAAAAT T-- A CAA A TTACA
3 GTTCACTGTTACACAGGAAT TGTAC GAC ACAG AATGTTC CTG
ATTACTGTAGTCCATGTGCA ACGTG CTG TGTC TTATAAG GAC
TAC A A-- - -----
GAM32151 12903 TGTACTGCAAGACCTGACTA TGCAAG A ATTCATAAC ACGA
6 TTCATAACGGAAAACGATTT TGTAC ACCTG CT GGAAA
CTAAAGCAACAGCAGGTATT ACATG TGGAC GA TCTTT
TTTGTACA TTTTTA - CAACGAAA- ----
GAM32152 9809 TGTACTTCTGAGGCATCAAA A G G CACAT
7 CATGTCTTCTAAGGCCTTCT TGT CTTCTGAG CATCAAACATGTCTTCTAAG CCTTCTCCA

CCACACATTGGAGAAGGCTT ACG GAAGATTC GTAGTTTGTACAGAAGATTC GGAAGAGGT

AGAAGACATGTTTGATGCTT - - - -----
AGAAGGCA
GAM32160 6611 TGTAGCCAGCCCCGTCTCAA A CCG CAA CCC GGCTAA
2 TCCCCTGGGCTAACAAAAGA TGT GCCAGCC TCT TC TG
ATCAGAAGAGGCTGGCCACA ACA CGGTCGG AGA AG AC
C AGA CTA AAA ------
GAM32160 20501 TGTAGCCATTATGTAAATAA AG ATGTA A TC--- CT --- AGATTAA
4 AGTTTCATATGTACCTGTTT TGT CCATT AATA AGTT ATATGTAC GTTTAT TTGGGC
ATTTGGGCAGATTAAGTCCA ATA GGTAA TTGT TCAA TATATATG TAAGTA AACCTG
ACATATGAATGTATATATCG CT GA--- A TACGC -- TAC -------
CATAACTATGTTAGAATGGT
CATA
GAM32161 18127 TGTAGCTGGAGGCATGGGCA CT A - CAA GT - -- -- AAACT - GTGGG
6 AGGGGGGTCCCCAGGTAGTA TGTAG GG GGCA TGGG GGGGG CC CC AGGT AGT CCC CAG

AACTCCCCAGGTGGGCTGAG ACGTC CC TCGT ACCC TCCTC GG GG TCCG TCG GGG GTC

GGCTAGGGCTGAGCCTCAGG -- A G TTG TG T AC AG GGATC A -----
TGGGTCTCCTGTTCCCAGTG
CTACCCTGCA
GAM32162 4139 TGTAGCTTTGCCAGATATGT GCT - AT- TAC- G AAACT
3 ACTTAGTAATATAAACTGTA TGTA TTGC CAG ATG TTA TAATAT

TTAATAAAATCCATTTACTG ACAT AATG GTC TAC AAT ATTATG
TGTAATACA --- T ATT CTAA A -----
GAM32163 18810 TGTAGGCAACCTTCCCTCTC GC C CC CTC T AGAACA
7 TCCTTGGTGAAGAACATCCC TGTAG AAC TTC TCT CTTGG GA
AAGCCAGAAAGAAGTTAACT ACATC TTG AAG AGA GAACC CT
ACA AA - AA CC- - ------
GAM32164 4147 TGTAGGCCGGAGGTTCATGG GAG ------ TAT AGGGT
3 TTGGTATTGCTAGGGTGGCG TGTAGGCCG GTTCATG GTTGG TGCT
CTTCCAATTAGGTGCATGAG ACGTCCGGT TGAGTAC TAACC GCGG
TAGGTGGCCTGCA GGA GTGGAT TTC -----
GAM32165 1208 TGTAGGTAATATTAAAAATT G- T AAATT - TAAT
4 ATTATAAACATTTAATAATG TGTA GTAATA TAA ATTATAAA CATT
CTTTATAATTTGCTATTATA ACAT TATTAT GTT TAATATTT GTAA
GTACA GA C ----- C ----
GAM32167 20561 TGTAGTACTTAAAATTCAAC - AA C --- ACG CTCAAACTTCATTAAAAT
0 ATATGTAACGTTATTCTCAA TGTAGT ACTTA ATT AACATA TGTA TTATT
ACTTCATTAAAATAATAAAT ACGTCA TGAGT TAA TTGTAT ACAT AATAA
ATACAAGTTATGTTTAATAT A A- T TGA ATA ----------
GAGTAACTGCA
GAM32180 5412 TGTATCTTTTTGGTGGGGGG TT TGG A AC AA- GA CAT GGATAAAATGATT
4 AGTCATATGAACAAGTAACT TGTATCTT TGG GGGGAGTC TATGA AAGT CT AG TTGG
GAAGCATTTGGGGATAAAAT ATATAGAG ACT TTTTTTAG ATACT TTCA GA TC GATC

GATTAACTAGCTCTGAAGAT TT TTA - A- ATA AG TC- ----------
AACTTATCATAGATTTTTTA AA
TTTCATTGAGATATA

--
GAM32180 21112 TGTATGAATTAAGCTGTAAG - T- GGCCTGT TCT TGTAT
8 GCCTGTAGCTCTGGTTGTAT TGTAT GAA TAAGCTGTAA AGC GGT
ACTTTTGCTTTTCAAATTAT ATATG CTT ATTTGATATT TCG TCA
AGTTTATCTTCTGTATA T CT AAACTTT TTT -----
GAM32183 6433 TGTATGTCCCTGGGAAGCTG --- C TG GAAG TG - T AACACGTG
8 CATGATGTGGAACACGTGCT TGTAT GT CC G C CAT GATG GG
CATCGATGTGGGAACTGGGT ACATG CA GG C G GTA CTAC TC
ACTATGTACA TAT T GT AAG- GT G - --------
GAM32188 20914 TGTATTGCTATATGGGTGCC TG -- C- - GAA CCGAGT
5 AAGATTGAATATGAAGAACC TGTAT CTATATGGG TGC AAGATTG AATAT GAAC
CGAGTGTTTGTAGTATTATA ACATA GGTGTGTCT ACG TTTTGAT TTATG TTTG
GTTTTAAGCAAATCTGTGTG GT AA AA A ATG ------
GTGATACA
GAM32195 1072 TGTCAAATATGAGCACTGTC AATAT TT------- TT TAGAA
3 ATTTTTTTTTTCTTAGAAGG TGTCA GAGCACTGTCA TTTTTT CT
GGGAAAAACATTTATTTTGG ACAGT TTCGTGACGGT AAAAAG GG
CAGTGCTTTGACA ----- TTTATTTAC GG -----
GAM32195 3129 TGTCAACACTGGTCTGATTA T - GTCTGATTATTTCT TTTTT
8 TTTCTGGAATTTTTTTTTTT TG CA ACACTG GGAA
TTTTTTTTGAAACAGTGTCT AC GT TGTGAC TTTT
GTCA T C AAAGTTTTTTTTTT -----
GAM32203 9208 TGTCACTGAGCGAGTACAGC CT GCG- - C GA T- TT GAAA

1 CCCTGGAAGTGGCTTTGGAA TGTCA GA AGTACAG CC CTG AG GGC TG
ACATTGTCTTCTGCAGAGGT ACAGT CT TCGTGTC GG GAC TC CTG AC
CTGTGCTGGGATCTATGACA AT AGGG T A G- TT TT ----
GAM32207 19193 TGTCAGGTCTTTCCCTTCCC -- C TCCCACG GCCATATTTCAGA
8 ACGAGGCCATATTTCAGACT TGTC AGGT TTTCCCT AG
ATCACATGGGGAGAAACCTT ACAG TCCA AGAGGGG TC
GGACA GT A TACACTA ----------
GAM32208 20984 TGTCAGTGCCTGATGGAGTG T CCTGA - C-- GGGT
8 GCCGGGGCGGGTGCCTTCAC TG CAGTG TGGAG TGGC GGGGC
GTCAGCTCCAGAATCACTGT AC GTCAC ACCTC ACTG TTCCG
CA T TAAG- G CAC ----
GAM32211 5481 TGTCATCTGCAAGAAGTGCC T AGAA CCATG G GGGC
8 ATGGGGCTGGAGGGGCCTCA TGTCATC GCA GTG GGGCTG AG
GCCTGCTCACGCTGTGATGA ACAGTAG TGT CAC TCCGAC TC
CA - CG-- TCG-- - ----
GAM32217 5897 TGTCCAATGATTGAAGCCAG - G TG GGAA A G--- TG - AAAAG
3 GAAGAATCATGGGCTGGTAT TGTCCA AT AT AAGCCA GA TCAT GGC GTATTT GT
TTGTAAAAGACAAGATATTT ACAGGT TG TG TTTGGT CT GGTG TCG TATAGA CA
GCTGTGGGTGGTCAGAATGG C G GA AAGA - GGTG TT A -----
TTTAGGTGGTCTGGACA
GAM32219 12433 TGTCCAGGCTGGGCGCTGTA GCG T AC- --- CAG - TA AGG
2 ACTCACGCCTGTAATCCCAG TGTCCAGGCTGG CTG AACTC GCCT GTAATCC CA CTT GG

CACTTTAGGAGGCCGAGATG ACGGGTCCGACC GAC TTGAG CGGG CATTAGG GT GAG CC

GGAGGATTACTTGGGGCCAG A-- C GAC GTT AGG A -- ---
GAGTTCCAGACCAGCCTGGG
CA
GAM32221 18121 TGTCCCAAGCAAGGATAGGG A ---- AA GGA- GAGCCTCTGGA
1 AAGGGGAAGTGGTTGAGCCT TGTCCCAAGC AGG ATAGGG GG AGTGGTT
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TCCTGTCAGACCTGGTTTGG G AGAC AA AATG ----------
GGCA
GAM32223 21653 TGTCCCCGCCACTCTCCGAC - A C- - C C GCGGGAA
8 AGCGGCGCGGGAAGCCCTTC TGTCC CCGCC CT TC CGA AG GGC
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C C AA A - - -------
GAM32224 20167 TGTCCCGGTTCGACGCTCTA - GA T CCTGC CC-- GCCGGAA
6 GCCCTGCGAGCAGCCGACGC TGTCC CGGTTC CGC CTAGC GAGCAG GAC
CGGAAGTCTCTACTGCTCCC ACGGG GCCAGG GCG GGTCG CTCGTC CTG
CGCTGGCGCGCAGGACCGCG C AC C CCC-- ATCT -------
GGCA
GAM32225 18433 TGTCCCTCTGCGCTTGCTCC CTCTGC C-------- CA ATGCCCA
7 CCGCATCCATGCCCAGGAAT TGTCC GCTTGCT CCCG TCC
CGGGACACATTACGGCAGGC ACAGG CGGACGG GGGC AGG
AAGGACA AA---- CATTACACA TA -------
GAM32225 9592 TGTCCCTCTGTTCAACAATA CC TCAACAATA TCC-- TTAT
8 CAGTCCTTTTTAATTATTTG TGT CTCTGT CAG TTTTTAA
AGAGTTTATCTGACAGAGAC ACA GAGACA GTC GAGAGTT
ACA CA --------- TATTT ----

GAM32226 838 TGTCCCTTCTTAAAAAACTG C CTTAAAAAAC A--- TG C CAT A CACTC
8 GAATGTTGGCATGCATTTGA TGT CCTT TGGA TGT G ATG TTG CTTCA
CTTCACACTCTGAAGCAACA ATA GGAA ACCT ACA C TAC AAC GAAGT
TCCTGACAGTCATCCACATC A CTTCATCTAC ACTG GT C --- - -----
TACTTCAAGGAATA
GAM32227 16741 TGTCCGAATGTGCTCTTACA AA CTCTTACACC - TC ATT
3 CCCATGTCTCAGCATTGCTT TGTCCG TGTG CA TGTC AGC
GGCACTGAACACACCTCCAC ACAGGC ACAC GT ACGG TCG
ACGGACA -- CTCCACACAA C T- ---
GAM32228 22311 TGTCCTAGCCTGCCAGCTAA T TG C TAAGA TC - CATC
6 GAGTCCGAGCCCATCGGCTG TG CCTAGCC C AGC G CG AGCC
CGTGCGACTGCTGTGGGCTG AC GGGTCGG G TCG C GC TCGG
GGCA - GT - TCAG- GT G ----
GAM32230 970 TGTCCTCTGCCATGCGACCG C TG C GCT TATCACACTGCACT
2 CTCAGTTATCACACTGCACT TGT CTC C ATGCGACC CAGT
GCTGTTGGGTTGCATGTGGA ACA GAG G TACGTTGG GTCG
GTACA T GT - GTT ----------
GAM32231 18724 TGTCCTGCCGCTGCTGGAGT T - C A G-- GAA
3 TGGTCGGGGAATCTGGTAAT TG CCTG CCG TGCTGG GTTG TCGGG
AACACCAGTACGGACGGGTC AC GGGC GGC ATGACC CAAT GGTCT
A T A - A AAT ---
GAM32233 1148 TGTCCTTGGTGAGAAGGGCC - TG AA GGCGGA GG A TGCT
3 GGCGGATTCGGGAACTGACT TGTCCT TGG AG GGGCC TTC GAACTG C
GCTGTAGTTCAGAAGAGGTT ACGGGA ACC TC TTTGG AAG CTTGAT G
TGGCTTGCCAGAGGGCA G GT GG AG---- A- - ----
GAM32239 14060 TGTCTATGGAAATGTGAATA TG - G AATAA CA T T TCAA
4 AAGGCAATCCATGAATAGGT TGTCTA GAA AT TG AGG ATCCA GAA AGG
CAACTTCTTCCTGGGTAACC ACAGGT TTT TG AC TCC TGGGT CTT TTC
TCCCCAGGTGTTTTGTGGAC GT G G CCC-- AA C C ----
A
GAM32242 755 TGTCTCCACTCCCTCCTTGG ACTCCCTCCTT AAG-- CA CT- T GCCG
9 TCAAGAGCACCTCACAGCTG TGTCTCC GGTC AGCACCT CAG GC GA
CTGAGCCGTCCGCTATCTGC ATAGAGG CCAG TCGTGGG GTC CG CT
AGGGTGCTGAAACGACCGGA ---------- CAAAG AC TAT C ----
GATA
GAM32244 19232 TGTCTCGGGTCTGGGGGGAT C TCT TC TCA A- CCTAAAGC
8 TCGGGGGGTTCAGCAGTGGC TGTCT GGG GGGGGGAT GGGGGGT GC GTGGCT
TCCTAAAGCAGCCACCGGTG ACAGA TCC TCCCTCTA TCCTCCG TG CACCGA
CCTCCTCCATCTCCCTGTCC C TG- CC --- GC --------
TCAGACA
GAM32245 1748 TGTCTCTCCTGTGGGCAGGT - C GGG T AGT GC T ACTCA
6 CCAGTGAATGCTGGTGTCAC TG TCT TCCTGT CAGG CC GAAT TGG GTC
TCAGACCCCAAAATTCCAGG AC AGA AGGACA GTCC GG CTTA ACC CAG
TCCTGAAGACAGGACAGAGC G C GAA T AC- AA C -----
A
GAM32246 18806 TGTCTCTGATGAGCTGAGAA TG TGA GAGAA- A-- ------ - CAATGAA
1 ACAAAGCCACCCAGCCAATG TGTCTC A GCT AC AAGCCACC CAG C
AAGTCTGTACTCTGGTGGCT ACGGAG T CGG TG TTCGGTGG GTC G
TCCAGTGGAAAAGGCATTTT GT TTA AAAAGG ACC TCTCAT T -------
GGAGGCA

GAM32247 18085 TGTCTCTTCTGGTGGAGCTG - TG G GT- GCCCTG
3 TGCCTGGCCCTGTAGGCCCA TGTC TCTTC GT GAGCT GCCTG
GGTTTGGCTGGAAGGTGACA ACAG GGAAG CG TTTGG CGGAT
T GT G ACC ------
GAM32249 1778 TGTCTGATGTGTTCTTCCTT TGTTCTTCCTT C ATG T GTAC AATCA -- C
0 TAGTCATCATGTTAGGTCTG TGTCTGATG TAGT ATC TTAGG CTGT CCTA GC ATATTA
TGTACCCTAAATCAGCATAT ATAGACTAC GTCA TAG AATTC GGTA GGAT CG TATAAT

TACTCATAAATCATTAATTA TTACTTAC--- - AA- T AA-- A---- AA -
ATATAAGCATAGGAAATGGT TCATAAATCATTAAT
CTTAAAAGATACTGCATTCA
TTCATCAGATA

GAM32250 21170 TGTCTGCGTGGGTCAGAAGA T - G AGAG T AC AGATTA
1 GTTGTGCACGCAGATTAGCA TG CTGC GTGG TCAGA TTG GC GC
GGCCAAGGTCTGAGCCACAG AC GACG CACC AGTCT AAC CG CG
CAGCA - A G GG-- - GA ------
GAM32251 4076 TGTCTGGCAATGGTCATCCA GGCAAT CCA---- AC G - ATCTTA
5 GCTTTCACAGAGTAATCTAT TGTCT GGTCAT GCTTTC AGA TA ATCT
CTTAAGATATAGTTTAGGGA ACAGG TCAGTA CGGAGG TTT AT TAGA
GGCAAAATCAATGACTCAAG AGAAC- ACTAAAA GA G A ------
AGGACA
GAM32256 9243 TGTCTTCAATAGAAAGTTCA CAATAGA GT TCCATT CC TA ATATTA
7 AATATTTCCATTTTTTAAAC TGTCTT AA TCAAATATT TTTTAAA TC GA
CTCTAGAATATTATCCGGAC ACAGGA TT AGTTTATAG AAAATTT AG CT
ATTTAAAATATTGATATTTG AATTACA TG TTAT-- AC GC ------
AGTTTACATTAAAGGACA
GAM32257 14627 TGTCTTCAGTATTAGGTCTC AG TT C---- A TCT AAG
4 CAACTCTTGTAAAAAGTTTA TGTCTTC TA AGGT TCC AC TGTAAA
TATGTAGGATAAAAACCTTT ACAGGAG AT TCCA AGG TG ATATTT
TAGAGGACA -- TT AAAAT A T-- ---
GAM32258 6098 TGTCTTCTGCCCATCCAGCA T CCA CA AA ACGTGAAG
9 TGGGAAGTGGGTCCCACGTG TGTCTTC GC TCCAG TGGG GTGGGTCCC
AAGGGGGCCCACCACCCACT ACGGAAG CG GGGTT ACCC CACCCGGGG
TTGGGAGCTGAAGGCA T A-- TC AC --------
GAM32259 8537 TGTCTTCTTGGTGGCTCCTG -- TG T- CCTGGACCC- TGAT
3 GACCCTCTCTGATGGGATAA TGTC TTCT G GGCT TCTC
TGACTGCAGCTCTCTGAGAA ACAG AAGA C TCGA AGGG
GTGACA TG GT TC CGTCAGTAAT ----
GAM32272 8564 TGTGAATGTCAACCAGTTTT TCA --------- CTTTATATTCCTT
4 TGCTTTATATTCCTTCAAAA TGTGAATG ACCA GTTTTTG
ACATTCCACCCTGGTCATTC ACACTTAC TGGT CAAAAAC
ACA --- CCCACCTTA ----------
GAM32272 1198 TGTGAATTATTATTGCATAA - TTGCATAAACTAT CT CCCA
6 ACTATAGTGCTGAGGCCCCA TGTGAA TTATTA AGTG GAGGC
GTCTTTACACTTCCATTTAA ACACTT AATAAT TCAC TTCTG
TAACTTCACA C TTACCT------- AT ----
GAM32276 742 TGTGACTATGAAGGGTGTGG CTATGA AA CTTCA GACTACCA
3 CAAGGCCTTCATCAGGGACT TGTGA AGGGTGTGGC GGC TCAGG
ACCATCTGAGCCGCCACATT ACACT TCTTACACCG CCG AGTCT

CTGACTCACA CAG--- -- ----- --------
GAM32278 875 TGTGACTTTGGTGCCGTTAC C T CCG TT AAAT TCT- G T TGTG
0 TTGTGAAAAATCTATTCTGT TGTGA TT GGTG TTAC GTGAA CTAT GTT TCTT GA
TGTCTTTGATGTGTCCAAGA ACACT AG CTAT AATG CATTT GATG TAA AGAA CT
AAATTCGTGTAGTTTACGTA C T AAA -- ---- TGCT A C ----
AAAATATCTGACTCACA
GAM32284 12225 TGTGATAGAATATTCATTTG A GAATATT G TT A AGAAA
1 GTTTTGATGTGCTAGAGAAA TGTG TA CATTT GT TG TGTGCTAG
CTGGTACACATTATAAAATG ACAC GT GTAAA TA AC ACATGGTC
TATCAGATGACACA A AGACTAT A TT - -----
GAM32286 8794 TGTGATGCAAGTCGGTTTCA ---- A G GG ATTC- TTGA
9 GGGGTCATTCCGCCCTTTGA TGTGA TGCA GTCG TTTCAG GTC CGCCCT
AGGGTGCTCTGGGCACTGAA ACACT ATGT CGGT AAAGTC CGG GTGGGA
ATGGCATGTAATTTTCACA TTTA A - A- GTCTC ----
GAM32287 19349 TGTGATGGGCTCATTGTAGT -- GC TT - CTGA AATAATGCTATACTC
6 TCTGACAGGAAAATAATGCT TGTGAT GG TCA GTA GTT CAGGAA
ATACTCTTTCTGGTAACTTA ATACTA TC AGT CAT CAA GTCTTT
CTTGAATCTTTATCATA TT TA T- T TG-- ----------
GAM32288 18556 TGTGATTAAATTGAGGAACT ---- A AAC- ------ AGAATA
1 TGAGTAGGAAGAATATCCTG TGTGATTAA ATTG GG TTGAG TAGGA
GATTATCTCAGCAGGCCCAA ACATTAATT TAAC CC GACTC GTCCT
TATAATTAATTACA AATA - GGAC TATTAG ------
GAM32288 18065 TGTGATTCCAGGAGGAGAGC GA GA AG GCCT CCT
9 CAGGCCTGCCCTGCCCTGCT TGT TTCCAG GG AGCCAG GC
GGCTTCCTGACTGGAGAGAC ACA GAGGTC TC TCGGTC CG
A GA AG CT GTCC ---
GAM32291 12639 TGTGCAAGGGCGGAAAGGCT G A C AA TG AGCA TG AATCAG
4 GGGGCAGCAGCTTGGAGAAT TGT CA GGG GGA GGC GGGC GCT GAG
CAGCTCAGCAGGCCTTGGCC ACA GT CCC CCT CCG TCCG CGA CTC
CTCCCCCCGTGGACA G G C C- GT GA-- -- ------
GAM32291 768 TGTGCAATCTCAAGAGGAAG TG CAA- TTT A T TTG- ACCTTAAA
8 ATTTTCTAAATTAGACATTG TG CAATCT GAGGAAGAT CT AA TAGACA TCTTT
TCTTTACCTTAAAGAAGAAA AC GTTAGA TTTTTTCTG GA TT ATCTGT AGAAG
ATTGTCTATTTCAGTGTCTT CA ACGA T-- C T TAAA --------
TTTTAGCAAGATTGACCA
GAM32291 9300 TGTGCAATGGAATATAAATA AAT TAT T AA GTTTAACTA
9 TCACAAAGTTGTTTAACTAG TGTGC GGAA AAATA CAC AGTT
ACTGCGTGTTGTTTTTCCCG ATATG CCTT TTTGT GTG TCAG
TATA C-- --- T CG ---------
GAM32292 8211 TGTGCACGTTACACTCATCC C ------- A CATCCAC TACAA
3 ACATTGGTACAACTAATTTT TGTG ACG TTAC CT ATTGG
TAAGCGTAAATTCCCCCGTC ACAC TGC AATG GA TAATC
CACA C CCCCTTA C ATTTT-- -----
GAM32296 12708 TGTGCCCACAGTGTTTGAGA - T TGAGAA G GCAGA GAGGTG
6 ACTATGTGGCAGATATCGAG TGTG CCCACAG GTT CTAT TG TATC
GTGGATGGAAAGCAGGTAGA ACAC GGGTGTT CGG GATG AC GTAG
GTTGGCTTTGTGGGACACA A T TTGA-- G GAAAG ------
GAM32297 19041 TGTGCCCGATGCGTGCCCAA G GA-- G CCAAGGACAA A AGAAA- TCATT
8 GGACAAGGCCATTAAGAAAT TGT CCC TGC TGC GGCC TTA TTCG
TCGTCATTCGAAACATAGTG ACA GGG ACG ACG CCGG GGT AAGC

GAGGCCGCAGCAGTCAGGGA - ACTG - ---------- A GATACA -----
CA
GAM32304 8458 TGTGCTCTGTGCAAGGTGGC CT AAG- GGC AA C-- TCC
3 TGTGAACTCCCTGTCCCAGC TGTGCT GTGC GT TGTG CTC CTG
TTGAGGCACATAACAAAGGT ACACGA CATG CA ACAC GAG GAC
ACTAAGCACA AT GAAA AT- G- TTC ---
GAM32308 21164 TGTGGAAACTGCATTTATCT GAA---------- T-- TTCTTGACCT
8 TCTTGACCTGATACCCATGC TGTG ACTGCAT TATC
AGTAAATGAATATAAGACAC ACAC TGACGTA ATAG
A AGAATATAAGTAAA CCC ----------
GAM32309 20088 TGTGGAACAACCAAGGAGAA C A--- GA - TC TCCA
1 GGCATATTCCTCCCTTTCCA TGTGGAA AACC AGGA AGGCATATT CC CCTT
AAGGTGGGCAATGTGCCTCT ACATTTT TTGG TCCT TCCGTGTAA GG GGAA
TCCTGGAAGGTTATTTTACA A AAGG TC C GT ----
GAM32310 9455 TGTGGAAGGGTTCCACCCTG A CTG AT TAATTC
1 TCTTATTTATTAATTCATAA TGTGG AGGGTTCCACC TCTT TTAT
AAGAATGGTGGGGCTCTATT ATATT TCTCGGGGTGG AGAA AATA
ATA A TA- -- ------
GAM32314 3427 TGTGGATATTGATTACTTTT TT-- T- TTT AGCA
4 AAATGGATTAGCAAGTTTAT TGTGGATA GA TACT AAATGGATT
TTCAGTATTTCTGATTGTCT ATATCTGT CT ATGA TTTATTTGA
ATA TAGT TT C-- ----
GAM32316 12788 TGTGGCAATAAGCATATGAA AATAA-- ATGAAAAA AATATCGC
1 AAAAATGGTTAAATATCGCT TGTGGC GCAT AATGGTTA
AATCATTAAGGAAATGCAAT ACACCG CGTA TTACTAAT
CAAAGCCACA AAACTAA AAGGAA-- --------
GAM32317 6523 TGTGGCATACATAATGTAGA GCATACATAA - CA GTAC
4 GTTTTCAAGGGTACCTTAAA TGTG TGTAGA GTTTT AGG
GAACATCTATAAATACATAC ACAC ATATCT CAAGA TTC
ACACA ACATACATAA A AA ----
GAM32318 1259 TGTGGCCCGGAGTTTGATGT TTTGAT C GATACCCA
7 GTAGGGCGGTGATACCCAGC TGTGGCCCGGAG GTGTAGGG GGT
TCCTTGCACCTCTGGGCCAC ACACCGGGTCTC CACGTTCC TCG
A ------ - --------
GAM32319 19986 TGTGGCCTCTTTGCTAGCCC TCT CTA CCCC CCCC ACCT
1 CCGCCCCCCGCCACCTGGCG TGTGGCC TTG GC GC CGCC
CCCCGCCCCCGCCCTCAGTC ACGCCGG GAC CG CG GCGG
GGCCGCA CT- TCC CCCC CCCC ----
GAM32320 12974 TGTGGCTCGTCTGAACTTCT - TCG - ACT - A GATG
7 CTCATGGAACTGATGAGTAC TGTG GC TCT GA TCTCT CATGG ACT
CATGCGGAGACCATCAAGAA ACGC CG AGA CT AGAGG GTACC TGA
TGCGCGCA G TA- A ACC C A ----
GAM32321 5611 TGTGGCTGGAGGAATAGTAA C GA GT AG GGG-- CCACA
2 GAGAAGTGGGGGGAGGTGCC TGTGG TGGAG ATA AAGAGA TGG GAGGTG
ACACACTTTAACAACCAGGT ACACT ACCTC TAT TTCTCT ACC TTTCAC
CTCTTTATAACTCCATCACA - AA -- GG AACAA -----
GAM32324 1711 TGTGGGCAAGGCGCGCCGCC --- - CGCC- AAGCGT A TG TG-- GA TT
0 CAAGCGTGAGTTCCCATTGG TGT GGGCA AGGCG GCCC GAGTTCCC T GGTC GGGC
ATTGG
GTCTGGGGCGAATTGGTTTC ACG CCTGT TCTGC TGGG CTCGGGGG A CCGG TCTG
TAACT

ATCAAAGATCTTCAATGTCT GAA C AACTT ACCAT- - GT TAGA -- TC
AGATGGCCTGAGGGGGCTCT - ATCAAA
ACCAGGGTTTCAACGTCTCT TC
GTCCAAGGCA AG
T ------
GAM32324 9279 TGTGGGCGCAGCAGGGCACC - G-- --- A AC GGGA AA G ACAC
9 GACCCGGGGACTCCTAAGCT TGTGGG C CAGC AGGGC CCG CCG CTCCT GCTCA GC

CAGGCACACGTGTGAGCAGG GCACCT G GTCG TCCTG GGT GGC GGGGA CGAGT TG
GGGACGGTGTGGGTCCTATG T AGG GTA - GT AG-- -- G ----
GCTGGGAGTTCCACG
GAM32326 14012 TGTGGGGCCTTTTTCGTGAA G- CTTTT T A-- A CC- TGCC
0 GGTGAGGACCCGGTGCCCCG TGTGG GC TCG GA GGTG GGA CGG
AAATCCCCGCCCCATCTGAC ACACC CG AGT CT CCGC CCT GCC
TCTGCAGCCACA GA TCTC- - ACC C AAA ----
GAM32326 19086 TGTGGGGTGCGTTTCACCGT CGT - CT---- C TCAT
4 CTTACGCTGCTCATGCACGT TGTGGGGTG TTCACC GT TACG TGC
ACATCACACAGGTGAATACC ACATCCCAT AAGTGG CA ATGC ACG
CTACA --- A CACTAC - ----
GAM32326 4116 TGTGGGGTTTGGAGAAATGC - AGAAAT - AGAA GAAAGA
8 TTTGGCAGAAGAGTGAAAGA TGTGG GGTTTGG GCTTT GGC GAGT
ACTCCTGGCCAAGAGCCCAG ACATC CCAGACC CGAGA CCG CTCA
ACCTCTACA T ------ A GTC- ------
GAM32327 1331 TGTGGGTATCTCCTCAGATG TATC T T - TTTG C GCTC
1 GGCAGTTTGCCCTCTCAGGC TGTGGG TCC CAGA GG GCAG CC TCTCAG
TCCTGGGATGGAACCCTGCG ACACTC AGG GTCT CC CGTC GG AGGGTC
CCTCTGGGATCTCACA T--- - - G CCAA T ----
GAM32328 9258 TGTGGTAAAACTGGGGTAAA GGTAAAACT AAAA - AAATGTGA
4 ATGTGGTAAAATGTGATACG TGT GGGGT TGTG GTA
CACAAACCCTTTGAAAATAG ACG TCCCA ACAC CAT
CA ATAAAAGTT A--- G --------
GAM32328 6103 TGTGGTAACGTGGGATCTCT -- G GATC AG AGGGA GAGA
7 GGAGTGTGTAGGGACTGAGA TGTGG TAAC TGG TCTGG TGTGT CT
GGATGGAATGCAGCCAGGTA ACGCT GTTG ATT GGACC ACGTA GG
GATTAGGTTGGGTCGCA GG G AGAT G- AGGTA ----
GAM32329 6241 TGTGGTAATAATAGGAAATG ----- - T ACCCTCAGGAATATG
0 GACCCTCAGGAATATGCCTT TGTGGT AATA ATAGGAAA GG
TCTTATATGTTATCAGGCTA ACATCG TTGT TATTCTTT CC
CA GACTA A - ----------
GAM32333 6445 TGTGGTTACTGACAGCCCCT ACT C CCCTATT- A ATA
9 ATTGGCACCGGATACCGGCG TGTGGTT GA AGC GGC CCGG
CCTACTCTACGCTTCTCAAT ACACTAA CT TCG CCG GGCC
CACA CT- - CATCTCAT C ---
GAM32334 22234 TGTGGTTATCTCCTCAGATG TTATC T T - TTG- C GCTC
3 GCCAGTTGCCCTCTCAGGCT TGTGG TCC CAGA GGC CAG CC TCTCAG
CCTGGGATGGAACCCTGCGC ACACT AGG GTCT CCG GTC GG AGGGTC
CTCTGGGATCTCACA CT--- - - C CCAA T ----
GAM32337 9413 TGTGTAATTTCTGGTCAGTG ATTT GT GTGATTC TTAAAT
9 ATTCCAGGTTTTAAATAATT TGTGTA CTG CA CAGGTT
TGTAAGTGTTCAGTTTCTAC ACACAT GAC GT GTTTAA

ACA CTTT TT GAAT--- ------
GAM32338 9860 TGTGTAGAAACTGAAAATTT AAA AATTTA AACT AAAACCTG
7 ACAAACTATTTAAAACCTGG TGTGTAG CTGAA CA ATTT
AATCGCTGACTGTTCAGAAA ACACATC GACTT GT TAAG
CTACACA AAA GTCA-- CGC- --------
GAM32340 20872 TGTGTATATGTGTATATATA A ACACA ACAC
5 TGTATGTAACACATATACAT TGTGT TATGTGTATATATATGTATGTA TATACATATATAT
ATATATACACATATATGTGT ACACA ATGTACATATATATACATATAT ATGTGTGTATATA
GTATATATACATATATATAC C ----- ----
ATGTACACACA
GAM32341 3348 TGTGTATGGCCATGTTTCAT GTA TTCATTCTCAA-- ATTCTA
5 TCTCAAATTTAATTCTATAA TGT TGGCCATGT ATTTA
ATACAAATCCTAAATACATG ACG ATCGGTACA TAAAT
GCTACAGCA AC- TAAATCCTAAACA ------
GAM32344 5492 TGTGTCATTTTTTAATATAG CATTT TAT A GA TCAC
5 CTGATTGACTTCACAGAAAG TGTGT TTTAA AGCTG TT CT
CAGCTTTTTTGAATTCTAAT ACATA AAGTT TCGAC GA GA
ACA ATCTT TTT - AA ----
GAM32345 9760 TGTGTCCTCCACCATGCACT C CA- C CACCC CCTG
8 CACCCCTAGCCCTGGTTAGC TGTGT CTCCAC TG ACT CTAGC
TGACAGTCAGCTGTGGGGAA ACACA GGGGTG AC TGA GATTG
CACA A TCG - CAGTC ----
GAM32347 20030 TGTGTCTCAAACCCGCCATG CTCAAACCCG - CT ACGCC
6 AAATTTCTGAACGCCTCCAA TGTGT CCA TGAAATTT GA
ATTTCAGTGGAATAATCCAA ACACA GGT ACTTTAAA CT
ACACA AACCTAATAA G C- -----
GAM32351 16421 TGTGTGATGTGGCAGGCAGC G T - - CAG- GAGC
1 AACAGTGGGAGCTCGAAGAT TGT TGA GTG GCAG GCAGCAA TGG
TGCTGCACTGTGCATTTCAA ACG ACT TAC TGTC CGTCGTT GCT
GCA A T G A AGAA ----
GAM32354 14002 TGTGTGGTGATCGAGTGGTC GATCGAG TG GTT TG GGTGG
7 TGTGTTCCTATTGCTGGTGG TGTGTGGT TGGTC T CCTAT CT
GGTGATAGGGTGGGCTAAAA ACGTACCA ATCGG G GGATA GG
ACCATGCA AAA---- GT --- GT -----
GAM32357 8648 TGTGTGTGTGAAGTCTTAAA TG TG A CTTA TT - CTACA
7 TGTTTTATTAGTCTACAGCT TGTG TG A GT AATG TT ATTAGT
AATCAGTTTATTGTAATATT ACAT AT T TA TTAT GA TAATCG
GTATGTACA GT GT A ATG- TT C -----
GAM32360 9526 TGTGTTAATTTTAGTAGAAT AG G AGGCA----- CTCG
9 CAGGCACTGCTCGCAGAAGG TGTGTTAATTTT TA AATC CTG
AACACAGATTGTAGAGATTA ATACAATTAGAG AT TTAG GAC
ACATA -- G ACACAAGGAA ----
GAM32362 12612 TGTGTTATTTTGCTAAGGAT A TAA A CTTCCAGCTCCAT
1 AATGGCTTCCAGCTCCATCC TGTGTT TTTTGC GGATA TGG
ATGTCCCTGCAAAGGACACG GCACAG GAAACG CCTGT ACC
- TC- - ----------
GAM32363 14292 TGTGTTCCGTCTTTATGCTG TTCC TT TGTC T CACTTTAGC
4 TCACTTGCAAACACTTTAGC TGTG GTCT ATGC ACT GCAAA
TTTGCTAGTTCTTGTATTAG ATAC TAGA TATG TGA CGTTT
ATCTTCATA TTC- T- TTCT T ---------

GAM32364 8280 TGTGTTGAATGTTTATGTGT TTGAAT A ATG TAAAGTATCTATAT
4 AATGGCTAAAGTATCTATAT TGTG GTTT TGTGTA GC
GTATGTGCATAAAACTGTCA ACAC CAAA ATACGT TG
CA TGT--- - GTA ----------
GAM32364 2745 TGTGTTGACTAGGTTTTTCT TT CT - ACACA ATTTAC
7 ACACAATTATATTTACATAA TGTG GA AGGTTTT TCT ATTAT
TGACTAAGGTAAAACCTTTC ACAC CT TCCAAAA GGA TAATA
CACA -- T- T ATCAG ------
GAM32369 8049 TGTGTTTTGTTTTCTTGTTA TTTTCT----- CA- TCACA
0 TCACTGTCACACAGCTTATA TGTGTTTTG TGTTAT CTG
ACATGTATGCTTTTCAGAAT ACATAAGAC ACAATA GAC
ACA TTTTCGTATGT TTC -----
GAM32371 9456 TGTTAACCTTGTAAGATGGA A-- CT- A A T G AGAA
9 TAATGTGTATAAGAATGTAG TGTT AC TGT AGATGG TAA GT TATA
GCCTTAACTATTTCACATGA ACAA TG ACA TTTATC ATT CG ATGT
GTCAAAACA AAC AGT C A C G ----
GAM32372 12216 TGTTAACTGAATACCACTCT TG CCACT GCAAAAAAAAAAAAA
2 GTAATTGCAAAAAAAAAAAA TGTTAAC AATA CTGTAATT
AAGTTGCAGCTGTTTGGTTG ACAGTTG TTGT GACGTTGA
ACA GT C---- ----------
GAM32380 21211 TGTTAGAGAAATCAACAGGT AG ACA------ - A T TTGTAACCC
3 TCTAGGAATTAAATATGTCT TGTTAG AAATCA GGTT CTAGGAATT AATATG CTCT
CTTTGTAACCCAGAGCATGT ATAATT TTTAGT CCAA GGTTTTTAA TTGTAC GAGA
TCAATTTTTGGAAACCGTAT CT GACTTTATG A C - ---------
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GAM32380 3945 TGTTAGAGGTTAGTCTATTT G TCTATTTTAA T C - ATATC
6 TAACATTTCTGAAGTCATAT TGTTA AGGTTAG CA TT TG AAGTC
CGACTTACATGATTGCTCTC ACAAT TCCAATT GT AG AC TTCAG
ATTTAACCTGTAACA G TACTCTC--- T T A -----
GAM32390 14022 TGTTATTGTTGCTGTTGTTA T GTT- ------- TTCAGTC
3 ATTACAAAAGTTCAGTCTTT TGT ATTGTTGCT GTTAATT ACAAAAG
TTGTTTTGGTAGATTAGCTT ACA TAACAATGA CGATTAG TGTTTTT
TAAGTAACAATTACA T ATTT ATGGTTT -------
GAM32391 20246 TGTTCAAAGTACTCAAGATG AAGTA AGATGA TTACAATG GAAAAATGG
4 AATTTGAGGAACTTACAATG TGTTCA CTCA ATTTGAGGAAC TCTCA
TCTCAGAAAAATGGTGGGAA GCAAGT GAGT TAGACTTCTTG AGGGT
TGTTCTTCAGATGATGTATG CCAAA ATGTAG TA------ ---------
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GAM32392 14051 TGTTCAAGGCAATGGCTTTT T CTTTTT C CTAT
1 TAAATCTTGGCTATCTAAAA TGTTCAAGGCAA GG AAAT TTGG
TTTTTTCCCTTTGTTTTGAA ATAAGTTTTGTT CC TTTA AATC
TA T CTTT-- A ----
GAM32393 12874 TGTTCACCACGCCCCCGAAG - C CCC AGC AGA C TT - A A ----
4 CGAGAGAGTTCAAGTTGATG TGTTC ACCA GC CGA GAG GTT AAG GATG TTG CG TGACATC
GTTGG
TTGACGATGACATCGTTGGC ACAAG TGGT CG GCT TTC CAA TTC CTAC AAC GT GCTGTAG
CAGCC
CGCCACCCGACACTCGATGT A - TT- GT- CG- C TT T - C CTCA
CGCTGCAATCATCTTCTTCA CCGCCAC
ACGCCTTTGTCGTTGCTGGT

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          AGAACA
                       -------
GAM32397 12349  TGTTCATTTACACTTCTGCC      TTTACACTTC----  C-  ATCTAGCAATTTAC
3           TTCATCTAGCAATTTACGAA TGTTCA           TGC  TTC
            CAGCATTAACATCCCCATCT ACAAGT           ACG  AAG
            GAACA                CTACCCCTACAATT   AC  ----------
GAM32398 12699  TGTTCCACGTGCTGGCACAC    CCA    T  ACACA   CT    CA---  CAAG
2           ATCTACTGGGCCCACTTCAA TGTT   CGTGC GGC    TCTA  GGGCC    CTT
            GGAGACGCTGGCCCTGGAGC ACAG   GCACG TCG    AGGT  CCCGG    GAG
            TGCACGGACA           ---    -  -----   --    TCGCA   ----
GAM32401 4470   TGTTCCTGGATTGCTCTGTA    -      CTCT   G  TTTT---  ATTT
2           CGTTATTTTTCTATTTAGGT TGTTC CTGGATTG    GTAC TTA      TCT
            CACTATTAAGGTGCCTTAAT ACAAG GACCTAAT    CGTG AAT      GGA
            CCAGTGAACA           T      TC--   G   TATCACT   ----
GAM32409 9314   TGTTCTTGTGATGATCAGAT    T   A  ATCA  T  T   TCAGTTT
0           TGTCAGTTCAGTTTACTGTA TGTTC TGTG TG    GA TG CAGT
            TTCCACACAACATACGAGCA ACGAG ATAC AC    CT AT GTCA
                         C   A  ACAC  T  -   -------
GAM32412 18233  TGTTGACTAGGTTTTTCTAC   T  CT     -  ACACA    ATTTAC
7           ACAATTATATTTACATAATG TGT GA  AGGTTTT TCT    ATTAT
            ACTAAGGTAAAACCTTTCCA ACA CT  TCCAAAA GGA    TAATA
            CA                C  T-      T   ATCAG    ------
GAM32423 12746  TGTTGGATTCCTAGGTATTT     GATT   AG  A  TG GT     C----  A    ACCCTG
9           GGGTCGCCCCCGGAACGTTC TGTTG    CCT  GT TT  G  CGCCCC    GGA CGTTC
            ACCCTGGAATGTCCAAAACG GCGAC    GGG  CA AA  C  GCGGGG    CCT GTAAG
            GGGCGGTCTGAAAACAAGGG     GGTT   AA  A  GT TG     CAAAA  -   ------
            TTGGCAGCG
GAM32424 4508   TGTTGGCATAACCTGGCTGG        AA-      GG    AATTC   C  TAGC
2           GTATGAATTCGAACCTTAGC TGTTGGCAT   CCTGGCT  GTATG    GAA CT
            AGCTTCCATACGAGCCAGGC ACGACTGTA   GGACCGA  CATAC    CTT GA
            CAATGTCAGCA              ACC      G-    -----  C  ----
GAM32427 19368  TGTTGGTGCTGGCAAAAAGC       -- G  A    -  A  GA  AAA   GCT   ATGA
4           CGAAGGAGTAAAGGTGCTGC TGTTGGTG  CT GC AAAAG CCG AG  GT   GGT   GCA
            AATGATGTTAGCTGTGGCCA ATAATTAC  GA CG TTTTT GGT TC  CG   TCG   TGT
            CTGTGGATTTTTCGCAAGAA       AA  A  C    A   G  AC  GTG   AT-   ----
            CATTAATA
GAM32430 4347   TGTTGTGAAAGTGACTATAA        A    CT       ----------      TT    GTTAAA
3           CCCAAACTTTTTTTTTTTTG TGTTGTGAA GTGA  ATAACCCAA         ACTTTTT  TTTTT
            TTAAAGAGGATTGGGAAGTG ACGGCATTT CACT  TATTGGGTT         TGAAGGG  AGGAG
            GTATGGATTTTTGGGTTATC       -   TC       TTTAGGTATGG     TT    ------
            TTCACTTTACGGCA
GAM32435 17972  TGTTTAACGAACTTTATATA    TA  GA   TTATATA      ACAGTA
0           TCTTTTTAACAGTATAAAAA TGTT  AC  ACT     TCTTTTTA
            GAGAGCTTTAGTAAGTAACA ACAA  TG  TGA     AGAAAAAT
                         --  AA   TTTCGAG      ------
GAM32436 14283  TGTTTACAGTTAGACTATCT   TT-      --  AT   AGTAAAT    TTTGT
7           GAGTAAATGGTTCTTTGTGG TGT   ACAGTTAG  ACT  CTG     GGTTC
            ACCTAGGCAGTTCCTGACTG ACA   TGTCAGTC  TGA  GAT     CCAGG
            TTCCACA            CCT      CT   CG  -------    -----
GAM32438 9284   TGTTTAGTAAAGACAATTTC       AAGACAAT   CTCATACA   AACA
```

```
8          GCTCATACAAAACAACAGTT TGTTTAGTA      TTCG      AAAC
           TACAACAATCGAGTGCTGGA ACAGGTCGT      GAGC      TTTG
           CA                   --------   TAACAACA   ----
GAM32439 8643   TGTTTAGTGTCTATTTATTC     AG-       ATTC     GGCCAGTTTTGAA
1          TTGGGTGGCCAGTTTTGAAA TGTTT   TGTCTATTT    TTGGGT
           CCTAAAAATGGACAATAAAG ACGAA   ACAGGTAAA    AATCCA
           CA                ATA       ----      -------------
GAM32440 21098  TGTTTATATATAATACCTAA         T   ACCT  -  GC-    AATATTG
3          CAAGCTGTAAATATTGTATA TGTTTATATA AAT    AA CAA   TGTA
           TTATTGATTTTTAATTTTAT ACGAATATAT TTA    TT GTT   ATAT
           ATAAGCA                  T   ATTT  A   ATT   -------
GAM32441 1126   TGTTTATCTTTTCTTTATTC       CT-   TT    CTACT    AAACT
2          TACTAGTTGAAACTCAATTT TGTTTAT   TTTC  TATT    AGTTG
           TTTAATATGAAACAAATAGA ACAGATA   AAAG  ATAA    TTAAC
           CA                   AAC   T-   TTTT-    -----
GAM32441 14711  TGTTTATGTGATGATAAAAG     AT   A  A    A  ACG      AGAAA
8          TACGTTGACACAGAAAGTGT TGTTT  GTG TG TAAA GT   TTGACAC
           CAAAGGCCTTTGCACACCAA ACAAA  CAC AC GTTT CG   AACTGTG
           AACA                 AC  -  -   C  GA-      -----
GAM32442 12705  TGTTTATTTCTCTAATATTA     ATTT    AAT-      -------       CTCTTT
9          TGTCAGTTTATTCTCTTTAA TGTTT    CTCT    ATTATGT      CAGTTTATT
           TGGACTGTAAAAAAATGTAA ATAAA    GAGA    TAATGTA      GTCAGGTAA
           TCACAAGAGTGCCAAATA       CCGT    ACAC      AAAAAAT       ------
GAM32443 12390  TGTTTCAGTGAACAAGTTTC   T    TGAAC     C  -  CAAC      TAA
9          AGCGGTTCAACTTTATAATA TG TTCAG     AAGTTT AGC GGTT    TTTATAA
           ATTATAAATAAACCTGTTAA AC AGGTC     TTTAAA TTG CCAA    AAATATT
           ATTTTTCTGGACA       -    TT---     -   T    AT--      ---
GAM32449 6110   TGTTTCTCTTTTTTTAAACA   T       TTTAAACATGTCTC     A-    CTCCGA
1          TGTCTCACATAGAGTATCTC TG TTCTCTTTT           ACATAG  GTAT
           CGAATGCAGCTATGTAAAAG AC AAGAGAAAA           TGTATC  CGTA
           AGAACCA            C       --------------      GA   ------
GAM32452 926    TGTTTGAGTCTAGAACTCAG      A TC   AAC-   --      ACTGTA
1          TTCCAGTACTGTAACTGGAG TGTTTG G  TAG    TCAG  TTCCAGT
           ACCTGACAACCTGAGCCAGA ACAGAC C  GTC    AGTC  GAGGTCA
           CA                   - GA   CAAC    CA      ------
GAM32453 14635  TGTTTGCCACTGACGACATT     G  A   A  ACA-     A     TATCATCTGTACAT
3          CCACACCCTATTATCATCTG TGTTT CC CTG CG    TTCCAC CCCTAT
           TACATATGGGGGTGGGGGGGG ACAGG GG GGC GC    GGGGTG GGGGTA
           GCGGCGGGGGGGGACA         G  -   G  GGGG     -     --------------
GAM32456 14383  TGTTTGTAAGCTATTCTGAC     TG     ----     GA  GA-      AAGGT-   TAATT
2          AGAAAAGACAAAGGTTACTA TGTT  TAAGCT    ATTCT  CA   AAAGACA     TAC
           ATTGTATGATAGTGTTTTTA ACAG  ATTCGA    TAAGA  GT   TTTTTGT     ATG
           TATGGAAGAATGTACAGCTT    GT     CATG     AG  ATA      GATAGT   -----
           ATGGACA
GAM32462 9614   TGTTTTATCATATATGCATT     TTAT    TAT   T    A  AT-  TCTT
0          AAAAGTATTATCTTTATCAA TGTT    CATA   GCA TAAA GT   TA
           CATTTGCTGCTACTGTGTTA ACAA    GTGT   CGT GTTT CA   AT
           ACA                  TT--    CAT   C    A  ACT  ----
GAM32462 20194  TGTTTTATTTGGTTCAAAAT      A---      CAAAATATAAAG   AGGTTAGAGG
7          ATAAAGGGCAGGTTAGAGGG TGTTTT    TTTGGTT          GGC
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CTACACAGAAAAAAGGCTAA ACAGAA AAATCGG TCG
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GAM32463 9846 TGTTTTCACCCCAACTATCT CCC ATCT TG ATT GACTA
2 GGTGCTATTGAATGACTAAT TGTTTTCAC AACT GG CT GAAT
TCAGTCCCTAAAGTTCTGTG ACAAAAGTG TTGA CC GA CTTA
AAAACA TC- AAT- CT --- -----
GAM32463 4518 TGTTTTCAGGGAGACTGGTA TTTT C TTTTT--- C CTAT
5 TTTTTGAAGCTGCTATCATT TG CAGGGAGA TGGTA GAAG TG
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CTTTGTAATCA TAAT A TTCTTTAT T ----
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6 CACAAATTTATTTTTTAATT TGT TCGTT TTAT AC CACA ATT TTTTTTA TTTTC GAGTC TGTTCAA
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GCAGGTT TTG
AATTATTTGTTTGTTGGACG C- A CG - C -- A AAC GC GT
CGGATTTCAAGAAAAATAGA TATTT
AGAAGTCTGTGGTGCATAAA
GACGACACA

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2 GTTTAGCAGACTGAAAGAGA TGTTTTCT CTGG TGGG TAGCAG TGA GA
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ACCTAGAGCAGGAAACA CGA C- CG -- A- -----
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4 CAGTTTCCTTGGCTAATTGG TGTTTTGA GAAG CCAGTT
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TA ACC TACTTTC ---------
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9 AAAATACTTCCAATTCCAAG TGTTTTG CTCT TCTTTG CTTC
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AACAGAGCA AAGA A GGGA--- ---------
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4 GCCAGGTCGCGGTCTATAGA TGT TTGGGACCCA TGGCC GTCGC TC
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TAGGTGGGTTTTAATACA T GGATT AGAAGA ACA ----
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3 GAGTCGGTTCCCCCATGTGT TGT TC GC AG GCGGG GTC GT CCCCC TGTG
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GAM32473 19035 TGTTTTTTTCTTATGCGGGT CT CG T TA---- - CTGA
5 CTTTTATATATTAGGGATCC TGTTTTTTT TATG GG CTTTTATATAT GGG ATC
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AAGCA
GAM32474 8805 TTAAAAAAGAAAGAAATTTG A ATTT AAACTTTCTCTTTGCCA
2 AAAAAACTTTCTCTTTGCCA TTAAAAAAGAA GAA GAAA
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A - CTT- ----------

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2 GTTTACATGGTGATTGTTCA TTAAAAC CAT AGT GGTGA
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TAA AG ------- TGACGT ----
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4 GATCCTTGTTGACTCTGCTT TTAAAAC CTGA CA GATC TT TT C CTGCTT
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GTCTTGATGGTCAGAAAGTT AAA GGTA- T T G A- - -----
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3 ACTCTCAGAGTGGGGTCCGT TTAAAC CC TCATCA GGAAC C CAGA TGG
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TTGA - T - - - ---
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TTAG GTAT
GTT ---
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TC TT - ----------
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3 TACTAGGTGCACACCACATG TTAAGA AAAGCA TTT AGG GCA
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TCTTGA - C CGTCGT- - -------
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CTTAA C-- C-- -- AT-- -----
GAM32501 18945 TTAAGGGAATGTGAGCACAA A- A A ATG TA - TAAAA
5 TGCATAATGTCTTTAAAAGA TTA GGGAATGTG GC CA CA ATGT CTT
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5 AATATATATAGTGCTAAGTC TTAAGTGAT GTGA TAAATA AG C
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AATCACTTAA AAA TAA TAT-- CT ---
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3 GGTGGCGCTTCCAATTAGGT TTAAT GTTGATATTGCT GGGT GC GCTT CC
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GTAATGTTAGCGGTTAG G CG G GA TACGT -----
GAM32514 19119 TTAATGGTTGATATTGCTAG G A- G -- ----- AATTA
4 GGTGGCGCTTCCAATTAGGT TTAAT GTTGATATTGCT GGGT GC GCTT CC
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8 TTATATTAAGTGTAAATTCC TTAATTATCA TTAAA ATATTA AAAT AGTGGCTT CCTCACT
AGTGGCTTTACCTCACTTGA AATTGATAGT AATTT TATAGT TTTG TTACCGAA GGGGTGA

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ATTTAACTATGATAGTTAA

-

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1 ATTGATTTTTCATCAATCGG TTACAA TG TTG TTTCCC GATTTTT TCAAT GACT CAGT
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GAGAGTCAGAGTTGGGGTAA T A G ACC- TGG AGA GA --------
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ATTTGTAA
GAM32523 19984 TTACAATGTTTGAATTAACA TTTGA CA-- G G CAAG
4 TCGTATCGATCCAAGGATGG TTACAATG ATTAA TC TATC ATC
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ATTGTAA TCGAG AAAG G - ----
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7 TCATAGGCCTAGGCTTTGGT TTACAGGGC GCTT CCT TAGGCC
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GTTGCCCTGTAA T AAATTTACAA AA --------
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1 TTAGGGATTAAATATAGATG TTAC GCT AAAACAC GGATTAAA GAT
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TGTAA
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8 CATCCCAGCTTGCTAGGCTC TTA CTCA AGGA GCT TGGCATCC GCTTG GGCT
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3 TGCCATCTTTGACCGAAACG TTACGG AA GA GCTC CATG TTTG
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TCCCGTGA C C - - CACCAA -------
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7 AACAGTTAACACACTTTTTT TTACT CTCATATT GA AAAA AGT
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GTGA CTA AATT TC T ------
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7 ATACTACACAAATTTTTTTT TTACTGAAT GG GC GGT AC ACAAA

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TTCCAATTTAGTGA A TT TTTT ACGT CAC -----
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7 GATATACCGTTGTGTTACAA TTACTGT TTGA ATACCGTTG GT
TTGCCAATGGTATTCAGTAC AATGACA GACT TATGGTAAC CG
AGTAA T---------- - - -------
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4 CCAACCGCTAGCCATCGGCT TTA TTCTGTCTCGTCT CCCAA CCG
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TAA T AT C --------
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7 TGTTTGCCTTGGACAAAAAG TTACT GGT CG GTA GT GCCTT
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CAGTAA CCTA T AC C T- -------
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5 TTACACATGAAAATGTGAAA TTAGAAA GAGT GTT CACAT
TCTGATTTTCTTATTTCTAA AATCTTT TTTA TAA GTGTA
ATTCT GTC A ----
GAM32558 20004 TTAGAATGCATCGTCTTTTA AA TC TTTTATT- CTT
2 TTTTCCAGGCTTCCTGGGAT TTAG TGCA GTC TTCCAGG
CAGATATGACATTGCACTAA AATC ACGT CAG AGGGTCC
-- TA TATAGACT ---
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5 GCTAGGTATATTCATTTCTG TTAGACACGAAGAT CT GC AGG
CTGAGGTGTTTTTGTGTCTA AATCTGTGTTTTTG GG CG TCT
A T AGT- - ----------
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0 GTGAGGGTGTGAGAAACTCA TTAGAGAT GG GAACA TG GAGGG GAGAAACTCACAGA ATACA

CAGAATACAAATTTGCCTGT AATCTTTA TC TTTGT AC TTCCT TTTTTTGGGTGTTT TATGT
ATGTTTTGTGGGTTTTTTTT - T AGA T TTTTT TG --------
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CTATTTCTAA
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7 GTTACCTATTATTGTGGAAA TTAGATGTC TTATTA ACCTAT TGG
TAAACTAATTGTATGGGTTT AGTTTACGG AATGGT TGGGTA ATC
AGATGGTAACATGGCATTTG TAC AGATT TGTTA -------
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7 GAGTTTTTATTACAATTGTA TTAGCA TGCA CCAG TTTATTACA T TA
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GATGGCTGA G ------- TGTACCATG ------
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AA CCC A CGAA- -----
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AA TT TA-- A C-- ----
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3 AGTGCCGGAGTTGGTCTTCT TTAGTCAGTG GCTAG CCCAG TGCCGG GTTGGT CTTC GTG
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AGAT

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GTTAGTGCACTGACTGA

--
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6 TGGTGAAAATGGATTCAACG TTAGT GATA TC ATGGT TGAA
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TGA T TG T- AACGCA ------
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9 TCTGGTTAATTCCGATAACG TTAGTTGGTG GC GTCT GTT
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ACTAG A- GTCT- G ----------

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2 AGTGGACTTGTATGCTGATA TTAT TGTGGATATTTT TTA GT ACTT CT GA
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TGGCAGAATATTTATACATG C C A AA ACCA- T ----
A
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5 GAACATGCTGATACAGAAGG TTATATTT AG TGTT TGCT
CAATAATAAAACAGTGCTAA AATATAAA TC ACAA ACGG
AATATAA A- GTG- AATAATA ---------
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5 GAAAAGCTGTTGAAAGCTAT TTATCTTG ATGAG CC AGCT
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A CC A TAATA--- ------
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7 GCAGTGGGTACTTCGATGTG TTATGAAGA CTGGAT CA TGG CTTC TGT
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GATCCGGATCTTCATGG A--- G- G AG- A- -----
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0 CACTGGTAAACGAAGTTCAG TTATGA TC AAACA CACCAC GGT GTTCA TTCAG GTG AG
CTGT
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GACG

GTACGCAGCCTCACAGCTGA --- A AAA - ------- --- GA - C --
GTGGATGCCGTGGTGAAATG AC
TTTAGATCATAG

--
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5 TACATCCAAAATAATTTGAT TTA AGACA GGAATCTT TCCAAA TTT AT CAG ATG
ACAGATGCCTTAACATTGCT AGT TTTGT TCTTAGAA AGGTTT AGA TA GTC TAC
GAATGAGACAACTTTGGAAA GT -- ---- CAAC G A GT ------
GATTCTTGTTTTGTGA
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9 TTAAATGGTGGGATAACTTA TTATG CGAC CT TTTAAATGGT G
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TGACCATGA CA- TTT- CT AA ------
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GCATGG GT GATA- TCTT ---------

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CATGG - G TCT- ---------
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0 GTTTTTTTTCCGTAACATTG TTATG ATATT TTGT TTTTT TAA ATTGT
TCTGCTGCAATTTAAATAAA GATAC TATAG AGCA AAAAA ATT TAACG
AATTACGACATTTTAAGATA TT AATTTTAC TT TAA - -----
TTTCATAG
GAM32628 1484 TTATGGTCCCACAACCACGG - C - AC GTTT GG- AGC ATCTTCC
6 CCGTCTTGTTTTCCCGGCCA TTATG GTC CAC AACC GGCCGTCTT TCCC CCAGGA TTC
GGAAGCTTCATCTTCCGGAT AATAC CAG GTG TTGG CCGGCGGAG AGGG GGTCCT AGG

CATCCTGGAAAGGGACAGAG T C G -- AC-- AAA ACT -------
GCGGCCGGTTGGTGCGACTC
ATAA
GAM32630 4127 TTATGTACTGTGTTCCCTTG T TGT TT -- GAAATTGTA
1 GGACTCATTGGAAATTGTAC TTATG ACTG TCCC GGGA CTCATTG
AGTGAGCATCTTCTGGGATT GGTAC TGAT AGGG TTCT GAGTGAC
TAGTCATGG - TT- TC AC ---------
GAM32631 2728 TTATGTGATGGTCTCAATAG TG T CTCAATAGACACA AAAATA
5 ACACAAGAAAAATATCTGAG TTATG A GGT AGA
AAAACCTAACACCCTTGCAT AGTAC T CCA TCT
GA GT C CAATCCAAAAGAG ------
GAM32632 3911 TTATGTTTATACACTGTGGT T GG--- TAC TTATTT
8 GCTTTTACTTTTTATTTAAA TTATGTTTA ACACTGT TGCTTT TTT
CTAAGGCAAAAAAATGGTGT AATGCAAGT TGTGGTA ACGGAA AAA
TGAACGTAA - AAAAA TC- ------
GAM32633 9244 TTATGTTTGGCTTTCTCTGA T -- -- AAA TGGAA
0 TTTGTCCAAAGCTGGAAGTG TTATG TTGGC TTTCTCTGATT TGTCC GC
GGGACAAAAATTAGGGAGGC AGTAT GACTG GGAGGGATTAA ACAGG TG
TGTCAGTTATGA T TC AA GG- -----
GAM32633 18521 TTATGTTTTAATATCCTAGG TAGA
2 CATCTGCTGTAATAATATTT TTATGTTTTAATATCCTAGGCATCTGCTGTAATAATATTT
TAGAAAATGTTATTACAGCA AATACAAAATTATAGGATCCGTAGACGACATTATTGTAAA
GATGCCTAGGATATTAAAAC ----
ATAA
GAM32633 4365 TTATTAAATATATAAGCAGC AA T - GCTTCC TTTAAAT
8 TTCCTATCTTTTAAATAGAT TTATT ATATA AAG CA TATCT
ATTTAAATGACTTTATATAA AATAA TATAT TTC GT ATAGA
AATAA AA - A AAATTT -------
GAM32634 8950 TTATTAAGCTCCTGTTAAAT T TTAAAT CACATACA ACAC
4 ATGCACATACAGACACACGT TTAT AAGCTCCTG ATG GAC
TGAAATTCCATTTCAGGGGC GATA TTCGGGGAC TAC TTG
TTTATAG T TT---- CTTAAAG- ----
GAM32635 8233 TTATTACTCTTCCATTGAGT TTAC TCC A ATG CTGT-- AA - --- T
5 GAATGATGAATACCTGTGAG TTA TCT ATTGAGTG ATG AATAC GAGGATAGG ATTA GT TC
GA
GATAGGAAATTAGTTCTGAG AGT AGA TAATTCGT TAC TTATG CTCCTATCT TGAT CA AG
CT

ATCTAGTCCCTCTCTGATTC ---- CTC G A-- ACTTTT AA T CTT T
ACTTAGTAATCTATCCTCTT TCTAGTCCC
TTCAGTATTACATGTGCTTA GA
ATCTCAGATGA CT

GAM32635 12285 TTATTAGAATATTTTTAAGA -------- TT--- TACAGCT
8 TGGTACAGCTCCATCTTACC TTATTAGA ATATT TAAGATGG
AATGATATAACCAATGTCTA AATAATCT TATAG ATTCTACC
ATAA GTAACCAA TAACC -------
GAM32637 19154 TTATTATTTCGAGAACAATT --- GTAGA T CACC
9 GTAGAGCTAATACACCTGTT TTATTATT TCGAGAACAATT GC AATA
GCAATTGGGTTGTTTTTGAT AATAGTAA AGTTTTTGTTGG CG TTGT
TCAATGATAA CTT GTTAA - ----
GAM32643 2916 TTATTGAGGTATAATTTACA AT- T ATAAAACCCACA
0 TACCATAAAACCCACAGGTT TTATTGAGGT AATTTACA ACC
GTAAGTTTACATTTTAATGA AGTAATTTTA TTGAATGT TGG
CAT - ----------
GAM32648 4208 TTATTTAACCAATCAAATCA TAACCA AAA---- ---- - TAA CT TTTAC
3 GAGTCACCTTAATGTTTATC TTATT ATC TCAGAGT CA CCT TGTTTAT TTTATTTT TG
TTTTATTTTTTTACTGAGTA AGTAA TAG AGTTTCA GT GGA ACGAGTG AAATAAAA AT
GAAAAAGAATTATTTAAAAA TAAAAG AACTATA TACT T C-- T- -----
TAAATGTGAGCACAGGTTGT AAAAAGAA
CATACTTTGAATATCAAGAT AGTAG
GAAAATAATGA TTATT

GAM32648 933 TTATTTAATAGGTAACTAAT A GTAACT AAAG GACAG AAGAGA
7 AAAAAGGAGCGACAGTATCG TTATTT ATAG AATAA GAGC TATCG
AAGAGATGATAAATTAGTTT AGTGGA TATC TTGTT TTTG ATAGT
ATGTTGTTTACTATGAGGTG G AT---- GTA- ATTAA ------
A
GAM32649 4520 TTATTTACAAGAGCAGGGTG A-- ---- GCCT -- CAC
1 CCTTGGAAGCAGCCCACGGC TTATTTAC AGAGCA GGGT TGGA AGCAGCC
TGTTAGTTCATAGACCCTGT AGTAGATG TCTCGT CCCA ACTT TTGTCGG
CTGCTCTGAAGTAGATGA AAG CTGT GAT- GA ---
GAM32655 4331 TTATTTTAATGCACAGTATG A- --- A GAAA CTTT
0 AGAAATGAACTTTTTTAAAT TTATTTT ATGCA CAGT TGA TGAA
CAACTGATTTGTATGGAAAA AGTAAAA TATGT GTCA ACT ATTT
TGA GG TTA - AA-- ----
GAM32657 14458 TTATTTTGTATAACTTTTAT T TAACTT T - - TACAAT
5 TCTTAGATTATATTACAATG TTAT TTGTA TTAT CTT AGATT ATAT
TGTCAGTCTCAAGTATAACT AATA AACAT AATA GAA TCTGA TGTG
ACAATATAA T C----- T C C ------
GAM32658 2807 TTATTTTTAACCTGTAGAGA AA AG AAG- TTTTACT
0 GACCTTAAGGATTTTACTTC TTATTTTT CCTGTAG AGACCTT GA
ATAAGGGGTTTGATTATGGG AATAGAAA GGGTATT TTTGGGG CT
AAAGATAA -- AG AATA -------
GAM32659 9223 TTATTTTTTTCTTTAAGCTC TCTTTAA T CACTTTT TCACACAAC
1 TTTCACACTTTTTCTTCACA TTATTTTTT GC CTTTCA TCT
CAACAGATCTATTGAGGGGC GATAAAAAA CG GGGAGT AGA
AAAAAATAG ------- - TATCT-- ---------

GAM32668 891 TTCAAGATGCAGATAAAATT AA GCAGATA A T CTT A ATTT A C TAA
1 AAATGATTGTCTTTAAGCTT TTC GAT AAATTA ATGA TGT TAAGCTTTCA TAA GTT GC AATT
TCAATAAATTTGTTAGCCAA AAG TTA TTTAAT TATT ATA GTTCGAAAGT ATT CGA CG TTAA

TTTAAGAATAATTGCAGCTT AA AAAAC-- C T TTT - ---- - - ---
ATGAAAGCTTGTTTATATTT GAAT
ATCTAATTTCAAAAATTAAG
AA

GAM32669 12872 TTCAAGGAATACGTGCCTTT AG A TT-- AAT- TT AT-- AACGATAC
3 GTCTTAGAATGGCTTTCATT TTCA GAAT CGTGCC TGTCTTAG GGCT CATTT TG
TATTGAACGATACCAGAAGA AAGT CTTG GTGCGG ACGGAATT CCGG GTAAA AC
AATGTGGCCCCCATTAAGGC A- - TATC ACCC T- GAAG --------
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GAM32670 21646 TTCAAGTACAGAAGGCTTCC A GA CTC AA--- A T TGA
1 TCTCAAATAAGTCTCCTGAG TTCAAGT CA AGGCTTC TCA TA GTC CC
GTGACATAAAGACTGAAAGA GAGTTCA GT TCCGAAG AGT AT CAG GG
AGCCTATGACTTGAG - A- AA- CAGAA A T ---
GAM32675 20298 TTCACAAGACAGTGATGATG A A- - GAAAAAATG--- GATC
5 AAAAAATGCCAGATCTGGAG TTC CAAG CAG TGATGAT CCA
TAAGGAATATGTCATCACCT AAG GTTT GTC ACTACTG GGT
GGATTTGAGAA A AG C TATAAGGAATGA ----
GAM32680 5562 TTCACCACCATGGAGAAGGC CA GA AG C CT T A CAAA TCATCAT
1 CTGGGGCTCATTTGCAGGGG TTCAC CCATG GA GC TGGGG CATT GCAGGGGGG GC AGGG

GGAGCCAAAAGGGTCATCAT AAGTG GGTAC CT TG ACCCC GTAG CGTCTCCCC CG TCTC

CTCTGCCCCCTCTGCTGATG TG TG -- T C- T - ---- -------
CCCCCATGTTCGTCATGGGT
GTGAA
GAM32680 5410 TTCACCACCATGGAGAAGGC CA GA GGC CT T A CAAA TCATCAT
2 TGGGGCTCATTTGCAGGGGG TTCAC CCATG GAA TGGGG CATT GCAGGGGGG GC AGGG

GAGCCAAAAGGGTCATCATC AAGTG GGTAC CTT ACCCC GTAG CGTCTCCCC CG TCTC

TCTGCCCCCTCTGCTGATGC TG TG GT- C- T - ---- -------
CCCCATGTTCGTCATGGGTG
TGAA
GAM32685 5618 TTCACTTAACTTCTCCATGG C A- C --- G C CTGAATAAA
4 CTGCTTCCTGCTGAATAAAT TTCA TTA CTT TCCA TG CTG TTCCTG
AGGGACAGGCATAATGGATA AAGT AGT GGA AGGT AC GAC AGGGAT
GGAATGAATGAA A AA T AAT G - ---------
GAM32689 822 TTCAGAAGTTGGGGCCTCAG AGTT TCA TAA GTGTCTGATA
5 GTATAAGGGGCGTGTCTGAT TTCAGA GGGGCC GGTA GGGGC
AGCCCTTACTGGCCCTTTTG AGGTTT TCCCGG TCAT TCCCG
GA ---- --- --- ----------
GAM32690 14052 TTCAGAATTTAGGCTCCATT - T C A- G -- CTGAAACATGTA
3 TGACTTAGTTTTCCTGAAAC TTCA GAATT AGG TCC TTT ACT TAGTTTTC
ATGTAGAAAACTAATGGTGA AAGT CTTAA TCC AGG AAA TGG ATCAAAAG
AAGAGGACCTAATTCTTGAA T - - AG G TA ----------

GAM32690 4279 TTCAGACAAGCCGGCCTCGG ACA CCTC - AT T TGGAA
4 CAATCATCTCTCTGGAAGTG TTCAG AGCCGG GG CAATC CTC C
AGCGGTTGACCCTCCTGGCT AAGTC TCGGTC CC GTTGG GAG G
CCCCTGAA CCC CTC- A C- T -----
GAM32691 12490 TTCAGAGAAATCCTATTTAT GAAATCC A- - TCTGAACTTAT
9 AATTATGATCTGAACTTATT TTCAGA TATTT TAATTAT GA
CTATGATTAGCAAATATATC AAGTCT ATAAA ATTAGTA CT
ATCTGAA ACTAT-- CG T ----------
GAM32698 3964 TTCAGCTCACCAGATGCAGA CT CA - ------ -- TTTTCT----- CA- TC
8 TTTGTGTTTTGTTTTCTTGT TTCAG CAC GATG C AGAT TTGTGTTTTG TGTTAT CTG
TATCACTGTCACACAGCTTA AAGTC GTG CTAC G TCTG GACATAAGAC ACAATA GAC

TAACATGTATGCTTTTCAGA T- AA C AACCGA TT TTTTCGTATGT TTC --
ATACAGTTGTCTAGCCAAGC ACA
CATCAAGTGTCTGAA

GAM32702 18112 TTCAGGGGCTGGAAGCTTTG GGG-- TG - A AGCACAATTC
5 AAGAATGAGCACAATTCCAT TTCAG C G AAGCTTTG AGAATG
TTTACAAAGTTTGCTGGAGA AAGTC G C TTTGAAAC TTTTAC
CACTGAA ACAGA GT G A ----------
GAM32703 20035 TTCAGGTAACAGCTCTAAGA AA T A CTCCT --- TTTTAT
1 CTCCTGAGCCAACTTTTATG TTCAGGT CAGC CTA GA GAGCCA AC
TAACTGGCTTTCCTAGGCTG AAGTTCG GTCG GAT CT TTCGGT TG
GGGCTTGAA GG - C ----- CAA ------
GAM32707 19094 TTCAGTGACGTACATGGCTC GAC A GG--- TG TCT CACAAAA
9 TGGTTCTGGACACAAAATCT TTCAGT GT CAT CTC GT GGA
GTACTGGAGAGGAAATGACT AAGTCG CA GTA GAG CA TCT
GCTGAA T-- - AAGGA GT TG- -------
GAM32709 8109 TTCAGTTAAAAAAGAAGAAG A AA - GGC AAAG
5 AAGAAATGGCAAAGAGAAAG TTCAGTT AAA GAAGAAGAA GAAAT AAAGAG
TTTTTTCAAATTTCTTTCTT GAGTTAG TTT TTTTTTCTT CTTTA TTTTTT
TTTTAATTTAGATTGAG A AA T AAC ----
GAM32710 9320 TTCAGTTATAGCTCTGTTTT A GC AA TAAC A TTTTAATT
2 TTAAGTGGTGTAACACATTT TTCAGTT TA TCTGTTTTTT GTGGTG ACATTT GTAA
AGTAATTTTAATTTTGCAGA AAGTCGA AT AGATAAGGAA TACTAC TGTAAG CGTT
ATGTAGATCATCATCAAGGA A A- C- TAGA A --------
ATAGAATAAAGCTGAA
GAM32712 4421 TTCATAAATTAAATGTCTAC - TTAAA ACA-- G- AGAATGGAAA
2 ATGTGCCAGAATGGAAAGGA TTC ATAAA TGTCT TGT CC
AACAAGGGGAGACAACTTTT AAG TATTT ACAGA ACA GG
ATAGAA A TCA-- GGGGA AA ----------
GAM32715 12259 TTCATATAGCATCAAAGTTG ------- - AAG---------- TCCTG
6 TCCTGCAAGAGCTTCGGCGC TTCATA TAG CATCA TTG
CTAATGATGTCTAAAGAAAA AAGTAT ATC GTAGT AAC
TATGAA AAAAGAA T AATCCGCGGCTTCGAG -----
GAM32716 6319 TTCATATTCACTGTTTCATA ATAT CATA TAC- AAATGA
9 AATATTACAGTAAATGAGCT TTC TCACTGTTT AATAT AGT
TTTTATATTGCAAACAGTGG AAG GGTGACAAA TTATA TCG
TTGGAA GTT- CG-- TTTT ------

GAM32719 5714 TTCATCCTGTAAAAGTAAGC ATC TA GCATG G TT GCTAAA
0 ATGTAGAAGGAGGAAGTTGT TTC CTG AAAGTAA TAGAAGGA GAAG GT
GCTAAAATGCCTTTGTTTTT AAG GAT TTTTATT GTTTTTTT TTTC TA
TTGTTATTATTTTCTTAGCC ACC TC ATT-- G CG ------
AGAA
GAM32719 949 TTCATCTATATAATAGAAAC TCTATA A CACACACACGAAA T -
CTTAAATACAACTT
8 GCACACACACGAAAGAGAAT TTCA TAATAGA ACG GAGAA CTTC TGA
CTTCTGACTTAAATACAACT AAGT ATTGTCT TGT TTCTT GAGG ACT
TTCATGGAGTTCTTCACCAC CTAAA- C CTATTCACCAC-- - T ----------
TTATCTGTCTCTGTTAAAAT
CTGAA
GAM32721 22189 TTCATGAGTCATTGGTAATG TGA T GA C AGTAC TT CT A TCAATT
8 AGAGTTCTGAGTACTTGTTA TTCA GTCA TGGTAAT GAGTT TG TTG AAT TGCTGT CTTG
ATCTTGCTGTACTTGTCAAT AAGT CAGT ACTATTA TTCGA AC AAC TTG ATGACG GAAT
TTAAGGCAGTATCGTTTTCA C-- T G- A AA--- TT CT - ------
AAACAAAGCTTGATTATCAT
TGACCTGAA
GAM32723 19917 TTCATGGATTTGTGAAATTT A - - - AAACAG ATAAAAATTC
2 AGAAACAGCCTAATAAAAAT TTC TG GAT TTGTGA AATTTAG CCTA
TCTAGGACAACTGAGTTGTC GAG AC CTG AACACT TTGAGTC GGAT
ACAACGTCACAAGAG A A C G AACA-- ----------
GAM32724 746 TTCATGGTCGTGGAAGCTGA TG AAGCTGA C- AAGA
0 GCCCATATTAAGAGATGTCA TTCATGGTCG G GCC ATATT
GGCGTCCGACCTCCGATCAT AAGTACTAGC C CGG TGTAG
GAA CT CAGCCTG AC ----
GAM32729 12372 TTCATTCCCCTTCAAAGGTT A - ACCAC AA- TTCCTTCCTTTCACAT
2 ACCACTGGAAATGCAATTCC TTC TTCCCCTT CAAAGGTT TGGA TGCAA
TTCCTTTCACATTTGCAAAC AAG GAGGGGAA GTTTCTAG ACTT ACGTT
TTCACTCGATCTTTGAAAGG A A CTC-- CAA ----------
GGAGAGAA
GAM32730 5370 TTCATTCTCTTATCTAAATC CTT AA C---- TCTCA
3 TCTCTGTTCTCTCTCAGGGA TTCATTCT ATCTA TCTCT TGTTCTC
ATATTTTCAGAGAATAGGTG AAGTAAGG TGGAT AGAGA ATAAGGG
GAATGAA --- A- CTTTT -----
GAM32730 5941 TTCATTCTTCATACACTGGC ATA- C-- ATC ----- AATTTGAC
5 CTTGGCATCCTGTGGAATTT TTCATTCTTC CACTGGC TTGGC CTGT GG
GACCCAACTAGCAGCTAGTC AAGTGAGAAG GTGACTG GACTG GACG CC
AGTCTGTCAGTGAGCAGAAG ACGA TCT ATC ATCAA --------
AGTGAA
GAM32730 19907 TTCCTTAAAACAGCTGAAAA A-- A AAA GGACAACATACTTTACG
9 TTGGGACAACATACTTTACG TTCCTTA AAC GCTG ATTG
CAATGAACAGTAGTTAAATA AAGGGAT TTG TGAC TAAC
GGGAA AAA A AAG ----------
GAM32734 3854 TTCCTTCTTACTGCCCTGTC AC CC - CT- GGAA
7 CTCTGCCTTGGAAGAGGCTT TTCCTTCTT TG CTGT CCT GCCTT
TGGGAATAGTTCATAGGGAA AGGGAAGGG AC GATA GGG CGGAG
GGGA AT TT A TTT ----
GAM32738 8906 TTCCTTTTTGAGTTGTTTTG TTTTGA TTA ATGA--- TTTCCAT
2 TTTTTATTTTTAAATGAAGT TTCCT GTTGTTTTGTTT TTTTTAA AG

TTCCATCTGTACACGTTAAG AAGGA CAACAAAACAAA AAGAATT TC
AAAATAAACAAAACAACAGG ------ TAA GCACATG -------
AA
GAM32738 9364 TTCCTTTTTTCCTGCTTTTT T- C- TTTTT TAAA
4 TTTTTTTTTGTTAAAACATA TTCC TTTTTC TGCTTTTTTTT TGT
CTGGGAGAAAGTAAAGAAAA AAGG AAAAAG ATGAAAGAGGG ACA
ACTGGAA TC AA TCAT- ----
GAM32740 4025 TTCGAGCCAGACATGTCATG G --- GTCAT TTT TTTGCAG
0 ATTTGGGTTTGCAGTCCTTC TTC AGCC AGACAT GA GGG
TCTCTGGTGTCTTCAGGCTG GAG TCGG TCTGTG CT CCT
AG - ACT GTCT- CTT -------
GAM32742 22237 TTCGCCCACTTTTTGATGGG -- - - -- T TTT- TGTA-- GTTT
1 GTTGTATGTTTTTTTCTTGT TTCGC CC ACTT TTTGAT GGGGTTG ATGTTT TCT AATTT
AAATTTGTTTGAGTTCATTG AAGCG GG TGAG AGACTG TCCCGAT TATAGG AGA TTGAG
TAGATTCTGGATATTAGCCC TT A T TT - TCTT TGTTAC ----
TTTGTCAGATGAGTAGGTTG
CGAA
GAM32743 9030 TTCGGCAACTATTTATTTAA - T A ------ TCTGC
7 CTTTGCATCTGCTGCCACAA TTCGGCAACT ATTTA TTA CTTT GCA
AAAAGATAACTGAATCAGTT AAGTCGTTGA TAAGT AAT GAAA CGT
GCTGAA C C A AAACAC -----
GAM32748 4034 TTCGTTTTGACCACATATAT G--- ATATACCAA CC A ATACC
7 ACCAAGCCCCTTAGTCTTAG TTCGTTTT ACCACAT GC CTT GTCTTAGAG
AGATACCCTCTGAGACAGAG GAGCAAAA TGGTGTA CG GAG CAGAGTCTC
AGCCAAGCTAATGTGGTAGT GTGA ATCGAAC-- A- A -----
GAAAACGAG
GAM32749 18579 TTCTAAACAAGTGCATTCTG A-- TG ATT-- TTGACTTAAAAAT
4 AAATTGACTTAAAAATTTTT TTCTAAAC AG C CTGAAA
AGTGTGGGTCCTAAAGTTTA GAGATTTG TC G GATTTT
GAG AAA CT GGTGT ----------
GAM32756 20232 TTCTACGGGTCCTCAGGGTA C--- AGGGTA----- CAG GGGC
3 TCATATCAGTGGGAGGGCTC TTCTA GGGTCCTC TCATAT TGGGA
CTAAGAATGTGGGAAGATTA GAGAT CCCAGGGG GGTGTA ATCCT
GCGGGGGACCCCTCATAGAG ACTC GCGATTAGAAG AGA ----
GAM32758 20238 TTCTAGAGCTGATTTGATGG A TGATTT G AA AG--- CCTGTGATTATAAAAAA
9 ACAATGGAGAGAGCTTTCCC TTCT GAGC GATG AC TGGAG AGCTTTC
TGTGATTATAAAAAAGGAAG GAGA TTCG CTAC TG ATCTC TCGAAGG
CTAGCTGCTCTACGGTCATC A TTT--- - GC GTCGA ----------
TTTGCTTAAGAG
GAM32760 3219 TTCTAGCTGCCTGGGGCTGG CT ------- C---- ACAAATCTGCTCC
4 CCCTGCTCAGACAAATCTGC TTCTAGCTGC GGGGC TGGCC TGCTCAG
TCCCTGGGCATCTTTGGCCA AGGGTCGACG TCCCG ACCGG ACGGGTC
GGCTTCTGCCCTCTGCAGCT TC TCTTCGG TTTCT ----------
GGGA
GAM32762 9104 TTCTAGTCCCAGAGCCAGTG A -- A GT TATTA AAGA AAC
6 TTTATTAGCAAGATGGAACC TTCT GT CCCAG GCCA GTT GC TGG
CAAAGGCGGCTGTGGCCTGG AAGA CG GGGTC CGGT CGG CG ACC
GCAGCAGAA - AC - GT ----- GAA- ---
GAM32765 8522 TTCTATCAGAGGTAACTTTG GA- A C--- - ACAAC
5 CCAGGGAACAACTCCACTGT TTCTATCA GGT ACTTTG CAG GGA

CCTCGAAGTAGCTGCGTGAT AAGGTAGT TCG TGAAGC GTC CCT
GGAA GCG A TCCT A -----
GAM32770 21346 TTCTATTTTTTTATTATTGT T TATTA- ATA GAT TATTTAGTTTAT
4 GATAGCAGATGTGCGTATTT TTCTATT TTT TTGTG GCA GTGCG
AGTTTATTGCACCTATGTAT AAGATAA AAA GACAT TGT CACGT
ACAGGAGCCTAAACAATAGA C TCCGAG A-- ATC ----------
A
GAM32775 8852 TTCTCAGGCCAAGTGGTCAA T CCA T C GAGC A T AACAG TGCCCTT
4 CTGGAGCAGACCCTGGAACA TTC CAGG AG GGT AACTG AG CCC GG TTCAG
GTTCAGTGCCCTTCTGAAAA AAG GTCC TC CCA TTGAC TC GGG CC AAGTC
CCTGGGCTCAGCAGTTAACC - --- - A GAC- - T AA--- -------
CTCCTGGAA
GAM32776 3605 TTCTCAGTTCATAGGCTATC AG ATAG A C- ------ A GAGAAGGAA
2 CCATCACCCTTTATTTGGAG TTCTC TTC GCT TC CATCAC CCTTT TTTG
AAGGAACGAGAGAAGGAAAT AAGAG AAG CGG AG GTAGTG GGAAG GAGC
TAGTGATGATGAGGCAGAGG -- GAGA - TA ATTAAA A ---------
AAGAGAA
GAM32788 1545 TTCTCTGGACCTTCCACCCC G- C- CCGA GGAGTTTGAAGGTGGGGA
0 GACGGGGACGCTGGAGTTTG TTCTCT GAC TTCCACC CGGGGACGCT
AAGGTGGGGAAGTGTCTCTG AAGGGA TTG AGGGTGG GTCTCTGTGA
GAAGGTGGGAAAGTTAAAGG AA AA AAG- ----------
GAA
GAM32788 9311 TTCTCTGGGGTCAAGAGAGA G- CAAGAG G GC TAGGA
1 GCCTGGGCCTAGGAGATCTA TTCTCT GGGT AGA CCTGG C
GGGTCTAAAAAAGCTCAAAG AAGGGA CTCG TCT GGATC G
GGAA AA AAAAAA G TA -----
GAM32791 20840 TTCTGAAAACACTTCTGTCC AAAC T GTCCC -- AACA
9 CTAACGAATCTAACAAGATT TTCTGA AC TCT TAAC GAATCT
CTTGTTAATAAAGATGTACC AAGACT TG AGA ATTG CTTAGA
TCAGAA CCA- T AATA- TT ----
GAM32792 12134 TTCTGAACATCCACAACTAG ACA - A-- A T A CCTT
8 ATAGACACCCTTGTGCTTTC TTCTGA TCCA CA CT GA AG CAC
AGATCTGCTGGACCCTCAGA AAGACT AGGT GT GA CT TC GTG
A CCC C CTA - T - ----
GAM32798 8822 TTCTGATAATTTTGGTGTAA TAAT--- -- AAAAA AT TTTT
0 ACAAAAATGATATTTAATTT TTCTGA TTTGGT GTAAAC TGAT TTAAT
TTATTAAATCAAGTTTACCT AAGATT AAACTA CATTTG ACTA AATTA
ATCAAATTCCCTTTTAGAA TTCCCTT TC A---- -- ----
GAM32799 5749 TTCTGATTTCCTGTCGTAAG TTC CG TTT TT C-- TAAATCAATATAA
4 ATTTTTTCTTTTCATTTTCT TTCTGAT CTGT TAAGATT TCT TCATTTTCTC AGGGAGGG
CCAGGGAGGGTAAATCAATA AAGATTG GACG ATTCTGG GGA GGTGGAGGAG TCTCTTCT

TAACCTCTTCTCTAGAGAGG T-- A- TT- TT AGA ----------
AGGTGGTTAGGTTGGTCTTA CC
AGCAGTGTTAGAA

--
GAM32807 1314 TTCTGGAGTGAGTTATTAGC A- TA ATG- AGA- GGAAGA
3 ATGGAAGAAGGAGGAAGATC TTCTGGAGTG GTTAT GC GA AGGA
TTGGGATCAAACGTGGGTGA AGGACTTCAT TAGTG TG CT TTCT

TGGTACTTCAGGA GG GG CAAA AGGG ------
GAM32807 5828 TTCTGGATATGACTGGTAAA AT---- C AAAAC TATTAATT
5 AACTGGATATTAATTTCTAC TTCTGGAT GA TGGTA TGGA
TACTACTCCCAAAAGTCTAG AAGATCTG CT ATCAT ATCT
AA AAAACC C C---- --------
GAM32808 8426 TTCTGGCAGCGGTACCCGAA - C - CGAA TATAGCAA - GACGG
2 TCCCTATAGCAAACATGTCT TTCTGG CAG GGT ACC TCCC AC ATGTCTT
TGACGGAAGACATAGTACAC AAGACC GTC CCA TGG AGGG TG TACAGAA
CGGGAGGTGACCCCTGACCA A C G ---- CCACA--- A -----
GAA
GAM32810 19275 TTCTGGGGGACTATGTGGAC G - A TGGACAG A CCTT - ACCAT
1 AGGGGCAAGCAGTCCTTGGA TTCT GGGG ACT TG GGGC AGCAGT GG AG
GACCATCTGCCTGCTGCTGG AAGA CCCC TGA AC TCCG TCGTCG CC TC
CCTATAAGATCAAGTACCCC G A - TAGAATA G T--- G -----
GAGAA
GAM32810 18296 TTCTGGGGGTGTCCCTTGCC T C TT -- T- AAAGC C TG C GGTC
4 GTCTGCAAAGCTGGTGCCGT TTC GGGGGTGT CC GCC GTC GC TGGTGC GT ACGA GGG

TGACGACGGGGGTCCCCCTT AAG TCTCCACA GG CGG CAG CG ACCACG CA TGTT CCC

GTACCGCACCATCGCCTGAC - C T- TT TC CT--- C -- C ----
TTGGCTGGCACACCTCTGAA
GAM32811 8479 TTCTGGTCTCAGGGTGATGC - GG A ATTGCG- ATGTG
0 ATTGCGCCATGTGGGATATT TTCT GGTCTCAG TG TGC CC
TGGCACGGACTGAGGCCAAG AAGA CCGGAGTC GC ACG GG
AA A AG - GTTTATA -----
GAM32811 20467 TTCTGGTGGTGATGTGGCTA T - T TAT G- AATATTC
5 TGATTGACAAATATTCTGTA TTCTGG GGT GATG GGC GATT ACA
AAATTTCTGCCTGTCTGCCT AAGATC CCG CTGT CCG TTAA TGT
CTAGAA T T - TCT AA -------
GAM32811 3743 TTCTGGTGTATCAAAGCACA G C G- T C AA AAAT
7 TGACTAAAATGAAATCATGG TTCTGGT TAT AAA CACA GA TA ATG
TATCTGTGAATTTTATAAGC AAGATCG ATA TTT GTGT CT AT TAC
TAGAA A T AA - - GG ----
GAM32812 19950 TTCTGGTTCTTCACAGACAG - ------ A C C CAAAAT
4 AAAGCCCATCATCAAAATAT TTC TGGTTCT TC CAGA AGAAAGCCCAT AT
AGTGGGTTTTTTTTCTGAGG AAG ACCAGGA GG GTCT TTTTTTGGGTG TA
TTTCTCAGGACCATGAA T CTCTTT A T A ------
GAM32813 20225 TTCTGTAGCAATGAAAATTT G GAAA T ATT ATAAAAA
7 TTAATTTGAATAAAAATCAC TTCT TAGCAAT AT TTTA TGA
GTAAGCATGAGGTTGTTGGG AAGG GTTGTTG TA GAAT ACT
GAA G GAG- C GC- -------
GAM32816 20629 TTCTGTCTCTCTATTCTCAA --- A--- - A- ----- ATT
4 CTCTTTTTGCCTTATATTAT TTCTGT CTCTCT TTCT C ACTCTTTTTGC CTTAT
AAGAAAACGTAAAAGGAGTC AAGACG GAGAGA AAGA G TGAGGAAAATG GAATA
AGAAGAAAAGCAGAGAGCTT TTC CGAA A AC CAAAA ---
GCAGAA
GAM32818 3606 TTCTGTGGAGAGAGGTCTAA GA G - A TATGTAGTATT
4 TATAATATGTAGTATTTTAT TTCTGTG GA AG GTCT ATATAA
GTAAGGCACTGTTATACAGA AAGACAT TT TC CGGA TGTATT

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          A                  A- G A   A     ----------
GAM32819 9380   TTCTGTGGTTAAAAATTTGA   -    TAAAAATT  TT   TTATTAAAA   TCAT
1          TTGTGCTTATTAAAAATGGT TTC TGTGGT      TGA  GTGC      ATGG
           CATCTATGTTTTGCACTTCA AAG GCATCG      ACT  CACG      TATC
           GCTACGTGAA          T    -------- T-   TTTTG----   ----
GAM32823 16704  TTCTGTTTTTTTTTTTTTT     T  TT--    TTTTT   TA----    TTACTTAAGCAT
2          TTTTCTTTAGCTATTTTACT TTCTGT TTT   TTTTTT    TCTT    GCTATT
           TAAGCATAATAGCCACAATA GAGACA AAA   AGAAAA    AGGA    CGATAA
           GGACATATAAAAGATTATAA     T  TATT    TATAC   TAACAC    ----------
           ATACAGAG
GAM32823 12452  TTCTTAAAGAATAACAGTAA      AG   A  T-    T   T  CCAAATCT   TTAGTCTT
4          ACATTCCAATGTCCAAATCT TTCTTAA  AATA CAG  AAACAT CCAA GT      TGG
           TGGTTAGTCTTCCACTATAT AGGAATT  TTGT GTT  TTTGTA GGTT CG      ACC
           TGCTTGGATGTTTCTTTGGT      GG   G  TC    -   - TTATATC-  --------
           GTTGGTTAAGGA
GAM32823 1309   TTCTTAACATTTACAAATTG       ATTTACAAATT-  CAAAGAT   AG    ATA
AAAAATGCTATACT
6          TACAAAGATTGGTAGCTTTT TTCTTAAC         GTA     TGGT  CTTTT   TTTTTTT
           ATATTTTTTTAAAAATGCTA GAGAGTTG         TAT     ACCA  GAAAA   AAAAGAG

           TACTAAGAGAAAAAACAAAA       GATATTAAACCT   AACAAC-   --    CAA     --------------
           GACCACAACAATATTCCAAA AA
           TTATAGGTTGAGAG

                      --
GAM32825 20848  TTCTTAATTTTGATGGTTGG     A--      TGGT    ATTTGAC    TAAAAAT
3          CTATTTGACTTCTCTAAAAA TTCTT   ATTTTGA   TGGCT     TTCTC
           TGAGAAAGAGCTATTTTAAA AAGAA   TAAAATT   ATCGA     AAGAG
           ATATAAAGAA            ATA     TT--    GA-----    -------
GAM32825 3506   TTCTTAATTTTTTTAAGTCA     AT--   TT  GT  --      AGAAAC
4          AATTGGATAGAAACATCCAA TTCTTA    TTTT  AA  CA  AATTGGAT
           TTGGTGGTTTTTAAAACTGG AAGAAT    AAAA  TT  GT  TTAACCTA
           TAAGAA               GGTC    TT  TG  GG      ------
GAM32836 4241   TTCTTGAAGTCTGGGTGATG      AGTC--    GA   ----    TGTGAT
0          CTGCCATTGTGATATGGTTC TTCTTGA     TGGGT  TGCT   GCCAT
           CTGGCAAGCCCATGTGTGTC GAGAGCT     ACCCG  ACGG   TGGTA
           GAGAG                GTGTGT    A-   TCCT    ------
GAM32838 20682  TTCTTGGACTTTATGAGATA      A  TATGA    TCTTATA    TCACGATT
8          GTCTTATAAGAATCACGATT TTCTTGG CTT    GATAG      AGAA
           TTCTACACCTGTCATTGAGC AAGAACC GAG    CTGTC      TCTT
           CAAGAA               -  TTA--    CACA---    --------
GAM32843 2874   TTCTTTAAATCATTTATCTG      AATC  TT    GA    ----    TTATT
1          GATTTTTATGTTTTATTAGC TTCTTTA    AT  ATCTG  TTTTT   ATGTT
           ATTTTCAAGAAGACGGATTA AAGAGAT    TA  TAGGC  AAGAA   TACGA
           TCTAGAGAA              C---  T-    AG    CTTT    -----
GAM32847 8086   TTCTTTCCCCCCCTTTTTTT    TT     TTTTTTTT   GG  G    G    AA  GACA  GCCG
5          TTGTGGGGCGCGGGCGTTGG TTCT  CCCCCCC      TGTG  GC  CGGGC  TTGGG  CC    CC
           GAACCGACACCGCCGGGGGG AAGG  GGGGGGG      GCAC  CG  GCCTG  GGCCC  GG    GG
           GCCCGGGGTCCGGGCGGCAC    T-     CCTTCTT-   GG  G    G    GG  ----  ----
           GTTCTTCCGGGGGGGTGGAA
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GAM32848 2866 TTCTTTCTCGAAGGTTGGTT T C AGGTT T AAG A- A- AGAGTCCC
5 TTTGCAAGCCCTGACAAGCA TTC TTCT GA GGTTTT GC CCCTG CA GCAA
AAGAGTCCCTTGCGGTGGCC AAG AAGA CT CCAGAA CG GGGAC GT CGTT
AGGGGGGCCAAGACCTCAGA T - ----- C GG- CG GG --------
ATGAA
GAM32848 5958 TTCTTTCTCTTGTGCTTATT C CTTATT T GAG - CTTCTTCTTCCTTT
8 CTTCTTGGGAGTGGTGTAAG TTCTTT TCTTGTG CTTC TGG TGGTGT AAGA
ACTTCTTCTTCCTTTTCTTA GAGAAG AGAGCGC GAAG ACC ACCACG TTCT
GCACCACCACGAAGTCTCGA T AGCTCT C --- A ----------
CGCGAGATGAAGAG
GAM32850 4346 TTCTTTGGCATTTATTCACT TT TTATTC TA- AAACA
8 AGATCTCTAAACAGGAGATC TTCT GGCAT AC GATCTCT
ACTGTTTCGTATGCTCTAGA GAGA TCGTA TG CTAGAGG
G TC TGCTT- TCA -----
GAM32851 12588 TTCTTTGGGACAAACCTTGA GGGA - GAAAA ATTTCAAAA
0 AAATGTTTATTTCAAAAAAA TTCTTT CAAA CCTT TGTTT
CAAAAGGCTTTGCACAAGAG AAGAGA GTTT GGAA ACAAA
AA ACAC C A---- ---------
GAM32854 5386 TTCTTTTTCCTCCCTATCCT TT TC TA TTTCCTGT ACCT
4 TTCCTGTAAGCACCTGTTTT TTC TT CTCCC TCC AAGC
TCCATGGAATGGGGGTTAAT GAG AA GGGGG AGG TTTG
GAG T- TT TA TACCTT-- ----
GAM32855 8931 TTCTTTTTGGTTTTGACATC TT A TTC ACCT
0 ATTCATTTCCACCTGGGAAT TTCTTTTTGGT TG CATCA ATTTCC
TTCTGGTGCCATGCCAGAAA AAGAAAGACCG AC GTGGT TAAGGG
GAA T- C CTT ----
GAM32855 4468 TTCTTTTTTCTTTTCTTTGA CT TCTTC TAGCA
8 TTTCTCTTCAGTAGCACTTT TTCTTTTTT TTTCTTTGATTTC AG
CGGAATCAGAGGAATCAAAA AGGAGAAAA AAGGAGACTAAGG TC
GAGGA CT CTT-- -----
GAM32859 3407 TTGAAACAGACTGGGCCAAT - --- -- CACAAAGAA - CA- ACCGATGTCC
1 GTCCACAAAGAATTCCTGGT TTGAA ACAGAC TGGGCCA ATGTC TTCCT GGT GCACC
CAGCACCACCGATGTCCAAA AACTT TGTTTG ATTCGGT TGCGG AAGGA CTA CGTGG

GGTGCAATATCAAGGAAGGG A TTT AG ACGGG---- A TAA ----------
CAGGCGTGATGGCTTATTTG AAA
TTTGTATTCAA

GAM32867 18171 TTGAACCTGACCATGGTTTT - GACCAT ATTA CT T AATG C A AC
6 TAATTAGATACTGCTAGGGC TTGAA CCT GGTTTTTA GATACTG AGGGCA TTT TG AAAA
AATTA
ATTTTAATGTGCAAAAAAAT AACTT GGG CCAGAGAT TTGTGAC TCCTGT AAA AC TTTT
TTGAT

TAACATAGTTCTTTTCAAAA T AGAT-- C--- -- C GAAA - C --
GAAACTGTCCTCAGTGTTCT A
AGAGACCTAGAGGGTTTCAA

-

GAM32869 20512 TTGAAGAACACCAACATTTA AGA- - A AGAA-- A AAAAAGAC
4 GAAGCATTTAAAAAGACAGA TTGA ACA CC ACATTT GC TTT
GCAAGAAGAAATGTAGGATG GACT TGT GG TGTAAA CG AGA
TGGTATCAG ATGG A A GAAGAA - --------
GAM32871 3312 TTGAAGAGGGTTTAATATGG AG TTAAT - ----- TAGGT
1 GAGTTATTTTACATAGGTTG TTGA AGGGT ATGGG AGTTAT TTTACA
TGGGCATGTGTAGCTGCCCA AACT TCCCG TACCC TCGATG GGGTGT
TTATGCCCTTCAA -- TAT-- G TGTAC -----
GAM32873 21659 TTGAAGGTTCACTCAAAGGC G - AAAG --- CT AAAAACAA
3 AGCTATCTCTTAAAAACAAA TTGAA GTTCA CTC GCA GCTAT CTT
AGCCATAGTAAATGCATCAG AACTT TAGGT GAG CGT TGATA GAA
AGATGGATATTCAA A A ACTA AAA CC --------
GAM32877 2697 TTGAATGCACTTTTGGTTTT TG GCAC G GT TGTTCGGT
6 TGGTCATGTTCGGTTGGTCA T AAT TTTT GTTTTTG CA
AAGATAAAAACTAAGTTTGA A TTG AAAA TAGAAAC GT
GT AATC A TG --------
GAM32880 12726 TTGAATTTGTTTTATTGTAG TTGTTTT ATTT AG- CTAG
5 ATTTGTTACTGGAGCACTAG TTGAAT ATTGTAG GTTACTGG CA
TGAAGTCAGTAACCTAACTG GATTTG TAACGTC CAATGACT GT
CAATTTGTTTAG TT----- AATC GAA ----
GAM32881 8860 TTGACAAACACCGTCATGTA CAAACAC TA CA CGA- C A AGAGCA
2 CCCAGTCGATACTCGGACGC TTGA CGTCATG CC GT TACT GG CGCCG
CGAGAGCACGGTGCCCCAGT AACT GTAGTGC GG CG ATGA CC GTGGC
AGCAAGCCCGGCCCGTGATG TTAGCTC CC CC AACG C C ------
CTCGATTTCAA
GAM32882 19105 TTGACACGCCTACAGCGCCC AC TAC C-- TCCC AAACTAC
0 CGTTCCCTTTGTGAAAACTA TTGAC GCC AGCGC CCGT TTTGTGA
CTCACAGGCAACATGGACCG AATTG CGG TCGCG GGTA GGACACT
CGCTTACGGCCGTTAA C- CAT CCA CAAC -------
GAM32883 18621 TTGACATTGCCTCTTTTGGA - TG - TT T TA TT TAA
9 TCTTAGTTTTCCTAAGGGGA TTGACA T C CTC TTGGA CT GTT CC
GCCCAGTTTAATTGAGTGTG GATTGT G G GAG AATTT GA CGA GG
GATGTTAG A GT T TT - CC GG ---
GAM32889 12238 TTGACTTATGGTTTTTCAAC CT C TTAT GG---- AAAA
9 TTTATAATGGGGCAAAAGCA TTGA TATGGTTTTT AACT AATG GC
ATACACATTCAGTTAAAAAC AACT ATGTCAAAAA TTGA TTAC CG
TGTACTTCAA TC - C--- ACATAA ----
GAM32890 16598 TTGACTTGTTGTTTCTTCAA G GTTTC A TTG T GACCTTGAA
8 AACTTTGACTGTGACCTTGA TT ACTTGTT TTCA AACT AC GT
AACTGTGGTTCTGAAAACAA AA TGAACAA AAGT TTGG TG CA
GTGAA G ----- C --- T ---------
GAM32891 6324 TTGAGAAAAAGGTAATAATG AAAAA TA TTTTG ATTC
5 ATTTTGTCAGAATTCTTTGA TTGAG GGTAA ATGA TCAGA
ATTTATATTTACTAGCTACT AATTC TCATT TATT AGTTT
TAA ATCGA TA TA--- ----
GAM32892 8311 TTGAGAACCTGAAGAAAACT AACCTG ---------- ATTTTC
3 TAGATTTTCCTGAGTTCATT TTGAG AAGAAA ACTTAG
GAACTATTTCTTAATCCTCA AACTC TTCTTT TGAGTC
A CTAA-- ATCAAGTTACT ------
GAM32893 21016 TTGAGACAAGAGTCTCGCTC A TC C TT C--- C -- A - CAATCTC

8 TGTTGCCCAGGCTGGAGTGC TTGAGACA GAG TCGCT TG GCC AGG TGGAG TGCA TG GCT

AATGGCTCAATCTCAGCTCA GACTCTGT CTC AGTGA AC TGG TCC ACCTC ACGT AC CGA

CTGCATCCTCCACCTCCCAG A TT - T- ACCC - CT C T -------
GTTCAAGTGATTCTCATGTC
TCAG

GAM32907 3334 TTGAGAGAGAGTCCTGCTCT -- A TC C TC C--- T -- T AATCTCG
0 GTCGCCCAGGCTGGAGTGCA TTGAG AG GAG CTGCT TG GCC AGGC GGAG TGCAGTGG GC

GTGGTGCAATCTCGGCTCAC GACTC TC CTC GACGA AC TGG TCCG CCTC ACGTCACT CG

TGCAACCTCCGCCTCCCAGG CG - TT - T- ACCC - CA - -------
TTCAAGCAGTTCTCCTGCCT
CAG

GAM32918 19245 TTGAGATGGGCACGTGGAAG T CACGT TC TTTC
0 TCAAAGGGTTTCTCTTTTTT TTGAGA GGG GGAAG AAAGGG
TTTTTTTTTTCCCCTTTTAG GATTTT CCC TTTTT TTTTCT
C TTTTT TT ----
GAM32927 18704 TTGAGGGCTACACAAAACAT CAAAAC-- A -- AC ATGAA
4 TTACATTTCATTCTAACATA TTGAGGGCTACA ATTTAC TTTCAT TCTA ATA
ATGAATATAATAGGTTGTGG GACTTCCGATGT TGGGTG AAGGTG GGAT TAT
AAAGTGGGTAAACTAAATGT AAATCAAA A TT AA -----
AGCCTTCAG

GAM32927 6183 TTGAGGGCTGGGAAGAGGCT T GG GAGG A AC GG- AGATAC
6 AGGCGACGTGGTTTCAGATA TTGAGGGC G AA CT GGCG GT TTTC
CGAAAAGGACTATGCTGGGA AACTTCTG C TT GG TCGT CA AAAG
ATATTTTCTGTCTTCAA T TT ATAA G AT GGA ------

GAM32929 21589 TTGAGGTGGTTATATTACTT - ATATT TCTTT CA GACA
4 TTTTCTTTAAGGTTATCAAA TTGAGG TGGTT ACTTTTT AAGGTTAT AA
GACATTAAATAATTTTTTAA AATTCT ACCAA TGAAAAA TTTTAATA TT
AAAGTTAAACCATTCTTAA T AT--- TT--- AA ----

GAM32929 20453 TTGAGGTGTTTGGATGAAAA TT G AAAAAATAC C CCTTCATGTCTA
5 AAAATACAAGAGCTTTGCCT TTGAGGTGT GGAT AA AAGAG TTTG
TCATGTCTACAGATCTCTTA AATTCCACG TCTG TT TTCTC AGAC
ATATATTGTTGGTCTTGCAC T- G GTTATATAA T ----------
CTTAA

GAM32929 18037 TTGAGGTTCTGGGTATAACT TG TG-- TAACTTTCT- TCCC
7 TTCTTTGGTCCCCTAATATT T AGGTTC GGTA TTGG
AAATTTTACCATTTGAGCCT A TCCGAG CCAT AATC
TGA GT TTTA TTTAAATTAT ----

GAM32941 4249 TTGATCTTTACGTCCTCAGT TTT TCCTC GGCA- TTCTGAT
2 GTGGCAGAGTTTCTGATGCT TTGATC ACG AGTGT GAGT
TAATAAACATTTGTTCTGAT GACTAG TGT TTACA TTCG
CAG TCT ----- AATAA -------

GAM32943 18253 TTGATGGAAAGGGTCCAATT T AG - AATT ------ GA GTAG
1 GGTTCCAAGACGCGTAGGCG TTGA GGAA GGT CC GGTT CCAA CGC
AGTTGGTCTGAAAGCCCCCG AGCT CCTT CTA GG CCGA GGTT GCG
GTATCATTCCTCGA - A- T CCC- AAGTCT GA ----

GAM32943 12738 TTGATGGGCGCATCTCATGA A CA T TG - C-- TGAC

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7          CATCATCGATGACTCACAGT TTG TGGGCG  TC CA  A CATCAT   GA
           GGTGCTTGTGGAATGCCCGC GAC GCCCGT  AG GT  T GTGGTG   CT
           AG               -     A- -  GT C     ACA  ----
GAM32944 3746   TTGATGTACAGTTTCTCCTA      A  TTTCTC    A  A  G     TT     TG- -   CTTC    ATC
4          AGAAGAAGCGAGGTGGTTGA TTGATGT CAG     CTAAG AGA GC AGGTGG  GAATTT   GA AGCA
TTGA
           ATTTTGGAAGCACTTCTTGA AATTATA GTT     GATTT TCT CG TCTACT  TTTAAG   TT TCGT    AATT

           ATCGGATTAACCCATGCTCT      -  T-----    G  -  -    TT     TTA  C    ACCC    ---
           TATTGAATTTTTTCATCTGC GGA
           TCTGTTTAGTTTGATATTAA

                      ---
GAM32947 8239   TTGATTGGGTCAACCTTTGC  TG T-   TCAACCTTT   AC-  T  GT-   GAAGT    AGT       TGT
9          CTACGAATGCAGTCCTTGAA T  A  TGGG       GCCT   GAA GCA   CCTT    CTTGC   CTCTTGTTA
           GTCTTGCAGTCTCTTGTTAT G  T  ACTT       CGGG   CTT CGT   GGAG    GAATG   GGGAACAGT

           GTTCATATTCTTTCTTGACA  GT CT    TATCTTCTT    ATT   C   ACT    -----    AT-       ---
           AGGGTAGTAAGGAGGTCATG TCATATTCTTTCT
           CCTTCTTAGGGCTTCTTCTA
           TTTCATCTTGG
                      -------------
GAM32949 1539   TTGATTTGTACAGTCATAAT         -   CATAATT      A  ACTT
6          TTGTTAAAATGACTTCATTT TTGATTTGTA CAGT      TGTTAAA TG
           AACATTCACTGATGTAGATT AATTAGATGT GTCA      ACAATTT AC
           AA                       A    CTT----      -  ----
GAM32950 12641  TTGATTTTTTTAAAGAGCTT   -      A     TTCACT    TAGGAT
8          CACTGAATTAGGATATTTTT TTG ATTTTTTT AAGAGC     GAAT
           ATTGCTTTTAAAGAAAATAC AAC TAAAAGAA TTTTCG     TTTA
           AA                 A       A     TTATT-    ------
GAM32955 14692  TTGCAATCTGAACTCGGGCC      TCT     GG     AAATAT    CGGGAA
5          GTTAAATATACCGCGGGAAC TTGCAA   GAACTC  GCCGTT     ACCG
           GGTTGGCAAATGGCGAGTTT AACGTT   TTTGAG  CGGTAA     TGGC
           TTTTGCAA               TT-     --     ACGGT-    ------
GAM32959 4012   TTGCAGGAAGGCCTCTTCCC      GAAGG---  -    C   T   CGC
4          TGATGGCCGCGTCTTCATGG TTGCAG       CCT CTTCC TGA GGC
           AAGTAGGAGAGAAGACTGTA AATGTC       GGA GAAGG ACT CTG
           A                  AGAAGAGA   T    T  T  ---
GAM32961 6164   TTGCAGTGAGGGCACTAGTT       -   C  T  TT  A   C  ACGAGAAC
1          AGAATGCGTACGAGAACACT TTGCAGTG AGGG AC AG  AG ATG GT
           TATCCTTTCTGTCTCTACGC AACGTCGC TCTC TG TC  TC TAT CA
           TGCAA                  A   -  -  TT  C   T  --------
GAM32963 3568   TTGCATGCAAGTTGCTGAGC     T  AAG    G  C  AA-   AAAGATGA
8          TGAAGGGAAAGATGATCCGC TTGCA GC   TTGCT AG TG   GGG
           GTACTGGTAAAAAGCTGCAA AACGT CG   AATGG TC AT   CCT
                            -  AAA    -  -  GCG   --------
GAM32970 19803  TTGCCATGCACATCCTCAAC   CCATGCACA      CAA  AA--   --       -   G   C    --   A
3          AATGGAAGGTTTGGCATGGC TTG       TCCTCAA   TGG    GGTT  TGGCATGG CTGC GCC TGGCA
GGT C
           TGCGGCCCTGGCAGGTACCA AAC       AGGGGTT   ACC    CTAA  ACCGTACT GATG CGG ATCGT
CTA G
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          TGAGAGGCATCATTGCTAAG  ACTTAAAAG     TG-  CATG  TC      A   G  A    TA  C
          GCGGTAGATCATGCCACTAA  ATGAGA
          TCGTACCCAGTTTGGGGAGA C
          AAATTCACAA         G
                      ------
GAM32970 5734  TTGCCATTCCATTTCTCATC    C--     TTTCTC    ACTA  T   GGAATA
9              AAACTATGTCCTGGGAATAC TTGC   ATTCCA     ATCAA   TG CCTG
          AGGCCAAACTTGATTTTTCT AATG   TAAGGT     TAGTT    AC GGAC
          TGGAATTTCGTAA         CTT     TCTTTT    CAA- C   ------
GAM32972 6158  TTGCCCAGGCTGGAGTGTGG    CC    ----------  G  TG  - ACAATCACA
3              TGGCACAATCACAGCTCATT TTGC  AGGCT         GGA TG  GTG GC
          GCATCCTCAATCACCCAGGC AACG  TCCGG         CCT AC  TAC CG
          CTAAGCAA             AA    ACCCACTAACT  -  GT   T ---------
GAM32973 19831  TTGCCCCTTCACTAGGGATG       --   TAGG   -   AA     AAGGGCAAAGGAA
7              CCCTAAGAAAGCAAGGGCAA TTGCCCCT  TCAC    GATG CCCT  GAAAGC
          AGGAAGCTTTTAGGGGTCAT GACGGGGG  AGTG    CTAC GGGG  TTTTCG
          CGTGACTGGGGGCAG           TC   ----   T   A-     -------------
GAM32974 16546  TTGCCCGGCCCGATTCTTAG     CGGC       AG   CC---  A      GCAACA
0              GCTCCAGGAGTCTTTGGCAA TTGCC    CCGATTCTT  GCT     AGG GTCTTTG
          CACAGAGACCTTTAAACAGC AACGG    GGCTGAGAA  CGA     TTC CAGAGAC
          AGAAGAGTCGGATGGCAA       TA--        GA   CAAAT   -      ------
GAM32975 3021  TTGCCGAGCGCAGCGCCGGC     GA  G    - -  GCCT    T    TTGT  C      G    A -----
7              CTGGCCTTCAGCTTGTACCA TTGCC  GC CAGCG C CG    GGCCT CAGC    AC AGGCCAT GCCA GG
 ACCA
          GGCCATGGCCAAGGACCAGG AACGG  CG GTCGC G GC    TCGGG GTCG    TG TCCGGTG TGGT CC
  TGGT
          CAGTGGAGAACATCCTGGTG     -- G    T T ----    -    C--- C      G    G  CACTG
          TCACCCGTGGTGGTGGCCTC   CA   GAGAA
          GTCGCTGGGGCTCGTGTCGC GG  GTG
          TGGGCGGCAA         CC  TAC
                      --   -----
GAM32976 6384  TTGCCGGGCCGCTACCCGGG      G    CTA    G   CTGG-    ACACCGGC
0              GTCTGGGGAACACACCGGCG TTGCCG GCCG   CCCG GGT     GGAAC
          TTCTAAAACACCGCGGGCGA AGCGGC CGGT   GGGC CCA     TCTTG
          TGGCGCGGCGA            G    AGC    G   CAAAA    --------
GAM32976 4352  TTGCCGTCTGCCAAAGCTGG      T TG CAA-   TG-   C   TGAGA    GGTC
1              TGCCGTTGAGAAGGGGGTCC TTGCCG C  C    AGC   GTG CGT     AGGG
          CCTGTACGCCACATCGCTGA AACGGT G  G    TCG   CAC GCA     TCCC
          CTGTGGTGGCAA            - GT TCAG   CTA   C   TG---    ----
GAM32978 6080  TTGCCTCCTATAAGTGGAAT  TG C    ATAAG    AT   TC     CCTCATT
2              GTCTCCCGGCCCTCATTGCT T  C TCCT     TGGA  GTC  CCGGC
          GGCTGACTCCAAGGATGTGA A  G AGGA     ACCT  CAG  GGTCG
                      GT T    -----    --   TC     -------
GAM32981 20921  TTGCGAATAATTATTTATTT       T   TATTT---      CCAA   -  TTTT
4              AACCAATCCCCTTTTGGTGG TTGCGAA AAT       ATTTAA    TCC CC
          ACACTTAGATTATTTCCTGT AACGCTT TTG       TAGATT    AGG GG
          TTTTCGCAA               T   TCCTTTAT     CAC-   T  ----
GAM32983 5926  TTGCTAACGAGTGCAGATTA    T   GA         ----     TAACAGCTC
8              TTCAATAACAGCTCTTGAAC TTGC AAC  GTGCAGATTA    TTCAA
          AGTTAATTTGCACAGTTGCA AACG TTG  CACGTTTAAT    AAGTT
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          A                - A-        TGAC    ---------
GAM32985 6612   TTGCTACCAGTCTAATCTTG     A     TA-   -- CC   A     AAGT    TTTGAACTATAT
0          CCTTAAATGTTAAGTTATTT TTGCT CCAGTC   ATCT  TG  TTA ATGTT    TATTT
           TTTGAACTATATAAATATAA GATGA GGTCAG   TAGA  AC  AAT TACAA    ATAAA
           ACATATAAACACCAGATGAT    -    TAG    CC  A-   A    AT--    ------------
           GACTGGAGTAG
GAM32985 19276  TTGCTAGGAATCTGTGGGGG  TG    AAT   TG       GTAT--   GAGC
9          AGGGGTATCTGGAGCCAGCC T  CTAGG   CTG  GGGGAGGG     CTG
           CTTACCCTCCCTGCCAGTGC A  GGTCC   GAC  TCCCTCCC     GAC
           CTGGTGA           GT    GT-   CG       ATTCCC   ----
GAM32988 3314   TTGCTCATTGCCATTCTGTG     CATTG   TTC-    TTTC   TAAAAACT
9          TTTCCTCTAAAAACTGAGTT TTGCT    CCA    TGTG    CTC
           TTCACAATTTTGGATTTAGT AATGA    GGT    ACAC    GAG
           AA                TTTA-   TTTA    TTTT   --------
GAM32990 1005   TTGCTCGCAGGGCTCATTCT          CTCA   -   TGGA    TGTTT
2          GCATGGATCTGTGTTTCAGG TTGCTCGCAGGG    TTCT GCA    TCTG
           ATGCTGCAAGGACAACTCTG GACGGGCGTCTC    AGGA CGT    GGAC
           CGGGCAG                  AAC-    A   CGTA    -----
GAM32995 1214   TTGCTGAAGGCTTCTTTAAA      AA   TT    AAACGAC    GAA-    ACATC
1          ACGACGTTTGAATTCAACAT TTGCTG  GGC  CTTTA      GTTT    TTCA
           CTGGACAGAAGACATACTCA AGCGAC  CCG  GAAAT      CAGA    AGGT
           TAAAGGCCACCAGCGA         CA   --    ACTCATA    AGAC    -----
GAM32998 18962  TTGCTGGGTCCTCAATGCAG        TCCTCAAT  A         -  TAGA
9          GGGGCCATTTCATAGATGAA TTGCTGGG       GC GGGGGCCATTT CA
           AATGGCTCTCGCCTTCCAGC AACGACCT       CG CTCTCGGTAAA GT
           AA                    TC------  -         A  ----
GAM33000 20690  TTGCTGTGTAGACCCTCCCC     GTGTAG    T  C  CT    A   AA--   CATC
6          CCTCCAAAAAAAATCTCATC TTGCT     ACCC CC CC  CCAA AAA    TCT
           GGACTGCTTTCTTGGTGGCG AACGA     TGGG GG GG  GGTT TTT    AGG
           GTGGGTAAAGCAA          AA----    T  C  T-    C   CGTC   ----
GAM33001 19392  TTGCTTAAAACTGTACTCTT      A  CTG  C     GCA-    AAC    TTATCACT
8          TTGCAAATTAACAATTTTAT TTGCTT AAA   TA TCTTTT    AATT   AATT
           CACTGATTCAGAGTTAAAAA AACGAA TTT   AT AGAAGA    TTGA   TTAG
           GAAGACTAACTTTTCAAGCA      C   TCA  C     AAAA    GAC    --------
           A
GAM33007 4437   TTGCTTGAACCTGGGAGGCA        A  TG---    -    A    ----   AG   AGCC
9          GTAGGTTGCAGTTGAGCCCA TTGCTTGA CC     GGAG GCAGT GGT    TGC  TTG
           AGTATCGTGCCACTGCTCTC AACGAGCT GG     CCTC CGTCA CCG    ATG  AAC
           CAGCCTGGGTCGAGCAA          G  TCCGA    T    -  TGCT   --   ----
GAM33008 9459   TTGCTTGAACCTGGGAGGCG     TG AC   GGAG    A   T    GAACCGAG
0          GAGGTTGCAGTGAACCGAGA TTGCT  A  CTG    GCGG GGT GCAGT
           CTGCACCACTGTACTACAGC AACGG  T  GAC    TGTC CCA CGTCA
           TTGGGCAA               GT C-   ATCA    A   -    --------
GAM33014 3024   TTGCTTTTGCCTCCTAGGCA        G   -------    C    -    GCCATACCAGTTAA
6          TCACCTGTGCCATACCAGTT TTGCTTTT CCTC       CTAGG ATCA CCTGT
           AAACAGGCTGATTCTGGAAG GACGAAAA GGAG       GGTCT TAGT GGACA
           TTCTGAGGAAAAGCAG          -   TCTTGAA    -    C    ---------------
GAM33019 20569  TTGGAAGTTAACTTATGCAC     AG--    -   A    -----    AACTATCTTAAC
3          GCTTAACTATCTTAACAAGC TTGGA    TTAA CTT TGCAC     GCTT
           TTTGAGTGCAAGAGATTGAA AACTT    AGTT GAG ACGTG     CGAA
```

GAGTTCAA GAGA A A AGTTT ----------
GAM33021 9199 TTGGACACCACAAATATTGG CAC- - T TG--- AATATTGC
2 GTATTGTCAAATATTGCTGG TTGGA CACA AATAT GGGTAT TCA
ATCCTGTACCCATGTTATGT AACCT GTGT TTGTA CCCATG GGT
GACTCTCCAA CTCA A - TCCTA --------
GAM33022 21636 TTGGACCATAATAGATTTTT AC- A - -- AGG
0 AATTTTACAGGGTGAAGTTG TTGG CAT ATAG ATTT TTAATTTTAC
AACAAATGCTATGATGAAAC AACC GTA TATC TAAA AGTTGAAGTG
CAA AAA G G CA ---
GAM33022 784 TTGGACCATATGCATAGTAC ACCA GTA- GAAACTAGTG T- CA CTGTTA
1 CGAGAAACTAGTGCGAAGTA TTGG TATGCATA CCGA CGAAG AGTGAT GGTATTG
GAT
GTGATCAGGTATTGCTGTTA AGCC ATACGTAT GGTT GTTTC TTACTA TCGTAAC CTG
GATATCCCCGAGTCCTTCAA ATG- ACCA ATA------- CC -- TTC---
TGCTATCATTCCCTTTGATA ATCCCCGA
TTGGACCATATGCATAGTAC
CGA

GAM33022 12988 TTGGACGTGGAGCTGGGCCG A CT CGAACCACG A ACCCAGCCCAA
7 AACCACGTGTACCAAGACCC TTGG CGTGGAG GGGC TGT CCAAG
AGCCCAACTTGGACAACTGC GACC GTACCTT CCCG ACA GGTTC
CCCTTCCATGACCAG A C- TCA------ - ----------
GAM33024 12249 TTGGAGAAGGCATTTGAAGA A A T AAT AAAGC
3 TGAAATGAAAAAGCTTCTAC TTGGAGAAGGC TTTGA GA GA GAA
TCTTCCTTAAAGCCTTTTCC AGCCTTTTCCG AAATT CT CT CTT
GA - C T CAT -----
GAM33024 8452 TTGGAGACCGACCAAGCCTC - A- A T- GGGCAG
7 TCTGTTGGGCAGGACTTGAG TTGGAGAC CG CC AGCCTCTC GTT
GGGTTGGGCCTGTGTCTCCA GACCTCTG GT GG TTGGGGAG CAG
G T CC G TT ------
GAM33025 3480 TTGGAGCAGTTTCTGACCAT - A AC - GC GAGA
9 CCTGCCTGGGGAGATCCAGA TTGGA GC GTTTCTG CATCC T CTGGG
TGTGGGTGCGGAAACAGTGT GACCT TG CAAAGGC GTGGG G GACCT
CCAG G A -- T TA ----
GAM33027 12600 TTGGAGGAACACAGTCATCT G A CT---- T GAAATCTA
0 CCTGGTGAAATCTAATCCGG TT GAGGAAC CAGTCAT CC GGT
TTACATGTGGCTGGTTTCTT AA TTCTTTG GTCGGTG GG CTA
GAA G - TACATT C --------
GAM33027 16635 TTGGAGGCAGAGAGGCATGC TG G A C-- - - CTAG
6 AGGCGGGGTCCTAGGAGCCC T GAGGCA AGAGGC TG AGGC GGGG TC
CTGCTTCTCCAGGCCTCTTG A TTCCGT TCTCCG AC TTCG CCCC AG
CCTTTGA GT - G CTC T G ----
GAM33035 4532 TTGGCAACCTCCAAGAGCGG C CAAGAGC GACC GACAAAAA
9 CTTAGACCCCAGACAAAAAT TTGG AACCTC GGCTTA CCA
GGATGGGCCTAAACACGAGG AACC TTGGAG CCGGGT GGT
TTACCAA A CACAAAT A--- --------
GAM33037 19332 TTGGCAGCAGCACCCACAGG - AG- CA T- AT CAGGCTT
6 GTGGCTATCACAGGCTTTGC TTGGCA GC CACCCA GGG GGCT CA
AGGCCCTCCCGTTGGGTGAT AACCGT CG GTGGGT CCC CCGG GT
GGCTTGCCAA T GTA TG TC AC -------

GAM33041 3200 TTGGCCAGGATTTTCATGAG - - TT T- G CC A TTGA
1 GGGCCGTAGCTTGAGCCACC TTG GC CAGGATT CA GAG GG GT GC
ACTGTTCTTTGGGAATCCTG AAC CG GTCCTAA GT CTT TC CA CG
TGCTCAA T T GG TT G AC C ----
GAM33043 4110 TTGGCCCTATTGACAGATGA CT T G---- TCA AATCCA
5 CTTCAGAAAATCCATTCCCC TTGGCC AT GACA ATGACT GAA
AGTCGTGAAAATGTCCGTGG AATCGG TG CTGT TGCTGA CTT
CTAA -- C AAAAG CCC ------
GAM33043 1597 TTGGCCCTGTGAATAATGCT CCCT T GAAA-- CA CAC GCTTT
7 GAAATGAACATGAGATTGCA TTGG GTGAA AATGCT TGAA TGAGATTG ATCTC
CATCTCGCTTTGAGGTTCTG AACC TATTT TTACGG ACTT ACTTTAGT TGGAG
ATTTCACTTCAACTTAAGGC ---- T AATTCA C- CT- -----
ATTTTTTATCCAA
GAM33045 3202 TTGGCGCTCGTGCGGAATAG TG G- A - A GCCTAAAGAATG
6 GAGCTTCAGCCTAAAGAATG T GCGCTCGT CGG ATAG G GCTTCA
TGAAGCACTCTGTGCTGGAA A TGTGAGCA GTC TGTC C CGAAGT
CGAGTGTTGA GT AG G T A ----------
GAM33046 19177 TTGGCTAAACTTGTAGGCCA TG TAA CCAA GG-- -- CTAAAATTAAC T TTTT
4 AAGCCGGTATTGTGTTCACT T GC ACTTGTAGG AGCC TAT TGTGTTCA TGCAA GG
AAAATTAACTGCAATGGTTT A TG TGGATATCC TCGG GTG ATATAAGT ATGTT CC

TTTGTTTTCCTTGTACTGAC GT TTC AG-- AAAA CC CACAGTC---- - ----
ACTGAATATACCGTGAAAAG TTGTTTT
GCTGACCTATAGGTCTTGTT
GA

GAM33048 16735 TTGGCTCTGACTCCGTGCCT CTC - GT CTGCT TC C GGCTTA
6 TCTGCTGGGAGCTCTCCTCA TTGG TGACT CC GCCTT GGGAGC TCCTCA AG
CAGGGCTTACTTGAGGGATG AACC ATTGA GG TGGAG TCTTCG GGGAGT TC
CTTCTTTTGAGGTGGAAGTT A-- A -- TTT-- TA - ------
AACCAA
GAM33050 16848 TTGGCTTGCAGCCGCATCAC CT C-- TCACTTC TC- TCCATCT
3 TTCTGTCTCTGATCCATCTT TTGG TGCAG CGCA TGTC TGA
CACATGGCATTTTCTCTGTG AACC ACGTC GTGT ACGG ACT
TCTCTGCATCCAA T- TCT CTCTTTT TAC -------
GAM33054 19395 TTGGGAGAAGAGAAATGTCT AA G ACTT G GCAGA
3 GAGACTTCTGAACTTTGGCA TTGGGAG GAGAAAT TCTGAG CT AACTTTG
GATAAAGTTGGTGTTCAGAG AGCCCTC CTTTTTG AGACTT GG TTGAAAT
TTTTTCAGCTCCCGA GA - GT-- - -----
GAM33057 16574 TTGGGATTCTTTTCACAAAA - TT A A A----- TG GAAA
8 AGGGAGGTATTGGGAAATTG TTGGGATT CTT C CAA AAGGG GGTAT G
GTATTGAAGAACCCTTCTTG AACCCTAA GAG G GTT TTCCC TTATG T
GGGGGAGAAATCCCAA A GG G C AAGAAG GT ----
GAM33060 3338 TTGGGCGTCCTGGGGCTGAG C- - GGC - TCCG A GGTGA
9 GATCCGGGTCACCGGTGAGG TTGGG GTC CTGG TGA GGA GGTC CC
GACCATTTTCCATCGCCAGC AACCC CAG GACC GCT CCT CCAG GG
GACTTCCCAA TT C --- A TTTA - -----
GAM33062 6583 TTGGGGAAGGTATTAAACAA A TTAAACAAAAA CCAATAAGTATCTCCTC
3 AAAGACCAATAAGTATCTCC TTGGGGA GGTA GA
TCTCGCCTTTCCCCCTACCC AACCCCT CCAT CT

TCCCCAA C CCCCCTTTCCG ----------
GAM33063 6479 TTGGGGAGTGACTTGGCTAA GG ACTTG AA--- T GTGTAAA
0 GCTTCAGGTGTAAACTGTGG TTGG AGTG GCT GCT CAG
TCACGGAGCAAAAACATTAA GACC TTAC CGA TGG GTC
CCAG AA AAAAA GGCAC T -------
GAM33065 2913 TTGGGGGGGGGCATTAATTC ---------- A-- TT A GATGTTA
8 CTTATTTAAGGATGTTACTG TTGGGGGG GGGC TTAATTCC ATTTA G
AGTTGGAATTAAAAGGCCCC AACCCCCC CCCG AATTAAGG TGAGT C
TCCAACCATTCAACCCCCCA AACTTACCAACCTC GAA T- - -------
A
GAM33066 5906 TTGGGGTAATGAAGTATTTC TG AAT TTT- TT TG GAATAG
6 AGTTTTGTGAATAGATGACC T GGGT GAAGTA CAG T T
TGTTTTTACTTCCTCACCCT A CCCA CTTCAT GTC A A
GA GT CTC TTTT C- GT ------
GAM33076 12839 TTGGTAGTGCCCCACCTCCC A CCCA- - G C--- A AAACGCGCTC
6 GCCCTCACCTGCAGAGAAAC TTGGT GTGC CCTC CC CCCTCA CTGC GAG
GCGCTCCTTGGCGGACACTG AATCG CGCG GGAG GG GGGGGT GGCG TTC
GGGGAGGAGAGGAAGAAGCG G AAGAA A A CACA G ----------
CGGCTAA
GAM33078 21466 TTGGTATTTTTTAATTATGA T --- T T AT ATAT ATTTCC
1 ATGCATATCCTATTTCCAGG TTGG ATTT TTTAA TA GA GC CCT
CAGGCTCTCTTACTTGAACA AACC TAAA AAGTT AT CT CG GGA
CAAATCCAA - CAC C T CT GAC- ------
GAM33079 2941 TTGGTCCGTATTTTTAACAG CC- ATTT C GAC - CA CTCC
3 AAGACAGTGCAACAACTGGT TTGGT GT TTAA AGAA AGTG CAA ACTGGT
CTCCACCAGTATTGTCACTT AACCA CA AATT TTTT TCAC GTT TGACCA
TATTTTTTTAATGACAAAAC AAA GT-- T ATT T A- ----
CAA
GAM33079 20483 TTGGTCCTGGTATGGTCCTG G TG A G- GG A AACC GAGGAA
4 GGAAATTAAACCTGATTGGA TT GTCC GT TG TCCTG AA TTA TGATTG
GGAACAATCATCATAACTTT AG CAGG TA AC GGGGC TT AAT ACTAAC
ACGGGGGACAATTGGGACGG G GT - AG AT C ACT- ------
A
GAM33082 9060 TTGGTGACCTTGAGCACGTT C AG T AA CAC TT CAGA
6 GAAGCGCACTGTCTTGCTCA TTGGTGAC TTG CACG TG GCG TGTC GCT
GAGGCCGGCACTCGCCCACT AGCCACTG AGC GTGT AC CGC ACGG CGG
GTGACGATGTCACCGA T A- C C- TC- C- ----
GAM33086 19237 TTGGTGTGATACCTTGTGTT TG ATACC - A-- CCCAC A TATATT
5 GCTTACATGGCCCACTATAT T GTGTG TTGTGTT GCTT CATGG TATAT TACATA
ATACATATATATTTATGTAG A CATAT AGCATAA CGGG GTACC ATATA ATGTAT
ATATACTTCCATGAAAGGGC GT ACGT- T AAA TTC-- G ------
TAATACGATGCATATACTGA
GAM33086 22230 TTGGTGTTACTTTTCTTAAG T TAC CTT - TATA
9 TTGTTTAATTATAGTTAAGG TTGG GT TTTT AAGTTGT TTAAT
CAATTTCAAAAATGCTCCAA AACC CG AAAA TTTAACG AATTG
T TA- C-- G ----
GAM33094 3715 TTGGTTTTGGTTTTTGTTTT T TGTTTT TG CAT T - T GT AAAGA
1 TGTTTTTGGGAACATGTTAG TTGGTTTTGG TTT TGTTTT GGAA GT AGGA GT AAT TGC
GAGTTAATGTTGCAAAGAGT AGCCAGGATT AAG ACAGAA CTTT CA TTCT CA TTG ATG
AGTTTACATCTTCACTTTCT T TTC--- GT --- C A T -- -----

GAAGACACTTGAATTTAGGA
CCGA
GAM33094 1712 TTGTAAACACGTTGAGATTA A C - ----- - G A GATCAA
7 AAGAAGGTTTTACCAGATCA TTGTA ACA GTT GAGA TTAAA GAA GTTTT CCA
ATGGGAAAATGTTCATTTAA GACAT TGT CAA CTTT AATTT CTT TAAAA GGT
TAAACTTTCTAACTGTATAC A - T CAAAT A G G ------
AG
GAM33096 6416 TTGTAAGGCCATGAGGGTAA AA - T AAAACGG AGGAAGA
8 AACGGGAACCGAGGAAGACG TTGT GGC CA GAGGGT GAACCG
GTTTAGACCTTCTGTGCCCC AACA CCG GT CTTCCA TTTGGC
ACAA CC T - GA----- -------
GAM33097 3596 TTGTAATCCATGAAAAAGAC TG T AAAA AG CCTG CTTG
5 CAAGGTCCTGGTCCTTGGGC T TAATCCA GA GACCA GT GTC
ACATTCTGGTCTCCTGGGTT A GTTGGGT CT CTGGT TA CGG
GTGA GT C ---- CT CA-- ----
GAM33098 3666 TTGTAATTATAATGGTATCA ATAAT- A ATG AAGAAG
5 AATAAGATGCAAAAGAAGTT TTGTAATT GGTATCAA TAAG CAA
GATGCTTATTGGTGCTTAAG AACATTAA TCGTGGTT ATTC GTT
AGAATTACAA GAGAAT - GTA ------
GAM33100 1234 TTGTACTAGCAAAAGGGTCT C GCA TCT A-- T TGT
6 GATCAAAGGTCTCCTGTGGA TTGTA TA AAAGGG GATCA AGG CTCC
GCTTGCATGGTTCCCTTTCA AGCAT AT TTTCCC TTGGT TTC GAGG
TACTACGA C AC- --- ACG - ---
GAM33106 6662 TTGTATAACTTTTATTCTTA AACTT T - - TACAAT
0 GATTATATTACAATGTGTCA TTGTAT TTAT CTT AGATT ATAT
GTCTCAAGTATAACTACAAT AATATA AATA GAA TCTGA TGTG
ATAA ACATC T C C ------
GAM33113 9266 TTGTCAAGTGTTTGTTGTAG CA GTT - - T A ATAAG
6 CTTAGTATCCATAAGGGAAA TTGT AGT TGT TGTAG CT AGT TCC
CTTAGACTATAGACATAACT AACA TCA ACA ATATC GA TCA AGG
ACAA -- AT- G A T A -----
GAM33115 16657 TTGTCAGATGGATAGATTGC TG - ATT AAATTTTCAC ATTCTGTA
4 AAAAATTTTCACCCATTCTG T TCAGA TGGATAG GCAA CC
TAGGTTGCCTGTTCACTCTG A AGTCT ACTTGTC CGTT GG
ATGA GT C --- ---------- --------
GAM33117 5805 TTGTCATGGTTGCAGCATTT T C AACTTTT GTTAAAAAAAAAA
4 GAACTTTTGGTGTTAAAAAA TTGTCA GGTTGCAG ATTTG GGT
AAAAACCTGTAAGTCTGTAA AACGGT CCAATGTC TGAAT CCA
CCTGGCAA - - GT----- ----------
GAM33121 3897 TTGTCGAGCTCATCAGGTGG AT --------- T G -- A G TT CTAAA
2 TGGAAGATGGATATGAATTT TTGTCGAGCTC CA GG GGT GAAGAT GG TAT AATT TTG
TTTGCTAAACGACAGTTGGT AATAGTTTGAG GT CC CCG CTTTTA CC ATG TTGA AGC
AACCTTATTTTCAGCCCCAA CG GTCATTAAA - A TT A G C- -----
ATTACTGTGGCGAGTTTGAT
AA
GAM33121 2672 TTGTCGTCATTGGACACGTA --- GACAC CG-- A CCACCACT
8 GATTCGGGCAAGTCCACCAC TTGTC GTCATTG GTAGATT GGC AGT
TACTGGCCATCTGATCTACA AACAG CGGTGGC CATCTAG CCG TCA
AATGCGGTGGCATCGACAA CTA GTAAA TCTA G --------
GAM33121 20206 TTGTCGTCATTGGACACGTA C- T- A C ATTC CAAG

9 GATTCGGGCAAGTCCACCAC TTGT GTCA TGG CA GTAG GGG
TACTGGCCATCTGATCTATA AATA TAGT ACC GT CATC CCT
A TC CT G - ACCA ----
GAM33122 12231 TTGTCGTCATTGGACACGTA --- GACAC CG-- A CCACCACT
0 GATTCGGGCAAGTCCACCAC TTGTC GTCATTG GTAGATT GGC AGT
TACTGGCCATCTGATCTATA AACAG CGGTGGC TATCTAG CCG TCA
AATGCGGTGGCATCGACAA CTA GTAAA TCTA G --------
GAM33122 19794 TTGTCGTCATTGGACACGTA T GACAC CG-- A CCACCACT
1 GATTCGGGCAAGTCCACCAC TTG CGTCATTG GTAGATT GGC AGT
TACTGGCCATCTGATCTATA AGC GCGGTGGC TATCTAG CCG TCA
AATGCGGTGGCGTCGA T GTAAA TCTA G --------
GAM33129 2740 TTGTGACAGGATCCGTTTTC ACA TCC CCAA CG- AAACAATA
9 CCAACTCGATCAAAAACAAT TTGTG GGA GTTTTC CT ATCAA
ATTGATGGTAGCCATGAAAA GACAC CCT TAAAAG GA TAGTT
TTTTCCAAACACAG AAA TT- TACC TGG --------
GAM33131 16702 TTGTGAGATGCTGTTATGCT GC-- - G CCTGAC
5 GAGAAACCTGACTTTGTTAG TTGTGAGAT TGTTA TGCTGA AAA
TGTTGGCAAAAAGTCTTACA GACATTCTG ACGGT GTGATT TTT
G AAAA T G ------
GAM33132 3844 TTGTGAGGCCCCGAAGGACC G A C A--- AT - TACCC C AACGGA
0 AATTGTTGCCGGTACCCGAG TT TG GGCC CGAAGG CCA TGTT GCCGG GAGT GGG
TCGGGAACGGATCCACTCCT AA AC CCGG GTTTCC GGT ACAG CGGCC CTCA CCT
CTCCGGCTGACATGGCCCCC G - T CCCC -- T TCTC- - ------
CTTTGTGGCCCAGAA
GAM33136 16551 TTGTGCGCCGCCATGTTGTT -- CA---- AGTG
0 TTTACAAGTGTGTGGGGACG TTGTG CGCCGC TGTTGTTTTTACA
ACACATTTTGTGGCGACCAC AGCAC GCGGTG ACAGCAGGGGTGT
GA CA TTTTAC ----
GAM33138 19913 TTGTGCTTGCTTAATAGGGC G --- - C CTCCCTC CA A CTGTT
1 CATTTCTCCCTCCTTGGCAT TTGT CTTGC TTAATAG GGC ATTT CTTGG TC TCAAG
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ACCTAAGAAAGATTAAATAG A TAA A A TTAGAAA CA A -----
CCATTGTTAAAATGCAGGAA
TAA
GAM33138 5989 TTGTGCTTTTGACACTTTAT - GA - TA - TT AAA CTAAAAA
3 CCGGTTTTATTTAAAAACAT TTGTGC TTTT CA CTT TCC GGTTTTAT AA CATG
GCTAAAAACATGGTGTTCCA GACACG AAGG GT GGA AGG CCGAAATA TT GTAC
TAAAGCCAGGACCAGGATGA C AA A CC A CC GTG -------
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GAM33142 19097 TTGTGGTATCCAACCCAGTT T - ACCC A TTC AGTAT
7 GACCATTCTTACAGTATGTA TTG GGTA TCCA AGTTG CCA TTAC
ACCTGGCAACTAAGTGGATT AAC CCAT AGGT TCAAC GGT AATG
ACCCAA - T GAA- - CC- -----
GAM33143 17952 TTGTGGTGAGTGCCTTCTGT G GA C -- A- GA AAATGAAAC
4 ACAGTCGACTGCAAATGAAA TTGT GT GTGC TTCT GTAC GTC CTGC
CGCAGAGGATGGGTGCCCAG GACG CG CACG AAGA CGTG TAG GACG
AAGCACCTGCGGCAG G TC - CC GG GA ---------
GAM33155 20706 TTGTTCACCTGGCAAGCACT - CAAG T - --- G TTTTCC
1 GTGGCTGGCTCTCCAGGATG TTGTTCAC CTGG CACTG GGCTG GCT CTCCA GATG
TTTTCCCATTGTGGGGTTGG AGCAGGTG GACC GTGGC CCGGC CGG GGGGT TTAC

GCACGGCCCGGTGGGACCAG A AGG- - A GTT G ------
AGTGGACGA
GAM33156 12478 TTGTTCCCATCAGTTTAGCC T CA CCCA AT ACA GAATGCAAA
7 CAGAGATAGACAGTAGAATG TTGT CC TCAGTTTAG GAG AG GTA
CAAATACCTCCCTCCCCTAA GGCA GG AGTCAAATC CTC TC CAT
ACTGACTGGACGG - TC CC-- CC --- ---------
GAM33158 16476 TTGTTCTGTTTGTTTTAATT -- G A AAACC AAGAAGC
8 AAACCTTTTGAAGAAGCCAA TTGTTCT GTTT TTTT ATT TTTTG
GACACAGATGGAAAGAGACT AACAAGA CAGA AAAG TAG AGAAC
AAGAACAA AT G G ACAC- -------
GAM33162 2754 TTGTTGGCCAGGCTGGTCTC TT - T CTCGA CC ACCT
5 GAACTCCTGACCTCAAGTGA TTG GGCC AGGC GGT ACT TG
TCTGCCTGCCTCGGCCTCCA AAC CCGG TCCG CCG TGA AC
A CT C T TCTAG -- ----
GAM33163 12560 TTGTTGGGGCCCAGGACCCA TG CAGG AC-- GC TC TG G TCATCTTT
2 CCCTCGCTTCTTGGCGTAGT T TTGGGGCC ACCC CCTC T T GCGTA TCTG
CTGTCATCTTTTGGGGTGTG A GACTCCGG TGGG GGAG A A TGTGT GGGT
TTGAAGAAGAGGATCCGGGT GT ---- CCTA A- GA GT G --------
GGCCTCAGTGA
GAM33165 5937 TTGTTGTTTTGTTTATCTTT TCTTTCTCTTTCA ATCG
2 CTCTTTCAGTTTTAGATCGC TTGTTGTTTTGTTTA GTTTTAG
TAAGGCATTTTAGATAAGGC GACAACGGAATAGAT CGGAATC
AACAG TTTA--------- ----
GAM33171 6124 TTGTTTGGGTCTGAATTTTG GG- TG TT T- -- TAA
2 TTTTTAAAACTAAGCTAAGT TTGTTTG TC AAT TGTTTT AAAAC TAAGC
TTAATGTTTTTTAAAATGCT GATAAGT AG TTG GTAAAA TTTTG ATTTG
GTTTGGAATATGAATAG ATA GT TC TT TA ---
GAM33171 9440 TTGTTTGTATTCATCTTCAT - TA--- --- A T AATAGACCA
7 GTAGCAGAATAGACCACTGT TTGTT TG TTCATCT TC TG AGCAG
TCAAGAAGTAGATGAAAAAT GACAA AC AAGTAGA AG AC TTGTC
TCATAACAG T TTAAA TGA A - ---------
GAM33172 20370 TTGTTTGTTTGTTTTTTTAA T AA- TG C A T AA
3 ATGGAGTCTTGTTCTGTCCC TTGTTTGTTTGTTT TTT ATGGAGTCT TTCTGTC CCCAGGCT
GAGTGCAGTGG GC
CCAGGCTAGAGTGCAGTGGT AATAAATAAATAAA AAA TGTCTTAGA GAGACAG GGGTCCGA
CTTACGTCACT CG

GCAATCTTGGCTCACTGCAT T CTC GT T C - --
TCCAGCCTGGGTGACAGAGT TCTTG
GAGATTCTGTCTCAAATAAA
TAAATAAATAA

GAM33172 1740 TTGTTTGTTTTAACATGGTA TT TAACAT - TT CTCAAATATTT
4 GGGTTCTGACCTCAAATATT TTGT GTTT GGTAG GG CTGAC
TGTTAGGTCTGCTACTCAAA GACA CAAG TCATC TC GATTG
TGAACTTACAG TT TAAAC- G TG ----------
GAM33173 3996 TTGTTTTAATGATTAATGTA - ---- AAA TCTGAAATA
1 AAGGGTCTGAAATATCTGCA TTGTTTT AATGATT AATGT GGG
TATTTAAAAATTATTAGAAG AACGAAG TTATTAA TTATA TCT
CAA A AAAT CG- ---------

GAM33175 21174 TTGTTTTCCCTAACATCAAG CC- --- -- AGAGAACCAC
3 AATGTGAGAGAACCACCACC TTGTTTT CTAACATCAAG AAT GTG
AATTTGCCTTGATGTTAGAC GACAAAA GATTGTAGTTC TTA CAC
AAAAACAG ACA CGT AC ----------
GAM33175 14717 TTGTTTTCTACTCTGTGATC CT G - TTCCAT ATTTCATTA
6 TTTCCATATCATATTTCATT TTGTTTT ACTCT TGAT CT ATCAT
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GAGTCAAAACAG C- A T TTGAC- ---------
GAM33176 8536 TTGTTTTGTTAGATGCAGTA - AT- GA- TTTAC
8 ATGATGTTTACCAGAGATTA TTGTTTTGT TAG GCAGTAAT TG
TTGTTTCCTATGCAAAATAA AATAAAACG ATC TGTTATTA AC
T CTT GAG -----
GAM33178 18189 TTGTTTTTTCGGTTGGGCAT TCG - A C A - AGGAT
0 GCTGCTTACCGCAGGATGAT TTGTTTTT GT TGGGC TG TGCTT CCG C
GGAAGCGACGGCCCGTACAA GACAGAAA CA GCCCG GC GCGAA GGT G
AGACAG --- T - A - A -----
GAM33178 20523 TTGTTTTTTGTTTATTTGTC - A-- C AAT - T GTT CCAG
6 TTTTTGAAATAGAGTTTCGC TTGTTTTTTG TTT TTTGT TTTTTGA AG AGTTTCGC CTT GC
TCTTGTTGCCCAGGCCGGAG AACAAAAAAC AAA AAACA AAAAACT TC TCAGAGTG GAG CG

TGTGAGACTGCTTCTCAAAA C CCA C CT- G T GC- ----
ACACAAAACCAAACCAAAAA
ACAA
GAM33179 4418 TTTAAAAAAAGAAGCTATGT A- --- ATG ACACTATAGTCTATTTAA
2 TTACACTACACTATAGTCTA TTTAAAA AAGA AGCT TTTACACT
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ATGTCTTAATTTTAAA AA GTA GTA ----------
GAM33184 18656 TTTAAAGAATAATTTGGAAA AA-- A A AA-- AA-- ATTATC
6 ATTTTAAACTAATACTTATT TTTAAAGAAT TTTGG AA TTTT ACT TACTT
ATCAAGTAATAAAGTCATCA GAATTTCTTA AGACC TT AAAA TGA ATGAA
AAAATTACCAGAAATAATTC ATAA A A CTAC AATA ------
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9 AGGGTCTCTGCCTCCCCAGC TTTAAAG GGTGGCC G GGGT TCTGCC CC
AGGTGTGGCAGATGCCTCCC AAATTTT TCACCGG C TCCG AGACGG GG
GGCCACTCGTTTTAAA GC --- CC T TGT ----
GAM33185 8935 TTTAAATAAAATTCACTTTA A ATGAA AATAAG AAATGG
8 TGAATCAATAAGTGAAATGG TTTAAATAA ATTCACTTT TC TG
CAAAAAGGAGAGGTGGATAT AAATTTATT TAGGTGGAG AG AC
TATTTAAA A ----- GAAAA- ------
GAM33190 21520 TTTAAGCAAGCACCATCAAG - AA-- CA CT AA- - - ACAATGAGAA
9 CCTTACAATGCTGAAGACAA TTTAAG C GCAC TCAAGC TAC TG CT GAAG
TGAGAACTTCAAGACAATAG AAGTTC G CGTG AGTTTG GTG AC GA CTTC
TGGAGTTTGAGTGCCGGGGC C GGGC -- AG ATA A A ----------
CTTGAA
GAM33191 2994 TTTAAGCATTTCATGGGGTG AAG A GG AGGGGAGA GTGC
0 AGAGGGGAGATCTGTGCAGG TTT CATTTC TG GTGAG TCT
GGGAAGCTTACTACAGAAGT AAA GTGAAG AC CATTC GGA
GAGAAA GA- - AT GAAGGG-- ----
GAM33191 9137 TTTAAGGAAAAGAGAATTTA AAAA TTA ATA T CATTAGATC

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4          AGAATATTTTGCAGGCATTA TTTAAGG   GAGAAT  AGA  TTT GCAGG
           GATCCTTGTTAAAAATCTAT AAATTTC   TTCTTA  TCT  AAA TGTTC
           ATTCTTGACTTTAAA         AG--    TA-  AA-  T   ---------
GAM33192 21295  TTTAAGGGGTCTTCAAGTAA      GG------    A  AAGTAAAACATACATCGTA
4          GTAAAACATACATCGTAGCT TTTAAGG      TCTTC AGT
           AGAAGAAAAATGTACCTTAA AAATTCC      AGAAG TCG
           A                  ATGTAAAA    A  ----------
GAM33194 18552  TTTAATAAGGTGTGAGGAAG       --   GA    --  ---  GTTT  TTTT
1          GGGTCCAGTTTTAGTTTTCT TTTAATAA  GGTGT  GGAAGG  GGT  CCA  TAG
           GCATATGGCTAGCCAGTTTT AAATTATT  TCACA  CCTTTT  CCG  GGT  GTC
           CCCAACACTGTTTATTAAA       TG    AC    GA  ATC  ATAC  ----
GAM33195 9048   TTTAATGCAGGTACTGTTAC    T   TACT TT    C  TGATGT
8          AATACAACTGATGTGTTTTG TTTAA GCAGG   G  ACAATA AAC
           TTGTCGTTCCCCCTGCTTAA AAATT CGTCC   T  TGTTGT TTG
           A                -   CCCT GC    T  ------
GAM33199 6053   TTTAATTTAGTACAATTAAG        TA  TTA   TA-    AACA
0          TATATTATAAAACATTGTAA TTTAATTTAG  CAA  AGTA  TTATAA
           AACTACTACTTGGTTTAAGT AGATTGAATT  GTT  TCAT  AATGTT
           TAGA                  TG  CA-   CAA    ----
GAM33200 9505   TTTACACCTGAAAGAAACTT   C   GAAAGAAA     CTTGTG     TTCCCCATCT
9          CATACTTGTGTGTTCTGTTC TTTA ACCT      CTTCATA    TGTTCTG
           CCCATCTCAGAGCAAGATTA AAAT TGGA      GAAGTAT    ACGAGAC
           TGAAGAGAAGGTCTAAA      C   AGA-----      TAGA--      ----------
GAM33202 4046   TTTACAGTATGTACACGCGG    A  AT  A   CG---    A  CCACAC
1          TGACACTCCACACAGGTCGC TTTAC GT  GT CACG    GTGAC CT
           AGACACGTGGACGCAGTGAG GAGTG CG  CA GTGC    CGCTG GA
                       A  --  G   ACAGA   -  ------
GAM33203 21201  TTTACATTAGCAGGGCTGGG    ATTA   G   GCAAGAT   ACATAATTC
5          CAAGATTCTTACATAATTCA TTTAC   GCAGG CTGG      TCTT
           AGACCTAAAACCAGCCTGCA AGATG   CGTCC GACC      AGAA
           GTAGA               A---    -   AAAATCC   ---------
GAM33206 1131   TTTACGAATGGGGTGACAAC         G  CA-  TATGA  AAAAC
0          TTATGATAAAAACTAGAGCT TTTACGAATGGG TGA  ACT    TA
           AGTGAATTAGCCTATTTGTA AAATGTTTATCC ATT  TGA    AT
           AA                    G  AAG  TCGAG  -----
GAM33211 920    TTTAGAAAGTGTTCATTTTT     AAGT-  ATTTTTAAACT   C   AG   GAAAAGTTAT
1          AAACTGCAACTGTAAAGGTT TTTAGA    GTTC        GCAA TGTAA  GTT
           GAAAAGTTATGACTCTTGCA AAGTCT    CAAG        TGTT ACGTT  CAG
           TTTGTGAACTGTAATCTGAA     AATGT   ----------   T   CT   ----------
GAM33214 3032   TTTAGAGTTTAAACTGTCAG   G -   AC   GC-  ATT   ATAAAC
0          CTTTATTATTGATAAACCAA TTTA AG TTTAA  TGTCA  TTT  ATTG
           TTGGAGAAAATGACATTAGA AAGT TC AGATT  ACAGT  AGA  TAAC
           TCTGTGAA             G  T   --   AAA  GGT   ------
GAM33215 5609   TTTAGATTTGAACTTCTCGA        AACT   GA    ACC   ACCCAA
6          AGAGCTACCAACACCCAAGT TTTAGATTTG   TCTC  AGAGCT   AAC
           TCAGCTTTGGAGGCAGATCT AGGTCTAGAC   GGAG  TTTCGA   TTG
           GGA                   ----  G-    C--  ------
GAM33218 9788   TTTAGCTGGTTCCAGGTAGA      GG----    GGT  AA  GG-    GTTTTA
9          AGAGGCTATTGTTTTAGATA TTTAGCT     TTCCA   AG  GA   CTATT
           GAGATTAGCTTGTGGGAAGA AGGTCGA     AGGGT   TC  TT   GATAG
```

TAAAGCTGGA AATAGA GT- GA AGA ------
GAM33222 16425 TTTAGGGCCTCCTAATAAGT AATA- C- - TGAAT
2 CCGTTTCCTGAATGGTAAAT TTTAGGGCCTCCT AGTC GTTT CC
AAGGCTCTCCCGGGGGGCCC AAATCCCGGGGGG TCGG TAAA GG
TAAA CCCTC AA T -----
GAM33222 1230 TTTAGGGGAAGTCAGACTAA G A A AA C G TGCACT
3 TCCCTGGGTGCACTTCGAGA TTTAGG GA GTC GACT TC CT GG
GAAAGGTTGGACCTCGCCTG GAGTCC CT CAG TTGG AG GA CT
AG G C G AA A G ------
GAM33226 9168 TTTAGTTGGGCTGAGCTGGT TG-- TCT T- - GTGCT
8 TCTCTTGTGAAATTGTGCTG TTTAGTTGGGC AGCTGGT CTTG GA AATT
GTTATCTTTAAGCTTATCAG AAATTAACCTG TTGACTA GAAT CT TTGG
TTATTTGTCCAATTAAA TTTA TTC TT A -----
GAM33233 2848 TTTATATGTGTTGAAAACCA TA GAAAA AAAT---- T AAAGCTTATCCATAAAAAA

2 AAATGACATCTTTTTAAAGC TT TATGTGTT CCA GACATCT TTT
TTATCCATAAAAAAAAATAG AG GTACACAA GGT CTGTAGA AAA
ATGTCTTTTATAGTGGAAAA GG AAA-- GATATTTT T ----------
ACACATGGGGA
GAM33233 3064 TTTATATGTTTTCTATTAGT T T GTAATTTCCTT C A - T TCAAGT
3 AATTTCCTTTGCACTATGCT TTTATA GTTTTCTA TA TG ACT TG CTT ATTTTAA
TTATTTTAATCAAGTTTGGA GAATAT CAAAAGGT AT AC TGA AC GAG TAAGGTT
ATTGAGTCAAAGTCACATCA C C ACGAATACTAC - A T T ------
TAAGCATACTGGAAAACCTA
TAAG
GAM33236 12300 TTTATCATCTGGACATTTTT TC A TTT GG G G AAAAAA
1 GGGTTTTTTTCTGTTTTGTT TTTATCA TGG CAT TG TTTTTTTCT TTTT TT
AAAAAAAAGAAAAAGAAGAA GGATGGT ACC GTA AC AAAAGAAGA AAAA AA
AAGACATCATGGCCAACTGG CA G CT- AG - G ------
TAGG
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9 AATGACAGAAAGTTCTTAAC TTTATCC AATACT TG CAGAA AGT CTTA ATTTAGAA
ATTTAGAAAATATTTTAAAT AAATAGG TTATGA AC GTTTT TCG GGAT TAAATTTT
TTGTAGGTGCTTAATTTTGC TAC CCC--- C AAT T GTT ----
CACCCAGTATTCATGGATAA
A
GAM33240 9773 TTTATGATTTGTTTCAGTTT T T TTA C TC AG TCAGT
7 TATTTTCCTGTCTCAGTTTC TTTATGAT TGT TCAGTT TTTTC TG TC TT
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GATTGACACACATCATAAG C C TC- - TT AA -----
GAM33242 987 TTTATGGCTGAGTAATATTC A TATTCC CT ATAT
3 CGTTGTCTGTATATACTACA TTTATGGCTG GTAA GTTGT GT
GCTTGTTTACATAGTCATGG AGGTACTGAT CATT CGACA CA
A A TGTT-- T- ----
GAM33243 1456 TTTATGTAAATGAGGGGTGG AAATG --------- T CTC
0 TCCTGCCCTCGGCTGGAGTT TTTATGT AGGGGTGG TCC GCC
CCTTTCTCACCCCTGTGATA AGGTATA TCCCCACT AGG CGG
TGGA GTG-- CTTTCCTTG T ---
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6 TACATTTATGACTTAAAAAT TTTATGT AT CTGG TTAT

AACAAGAATCAGGAATTAGA AGGTATA TA GACT AATA
TATGGA GAT- AG AAGAAC ---------
GAM33244 8422 TTTATTAAAAGATCATGATA AAAA TC GATAA GCATTTTA
6 TTGATAAGAATGCATTTTAA TTTATT GA ATGATATT GAAT
TTTACAAGGTATCATTTCAG AAGTGA CT TACTATGG TTTA
AGAGTGAA GAGA T- AACA- --------
GAM33245 19085 TTTATTAATAATCACCCAAA AATAA CAAAC A- CCA
2 CTTTGAAATAATCCAATTGT TTTATT TCACC TTTGA ATAAT
CCTTAAACTGGTGAATGGAT AAATAG AGTGG AAATT TGTTA
AAA GTA-- TC--- CC ---
GAM33245 3349 TTTATTACCTCCCAGACTGA --- C ACTG CC- GA CC ---- C CCAATCC
9 GCCCCCGACCTGGCCCAGCC TTTATTA CCT CCAG AGC CC CCTGG CA GCCTGGCC GTCC

TGGCCCGTCCCCAATCCAAT AAATAAT GGA GGTC TCG GG GGACC GT CGGACCGG CGGG

GGGCTGGCCAGGCCACCTGC CAG C G--- ACA AG AC CCAC T -------
ACCAGGGAGGACAGCTGCTG AAT
GCAGGGACTAATAAA

GAM33254 796 TTTATTTGTATCAAGGCATT GTATCAAG A GAA-- TAA
2 TAAAATGAATATATGTAACA TTTATTT GC TTTAAAAT TATATG
TGTACCTAAGTTTTAAAAGC AAGTAAA CG AAATTTTG ATGTAC
ATAATAAAATGAA ATAATA-- A AATCC ---
GAM33254 19790 TTTATTTGTGTTTCTAATGA TGTT A AAGGAA AG CACT
5 GAAAGGAAGGTTAGAGGTCC TTTATTTG TCTA TGAGA GGTT AGGTC
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TCAATGGACAGATGAA ---- A GGCGA- A- ----
GAM33257 9189 TTTATTTTTTTAATACAATA A AAT A T CAATACA
3 GCTGCCAGCAATACACTGGT TTT TTTTTTT ACA TAGC GCCAG
GTTGATGTTCCAGAGAAAAG AAG AAAGAGA TGT GTTG TGGTC
AA A CCT A - -------
GAM33264 20681 TTTCAATTTTTATTTTGGGT C A TG GT AAG ACATTTTCCA
0 TTCTTACAAAGGTTGACATT TTT AATTTTT TTT G TTCTTACA GTTG
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TGTTGAAAAAAAAATTCAAA C A GT GT GGA ----------
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1 TTCTTACAAAGGTTGACATT TTT AATTTTT TTT G TTCTTACA GTTG
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TGTTGAAAAAAAAATTCAAA C A GT GT GGA ----------
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8 TATGATTTAAAAAATCCAGG TTTC TCTGT TTTT TATGATTT
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AGAAGAAA A-- GAAATAC AG ---------
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4 TGACACAGTGGTGCAAACAA TTTCA CGTAT GCTATGA CAGT GT
CTGGAGACTCGTGGCACATA GAAGT GTATA CGGTGCT GTCA CA
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GAM33274 5674 TTTCAGGCATTTTTATTTTT TT TTT-- -- - TG TAAAC
8 CCTGGCTAAACGTTGGTGAA T CAGGCA TTAT TTTTC C GC

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GA GG CCTCC TT T GT -----
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ACTTTTCTGGAA TT --- -- ATACAT T ----
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4 TGTTGAACAAGAAATTAACA TTTCAGGGTA TGCAC TGTTGA
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A ACAAAG - --------
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TGCAGAAACTTACTTTGAAA AAAGTTTCATT ACGTG ACA
CAAAG - ----------
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6 CTCCTATGAAAGAATGCAAT TTTCAG GT TGAT ATGAGCT CTA GAAAG CA
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GAA
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4 TATTTTTTTTTTTCCAAAAA TTTCAGTCTG GT CTATTTTT
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GGCTGGAG C CTGTCTCGCTCT --------
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2 TATAAAACGAGAACGATAAA TTTCAT AAT CTCTATAA GAG AC
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ATTGTGAAA ------ TT CAA A -------
GAM33282 3836 TTTCATGCTTTGAACGATCA C ACGA ACA- CA ---- TAT
3 GACAAGCTTTACATTCTACC TTT ATGCTTTGA TCAG AGCTTTA TTCT ACC
TATGGTGTTCAGAAATTGAG AAA TGCGAAACT AGTT TCGGAGT AAGA TGG
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GCGTTAAA
GAM33283 12454 TTTCATTAACACATATATTC ATTAA C GT - G ATAC
5 CGTCCTGCAATACTGGAGAG TTTC CA ATATATTCC C CT CA
GTGGAATGTGTCTGGCACAG AAAG GT TGTGTAAGG G GA GT
AAA ACACG C TG A G ----
GAM33284 18404 TTTCATTCTGAGATACTGAA - - AT AACACAAA CTTG
3 CACAAAGTTGCTTGCAACAA TTTCAT TCT GAG ACTG GTTG
ATTTTGCAGTTGTTCAAGAG AAAGTG AGA CTT TGAC CAAC
GTGAAA G A GT GTTTTAAA ----
GAM33285 5824 TTTCATTTAAAAAATGGTTT TTAAA TTTCA TGAAAATAGAAAGTCCGT
0 CAGCAAATATGAAAATAGAA TTTCAT AAATGG GCAAATA
AGTCCGTTATTTGTCCATTT AGAGTA TTTACC TGTTTAT
GTAATATGAGA TAATG ----- ----------
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2 TGCCGTGAGCCGTGGCCCTG TTTC CA TTCC CC GCACC GCCGTG CG GGCC GTGGGCAC
GACGGCC
GTGGGCACCGACGGCCCCTC AAAG GT AAGG GG TGTGG TGGTAC GC CTGG CACTTGTG
CTGTCGG

CGCCCGGCTGTCTGTGTTCA CA A - C - CCTTT T TAGA T ----
CAGATGGTCTCGTTTCCCAT CGCCC
GGTGGTGTCGGGGAAATGAC
GAAA

GAM33304 18096 TTTCCTGATCAGCTTTTAAT TCAG TTAA-- G ATAAAAATTGAAA
0 ATCTGTCAAATAAAAATTGA TTTCCTGA CTT TATCT TCAA
AATTGAAGATGGTATATAAG AAAGGACT GAA GTAGA AGTT
ATTTCAGGAAA TTA- TATATG - ----------
GAM33308 14019 TTTCCTTTCCTGCATTTCTG TCCTTT ATTTCTG TT -- TATCTT - CCT T
4 AATTTGTCATGTTGCTTATC TT CCTGC AA TGT CATGTTGCT GCTC AGAATTT TCAT C
TTGCTCAGAATTTCCTTCAT AA GGATG TT ACA GTACGACGA CGGG TTTTAGA GGTG G
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TACAGATTTTCGGGCAGCAG AAAGTA
CATGTAACACTTTATAGGTA TCA
GGTTTTCCAA GGT

GAM33310 12228 TTTCGCTTGAGTTCTTCTCT --- TT C AATTA A T - TCTTCA
7 GAAATTATATGCAAAGAGTT TTTCGC TTGAG CTTCT TGA TATGCA AGAG TGTG GG
GTGGGTCTTCATCACACATT AGAGTG AATTC GGAGA ACT ATATGT TTTT ACAC CT
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GAM33311 6214 TTTCGGCGCTGGGTCCCCAA CG-- T- - AAGCAGAA GAGA
2 AGCAGAATGGAGACGGATAG TTTCGG CTGGG CC CCA TG
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CGAAG CTAA TC T GAGATAG- ----
GAM33311 3676 TTTCGGCGCTGGGTCGCCAA CG-- --- AAAGCAGAA GAGA
3 AGCAGAATGGAGACGGATAG TTTCGG CTGGG TCGCC TG
AGTGGGTGGGCTCCCAGAAT GAAGCC GACCC GGTGG GC
CCCGAAG CTAA TCG GTGAGATAG ----
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4 AGCAGAATGGAGACGGATAG TTTCGG CTGGG GCCA GC TG
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CGAAG CTAA T- GG AGATAG ----
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5 AAGCAGAATGGAGACGGATA TTTCGG TCTGGG GCC A GC TG
GAGTGGTGGCTCCCAGAATC GAAGCC AGACCC CGG T TG GC
CCGAAG CTA T- - GG AGATAG ----
GAM33314 1226 TTTCTAATAAATGTAAAAAG AT-- GCTTAG TTTATAACTT
5 CTTAGTTTTGTTTTATAACT TTTCTAATAA GTAAAAA TTTTGT
TATAGAGGATAATTTTTATT AGAGATTGTT TATTTTT GAGATA
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8 TTTCCACATGTCTCTTATGG TTTC AGATTGCT GA TTGT CATG
TATAGTTCTTGAGCAATTTC AAAG TTTAACGA CT GATA GTAT
CTGAAA TCC GTT T TG--- -----
GAM33320 14355 TTTCTCAGCTATGACACAGA CTA- CA A CAATTCACTTGTACC
9 GACAGGGGGCAATTCACTTG TTTCTCAG TGA CAG GACAGGGGG
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ACATTTGGGAGA TACA C- - ----------

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0 TCTCTCTCTCTCTCTCTCTC TTTCTCTCTCTCTCTCTC TCTCTCTCTCTCTCTCTCTCTCAAA
TGCT G
TCAAAATTACAGTGCTCATT AGAGAGAGGGAGAGAGAG AGAGAGGGGGAGAGAGAGAGAGAGTTT
ACGA C
GTCATTGACCTCAGCAGCAA ATAT AAACG-- CTC-
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GGGAGAGATATAGAGAGAGA TC
GGGAGAGAGA AG

GAM33329 9549 TTTCTGAGTTAACAAAATAT TG GTT TTTTT TCT
0 TTTTAATAAAATCTTTTTGT TTTC A AACAAAATA AATAAAA
TTGTTTGTTTTGTTTTGGAA AAAG T TTGTTTTGT TTGTTTT
A GT --- TTGT- ---
GAM33330 21337 TTTCTGCTTTGGCTTCAGAC TG ---- T CTTTA G TTTT
5 TTTAAAAGAGCTTTTGCTGT TTTC CT TTGGCT CAGA AAA AGC
TTCCTCTTCTGCAGTTAAAC AAGG GA AATTGA GTCT TTT TCG
ACAGTGGGAA GT CACA C TCTCC G ----
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7 TCAAATATCTGAAATACTTT TTTCTGG GGT TC ATCTG ATA
CATTATACCAGGTCAAGAAA AAAGACC CCG AG TGGAC TAT
AATGCCACAGCCAGAAA GACA- TAAAA AAC- CA -------
GAM33332 1763 TTTCTGGGCCCTGAATTCTA G AA --- AAA
0 TTTTAGTAAAATAAAATTTT TTTCT GGCCCTG TTCTATT TTAGTAAAAT
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GGTTGGGGAA G AG ACC ---
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4 TCCTGAAATCTATGGGCTTC TTTCT TCTCGC CCTTT AG CTGAA C
AGTCTCTCAAAGGTGTGAGA AAAGG AGAGTG GGAAA TC GACTT G
GGGAAA G T C TCT CG ----
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1 GTGATCTGTTTTTTTAGTGA TTTCTGTT AAA GAAG GATC
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AGA GGG G CT- ----------
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6 CCGTGGTACTTAATAGGTGT T CTGT TTCTAA TGGTAC
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AGGGA GG -- GTGTTAAA ---------
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8 TTTTTAAAATCTGTACAGCA TTTCTT GCATTTT TTTTTA TG ACAG AAGAG
AGAGCAACTTTTTCTGTCAA AAAGAA CGTAAAG AAAAAT AC TGTC TTTTC
ATAAAAATGAGAAATGCAAA AAAA AGT AA--- - T ---
AAAGAAA
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2 GCTTGGTTGCTACACATTTA TTTCTT ATC CT TGTCAGCTT GTTG
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TTGAGGATGAAGAAA G - GTT ATA ----------
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9 CATCAAGGAATCTCTTCTCG TTTCTTA TGT TGT ATC AGGA
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AGAAA TCT C TAAAAT C -----
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0 TTGTGCTAATTTTTCTATGT TTTCTT TCT CTGTTAT CTA TTCTATGTATGTG
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TATATATATGGAATGGAGGT - AA GA---- ---- ----------
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GAM33341 14340 TTTCTTCTGTGACATAAAGA - GA- A CATT ATATCGTAGAAC
9 CATTTTGATATCGTAGAACC TTTCT TCTGT CATAA GA TTG
AATTTTTTATTGTGGTAACG AAGGA AGGCA GTGTT TT AAC
GACAGGAA C ATG A TTTT ----------
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1 TATGTATATGTACTAAGTTT TTTCTTG AATAT CAAAATA GTA
ATTTTGCAAGTGTTTCAAGG AAGGAAC TTGTG GTTTTAT CAT
AA T AAC TTGAAT ----
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8 ATATTCAATCTGTTGTGAAG TTTCTTTAAA ACTGC AATC GTT
AACCTGATTTGCACTCTGTA AAAGAAATTT TGATG TTAG CAA
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1 CTGGGAGCCCAGAGGGCAGC TTTCTTTCATG GT GGT TGG GCCC
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GAGGAAG CT G TGTGAT GA ---
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3 GTGACAGACAACCGGGCATT TTTCTTTCAT TGCCCG TGT
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A TGTGCATTGGTTT CA- -----
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3 GCCATTTCATTAACAGTATT TTTCTTTGGTG TGC AGAGC TTTCA TA
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AGAAA A- T -- T ----
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TAGGAAA TGTCG AGTAAA TT ---
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8 GGAAGAATATGTAGTACTCC TTTCTTTTT ATTGT CTTG GA TAG
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AAAAGAAA CAC A AA- ----- -----
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3 AAACAAAATAGTAAAGCTAA TTTGAAA TC CAGA AGC AC
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AA A ACAAAA AAA ------
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0 AATAATAGCTAACATTGAAT TTTG CATA AGGA TAAT
TACTCCTTAATATGTGCCAA AAAC GTAT TCCT ATTA
A CGT- AAT-- C ----------
GAM33352 6056 TTTGAAATCTCTCTATAAGG AAT ---------- A AGATATTAAG
1 TATCCAGATATTAAGGGATG TTTGA CTCTCT ATA GGTATCC
CCATATAAGACTAGGAAGAG AAACT GGGAGA TAT CCGTAGG
GGTATCAAA AT- AGGATCAGAA A ----------

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9 CTCCTGTCTGTTTTCTTAGC TTTGA CTGGGG TG TGG TG CTG
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TCAGA G - AC CCTC C ------
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TTCCCCATTTGTTTGTGCTT AAACTTCGT TTG TACC CT TGACTT
CAAA GT TT C T --------
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2 AAAACATGCATAATAATCTT TTTGAATT AAAC TC TGG CAT
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TAAATTCAAA A ATC TT CTA- ----------
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AACCAAAATAAAAATTGAAA G T ACCAAA TTC C -----
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0 ATGAGATGTCTCTGGGGACA TT A GTG TGCAAT TGA AG TGTC TGGGG CA
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TGACTTGTCATGGTTGCAGC GT - G GT GT AGTC TA - ------
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6 GAAAAGAGACAGTTGAATCC TTTGACT TTTTAT TTGG AAAGAGA AG
CTTTTCTTTACCAGCATAAG GGACTGA GGAATA GACC TTTCTTT TC
GCAGTCAGG C--- C A - --------
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6 TTGTTGCCCAGGCCTAAATT TTTGAGAT GGAGTTA CC TGC AGG AATTA
ACACTAATTATTCTTTGCAT AAACTCTG CCTTAAT GG ACG TCT TTAAT
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TCTCAAA
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2 TCTTTTTTTGGGTTTCCAGC TTTGAG TGGA GGT TCT GGGTT CCAG
TCACTGGGACTCTCAGACCT AAACTC ACCT CCA AGA CTCAG GGTC
TACCTTTCCAGCTCAAA G TT TTCC CT---- - ----
GAM33368 21469 TTTGAGTATCGGAACCAAGG -- G A AA AAGGCAC ATAGATA
3 AGATGAAGAAGGCACAGAGA TTTGAGT ATC GA CC GGAGATGAAG AGAG
TAGATACTCTACAGTTTCGT AGGCTCA TAG CT GG CCTCTGCTTT TCTC
CTCCAGGTCAGATGCACTCG CG A - A- GACA--- -------
GA
GAM33372 771 TTTGATCTGAACTTAAAAGA TC CTTAAAAG A AA- TAT
2 GGAAGAAAGGATTATGTCTT TTTGA TGAA AGGA G AGGAT
GAGCTCCTAAAACTTCAACT AAACT ACTT TCCT C TTCTG
CAAA CA CAAAA--- - GAG ---
GAM33375 1194 TTTGATTCTTCAGCACTTAA - TTC-------- ATA TGCCT
4 TAGTCTGCCTGGCACTAAGT TTTGA TTC AGCACTTA GTC

GCTCAATAAATTCTGAACTC AAACT AAG TCGTGAAT CGG
AAA C TCTTAAATAAC CA- -----
GAM33377 12429 TTTGCAATTTTTATTTTGGT C A TG TT AAG ACATTTTCCA
5 TTTCTTACAAAGGTTGACAT TTTG AATTTTT TTT G TTCTTACA GTTG
TTTCCATAACAGGTGTAAGA AAAC TTAAAAA AAA T GAGAATGT CAAT
GTGTTGAAAAAAAAATTCAA - A GT GT GGA ----------
A
GAM33378 16775 TTTGCAGAAGTTCCCTAAGC AA - A CC C C GAATACCAGTA
7 CTTTACCACAGGAATACCAG TTTGCAG GTTCC CT AG TTTA CA AG
TACTTTGATGAACTCAGTGG AGACGTC TAAGG GA TC AAGT GT TC
AATACCTGCAGA CA T C -- A T ----------
GAM33380 2787 TTTGCAGCCCTGCACGAAAA TG C-- G AATC ACATAATTATTGCCACGCC
1 TCCCGACATAATTATTGCCA TT CAGCC TGCAC AA CCG
CGCCCGGACGGTTGGTGCAT AG GTCGG ACGTG TT GGC
GTGGCTGTGGA GT TGT G GGCA ----------
GAM33385 6561 TTTGCCCAGCTAACTTGCCA TG A AACTT CAG- CCCGATTA
1 TCTCAGTTTCCCCGATTAGA TT CCC GCT GCCATCT TTTC
AAAGGTGGGTGGCCAGCGGG AG GGG CGA CGGTGGG AAAG
TGGA GT - C---- TGGA --------
GAM33385 18878 TTTGCCCTTCTCAGTCTGTT - TCTCAG CCA CTA G -- ACCA
7 CCACTTCTAGGAGGCAGCCA TTTG CCCT TCTGTT CTT GGA GC AGCC
CCAGGCTCAGCATCCGGCAA AGAC GGGG AGACAA GAA CCT CG TCGG
GAAAACAGAAAATATGGGGA A TATAAA AA- CGG A AC ----
CAGA
GAM33398 9070 TTTGGAGCGCCGGGAGCGAG AGCGC- C- - AACATGGC
8 AGTGTGAACATGGCTACGCC TTTGG CGGGAG GAGAG TGTG
TCTTCATTCCCGTCCATGCC GAGCC GCCCTT TTCTC GCAT
GAG GTACCT AC C --------
GAM33401 12484 TTTGGCAAAACAAAATGTAA AAA AAA - - TT C CATTTTA
7 TGTCAGACTTTGCTGCATTT TTTGGCA CA TGTAA TGTCAG AC TG TG
TACACATGTGCTGATGTTTA AAGCCGT GT ACATT GTAGTC TG AC AC
CAATGATGCCGAA A-- A-- T G T- - -------
GAM33402 12451 TTTGGCAATTCCGGTGCCAA TT- - ATCT- CAAGC
1 TCTGTTCAAGCGACTGTTGT TTTGGCAA CCGGTG CCA GTT
GGATATTGGTCTTTGCCGAG GAGCCGTT GGTTAT GGT CAG
TCT A GTTGT -----
GAM33407 2815 TTTGGGACCTTTGTACAGTT G GTA-- TTGTGAT GCAA
1 GTGATGCTCGAGCAATTGGG TTTGG ACCTTT CAG GCTCGA
TCTGGTTCAGAGGGTGCCAG AGACC TGGGAG GTC TGGGTT
A G ACTTG ------- ----
GAM33411 19341 TTTGGGAGTAATGAATGAAA GTAAT- AA-- ---- GTA
5 GTAACTTTGTAAAAGTATTA TTTGGGA GAATG AGTA ACTTT
TACTCACGTGTTCTTCAAAT AAACCCT CTTGT TCAT TGAAA
CCCAAA AAACTT GCAC ATTA ---
GAM33411 9739 TTTGGGAGTCTGGAAGCGTA - GGAAGCGTAC A--- TTAAAC
6 CTTTATTGGTTTAGGATTTA TTTGGGAG TCT TTTATTGGTTT GGAT
AACATCTAATAAAACCAATA AGACCCTC AGA AAATAACCAAA TCTA
AAAGATCTCCCAGA T ---------- ATAA ------
GAM33413 3074 TTTGGGGAAAATTTTTGGGG - GGG GGGAGGGAA
5 GGGTGGGGAGGGAACACCCC TTTGGGGA AAATTTTT GGGGTG

AAAAAAAGTTTCTTCTCAAA AAACTCTT TTTGAAAA CCCCAC
C AAA ---------
GAM33414 5692 TTTGGGGATTTTTTTTTAAC A TAACCTTTATTCA GCA
8 CTTTATTCATTCAGAATGCA TTTGGGG TTTTTTTT TTCAGAAT
ATTCTGGGCCACTCTACAAC AAATCCC AAAGAGAA GGGTCTTA
CAAGAGAAAACCCTAAA A CCAACATCTCACC ---
GAM33416 14713 TTTGGGGGTCACGACTTGAC G T C A - AGGATTTGGAACA
0 GTAAACAGGATTTGGAACAG TTT GGGG CACGA TTG CGTA AAC
TTATGCGACGATTGTGCTTT GGA TTTC GTGTT AGC GCGT TTG
GAGG G - - A A ----------
GAM33417 18107 TTTGGGTGGCATAGAGGTTT TA TTT TG GC- GTGA
6 TGTATTGAGGGCCAGTGATG TTTGGGTGGCA GAGGT GTAT AGG CA
ATGTTTTGATATTTATTTCC AAATTCATCGT CTTTA TATA TTT GT
TGCTACTTAAA C- TT- GT GTA ----
GAM33419 20902 TTTGGTAGTAATTTCATTTT A ATTT ACA GA TAC ACCCAA
2 ACAGTGGTTGAATTTACCCA TTTGGT GTA CATTTT GTGGTT ATT CC
CCCAAGGCTTAATGACCACA AAATCA CGT GTAAAA CACCAG TAA GG
AAATGTTTCTGCAACTAAA A CTTT --- -- TTC ------
GAM33420 18142 TTTGGTGAAGTACCTTTTGG A A T TG TAAAGA - A AA- TCCC
7 CTAAAGACCAGACGAAGATT TTTGGTGA GT CCT T GC CC AG CG GAT
CCCATCAAGCGCTCGGACAT AAACTACT CA GGA A CG GG TC GC CTA
GCTGAAGGACATCATCAAA A - - GT TACA-- C - GAA ----
GAM33423 20165 TTTGGTTTGTTTGGTCATGT TGG T GT CC CAAGT
8 GAGTTACCCACAAGTTGTAT TTTGGTTTGTT TCATG GA TA CA
AGTTCCATGAAACAAGCTAA AAATCGAACAA AGTAC CT AT GT
A --- - TG AT -----
GAM33424 12538 TTTGTAAAAAAAAATTCCCC A A TT C ACCT
0 TTTTTTACTCTTAACCTTGA TTTGT AAA AAAA CC CTTTTTTACTCTTA
GAGTGAAGAAGAGGTTTTCT AAACA TTT TTTT GG GAAGAAGTGAGAGT
TTGACAAA G C -- A ----
GAM33427 1236 TTTGTACATCTCGCTTTTCT CTC TTTCTTCT T - TTAGGTCTC
5 TCTGGCATAGTTACTTAGGT TTTGTACAT GCT GGCA AG TTAC
CTCGTAATCTTTGCTTTAGC AAATATGTA CGA TCGT TC AATG
AATGTATAAA A-- TT------ T T ---------
GAM33429 19209 TTTGTAGTATTAACTTGAAC G G AACT TT ATTTCTTTTA
6 TTGGTTGATTTCTTTTATAA TTT TA TATT TGAAC GGTTG
CTTGTTCATAAGATGGTGGG GAG GT GTAG ACTTG TCAAT
AG G G AAT- T- ----------
GAM33432 5633 TTTGTATTGACAGCTGTCAT GACA T TAT GAAAAGTA
4 ATAATTTTGAAAAGTAAAAA TTTGTATT GC GTCA AATTTT
TTTTGACTGCCGAATATAGA AGATATAA CG CAGT TTAAAA
GC-- T T-- --------
GAM33435 3685 TTTGTCGCTGACTGGCATTT C - - TTCA CT--- G AATGA
7 TCACTCGGCTGGAAGTGCAA TTTGTCG TGAC TG GCATT CTCGG GGAA TGCA
ATGATGTATTCCTTTCTCCG AGACAGT GCTG GC CGTAG GAGCC CCTT ATGT
AGGATGCTCGTGTCGTTGAC T T T ---- TCTTT - -----
AGA
GAM33437 3100 TTTGTCTTAGTCTTTTTTTA TCTTTTT A AATTTTA
8 AAGATATAATTTTAATACCT TTTGTCTTAG TTAAAG TAT
TTAATTGTCATCTAAGATAA AAATAGAATC AATTTC ATA

A TACTGTT C -------
GAM33440 5768 TTTGTGCATATCAAACCTTG G ATCAA - C AA AG GCGAAAA
9 TTCCAGAATGGAGTGGCGAA TTT TGCAT ACC TTGTT CAG TGG TG
AACAATCGGGCTGAAGCAGC AAA ACGTA TGG GACGA GTC GCT AC
GGTACCAGATGCAGAAA G GACCA C A GG A- -------
GAM33441 20691 TTTGTGCTGAAGGAGGGTGT TGAAGGA GA-- A AAA TTC GTTAA
6 GGAGTACCGGATAAAAATCT TTTGTGC GGGTGTG GT CCGGATA ATCTCT CGG
CTTTCCGGGTTAACCGAGAG GGACATG CCTACAT TA GGCCTGT TAGAGA GCC
ATAGTGTCCGGCATGAAGTA CATACGA GAAG C GA- --- -----
CATCCAGCATACGTACAGG
GAM33441 1613 TTTGTGCTTCTAACTGGTGC AAC T GCCAGCTTT A CCACCTA
8 TGCCAGCTTTATAATGGTGG TTTGTGCTTCT TGG GCT ATA TGGTGGC
CCCACCTAGCCATCAATGTT AAACATGAAGA GCC CGG TGT ACTACCG
TCCAAGGCCCGCAAGAAGTA AC- - AACCTT--- A -------
CAAA
GAM33444 4397 TTTGTGTGAATCAGACCATC GTG ---------- --- ATATAATATAAA
9 TAAATATAATATAAATTAGA TTTGT AATCAG ACCA TCTAA
GACTGGTACTTGTATTTCCT AAACA TTAGTC TGGT AGATT
GATTAAAACAAA AAA CTTTATGTTCA CAG ----------
GAM33451 12347 TTTGTTGATAGAGTGGTTTC TT ---- TCC TT ATTCCCC
5 CTCCTTTGTAATTCCCCTGC TTTG GATAGAGT GGTT TCCT GTA
CCAGGGCCAGCCCATAGCTT AGAC TTATTTCG CCGA GGGA CGT
TATTTTCAGA TT ATAC CC- CC -------
GAM33452 18352 TTTGTTGTGCAGCCAATGGC TGCAGCCA GC A AA---- CACAAAATCAAAC
6 TGTGATCAAAAATTCAACAC TTTGTTG ATG TGTG TCAAA TTCAA
AAAATCAAACTTGAAGAAAC AAACAAC TAC ACGC AGTTT AAGTT
ATTTGAACGCAAACATGAAA TAAAAG-- AA A ACAAAG ----------
ATCAACAAA
GAM33452 21440 TTTGTTGTGTAGTCTGGAAC TT AG- AA-- -- GATTGT
7 TCTAAAATGATTGTGTTGCT TTTG GTGT TCTGG CTCTAA AAT
TAGGGATGATCAGAAGAACA AAAC CACA AGACT GGGATT TTG
CTCCAAA CT AGA AGTA CG ------
GAM33454 4002 TTTGTTTCTTGCTGTATTTA TG TA C CCACAGA
9 AGCATCTCCACAGAAGATAT TTTGTTTCT CTG TTTAAG ATCT
TTAGACGCAGGTAGAGATAA AAATAGAGA GAC AGATTT TAGA
A TG GC A -------
GAM33456 14475 TTTGTTTGTGACTATGAAGG G ACTATGA AA CTTCA GACTACCA
0 GTGTGGCAAGGCCTTCATCA TTT TTTGTG AGGGTGTGGC GGC TCAGG
GGGACTACCATCTGAGCCGC AAG GGACAC TCTTACACCG CCG AGTCT
CACATTCTGACTCACACAGG A ACTCAG- -- ----- --------
AGAA
GAM33461 19932 TTTTAAAATTTCAAATTGGT ATT AA------- - A T TGT
5 TTTTCTACTAGTAGATTGTG TTTTAAA TCA TTG GTTTTTCT CTAG AGAT
TTTCTAGAGAAAGATACAAG GGGATTT AGT AAC TAGAAAGA GATC TTTG
GGCATAGGTGATTGTTTAGG GTT GGATACGGG A - - ---
G
GAM33461 5902 TTTTAAAATTTTATGATTTA TT-- A T AAAATCTC
6 TGAGTTTAGAAAAAATCTCT TTTTAAAAT TATG TTTA GAGTTTAGAA
TTTGGACTTTAAGCATATGT AGGATTTTA ATAC GAAT TTCAGGTTTT
TATTTTAGGA TTGT - - --------

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GAM33462 16650  TTTTAAAGATTTTATATTAT         TTAT--    TT   -    ---  TT   GAAA
7          TTTTAAAGATTTAAATTATA TTTTAAAGATT     ATTAT  TTAA AGATTT   AAA  ATAT
           TGAAAATGTTTTTTCAAAGG AAAATTTCTAA     TAGTG  AATT TCTGGA   TTT  TGTA
           TCTATTAATGTGATTTTTTT         TTTTTT    T-   A     AAC   TT   ----
           AATCTTTAAAA
GAM33463 5458   TTTTAAATGGCTTTTACTTT         TTTTA-      AA  CACTGAA
9          TCTAAGTCACTGAAACAAGG TTTTAAATGGC     CTTTTCT  GT
           AAGGGCCACATGCCATTTAA AAAATTTACCG     GGGAAGG  CA
           AA                    TACACC      AA -------
GAM33466 9563   TTTTAAGTACCAATGATACT       TA        TAAAATTT    ATGG
8          TAAAATTTCCAGAATGGTCT TTTTAAG  CCAATGATACT       CCAGA
           GGGGTGTCATTGGCTTGAAA AAAGTTC  GGTTACTGTGG       GGTCT
                              --         --------    ----
GAM33469 3892   TTTTAATTCAATTTTTATGG      T     TTTATGG   GG  A--   TTCT
7          TGATGGGCAAATCATTCTTG TTTTAA TCAATT      TGAT  GCA   ATCA
           GTAAATGTAAATCAAACATG AAAATT AGTTAG      ACTA  TGT   TGGT
           ATTGATTTAAAA            T     TACAA--    AA   AAA   ----
GAM33470 4126   TTTTAATTTAAAACAATTTA       TA    AT    T    ---------   C  T  AG   AGAC
1          TTTCAAAGGGAACAATTAAG TTTTAATT  AAACA  TTATT CAAAG       GGAA AA TA  GGG
           GGGAGACTCCTCTATTTTTT AGAATTAG  TTTGT  AATAA GTTTC       CCTT TT AT  CCT
           CCGTATCTGATCTTTGTAAT       --    --    T    TAGTCTATG    T  T  CT   ----
           AATGTTTGATTAAGA
GAM33471 5970   TTTTACAAATGGAAGGTTTG       AA--   A       GGTA  CCTGA
1          TGGTAACCCTGAGTCAAGCA TTTTACA    TGG AGGTTTGT    AC
           AATCTATCAGCACTGTAGAA AAGATGT    ACT TCTAAACG    TG
                              CACG   A       AAC-  -----
GAM33472 16638  TTTTACCCCCTGGGAGTGAT      -  --         GGTG----------------   -    -      GAA
7          GGTGATAGTTAAGGTGTACT TTTTACC CC  CTGGGAGTGAT              ATAG TTAAG GTGTACT
GA
           GAAGATGGCGTCACAGAACG AAAATGG GG  GACCTTTATTG              TATC AGTTT CATGTGA   TT
           CGTCATTGAAGTGTACGTTT       A  TG         AAAGGGGACACAGAGAATA   T    G      AG-
           GATCTATATAAGAGACACAG      CACAGAAC
           GGGAAAGTTATTTCCAGGTG TGGCGT
           GAGGTAAAA          ACTGCG
                              --------
GAM33474 3108   TTTTACTCTCTATCTCCATG       TCTATCTCCAT    TC     TCT
0          AGCTTCAAGTTGTCTTAATT TTTTACTC         GAGCT  AAGTTG
           TTTGGCTCCTACAAATGAGT AAAGTGAG         CTCGG  TTTAAT
           GAAA                  TAAACATC---     TT     ---
GAM33474 8075   TTTTACTCTCTATCTCCATG       TCTATCTCCAT    T   TT  TTTA
1          AGTTCAATTGTTTTAATTTT TTTTACTC         GAGT CAA  GT
           TGGCTCCTACAAATGAGTGA AAAGTGAG         CTCG GTT  TA
           AA                    TAAACATC---    -  TT  ----
GAM33475 4307   TTTTAGACATTTGGAGAAAC      ACAT     AAA-- G    AG----------    TGCCA
9          AGTTTCAGATCCTGCCAGGA TTTTAG    TTGGAG     CA TTTC           ATCC
           TATTTTTGTAAAAAAGGAAA AAGATC    AACCTT     GT AAAG           TAGG
           ATGGAAGATTCCAATAAACT      AAAT     AGAAG  A   GAAAAAATGTTTTTA   -----
           AGAA
GAM33477 3984   TTTTAGCCCTCTGTATTCCT   TT    TC  -  TT---    GAGTTTTCCAGTA
6          CCGAGTTTTCCAGTAGGAGG TT  AGCCC  TG TA    CCTCC
```

TCATTTATCACTGGGCTTTA AA TCGGG AC AT GGAGG
A TT TC T TTACT ----------
GAM33481 3522 TTTTAGTTGTTTTAGGGCTT T TTT GC AATAGAAAA AAACA
6 TTTATTGAATAGAAAAAATA TTTTAGT GT AGG TTTTTATTG AATAT
TAAACAATGTTGTAGAGTAA AAAGTCA CA TCC AAGAGTAAT TTGTA
TGAGAAATCCTCCACACTGA - CC- TA GAGATG--- -----
AA
GAM33484 18538 TTTTATATGACCTGCAGGTA ATG ------ A-- A AAT- AACAA
0 AAAAGCACATTTAATTATAA TTTTAT ACCTGCA GGTAAAA GC CATTT TATA
ACAATATATTCAAAATGGGC GAGATG TGGACGT TTATTTT CG GTAAA ATAT
AAATTTTATTTTCAAATGCA --- AAACTT AAA G ACTT -----
GGTGTAGAG
GAM33485 3901 TTTTATCTACAAAACATTCA A TACAAA T --- CAACA
1 TGTCGTCATTCAACAAATGA TTTT TC ACAT CATGTC GTCATT
CACAGATGTGTATGTACTAC GAAA AG TGTA GTGTAG CAGTAA
TGAAAAAG A TCATCA T ACA -----
GAM33486 20209 TTTTATGGCTAAGCTTAGAC CTAAG A ATA- AAACA
5 TCATATCTTTAAACAAAAGA TTTTATGG CTT GACTC TCTTT
ACAAGAGTTGAAGATCTATG AAAGTATC GAA TTGAG AGAAA
AAA TA--- G AACA -----
GAM33491 4214 TTTTATTTTTAGTAGCAAAT A GTAG GT---- TGA ACATAG
5 TTGGATGTAGACTGACAGAC TTTT TTTTTA CAAATTTGGAT AGAC CAG
ATAGCTGAATGTCTTAATAA AAAA AAAAAT GTTTAAATTTA TCTG GTC
ATTTAAATTTGAAGATAAAA A AGAA AATAAT TAA ------
AAAAAA
GAM33491 12627 TTTTATTTTTCAATTTTTAT TT-- C A TG TT AAG ACATTTTCCA
6 TTTGGTTTTCTTACAAAGGT TTTTA TTT AATTTTT TTT G TTCTTACA GTTG
TGACATTTTCCATAACAGGT GGGAT AAA TTAAAAA AAA T GAGAATGT CAAT
GTAAGAGTGTTGAAAAAAAA TTTT C A GT GT GGA ----------
ATTCAAATTTTTAGGG
GAM33492 2972 TTTTATTTTTTTTTTGAGAC A T CTTCT - AGGCT
0 GGAGTTTCGCTCTTCTCACC TTTT TTTT TTTTTGAGACGGAGTTTCGCT CAC CC
CAGGCTGGAGTGCAAAGCGA AAAA AAAA AAAAACTCTGTCTCAGAGCGA GTG GG
GACTCTGTCTCAAAAACAAA C C AAC-- A -----
ACAAAA
GAM33493 20614 TTTTCAAGTCTCTGGGAGGC T --- CCA CA- CAGGT
6 CAGTGGCAGCAGCAGGTCTG TTTTCAAG CTC TGGGAGG GTGG GCAG
TGTTTCACCTTCTTCCCATG AAAGGTTC GAG ACCCTTC CACT TGTC
TGAGCTTGGAAA - TGT TTC TTG -----
GAM33495 6493 TTTTCACTCTGCTTCTTGGC C GC - CTTATGA AAAAATGAC
2 TTATGAGGATAAAAATGACA TTTTCA TCT TTCTT GG GGAT
TCCCTAAAGAAAAAGATGAA AAAAGT AGA AAGAA TC CCTA
AA - AA A ------- ---------
GAM33501 3406 TTTTCCATGATTTTATCATC ATG T TT A - CCAG
6 ATTTGATTAAGGACCAGTCA TTTTCC ATTTTA CATCA TG TTAAG GA
TTTAACACTGATGTGAAATA AGGAGG TAAAGT GTAGT AC AATTT CT
GGAGGA A-- - C- - A ----
GAM33502 12670 TTTTCCATTTGTATAAATAA TT T AAATAAAACA AATTAA
1 AACATTTTTTAATTAAAAAA TT CCAT TGTAT TTTTTT
AAAAACTCTACAGTACACGT AG GGTG ACATG AAAAAA

GGGGGA GG C ACATCTCAAA ------
GAM33507 8059 TTTTCGGCGCTGGGTCGCCC CG-- TC C AA AGAA-- GAGA
3 AAAGCAGAATGGAGACGGAT TTTTCGG CTGGG GCC A GC TG
AGAGTGGTGGCTCCCAGAAT AGAAGCC GACCC CGG T TG GC
CCCGAAGA CTAA T- - GG AGATAG ----
GAM33509 2840 TTTTCTACTTTGGATTCTTG T ATTC- ---- ----- ACCAATTGA
5 GTTGCTGACATATAGAAAAC TTTTCTACT TGG TTGGT TGC TGACATATAGAAA
CAATTGATTTTTATATGTTG AAAAGATGA ACC AACCG ATG GTTGTATATTTTT
ATCTTGTATCCTGCCAACAT C GTTAC TCCT TTCTA ---------
TGCCACAGTAGAAAA
GAM33511 9148 TTTTCTCACGTGGTTTCTAG - - A- CAGACTCAGCCCAAATT
5 CTTCTTCAGACTCAGCCCAA TTTTC TCA CGTGGTTTCT GCTTCTT
ATTAGGAAGTGCAGAAGCCA AAAAG GGT GTACCGAAGA TGAAGGA
TGATGGTGAAAA T A CG ----------
GAM33512 6012 TTTTCTCCATTTTACTGGGA CCATTT CT CA T TTCAGTCT
2 ACTCAGTTTCCTTTCAGTCT TTTTCT TA GGGAACT GTT CCT
AGGAACCCAGTTCCTTTTAT AAAAGA AT TCCTTGA CAA GGA
CCTCAGAAAA CTCCT- TT CC - --------
GAM33512 20750 TTTTCTCCCATGTTGTAGGT CCCA T - CACTC T T- TTTCTTTTGCGTTCT
3 TGCCTGTTCACTCAGATGGT TTTTCT TGTTG AGGTTGCC TGTT AGA GG AG
AGTTTCTTTTGCGTTCTCTT AGAAGA ACGAC TCCGGCGG ACAA TCT CC TC
TCCCTCTCCCAACATGGCGG AAAA - T CCC-- C TT ----------
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GAM33516 8080 TTTTCTTAAAAAATACCAGC ATACCA-------- TTACTCATGGAATATATT
6 AGTTACTCATGGAATATATT TTTTCTTAAAAA GCAG
CTGCGTTTATAAAACTAGTT AGAAGAATTTTT CGTC
TTTAAGAAGA GATCAAAATATTTG ----------
GAM33521 14468 TTTTCTTTTTTGTTTGTTTT TTTTT- TTTTGT-- ATATTAAA
4 TGTTATTGATATTAAACAGT TTTTC TGTTTGT TATTG
GTAATCTTTGCAAGCGTATA AGAAG GCGAACG GTGAC
TTGAAGA TTATAT TTTCTAAT --------
GAM33522 1155 TTTTGAAAGTTATCAGGAAG AA TA - A-- T AAGAAA
2 AATTGGGTCAAAGAAATGCT TTTTG AGT TCAG GAAGA TTGGG CA
TAGAACTCTTTACTGAACTG AAGGC TCA AGTC TTTCT GATTC GT
GCGGAA GG -- A CAA - ------
GAM33523 8925 TTTTGAATGACAATATATGG AATATAT T - AAAACAGTTAAAA
2 AGTAGCAAAAACAGTTAAAA TTTTGAATGAC GGAG AG CA
TGACTTCTCTTTAAGAGTTA AAGACTTATTG TCTC TC GT
TTCAGAA AGAATT- T A ----------
GAM33525 16510 TTTTGAGCACAAAACCACCG AG- AAAA GA CC--- CA C GAGATGACA
1 GGGATCTAGCCTGTGGCACC TTTTG CAC CCACCGGG TCTAG TGTGG CC CG
CCGGAGATGACACGAGGCTC AGAGC GTG GGTGGTTC AGATC ACACT GG GC
ACATGACTCTAGACACTTGG GGA AAA- AC TCAGT C- A ---------
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GAM33527 4464 TTTTGATGAATTTCACCTAT TG T C T CATTCTTCACGTTTCA
3 TCCATTCTTCACGTTTCAGA TTTTGA AA TT ACC ATTC
ATTGGTCGACTTTGTTAGAA AAGATT TT AG TGG TAAG
GT C C T ----------
GAM33537 21495 TTTTGGCTCGTCCATCAGTG T CC A--- - --------- - GT - TT A
1 ATCTGCCATACCACTGTGAC TTTTGGC CGT ATC GTG ATCTG CCATACC ACT GACTG CA
GA A

TGCATTGAAAGATGTCCCTT AAAACCG GCG TAG CAT TAGAC GGTGTGG TGG CTGAC GT
CT T
TCTCTCTCTGCCAGTCGGTC - A- ACGA A ACAAAACAG C -- C CT C
GGTGTGGGACAAAACACAGA TGTCCCTT
TATACAGCAGATAGCGGCCA GA
AAA CT

GAM33541 19953 TTTTGGTGGCTTATTTAGGA GGCT GG AC TACTTT
2 TACTTACTGAATACTTTTTT TTTTGGT TATTTA ATACTT TGAA
AAAAAGTATTAAATATAACC GAAACCA ATAAAT TATGAA ATTT
AAAG AT-- -- AA ------
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7 GCTTTTTTATTTTCTGTAAA TTTTGTA ACA TTTTGC
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AA AAAATAAA CTC ----------
GAM33546 5812 TTTTGTCAAAATGTAAATTC CAAA C CT--------- CAAA
5 TACCTTCTGCAAATAGATAA TTTTGT ATGTAAATT TAC TCTG
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ATAAACAAGA AATA - TACAACTTAAT ----
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GACAGCAAGA AC A CT ATGAAAA- ---
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2 AACATATAAATTTATTCATT TTTTG TTATTAA GAT ATA
TATTTTTTTAATAGTCAAAA AAAAC GATAATT TTA TAT
T TTT TTTACT ------
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3 GCAAGACCTTGCAAAGACTC TTTTGTTCA GA TTGAAGC GA CTT GACT TTAACAT CTG C
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GCTTAGATTGTGTTAACAGT --- C C- A ACAATTTAC C TTA TC -----
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TTAACTCTGAACAAAA

GAM33554 12858 TTTTGTTTTGTCTATATGTG G T GTGCGGCT AGAA
0 CGGCTTTTCAGAAGAAATTT TTTT TTTTGTC ATAT TTTC
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A A - ACTAATTT ----
GAM33556 20556 TTTTTAAAGTGGCCACATCT AA- - CACA A AAT CATGAT
5 AAGAAATACTACATGATTAG TTTTT AGT GGC TCTA GA ACTA
TCAATCTAGAAGCCTACTGC AGGAA TCA CCG AGAT CT TGAT
CAAGGA CCG T A--- - AAC ------
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8 TTTCTGTACTTACCTGGTTT TTTTTAAA AAGGGT TA TTAC CTGGT TGC
GCCAAGTATGCCAGTGTAAT GAAAATTT TTCCCG GT AATG GACCG ATG
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GAM33557 9301 TTTTTAAATTATTCACATTG AATT- A TT- AG CTTCTT

0 CAGTAAACTTCTTTTTAAGG TTTTTA ATTC CA GC TAAA
TCTCTGAGAGTTACAATAGG AAGGAT TGAG GT TG ATTT
AA AACAT A CTC GA ------
GAM33560 21330 TTTTTAGGGCACTGCATCCC CACTGCAT - AAAATTCTAATCA
9 ATTGAAAATTCTAATCACAA TTTTTAGGG CCCA TTG
CTGGGCACTCCTCTCCTAAA AAAAATCCT GGGT AAC
AA CTCCTCAC C ----------
GAM33564 1611 TTTTTATTTTATTTTTTGGA A A - CA ACA A - A
8 TGGAGTCTCACTCTGTCGCC TTTTT TTTT TTTTTTG GATGGAGTCT CTCTGTCGCCCAGGCTGGA
CAGTG GC TG
CAGGCTGGAACACAGTGAGC GAAAA AAAA AAAAAAC CTACCTCAGA GAGACAGTGGGTCTGATCT
GTCAC CG GC

TGACATCGTGCCACTGCACT C - T AC CAC - T -
CTAGTCTGGGTGACAGAGCA CAT
AGACTCCATCTCAAAAAAAA
AACAAAAG

GAM33565 14535 TTTTTATTTTGGTTTTCTTA A TG TT AAG ACATTTTCCA
1 CAAAGGTTGACATTTTCCAT TTTTT TTT G TTCTTACA GTTG
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AAAAAAAA A GT GT GGA ----------
GAM33567 16468 TTTTTCCCAAATTAACTTGT TT AAATTAAC G AAA AAAAAAAA
6 GTCCAAAAAAAAAAAAAATTG TTT CCC TT TGTCC AA
GGGGGCGGAAAAAAAAGGGG AGA GGG AA GCGGG TT
GGGAGA GG GGAAAAAA G GGG --------
GAM33568 4232 TTTTTCCTGCTTCAGGGTCC TGCTTC- --- TTCA TAC- T TTTAT
4 AATTCAAGATTACTCTTGAC TTTTTCC AGGGT CCAA AGAT TC TGACA
ATTTATTGTCATGATATTGT AGAAGGG TCCTA GGTT TCTG AG ACTGT
CTGTTTGGGTAATCCTTTAT TTTTATT ATG TG-- TTAT T -----
TTTGGGAAGA
GAM33572 3772 TTTTTCTTTCTTTTTTAAAA C C ----- A TTCACTTTAATATAAT
6 GAAGATGGTTTCACTTTAAT TTTTT TTT TTTTTTAA AAGA GATGGT
ATAATGCTATTATCTTAAGA AAAAA AAA AAAAAATT TTCT TTATCG
CTTAAAAAAAAAAAAAAAA A A CAGAA A ----------
GAM33572 12283 TTTTTCTTTTCTGCCTCTGC T C--- TGCTT- T TTAT
8 TTTCATTTCTATGGTTATTC TTT TCTTTTCTGC TC TCATT CTATGG
GTGGAATGACTCTTTGACCA AAA GGAAGAGGCG AG AGTAA GGTGCT
CGCGGAGAAGGCAAA C CACC TTTCTC - ----
GAM33573 18902 TTTTTCTTTTTCACGGAACA G------- TGACACTAT
0 AGGTGACACTATCTTTGTTC TTTTTCTTTTTCAC GAACAAGG
AAACCAAAGTGAAAAGGAAG GAGAAGGAAAAGTG CTTGTTTC
AG AAACCAAA ---------
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4 CTCTTGGCACTCCGCACTGA TTTTTG GTC GG TAGGACT CAC
AACACCGTGATTAGTCCTGA GAAAAC CAG TC GTCCTGA GTG
CTAGACAGCAAAAG GA A A TTA-- ----------
GAM33575 18883 TTTTTGAGTTTAAATGCATT TTTAAAT T TTT ACAAC
5 TCATTTTTAGACAACCTACA TTTTTGAG GCAT TCAT TAG
TGACATGTTTTTCTTAAAAA AAAAATTC TGTA AGTA ATC

```
                          TTTT---  C  C--  -----
GAM33575 4305  TTTTTGAGTTTAAATGCATT      TTTAAAT  T  TTT  ACAAC
6              TTATTTTTAGACAACCTACA TTTTTGAG     GCAT TTAT  TAG
               TGACATGTTTTTCTTAAAAA AAAAATTC     TGTA AGTA  ATC
                          TTTT---  C  C--  -----
GAM33578 18675 TTTTTGGTAATTGTAACATT      TA   AA---- T-  AAG  GA  GTTCGAATG--  TTTT
9              CCAAGGGGGATTTGTTCGAA TTTTTGG ATTGT    CA  TCC  GGG  TTT       TGGC
               TGTGGCTTTTGTCAAAGAAA AAGAACC TGACG    GT  AGG  CCC  AAA       ACTG
               AAAAAAAAAACCCAGGGGAT     --   GATAAA TT  GGA  AA  AAAAAAAAGAA  ----
               TTGAAATAGGCAGTCCAAGA
               A
GAM33580 18909 TTTTTGTCACTGTAACTATT      ----    A       TTACATTACAATAAT
9              TTTATTACATTACAATAATT TTTTTGTC   ACTGTA CTATTTTTA
               AGGAGTAGTACAGTTCATGA AAAAACAG   TGACAT GATGAGGAT
               CAAAAA               TACT   -      ----------
GAM33582 20597 TTTTTGTTGGTTTCTGCTCA     TT-      C----------     TCTTT
8              GTTCTTTATTGATTGGTGTG TTTTTG  GGTTTCTG            TCAGT
               CCGTTTTCTCTGGAAGCCTC AAGAAT  CCGAAGGT             AGTTA
               TTAAGAA              TCT      CTCTTTTGCCGTGTGGTT    -----
GAM33585 12936 TTTTTTAATGGGTCTCAAAA         TCT  AATTCTG   AAATTTTTG
8              TTCTGTGACAAATTTTTGGT TTTTTTAATGGG  CAA     TGAC
               CAAGTTGTTTCCATTAAAAA GAAAAATTACCT  GTT     ACTG
               G                    TT-  GA-----   ---------
GAM33585 3625  TTTTTTAATGGGTTTCAAAA         TTT  AATTCTG   AAATTTTTG
9              TTCTGTGACAAATTTTTGGT TTTTTTAATGGG  CAA     TGAC
               CAAGTTGTTTCCATTAAAAA GAAAAATTACCT  GTT     ACTG
               G                    TT-  GA-----   ---------
GAM33586 8056  TTTTTTAATTTTTAAAATAT       TTTTAAAATA     GATTTTATTACA
2              GAAGTTGATTTTATTACAAA TTTTTTAAT       TGAAGTT
               TTTCAGATATACACATTAGA AAAAGATTA       ACTTTAA
               AAA                  CACATATAG-     ----------
GAM33589 16834 TTTTTTCTATTTAACTTTTT     TCT  TAAC        TCT  AATTCTG   AAATTTTTG
6              TAATGGGTCTCAAAATTCTG TTTTT  ATT   TTTTTTAATGGG  CAA     TGAC
               TGACAAATTTTTGGTCAAGT AAAAA  TAG   GAAAAATTACCT  GTT     ACTG
               TGTTTCCATTAAAAAGTACT    TTT  TCAT        TT-  GA-----   ---------
               GATTTTAAAAA
GAM33589 2705  TTTTTTCTCATACTCTCCGA          ---------- C    G--      A  TTTAAT
7              GGGTTCTCCTCAATTTTAAT TTTTTTCTCATACT        CT CGAGG  TTCTCCTC AT
               GTGGGGGGGAAATACCTTGA AGAAAAGGGTGTGA        GA GTTCC  AAGGGGGG TG
               AGCCAGAAATTACAGTGTGG           CATTAAAGACC A    ATA      G ------
               GAAAAGA
GAM33591 3840  TTTTTTGAAATTTGAAATGG      A     AA   --  TT  TAA
4              CAGATTTATTAAGTATTTTT TTTTTTG AATTTGA  TGGC  AGA  TAT
               AAGCCATCAAGTTACAAAAG GGAAAAC TTGAACT  ACCG  TTT  ATG
               G                   A     --   AA  TT  ---
GAM33591 8992  TTTTTTGAAGCTTGAAAATT         -------     -  ---     T    TTT
5              TTATTTAATTGTATCTTTGA TTTTTTGAAGCT      TGAAAAT TTTA  TTTAAT GTATC
               TACATTGAAAGCTGAGTATT GAAGGACTTTGG      ATTTTTA GAGT  AAGTTA CATAG
               TTTAAGACAAAGGTTTCAGG          AAACAGA      T   CGA    -   ---
               AAG
```

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2 GAGCTTTTGTGGGGTGTTTC TTTTTTTAAAGC AAT TG GCTTTT TGGG
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AGAGGG A --- - - -----
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4 AGATTTTATTAAACTAATTC TTTTTTTAAC TGT AA ATTTTATTA CTAAT
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AGATGTTACAACTGGTTAAG GTCA --- G AAAGG -------
AGGA
GAM33595 5769 TTTTTTTAGAAAATCATGGC T T GCTCACTA--- ---- A ATAT TTTCAC
2 TCACTATGGTAGTATACAAT TTTTTT AGAAAA CATG TGGT AGT TACA TGT
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GAM33595 9703 TTTTTTTAGTTAAAACTGTT AAAAC- - AG---- T- AGCA
5 TAATAGGAACAATCTTTTTC TTTTTTTAGTT TGTT TAAT GAACAA CTTTTTCA
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8 AATTTATTCTGAATAAATCA TTTTTTTCA TAA ATTTATT
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A C AACATTTCAC ---
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ACAAATTTTGTGGGGGGGGG GG G CACA A T --- ---
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3 TTTTTATTTGACAGAAAAAG TTTTTT GCATTT TTTTTA TTTG ACAG AAG
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GAM33596 14485 TTTTTTTCCTTTTAGAATGT CCTTTT TTTGA AAAA AA TCTCATAT
5 ATCTCTTTGATTAATAAAAG TTTTTTT AGAATGTATCTC TTAAT GCTTTG TTAAA
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AAAGAAAA
GAM33597 2853 TTTTTTTGAGACAGAGTCTG CAGA A - - CAATCTC
3 ACTCTGTTGCCAGGCTGGAG TTTTTTTGAGA GTCTG CTCTGTTGC CAGGCTGGAGTGCAGTG GCA

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GAM33597 3500 TTTTTTTGCACTTAACCACT G AACCACTAAA GAA TT ACAGCAA
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9 AATTTTTTGGGGGCCCCCAA TTTTTTTGGGAAAAAAA AAA TTTTTTGGG
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AAAAA - A ----
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GAM33599 22261 TTTTTTTTCCAGATGCAGTC CC C T---------- ACTCCA
6 TCACTGCACTCCAGCCTGGT TTTTTTTT AGATG AGTCTCAC GC
GACAGAGTGAGACTCCATCT AAAAAAAA TCTAC TCAGAGTG CG
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AAA A CCGG ACA --------
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AGCAAAAG

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AA T GT AATC C -----
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3 TGCTTTAATCAACAGACATA TTTT TTTTAA TTCG TG TC
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AAA AAA- CA --------
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AAAA C T AAA----- -------
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5 GATACTTTATTGAAGGTAAG TTTTTTTTTC GTAG TACTT
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A ATTT--- G ----------
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8 TCGTTCTGTTGCCCAGGCTG TTTTTTTTTGA ATAGA TCTCGTTCT GC CCA
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1 CTGTTTATTGACAAGATAGG TTTTTTTTTTA GAATG TGT TGACA
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GAM33603 21254 TTTTTTTTTTCATTTAACTT TTTT TTTA T TCT AATTCTG AAATTTTTG
2 TTTTAATGGGTCTCAAAATT TTTTT TCA ACTTTTT AATGGG CAA TGAC

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3 ATTGAAGCAGAACCAAGTTG TTTTTTTTTTCCA GA TATT AA CAG
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AAAAAA CG C- G G -------
GAM33603 14506 TTTTTTTTTTGAATGTGTAC GAATG ---- C-- AAA TAGA
5 TAGATGCTATTTATTAAACT TTTTTTTTTT TGTACT AGATG TATTTATT CTG
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6 TTTTTATTTGACAGAAAAAG TTTTTT GCATTT TTTTTA TTTG ACAG AAG
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7 GTGATTTATTGCAATATTTG TTTTTTT TTGCTTG AGGTGATTT TGCA TA TGC
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1 TTTAATGATCTTTTACTTAA TTTT TTTTTTATTTT TTAA TGA
TAATAAAATGAAAAATAAGA AGAA AAAAAGTAAAA AATT ATT
T TAAT- C ----
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GTCTCAAAAAAAAAAA C CGT TGT -----
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6 CAATCAAAGCATTTAATGCA TTTT TTTTTTG AAG AA GCAT
AACATATTTGCTTCTCAAAA AAAA AAAAAAC TTC TT CGTA
AATAAAA T TC G TATACAAA ---
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9 TAAAGTAGATGATTTTATTC TTTTTTTT AG TTA AGTAGA
TAGTAACTGGCTACAAGAGA AAAGAGAA TC GAT TTATTT
AA CATCGG AAT C ----
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2 ATCTTAATTATACTTTTATT TTTTTTTT TTTAC TTGTG TAA TAT CT TAT
AAAATATAGCATACTTATGC AAAAAAGA AAGTG GACAC ATT ATA GA ATA
ACAGAGTGAATAGAAAAAA T A GT-- C C T- ----
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3 TTCCCAGTTTATTTAGCCAA TTTTTTTTTTTTA GTT
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GAAA AAGAACACAAAAAC -----
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GCTGGAAAAAAAAAA TTCAT GG ----------
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1 ATATAGTCTTGTATTATATA TTTTTTT TTTTTC TATAG CT TGTAT
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AA
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A T C TT G C-- -----
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A
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1 ACATGCATCGGATTTACTTG TTTTTTTTTTTTTTCA CA CAT GGATTT
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AAAGGAGAGAA TT - AAC-- ----
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2 TTTGGAAAATATTTATTAAA TTTT TTTTTTT TCCCATTT TTGG
AAACTAGTGAATGGGGCAAA AAAA AAAAAAA GGGGTAAG GATC
AAAACAAAA C C T ----------
GAM33607 1565 TTTTTTTTTTTTTTGACCGA CC-- CA TC TT ACTCCA

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3          GTCTCACTCTGTCTCCCATT TTTTTTTTTTTTTTGA   GAGTCT  CTCTGTC  CCA  GC
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GAM33607 18821  TTTTTTTTTTTTTTGATGAC        T   ATGA     TCTC   TTATTGCCGCT
4          TCCCAGTCTCGTTTTATTGC TTTTTTTTTT TTTG   CTCCCAG   GTT
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GAM33607 21248  TTTTTTTTTTTTTTGCAAGA   T     TTGC    CC   C   TATC
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           AAA              T     TTTA    A-  A  ----
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6          TGGTAACTCTTTATTTCATT TTTT  TTTTTTTT CTGGG  GT
           GTCCGGAAGAAAGATGGGAG GAGG  AGAAAGAA GGCCT  TA
                        GT      -    GT  ----------
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                               ----  TTC--  ------
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           GTCTGCTGCAGGTACAACTC GAGAA AGAGGAAACA GAAA  AC AAGT   GTCTCAACA GG
           TGTCTGAACAAAAGGACAAA    C       G   -- -   CT-      T  ------
           GGAGACAAGAG
GAM33608 20281  TTTTTTTTTTTTTTTAAGGC       TTTT-   AG   A-   ACT   T    A-    GTTTAAAA
0          AACAGACTCTTTATTTAATG TTTTTTTT    TTTA  GCA  CAG   CTT ATTT  ATGTG
           TGGTTTAAAATACATCAAAA AGAGGAAA    AAGT  TGT  GTC   GAA TAAA  TACAT
           TCAAGTCCCTGGCTGTTGTG       CCCAT   GT   CG   CCT   C    AC    --------
           AATACCCAAAGGAGA
GAM33608 3993   TTTTTTTTTTTTTTTCCTGC    TTT    TCCT    CTCA    ---   -   A    TTG
2          ATTTCTCATTTTTATTTGAC TTTTT   TTTTTT   GCATTT   TTTTTA   TTTG ACAG AAAAG
           AGAAAAAGTTGCTTTTGCTG AAAAG   AAAAAA   CGTAAA   AAAAAT   AGAC TGTC TTTTC
           TACAGATTTTAAAAAACCAA    TAC    TTTC    ACCA    TTT   A   G    ---
           AATGCCTTTAAAAAACATGA
           AAA
GAM33608 8918   TTTTTTTTTTTTTTTCTAGA        T     GA    TA   TTTGTTCTATTTT
3          AACTTTAACTTTTGTTCTAT TTTTTTTTTT TTTTCTA  AACTT  ACT
           TTTGGTCTAAGTTTGGAAAA AAAGAAAAGA AAAAGGT  TTGAA  TGG
           CAGAAAAGAAA              C     --    TC  ----------
GAM33608 9819   TTTTTTTTTTTTTTTGCCTA       TT   TG   A-       AA   ATTGA
4          TGAAGTGCAAATGTATTGAG TTTTTTTTT  TTT  CCT  TGAAGTGCA  TGT
           CAAATGTATTTCGGAAGGTG AAAGGGAGG  GGG  GGA  GCTTTATGT  ACG
           GGGTTGGAGGGAAA           TT   GT   AG       AA  -----
GAM33608 9222   TTTTTTTTTTTTTTTTAAAA          T    -   A   TAAG
5          ATAGAGCCTAAGGGCCTGTA TTTTTTTTTTTTT TTAAAA ATAG GCC
           TTTTAATGAGAAAAAAAAAA AAAAAAAAAAGAG AATTTT TGTC CGG
                               T     A   -  ----
GAM33608 16611  TTTTTTTTTTTTTTTTCACG             ---    CT   TACTTACTTT
6          GAGCTTTATACTTACTTTTA TTTTTTTTTTTTTTTCA   CGGAG  TTA
```

ATTTCTGCACTGAAAAAGAA GGAAGGAAAAGAAAAAGT GTCTT AAT
AAGGAAGG CAC T- ----------
GAM33608 21227 TTTTTTTTTTTTTTTTGAGA T AG G A T-------- -- GGTCTGGA
8 TGAGGTCTTGCTATGTTGCC TTTTTTTTTTTT TTTGAGATG GTCTT CT TGT GCCCA GGT
CAGGTGGTCTGGAACTCATG AAGAAAAAAAAA AAACTCTAC CAGAA GA ACG CGGGT TCA

GGCTCAAGTAATGCAGAGAA C CT A G TAATGAACT AC --------
AGACTCCATCTCAAACAAAA
AAAAAGAA
GAM33608 8584 TTTTTTTTTTTTTTTTGAGA C - AGGCT
9 TGGGGTCTCACTCTGTCACC TTTTTTTTTTTTTTTTGAGATGGGGTCTCACTCTGT AC CC

CAGGCTGGAGTACAGAGTGA AGAAAAAAAAAAAAAACTCTGCCTCAGAGTGAGACA TG GG

GACTCCGTCTCAAAAAAAAA - A -----
AAAAAGA
GAM33609 12185 TTTTTTTTTTTTTTTTGCAC TT ACACAA GTTTAATAAA
0 ACAATGCAGTTTAATAAATG TTTTTTTTT TTTTTGC TGCA
CAATAGAGGCAGAGGCTGAG AAAGAAGAG GGAGACG ACGT
AAGAAA TC GAGATA ----------
GAM33609 18525 TTTTTTTTTTTTTTTTGGAA T T GAAA - TTTTAT
1 AGTTGAATATTTTATTATTT TTTTT TTTTT TTTTG GT TGAATA
ACACATATAAAGTGAGAATG AAAAG AAGAG GAAAT CA ATTTAT
AAAA T T ATA- C ------
GAM33609 4383 TTTTTTTTTTTTTTTTGGAG TTTT G GT TG G A G A
2 ATGTAGTTTTGCTCTTGTTG TTTTTTTT TTTTG AGAT AGTTTTGCTCTTGT CCCAGGCTG AGTGCA
TGGG CG
CCCAGGCTGGAGTGCAATGG AAAAAGGA AAAAC TCTG TCAAAGCGAGAACA GGGTCCGAC
TCACGT ACTC GT

GGCGACCTTGGCTCACTGCA TTAT - TC GT G C G -
CTGCAGCCTGGGTGACAAGA CCT
GCGAAACTCTGTCTCAAAAT
ATTAGGAAAAA

GAM33609 21341 TTTTTTTTTTTTTTTTTAAA T T AC-- CATTTTTAT
4 ACTTTGGCATTTTTATTCAG TTTTTT TTTT TTTTTAAA TTTGG
ACCCGTTTAAAAACAAAACA AAAAAA AAAA AAAAATTT AGACT
AAAAA C C GCCC ---------
GAM33609 9263 TTTTTTTTTTTTTTTTTAAA TT C -- CTTTA
5 GCAAGTAACTTTATTATCAT TTTTTTT TTTTTTTTAAAG AA GTAA
TCCTTTAAAAAGAACCAAGG AAAGGAA AAGAAAAATTTC TT TATT
AAA CC C AC -----
GAM33609 20489 TTTTTTTTTTTTTTTTTAAG TT AGAGGAAAA GT ATGA
6 AGGAAAACCCGGTAATGATG TTTTT TTTTTTTTTTA CCCG A
TCGGGGTTGAGGGATAGGAG AGGGG AAGAGGAGGAT GGGC T
GAGAATGGGGGA GT AGGGAGTTG TG ----
GAM33609 5920 TTTTTTTTTTTTTTTTTAGT TTTT TTGC TC GTTTA
8 TGCTGTTCATAAGTTTATTA TTTTTT TTTTTTTAG TGT ATAA
TCTATATCTGAAAAAATCAT AAAAGA AAAAAAGTC ATA TATT

AGAAAA TACT T--- TC -----
GAM33609 6629 TTTTTTTTTTTTTTTTTATG TTTTTTTT- TGT A ----- GGAGG
9 TGCCGCCACTTTTGTATGTG TTTTTT TTTATGTGCCGCCACTTTTGTA GGTC GGGGGA
GGGT
GTCAGGGGGAGGGTGGAGGA AAAAAA AAATACACGGCGGTGAAAACAT CCGG CCCTCT
CCCA

CCCTGGGATCTCCCAGGCCT TCCAAACAT T-- A AGGGT -----
TACAAAAGTGGCGGCACATA
AATACAAACCTAAAAAA

GAM33610 20002 TTTTTTTTTTTTTTTTTCAA T T AAAAAGA TTTAA AT ACAGAAGA
0 AAAGAATGTTTATTTTAAGC TTTTT TTTTTTTT TTC ATGTTTAT GCTCT GT
TCTATGTACAGAAGAACAGA AAAAA AAAGGAAA AAG TGCAAATA TGAGA CA
GTATAAACGTAAAAAGGAAC C C GAAAAA- ----- -- --------
AAAGGAAACAAAAA
GAM33610 14654 TTTTTTTTTTTTTTTTTCAC T T---------- GATAAG
1 GATAAGGTGGATGTTTATTT TTTTTTTTT TTTT TTCAC
AAAACAAAAATAAGAAGAGA AGAGAAGAA AAAA AGGTG
T ACAAAATTTATTTGT ------
GAM33610 5407 TTTTTTTTTTTTTTTTTGGT TT T T TT- A --- TT- TAGAGAT
3 TACAAAGCGGTTTAATAGAG TTTTTT TT TTTT TGG ACAA GC GG TAA
ATTTATTTCCAAGGCTTGTT AAAAAA GA AAAG ACC TGTT CG CC ATT
TTCCATGAAACAGTCAAAAA CT C T TTT - GAA TTT -------
A
GAM33610 884 TTTTTTTTTTTTTTTTTTAA TT T AAG-- TCTCATTTATTGTCACTGT
4 AGGGGTCTCATTTATTGTCA TTTTTT TTTTTTTT TA GGG
CTGTTCCAAATGTACAAAAA AAAAGA AAAAAAAA AT CCT
AAATTAGAAAA TT C GTAAA ----------
GAM33610 20585 TTTTTTTTTTTTTTTTTTAC TT T GTTTAAAG GT ---- TTTAT
5 AGTTTAAAGGGGTCTCATTT TTTTTT TTTTTTTT TACA GG CT CA
ATTGTCACGGGTCCAAATGT AAAAGA AAAAAAAA ATGT CC GG GT
ACAAAAAAAATTAGAAAA TT C AAA----- TG CACT -----
GAM33610 13959 TTTTTTTTTTTTTTTTTTCC TC AAAA-- AT--- TTATATTT
6 CAGAAAAATCATGTTTATAT TTTTTTTTTTTTTTTTT CCAG ATC GT
TTGCTATTAGGTCCCAGGCT GAAAAAAAAAAGAAAAA GGTC TGG CG
GGACAAAAAGAAAAAAAAAA CA GGACCC ATTAT --------
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GAM33610 20896 TTTTTTTTTTTTTTTTTTGC TTT- AA T TTTTTATTTT ATTTT TTTT
7 AAATGTTTATGGTTTTTATT TTTTTTTTTT TTTTTGCA TGTT ATGG TCAATTTTT GG
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TTCTTACAAAGGTTGACATT TTGT GG - TTTTAC---- CAT-- ----
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TGTTGAAAAAAAAA
GAM33610 8336 TTTTTTTTTTTTTTTTTTTA T TTTTTTAC CAAAC CACTTTA
8 CGACCAAACATCACAAACAC TTTTTT TTTTTT GAC ATCACAAA
TTTATTTGTGGTTACCAGTT AAGAAA AAGAGA TTG TGGTGTTT
ATTTTTACAGAGAATAAAGA T CATTTTTA ACCAT -------
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GAM33610 14072 TTTTTTTTTTTTTTTTTTTG T T TG CAG GCTTTG
9 ACAGGGGGTTGCTTTGAACT TTT TTTTTT TTTTTTT A GGGGTT
TTATTTGAAAAAAACAGAAG AAA AGAAGA AAAAAAA T TTTCAA
ATAAA T C GT TA- ------
GAM33611 20592 TTTTTTTTTTTTTTTTTTTT TT- ------ CA CAAT
0 TGAAACAAAACAATTTTAAT TTTTTTTTTT TTTTT TTTTGAAA AAA
TTCAGAATATTACAAGAATA AGAAAGAAAA AAGAA AAGACTTT TTT
TAAAAGAAAGA TAT CATTAT AA ----
GAM33611 20674 TTTTTTTTTTTTTTTTTTTT T T TTTTATA T ATAAA
1 TTGTTTTTATAATGTTTTAT TTTTT TTTTTTTT TTTTTTTGT ATGT TTATT
TATAAAAGTAATATATGATC AAAAA AAAAGAAA AAAAAGATA TATA AATGA
TTTATAGAAAAATAAAGAAA T T TTTCTAG T -----
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GAM33611 3479 TTTTTTTTTTTTTTTTTTTT T TTTTT AG A- ACT T A- GTTTAAAA
2 TTTAAGGCAACAGACTCTTT TTTTTT TTTTTTTT TTTA GCA CAG CTT ATTT ATGTG
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CATCAAAATCAAGTCCCTGG C CCCAT GT CG CCT C AC --------
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AGACAAAAAA
GAM33611 18898 TTTTTTTTTTTTTTTTTTTT T TT AAACCC CTTTTT
3 TTTTTGTGGAAACCCAGGAG TTT TTTTTTTTTTTTTTTTTT GTGG AGGAG
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TTTGGAAAAAAGGGGAGGAG C TT AAAAAT ------
GACGAA
GAM33611 8308 TTTTTTTTTTTTTTTTTTTT -------- TTTT
5 TTTTTTTTTAAAAAAAAAAA TTTTTTTTT TTTTTTTTTTTTTTTT
AAAAATTTATTTTGGGAAAA AAAAAAGGG AAAAAAAAAAAAAAAA
AA TTTTATTT ----
GAM33611 20822 TTTTTTTTTTTTTTTTTTTT T T TTT TT AAAA-- C CCACTT
6 TTTTTTTTTTTCAGAAAAAA TTTTTTTTTT TTTTTT TT TTTTTT CAG AATAC ATG
TACCATGCCACTTTATGTAT AAGAGAAGAA AAGGGA AA AAGGAG GTT TTATG TAT
TATTATGTTGGGGAGGAATA C C TAT GG GTATTA - ------
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GAM33611 2832 TTTTTTTTTTTTTTTTTTTT TT TT T T GG GCTTTGAA
7 TTTTTTTTTTTTAGGGGGGG TTTTTTT TT TTT TTTTTT TTTTTTTTAGG GGG
GCTTTGAACTTTATTTGAAA AAGAAAA AG AAA AAAAGA AAAAAAAGTTT TTC
AAAACAGAAAATAAATGGAT CT GT T C AT --------
CAAAAGAA
GAM33611 19925 TTTTTTTTTTTTTTTTTTTT TTTTTTTTTTTTTTT TTTCCTC
8 TTTTTTTTTTTTTCGGGTTT TTTTTTTTTTTTTT TTTTCGGG
CCTCTTTGAAAGTTTATTGT AAAAAAAAAAAAAA GAAAGTTT
TTTCTTTAAAAAAAAAAAAA TTTCTTTTGTTATTT -------
A
GAM33611 21212 TTTTTTTTTTTTTTTTTTTT T TT T TTT TT ---- T- AGTTGGAA
9 TTTTTTTTTTTTTTCCAGGT TTTT TTTT TTTTT TT TTTTT TTTTTCCA GG CCAA
CCAAAGTTGGAATTGGCTCC AAAA AAAA AAAAA AA AAAAG AAAAAGGT CC GGTT
TTTATGGAAAAACTGAAAAT T TT T TAT TC ATTT TC --------
ATAATAAAAATTAAAATAAA
A

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GAM33613 16409  GCGGCTGGGGTGGCAGGGCC      GG    C----     ---     T      GATTTCAG
3               GGTGTTTCTGTGCTGATTTC GCGGCT  GGTGG    AGGGCC   GGTGTT CTGTGCT
                AGGGTACAGGACACTGTTGG TGTCGG  CCACC    TTTCGG   TCACAG GACATGG
                CTTTAGAGACCACCAGGCTG      A-    AGAGA     TTG     -      --------
                T
GAM33616 21811  GTGGCAGAAGATCCCAGCTG  TG    AAGA    A     CA  G  C-----  TT    GGGT
8               ACCACGGCCCCTTTCTCTGG G  GCAG    TCCC GCTGAC  CG CC      CT  CTCTG
                GGTCAGAGGGAGAAGACAGG C  TGTC    GGGG CGACTG  GC GG      GA  GAGAC
                CGCAGTCAGCAGGGGCAGCT  GT    GAC-    A     AC  -  ACAGAA  GG     ----
                GTTGC
GAM33628 13762  GTGACCTACAAGTCTCTTTA    A   A    G  ------       T   C-----     TATAGAC      -     TAA
5               TTTGCCCTCCATTATAGACT GTG CCT CAA TC      TCTTTATT GCC      TCCAT      TGAGCT GTTAA
                GAGCTGTTAATAACATTTAA TAC GGA GTT AG      AGAAATAA CGG      AGGTA      ACTCGA TAATT

                TGAGCTCACATGGATTCACT    A   -   G  ATAAGA       T   TCACTT     C------      G     ---
                GGCTAATAAAGAAGAATAGA CAT
                GTTGAGGACAT

                          ---
GAM33634 11034  TCAAGTCATAGGCTTCTTTC      -  T-      -      TCTTTAT   A  TCA
6               AGTCTTTATGTCACCTCAGG TCAAGT CA  AGGCTTC TTTCAG       GTC CC
                AGACTTATTTGAGAGGAAGC AGTTCA GT  TCCGAAG AGAGTT       CAG GG
                CTTCTGTACTTGA            T  CT      G      TATT---   A  ---
GAM33640 2646   AAGCCTGACAAGTTGATGCC       AC   TTG-    ---    --    T   A-     CCTCC
2               ACTGCTGTCTGAGGGCTCCT AAGCCTG  AAG    ATGC   CACT  GCTG CTG  GGGCT
                CCGGCTCAACAGTCAGCTCA TTCGGGC  TTC    TGTG   GTGA  CGAC GAC  CTCGG
                GTGCTTGTGTAATTCTTCCG       C-   TTAA    TTC    CT    T   AA     -----
                GGCTT
GAM33644 22388  TGTGGTGCCTGGTGGAGACC      G  T    G  A   -    AA    CAGAGA      -  CA   TGA
3               TGGCCAAGGTACAGAGAGCT TGTGGT CC GGTG AG CCT GGCC  GGTA     GCTGTG TG  TGC

                GTGTGCATGCTGAGCAACAC ACACCA GG CCGC TC GGG CCGG  TCGT     CGACAC AC  ACG

                CACAGCCATTGCTGAGGCCT      -  T    -  -   T    AG    TAC---      C  A-   ---
                GGGCTCGCCTGGACCACA
GAM33645 254    TCAGAGTCTCCTAAAGAGCC      T  CTAAAG    GAA  C    AAGCT
5               CGAACAGCTGAGGAAGCTCT TCAGAG CTC     AGCCC   CAG TGAGG
                TCATTGGAGGGTTGAGCTTT AGTTTC GAG     TTGGG   GTT ACTTC
                GA                  -   ------     AG-   -    -----
GAM33649 18529  GAGGAGGCGGGCCGCCTGCT    G        ---   ---      - GAGAACTA
9               CTTGGAGAACTACGAGGAGT GAG AGGCGGGCC   GCC   TGCTCTT G
                ATGCGGCTCGGGCCCGTCTG CTC TCTGCCCGG   CGG   ATGAGGA C
                CTC                 G        GCT   CGT      G --------
GAM33650 9710   CGAATCTGGAGAGCTTTGGA    TC   -   CT    ATCC      TGTCT
1               TCCTGGGTGATGTCTTCATC CGAA  TGG AGAG  TTGG    TGGGTGA
                CGCCAGTACTTTACCGTCTT GCTT  GCC TTTC  GACC    GCCTACT
                CG                  CT   A    AT    ----      -----
GAM33659 19248  AAAAGAAAACCAAAGTGGTC      AAACCAA     CC    AA    CT----     CCTTCT
9               CACAAAACATTCTCCTTTCC AAAAGA      AGTGGT  ACAA  CATT      CCTTT
                TTCTGAAGGTTTTACGATGC TTTTCT      TTACTA  TGTT  GTAG      GGAAG
```

ATTGTTATCATTAACCAGTC GACCAA- T- AC CATTTT ------
TTTT
GAM33660 7497 GGCTTAGCTGTGAGAAGTGG T T TG TTCTCTTCCTCT TTCTG
3 TTCTCTTCCTCTGGTCCCTT GGC TAGC G AGAAGTGG GGTCCC
CTGGGGACTCTGTTTCCCCA CTG GTCG C TCTTTACC TCAGGG
TTTCTTGCTGCTGTGTC T T GT CCTTTGTC---- -----
GAM33660 15556 GAGGAAGACACCCCTTCAGA A A CTTCAGATAAT T A TATGAGCC
4 TAATGATAGTGGCATCTGTA GAGGA GAC CCC GATAG GGC TCTG
TGAGCCCAGAGTCCTATCTG CTCCT CTG GGG CTATC CTG AGAC
GGGTCTCCTC - - T---------- - - --------
GAM33663 6661 AGTCCCTGCTGTGTACTAGA CCTG T - AAC- G-- GTGAGA
8 ACGACTGAGCGTGAGAGTTG AGTC CTG GTAC TAG GACT AGC
AGAGTCCCTGCTGTGTACTA TCAG GAT CATG GTC CTGA TTG
GAACGACT CAA- - T GTCC GAG ------
GAM33663 6661 AGTCCCTGCTGTGTACTAGA CCTG T - AAC- G-- GTGAGA
9 ACGACTGAGCGTGAGAGTTG AGTC CTG GTAC TAG GACT AGC
AGAGTCCCTGCTGTGTACTA TCAG GAT CATG GTC CTGA TTG
GAACGACT CAA- - T GTCC GAG ------
GAM33665 8747 TCAGGAATCCTTGGTAGTTT ATCCT GTTTAAC G TAGTG
5 AACTCTGGAAGTTTTAGTGG TCAGGA TGGTA TCT GAAGTTT
GACTTTGGGAAACAAATACT GGTCTT ATCAT AGG TTTCAGG
ATTTGTTCTGG GTTT- AAACAA- G -----
GAM33669 1028 AATGGTCGTGCCAAAAAGGG G - AAAAA - ---- - C--- CTATTC
3 CCGCGGCCACGTGCAGCCTA AATGGTC TG CC GGGC CGC GGC CA GTGCAGC
TTCGCTGCACTAACTGTGCC TTACCGG AC GG CCCG GCG CCG GT CACGTCG
CGATGCGTGCCCAAGGACAA A A AA--- T TAGC T CAAT ------
GGCCATT
GAM33675 5382 GTGACTGCCTGGTTAAGATC GACT - TA AT ACA GATG
3 TACAAATCTGATGGGATTAA GT GCCT GGT AG CT AATCT
GGGCCTGTACCAAGGCTTTA CA CGGA CCA TC GG TTAGG
AC ATTT A TG CG AA- ----
GAM33679 22410 TCCAGCAGCCTTCTTGTCCA A- - TCT CCACT-- GAT AC- -------- AAC T
0 CTGCTTTGATGACACCCACC TCC GC AGCCT TGT GCTTT GAC CCACC GC TG CTGT
GCAACTGTCTGTCTCATATC AGG CG TCGGG ACA CGAAG CTG GGTGG CG AC GACA
ACGAACAGCAAAGCGACCCA AC T TAC CAACTCT AGT ATA AAACCCAG AA- -
AAGGTGGATAGTCTGAGAAG C ATATCAC
CTCTCAACACACATGGGCTT TC
GCCAGGA AG
- -------
GAM33679 21415 AGTTTAGTGGCAAGTTCTTT A AA TCTTTA TTT CTTTTCGA
2 AGCCTTTGCCTTTTCGAGCT AGTTT GTGGC GT GCC GC
TGGCGATACGAGCCACAGAC TCAGA CACCG CA CGG CG
T - AG TAG--- TT- --------
GAM33679 16107 CCTACTTCAGAGTGTCCCTG A AGA - -- - GA CT ACTC
9 AGCCATGACTGCTTGACTCC CCT CTTC G TGTC CCTGA GCCAT CTG TG
ACAGATGGCTTCAGGAAGAC GGG GAAG C ACAG GGACT CGGTA GAC AC
AGCACAGAAGAGGG A ACA G AA T -- -- ----
GAM33683 5317 GGCGGCGGCTGAACCGGGGC G GAA GG--- - --- GAAG CTCCC
5 CTGCGGCGGAAGCAGCACTC GGCGGCG CT CC GGCCT GC GGCG CAGCA
CCTGCTGAAGCGCCTGCGCA CCGCCGC GA GG CCGGA CG CCGC GTCGT

AGGCCAAGAAGGAGGCGCCG G --- AAGAA A CGT GAA- -----
CC

GENE NAME	GAM SEQ-ID	GENE SEQUENCE (5` TO 3`)	PRECUR SEQ-ID	SOURCE REF-ID	GAM POS
GAM25	26836	AATTGCTTGAACCCAGGAAGTG	22599		A
GAM28	30029	CTTTGCTTCTGTTTTCTGGATGCA	829	AW001829	A
GAM29	43188	GTGGTGGCAGACTTTGGGCTGTCA	19672	AW952936	A
GAM29	24375	AGAGGAAAAGGGCCCCCATGGAGA	19672	AW952936	B
GAM30	50720	ATTGCACTCCAGCCTGGGCCACAG	17666	AL042363	A
GAM30	44575	AGGCAGAAGTTGCAGTGAGCCAAG	17666	AL042363	B
GAM32	30323	TCGAATGGACACATTACCAGTGAA	11060	BQ029001	A
GAM33	45675	AGTCAAGTTGCAGGATCAGCAGGT	3277	BI767711	A
GAM34	40231	TGACGCTGAAGCTGGTGAGCCTGG	7749	BE314459	A
GAM34	31154	CTGACGCTGAAGCTGGTGAGCCTG	7749	BE314459	B
GAM35	43198	TGAGGAATGTATCATCTTTTTGTC	6589	BF672917	A
GAM36	48577	CTGCAAGGCTTCTGGCTACATCTT	16036	BF897781	A
GAM37	31748	TATATGGATCCAATGGCAAGATCA	3023	BI016304	A
GAM38	50630	AGGCATGGAGGAGCTGTGTGGTCA	14069	AI745004	A
GAM39	30780	AAGCCACCTATGACGCAGCCACCC	5797	AL709699	A
GAM40	33190	CACTGAGTGAAAGCTGCTCATTGC	14487	AI656172	A
GAM41	29265	TGTCTCAGGCACCTGAATCAGACC	1460	AA680311	A
GAM42	40880	CAACTCAGGCTCTAGCTTCTCCAG	11077	BF082911	A
GAM43	26070	TGAAACGAACAAGGCTTGAGAATC	18851	BG292228	A
GAM45	40676	TTTGTCTCTGACCTCCCAGGAAGT	7608	BF109609	A
GAM45	33619	TCTGACCTCCCAGGAAGTGT	7608	BF109609	B
GAM46	41205	TGGGTGGATGCTGCTCTCGAATAA	16366	BE092454	A
GAM48	34024	TCACTGAGTGAGCAGAATCTGGTA	11049	BI827667	A
GAM49	48483	GCCGCTGTGCTGAAGGAGGTGTGC	4481	BM016609	A
GAM49	32724	AAGGAGGTGTGCGACGCGT	4481	BM016609	B
GAM50	28483	CCCCGGGAAGTCAGAAATCGATCA	13607	BE741747	A
GAM51	27247	TCCCCATCTCTTTTTCCCCACA	22145	BE327494	A
GAM52	36684	AATTTCTCCTCTGCAGGGTGAGCT	1578	AI085403	A
GAM52	38174	GTTCCAGTTAGGGGCAGTAGAGTT	1578	AI085403	B
GAM53	45091	CTCCATGGCCAAAGCGAGAGCATT	19756	AA709317	A
GAM53	31607	GAGCATTGGCAGTGAATTGCAGA	19756	AA709317	B
GAM54	49652	CTGGGCCCAGATGGCCCCTTCTGA	19542	AA877910	A
GAM56	28372	AGGTATTTGGTGTCATGTTTTGGA	9366	BE538084	A
GAM57	38080	AGAGGTCCTGATTCAGTTTATCAA	10110	BF878415	A
GAM58	47229	TGAGTTATCTTTTAAATATGTCTT	16171	BG402766	A
GAM59	50232	TCCCGGGGCCGGGGGACCTTAGCG	5091	BG913775	A
GAM60	35022	CTTCAAGTGTAGGGACTCCTCGCA	17495	BF745849	A
GAM60	33092	TAACTGGTTGGAAAAACTGTGATC	17495	BF745849	B
GAM61	29835	AGTCATGGTCCCCATCATGCAGGA	5240	BG990766	A
GAM61	48292	CACGATGGGCACAATGCCATTCTG	5240	BG990766	B
GAM62	32343	TGGCTTGGGTCGAGCTCTGTCACA	11969	AI277769	A
GAM64	28444	TACTGTAATCCCCGCTGCTGCTCC	15	BE938023	A
GAM64	47933	CAGCTGCCTGGGTTGTGGCCGCCC	15	BE938023	B
GAM65	39587	TTCGTTGAAGAGGAGGTGCTCTGT	14385	AV726476	A
GAM68	23658	TGTGCATGGCAGCTGTTTTCCTTT	22078	AI032366	A
GAM69	50639	GGGGGACAATATTTTCCCTCCTAG	17542	BF103503	A
GAM70	37255	GGGCCTGTGACCTTGAGAACCTCA	17353	BQ024160	A

GAM70 41074 TGTGACCTTGAGAACCTCATCTCA 17353 BQ024160 B
GAM71 32809 TACCTGGACAGGGCAGGGGC 12332 AI052780 A
GAM71 42465 TGAGCTGGTGTACCTGGACAGGGC 12332 AI052780 B
GAM72 25775 AAAGTGCTGGGATTACAGGCATGA 12926 BF769185 A
GAM73 40967 TGAGAGCAAGGGAACAGGGCGGAT 14252 BF185120 A
GAM74 49767 TTCAGGCAACAGTTTGTCCTG 1790 BG258808 A
GAM75 24658 CCACTGCTCTCCGGGCCTCTCCTG 12089 BI223210 A
GAM75 26840 CACTGCTCTCCGGGCCTCTCCTGC 12089 BI223210 B
GAM76 41484 TGGGGTCATGCCGAACACCCATGA 15194 AW157423 A
GAM77 45368 TTCAGGTCACATGAGTTGCAAGAT 14503 BI488926 A
GAM78 26975 TCTGCAATTCTTATTCTCTTATAG 18244 AA665452 A
GAM78 40626 TGTTATTTTCTGCAATTCTTATTC 18244 AA665452 B
GAM80 46736 GGACAGGTGTACAGACATGTTCTT 9120 AA659917 A
GAM80 29143 GGGGACAGGTGTACAGACATGTTC 9120 AA659917 B
GAM81 44838 AGATGCTCTGCTGTCCTGTGTGGT 22716 BE082837 A
GAM81 24051 AAGCAGTTCATGGACATCTTCTCG 22716 BE082837 B
GAM82 41983 AAGCTGCAACAAGGTGATAAAGGT 20307 AL712226 A
GAM84 45386 TCCCTGGACCAGCCCGGTGGCACC 22365 BG391958 A
GAM85 47482 GGGCATGAAGATCACAATGGGCCT 14138 AA926806 A
GAM86 29188 TGTCACGTAGGTCACACTAGACTC 17426 BG778757 A
GAM86 48970 TCGCTGCGTGTTCATCCTCTCGAG 17426 BG778757 B
GAM87 41215 CAAGATTAGGCCTCTCAAAAGAGC 5755 BE879870 A
GAM88 39481 TAAGTCACATGGCTTCTGTCTTGG 7804 BM923673 A
GAM89 28704 CTTCACCATTTTGTTTTCATTTTG 87 BF984706 A
GAM89 29718 CAAGGTGTTAACAGGCCTGGGAAT 87 BF984706 B
GAM90 45784 TCCACAGAGTTTAGTTTCCTCATT 16700 BF768064 A
GAM91 44452 CTTACAGTCGCGGGCCAGGATGAG 5070 AI832222 A
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GR NAME	SOURCE REF-ID	GR DESCRIPTION
GR1	R36556	Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1(GR1) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1 gene encodes GR1 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1 precursor RNA folds spatially, forming GR1 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2093 precursor RNA and GAM8769 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2093 RNA and GAM8769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2093 target RNA into GAM2093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8769 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8769 target RNA into GAM8769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1 gene: GAM2093 target protein and GAM8769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2093 and GAM8769

GR2 AA829663 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2(GR2) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2 gene encodes GR2 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2 precursor RNA folds spatially, forming GR2 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2453 precursor RNA and GAM244134 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2453 RNA and GAM244134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2453 target RNA into GAM2453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244134 target RNA into GAM244134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2 gene: GAM2453 target protein and GAM244134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2453 and GAM244134

GR3 AI091262 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3(GR3) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3 gene encodes GR3 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3 precursor RNA folds spatially, forming GR3 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3 precursor RNA comprises a plurality of segments, the first

half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1526 precursor RNA, GAM190222 precursor RNA and GAM247582 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1526 RNA, GAM190222 RNA and GAM247582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1526 target RNA into GAM1526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190222 target RNA into GAM190222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247582 target RNA into GAM247582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3 gene: GAM1526 target protein, GAM190222 target protein and GAM247582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM1526, GAM190222 and GAM247582

GR4 BE834479 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4(GR4) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4 gene encodes GR4 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4 precursor RNA folds spatially, forming GR4 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM8650 precursor RNA, GAM128091 precursor RNA, GAM135388 precursor RNA and GAM225636 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8650 RNA, GAM128091 RNA, GAM135388 RNA and GAM225636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8650 target RNA into GAM8650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128091 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128091 target RNA into GAM128091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135388 target RNA into GAM135388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225636 target RNA into GAM225636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4 gene: GAM8650 target protein, GAM128091 target protein, GAM135388 target protein and GAM225636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8650, GAM128091, GAM135388 and GAM225636

GR5 AL138325 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 5(GR5) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR5 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR5 gene was detected is described hereinabove with reference to Figs. 8-18.

GR5 gene encodes GR5 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR5 precursor RNA folds spatially, forming GR5 folded precursor RNA,

herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR5 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR5 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR5 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79658 precursor RNA and GAM96363 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79658 RNA and GAM96363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79658 target RNA into GAM79658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96363 target RNA into GAM96363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR5 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR5 gene: GAM79658 target protein and GAM96363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79658 and GAM96363

GR6 H29661 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 6(GR6) gene, which encodes an `operon-like` cluster of novel micro RNA-like

genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR6 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR6 gene was detected is described hereinabove with reference to Figs. 8-18.

GR6 gene encodes GR6 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR6 precursor RNA folds spatially, forming GR6 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR6 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR6 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR6 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24323 precursor RNA, GAM238820 precursor RNA and GAM281389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24323 RNA, GAM238820 RNA and GAM281389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24323 target RNA into GAM24323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238820 target RNA into GAM238820 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281389 target RNA into GAM281389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR6 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR6 gene: GAM24323 target protein, GAM238820 target protein and GAM281389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24323, GAM238820 and GAM281389

GR7 BG830940 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 7(GR7) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR7 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR7 gene was detected is described hereinabove with reference to Figs. 8-18.

GR7 gene encodes GR7 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR7 precursor RNA folds spatially, forming GR7 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR7 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR7 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR7 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21477 precursor RNA and GAM169828 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21477 RNA and GAM169828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21477 target RNA into GAM21477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169828 target RNA into GAM169828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR7 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR7 gene: GAM21477 target protein and GAM169828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21477 and GAM169828

GR8 AI243391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 8(GR8) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR8 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR8 gene was detected is described hereinabove with reference to Figs. 8-18.

GR8 gene encodes GR8 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR8 precursor RNA folds spatially, forming GR8 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR8 folded

precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR8 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR8 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4338 precursor RNA and GAM6457 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4338 RNA and GAM6457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4338 target RNA into GAM4338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6457 target RNA into GAM6457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR8 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR8 gene: GAM4338 target protein and GAM6457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4338 and GAM6457

GR9 BI551740 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 9(GR9) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene,

the function and utility of which at least one target gene is known in the art.

GR9 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR9 gene was detected is described hereinabove with reference to Figs. 8-18.

GR9 gene encodes GR9 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR9 precursor RNA folds spatially, forming GR9 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR9 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR9 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR9 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM258085 precursor RNA and GAM259023 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM258085 RNA and GAM259023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM258085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258085 target RNA into GAM258085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259023 target RNA into GAM259023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR9 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR9 gene: GAM258085 target protein and GAM259023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM258085 and GAM259023

GR10 W24034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 10(GR10) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR10 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR10 gene was detected is described hereinabove with reference to Figs. 8-18.

GR10 gene encodes GR10 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR10 precursor RNA folds spatially, forming GR10 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR10 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR10 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR10 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7328 precursor RNA, GAM270092 precursor RNA and GAM302798 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7328 RNA, GAM270092 RNA and GAM302798 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7328 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7328 target RNA into GAM7328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270092 target RNA into GAM270092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302798 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302798 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302798 target RNA into GAM302798 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR10 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR10 gene: GAM7328 target protein, GAM270092 target protein and GAM302798 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7328, GAM270092 and GAM302798

GR11 AI571567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 11(GR11) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR11 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR11 gene was detected is described hereinabove with reference to Figs. 8-18.

GR11 gene encodes GR11 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR11 precursor RNA folds spatially, forming GR11 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR11 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR11 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR11 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM283855 precursor RNA and GAM284856 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM283855 RNA and GAM284856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM283855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283855 target RNA into GAM283855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284856 target RNA into GAM284856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR11 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR11 gene: GAM283855 target protein and GAM284856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM283855 and GAM284856

GR12 BG562768 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 12(GR12) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the

art.

GR12 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR12 gene was detected is described hereinabove with reference to Figs. 8-18.

GR12 gene encodes GR12 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR12 precursor RNA folds spatially, forming GR12 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR12 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR12 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR12 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM820 precursor RNA, GAM3125 precursor RNA and GAM105622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM820 RNA, GAM3125 RNA and GAM105622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM820 target RNA into GAM820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3125 target RNA into GAM3125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105622 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105622 target RNA into GAM105622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR12 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR12 gene: GAM820 target protein, GAM3125 target protein and GAM105622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM820, GAM3125 and GAM105622

GR13 AA622566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 13(GR13) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR13 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR13 gene was detected is described hereinabove with reference to Figs. 8-18.

GR13 gene encodes GR13 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR13 precursor RNA folds spatially, forming GR13 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR13 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR13 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR13 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120159 precursor RNA and GAM160088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120159 RNA and GAM160088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120159 target RNA into GAM120159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160088 target RNA into GAM160088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR13 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR13 gene: GAM120159 target protein and GAM160088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120159 and GAM160088

GR14 BE270904 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 14(GR14) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR14 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR14 gene was detected is described hereinabove with reference to Figs. 8-18.

GR14 gene encodes GR14 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR14 precursor RNA folds spatially, forming GR14 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR14 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR14 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR14 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21459 precursor RNA and GAM156724 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21459 RNA and GAM156724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21459 target RNA into GAM21459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156724 target RNA into GAM156724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR14 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR14 gene: GAM21459 target protein and GAM156724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21459 and GAM156724

GR15 BQ061519 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 15(GR15) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR15 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR15 gene was detected is described hereinabove with reference to Figs. 8-18.

GR15 gene encodes GR15 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR15 precursor RNA folds spatially, forming GR15 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR15 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR15 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR15 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4032 precursor RNA, GAM26511 precursor RNA and GAM307457 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4032 RNA, GAM26511 RNA and GAM307457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4032 target RNA into GAM4032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26511 target RNA into GAM26511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM307457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307457 target RNA into GAM307457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR15 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR15 gene: GAM4032 target protein, GAM26511 target protein and GAM307457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4032, GAM26511 and GAM307457

GR16 BF026592 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 16(GR16) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR16 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR16 gene was detected is described hereinabove with reference to Figs. 8-18.

GR16 gene encodes GR16 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR16 precursor RNA folds spatially, forming GR16 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR16 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR16 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR16 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7723 precursor RNA, GAM132708 precursor RNA and GAM257908 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7723 RNA, GAM132708 RNA and GAM257908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7723 target RNA into GAM7723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132708 target RNA into GAM132708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257908 target RNA into GAM257908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR16 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR16 gene: GAM7723 target protein, GAM132708 target protein and GAM257908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7723, GAM132708 and GAM257908

GR17 BG153427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 17(GR17) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR17 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR17 gene was detected is described hereinabove with reference to Figs. 8-18.

GR17 gene encodes GR17 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR17 precursor RNA folds spatially, forming GR17 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR17 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR17 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR17 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8032 precursor RNA and GAM114773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8032 RNA and GAM114773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8032 target RNA into GAM8032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114773 target RNA into GAM114773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR17 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR17 gene: GAM8032 target protein and GAM114773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8032 and GAM114773

GR18 BI459793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 18(GR18) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR18 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR18 gene was detected is described hereinabove with reference to Figs. 8-18.

GR18 gene encodes GR18 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR18 precursor RNA folds spatially, forming GR18 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR18 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR18 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR18 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2413 precursor RNA and GAM6240 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2413 RNA and GAM6240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2413 target RNA into GAM2413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM6240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6240 target RNA into GAM6240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR18 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR18 gene: GAM2413 target protein and GAM6240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2413 and GAM6240

GR19 BF665192 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 19(GR19) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR19 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR19 gene was detected is described hereinabove with reference to Figs. 8-18.

GR19 gene encodes GR19 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR19 precursor RNA folds spatially, forming GR19 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR19 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR19 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR19 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2399 precursor RNA, GAM124002 precursor RNA and GAM165389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2399 RNA, GAM124002 RNA and GAM165389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2399 target RNA into GAM2399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124002 target RNA into GAM124002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165389 target RNA into GAM165389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR19 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR19 gene: GAM2399 target protein, GAM124002 target protein and GAM165389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2399, GAM124002 and GAM165389

GR20 BG335746 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 20(GR20) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR20 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR20 gene was detected is described hereinabove with reference to Figs. 8-18.

GR20 gene encodes GR20 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR20 precursor RNA folds spatially, forming GR20 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR20 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR20 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR20 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM165409 precursor RNA and GAM222296 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165409 RNA and GAM222296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165409 target RNA into GAM165409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222296 target RNA into GAM222296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR20 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR20 gene: GAM165409 target protein and GAM222296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM165409 and GAM222296

GR21 AA503005 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 21(GR21) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR21 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR21 gene was detected is described hereinabove with reference to Figs. 8-18.

GR21 gene encodes GR21 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR21 precursor RNA folds spatially, forming GR21 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR21 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR21 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR21 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6557 precursor RNA and GAM151723 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6557 RNA and GAM151723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6557 target RNA into GAM6557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151723 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151723 target RNA into GAM151723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR21 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR21 gene: GAM6557 target protein and GAM151723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6557 and GAM151723

GR22 AI688911 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 22(GR22) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR22 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR22 gene was detected is described hereinabove with reference to Figs. 8-18.

GR22 gene encodes GR22 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR22 precursor RNA folds spatially, forming GR22 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR22 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR22 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR22 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1798 precursor RNA and GAM88228 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1798 RNA and GAM88228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM1798 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1798 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1798 target RNA into GAM1798 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88228 target RNA into GAM88228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR22 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR22 gene: GAM1798 target protein and GAM88228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1798 and GAM88228

GR23 AW859566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 23(GR23) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR23 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR23 gene was detected is described hereinabove with reference to Figs. 8-18.

GR23 gene encodes GR23 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR23 precursor RNA folds spatially, forming GR23 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR23 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR23 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR23 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3645 precursor RNA and GAM305734 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3645 RNA and GAM305734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3645 target RNA into GAM3645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305734 target RNA into GAM305734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR23 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR23 gene: GAM3645 target protein and GAM305734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3645 and GAM305734

GR24 BM920734 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 24(GR24) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR24 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR24

gene was detected is described hereinabove with reference to Figs. 8-18.

GR24 gene encodes GR24 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR24 precursor RNA folds spatially, forming GR24 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR24 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR24 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR24 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM31304 precursor RNA, GAM65443 precursor RNA and GAM225519 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31304 RNA, GAM65443 RNA and GAM225519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31304 target RNA into GAM31304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65443 target RNA into GAM65443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225519 target RNA into GAM225519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR24 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR24 gene: GAM31304 target protein, GAM65443 target protein and GAM225519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31304, GAM65443 and GAM225519

GR25 BG687463 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 25(GR25) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR25 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR25 gene was detected is described hereinabove with reference to Figs. 8-18.

GR25 gene encodes GR25 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR25 precursor RNA folds spatially, forming GR25 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR25 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR25 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR25 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3105 precursor RNA and GAM6578 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3105 RNA and GAM6578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3105 target RNA into GAM3105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6578 target RNA into GAM6578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR25 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR25 gene: GAM3105 target protein and GAM6578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3105 and GAM6578

GR26 BF691057 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 26(GR26) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR26 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR26 gene was detected is described hereinabove with reference to Figs. 8-18.

GR26 gene encodes GR26 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR26 precursor RNA folds spatially, forming GR26 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR26 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR26 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR26 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2604 precursor RNA, GAM3839 precursor RNA, GAM22405 precursor RNA and GAM148274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2604 RNA, GAM3839 RNA, GAM22405 RNA and GAM148274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2604 target RNA into GAM2604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3839 target RNA into GAM3839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22405 target RNA into GAM22405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148274 target RNA into GAM148274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR26 gene, herein designated GR GENE, correlate with, and may be

deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR26 gene: GAM2604 target protein, GAM3839 target protein, GAM22405 target protein and GAM148274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2604, GAM3839, GAM22405 and GAM148274

GR27 BF132919 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 27(GR27) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR27 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR27 gene was detected is described hereinabove with reference to Figs. 8-18.

GR27 gene encodes GR27 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR27 precursor RNA folds spatially, forming GR27 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR27 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR27 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR27 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3066 precursor RNA and GAM294663 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3066 RNA and GAM294663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3066 target RNA into GAM3066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294663 target RNA into GAM294663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR27 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR27 gene: GAM3066 target protein and GAM294663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3066 and GAM294663

GR28 AW418542 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 28(GR28) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR28 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR28 gene was detected is described hereinabove with reference to Figs. 8-18.

GR28 gene encodes GR28 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR28 precursor RNA folds spatially, forming GR28 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR28 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR28 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR28 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM201141 precursor RNA and GAM326580 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM201141 RNA and GAM326580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM201141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201141 target RNA into GAM201141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326580 target RNA into GAM326580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR28 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR28 gene: GAM201141 target protein and GAM326580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM201141 and GAM326580

GR29 AI391577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 29(GR29) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR29 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR29 gene was detected is described hereinabove with reference to Figs. 8-18.

GR29 gene encodes GR29 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR29 precursor RNA folds spatially, forming GR29 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR29 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR29 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR29 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM182 precursor RNA, GAM183948 precursor RNA and GAM217843 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM182 RNA, GAM183948 RNA and GAM217843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182 target RNA into GAM182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183948 target RNA into GAM183948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217843 target RNA into GAM217843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR29 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR29 gene: GAM182 target protein, GAM183948 target protein and GAM217843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM182, GAM183948 and GAM217843

GR30 AA724325 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 30(GR30) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR30 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR30 gene was detected is described hereinabove with reference to Figs. 8-18.

GR30 gene encodes GR30 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR30 precursor RNA folds spatially, forming GR30 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR30 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR30 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR30 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10427 precursor RNA and GAM322923 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10427 RNA and GAM322923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10427

target RNA into GAM10427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322923 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322923 target RNA into GAM322923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR30 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR30 gene: GAM10427 target protein and GAM322923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10427 and GAM322923

GR31 AI702056 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 31(GR31) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR31 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR31 gene was detected is described hereinabove with reference to Figs. 8-18.

GR31 gene encodes GR31 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR31 precursor RNA folds spatially, forming GR31 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR31 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR31 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR31 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7307 precursor RNA and GAM149376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7307 RNA and GAM149376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7307 target RNA into GAM7307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149376 target RNA into GAM149376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR31 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR31 gene: GAM7307 target protein and GAM149376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7307 and GAM149376

GR32 AW969755 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 32(GR32) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR32 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR32 gene was detected is described hereinabove with reference to Figs. 8-18.

GR32 gene encodes GR32 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR32 precursor RNA folds spatially, forming GR32 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR32

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR32 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR32 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM740 precursor RNA and GAM8682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM740 RNA and GAM8682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM740 target RNA into GAM740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8682 target RNA into GAM8682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR32 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR32 gene: GAM740 target protein and GAM8682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM740 and GAM8682

GR33 BG575759 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 33(GR33) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene,

the function and utility of which at least one target gene is known in the art.

GR33 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR33 gene was detected is described hereinabove with reference to Figs. 8-18.

GR33 gene encodes GR33 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR33 precursor RNA folds spatially, forming GR33 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR33 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR33 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR33 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40859 precursor RNA and GAM127089 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40859 RNA and GAM127089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40859 target RNA into GAM40859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127089 target RNA into GAM127089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR33 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR33 gene: GAM40859 target protein and GAM127089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40859 and GAM127089

GR34 BM809823 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 34(GR34) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR34 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR34 gene was detected is described hereinabove with reference to Figs. 8-18.

GR34 gene encodes GR34 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR34 precursor RNA folds spatially, forming GR34 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR34 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR34 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR34 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM77265 precursor RNA, GAM185987 precursor RNA and GAM188223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77265 RNA, GAM185987 RNA and GAM188223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77265 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77265 target RNA into GAM77265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185987 target RNA into GAM185987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188223 target RNA into GAM188223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR34 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR34 gene: GAM77265 target protein, GAM185987 target protein and GAM188223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77265, GAM185987 and GAM188223

GR35 AA649226 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 35(GR35) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR35 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR35 gene was detected is described hereinabove with reference to Figs. 8-18.

GR35 gene encodes GR35 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR35 precursor RNA folds spatially, forming GR35 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR35 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR35 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR35 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2088 precursor RNA and GAM287672 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2088 RNA and GAM287672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2088 target RNA into GAM2088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287672 target RNA into GAM287672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR35 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR35 gene: GAM2088 target protein and GAM287672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2088 and GAM287672

GR36 BI464900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 36(GR36) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the

art.

GR36 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR36 gene was detected is described hereinabove with reference to Figs. 8-18.

GR36 gene encodes GR36 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR36 precursor RNA folds spatially, forming GR36 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR36 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR36 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR36 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6529 precursor RNA and GAM166710 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6529 RNA and GAM166710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6529 target RNA into GAM6529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166710 target RNA into GAM166710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR36 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR36 gene: GAM6529 target protein and GAM166710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6529 and GAM166710

GR37 BM681865 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 37(GR37) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR37 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR37 gene was detected is described hereinabove with reference to Figs. 8-18.

GR37 gene encodes GR37 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR37 precursor RNA folds spatially, forming GR37 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR37 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR37 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR37 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30482 precursor RNA and GAM216781 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30482 RNA and GAM216781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30482 target RNA into GAM30482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216781 target RNA into GAM216781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR37 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR37 gene: GAM30482 target protein and GAM216781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30482 and GAM216781

GR38 AI935463 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 38(GR38) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR38 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR38 gene was detected is described hereinabove with reference to Figs. 8-18.

GR38 gene encodes GR38 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR38 precursor RNA folds spatially, forming GR38 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR38 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR38 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR38 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1778 precursor RNA and GAM22982 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1778 RNA and GAM22982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1778 target RNA into GAM1778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22982 target RNA into GAM22982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR38 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR38 gene: GAM1778 target protein and GAM22982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1778 and GAM22982

GR39 BF309305 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 39(GR39) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR39 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR39 gene was detected is described hereinabove with reference to Figs. 8-18.

GR39 gene encodes GR39 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR39 precursor RNA folds spatially, forming GR39 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR39 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR39 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR39 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3929 precursor RNA, GAM95158 precursor RNA and GAM116790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3929 RNA, GAM95158 RNA and GAM116790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3929 target RNA into GAM3929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95158 target RNA into GAM95158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116790 target RNA into GAM116790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR39 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR39 gene: GAM3929 target protein, GAM95158 target protein and GAM116790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3929, GAM95158 and GAM116790

GR40 BF930238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 40(GR40) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR40 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR40 gene was detected is described hereinabove with reference to Figs. 8-18.

GR40 gene encodes GR40 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR40 precursor RNA folds spatially, forming GR40 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR40 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR40 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR40 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7833 precursor RNA, GAM92958 precursor RNA and GAM224809 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7833 RNA, GAM92958 RNA and GAM224809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7833 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7833 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7833 target RNA into GAM7833 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92958 target RNA into GAM92958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224809 target RNA into GAM224809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR40 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR40 gene: GAM7833 target protein, GAM92958 target protein and GAM224809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7833, GAM92958 and GAM224809

GR41 AW274021 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 41(GR41) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR41 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR41 gene was detected is described hereinabove with reference to Figs. 8-18.

GR41 gene encodes GR41 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR41 precursor RNA folds spatially, forming GR41 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR41 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR41 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR41 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55823 precursor RNA and GAM334021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55823 RNA and GAM334021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55823 target RNA into GAM55823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334021 target RNA into GAM334021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR41 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR41 gene: GAM55823 target protein and GAM334021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55823 and GAM334021

GR42 BF126283 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 42(GR42) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR42 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR42 gene was detected is described hereinabove with reference to Figs. 8-18.

GR42 gene encodes GR42 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR42 precursor RNA folds spatially, forming GR42 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR42 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR42 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR42 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4077 precursor RNA and GAM5279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4077 RNA and GAM5279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4077 target RNA into GAM4077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5279 target RNA into GAM5279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR42 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR42 gene: GAM4077 target protein and GAM5279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4077 and GAM5279

GR43 BE772525 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 43(GR43) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR43 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR43 gene was detected is described hereinabove with reference to Figs. 8-18.

GR43 gene encodes GR43 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR43 precursor RNA folds spatially, forming GR43 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR43 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR43 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR43 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM31614 precursor RNA, GAM125698 precursor RNA and GAM230105 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31614 RNA, GAM125698 RNA and GAM230105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31614

target RNA into GAM31614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125698 target RNA into GAM125698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230105 target RNA into GAM230105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR43 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR43 gene: GAM31614 target protein, GAM125698 target protein and GAM230105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31614, GAM125698 and GAM230105

GR44 AA442190 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 44(GR44) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR44 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR44 gene was detected is described hereinabove with reference to Figs. 8-18.

GR44 gene encodes GR44 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR44 precursor RNA folds spatially, forming GR44 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR44 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR44 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR44 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM177016 precursor RNA and GAM204536 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177016 RNA and GAM204536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM177016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177016 target RNA into GAM177016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204536 target RNA into GAM204536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR44 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR44 gene: GAM177016 target protein and GAM204536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177016 and GAM204536

GR45 AV734186 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 45(GR45) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR45 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR45 gene was detected is described hereinabove with reference to Figs. 8-18.

GR45 gene encodes GR45 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR45 precursor RNA folds spatially, forming GR45 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR45 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR45 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR45 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM279168 precursor RNA and GAM279734 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM279168 RNA and GAM279734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM279168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279168 target RNA into GAM279168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279734 target RNA into GAM279734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR45 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR45 gene: GAM279168 target

protein and GAM279734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM279168 and GAM279734

GR46 AV759326 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 46(GR46) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR46 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR46 gene was detected is described hereinabove with reference to Figs. 8-18.

GR46 gene encodes GR46 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR46 precursor RNA folds spatially, forming GR46 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR46 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR46 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR46 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1097 precursor RNA and GAM235253 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1097 RNA and GAM235253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1097 target RNA into GAM1097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235253 target RNA into GAM235253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR46 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR46 gene: GAM1097 target protein and GAM235253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1097 and GAM235253

GR47 BE256238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 47(GR47) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR47 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR47 gene was detected is described hereinabove with reference to Figs. 8-18.

GR47 gene encodes GR47 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR47 precursor RNA folds spatially, forming GR47 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR47 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR47 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR47 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM223642 precursor RNA and GAM267163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223642 RNA and GAM267163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223642 target RNA into GAM223642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267163 target RNA into GAM267163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR47 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR47 gene: GAM223642 target protein and GAM267163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223642 and GAM267163

GR48 BF701094 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 48(GR48) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR48 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR48 gene was detected is described hereinabove with reference to Figs. 8-18.

GR48 gene encodes GR48 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR48 precursor RNA folds spatially, forming GR48 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR48 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR48 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR48 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2157 precursor RNA, GAM8688 precursor RNA and GAM71391 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2157 RNA, GAM8688 RNA and GAM71391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2157 target RNA into GAM2157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8688 target RNA into GAM8688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71391 target RNA into GAM71391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR48 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR48 gene: GAM2157 target protein, GAM8688 target protein and GAM71391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2157, GAM8688 and GAM71391

GR49 BG248171 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 49(GR49) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR49 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR49 gene was detected is described hereinabove with reference to Figs. 8-18.

GR49 gene encodes GR49 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR49 precursor RNA folds spatially, forming GR49 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR49 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR49 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR49 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM6915 precursor RNA, GAM14245 precursor RNA, GAM38106 precursor RNA, GAM49162 precursor RNA and GAM197552 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6915 RNA, GAM14245 RNA, GAM38106 RNA, GAM49162 RNA and GAM197552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6915 target RNA into GAM6915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14245 target RNA into GAM14245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38106 target RNA into GAM38106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49162 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49162 target RNA into GAM49162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197552 target RNA into GAM197552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR49 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR49 gene: GAM6915 target protein, GAM14245 target protein, GAM38106 target protein, GAM49162 target protein and GAM197552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6915, GAM14245, GAM38106, GAM49162 and GAM197552

GR50 AU129832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 50(GR50) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR50 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR50 gene was detected is described hereinabove with reference to Figs. 8-18.

GR50 gene encodes GR50 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR50 precursor RNA folds spatially, forming GR50 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR50 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR50 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR50 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230548 precursor RNA and GAM257332 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230548 RNA and GAM257332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230548 target RNA into GAM230548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257332 target RNA into GAM257332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR50 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR50 gene: GAM230548 target protein and GAM257332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230548 and GAM257332

GR51 BE544229 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 51(GR51) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR51 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR51 gene was detected is described hereinabove with reference to Figs. 8-18.

GR51 gene encodes GR51 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR51 precursor RNA folds spatially, forming GR51 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR51 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR51 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR51 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4616 precursor RNA and GAM7004 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4616 RNA and GAM7004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4616 target RNA into GAM4616 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7004 target RNA into GAM7004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR51 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR51 gene: GAM4616 target protein and GAM7004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4616 and GAM7004

GR52 AI961123 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 52(GR52) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR52 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR52 gene was detected is described hereinabove with reference to Figs. 8-18.

GR52 gene encodes GR52 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR52 precursor RNA folds spatially, forming GR52 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR52 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR52 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR52 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122126 precursor RNA and GAM336168 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122126 RNA and GAM336168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122126 target RNA into GAM122126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336168 target RNA into GAM336168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR52 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR52 gene: GAM122126 target protein and GAM336168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122126 and GAM336168

GR53 AW593409 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 53(GR53) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR53 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR53 gene was detected is described hereinabove with reference to Figs. 8-18.

GR53 gene encodes GR53 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR53 precursor RNA folds spatially, forming GR53 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR53 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR53 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR53 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM37860 precursor RNA and GAM39378 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM37860 RNA and GAM39378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM37860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37860 target RNA into GAM37860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM39378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39378 target RNA into GAM39378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR53 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR53 gene: GAM37860 target protein and GAM39378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM37860 and GAM39378

GR54 BM047407 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 54(GR54) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the

art.

GR54 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR54 gene was detected is described hereinabove with reference to Figs. 8-18.

GR54 gene encodes GR54 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR54 precursor RNA folds spatially, forming GR54 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR54 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR54 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR54 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM218288 precursor RNA and GAM292802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218288 RNA and GAM292802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218288 target RNA into GAM218288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292802 target RNA into GAM292802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR54 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR54 gene: GAM218288 target protein and GAM292802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218288 and GAM292802

GR55 BM997938 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 55(GR55) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR55 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR55 gene was detected is described hereinabove with reference to Figs. 8-18.

GR55 gene encodes GR55 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR55 precursor RNA folds spatially, forming GR55 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR55 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR55 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR55 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48568 precursor RNA and GAM151691 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48568 RNA and GAM151691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48568 target RNA into GAM48568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151691 target RNA into GAM151691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR55 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR55 gene: GAM48568 target protein and GAM151691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48568 and GAM151691

GR56 BQ007446 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 56(GR56) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR56 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR56 gene was detected is described hereinabove with reference to Figs. 8-18.

GR56 gene encodes GR56 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR56 precursor RNA folds spatially, forming GR56 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR56 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR56 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR56 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3962 precursor RNA and GAM31696 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3962 RNA and GAM31696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3962 target RNA into GAM3962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31696 target RNA into GAM31696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR56 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR56 gene: GAM3962 target protein and GAM31696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3962 and GAM31696

GR57 BI497054 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 57(GR57) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR57 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR57 gene was detected is described hereinabove with reference to Figs. 8-18.

GR57 gene encodes GR57 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR57 precursor RNA folds spatially, forming GR57 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR57 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR57 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR57 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM39283 precursor RNA, GAM126054 precursor RNA and GAM304099 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39283 RNA, GAM126054 RNA and GAM304099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39283 target RNA into GAM39283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126054 target RNA into GAM126054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304099 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304099 target RNA into GAM304099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR57 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR57 gene: GAM39283 target protein, GAM126054 target protein and GAM304099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39283, GAM126054 and GAM304099

GR58 BG216543 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 58(GR58) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR58 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR58 gene was detected is described hereinabove with reference to Figs. 8-18.

GR58 gene encodes GR58 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR58 precursor RNA folds spatially, forming GR58 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR58 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR58 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR58 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM124880 precursor RNA and GAM137814 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM124880 RNA and GAM137814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM124880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124880

target RNA into GAM124880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137814 target RNA into GAM137814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR58 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR58 gene: GAM124880 target protein and GAM137814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM124880 and GAM137814

GR59 AI734272 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 59(GR59) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR59 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR59 gene was detected is described hereinabove with reference to Figs. 8-18.

GR59 gene encodes GR59 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR59 precursor RNA folds spatially, forming GR59 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR59 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR59 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR59 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158232 precursor RNA and GAM224056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158232 RNA and GAM224056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158232 target RNA into GAM158232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224056 target RNA into GAM224056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR59 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR59 gene: GAM158232 target protein and GAM224056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158232 and GAM224056

GR60 BF899412 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 60(GR60) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR60 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR60 gene was detected is described hereinabove with reference to Figs. 8-18.

GR60 gene encodes GR60 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR60 precursor RNA folds spatially, forming GR60 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR60

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR60 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR60 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3637 precursor RNA and GAM267270 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3637 RNA and GAM267270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3637 target RNA into GAM3637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267270 target RNA into GAM267270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR60 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR60 gene: GAM3637 target protein and GAM267270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3637 and GAM267270

GR61 BM091510 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 61(GR61) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene,

the function and utility of which at least one target gene is known in the art.

GR61 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR61 gene was detected is described hereinabove with reference to Figs. 8-18.

GR61 gene encodes GR61 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR61 precursor RNA folds spatially, forming GR61 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR61 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR61 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR61 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM43345 precursor RNA and GAM335756 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43345 RNA and GAM335756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43345 target RNA into GAM43345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335756 target RNA into GAM335756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR61 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR61 gene: GAM43345 target protein and GAM335756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43345 and GAM335756

GR62 BM991048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 62(GR62) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR62 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR62 gene was detected is described hereinabove with reference to Figs. 8-18.

GR62 gene encodes GR62 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR62 precursor RNA folds spatially, forming GR62 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR62 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR62 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR62 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM112216 precursor RNA and GAM130222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112216 RNA and GAM130222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112216 target RNA into GAM112216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130222 target RNA into GAM130222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR62 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR62 gene: GAM112216 target protein and GAM130222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112216 and GAM130222

GR63 AW578548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 63(GR63) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR63 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR63 gene was detected is described hereinabove with reference to Figs. 8-18.

GR63 gene encodes GR63 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR63 precursor RNA folds spatially, forming GR63 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR63 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR63 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR63 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7781 precursor RNA, GAM72744 precursor RNA and GAM155395 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7781 RNA, GAM72744 RNA and GAM155395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7781 target RNA into GAM7781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72744 target RNA into GAM72744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM155395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155395 target RNA into GAM155395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR63 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR63 gene: GAM7781 target protein, GAM72744 target protein and GAM155395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7781, GAM72744 and GAM155395

GR64 AW991272 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 64(GR64) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the

art.

GR64 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR64 gene was detected is described hereinabove with reference to Figs. 8-18.

GR64 gene encodes GR64 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR64 precursor RNA folds spatially, forming GR64 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR64 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR64 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR64 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM18229 precursor RNA, GAM167780 precursor RNA and GAM293444 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18229 RNA, GAM167780 RNA and GAM293444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18229 target RNA into GAM18229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167780 target RNA into GAM167780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293444 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293444 target RNA into GAM293444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR64 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR64 gene: GAM18229 target protein, GAM167780 target protein and GAM293444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18229, GAM167780 and GAM293444

GR65 BF758251 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 65(GR65) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR65 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR65 gene was detected is described hereinabove with reference to Figs. 8-18.

GR65 gene encodes GR65 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR65 precursor RNA folds spatially, forming GR65 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR65 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR65 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR65 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6219 precursor RNA and GAM101015 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6219 RNA and GAM101015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6219 target RNA into GAM6219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101015 target RNA into GAM101015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR65 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR65 gene: GAM6219 target protein and GAM101015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6219 and GAM101015

GR66 BG281965 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 66(GR66) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR66 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR66 gene was detected is described hereinabove with reference to Figs. 8-18.

GR66 gene encodes GR66 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR66 precursor RNA folds spatially, forming GR66 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR66 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR66 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR66 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3109 precursor RNA, GAM6543 precursor RNA and GAM111827 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3109 RNA, GAM6543 RNA and GAM111827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3109 target RNA into GAM3109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6543 target RNA into GAM6543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111827 target RNA into GAM111827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR66 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR66 gene: GAM3109 target protein, GAM6543 target protein and GAM111827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3109, GAM6543 and GAM111827

GR67 BF527453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 67(GR67) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR67 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR67 gene was detected is described hereinabove with reference to Figs. 8-18.

GR67 gene encodes GR67 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR67 precursor RNA folds spatially, forming GR67 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR67 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR67 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR67 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM278 precursor RNA and GAM6615 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM278 RNA and GAM6615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278 target RNA into GAM278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6615 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6615 target RNA into GAM6615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR67 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR67 gene: GAM278 target protein and GAM6615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM278 and GAM6615

GR68 AA634158 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 68(GR68) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR68 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR68 gene was detected is described hereinabove with reference to Figs. 8-18.

GR68 gene encodes GR68 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR68 precursor RNA folds spatially, forming GR68 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR68 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR68 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR68 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM596 precursor RNA and GAM143300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM596 RNA and GAM143300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM596 target RNA into GAM596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM143300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143300 target RNA into GAM143300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR68 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR68 gene: GAM596 target protein and GAM143300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM596 and GAM143300

GR69 BQ016309 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 69(GR69) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR69 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR69 gene was detected is described hereinabove with reference to Figs. 8-18.

GR69 gene encodes GR69 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR69 precursor RNA folds spatially, forming GR69 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR69 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR69 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR69 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5449 precursor RNA and GAM212429 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5449 RNA and GAM212429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5449 target RNA into GAM5449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212429 target RNA into GAM212429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR69 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR69 gene: GAM5449 target protein and GAM212429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5449 and GAM212429

GR70 BE279528 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 70(GR70) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR70 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR70 gene was detected is described hereinabove with reference to Figs. 8-18.

GR70 gene encodes GR70 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR70 precursor RNA folds spatially, forming GR70 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR70 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR70 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR70 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM18028 precursor RNA and GAM260324 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18028 RNA and GAM260324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18028 target RNA into GAM18028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260324 target RNA into GAM260324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR70 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR70 gene: GAM18028 target protein and GAM260324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18028 and GAM260324

GR71 BF315104 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 71(GR71) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR71 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR71 gene was detected is described hereinabove with reference to Figs. 8-18.

GR71 gene encodes GR71 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR71 precursor RNA folds spatially, forming GR71 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR71 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR71 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR71 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116956 precursor RNA and GAM154068 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116956 RNA and GAM154068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116956 target RNA into GAM116956 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154068 target RNA into GAM154068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR71 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR71 gene: GAM116956 target protein and GAM154068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116956 and GAM154068

GR72 AA868333 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 72(GR72) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR72 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR72 gene was detected is described hereinabove with reference to Figs. 8-18.

GR72 gene encodes GR72 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR72 precursor RNA folds spatially, forming GR72 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR72 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR72 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR72 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2952 precursor RNA, GAM92461 precursor RNA and GAM286060 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2952 RNA, GAM92461 RNA and GAM286060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2952 target RNA into GAM2952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92461 target RNA into GAM92461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286060 target RNA into GAM286060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR72 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR72 gene: GAM2952 target protein, GAM92461 target protein and GAM286060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2952, GAM92461 and GAM286060

GR73 BE783763 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 73(GR73) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR73 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR73 gene was detected is described hereinabove with reference to Figs. 8-18.

GR73 gene encodes GR73 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR73 precursor RNA folds spatially, forming GR73 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR73 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR73 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR73 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4725 precursor RNA, GAM34044 precursor RNA and GAM210460 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4725 RNA, GAM34044 RNA and GAM210460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4725 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4725 target RNA into GAM4725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34044 target RNA into GAM34044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210460 target RNA into GAM210460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR73 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR73 gene: GAM4725 target protein, GAM34044 target protein and GAM210460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4725, GAM34044 and GAM210460

GR74 BF590949 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 74(GR74) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR74 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR74 gene was detected is described hereinabove with reference to Figs. 8-18.

GR74 gene encodes GR74 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR74 precursor RNA folds spatially, forming GR74 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR74 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR74 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR74 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4775 precursor RNA, GAM287482 precursor RNA and GAM287657 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4775 RNA, GAM287482 RNA and GAM287657 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4775 target RNA into GAM4775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287482 target RNA into GAM287482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287657 target RNA into GAM287657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR74 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR74 gene: GAM4775 target protein, GAM287482 target protein and GAM287657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4775, GAM287482 and GAM287657

GR75 AI906335 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 75(GR75) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR75 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR75 gene was detected is described hereinabove with reference to Figs. 8-18.

GR75 gene encodes GR75 precursor RNA, herein designated GR PRECURSOR

RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR75 precursor RNA folds spatially, forming GR75 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR75 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR75 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR75 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6802 precursor RNA, GAM9932 precursor RNA and GAM95526 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6802 RNA, GAM9932 RNA and GAM95526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6802 target RNA into GAM6802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9932 target RNA into GAM9932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95526 target RNA into GAM95526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR75 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR75 gene: GAM6802 target protein, GAM9932 target protein and GAM95526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6802, GAM9932 and GAM95526

GR76 AW752500 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 76(GR76) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR76 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR76 gene was detected is described hereinabove with reference to Figs. 8-18.

GR76 gene encodes GR76 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR76 precursor RNA folds spatially, forming GR76 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR76 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR76 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR76 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM69897 precursor RNA, GAM183658 precursor RNA and GAM213548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69897 RNA, GAM183658 RNA and GAM213548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69897 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69897 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69897 target RNA into GAM69897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183658 target RNA into GAM183658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213548 target RNA into GAM213548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR76 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR76 gene: GAM69897 target protein, GAM183658 target protein and GAM213548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69897, GAM183658 and GAM213548

GR77 AA693933 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 77(GR77) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR77 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR77 gene was detected is described hereinabove with reference to Figs. 8-18.

GR77 gene encodes GR77 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR77 precursor RNA folds spatially, forming GR77 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR77 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR77 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR77 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5611 precursor RNA and GAM331381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5611 RNA and GAM331381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5611 target RNA into GAM5611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331381 target RNA into GAM331381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR77 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR77 gene: GAM5611 target protein and GAM331381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5611 and GAM331381

GR78 AW965215 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 78(GR78) gene, which encodes an `operon-like` cluster of novel micro RNA-like

genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR78 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR78 gene was detected is described hereinabove with reference to Figs. 8-18.

GR78 gene encodes GR78 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR78 precursor RNA folds spatially, forming GR78 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR78 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR78 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR78 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82292 precursor RNA and GAM247332 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82292 RNA and GAM247332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82292 target RNA into GAM82292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247332 target RNA into GAM247332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR78 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR78 gene: GAM82292 target protein and GAM247332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82292 and GAM247332

GR79 AW303330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 79(GR79) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR79 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR79 gene was detected is described hereinabove with reference to Figs. 8-18.

GR79 gene encodes GR79 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR79 precursor RNA folds spatially, forming GR79 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR79 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR79 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR79 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM126075 precursor RNA and GAM163333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126075 RNA and GAM163333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126075 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126075 target RNA into GAM126075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163333 target RNA into GAM163333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR79 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR79 gene: GAM126075 target protein and GAM163333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126075 and GAM163333

GR80 AV726145 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 80(GR80) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR80 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR80 gene was detected is described hereinabove with reference to Figs. 8-18.

GR80 gene encodes GR80 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR80 precursor RNA folds spatially, forming GR80 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR80 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR80 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR80 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4291 precursor RNA, GAM91027 precursor RNA and

GAM174202 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4291 RNA, GAM91027 RNA and GAM174202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4291 target RNA into GAM4291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91027 target RNA into GAM91027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174202 target RNA into GAM174202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR80 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR80 gene: GAM4291 target protein, GAM91027 target protein and GAM174202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4291, GAM91027 and GAM174202

GR81 BI035566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 81(GR81) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene,

the function and utility of which at least one target gene is known in the art.

GR81 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR81 gene was detected is described hereinabove with reference to Figs. 8-18.

GR81 gene encodes GR81 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR81 precursor RNA folds spatially, forming GR81 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR81 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR81 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR81 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116596 precursor RNA and GAM173604 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116596 RNA and GAM173604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116596 target RNA into GAM116596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173604 target RNA into GAM173604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR81 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR81 gene: GAM116596 target protein and GAM173604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116596 and GAM173604

GR82 BE732748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 82(GR82) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR82 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR82 gene was detected is described hereinabove with reference to Figs. 8-18.

GR82 gene encodes GR82 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR82 precursor RNA folds spatially, forming GR82 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR82 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR82 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR82 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM20598 precursor RNA, GAM181643 precursor RNA and GAM284117 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20598 RNA, GAM181643 RNA and GAM284117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20598 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20598 target RNA into GAM20598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181643 target RNA into GAM181643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284117 target RNA into GAM284117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR82 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR82 gene: GAM20598 target protein, GAM181643 target protein and GAM284117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20598, GAM181643 and GAM284117

GR83 BM676615 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 83(GR83) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR83 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR83 gene was detected is described hereinabove with reference to Figs. 8-18.

GR83 gene encodes GR83 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR83 precursor RNA folds spatially, forming GR83 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR83 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR83 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR83 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93232 precursor RNA and GAM223539 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93232 RNA and GAM223539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93232 target RNA into GAM93232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223539 target RNA into GAM223539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR83 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR83 gene: GAM93232 target protein and GAM223539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93232 and GAM223539

GR84 BM827467 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 84(GR84) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the

art.

GR84 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR84 gene was detected is described hereinabove with reference to Figs. 8-18.

GR84 gene encodes GR84 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR84 precursor RNA folds spatially, forming GR84 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR84 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR84 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR84 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM161012 precursor RNA and GAM280444 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM161012 RNA and GAM280444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM161012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161012 target RNA into GAM161012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280444 target RNA into GAM280444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR84 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR84 gene: GAM161012 target protein and GAM280444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM161012 and GAM280444

GR85 H09988 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 85(GR85) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR85 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR85 gene was detected is described hereinabove with reference to Figs. 8-18.

GR85 gene encodes GR85 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR85 precursor RNA folds spatially, forming GR85 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR85 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR85 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR85 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM231021 precursor RNA and GAM332223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM231021 RNA and GAM332223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM231021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231021 target RNA into GAM231021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332223 target RNA into GAM332223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR85 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR85 gene: GAM231021 target protein and GAM332223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM231021 and GAM332223

GR86 F08624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 86(GR86) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR86 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR86 gene was detected is described hereinabove with reference to Figs. 8-18.

GR86 gene encodes GR86 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR86 precursor RNA folds spatially, forming GR86 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR86 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR86 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR86 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM291907 precursor RNA and GAM294978 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM291907 RNA and GAM294978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM291907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291907 target RNA into GAM291907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294978 target RNA into GAM294978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR86 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR86 gene: GAM291907 target protein and GAM294978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM291907 and GAM294978

GR87 BM720046 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 87(GR87) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR87 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR87 gene was detected is described hereinabove with reference to Figs. 8-18.

GR87 gene encodes GR87 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR87 precursor RNA folds spatially, forming GR87 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR87 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR87 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR87 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98593 precursor RNA and GAM129790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98593 RNA and GAM129790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98593 target RNA into GAM98593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129790 target RNA into GAM129790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR87 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR87 gene: GAM98593 target protein and GAM129790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98593 and GAM129790

GR88 BG949772 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 88(GR88) gene, which encodes an `operon-like` cluster of novel micro RNA-like

genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR88 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR88 gene was detected is described hereinabove with reference to Figs. 8-18.

GR88 gene encodes GR88 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR88 precursor RNA folds spatially, forming GR88 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR88 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR88 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR88 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7365 precursor RNA, GAM8528 precursor RNA and GAM128105 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7365 RNA, GAM8528 RNA and GAM128105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7365 target RNA into GAM7365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8528 target RNA into GAM8528 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128105 target RNA into GAM128105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR88 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR88 gene: GAM7365 target protein, GAM8528 target protein and GAM128105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7365, GAM8528 and GAM128105

GR89 AW361696 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 89(GR89) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR89 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR89 gene was detected is described hereinabove with reference to Figs. 8-18.

GR89 gene encodes GR89 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR89 precursor RNA folds spatially, forming GR89 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR89 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR89 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR89 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253724 precursor RNA and GAM281024 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253724 RNA and GAM281024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253724 target RNA into GAM253724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281024 target RNA into GAM281024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR89 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR89 gene: GAM253724 target protein and GAM281024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253724 and GAM281024

GR90 BF081453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 90(GR90) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR90 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR90 gene was detected is described hereinabove with reference to Figs. 8-18.

GR90 gene encodes GR90 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR90 precursor RNA folds spatially, forming GR90 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR90

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR90 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR90 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM117767 precursor RNA and GAM216950 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117767 RNA and GAM216950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117767 target RNA into GAM117767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216950 target RNA into GAM216950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR90 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR90 gene: GAM117767 target protein and GAM216950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117767 and GAM216950

GR91 BM786398 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 91(GR91) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene,

the function and utility of which at least one target gene is known in the art.

GR91 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR91 gene was detected is described hereinabove with reference to Figs. 8-18.

GR91 gene encodes GR91 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR91 precursor RNA folds spatially, forming GR91 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR91 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR91 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR91 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82885 precursor RNA and GAM109647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82885 RNA and GAM109647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82885 target RNA into GAM82885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109647 target RNA into GAM109647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR91 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR91 gene: GAM82885 target protein and GAM109647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82885 and GAM109647

GR92 BM015762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 92(GR92) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR92 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR92 gene was detected is described hereinabove with reference to Figs. 8-18.

GR92 gene encodes GR92 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR92 precursor RNA folds spatially, forming GR92 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR92 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR92 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR92 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM4308 precursor RNA, GAM8083 precursor RNA, GAM111585 precursor RNA, GAM210762 precursor RNA and GAM287011 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4308 RNA, GAM8083 RNA, GAM111585 RNA, GAM210762 RNA and GAM287011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4308 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4308 target RNA into GAM4308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8083 target RNA into GAM8083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111585 target RNA into GAM111585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210762 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210762 target RNA into GAM210762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287011 target RNA into GAM287011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR92 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR92 gene: GAM4308 target protein, GAM8083 target protein, GAM111585 target protein, GAM210762 target protein and GAM287011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4308, GAM8083, GAM111585, GAM210762 and GAM287011

GR93 AI761680 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

93(GR93) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR93 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR93 gene was detected is described hereinabove with reference to Figs. 8-18.

GR93 gene encodes GR93 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR93 precursor RNA folds spatially, forming GR93 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR93 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR93 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR93 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4645 precursor RNA and GAM4878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4645 RNA and GAM4878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4645 target RNA into GAM4645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4878 target RNA into GAM4878 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR93 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR93 gene: GAM4645 target protein and GAM4878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4645 and GAM4878

GR94 BM837384 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 94(GR94) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR94 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR94 gene was detected is described hereinabove with reference to Figs. 8-18.

GR94 gene encodes GR94 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR94 precursor RNA folds spatially, forming GR94 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR94 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR94 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR94 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM652 precursor RNA and GAM3684 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM652 RNA and GAM3684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM652 target RNA into GAM652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3684 target RNA into GAM3684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR94 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR94 gene: GAM652 target protein and GAM3684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM652 and GAM3684

GR95 BM669394 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 95(GR95) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR95 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR95 gene was detected is described hereinabove with reference to Figs. 8-18.

GR95 gene encodes GR95 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR95 precursor RNA folds spatially, forming GR95 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR95 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR95 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR95 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM3713 precursor RNA, GAM75861 precursor RNA and GAM120280 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3713 RNA, GAM75861 RNA and GAM120280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3713 target RNA into GAM3713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75861 target RNA into GAM75861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120280 target RNA into GAM120280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR95 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR95 gene: GAM3713 target protein, GAM75861 target protein and GAM120280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3713, GAM75861 and GAM120280

GR96 BE220099 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 96(GR96) gene, which encodes an `operon-like` cluster of novel micro RNA-like

genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR96 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR96 gene was detected is described hereinabove with reference to Figs. 8-18.

GR96 gene encodes GR96 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR96 precursor RNA folds spatially, forming GR96 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR96 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR96 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR96 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7268 precursor RNA and GAM16962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7268 RNA and GAM16962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7268 target RNA into GAM7268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16962 target RNA into GAM16962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR96 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR96 gene: GAM7268 target protein and GAM16962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7268 and GAM16962

GR97 BE564930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 97(GR97) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR97 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR97 gene was detected is described hereinabove with reference to Figs. 8-18.

GR97 gene encodes GR97 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR97 precursor RNA folds spatially, forming GR97 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR97 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR97 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR97 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM101274 precursor RNA, GAM188694 precursor RNA and GAM243856 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101274 RNA, GAM188694 RNA and GAM243856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM101274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101274 target RNA into GAM101274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188694 target RNA into GAM188694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243856 target RNA into GAM243856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR97 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR97 gene: GAM101274 target protein, GAM188694 target protein and GAM243856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101274, GAM188694 and GAM243856

GR98 BI837704 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 98(GR98) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR98 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR98 gene was detected is described hereinabove with reference to Figs. 8-18.

GR98 gene encodes GR98 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR98 precursor RNA folds spatially, forming GR98 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR98

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR98 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR98 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5403 precursor RNA, GAM6317 precursor RNA, GAM8812 precursor RNA and GAM94735 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5403 RNA, GAM6317 RNA, GAM8812 RNA and GAM94735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5403 target RNA into GAM5403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6317 target RNA into GAM6317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8812 target RNA into GAM8812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94735 target RNA into GAM94735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR98 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR98 gene: GAM5403 target protein, GAM6317 target protein, GAM8812 target protein and GAM94735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5403, GAM6317, GAM8812 and GAM94735

GR99 N72793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 99(GR99) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR99 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR99 gene was detected is described hereinabove with reference to Figs. 8-18.

GR99 gene encodes GR99 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR99 precursor RNA folds spatially, forming GR99 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR99 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR99 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR99 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM261010 precursor RNA and GAM269207 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM261010 RNA and GAM269207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM261010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261010 target RNA into GAM261010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269207 target RNA into GAM269207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR99 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR99 gene: GAM261010 target protein and GAM269207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM261010 and GAM269207

GR100 AW023676 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 100(GR100) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR100 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR100 gene was detected is described hereinabove with reference to Figs. 8-18.

GR100 gene encodes GR100 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR100 precursor RNA folds spatially, forming GR100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR100 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR100 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6175 precursor RNA and GAM58452 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6175 RNA and GAM58452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6175 target RNA into GAM6175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58452 target RNA into GAM58452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR100 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR100 gene: GAM6175 target protein and GAM58452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6175 and GAM58452

GR101 AV700980 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 101(GR101) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR101 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR101 gene was detected is described hereinabove with reference to Figs. 8-18.

GR101 gene encodes GR101 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR101 precursor RNA folds spatially, forming GR101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR101 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR101 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3612 precursor RNA, GAM6705 precursor RNA and GAM157548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3612 RNA, GAM6705 RNA and GAM157548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3612 target RNA into GAM3612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6705 target RNA into GAM6705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157548

target RNA into GAM157548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR101 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR101 gene: GAM3612 target protein, GAM6705 target protein and GAM157548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3612, GAM6705 and GAM157548

GR102 R59964 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 102(GR102) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR102 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR102 gene was detected is described hereinabove with reference to Figs. 8-18.

GR102 gene encodes GR102 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR102 precursor RNA folds spatially, forming GR102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR102 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR102 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8509 precursor RNA and GAM196308 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8509 RNA and GAM196308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8509 target RNA into GAM8509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196308 target RNA into GAM196308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR102 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR102 gene: GAM8509 target protein and GAM196308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8509 and GAM196308

GR103 BI084356 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 103(GR103) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR103 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR103 gene was detected is described hereinabove with reference to Figs. 8-18.

GR103 gene encodes GR103 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR103 precursor RNA folds spatially, forming GR103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR103 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR103 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7648 precursor RNA and GAM95508 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7648 RNA and GAM95508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7648 target RNA into GAM7648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95508 target RNA into GAM95508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR103 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR103 gene: GAM7648 target protein and GAM95508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7648 and GAM95508

GR104 BE297839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 104(GR104) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR104 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR104 gene was detected is described hereinabove with reference to Figs. 8-18.

GR104 gene encodes GR104 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR104 precursor RNA folds spatially, forming GR104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR104 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR104 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM201 precursor RNA, GAM8408 precursor RNA and GAM146218 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM201 RNA, GAM8408 RNA and GAM146218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM201 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201 target RNA into GAM201 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8408 target RNA into GAM8408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146218 target RNA into GAM146218 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR104 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR104 gene: GAM201 target protein, GAM8408 target protein and GAM146218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM201, GAM8408 and GAM146218

GR105 AW501759 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 105(GR105) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR105 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR105 gene was detected is described hereinabove with reference to Figs. 8-18.

GR105 gene encodes GR105 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR105 precursor RNA folds spatially, forming GR105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR105 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR105 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8270 precursor RNA and GAM120365 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8270 RNA and GAM120365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8270 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8270 target RNA into GAM8270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120365 target RNA into GAM120365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR105 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR105 gene: GAM8270 target protein and GAM120365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8270 and GAM120365

GR106 AW205195 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 106(GR106) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR106 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR106 gene was detected is described hereinabove with reference to Figs. 8-18.

GR106 gene encodes GR106 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR106 precursor RNA folds spatially, forming GR106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR106 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR106 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR106 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM196841 precursor RNA and GAM336083 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196841 RNA and GAM336083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196841 target RNA into GAM196841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336083 target RNA into GAM336083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR106 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR106 gene: GAM196841 target protein and GAM336083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196841 and GAM336083

GR107 BE007422 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 107(GR107) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR107 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR107 gene was detected is described hereinabove with reference to Figs. 8-18.

GR107 gene encodes GR107 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR107 precursor RNA folds spatially, forming GR107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR107 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR107 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM199628 precursor RNA and GAM279138 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM199628 RNA and GAM279138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM199628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199628 target RNA into GAM199628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279138 target RNA into GAM279138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR107 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR107 gene: GAM199628 target protein and GAM279138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM199628 and GAM279138

GR108 AW947625 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 108(GR108) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR108 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR108 gene was detected is described hereinabove with reference to Figs. 8-18.

GR108 gene encodes GR108 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR108 precursor RNA folds spatially, forming GR108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR108 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR108 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM206855 precursor RNA and GAM268387 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM206855 RNA and GAM268387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM206855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206855 target RNA into GAM206855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268387 target RNA into GAM268387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR108 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR108 gene: GAM206855 target protein and GAM268387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM206855 and GAM268387

GR109 BM973181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 109(GR109) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR109 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR109 gene was detected is described hereinabove with reference to Figs. 8-18.

GR109 gene encodes GR109 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR109 precursor RNA folds spatially, forming GR109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR109 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR109 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM36021 precursor RNA, GAM159627 precursor RNA and GAM336071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36021 RNA, GAM159627 RNA and GAM336071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM36021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36021 target RNA into GAM36021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159627 target RNA into GAM159627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336071 target RNA into GAM336071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR109 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR109 gene: GAM36021 target protein, GAM159627 target protein and GAM336071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36021, GAM159627 and GAM336071

GR110 T53979 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 110(GR110) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR110 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR110 gene was detected is described hereinabove with reference to Figs. 8-18.

GR110 gene encodes GR110 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR110 precursor RNA folds spatially, forming GR110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR110 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR110 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4360 precursor RNA and GAM106223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4360 RNA and GAM106223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4360 target RNA into GAM4360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106223 target RNA into GAM106223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR110 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR110 gene: GAM4360 target protein and GAM106223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4360 and GAM106223

GR111 BI713729 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 111(GR111) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR111 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR111 gene was detected is described hereinabove with reference to Figs. 8-18.

GR111 gene encodes GR111 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR111 precursor RNA folds spatially, forming GR111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR111 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR111 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162768 precursor RNA and GAM187699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162768 RNA and GAM187699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162768 target RNA into GAM162768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187699 target RNA into GAM187699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR111 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR111 gene: GAM162768 target protein and GAM187699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162768 and GAM187699

GR112 BI830954 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 112(GR112) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR112 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR112 gene was detected is described hereinabove with reference to Figs. 8-18.

GR112 gene encodes GR112 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR112 precursor RNA folds spatially, forming GR112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR112 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR112 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8572 precursor RNA and GAM59104 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8572 RNA and GAM59104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8572 target RNA into GAM8572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59104 target RNA into GAM59104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR112 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR112 gene: GAM8572 target protein and GAM59104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8572 and GAM59104

GR113 BF092779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 113(GR113) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR113 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR113 gene was detected is described hereinabove with reference to Figs. 8-18.

GR113 gene encodes GR113 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR113 precursor RNA folds spatially, forming GR113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR113 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR113 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4029 precursor RNA and GAM7750 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4029 RNA and GAM7750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4029 target RNA into GAM4029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7750 target RNA into GAM7750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR113 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR113 gene: GAM4029 target protein and GAM7750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4029 and GAM7750

GR114 BF306483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 114(GR114) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR114 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR114 gene was detected is described hereinabove with reference to Figs. 8-18.

GR114 gene encodes GR114 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR114 precursor RNA folds spatially, forming GR114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR114 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR114 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208702 precursor RNA and GAM223026 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208702 RNA and GAM223026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208702 target RNA into GAM208702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223026 target RNA into GAM223026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR114 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR114 gene: GAM208702 target protein and GAM223026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM208702 and GAM223026

GR115 BE314867 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 115(GR115) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR115 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR115 gene was detected is described hereinabove with reference to Figs. 8-18.

GR115 gene encodes GR115 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR115 precursor RNA folds spatially, forming GR115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR115 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR115 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM318 precursor RNA, GAM192584 precursor RNA and GAM270783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM318 RNA, GAM192584 RNA and GAM270783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318 target RNA into GAM318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM192584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192584 target RNA into GAM192584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270783 target RNA into GAM270783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR115 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR115 gene: GAM318 target protein, GAM192584 target protein and GAM270783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM318, GAM192584 and GAM270783

GR116 BG721411 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 116(GR116) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR116 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR116 gene was detected is described hereinabove with reference to Figs. 8-18.

GR116 gene encodes GR116 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR116 precursor RNA folds spatially, forming GR116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR116 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR116 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR116 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3726 precursor RNA, GAM72015 precursor RNA and GAM118602 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3726 RNA, GAM72015 RNA and GAM118602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3726 target RNA into GAM3726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72015 target RNA into GAM72015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118602 target RNA into GAM118602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR116 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR116 gene: GAM3726 target protein, GAM72015 target protein and GAM118602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3726, GAM72015 and GAM118602

GR117 AI672285 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

117(GR117) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR117 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR117 gene was detected is described hereinabove with reference to Figs. 8-18.

GR117 gene encodes GR117 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR117 precursor RNA folds spatially, forming GR117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR117 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR117 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6659 precursor RNA and GAM44144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6659 RNA and GAM44144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6659 target RNA into GAM6659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44144 target RNA into GAM44144 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR117 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR117 gene: GAM6659 target protein and GAM44144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6659 and GAM44144

GR118 BE047051 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 118(GR118) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR118 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR118 gene was detected is described hereinabove with reference to Figs. 8-18.

GR118 gene encodes GR118 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR118 precursor RNA folds spatially, forming GR118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR118 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR118 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8238 precursor RNA and GAM74087 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8238 RNA and GAM74087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8238 target RNA into GAM8238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74087 target RNA into GAM74087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR118 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR118 gene: GAM8238 target protein and GAM74087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8238 and GAM74087

GR119 AI160573 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 119(GR119) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR119 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR119 gene was detected is described hereinabove with reference to Figs. 8-18.

GR119 gene encodes GR119 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR119 precursor RNA folds spatially, forming GR119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR119 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR119 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM4831 precursor RNA and GAM305924 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4831 RNA and GAM305924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4831 target RNA into GAM4831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305924 target RNA into GAM305924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR119 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR119 gene: GAM4831 target protein and GAM305924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4831 and GAM305924

GR120 F33570 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 120(GR120) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR120 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR120 gene was detected is described hereinabove with reference to Figs. 8-18.

GR120 gene encodes GR120 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR120 precursor RNA folds spatially, forming GR120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR120 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR120 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1745 precursor RNA and GAM132323 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1745 RNA and GAM132323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1745 target RNA into GAM1745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132323 target RNA into GAM132323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR120 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR120 gene: GAM1745 target protein and GAM132323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1745 and GAM132323

GR121 BF569213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 121(GR121) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR121 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR121 gene was detected is described hereinabove with reference to Figs. 8-18.

GR121 gene encodes GR121 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR121 precursor RNA folds spatially, forming GR121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR121 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR121 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM233702 precursor RNA and GAM243333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM233702 RNA and GAM243333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM233702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233702 target RNA into GAM233702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243333 target RNA into GAM243333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR121 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR121 gene: GAM233702 target protein and GAM243333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM233702 and GAM243333

GR122 BI051914 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 122(GR122) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR122 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR122 gene was detected is described hereinabove with reference to Figs. 8-18.

GR122 gene encodes GR122 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR122 precursor RNA folds spatially, forming GR122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR122 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR122 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152385 precursor RNA and GAM191251 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152385 RNA and GAM191251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152385 target RNA into GAM152385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191251 target RNA into GAM191251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR122 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR122 gene: GAM152385 target protein and GAM191251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152385 and GAM191251

GR123 BE742479 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 123(GR123) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR123 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR123 gene was detected is described hereinabove with reference to Figs. 8-18.

GR123 gene encodes GR123 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR123 precursor RNA folds spatially, forming GR123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR123 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR123 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79777 precursor RNA and GAM204705 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79777 RNA and GAM204705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79777 target RNA into GAM79777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204705 target RNA into GAM204705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR123 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR123 gene: GAM79777 target protein and GAM204705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79777 and GAM204705

GR124 AI865721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 124(GR124) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR124 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR124 gene was detected is described hereinabove with reference to Figs. 8-18.

GR124 gene encodes GR124 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR124 precursor RNA folds spatially, forming GR124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR124 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR124 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6146 precursor RNA and GAM324418 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6146 RNA and GAM324418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6146 target RNA into GAM6146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324418 target RNA into GAM324418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR124 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR124 gene: GAM6146 target protein and GAM324418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM6146 and GAM324418

GR125 AW956239 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 125(GR125) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR125 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR125 gene was detected is described hereinabove with reference to Figs. 8-18.

GR125 gene encodes GR125 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR125 precursor RNA folds spatially, forming GR125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR125 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR125 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM65441 precursor RNA, GAM128867 precursor RNA and GAM271309 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65441 RNA, GAM128867 RNA and GAM271309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65441 target RNA into GAM65441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM128867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128867 target RNA into GAM128867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271309 target RNA into GAM271309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR125 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR125 gene: GAM65441 target protein, GAM128867 target protein and GAM271309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65441, GAM128867 and GAM271309

GR126 BF374392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 126(GR126) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR126 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR126 gene was detected is described hereinabove with reference to Figs. 8-18.

GR126 gene encodes GR126 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR126 precursor RNA folds spatially, forming GR126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR126 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR126 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR126 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM243713 precursor RNA and GAM314075 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM243713 RNA and GAM314075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM243713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243713 target RNA into GAM243713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314075 target RNA into GAM314075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR126 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR126 gene: GAM243713 target protein and GAM314075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM243713 and GAM314075

GR127 BG773337 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 127(GR127) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR127 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR127 gene was detected is described hereinabove with reference to Figs. 8-18.

GR127 gene encodes GR127 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR127 precursor RNA folds spatially, forming GR127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR127 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR127 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3882 precursor RNA, GAM181122 precursor RNA and GAM209161 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3882 RNA, GAM181122 RNA and GAM209161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3882 target RNA into GAM3882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181122 target RNA into GAM181122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209161 target RNA into GAM209161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR127 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR127 gene: GAM3882 target protein, GAM181122 target protein and GAM209161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3882, GAM181122 and GAM209161

GR128 BM010904 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 128(GR128) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR128 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR128 gene was detected is described hereinabove with reference to Figs. 8-18.

GR128 gene encodes GR128 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR128 precursor RNA folds spatially, forming GR128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR128 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR128 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68304 precursor RNA and GAM159411 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68304 RNA and GAM159411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM68304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68304 target RNA into GAM68304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159411 target RNA into GAM159411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR128 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR128 gene: GAM68304 target protein and GAM159411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68304 and GAM159411

GR129 AA905683 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 129(GR129) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR129 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR129 gene was detected is described hereinabove with reference to Figs. 8-18.

GR129 gene encodes GR129 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR129 precursor RNA folds spatially, forming GR129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR129 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR129 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM7009 precursor RNA and GAM301875 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7009 RNA and GAM301875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7009 target RNA into GAM7009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301875 target RNA into GAM301875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR129 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR129 gene: GAM7009 target protein and GAM301875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7009 and GAM301875

GR130 BG253982 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 130(GR130) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR130 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR130 gene was detected is described hereinabove with reference to Figs. 8-18.

GR130 gene encodes GR130 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR130 precursor RNA folds spatially, forming GR130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR130 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR130 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2695 precursor RNA and GAM2774 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2695 RNA and GAM2774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2695 target RNA into GAM2695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2774 target RNA into GAM2774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR130 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR130 gene: GAM2695 target protein and GAM2774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2695 and GAM2774

GR131 AI978712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 131(GR131) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR131 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR131 gene was detected is described hereinabove with reference to Figs. 8-18.

GR131 gene encodes GR131 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR131 precursor RNA folds spatially, forming GR131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR131 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR131 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM125981 precursor RNA and GAM267628 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125981 RNA and GAM267628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125981 target RNA into GAM125981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267628 target RNA into GAM267628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR131 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR131 gene: GAM125981 target protein and GAM267628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125981 and GAM267628

GR132 AL709476 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 132(GR132) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR132 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR132 gene was detected is described hereinabove with reference to Figs. 8-18.

GR132 gene encodes GR132 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR132 precursor RNA folds spatially, forming GR132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR132 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR132 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1884 precursor RNA and GAM323088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1884 RNA and GAM323088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1884 target RNA into GAM1884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323088 target RNA into GAM323088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR132 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR132 gene: GAM1884 target protein and GAM323088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1884 and GAM323088

GR133 AA768457 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 133(GR133) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR133 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR133 gene was detected is described hereinabove with reference to Figs. 8-18.

GR133 gene encodes GR133 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR133 precursor RNA folds spatially, forming GR133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR133 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR133 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41546 precursor RNA, GAM136140 precursor RNA and GAM207872 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41546 RNA, GAM136140 RNA and GAM207872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41546 target RNA into GAM41546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136140 target RNA into GAM136140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207872 target RNA into GAM207872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR133 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR133 gene: GAM41546 target protein, GAM136140 target protein and GAM207872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41546, GAM136140 and GAM207872

GR134 BI522636 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 134(GR134) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR134 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR134 gene was detected is described hereinabove with reference to Figs. 8-18.

GR134 gene encodes GR134 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR134 precursor RNA folds spatially, forming GR134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR134 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR134 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM69344 precursor RNA, GAM108876 precursor RNA, GAM271527 precursor RNA and GAM307181 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69344 RNA, GAM108876 RNA, GAM271527 RNA and GAM307181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69344 target RNA into GAM69344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108876 target RNA into GAM108876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271527 target RNA into GAM271527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307181 target RNA into GAM307181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR134 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR134 gene: GAM69344 target protein, GAM108876 target protein, GAM271527 target protein and GAM307181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69344, GAM108876, GAM271527 and GAM307181

GR135 R02281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 135(GR135) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR135 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR135 gene was detected is described hereinabove with reference to Figs. 8-18.

GR135 gene encodes GR135 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR135 precursor RNA folds spatially, forming GR135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR135 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR135 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1557 precursor RNA, GAM42863 precursor RNA and GAM154685 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1557 RNA, GAM42863 RNA and GAM154685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1557 target RNA into GAM1557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM42863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42863 target RNA into GAM42863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154685 target RNA into GAM154685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR135 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR135 gene: GAM1557 target protein, GAM42863 target protein and GAM154685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM1557, GAM42863 and GAM154685

GR136 BE614613 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 136(GR136) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR136 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR136 gene was detected is described hereinabove with reference to Figs. 8-18.

GR136 gene encodes GR136 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR136 precursor RNA folds spatially, forming GR136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR136 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR136 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111233 precursor RNA and GAM161312 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111233 RNA and GAM161312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111233 target RNA into GAM111233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM161312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161312 target RNA into GAM161312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR136 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR136 gene: GAM111233 target protein and GAM161312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111233 and GAM161312

GR137 BG929056 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 137(GR137) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR137 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR137 gene was detected is described hereinabove with reference to Figs. 8-18.

GR137 gene encodes GR137 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR137 precursor RNA folds spatially, forming GR137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR137 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR137 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM172922 precursor RNA and GAM226271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM172922 RNA and GAM226271 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM172922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172922 target RNA into GAM172922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226271 target RNA into GAM226271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR137 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR137 gene: GAM172922 target protein and GAM226271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM172922 and GAM226271

GR138 AA452583 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 138(GR138) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR138 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR138 gene was detected is described hereinabove with reference to Figs. 8-18.

GR138 gene encodes GR138 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR138 precursor RNA folds spatially, forming GR138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR138 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR138 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8298 precursor RNA and GAM161303 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8298 RNA and GAM161303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8298 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8298 target RNA into GAM8298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161303 target RNA into GAM161303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR138 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR138 gene: GAM8298 target protein and GAM161303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8298 and GAM161303

GR139 AW007513 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 139(GR139) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR139 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR139 gene was detected is described hereinabove with reference to Figs. 8-18.

GR139 gene encodes GR139 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR139 precursor RNA folds spatially, forming GR139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR139 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR139 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2386 precursor RNA and GAM63641 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2386 RNA and GAM63641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2386 target RNA into GAM2386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63641 target RNA into GAM63641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR139 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR139 gene: GAM2386 target

protein and GAM63641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2386 and GAM63641

GR140 AI749509 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 140(GR140) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR140 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR140 gene was detected is described hereinabove with reference to Figs. 8-18.

GR140 gene encodes GR140 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR140 precursor RNA folds spatially, forming GR140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR140 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR140 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3615 precursor RNA and GAM158673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3615 RNA and GAM158673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3615 target RNA into GAM3615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158673 target RNA into GAM158673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR140 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR140 gene: GAM3615 target protein and GAM158673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3615 and GAM158673

GR141 AA765778 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 141(GR141) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR141 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR141 gene was detected is described hereinabove with reference to Figs. 8-18.

GR141 gene encodes GR141 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR141 precursor RNA folds spatially, forming GR141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR141 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR141 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5318 precursor RNA, GAM6420 precursor RNA and GAM323405 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5318 RNA, GAM6420 RNA and GAM323405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5318 target RNA into GAM5318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6420 target RNA into GAM6420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323405 target RNA into GAM323405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR141 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR141 gene: GAM5318 target protein, GAM6420 target protein and GAM323405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5318, GAM6420 and GAM323405

GR142 BI914664 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 142(GR142) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR142 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR142

gene was detected is described hereinabove with reference to Figs. 8-18.

GR142 gene encodes GR142 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR142 precursor RNA folds spatially, forming GR142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR142 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR142 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4387 precursor RNA and GAM118332 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4387 RNA and GAM118332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4387 target RNA into GAM4387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118332 target RNA into GAM118332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR142 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR142 gene: GAM4387 target protein and GAM118332 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4387 and GAM118332

GR143 AW072579 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 143(GR143) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR143 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR143 gene was detected is described hereinabove with reference to Figs. 8-18.

GR143 gene encodes GR143 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR143 precursor RNA folds spatially, forming GR143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR143 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR143 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM122113 precursor RNA, GAM145295 precursor RNA and GAM196315 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122113 RNA, GAM145295 RNA and GAM196315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122113 target RNA into GAM122113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145295 target RNA into GAM145295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196315 target RNA into GAM196315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR143 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR143 gene: GAM122113 target protein, GAM145295 target protein and GAM196315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122113, GAM145295 and GAM196315

GR144 R70644 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 144(GR144) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR144 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR144 gene was detected is described hereinabove with reference to Figs. 8-18.

GR144 gene encodes GR144 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR144 precursor RNA folds spatially, forming GR144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR144 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR144 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1576 precursor RNA and GAM85635 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1576 RNA and GAM85635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1576 target RNA into GAM1576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85635 target RNA into GAM85635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR144 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR144 gene: GAM1576 target protein and GAM85635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1576 and GAM85635

GR145 AI028049 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 145(GR145) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR145 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR145 gene was detected is described hereinabove with reference to Figs. 8-18.

GR145 gene encodes GR145 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR145 precursor RNA folds spatially, forming GR145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR145 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR145 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7602 precursor RNA, GAM11406 precursor RNA and GAM279203 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7602 RNA, GAM11406 RNA and GAM279203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7602 target RNA into GAM7602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11406 target RNA into GAM11406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279203

target RNA into GAM279203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR145 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR145 gene: GAM7602 target protein, GAM11406 target protein and GAM279203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7602, GAM11406 and GAM279203

GR146 H85708 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 146(GR146) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR146 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR146 gene was detected is described hereinabove with reference to Figs. 8-18.

GR146 gene encodes GR146 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR146 precursor RNA folds spatially, forming GR146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR146 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR146 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM232370 precursor RNA and GAM252683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM232370 RNA and GAM252683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM232370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232370 target RNA into GAM232370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252683 target RNA into GAM252683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR146 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR146 gene: GAM232370 target protein and GAM252683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM232370 and GAM252683

GR147 BG528076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 147(GR147) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR147 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR147 gene was detected is described hereinabove with reference to Figs. 8-18.

GR147 gene encodes GR147 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR147 precursor RNA folds spatially, forming GR147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR147 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR147 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4453 precursor RNA, GAM108858 precursor RNA and GAM214252 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4453 RNA, GAM108858 RNA and GAM214252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4453 target RNA into GAM4453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108858 target RNA into GAM108858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214252 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214252 target RNA into GAM214252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR147 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR147 gene: GAM4453 target protein, GAM108858 target protein and GAM214252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4453, GAM108858 and GAM214252

GR148 AW882894 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 148(GR148) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR148 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR148 gene was detected is described hereinabove with reference to Figs. 8-18.

GR148 gene encodes GR148 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR148 precursor RNA folds spatially, forming GR148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR148 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR148 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM628 precursor RNA and GAM226073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM628 RNA and GAM226073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM628 target RNA into GAM628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226073

target RNA into GAM226073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR148 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR148 gene: GAM628 target protein and GAM226073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM628 and GAM226073

GR149 AA282856 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 149(GR149) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR149 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR149 gene was detected is described hereinabove with reference to Figs. 8-18.

GR149 gene encodes GR149 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR149 precursor RNA folds spatially, forming GR149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR149 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR149 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16811 precursor RNA and GAM227502 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16811 RNA and GAM227502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16811 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16811 target RNA into GAM16811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227502 target RNA into GAM227502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR149 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR149 gene: GAM16811 target protein and GAM227502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16811 and GAM227502

GR150 AA522797 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 150(GR150) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR150 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR150 gene was detected is described hereinabove with reference to Figs. 8-18.

GR150 gene encodes GR150 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR150 precursor RNA folds spatially, forming GR150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR150 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR150 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR150 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7626 precursor RNA, GAM266023 precursor RNA and GAM276179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7626 RNA, GAM266023 RNA and GAM276179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7626 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7626 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7626 target RNA into GAM7626 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266023 target RNA into GAM266023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276179 target RNA into GAM276179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR150 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR150 gene: GAM7626 target protein, GAM266023 target protein and GAM276179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7626, GAM266023 and GAM276179

GR151 BG385807 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

151(GR151) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR151 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR151 gene was detected is described hereinabove with reference to Figs. 8-18.

GR151 gene encodes GR151 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR151 precursor RNA folds spatially, forming GR151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR151 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR151 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2539 precursor RNA, GAM6892 precursor RNA and GAM252815 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2539 RNA, GAM6892 RNA and GAM252815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2539 target RNA into GAM2539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6892 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6892 target RNA into

GAM6892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252815 target RNA into GAM252815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR151 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR151 gene: GAM2539 target protein, GAM6892 target protein and GAM252815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2539, GAM6892 and GAM252815

GR152 AW450736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 152(GR152) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR152 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR152 gene was detected is described hereinabove with reference to Figs. 8-18.

GR152 gene encodes GR152 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR152 precursor RNA folds spatially, forming GR152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR152 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR152 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM236853 precursor RNA and GAM316859 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM236853 RNA and GAM316859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM236853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236853 target RNA into GAM236853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316859 target RNA into GAM316859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR152 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR152 gene: GAM236853 target protein and GAM316859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM236853 and GAM316859

GR153 BF363312 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 153(GR153) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR153 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR153 gene was detected is described hereinabove with reference to Figs. 8-18.

GR153 gene encodes GR153 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR153 precursor RNA folds spatially, forming GR153 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR153 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR153 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128640 precursor RNA and GAM323973 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128640 RNA and GAM323973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128640 target RNA into GAM128640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323973 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323973 target RNA into GAM323973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR153 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR153 gene: GAM128640 target protein and GAM323973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128640 and GAM323973

GR154 AI860826 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 154(GR154) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR154 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR154 gene was detected is described hereinabove with reference to Figs. 8-18.

GR154 gene encodes GR154 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR154 precursor RNA folds spatially, forming GR154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR154 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR154 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7705 precursor RNA and GAM108129 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7705 RNA and GAM108129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7705 target RNA into GAM7705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108129 target RNA into GAM108129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR154 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR154 gene: GAM7705 target protein and GAM108129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7705 and GAM108129

GR155 BM926368 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 155(GR155) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR155 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR155 gene was detected is described hereinabove with reference to Figs. 8-18.

GR155 gene encodes GR155 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR155 precursor RNA folds spatially, forming GR155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR155 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR155 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4394 precursor RNA, GAM13505 precursor RNA and GAM217730 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4394 RNA, GAM13505 RNA and GAM217730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4394 target RNA into GAM4394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13505 target RNA into GAM13505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217730 target RNA into GAM217730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR155 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR155 gene: GAM4394 target protein, GAM13505 target protein and GAM217730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4394, GAM13505 and GAM217730

GR156 N25535 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 156(GR156) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR156 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR156 gene was detected is described hereinabove with reference to Figs. 8-18.

GR156 gene encodes GR156 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR156 precursor RNA folds spatially, forming GR156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR156

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR156 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5799 precursor RNA, GAM6008 precursor RNA and GAM7831 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5799 RNA, GAM6008 RNA and GAM7831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5799 target RNA into GAM5799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6008 target RNA into GAM6008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7831 target RNA into GAM7831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR156 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR156 gene: GAM5799 target

protein, GAM6008 target protein and GAM7831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5799, GAM6008 and GAM7831

GR157 BI602452 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 157(GR157) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR157 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR157 gene was detected is described hereinabove with reference to Figs. 8-18.

GR157 gene encodes GR157 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR157 precursor RNA folds spatially, forming GR157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR157 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR157 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM196487 precursor RNA, GAM317399 precursor RNA and GAM335568 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196487 RNA, GAM317399 RNA and GAM335568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196487

target RNA into GAM196487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317399 target RNA into GAM317399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335568 target RNA into GAM335568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR157 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR157 gene: GAM196487 target protein, GAM317399 target protein and GAM335568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196487, GAM317399 and GAM335568

GR158 BF673725 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 158(GR158) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR158 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR158 gene was detected is described hereinabove with reference to Figs. 8-18.

GR158 gene encodes GR158 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR158 precursor RNA folds spatially, forming GR158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR158 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR158 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4724 precursor RNA, GAM32847 precursor RNA, GAM213667 precursor RNA and GAM307634 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4724 RNA, GAM32847 RNA, GAM213667 RNA and GAM307634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4724 target RNA into GAM4724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32847 target RNA into GAM32847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213667 target RNA into GAM213667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307634 target RNA into GAM307634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR158 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR158 gene: GAM4724 target protein, GAM32847 target protein, GAM213667 target protein and GAM307634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4724, GAM32847, GAM213667 and GAM307634

GR159 BG715429 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 159(GR159) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR159 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR159 gene was detected is described hereinabove with reference to Figs. 8-18.

GR159 gene encodes GR159 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR159 precursor RNA folds spatially, forming GR159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR159 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR159 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3951 precursor RNA and GAM75193 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3951 RNA and GAM75193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3951 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3951 target RNA into GAM3951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75193 target RNA into GAM75193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR159 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR159 gene: GAM3951 target protein and GAM75193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3951 and GAM75193

GR160 AI827601 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 160(GR160) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR160 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR160 gene was detected is described hereinabove with reference to Figs. 8-18.

GR160 gene encodes GR160 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR160 precursor RNA folds spatially, forming GR160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR160 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR160 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116547 precursor RNA and GAM214413 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116547 RNA and GAM214413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116547 target RNA into GAM116547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214413 target RNA into GAM214413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR160 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR160 gene: GAM116547 target protein and GAM214413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116547 and GAM214413

GR161 BF377396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 161(GR161) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR161 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR161 gene was detected is described hereinabove with reference to Figs. 8-18.

GR161 gene encodes GR161 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR161 precursor RNA folds spatially, forming GR161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR161 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR161 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM152674 precursor RNA, GAM208435 precursor RNA and GAM217473 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152674 RNA, GAM208435 RNA and GAM217473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152674 target RNA into GAM152674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208435 target RNA into GAM208435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217473 target RNA into GAM217473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR161 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR161 gene: GAM152674 target protein, GAM208435 target protein and GAM217473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152674, GAM208435 and GAM217473

GR162 BE908032 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 162(GR162) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR162 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR162 gene was detected is described hereinabove with reference to Figs. 8-18.

GR162 gene encodes GR162 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR162 precursor RNA folds spatially, forming GR162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR162 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR162 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4950 precursor RNA, GAM5881 precursor RNA and GAM266783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4950 RNA, GAM5881 RNA and GAM266783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4950 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4950 target RNA into GAM4950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5881 target RNA into GAM5881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266783 target RNA into GAM266783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR162 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR162 gene: GAM4950 target protein, GAM5881 target protein and GAM266783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4950, GAM5881 and GAM266783

GR163 AA504377 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 163(GR163) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR163 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR163 gene was detected is described hereinabove with reference to Figs. 8-18.

GR163 gene encodes GR163 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR163 precursor RNA folds spatially, forming GR163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR163 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR163 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4352 precursor RNA, GAM4970 precursor RNA and GAM315341 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4352 RNA, GAM4970 RNA and GAM315341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4352 target RNA into GAM4352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4970 target RNA into GAM4970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315341 target RNA into GAM315341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR163 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR163 gene: GAM4352 target protein, GAM4970 target protein and GAM315341 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4352, GAM4970 and GAM315341

GR164 AL691993 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 164(GR164) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR164 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR164 gene was detected is described hereinabove with reference to Figs. 8-18.

GR164 gene encodes GR164 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR164 precursor RNA folds spatially, forming GR164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR164 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR164 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3941 precursor RNA and GAM266591 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3941 RNA and GAM266591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3941 target RNA into GAM3941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266591 target RNA into GAM266591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR164 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR164 gene: GAM3941 target protein and GAM266591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3941 and GAM266591

GR165 BE087325 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 165(GR165) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR165 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR165 gene was detected is described hereinabove with reference to Figs. 8-18.

GR165 gene encodes GR165 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR165 precursor RNA folds spatially, forming GR165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR165 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR165 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM30353 precursor RNA, GAM222932 precursor RNA and GAM278906 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30353 RNA, GAM222932 RNA and GAM278906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30353 target RNA into GAM30353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222932 target RNA into GAM222932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278906 target RNA into GAM278906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR165 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR165 gene: GAM30353 target protein, GAM222932 target protein and GAM278906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30353, GAM222932 and GAM278906

GR166 AW856088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 166(GR166) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR166 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR166

gene was detected is described hereinabove with reference to Figs. 8-18.

GR166 gene encodes GR166 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR166 precursor RNA folds spatially, forming GR166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR166 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR166 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3958 precursor RNA, GAM84174 precursor RNA and GAM306700 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3958 RNA, GAM84174 RNA and GAM306700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3958 target RNA into GAM3958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84174 target RNA into GAM84174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306700 target RNA into GAM306700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR166 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR166 gene: GAM3958 target protein, GAM84174 target protein and GAM306700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3958, GAM84174 and GAM306700

GR167 AW102672 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 167(GR167) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR167 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR167 gene was detected is described hereinabove with reference to Figs. 8-18.

GR167 gene encodes GR167 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR167 precursor RNA folds spatially, forming GR167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR167 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR167 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67983 precursor RNA and GAM254369 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67983 RNA and GAM254369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67983 target RNA into GAM67983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254369 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254369 target RNA into GAM254369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR167 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR167 gene: GAM67983 target protein and GAM254369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67983 and GAM254369

GR168 BF206719 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 168(GR168) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR168 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR168 gene was detected is described hereinabove with reference to Figs. 8-18.

GR168 gene encodes GR168 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR168 precursor RNA folds spatially, forming GR168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR168 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR168 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM113426 precursor RNA and GAM131235 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113426 RNA and GAM131235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113426 target RNA into GAM113426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131235 target RNA into GAM131235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR168 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR168 gene: GAM113426 target protein and GAM131235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113426 and GAM131235

GR169 AA252558 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 169(GR169) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR169 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR169 gene was detected is described hereinabove with reference to Figs. 8-18.

GR169 gene encodes GR169 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR169 precursor RNA folds spatially, forming GR169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR169 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR169 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM291896 precursor RNA and GAM315549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM291896 RNA and GAM315549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM291896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291896 target RNA into GAM291896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315549 target RNA into GAM315549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR169 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR169 gene: GAM291896 target protein and GAM315549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM291896 and GAM315549

GR170 BM905315 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 170(GR170) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR170 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR170 gene was detected is described hereinabove with reference to Figs. 8-18.

GR170 gene encodes GR170 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR170 precursor RNA folds spatially, forming GR170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR170 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR170 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM165128 precursor RNA, GAM201552 precursor RNA, GAM238690 precursor RNA and GAM274797 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165128 RNA, GAM201552 RNA, GAM238690 RNA and GAM274797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165128 target RNA into GAM165128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201552 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201552 target RNA into GAM201552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238690 target RNA into GAM238690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274797 target RNA into GAM274797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR170 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR170 gene: GAM165128 target protein, GAM201552 target protein, GAM238690 target protein and GAM274797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165128, GAM201552, GAM238690 and GAM274797

GR171 BQ051147 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 171(GR171) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR171 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR171 gene was detected is described hereinabove with reference to Figs. 8-18.

GR171 gene encodes GR171 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR171 precursor RNA folds spatially, forming GR171 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR171 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR171 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM197514 precursor RNA and GAM284300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM197514 RNA and GAM284300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM197514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197514 target RNA into GAM197514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284300 target RNA into GAM284300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR171 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR171 gene: GAM197514 target protein and GAM284300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM197514 and GAM284300

GR172 BM755445 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 172(GR172) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR172 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR172 gene was detected is described hereinabove with reference to Figs. 8-18.

GR172 gene encodes GR172 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR172 precursor RNA folds spatially, forming GR172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR172 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR172 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM191918 precursor RNA and GAM285358 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM191918 RNA and GAM285358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM191918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191918 target RNA into GAM191918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285358 target RNA into GAM285358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR172 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR172 gene: GAM191918 target protein and GAM285358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM191918 and GAM285358

GR173 BF670771 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 173(GR173) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR173 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR173 gene was detected is described hereinabove with reference to Figs. 8-18.

GR173 gene encodes GR173 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR173 precursor RNA folds spatially, forming GR173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR173 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR173 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7792 precursor RNA, GAM334527 precursor RNA and GAM335512 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7792 RNA, GAM334527 RNA and GAM335512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7792 target RNA into GAM7792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334527 target RNA into GAM334527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335512 target RNA into GAM335512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR173 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR173 gene: GAM7792 target protein, GAM334527 target protein and GAM335512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7792, GAM334527 and GAM335512

GR174 BM542973 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 174(GR174) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR174 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR174 gene was detected is described hereinabove with reference to Figs. 8-18.

GR174 gene encodes GR174 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR174 precursor RNA folds spatially, forming GR174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR174

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR174 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102490 precursor RNA and GAM195684 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102490 RNA and GAM195684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102490 target RNA into GAM102490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195684 target RNA into GAM195684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR174 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR174 gene: GAM102490 target protein and GAM195684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102490 and GAM195684

GR175 BF436236 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 175(GR175) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR175 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR175 gene was detected is described hereinabove with reference to Figs. 8-18.

GR175 gene encodes GR175 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR175 precursor RNA folds spatially, forming GR175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR175 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR175 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2866 precursor RNA, GAM147257 precursor RNA and GAM169693 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2866 RNA, GAM147257 RNA and GAM169693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2866 target RNA into GAM2866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147257 target RNA into GAM147257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169693 target RNA into GAM169693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR175 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR175 gene: GAM2866 target protein, GAM147257 target protein and GAM169693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2866, GAM147257 and GAM169693

GR176 BF826266 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 176(GR176) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR176 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR176 gene was detected is described hereinabove with reference to Figs. 8-18.

GR176 gene encodes GR176 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR176 precursor RNA folds spatially, forming GR176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR176 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR176 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2513 precursor RNA and GAM61701 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2513 RNA and GAM61701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2513 target RNA into GAM2513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61701 target RNA into GAM61701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR176 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR176 gene: GAM2513 target protein and GAM61701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2513 and GAM61701

GR177 AW387815 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 177(GR177) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR177 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR177 gene was detected is described hereinabove with reference to Figs. 8-18.

GR177 gene encodes GR177 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR177 precursor RNA folds spatially, forming GR177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR177 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR177 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6385 precursor RNA, GAM9820 precursor RNA and GAM150755 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6385 RNA, GAM9820 RNA and GAM150755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6385 target RNA into GAM6385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9820 target RNA into GAM9820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150755 target RNA into GAM150755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR177 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR177 gene: GAM6385 target protein, GAM9820 target protein and GAM150755 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6385, GAM9820 and GAM150755

GR178 BG165585 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 178(GR178) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR178 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR178 gene was detected is described hereinabove with reference to Figs. 8-18.

GR178 gene encodes GR178 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR178 precursor RNA folds spatially, forming GR178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR178 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR178 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2277 precursor RNA and GAM6676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2277 RNA and GAM6676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2277 target RNA into GAM2277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6676 target RNA into GAM6676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR178 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR178 gene: GAM2277 target protein and GAM6676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2277 and GAM6676

GR179 AA323625 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 179(GR179) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR179 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR179 gene was detected is described hereinabove with reference to Figs. 8-18.

GR179 gene encodes GR179 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR179 precursor RNA folds spatially, forming GR179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR179 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR179 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3858 precursor RNA, GAM6895 precursor RNA and GAM185656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3858 RNA, GAM6895 RNA and GAM185656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3858 target RNA into GAM3858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6895 target RNA into GAM6895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185656 target RNA into GAM185656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR179 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR179 gene: GAM3858 target protein, GAM6895 target protein and GAM185656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3858, GAM6895 and GAM185656

GR180 BF997396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 180(GR180) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR180 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR180

gene was detected is described hereinabove with reference to Figs. 8-18.

GR180 gene encodes GR180 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR180 precursor RNA folds spatially, forming GR180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR180 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR180 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99933 precursor RNA and GAM161344 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99933 RNA and GAM161344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99933 target RNA into GAM99933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161344 target RNA into GAM161344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR180 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR180 gene: GAM99933 target protein and GAM161344 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99933 and GAM161344

GR181 BF216301 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 181(GR181) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR181 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR181 gene was detected is described hereinabove with reference to Figs. 8-18.

GR181 gene encodes GR181 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR181 precursor RNA folds spatially, forming GR181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR181 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR181 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7270 precursor RNA and GAM129824 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7270 RNA and GAM129824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7270 target RNA into GAM7270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129824 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129824 target RNA into GAM129824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR181 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR181 gene: GAM7270 target protein and GAM129824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7270 and GAM129824

GR182 AL704300 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 182(GR182) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR182 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR182 gene was detected is described hereinabove with reference to Figs. 8-18.

GR182 gene encodes GR182 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR182 precursor RNA folds spatially, forming GR182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR182 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR182 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5862 precursor RNA, GAM32971 precursor RNA and GAM81226 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5862 RNA, GAM32971 RNA and GAM81226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5862 target RNA into GAM5862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32971 target RNA into GAM32971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81226 target RNA into GAM81226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR182 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR182 gene: GAM5862 target protein, GAM32971 target protein and GAM81226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5862, GAM32971 and GAM81226

GR183 AW838710 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 183(GR183) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR183 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR183 gene was detected is described hereinabove with reference to Figs. 8-18.

GR183 gene encodes GR183 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR183 precursor RNA folds spatially, forming GR183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR183 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR183 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM23291 precursor RNA and GAM28335 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23291 RNA and GAM28335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23291 target RNA into GAM23291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28335 target RNA into GAM28335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR183 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR183 gene: GAM23291 target protein and GAM28335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23291 and GAM28335

GR184 BI962515 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 184(GR184) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR184 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR184 gene was detected is described hereinabove with reference to Figs. 8-18.

GR184 gene encodes GR184 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR184 precursor RNA folds spatially, forming GR184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR184 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR184 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3865 precursor RNA and GAM212241 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3865 RNA and GAM212241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3865 target RNA into GAM3865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM212241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212241 target RNA into GAM212241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR184 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR184 gene: GAM3865 target protein and GAM212241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3865 and GAM212241

GR185 BG189882 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 185(GR185) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR185 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR185 gene was detected is described hereinabove with reference to Figs. 8-18.

GR185 gene encodes GR185 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR185 precursor RNA folds spatially, forming GR185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR185 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR185 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM430 precursor RNA and GAM86338 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM430 RNA and GAM86338 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM430 target RNA into GAM430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86338 target RNA into GAM86338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR185 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR185 gene: GAM430 target protein and GAM86338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM430 and GAM86338

GR186 AA807736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 186(GR186) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR186 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR186 gene was detected is described hereinabove with reference to Figs. 8-18.

GR186 gene encodes GR186 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR186 precursor RNA folds spatially, forming GR186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR186 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR186 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5543 precursor RNA, GAM24156 precursor RNA and GAM188928 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5543 RNA, GAM24156 RNA and GAM188928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5543 target RNA into GAM5543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24156 target RNA into GAM24156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188928 target RNA into GAM188928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR186 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR186 gene: GAM5543 target protein, GAM24156 target protein and GAM188928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5543, GAM24156 and

GAM188928

GR187 BF855427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 187(GR187) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR187 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR187 gene was detected is described hereinabove with reference to Figs. 8-18.

GR187 gene encodes GR187 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR187 precursor RNA folds spatially, forming GR187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR187 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR187 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM147467 precursor RNA, GAM161152 precursor RNA and GAM277845 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147467 RNA, GAM161152 RNA and GAM277845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147467 target RNA into GAM147467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM161152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161152 target RNA into GAM161152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277845 target RNA into GAM277845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR187 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR187 gene: GAM147467 target protein, GAM161152 target protein and GAM277845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147467, GAM161152 and GAM277845

GR188 AW134984 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 188(GR188) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR188 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR188 gene was detected is described hereinabove with reference to Figs. 8-18.

GR188 gene encodes GR188 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR188 precursor RNA folds spatially, forming GR188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR188 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR188 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR188 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7395 precursor RNA and GAM316255 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7395 RNA and GAM316255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7395 target RNA into GAM7395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316255 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316255 target RNA into GAM316255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR188 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR188 gene: GAM7395 target protein and GAM316255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7395 and GAM316255

GR189 BG504844 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 189(GR189) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR189 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR189 gene was detected is described hereinabove with reference to Figs. 8-18.

GR189 gene encodes GR189 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR189 precursor RNA folds spatially, forming GR189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR189 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR189 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58807 precursor RNA and GAM223331 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58807 RNA and GAM223331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58807 target RNA into GAM58807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223331 target RNA into GAM223331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR189 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR189 gene: GAM58807 target protein and GAM223331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58807 and GAM223331

GR190 BM727359 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 190(GR190) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR190 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR190 gene was detected is described hereinabove with reference to Figs. 8-18.

GR190 gene encodes GR190 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR190 precursor RNA folds spatially, forming GR190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR190 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR190 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM551 precursor RNA and GAM79369 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM551 RNA and GAM79369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM551 target RNA into GAM551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79369 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79369 target RNA into GAM79369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR190 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR190 gene: GAM551 target protein and GAM79369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM551 and GAM79369

GR191 BI197196 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 191(GR191) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR191 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR191 gene was detected is described hereinabove with reference to Figs. 8-18.

GR191 gene encodes GR191 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR191 precursor RNA folds spatially, forming GR191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR191 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR191 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60353 precursor RNA and GAM210756 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60353 RNA and GAM210756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60353 target RNA into GAM60353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210756 target RNA into GAM210756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR191 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR191 gene: GAM60353 target protein and GAM210756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60353 and GAM210756

GR192 BG422047 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 192(GR192) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR192 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR192 gene was detected is described hereinabove with reference to Figs. 8-18.

GR192 gene encodes GR192 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR192 precursor RNA folds spatially, forming GR192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR192 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR192 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM935 precursor RNA, GAM3111 precursor RNA, GAM46300 precursor RNA and GAM96949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM935 RNA, GAM3111 RNA, GAM46300 RNA and GAM96949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM935 target RNA into GAM935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3111 target RNA into GAM3111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46300 target RNA into GAM46300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96949 target RNA into GAM96949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR192 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR192 gene: GAM935 target protein, GAM3111 target protein, GAM46300 target protein and GAM96949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM935, GAM3111, GAM46300 and GAM96949

GR193 BE067011 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 193(GR193) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR193 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR193 gene was detected is described hereinabove with reference to Figs. 8-18.

GR193 gene encodes GR193 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR193 precursor RNA folds spatially, forming GR193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR193 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR193 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM83276 precursor RNA, GAM184331 precursor RNA and GAM244238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83276 RNA, GAM184331 RNA and GAM244238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83276 target RNA into GAM83276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184331 target RNA into GAM184331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244238 target RNA into GAM244238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR193 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR193 gene: GAM83276 target protein, GAM184331 target protein and GAM244238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83276, GAM184331 and GAM244238

GR194 AW027572 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 194(GR194) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR194 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR194 gene was detected is described hereinabove with reference to Figs. 8-18.

GR194 gene encodes GR194 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR194 precursor RNA folds spatially, forming GR194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR194 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR194 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4442 precursor RNA and GAM112851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4442 RNA and GAM112851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4442 target RNA into GAM4442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112851 target RNA into GAM112851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR194 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR194 gene: GAM4442 target protein and GAM112851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4442 and GAM112851

GR195 BG539675 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 195(GR195) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR195 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR195 gene was detected is described hereinabove with reference to Figs. 8-18.

GR195 gene encodes GR195 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR195 precursor RNA folds spatially, forming GR195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR195 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR195 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM53295 precursor RNA, GAM144962 precursor RNA and GAM157728 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53295 RNA, GAM144962 RNA and GAM157728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53295 target RNA into GAM53295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144962 target RNA into GAM144962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM157728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157728 target RNA into GAM157728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR195 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR195 gene: GAM53295 target protein, GAM144962 target protein and GAM157728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53295, GAM144962 and GAM157728

GR196 AI017052 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 196(GR196) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR196 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR196 gene was detected is described hereinabove with reference to Figs. 8-18.

GR196 gene encodes GR196 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR196 precursor RNA folds spatially, forming GR196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR196 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR196 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM86443 precursor RNA and GAM122855 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM86443 RNA and GAM122855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM86443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86443 target RNA into GAM86443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122855 target RNA into GAM122855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR196 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR196 gene: GAM86443 target protein and GAM122855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM86443 and GAM122855

GR197 AL110424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 197(GR197) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR197 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR197 gene was detected is described hereinabove with reference to Figs. 8-18.

GR197 gene encodes GR197 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR197 precursor RNA folds spatially, forming GR197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR197 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR197 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1104 precursor RNA and GAM1401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1104 RNA and GAM1401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1104 target RNA into GAM1104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1401 target RNA into GAM1401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR197 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR197 gene: GAM1104 target protein and GAM1401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1104 and GAM1401

GR198 BQ100967 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 198(GR198) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR198 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR198 gene was detected is described hereinabove with reference to Figs. 8-18.

GR198 gene encodes GR198 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR198 precursor RNA folds spatially, forming GR198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR198 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR198 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM173373 precursor RNA, GAM233143 precursor RNA and GAM335095 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173373 RNA, GAM233143 RNA and GAM335095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173373 target RNA into GAM173373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233143 target RNA into GAM233143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335095 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335095 target RNA into GAM335095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR198 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR198 gene: GAM173373 target protein, GAM233143 target protein and GAM335095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173373, GAM233143 and GAM335095

GR199 BG778978 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 199(GR199) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR199 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR199 gene was detected is described hereinabove with reference to Figs. 8-18.

GR199 gene encodes GR199 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR199 precursor RNA folds spatially, forming GR199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR199 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR199 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67512 precursor RNA and GAM301690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67512 RNA and GAM301690 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67512 target RNA into GAM67512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301690 target RNA into GAM301690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR199 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR199 gene: GAM67512 target protein and GAM301690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67512 and GAM301690

GR200 BE180379 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 200(GR200) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR200 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR200 gene was detected is described hereinabove with reference to Figs. 8-18.

GR200 gene encodes GR200 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR200 precursor RNA folds spatially, forming GR200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR200 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR200 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4467 precursor RNA, GAM127824 precursor RNA and GAM156295 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4467 RNA, GAM127824 RNA and GAM156295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4467 target RNA into GAM4467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127824 target RNA into GAM127824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156295 target RNA into GAM156295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR200 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR200 gene: GAM4467 target protein, GAM127824 target protein and GAM156295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4467, GAM127824 and

GAM156295

GR201 BG910678 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 201(GR201) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR201 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR201 gene was detected is described hereinabove with reference to Figs. 8-18.

GR201 gene encodes GR201 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR201 precursor RNA folds spatially, forming GR201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR201 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR201 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230433 precursor RNA and GAM271515 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230433 RNA and GAM271515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230433 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230433 target RNA into GAM230433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271515 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271515 target RNA into GAM271515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR201 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR201 gene: GAM230433 target protein and GAM271515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230433 and GAM271515

GR202 BM971258 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 202(GR202) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR202 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR202 gene was detected is described hereinabove with reference to Figs. 8-18.

GR202 gene encodes GR202 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR202 precursor RNA folds spatially, forming GR202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR202 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR202 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6893 precursor RNA and GAM216019 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6893 RNA and GAM216019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM6893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6893 target RNA into GAM6893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216019 target RNA into GAM216019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR202 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR202 gene: GAM6893 target protein and GAM216019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6893 and GAM216019

GR203 BE397455 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 203(GR203) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR203 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR203 gene was detected is described hereinabove with reference to Figs. 8-18.

GR203 gene encodes GR203 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR203 precursor RNA folds spatially, forming GR203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR203 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR203 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM181741 precursor RNA, GAM322763 precursor RNA and GAM334526 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM181741 RNA, GAM322763 RNA and GAM334526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM181741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181741 target RNA into GAM181741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322763 target RNA into GAM322763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334526 target RNA into GAM334526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR203 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR203 gene: GAM181741 target protein, GAM322763 target protein and GAM334526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM181741, GAM322763 and GAM334526

GR204 BF888376 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 204(GR204) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR204 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR204 gene was detected is described hereinabove with reference to Figs. 8-18.

GR204 gene encodes GR204 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR204 precursor RNA folds spatially, forming GR204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR204 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR204 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2522 precursor RNA, GAM6168 precursor RNA and GAM75263 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2522 RNA, GAM6168 RNA and GAM75263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2522 target RNA into GAM2522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6168 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6168 target RNA into GAM6168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75263 target RNA into GAM75263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR204 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR204 gene: GAM2522 target protein, GAM6168 target protein and GAM75263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2522, GAM6168 and GAM75263

GR205 BF194896 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 205(GR205) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR205 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR205 gene was detected is described hereinabove with reference to Figs. 8-18.

GR205 gene encodes GR205 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR205 precursor RNA folds spatially, forming GR205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR205 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR205 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM11453 precursor RNA and GAM233392 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11453 RNA and GAM233392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11453 target RNA into GAM11453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233392 target RNA into GAM233392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR205 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR205 gene: GAM11453 target protein and GAM233392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11453 and GAM233392

GR206 AA620888 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 206(GR206) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR206 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR206 gene was detected is described hereinabove with reference to Figs. 8-18.

GR206 gene encodes GR206 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR206 precursor RNA folds spatially, forming GR206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR206 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR206 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192 precursor RNA and GAM49006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192 RNA and GAM49006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192 target RNA into GAM192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49006 target RNA into GAM49006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR206 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR206 gene: GAM192 target protein and GAM49006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192 and GAM49006

GR207 BG116256 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 207(GR207) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR207 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR207 gene was detected is described hereinabove with reference to Figs. 8-18.

GR207 gene encodes GR207 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR207 precursor RNA folds spatially, forming GR207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR207 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR207 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65137 precursor RNA and GAM114766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65137 RNA and GAM114766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65137 target RNA into GAM65137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114766 target RNA into GAM114766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR207 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR207 gene: GAM65137 target protein and GAM114766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65137 and GAM114766

GR208 AI802419 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 208(GR208) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR208 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR208 gene was detected is described hereinabove with reference to Figs. 8-18.

GR208 gene encodes GR208 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR208 precursor RNA folds spatially, forming GR208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR208 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR208 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82301 precursor RNA and GAM277768 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82301 RNA and GAM277768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82301 target RNA into GAM82301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277768 target RNA into GAM277768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR208 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR208 gene: GAM82301 target protein and GAM277768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82301 and GAM277768

GR209 BF507853 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 209(GR209) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR209 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR209 gene was detected is described hereinabove with reference to Figs. 8-18.

GR209 gene encodes GR209 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR209 precursor RNA folds spatially, forming GR209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR209 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR209 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM144400 precursor RNA, GAM299038 precursor RNA and GAM335232 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144400 RNA, GAM299038 RNA and GAM335232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144400 target RNA into GAM144400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299038 target RNA into GAM299038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335232 target RNA into GAM335232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR209 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR209 gene: GAM144400 target protein, GAM299038 target protein and GAM335232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144400, GAM299038 and GAM335232

GR210 BF809140 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 210(GR210) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR210 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR210 gene was detected is described hereinabove with reference to Figs. 8-18.

GR210 gene encodes GR210 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR210 precursor RNA folds spatially, forming GR210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR210 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR210 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5191 precursor RNA and GAM98856 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5191 RNA and GAM98856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5191 target RNA into GAM5191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98856

target RNA into GAM98856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR210 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR210 gene: GAM5191 target protein and GAM98856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5191 and GAM98856

GR211 BF665965 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 211(GR211) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR211 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR211 gene was detected is described hereinabove with reference to Figs. 8-18.

GR211 gene encodes GR211 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR211 precursor RNA folds spatially, forming GR211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR211 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR211 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34250 precursor RNA and GAM281994 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34250 RNA and GAM281994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34250 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34250 target RNA into GAM34250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281994 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281994 target RNA into GAM281994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR211 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR211 gene: GAM34250 target protein and GAM281994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34250 and GAM281994

GR212 BF694534 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 212(GR212) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR212 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR212 gene was detected is described hereinabove with reference to Figs. 8-18.

GR212 gene encodes GR212 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR212 precursor RNA folds spatially, forming GR212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR212 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR212 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR212 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111937 precursor RNA and GAM182226 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111937 RNA and GAM182226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111937 target RNA into GAM111937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182226 target RNA into GAM182226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR212 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR212 gene: GAM111937 target protein and GAM182226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111937 and GAM182226

GR213 BI550614 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 213(GR213) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR213 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR213 gene was detected is described hereinabove with reference to Figs. 8-18.

GR213 gene encodes GR213 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR213 precursor RNA folds spatially, forming GR213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR213 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR213 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1637 precursor RNA, GAM4065 precursor RNA and GAM248566 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1637 RNA, GAM4065 RNA and GAM248566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1637 target RNA into GAM1637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4065 target RNA into GAM4065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248566 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248566 target RNA into GAM248566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR213 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR213 gene: GAM1637 target protein, GAM4065 target protein and GAM248566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1637, GAM4065 and GAM248566

GR214 BF978299 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 214(GR214) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR214 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR214 gene was detected is described hereinabove with reference to Figs. 8-18.

GR214 gene encodes GR214 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR214 precursor RNA folds spatially, forming GR214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR214 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR214 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1750 precursor RNA, GAM6193 precursor RNA and GAM311432 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1750 RNA, GAM6193 RNA and GAM311432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1750 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1750 target RNA into GAM1750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6193 target RNA into GAM6193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311432 target RNA into GAM311432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR214 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR214 gene: GAM1750 target protein, GAM6193 target protein and GAM311432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1750, GAM6193 and GAM311432

GR215 BF879612 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 215(GR215) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR215 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR215 gene was detected is described hereinabove with reference to Figs. 8-18.

GR215 gene encodes GR215 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR215 precursor RNA folds spatially, forming GR215 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR215 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR215 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8167 precursor RNA and GAM293568 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8167 RNA and GAM293568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8167 target RNA into GAM8167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293568 target RNA into GAM293568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR215 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR215 gene: GAM8167 target protein and GAM293568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8167 and GAM293568

GR216 BF240619 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 216(GR216) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR216 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR216 gene was detected is described hereinabove with reference to Figs. 8-18.

GR216 gene encodes GR216 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR216 precursor RNA folds spatially, forming GR216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR216 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR216 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3878 precursor RNA, GAM190406 precursor RNA, GAM215143 precursor RNA and GAM277557 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3878 RNA, GAM190406 RNA, GAM215143 RNA and GAM277557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3878 target RNA into GAM3878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190406 target RNA into GAM190406 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215143 target RNA into GAM215143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277557 target RNA into GAM277557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR216 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR216 gene: GAM3878 target protein, GAM190406 target protein, GAM215143 target protein and GAM277557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3878, GAM190406, GAM215143 and GAM277557

GR217 AA721389 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 217(GR217) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR217 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR217 gene was detected is described hereinabove with reference to Figs. 8-18.

GR217 gene encodes GR217 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR217 precursor RNA folds spatially, forming GR217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR217 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR217 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5585 precursor RNA and GAM335944 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5585 RNA and GAM335944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5585 target RNA into GAM5585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335944 target RNA into GAM335944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR217 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR217 gene: GAM5585 target protein and GAM335944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5585 and GAM335944

GR218 BG201257 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 218(GR218) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR218 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR218

gene was detected is described hereinabove with reference to Figs. 8-18.

GR218 gene encodes GR218 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR218 precursor RNA folds spatially, forming GR218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR218 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR218 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5530 precursor RNA and GAM8577 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5530 RNA and GAM8577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5530 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5530 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5530 target RNA into GAM5530 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8577 target RNA into GAM8577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR218 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR218 gene: GAM5530 target protein and GAM8577 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5530 and GAM8577

GR219 BG682656 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 219(GR219) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR219 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR219 gene was detected is described hereinabove with reference to Figs. 8-18.

GR219 gene encodes GR219 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR219 precursor RNA folds spatially, forming GR219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR219 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR219 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8158 precursor RNA, GAM275873 precursor RNA and GAM291951 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8158 RNA, GAM275873 RNA and GAM291951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8158 target RNA into GAM8158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275873 target RNA into GAM275873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291951 target RNA into GAM291951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR219 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR219 gene: GAM8158 target protein, GAM275873 target protein and GAM291951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8158, GAM275873 and GAM291951

GR220 BF592652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 220(GR220) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR220 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR220 gene was detected is described hereinabove with reference to Figs. 8-18.

GR220 gene encodes GR220 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR220 precursor RNA folds spatially, forming GR220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR220 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR220 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM135364 precursor RNA and GAM335465 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM135364 RNA and GAM335465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM135364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135364 target RNA into GAM135364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335465 target RNA into GAM335465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR220 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR220 gene: GAM135364 target protein and GAM335465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM135364 and GAM335465

GR221 AI686321 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 221(GR221) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR221 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR221 gene was detected is described hereinabove with reference to Figs. 8-18.

GR221 gene encodes GR221 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR221 precursor RNA folds spatially, forming GR221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR221 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR221 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6101 precursor RNA and GAM257544 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6101 RNA and GAM257544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6101 target RNA into GAM6101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257544 target RNA into GAM257544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR221 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR221 gene: GAM6101 target protein and GAM257544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6101 and GAM257544

GR222 AI085038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 222(GR222) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR222 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR222 gene was detected is described hereinabove with reference to Figs. 8-18.

GR222 gene encodes GR222 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR222 precursor RNA folds spatially, forming GR222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR222 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR222 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8038 precursor RNA and GAM29802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8038 RNA and GAM29802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8038 target RNA into GAM8038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM29802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29802 target RNA into GAM29802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR222 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR222 gene: GAM8038 target protein and GAM29802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8038 and GAM29802

GR223 AL598111 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 223(GR223) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR223 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR223 gene was detected is described hereinabove with reference to Figs. 8-18.

GR223 gene encodes GR223 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR223 precursor RNA folds spatially, forming GR223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR223 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR223 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM285737 precursor RNA and GAM288741 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM285737 RNA and GAM288741 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM285737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285737 target RNA into GAM285737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288741 target RNA into GAM288741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR223 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR223 gene: GAM285737 target protein and GAM288741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM285737 and GAM288741

GR224 BE838445 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 224(GR224) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR224 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR224 gene was detected is described hereinabove with reference to Figs. 8-18.

GR224 gene encodes GR224 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR224 precursor RNA folds spatially, forming GR224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR224 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR224 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3649 precursor RNA, GAM187679 precursor RNA and GAM286158 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3649 RNA, GAM187679 RNA and GAM286158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3649 target RNA into GAM3649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187679 target RNA into GAM187679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286158 target RNA into GAM286158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR224 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR224 gene: GAM3649 target protein, GAM187679 target protein and GAM286158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3649, GAM187679 and

GAM286158

GR225 BE545194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 225(GR225) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR225 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR225 gene was detected is described hereinabove with reference to Figs. 8-18.

GR225 gene encodes GR225 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR225 precursor RNA folds spatially, forming GR225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR225 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR225 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55026 precursor RNA, GAM125694 precursor RNA and GAM183751 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55026 RNA, GAM125694 RNA and GAM183751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55026 target RNA into GAM55026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM125694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125694 target RNA into GAM125694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183751 target RNA into GAM183751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR225 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR225 gene: GAM55026 target protein, GAM125694 target protein and GAM183751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55026, GAM125694 and GAM183751

GR226 BG825902 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 226(GR226) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR226 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR226 gene was detected is described hereinabove with reference to Figs. 8-18.

GR226 gene encodes GR226 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR226 precursor RNA folds spatially, forming GR226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR226 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR226 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR226 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1245 precursor RNA, GAM5742 precursor RNA, GAM7587 precursor RNA and GAM149623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1245 RNA, GAM5742 RNA, GAM7587 RNA and GAM149623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1245 target RNA into GAM1245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5742 target RNA into GAM5742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7587 target RNA into GAM7587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149623 target RNA into GAM149623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR226 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR226 gene: GAM1245 target

protein, GAM5742 target protein, GAM7587 target protein and GAM149623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1245, GAM5742, GAM7587 and GAM149623

GR227 BG743877 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 227(GR227) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR227 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR227 gene was detected is described hereinabove with reference to Figs. 8-18.

GR227 gene encodes GR227 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR227 precursor RNA folds spatially, forming GR227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR227 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR227 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7797 precursor RNA, GAM29526 precursor RNA and GAM83372 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7797 RNA, GAM29526 RNA and GAM83372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7797 target RNA into

GAM7797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29526 target RNA into GAM29526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83372 target RNA into GAM83372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR227 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR227 gene: GAM7797 target protein, GAM29526 target protein and GAM83372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7797, GAM29526 and GAM83372

GR228 N46046 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 228(GR228) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR228 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR228 gene was detected is described hereinabove with reference to Figs. 8-18.

GR228 gene encodes GR228 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR228 precursor RNA folds spatially, forming GR228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR228 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR228 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2792 precursor RNA and GAM24280 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2792 RNA and GAM24280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2792 target RNA into GAM2792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24280 target RNA into GAM24280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR228 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR228 gene: GAM2792 target protein and GAM24280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2792 and GAM24280

GR229 AA989696 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 229(GR229) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR229 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR229 gene was detected is described hereinabove with reference to Figs. 8-18.

GR229 gene encodes GR229 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR229 precursor RNA folds spatially, forming GR229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR229 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR229 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM721 precursor RNA, GAM1411 precursor RNA, GAM90975 precursor RNA and GAM215222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM721 RNA, GAM1411 RNA, GAM90975 RNA and GAM215222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM721 target RNA into GAM721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1411 target RNA into GAM1411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90975 target RNA into GAM90975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215222 target RNA into GAM215222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR229 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR229 gene: GAM721 target protein, GAM1411 target protein, GAM90975 target protein and GAM215222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM721, GAM1411, GAM90975 and GAM215222

GR230 BE973037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 230(GR230) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR230 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR230 gene was detected is described hereinabove with reference to Figs. 8-18.

GR230 gene encodes GR230 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR230 precursor RNA folds spatially, forming GR230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR230 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR230 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3818 precursor RNA, GAM297110 precursor RNA

and GAM324646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3818 RNA, GAM297110 RNA and GAM324646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3818 target RNA into GAM3818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297110 target RNA into GAM297110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324646 target RNA into GAM324646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR230 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR230 gene: GAM3818 target protein, GAM297110 target protein and GAM324646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3818, GAM297110 and GAM324646

GR231 AI375086 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 231(GR231) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR231 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR231 gene was detected is described hereinabove with reference to Figs. 8-18.

GR231 gene encodes GR231 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR231 precursor RNA folds spatially, forming GR231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR231 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR231 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4929 precursor RNA, GAM54367 precursor RNA and GAM246748 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4929 RNA, GAM54367 RNA and GAM246748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4929 target RNA into GAM4929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54367 target RNA into GAM54367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246748 target RNA into GAM246748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR231 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR231 gene: GAM4929 target protein, GAM54367 target protein and GAM246748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4929, GAM54367 and GAM246748

GR232 BE153159 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 232(GR232) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR232 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR232 gene was detected is described hereinabove with reference to Figs. 8-18.

GR232 gene encodes GR232 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR232 precursor RNA folds spatially, forming GR232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR232 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR232 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6732 precursor RNA, GAM6861 precursor RNA, GAM21351 precursor RNA and GAM129623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6732 RNA, GAM6861 RNA, GAM21351 RNA and GAM129623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6732 target RNA into GAM6732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6861 target RNA into GAM6861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21351 target RNA into GAM21351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129623 target RNA into GAM129623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR232 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR232 gene: GAM6732 target protein, GAM6861 target protein, GAM21351 target protein and GAM129623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6732, GAM6861, GAM21351 and GAM129623

GR233 BG988132 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 233(GR233) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR233 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR233 gene was detected is described hereinabove with reference to Figs. 8-18.

GR233 gene encodes GR233 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR233 precursor RNA folds spatially, forming GR233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR233 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR233 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5685 precursor RNA and GAM6002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5685 RNA and GAM6002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5685 target RNA into GAM5685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6002 target RNA into GAM6002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR233 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR233 gene: GAM5685 target protein and GAM6002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5685 and GAM6002

GR234 AA738329 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 234(GR234) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR234 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR234 gene was detected is described hereinabove with reference to Figs. 8-18.

GR234 gene encodes GR234 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR234 precursor RNA folds spatially, forming GR234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR234 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR234 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8302 precursor RNA and GAM14281 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8302 RNA and GAM14281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8302 target RNA into GAM8302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14281 target RNA into GAM14281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR234 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR234 gene: GAM8302 target protein and GAM14281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8302 and GAM14281

GR235 BF183081 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 235(GR235) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR235 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR235 gene was detected is described hereinabove with reference to Figs. 8-18.

GR235 gene encodes GR235 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR235 precursor RNA folds spatially, forming GR235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR235 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR235 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1952 precursor RNA and GAM5502 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1952 RNA and GAM5502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1952 target RNA into GAM1952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5502 target RNA into GAM5502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR235 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR235 gene: GAM1952 target protein and GAM5502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1952 and GAM5502

GR236 AI248475 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 236(GR236) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR236 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR236 gene was detected is described hereinabove with reference to Figs. 8-18.

GR236 gene encodes GR236 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR236 precursor RNA folds spatially, forming GR236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR236 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR236 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1416 precursor RNA and GAM253497 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1416 RNA and GAM253497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1416 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1416 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1416 target RNA into GAM1416 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253497 target RNA into GAM253497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR236 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR236 gene: GAM1416 target protein and GAM253497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM1416 and GAM253497

GR237 BI463437 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 237(GR237) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR237 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR237 gene was detected is described hereinabove with reference to Figs. 8-18.

GR237 gene encodes GR237 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR237 precursor RNA folds spatially, forming GR237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR237 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR237 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129241 precursor RNA and GAM314406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129241 RNA and GAM314406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129241 target RNA into GAM129241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314406 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314406 target RNA into GAM314406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR237 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR237 gene: GAM129241 target protein and GAM314406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129241 and GAM314406

GR238 BQ067282 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 238(GR238) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR238 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR238 gene was detected is described hereinabove with reference to Figs. 8-18.

GR238 gene encodes GR238 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR238 precursor RNA folds spatially, forming GR238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR238 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR238 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM277895 precursor RNA and GAM288012 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM277895 RNA and GAM288012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM277895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277895 target RNA into GAM277895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288012 target RNA into GAM288012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR238 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR238 gene: GAM277895 target protein and GAM288012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM277895 and GAM288012

GR239 BG547948 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 239(GR239) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR239 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR239 gene was detected is described hereinabove with reference to Figs. 8-18.

GR239 gene encodes GR239 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR239 precursor RNA folds spatially, forming GR239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR239 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR239 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3739 precursor RNA and GAM21429 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3739 RNA and GAM21429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3739 target RNA into GAM3739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21429 target RNA into GAM21429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR239 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR239 gene: GAM3739 target protein and GAM21429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3739 and GAM21429

GR240 AA082717 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 240(GR240) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR240 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR240

gene was detected is described hereinabove with reference to Figs. 8-18.

GR240 gene encodes GR240 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR240 precursor RNA folds spatially, forming GR240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR240 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR240 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM137575 precursor RNA and GAM314857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM137575 RNA and GAM314857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM137575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137575 target RNA into GAM137575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314857 target RNA into GAM314857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR240 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR240 gene: GAM137575 target protein and GAM314857 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM137575 and GAM314857

GR241 R95049 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 241(GR241) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR241 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR241 gene was detected is described hereinabove with reference to Figs. 8-18.

GR241 gene encodes GR241 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR241 precursor RNA folds spatially, forming GR241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR241 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR241 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1866 precursor RNA, GAM6631 precursor RNA and GAM98609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1866 RNA, GAM6631 RNA and GAM98609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1866 target RNA into GAM1866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6631 target RNA into GAM6631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98609 target RNA into GAM98609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR241 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR241 gene: GAM1866 target protein, GAM6631 target protein and GAM98609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1866, GAM6631 and GAM98609

GR242 AA484121 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 242(GR242) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR242 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR242 gene was detected is described hereinabove with reference to Figs. 8-18.

GR242 gene encodes GR242 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR242 precursor RNA folds spatially, forming GR242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR242 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR242 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM336 precursor RNA and GAM183227 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM336 RNA and GAM183227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM336 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336 target RNA into GAM336 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183227 target RNA into GAM183227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR242 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR242 gene: GAM336 target protein and GAM183227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM336 and GAM183227

GR243 BI819166 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 243(GR243) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR243 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR243 gene was detected is described hereinabove with reference to Figs. 8-18.

GR243 gene encodes GR243 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR243 precursor RNA folds spatially, forming GR243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR243 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR243 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259334 precursor RNA and GAM283395 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259334 RNA and GAM283395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259334 target RNA into GAM259334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283395 target RNA into GAM283395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR243 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR243 gene: GAM259334 target protein and GAM283395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259334 and GAM283395

GR244 BG427760 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 244(GR244) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR244 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR244 gene was detected is described hereinabove with reference to Figs. 8-18.

GR244 gene encodes GR244 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR244 precursor RNA folds spatially, forming GR244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR244 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR244 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24739 precursor RNA and GAM292147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24739 RNA and GAM292147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24739 target RNA into GAM24739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM292147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292147 target RNA into GAM292147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR244 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR244 gene: GAM24739 target protein and GAM292147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24739 and GAM292147

GR245 BF971822 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 245(GR245) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR245 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR245 gene was detected is described hereinabove with reference to Figs. 8-18.

GR245 gene encodes GR245 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR245 precursor RNA folds spatially, forming GR245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR245 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR245 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM192385 precursor RNA, GAM222599 precursor RNA and GAM279970 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM192385 RNA, GAM222599 RNA and GAM279970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192385 target RNA into GAM192385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222599 target RNA into GAM222599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279970 target RNA into GAM279970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR245 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR245 gene: GAM192385 target protein, GAM222599 target protein and GAM279970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192385, GAM222599 and GAM279970

GR246 AA229846 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 246(GR246) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR246 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR246 gene was detected is described hereinabove with reference to Figs. 8-18.

GR246 gene encodes GR246 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR246 precursor RNA folds spatially, forming GR246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR246 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR246 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM913 precursor RNA and GAM84674 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM913 RNA and GAM84674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM913 target RNA into GAM913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84674 target RNA into GAM84674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR246 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR246 gene: GAM913 target protein and GAM84674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM913 and GAM84674

GR247 BI559829 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 247(GR247) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR247 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR247 gene was detected is described hereinabove with reference to Figs. 8-18.

GR247 gene encodes GR247 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR247 precursor RNA folds spatially, forming GR247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR247 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR247 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6794 precursor RNA, GAM60658 precursor RNA and GAM100841 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6794 RNA, GAM60658 RNA and GAM100841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6794 target RNA into GAM6794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM60658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60658 target RNA into GAM60658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100841 target RNA into GAM100841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR247 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR247 gene: GAM6794 target protein, GAM60658 target protein and GAM100841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6794, GAM60658 and GAM100841

GR248 BM468981 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 248(GR248) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR248 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR248 gene was detected is described hereinabove with reference to Figs. 8-18.

GR248 gene encodes GR248 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR248 precursor RNA folds spatially, forming GR248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR248 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR248 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR248 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5694 precursor RNA and GAM104844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5694 RNA and GAM104844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5694 target RNA into GAM5694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104844 target RNA into GAM104844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR248 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR248 gene: GAM5694 target protein and GAM104844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5694 and GAM104844

GR249 BQ006255 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 249(GR249) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR249 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR249 gene was detected is described hereinabove with reference to Figs. 8-18.

GR249 gene encodes GR249 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR249 precursor RNA folds spatially, forming GR249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR249 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR249 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30793 precursor RNA and GAM336105 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30793 RNA and GAM336105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30793 target RNA into GAM30793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336105 target RNA into GAM336105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR249 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR249 gene: GAM30793 target protein and GAM336105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30793 and GAM336105

GR250 BE266741 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 250(GR250) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR250 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR250 gene was detected is described hereinabove with reference to Figs. 8-18.

GR250 gene encodes GR250 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR250 precursor RNA folds spatially, forming GR250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR250 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR250 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM91092 precursor RNA, GAM209169 precursor RNA and GAM215695 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91092 RNA, GAM209169 RNA and GAM215695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91092 target RNA into GAM91092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209169 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209169 target RNA into GAM209169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215695 target RNA into GAM215695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR250 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR250 gene: GAM91092 target protein, GAM209169 target protein and GAM215695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91092, GAM209169 and GAM215695

GR251 AW976292 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 251(GR251) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR251 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR251 gene was detected is described hereinabove with reference to Figs. 8-18.

GR251 gene encodes GR251 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR251 precursor RNA folds spatially, forming GR251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR251 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR251 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM7609 precursor RNA and GAM8226 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7609 RNA and GAM8226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7609 target RNA into GAM7609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8226 target RNA into GAM8226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR251 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR251 gene: GAM7609 target protein and GAM8226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7609 and GAM8226

GR252 BG614194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 252(GR252) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR252 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR252 gene was detected is described hereinabove with reference to Figs. 8-18.

GR252 gene encodes GR252 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR252 precursor RNA folds spatially, forming GR252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR252 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR252 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7121 precursor RNA, GAM7300 precursor RNA, GAM168460 precursor RNA and GAM193117 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7121 RNA, GAM7300 RNA, GAM168460 RNA and GAM193117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7121 target RNA into GAM7121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7300 target RNA into GAM7300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168460 target RNA into GAM168460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193117 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193117 target RNA into GAM193117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR252 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR252 gene: GAM7121 target protein, GAM7300 target protein, GAM168460 target protein and GAM193117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7121, GAM7300, GAM168460 and GAM193117

GR253 BF754171 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 253(GR253) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR253 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR253 gene was detected is described hereinabove with reference to Figs. 8-18.

GR253 gene encodes GR253 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR253 precursor RNA folds spatially, forming GR253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR253 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR253 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13065 precursor RNA and GAM204337 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13065 RNA and GAM204337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13065 target RNA into GAM13065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204337 target RNA into GAM204337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR253 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR253 gene: GAM13065 target protein and GAM204337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13065 and GAM204337

GR254 AI431704 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 254(GR254) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR254 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR254 gene was detected is described hereinabove with reference to Figs. 8-18.

GR254 gene encodes GR254 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR254 precursor RNA folds spatially, forming GR254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR254 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR254 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3993 precursor RNA, GAM6241 precursor RNA and GAM297712 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3993 RNA, GAM6241 RNA and GAM297712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3993 target RNA into GAM3993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6241 target RNA into GAM6241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297712 target RNA into GAM297712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR254 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR254 gene: GAM3993 target protein, GAM6241 target protein and GAM297712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3993, GAM6241 and GAM297712

GR255 AA131148 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 255(GR255) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR255 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR255 gene was detected is described hereinabove with reference to Figs. 8-18.

GR255 gene encodes GR255 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR255 precursor RNA folds spatially, forming GR255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR255 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR255 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8564 precursor RNA and GAM238209 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8564 RNA and GAM238209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8564 target RNA into GAM8564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238209 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238209 target RNA into GAM238209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR255 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR255 gene: GAM8564 target protein and GAM238209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8564 and GAM238209

GR256 BF570254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 256(GR256) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR256 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR256 gene was detected is described hereinabove with reference to Figs. 8-18.

GR256 gene encodes GR256 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR256 precursor RNA folds spatially, forming GR256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR256 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR256 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM95463 precursor RNA, GAM140419 precursor RNA, GAM147561 precursor RNA, GAM152364 precursor RNA and GAM196739 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95463 RNA, GAM140419 RNA, GAM147561 RNA, GAM152364 RNA and GAM196739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95463 target RNA into GAM95463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140419 target RNA into GAM140419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147561 target RNA into GAM147561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152364 target RNA into GAM152364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196739 target RNA into GAM196739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR256 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR256 gene: GAM95463 target

protein, GAM140419 target protein, GAM147561 target protein, GAM152364 target protein and GAM196739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95463, GAM140419, GAM147561, GAM152364 and GAM196739

GR257 BM805333 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 257(GR257) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR257 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR257 gene was detected is described hereinabove with reference to Figs. 8-18.

GR257 gene encodes GR257 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR257 precursor RNA folds spatially, forming GR257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR257 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR257 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63500 precursor RNA, GAM92407 precursor RNA and GAM151060 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63500 RNA, GAM92407 RNA and GAM151060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63500 target RNA into GAM63500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92407 target RNA into GAM92407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151060 target RNA into GAM151060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR257 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR257 gene: GAM63500 target protein, GAM92407 target protein and GAM151060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63500, GAM92407 and GAM151060

GR258 AI733252 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 258(GR258) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR258 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR258 gene was detected is described hereinabove with reference to Figs. 8-18.

GR258 gene encodes GR258 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR258 precursor RNA folds spatially, forming GR258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR258 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR258 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96839 precursor RNA and GAM109389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96839 RNA and GAM109389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96839 target RNA into GAM96839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109389 target RNA into GAM109389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR258 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR258 gene: GAM96839 target protein and GAM109389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96839 and GAM109389

GR259 BF115670 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 259(GR259) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR259 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR259 gene was detected is described hereinabove with reference to Figs. 8-18.

GR259 gene encodes GR259 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR259 precursor RNA folds spatially, forming GR259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR259 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR259 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7235 precursor RNA, GAM22145 precursor RNA, GAM36889 precursor RNA and GAM59949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7235 RNA, GAM22145 RNA, GAM36889 RNA and GAM59949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7235 target RNA into GAM7235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22145 target RNA into GAM22145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36889 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36889 target RNA into GAM36889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59949 target RNA into GAM59949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR259 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR259 gene: GAM7235 target protein, GAM22145 target protein, GAM36889 target protein and GAM59949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7235, GAM22145, GAM36889 and GAM59949

GR260 BE540857 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 260(GR260) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR260 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR260 gene was detected is described hereinabove with reference to Figs. 8-18.

GR260 gene encodes GR260 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR260 precursor RNA folds spatially, forming GR260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR260 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR260 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM20660 precursor RNA, GAM30156 precursor RNA and GAM233105 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20660 RNA, GAM30156 RNA and GAM233105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20660 target RNA into GAM20660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30156 target RNA into GAM30156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233105 target RNA into GAM233105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR260 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR260 gene: GAM20660 target protein, GAM30156 target protein and GAM233105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20660, GAM30156 and GAM233105

GR261 AW609486 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 261(GR261) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR261 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR261 gene was detected is described hereinabove with reference to Figs. 8-18.

GR261 gene encodes GR261 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR261 precursor RNA folds spatially, forming GR261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR261 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR261 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4888 precursor RNA, GAM146664 precursor RNA and GAM289108 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4888 RNA, GAM146664 RNA and GAM289108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4888 target RNA into GAM4888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146664 target RNA into GAM146664 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289108 target RNA into GAM289108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR261 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR261 gene: GAM4888 target protein, GAM146664 target protein and GAM289108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4888, GAM146664 and GAM289108

GR262 AA443182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 262(GR262) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR262 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR262 gene was detected is described hereinabove with reference to Figs. 8-18.

GR262 gene encodes GR262 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR262 precursor RNA folds spatially, forming GR262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR262 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR262 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1164 precursor RNA and GAM6257 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1164 RNA and GAM6257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1164 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1164 target RNA into GAM1164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6257 target RNA into GAM6257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR262 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR262 gene: GAM1164 target protein and GAM6257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1164 and GAM6257

GR263 BI019674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 263(GR263) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR263 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR263 gene was detected is described hereinabove with reference to Figs. 8-18.

GR263 gene encodes GR263 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR263 precursor RNA folds spatially, forming GR263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR263

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR263 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87104 precursor RNA and GAM196185 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87104 RNA and GAM196185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87104 target RNA into GAM87104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196185 target RNA into GAM196185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR263 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR263 gene: GAM87104 target protein and GAM196185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87104 and GAM196185

GR264 T84335 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 264(GR264) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR264 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR264 gene was detected is described hereinabove with reference to Figs. 8-18.

GR264 gene encodes GR264 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR264 precursor RNA folds spatially, forming GR264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR264 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR264 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53115 precursor RNA and GAM94712 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53115 RNA and GAM94712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53115 target RNA into GAM53115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94712 target RNA into GAM94712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR264 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR264 gene: GAM53115 target protein and GAM94712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53115 and GAM94712

GR265 AW298121 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 265(GR265) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR265 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR265 gene was detected is described hereinabove with reference to Figs. 8-18.

GR265 gene encodes GR265 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR265 precursor RNA folds spatially, forming GR265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR265 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR265 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17623 precursor RNA and GAM133088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17623 RNA and GAM133088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17623 target RNA into GAM17623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133088 target RNA into GAM133088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR265 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR265 gene: GAM17623 target protein and GAM133088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17623 and GAM133088

GR266 BF131842 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 266(GR266) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR266 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR266 gene was detected is described hereinabove with reference to Figs. 8-18.

GR266 gene encodes GR266 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR266 precursor RNA folds spatially, forming GR266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR266 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR266 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM197314 precursor RNA and GAM269023 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM197314 RNA and GAM269023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM197314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197314 target RNA into GAM197314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269023 target RNA into GAM269023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR266 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR266 gene: GAM197314 target protein and GAM269023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM197314 and GAM269023

GR267 H15562 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 267(GR267) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR267 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR267 gene was detected is described hereinabove with reference to Figs. 8-18.

GR267 gene encodes GR267 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR267 precursor RNA folds spatially, forming GR267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR267 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR267 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9492 precursor RNA and GAM187257 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9492 RNA and GAM187257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9492 target RNA into GAM9492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187257 target RNA into GAM187257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR267 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR267 gene: GAM9492 target protein and GAM187257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9492 and GAM187257

GR268 AI934517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

268(GR268) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR268 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR268 gene was detected is described hereinabove with reference to Figs. 8-18.

GR268 gene encodes GR268 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR268 precursor RNA folds spatially, forming GR268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR268 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR268 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2250 precursor RNA and GAM305271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2250 RNA and GAM305271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2250 target RNA into GAM2250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305271 target RNA into GAM305271 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR268 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR268 gene: GAM2250 target protein and GAM305271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2250 and GAM305271

GR269 BE782992 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 269(GR269) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR269 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR269 gene was detected is described hereinabove with reference to Figs. 8-18.

GR269 gene encodes GR269 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR269 precursor RNA folds spatially, forming GR269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR269 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR269 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM152716 precursor RNA, GAM187226 precursor RNA and GAM322966 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152716 RNA, GAM187226 RNA and GAM322966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152716 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152716 target RNA into GAM152716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187226 target RNA into GAM187226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322966 target RNA into GAM322966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR269 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR269 gene: GAM152716 target protein, GAM187226 target protein and GAM322966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152716, GAM187226 and GAM322966

GR270 AI446682 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 270(GR270) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR270 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR270 gene was detected is described hereinabove with reference to Figs. 8-18.

GR270 gene encodes GR270 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR270 precursor RNA folds spatially, forming GR270 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR270 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR270 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87306 precursor RNA and GAM130601 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87306 RNA and GAM130601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87306 target RNA into GAM87306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130601 target RNA into GAM130601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR270 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR270 gene: GAM87306 target protein and GAM130601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87306 and GAM130601

GR271 AV751386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 271(GR271) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR271 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR271 gene was detected is described hereinabove with reference to Figs. 8-18.

GR271 gene encodes GR271 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR271 precursor RNA folds spatially, forming GR271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR271 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR271 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115981 precursor RNA and GAM310975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115981 RNA and GAM310975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115981 target RNA into GAM115981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310975 target RNA into GAM310975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR271 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR271 gene: GAM115981 target protein and GAM310975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115981 and GAM310975

GR272 BI824604 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 272(GR272) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR272 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR272 gene was detected is described hereinabove with reference to Figs. 8-18.

GR272 gene encodes GR272 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR272 precursor RNA folds spatially, forming GR272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR272 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR272 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1609 precursor RNA, GAM100095 precursor RNA and GAM128882 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1609 RNA, GAM100095 RNA and GAM128882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM1609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1609 target RNA into GAM1609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100095 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100095 target RNA into GAM100095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128882 target RNA into GAM128882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR272 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR272 gene: GAM1609 target protein, GAM100095 target protein and GAM128882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1609, GAM100095 and GAM128882

GR273 BM690671 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 273(GR273) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR273 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR273 gene was detected is described hereinabove with reference to Figs. 8-18.

GR273 gene encodes GR273 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR273 precursor RNA folds spatially, forming GR273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR273

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR273 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3868 precursor RNA and GAM278504 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3868 RNA and GAM278504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3868 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3868 target RNA into GAM3868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278504 target RNA into GAM278504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR273 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR273 gene: GAM3868 target protein and GAM278504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3868 and GAM278504

GR274 AV728029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 274(GR274) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR274 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR274 gene was detected is described hereinabove with reference to Figs. 8-18.

GR274 gene encodes GR274 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR274 precursor RNA folds spatially, forming GR274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR274 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR274 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59368 precursor RNA and GAM249215 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59368 RNA and GAM249215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59368 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59368 target RNA into GAM59368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249215 target RNA into GAM249215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR274 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR274 gene: GAM59368 target protein and GAM249215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59368 and GAM249215

GR275 BF736222 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 275(GR275) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR275 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR275 gene was detected is described hereinabove with reference to Figs. 8-18.

GR275 gene encodes GR275 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR275 precursor RNA folds spatially, forming GR275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR275 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR275 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2100 precursor RNA, GAM183625 precursor RNA and GAM190799 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2100 RNA, GAM183625 RNA and GAM190799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2100 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2100 target RNA into GAM2100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183625 target RNA into GAM183625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190799 target RNA into GAM190799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR275 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR275 gene: GAM2100 target protein, GAM183625 target protein and GAM190799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2100, GAM183625 and GAM190799

GR276 BG057312 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 276(GR276) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR276 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR276 gene was detected is described hereinabove with reference to Figs. 8-18.

GR276 gene encodes GR276 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR276 precursor RNA folds spatially, forming GR276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR276 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR276 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56057 precursor RNA and GAM171473 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56057 RNA and GAM171473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56057 target RNA into GAM56057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171473 target RNA into GAM171473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR276 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR276 gene: GAM56057 target protein and GAM171473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56057 and GAM171473

GR277 AA894451 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 277(GR277) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR277 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR277 gene was detected is described hereinabove with reference to Figs. 8-18.

GR277 gene encodes GR277 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR277 precursor RNA folds spatially, forming GR277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR277 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR277 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4251 precursor RNA, GAM159661 precursor RNA, GAM226400 precursor RNA and GAM336011 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4251 RNA, GAM159661 RNA, GAM226400 RNA and GAM336011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4251 target RNA into GAM4251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159661 target RNA into GAM159661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226400 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226400 target RNA into GAM226400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336011 target RNA into GAM336011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR277 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR277 gene: GAM4251 target protein, GAM159661 target protein, GAM226400 target protein and GAM336011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4251, GAM159661, GAM226400 and GAM336011

GR278 BM677626 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 278(GR278) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR278 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR278 gene was detected is described hereinabove with reference to Figs. 8-18.

GR278 gene encodes GR278 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR278 precursor RNA folds spatially, forming GR278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR278 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR278 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5152 precursor RNA and GAM29093 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5152 RNA and GAM29093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5152 target RNA into GAM5152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29093 target RNA into GAM29093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR278 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR278 gene: GAM5152 target protein and GAM29093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5152 and GAM29093

GR279 BF530038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 279(GR279) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR279 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR279 gene was detected is described hereinabove with reference to Figs. 8-18.

GR279 gene encodes GR279 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR279 precursor RNA folds spatially, forming GR279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR279 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR279 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2394 precursor RNA and GAM130623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2394 RNA and GAM130623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2394 target RNA into GAM2394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130623 target RNA into GAM130623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR279 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR279 gene: GAM2394 target protein and GAM130623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM2394 and GAM130623

GR280 AI744743 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 280(GR280) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR280 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR280 gene was detected is described hereinabove with reference to Figs. 8-18.

GR280 gene encodes GR280 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR280 precursor RNA folds spatially, forming GR280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR280 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR280 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM166869 precursor RNA, GAM206325 precursor RNA and GAM209724 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM166869 RNA, GAM206325 RNA and GAM209724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM166869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166869 target RNA into GAM166869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM206325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206325 target RNA into GAM206325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209724 target RNA into GAM209724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR280 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR280 gene: GAM166869 target protein, GAM206325 target protein and GAM209724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM166869, GAM206325 and GAM209724

GR281 BI039143 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 281(GR281) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR281 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR281 gene was detected is described hereinabove with reference to Figs. 8-18.

GR281 gene encodes GR281 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR281 precursor RNA folds spatially, forming GR281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR281 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR281 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR281 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3972 precursor RNA and GAM289450 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3972 RNA and GAM289450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3972 target RNA into GAM3972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289450 target RNA into GAM289450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR281 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR281 gene: GAM3972 target protein and GAM289450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3972 and GAM289450

GR282 BM824157 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 282(GR282) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR282 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR282 gene was detected is described hereinabove with reference to Figs. 8-18.

GR282 gene encodes GR282 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR282 precursor RNA folds spatially, forming GR282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR282 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR282 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253070 precursor RNA and GAM269102 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253070 RNA and GAM269102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253070 target RNA into GAM253070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269102 target RNA into GAM269102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR282 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR282 gene: GAM253070 target protein and GAM269102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253070 and GAM269102

GR283 BF246429 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 283(GR283) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR283 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR283 gene was detected is described hereinabove with reference to Figs. 8-18.

GR283 gene encodes GR283 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR283 precursor RNA folds spatially, forming GR283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR283 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR283 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2825 precursor RNA, GAM6823 precursor RNA and GAM40726 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2825 RNA, GAM6823 RNA and GAM40726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2825 target RNA into GAM2825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6823 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6823 target RNA into GAM6823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40726 target RNA into GAM40726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR283 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR283 gene: GAM2825 target protein, GAM6823 target protein and GAM40726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2825, GAM6823 and GAM40726

GR284 BG432758 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 284(GR284) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR284 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR284 gene was detected is described hereinabove with reference to Figs. 8-18.

GR284 gene encodes GR284 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR284 precursor RNA folds spatially, forming GR284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR284 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR284 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM106561 precursor RNA and GAM191402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106561 RNA and GAM191402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106561 target RNA into GAM106561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191402 target RNA into GAM191402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR284 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR284 gene: GAM106561 target protein and GAM191402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106561 and GAM191402

GR285 BF958779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 285(GR285) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR285 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR285 gene was detected is described hereinabove with reference to Figs. 8-18.

GR285 gene encodes GR285 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR285 precursor RNA folds spatially, forming GR285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR285 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR285 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM907 precursor RNA and GAM33887 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM907 RNA and GAM33887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM907 target RNA into GAM907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33887 target RNA into GAM33887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR285 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR285 gene: GAM907 target protein and GAM33887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM907 and GAM33887

GR286 AA687458 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 286(GR286) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR286 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR286 gene was detected is described hereinabove with reference to Figs. 8-18.

GR286 gene encodes GR286 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR286 precursor RNA folds spatially, forming GR286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR286 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR286 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8113 precursor RNA, GAM133774 precursor RNA and GAM139347 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8113 RNA, GAM133774 RNA and GAM139347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8113 target RNA into GAM8113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133774 target RNA into GAM133774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139347 target RNA into GAM139347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR286 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR286 gene: GAM8113 target protein, GAM133774 target protein and GAM139347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8113, GAM133774 and GAM139347

GR287 AW342040 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 287(GR287) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR287 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR287 gene was detected is described hereinabove with reference to Figs. 8-18.

GR287 gene encodes GR287 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR287 precursor RNA folds spatially, forming GR287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR287 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR287 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1000 precursor RNA, GAM5458 precursor RNA and

GAM299155 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1000 RNA, GAM5458 RNA and GAM299155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1000 target RNA into GAM1000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5458 target RNA into GAM5458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299155 target RNA into GAM299155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR287 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR287 gene: GAM1000 target protein, GAM5458 target protein and GAM299155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1000, GAM5458 and GAM299155

GR288 BF317051 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 288(GR288) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR288 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR288 gene was detected is described hereinabove with reference to Figs. 8-18.

GR288 gene encodes GR288 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR288 precursor RNA folds spatially, forming GR288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR288 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR288 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5621 precursor RNA and GAM286817 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5621 RNA and GAM286817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5621 target RNA into GAM5621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286817 target RNA into GAM286817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR288 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR288 gene: GAM5621 target protein and GAM286817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5621 and GAM286817

GR289 BI457465 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 289(GR289) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR289 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR289 gene was detected is described hereinabove with reference to Figs. 8-18.

GR289 gene encodes GR289 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR289 precursor RNA folds spatially, forming GR289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR289 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR289 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3442 precursor RNA and GAM7745 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3442 RNA and GAM7745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3442 target RNA into GAM3442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7745 target RNA into GAM7745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR289 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR289 gene: GAM3442 target protein and GAM7745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3442 and GAM7745

GR290 AW969337 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 290(GR290) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR290 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR290 gene was detected is described hereinabove with reference to Figs. 8-18.

GR290 gene encodes GR290 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR290 precursor RNA folds spatially, forming GR290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR290 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR290 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3574 precursor RNA, GAM4751 precursor RNA and GAM78108 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3574 RNA, GAM4751 RNA and GAM78108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3574 target RNA into GAM3574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4751 target RNA into GAM4751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78108 target RNA into GAM78108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR290 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR290 gene: GAM3574 target protein, GAM4751 target protein and GAM78108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3574, GAM4751 and GAM78108

GR291 AA936503 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 291(GR291) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR291 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR291 gene was detected is described hereinabove with reference to Figs. 8-18.

GR291 gene encodes GR291 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR291 precursor RNA folds spatially, forming GR291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR291 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR291 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM22809 precursor RNA, GAM217333 precursor RNA and GAM288307 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22809 RNA, GAM217333 RNA and GAM288307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22809 target RNA into GAM22809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217333 target RNA into GAM217333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288307 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288307 target RNA into GAM288307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR291 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR291 gene: GAM22809 target protein, GAM217333 target protein and GAM288307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22809, GAM217333 and GAM288307

GR292 AW749818 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 292(GR292) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR292 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR292 gene was detected is described hereinabove with reference to Figs. 8-18.

GR292 gene encodes GR292 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR292 precursor RNA folds spatially, forming GR292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR292 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR292 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM38838 precursor RNA and GAM322173 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38838 RNA and GAM322173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38838 target RNA into GAM38838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322173 target RNA into GAM322173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR292 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR292 gene: GAM38838 target protein and GAM322173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM38838 and GAM322173

GR293 BM670493 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 293(GR293) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR293 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR293 gene was detected is described hereinabove with reference to Figs. 8-18.

GR293 gene encodes GR293 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR293 precursor RNA folds spatially, forming GR293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR293 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR293 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3424 precursor RNA, GAM226410 precursor RNA and GAM261694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3424 RNA, GAM226410 RNA and GAM261694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3424 target RNA into GAM3424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226410 target RNA into GAM226410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261694 target RNA into GAM261694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR293 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR293 gene: GAM3424 target protein, GAM226410 target protein and GAM261694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3424, GAM226410 and GAM261694

GR294 BM834512 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 294(GR294) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR294 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR294 gene was detected is described hereinabove with reference to Figs. 8-18.

GR294 gene encodes GR294 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR294 precursor RNA folds spatially, forming GR294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR294 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR294 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4563 precursor RNA and GAM290810 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4563 RNA and GAM290810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4563 target RNA into GAM4563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290810 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290810 target RNA into GAM290810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR294 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR294 gene: GAM4563 target protein and GAM290810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4563 and GAM290810

GR295 AI125852 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 295(GR295) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR295 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR295 gene was detected is described hereinabove with reference to Figs. 8-18.

GR295 gene encodes GR295 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR295 precursor RNA folds spatially, forming GR295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR295 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR295 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6342 precursor RNA, GAM189799 precursor RNA and GAM314829 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6342 RNA, GAM189799 RNA and GAM314829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6342 target RNA into GAM6342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189799 target RNA into GAM189799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314829 target RNA into GAM314829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR295 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR295 gene: GAM6342 target protein, GAM189799 target protein and GAM314829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6342, GAM189799 and GAM314829

GR296 BG032579 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 296(GR296) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR296 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR296 gene was detected is described hereinabove with reference to Figs. 8-18.

GR296 gene encodes GR296 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR296 precursor RNA folds spatially, forming GR296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR296 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR296 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100445 precursor RNA and GAM183163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100445 RNA and GAM183163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100445 target RNA into GAM100445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183163 target RNA into GAM183163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR296 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR296 gene: GAM100445 target protein and GAM183163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100445 and GAM183163

GR297 AI681717 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 297(GR297) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR297 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR297 gene was detected is described hereinabove with reference to Figs. 8-18.

GR297 gene encodes GR297 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR297 precursor RNA folds spatially, forming GR297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR297 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR297 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM94658 precursor RNA, GAM206247 precursor RNA and GAM297982 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94658 RNA, GAM206247 RNA and GAM297982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94658 target RNA into GAM94658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206247 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206247 target RNA into GAM206247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297982 target RNA into GAM297982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR297 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR297 gene: GAM94658 target protein, GAM206247 target protein and GAM297982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94658, GAM206247 and GAM297982

GR298 AA428389 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 298(GR298) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR298 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR298 gene was detected is described hereinabove with reference to Figs. 8-18.

GR298 gene encodes GR298 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR298 precursor RNA folds spatially, forming GR298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR298 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR298 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM40943 precursor RNA, GAM116764 precursor RNA and GAM190633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40943 RNA, GAM116764 RNA and GAM190633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40943 target RNA into GAM40943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116764 target RNA into GAM116764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190633 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190633 target RNA into GAM190633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR298 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR298 gene: GAM40943 target protein, GAM116764 target protein and GAM190633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40943, GAM116764 and GAM190633

GR299 BF699993 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 299(GR299) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR299 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR299 gene was detected is described hereinabove with reference to Figs. 8-18.

GR299 gene encodes GR299 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR299 precursor RNA folds spatially, forming GR299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR299 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR299 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68815 precursor RNA and GAM257638 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68815 RNA and GAM257638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68815 target RNA into GAM68815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257638

target RNA into GAM257638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR299 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR299 gene: GAM68815 target protein and GAM257638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68815 and GAM257638

GR300 BI829992 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 300(GR300) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR300 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR300 gene was detected is described hereinabove with reference to Figs. 8-18.

GR300 gene encodes GR300 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR300 precursor RNA folds spatially, forming GR300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR300 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR300 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM252293 precursor RNA and GAM279695 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM252293 RNA and GAM279695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM252293 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252293 target RNA into GAM252293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279695 target RNA into GAM279695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR300 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR300 gene: GAM252293 target protein and GAM279695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM252293 and GAM279695

GR301 BF574225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 301(GR301) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR301 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR301 gene was detected is described hereinabove with reference to Figs. 8-18.

GR301 gene encodes GR301 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR301 precursor RNA folds spatially, forming GR301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR301 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR301 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR301 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM202628 precursor RNA and GAM296174 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM202628 RNA and GAM296174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM202628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202628 target RNA into GAM202628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296174 target RNA into GAM296174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR301 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR301 gene: GAM202628 target protein and GAM296174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM202628 and GAM296174

GR302 BG218720 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 302(GR302) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR302 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR302 gene was detected is described hereinabove with reference to Figs. 8-18.

GR302 gene encodes GR302 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR302 precursor RNA folds spatially, forming GR302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR302 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR302 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100912 precursor RNA and GAM147350 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100912 RNA and GAM147350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100912 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100912 target RNA into GAM100912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147350 target RNA into GAM147350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR302 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR302 gene: GAM100912 target protein and GAM147350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100912 and GAM147350

GR303 BG955624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 303(GR303) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR303 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR303 gene was detected is described hereinabove with reference to Figs. 8-18.

GR303 gene encodes GR303 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR303 precursor RNA folds spatially, forming GR303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR303 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR303 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17195 precursor RNA and GAM208234 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17195 RNA and GAM208234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17195 target RNA into GAM17195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208234 target RNA into GAM208234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR303 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR303 gene: GAM17195 target protein and GAM208234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17195 and GAM208234

GR304 BE562998 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 304(GR304) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR304 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR304 gene was detected is described hereinabove with reference to Figs. 8-18.

GR304 gene encodes GR304 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR304 precursor RNA folds spatially, forming GR304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR304 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR304 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM875 precursor RNA and GAM181937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM875 RNA and GAM181937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM875 target RNA into GAM875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181937 target RNA into GAM181937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR304 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR304 gene: GAM875 target protein and GAM181937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM875 and GAM181937

GR305 AA468231 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 305(GR305) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR305 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR305 gene was detected is described hereinabove with reference to Figs. 8-18.

GR305 gene encodes GR305 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR305 precursor RNA folds spatially, forming GR305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR305 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR305 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM52592 precursor RNA and GAM118251 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52592 RNA and GAM118251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52592 target RNA into GAM52592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118251 target RNA into GAM118251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR305 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR305 gene: GAM52592 target protein and GAM118251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52592 and GAM118251

GR306 AA112241 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 306(GR306) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR306 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR306 gene was detected is described hereinabove with reference to Figs. 8-18.

GR306 gene encodes GR306 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR306 precursor RNA folds spatially, forming GR306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR306 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR306 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5231 precursor RNA and GAM203954 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5231 RNA and GAM203954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5231 target RNA into GAM5231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203954 target RNA into GAM203954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR306 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR306 gene: GAM5231 target protein and GAM203954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5231 and GAM203954

GR307 BF908991 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 307(GR307) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR307 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR307 gene was detected is described hereinabove with reference to Figs. 8-18.

GR307 gene encodes GR307 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR307 precursor RNA folds spatially, forming GR307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR307 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR307 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162131 precursor RNA and GAM210816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162131 RNA and GAM210816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162131 target RNA into GAM162131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM210816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210816 target RNA into GAM210816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR307 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR307 gene: GAM162131 target protein and GAM210816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162131 and GAM210816

GR308 BI494139 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 308(GR308) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR308 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR308 gene was detected is described hereinabove with reference to Figs. 8-18.

GR308 gene encodes GR308 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR308 precursor RNA folds spatially, forming GR308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR308 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR308 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM117389 precursor RNA and GAM217982 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117389 RNA and GAM217982 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117389 target RNA into GAM117389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217982 target RNA into GAM217982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR308 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR308 gene: GAM117389 target protein and GAM217982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117389 and GAM217982

GR309 R18230 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 309(GR309) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR309 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR309 gene was detected is described hereinabove with reference to Figs. 8-18.

GR309 gene encodes GR309 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR309 precursor RNA folds spatially, forming GR309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR309 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR309 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM297092 precursor RNA and GAM299992 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM297092 RNA and GAM299992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM297092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297092 target RNA into GAM297092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299992 target RNA into GAM299992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR309 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR309 gene: GAM297092 target protein and GAM299992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM297092 and GAM299992

GR310 BM800842 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 310(GR310) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR310 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR310 gene was detected is described hereinabove with reference to Figs. 8-18.

GR310 gene encodes GR310 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR310 precursor RNA folds spatially, forming GR310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR310 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR310 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5240 precursor RNA, GAM178224 precursor RNA and GAM224565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5240 RNA, GAM178224 RNA and GAM224565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5240 target RNA into GAM5240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178224 target RNA into GAM178224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224565 target RNA into GAM224565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR310 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR310 gene: GAM5240 target protein, GAM178224 target protein and GAM224565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5240, GAM178224 and GAM224565

GR311 BM701962 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 311(GR311) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR311 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR311 gene was detected is described hereinabove with reference to Figs. 8-18.

GR311 gene encodes GR311 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR311 precursor RNA folds spatially, forming GR311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR311 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR311 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM58910 precursor RNA, GAM131927 precursor RNA, GAM147666 precursor RNA and GAM280455 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58910 RNA, GAM131927 RNA, GAM147666 RNA and

GAM280455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58910 target RNA into GAM58910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131927 target RNA into GAM131927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147666 target RNA into GAM147666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280455 target RNA into GAM280455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR311 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR311 gene: GAM58910 target protein, GAM131927 target protein, GAM147666 target protein and GAM280455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58910, GAM131927, GAM147666 and GAM280455

GR312 AI954450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 312(GR312) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR312 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR312 gene was detected is described hereinabove with reference to Figs. 8-18.

GR312 gene encodes GR312 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR312 precursor RNA folds spatially, forming GR312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR312 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR312 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM956 precursor RNA and GAM115950 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM956 RNA and GAM115950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM956 target RNA into GAM956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115950 target RNA into GAM115950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR312 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR312 gene: GAM956 target protein and GAM115950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM956 and GAM115950

GR313 BM018649 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 313(GR313) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR313 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR313 gene was detected is described hereinabove with reference to Figs. 8-18.

GR313 gene encodes GR313 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR313 precursor RNA folds spatially, forming GR313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR313 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR313 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6639 precursor RNA and GAM117935 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6639 RNA and GAM117935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6639 target RNA into GAM6639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117935 target RNA into GAM117935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR313 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR313 gene: GAM6639 target protein and GAM117935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6639 and GAM117935

GR314 AV760123 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 314(GR314) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR314 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR314 gene was detected is described hereinabove with reference to Figs. 8-18.

GR314 gene encodes GR314 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR314 precursor RNA folds spatially, forming GR314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR314 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR314 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM207757 precursor RNA and GAM246792 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM207757 RNA and GAM246792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM207757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207757 target RNA into GAM207757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246792 target RNA into GAM246792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR314 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR314 gene: GAM207757 target protein and GAM246792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM207757 and GAM246792

GR315 AW592034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 315(GR315) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR315 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR315 gene was detected is described hereinabove with reference to Figs. 8-18.

GR315 gene encodes GR315 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR315 precursor RNA folds spatially, forming GR315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR315 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR315 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5284 precursor RNA, GAM88556 precursor RNA, GAM240075 precursor RNA and GAM284376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5284 RNA, GAM88556 RNA, GAM240075 RNA and GAM284376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5284 target RNA into GAM5284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88556 target RNA into GAM88556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240075 target RNA into GAM240075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284376 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284376 target RNA into GAM284376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR315 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR315 gene: GAM5284 target protein, GAM88556 target protein, GAM240075 target protein and GAM284376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5284, GAM88556, GAM240075 and GAM284376

GR316 AW367899 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 316(GR316) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR316 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR316 gene was detected is described hereinabove with reference to Figs. 8-18.

GR316 gene encodes GR316 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR316 precursor RNA folds spatially, forming GR316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR316 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR316 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2308 precursor RNA and GAM259510 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2308 RNA and GAM259510 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2308 target RNA into GAM2308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259510 target RNA into GAM259510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR316 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR316 gene: GAM2308 target protein and GAM259510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2308 and GAM259510

GR317 AI174539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 317(GR317) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR317 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR317 gene was detected is described hereinabove with reference to Figs. 8-18.

GR317 gene encodes GR317 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR317 precursor RNA folds spatially, forming GR317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR317 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR317 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1321 precursor RNA, GAM2748 precursor RNA and GAM305474 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1321 RNA, GAM2748 RNA and GAM305474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1321 target RNA into GAM1321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2748 target RNA into GAM2748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305474 target RNA into GAM305474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR317 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR317 gene: GAM1321 target protein, GAM2748 target protein and GAM305474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1321, GAM2748 and

GR318 BI260726 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 318(GR318) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR318 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR318 gene was detected is described hereinabove with reference to Figs. 8-18.

GR318 gene encodes GR318 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR318 precursor RNA folds spatially, forming GR318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR318 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR318 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2304 precursor RNA, GAM5875 precursor RNA and GAM298319 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2304 RNA, GAM5875 RNA and GAM298319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2304 target RNA into GAM2304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5875 target RNA into GAM5875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298319 target RNA into GAM298319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR318 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR318 gene: GAM2304 target protein, GAM5875 target protein and GAM298319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2304, GAM5875 and GAM298319

GR319 BG938643 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 319(GR319) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR319 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR319 gene was detected is described hereinabove with reference to Figs. 8-18.

GR319 gene encodes GR319 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR319 precursor RNA folds spatially, forming GR319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR319 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR319 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR319 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29341 precursor RNA and GAM175875 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29341 RNA and GAM175875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29341 target RNA into GAM29341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175875 target RNA into GAM175875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR319 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR319 gene: GAM29341 target protein and GAM175875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29341 and GAM175875

GR320 BM127099 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 320(GR320) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR320 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR320 gene was detected is described hereinabove with reference to Figs. 8-18.

GR320 gene encodes GR320 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR320 precursor RNA folds spatially, forming GR320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR320 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR320 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8576 precursor RNA and GAM276847 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8576 RNA and GAM276847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8576 target RNA into GAM8576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276847 target RNA into GAM276847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR320 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR320 gene: GAM8576 target protein and GAM276847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8576 and GAM276847

GR321 F32040 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 321(GR321) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR321 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR321 gene was detected is described hereinabove with reference to Figs. 8-18.

GR321 gene encodes GR321 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR321 precursor RNA folds spatially, forming GR321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR321 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR321 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1257 precursor RNA and GAM215287 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1257 RNA and GAM215287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1257 target RNA into GAM1257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215287 target RNA into GAM215287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR321 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR321 gene: GAM1257 target protein and GAM215287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1257 and GAM215287

GR322 AW953181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 322(GR322) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR322 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR322 gene was detected is described hereinabove with reference to Figs. 8-18.

GR322 gene encodes GR322 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR322 precursor RNA folds spatially, forming GR322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR322 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR322 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6093 precursor RNA, GAM8379 precursor RNA and GAM117200 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6093 RNA, GAM8379 RNA and GAM117200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM6093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6093 target RNA into GAM6093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8379 target RNA into GAM8379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117200 target RNA into GAM117200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR322 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR322 gene: GAM6093 target protein, GAM8379 target protein and GAM117200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6093, GAM8379 and GAM117200

GR323 BI085090 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 323(GR323) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR323 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR323 gene was detected is described hereinabove with reference to Figs. 8-18.

GR323 gene encodes GR323 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR323 precursor RNA folds spatially, forming GR323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR323 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR323 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM127933 precursor RNA and GAM286818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127933 RNA and GAM286818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127933 target RNA into GAM127933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286818 target RNA into GAM286818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR323 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR323 gene: GAM127933 target protein and GAM286818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127933 and GAM286818

GR324 AW993251 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 324(GR324) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR324 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR324 gene was detected is described hereinabove with reference to Figs. 8-18.

GR324 gene encodes GR324 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR324 precursor RNA folds spatially, forming GR324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR324 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR324 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30687 precursor RNA and GAM37624 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30687 RNA and GAM37624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30687 target RNA into GAM30687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37624 target RNA into GAM37624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR324 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR324 gene: GAM30687 target protein and GAM37624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30687 and GAM37624

GR325 BI544767 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 325(GR325) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR325 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR325 gene was detected is described hereinabove with reference to Figs. 8-18.

GR325 gene encodes GR325 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR325 precursor RNA folds spatially, forming GR325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR325 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR325 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM227178 precursor RNA and GAM275341 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM227178 RNA and GAM275341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM227178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227178 target RNA into GAM227178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275341 target RNA into GAM275341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR325 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR325 gene: GAM227178 target protein and GAM275341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM227178 and GAM275341

GR326 BE740047 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 326(GR326) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR326 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR326 gene was detected is described hereinabove with reference to Figs. 8-18.

GR326 gene encodes GR326 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR326 precursor RNA folds spatially, forming GR326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR326 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR326 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4494 precursor RNA and GAM252148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4494 RNA and GAM252148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4494 target RNA into GAM4494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252148 target RNA into GAM252148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR326 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR326 gene: GAM4494 target protein and GAM252148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4494 and GAM252148

GR327 BM978781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 327(GR327) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR327 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR327 gene was detected is described hereinabove with reference to Figs. 8-18.

GR327 gene encodes GR327 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR327 precursor RNA folds spatially, forming GR327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR327 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR327 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7262 precursor RNA, GAM239781 precursor RNA, GAM249404 precursor RNA and GAM325168 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7262 RNA, GAM239781 RNA, GAM249404 RNA and GAM325168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7262 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7262 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7262 target RNA into GAM7262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239781 target RNA into GAM239781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249404 target RNA into GAM249404 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325168 target RNA into GAM325168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR327 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR327 gene: GAM7262 target protein, GAM239781 target protein, GAM249404 target protein and GAM325168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7262, GAM239781, GAM249404 and GAM325168

GR328 AI522155 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 328(GR328) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR328 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR328 gene was detected is described hereinabove with reference to Figs. 8-18.

GR328 gene encodes GR328 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR328 precursor RNA folds spatially, forming GR328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR328 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR328 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM516 precursor RNA, GAM2909 precursor RNA, GAM123643 precursor RNA and GAM264259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment,

corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM516 RNA, GAM2909 RNA, GAM123643 RNA and GAM264259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM516 target RNA into GAM516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2909 target RNA into GAM2909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123643 target RNA into GAM123643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264259 target RNA into GAM264259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR328 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR328 gene: GAM516 target protein, GAM2909 target protein, GAM123643 target protein and GAM264259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM516, GAM2909, GAM123643 and GAM264259

GR329 AV764584 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 329(GR329) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR329 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR329 gene was detected is described hereinabove with reference to Figs. 8-18.

GR329 gene encodes GR329 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR329 precursor RNA folds spatially, forming GR329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR329 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR329 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM183957 precursor RNA and GAM240231 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM183957 RNA and GAM240231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM183957 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183957 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183957 target RNA into GAM183957 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240231 target RNA into GAM240231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR329 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR329 gene: GAM183957 target protein and GAM240231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM183957 and GAM240231

GR330 H39531 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 330(GR330) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR330 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR330 gene was detected is described hereinabove with reference to Figs. 8-18.

GR330 gene encodes GR330 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR330 precursor RNA folds spatially, forming GR330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR330 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR330 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82575 precursor RNA and GAM113892 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82575 RNA and GAM113892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82575 target RNA into GAM82575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113892 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113892 target RNA into GAM113892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR330 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR330 gene: GAM82575 target protein and GAM113892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82575 and GAM113892

GR331 AI754458 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 331(GR331) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR331 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR331 gene was detected is described hereinabove with reference to Figs. 8-18.

GR331 gene encodes GR331 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR331 precursor RNA folds spatially, forming GR331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR331 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR331 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79665 precursor RNA and GAM82113 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79665 RNA and GAM82113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79665 target RNA into GAM79665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82113 target RNA into GAM82113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR331 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR331 gene: GAM79665 target protein and GAM82113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79665 and GAM82113

GR332 R51652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 332(GR332) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR332 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR332 gene was detected is described hereinabove with reference to Figs. 8-18.

GR332 gene encodes GR332 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR332 precursor RNA folds spatially, forming GR332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR332 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR332 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4750 precursor RNA and GAM8178 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4750 RNA and GAM8178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4750 target RNA into GAM4750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8178 target RNA into GAM8178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR332 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR332 gene: GAM4750 target protein and GAM8178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4750 and GAM8178

GR333 AW161289 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 333(GR333) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR333 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR333 gene was detected is described hereinabove with reference to Figs. 8-18.

GR333 gene encodes GR333 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR333 precursor RNA folds spatially, forming GR333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR333 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR333 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2301 precursor RNA and GAM4254 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2301 RNA and GAM4254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2301 target RNA into GAM2301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4254 target RNA into GAM4254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR333 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR333 gene: GAM2301 target protein and GAM4254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2301 and GAM4254

GR334 AW009898 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 334(GR334) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR334 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR334 gene was detected is described hereinabove with reference to Figs. 8-18.

GR334 gene encodes GR334 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR334 precursor RNA folds spatially, forming GR334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR334 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR334 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2890 precursor RNA and GAM281542 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2890 RNA and GAM281542 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2890 target RNA into GAM2890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281542 target RNA into GAM281542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR334 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR334 gene: GAM2890 target protein and GAM281542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2890 and GAM281542

GR335 BE613520 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 335(GR335) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR335 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR335 gene was detected is described hereinabove with reference to Figs. 8-18.

GR335 gene encodes GR335 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR335 precursor RNA folds spatially, forming GR335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR335 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR335 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1683 precursor RNA and GAM27186 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1683 RNA and GAM27186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1683 target RNA into GAM1683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27186 target RNA into GAM27186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR335 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR335 gene: GAM1683 target protein and GAM27186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1683 and GAM27186

GR336 AI334829 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 336(GR336) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR336 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR336 gene was detected is described hereinabove with reference to Figs. 8-18.

GR336 gene encodes GR336 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR336 precursor RNA folds spatially, forming GR336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR336 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR336 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2016 precursor RNA, GAM100153 precursor RNA, GAM126062 precursor RNA and GAM335021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2016 RNA, GAM100153 RNA, GAM126062 RNA and GAM335021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2016 target RNA into GAM2016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100153 target RNA into GAM100153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126062 target RNA into GAM126062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335021 target RNA into GAM335021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR336 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR336 gene: GAM2016 target protein, GAM100153 target protein, GAM126062 target protein and GAM335021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2016, GAM100153, GAM126062 and GAM335021

GR337 AW576169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 337(GR337) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR337 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR337 gene was detected is described hereinabove with reference to Figs. 8-18.

GR337 gene encodes GR337 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR337 precursor RNA folds spatially, forming GR337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR337 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR337 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM177878 precursor RNA and GAM299561 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177878 RNA and GAM299561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM177878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177878 target RNA into GAM177878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299561 target RNA into GAM299561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR337 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR337 gene: GAM177878 target protein and GAM299561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177878 and GAM299561

GR338 BM560517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 338(GR338) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR338 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR338 gene was detected is described hereinabove with reference to Figs. 8-18.

GR338 gene encodes GR338 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR338 precursor RNA folds spatially, forming GR338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR338 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR338 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5009 precursor RNA and GAM238085 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5009 RNA and GAM238085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5009 target RNA into GAM5009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238085 target RNA into GAM238085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR338 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR338 gene: GAM5009 target protein and GAM238085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5009 and GAM238085

GR339 BE244494 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 339(GR339) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR339 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR339 gene was detected is described hereinabove with reference to Figs. 8-18.

GR339 gene encodes GR339 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR339 precursor RNA folds spatially, forming GR339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR339 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR339 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2642 precursor RNA and GAM156251 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2642 RNA and GAM156251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2642 target RNA into GAM2642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156251

target RNA into GAM156251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR339 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR339 gene: GAM2642 target protein and GAM156251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2642 and GAM156251

GR340 BE280923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 340(GR340) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR340 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR340 gene was detected is described hereinabove with reference to Figs. 8-18.

GR340 gene encodes GR340 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR340 precursor RNA folds spatially, forming GR340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR340 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR340 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102763 precursor RNA and GAM247769 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102763 RNA and GAM247769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102763 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102763 target RNA into GAM102763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247769 target RNA into GAM247769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR340 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR340 gene: GAM102763 target protein and GAM247769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102763 and GAM247769

GR341 BM720796 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 341(GR341) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR341 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR341 gene was detected is described hereinabove with reference to Figs. 8-18.

GR341 gene encodes GR341 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR341 precursor RNA folds spatially, forming GR341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR341 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR341 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR341 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164731 precursor RNA and GAM206629 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164731 RNA and GAM206629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164731 target RNA into GAM164731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206629 target RNA into GAM206629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR341 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR341 gene: GAM164731 target protein and GAM206629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164731 and GAM206629

GR342 AW378524 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 342(GR342) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR342 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR342 gene was detected is described hereinabove with reference to Figs. 8-18.

GR342 gene encodes GR342 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR342 precursor RNA folds spatially, forming GR342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR342 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR342 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3565 precursor RNA and GAM35494 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3565 RNA and GAM35494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3565 target RNA into GAM3565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35494 target RNA into GAM35494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR342 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR342 gene: GAM3565 target protein and GAM35494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3565 and GAM35494

GR343 AU139202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 343(GR343) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR343 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR343 gene was detected is described hereinabove with reference to Figs. 8-18.

GR343 gene encodes GR343 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR343 precursor RNA folds spatially, forming GR343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR343 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR343 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM29345 precursor RNA, GAM80736 precursor RNA and GAM238618 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29345 RNA, GAM80736 RNA and GAM238618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29345 target RNA into GAM29345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80736 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80736 target RNA into GAM80736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238618 target RNA into GAM238618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR343 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR343 gene: GAM29345 target protein, GAM80736 target protein and GAM238618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29345, GAM80736 and GAM238618

GR344 AL038164 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 344(GR344) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR344 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR344 gene was detected is described hereinabove with reference to Figs. 8-18.

GR344 gene encodes GR344 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR344 precursor RNA folds spatially, forming GR344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR344 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR344 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM110761 precursor RNA and GAM335651 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110761 RNA and GAM335651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110761 target RNA into GAM110761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335651 target RNA into GAM335651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR344 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR344 gene: GAM110761 target protein and GAM335651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110761 and GAM335651

GR345 BG256086 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 345(GR345) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR345 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR345 gene was detected is described hereinabove with reference to Figs. 8-18.

GR345 gene encodes GR345 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR345 precursor RNA folds spatially, forming GR345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR345 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR345 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3420 precursor RNA, GAM183553 precursor RNA and GAM186338 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3420 RNA, GAM183553 RNA and GAM186338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3420 target RNA into GAM3420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183553 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183553 target RNA into GAM183553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186338 target RNA into GAM186338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR345 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR345 gene: GAM3420 target protein, GAM183553 target protein and GAM186338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3420, GAM183553 and GAM186338

GR346 BI859829 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 346(GR346) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR346 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR346 gene was detected is described hereinabove with reference to Figs. 8-18.

GR346 gene encodes GR346 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR346 precursor RNA folds spatially, forming GR346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR346 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR346 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM136234 precursor RNA and GAM154565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM136234 RNA and GAM154565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM136234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136234 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136234 target RNA into GAM136234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154565 target RNA into GAM154565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR346 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR346 gene: GAM136234 target protein and GAM154565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM136234 and GAM154565

GR347 AW962707 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 347(GR347) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR347 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR347 gene was detected is described hereinabove with reference to Figs. 8-18.

GR347 gene encodes GR347 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR347 precursor RNA folds spatially, forming GR347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR347 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR347 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM103559 precursor RNA and GAM209283 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103559 RNA and GAM209283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103559 target RNA into GAM103559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209283 target RNA into GAM209283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR347 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR347 gene: GAM103559 target protein and GAM209283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103559 and GAM209283

GR348 BI520522 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 348(GR348) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR348 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR348 gene was detected is described hereinabove with reference to Figs. 8-18.

GR348 gene encodes GR348 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR348 precursor RNA folds spatially, forming GR348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR348 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR348 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25332 precursor RNA and GAM85795 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25332 RNA and GAM85795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25332 target RNA into GAM25332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85795 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85795 target RNA into GAM85795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR348 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR348 gene: GAM25332 target protein and GAM85795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25332 and GAM85795

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 349(GR349) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR349 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR349 gene was detected is described hereinabove with reference to Figs. 8-18.

GR349 gene encodes GR349 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR349 precursor RNA folds spatially, forming GR349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR349 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR349 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM197462 precursor RNA, GAM221871 precursor RNA and GAM225848 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM197462 RNA, GAM221871 RNA and GAM225848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM197462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197462 target RNA into GAM197462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221871 target RNA into GAM221871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225848 target RNA into GAM225848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR349 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR349 gene: GAM197462 target protein, GAM221871 target protein and GAM225848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM197462, GAM221871 and GAM225848

GR350 BG533036 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 350(GR350) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR350 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR350 gene was detected is described hereinabove with reference to Figs. 8-18.

GR350 gene encodes GR350 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR350 precursor RNA folds spatially, forming GR350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR350 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR350 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM64663 precursor RNA, GAM77804 precursor RNA and GAM168160 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64663 RNA, GAM77804 RNA and GAM168160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64663 target RNA into GAM64663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77804 target RNA into GAM77804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168160 target RNA into GAM168160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR350 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR350 gene: GAM64663 target protein, GAM77804 target protein and GAM168160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64663, GAM77804 and GAM168160

GR351 BE300162 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 351(GR351) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR351 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR351 gene was detected is described hereinabove with reference to Figs. 8-18.

GR351 gene encodes GR351 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR351 precursor RNA folds spatially, forming GR351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR351 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR351 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3606 precursor RNA and GAM198605 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3606 RNA and GAM198605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3606 target RNA into GAM3606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198605 target RNA into GAM198605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR351 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR351 gene: GAM3606 target protein and GAM198605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3606 and GAM198605

GR352 BG106414 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 352(GR352) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR352 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR352 gene was detected is described hereinabove with reference to Figs. 8-18.

GR352 gene encodes GR352 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR352 precursor RNA folds spatially, forming GR352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR352 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR352 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM141317 precursor RNA and GAM186097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM141317 RNA and GAM186097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM141317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141317 target RNA into GAM141317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186097 target RNA into GAM186097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR352 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR352 gene: GAM141317 target protein and GAM186097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM141317 and GAM186097

GR353 H50674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 353(GR353) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR353 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR353 gene was detected is described hereinabove with reference to Figs. 8-18.

GR353 gene encodes GR353 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR353 precursor RNA folds spatially, forming GR353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR353 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR353 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50167 precursor RNA and GAM78674 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50167 RNA and GAM78674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50167 target RNA into GAM50167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78674 target RNA into GAM78674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR353 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR353 gene: GAM50167 target protein and GAM78674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50167 and GAM78674

GR354 BE018230 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 354(GR354) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR354 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR354 gene was detected is described hereinabove with reference to Figs. 8-18.

GR354 gene encodes GR354 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR354 precursor RNA folds spatially, forming GR354 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR354 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR354 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5550 precursor RNA, GAM215601 precursor RNA and GAM287968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5550 RNA, GAM215601 RNA and GAM287968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5550 target RNA into GAM5550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215601 target RNA into GAM215601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287968 target RNA into GAM287968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR354 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR354 gene: GAM5550 target protein, GAM215601 target protein and GAM287968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5550, GAM215601 and GAM287968

GR355 BE253239 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 355(GR355) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR355 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR355 gene was detected is described hereinabove with reference to Figs. 8-18.

GR355 gene encodes GR355 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR355 precursor RNA folds spatially, forming GR355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR355 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR355 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4982 precursor RNA, GAM8327 precursor RNA, GAM60577 precursor RNA and GAM112225 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4982 RNA, GAM8327 RNA, GAM60577 RNA and GAM112225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4982 target RNA into GAM4982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8327 target RNA into GAM8327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60577 target RNA into GAM60577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112225 target RNA into GAM112225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR355 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR355 gene: GAM4982 target protein, GAM8327 target protein, GAM60577 target protein and GAM112225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4982, GAM8327, GAM60577 and GAM112225

GR356 N77076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 356(GR356) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR356 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR356 gene was detected is described hereinabove with reference to Figs. 8-18.

GR356 gene encodes GR356 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR356 precursor RNA folds spatially, forming GR356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR356 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR356 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74630 precursor RNA and GAM327494 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74630 RNA and GAM327494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74630 target RNA into GAM74630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327494 target RNA into GAM327494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR356 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR356 gene: GAM74630 target protein and GAM327494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74630 and GAM327494

GR357 BG924635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 357(GR357) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR357 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR357 gene was detected is described hereinabove with reference to Figs. 8-18.

GR357 gene encodes GR357 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR357 precursor RNA folds spatially, forming GR357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR357 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR357 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25503 precursor RNA and GAM214281 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25503 RNA and GAM214281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25503 target RNA into GAM25503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214281 target RNA into GAM214281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR357 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR357 gene: GAM25503 target protein and GAM214281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25503 and GAM214281

GR358 BI836207 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 358(GR358) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR358 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR358 gene was detected is described hereinabove with reference to Figs. 8-18.

GR358 gene encodes GR358 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR358 precursor RNA folds spatially, forming GR358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR358 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR358 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6210 precursor RNA and GAM241117 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6210 RNA and GAM241117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6210 target RNA into GAM6210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241117 target RNA into GAM241117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR358 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR358 gene: GAM6210 target protein and GAM241117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6210 and GAM241117

GR359 BM152694 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 359(GR359) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR359 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR359 gene was detected is described hereinabove with reference to Figs. 8-18.

GR359 gene encodes GR359 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR359 precursor RNA folds spatially, forming GR359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR359 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR359 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM79183 precursor RNA, GAM85244 precursor RNA and GAM123434 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79183 RNA, GAM85244 RNA and GAM123434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79183 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79183 target RNA into GAM79183 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85244 target RNA into GAM85244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123434 target RNA into GAM123434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR359 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR359 gene: GAM79183 target protein, GAM85244 target protein and GAM123434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79183, GAM85244 and GAM123434

GR360 AI970597 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 360(GR360) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR360 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR360 gene was detected is described hereinabove with reference to Figs. 8-18.

GR360 gene encodes GR360 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR360 precursor RNA folds spatially, forming GR360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR360 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR360 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1175 precursor RNA, GAM189655 precursor RNA and GAM275946 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1175 RNA, GAM189655 RNA and GAM275946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1175 target RNA into GAM1175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189655 target RNA into GAM189655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275946 target RNA into GAM275946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR360 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR360 gene: GAM1175 target protein, GAM189655 target protein and GAM275946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1175, GAM189655 and GAM275946

GR361 BE896634 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 361(GR361) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR361 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR361 gene was detected is described hereinabove with reference to Figs. 8-18.

GR361 gene encodes GR361 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR361 precursor RNA folds spatially, forming GR361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR361 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR361 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM748 precursor RNA, GAM5743 precursor RNA and

GAM97930 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM748 RNA, GAM5743 RNA and GAM97930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM748 target RNA into GAM748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5743 target RNA into GAM5743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97930 target RNA into GAM97930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR361 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR361 gene: GAM748 target protein, GAM5743 target protein and GAM97930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM748, GAM5743 and GAM97930

GR362 BE617773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 362(GR362) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR362 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR362 gene was detected is described hereinabove with reference to Figs. 8-18.

GR362 gene encodes GR362 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR362 precursor RNA folds spatially, forming GR362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR362 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR362 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132101 precursor RNA and GAM242896 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132101 RNA and GAM242896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132101 target RNA into GAM132101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242896 target RNA into GAM242896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR362 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR362 gene: GAM132101 target protein and GAM242896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132101 and GAM242896

GR363 BG473291 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 363(GR363) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR363 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR363 gene was detected is described hereinabove with reference to Figs. 8-18.

GR363 gene encodes GR363 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR363 precursor RNA folds spatially, forming GR363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR363 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR363 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM3861 precursor RNA, GAM66173 precursor RNA, GAM87036 precursor RNA, GAM99625 precursor RNA and GAM233010 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3861 RNA, GAM66173 RNA, GAM87036 RNA, GAM99625 RNA and GAM233010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3861 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3861 target RNA into GAM3861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66173 target RNA into GAM66173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87036 target RNA into GAM87036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99625 target RNA into GAM99625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233010 target RNA into GAM233010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR363 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR363 gene: GAM3861 target protein, GAM66173 target protein, GAM87036 target protein, GAM99625 target protein and GAM233010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3861, GAM66173, GAM87036, GAM99625 and GAM233010

GR364 BM789358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

364(GR364) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR364 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR364 gene was detected is described hereinabove with reference to Figs. 8-18.

GR364 gene encodes GR364 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR364 precursor RNA folds spatially, forming GR364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR364 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR364 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3761 precursor RNA and GAM112917 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3761 RNA and GAM112917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3761 target RNA into GAM3761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112917 target RNA into GAM112917 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR364 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR364 gene: GAM3761 target protein and GAM112917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3761 and GAM112917

GR365 BF924409 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 365(GR365) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR365 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR365 gene was detected is described hereinabove with reference to Figs. 8-18.

GR365 gene encodes GR365 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR365 precursor RNA folds spatially, forming GR365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR365 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR365 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4317 precursor RNA and GAM208688 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4317 RNA and GAM208688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4317 target RNA into GAM4317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208688 target RNA into GAM208688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR365 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR365 gene: GAM4317 target protein and GAM208688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4317 and GAM208688

GR366 BG719962 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 366(GR366) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR366 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR366 gene was detected is described hereinabove with reference to Figs. 8-18.

GR366 gene encodes GR366 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR366 precursor RNA folds spatially, forming GR366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR366 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR366 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM96603 precursor RNA and GAM164417 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96603 RNA and GAM164417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96603 target RNA into GAM96603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164417 target RNA into GAM164417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR366 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR366 gene: GAM96603 target protein and GAM164417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96603 and GAM164417

GR367 AA568890 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 367(GR367) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR367 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR367 gene was detected is described hereinabove with reference to Figs. 8-18.

GR367 gene encodes GR367 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR367 precursor RNA folds spatially, forming GR367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR367 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR367 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1077 precursor RNA and GAM30408 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1077 RNA and GAM30408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1077 target RNA into GAM1077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30408 target RNA into GAM30408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR367 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR367 gene: GAM1077 target protein and GAM30408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1077 and GAM30408

GR368 AL713358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 368(GR368) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR368 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR368 gene was detected is described hereinabove with reference to Figs. 8-18.

GR368 gene encodes GR368 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR368 precursor RNA folds spatially, forming GR368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR368 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR368 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM142133 precursor RNA and GAM246630 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142133 RNA and GAM246630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142133 target RNA into GAM142133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246630 target RNA into GAM246630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR368 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR368 gene: GAM142133 target protein and GAM246630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142133 and GAM246630

GR369 BF676344 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 369(GR369) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR369 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR369 gene was detected is described hereinabove with reference to Figs. 8-18.

GR369 gene encodes GR369 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR369 precursor RNA folds spatially, forming GR369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR369 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR369 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM63248 precursor RNA, GAM117834 precursor RNA, GAM169501 precursor RNA and GAM274428 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63248 RNA, GAM117834 RNA, GAM169501 RNA and GAM274428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63248 target RNA into GAM63248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117834 target RNA into GAM117834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169501 target RNA into GAM169501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274428 target RNA into GAM274428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR369 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR369 gene: GAM63248 target protein, GAM117834 target protein, GAM169501 target protein and GAM274428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63248, GAM117834, GAM169501 and GAM274428

GR370 BI056822 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 370(GR370) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR370 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR370 gene was detected is described hereinabove with reference to Figs. 8-18.

GR370 gene encodes GR370 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR370 precursor RNA folds spatially, forming GR370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR370 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR370 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM273221 precursor RNA and GAM309387 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM273221 RNA and GAM309387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM273221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273221 target RNA into GAM273221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309387 target RNA into GAM309387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR370 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR370 gene: GAM273221 target protein and GAM309387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM273221 and GAM309387

GR371 BQ025657 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 371(GR371) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR371 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR371 gene was detected is described hereinabove with reference to Figs. 8-18.

GR371 gene encodes GR371 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR371 precursor RNA folds spatially, forming GR371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR371 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR371 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1425 precursor RNA, GAM107443 precursor RNA and GAM260246 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1425 RNA, GAM107443 RNA and GAM260246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1425 target RNA into GAM1425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107443 target RNA into GAM107443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260246 target RNA into GAM260246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR371 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR371 gene: GAM1425 target protein, GAM107443 target protein and GAM260246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1425, GAM107443 and GAM260246

GR372 BI253608 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 372(GR372) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR372 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR372 gene was detected is described hereinabove with reference to Figs. 8-18.

GR372 gene encodes GR372 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR372 precursor RNA folds spatially, forming GR372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR372 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR372 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5056 precursor RNA, GAM86848 precursor RNA and GAM315042 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5056 RNA, GAM86848 RNA and GAM315042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5056 target RNA into GAM5056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86848 target RNA into GAM86848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315042 target RNA into GAM315042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR372 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR372 gene: GAM5056 target protein, GAM86848 target protein and GAM315042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM5056, GAM86848 and GAM315042

GR373 AA662368 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 373(GR373) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR373 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR373 gene was detected is described hereinabove with reference to Figs. 8-18.

GR373 gene encodes GR373 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR373 precursor RNA folds spatially, forming GR373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR373 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR373 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6004 precursor RNA and GAM251417 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6004 RNA and GAM251417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6004 target RNA into GAM6004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM251417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251417 target RNA into GAM251417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR373 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR373 gene: GAM6004 target protein and GAM251417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6004 and GAM251417

GR374 BG184221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 374(GR374) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR374 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR374 gene was detected is described hereinabove with reference to Figs. 8-18.

GR374 gene encodes GR374 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR374 precursor RNA folds spatially, forming GR374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR374 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR374 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM417 precursor RNA, GAM107394 precursor RNA and GAM319389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM417 RNA, GAM107394 RNA and GAM319389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM417 target RNA into GAM417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107394 target RNA into GAM107394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319389 target RNA into GAM319389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR374 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR374 gene: GAM417 target protein, GAM107394 target protein and GAM319389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM417, GAM107394 and GAM319389

GR375 BF840317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 375(GR375) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR375 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR375 gene was detected is described hereinabove with reference to Figs. 8-18.

GR375 gene encodes GR375 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR375 precursor RNA folds spatially, forming GR375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR375 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR375 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93679 precursor RNA and GAM222885 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93679 RNA and GAM222885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93679 target RNA into GAM93679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222885 target RNA into GAM222885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR375 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR375 gene: GAM93679 target protein and GAM222885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM93679 and GAM222885

GR376 BE767761 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 376(GR376) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR376 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR376 gene was detected is described hereinabove with reference to Figs. 8-18.

GR376 gene encodes GR376 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR376 precursor RNA folds spatially, forming GR376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR376 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR376 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4120 precursor RNA, GAM77563 precursor RNA and GAM202294 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4120 RNA, GAM77563 RNA and GAM202294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4120 target RNA into GAM4120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM77563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77563 target RNA into GAM77563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202294 target RNA into GAM202294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR376 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR376 gene: GAM4120 target protein, GAM77563 target protein and GAM202294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4120, GAM77563 and GAM202294

GR377 AW051432 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 377(GR377) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR377 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR377 gene was detected is described hereinabove with reference to Figs. 8-18.

GR377 gene encodes GR377 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR377 precursor RNA folds spatially, forming GR377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR377 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR377 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR377 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9428 precursor RNA and GAM139084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9428 RNA and GAM139084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9428 target RNA into GAM9428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139084 target RNA into GAM139084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR377 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR377 gene: GAM9428 target protein and GAM139084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9428 and GAM139084

GR378 BE698957 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 378(GR378) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR378 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR378 gene was detected is described hereinabove with reference to Figs. 8-18.

GR378 gene encodes GR378 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR378 precursor RNA folds spatially, forming GR378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR378 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR378 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29201 precursor RNA and GAM32590 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29201 RNA and GAM32590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29201 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29201 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29201 target RNA into GAM29201 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32590 target RNA into GAM32590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR378 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR378 gene: GAM29201 target protein and GAM32590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29201 and GAM32590

GR379 BG194310 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 379(GR379) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR379 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR379 gene was detected is described hereinabove with reference to Figs. 8-18.

GR379 gene encodes GR379 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR379 precursor RNA folds spatially, forming GR379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR379 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR379 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM272 precursor RNA and GAM142587 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM272 RNA and GAM142587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272 target RNA into GAM272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142587 target RNA into GAM142587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR379 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR379 gene: GAM272 target protein and GAM142587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM272 and GAM142587

GR380 BI869786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 380(GR380) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR380 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR380 gene was detected is described hereinabove with reference to Figs. 8-18.

GR380 gene encodes GR380 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR380 precursor RNA folds spatially, forming GR380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR380 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR380 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58547 precursor RNA and GAM116686 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58547 RNA and GAM116686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58547 target RNA into GAM58547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116686 target RNA into GAM116686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR380 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR380 gene: GAM58547 target protein and GAM116686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58547 and GAM116686

GR381 BI549335 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 381(GR381) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR381 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR381 gene was detected is described hereinabove with reference to Figs. 8-18.

GR381 gene encodes GR381 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR381 precursor RNA folds spatially, forming GR381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR381 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR381 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1419 precursor RNA, GAM1492 precursor RNA and GAM140841 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1419 RNA, GAM1492 RNA and GAM140841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1419 target RNA into GAM1419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1492 target RNA into GAM1492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140841 target RNA into GAM140841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR381 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR381 gene: GAM1419 target protein, GAM1492 target protein and GAM140841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1419, GAM1492 and GAM140841

GR382 H65415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 382(GR382) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR382 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR382 gene was detected is described hereinabove with reference to Figs. 8-18.

GR382 gene encodes GR382 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR382 precursor RNA folds spatially, forming GR382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR382 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR382 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3485 precursor RNA and GAM99948 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3485 RNA and GAM99948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3485 target RNA into GAM3485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99948 target RNA into GAM99948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR382 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR382 gene: GAM3485 target protein and GAM99948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3485 and GAM99948

GR383 AA731995 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 383(GR383) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR383 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR383 gene was detected is described hereinabove with reference to Figs. 8-18.

GR383 gene encodes GR383 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR383 precursor RNA folds spatially, forming GR383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR383 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR383 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM184277 precursor RNA and GAM336111 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM184277 RNA and GAM336111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM184277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184277 target RNA into GAM184277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336111 target RNA into GAM336111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR383 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR383 gene: GAM184277 target protein and GAM336111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM184277 and GAM336111

GR384 BE970909 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 384(GR384) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR384 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR384 gene was detected is described hereinabove with reference to Figs. 8-18.

GR384 gene encodes GR384 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR384 precursor RNA folds spatially, forming GR384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR384 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR384 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1856 precursor RNA, GAM95898 precursor RNA and GAM217504 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1856 RNA, GAM95898 RNA and GAM217504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1856 target RNA into GAM1856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95898 target RNA into GAM95898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217504 target RNA into GAM217504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR384 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR384 gene: GAM1856 target protein, GAM95898 target protein and GAM217504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1856, GAM95898 and GAM217504

GR385 BF365234 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 385(GR385) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR385 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR385 gene was detected is described hereinabove with reference to Figs. 8-18.

GR385 gene encodes GR385 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR385 precursor RNA folds spatially, forming GR385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR385 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR385 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM902 precursor RNA, GAM4409 precursor RNA and GAM269683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM902 RNA, GAM4409 RNA and GAM269683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM902 target RNA into GAM902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4409 target RNA into GAM4409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269683 target RNA into GAM269683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR385 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR385 gene: GAM902 target protein, GAM4409 target protein and GAM269683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM902, GAM4409 and GAM269683

GR386 AI859317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 386(GR386) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR386 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR386 gene was detected is described hereinabove with reference to Figs. 8-18.

GR386 gene encodes GR386 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR386 precursor RNA folds spatially, forming GR386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR386 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR386 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178218 precursor RNA and GAM219971 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178218 RNA and GAM219971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178218 target RNA into GAM178218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219971 target RNA into GAM219971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR386 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR386 gene: GAM178218 target protein and GAM219971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178218 and GAM219971

GR387 AW833633 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 387(GR387) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR387 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR387 gene was detected is described hereinabove with reference to Figs. 8-18.

GR387 gene encodes GR387 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR387 precursor RNA folds spatially, forming GR387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR387 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR387 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6775 precursor RNA, GAM10948 precursor RNA and GAM31098 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6775 RNA, GAM10948 RNA and GAM31098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6775 target RNA into GAM6775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM10948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10948 target RNA into GAM10948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31098 target RNA into GAM31098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR387 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR387 gene: GAM6775 target protein, GAM10948 target protein and GAM31098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6775, GAM10948 and GAM31098

GR388 BF976807 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 388(GR388) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR388 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR388 gene was detected is described hereinabove with reference to Figs. 8-18.

GR388 gene encodes GR388 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR388 precursor RNA folds spatially, forming GR388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR388 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR388 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54082 precursor RNA and GAM60492 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54082 RNA and GAM60492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54082 target RNA into GAM54082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60492 target RNA into GAM60492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR388 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR388 gene: GAM54082 target protein and GAM60492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54082 and GAM60492

GR389 BQ064188 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 389(GR389) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR389 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR389 gene was detected is described hereinabove with reference to Figs. 8-18.

GR389 gene encodes GR389 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR389 precursor RNA folds spatially, forming GR389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR389 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR389 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98485 precursor RNA and GAM243645 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98485 RNA and GAM243645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98485 target RNA into GAM98485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243645 target RNA into GAM243645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR389 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR389 gene: GAM98485 target protein and GAM243645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98485 and GAM243645

GR390 BG875240 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 390(GR390) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR390 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR390 gene was detected is described hereinabove with reference to Figs. 8-18.

GR390 gene encodes GR390 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR390 precursor RNA folds spatially, forming GR390 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR390 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR390 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM135546 precursor RNA and GAM253357 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM135546 RNA and GAM253357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM135546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135546 target RNA into GAM135546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253357 target RNA into GAM253357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR390 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR390 gene: GAM135546 target protein and GAM253357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM135546 and GAM253357

GR391 AL702347 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 391(GR391) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR391 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR391 gene was detected is described hereinabove with reference to Figs. 8-18.

GR391 gene encodes GR391 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR391 precursor RNA folds spatially, forming GR391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR391 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR391 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2599 precursor RNA and GAM249443 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2599 RNA and GAM249443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2599 target RNA into GAM2599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249443 target RNA into GAM249443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR391 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR391 gene: GAM2599 target protein and GAM249443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2599 and GAM249443

GR392 AA987361 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 392(GR392) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR392 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR392 gene was detected is described hereinabove with reference to Figs. 8-18.

GR392 gene encodes GR392 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR392 precursor RNA folds spatially, forming GR392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR392 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR392 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7298 precursor RNA and GAM299002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7298 RNA and GAM299002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7298 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7298 target RNA into GAM7298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299002 target RNA into GAM299002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR392 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR392 gene: GAM7298 target protein and GAM299002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7298 and GAM299002

GR393 BF805894 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 393(GR393) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR393 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR393 gene was detected is described hereinabove with reference to Figs. 8-18.

GR393 gene encodes GR393 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR393 precursor RNA folds spatially, forming GR393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR393 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR393 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4817 precursor RNA and GAM211976 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4817 RNA and GAM211976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4817 target RNA into GAM4817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211976 target RNA into GAM211976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR393 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR393 gene: GAM4817 target protein and GAM211976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4817 and GAM211976

GR394 AI339483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 394(GR394) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR394 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR394 gene was detected is described hereinabove with reference to Figs. 8-18.

GR394 gene encodes GR394 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR394 precursor RNA folds spatially, forming GR394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR394 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR394 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5271 precursor RNA, GAM176785 precursor RNA and GAM255960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5271 RNA, GAM176785 RNA and GAM255960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5271 target RNA into GAM5271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176785 target RNA into GAM176785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255960 target RNA into GAM255960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR394 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR394 gene: GAM5271 target protein, GAM176785 target protein and GAM255960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5271, GAM176785 and GAM255960

GR395 BG000084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 395(GR395) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR395 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR395 gene was detected is described hereinabove with reference to Figs. 8-18.

GR395 gene encodes GR395 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR395 precursor RNA folds spatially, forming GR395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR395 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR395 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM720 precursor RNA, GAM154578 precursor RNA and GAM270303 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM720 RNA, GAM154578 RNA and GAM270303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM720 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM720 target RNA into GAM720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154578 target RNA into GAM154578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270303 target RNA into GAM270303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR395 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR395 gene: GAM720 target protein, GAM154578 target protein and GAM270303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM720, GAM154578 and GAM270303

GR396 BM561827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 396(GR396) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR396 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR396 gene was detected is described hereinabove with reference to Figs. 8-18.

GR396 gene encodes GR396 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR396 precursor RNA folds spatially, forming GR396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR396 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR396 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM47233 precursor RNA, GAM62780 precursor RNA, GAM96650 precursor RNA and GAM139850 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47233 RNA, GAM62780 RNA, GAM96650 RNA and GAM139850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47233 target RNA into GAM47233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62780 target RNA into GAM62780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96650 target RNA into GAM96650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139850

target RNA into GAM139850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR396 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR396 gene: GAM47233 target protein, GAM62780 target protein, GAM96650 target protein and GAM139850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47233, GAM62780, GAM96650 and GAM139850

GR397 AW805620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 397(GR397) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR397 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR397 gene was detected is described hereinabove with reference to Figs. 8-18.

GR397 gene encodes GR397 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR397 precursor RNA folds spatially, forming GR397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR397 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR397 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM77463 precursor RNA and GAM236599 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77463 RNA and GAM236599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77463 target RNA into GAM77463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236599 target RNA into GAM236599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR397 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR397 gene: GAM77463 target protein and GAM236599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77463 and GAM236599

GR398 BI192816 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 398(GR398) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR398 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR398 gene was detected is described hereinabove with reference to Figs. 8-18.

GR398 gene encodes GR398 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR398 precursor RNA folds spatially, forming GR398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR398 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR398 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM870 precursor RNA, GAM168716 precursor RNA, GAM250720 precursor RNA and GAM314129 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM870 RNA, GAM168716 RNA, GAM250720 RNA and GAM314129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM870 target RNA into GAM870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168716 target RNA into GAM168716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250720 target RNA into GAM250720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314129 target RNA into GAM314129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR398 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR398 gene: GAM870 target protein, GAM168716 target protein, GAM250720 target protein and GAM314129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM870, GAM168716, GAM250720 and GAM314129

GR399 BE185770 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 399(GR399) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR399 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR399 gene was detected is described hereinabove with reference to Figs. 8-18.

GR399 gene encodes GR399 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR399 precursor RNA folds spatially, forming GR399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR399 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR399 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57785 precursor RNA and GAM246377 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57785 RNA and GAM246377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57785

target RNA into GAM57785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246377 target RNA into GAM246377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR399 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR399 gene: GAM57785 target protein and GAM246377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57785 and GAM246377

GR400 BF349726 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 400(GR400) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR400 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR400 gene was detected is described hereinabove with reference to Figs. 8-18.

GR400 gene encodes GR400 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR400 precursor RNA folds spatially, forming GR400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR400 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR400 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM77865 precursor RNA and GAM139867 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77865 RNA and GAM139867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77865 target RNA into GAM77865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139867 target RNA into GAM139867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR400 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR400 gene: GAM77865 target protein and GAM139867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77865 and GAM139867

GR401 BM969107 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 401(GR401) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR401 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR401 gene was detected is described hereinabove with reference to Figs. 8-18.

GR401 gene encodes GR401 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR401 precursor RNA folds spatially, forming GR401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR401

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR401 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM447 precursor RNA, GAM288472 precursor RNA and GAM290854 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM447 RNA, GAM288472 RNA and GAM290854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM447 target RNA into GAM447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288472 target RNA into GAM288472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290854 target RNA into GAM290854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR401 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR401 gene: GAM447 target

protein, GAM288472 target protein and GAM290854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM447, GAM288472 and GAM290854

GR402 AV654785 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 402(GR402) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR402 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR402 gene was detected is described hereinabove with reference to Figs. 8-18.

GR402 gene encodes GR402 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR402 precursor RNA folds spatially, forming GR402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR402 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR402 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5408 precursor RNA, GAM7493 precursor RNA and GAM192720 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5408 RNA, GAM7493 RNA and GAM192720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5408 target RNA into

GAM5408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7493 target RNA into GAM7493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192720 target RNA into GAM192720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR402 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR402 gene: GAM5408 target protein, GAM7493 target protein and GAM192720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5408, GAM7493 and GAM192720

GR403 BM765876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 403(GR403) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR403 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR403 gene was detected is described hereinabove with reference to Figs. 8-18.

GR403 gene encodes GR403 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR403 precursor RNA folds spatially, forming GR403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR403 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR403 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1241 precursor RNA, GAM1796 precursor RNA and GAM163517 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1241 RNA, GAM1796 RNA and GAM163517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1241 target RNA into GAM1241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1796 target RNA into GAM1796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163517 target RNA into GAM163517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR403 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR403 gene: GAM1241 target protein, GAM1796 target protein and GAM163517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1241, GAM1796 and

GAM163517

GR404 AI671192 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 404(GR404) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR404 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR404 gene was detected is described hereinabove with reference to Figs. 8-18.

GR404 gene encodes GR404 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR404 precursor RNA folds spatially, forming GR404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR404 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR404 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM126903 precursor RNA, GAM156225 precursor RNA and GAM206417 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126903 RNA, GAM156225 RNA and GAM206417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126903 target RNA into GAM126903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM156225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156225 target RNA into GAM156225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206417 target RNA into GAM206417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR404 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR404 gene: GAM126903 target protein, GAM156225 target protein and GAM206417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126903, GAM156225 and GAM206417

GR405 AA524062 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 405(GR405) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR405 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR405 gene was detected is described hereinabove with reference to Figs. 8-18.

GR405 gene encodes GR405 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR405 precursor RNA folds spatially, forming GR405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR405 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR405 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR405 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7385 precursor RNA and GAM289494 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7385 RNA and GAM289494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7385 target RNA into GAM7385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289494 target RNA into GAM289494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR405 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR405 gene: GAM7385 target protein and GAM289494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7385 and GAM289494

GR406 BF671360 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 406(GR406) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR406 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR406 gene was detected is described hereinabove with reference to Figs. 8-18.

GR406 gene encodes GR406 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR406 precursor RNA folds spatially, forming GR406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR406 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR406 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31399 precursor RNA and GAM230512 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31399 RNA and GAM230512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31399 target RNA into GAM31399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230512 target RNA into GAM230512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR406 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR406 gene: GAM31399 target protein and GAM230512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31399 and GAM230512

GR407 BG394189 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 407(GR407) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR407 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR407 gene was detected is described hereinabove with reference to Figs. 8-18.

GR407 gene encodes GR407 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR407 precursor RNA folds spatially, forming GR407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR407 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR407 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM614 precursor RNA and GAM277757 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM614 RNA and GAM277757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM614 target RNA into GAM614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277757 target RNA into GAM277757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR407 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR407 gene: GAM614 target protein and GAM277757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM614 and GAM277757

GR408 AI014529 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 408(GR408) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR408 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR408 gene was detected is described hereinabove with reference to Figs. 8-18.

GR408 gene encodes GR408 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR408 precursor RNA folds spatially, forming GR408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR408 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR408 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50070 precursor RNA and GAM184264 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50070 RNA and GAM184264 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50070 target RNA into GAM50070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184264 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184264 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184264 target RNA into GAM184264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR408 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR408 gene: GAM50070 target protein and GAM184264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50070 and GAM184264

GR409 BI907983 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 409(GR409) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR409 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR409 gene was detected is described hereinabove with reference to Figs. 8-18.

GR409 gene encodes GR409 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR409 precursor RNA folds spatially, forming GR409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR409 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR409 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49602 precursor RNA and GAM148366 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49602 RNA and GAM148366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49602 target RNA into GAM49602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148366 target RNA into GAM148366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR409 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR409 gene: GAM49602 target protein and GAM148366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49602 and GAM148366

GR410 AA743128 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 410(GR410) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR410 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR410 gene was detected is described hereinabove with reference to Figs. 8-18.

GR410 gene encodes GR410 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR410 precursor RNA folds spatially, forming GR410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR410 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR410 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM51147 precursor RNA and GAM273570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51147 RNA and GAM273570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51147 target RNA into GAM51147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273570 target RNA into GAM273570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR410 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR410 gene: GAM51147 target protein and GAM273570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51147 and GAM273570

GR411 BE393483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 411(GR411) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR411 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR411 gene was detected is described hereinabove with reference to Figs. 8-18.

GR411 gene encodes GR411 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR411 precursor RNA folds spatially, forming GR411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR411 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR411 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49462 precursor RNA and GAM146039 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49462 RNA and GAM146039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49462 target RNA into GAM49462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM146039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146039 target RNA into GAM146039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR411 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR411 gene: GAM49462 target protein and GAM146039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49462 and GAM146039

GR412 AL708513 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 412(GR412) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR412 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR412 gene was detected is described hereinabove with reference to Figs. 8-18.

GR412 gene encodes GR412 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR412 precursor RNA folds spatially, forming GR412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR412 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR412 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99317 precursor RNA and GAM276499 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99317 RNA and GAM276499 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99317 target RNA into GAM99317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276499 target RNA into GAM276499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR412 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR412 gene: GAM99317 target protein and GAM276499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99317 and GAM276499

GR413 AW383287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 413(GR413) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR413 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR413 gene was detected is described hereinabove with reference to Figs. 8-18.

GR413 gene encodes GR413 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR413 precursor RNA folds spatially, forming GR413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR413 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR413 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM106968 precursor RNA and GAM132303 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106968 RNA and GAM132303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106968 target RNA into GAM106968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132303 target RNA into GAM132303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR413 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR413 gene: GAM106968 target protein and GAM132303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106968 and GAM132303

GR414 BQ082249 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 414(GR414) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR414 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR414 gene was detected is described hereinabove with reference to Figs. 8-18.

GR414 gene encodes GR414 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR414 precursor RNA folds spatially, forming GR414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR414 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR414 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM311 precursor RNA, GAM5116 precursor RNA, GAM5746 precursor RNA and GAM8179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM311 RNA, GAM5116 RNA, GAM5746 RNA and GAM8179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311 target RNA into GAM311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5116 target RNA into GAM5116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5746 target RNA into GAM5746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8179 target RNA into GAM8179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR414 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR414 gene: GAM311 target protein, GAM5116 target protein, GAM5746 target protein and GAM8179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM311, GAM5116, GAM5746 and GAM8179

GR415 BG538378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 415(GR415) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR415 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR415 gene was detected is described hereinabove with reference to Figs. 8-18.

GR415 gene encodes GR415 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR415 precursor RNA folds spatially, forming GR415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR415 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR415 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM147019 precursor RNA, GAM289156 precursor RNA

and GAM307052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147019 RNA, GAM289156 RNA and GAM307052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147019 target RNA into GAM147019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289156 target RNA into GAM289156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307052 target RNA into GAM307052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR415 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR415 gene: GAM147019 target protein, GAM289156 target protein and GAM307052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147019, GAM289156 and GAM307052

GR416 BE091120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 416(GR416) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR416 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR416 gene was detected is described hereinabove with reference to Figs. 8-18.

GR416 gene encodes GR416 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR416 precursor RNA folds spatially, forming GR416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR416 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR416 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36231 precursor RNA and GAM277982 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36231 RNA and GAM277982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36231 target RNA into GAM36231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277982 target RNA into GAM277982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR416 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR416 gene: GAM36231 target protein and GAM277982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36231 and GAM277982

GR417 BF380981 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 417(GR417) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR417 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR417 gene was detected is described hereinabove with reference to Figs. 8-18.

GR417 gene encodes GR417 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR417 precursor RNA folds spatially, forming GR417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR417 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR417 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM199181 precursor RNA and GAM293622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM199181 RNA and GAM293622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM199181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199181 target RNA into GAM199181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293622 target RNA into GAM293622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR417 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR417 gene: GAM199181 target protein and GAM293622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM199181 and GAM293622

GR418 BF794897 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 418(GR418) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR418 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR418 gene was detected is described hereinabove with reference to Figs. 8-18.

GR418 gene encodes GR418 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR418 precursor RNA folds spatially, forming GR418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR418 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR418 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102542 precursor RNA and GAM103056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102542 RNA and GAM103056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102542 target RNA into GAM102542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103056 target RNA into GAM103056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR418 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR418 gene: GAM102542 target protein and GAM103056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102542 and GAM103056

GR419 BG911421 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 419(GR419) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR419 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR419 gene was detected is described hereinabove with reference to Figs. 8-18.

GR419 gene encodes GR419 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR419 precursor RNA folds spatially, forming GR419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR419 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR419 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2660 precursor RNA, GAM35715 precursor RNA and GAM257415 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2660 RNA, GAM35715 RNA and GAM257415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2660 target RNA into GAM2660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35715 target RNA into GAM35715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257415 target RNA into GAM257415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR419 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR419 gene: GAM2660 target protein, GAM35715 target protein and GAM257415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2660, GAM35715 and GAM257415

GR420 BM914772 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 420(GR420) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR420 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR420 gene was detected is described hereinabove with reference to Figs. 8-18.

GR420 gene encodes GR420 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR420 precursor RNA folds spatially, forming GR420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR420 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR420 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM181243 precursor RNA, GAM263049 precursor RNA and GAM299494 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM181243 RNA, GAM263049 RNA and GAM299494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM181243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181243 target RNA into GAM181243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263049 target RNA into GAM263049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299494 target RNA into GAM299494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR420 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR420 gene: GAM181243 target protein, GAM263049 target protein and GAM299494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM181243, GAM263049 and GAM299494

GR421 BE387177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 421(GR421) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR421 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR421 gene was detected is described hereinabove with reference to Figs. 8-18.

GR421 gene encodes GR421 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR421 precursor RNA folds spatially, forming GR421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR421 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR421 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1477 precursor RNA, GAM230439 precursor RNA and GAM289528 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1477 RNA, GAM230439 RNA and GAM289528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1477 target RNA into GAM1477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230439 target RNA into GAM230439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289528 target RNA into GAM289528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR421 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR421 gene: GAM1477 target protein, GAM230439 target protein and GAM289528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1477, GAM230439 and GAM289528

GR422 BI546063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 422(GR422) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR422 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR422 gene was detected is described hereinabove with reference to Figs. 8-18.

GR422 gene encodes GR422 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR422 precursor RNA folds spatially, forming GR422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR422 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR422 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM272015 precursor RNA and GAM297960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM272015 RNA and GAM297960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM272015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272015 target RNA into GAM272015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297960 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297960 target RNA into GAM297960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR422 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR422 gene: GAM272015 target protein and GAM297960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM272015 and GAM297960

GR423 BF667351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 423(GR423) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR423 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR423 gene was detected is described hereinabove with reference to Figs. 8-18.

GR423 gene encodes GR423 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR423 precursor RNA folds spatially, forming GR423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR423 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR423 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192944 precursor RNA and GAM237060 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM192944 RNA and GAM237060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192944 target RNA into GAM192944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237060 target RNA into GAM237060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR423 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR423 gene: GAM192944 target protein and GAM237060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192944 and GAM237060

GR424 BG819642 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 424(GR424) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR424 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR424 gene was detected is described hereinabove with reference to Figs. 8-18.

GR424 gene encodes GR424 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR424 precursor RNA folds spatially, forming GR424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR424 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR424 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7283 precursor RNA and GAM207034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7283 RNA and GAM207034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7283 target RNA into GAM7283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207034 target RNA into GAM207034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR424 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR424 gene: GAM7283 target protein and GAM207034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7283 and GAM207034

GR425 BM784561 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 425(GR425) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR425 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR425 gene was detected is described hereinabove with reference to Figs. 8-18.

GR425 gene encodes GR425 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR425 precursor RNA folds spatially, forming GR425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR425 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR425 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1457 precursor RNA, GAM26697 precursor RNA and GAM184133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1457 RNA, GAM26697 RNA and GAM184133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1457 target RNA into GAM1457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26697 target RNA into GAM26697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184133 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184133 target RNA into GAM184133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR425 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR425 gene: GAM1457 target protein, GAM26697 target protein and GAM184133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1457, GAM26697 and GAM184133

GR426 BM475210 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 426(GR426) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR426 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR426 gene was detected is described hereinabove with reference to Figs. 8-18.

GR426 gene encodes GR426 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR426 precursor RNA folds spatially, forming GR426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR426 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR426 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5205 precursor RNA, GAM187651 precursor RNA and GAM270763 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5205 RNA, GAM187651 RNA and GAM270763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5205 target RNA into GAM5205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187651 target RNA into GAM187651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270763 target RNA into GAM270763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR426 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR426 gene: GAM5205 target protein, GAM187651 target protein and GAM270763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5205, GAM187651 and GAM270763

GR427 BI198530 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 427(GR427) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR427 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR427 gene was detected is described hereinabove with reference to Figs. 8-18.

GR427 gene encodes GR427 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR427 precursor RNA folds spatially, forming GR427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR427 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR427 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1218 precursor RNA, GAM20530 precursor RNA and GAM65609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1218 RNA, GAM20530 RNA and GAM65609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1218 target RNA into GAM1218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20530 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20530 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20530 target RNA into GAM20530 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65609 target RNA into GAM65609 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR427 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR427 gene: GAM1218 target protein, GAM20530 target protein and GAM65609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1218, GAM20530 and GAM65609

GR428 Z44295 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 428(GR428) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR428 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR428 gene was detected is described hereinabove with reference to Figs. 8-18.

GR428 gene encodes GR428 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR428 precursor RNA folds spatially, forming GR428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR428 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR428 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM174410 precursor RNA and GAM227185 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM174410 RNA and GAM227185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM174410 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174410 target RNA into GAM174410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227185 target RNA into GAM227185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR428 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR428 gene: GAM174410 target protein and GAM227185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM174410 and GAM227185

GR429 AW016919 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 429(GR429) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR429 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR429 gene was detected is described hereinabove with reference to Figs. 8-18.

GR429 gene encodes GR429 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR429 precursor RNA folds spatially, forming GR429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR429 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR429 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR429 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178219 precursor RNA and GAM259390 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178219 RNA and GAM259390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178219 target RNA into GAM178219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259390 target RNA into GAM259390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR429 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR429 gene: GAM178219 target protein and GAM259390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178219 and GAM259390

GR430 BE673001 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 430(GR430) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR430 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR430 gene was detected is described hereinabove with reference to Figs. 8-18.

GR430 gene encodes GR430 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR430 precursor RNA folds spatially, forming GR430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR430 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR430 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20070 precursor RNA and GAM59792 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20070 RNA and GAM59792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20070 target RNA into GAM20070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59792 target RNA into GAM59792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR430 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR430 gene: GAM20070 target protein and GAM59792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20070 and GAM59792

GR431 BG202462 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 431(GR431) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR431 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR431 gene was detected is described hereinabove with reference to Figs. 8-18.

GR431 gene encodes GR431 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR431 precursor RNA folds spatially, forming GR431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR431 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR431 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2579 precursor RNA and GAM5637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2579 RNA and GAM5637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2579 target RNA into GAM2579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5637 target RNA into GAM5637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR431 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR431 gene: GAM2579 target protein and GAM5637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2579 and GAM5637

GR432 D59134 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 432(GR432) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR432 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR432 gene was detected is described hereinabove with reference to Figs. 8-18.

GR432 gene encodes GR432 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR432 precursor RNA folds spatially, forming GR432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR432 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR432 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3543 precursor RNA, GAM5954 precursor RNA and GAM129578 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3543 RNA, GAM5954 RNA and GAM129578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM3543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3543 target RNA into GAM3543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5954 target RNA into GAM5954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129578 target RNA into GAM129578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR432 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR432 gene: GAM3543 target protein, GAM5954 target protein and GAM129578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3543, GAM5954 and GAM129578

GR433 BE959375 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 433(GR433) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR433 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR433 gene was detected is described hereinabove with reference to Figs. 8-18.

GR433 gene encodes GR433 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR433 precursor RNA folds spatially, forming GR433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR433 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR433 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM718 precursor RNA, GAM2216 precursor RNA and GAM279878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM718 RNA, GAM2216 RNA and GAM279878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM718 target RNA into GAM718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2216 target RNA into GAM2216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279878 target RNA into GAM279878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR433 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR433 gene: GAM718 target protein, GAM2216 target protein and GAM279878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM718, GAM2216 and GAM279878

GR434 BG419567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 434(GR434) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR434 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR434 gene was detected is described hereinabove with reference to Figs. 8-18.

GR434 gene encodes GR434 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR434 precursor RNA folds spatially, forming GR434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR434 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR434 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5359 precursor RNA, GAM112534 precursor RNA and GAM263843 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5359 RNA, GAM112534 RNA and GAM263843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5359 target RNA into GAM5359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112534 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112534 target RNA into GAM112534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263843 target RNA into GAM263843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR434 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR434 gene: GAM5359 target protein, GAM112534 target protein and GAM263843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5359, GAM112534 and GAM263843

GR435 BG177956 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 435(GR435) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR435 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR435 gene was detected is described hereinabove with reference to Figs. 8-18.

GR435 gene encodes GR435 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR435 precursor RNA folds spatially, forming GR435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR435

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR435 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5936 precursor RNA and GAM6502 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5936 RNA and GAM6502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5936 target RNA into GAM5936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6502 target RNA into GAM6502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR435 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR435 gene: GAM5936 target protein and GAM6502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5936 and GAM6502

GR436 BI597008 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 436(GR436) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR436 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR436 gene was detected is described hereinabove with reference to Figs. 8-18.

GR436 gene encodes GR436 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR436 precursor RNA folds spatially, forming GR436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR436 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR436 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1754 precursor RNA and GAM79376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1754 RNA and GAM79376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1754 target RNA into GAM1754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79376 target RNA into GAM79376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR436 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR436 gene: GAM1754 target protein and GAM79376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1754 and GAM79376

GR437 BF342343 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 437(GR437) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR437 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR437 gene was detected is described hereinabove with reference to Figs. 8-18.

GR437 gene encodes GR437 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR437 precursor RNA folds spatially, forming GR437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR437 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR437 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM50233 precursor RNA, GAM109310 precursor RNA and GAM271222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50233 RNA, GAM109310 RNA and GAM271222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50233 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50233 target RNA into GAM50233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109310 target RNA into GAM109310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271222 target RNA into GAM271222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR437 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR437 gene: GAM50233 target protein, GAM109310 target protein and GAM271222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50233, GAM109310 and GAM271222

GR438 BF677746 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 438(GR438) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR438 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR438 gene was detected is described hereinabove with reference to Figs. 8-18.

GR438 gene encodes GR438 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR438 precursor RNA folds spatially, forming GR438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR438 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR438 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM166075 precursor RNA and GAM328117 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM166075 RNA and GAM328117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM166075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166075 target RNA into GAM166075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328117 target RNA into GAM328117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR438 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR438 gene: GAM166075 target protein and GAM328117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM166075 and GAM328117

GR439 BI086470 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 439(GR439) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR439 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR439 gene was detected is described hereinabove with reference to Figs. 8-18.

GR439 gene encodes GR439 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR439 precursor RNA folds spatially, forming GR439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR439 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR439 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8584 precursor RNA, GAM25501 precursor RNA and GAM105271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8584 RNA, GAM25501 RNA and GAM105271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8584 target RNA into GAM8584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM25501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25501 target RNA into GAM25501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105271 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105271 target RNA into GAM105271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR439 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR439 gene: GAM8584 target protein, GAM25501 target protein and GAM105271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8584, GAM25501 and GAM105271

GR440 R43516 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 440(GR440) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR440 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR440 gene was detected is described hereinabove with reference to Figs. 8-18.

GR440 gene encodes GR440 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR440 precursor RNA folds spatially, forming GR440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR440 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR440 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16498 precursor RNA and GAM207624 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16498 RNA and GAM207624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16498 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16498 target RNA into GAM16498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207624 target RNA into GAM207624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR440 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR440 gene: GAM16498 target protein and GAM207624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16498 and GAM207624

GR441 BI913485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 441(GR441) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR441 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR441 gene was detected is described hereinabove with reference to Figs. 8-18.

GR441 gene encodes GR441 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR441 precursor RNA folds spatially, forming GR441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR441 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR441 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1393 precursor RNA, GAM7084 precursor RNA and GAM63724 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1393 RNA, GAM7084 RNA and GAM63724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1393 target RNA into GAM1393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7084 target RNA into GAM7084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63724 target RNA into GAM63724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR441 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR441 gene: GAM1393 target protein, GAM7084 target protein and GAM63724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1393, GAM7084 and GAM63724

GR442 AW103355 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 442(GR442) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR442 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR442 gene was detected is described hereinabove with reference to Figs. 8-18.

GR442 gene encodes GR442 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR442 precursor RNA folds spatially, forming GR442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR442 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR442 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6479 precursor RNA and GAM6739 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6479 RNA and GAM6739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6479 target RNA into GAM6479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6739 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6739 target RNA into GAM6739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR442 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR442 gene: GAM6479 target protein and GAM6739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6479 and GAM6739

GR443 W39635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 443(GR443) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR443 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR443 gene was detected is described hereinabove with reference to Figs. 8-18.

GR443 gene encodes GR443 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR443 precursor RNA folds spatially, forming GR443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR443 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR443 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM113664 precursor RNA and GAM114020 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM113664 RNA and GAM114020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113664 target RNA into GAM113664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114020 target RNA into GAM114020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR443 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR443 gene: GAM113664 target protein and GAM114020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113664 and GAM114020

GR444 AW444772 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 444(GR444) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR444 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR444 gene was detected is described hereinabove with reference to Figs. 8-18.

GR444 gene encodes GR444 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR444 precursor RNA folds spatially, forming GR444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR444 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR444 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95347 precursor RNA and GAM160623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95347 RNA and GAM160623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95347 target RNA into GAM95347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160623 target RNA into GAM160623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR444 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR444 gene: GAM95347 target protein and GAM160623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95347 and GAM160623

GR445 BE737872 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 445(GR445) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR445 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR445 gene was detected is described hereinabove with reference to Figs. 8-18.

GR445 gene encodes GR445 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR445 precursor RNA folds spatially, forming GR445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR445 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR445 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4272 precursor RNA, GAM5070 precursor RNA, GAM254812 precursor RNA and GAM265143 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4272 RNA, GAM5070 RNA, GAM254812 RNA and GAM265143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4272 target RNA into GAM4272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5070 target RNA into GAM5070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254812 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254812 target RNA into GAM254812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265143 target RNA into GAM265143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR445 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR445 gene: GAM4272 target protein, GAM5070 target protein, GAM254812 target protein and GAM265143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4272, GAM5070, GAM254812 and GAM265143

GR446 BI857504 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 446(GR446) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR446 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR446 gene was detected is described hereinabove with reference to Figs. 8-18.

GR446 gene encodes GR446 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR446 precursor RNA folds spatially, forming GR446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR446 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR446 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM1992 precursor RNA and GAM4078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1992 RNA and GAM4078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1992 target RNA into GAM1992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4078 target RNA into GAM4078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR446 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR446 gene: GAM1992 target protein and GAM4078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1992 and GAM4078

GR447 AA505115 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 447(GR447) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR447 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR447 gene was detected is described hereinabove with reference to Figs. 8-18.

GR447 gene encodes GR447 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR447 precursor RNA folds spatially, forming GR447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR447 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR447 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM134353 precursor RNA and GAM212631 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM134353 RNA and GAM212631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM134353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134353 target RNA into GAM134353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212631 target RNA into GAM212631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR447 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR447 gene: GAM134353 target protein and GAM212631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM134353 and GAM212631

GR448 BF208493 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 448(GR448) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR448 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR448 gene was detected is described hereinabove with reference to Figs. 8-18.

GR448 gene encodes GR448 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR448 precursor RNA folds spatially, forming GR448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR448 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR448 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM239840 precursor RNA and GAM305546 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM239840 RNA and GAM305546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM239840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239840 target RNA into GAM239840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305546 target RNA into GAM305546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR448 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR448 gene: GAM239840 target protein and GAM305546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM239840 and GAM305546

GR449 BE466577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 449(GR449) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR449 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR449 gene was detected is described hereinabove with reference to Figs. 8-18.

GR449 gene encodes GR449 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR449 precursor RNA folds spatially, forming GR449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR449 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR449 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM82621 precursor RNA, GAM97133 precursor RNA and GAM286325 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82621 RNA, GAM97133 RNA and GAM286325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82621 target RNA into GAM82621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97133 target RNA into GAM97133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286325 target RNA into GAM286325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR449 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR449 gene: GAM82621 target protein, GAM97133 target protein and GAM286325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82621, GAM97133 and GAM286325

GR450 BG023865 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 450(GR450) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR450 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR450 gene was detected is described hereinabove with reference to Figs. 8-18.

GR450 gene encodes GR450 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR450 precursor RNA folds spatially, forming GR450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR450 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR450 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93254 precursor RNA and GAM240100 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93254 RNA and GAM240100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93254 target RNA into GAM93254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240100 target RNA into GAM240100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR450 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR450 gene: GAM93254 target protein and GAM240100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93254 and GAM240100

GR451 AI648511 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 451(GR451) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR451 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR451 gene was detected is described hereinabove with reference to Figs. 8-18.

GR451 gene encodes GR451 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR451 precursor RNA folds spatially, forming GR451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR451 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR451 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81159 precursor RNA and GAM166814 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81159 RNA and GAM166814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81159 target RNA into GAM81159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166814

target RNA into GAM166814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR451 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR451 gene: GAM81159 target protein and GAM166814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81159 and GAM166814

GR452 AV683230 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 452(GR452) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR452 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR452 gene was detected is described hereinabove with reference to Figs. 8-18.

GR452 gene encodes GR452 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR452 precursor RNA folds spatially, forming GR452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR452 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR452 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM109223 precursor RNA and GAM194656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM109223 RNA and GAM194656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM109223 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109223 target RNA into GAM109223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194656 target RNA into GAM194656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR452 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR452 gene: GAM109223 target protein and GAM194656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM109223 and GAM194656

GR453 AA577069 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 453(GR453) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR453 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR453 gene was detected is described hereinabove with reference to Figs. 8-18.

GR453 gene encodes GR453 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR453 precursor RNA folds spatially, forming GR453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR453 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR453 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR453 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133068 precursor RNA and GAM158606 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133068 RNA and GAM158606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133068 target RNA into GAM133068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158606 target RNA into GAM158606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR453 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR453 gene: GAM133068 target protein and GAM158606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133068 and GAM158606

GR454 BF337723 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 454(GR454) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR454 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR454 gene was detected is described hereinabove with reference to Figs. 8-18.

GR454 gene encodes GR454 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR454 precursor RNA folds spatially, forming GR454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR454 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR454 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM983 precursor RNA, GAM63493 precursor RNA and GAM107310 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM983 RNA, GAM63493 RNA and GAM107310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM983 target RNA into GAM983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63493 target RNA into GAM63493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107310 target RNA into GAM107310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR454 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR454 gene: GAM983 target protein, GAM63493 target protein and GAM107310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM983, GAM63493 and GAM107310

GR455 BF851124 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 455(GR455) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR455 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR455 gene was detected is described hereinabove with reference to Figs. 8-18.

GR455 gene encodes GR455 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR455 precursor RNA folds spatially, forming GR455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR455 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR455 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM163880 precursor RNA and GAM276514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM163880 RNA and GAM276514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM163880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM163880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163880 target RNA into GAM163880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276514 target RNA into GAM276514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR455 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR455 gene: GAM163880 target protein and GAM276514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM163880 and GAM276514

GR456 AI261745 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 456(GR456) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR456 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR456 gene was detected is described hereinabove with reference to Figs. 8-18.

GR456 gene encodes GR456 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR456 precursor RNA folds spatially, forming GR456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR456 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR456 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM39928 precursor RNA, GAM156812 precursor RNA and GAM215746 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39928 RNA, GAM156812 RNA and GAM215746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39928 target RNA into GAM39928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156812 target RNA into GAM156812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215746 target RNA into GAM215746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR456 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR456 gene: GAM39928 target protein, GAM156812 target protein and GAM215746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39928, GAM156812 and GAM215746

GR457 AA330035 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 457(GR457) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR457 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR457 gene was detected is described hereinabove with reference to Figs. 8-18.

GR457 gene encodes GR457 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR457 precursor RNA folds spatially, forming GR457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR457 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR457 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM140951 precursor RNA and GAM334549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140951 RNA and GAM334549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140951 target RNA into GAM140951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334549 target RNA into GAM334549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR457 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR457 gene: GAM140951 target protein and GAM334549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140951 and GAM334549

GR458 BF789950 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 458(GR458) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR458 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR458 gene was detected is described hereinabove with reference to Figs. 8-18.

GR458 gene encodes GR458 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR458 precursor RNA folds spatially, forming GR458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR458 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR458 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111313 precursor RNA and GAM161200 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111313 RNA and GAM161200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111313 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111313 target RNA into GAM111313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161200 target RNA into GAM161200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR458 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR458 gene: GAM111313 target protein and GAM161200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111313 and GAM161200

GR459 W04281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 459(GR459) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR459 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR459 gene was detected is described hereinabove with reference to Figs. 8-18.

GR459 gene encodes GR459 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR459 precursor RNA folds spatially, forming GR459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR459 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR459 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14758 precursor RNA and GAM21838 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14758 RNA and GAM21838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14758 target RNA into GAM14758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21838 target RNA into GAM21838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR459 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR459 gene: GAM14758 target protein and GAM21838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14758 and GAM21838

GR460 AI377752 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 460(GR460) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR460 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR460 gene was detected is described hereinabove with reference to Figs. 8-18.

GR460 gene encodes GR460 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR460 precursor RNA folds spatially, forming GR460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR460 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR460 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4890 precursor RNA, GAM8353 precursor RNA and GAM122547 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4890 RNA, GAM8353 RNA and GAM122547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4890 target RNA into GAM4890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8353 target RNA into GAM8353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122547 target RNA into GAM122547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR460 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR460 gene: GAM4890 target protein, GAM8353 target protein and GAM122547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4890, GAM8353 and GAM122547

GR461 BG215275 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 461(GR461) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR461 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR461 gene was detected is described hereinabove with reference to Figs. 8-18.

GR461 gene encodes GR461 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR461 precursor RNA folds spatially, forming GR461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR461 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR461 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2315 precursor RNA, GAM174956 precursor RNA and GAM182210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2315 RNA, GAM174956 RNA and GAM182210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2315 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2315 target RNA into GAM2315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174956 target RNA into GAM174956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182210 target RNA into GAM182210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR461 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR461 gene: GAM2315 target protein, GAM174956 target protein and GAM182210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2315, GAM174956 and GAM182210

GR462 AA207063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 462(GR462) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR462 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR462 gene was detected is described hereinabove with reference to Figs. 8-18.

GR462 gene encodes GR462 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR462 precursor RNA folds spatially, forming GR462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR462 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR462 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5495 precursor RNA and GAM329594 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5495 RNA and GAM329594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5495 target RNA into GAM5495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329594 target RNA into GAM329594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR462 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR462 gene: GAM5495 target protein and GAM329594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5495 and GAM329594

GR463 BF953772 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 463(GR463) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR463 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR463 gene was detected is described hereinabove with reference to Figs. 8-18.

GR463 gene encodes GR463 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR463 precursor RNA folds spatially, forming GR463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR463 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR463 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM94702 precursor RNA, GAM139570 precursor RNA and GAM151548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94702 RNA, GAM139570 RNA and GAM151548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94702 target RNA into GAM94702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139570 target RNA into GAM139570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151548 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151548 target RNA into GAM151548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR463 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR463 gene: GAM94702 target protein, GAM139570 target protein and GAM151548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94702, GAM139570 and GAM151548

GR464 AI086796 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 464(GR464) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR464 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR464 gene was detected is described hereinabove with reference to Figs. 8-18.

GR464 gene encodes GR464 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR464 precursor RNA folds spatially, forming GR464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR464 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR464 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6452 precursor RNA and GAM7716 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6452 RNA and GAM7716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6452 target RNA into GAM6452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7716 target RNA into GAM7716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR464 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR464 gene: GAM6452 target protein and GAM7716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6452 and GAM7716

GR465 AW867860 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 465(GR465) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR465 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR465 gene was detected is described hereinabove with reference to Figs. 8-18.

GR465 gene encodes GR465 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR465 precursor RNA folds spatially, forming GR465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR465 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR465 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2153 precursor RNA and GAM36234 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2153 RNA and GAM36234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2153 target RNA into GAM2153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36234 target RNA into GAM36234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR465 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR465 gene: GAM2153 target protein and GAM36234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2153 and GAM36234

GR466 BF061380 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 466(GR466) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR466 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR466 gene was detected is described hereinabove with reference to Figs. 8-18.

GR466 gene encodes GR466 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR466 precursor RNA folds spatially, forming GR466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR466 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR466 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4752 precursor RNA and GAM5900 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4752 RNA and GAM5900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4752 target RNA into GAM4752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5900 target RNA into GAM5900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR466 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR466 gene: GAM4752 target protein and GAM5900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4752 and GAM5900

GR467 BG209583 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 467(GR467) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR467 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR467 gene was detected is described hereinabove with reference to Figs. 8-18.

GR467 gene encodes GR467 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR467 precursor RNA folds spatially, forming GR467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR467 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR467 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110317 precursor RNA and GAM241514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110317 RNA and GAM241514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110317

target RNA into GAM110317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241514 target RNA into GAM241514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR467 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR467 gene: GAM110317 target protein and GAM241514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110317 and GAM241514

GR468 AA700287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 468(GR468) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR468 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR468 gene was detected is described hereinabove with reference to Figs. 8-18.

GR468 gene encodes GR468 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR468 precursor RNA folds spatially, forming GR468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR468 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR468 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM193885 precursor RNA and GAM291140 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM193885 RNA and GAM291140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM193885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193885 target RNA into GAM193885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291140 target RNA into GAM291140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR468 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR468 gene: GAM193885 target protein and GAM291140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM193885 and GAM291140

GR469 BG028841 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 469(GR469) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR469 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR469 gene was detected is described hereinabove with reference to Figs. 8-18.

GR469 gene encodes GR469 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR469 precursor RNA folds spatially, forming GR469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR469

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR469 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM5003 precursor RNA, GAM7359 precursor RNA, GAM7732 precursor RNA, GAM128308 precursor RNA and GAM140279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5003 RNA, GAM7359 RNA, GAM7732 RNA, GAM128308 RNA and GAM140279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5003 target RNA into GAM5003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7359 target RNA into GAM7359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7732 target RNA into GAM7732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128308 target RNA into GAM128308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140279 target RNA into GAM140279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR469 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR469 gene: GAM5003 target protein, GAM7359 target protein, GAM7732 target protein, GAM128308 target protein and GAM140279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5003, GAM7359, GAM7732, GAM128308 and GAM140279

GR470 AL560599 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 470(GR470) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR470 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR470 gene was detected is described hereinabove with reference to Figs. 8-18.

GR470 gene encodes GR470 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR470 precursor RNA folds spatially, forming GR470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR470 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR470 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7315 precursor RNA and GAM222895 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7315 RNA and GAM222895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7315 target RNA into GAM7315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222895 target RNA into GAM222895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR470 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR470 gene: GAM7315 target protein and GAM222895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7315 and GAM222895

GR471 BF217200 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 471(GR471) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR471 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR471 gene was detected is described hereinabove with reference to Figs. 8-18.

GR471 gene encodes GR471 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR471 precursor RNA folds spatially, forming GR471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR471 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR471 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7827 precursor RNA, GAM8455 precursor RNA, GAM103784 precursor RNA and GAM328839 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7827 RNA, GAM8455 RNA, GAM103784 RNA and GAM328839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7827 target RNA into GAM7827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8455 target RNA into GAM8455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103784 target RNA into GAM103784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328839 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328839 target RNA into GAM328839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR471 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR471 gene: GAM7827 target protein, GAM8455 target protein, GAM103784 target protein and GAM328839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7827, GAM8455, GAM103784 and GAM328839

GR472 BG546784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 472(GR472) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR472 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR472 gene was detected is described hereinabove with reference to Figs. 8-18.

GR472 gene encodes GR472 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR472 precursor RNA folds spatially, forming GR472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR472 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR472 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM44000 precursor RNA, GAM95830 precursor RNA, GAM190498 precursor RNA and GAM232277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM44000 RNA, GAM95830 RNA, GAM190498 RNA and GAM232277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44000 target RNA into GAM44000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95830 target RNA into GAM95830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190498 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190498 target RNA into GAM190498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232277 target RNA into GAM232277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR472 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR472 gene: GAM44000 target protein, GAM95830 target protein, GAM190498 target protein and GAM232277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44000, GAM95830, GAM190498 and GAM232277

GR473 BF185120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 473(GR473) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR473 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR473 gene was detected is described hereinabove with reference to Figs. 8-18.

GR473 gene encodes GR473 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR473 precursor RNA folds spatially, forming GR473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR473 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR473 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73 precursor RNA and GAM83146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73 RNA and GAM83146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73 target RNA into GAM73 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83146 target RNA into GAM83146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR473 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR473 gene: GAM73 target protein and GAM83146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73 and GAM83146

GR474 R31496 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 474(GR474) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR474 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR474 gene was detected is described hereinabove with reference to Figs. 8-18.

GR474 gene encodes GR474 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR474 precursor RNA folds spatially, forming GR474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR474 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR474 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1239 precursor RNA, GAM169836 precursor RNA and GAM314722 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1239 RNA, GAM169836 RNA and GAM314722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM1239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1239 target RNA into GAM1239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169836 target RNA into GAM169836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314722 target RNA into GAM314722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR474 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR474 gene: GAM1239 target protein, GAM169836 target protein and GAM314722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1239, GAM169836 and GAM314722

GR475 AI608983 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 475(GR475) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR475 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR475 gene was detected is described hereinabove with reference to Figs. 8-18.

GR475 gene encodes GR475 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR475 precursor RNA folds spatially, forming GR475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR475

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR475 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3852 precursor RNA and GAM142923 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3852 RNA and GAM142923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3852 target RNA into GAM3852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142923 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142923 target RNA into GAM142923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR475 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR475 gene: GAM3852 target protein and GAM142923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3852 and GAM142923

GR476 BF683381 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 476(GR476) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR476 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR476 gene was detected is described hereinabove with reference to Figs. 8-18.

GR476 gene encodes GR476 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR476 precursor RNA folds spatially, forming GR476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR476 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR476 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3405 precursor RNA and GAM6472 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3405 RNA and GAM6472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3405 target RNA into GAM3405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6472 target RNA into GAM6472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR476 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR476 gene: GAM3405 target protein and GAM6472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3405 and GAM6472

GR477 BG426752 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 477(GR477) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR477 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR477 gene was detected is described hereinabove with reference to Figs. 8-18.

GR477 gene encodes GR477 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR477 precursor RNA folds spatially, forming GR477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR477 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR477 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73135 precursor RNA and GAM223921 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73135 RNA and GAM223921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73135 target RNA into GAM73135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223921 target RNA into GAM223921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR477 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR477 gene: GAM73135 target protein and GAM223921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73135 and GAM223921

GR478 BF437892 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 478(GR478) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR478 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR478 gene was detected is described hereinabove with reference to Figs. 8-18.

GR478 gene encodes GR478 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR478 precursor RNA folds spatially, forming GR478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR478 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR478 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5871 precursor RNA, GAM7956 precursor RNA and GAM48460 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5871 RNA, GAM7956 RNA and GAM48460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5871 target RNA into GAM5871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7956 target RNA into GAM7956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48460 target RNA into GAM48460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR478 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR478 gene: GAM5871 target protein, GAM7956 target protein and GAM48460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5871, GAM7956 and GAM48460

GR479 BG704979 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 479(GR479) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR479 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR479 gene was detected is described hereinabove with reference to Figs. 8-18.

GR479 gene encodes GR479 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR479 precursor RNA folds spatially, forming GR479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR479 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR479 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1968 precursor RNA and GAM161267 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1968 RNA and GAM161267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1968 target RNA into GAM1968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161267 target RNA into GAM161267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR479 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR479 gene: GAM1968 target protein and GAM161267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1968 and GAM161267

GR480 R23435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 480(GR480) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR480 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR480 gene was detected is described hereinabove with reference to Figs. 8-18.

GR480 gene encodes GR480 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR480 precursor RNA folds spatially, forming GR480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR480 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR480 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM631 precursor RNA, GAM6523 precursor RNA and GAM302051 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM631 RNA, GAM6523 RNA and GAM302051 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM631 target RNA into GAM631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6523 target RNA into GAM6523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302051 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302051 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302051 target RNA into GAM302051 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR480 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR480 gene: GAM631 target protein, GAM6523 target protein and GAM302051 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM631, GAM6523 and GAM302051

GR481 AA234850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 481(GR481) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR481 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR481 gene was detected is described hereinabove with reference to Figs. 8-18.

GR481 gene encodes GR481 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR481 precursor RNA folds spatially, forming GR481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR481 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR481 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3636 precursor RNA and GAM92026 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3636 RNA and GAM92026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3636 target RNA into GAM3636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92026 target RNA into GAM92026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR481 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR481 gene: GAM3636 target protein and GAM92026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3636 and GAM92026

GR482 T85494 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 482(GR482) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR482 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR482 gene was detected is described hereinabove with reference to Figs. 8-18.

GR482 gene encodes GR482 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR482 precursor RNA folds spatially, forming GR482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR482 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR482 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8404 precursor RNA, GAM166282 precursor RNA and GAM270709 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8404 RNA, GAM166282 RNA and GAM270709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8404 target RNA into GAM8404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166282 target RNA into GAM166282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM270709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270709 target RNA into GAM270709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR482 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR482 gene: GAM8404 target protein, GAM166282 target protein and GAM270709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8404, GAM166282 and GAM270709

GR483 AI281042 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 483(GR483) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR483 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR483 gene was detected is described hereinabove with reference to Figs. 8-18.

GR483 gene encodes GR483 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR483 precursor RNA folds spatially, forming GR483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR483 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR483 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM39271 precursor RNA and GAM154432 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM39271 RNA and GAM154432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39271 target RNA into GAM39271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154432 target RNA into GAM154432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR483 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR483 gene: GAM39271 target protein and GAM154432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39271 and GAM154432

GR484 BM044153 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 484(GR484) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR484 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR484 gene was detected is described hereinabove with reference to Figs. 8-18.

GR484 gene encodes GR484 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR484 precursor RNA folds spatially, forming GR484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR484 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR484 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM126320 precursor RNA and GAM242147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126320 RNA and GAM242147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126320 target RNA into GAM126320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242147 target RNA into GAM242147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR484 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR484 gene: GAM126320 target protein and GAM242147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126320 and GAM242147

GR485 AA598969 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 485(GR485) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR485 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR485 gene was detected is described hereinabove with reference to Figs. 8-18.

GR485 gene encodes GR485 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR485 precursor RNA folds spatially, forming GR485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR485 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR485 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM162951 precursor RNA, GAM174231 precursor RNA and GAM296964 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162951 RNA, GAM174231 RNA and GAM296964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162951 target RNA into GAM162951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174231 target RNA into GAM174231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296964 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296964 target RNA into GAM296964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR485 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR485 gene: GAM162951 target protein, GAM174231 target protein and GAM296964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162951, GAM174231 and GAM296964

GR486 AI922433 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 486(GR486) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR486 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR486 gene was detected is described hereinabove with reference to Figs. 8-18.

GR486 gene encodes GR486 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR486 precursor RNA folds spatially, forming GR486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR486 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR486 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217939 precursor RNA and GAM336119 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217939 RNA and GAM336119 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217939 target RNA into GAM217939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336119 target RNA into GAM336119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR486 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR486 gene: GAM217939 target protein and GAM336119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217939 and GAM336119

GR487 AW967827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 487(GR487) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR487 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR487 gene was detected is described hereinabove with reference to Figs. 8-18.

GR487 gene encodes GR487 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR487 precursor RNA folds spatially, forming GR487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR487 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR487 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7050 precursor RNA, GAM156278 precursor RNA and GAM321254 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7050 RNA, GAM156278 RNA and GAM321254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7050 target RNA into GAM7050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156278 target RNA into GAM156278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321254 target RNA into GAM321254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR487 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR487 gene: GAM7050 target protein, GAM156278 target protein and GAM321254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7050, GAM156278 and

GAM321254

GR488 BE728461 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 488(GR488) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR488 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR488 gene was detected is described hereinabove with reference to Figs. 8-18.

GR488 gene encodes GR488 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR488 precursor RNA folds spatially, forming GR488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR488 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR488 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1458 precursor RNA, GAM281918 precursor RNA and GAM307462 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1458 RNA, GAM281918 RNA and GAM307462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1458 target RNA into GAM1458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM281918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281918 target RNA into GAM281918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307462 target RNA into GAM307462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR488 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR488 gene: GAM1458 target protein, GAM281918 target protein and GAM307462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1458, GAM281918 and GAM307462

GR489 AI633363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 489(GR489) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR489 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR489 gene was detected is described hereinabove with reference to Figs. 8-18.

GR489 gene encodes GR489 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR489 precursor RNA folds spatially, forming GR489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR489 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR489 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR489 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM394 precursor RNA and GAM17911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM394 RNA and GAM17911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM394 target RNA into GAM394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17911 target RNA into GAM17911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR489 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR489 gene: GAM394 target protein and GAM17911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM394 and GAM17911

GR490 AI696226 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 490(GR490) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR490 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR490 gene was detected is described hereinabove with reference to Figs. 8-18.

GR490 gene encodes GR490 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR490 precursor RNA folds spatially, forming GR490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR490 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR490 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171427 precursor RNA and GAM196808 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171427 RNA and GAM196808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171427 target RNA into GAM171427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196808 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196808 target RNA into GAM196808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR490 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR490 gene: GAM171427 target protein and GAM196808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171427 and GAM196808

GR491 BE407398 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 491(GR491) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR491 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR491 gene was detected is described hereinabove with reference to Figs. 8-18.

GR491 gene encodes GR491 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR491 precursor RNA folds spatially, forming GR491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR491 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR491 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132199 precursor RNA and GAM232665 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132199 RNA and GAM232665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132199 target RNA into GAM132199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232665 target RNA into GAM232665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR491 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR491 gene: GAM132199 target protein and GAM232665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132199 and GAM232665

GR492 AI418461 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 492(GR492) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR492 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR492 gene was detected is described hereinabove with reference to Figs. 8-18.

GR492 gene encodes GR492 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR492 precursor RNA folds spatially, forming GR492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR492 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR492 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4819 precursor RNA and GAM76970 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4819 RNA and GAM76970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4819 target RNA into GAM4819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76970 target RNA into GAM76970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR492 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR492 gene: GAM4819 target protein and GAM76970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4819 and GAM76970

GR493 BM548740 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 493(GR493) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR493 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR493 gene was detected is described hereinabove with reference to Figs. 8-18.

GR493 gene encodes GR493 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR493 precursor RNA folds spatially, forming GR493 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR493 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR493 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR493 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1606 precursor RNA, GAM3786 precursor RNA and GAM116479 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1606 RNA, GAM3786 RNA and GAM116479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1606 target RNA into GAM1606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3786 target RNA into GAM3786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116479 target RNA into GAM116479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR493 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR493 gene: GAM1606 target protein, GAM3786 target protein and GAM116479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1606, GAM3786 and GAM116479

GR494 AI096718 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 494(GR494) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR494 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR494 gene was detected is described hereinabove with reference to Figs. 8-18.

GR494 gene encodes GR494 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR494 precursor RNA folds spatially, forming GR494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR494 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR494 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM85942 precursor RNA, GAM178233 precursor RNA and GAM181225 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85942 RNA, GAM178233 RNA and GAM181225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85942 target RNA into GAM85942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178233 target RNA into GAM178233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181225 target RNA into GAM181225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR494 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR494 gene: GAM85942 target protein, GAM178233 target protein and GAM181225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85942, GAM178233 and GAM181225

GR495 AW601770 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 495(GR495) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR495 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR495 gene was detected is described hereinabove with reference to Figs. 8-18.

GR495 gene encodes GR495 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR495 precursor RNA folds spatially, forming GR495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR495 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR495 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM71297 precursor RNA, GAM175371 precursor RNA,

GAM321140 precursor RNA and GAM335273 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71297 RNA, GAM175371 RNA, GAM321140 RNA and GAM335273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71297 target RNA into GAM71297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175371 target RNA into GAM175371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321140 target RNA into GAM321140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335273 target RNA into GAM335273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR495 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR495 gene: GAM71297 target protein, GAM175371 target protein, GAM321140 target protein and GAM335273 target protein, herein schematically represented by GAM1 TARGET PROTEIN

through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71297, GAM175371, GAM321140 and GAM335273

GR496 BM925264 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 496(GR496) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR496 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR496 gene was detected is described hereinabove with reference to Figs. 8-18.

GR496 gene encodes GR496 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR496 precursor RNA folds spatially, forming GR496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR496 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR496 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM257 precursor RNA, GAM1831 precursor RNA, GAM174175 precursor RNA and GAM236106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257 RNA, GAM1831 RNA, GAM174175 RNA and GAM236106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257 target RNA into GAM257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1831 target RNA into GAM1831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174175 target RNA into GAM174175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236106 target RNA into GAM236106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR496 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR496 gene: GAM257 target protein, GAM1831 target protein, GAM174175 target protein and GAM236106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257, GAM1831, GAM174175 and GAM236106

GR497 N28912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 497(GR497) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR497 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR497 gene was detected is described hereinabove with reference to Figs. 8-18.

GR497 gene encodes GR497 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR497 precursor RNA folds spatially, forming GR497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR497 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR497 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5456 precursor RNA and GAM298256 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5456 RNA and GAM298256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5456 target RNA into GAM5456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298256 target RNA into GAM298256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR497 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR497 gene: GAM5456 target protein and GAM298256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5456 and GAM298256

GR498 BG168103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

498(GR498) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR498 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR498 gene was detected is described hereinabove with reference to Figs. 8-18.

GR498 gene encodes GR498 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR498 precursor RNA folds spatially, forming GR498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR498 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR498 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3746 precursor RNA and GAM7937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3746 RNA and GAM7937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3746 target RNA into GAM3746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7937 target RNA into GAM7937 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR498 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR498 gene: GAM3746 target protein and GAM7937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3746 and GAM7937

GR499 AV735934 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 499(GR499) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR499 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR499 gene was detected is described hereinabove with reference to Figs. 8-18.

GR499 gene encodes GR499 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR499 precursor RNA folds spatially, forming GR499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR499 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR499 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM211122 precursor RNA and GAM254044 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM211122 RNA and GAM254044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM211122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM211122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211122 target RNA into GAM211122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254044 target RNA into GAM254044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR499 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR499 gene: GAM211122 target protein and GAM254044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM211122 and GAM254044

GR500 BE275112 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 500(GR500) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR500 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR500 gene was detected is described hereinabove with reference to Figs. 8-18.

GR500 gene encodes GR500 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR500 precursor RNA folds spatially, forming GR500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR500 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR500 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM6397 precursor RNA and GAM294980 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6397 RNA and GAM294980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6397 target RNA into GAM6397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294980 target RNA into GAM294980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR500 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR500 gene: GAM6397 target protein and GAM294980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6397 and GAM294980

GR501 BF033269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 501(GR501) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR501 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR501 gene was detected is described hereinabove with reference to Figs. 8-18.

GR501 gene encodes GR501 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR501 precursor RNA folds spatially, forming GR501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR501 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR501 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1378 precursor RNA, GAM6199 precursor RNA, GAM91502 precursor RNA and GAM276749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1378 RNA, GAM6199 RNA, GAM91502 RNA and GAM276749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1378 target RNA into GAM1378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6199 target RNA into GAM6199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91502 target RNA into GAM91502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276749 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276749 target RNA into GAM276749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR501 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR501 gene: GAM1378 target protein, GAM6199 target protein, GAM91502 target protein and GAM276749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1378, GAM6199, GAM91502 and GAM276749

GR502 AW263031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 502(GR502) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR502 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR502 gene was detected is described hereinabove with reference to Figs. 8-18.

GR502 gene encodes GR502 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR502 precursor RNA folds spatially, forming GR502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR502 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR502 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3514 precursor RNA and GAM8446 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3514 RNA and GAM8446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3514 target RNA into GAM3514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8446 target RNA into GAM8446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR502 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR502 gene: GAM3514 target protein and GAM8446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3514 and GAM8446

GR503 BG339403 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 503(GR503) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR503 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR503 gene was detected is described hereinabove with reference to Figs. 8-18.

GR503 gene encodes GR503 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR503 precursor RNA folds spatially, forming GR503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR503 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR503 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1632 precursor RNA, GAM105799 precursor RNA, GAM169722 precursor RNA and GAM316964 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1632 RNA, GAM105799 RNA, GAM169722 RNA and GAM316964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1632 target RNA into GAM1632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105799 target RNA into GAM105799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169722 target RNA into GAM169722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316964 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316964 target RNA into GAM316964 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR503 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR503 gene: GAM1632 target protein, GAM105799 target protein, GAM169722 target protein and GAM316964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1632, GAM105799, GAM169722 and GAM316964

GR504 AI491748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 504(GR504) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR504 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR504 gene was detected is described hereinabove with reference to Figs. 8-18.

GR504 gene encodes GR504 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR504 precursor RNA folds spatially, forming GR504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR504 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR504 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM171848 precursor RNA, GAM214470 precursor RNA and GAM227046 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171848 RNA, GAM214470 RNA and GAM227046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171848 target RNA into GAM171848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214470 target RNA into GAM214470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227046 target RNA into GAM227046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR504 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR504 gene: GAM171848 target protein, GAM214470 target protein and GAM227046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171848, GAM214470 and GAM227046

GR505 BG619298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 505(GR505) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR505 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR505 gene was detected is described hereinabove with reference to Figs. 8-18.

GR505 gene encodes GR505 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR505 precursor RNA folds spatially, forming GR505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR505 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR505 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100044 precursor RNA and GAM277116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100044 RNA and GAM277116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100044 target RNA into GAM100044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277116 target RNA into GAM277116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR505 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR505 gene: GAM100044 target protein and GAM277116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100044 and GAM277116

GR506 BF697963 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

506(GR506) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR506 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR506 gene was detected is described hereinabove with reference to Figs. 8-18.

GR506 gene encodes GR506 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR506 precursor RNA folds spatially, forming GR506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR506 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR506 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate GAM precursor RNAs, GAM2134 precursor RNA, GAM2907 precursor RNA, GAM11232 precursor RNA, GAM133512 precursor RNA, GAM148120 precursor RNA and GAM172274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2134 RNA, GAM2907 RNA, GAM11232 RNA, GAM133512 RNA, GAM148120 RNA and GAM172274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2134 target RNA into GAM2134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2907 target RNA into GAM2907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11232 target RNA into GAM11232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133512 target RNA into GAM133512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148120 target RNA into GAM148120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172274 target RNA into GAM172274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR506 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR506 gene: GAM2134 target protein, GAM2907 target protein, GAM11232 target protein, GAM133512 target protein, GAM148120 target protein and GAM172274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2134, GAM2907, GAM11232, GAM133512, GAM148120 and GAM172274

GR507 BG744934 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 507(GR507) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR507 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR507 gene was detected is described hereinabove with reference to Figs. 8-18.

GR507 gene encodes GR507 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR507 precursor RNA folds spatially, forming GR507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR507 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR507 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6443 precursor RNA, GAM121722 precursor RNA and GAM277737 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6443 RNA, GAM121722 RNA and GAM277737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6443 target RNA into GAM6443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121722 target RNA into GAM121722 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277737 target RNA into GAM277737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR507 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR507 gene: GAM6443 target protein, GAM121722 target protein and GAM277737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6443, GAM121722 and GAM277737

GR508 AW960063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 508(GR508) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR508 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR508 gene was detected is described hereinabove with reference to Figs. 8-18.

GR508 gene encodes GR508 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR508 precursor RNA folds spatially, forming GR508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR508 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR508 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17063 precursor RNA and GAM206100 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17063 RNA and GAM206100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17063 target RNA into GAM17063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206100 target RNA into GAM206100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR508 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR508 gene: GAM17063 target protein and GAM206100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17063 and GAM206100

GR509 BF130626 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 509(GR509) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR509 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR509 gene was detected is described hereinabove with reference to Figs. 8-18.

GR509 gene encodes GR509 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR509 precursor RNA folds spatially, forming GR509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR509

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR509 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4045 precursor RNA, GAM31094 precursor RNA and GAM168918 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4045 RNA, GAM31094 RNA and GAM168918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4045 target RNA into GAM4045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31094 target RNA into GAM31094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168918 target RNA into GAM168918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR509 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR509 gene: GAM4045 target

protein, GAM31094 target protein and GAM168918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4045, GAM31094 and GAM168918

GR510 BF540774 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 510(GR510) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR510 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR510 gene was detected is described hereinabove with reference to Figs. 8-18.

GR510 gene encodes GR510 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR510 precursor RNA folds spatially, forming GR510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR510 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR510 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM292410 precursor RNA and GAM297927 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM292410 RNA and GAM297927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM292410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292410 target RNA into GAM292410 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297927 target RNA into GAM297927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR510 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR510 gene: GAM292410 target protein and GAM297927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM292410 and GAM297927

GR511 BI458293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 511(GR511) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR511 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR511 gene was detected is described hereinabove with reference to Figs. 8-18.

GR511 gene encodes GR511 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR511 precursor RNA folds spatially, forming GR511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR511 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR511 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90138 precursor RNA and GAM156311 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90138 RNA and GAM156311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90138 target RNA into GAM90138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156311 target RNA into GAM156311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR511 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR511 gene: GAM90138 target protein and GAM156311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90138 and GAM156311

GR512 BF247573 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 512(GR512) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR512 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR512 gene was detected is described hereinabove with reference to Figs. 8-18.

GR512 gene encodes GR512 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR512 precursor RNA folds spatially, forming GR512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR512 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR512 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2821 precursor RNA, GAM24853 precursor RNA and GAM62207 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2821 RNA, GAM24853 RNA and GAM62207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2821 target RNA into GAM2821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24853 target RNA into GAM24853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62207 target RNA into GAM62207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR512 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR512 gene: GAM2821 target protein, GAM24853 target protein and GAM62207 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2821, GAM24853 and GAM62207

GR513 AW239518 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 513(GR513) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR513 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR513 gene was detected is described hereinabove with reference to Figs. 8-18.

GR513 gene encodes GR513 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR513 precursor RNA folds spatially, forming GR513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR513 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR513 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1963 precursor RNA, GAM7404 precursor RNA and GAM329757 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1963 RNA, GAM7404 RNA and GAM329757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1963 target RNA into GAM1963 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7404 target RNA into GAM7404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329757 target RNA into GAM329757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR513 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR513 gene: GAM1963 target protein, GAM7404 target protein and GAM329757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1963, GAM7404 and GAM329757

GR514 AV729639 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 514(GR514) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR514 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR514 gene was detected is described hereinabove with reference to Figs. 8-18.

GR514 gene encodes GR514 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR514 precursor RNA folds spatially, forming GR514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR514 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR514 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM12741 precursor RNA, GAM57522 precursor RNA, GAM146203 precursor RNA and GAM270381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12741 RNA, GAM57522 RNA, GAM146203 RNA and GAM270381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12741 target RNA into GAM12741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57522 target RNA into GAM57522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146203 target RNA into GAM146203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270381 target RNA into GAM270381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR514 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR514 gene: GAM12741 target protein, GAM57522 target protein, GAM146203 target protein and GAM270381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12741, GAM57522, GAM146203 and GAM270381

GR515 BI770739 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 515(GR515) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR515 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR515 gene was detected is described hereinabove with reference to Figs. 8-18.

GR515 gene encodes GR515 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR515 precursor RNA folds spatially, forming GR515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR515 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR515 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3588 precursor RNA, GAM8470 precursor RNA and GAM221292 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3588 RNA, GAM8470 RNA and GAM221292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3588 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3588 target RNA into GAM3588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8470 target RNA into GAM8470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221292 target RNA into GAM221292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR515 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR515 gene: GAM3588 target protein, GAM8470 target protein and GAM221292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3588, GAM8470 and GAM221292

GR516 BQ014155 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 516(GR516) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR516 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR516 gene was detected is described hereinabove with reference to Figs. 8-18.

GR516 gene encodes GR516 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR516 precursor RNA folds spatially, forming GR516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR516 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR516 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM269022 precursor RNA and GAM294176 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM269022 RNA and GAM294176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM269022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269022 target RNA into GAM269022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294176 target RNA into GAM294176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR516 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR516 gene: GAM269022 target protein and GAM294176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM269022 and GAM294176

GR517 R12651 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 517(GR517) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR517 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR517 gene was detected is described hereinabove with reference to Figs. 8-18.

GR517 gene encodes GR517 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR517 precursor RNA folds spatially, forming GR517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR517 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR517 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM271483 precursor RNA and GAM300608 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM271483 RNA and GAM300608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM271483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271483 target RNA into GAM271483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300608 target RNA into GAM300608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR517 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR517 gene: GAM271483 target protein and GAM300608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM271483 and GAM300608

GR518 BF307673 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 518(GR518) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR518 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR518 gene was detected is described hereinabove with reference to Figs. 8-18.

GR518 gene encodes GR518 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR518 precursor RNA folds spatially, forming GR518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR518 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR518 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7621 precursor RNA and GAM251513 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7621 RNA and GAM251513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7621 target RNA into GAM7621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251513 target RNA into GAM251513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR518 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR518 gene: GAM7621 target protein and GAM251513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7621 and GAM251513

GR519 BG285682 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 519(GR519) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR519 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR519 gene was detected is described hereinabove with reference to Figs. 8-18.

GR519 gene encodes GR519 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR519 precursor RNA folds spatially, forming GR519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR519 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR519 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM78100 precursor RNA, GAM123668 precursor RNA and GAM198924 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78100 RNA, GAM123668 RNA and GAM198924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78100 target RNA into GAM78100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123668 target RNA into GAM123668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198924 target RNA into GAM198924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR519 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR519 gene: GAM78100 target protein, GAM123668 target protein and GAM198924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78100, GAM123668 and GAM198924

GR520 BI757456 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 520(GR520) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR520 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR520 gene was detected is described hereinabove with reference to Figs. 8-18.

GR520 gene encodes GR520 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR520 precursor RNA folds spatially, forming GR520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR520 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR520 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40218 precursor RNA and GAM199663 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40218 RNA and GAM199663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40218 target RNA into GAM40218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199663 target RNA into GAM199663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR520 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR520 gene: GAM40218 target protein and GAM199663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40218 and GAM199663

GR521 BE546427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 521(GR521) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR521 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR521 gene was detected is described hereinabove with reference to Figs. 8-18.

GR521 gene encodes GR521 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR521 precursor RNA folds spatially, forming GR521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR521 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR521 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM245027 precursor RNA and GAM261057 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM245027 RNA and GAM261057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM245027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245027

target RNA into GAM245027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261057 target RNA into GAM261057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR521 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR521 gene: GAM245027 target protein and GAM261057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM245027 and GAM261057

GR522 BI457959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 522(GR522) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR522 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR522 gene was detected is described hereinabove with reference to Figs. 8-18.

GR522 gene encodes GR522 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR522 precursor RNA folds spatially, forming GR522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR522 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR522 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM6313 precursor RNA, GAM207638 precursor RNA, GAM251854 precursor RNA, GAM263507 precursor RNA and GAM330146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6313 RNA, GAM207638 RNA, GAM251854 RNA, GAM263507 RNA and GAM330146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6313 target RNA into GAM6313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207638 target RNA into GAM207638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251854 target RNA into GAM251854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263507 target RNA into GAM263507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330146 target RNA into GAM330146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR522 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR522 gene: GAM6313 target protein, GAM207638 target protein, GAM251854 target protein, GAM263507 target protein and GAM330146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6313, GAM207638, GAM251854, GAM263507 and GAM330146

GR523 BE819662 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 523(GR523) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR523 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR523 gene was detected is described hereinabove with reference to Figs. 8-18.

GR523 gene encodes GR523 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR523 precursor RNA folds spatially, forming GR523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR523 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR523 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM438 precursor RNA and GAM3401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM438 RNA and GAM3401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM438 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM438 target RNA into GAM438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3401 target RNA into GAM3401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR523 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR523 gene: GAM438 target protein and GAM3401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM438 and GAM3401

GR524 AI950947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 524(GR524) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR524 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR524 gene was detected is described hereinabove with reference to Figs. 8-18.

GR524 gene encodes GR524 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR524 precursor RNA folds spatially, forming GR524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR524 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR524 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM52900 precursor RNA, GAM88220 precursor RNA

and GAM134751 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52900 RNA, GAM88220 RNA and GAM134751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52900 target RNA into GAM52900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88220 target RNA into GAM88220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134751 target RNA into GAM134751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR524 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR524 gene: GAM52900 target protein, GAM88220 target protein and GAM134751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52900, GAM88220 and GAM134751

GR525 AW583466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 525(GR525) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR525 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR525 gene was detected is described hereinabove with reference to Figs. 8-18.

GR525 gene encodes GR525 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR525 precursor RNA folds spatially, forming GR525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR525 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR525 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1917 precursor RNA and GAM311990 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1917 RNA and GAM311990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1917 target RNA into GAM1917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311990 target RNA into GAM311990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR525 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR525 gene: GAM1917 target protein and GAM311990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1917 and GAM311990

GR526 AA085538 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 526(GR526) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR526 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR526 gene was detected is described hereinabove with reference to Figs. 8-18.

GR526 gene encodes GR526 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR526 precursor RNA folds spatially, forming GR526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR526 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR526 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5843 precursor RNA and GAM238210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5843 RNA and GAM238210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5843 target RNA into GAM5843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238210 target RNA into GAM238210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR526 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR526 gene: GAM5843 target protein and GAM238210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5843 and GAM238210

GR527 AW997672 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 527(GR527) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR527 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR527 gene was detected is described hereinabove with reference to Figs. 8-18.

GR527 gene encodes GR527 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR527 precursor RNA folds spatially, forming GR527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR527 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR527 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM70326 precursor RNA and GAM203570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70326 RNA and GAM203570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70326 target RNA into GAM70326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203570 target RNA into GAM203570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR527 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR527 gene: GAM70326 target protein and GAM203570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70326 and GAM203570

GR528 BG661237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 528(GR528) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR528 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR528 gene was detected is described hereinabove with reference to Figs. 8-18.

GR528 gene encodes GR528 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR528 precursor RNA folds spatially, forming GR528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR528 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR528 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1415 precursor RNA and GAM38647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1415 RNA and GAM38647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1415 target RNA into GAM1415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38647 target RNA into GAM38647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR528 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR528 gene: GAM1415 target protein and GAM38647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1415 and GAM38647

GR529 BG113964 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

529(GR529) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR529 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR529 gene was detected is described hereinabove with reference to Figs. 8-18.

GR529 gene encodes GR529 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR529 precursor RNA folds spatially, forming GR529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR529 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR529 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7550 precursor RNA and GAM92778 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7550 RNA and GAM92778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7550 target RNA into GAM7550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92778 target RNA into GAM92778 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR529 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR529 gene: GAM7550 target protein and GAM92778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7550 and GAM92778

GR530 AA431585 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 530(GR530) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR530 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR530 gene was detected is described hereinabove with reference to Figs. 8-18.

GR530 gene encodes GR530 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR530 precursor RNA folds spatially, forming GR530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR530 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR530 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5819 precursor RNA and GAM7288 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5819 RNA and GAM7288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5819 target RNA into GAM5819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7288 target RNA into GAM7288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR530 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR530 gene: GAM5819 target protein and GAM7288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5819 and GAM7288

GR531 BG961462 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 531(GR531) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR531 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR531 gene was detected is described hereinabove with reference to Figs. 8-18.

GR531 gene encodes GR531 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR531 precursor RNA folds spatially, forming GR531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR531 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR531 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM293 precursor RNA and GAM4549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM293 RNA and GAM4549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293 target RNA into GAM293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4549 target RNA into GAM4549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR531 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR531 gene: GAM293 target protein and GAM4549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM293 and GAM4549

GR532 BM017373 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 532(GR532) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR532 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR532 gene was detected is described hereinabove with reference to Figs. 8-18.

GR532 gene encodes GR532 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR532 precursor RNA folds spatially, forming GR532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR532 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR532 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2818 precursor RNA, GAM7295 precursor RNA and GAM97179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2818 RNA, GAM7295 RNA and GAM97179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2818 target RNA into GAM2818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7295 target RNA into GAM7295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97179 target RNA into GAM97179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR532 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR532 gene: GAM2818 target protein, GAM7295 target protein and GAM97179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2818, GAM7295 and GAM97179

GR533 BF241976 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 533(GR533) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR533 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR533 gene was detected is described hereinabove with reference to Figs. 8-18.

GR533 gene encodes GR533 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR533 precursor RNA folds spatially, forming GR533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR533 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR533 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6338 precursor RNA and GAM275355 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6338 RNA and GAM275355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6338 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6338 target RNA into GAM6338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275355 target RNA into GAM275355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR533 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR533 gene: GAM6338 target protein and GAM275355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6338 and GAM275355

GR534 BG251318 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 534(GR534) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR534 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR534 gene was detected is described hereinabove with reference to Figs. 8-18.

GR534 gene encodes GR534 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR534 precursor RNA folds spatially, forming GR534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR534 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR534 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM127366 precursor RNA, GAM144027 precursor RNA

and GAM223931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127366 RNA, GAM144027 RNA and GAM223931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127366 target RNA into GAM127366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144027 target RNA into GAM144027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223931 target RNA into GAM223931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR534 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR534 gene: GAM127366 target protein, GAM144027 target protein and GAM223931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127366, GAM144027 and GAM223931

GR535 BM013103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 535(GR535) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR535 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR535 gene was detected is described hereinabove with reference to Figs. 8-18.

GR535 gene encodes GR535 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR535 precursor RNA folds spatially, forming GR535 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR535 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR535 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR535 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM163418 precursor RNA and GAM289656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM163418 RNA and GAM289656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM163418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163418 target RNA into GAM163418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289656 target RNA into GAM289656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR535 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR535 gene: GAM163418 target protein and GAM289656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM163418 and GAM289656

GR536 BI462509 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 536(GR536) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR536 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR536 gene was detected is described hereinabove with reference to Figs. 8-18.

GR536 gene encodes GR536 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR536 precursor RNA folds spatially, forming GR536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR536 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR536 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM76092 precursor RNA, GAM276148 precursor RNA and GAM323249 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76092 RNA, GAM276148 RNA and GAM323249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76092 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76092 target RNA into GAM76092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276148 target RNA into GAM276148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323249 target RNA into GAM323249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR536 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR536 gene: GAM76092 target protein, GAM276148 target protein and GAM323249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76092, GAM276148 and GAM323249

GR537 BE876618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 537(GR537) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR537 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR537 gene was detected is described hereinabove with reference to Figs. 8-18.

GR537 gene encodes GR537 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR537 precursor RNA folds spatially, forming GR537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR537 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR537 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5101 precursor RNA, GAM65073 precursor RNA and GAM225018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5101 RNA, GAM65073 RNA and GAM225018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5101 target RNA into GAM5101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65073 target RNA into GAM65073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225018 target RNA into GAM225018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR537 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR537 gene: GAM5101 target protein, GAM65073 target protein and GAM225018 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5101, GAM65073 and GAM225018

GR538 AU124977 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 538(GR538) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR538 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR538 gene was detected is described hereinabove with reference to Figs. 8-18.

GR538 gene encodes GR538 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR538 precursor RNA folds spatially, forming GR538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR538 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR538 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM267 precursor RNA and GAM211536 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM267 RNA and GAM211536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267 target RNA into GAM267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211536 target RNA into GAM211536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR538 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR538 gene: GAM267 target protein and GAM211536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM267 and GAM211536

GR539 BG120003 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 539(GR539) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR539 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR539 gene was detected is described hereinabove with reference to Figs. 8-18.

GR539 gene encodes GR539 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR539 precursor RNA folds spatially, forming GR539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR539 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR539 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7875 precursor RNA, GAM255941 precursor RNA and GAM291444 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7875 RNA, GAM255941 RNA and GAM291444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7875 target RNA into GAM7875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255941 target RNA into GAM255941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291444 target RNA into GAM291444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR539 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR539 gene: GAM7875 target protein, GAM255941 target protein and GAM291444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7875, GAM255941 and GAM291444

GR540 BI667846 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 540(GR540) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR540 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR540

gene was detected is described hereinabove with reference to Figs. 8-18.

GR540 gene encodes GR540 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR540 precursor RNA folds spatially, forming GR540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR540 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR540 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12814 precursor RNA and GAM302136 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12814 RNA and GAM302136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12814 target RNA into GAM12814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302136 target RNA into GAM302136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR540 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR540 gene: GAM12814 target protein and GAM302136 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12814 and GAM302136

GR541 BF692762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 541(GR541) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR541 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR541 gene was detected is described hereinabove with reference to Figs. 8-18.

GR541 gene encodes GR541 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR541 precursor RNA folds spatially, forming GR541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR541 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR541 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM837 precursor RNA, GAM4119 precursor RNA and GAM60279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM837 RNA, GAM4119 RNA and GAM60279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM837 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM837 target RNA into GAM837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4119 target RNA into GAM4119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60279 target RNA into GAM60279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR541 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR541 gene: GAM837 target protein, GAM4119 target protein and GAM60279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM837, GAM4119 and GAM60279

GR542 BM831993 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 542(GR542) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR542 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR542 gene was detected is described hereinabove with reference to Figs. 8-18.

GR542 gene encodes GR542 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR542 precursor RNA folds spatially, forming GR542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR542 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR542 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129679 precursor RNA and GAM300109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129679 RNA and GAM300109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129679 target RNA into GAM129679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300109 target RNA into GAM300109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR542 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR542 gene: GAM129679 target protein and GAM300109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129679 and GAM300109

GR543 BG325913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 543(GR543) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR543 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR543 gene was detected is described hereinabove with reference to Figs. 8-18.

GR543 gene encodes GR543 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR543 precursor RNA folds spatially, forming GR543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR543 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR543 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3523 precursor RNA, GAM90729 precursor RNA and GAM212133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3523 RNA, GAM90729 RNA and GAM212133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3523 target RNA into GAM3523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90729 target RNA into GAM90729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212133

target RNA into GAM212133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR543 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR543 gene: GAM3523 target protein, GAM90729 target protein and GAM212133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3523, GAM90729 and GAM212133

GR544 BI027084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 544(GR544) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR544 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR544 gene was detected is described hereinabove with reference to Figs. 8-18.

GR544 gene encodes GR544 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR544 precursor RNA folds spatially, forming GR544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR544 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR544 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2517 precursor RNA and GAM6204 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2517 RNA and GAM6204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2517 target RNA into GAM2517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6204 target RNA into GAM6204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR544 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR544 gene: GAM2517 target protein and GAM6204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2517 and GAM6204

GR545 H14674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 545(GR545) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR545 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR545 gene was detected is described hereinabove with reference to Figs. 8-18.

GR545 gene encodes GR545 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR545 precursor RNA folds spatially, forming GR545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR545 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR545 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81068 precursor RNA and GAM318152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81068 RNA and GAM318152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81068 target RNA into GAM81068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318152 target RNA into GAM318152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR545 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR545 gene: GAM81068 target protein and GAM318152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81068 and GAM318152

GR546 BM715742 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 546(GR546) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR546 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR546 gene was detected is described hereinabove with reference to Figs. 8-18.

GR546 gene encodes GR546 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR546 precursor RNA folds spatially, forming GR546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR546 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR546 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8207 precursor RNA and GAM52885 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8207 RNA and GAM52885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8207 target RNA into GAM8207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52885 target RNA into GAM52885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR546 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR546 gene: GAM8207 target protein and GAM52885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM8207 and GAM52885

GR547 BF575079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 547(GR547) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR547 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR547 gene was detected is described hereinabove with reference to Figs. 8-18.

GR547 gene encodes GR547 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR547 precursor RNA folds spatially, forming GR547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR547 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR547 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7589 precursor RNA, GAM312946 precursor RNA and GAM317614 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7589 RNA, GAM312946 RNA and GAM317614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7589 target RNA into GAM7589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM312946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312946 target RNA into GAM312946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317614 target RNA into GAM317614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR547 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR547 gene: GAM7589 target protein, GAM312946 target protein and GAM317614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7589, GAM312946 and GAM317614

GR548 AA411973 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 548(GR548) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR548 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR548 gene was detected is described hereinabove with reference to Figs. 8-18.

GR548 gene encodes GR548 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR548 precursor RNA folds spatially, forming GR548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR548 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR548 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR548 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4593 precursor RNA, GAM5969 precursor RNA and GAM248591 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4593 RNA, GAM5969 RNA and GAM248591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4593 target RNA into GAM4593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5969 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5969 target RNA into GAM5969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248591 target RNA into GAM248591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR548 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR548 gene: GAM4593 target protein, GAM5969 target protein and GAM248591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4593, GAM5969 and GAM248591

GR549 BE294209 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

549(GR549) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR549 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR549 gene was detected is described hereinabove with reference to Figs. 8-18.

GR549 gene encodes GR549 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR549 precursor RNA folds spatially, forming GR549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR549 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR549 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3503 precursor RNA and GAM3773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3503 RNA and GAM3773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3503 target RNA into GAM3503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3773 target RNA into GAM3773 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR549 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR549 gene: GAM3503 target protein and GAM3773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3503 and GAM3773

GR550 AV753174 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 550(GR550) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR550 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR550 gene was detected is described hereinabove with reference to Figs. 8-18.

GR550 gene encodes GR550 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR550 precursor RNA folds spatially, forming GR550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR550 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR550 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM699 precursor RNA, GAM7467 precursor RNA and GAM225924 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM699 RNA, GAM7467 RNA and GAM225924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM699 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM699 target RNA into GAM699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7467 target RNA into GAM7467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225924 target RNA into GAM225924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR550 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR550 gene: GAM699 target protein, GAM7467 target protein and GAM225924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM699, GAM7467 and GAM225924

GR551 BM145468 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 551(GR551) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR551 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR551 gene was detected is described hereinabove with reference to Figs. 8-18.

GR551 gene encodes GR551 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR551 precursor RNA folds spatially, forming GR551 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR551 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR551 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM72913 precursor RNA and GAM320828 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72913 RNA and GAM320828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72913 target RNA into GAM72913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320828 target RNA into GAM320828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR551 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR551 gene: GAM72913 target protein and GAM320828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72913 and GAM320828

GR552 BG941260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 552(GR552) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR552 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR552 gene was detected is described hereinabove with reference to Figs. 8-18.

GR552 gene encodes GR552 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR552 precursor RNA folds spatially, forming GR552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR552 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR552 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6182 precursor RNA and GAM39852 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6182 RNA and GAM39852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6182 target RNA into GAM6182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM39852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39852 target RNA into GAM39852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR552 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR552 gene: GAM6182 target protein and GAM39852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6182 and GAM39852

GR553 AA457167 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 553(GR553) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR553 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR553 gene was detected is described hereinabove with reference to Figs. 8-18.

GR553 gene encodes GR553 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR553 precursor RNA folds spatially, forming GR553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR553 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR553 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM153940 precursor RNA, GAM173924 precursor RNA and GAM249120 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM153940 RNA, GAM173924 RNA and GAM249120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM153940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM153940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153940 target RNA into GAM153940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173924 target RNA into GAM173924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249120 target RNA into GAM249120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR553 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR553 gene: GAM153940 target protein, GAM173924 target protein and GAM249120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM153940, GAM173924 and GAM249120

GR554 BG482975 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 554(GR554) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR554 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR554 gene was detected is described hereinabove with reference to Figs. 8-18.

GR554 gene encodes GR554 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR554 precursor RNA folds spatially, forming GR554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR554

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR554 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM227356 precursor RNA and GAM304921 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM227356 RNA and GAM304921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM227356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227356 target RNA into GAM227356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304921 target RNA into GAM304921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR554 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR554 gene: GAM227356 target protein and GAM304921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM227356 and GAM304921

GR555 AW518977 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 555(GR555) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR555 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR555 gene was detected is described hereinabove with reference to Figs. 8-18.

GR555 gene encodes GR555 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR555 precursor RNA folds spatially, forming GR555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR555 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR555 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41687 precursor RNA and GAM117406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41687 RNA and GAM117406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41687 target RNA into GAM41687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117406 target RNA into GAM117406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR555 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR555 gene: GAM41687 target protein and GAM117406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41687 and GAM117406

GR556 BF893251 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 556(GR556) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR556 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR556 gene was detected is described hereinabove with reference to Figs. 8-18.

GR556 gene encodes GR556 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR556 precursor RNA folds spatially, forming GR556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR556 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR556 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81736 precursor RNA and GAM197240 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81736 RNA and GAM197240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81736 target RNA into GAM81736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197240 target RNA into GAM197240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR556 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR556 gene: GAM81736 target protein and GAM197240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81736 and GAM197240

GR557 BQ018181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 557(GR557) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR557 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR557 gene was detected is described hereinabove with reference to Figs. 8-18.

GR557 gene encodes GR557 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR557 precursor RNA folds spatially, forming GR557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR557 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR557 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2078 precursor RNA and GAM205260 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2078 RNA and GAM205260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2078 target RNA into GAM2078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205260 target RNA into GAM205260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR557 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR557 gene: GAM2078 target protein and GAM205260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2078 and GAM205260

GR558 BG105101 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 558(GR558) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR558 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR558 gene was detected is described hereinabove with reference to Figs. 8-18.

GR558 gene encodes GR558 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR558 precursor RNA folds spatially, forming GR558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR558 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR558 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53882 precursor RNA and GAM224366 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53882 RNA and GAM224366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53882 target RNA into GAM53882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224366 target RNA into GAM224366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR558 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR558 gene: GAM53882 target protein and GAM224366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53882 and GAM224366

GR559 BM807130 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

559(GR559) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR559 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR559 gene was detected is described hereinabove with reference to Figs. 8-18.

GR559 gene encodes GR559 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR559 precursor RNA folds spatially, forming GR559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR559 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR559 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1328 precursor RNA, GAM158905 precursor RNA and GAM277145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1328 RNA, GAM158905 RNA and GAM277145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1328 target RNA into GAM1328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158905

target RNA into GAM158905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277145 target RNA into GAM277145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR559 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR559 gene: GAM1328 target protein, GAM158905 target protein and GAM277145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1328, GAM158905 and GAM277145

GR560 AI912781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 560(GR560) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR560 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR560 gene was detected is described hereinabove with reference to Figs. 8-18.

GR560 gene encodes GR560 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR560 precursor RNA folds spatially, forming GR560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR560 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR560 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5587 precursor RNA, GAM35908 precursor RNA and GAM136458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5587 RNA, GAM35908 RNA and GAM136458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5587 target RNA into GAM5587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35908 target RNA into GAM35908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136458 target RNA into GAM136458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR560 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR560 gene: GAM5587 target protein, GAM35908 target protein and GAM136458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5587, GAM35908 and GAM136458

GR561 AW675434 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 561(GR561) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR561 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR561 gene was detected is described hereinabove with reference to Figs. 8-18.

GR561 gene encodes GR561 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR561 precursor RNA folds spatially, forming GR561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR561 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR561 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM42443 precursor RNA, GAM133988 precursor RNA and GAM326701 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42443 RNA, GAM133988 RNA and GAM326701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42443 target RNA into GAM42443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133988 target RNA into GAM133988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM326701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326701 target RNA into GAM326701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR561 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR561 gene: GAM42443 target protein, GAM133988 target protein and GAM326701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42443, GAM133988 and GAM326701

GR562 AW293005 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 562(GR562) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR562 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR562 gene was detected is described hereinabove with reference to Figs. 8-18.

GR562 gene encodes GR562 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR562 precursor RNA folds spatially, forming GR562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR562 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR562 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7997 precursor RNA and GAM206281 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7997 RNA and GAM206281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7997 target RNA into GAM7997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206281 target RNA into GAM206281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR562 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR562 gene: GAM7997 target protein and GAM206281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7997 and GAM206281

GR563 BM729256 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 563(GR563) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR563 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR563 gene was detected is described hereinabove with reference to Figs. 8-18.

GR563 gene encodes GR563 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR563 precursor RNA folds spatially, forming GR563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR563 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR563 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4583 precursor RNA and GAM334936 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4583 RNA and GAM334936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4583 target RNA into GAM4583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334936 target RNA into GAM334936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR563 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR563 gene: GAM4583 target protein and GAM334936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4583 and GAM334936

GR564 BG770468 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 564(GR564) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR564 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR564 gene was detected is described hereinabove with reference to Figs. 8-18.

GR564 gene encodes GR564 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR564 precursor RNA folds spatially, forming GR564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR564 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR564 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM101244 precursor RNA, GAM101955 precursor RNA and GAM274470 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101244 RNA, GAM101955 RNA and GAM274470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101244 target RNA into GAM101244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101955 target RNA into GAM101955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274470 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274470 target RNA into GAM274470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR564 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR564 gene: GAM101244 target protein, GAM101955 target protein and GAM274470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101244, GAM101955 and GAM274470

GR565 BE538668 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 565(GR565) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR565 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR565 gene was detected is described hereinabove with reference to Figs. 8-18.

GR565 gene encodes GR565 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR565 precursor RNA folds spatially, forming GR565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR565 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR565 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2561 precursor RNA and GAM4992 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2561 RNA and GAM4992 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2561 target RNA into GAM2561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4992 target RNA into GAM4992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR565 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR565 gene: GAM2561 target protein and GAM4992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2561 and GAM4992

GR566 H03900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 566(GR566) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR566 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR566 gene was detected is described hereinabove with reference to Figs. 8-18.

GR566 gene encodes GR566 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR566 precursor RNA folds spatially, forming GR566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR566 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR566 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5465 precursor RNA, GAM86411 precursor RNA and GAM105090 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5465 RNA, GAM86411 RNA and GAM105090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5465 target RNA into GAM5465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86411 target RNA into GAM86411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105090 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105090 target RNA into GAM105090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR566 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR566 gene: GAM5465 target protein, GAM86411 target protein and GAM105090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5465, GAM86411 and

GAM105090

GR567 BG926085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 567(GR567) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR567 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR567 gene was detected is described hereinabove with reference to Figs. 8-18.

GR567 gene encodes GR567 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR567 precursor RNA folds spatially, forming GR567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR567 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR567 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5781 precursor RNA and GAM274041 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5781 RNA and GAM274041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5781 target RNA into GAM5781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274041 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274041 target RNA into GAM274041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR567 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR567 gene: GAM5781 target protein and GAM274041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5781 and GAM274041

GR568 BM006992 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 568(GR568) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR568 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR568 gene was detected is described hereinabove with reference to Figs. 8-18.

GR568 gene encodes GR568 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR568 precursor RNA folds spatially, forming GR568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR568 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR568 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116784 precursor RNA and GAM160015 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116784 RNA and GAM160015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM116784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116784 target RNA into GAM116784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160015 target RNA into GAM160015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR568 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR568 gene: GAM116784 target protein and GAM160015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116784 and GAM160015

GR569 BI827773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 569(GR569) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR569 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR569 gene was detected is described hereinabove with reference to Figs. 8-18.

GR569 gene encodes GR569 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR569 precursor RNA folds spatially, forming GR569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR569 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR569 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5675 precursor RNA, GAM59990 precursor RNA and GAM70938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5675 RNA, GAM59990 RNA and GAM70938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5675 target RNA into GAM5675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59990 target RNA into GAM59990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70938 target RNA into GAM70938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR569 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR569 gene: GAM5675 target protein, GAM59990 target protein and GAM70938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5675, GAM59990 and GAM70938

GR570 BE892429 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 570(GR570) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR570 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR570 gene was detected is described hereinabove with reference to Figs. 8-18.

GR570 gene encodes GR570 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR570 precursor RNA folds spatially, forming GR570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR570 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR570 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34582 precursor RNA and GAM133378 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34582 RNA and GAM133378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34582 target RNA into GAM34582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133378 target RNA into GAM133378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR570 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR570 gene: GAM34582 target protein and GAM133378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34582 and GAM133378

GR571 BI519196 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 571(GR571) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR571 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR571 gene was detected is described hereinabove with reference to Figs. 8-18.

GR571 gene encodes GR571 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR571 precursor RNA folds spatially, forming GR571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR571 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR571 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99807 precursor RNA and GAM257836 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99807 RNA and GAM257836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99807 target RNA into GAM99807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257836 target RNA into GAM257836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR571 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR571 gene: GAM99807 target protein and GAM257836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99807 and GAM257836

GR572 BQ024160 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 572(GR572) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR572 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR572 gene was detected is described hereinabove with reference to Figs. 8-18.

GR572 gene encodes GR572 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR572 precursor RNA folds spatially, forming GR572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR572 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR572 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM70 precursor RNA and GAM116556 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70 RNA and GAM116556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70 target RNA into GAM70 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116556 target RNA into GAM116556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR572 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR572 gene: GAM70 target protein and GAM116556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70 and GAM116556

GR573 BF103982 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 573(GR573) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR573 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR573 gene was detected is described hereinabove with reference to Figs. 8-18.

GR573 gene encodes GR573 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR573 precursor RNA folds spatially, forming GR573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR573 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR573 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM30803 precursor RNA, GAM115061 precursor RNA and GAM301614 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30803 RNA, GAM115061 RNA and GAM301614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30803 target RNA into GAM30803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115061 target RNA into GAM115061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301614

target RNA into GAM301614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR573 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR573 gene: GAM30803 target protein, GAM115061 target protein and GAM301614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30803, GAM115061 and GAM301614

GR574 BE044193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 574(GR574) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR574 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR574 gene was detected is described hereinabove with reference to Figs. 8-18.

GR574 gene encodes GR574 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR574 precursor RNA folds spatially, forming GR574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR574 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR574 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3476 precursor RNA and GAM32082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3476 RNA and GAM32082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3476 target RNA into GAM3476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32082 target RNA into GAM32082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR574 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR574 gene: GAM3476 target protein and GAM32082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3476 and GAM32082

GR575 AI039359 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 575(GR575) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR575 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR575 gene was detected is described hereinabove with reference to Figs. 8-18.

GR575 gene encodes GR575 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR575 precursor RNA folds spatially, forming GR575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR575 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR575 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1558 precursor RNA and GAM5551 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1558 RNA and GAM5551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1558 target RNA into GAM1558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5551 target RNA into GAM5551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR575 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR575 gene: GAM1558 target protein and GAM5551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1558 and GAM5551

GR576 BI916708 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 576(GR576) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR576 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR576 gene was detected is described hereinabove with reference to Figs. 8-18.

GR576 gene encodes GR576 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR576 precursor RNA folds spatially, forming GR576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR576 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR576 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6865 precursor RNA, GAM64940 precursor RNA and GAM248465 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6865 RNA, GAM64940 RNA and GAM248465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6865 target RNA into GAM6865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64940 target RNA into GAM64940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248465 target RNA into GAM248465 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR576 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR576 gene: GAM6865 target protein, GAM64940 target protein and GAM248465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6865, GAM64940 and GAM248465

GR577 AA159675 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 577(GR577) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR577 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR577 gene was detected is described hereinabove with reference to Figs. 8-18.

GR577 gene encodes GR577 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR577 precursor RNA folds spatially, forming GR577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR577 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR577 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21603 precursor RNA and GAM97726 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21603 RNA and GAM97726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21603 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21603 target RNA into GAM21603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97726 target RNA into GAM97726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR577 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR577 gene: GAM21603 target protein and GAM97726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21603 and GAM97726

GR578 AU118872 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 578(GR578) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR578 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR578 gene was detected is described hereinabove with reference to Figs. 8-18.

GR578 gene encodes GR578 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR578 precursor RNA folds spatially, forming GR578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR578 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR578 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR578 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM9055 precursor RNA, GAM33317 precursor RNA and GAM62543 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9055 RNA, GAM33317 RNA and GAM62543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9055 target RNA into GAM9055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33317 target RNA into GAM33317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62543 target RNA into GAM62543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR578 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR578 gene: GAM9055 target protein, GAM33317 target protein and GAM62543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9055, GAM33317 and GAM62543

GR579 BG762030 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

579(GR579) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR579 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR579 gene was detected is described hereinabove with reference to Figs. 8-18.

GR579 gene encodes GR579 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR579 precursor RNA folds spatially, forming GR579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR579 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR579 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4439 precursor RNA and GAM85790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4439 RNA and GAM85790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4439 target RNA into GAM4439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85790 target RNA into GAM85790 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR579 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR579 gene: GAM4439 target protein and GAM85790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4439 and GAM85790

GR580 BI225084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 580(GR580) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR580 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR580 gene was detected is described hereinabove with reference to Figs. 8-18.

GR580 gene encodes GR580 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR580 precursor RNA folds spatially, forming GR580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR580 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR580 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48430 precursor RNA and GAM307468 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48430 RNA and GAM307468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM48430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48430 target RNA into GAM48430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307468 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307468 target RNA into GAM307468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR580 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR580 gene: GAM48430 target protein and GAM307468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48430 and GAM307468

GR581 AV706945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 581(GR581) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR581 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR581 gene was detected is described hereinabove with reference to Figs. 8-18.

GR581 gene encodes GR581 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR581 precursor RNA folds spatially, forming GR581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR581 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR581 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM3086 precursor RNA and GAM123443 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3086 RNA and GAM123443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3086 target RNA into GAM3086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123443 target RNA into GAM123443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR581 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR581 gene: GAM3086 target protein and GAM123443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3086 and GAM123443

GR582 BE258934 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 582(GR582) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR582 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR582 gene was detected is described hereinabove with reference to Figs. 8-18.

GR582 gene encodes GR582 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR582 precursor RNA folds spatially, forming GR582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR582 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR582 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM154293 precursor RNA and GAM194891 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM154293 RNA and GAM194891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM154293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154293 target RNA into GAM154293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194891 target RNA into GAM194891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR582 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR582 gene: GAM154293 target protein and GAM194891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM154293 and GAM194891

GR583 F29004 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 583(GR583) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR583 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR583 gene was detected is described hereinabove with reference to Figs. 8-18.

GR583 gene encodes GR583 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR583 precursor RNA folds spatially, forming GR583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR583 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR583 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM198172 precursor RNA, GAM215133 precursor RNA and GAM285388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM198172 RNA, GAM215133 RNA and GAM285388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM198172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198172 target RNA into GAM198172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215133 target RNA into GAM215133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285388 target RNA into GAM285388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR583 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR583 gene: GAM198172 target protein, GAM215133 target protein and GAM285388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM198172, GAM215133 and GAM285388

GR584 BE748415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 584(GR584) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR584 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR584 gene was detected is described hereinabove with reference to Figs. 8-18.

GR584 gene encodes GR584 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR584 precursor RNA folds spatially, forming GR584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR584 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR584 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19004 precursor RNA and GAM335609 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19004 RNA and GAM335609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19004 target RNA into GAM19004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335609 target RNA into GAM335609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR584 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR584 gene: GAM19004 target protein and GAM335609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19004 and GAM335609

GR585 BI057880 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 585(GR585) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR585 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR585 gene was detected is described hereinabove with reference to Figs. 8-18.

GR585 gene encodes GR585 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR585 precursor RNA folds spatially, forming GR585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR585 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR585 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31745 precursor RNA and GAM290740 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31745 RNA and GAM290740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31745 target RNA into GAM31745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290740 target RNA into GAM290740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR585 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR585 gene: GAM31745 target protein and GAM290740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31745 and GAM290740

GR586 BI489988 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 586(GR586) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR586 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR586 gene was detected is described hereinabove with reference to Figs. 8-18.

GR586 gene encodes GR586 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR586 precursor RNA folds spatially, forming GR586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR586 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR586 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5362 precursor RNA and GAM290505 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5362 RNA and GAM290505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5362 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5362 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5362 target RNA into GAM5362 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290505

target RNA into GAM290505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR586 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR586 gene: GAM5362 target protein and GAM290505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5362 and GAM290505

GR587 AA655017 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 587(GR587) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR587 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR587 gene was detected is described hereinabove with reference to Figs. 8-18.

GR587 gene encodes GR587 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR587 precursor RNA folds spatially, forming GR587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR587 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR587 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM212587 precursor RNA and GAM315172 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM212587 RNA and GAM315172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM212587 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212587 target RNA into GAM212587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315172 target RNA into GAM315172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR587 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR587 gene: GAM212587 target protein and GAM315172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM212587 and GAM315172

GR588 BF112073 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 588(GR588) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR588 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR588 gene was detected is described hereinabove with reference to Figs. 8-18.

GR588 gene encodes GR588 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR588 precursor RNA folds spatially, forming GR588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR588 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR588 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR588 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM108232 precursor RNA and GAM130965 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108232 RNA and GAM130965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108232 target RNA into GAM108232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130965 target RNA into GAM130965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR588 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR588 gene: GAM108232 target protein and GAM130965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108232 and GAM130965

GR589 AI361314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 589(GR589) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR589 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR589 gene was detected is described hereinabove with reference to Figs. 8-18.

GR589 gene encodes GR589 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR589 precursor RNA folds spatially, forming GR589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR589 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR589 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4874 precursor RNA and GAM5534 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4874 RNA and GAM5534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4874 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4874 target RNA into GAM4874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5534 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5534 target RNA into GAM5534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR589 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR589 gene: GAM4874 target protein and GAM5534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4874 and GAM5534

GR590 BF921505 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 590(GR590) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR590 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR590 gene was detected is described hereinabove with reference to Figs. 8-18.

GR590 gene encodes GR590 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR590 precursor RNA folds spatially, forming GR590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR590 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR590 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM249154 precursor RNA and GAM269891 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM249154 RNA and GAM269891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM249154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249154 target RNA into GAM249154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269891 target RNA into GAM269891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR590 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR590 gene: GAM249154 target protein and GAM269891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM249154 and GAM269891

GR591 T41177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 591(GR591) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR591 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR591 gene was detected is described hereinabove with reference to Figs. 8-18.

GR591 gene encodes GR591 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR591 precursor RNA folds spatially, forming GR591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR591 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR591 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM188896 precursor RNA, GAM260554 precursor RNA and GAM331910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM188896 RNA, GAM260554 RNA and GAM331910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM188896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188896 target RNA into GAM188896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260554 target RNA into GAM260554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331910 target RNA into GAM331910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR591 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR591 gene: GAM188896 target protein, GAM260554 target protein and GAM331910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM188896, GAM260554 and GAM331910

GR592 R53335 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 592(GR592) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR592 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR592 gene was detected is described hereinabove with reference to Figs. 8-18.

GR592 gene encodes GR592 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR592 precursor RNA folds spatially, forming GR592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR592 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR592 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24187 precursor RNA, GAM191374 precursor RNA and GAM328164 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24187 RNA, GAM191374 RNA and GAM328164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24187 target RNA into GAM24187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191374 target RNA into GAM191374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328164 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328164 target RNA into GAM328164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR592 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR592 gene: GAM24187 target protein, GAM191374 target protein and GAM328164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24187, GAM191374 and GAM328164

GR593 AI888246 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 593(GR593) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR593 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR593 gene was detected is described hereinabove with reference to Figs. 8-18.

GR593 gene encodes GR593 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR593 precursor RNA folds spatially, forming GR593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR593 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR593 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM201799 precursor RNA and GAM336058 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM201799 RNA and GAM336058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM201799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201799 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201799 target RNA into GAM201799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336058 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336058 target RNA into GAM336058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR593 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR593 gene: GAM201799 target protein and GAM336058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM201799 and GAM336058

GR594 BF732924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 594(GR594) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR594 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR594 gene was detected is described hereinabove with reference to Figs. 8-18.

GR594 gene encodes GR594 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR594 precursor RNA folds spatially, forming GR594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR594 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR594 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM240051 precursor RNA and GAM286113 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM240051 RNA and GAM286113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM240051 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240051 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240051 target RNA into GAM240051 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286113 target RNA into GAM286113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR594 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR594 gene: GAM240051 target protein and GAM286113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM240051 and GAM286113

GR595 AI752218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 595(GR595) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR595 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR595 gene was detected is described hereinabove with reference to Figs. 8-18.

GR595 gene encodes GR595 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR595 precursor RNA folds spatially, forming GR595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR595 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR595 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49382 precursor RNA and GAM70665 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49382 RNA and GAM70665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49382 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49382 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49382 target RNA into GAM49382 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70665 target RNA into GAM70665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR595 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR595 gene: GAM49382 target protein and GAM70665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49382 and GAM70665

GR596 AI023587 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 596(GR596) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR596 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR596 gene was detected is described hereinabove with reference to Figs. 8-18.

GR596 gene encodes GR596 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR596 precursor RNA folds spatially, forming GR596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR596 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR596 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4222 precursor RNA and GAM99284 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4222 RNA and GAM99284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4222 target RNA into GAM4222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99284

target RNA into GAM99284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR596 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR596 gene: GAM4222 target protein and GAM99284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4222 and GAM99284

GR597 AW505100 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 597(GR597) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR597 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR597 gene was detected is described hereinabove with reference to Figs. 8-18.

GR597 gene encodes GR597 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR597 precursor RNA folds spatially, forming GR597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR597 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR597 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12335 precursor RNA and GAM312816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12335 RNA and GAM312816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12335 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12335 target RNA into GAM12335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312816 target RNA into GAM312816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR597 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR597 gene: GAM12335 target protein and GAM312816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12335 and GAM312816

GR598 AA760886 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 598(GR598) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR598 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR598 gene was detected is described hereinabove with reference to Figs. 8-18.

GR598 gene encodes GR598 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR598 precursor RNA folds spatially, forming GR598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR598 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR598 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR598 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM148592 precursor RNA and GAM334409 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM148592 RNA and GAM334409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM148592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148592 target RNA into GAM148592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334409 target RNA into GAM334409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR598 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR598 gene: GAM148592 target protein and GAM334409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM148592 and GAM334409

GR599 AL712311 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 599(GR599) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR599 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR599 gene was detected is described hereinabove with reference to Figs. 8-18.

GR599 gene encodes GR599 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR599 precursor RNA folds spatially, forming GR599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR599 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR599 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM18018 precursor RNA, GAM99251 precursor RNA and GAM235485 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18018 RNA, GAM99251 RNA and GAM235485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18018 target RNA into GAM18018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99251 target RNA into GAM99251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235485 target RNA into GAM235485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR599 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR599 gene: GAM18018 target protein, GAM99251 target protein and GAM235485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18018, GAM99251 and GAM235485

GR600 N83753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 600(GR600) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR600 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR600 gene was detected is described hereinabove with reference to Figs. 8-18.

GR600 gene encodes GR600 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR600 precursor RNA folds spatially, forming GR600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR600 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR600 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8449 precursor RNA and GAM214868 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8449 RNA and GAM214868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8449 target RNA into GAM8449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214868 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214868 target RNA into GAM214868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR600 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR600 gene: GAM8449 target protein and GAM214868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8449 and GAM214868

GR601 AI677662 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 601(GR601) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR601 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR601 gene was detected is described hereinabove with reference to Figs. 8-18.

GR601 gene encodes GR601 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR601 precursor RNA folds spatially, forming GR601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR601 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR601 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM228640 precursor RNA and GAM315174 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM228640 RNA and GAM315174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM228640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228640 target RNA into GAM228640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315174 target RNA into GAM315174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR601 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR601 gene: GAM228640 target protein and GAM315174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM228640 and GAM315174

GR602 BE616889 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 602(GR602) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR602 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR602 gene was detected is described hereinabove with reference to Figs. 8-18.

GR602 gene encodes GR602 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR602 precursor RNA folds spatially, forming GR602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR602 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR602 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4548 precursor RNA, GAM6746 precursor RNA and GAM204726 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4548 RNA, GAM6746 RNA and GAM204726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4548 target RNA into GAM4548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6746 target RNA into GAM6746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204726 target RNA into GAM204726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR602 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR602 gene: GAM4548 target protein, GAM6746 target protein and GAM204726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4548, GAM6746 and GAM204726

GR603 BE328712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 603(GR603) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR603 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR603 gene was detected is described hereinabove with reference to Figs. 8-18.

GR603 gene encodes GR603 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR603 precursor RNA folds spatially, forming GR603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR603 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR603 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3692 precursor RNA and GAM286278 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3692 RNA and GAM286278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3692 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3692 target RNA into GAM3692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286278 target RNA into GAM286278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR603 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR603 gene: GAM3692 target protein and GAM286278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3692 and GAM286278

GR604 AA548037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 604(GR604) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR604 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR604 gene was detected is described hereinabove with reference to Figs. 8-18.

GR604 gene encodes GR604 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR604 precursor RNA folds spatially, forming GR604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR604 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR604 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8635 precursor RNA and GAM51981 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8635 RNA and GAM51981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8635 target RNA into GAM8635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51981 target RNA into GAM51981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR604 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR604 gene: GAM8635 target protein and GAM51981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8635 and GAM51981

GR605 BG723982 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 605(GR605) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR605 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR605 gene was detected is described hereinabove with reference to Figs. 8-18.

GR605 gene encodes GR605 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR605 precursor RNA folds spatially, forming GR605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR605 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR605 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2556 precursor RNA, GAM60158 precursor RNA, GAM224550 precursor RNA and GAM245022 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2556 RNA, GAM60158 RNA, GAM224550 RNA and GAM245022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2556 target RNA into GAM2556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60158 target RNA into GAM60158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224550 target RNA into GAM224550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM245022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245022 target RNA into GAM245022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR605 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR605 gene: GAM2556 target protein, GAM60158 target protein, GAM224550 target protein and GAM245022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2556, GAM60158, GAM224550 and GAM245022

GR606 BM672727 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 606(GR606) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR606 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR606 gene was detected is described hereinabove with reference to Figs. 8-18.

GR606 gene encodes GR606 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR606 precursor RNA folds spatially, forming GR606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR606 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR606 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM163702 precursor RNA and GAM277560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM163702 RNA and GAM277560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM163702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163702 target RNA into GAM163702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277560 target RNA into GAM277560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR606 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR606 gene: GAM163702 target protein and GAM277560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM163702 and GAM277560

GR607 BI042193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 607(GR607) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR607 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR607 gene was detected is described hereinabove with reference to Figs. 8-18.

GR607 gene encodes GR607 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR607 precursor RNA folds spatially, forming GR607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR607 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR607 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM224530 precursor RNA and GAM233389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224530 RNA and GAM233389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224530 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224530 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224530 target RNA into GAM224530 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233389 target RNA into GAM233389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR607 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR607 gene: GAM224530 target protein and GAM233389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224530 and GAM233389

GR608 BM722803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 608(GR608) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR608 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR608 gene was detected is described hereinabove with reference to Figs. 8-18.

GR608 gene encodes GR608 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR608 precursor RNA folds spatially, forming GR608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR608 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR608 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6847 precursor RNA and GAM306223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6847 RNA and GAM306223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6847 target RNA into GAM6847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306223 target RNA into GAM306223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR608 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR608 gene: GAM6847 target protein and GAM306223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6847 and GAM306223

GR609 BG258380 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 609(GR609) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR609 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR609 gene was detected is described hereinabove with reference to Figs. 8-18.

GR609 gene encodes GR609 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR609 precursor RNA folds spatially, forming GR609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR609 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR609 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2505 precursor RNA and GAM5812 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2505 RNA and GAM5812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2505 target RNA into GAM2505 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5812 target RNA into GAM5812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR609 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR609 gene: GAM2505 target protein and GAM5812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2505 and GAM5812

GR610 AW162863 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 610(GR610) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR610 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR610 gene was detected is described hereinabove with reference to Figs. 8-18.

GR610 gene encodes GR610 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR610 precursor RNA folds spatially, forming GR610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR610 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR610 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192990 precursor RNA and GAM200237 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192990 RNA and GAM200237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192990 target RNA into GAM192990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200237 target RNA into GAM200237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR610 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR610 gene: GAM192990 target protein and GAM200237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192990 and GAM200237

GR611 BG531861 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 611(GR611) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR611 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR611 gene was detected is described hereinabove with reference to Figs. 8-18.

GR611 gene encodes GR611 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR611 precursor RNA folds spatially, forming GR611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR611 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR611 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26005 precursor RNA and GAM66822 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26005 RNA and GAM66822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26005 target RNA into GAM26005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66822 target RNA into GAM66822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR611 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR611 gene: GAM26005 target protein and GAM66822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26005 and GAM66822

GR612 AW754428 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 612(GR612) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR612 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR612 gene was detected is described hereinabove with reference to Figs. 8-18.

GR612 gene encodes GR612 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR612 precursor RNA folds spatially, forming GR612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR612 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR612 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM256900 precursor RNA and GAM281251 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM256900 RNA and GAM281251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM256900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256900 target RNA into GAM256900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281251 target RNA into GAM281251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR612 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR612 gene: GAM256900 target protein and GAM281251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM256900 and GAM281251

GR613 BF994281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 613(GR613) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR613 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR613 gene was detected is described hereinabove with reference to Figs. 8-18.

GR613 gene encodes GR613 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR613 precursor RNA folds spatially, forming GR613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR613 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR613 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111458 precursor RNA and GAM200204 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111458 RNA and GAM200204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111458 target RNA into GAM111458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200204 target RNA into GAM200204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR613 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR613 gene: GAM111458 target protein and GAM200204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111458 and GAM200204

GR614 BF822281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 614(GR614) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR614 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR614 gene was detected is described hereinabove with reference to Figs. 8-18.

GR614 gene encodes GR614 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR614 precursor RNA folds spatially, forming GR614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR614 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR614 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2407 precursor RNA and GAM91875 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2407 RNA and GAM91875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2407 target RNA into GAM2407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91875 target RNA into GAM91875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR614 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR614 gene: GAM2407 target protein and GAM91875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2407 and GAM91875

GR615 AI990965 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 615(GR615) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR615 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR615 gene was detected is described hereinabove with reference to Figs. 8-18.

GR615 gene encodes GR615 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR615 precursor RNA folds spatially, forming GR615 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR615 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR615 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6735 precursor RNA, GAM46830 precursor RNA and GAM333290 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6735 RNA, GAM46830 RNA and GAM333290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6735 target RNA into GAM6735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46830 target RNA into GAM46830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333290 target RNA into GAM333290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR615 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR615 gene: GAM6735 target protein, GAM46830 target protein and GAM333290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6735, GAM46830 and GAM333290

GR616 BE063056 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 616(GR616) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR616 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR616 gene was detected is described hereinabove with reference to Figs. 8-18.

GR616 gene encodes GR616 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR616 precursor RNA folds spatially, forming GR616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR616 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR616 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6826 precursor RNA and GAM239278 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6826 RNA and GAM239278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6826 target RNA into

GAM6826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239278 target RNA into GAM239278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR616 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR616 gene: GAM6826 target protein and GAM239278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6826 and GAM239278

GR617 BE906019 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 617(GR617) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR617 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR617 gene was detected is described hereinabove with reference to Figs. 8-18.

GR617 gene encodes GR617 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR617 precursor RNA folds spatially, forming GR617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR617 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR617 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5561 precursor RNA, GAM5610 precursor RNA and GAM243273 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5561 RNA, GAM5610 RNA and GAM243273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5561 target RNA into GAM5561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5610 target RNA into GAM5610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243273 target RNA into GAM243273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR617 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR617 gene: GAM5561 target protein, GAM5610 target protein and GAM243273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5561, GAM5610 and GAM243273

GR618 BG188635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 618(GR618) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR618 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR618 gene was detected is described hereinabove with reference to Figs. 8-18.

GR618 gene encodes GR618 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR618 precursor RNA folds spatially, forming GR618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR618 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR618 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3811 precursor RNA, GAM8262 precursor RNA and GAM250414 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3811 RNA, GAM8262 RNA and GAM250414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3811 target RNA into GAM3811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8262 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8262 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8262 target RNA into GAM8262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250414 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250414 target RNA into GAM250414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR618 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR618 gene: GAM3811 target protein, GAM8262 target protein and GAM250414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3811, GAM8262 and GAM250414

GR619 AW021696 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 619(GR619) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR619 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR619 gene was detected is described hereinabove with reference to Figs. 8-18.

GR619 gene encodes GR619 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR619 precursor RNA folds spatially, forming GR619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR619 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR619 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM175487 precursor RNA and GAM261178 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM175487 RNA and GAM261178 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM175487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175487 target RNA into GAM175487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261178 target RNA into GAM261178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR619 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR619 gene: GAM175487 target protein and GAM261178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM175487 and GAM261178

GR620 AL707724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 620(GR620) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR620 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR620 gene was detected is described hereinabove with reference to Figs. 8-18.

GR620 gene encodes GR620 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR620 precursor RNA folds spatially, forming GR620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR620 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR620 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208933 precursor RNA and GAM307647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208933 RNA and GAM307647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208933 target RNA into GAM208933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307647 target RNA into GAM307647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR620 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR620 gene: GAM208933 target protein and GAM307647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208933 and GAM307647

GR621 H53090 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 621(GR621) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR621 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR621 gene was detected is described hereinabove with reference to Figs. 8-18.

GR621 gene encodes GR621 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR621 precursor RNA folds spatially, forming GR621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR621 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR621 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM286958 precursor RNA and GAM323511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM286958 RNA and GAM323511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM286958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286958 target RNA into GAM286958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323511 target RNA into GAM323511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR621 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR621 gene: GAM286958 target

protein and GAM323511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM286958 and GAM323511

GR622 AA741539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 622(GR622) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR622 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR622 gene was detected is described hereinabove with reference to Figs. 8-18.

GR622 gene encodes GR622 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR622 precursor RNA folds spatially, forming GR622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR622 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR622 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6031 precursor RNA and GAM71340 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6031 RNA and GAM71340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6031 target RNA into GAM6031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71340 target RNA into GAM71340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR622 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR622 gene: GAM6031 target protein and GAM71340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6031 and GAM71340

GR623 AU152515 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 623(GR623) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR623 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR623 gene was detected is described hereinabove with reference to Figs. 8-18.

GR623 gene encodes GR623 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR623 precursor RNA folds spatially, forming GR623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR623 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR623 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM17485 precursor RNA, GAM127147 precursor RNA and GAM333084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17485 RNA, GAM127147 RNA and GAM333084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17485 target RNA into GAM17485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127147 target RNA into GAM127147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333084 target RNA into GAM333084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR623 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR623 gene: GAM17485 target protein, GAM127147 target protein and GAM333084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17485, GAM127147 and GAM333084

GR624 BF351392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 624(GR624) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR624 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR624

gene was detected is described hereinabove with reference to Figs. 8-18.

GR624 gene encodes GR624 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR624 precursor RNA folds spatially, forming GR624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR624 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR624 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118645 precursor RNA and GAM235156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118645 RNA and GAM235156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118645 target RNA into GAM118645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235156 target RNA into GAM235156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR624 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR624 gene: GAM118645 target protein and GAM235156 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118645 and GAM235156

GR625 AW846527 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 625(GR625) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR625 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR625 gene was detected is described hereinabove with reference to Figs. 8-18.

GR625 gene encodes GR625 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR625 precursor RNA folds spatially, forming GR625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR625 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR625 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM27030 precursor RNA, GAM89666 precursor RNA and GAM280395 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27030 RNA, GAM89666 RNA and GAM280395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27030 target RNA into GAM27030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89666 target RNA into GAM89666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280395 target RNA into GAM280395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR625 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR625 gene: GAM27030 target protein, GAM89666 target protein and GAM280395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27030, GAM89666 and GAM280395

GR626 BM931158 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 626(GR626) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR626 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR626 gene was detected is described hereinabove with reference to Figs. 8-18.

GR626 gene encodes GR626 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR626 precursor RNA folds spatially, forming GR626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR626 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR626 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8677 precursor RNA and GAM274034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8677 RNA and GAM274034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8677 target RNA into GAM8677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274034 target RNA into GAM274034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR626 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR626 gene: GAM8677 target protein and GAM274034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8677 and GAM274034

GR627 BE387917 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 627(GR627) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR627 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR627 gene was detected is described hereinabove with reference to Figs. 8-18.

GR627 gene encodes GR627 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR627 precursor RNA folds spatially, forming GR627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR627 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR627 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6752 precursor RNA and GAM120735 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6752 RNA and GAM120735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6752 target RNA into GAM6752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120735 target RNA into GAM120735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR627 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR627 gene: GAM6752 target protein and GAM120735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6752 and GAM120735

GR628 AA490208 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 628(GR628) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR628 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR628 gene was detected is described hereinabove with reference to Figs. 8-18.

GR628 gene encodes GR628 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR628 precursor RNA folds spatially, forming GR628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR628 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR628 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68502 precursor RNA and GAM137259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68502 RNA and GAM137259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68502 target RNA into GAM68502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM137259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137259 target RNA into GAM137259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR628 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR628 gene: GAM68502 target protein and GAM137259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68502 and GAM137259

GR629 BI087913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 629(GR629) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR629 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR629 gene was detected is described hereinabove with reference to Figs. 8-18.

GR629 gene encodes GR629 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR629 precursor RNA folds spatially, forming GR629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR629 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR629 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2758 precursor RNA, GAM3813 precursor RNA, GAM219685 precursor RNA and GAM330018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2758 RNA, GAM3813 RNA, GAM219685 RNA and GAM330018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2758 target RNA into GAM2758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3813 target RNA into GAM3813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219685 target RNA into GAM219685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330018 target RNA into GAM330018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR629 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR629 gene: GAM2758 target protein, GAM3813 target protein, GAM219685 target protein and GAM330018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2758, GAM3813, GAM219685 and GAM330018

GR630 BG395442 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 630(GR630) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR630 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR630 gene was detected is described hereinabove with reference to Figs. 8-18.

GR630 gene encodes GR630 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR630 precursor RNA folds spatially, forming GR630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR630 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR630 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1541 precursor RNA and GAM5140 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1541 RNA and GAM5140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1541 target RNA into GAM1541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5140 target RNA into GAM5140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR630 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR630 gene: GAM1541 target protein and GAM5140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1541 and GAM5140

GR631 BG820599 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 631(GR631) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR631 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR631 gene was detected is described hereinabove with reference to Figs. 8-18.

GR631 gene encodes GR631 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR631 precursor RNA folds spatially, forming GR631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR631 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR631 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34776 precursor RNA and GAM179865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34776 RNA and GAM179865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34776 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34776 target RNA into GAM34776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179865 target RNA into GAM179865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR631 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR631 gene: GAM34776 target protein and GAM179865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34776 and GAM179865

GR632 AA235968 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 632(GR632) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR632 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR632 gene was detected is described hereinabove with reference to Figs. 8-18.

GR632 gene encodes GR632 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR632 precursor RNA folds spatially, forming GR632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR632 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR632 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2680 precursor RNA, GAM5992 precursor RNA and

GAM297603 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2680 RNA, GAM5992 RNA and GAM297603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2680 target RNA into GAM2680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5992 target RNA into GAM5992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297603 target RNA into GAM297603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR632 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR632 gene: GAM2680 target protein, GAM5992 target protein and GAM297603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2680, GAM5992 and GAM297603

GR633 AI655203 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 633(GR633) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR633 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR633 gene was detected is described hereinabove with reference to Figs. 8-18.

GR633 gene encodes GR633 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR633 precursor RNA folds spatially, forming GR633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR633 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR633 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8624 precursor RNA, GAM221408 precursor RNA and GAM299431 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8624 RNA, GAM221408 RNA and GAM299431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8624 target RNA into GAM8624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221408 target RNA into GAM221408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299431 target RNA into GAM299431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR633 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR633 gene: GAM8624 target protein, GAM221408 target protein and GAM299431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8624, GAM221408 and GAM299431

GR634 BG003754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 634(GR634) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR634 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR634 gene was detected is described hereinabove with reference to Figs. 8-18.

GR634 gene encodes GR634 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR634 precursor RNA folds spatially, forming GR634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR634 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR634 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30091 precursor RNA and GAM53835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30091 RNA and GAM53835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30091 target RNA into GAM30091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53835 target RNA into GAM53835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR634 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR634 gene: GAM30091 target protein and GAM53835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30091 and GAM53835

GR635 AA507869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 635(GR635) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR635 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR635 gene was detected is described hereinabove with reference to Figs. 8-18.

GR635 gene encodes GR635 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR635 precursor RNA folds spatially, forming GR635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR635 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR635 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7896 precursor RNA and GAM270496 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7896 RNA and GAM270496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7896 target RNA into GAM7896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270496 target RNA into GAM270496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR635 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR635 gene: GAM7896 target protein and GAM270496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7896 and GAM270496

GR636 BI115007 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 636(GR636) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR636 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR636 gene was detected is described hereinabove with reference to Figs. 8-18.

GR636 gene encodes GR636 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR636 precursor RNA folds spatially, forming GR636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR636 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR636 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4447 precursor RNA, GAM64024 precursor RNA, GAM83459 precursor RNA and GAM254393 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4447 RNA, GAM64024 RNA, GAM83459 RNA and GAM254393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4447 target RNA into GAM4447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64024 target RNA into GAM64024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83459 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83459 target RNA into GAM83459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254393 target RNA into GAM254393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR636 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR636 gene: GAM4447 target protein, GAM64024 target protein, GAM83459 target protein and GAM254393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4447, GAM64024, GAM83459 and GAM254393

GR637 AI310106 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 637(GR637) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR637 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR637 gene was detected is described hereinabove with reference to Figs. 8-18.

GR637 gene encodes GR637 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR637 precursor RNA folds spatially, forming GR637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR637 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR637 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8307 precursor RNA, GAM24834 precursor RNA and GAM93149 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8307 RNA, GAM24834 RNA and GAM93149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8307 target RNA into GAM8307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24834 target RNA into GAM24834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93149 target RNA into GAM93149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR637 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR637 gene: GAM8307 target protein, GAM24834 target protein and GAM93149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8307, GAM24834 and GAM93149

GR638 BG196281 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 638(GR638) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR638 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR638 gene was detected is described hereinabove with reference to Figs. 8-18.

GR638 gene encodes GR638 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR638 precursor RNA folds spatially, forming GR638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR638 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR638 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2019 precursor RNA, GAM32736 precursor RNA and GAM279731 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2019 RNA, GAM32736 RNA and GAM279731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2019 target RNA into GAM2019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32736 target RNA into GAM32736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279731 target RNA into GAM279731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR638 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR638 gene: GAM2019 target protein, GAM32736 target protein and GAM279731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2019, GAM32736 and GAM279731

GR639 BF817521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 639(GR639) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR639 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR639 gene was detected is described hereinabove with reference to Figs. 8-18.

GR639 gene encodes GR639 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR639 precursor RNA folds spatially, forming GR639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR639 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR639 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8501 precursor RNA and GAM68862 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8501 RNA and GAM68862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8501 target RNA into GAM8501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68862 target RNA into GAM68862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR639 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR639 gene: GAM8501 target protein and GAM68862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8501 and GAM68862

GR640 BF980753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 640(GR640) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR640 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR640 gene was detected is described hereinabove with reference to Figs. 8-18.

GR640 gene encodes GR640 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR640 precursor RNA folds spatially, forming GR640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR640 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR640 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM87941 precursor RNA, GAM88801 precursor RNA and GAM164774 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87941 RNA, GAM88801 RNA and GAM164774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87941 target RNA into GAM87941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88801 target RNA into GAM88801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164774 target RNA into GAM164774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR640 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR640 gene: GAM87941 target protein, GAM88801 target protein and GAM164774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87941, GAM88801 and GAM164774

GR641 BG718036 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 641(GR641) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR641 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR641 gene was detected is described hereinabove with reference to Figs. 8-18.

GR641 gene encodes GR641 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR641 precursor RNA folds spatially, forming GR641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR641 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR641 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM243216 precursor RNA and GAM245231 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM243216 RNA and GAM245231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM243216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243216 target RNA into GAM243216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245231 target RNA into GAM245231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR641 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR641 gene: GAM243216 target protein and GAM245231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM243216 and GAM245231

GR642 BE735575 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 642(GR642) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR642 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR642 gene was detected is described hereinabove with reference to Figs. 8-18.

GR642 gene encodes GR642 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR642 precursor RNA folds spatially, forming GR642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR642 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR642 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM143992 precursor RNA, GAM208993 precursor RNA, GAM270455 precursor RNA and GAM303627 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143992 RNA, GAM208993 RNA, GAM270455 RNA and GAM303627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143992 target RNA into GAM143992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208993 target RNA into GAM208993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270455 target RNA into GAM270455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303627 target RNA into GAM303627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR642 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR642 gene: GAM143992 target protein, GAM208993 target protein, GAM270455 target protein and GAM303627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM143992, GAM208993, GAM270455 and GAM303627

GR643 BG829690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 643(GR643) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR643 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR643 gene was detected is described hereinabove with reference to Figs. 8-18.

GR643 gene encodes GR643 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR643 precursor RNA folds spatially, forming GR643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR643 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR643 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4920 precursor RNA and GAM8699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4920 RNA and GAM8699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4920 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4920 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4920 target RNA into GAM4920 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8699 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8699 target RNA into GAM8699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR643 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR643 gene: GAM4920 target protein and GAM8699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4920 and GAM8699

GR644 BM549273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 644(GR644) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR644 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR644 gene was detected is described hereinabove with reference to Figs. 8-18.

GR644 gene encodes GR644 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR644 precursor RNA folds spatially, forming GR644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR644 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR644 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM71640 precursor RNA and GAM318131 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71640 RNA and GAM318131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM71640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71640 target RNA into GAM71640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318131 target RNA into GAM318131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR644 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR644 gene: GAM71640 target protein and GAM318131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71640 and GAM318131

GR645 BI062363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 645(GR645) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR645 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR645 gene was detected is described hereinabove with reference to Figs. 8-18.

GR645 gene encodes GR645 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR645 precursor RNA folds spatially, forming GR645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR645 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR645 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM21621 precursor RNA, GAM279102 precursor RNA and GAM320227 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21621 RNA, GAM279102 RNA and GAM320227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21621 target RNA into GAM21621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279102 target RNA into GAM279102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320227 target RNA into GAM320227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR645 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR645 gene: GAM21621 target protein, GAM279102 target protein and GAM320227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21621, GAM279102 and GAM320227

GR646 BM923673 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 646(GR646) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR646 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR646 gene was detected is described hereinabove with reference to Figs. 8-18.

GR646 gene encodes GR646 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR646 precursor RNA folds spatially, forming GR646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR646 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR646 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88 precursor RNA and GAM50532 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88 RNA and GAM50532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88 target RNA into GAM88 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50532 target RNA into GAM50532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR646 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR646 gene: GAM88 target protein and GAM50532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88 and GAM50532

GR647 BG877496 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 647(GR647) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR647 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR647 gene was detected is described hereinabove with reference to Figs. 8-18.

GR647 gene encodes GR647 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR647 precursor RNA folds spatially, forming GR647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR647 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR647 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1630 precursor RNA and GAM224773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1630 RNA and GAM224773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1630 target RNA into GAM1630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224773 target RNA into GAM224773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR647 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR647 gene: GAM1630 target protein and GAM224773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1630 and GAM224773

GR648 BM562349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 648(GR648) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR648 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR648 gene was detected is described hereinabove with reference to Figs. 8-18.

GR648 gene encodes GR648 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR648 precursor RNA folds spatially, forming GR648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR648 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR648 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2996 precursor RNA and GAM216805 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2996 RNA and GAM216805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2996 target RNA into GAM2996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216805 target RNA into GAM216805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR648 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR648 gene: GAM2996 target protein and GAM216805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2996 and GAM216805

GR649 BG542754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 649(GR649) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR649 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR649 gene was detected is described hereinabove with reference to Figs. 8-18.

GR649 gene encodes GR649 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR649 precursor RNA folds spatially, forming GR649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR649 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR649 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3942 precursor RNA, GAM37415 precursor RNA and GAM53186 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3942 RNA, GAM37415 RNA and GAM53186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3942 target RNA into GAM3942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37415 target RNA into GAM37415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53186

target RNA into GAM53186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR649 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR649 gene: GAM3942 target protein, GAM37415 target protein and GAM53186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3942, GAM37415 and GAM53186

GR650 BE079319 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 650(GR650) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR650 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR650 gene was detected is described hereinabove with reference to Figs. 8-18.

GR650 gene encodes GR650 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR650 precursor RNA folds spatially, forming GR650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR650 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR650 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1947 precursor RNA and GAM44939 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1947 RNA and GAM44939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1947 target RNA into GAM1947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44939 target RNA into GAM44939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR650 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR650 gene: GAM1947 target protein and GAM44939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1947 and GAM44939

GR651 BF367925 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 651(GR651) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR651 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR651 gene was detected is described hereinabove with reference to Figs. 8-18.

GR651 gene encodes GR651 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR651 precursor RNA folds spatially, forming GR651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR651 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR651 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM146001 precursor RNA and GAM306931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146001 RNA and GAM306931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM146001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146001 target RNA into GAM146001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306931 target RNA into GAM306931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR651 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR651 gene: GAM146001 target protein and GAM306931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM146001 and GAM306931

GR652 BG775159 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 652(GR652) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR652 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR652 gene was detected is described hereinabove with reference to Figs. 8-18.

GR652 gene encodes GR652 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR652 precursor RNA folds spatially, forming GR652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR652 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR652 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM410 precursor RNA, GAM68120 precursor RNA and GAM248273 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM410 RNA, GAM68120 RNA and GAM248273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM410 target RNA into GAM410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68120 target RNA into GAM68120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248273 target RNA into GAM248273 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR652 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR652 gene: GAM410 target protein, GAM68120 target protein and GAM248273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM410, GAM68120 and GAM248273

GR653 BQ063251 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 653(GR653) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR653 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR653 gene was detected is described hereinabove with reference to Figs. 8-18.

GR653 gene encodes GR653 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR653 precursor RNA folds spatially, forming GR653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR653 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR653 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM594 precursor RNA and GAM160462 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM594 RNA and GAM160462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM594 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM594 target RNA into GAM594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160462 target RNA into GAM160462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR653 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR653 gene: GAM594 target protein and GAM160462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM594 and GAM160462

GR654 BE350405 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 654(GR654) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR654 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR654 gene was detected is described hereinabove with reference to Figs. 8-18.

GR654 gene encodes GR654 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR654 precursor RNA folds spatially, forming GR654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR654 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR654 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR654 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1434 precursor RNA and GAM223159 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1434 RNA and GAM223159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1434 target RNA into GAM1434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223159 target RNA into GAM223159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR654 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR654 gene: GAM1434 target protein and GAM223159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1434 and GAM223159

GR655 BI912873 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 655(GR655) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR655 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR655 gene was detected is described hereinabove with reference to Figs. 8-18.

GR655 gene encodes GR655 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR655 precursor RNA folds spatially, forming GR655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR655 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR655 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM196206 precursor RNA and GAM232680 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196206 RNA and GAM232680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196206 target RNA into GAM196206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232680 target RNA into GAM232680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR655 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR655 gene: GAM196206 target protein and GAM232680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196206 and GAM232680

GR656 BI868310 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 656(GR656) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR656 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR656 gene was detected is described hereinabove with reference to Figs. 8-18.

GR656 gene encodes GR656 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR656 precursor RNA folds spatially, forming GR656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR656 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR656 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2867 precursor RNA and GAM316909 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2867 RNA and GAM316909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2867 target RNA into GAM2867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316909 target RNA into GAM316909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR656 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR656 gene: GAM2867 target protein and GAM316909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2867 and GAM316909

GR657 BG178715 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 657(GR657) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR657 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR657 gene was detected is described hereinabove with reference to Figs. 8-18.

GR657 gene encodes GR657 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR657 precursor RNA folds spatially, forming GR657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR657 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR657 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6555 precursor RNA, GAM7533 precursor RNA and GAM8089 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6555 RNA, GAM7533 RNA and GAM8089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM6555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6555 target RNA into GAM6555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7533 target RNA into GAM7533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8089 target RNA into GAM8089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR657 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR657 gene: GAM6555 target protein, GAM7533 target protein and GAM8089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6555, GAM7533 and GAM8089

GR658 BG709273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 658(GR658) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR658 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR658 gene was detected is described hereinabove with reference to Figs. 8-18.

GR658 gene encodes GR658 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR658 precursor RNA folds spatially, forming GR658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR658 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR658 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM107103 precursor RNA, GAM210329 precursor RNA and GAM211589 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM107103 RNA, GAM210329 RNA and GAM211589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM107103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107103 target RNA into GAM107103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210329 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210329 target RNA into GAM210329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211589 target RNA into GAM211589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR658 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR658 gene: GAM107103 target protein, GAM210329 target protein and GAM211589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM107103, GAM210329 and GAM211589

GR659 AI283947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 659(GR659) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR659 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR659 gene was detected is described hereinabove with reference to Figs. 8-18.

GR659 gene encodes GR659 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR659 precursor RNA folds spatially, forming GR659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR659 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR659 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7173 precursor RNA, GAM8410 precursor RNA and GAM113931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7173 RNA, GAM8410 RNA and GAM113931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7173 target RNA into GAM7173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8410 target RNA into GAM8410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113931 target RNA into GAM113931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR659 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR659 gene: GAM7173 target protein, GAM8410 target protein and GAM113931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7173, GAM8410 and GAM113931

GR660 BF668162 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 660(GR660) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR660 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR660 gene was detected is described hereinabove with reference to Figs. 8-18.

GR660 gene encodes GR660 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR660 precursor RNA folds spatially, forming GR660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR660

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR660 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82943 precursor RNA and GAM170302 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82943 RNA and GAM170302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82943 target RNA into GAM82943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170302 target RNA into GAM170302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR660 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR660 gene: GAM82943 target protein and GAM170302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82943 and GAM170302

GR661 BM975120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 661(GR661) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR661 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR661 gene was detected is described hereinabove with reference to Figs. 8-18.

GR661 gene encodes GR661 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR661 precursor RNA folds spatially, forming GR661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR661 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR661 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12729 precursor RNA and GAM28589 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12729 RNA and GAM28589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12729 target RNA into GAM12729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28589 target RNA into GAM28589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR661 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR661 gene: GAM12729 target protein and GAM28589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12729 and GAM28589

GR662 BF342704 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 662(GR662) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR662 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR662 gene was detected is described hereinabove with reference to Figs. 8-18.

GR662 gene encodes GR662 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR662 precursor RNA folds spatially, forming GR662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR662 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR662 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM25191 precursor RNA, GAM33782 precursor RNA and GAM120797 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25191 RNA, GAM33782 RNA and GAM120797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25191 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25191 target RNA into GAM25191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33782 target RNA into GAM33782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120797 target RNA into GAM120797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR662 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR662 gene: GAM25191 target protein, GAM33782 target protein and GAM120797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25191, GAM33782 and GAM120797

GR663 W07550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 663(GR663) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR663 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR663 gene was detected is described hereinabove with reference to Figs. 8-18.

GR663 gene encodes GR663 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR663 precursor RNA folds spatially, forming GR663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR663 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR663 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM35331 precursor RNA and GAM100322 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM35331 RNA and GAM100322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM35331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35331 target RNA into GAM35331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100322 target RNA into GAM100322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR663 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR663 gene: GAM35331 target protein and GAM100322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM35331 and GAM100322

GR664 AW819567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 664(GR664) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR664 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR664 gene was detected is described hereinabove with reference to Figs. 8-18.

GR664 gene encodes GR664 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR664 precursor RNA folds spatially, forming GR664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR664 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR664 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3038 precursor RNA and GAM54499 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3038 RNA and GAM54499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3038 target RNA into GAM3038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54499 target RNA into GAM54499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR664 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR664 gene: GAM3038 target protein and GAM54499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3038 and GAM54499

GR665 H73531 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 665(GR665) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR665 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR665 gene was detected is described hereinabove with reference to Figs. 8-18.

GR665 gene encodes GR665 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR665 precursor RNA folds spatially, forming GR665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR665 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR665 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM477 precursor RNA, GAM154016 precursor RNA and GAM218338 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM477 RNA, GAM154016 RNA and GAM218338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM477 target RNA into GAM477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154016 target RNA into GAM154016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218338 target RNA into GAM218338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR665 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR665 gene: GAM477 target protein, GAM154016 target protein and GAM218338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM477, GAM154016 and GAM218338

GR666 AW468169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 666(GR666) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR666 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR666 gene was detected is described hereinabove with reference to Figs. 8-18.

GR666 gene encodes GR666 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR666 precursor RNA folds spatially, forming GR666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR666 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR666 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65011 precursor RNA and GAM226929 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65011 RNA and GAM226929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65011 target RNA into GAM65011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226929 target RNA into GAM226929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR666 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR666 gene: GAM65011 target protein and GAM226929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65011 and GAM226929

GR667 BI561920 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 667(GR667) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR667 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR667 gene was detected is described hereinabove with reference to Figs. 8-18.

GR667 gene encodes GR667 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR667 precursor RNA folds spatially, forming GR667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR667 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR667 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM753 precursor RNA, GAM19012 precursor RNA and GAM291922 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM753 RNA, GAM19012 RNA and GAM291922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM753 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM753 target RNA into GAM753 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19012 target RNA into GAM19012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM291922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291922 target RNA into GAM291922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR667 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR667 gene: GAM753 target protein, GAM19012 target protein and GAM291922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM753, GAM19012 and GAM291922

GR668 R34734 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 668(GR668) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR668 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR668 gene was detected is described hereinabove with reference to Figs. 8-18.

GR668 gene encodes GR668 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR668 precursor RNA folds spatially, forming GR668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR668 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR668 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM43132 precursor RNA and GAM213389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM43132 RNA and GAM213389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43132 target RNA into GAM43132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213389 target RNA into GAM213389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR668 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR668 gene: GAM43132 target protein and GAM213389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43132 and GAM213389

GR669 BE746707 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 669(GR669) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR669 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR669 gene was detected is described hereinabove with reference to Figs. 8-18.

GR669 gene encodes GR669 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR669 precursor RNA folds spatially, forming GR669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR669 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR669 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM32409 precursor RNA, GAM225754 precursor RNA and GAM321637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32409 RNA, GAM225754 RNA and GAM321637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32409 target RNA into GAM32409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225754 target RNA into GAM225754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321637 target RNA into GAM321637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR669 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR669 gene: GAM32409 target protein, GAM225754 target protein and GAM321637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM32409, GAM225754 and GAM321637

GR670 AW892628 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 670(GR670) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR670 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR670 gene was detected is described hereinabove with reference to Figs. 8-18.

GR670 gene encodes GR670 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR670 precursor RNA folds spatially, forming GR670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR670 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR670 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM48607 precursor RNA, GAM100080 precursor RNA and GAM252122 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48607 RNA, GAM100080 RNA and GAM252122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48607 target RNA into GAM48607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100080 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100080 target RNA into GAM100080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252122 target RNA into GAM252122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR670 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR670 gene: GAM48607 target protein, GAM100080 target protein and GAM252122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48607, GAM100080 and GAM252122

GR671 BF847363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 671(GR671) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR671 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR671 gene was detected is described hereinabove with reference to Figs. 8-18.

GR671 gene encodes GR671 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR671 precursor RNA folds spatially, forming GR671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR671 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR671 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4341 precursor RNA, GAM118806 precursor RNA and GAM128821 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4341 RNA, GAM118806 RNA and GAM128821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4341 target RNA into GAM4341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118806 target RNA into GAM118806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128821 target RNA into GAM128821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR671 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR671 gene: GAM4341 target protein, GAM118806 target protein and GAM128821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4341, GAM118806 and GAM128821

GR672 BI193992 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 672(GR672) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR672 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR672 gene was detected is described hereinabove with reference to Figs. 8-18.

GR672 gene encodes GR672 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR672 precursor RNA folds spatially, forming GR672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR672 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR672 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM63620 precursor RNA, GAM187569 precursor RNA, GAM237149 precursor RNA and GAM242043 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63620 RNA, GAM187569 RNA, GAM237149 RNA and GAM242043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63620 target RNA into GAM63620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187569 target RNA into GAM187569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237149 target RNA into GAM237149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242043 target RNA into GAM242043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR672 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR672 gene: GAM63620 target protein, GAM187569 target protein, GAM237149 target protein and GAM242043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63620, GAM187569, GAM237149 and GAM242043

GR673 BE964893 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 673(GR673) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR673 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR673 gene was detected is described hereinabove with reference to Figs. 8-18.

GR673 gene encodes GR673 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR673 precursor RNA folds spatially, forming GR673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR673 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR673 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5940 precursor RNA, GAM48673 precursor RNA and GAM183366 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5940 RNA, GAM48673 RNA and GAM183366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5940 target RNA into GAM5940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48673 target RNA into GAM48673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183366 target RNA into GAM183366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR673 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR673 gene: GAM5940 target protein, GAM48673 target protein and GAM183366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM5940, GAM48673 and GAM183366

GR674 BF088112 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 674(GR674) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR674 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR674 gene was detected is described hereinabove with reference to Figs. 8-18.

GR674 gene encodes GR674 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR674 precursor RNA folds spatially, forming GR674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR674 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR674 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5586 precursor RNA and GAM8661 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5586 RNA and GAM8661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5586 target RNA into GAM5586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8661 target RNA into GAM8661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR674 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR674 gene: GAM5586 target protein and GAM8661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5586 and GAM8661

GR675 AI077312 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 675(GR675) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR675 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR675 gene was detected is described hereinabove with reference to Figs. 8-18.

GR675 gene encodes GR675 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR675 precursor RNA folds spatially, forming GR675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR675 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR675 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM181873 precursor RNA and GAM275284 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM181873 RNA and GAM275284 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM181873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181873 target RNA into GAM181873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275284 target RNA into GAM275284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR675 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR675 gene: GAM181873 target protein and GAM275284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM181873 and GAM275284

GR676 AW381276 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 676(GR676) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR676 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR676 gene was detected is described hereinabove with reference to Figs. 8-18.

GR676 gene encodes GR676 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR676 precursor RNA folds spatially, forming GR676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR676 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR676 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM105 precursor RNA, GAM5509 precursor RNA, GAM6968 precursor RNA and GAM187065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105 RNA, GAM5509 RNA, GAM6968 RNA and GAM187065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105 target RNA into GAM105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5509 target RNA into GAM5509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6968 target RNA into GAM6968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187065 target RNA into GAM187065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR676 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR676 gene: GAM105 target protein, GAM5509 target protein, GAM6968 target protein and GAM187065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105, GAM5509, GAM6968 and GAM187065

GR677 BF680971 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 677(GR677) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR677 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR677 gene was detected is described hereinabove with reference to Figs. 8-18.

GR677 gene encodes GR677 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR677 precursor RNA folds spatially, forming GR677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR677 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR677 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM33271 precursor RNA, GAM173947 precursor RNA and GAM196040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33271 RNA, GAM173947 RNA and GAM196040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM33271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33271 target RNA into GAM33271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173947 target RNA into GAM173947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196040 target RNA into GAM196040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR677 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR677 gene: GAM33271 target protein, GAM173947 target protein and GAM196040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33271, GAM173947 and GAM196040

GR678 BM739565 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 678(GR678) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR678 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR678 gene was detected is described hereinabove with reference to Figs. 8-18.

GR678 gene encodes GR678 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR678 precursor RNA folds spatially, forming GR678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR678

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR678 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5818 precursor RNA, GAM5889 precursor RNA, GAM116064 precursor RNA and GAM333558 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5818 RNA, GAM5889 RNA, GAM116064 RNA and GAM333558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5818 target RNA into GAM5818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5889 target RNA into GAM5889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116064 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116064 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116064 target RNA into GAM116064 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333558 target RNA into GAM333558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR678 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR678 gene: GAM5818 target protein, GAM5889 target protein, GAM116064 target protein and GAM333558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5818, GAM5889, GAM116064 and GAM333558

GR679 AA595514 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 679(GR679) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR679 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR679 gene was detected is described hereinabove with reference to Figs. 8-18.

GR679 gene encodes GR679 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR679 precursor RNA folds spatially, forming GR679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR679 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR679 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192425 precursor RNA and GAM276295 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192425 RNA and GAM276295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192425 target RNA into GAM192425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276295 target RNA into GAM276295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR679 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR679 gene: GAM192425 target protein and GAM276295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192425 and GAM276295

GR680 BF577015 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 680(GR680) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR680 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR680 gene was detected is described hereinabove with reference to Figs. 8-18.

GR680 gene encodes GR680 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR680 precursor RNA folds spatially, forming GR680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR680 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR680 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7119 precursor RNA, GAM23464 precursor RNA, GAM127087 precursor RNA and GAM270211 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7119 RNA, GAM23464 RNA, GAM127087 RNA and GAM270211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7119 target RNA into GAM7119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23464 target RNA into GAM23464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127087 target RNA into GAM127087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270211 target RNA into GAM270211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR680 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR680 gene: GAM7119 target protein, GAM23464 target protein, GAM127087 target protein and GAM270211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7119, GAM23464, GAM127087 and GAM270211

GR681 AI694237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 681(GR681) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR681 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR681 gene was detected is described hereinabove with reference to Figs. 8-18.

GR681 gene encodes GR681 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR681 precursor RNA folds spatially, forming GR681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR681 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR681 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2765 precursor RNA, GAM111886 precursor RNA and GAM247238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2765 RNA, GAM111886 RNA and GAM247238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2765 target RNA into GAM2765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111886 target RNA into GAM111886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247238 target RNA into GAM247238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR681 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR681 gene: GAM2765 target protein, GAM111886 target protein and GAM247238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2765, GAM111886 and GAM247238

GR682 BG030889 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 682(GR682) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR682 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR682 gene was detected is described hereinabove with reference to Figs. 8-18.

GR682 gene encodes GR682 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR682 precursor RNA folds spatially, forming GR682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR682 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR682 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98158 precursor RNA and GAM330968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98158 RNA and GAM330968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98158 target RNA into GAM98158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330968 target RNA into GAM330968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR682 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR682 gene: GAM98158 target protein and GAM330968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98158 and GAM330968

GR683 R91160 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 683(GR683) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR683 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR683 gene was detected is described hereinabove with reference to Figs. 8-18.

GR683 gene encodes GR683 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR683 precursor RNA folds spatially, forming GR683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR683 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR683 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5545 precursor RNA and GAM200181 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5545 RNA and GAM200181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5545 target RNA into GAM5545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200181 target RNA into GAM200181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR683 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR683 gene: GAM5545 target protein and GAM200181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5545 and GAM200181

GR684 AI241704 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 684(GR684) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR684 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR684 gene was detected is described hereinabove with reference to Figs. 8-18.

GR684 gene encodes GR684 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR684 precursor RNA folds spatially, forming GR684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR684 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR684 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4177 precursor RNA and GAM161870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4177 RNA and GAM161870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4177 target RNA into

GAM4177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161870 target RNA into GAM161870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR684 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR684 gene: GAM4177 target protein and GAM161870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4177 and GAM161870

GR685 T90048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 685(GR685) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR685 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR685 gene was detected is described hereinabove with reference to Figs. 8-18.

GR685 gene encodes GR685 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR685 precursor RNA folds spatially, forming GR685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR685 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR685 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32060 precursor RNA and GAM111610 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32060 RNA and GAM111610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32060 target RNA into GAM32060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111610 target RNA into GAM111610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR685 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR685 gene: GAM32060 target protein and GAM111610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32060 and GAM111610

GR686 BF870211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 686(GR686) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR686 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR686 gene was detected is described hereinabove with reference to Figs. 8-18.

GR686 gene encodes GR686 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR686 precursor RNA folds spatially, forming GR686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR686

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR686 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2026 precursor RNA and GAM93189 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2026 RNA and GAM93189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2026 target RNA into GAM2026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93189 target RNA into GAM93189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR686 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR686 gene: GAM2026 target protein and GAM93189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2026 and GAM93189

GR687 BF793499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 687(GR687) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR687 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR687 gene was detected is described hereinabove with reference to Figs. 8-18.

GR687 gene encodes GR687 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR687 precursor RNA folds spatially, forming GR687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR687 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR687 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53818 precursor RNA and GAM168679 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53818 RNA and GAM168679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53818 target RNA into GAM53818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168679 target RNA into GAM168679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR687 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR687 gene: GAM53818 target protein and GAM168679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53818 and GAM168679

GR688 BF687585 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 688(GR688) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR688 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR688 gene was detected is described hereinabove with reference to Figs. 8-18.

GR688 gene encodes GR688 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR688 precursor RNA folds spatially, forming GR688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR688 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR688 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1246 precursor RNA and GAM72893 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1246 RNA and GAM72893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1246 target RNA into GAM1246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72893 target RNA into GAM72893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR688 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR688 gene: GAM1246 target protein and GAM72893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1246 and GAM72893

GR689 BG142150 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 689(GR689) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR689 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR689 gene was detected is described hereinabove with reference to Figs. 8-18.

GR689 gene encodes GR689 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR689 precursor RNA folds spatially, forming GR689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR689 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR689 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM280462 precursor RNA and GAM288910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM280462 RNA and GAM288910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM280462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280462 target RNA into GAM280462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288910 target RNA into GAM288910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR689 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR689 gene: GAM280462 target protein and GAM288910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM280462 and GAM288910

GR690 BF382578 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 690(GR690) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR690 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR690 gene was detected is described hereinabove with reference to Figs. 8-18.

GR690 gene encodes GR690 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR690 precursor RNA folds spatially, forming GR690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR690 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR690 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3632 precursor RNA, GAM21313 precursor RNA and GAM38053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3632 RNA, GAM21313 RNA and GAM38053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3632 target RNA into GAM3632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21313 target RNA into GAM21313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38053 target RNA into GAM38053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR690 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR690 gene: GAM3632 target protein, GAM21313 target protein and GAM38053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3632, GAM21313 and GAM38053

GR691 BG329214 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 691(GR691) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR691 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR691 gene was detected is described hereinabove with reference to Figs. 8-18.

GR691 gene encodes GR691 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR691 precursor RNA folds spatially, forming GR691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR691 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR691 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7847 precursor RNA and GAM129501 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7847 RNA and GAM129501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7847 target RNA into GAM7847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129501 target RNA into GAM129501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR691 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR691 gene: GAM7847 target protein and GAM129501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7847 and GAM129501

GR692 AA781818 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 692(GR692) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR692 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR692 gene was detected is described hereinabove with reference to Figs. 8-18.

GR692 gene encodes GR692 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR692 precursor RNA folds spatially, forming GR692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR692 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR692 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3325 precursor RNA and GAM8689 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3325 RNA and GAM8689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3325 target RNA into GAM3325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8689 target RNA into GAM8689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR692 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR692 gene: GAM3325 target protein and GAM8689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3325 and GAM8689

GR693 AI822062 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 693(GR693) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR693 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR693 gene was detected is described hereinabove with reference to Figs. 8-18.

GR693 gene encodes GR693 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR693 precursor RNA folds spatially, forming GR693 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR693 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR693 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM75063 precursor RNA, GAM157580 precursor RNA and GAM169713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM75063 RNA, GAM157580 RNA and GAM169713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75063 target RNA into GAM75063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157580 target RNA into GAM157580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169713 target RNA into GAM169713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR693 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR693 gene: GAM75063 target protein, GAM157580 target protein and GAM169713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75063, GAM157580 and GAM169713

GR694 BF769185 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 694(GR694) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR694 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR694 gene was detected is described hereinabove with reference to Figs. 8-18.

GR694 gene encodes GR694 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR694 precursor RNA folds spatially, forming GR694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR694 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR694 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM72 precursor RNA, GAM163324 precursor RNA, GAM270136 precursor RNA and GAM280558 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72 RNA, GAM163324 RNA, GAM270136 RNA and GAM280558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of

Fig. 8, thereby inhibiting translation of GAM72 target RNA into GAM72 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163324 target RNA into GAM163324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270136 target RNA into GAM270136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280558 target RNA into GAM280558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR694 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR694 gene: GAM72 target protein, GAM163324 target protein, GAM270136 target protein and GAM280558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72, GAM163324, GAM270136 and GAM280558

GR695 BF210610 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 695(GR695) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR695 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR695 gene was detected is described hereinabove with reference to Figs. 8-18.

GR695 gene encodes GR695 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR695 precursor RNA folds spatially, forming GR695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR695 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR695 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81803 precursor RNA and GAM185334 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81803 RNA and GAM185334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81803 target RNA into GAM81803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185334 target RNA into GAM185334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR695 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR695 gene: GAM81803 target protein and GAM185334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81803 and GAM185334

GR696 AA045239 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 696(GR696) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR696 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR696 gene was detected is described hereinabove with reference to Figs. 8-18.

GR696 gene encodes GR696 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR696 precursor RNA folds spatially, forming GR696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR696 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR696 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM223780 precursor RNA and GAM254066 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223780 RNA and GAM254066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223780 target RNA into GAM223780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254066 target RNA into GAM254066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR696 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR696 gene: GAM223780 target protein and GAM254066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223780 and GAM254066

GR697 AA713823 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 697(GR697) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR697 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR697 gene was detected is described hereinabove with reference to Figs. 8-18.

GR697 gene encodes GR697 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR697 precursor RNA folds spatially, forming GR697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR697 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR697 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM601 precursor RNA, GAM6375 precursor RNA and GAM36104 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM601 RNA, GAM6375 RNA and GAM36104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM601 target RNA into GAM601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6375 target RNA into GAM6375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36104 target RNA into GAM36104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR697 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR697 gene: GAM601 target protein, GAM6375 target protein and GAM36104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM601, GAM6375 and GAM36104

GR698 BF692042 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 698(GR698) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR698 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR698 gene was detected is described hereinabove with reference to Figs. 8-18.

GR698 gene encodes GR698 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR698 precursor RNA folds spatially, forming GR698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR698 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR698 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM499 precursor RNA and GAM6941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM499 RNA and GAM6941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM499 target RNA into GAM499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6941 target RNA into GAM6941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR698 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR698 gene: GAM499 target protein and GAM6941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM499 and GAM6941

GR699 AW082871 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 699(GR699) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR699 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR699 gene was detected is described hereinabove with reference to Figs. 8-18.

GR699 gene encodes GR699 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR699 precursor RNA folds spatially, forming GR699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR699 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR699 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3090 precursor RNA and GAM230866 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3090 RNA and GAM230866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3090 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3090 target RNA into GAM3090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230866 target RNA into GAM230866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR699 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR699 gene: GAM3090 target protein and GAM230866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3090 and GAM230866

GR700 BG434904 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 700(GR700) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR700 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR700 gene was detected is described hereinabove with reference to Figs. 8-18.

GR700 gene encodes GR700 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR700 precursor RNA folds spatially, forming GR700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR700 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR700 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3489 precursor RNA, GAM3910 precursor RNA and GAM274666 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3489 RNA, GAM3910 RNA and GAM274666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3489 target RNA into GAM3489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3910 target RNA into GAM3910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274666 target RNA into GAM274666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR700 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR700 gene: GAM3489 target protein, GAM3910 target protein and GAM274666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3489, GAM3910 and GAM274666

GR701 R76751 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 701(GR701) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR701 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR701 gene was detected is described hereinabove with reference to Figs. 8-18.

GR701 gene encodes GR701 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR701 precursor RNA folds spatially, forming GR701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR701 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR701 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6656 precursor RNA and GAM333351 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6656 RNA and GAM333351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6656 target RNA into GAM6656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333351 target RNA into GAM333351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR701 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR701 gene: GAM6656 target protein and GAM333351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6656 and GAM333351

GR702 AA969691 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 702(GR702) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR702 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR702 gene was detected is described hereinabove with reference to Figs. 8-18.

GR702 gene encodes GR702 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR702 precursor RNA folds spatially, forming GR702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR702 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR702 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4265 precursor RNA and GAM7832 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4265 RNA and GAM7832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4265 target RNA into GAM4265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7832 target RNA into

GAM7832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR702 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR702 gene: GAM4265 target protein and GAM7832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4265 and GAM7832

GR703 BG494500 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 703(GR703) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR703 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR703 gene was detected is described hereinabove with reference to Figs. 8-18.

GR703 gene encodes GR703 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR703 precursor RNA folds spatially, forming GR703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR703 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR703 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM133653 precursor RNA, GAM150281 precursor RNA and GAM219649 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133653 RNA, GAM150281 RNA and GAM219649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133653 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133653 target RNA into GAM133653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150281 target RNA into GAM150281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219649 target RNA into GAM219649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR703 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR703 gene: GAM133653 target protein, GAM150281 target protein and GAM219649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133653, GAM150281 and GAM219649

GR704 BG169392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 704(GR704) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR704 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR704 gene was detected is described hereinabove with reference to Figs. 8-18.

GR704 gene encodes GR704 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR704 precursor RNA folds spatially, forming GR704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR704 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR704 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105556 precursor RNA and GAM164243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105556 RNA and GAM164243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105556 target RNA into GAM105556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164243 target RNA into GAM164243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR704 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR704 gene: GAM105556 target protein and GAM164243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105556 and GAM164243

GR705 AW864075 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

705(GR705) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR705 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR705 gene was detected is described hereinabove with reference to Figs. 8-18.

GR705 gene encodes GR705 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR705 precursor RNA folds spatially, forming GR705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR705 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR705 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1776 precursor RNA, GAM5556 precursor RNA and GAM164518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1776 RNA, GAM5556 RNA and GAM164518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1776 target RNA into GAM1776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5556 target RNA into

GAM5556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164518 target RNA into GAM164518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR705 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR705 gene: GAM1776 target protein, GAM5556 target protein and GAM164518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1776, GAM5556 and GAM164518

GR706 BE561700 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 706(GR706) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR706 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR706 gene was detected is described hereinabove with reference to Figs. 8-18.

GR706 gene encodes GR706 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR706 precursor RNA folds spatially, forming GR706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR706 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR706 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM968 precursor RNA, GAM186030 precursor RNA and GAM257613 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM968 RNA, GAM186030 RNA and GAM257613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM968 target RNA into GAM968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186030 target RNA into GAM186030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257613 target RNA into GAM257613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR706 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR706 gene: GAM968 target protein, GAM186030 target protein and GAM257613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM968, GAM186030 and GAM257613

GR707 AA214699 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 707(GR707) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR707 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR707 gene was detected is described hereinabove with reference to Figs. 8-18.

GR707 gene encodes GR707 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR707 precursor RNA folds spatially, forming GR707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR707 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR707 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM221301 precursor RNA and GAM234354 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221301 RNA and GAM234354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221301 target RNA into GAM221301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234354 target RNA into GAM234354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR707 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR707 gene: GAM221301 target protein and GAM234354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221301 and GAM234354

GR708 AI832222 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 708(GR708) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR708 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR708 gene was detected is described hereinabove with reference to Figs. 8-18.

GR708 gene encodes GR708 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR708 precursor RNA folds spatially, forming GR708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR708 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR708 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM91 precursor RNA and GAM64636 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91 RNA and GAM64636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91 target RNA into GAM91 target

protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64636 target RNA into GAM64636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR708 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR708 gene: GAM91 target protein and GAM64636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91 and GAM64636

GR709 AW269343 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 709(GR709) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR709 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR709 gene was detected is described hereinabove with reference to Figs. 8-18.

GR709 gene encodes GR709 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR709 precursor RNA folds spatially, forming GR709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR709 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR709 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM145764 precursor RNA, GAM181649 precursor RNA and GAM241832 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM145764 RNA, GAM181649 RNA and GAM241832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM145764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145764 target RNA into GAM145764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181649 target RNA into GAM181649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241832 target RNA into GAM241832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR709 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR709 gene: GAM145764 target protein, GAM181649 target protein and GAM241832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM145764, GAM181649 and GAM241832

GR710 AA813228 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 710(GR710) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR710 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR710 gene was detected is described hereinabove with reference to Figs. 8-18.

GR710 gene encodes GR710 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR710 precursor RNA folds spatially, forming GR710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR710 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR710 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6763 precursor RNA, GAM8202 precursor RNA and GAM64348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6763 RNA, GAM8202 RNA and GAM64348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6763 target RNA into GAM6763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8202 target RNA into GAM8202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64348 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64348 target RNA into GAM64348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR710 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR710 gene: GAM6763 target protein, GAM8202 target protein and GAM64348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6763, GAM8202 and GAM64348

GR711 BF059006 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 711(GR711) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR711 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR711 gene was detected is described hereinabove with reference to Figs. 8-18.

GR711 gene encodes GR711 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR711 precursor RNA folds spatially, forming GR711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR711 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR711 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102089 precursor RNA and GAM317575 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102089 RNA and GAM317575 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102089 target RNA into GAM102089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317575 target RNA into GAM317575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR711 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR711 gene: GAM102089 target protein and GAM317575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102089 and GAM317575

GR712 AL700054 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 712(GR712) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR712 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR712 gene was detected is described hereinabove with reference to Figs. 8-18.

GR712 gene encodes GR712 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR712 precursor RNA folds spatially, forming GR712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR712 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR712 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7623 precursor RNA and GAM331958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7623 RNA and GAM331958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7623 target RNA into GAM7623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331958 target RNA into GAM331958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR712 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR712 gene: GAM7623 target protein and GAM331958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7623 and GAM331958

GR713 BF885622 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 713(GR713) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR713 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR713 gene was detected is described hereinabove with reference to Figs. 8-18.

GR713 gene encodes GR713 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR713 precursor RNA folds spatially, forming GR713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR713 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR713 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4367 precursor RNA and GAM6226 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4367 RNA and GAM6226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4367 target RNA into GAM4367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6226 target RNA into GAM6226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR713 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR713 gene: GAM4367 target

protein and GAM6226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4367 and GAM6226

GR714 AI421297 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 714(GR714) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR714 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR714 gene was detected is described hereinabove with reference to Figs. 8-18.

GR714 gene encodes GR714 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR714 precursor RNA folds spatially, forming GR714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR714 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR714 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8126 precursor RNA, GAM14076 precursor RNA and GAM215329 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8126 RNA, GAM14076 RNA and GAM215329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8126 target RNA into GAM8126 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14076 target RNA into GAM14076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215329 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215329 target RNA into GAM215329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR714 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR714 gene: GAM8126 target protein, GAM14076 target protein and GAM215329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8126, GAM14076 and GAM215329

GR715 BM479963 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 715(GR715) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR715 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR715 gene was detected is described hereinabove with reference to Figs. 8-18.

GR715 gene encodes GR715 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR715 precursor RNA folds spatially, forming GR715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR715 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR715 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4602 precursor RNA and GAM5662 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4602 RNA and GAM5662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4602 target RNA into GAM4602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5662 target RNA into GAM5662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR715 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR715 gene: GAM4602 target protein and GAM5662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4602 and GAM5662

GR716 BF184409 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 716(GR716) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR716 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR716

gene was detected is described hereinabove with reference to Figs. 8-18.

GR716 gene encodes GR716 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR716 precursor RNA folds spatially, forming GR716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR716 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR716 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7312 precursor RNA and GAM316683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7312 RNA and GAM316683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7312 target RNA into GAM7312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316683 target RNA into GAM316683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR716 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR716 gene: GAM7312 target protein and GAM316683 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7312 and GAM316683

GR717 BE162548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 717(GR717) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR717 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR717 gene was detected is described hereinabove with reference to Figs. 8-18.

GR717 gene encodes GR717 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR717 precursor RNA folds spatially, forming GR717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR717 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR717 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM117570 precursor RNA and GAM159390 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117570 RNA and GAM159390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117570 target RNA into GAM117570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159390 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159390 target RNA into GAM159390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR717 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR717 gene: GAM117570 target protein and GAM159390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117570 and GAM159390

GR718 BE871673 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 718(GR718) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR718 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR718 gene was detected is described hereinabove with reference to Figs. 8-18.

GR718 gene encodes GR718 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR718 precursor RNA folds spatially, forming GR718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR718 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR718 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM87041 precursor RNA, GAM89247 precursor RNA and GAM239909 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87041 RNA, GAM89247 RNA and GAM239909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87041 target RNA into GAM87041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89247 target RNA into GAM89247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239909 target RNA into GAM239909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR718 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR718 gene: GAM87041 target protein, GAM89247 target protein and GAM239909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87041, GAM89247 and GAM239909

GR719 BF218320 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 719(GR719) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR719 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR719 gene was detected is described hereinabove with reference to Figs. 8-18.

GR719 gene encodes GR719 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR719 precursor RNA folds spatially, forming GR719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR719 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR719 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM688 precursor RNA, GAM6089 precursor RNA and GAM312179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM688 RNA, GAM6089 RNA and GAM312179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM688 target RNA into GAM688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6089 target RNA into GAM6089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312179

target RNA into GAM312179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR719 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR719 gene: GAM688 target protein, GAM6089 target protein and GAM312179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM688, GAM6089 and GAM312179

GR720 AI929315 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 720(GR720) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR720 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR720 gene was detected is described hereinabove with reference to Figs. 8-18.

GR720 gene encodes GR720 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR720 precursor RNA folds spatially, forming GR720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR720 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR720 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25579 precursor RNA and GAM251750 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25579 RNA and GAM251750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25579 target RNA into GAM25579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251750 target RNA into GAM251750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR720 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR720 gene: GAM25579 target protein and GAM251750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25579 and GAM251750

GR721 AW054680 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 721(GR721) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR721 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR721 gene was detected is described hereinabove with reference to Figs. 8-18.

GR721 gene encodes GR721 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR721 precursor RNA folds spatially, forming GR721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR721 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR721 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158514 precursor RNA and GAM281506 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158514 RNA and GAM281506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158514 target RNA into GAM158514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281506 target RNA into GAM281506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR721 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR721 gene: GAM158514 target protein and GAM281506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158514 and GAM281506

GR722 AI265919 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 722(GR722) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR722 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR722 gene was detected is described hereinabove with reference to Figs. 8-18.

GR722 gene encodes GR722 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR722 precursor RNA folds spatially, forming GR722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR722 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR722 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7903 precursor RNA and GAM336020 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7903 RNA and GAM336020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7903 target RNA into GAM7903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336020 target RNA into GAM336020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR722 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR722 gene: GAM7903 target protein and GAM336020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM7903 and GAM336020

GR723 BG210690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 723(GR723) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR723 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR723 gene was detected is described hereinabove with reference to Figs. 8-18.

GR723 gene encodes GR723 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR723 precursor RNA folds spatially, forming GR723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR723 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR723 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2410 precursor RNA, GAM5381 precursor RNA, GAM8643 precursor RNA and GAM56566 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2410 RNA, GAM5381 RNA, GAM8643 RNA and GAM56566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2410 target RNA into GAM2410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5381 target RNA into GAM5381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8643 target RNA into GAM8643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56566 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56566 target RNA into GAM56566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR723 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR723 gene: GAM2410 target protein, GAM5381 target protein, GAM8643 target protein and GAM56566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2410, GAM5381, GAM8643 and GAM56566

GR724 BG704255 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 724(GR724) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR724 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR724 gene was detected is described hereinabove with reference to Figs. 8-18.

GR724 gene encodes GR724 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR724 precursor RNA folds spatially, forming GR724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR724

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR724 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4604 precursor RNA and GAM111562 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4604 RNA and GAM111562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4604 target RNA into GAM4604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111562 target RNA into GAM111562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR724 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR724 gene: GAM4604 target protein and GAM111562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4604 and GAM111562

GR725 AW971424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 725(GR725) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR725 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR725 gene was detected is described hereinabove with reference to Figs. 8-18.

GR725 gene encodes GR725 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR725 precursor RNA folds spatially, forming GR725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR725 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR725 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3540 precursor RNA and GAM101624 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3540 RNA and GAM101624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3540 target RNA into GAM3540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101624 target RNA into GAM101624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR725 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR725 gene: GAM3540 target protein and GAM101624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3540 and GAM101624

GR726 BF967351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 726(GR726) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR726 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR726 gene was detected is described hereinabove with reference to Figs. 8-18.

GR726 gene encodes GR726 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR726 precursor RNA folds spatially, forming GR726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR726 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR726 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2001 precursor RNA and GAM299018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2001 RNA and GAM299018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2001 target RNA into GAM2001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299018 target RNA into GAM299018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR726 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR726 gene: GAM2001 target protein and GAM299018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2001 and GAM299018

GR727 AI718091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 727(GR727) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR727 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR727 gene was detected is described hereinabove with reference to Figs. 8-18.

GR727 gene encodes GR727 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR727 precursor RNA folds spatially, forming GR727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR727 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR727 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8619 precursor RNA and GAM185001 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8619 RNA and GAM185001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8619 target RNA into GAM8619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185001 target RNA into GAM185001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR727 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR727 gene: GAM8619 target protein and GAM185001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8619 and GAM185001

GR728 BG741260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 728(GR728) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR728 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR728 gene was detected is described hereinabove with reference to Figs. 8-18.

GR728 gene encodes GR728 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR728 precursor RNA folds spatially, forming GR728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR728 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR728 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM853 precursor RNA, GAM1122 precursor RNA, GAM221153 precursor RNA and GAM319509 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM853 RNA, GAM1122 RNA, GAM221153 RNA and GAM319509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM853 target RNA into GAM853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1122 target RNA into GAM1122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221153 target RNA into GAM221153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319509 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319509 target RNA into GAM319509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR728 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR728 gene: GAM853 target protein, GAM1122 target protein, GAM221153 target protein and GAM319509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM853, GAM1122, GAM221153 and GAM319509

GR729 BE394622 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 729(GR729) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR729 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR729 gene was detected is described hereinabove with reference to Figs. 8-18.

GR729 gene encodes GR729 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR729 precursor RNA folds spatially, forming GR729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR729 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR729 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3968 precursor RNA, GAM7214 precursor RNA and GAM273265 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3968 RNA, GAM7214 RNA and GAM273265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3968 target RNA into GAM3968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7214 target RNA into GAM7214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273265 target RNA into GAM273265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR729 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR729 gene: GAM3968 target protein, GAM7214 target protein and GAM273265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3968, GAM7214 and GAM273265

GR730 AA610177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 730(GR730) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR730 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR730 gene was detected is described hereinabove with reference to Figs. 8-18.

GR730 gene encodes GR730 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR730 precursor RNA folds spatially, forming GR730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR730 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR730 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM74601 precursor RNA, GAM157813 precursor RNA and GAM237546 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74601 RNA, GAM157813 RNA and GAM237546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74601 target RNA into GAM74601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157813 target RNA into GAM157813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237546 target RNA into GAM237546 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR730 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR730 gene: GAM74601 target protein, GAM157813 target protein and GAM237546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74601, GAM157813 and GAM237546

GR731 BG654459 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 731(GR731) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR731 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR731 gene was detected is described hereinabove with reference to Figs. 8-18.

GR731 gene encodes GR731 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR731 precursor RNA folds spatially, forming GR731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR731 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR731 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM238730 precursor RNA and GAM335915 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM238730 RNA and GAM335915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM238730 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238730 target RNA into GAM238730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335915 target RNA into GAM335915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR731 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR731 gene: GAM238730 target protein and GAM335915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM238730 and GAM335915

GR732 BF724211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 732(GR732) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR732 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR732 gene was detected is described hereinabove with reference to Figs. 8-18.

GR732 gene encodes GR732 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR732 precursor RNA folds spatially, forming GR732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR732 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR732 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR732 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5462 precursor RNA and GAM295750 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5462 RNA and GAM295750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5462 target RNA into GAM5462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295750 target RNA into GAM295750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR732 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR732 gene: GAM5462 target protein and GAM295750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5462 and GAM295750

GR733 AA091796 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 733(GR733) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR733 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR733 gene was detected is described hereinabove with reference to Figs. 8-18.

GR733 gene encodes GR733 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR733 precursor RNA folds spatially, forming GR733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR733 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR733 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59611 precursor RNA and GAM124890 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59611 RNA and GAM124890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59611 target RNA into GAM59611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124890 target RNA into GAM124890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR733 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR733 gene: GAM59611 target protein and GAM124890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59611 and GAM124890

GR734 BF526458 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 734(GR734) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR734 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR734 gene was detected is described hereinabove with reference to Figs. 8-18.

GR734 gene encodes GR734 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR734 precursor RNA folds spatially, forming GR734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR734 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR734 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM218155 precursor RNA, GAM230299 precursor RNA and GAM260584 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218155 RNA, GAM230299 RNA and GAM260584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218155 target RNA into GAM218155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230299 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230299 target RNA into GAM230299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260584 target RNA into GAM260584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR734 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR734 gene: GAM218155 target protein, GAM230299 target protein and GAM260584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218155, GAM230299 and GAM260584

GR735 BF155031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 735(GR735) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR735 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR735 gene was detected is described hereinabove with reference to Figs. 8-18.

GR735 gene encodes GR735 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR735 precursor RNA folds spatially, forming GR735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR735 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR735 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM121037 precursor RNA and GAM323634 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121037 RNA and GAM323634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121037 target RNA into GAM121037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323634 target RNA into GAM323634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR735 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR735 gene: GAM121037 target protein and GAM323634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121037 and GAM323634

GR736 BI461445 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 736(GR736) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR736 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR736 gene was detected is described hereinabove with reference to Figs. 8-18.

GR736 gene encodes GR736 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR736 precursor RNA folds spatially, forming GR736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR736 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR736 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5664 precursor RNA and GAM125475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5664 RNA and GAM125475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5664 target RNA into GAM5664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125475 target RNA into GAM125475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR736 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR736 gene: GAM5664 target protein and GAM125475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5664 and GAM125475

GR737 AW580480 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 737(GR737) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR737 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR737 gene was detected is described hereinabove with reference to Figs. 8-18.

GR737 gene encodes GR737 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR737 precursor RNA folds spatially, forming GR737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR737 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR737 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94634 precursor RNA and GAM260846 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94634 RNA and GAM260846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94634 target RNA into GAM94634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260846 target RNA into GAM260846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR737 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR737 gene: GAM94634 target protein and GAM260846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94634 and GAM260846

GR738 BG475841 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 738(GR738) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR738 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR738 gene was detected is described hereinabove with reference to Figs. 8-18.

GR738 gene encodes GR738 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR738 precursor RNA folds spatially, forming GR738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR738 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR738 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM213908 precursor RNA, GAM233022 precursor RNA and GAM278800 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM213908 RNA, GAM233022 RNA and GAM278800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM213908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213908 target RNA into GAM213908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233022 target RNA into GAM233022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278800 target RNA into GAM278800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR738 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR738 gene: GAM213908 target protein, GAM233022 target protein and GAM278800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM213908, GAM233022 and GAM278800

GR739 BM695752 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 739(GR739) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR739 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR739 gene was detected is described hereinabove with reference to Figs. 8-18.

GR739 gene encodes GR739 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR739 precursor RNA folds spatially, forming GR739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR739 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR739 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM60844 precursor RNA, GAM169093 precursor RNA and GAM330766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60844 RNA, GAM169093 RNA and GAM330766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60844 target RNA into GAM60844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169093 target RNA into GAM169093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330766 target RNA into GAM330766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR739 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR739 gene: GAM60844 target protein, GAM169093 target protein and GAM330766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60844, GAM169093 and GAM330766

GR740 BE799636 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 740(GR740) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR740 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR740 gene was detected is described hereinabove with reference to Figs. 8-18.

GR740 gene encodes GR740 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR740 precursor RNA folds spatially, forming GR740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR740 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR740 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2485 precursor RNA, GAM16786 precursor RNA and GAM162492 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2485 RNA, GAM16786 RNA and GAM162492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2485 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2485 target RNA into GAM2485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16786 target RNA into GAM16786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162492 target RNA into GAM162492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR740 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR740 gene: GAM2485 target protein, GAM16786 target protein and GAM162492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2485, GAM16786 and GAM162492

GR741 T58800 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 741(GR741) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR741 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR741 gene was detected is described hereinabove with reference to Figs. 8-18.

GR741 gene encodes GR741 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR741 precursor RNA folds spatially, forming GR741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR741 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR741 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM101 precursor RNA and GAM177834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101 RNA and GAM177834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101 target RNA into GAM101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177834 target RNA into GAM177834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR741 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR741 gene: GAM101 target protein and GAM177834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101 and GAM177834

GR742 BG260937 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 742(GR742) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR742 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR742 gene was detected is described hereinabove with reference to Figs. 8-18.

GR742 gene encodes GR742 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR742 precursor RNA folds spatially, forming GR742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR742 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR742 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM26797 precursor RNA, GAM201950 precursor RNA and GAM335513 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26797 RNA, GAM201950 RNA and GAM335513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26797 target RNA into GAM26797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201950 target RNA into GAM201950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335513 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335513 target RNA into GAM335513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR742 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR742 gene: GAM26797 target protein, GAM201950 target protein and GAM335513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26797, GAM201950 and GAM335513

GR743 BI334114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 743(GR743) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR743 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR743 gene was detected is described hereinabove with reference to Figs. 8-18.

GR743 gene encodes GR743 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR743 precursor RNA folds spatially, forming GR743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR743 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR743 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM10708 precursor RNA, GAM28288 precursor RNA and GAM239914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10708 RNA, GAM28288 RNA and GAM239914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10708 target RNA into GAM10708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28288 target RNA into GAM28288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239914 target RNA into GAM239914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR743 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR743 gene: GAM10708 target protein, GAM28288 target protein and GAM239914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10708, GAM28288 and GAM239914

GR744 AA877910 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 744(GR744) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR744 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR744

gene was detected is described hereinabove with reference to Figs. 8-18.

GR744 gene encodes GR744 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR744 precursor RNA folds spatially, forming GR744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR744 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR744 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54 precursor RNA and GAM329555 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54 RNA and GAM329555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54 target RNA into GAM54 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329555 target RNA into GAM329555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR744 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR744 gene: GAM54 target protein and GAM329555 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54 and GAM329555

GR745 BI764308 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 745(GR745) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR745 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR745 gene was detected is described hereinabove with reference to Figs. 8-18.

GR745 gene encodes GR745 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR745 precursor RNA folds spatially, forming GR745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR745 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR745 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96615 precursor RNA and GAM194989 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96615 RNA and GAM194989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96615 target RNA into GAM96615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194989 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194989 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194989 target RNA into GAM194989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR745 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR745 gene: GAM96615 target protein and GAM194989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96615 and GAM194989

GR746 BG252537 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 746(GR746) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR746 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR746 gene was detected is described hereinabove with reference to Figs. 8-18.

GR746 gene encodes GR746 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR746 precursor RNA folds spatially, forming GR746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR746 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR746 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3648 precursor RNA, GAM261450 precursor RNA and GAM289863 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3648 RNA, GAM261450 RNA and GAM289863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3648 target RNA into GAM3648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261450 target RNA into GAM261450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289863 target RNA into GAM289863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR746 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR746 gene: GAM3648 target protein, GAM261450 target protein and GAM289863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3648, GAM261450 and GAM289863

GR747 AA640735 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 747(GR747) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR747 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR747 gene was detected is described hereinabove with reference to Figs. 8-18.

GR747 gene encodes GR747 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR747 precursor RNA folds spatially, forming GR747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR747 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR747 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48263 precursor RNA and GAM317749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48263 RNA and GAM317749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48263 target RNA into GAM48263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317749 target RNA into GAM317749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR747 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR747 gene: GAM48263 target protein and GAM317749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48263 and GAM317749

GR748 BF743293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 748(GR748) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR748 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR748 gene was detected is described hereinabove with reference to Figs. 8-18.

GR748 gene encodes GR748 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR748 precursor RNA folds spatially, forming GR748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR748 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR748 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5851 precursor RNA and GAM55437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5851 RNA and GAM55437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5851 target RNA into GAM5851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM55437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55437 target RNA into GAM55437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR748 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR748 gene: GAM5851 target protein and GAM55437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5851 and GAM55437

GR749 BQ017443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 749(GR749) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR749 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR749 gene was detected is described hereinabove with reference to Figs. 8-18.

GR749 gene encodes GR749 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR749 precursor RNA folds spatially, forming GR749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR749 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR749 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3299 precursor RNA, GAM4698 precursor RNA, GAM4991 precursor RNA and GAM318978 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3299 RNA, GAM4698 RNA, GAM4991 RNA and GAM318978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3299 target RNA into GAM3299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4698 target RNA into GAM4698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4991 target RNA into GAM4991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318978 target RNA into GAM318978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR749 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR749 gene: GAM3299 target protein, GAM4698 target protein, GAM4991 target protein and GAM318978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3299, GAM4698, GAM4991 and GAM318978

GR750 BI820972 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 750(GR750) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR750 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR750 gene was detected is described hereinabove with reference to Figs. 8-18.

GR750 gene encodes GR750 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR750 precursor RNA folds spatially, forming GR750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR750 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR750 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2906 precursor RNA and GAM116357 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2906 RNA and GAM116357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2906 target RNA into GAM2906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116357 target RNA into GAM116357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR750 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR750 gene: GAM2906 target protein and GAM116357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2906 and GAM116357

GR751 BM808149 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 751(GR751) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR751 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR751 gene was detected is described hereinabove with reference to Figs. 8-18.

GR751 gene encodes GR751 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR751 precursor RNA folds spatially, forming GR751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR751 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR751 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3305 precursor RNA and GAM258277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3305 RNA and GAM258277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3305 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3305 target RNA into GAM3305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258277 target RNA into GAM258277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR751 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR751 gene: GAM3305 target protein and GAM258277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3305 and GAM258277

GR752 BE264653 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 752(GR752) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR752 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR752 gene was detected is described hereinabove with reference to Figs. 8-18.

GR752 gene encodes GR752 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR752 precursor RNA folds spatially, forming GR752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR752 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR752 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83641 precursor RNA and GAM115177 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83641 RNA and GAM115177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83641 target RNA into GAM83641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115177 target RNA into GAM115177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR752 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR752 gene: GAM83641 target protein and GAM115177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83641 and GAM115177

GR753 BE277029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 753(GR753) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR753 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR753 gene was detected is described hereinabove with reference to Figs. 8-18.

GR753 gene encodes GR753 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR753 precursor RNA folds spatially, forming GR753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR753 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR753 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1389 precursor RNA and GAM298385 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1389 RNA and GAM298385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1389 target RNA into GAM1389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298385 target RNA into GAM298385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR753 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR753 gene: GAM1389 target protein and GAM298385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1389 and GAM298385

GR754 BG482325 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 754(GR754) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR754 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR754 gene was detected is described hereinabove with reference to Figs. 8-18.

GR754 gene encodes GR754 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR754 precursor RNA folds spatially, forming GR754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR754 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR754 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6384 precursor RNA and GAM33066 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6384 RNA and GAM33066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6384 target RNA into GAM6384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33066

target RNA into GAM33066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR754 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR754 gene: GAM6384 target protein and GAM33066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6384 and GAM33066

GR755 AW516746 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 755(GR755) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR755 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR755 gene was detected is described hereinabove with reference to Figs. 8-18.

GR755 gene encodes GR755 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR755 precursor RNA folds spatially, forming GR755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR755 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR755 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1928 precursor RNA and GAM8437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1928 RNA and GAM8437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1928 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1928 target RNA into GAM1928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8437 target RNA into GAM8437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR755 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR755 gene: GAM1928 target protein and GAM8437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1928 and GAM8437

GR756 BG114935 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 756(GR756) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR756 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR756 gene was detected is described hereinabove with reference to Figs. 8-18.

GR756 gene encodes GR756 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR756 precursor RNA folds spatially, forming GR756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR756 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR756 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR756 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6430 precursor RNA and GAM251444 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6430 RNA and GAM251444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6430 target RNA into GAM6430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251444 target RNA into GAM251444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR756 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR756 gene: GAM6430 target protein and GAM251444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6430 and GAM251444

GR757 BM016609 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 757(GR757) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR757 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR757 gene was detected is described hereinabove with reference to Figs. 8-18.

GR757 gene encodes GR757 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR757 precursor RNA folds spatially, forming GR757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR757 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR757 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49 precursor RNA and GAM67297 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49 RNA and GAM67297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49 target RNA into GAM49 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67297 target RNA into GAM67297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR757 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR757 gene: GAM49 target protein and GAM67297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49 and GAM67297

GR758 BI488748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 758(GR758) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR758 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR758 gene was detected is described hereinabove with reference to Figs. 8-18.

GR758 gene encodes GR758 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR758 precursor RNA folds spatially, forming GR758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR758 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR758 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259814 precursor RNA and GAM309522 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259814 RNA and GAM309522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259814 target RNA into GAM259814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309522 target RNA into GAM309522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR758 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR758 gene: GAM259814 target protein and GAM309522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259814 and GAM309522

GR759 BF129170 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 759(GR759) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR759 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR759 gene was detected is described hereinabove with reference to Figs. 8-18.

GR759 gene encodes GR759 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR759 precursor RNA folds spatially, forming GR759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR759 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR759 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5741 precursor RNA and GAM7731 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5741 RNA and GAM7731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5741 target RNA into GAM5741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7731 target RNA into GAM7731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR759 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR759 gene: GAM5741 target protein and GAM7731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5741 and GAM7731

GR760 BF513144 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 760(GR760) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR760 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR760 gene was detected is described hereinabove with reference to Figs. 8-18.

GR760 gene encodes GR760 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR760 precursor RNA folds spatially, forming GR760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR760 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR760 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM170703 precursor RNA and GAM171730 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170703 RNA and GAM171730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170703 target RNA into GAM170703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171730 target RNA into GAM171730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR760 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR760 gene: GAM170703 target protein and GAM171730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170703 and GAM171730

GR761 BF932817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 761(GR761) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR761 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR761 gene was detected is described hereinabove with reference to Figs. 8-18.

GR761 gene encodes GR761 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR761 precursor RNA folds spatially, forming GR761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR761 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR761 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM169004 precursor RNA and GAM187126 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM169004 RNA and GAM187126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM169004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169004 target RNA into GAM169004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187126 target RNA into GAM187126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR761 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR761 gene: GAM169004 target protein and GAM187126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM169004 and GAM187126

GR762 BI752486 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 762(GR762) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR762 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR762 gene was detected is described hereinabove with reference to Figs. 8-18.

GR762 gene encodes GR762 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR762 precursor RNA folds spatially, forming GR762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR762 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR762 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1225 precursor RNA, GAM6876 precursor RNA, GAM88346 precursor RNA and GAM115237 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1225 RNA, GAM6876 RNA, GAM88346 RNA and GAM115237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1225 target RNA into GAM1225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6876 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6876 target RNA into GAM6876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88346 target RNA into GAM88346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115237 target RNA into GAM115237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR762 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR762 gene: GAM1225 target protein, GAM6876 target protein, GAM88346 target protein and GAM115237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1225, GAM6876, GAM88346 and GAM115237

GR763 T75199 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 763(GR763) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR763 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR763 gene was detected is described hereinabove with reference to Figs. 8-18.

GR763 gene encodes GR763 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR763 precursor RNA folds spatially, forming GR763 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR763 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR763 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2498 precursor RNA, GAM4435 precursor RNA and GAM5861 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2498 RNA, GAM4435 RNA and GAM5861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2498 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2498 target RNA into GAM2498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4435 target RNA into GAM4435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5861 target RNA into GAM5861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR763 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR763 gene: GAM2498 target protein, GAM4435 target protein and GAM5861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2498, GAM4435 and GAM5861

GR764 BE889480 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 764(GR764) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR764 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR764 gene was detected is described hereinabove with reference to Figs. 8-18.

GR764 gene encodes GR764 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR764 precursor RNA folds spatially, forming GR764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR764 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR764 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88662 precursor RNA and GAM322273 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88662 RNA and GAM322273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88662

target RNA into GAM88662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322273 target RNA into GAM322273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR764 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR764 gene: GAM88662 target protein and GAM322273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88662 and GAM322273

GR765 BG617307 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 765(GR765) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR765 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR765 gene was detected is described hereinabove with reference to Figs. 8-18.

GR765 gene encodes GR765 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR765 precursor RNA folds spatially, forming GR765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR765 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR765 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115229 precursor RNA and GAM202228 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115229 RNA and GAM202228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115229 target RNA into GAM115229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202228 target RNA into GAM202228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR765 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR765 gene: GAM115229 target protein and GAM202228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115229 and GAM202228

GR766 N49701 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 766(GR766) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR766 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR766 gene was detected is described hereinabove with reference to Figs. 8-18.

GR766 gene encodes GR766 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR766 precursor RNA folds spatially, forming GR766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR766

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR766 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM106935 precursor RNA and GAM315686 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106935 RNA and GAM315686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106935 target RNA into GAM106935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315686 target RNA into GAM315686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR766 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR766 gene: GAM106935 target protein and GAM315686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106935 and GAM315686

GR767 BG491216 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 767(GR767) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR767 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR767 gene was detected is described hereinabove with reference to Figs. 8-18.

GR767 gene encodes GR767 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR767 precursor RNA folds spatially, forming GR767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR767 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR767 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102108 precursor RNA and GAM234405 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102108 RNA and GAM234405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102108 target RNA into GAM102108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234405 target RNA into GAM234405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR767 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR767 gene: GAM102108 target protein and GAM234405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102108 and GAM234405

GR768 BF308470 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 768(GR768) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR768 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR768 gene was detected is described hereinabove with reference to Figs. 8-18.

GR768 gene encodes GR768 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR768 precursor RNA folds spatially, forming GR768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR768 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR768 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM115269 precursor RNA, GAM143971 precursor RNA and GAM206652 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115269 RNA, GAM143971 RNA and GAM206652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115269 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115269 target RNA into GAM115269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM143971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143971 target RNA into GAM143971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206652 target RNA into GAM206652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR768 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR768 gene: GAM115269 target protein, GAM143971 target protein and GAM206652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115269, GAM143971 and GAM206652

GR769 BG679551 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 769(GR769) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR769 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR769 gene was detected is described hereinabove with reference to Figs. 8-18.

GR769 gene encodes GR769 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR769 precursor RNA folds spatially, forming GR769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR769 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR769 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6522 precursor RNA, GAM132045 precursor RNA, GAM267167 precursor RNA and GAM271765 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6522 RNA, GAM132045 RNA, GAM267167 RNA and GAM271765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6522 target RNA into GAM6522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132045 target RNA into GAM132045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267167 target RNA into GAM267167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271765

target RNA into GAM271765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR769 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR769 gene: GAM6522 target protein, GAM132045 target protein, GAM267167 target protein and GAM271765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6522, GAM132045, GAM267167 and GAM271765

GR770 AW958298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 770(GR770) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR770 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR770 gene was detected is described hereinabove with reference to Figs. 8-18.

GR770 gene encodes GR770 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR770 precursor RNA folds spatially, forming GR770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR770 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR770 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM183062 precursor RNA, GAM188187 precursor RNA and GAM282052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM183062 RNA, GAM188187 RNA and GAM282052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM183062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183062 target RNA into GAM183062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188187 target RNA into GAM188187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282052 target RNA into GAM282052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR770 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR770 gene: GAM183062 target protein, GAM188187 target protein and GAM282052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM183062, GAM188187 and GAM282052

GR771 BM680489 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 771(GR771) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR771 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR771 gene was detected is described hereinabove with reference to Figs. 8-18.

GR771 gene encodes GR771 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR771 precursor RNA folds spatially, forming GR771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR771 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR771 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1390 precursor RNA and GAM68553 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1390 RNA and GAM68553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1390 target RNA into GAM1390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68553 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68553 target RNA into GAM68553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR771 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR771 gene: GAM1390 target protein and GAM68553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1390 and GAM68553

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 772(GR772) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR772 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR772 gene was detected is described hereinabove with reference to Figs. 8-18.

GR772 gene encodes GR772 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR772 precursor RNA folds spatially, forming GR772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR772 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR772 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1497 precursor RNA, GAM6919 precursor RNA and GAM89233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1497 RNA, GAM6919 RNA and GAM89233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1497 target RNA into GAM1497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6919 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6919 target RNA into GAM6919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89233 target RNA into GAM89233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR772 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR772 gene: GAM1497 target protein, GAM6919 target protein and GAM89233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1497, GAM6919 and GAM89233

GR773 BF902811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 773(GR773) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR773 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR773 gene was detected is described hereinabove with reference to Figs. 8-18.

GR773 gene encodes GR773 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR773 precursor RNA folds spatially, forming GR773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR773 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR773 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2175 precursor RNA and GAM65212 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2175 RNA and GAM65212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2175 target RNA into GAM2175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65212 target RNA into GAM65212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR773 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR773 gene: GAM2175 target protein and GAM65212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2175 and GAM65212

GR774 BQ021777 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 774(GR774) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR774 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR774 gene was detected is described hereinabove with reference to Figs. 8-18.

GR774 gene encodes GR774 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR774 precursor RNA folds spatially, forming GR774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR774 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR774 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178216 precursor RNA and GAM312482 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178216 RNA and GAM312482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178216 target RNA into GAM178216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312482 target RNA into GAM312482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR774 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR774 gene: GAM178216 target protein and GAM312482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178216 and GAM312482

GR775 R13704 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

775(GR775) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR775 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR775 gene was detected is described hereinabove with reference to Figs. 8-18.

GR775 gene encodes GR775 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR775 precursor RNA folds spatially, forming GR775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR775 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR775 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7766 precursor RNA and GAM325864 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7766 RNA and GAM325864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7766 target RNA into GAM7766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325864 target RNA into GAM325864 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR775 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR775 gene: GAM7766 target protein and GAM325864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7766 and GAM325864

GR776 BG035667 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 776(GR776) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR776 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR776 gene was detected is described hereinabove with reference to Figs. 8-18.

GR776 gene encodes GR776 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR776 precursor RNA folds spatially, forming GR776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR776 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR776 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7242 precursor RNA and GAM122487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7242 RNA and GAM122487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7242 target RNA into GAM7242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122487 target RNA into GAM122487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR776 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR776 gene: GAM7242 target protein and GAM122487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7242 and GAM122487

GR777 BI255925 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 777(GR777) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR777 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR777 gene was detected is described hereinabove with reference to Figs. 8-18.

GR777 gene encodes GR777 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR777 precursor RNA folds spatially, forming GR777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR777 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR777 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM3914 precursor RNA, GAM136156 precursor RNA and GAM234186 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3914 RNA, GAM136156 RNA and GAM234186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3914 target RNA into GAM3914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136156 target RNA into GAM136156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234186 target RNA into GAM234186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR777 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR777 gene: GAM3914 target protein, GAM136156 target protein and GAM234186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3914, GAM136156 and GAM234186

GR778 BI826455 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 778(GR778) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR778 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR778 gene was detected is described hereinabove with reference to Figs. 8-18.

GR778 gene encodes GR778 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR778 precursor RNA folds spatially, forming GR778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR778 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR778 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM45661 precursor RNA, GAM219910 precursor RNA and GAM295558 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45661 RNA, GAM219910 RNA and GAM295558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45661 target RNA into GAM45661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219910 target RNA into GAM219910 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295558 target RNA into GAM295558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR778 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR778 gene: GAM45661 target protein, GAM219910 target protein and GAM295558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45661, GAM219910 and GAM295558

GR779 BM802833 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 779(GR779) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR779 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR779 gene was detected is described hereinabove with reference to Figs. 8-18.

GR779 gene encodes GR779 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR779 precursor RNA folds spatially, forming GR779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR779 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR779 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM549 precursor RNA, GAM943 precursor RNA, GAM59628 precursor RNA and GAM219621 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment,

corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM549 RNA, GAM943 RNA, GAM59628 RNA and GAM219621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM549 target RNA into GAM549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM943 target RNA into GAM943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59628 target RNA into GAM59628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219621 target RNA into GAM219621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR779 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR779 gene: GAM549 target protein, GAM943 target protein, GAM59628 target protein and GAM219621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM549, GAM943, GAM59628 and GAM219621

GR780 BG942832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 780(GR780) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR780 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR780 gene was detected is described hereinabove with reference to Figs. 8-18.

GR780 gene encodes GR780 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR780 precursor RNA folds spatially, forming GR780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR780 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR780 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22397 precursor RNA and GAM171397 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22397 RNA and GAM171397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22397 target RNA into GAM22397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171397 target RNA into GAM171397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR780 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR780 gene: GAM22397 target protein and GAM171397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22397 and GAM171397

GR781 AI963631 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 781(GR781) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR781 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR781 gene was detected is described hereinabove with reference to Figs. 8-18.

GR781 gene encodes GR781 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR781 precursor RNA folds spatially, forming GR781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR781 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR781 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105242 precursor RNA and GAM178236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105242 RNA and GAM178236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105242 target RNA into GAM105242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178236 target RNA into GAM178236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR781 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR781 gene: GAM105242 target protein and GAM178236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105242 and GAM178236

GR782 BE002778 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 782(GR782) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR782 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR782 gene was detected is described hereinabove with reference to Figs. 8-18.

GR782 gene encodes GR782 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR782 precursor RNA folds spatially, forming GR782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR782 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR782 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8659 precursor RNA and GAM179936 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8659 RNA and GAM179936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8659 target RNA into GAM8659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179936 target RNA into GAM179936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR782 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR782 gene: GAM8659 target protein and GAM179936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8659 and GAM179936

GR783 BE543001 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 783(GR783) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR783 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR783 gene was detected is described hereinabove with reference to Figs. 8-18.

GR783 gene encodes GR783 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR783 precursor RNA folds spatially, forming GR783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR783 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR783 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1005 precursor RNA and GAM42158 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1005 RNA and GAM42158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1005 target RNA into GAM1005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM42158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42158 target RNA into GAM42158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR783 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR783 gene: GAM1005 target protein and GAM42158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1005 and GAM42158

GR784 BF760403 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 784(GR784) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR784 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR784 gene was detected is described hereinabove with reference to Figs. 8-18.

GR784 gene encodes GR784 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR784 precursor RNA folds spatially, forming GR784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR784 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR784 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM130029 precursor RNA and GAM158605 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM130029 RNA and GAM158605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM130029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130029 target RNA into GAM130029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM158605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158605 target RNA into GAM158605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR784 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR784 gene: GAM130029 target protein and GAM158605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM130029 and GAM158605

GR785 AA844177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 785(GR785) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR785 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR785 gene was detected is described hereinabove with reference to Figs. 8-18.

GR785 gene encodes GR785 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR785 precursor RNA folds spatially, forming GR785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR785 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR785 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7935 precursor RNA, GAM113428 precursor RNA and GAM219364 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7935 RNA, GAM113428 RNA and GAM219364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7935 target RNA into GAM7935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113428 target RNA into GAM113428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219364 target RNA into GAM219364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR785 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR785 gene: GAM7935 target protein, GAM113428 target protein and GAM219364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7935, GAM113428 and GAM219364

GR786 BF696417 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 786(GR786) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR786 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR786 gene was detected is described hereinabove with reference to Figs. 8-18.

GR786 gene encodes GR786 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR786 precursor RNA folds spatially, forming GR786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR786 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR786 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2790 precursor RNA and GAM33333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2790 RNA and GAM33333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2790 target RNA into GAM2790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33333 target RNA into GAM33333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR786 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR786 gene: GAM2790 target protein and GAM33333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM2790 and GAM33333

GR787 AI129790 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 787(GR787) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR787 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR787 gene was detected is described hereinabove with reference to Figs. 8-18.

GR787 gene encodes GR787 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR787 precursor RNA folds spatially, forming GR787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR787 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR787 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4501 precursor RNA, GAM235221 precursor RNA and GAM292121 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4501 RNA, GAM235221 RNA and GAM292121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4501 target RNA into GAM4501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM235221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235221 target RNA into GAM235221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292121 target RNA into GAM292121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR787 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR787 gene: GAM4501 target protein, GAM235221 target protein and GAM292121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4501, GAM235221 and GAM292121

GR788 BQ000048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 788(GR788) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR788 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR788 gene was detected is described hereinabove with reference to Figs. 8-18.

GR788 gene encodes GR788 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR788 precursor RNA folds spatially, forming GR788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR788 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR788 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR788 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM186371 precursor RNA and GAM192281 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM186371 RNA and GAM192281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM186371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186371 target RNA into GAM186371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192281 target RNA into GAM192281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR788 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR788 gene: GAM186371 target protein and GAM192281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM186371 and GAM192281

GR789 AU126349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 789(GR789) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR789 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR789 gene was detected is described hereinabove with reference to Figs. 8-18.

GR789 gene encodes GR789 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR789 precursor RNA folds spatially, forming GR789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR789 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR789 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM156424 precursor RNA and GAM246459 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM156424 RNA and GAM246459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM156424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156424 target RNA into GAM156424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246459 target RNA into GAM246459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR789 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR789 gene: GAM156424 target protein and GAM246459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM156424 and GAM246459

GR790 BG288213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 790(GR790) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR790 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR790 gene was detected is described hereinabove with reference to Figs. 8-18.

GR790 gene encodes GR790 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR790 precursor RNA folds spatially, forming GR790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR790 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR790 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3918 precursor RNA, GAM253656 precursor RNA, GAM254052 precursor RNA and GAM263975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3918 RNA, GAM253656 RNA, GAM254052 RNA and GAM263975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3918 target RNA into GAM3918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253656 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253656 target RNA into GAM253656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254052 target RNA into GAM254052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263975 target RNA into GAM263975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR790 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR790 gene: GAM3918 target protein, GAM253656 target protein, GAM254052 target protein and GAM263975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3918, GAM253656, GAM254052 and GAM263975

GR791 BF572424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 791(GR791) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR791 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR791 gene was detected is described hereinabove with reference to Figs. 8-18.

GR791 gene encodes GR791 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR791 precursor RNA folds spatially, forming GR791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR791 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR791 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22849 precursor RNA and GAM56087 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22849 RNA and GAM56087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22849 target RNA into GAM22849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56087 target RNA into GAM56087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR791 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR791 gene: GAM22849 target protein and GAM56087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22849 and GAM56087

GR792 BI225786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 792(GR792) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR792 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR792 gene was detected is described hereinabove with reference to Figs. 8-18.

GR792 gene encodes GR792 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR792 precursor RNA folds spatially, forming GR792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR792 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR792 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3848 precursor RNA, GAM5816 precursor RNA and GAM64805 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3848 RNA, GAM5816 RNA and GAM64805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3848 target RNA into GAM3848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5816 target RNA into GAM5816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64805 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64805 target RNA into GAM64805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR792 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR792 gene: GAM3848 target protein, GAM5816 target protein and GAM64805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3848, GAM5816 and GAM64805

GR793 AV688570 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 793(GR793) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR793 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR793 gene was detected is described hereinabove with reference to Figs. 8-18.

GR793 gene encodes GR793 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR793 precursor RNA folds spatially, forming GR793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR793 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR793 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2656 precursor RNA, GAM4741 precursor RNA and GAM212342 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2656 RNA, GAM4741 RNA and GAM212342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2656 target RNA into GAM2656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4741 target RNA into GAM4741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212342 target RNA into GAM212342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR793 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR793 gene: GAM2656 target protein, GAM4741 target protein and GAM212342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2656, GAM4741 and GAM212342

GR794 AW752882 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 794(GR794) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR794 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR794

gene was detected is described hereinabove with reference to Figs. 8-18.

GR794 gene encodes GR794 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR794 precursor RNA folds spatially, forming GR794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR794 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR794 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2759 precursor RNA, GAM5321 precursor RNA and GAM267061 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2759 RNA, GAM5321 RNA and GAM267061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2759 target RNA into GAM2759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5321 target RNA into GAM5321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267061 target RNA into GAM267061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR794 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR794 gene: GAM2759 target protein, GAM5321 target protein and GAM267061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2759, GAM5321 and GAM267061

GR795 BE903355 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 795(GR795) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR795 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR795 gene was detected is described hereinabove with reference to Figs. 8-18.

GR795 gene encodes GR795 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR795 precursor RNA folds spatially, forming GR795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR795 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR795 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7437 precursor RNA and GAM312139 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7437 RNA and GAM312139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7437 target RNA into GAM7437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312139 target RNA into GAM312139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR795 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR795 gene: GAM7437 target protein and GAM312139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7437 and GAM312139

GR796 H12379 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 796(GR796) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR796 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR796 gene was detected is described hereinabove with reference to Figs. 8-18.

GR796 gene encodes GR796 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR796 precursor RNA folds spatially, forming GR796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR796 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR796 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129711 precursor RNA and GAM250851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129711 RNA and GAM250851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129711 target RNA into GAM129711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250851 target RNA into GAM250851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR796 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR796 gene: GAM129711 target protein and GAM250851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129711 and GAM250851

GR797 BM264108 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 797(GR797) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR797 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR797 gene was detected is described hereinabove with reference to Figs. 8-18.

GR797 gene encodes GR797 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR797 precursor RNA folds spatially, forming GR797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR797 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR797 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM231437 precursor RNA and GAM237951 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM231437 RNA and GAM237951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM231437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231437 target RNA into GAM231437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237951 target RNA into GAM237951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR797 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR797 gene: GAM231437 target protein and GAM237951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM231437 and GAM237951

GR798 AW138285 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 798(GR798) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR798 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR798 gene was detected is described hereinabove with reference to Figs. 8-18.

GR798 gene encodes GR798 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR798 precursor RNA folds spatially, forming GR798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR798 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR798 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73737 precursor RNA and GAM210046 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73737 RNA and GAM210046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73737 target RNA into GAM73737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM210046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210046 target RNA into GAM210046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR798 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR798 gene: GAM73737 target protein and GAM210046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73737 and GAM210046

GR799 BG764605 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 799(GR799) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR799 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR799 gene was detected is described hereinabove with reference to Figs. 8-18.

GR799 gene encodes GR799 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR799 precursor RNA folds spatially, forming GR799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR799 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR799 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4452 precursor RNA and GAM99285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4452 RNA and GAM99285 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4452 target RNA into GAM4452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99285 target RNA into GAM99285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR799 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR799 gene: GAM4452 target protein and GAM99285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4452 and GAM99285

GR800 AA677662 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 800(GR800) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR800 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR800 gene was detected is described hereinabove with reference to Figs. 8-18.

GR800 gene encodes GR800 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR800 precursor RNA folds spatially, forming GR800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR800 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR800 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116843 precursor RNA and GAM246727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116843 RNA and GAM246727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116843 target RNA into GAM116843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246727 target RNA into GAM246727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR800 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR800 gene: GAM116843 target protein and GAM246727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116843 and GAM246727

GR801 BE779119 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 801(GR801) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR801 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR801 gene was detected is described hereinabove with reference to Figs. 8-18.

GR801 gene encodes GR801 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR801 precursor RNA folds spatially, forming GR801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR801 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR801 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5322 precursor RNA, GAM211071 precursor RNA and GAM213215 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5322 RNA, GAM211071 RNA and GAM213215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5322 target RNA into GAM5322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211071 target RNA into GAM211071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213215 target RNA into GAM213215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR801 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR801 gene: GAM5322 target protein, GAM211071 target protein and GAM213215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5322, GAM211071 and GAM213215

GR802 BI666839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 802(GR802) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR802 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR802 gene was detected is described hereinabove with reference to Figs. 8-18.

GR802 gene encodes GR802 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR802 precursor RNA folds spatially, forming GR802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR802 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR802 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7696 precursor RNA, GAM85710 precursor RNA and GAM258321 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7696 RNA, GAM85710 RNA and GAM258321 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7696 target RNA into GAM7696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85710 target RNA into GAM85710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258321 target RNA into GAM258321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR802 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR802 gene: GAM7696 target protein, GAM85710 target protein and GAM258321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7696, GAM85710 and GAM258321

GR803 BM006642 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 803(GR803) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR803 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR803 gene was detected is described hereinabove with reference to Figs. 8-18.

GR803 gene encodes GR803 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR803 precursor RNA folds spatially, forming GR803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR803 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR803 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217352 precursor RNA and GAM310053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217352 RNA and GAM310053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217352 target RNA into GAM217352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310053 target RNA into GAM310053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR803 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR803 gene: GAM217352 target protein and GAM310053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217352 and GAM310053

GR804 BI839055 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 804(GR804) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR804 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR804 gene was detected is described hereinabove with reference to Figs. 8-18.

GR804 gene encodes GR804 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR804 precursor RNA folds spatially, forming GR804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR804 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR804 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM867 precursor RNA, GAM5151 precursor RNA, GAM7068 precursor RNA, GAM7075 precursor RNA and GAM58765 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM867 RNA, GAM5151 RNA, GAM7068 RNA, GAM7075 RNA and GAM58765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM867 target RNA into GAM867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5151 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5151 target RNA into GAM5151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7068 target RNA into GAM7068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7075 target RNA into GAM7075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58765 target RNA into GAM58765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR804 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR804 gene: GAM867 target protein, GAM5151 target protein, GAM7068 target protein, GAM7075 target protein and GAM58765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM867, GAM5151, GAM7068, GAM7075 and GAM58765

GR805 AA137164 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 805(GR805) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR805 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR805 gene was detected is described hereinabove with reference to Figs. 8-18.

GR805 gene encodes GR805 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR805 precursor RNA folds spatially, forming GR805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR805 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR805 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110523 precursor RNA and GAM249558 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110523 RNA and GAM249558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110523 target RNA into GAM110523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249558 target RNA into GAM249558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR805 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR805 gene: GAM110523 target protein and GAM249558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110523 and GAM249558

GR806 AU122280 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 806(GR806) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR806 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR806 gene was detected is described hereinabove with reference to Figs. 8-18.

GR806 gene encodes GR806 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR806 precursor RNA folds spatially, forming GR806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR806 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR806 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5934 precursor RNA, GAM6300 precursor RNA and GAM169635 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5934 RNA, GAM6300 RNA and GAM169635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5934 target RNA into GAM5934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6300 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6300 target RNA into GAM6300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169635 target RNA into GAM169635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR806 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR806 gene: GAM5934 target protein, GAM6300 target protein and GAM169635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5934, GAM6300 and GAM169635

GR807 BG928455 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 807(GR807) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR807 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR807 gene was detected is described hereinabove with reference to Figs. 8-18.

GR807 gene encodes GR807 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR807 precursor RNA folds spatially, forming GR807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR807 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR807 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1758 precursor RNA and GAM36132 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1758 RNA and GAM36132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1758 target RNA into GAM1758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36132 target RNA into GAM36132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR807 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR807 gene: GAM1758 target protein and GAM36132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1758 and GAM36132

GR808 BF095767 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 808(GR808) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR808 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR808 gene was detected is described hereinabove with reference to Figs. 8-18.

GR808 gene encodes GR808 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR808 precursor RNA folds spatially, forming GR808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR808 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR808 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM129527 precursor RNA, GAM193219 precursor RNA and GAM238977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129527 RNA, GAM193219 RNA and GAM238977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129527 target RNA into GAM129527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193219 target RNA into GAM193219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238977 target RNA into GAM238977 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR808 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR808 gene: GAM129527 target protein, GAM193219 target protein and GAM238977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129527, GAM193219 and GAM238977

GR809 BM674867 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 809(GR809) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR809 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR809 gene was detected is described hereinabove with reference to Figs. 8-18.

GR809 gene encodes GR809 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR809 precursor RNA folds spatially, forming GR809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR809 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR809 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2710 precursor RNA and GAM332021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2710 RNA and GAM332021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2710 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2710 target RNA into GAM2710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332021 target RNA into GAM332021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR809 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR809 gene: GAM2710 target protein and GAM332021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2710 and GAM332021

GR810 BM718500 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 810(GR810) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR810 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR810 gene was detected is described hereinabove with reference to Figs. 8-18.

GR810 gene encodes GR810 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR810 precursor RNA folds spatially, forming GR810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR810 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR810 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR810 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM272055 precursor RNA and GAM293206 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM272055 RNA and GAM293206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM272055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272055 target RNA into GAM272055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293206 target RNA into GAM293206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR810 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR810 gene: GAM272055 target protein and GAM293206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM272055 and GAM293206

GR811 BG755231 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 811(GR811) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR811 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR811 gene was detected is described hereinabove with reference to Figs. 8-18.

GR811 gene encodes GR811 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR811 precursor RNA folds spatially, forming GR811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR811 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR811 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65311 precursor RNA and GAM112986 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65311 RNA and GAM112986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65311 target RNA into GAM65311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112986 target RNA into GAM112986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR811 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR811 gene: GAM65311 target protein and GAM112986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65311 and GAM112986

GR812 BQ054598 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 812(GR812) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR812 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR812 gene was detected is described hereinabove with reference to Figs. 8-18.

GR812 gene encodes GR812 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR812 precursor RNA folds spatially, forming GR812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR812 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR812 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM587 precursor RNA and GAM58290 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM587 RNA and GAM58290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM587 target RNA into GAM587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58290 target RNA into GAM58290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR812 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR812 gene: GAM587 target protein and GAM58290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM587 and GAM58290

GR813 BM903844 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 813(GR813) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR813 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR813 gene was detected is described hereinabove with reference to Figs. 8-18.

GR813 gene encodes GR813 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR813 precursor RNA folds spatially, forming GR813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR813 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR813 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68625 precursor RNA and GAM108533 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68625 RNA and GAM108533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68625 target RNA into GAM68625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108533 target RNA into GAM108533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR813 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR813 gene: GAM68625 target protein and GAM108533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68625 and GAM108533

GR814 AI911061 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 814(GR814) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR814 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR814 gene was detected is described hereinabove with reference to Figs. 8-18.

GR814 gene encodes GR814 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR814 precursor RNA folds spatially, forming GR814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR814 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR814 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24047 precursor RNA and GAM94252 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24047 RNA and GAM94252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24047 target RNA into GAM24047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94252 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94252 target RNA into GAM94252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR814 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR814 gene: GAM24047 target protein and GAM94252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24047 and GAM94252

GR815 BM981994 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 815(GR815) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR815 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR815 gene was detected is described hereinabove with reference to Figs. 8-18.

GR815 gene encodes GR815 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR815 precursor RNA folds spatially, forming GR815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR815 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR815 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1794 precursor RNA and GAM288246 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1794 RNA and GAM288246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1794 target RNA into GAM1794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288246 target RNA into GAM288246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR815 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR815 gene: GAM1794 target protein and GAM288246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1794 and GAM288246

GR816 AI189716 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 816(GR816) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR816 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR816 gene was detected is described hereinabove with reference to Figs. 8-18.

GR816 gene encodes GR816 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR816 precursor RNA folds spatially, forming GR816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR816 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR816 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM245 precursor RNA, GAM22344 precursor RNA, GAM268598 precursor RNA and GAM275261 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM245 RNA, GAM22344 RNA, GAM268598 RNA and GAM275261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245 target RNA into GAM245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22344 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22344 target RNA into GAM22344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268598 target RNA into GAM268598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275261 target RNA into GAM275261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR816 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR816 gene: GAM245 target protein, GAM22344 target protein, GAM268598 target protein and GAM275261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM245, GAM22344, GAM268598 and GAM275261

GR817 BE250989 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 817(GR817) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR817 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR817 gene was detected is described hereinabove with reference to Figs. 8-18.

GR817 gene encodes GR817 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR817 precursor RNA folds spatially, forming GR817 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR817 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR817 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR817 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1816 precursor RNA and GAM96406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1816 RNA and GAM96406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1816 target RNA into GAM1816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96406 target RNA into GAM96406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR817 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR817 gene: GAM1816 target protein and GAM96406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1816 and GAM96406

GR818 BI523427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 818(GR818) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR818 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR818 gene was detected is described hereinabove with reference to Figs. 8-18.

GR818 gene encodes GR818 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR818 precursor RNA folds spatially, forming GR818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR818 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR818 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5717 precursor RNA, GAM98608 precursor RNA, GAM187571 precursor RNA and GAM258231 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5717 RNA, GAM98608 RNA, GAM187571 RNA and GAM258231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5717 target RNA into GAM5717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98608 target RNA into GAM98608 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187571 target RNA into GAM187571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258231 target RNA into GAM258231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR818 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR818 gene: GAM5717 target protein, GAM98608 target protein, GAM187571 target protein and GAM258231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5717, GAM98608, GAM187571 and GAM258231

GR819 AA772263 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 819(GR819) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR819 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR819 gene was detected is described hereinabove with reference to Figs. 8-18.

GR819 gene encodes GR819 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR819 precursor RNA folds spatially, forming GR819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR819 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR819 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64027 precursor RNA and GAM134000 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64027 RNA and GAM134000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64027 target RNA into GAM64027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134000 target RNA into GAM134000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR819 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR819 gene: GAM64027 target protein and GAM134000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64027 and GAM134000

GR820 AI343261 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 820(GR820) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR820 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR820

gene was detected is described hereinabove with reference to Figs. 8-18.

GR820 gene encodes GR820 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR820 precursor RNA folds spatially, forming GR820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR820 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR820 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30471 precursor RNA and GAM94748 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30471 RNA and GAM94748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30471 target RNA into GAM30471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94748 target RNA into GAM94748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR820 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR820 gene: GAM30471 target protein and GAM94748 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30471 and GAM94748

GR821 AL046435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 821(GR821) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR821 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR821 gene was detected is described hereinabove with reference to Figs. 8-18.

GR821 gene encodes GR821 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR821 precursor RNA folds spatially, forming GR821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR821 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR821 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60700 precursor RNA and GAM122975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60700 RNA and GAM122975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60700 target RNA into GAM60700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122975 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122975 target RNA into GAM122975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR821 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR821 gene: GAM60700 target protein and GAM122975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60700 and GAM122975

GR822 BE066055 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 822(GR822) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR822 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR822 gene was detected is described hereinabove with reference to Figs. 8-18.

GR822 gene encodes GR822 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR822 precursor RNA folds spatially, forming GR822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR822 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR822 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102843 precursor RNA and GAM241472 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM102843 RNA and GAM241472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102843 target RNA into GAM102843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241472 target RNA into GAM241472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR822 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR822 gene: GAM102843 target protein and GAM241472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102843 and GAM241472

GR823 AI679985 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 823(GR823) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR823 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR823 gene was detected is described hereinabove with reference to Figs. 8-18.

GR823 gene encodes GR823 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR823 precursor RNA folds spatially, forming GR823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR823 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR823 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7936 precursor RNA and GAM15081 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7936 RNA and GAM15081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7936 target RNA into GAM7936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15081 target RNA into GAM15081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR823 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR823 gene: GAM7936 target protein and GAM15081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7936 and GAM15081

GR824 AA435638 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 824(GR824) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR824 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR824 gene was detected is described hereinabove with reference to Figs. 8-18.

GR824 gene encodes GR824 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR824 precursor RNA folds spatially, forming GR824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR824 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR824 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1158 precursor RNA, GAM133937 precursor RNA and GAM236906 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1158 RNA, GAM133937 RNA and GAM236906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1158 target RNA into GAM1158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133937 target RNA into GAM133937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236906 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236906 target RNA into GAM236906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR824 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR824 gene: GAM1158 target protein, GAM133937 target protein and GAM236906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1158, GAM133937 and GAM236906

GR825 AI766706 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 825(GR825) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR825 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR825 gene was detected is described hereinabove with reference to Figs. 8-18.

GR825 gene encodes GR825 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR825 precursor RNA folds spatially, forming GR825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR825 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR825 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM182723 precursor RNA, GAM301540 precursor RNA and GAM336088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM182723 RNA, GAM301540 RNA and GAM336088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM182723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182723 target RNA into GAM182723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301540 target RNA into GAM301540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336088 target RNA into GAM336088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR825 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR825 gene: GAM182723 target protein, GAM301540 target protein and GAM336088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM182723, GAM301540 and GAM336088

GR826 AV698932 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 826(GR826) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR826 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR826 gene was detected is described hereinabove with reference to Figs. 8-18.

GR826 gene encodes GR826 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR826 precursor RNA folds spatially, forming GR826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR826 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR826 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM555 precursor RNA and GAM250786 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM555 RNA and GAM250786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM555 target RNA into GAM555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250786 target RNA into GAM250786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR826 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR826 gene: GAM555 target protein and GAM250786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM555 and GAM250786

GR827 BE539385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 827(GR827) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR827 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR827 gene was detected is described hereinabove with reference to Figs. 8-18.

GR827 gene encodes GR827 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR827 precursor RNA folds spatially, forming GR827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR827 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR827 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2432 precursor RNA and GAM148252 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2432 RNA and GAM148252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2432 target RNA into GAM2432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148252 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148252 target RNA into GAM148252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR827 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR827 gene: GAM2432 target protein and GAM148252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2432 and GAM148252

GR828 AA757930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 828(GR828) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR828 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR828 gene was detected is described hereinabove with reference to Figs. 8-18.

GR828 gene encodes GR828 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR828 precursor RNA folds spatially, forming GR828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR828 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR828 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM370 precursor RNA and GAM103335 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM370 RNA and GAM103335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM370 target RNA into GAM370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103335 target RNA into GAM103335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR828 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR828 gene: GAM370 target protein and GAM103335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM370 and GAM103335

GR829 AA908986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 829(GR829) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR829 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR829 gene was detected is described hereinabove with reference to Figs. 8-18.

GR829 gene encodes GR829 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR829 precursor RNA folds spatially, forming GR829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR829 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR829 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2041 precursor RNA, GAM7036 precursor RNA, GAM63906 precursor RNA and GAM152834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2041 RNA, GAM7036 RNA, GAM63906 RNA and GAM152834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2041 target RNA into GAM2041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7036 target RNA into GAM7036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63906 target RNA into GAM63906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152834 target RNA into GAM152834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR829 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR829 gene: GAM2041 target protein, GAM7036 target protein, GAM63906 target protein and GAM152834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2041, GAM7036, GAM63906 and GAM152834

GR830 BE938912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 830(GR830) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR830 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR830 gene was detected is described hereinabove with reference to Figs. 8-18.

GR830 gene encodes GR830 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR830 precursor RNA folds spatially, forming GR830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR830 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR830 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3264 precursor RNA, GAM6493 precursor RNA, GAM84815 precursor RNA and GAM146953 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3264 RNA, GAM6493 RNA, GAM84815 RNA and GAM146953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3264 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3264 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3264 target RNA into GAM3264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6493 target RNA into GAM6493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84815 target RNA into GAM84815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146953 target RNA into GAM146953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR830 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR830 gene: GAM3264 target protein, GAM6493 target protein, GAM84815 target protein and GAM146953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3264, GAM6493, GAM84815 and GAM146953

GR831 H01379 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 831(GR831) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR831 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR831 gene was detected is described hereinabove with reference to Figs. 8-18.

GR831 gene encodes GR831 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR831 precursor RNA folds spatially, forming GR831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR831 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR831 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1301 precursor RNA and GAM208614 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1301 RNA and GAM208614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1301 target RNA into GAM1301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208614 target RNA into GAM208614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR831 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR831 gene: GAM1301 target protein and GAM208614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1301 and GAM208614

GR832 AI149609 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 832(GR832) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR832 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR832 gene was detected is described hereinabove with reference to Figs. 8-18.

GR832 gene encodes GR832 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR832 precursor RNA folds spatially, forming GR832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR832 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR832 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM752 precursor RNA, GAM3821 precursor RNA, GAM124102 precursor RNA and GAM178207 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM752 RNA, GAM3821 RNA, GAM124102 RNA and GAM178207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM752 target RNA into GAM752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3821 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3821 target RNA into GAM3821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124102 target RNA into GAM124102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178207 target RNA into GAM178207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR832 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR832 gene: GAM752 target protein, GAM3821 target protein, GAM124102 target protein and GAM178207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM752, GAM3821, GAM124102 and GAM178207

GR833 W61330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 833(GR833) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR833 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR833 gene was detected is described hereinabove with reference to Figs. 8-18.

GR833 gene encodes GR833 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR833 precursor RNA folds spatially, forming GR833 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR833 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR833 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR833 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115600 precursor RNA and GAM315480 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115600 RNA and GAM315480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115600 target RNA into GAM115600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315480 target RNA into GAM315480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR833 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR833 gene: GAM115600 target protein and GAM315480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115600 and GAM315480

GR834 AW800106 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 834(GR834) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR834 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR834 gene was detected is described hereinabove with reference to Figs. 8-18.

GR834 gene encodes GR834 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR834 precursor RNA folds spatially, forming GR834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR834 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR834 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM110658 precursor RNA, GAM163569 precursor RNA and GAM292562 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110658 RNA, GAM163569 RNA and GAM292562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110658 target RNA into GAM110658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163569 target RNA into GAM163569 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292562 target RNA into GAM292562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR834 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR834 gene: GAM110658 target protein, GAM163569 target protein and GAM292562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110658, GAM163569 and GAM292562

GR835 AV762220 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 835(GR835) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR835 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR835 gene was detected is described hereinabove with reference to Figs. 8-18.

GR835 gene encodes GR835 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR835 precursor RNA folds spatially, forming GR835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR835 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR835 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8514 precursor RNA, GAM208423 precursor RNA and GAM271247 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8514 RNA, GAM208423 RNA and GAM271247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8514 target RNA into GAM8514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208423 target RNA into GAM208423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271247 target RNA into GAM271247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR835 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR835 gene: GAM8514 target protein, GAM208423 target protein and GAM271247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8514, GAM208423 and GAM271247

GR836 AW949440 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 836(GR836) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR836 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR836 gene was detected is described hereinabove with reference to Figs. 8-18.

GR836 gene encodes GR836 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR836 precursor RNA folds spatially, forming GR836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR836 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR836 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM791 precursor RNA and GAM176701 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM791 RNA and GAM176701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM791 target RNA into GAM791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176701 target RNA into GAM176701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR836 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR836 gene: GAM791 target protein and GAM176701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM791 and GAM176701

GR837 AI885001 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 837(GR837) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR837 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR837 gene was detected is described hereinabove with reference to Figs. 8-18.

GR837 gene encodes GR837 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR837 precursor RNA folds spatially, forming GR837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR837 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR837 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63814 precursor RNA, GAM109351 precursor RNA and GAM195721 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63814 RNA, GAM109351 RNA and GAM195721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63814

target RNA into GAM63814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109351 target RNA into GAM109351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195721 target RNA into GAM195721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR837 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR837 gene: GAM63814 target protein, GAM109351 target protein and GAM195721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63814, GAM109351 and GAM195721

GR838 N66900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 838(GR838) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR838 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR838 gene was detected is described hereinabove with reference to Figs. 8-18.

GR838 gene encodes GR838 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR838 precursor RNA folds spatially, forming GR838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR838 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR838 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12481 precursor RNA and GAM48127 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12481 RNA and GAM48127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12481 target RNA into GAM12481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48127 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48127 target RNA into GAM48127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR838 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR838 gene: GAM12481 target protein and GAM48127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12481 and GAM48127

GR839 BF304129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 839(GR839) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR839 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR839 gene was detected is described hereinabove with reference to Figs. 8-18.

GR839 gene encodes GR839 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR839 precursor RNA folds spatially, forming GR839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR839 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR839 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5295 precursor RNA and GAM276105 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5295 RNA and GAM276105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5295 target RNA into GAM5295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276105 target RNA into GAM276105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR839 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR839 gene: GAM5295 target

protein and GAM276105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5295 and GAM276105

GR840 BG108850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 840(GR840) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR840 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR840 gene was detected is described hereinabove with reference to Figs. 8-18.

GR840 gene encodes GR840 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR840 precursor RNA folds spatially, forming GR840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR840 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR840 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM204625 precursor RNA and GAM211730 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM204625 RNA and GAM211730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM204625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204625 target RNA into GAM204625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211730 target RNA into GAM211730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR840 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR840 gene: GAM204625 target protein and GAM211730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM204625 and GAM211730

GR841 BM796800 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 841(GR841) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR841 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR841 gene was detected is described hereinabove with reference to Figs. 8-18.

GR841 gene encodes GR841 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR841 precursor RNA folds spatially, forming GR841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR841 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR841 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM49871 precursor RNA, GAM179570 precursor RNA and GAM254579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49871 RNA, GAM179570 RNA and GAM254579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49871 target RNA into GAM49871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179570 target RNA into GAM179570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254579 target RNA into GAM254579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR841 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR841 gene: GAM49871 target protein, GAM179570 target protein and GAM254579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49871, GAM179570 and GAM254579

GR842 BF674630 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 842(GR842) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR842 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR842

gene was detected is described hereinabove with reference to Figs. 8-18.

GR842 gene encodes GR842 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR842 precursor RNA folds spatially, forming GR842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR842 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR842 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM220571 precursor RNA and GAM255132 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM220571 RNA and GAM255132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM220571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220571 target RNA into GAM220571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255132 target RNA into GAM255132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR842 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR842 gene: GAM220571 target protein and GAM255132 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM220571 and GAM255132

GR843 BI832695 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 843(GR843) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR843 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR843 gene was detected is described hereinabove with reference to Figs. 8-18.

GR843 gene encodes GR843 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR843 precursor RNA folds spatially, forming GR843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR843 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR843 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM198 precursor RNA and GAM254043 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM198 RNA and GAM254043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198 target RNA into GAM198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254043 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254043 target RNA into GAM254043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR843 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR843 gene: GAM198 target protein and GAM254043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM198 and GAM254043

GR844 BQ029339 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 844(GR844) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR844 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR844 gene was detected is described hereinabove with reference to Figs. 8-18.

GR844 gene encodes GR844 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR844 precursor RNA folds spatially, forming GR844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR844 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR844 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257681 precursor RNA and GAM332835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM257681 RNA and GAM332835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257681 target RNA into GAM257681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332835 target RNA into GAM332835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR844 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR844 gene: GAM257681 target protein and GAM332835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257681 and GAM332835

GR845 AI031841 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 845(GR845) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR845 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR845 gene was detected is described hereinabove with reference to Figs. 8-18.

GR845 gene encodes GR845 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR845 precursor RNA folds spatially, forming GR845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR845 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR845 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM783 precursor RNA and GAM278916 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM783 RNA and GAM278916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM783 target RNA into GAM783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278916 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278916 target RNA into GAM278916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR845 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR845 gene: GAM783 target protein and GAM278916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM783 and GAM278916

GR846 BG289302 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 846(GR846) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR846 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR846 gene was detected is described hereinabove with reference to Figs. 8-18.

GR846 gene encodes GR846 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR846 precursor RNA folds spatially, forming GR846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR846 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR846 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65552 precursor RNA and GAM308089 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65552 RNA and GAM308089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65552 target RNA into GAM65552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308089 target RNA into GAM308089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR846 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR846 gene: GAM65552 target protein and GAM308089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65552 and GAM308089

GR847 AA706777 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 847(GR847) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR847 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR847 gene was detected is described hereinabove with reference to Figs. 8-18.

GR847 gene encodes GR847 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR847 precursor RNA folds spatially, forming GR847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR847 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR847 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25092 precursor RNA and GAM188786 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25092 RNA and GAM188786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25092 target RNA into GAM25092 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188786 target RNA into GAM188786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR847 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR847 gene: GAM25092 target protein and GAM188786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25092 and GAM188786

GR848 BF343916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 848(GR848) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR848 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR848 gene was detected is described hereinabove with reference to Figs. 8-18.

GR848 gene encodes GR848 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR848 precursor RNA folds spatially, forming GR848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR848 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR848 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM292 precursor RNA, GAM2724 precursor RNA, GAM221781 precursor RNA and GAM280972 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM292 RNA, GAM2724 RNA, GAM221781 RNA and GAM280972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292 target RNA into GAM292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2724 target RNA into GAM2724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221781 target RNA into GAM221781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280972 target RNA into GAM280972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR848 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR848 gene: GAM292 target protein, GAM2724 target protein, GAM221781 target protein and GAM280972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM292, GAM2724, GAM221781 and GAM280972

GR849 AI220193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 849(GR849) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR849 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR849 gene was detected is described hereinabove with reference to Figs. 8-18.

GR849 gene encodes GR849 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR849 precursor RNA folds spatially, forming GR849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR849 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR849 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1302 precursor RNA and GAM79254 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1302 RNA and GAM79254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1302 target RNA into GAM1302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79254 target RNA into GAM79254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR849 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR849 gene: GAM1302 target protein and GAM79254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1302 and GAM79254

GR850 BE439889 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 850(GR850) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR850 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR850 gene was detected is described hereinabove with reference to Figs. 8-18.

GR850 gene encodes GR850 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR850 precursor RNA folds spatially, forming GR850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR850 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR850 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9583 precursor RNA and GAM325697 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9583 RNA and GAM325697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9583 target RNA into GAM9583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325697 target RNA into GAM325697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR850 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR850 gene: GAM9583 target protein and GAM325697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9583 and GAM325697

GR851 AW183053 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 851(GR851) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR851 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR851 gene was detected is described hereinabove with reference to Figs. 8-18.

GR851 gene encodes GR851 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR851 precursor RNA folds spatially, forming GR851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR851 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR851 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM77604 precursor RNA, GAM99067 precursor RNA, GAM136487 precursor RNA and GAM297437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77604 RNA, GAM99067 RNA, GAM136487 RNA and GAM297437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77604 target RNA into GAM77604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99067 target RNA into GAM99067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136487 target RNA into GAM136487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297437 target RNA into GAM297437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR851 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR851 gene: GAM77604 target protein, GAM99067 target protein, GAM136487 target protein and GAM297437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77604, GAM99067, GAM136487 and GAM297437

GR852 BG484485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 852(GR852) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR852 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR852 gene was detected is described hereinabove with reference to Figs. 8-18.

GR852 gene encodes GR852 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR852 precursor RNA folds spatially, forming GR852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR852 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR852 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2997 precursor RNA and GAM6261 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2997 RNA and GAM6261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2997 target RNA into

GAM2997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6261 target RNA into GAM6261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR852 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR852 gene: GAM2997 target protein and GAM6261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2997 and GAM6261

GR853 BM012007 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 853(GR853) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR853 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR853 gene was detected is described hereinabove with reference to Figs. 8-18.

GR853 gene encodes GR853 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR853 precursor RNA folds spatially, forming GR853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR853 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR853 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121428 precursor RNA and GAM291894 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121428 RNA and GAM291894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121428 target RNA into GAM121428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291894 target RNA into GAM291894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR853 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR853 gene: GAM121428 target protein and GAM291894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121428 and GAM291894

GR854 BF960225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 854(GR854) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR854 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR854 gene was detected is described hereinabove with reference to Figs. 8-18.

GR854 gene encodes GR854 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR854 precursor RNA folds spatially, forming GR854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR854

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR854 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4793 precursor RNA, GAM87057 precursor RNA and GAM248372 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4793 RNA, GAM87057 RNA and GAM248372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4793 target RNA into GAM4793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87057 target RNA into GAM87057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248372 target RNA into GAM248372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR854 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR854 gene: GAM4793 target

protein, GAM87057 target protein and GAM248372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4793, GAM87057 and GAM248372

GR855 BM669548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 855(GR855) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR855 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR855 gene was detected is described hereinabove with reference to Figs. 8-18.

GR855 gene encodes GR855 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR855 precursor RNA folds spatially, forming GR855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR855 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR855 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3722 precursor RNA, GAM155294 precursor RNA and GAM305147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3722 RNA, GAM155294 RNA and GAM305147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3722 target RNA into

GAM3722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM155294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155294 target RNA into GAM155294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305147 target RNA into GAM305147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR855 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR855 gene: GAM3722 target protein, GAM155294 target protein and GAM305147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3722, GAM155294 and GAM305147

GR856 BE220823 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 856(GR856) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR856 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR856 gene was detected is described hereinabove with reference to Figs. 8-18.

GR856 gene encodes GR856 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR856 precursor RNA folds spatially, forming GR856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR856 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR856 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1198 precursor RNA and GAM122004 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1198 RNA and GAM122004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1198 target RNA into GAM1198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122004 target RNA into GAM122004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR856 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR856 gene: GAM1198 target protein and GAM122004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1198 and GAM122004

GR857 AA244090 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 857(GR857) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR857 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR857 gene was detected is described hereinabove with reference to Figs. 8-18.

GR857 gene encodes GR857 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR857 precursor RNA folds spatially, forming GR857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR857 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR857 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34016 precursor RNA and GAM206145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34016 RNA and GAM206145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34016 target RNA into GAM34016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206145 target RNA into GAM206145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR857 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR857 gene: GAM34016 target

protein and GAM206145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34016 and GAM206145

GR858 BF791703 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 858(GR858) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR858 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR858 gene was detected is described hereinabove with reference to Figs. 8-18.

GR858 gene encodes GR858 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR858 precursor RNA folds spatially, forming GR858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR858 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR858 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2400 precursor RNA, GAM64535 precursor RNA and GAM228047 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2400 RNA, GAM64535 RNA and GAM228047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2400 target RNA into GAM2400 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64535 target RNA into GAM64535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228047 target RNA into GAM228047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR858 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR858 gene: GAM2400 target protein, GAM64535 target protein and GAM228047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2400, GAM64535 and GAM228047

GR859 AI753851 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 859(GR859) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR859 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR859 gene was detected is described hereinabove with reference to Figs. 8-18.

GR859 gene encodes GR859 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR859 precursor RNA folds spatially, forming GR859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR859 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR859 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2140 precursor RNA and GAM8277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2140 RNA and GAM8277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2140 target RNA into GAM2140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8277 target RNA into GAM8277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR859 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR859 gene: GAM2140 target protein and GAM8277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2140 and GAM8277

GR860 AW904533 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 860(GR860) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR860 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR860

gene was detected is described hereinabove with reference to Figs. 8-18.

GR860 gene encodes GR860 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR860 precursor RNA folds spatially, forming GR860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR860 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR860 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1436 precursor RNA and GAM36379 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1436 RNA and GAM36379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1436 target RNA into GAM1436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36379 target RNA into GAM36379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR860 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR860 gene: GAM1436 target protein and GAM36379 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1436 and GAM36379

GR861 BG621784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 861(GR861) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR861 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR861 gene was detected is described hereinabove with reference to Figs. 8-18.

GR861 gene encodes GR861 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR861 precursor RNA folds spatially, forming GR861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR861 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR861 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5291 precursor RNA and GAM132680 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5291 RNA and GAM132680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5291 target RNA into GAM5291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132680 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132680 target RNA into GAM132680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR861 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR861 gene: GAM5291 target protein and GAM132680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5291 and GAM132680

GR862 BM565061 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 862(GR862) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR862 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR862 gene was detected is described hereinabove with reference to Figs. 8-18.

GR862 gene encodes GR862 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR862 precursor RNA folds spatially, forming GR862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR862 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR862 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM20342 precursor RNA, GAM131638 precursor RNA, GAM264441 precursor RNA and GAM304469 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20342 RNA, GAM131638 RNA, GAM264441 RNA and GAM304469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20342 target RNA into GAM20342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131638 target RNA into GAM131638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264441 target RNA into GAM264441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304469 target RNA into GAM304469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR862 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR862 gene: GAM20342 target protein, GAM131638 target protein, GAM264441 target protein and GAM304469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20342, GAM131638, GAM264441 and GAM304469

GR863 BM006749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

863(GR863) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR863 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR863 gene was detected is described hereinabove with reference to Figs. 8-18.

GR863 gene encodes GR863 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR863 precursor RNA folds spatially, forming GR863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR863 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR863 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM57025 precursor RNA, GAM107247 precursor RNA and GAM167121 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57025 RNA, GAM107247 RNA and GAM167121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57025 target RNA into GAM57025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107247

target RNA into GAM107247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167121 target RNA into GAM167121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR863 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR863 gene: GAM57025 target protein, GAM107247 target protein and GAM167121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57025, GAM107247 and GAM167121

GR864 AW161391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 864(GR864) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR864 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR864 gene was detected is described hereinabove with reference to Figs. 8-18.

GR864 gene encodes GR864 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR864 precursor RNA folds spatially, forming GR864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR864 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR864 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3572 precursor RNA, GAM255559 precursor RNA, GAM280343 precursor RNA and GAM323914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3572 RNA, GAM255559 RNA, GAM280343 RNA and GAM323914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3572 target RNA into GAM3572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255559 target RNA into GAM255559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280343 target RNA into GAM280343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323914 target RNA into GAM323914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR864 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR864 gene: GAM3572 target protein, GAM255559 target protein, GAM280343 target protein and GAM323914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM3572, GAM255559, GAM280343 and GAM323914

GR865 BG742813 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 865(GR865) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR865 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR865 gene was detected is described hereinabove with reference to Figs. 8-18.

GR865 gene encodes GR865 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR865 precursor RNA folds spatially, forming GR865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR865 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR865 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5905 precursor RNA and GAM188541 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5905 RNA and GAM188541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5905 target RNA into GAM5905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188541 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188541 target RNA into GAM188541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR865 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR865 gene: GAM5905 target protein and GAM188541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5905 and GAM188541

GR866 BG983594 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 866(GR866) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR866 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR866 gene was detected is described hereinabove with reference to Figs. 8-18.

GR866 gene encodes GR866 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR866 precursor RNA folds spatially, forming GR866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR866 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR866 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM236 precursor RNA, GAM1697 precursor RNA and GAM81921 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM236 RNA, GAM1697 RNA and GAM81921 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236 target RNA into GAM236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1697 target RNA into GAM1697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81921 target RNA into GAM81921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR866 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR866 gene: GAM236 target protein, GAM1697 target protein and GAM81921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM236, GAM1697 and GAM81921

GR867 AW502103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 867(GR867) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR867 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR867 gene was detected is described hereinabove with reference to Figs. 8-18.

GR867 gene encodes GR867 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR867 precursor RNA folds spatially, forming GR867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR867 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR867 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14584 precursor RNA and GAM136053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14584 RNA and GAM136053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14584 target RNA into GAM14584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136053 target RNA into GAM136053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR867 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR867 gene: GAM14584 target protein and GAM136053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14584 and GAM136053

GR868 AI499575 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 868(GR868) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR868 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR868 gene was detected is described hereinabove with reference to Figs. 8-18.

GR868 gene encodes GR868 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR868 precursor RNA folds spatially, forming GR868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR868 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR868 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56593 precursor RNA and GAM279510 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56593 RNA and GAM279510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56593 target RNA into GAM56593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279510 target RNA into GAM279510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR868 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR868 gene: GAM56593 target protein and GAM279510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56593 and GAM279510

GR869 AA481276 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 869(GR869) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR869 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR869 gene was detected is described hereinabove with reference to Figs. 8-18.

GR869 gene encodes GR869 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR869 precursor RNA folds spatially, forming GR869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR869 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR869 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1082 precursor RNA and GAM24808 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1082 RNA and GAM24808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1082 target RNA into GAM1082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24808 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24808 target RNA into GAM24808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR869 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR869 gene: GAM1082 target protein and GAM24808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1082 and GAM24808

GR870 BF196331 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 870(GR870) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR870 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR870 gene was detected is described hereinabove with reference to Figs. 8-18.

GR870 gene encodes GR870 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR870 precursor RNA folds spatially, forming GR870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR870 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR870 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4567 precursor RNA and GAM92608 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4567 RNA and GAM92608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4567 target RNA into GAM4567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92608 target RNA into GAM92608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR870 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR870 gene: GAM4567 target protein and GAM92608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4567 and GAM92608

GR871 BF669065 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 871(GR871) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR871 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR871 gene was detected is described hereinabove with reference to Figs. 8-18.

GR871 gene encodes GR871 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR871 precursor RNA folds spatially, forming GR871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR871 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR871 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4937 precursor RNA and GAM7420 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4937 RNA and GAM7420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4937 target RNA into GAM4937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7420 target RNA into GAM7420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR871 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR871 gene: GAM4937 target protein and GAM7420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4937 and GAM7420

GR872 AI189223 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 872(GR872) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR872 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR872 gene was detected is described hereinabove with reference to Figs. 8-18.

GR872 gene encodes GR872 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR872 precursor RNA folds spatially, forming GR872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR872 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR872 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM148434 precursor RNA and GAM199034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM148434 RNA and GAM199034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM148434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148434 target RNA into GAM148434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM199034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199034 target RNA into GAM199034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR872 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR872 gene: GAM148434 target protein and GAM199034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM148434 and GAM199034

GR873 AV702119 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 873(GR873) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR873 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR873 gene was detected is described hereinabove with reference to Figs. 8-18.

GR873 gene encodes GR873 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR873 precursor RNA folds spatially, forming GR873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR873 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR873 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81113 precursor RNA and GAM311787 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81113 RNA and GAM311787 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81113 target RNA into GAM81113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311787 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311787 target RNA into GAM311787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR873 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR873 gene: GAM81113 target protein and GAM311787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81113 and GAM311787

GR874 BM771531 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 874(GR874) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR874 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR874 gene was detected is described hereinabove with reference to Figs. 8-18.

GR874 gene encodes GR874 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR874 precursor RNA folds spatially, forming GR874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR874 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR874 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM105373 precursor RNA, GAM175617 precursor RNA and GAM254032 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105373 RNA, GAM175617 RNA and GAM254032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105373 target RNA into GAM105373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175617 target RNA into GAM175617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254032 target RNA into GAM254032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR874 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR874 gene: GAM105373 target protein, GAM175617 target protein and GAM254032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105373, GAM175617 and

GAM254032

GR875 BG929160 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 875(GR875) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR875 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR875 gene was detected is described hereinabove with reference to Figs. 8-18.

GR875 gene encodes GR875 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR875 precursor RNA folds spatially, forming GR875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR875 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR875 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM115539 precursor RNA, GAM217378 precursor RNA, GAM303241 precursor RNA and GAM316609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115539 RNA, GAM217378 RNA, GAM303241 RNA and GAM316609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115539 target RNA into GAM115539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM217378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217378 target RNA into GAM217378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303241 target RNA into GAM303241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316609 target RNA into GAM316609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR875 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR875 gene: GAM115539 target protein, GAM217378 target protein, GAM303241 target protein and GAM316609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115539, GAM217378, GAM303241 and GAM316609

GR876 BF086724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 876(GR876) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR876 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR876 gene was detected is described hereinabove with reference to Figs. 8-18.

GR876 gene encodes GR876 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR876 precursor RNA folds spatially, forming GR876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR876

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR876 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41600 precursor RNA and GAM319552 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41600 RNA and GAM319552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41600 target RNA into GAM41600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319552 target RNA into GAM319552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR876 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR876 gene: GAM41600 target protein and GAM319552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41600 and GAM319552

GR877 AI242443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 877(GR877) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR877 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR877 gene was detected is described hereinabove with reference to Figs. 8-18.

GR877 gene encodes GR877 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR877 precursor RNA folds spatially, forming GR877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR877 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR877 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4555 precursor RNA, GAM6107 precursor RNA and GAM73571 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4555 RNA, GAM6107 RNA and GAM73571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4555 target RNA into GAM4555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6107 target RNA into GAM6107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73571 target RNA into GAM73571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR877 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR877 gene: GAM4555 target protein, GAM6107 target protein and GAM73571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4555, GAM6107 and GAM73571

GR878 BE396412 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 878(GR878) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR878 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR878 gene was detected is described hereinabove with reference to Figs. 8-18.

GR878 gene encodes GR878 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR878 precursor RNA folds spatially, forming GR878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR878 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR878 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8559 precursor RNA, GAM106959 precursor RNA and GAM293078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8559 RNA, GAM106959 RNA and GAM293078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8559 target RNA into GAM8559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106959 target RNA into GAM106959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293078 target RNA into GAM293078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR878 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR878 gene: GAM8559 target protein, GAM106959 target protein and GAM293078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8559, GAM106959 and GAM293078

GR879 BG748966 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 879(GR879) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR879 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR879 gene was detected is described hereinabove with reference to Figs. 8-18.

GR879 gene encodes GR879 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR879 precursor RNA folds spatially, forming GR879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR879 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR879 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8328 precursor RNA, GAM75648 precursor RNA and GAM306243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8328 RNA, GAM75648 RNA and GAM306243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8328 target RNA into GAM8328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75648 target RNA into GAM75648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306243 target RNA into GAM306243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR879 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR879 gene: GAM8328 target protein, GAM75648 target protein and GAM306243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8328, GAM75648 and GAM306243

GR880 BE744029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 880(GR880) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR880 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR880 gene was detected is described hereinabove with reference to Figs. 8-18.

GR880 gene encodes GR880 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR880 precursor RNA folds spatially, forming GR880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR880 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR880 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65619 precursor RNA and GAM144340 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65619 RNA and GAM144340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM65619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65619 target RNA into GAM65619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144340 target RNA into GAM144340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR880 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR880 gene: GAM65619 target protein and GAM144340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65619 and GAM144340

GR881 BE713858 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 881(GR881) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR881 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR881 gene was detected is described hereinabove with reference to Figs. 8-18.

GR881 gene encodes GR881 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR881 precursor RNA folds spatially, forming GR881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR881 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR881 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8096 precursor RNA and GAM267727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8096 RNA and GAM267727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8096 target RNA into GAM8096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267727 target RNA into GAM267727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR881 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR881 gene: GAM8096 target protein and GAM267727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8096 and GAM267727

GR882 R36420 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 882(GR882) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR882 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR882

gene was detected is described hereinabove with reference to Figs. 8-18.

GR882 gene encodes GR882 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR882 precursor RNA folds spatially, forming GR882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR882 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR882 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2463 precursor RNA and GAM43819 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2463 RNA and GAM43819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2463 target RNA into GAM2463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43819 target RNA into GAM43819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR882 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR882 gene: GAM2463 target protein and GAM43819 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2463 and GAM43819

GR883 AI148930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 883(GR883) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR883 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR883 gene was detected is described hereinabove with reference to Figs. 8-18.

GR883 gene encodes GR883 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR883 precursor RNA folds spatially, forming GR883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR883 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR883 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88462 precursor RNA and GAM325487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88462 RNA and GAM325487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88462 target RNA into GAM88462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325487 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325487 target RNA into GAM325487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR883 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR883 gene: GAM88462 target protein and GAM325487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88462 and GAM325487

GR884 BE513240 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 884(GR884) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR884 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR884 gene was detected is described hereinabove with reference to Figs. 8-18.

GR884 gene encodes GR884 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR884 precursor RNA folds spatially, forming GR884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR884 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR884 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2025 precursor RNA, GAM2244 precursor RNA, GAM35024 precursor RNA and GAM144211 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2025 RNA, GAM2244 RNA, GAM35024 RNA and GAM144211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2025 target RNA into GAM2025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2244 target RNA into GAM2244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35024 target RNA into GAM35024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144211 target RNA into GAM144211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR884 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR884 gene: GAM2025 target protein, GAM2244 target protein, GAM35024 target protein and GAM144211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2025, GAM2244, GAM35024 and GAM144211

GR885 AI571412 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

885(GR885) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR885 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR885 gene was detected is described hereinabove with reference to Figs. 8-18.

GR885 gene encodes GR885 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR885 precursor RNA folds spatially, forming GR885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR885 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR885 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99002 precursor RNA and GAM233925 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99002 RNA and GAM233925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99002 target RNA into GAM99002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233925 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233925 target RNA into GAM233925 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR885 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR885 gene: GAM99002 target protein and GAM233925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99002 and GAM233925

GR886 BI603208 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 886(GR886) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR886 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR886 gene was detected is described hereinabove with reference to Figs. 8-18.

GR886 gene encodes GR886 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR886 precursor RNA folds spatially, forming GR886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR886 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR886 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM3351 precursor RNA, GAM83151 precursor RNA, GAM130340 precursor RNA, GAM224905 precursor RNA and GAM247614 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3351 RNA, GAM83151 RNA, GAM130340 RNA, GAM224905 RNA and GAM247614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3351 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3351 target RNA into GAM3351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83151 target RNA into GAM83151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130340 target RNA into GAM130340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224905 target RNA into GAM224905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247614 target RNA into GAM247614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR886 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR886 gene: GAM3351 target protein, GAM83151 target protein, GAM130340 target protein, GAM224905 target protein and GAM247614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3351, GAM83151, GAM130340, GAM224905 and GAM247614

GR887 H58276 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 887(GR887) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR887 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR887 gene was detected is described hereinabove with reference to Figs. 8-18.

GR887 gene encodes GR887 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR887 precursor RNA folds spatially, forming GR887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR887 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR887 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM234772 precursor RNA and GAM327589 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM234772 RNA and GAM327589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM234772 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234772 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234772 target RNA into GAM234772 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327589 target RNA into GAM327589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR887 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR887 gene: GAM234772 target protein and GAM327589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM234772 and GAM327589

GR888 BF665036 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 888(GR888) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR888 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR888 gene was detected is described hereinabove with reference to Figs. 8-18.

GR888 gene encodes GR888 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR888 precursor RNA folds spatially, forming GR888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR888 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR888 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4954 precursor RNA and GAM330865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4954 RNA and GAM330865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4954 target RNA into GAM4954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330865 target RNA into GAM330865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR888 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR888 gene: GAM4954 target protein and GAM330865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4954 and GAM330865

GR889 BG253038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 889(GR889) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR889 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR889 gene was detected is described hereinabove with reference to Figs. 8-18.

GR889 gene encodes GR889 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR889 precursor RNA folds spatially, forming GR889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR889 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR889 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3015 precursor RNA, GAM159588 precursor RNA, GAM240076 precursor RNA and GAM288569 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3015 RNA, GAM159588 RNA, GAM240076 RNA and GAM288569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3015 target RNA into GAM3015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159588 target RNA into GAM159588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240076 target RNA into GAM240076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288569 target RNA into GAM288569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR889 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR889 gene: GAM3015 target protein, GAM159588 target protein, GAM240076 target protein and GAM288569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3015, GAM159588, GAM240076 and GAM288569

GR890 BM980415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 890(GR890) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR890 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR890 gene was detected is described hereinabove with reference to Figs. 8-18.

GR890 gene encodes GR890 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR890 precursor RNA folds spatially, forming GR890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR890 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR890 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM223592 precursor RNA, GAM263489 precursor RNA and GAM333107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223592 RNA, GAM263489 RNA and GAM333107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223592 target RNA into GAM223592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263489 target RNA into GAM263489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333107 target RNA into GAM333107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR890 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR890 gene: GAM223592 target protein, GAM263489 target protein and GAM333107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223592, GAM263489 and GAM333107

GR891 AA904898 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 891(GR891) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR891 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR891 gene was detected is described hereinabove with reference to Figs. 8-18.

GR891 gene encodes GR891 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR891 precursor RNA folds spatially, forming GR891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR891 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the

nucleotide sequence of GR891 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8324 precursor RNA and GAM160236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8324 RNA and GAM160236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8324 target RNA into GAM8324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160236 target RNA into GAM160236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR891 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR891 gene: GAM8324 target protein and GAM160236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8324 and GAM160236

GR892 BI769091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 892(GR892) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR892 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR892 gene was detected is described hereinabove with reference to Figs. 8-18.

GR892 gene encodes GR892 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR892 precursor RNA folds spatially, forming GR892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR892 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR892 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM75314 precursor RNA, GAM181512 precursor RNA, GAM228965 precursor RNA and GAM250637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM75314 RNA, GAM181512 RNA, GAM228965 RNA and GAM250637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75314 target RNA into GAM75314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181512 target RNA into GAM181512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM228965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228965 target RNA into GAM228965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250637 target RNA into GAM250637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR892 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR892 gene: GAM75314 target protein, GAM181512 target protein, GAM228965 target protein and GAM250637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75314, GAM181512, GAM228965 and GAM250637

GR893 AA661861 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 893(GR893) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR893 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR893 gene was detected is described hereinabove with reference to Figs. 8-18.

GR893 gene encodes GR893 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR893 precursor RNA folds spatially, forming GR893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR893 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR893 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR893 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2367 precursor RNA and GAM162243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2367 RNA and GAM162243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2367 target RNA into GAM2367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162243 target RNA into GAM162243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR893 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR893 gene: GAM2367 target protein and GAM162243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2367 and GAM162243

GR894 BI460056 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 894(GR894) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR894 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR894 gene was detected is described hereinabove with reference to Figs. 8-18.

GR894 gene encodes GR894 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR894 precursor RNA folds spatially, forming GR894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR894 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR894 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208240 precursor RNA and GAM237144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208240 RNA and GAM237144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208240 target RNA into GAM208240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237144 target RNA into GAM237144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR894 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR894 gene: GAM208240 target protein and GAM237144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208240 and GAM237144

GR895 BG108439 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 895(GR895) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR895 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR895 gene was detected is described hereinabove with reference to Figs. 8-18.

GR895 gene encodes GR895 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR895 precursor RNA folds spatially, forming GR895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR895 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR895 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4067 precursor RNA and GAM107482 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4067 RNA and GAM107482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4067 target RNA into GAM4067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107482 target RNA into GAM107482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR895 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR895 gene: GAM4067 target protein and GAM107482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4067 and GAM107482

GR896 BF339994 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 896(GR896) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR896 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR896 gene was detected is described hereinabove with reference to Figs. 8-18.

GR896 gene encodes GR896 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR896 precursor RNA folds spatially, forming GR896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR896 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR896 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3075 precursor RNA, GAM4365 precursor RNA and GAM96613 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3075 RNA, GAM4365 RNA and GAM96613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM3075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3075 target RNA into GAM3075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4365 target RNA into GAM4365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96613 target RNA into GAM96613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR896 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR896 gene: GAM3075 target protein, GAM4365 target protein and GAM96613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3075, GAM4365 and GAM96613

GR897 BI006074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 897(GR897) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR897 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR897 gene was detected is described hereinabove with reference to Figs. 8-18.

GR897 gene encodes GR897 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR897 precursor RNA folds spatially, forming GR897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR897 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR897 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1757 precursor RNA and GAM3006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1757 RNA and GAM3006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1757 target RNA into GAM1757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3006 target RNA into GAM3006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR897 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR897 gene: GAM1757 target protein and GAM3006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1757 and GAM3006

GR898 AA451794 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 898(GR898) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR898 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR898 gene was detected is described hereinabove with reference to Figs. 8-18.

GR898 gene encodes GR898 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR898 precursor RNA folds spatially, forming GR898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR898 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR898 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM129441 precursor RNA, GAM227294 precursor RNA and GAM227402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129441 RNA, GAM227294 RNA and GAM227402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129441 target RNA into GAM129441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227294 target RNA into GAM227294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227402 target RNA into GAM227402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR898 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR898 gene: GAM129441 target protein, GAM227294 target protein and GAM227402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129441, GAM227294 and GAM227402

GR899 BG615469 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 899(GR899) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR899 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR899 gene was detected is described hereinabove with reference to Figs. 8-18.

GR899 gene encodes GR899 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR899 precursor RNA folds spatially, forming GR899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR899 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR899 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88286 precursor RNA and GAM124856 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88286 RNA and GAM124856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88286 target RNA into GAM88286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124856 target RNA into GAM124856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR899 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR899 gene: GAM88286 target protein and GAM124856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88286 and GAM124856

GR900 BF676030 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 900(GR900) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR900 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR900 gene was detected is described hereinabove with reference to Figs. 8-18.

GR900 gene encodes GR900 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR900 precursor RNA folds spatially, forming GR900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR900 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR900 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1407 precursor RNA, GAM2713 precursor RNA and GAM51056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1407 RNA, GAM2713 RNA and GAM51056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1407 target RNA into GAM1407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2713 target RNA into GAM2713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51056 target RNA into GAM51056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR900 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR900 gene: GAM1407 target protein, GAM2713 target protein and GAM51056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1407, GAM2713 and GAM51056

GR901 AW514182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 901(GR901) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR901 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR901 gene was detected is described hereinabove with reference to Figs. 8-18.

GR901 gene encodes GR901 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR901 precursor RNA folds spatially, forming GR901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR901 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR901 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM424 precursor RNA and GAM336799 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM424 RNA and GAM336799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM424 target RNA into GAM424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336799 target RNA into GAM336799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR901 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR901 gene: GAM424 target protein and GAM336799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM424 and GAM336799

GR902 AA976447 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 902(GR902) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR902 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR902 gene was detected is described hereinabove with reference to Figs. 8-18.

GR902 gene encodes GR902 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR902 precursor RNA folds spatially, forming GR902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR902 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR902 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105457 precursor RNA and GAM160906 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105457 RNA and GAM160906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105457 target RNA into GAM105457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160906 target RNA into GAM160906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR902 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR902 gene: GAM105457 target protein and GAM160906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105457 and GAM160906

GR903 AA723487 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 903(GR903) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR903 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR903 gene was detected is described hereinabove with reference to Figs. 8-18.

GR903 gene encodes GR903 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR903 precursor RNA folds spatially, forming GR903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR903 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR903 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1872 precursor RNA and GAM162634 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1872 RNA and GAM162634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1872 target RNA into GAM1872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162634 target RNA into GAM162634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR903 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR903 gene: GAM1872 target protein and GAM162634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1872 and GAM162634

GR904 AW419060 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

904(GR904) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR904 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR904 gene was detected is described hereinabove with reference to Figs. 8-18.

GR904 gene encodes GR904 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR904 precursor RNA folds spatially, forming GR904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR904 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR904 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5842 precursor RNA and GAM7314 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5842 RNA and GAM7314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5842 target RNA into GAM5842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7314 target RNA into GAM7314 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR904 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR904 gene: GAM5842 target protein and GAM7314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5842 and GAM7314

GR905 AW949566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 905(GR905) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR905 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR905 gene was detected is described hereinabove with reference to Figs. 8-18.

GR905 gene encodes GR905 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR905 precursor RNA folds spatially, forming GR905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR905 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR905 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13856 precursor RNA and GAM282010 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13856 RNA and GAM282010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM13856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13856 target RNA into GAM13856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282010 target RNA into GAM282010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR905 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR905 gene: GAM13856 target protein and GAM282010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13856 and GAM282010

GR906 BM920825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 906(GR906) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR906 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR906 gene was detected is described hereinabove with reference to Figs. 8-18.

GR906 gene encodes GR906 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR906 precursor RNA folds spatially, forming GR906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR906 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR906 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM332 precursor RNA and GAM4838 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM332 RNA and GAM4838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332 target RNA into GAM332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4838 target RNA into GAM4838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR906 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR906 gene: GAM332 target protein and GAM4838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM332 and GAM4838

GR907 BF372545 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 907(GR907) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR907 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR907 gene was detected is described hereinabove with reference to Figs. 8-18.

GR907 gene encodes GR907 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR907 precursor RNA folds spatially, forming GR907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR907 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR907 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259578 precursor RNA and GAM272666 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259578 RNA and GAM272666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259578 target RNA into GAM259578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272666 target RNA into GAM272666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR907 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR907 gene: GAM259578 target protein and GAM272666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259578 and GAM272666

GR908 BI022425 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 908(GR908) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR908 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR908 gene was detected is described hereinabove with reference to Figs. 8-18.

GR908 gene encodes GR908 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR908 precursor RNA folds spatially, forming GR908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR908 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR908 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50121 precursor RNA and GAM68254 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50121 RNA and GAM68254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50121 target RNA into GAM50121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68254 target RNA into GAM68254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR908 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR908 gene: GAM50121 target protein and GAM68254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50121 and GAM68254

GR909 BI912423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 909(GR909) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR909 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR909 gene was detected is described hereinabove with reference to Figs. 8-18.

GR909 gene encodes GR909 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR909 precursor RNA folds spatially, forming GR909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR909 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR909 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1137 precursor RNA, GAM7791 precursor RNA and GAM316458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1137 RNA, GAM7791 RNA and GAM316458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1137 target RNA into GAM1137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7791 target RNA into GAM7791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316458 target RNA into GAM316458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR909 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR909 gene: GAM1137 target protein, GAM7791 target protein and GAM316458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1137, GAM7791 and GAM316458

GR910 BM504887 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 910(GR910) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR910 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR910 gene was detected is described hereinabove with reference to Figs. 8-18.

GR910 gene encodes GR910 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR910 precursor RNA folds spatially, forming GR910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR910 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR910 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM109177 precursor RNA, GAM139683 precursor RNA and GAM214861 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM109177 RNA, GAM139683 RNA and GAM214861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM109177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109177 target RNA into GAM109177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139683 target RNA into GAM139683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214861 target RNA into GAM214861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR910 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR910 gene: GAM109177 target protein, GAM139683 target protein and GAM214861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM109177, GAM139683 and GAM214861

GR911 BF572972 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 911(GR911) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR911 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR911 gene was detected is described hereinabove with reference to Figs. 8-18.

GR911 gene encodes GR911 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR911 precursor RNA folds spatially, forming GR911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR911 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR911 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26917 precursor RNA and GAM87170 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26917 RNA and GAM87170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26917 target RNA into GAM26917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87170 target RNA into GAM87170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR911 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR911 gene: GAM26917 target protein and GAM87170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26917 and GAM87170

GR912 N21687 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 912(GR912) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR912 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR912 gene was detected is described hereinabove with reference to Figs. 8-18.

GR912 gene encodes GR912 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR912 precursor RNA folds spatially, forming GR912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR912 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR912 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7183 precursor RNA and GAM31194 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7183 RNA and GAM31194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7183 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7183 target RNA into GAM7183 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31194 target RNA into GAM31194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR912 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR912 gene: GAM7183 target protein and GAM31194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7183 and GAM31194

GR913 AV660517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 913(GR913) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR913 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR913 gene was detected is described hereinabove with reference to Figs. 8-18.

GR913 gene encodes GR913 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR913 precursor RNA folds spatially, forming GR913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR913 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR913 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82094 precursor RNA and GAM326115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82094 RNA and GAM326115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82094 target RNA into GAM82094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326115 target RNA into GAM326115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR913 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR913 gene: GAM82094 target protein and GAM326115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82094 and GAM326115

GR914 BM752697 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

914(GR914) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR914 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR914 gene was detected is described hereinabove with reference to Figs. 8-18.

GR914 gene encodes GR914 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR914 precursor RNA folds spatially, forming GR914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR914 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR914 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1574 precursor RNA and GAM113328 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1574 RNA and GAM113328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1574 target RNA into GAM1574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113328 target RNA into GAM113328 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR914 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR914 gene: GAM1574 target protein and GAM113328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1574 and GAM113328

GR915 T79451 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 915(GR915) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR915 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR915 gene was detected is described hereinabove with reference to Figs. 8-18.

GR915 gene encodes GR915 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR915 precursor RNA folds spatially, forming GR915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR915 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR915 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM273 precursor RNA, GAM6832 precursor RNA and GAM61937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM273 RNA, GAM6832 RNA and GAM61937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM273 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273 target RNA into GAM273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6832 target RNA into GAM6832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61937 target RNA into GAM61937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR915 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR915 gene: GAM273 target protein, GAM6832 target protein and GAM61937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM273, GAM6832 and GAM61937

GR916 BF432820 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 916(GR916) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR916 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR916 gene was detected is described hereinabove with reference to Figs. 8-18.

GR916 gene encodes GR916 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR916 precursor RNA folds spatially, forming GR916 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR916 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR916 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2108 precursor RNA and GAM240006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2108 RNA and GAM240006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2108 target RNA into GAM2108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240006 target RNA into GAM240006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR916 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR916 gene: GAM2108 target protein and GAM240006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2108 and GAM240006

GR917 AW274712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 917(GR917) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR917 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR917 gene was detected is described hereinabove with reference to Figs. 8-18.

GR917 gene encodes GR917 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR917 precursor RNA folds spatially, forming GR917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR917 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR917 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM79615 precursor RNA, GAM171668 precursor RNA and GAM297658 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79615 RNA, GAM171668 RNA and GAM297658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79615 target RNA into GAM79615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171668 target RNA into GAM171668 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297658 target RNA into GAM297658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR917 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR917 gene: GAM79615 target protein, GAM171668 target protein and GAM297658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79615, GAM171668 and GAM297658

GR918 BF929577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 918(GR918) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR918 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR918 gene was detected is described hereinabove with reference to Figs. 8-18.

GR918 gene encodes GR918 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR918 precursor RNA folds spatially, forming GR918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR918 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR918 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3108 precursor RNA and GAM115844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3108 RNA and GAM115844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3108 target RNA into GAM3108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115844 target RNA into GAM115844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR918 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR918 gene: GAM3108 target protein and GAM115844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3108 and GAM115844

GR919 T94951 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 919(GR919) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR919 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR919 gene was detected is described hereinabove with reference to Figs. 8-18.

GR919 gene encodes GR919 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR919 precursor RNA folds spatially, forming GR919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR919

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR919 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180707 precursor RNA and GAM262980 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180707 RNA and GAM262980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180707 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180707 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180707 target RNA into GAM180707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262980 target RNA into GAM262980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR919 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR919 gene: GAM180707 target protein and GAM262980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180707 and GAM262980

GR920 W92500 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 920(GR920) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR920 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR920 gene was detected is described hereinabove with reference to Figs. 8-18.

GR920 gene encodes GR920 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR920 precursor RNA folds spatially, forming GR920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR920 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR920 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6068 precursor RNA and GAM228508 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6068 RNA and GAM228508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6068 target RNA into GAM6068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228508 target RNA into GAM228508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR920 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR920 gene: GAM6068 target protein and GAM228508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6068 and GAM228508

GR921 R68151 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 921(GR921) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR921 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR921 gene was detected is described hereinabove with reference to Figs. 8-18.

GR921 gene encodes GR921 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR921 precursor RNA folds spatially, forming GR921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR921 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR921 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8393 precursor RNA and GAM9739 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8393 RNA and GAM9739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8393 target RNA into GAM8393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9739 target RNA into GAM9739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR921 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR921 gene: GAM8393 target protein and GAM9739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8393 and GAM9739

GR922 AA013220 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 922(GR922) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR922 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR922 gene was detected is described hereinabove with reference to Figs. 8-18.

GR922 gene encodes GR922 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR922 precursor RNA folds spatially, forming GR922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR922 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR922 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68681 precursor RNA and GAM185360 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68681 RNA and GAM185360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68681 target RNA into GAM68681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185360 target RNA into GAM185360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR922 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR922 gene: GAM68681 target protein and GAM185360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68681 and GAM185360

GR923 R26860 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 923(GR923) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR923 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR923 gene was detected is described hereinabove with reference to Figs. 8-18.

GR923 gene encodes GR923 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR923 precursor RNA folds spatially, forming GR923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR923 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR923 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM975 precursor RNA and GAM6877 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM975 RNA and GAM6877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM975 target RNA into GAM975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6877 target RNA into GAM6877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR923 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR923 gene: GAM975 target protein and GAM6877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM975 and GAM6877

GR924 BI821037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

924(GR924) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR924 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR924 gene was detected is described hereinabove with reference to Figs. 8-18.

GR924 gene encodes GR924 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR924 precursor RNA folds spatially, forming GR924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR924 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR924 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4978 precursor RNA, GAM5331 precursor RNA and GAM173116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4978 RNA, GAM5331 RNA and GAM173116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4978 target RNA into GAM4978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5331 target RNA into

GAM5331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173116 target RNA into GAM173116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR924 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR924 gene: GAM4978 target protein, GAM5331 target protein and GAM173116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4978, GAM5331 and GAM173116

GR925 BI196481 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 925(GR925) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR925 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR925 gene was detected is described hereinabove with reference to Figs. 8-18.

GR925 gene encodes GR925 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR925 precursor RNA folds spatially, forming GR925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR925 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR925 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1612 precursor RNA and GAM311139 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1612 RNA and GAM311139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1612 target RNA into GAM1612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311139 target RNA into GAM311139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR925 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR925 gene: GAM1612 target protein and GAM311139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1612 and GAM311139

GR926 AL135117 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 926(GR926) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR926 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR926 gene was detected is described hereinabove with reference to Figs. 8-18.

GR926 gene encodes GR926 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR926 precursor RNA folds spatially, forming GR926 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR926 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR926 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69319 precursor RNA and GAM242809 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69319 RNA and GAM242809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69319 target RNA into GAM69319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242809 target RNA into GAM242809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR926 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR926 gene: GAM69319 target protein and GAM242809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69319 and GAM242809

GR927 BF995550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 927(GR927) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR927 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR927 gene was detected is described hereinabove with reference to Figs. 8-18.

GR927 gene encodes GR927 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR927 precursor RNA folds spatially, forming GR927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR927 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR927 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2070 precursor RNA and GAM7303 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2070 RNA and GAM7303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2070 target RNA into GAM2070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7303 target RNA into GAM7303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR927 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR927 gene: GAM2070 target protein and GAM7303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2070 and GAM7303

GR928 BM048071 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 928(GR928) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR928 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR928 gene was detected is described hereinabove with reference to Figs. 8-18.

GR928 gene encodes GR928 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR928 precursor RNA folds spatially, forming GR928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR928 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR928 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7603 precursor RNA and GAM145261 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7603 RNA and GAM145261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7603 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7603 target RNA into GAM7603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145261 target RNA into GAM145261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR928 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR928 gene: GAM7603 target protein and GAM145261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7603 and GAM145261

GR929 BF219488 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 929(GR929) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR929 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR929 gene was detected is described hereinabove with reference to Figs. 8-18.

GR929 gene encodes GR929 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR929 precursor RNA folds spatially, forming GR929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR929 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR929 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM358 precursor RNA and GAM223512 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM358 RNA and GAM223512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM358 target RNA into GAM358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223512 target RNA into GAM223512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR929 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR929 gene: GAM358 target protein and GAM223512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM358 and GAM223512

GR930 BF313129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 930(GR930) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR930 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR930 gene was detected is described hereinabove with reference to Figs. 8-18.

GR930 gene encodes GR930 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR930 precursor RNA folds spatially, forming GR930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR930 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR930 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63712 precursor RNA and GAM309643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63712 RNA and GAM309643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63712 target RNA into GAM63712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309643 target RNA into GAM309643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR930 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR930 gene: GAM63712 target protein and GAM309643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63712 and GAM309643

GR931 BG768274 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 931(GR931) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR931 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR931 gene was detected is described hereinabove with reference to Figs. 8-18.

GR931 gene encodes GR931 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR931 precursor RNA folds spatially, forming GR931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR931 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR931 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1668 precursor RNA, GAM8707 precursor RNA and GAM228165 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1668 RNA, GAM8707 RNA and GAM228165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1668 target RNA into GAM1668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8707 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8707 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM8707 target RNA into GAM8707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228165 target RNA into GAM228165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR931 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR931 gene: GAM1668 target protein, GAM8707 target protein and GAM228165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1668, GAM8707 and GAM228165

GR932 BF948050 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 932(GR932) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR932 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR932 gene was detected is described hereinabove with reference to Figs. 8-18.

GR932 gene encodes GR932 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR932 precursor RNA folds spatially, forming GR932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR932 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR932 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5153 precursor RNA, GAM115436 precursor RNA, GAM240953 precursor RNA and GAM281956 precursor RNA,herein schematically

represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5153 RNA, GAM115436 RNA, GAM240953 RNA and GAM281956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5153 target RNA into GAM5153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115436 target RNA into GAM115436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240953 target RNA into GAM240953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281956 target RNA into GAM281956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR932 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR932 gene: GAM5153 target protein, GAM115436 target protein, GAM240953 target protein and GAM281956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated

with reference to Table 6, hereby incorporated by reference, with references to GAM5153, GAM115436, GAM240953 and GAM281956

GR933 BI827495 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 933(GR933) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR933 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR933 gene was detected is described hereinabove with reference to Figs. 8-18.

GR933 gene encodes GR933 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR933 precursor RNA folds spatially, forming GR933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR933 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR933 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4415 precursor RNA and GAM5184 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4415 RNA and GAM5184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4415 target RNA into GAM4415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5184 target RNA into GAM5184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR933 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR933 gene: GAM4415 target protein and GAM5184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4415 and GAM5184

GR934 AA461399 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 934(GR934) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR934 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR934 gene was detected is described hereinabove with reference to Figs. 8-18.

GR934 gene encodes GR934 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR934 precursor RNA folds spatially, forming GR934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR934 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR934 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5733 precursor RNA and GAM290028 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5733 RNA and GAM290028 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5733 target RNA into GAM5733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290028 target RNA into GAM290028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR934 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR934 gene: GAM5733 target protein and GAM290028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5733 and GAM290028

GR935 AW888859 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 935(GR935) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR935 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR935 gene was detected is described hereinabove with reference to Figs. 8-18.

GR935 gene encodes GR935 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR935 precursor RNA folds spatially, forming GR935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR935 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR935 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM26378 precursor RNA, GAM88906 precursor RNA and GAM290163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26378 RNA, GAM88906 RNA and GAM290163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26378 target RNA into GAM26378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88906 target RNA into GAM88906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290163 target RNA into GAM290163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR935 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR935 gene: GAM26378 target protein, GAM88906 target protein and GAM290163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26378, GAM88906 and

GR936 AW304938 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 936(GR936) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR936 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR936 gene was detected is described hereinabove with reference to Figs. 8-18.

GR936 gene encodes GR936 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR936 precursor RNA folds spatially, forming GR936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR936 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR936 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95593 precursor RNA and GAM186855 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95593 RNA and GAM186855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95593 target RNA into GAM95593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186855 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186855 target RNA into GAM186855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR936 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR936 gene: GAM95593 target protein and GAM186855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95593 and GAM186855

GR937 AA687205 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 937(GR937) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR937 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR937 gene was detected is described hereinabove with reference to Figs. 8-18.

GR937 gene encodes GR937 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR937 precursor RNA folds spatially, forming GR937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR937 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR937 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6409 precursor RNA, GAM138986 precursor RNA and GAM238301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6409 RNA, GAM138986 RNA and GAM238301 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6409 target RNA into GAM6409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM138986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138986 target RNA into GAM138986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238301 target RNA into GAM238301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR937 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR937 gene: GAM6409 target protein, GAM138986 target protein and GAM238301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6409, GAM138986 and GAM238301

GR938 BI517330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 938(GR938) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR938 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR938 gene was detected is described hereinabove with reference to Figs. 8-18.

GR938 gene encodes GR938 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR938 precursor RNA folds spatially, forming GR938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR938 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR938 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1278 precursor RNA, GAM256616 precursor RNA and GAM314855 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1278 RNA, GAM256616 RNA and GAM314855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1278 target RNA into GAM1278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256616 target RNA into GAM256616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314855 target RNA into GAM314855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR938 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR938 gene: GAM1278 target protein, GAM256616 target protein and GAM314855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1278, GAM256616 and GAM314855

GR939 BM091527 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 939(GR939) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR939 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR939 gene was detected is described hereinabove with reference to Figs. 8-18.

GR939 gene encodes GR939 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR939 precursor RNA folds spatially, forming GR939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR939 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR939 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2164 precursor RNA, GAM7627 precursor RNA and GAM257524 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2164 RNA, GAM7627 RNA and GAM257524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2164 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2164 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2164 target RNA into GAM2164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7627 target RNA into GAM7627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257524 target RNA into GAM257524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR939 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR939 gene: GAM2164 target protein, GAM7627 target protein and GAM257524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2164, GAM7627 and GAM257524

GR940 BM553812 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 940(GR940) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR940 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR940 gene was detected is described hereinabove with reference to Figs. 8-18.

GR940 gene encodes GR940 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR940 precursor RNA folds spatially, forming GR940 folded precursor

RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR940 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR940 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM50869 precursor RNA, GAM271590 precursor RNA, GAM276391 precursor RNA and GAM318766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50869 RNA, GAM271590 RNA, GAM276391 RNA and GAM318766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50869 target RNA into GAM50869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271590 target RNA into GAM271590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276391 target RNA into GAM276391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318766 target RNA into GAM318766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR940 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR940 gene: GAM50869 target protein, GAM271590 target protein, GAM276391 target protein and GAM318766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50869, GAM271590, GAM276391 and GAM318766

GR941 BF857197 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 941(GR941) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR941 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR941 gene was detected is described hereinabove with reference to Figs. 8-18.

GR941 gene encodes GR941 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR941 precursor RNA folds spatially, forming GR941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR941 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR941 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM47352 precursor RNA, GAM106985 precursor RNA, GAM149662 precursor RNA and GAM274335 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47352 RNA, GAM106985 RNA, GAM149662 RNA and

GAM274335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47352 target RNA into GAM47352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106985 target RNA into GAM106985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149662 target RNA into GAM149662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274335 target RNA into GAM274335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR941 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR941 gene: GAM47352 target protein, GAM106985 target protein, GAM149662 target protein and GAM274335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47352, GAM106985, GAM149662 and GAM274335

GR942 BG477509 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 942(GR942) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR942 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR942 gene was detected is described hereinabove with reference to Figs. 8-18.

GR942 gene encodes GR942 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR942 precursor RNA folds spatially, forming GR942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR942 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR942 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3465 precursor RNA, GAM4456 precursor RNA and GAM286156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3465 RNA, GAM4456 RNA and GAM286156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3465 target RNA into GAM3465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4456 target RNA into GAM4456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286156 target RNA into GAM286156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR942 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR942 gene: GAM3465 target protein, GAM4456 target protein and GAM286156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3465, GAM4456 and GAM286156

GR943 AW130622 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 943(GR943) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR943 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR943 gene was detected is described hereinabove with reference to Figs. 8-18.

GR943 gene encodes GR943 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR943 precursor RNA folds spatially, forming GR943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR943 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR943 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM51789 precursor RNA and GAM239390 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51789 RNA and GAM239390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51789 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51789 target RNA into GAM51789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239390 target RNA into GAM239390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR943 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR943 gene: GAM51789 target protein and GAM239390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51789 and GAM239390

GR944 AW991982 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 944(GR944) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR944 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR944 gene was detected is described hereinabove with reference to Figs. 8-18.

GR944 gene encodes GR944 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR944 precursor RNA folds spatially, forming GR944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR944 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR944 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM324987 precursor RNA and GAM326854 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM324987 RNA and GAM326854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM324987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324987 target RNA into GAM324987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326854 target RNA into GAM326854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR944 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR944 gene: GAM324987 target protein and GAM326854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM324987 and GAM326854

GR945 AA778543 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 945(GR945) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR945 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR945 gene was detected is described hereinabove with reference to Figs. 8-18.

GR945 gene encodes GR945 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR945 precursor RNA folds spatially, forming GR945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR945 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR945 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM560 precursor RNA and GAM42558 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM560 RNA and GAM42558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM560 target RNA into GAM560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM42558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42558 target RNA into GAM42558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR945 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR945 gene: GAM560 target protein and GAM42558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM560 and GAM42558

GR946 BI600031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 946(GR946) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR946 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR946 gene was detected is described hereinabove with reference to Figs. 8-18.

GR946 gene encodes GR946 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR946 precursor RNA folds spatially, forming GR946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR946 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR946 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3716 precursor RNA and GAM234661 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3716 RNA and GAM234661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3716 target RNA into GAM3716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234661 target RNA into GAM234661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR946 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR946 gene: GAM3716 target protein and GAM234661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3716 and GAM234661

GR947 AV692009 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 947(GR947) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR947 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR947 gene was detected is described hereinabove with reference to Figs. 8-18.

GR947 gene encodes GR947 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR947 precursor RNA folds spatially, forming GR947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR947 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR947 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM94281 precursor RNA, GAM134862 precursor RNA and GAM260451 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94281 RNA, GAM134862 RNA and GAM260451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94281 target RNA into GAM94281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134862 target RNA into GAM134862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260451 target RNA into GAM260451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR947 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR947 gene: GAM94281 target protein, GAM134862 target protein and GAM260451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94281, GAM134862 and GAM260451

GR948 AA584018 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 948(GR948) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR948 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR948 gene was detected is described hereinabove with reference to Figs. 8-18.

GR948 gene encodes GR948 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR948 precursor RNA folds spatially, forming GR948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR948 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR948 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1002 precursor RNA and GAM14680 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1002 RNA and GAM14680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1002 target RNA into GAM1002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14680 target RNA into GAM14680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR948 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR948 gene: GAM1002 target protein and GAM14680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1002 and GAM14680

GR949 AL042124 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 949(GR949) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR949 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR949 gene was detected is described hereinabove with reference to Figs. 8-18.

GR949 gene encodes GR949 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR949 precursor RNA folds spatially, forming GR949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR949 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR949 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2439 precursor RNA, GAM76556 precursor RNA, GAM86542 precursor RNA and GAM111520 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2439 RNA, GAM76556 RNA, GAM86542 RNA and GAM111520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2439 target RNA into GAM2439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76556 target RNA into GAM76556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86542 target RNA into GAM86542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111520 target RNA into GAM111520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR949 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR949 gene: GAM2439 target protein, GAM76556 target protein, GAM86542 target protein and GAM111520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2439, GAM76556, GAM86542 and GAM111520

GR950 R19861 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 950(GR950) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR950 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR950 gene was detected is described hereinabove with reference to Figs. 8-18.

GR950 gene encodes GR950 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR950 precursor RNA folds spatially, forming GR950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR950 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR950 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6337 precursor RNA and GAM295450 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6337 RNA and GAM295450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6337 target RNA into GAM6337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295450 target RNA into GAM295450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR950 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR950 gene: GAM6337 target protein and GAM295450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6337 and GAM295450

GR951 AI554631 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 951(GR951) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR951 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR951 gene was detected is described hereinabove with reference to Figs. 8-18.

GR951 gene encodes GR951 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR951 precursor RNA folds spatially, forming GR951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR951 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR951 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4965 precursor RNA and GAM6640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4965 RNA and GAM6640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4965 target RNA into GAM4965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6640 target RNA into GAM6640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR951 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR951 gene: GAM4965 target protein and GAM6640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4965 and GAM6640

GR952 BG401800 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 952(GR952) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR952 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR952 gene was detected is described hereinabove with reference to Figs. 8-18.

GR952 gene encodes GR952 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR952 precursor RNA folds spatially, forming GR952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR952 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR952 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM108626 precursor RNA and GAM182115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108626 RNA and GAM182115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108626 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108626 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108626 target RNA into GAM108626 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182115 target RNA into GAM182115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR952 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR952 gene: GAM108626 target protein and GAM182115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108626 and GAM182115

GR953 BM702274 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 953(GR953) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR953 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR953 gene was detected is described hereinabove with reference to Figs. 8-18.

GR953 gene encodes GR953 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR953 precursor RNA folds spatially, forming GR953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR953 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR953 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2655 precursor RNA, GAM219236 precursor RNA and GAM219724 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2655 RNA, GAM219236 RNA and GAM219724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2655 target RNA into GAM2655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219236 target RNA into GAM219236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219724 target RNA into GAM219724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR953 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR953 gene: GAM2655 target protein, GAM219236 target protein and GAM219724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2655, GAM219236 and GAM219724

GR954 AI791913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 954(GR954) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR954 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR954 gene was detected is described hereinabove with reference to Figs. 8-18.

GR954 gene encodes GR954 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR954 precursor RNA folds spatially, forming GR954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR954 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR954 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8680 precursor RNA, GAM23404 precursor RNA and GAM171008 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8680 RNA, GAM23404 RNA and GAM171008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8680 target RNA into GAM8680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23404 target RNA into GAM23404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171008 target RNA into GAM171008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR954 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR954 gene: GAM8680 target protein, GAM23404 target protein and GAM171008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8680, GAM23404 and GAM171008

GR955 BM827781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 955(GR955) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR955 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR955 gene was detected is described hereinabove with reference to Figs. 8-18.

GR955 gene encodes GR955 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR955 precursor RNA folds spatially, forming GR955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR955 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR955 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13571 precursor RNA and GAM79412 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13571 RNA and GAM79412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13571 target RNA into GAM13571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79412 target RNA into GAM79412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR955 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR955 gene: GAM13571 target protein and GAM79412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13571 and GAM79412

GR956 BE733184 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 956(GR956) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR956 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR956 gene was detected is described hereinabove with reference to Figs. 8-18.

GR956 gene encodes GR956 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR956 precursor RNA folds spatially, forming GR956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR956 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR956 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2102 precursor RNA and GAM20046 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2102 RNA and GAM20046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2102 target RNA into GAM2102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20046 target RNA into GAM20046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR956 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR956 gene: GAM2102 target protein and GAM20046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2102 and GAM20046

GR957 AI873813 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 957(GR957) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR957 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR957 gene was detected is described hereinabove with reference to Figs. 8-18.

GR957 gene encodes GR957 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR957 precursor RNA folds spatially, forming GR957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR957 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR957 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM567 precursor RNA, GAM250742 precursor RNA, GAM296471 precursor RNA and GAM302766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM567 RNA, GAM250742 RNA, GAM296471 RNA and GAM302766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM567 target RNA into GAM567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250742 target RNA into GAM250742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296471 target RNA into GAM296471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302766 target RNA into GAM302766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR957 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR957 gene: GAM567 target protein, GAM250742 target protein, GAM296471 target protein and GAM302766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM567, GAM250742, GAM296471 and GAM302766

GR958 BM720080 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 958(GR958) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR958 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR958 gene was detected is described hereinabove with reference to Figs. 8-18.

GR958 gene encodes GR958 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR958 precursor RNA folds spatially, forming GR958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR958 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR958 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7545 precursor RNA and GAM243001 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7545 RNA and GAM243001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7545 target RNA into GAM7545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243001 target RNA into GAM243001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR958 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR958 gene: GAM7545 target protein and GAM243001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7545 and GAM243001

GR959 BF888319 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 959(GR959) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR959 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR959 gene was detected is described hereinabove with reference to Figs. 8-18.

GR959 gene encodes GR959 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR959 precursor RNA folds spatially, forming GR959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR959 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR959 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1852 precursor RNA, GAM36867 precursor RNA and GAM211312 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1852 RNA, GAM36867 RNA and GAM211312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1852 target RNA into GAM1852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36867 target RNA into GAM36867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211312 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211312 target RNA into GAM211312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR959 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR959 gene: GAM1852 target protein, GAM36867 target protein and GAM211312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1852, GAM36867 and GAM211312

GR960 BM837529 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 960(GR960) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR960 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR960 gene was detected is described hereinabove with reference to Figs. 8-18.

GR960 gene encodes GR960 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR960 precursor RNA folds spatially, forming GR960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR960 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR960 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6094 precursor RNA and GAM264467 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6094 RNA and GAM264467 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6094 target RNA into GAM6094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264467 target RNA into GAM264467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR960 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR960 gene: GAM6094 target protein and GAM264467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6094 and GAM264467

GR961 AA401213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 961(GR961) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR961 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR961 gene was detected is described hereinabove with reference to Figs. 8-18.

GR961 gene encodes GR961 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR961 precursor RNA folds spatially, forming GR961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR961 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR961 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at

least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6444 precursor RNA and GAM92265 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6444 RNA and GAM92265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6444 target RNA into GAM6444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92265 target RNA into GAM92265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR961 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR961 gene: GAM6444 target protein and GAM92265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6444 and GAM92265

GR962 BG779275 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 962(GR962) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR962 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR962 gene was detected is described hereinabove with reference to Figs. 8-18.

GR962 gene encodes GR962 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR962 precursor RNA folds spatially, forming GR962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR962 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR962 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM99451 precursor RNA, GAM277303 precursor RNA and GAM313238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99451 RNA, GAM277303 RNA and GAM313238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99451 target RNA into GAM99451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277303 target RNA into GAM277303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313238 target RNA into GAM313238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR962 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR962 gene: GAM99451 target protein, GAM277303 target protein and GAM313238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99451, GAM277303 and GAM313238

GR963 BF184016 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 963(GR963) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR963 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR963 gene was detected is described hereinabove with reference to Figs. 8-18.

GR963 gene encodes GR963 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR963 precursor RNA folds spatially, forming GR963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR963 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR963 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230025 precursor RNA and GAM240616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230025 RNA and GAM240616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM230025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230025 target RNA into GAM230025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240616 target RNA into GAM240616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR963 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR963 gene: GAM230025 target protein and GAM240616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230025 and GAM240616

GR964 BF513824 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 964(GR964) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR964 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR964 gene was detected is described hereinabove with reference to Figs. 8-18.

GR964 gene encodes GR964 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR964 precursor RNA folds spatially, forming GR964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR964 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR964 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is

well known in the art.

GR964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM13717 precursor RNA, GAM22231 precursor RNA, GAM154230 precursor RNA and GAM177987 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13717 RNA, GAM22231 RNA, GAM154230 RNA and GAM177987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13717 target RNA into GAM13717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22231 target RNA into GAM22231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154230 target RNA into GAM154230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177987 target RNA into GAM177987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR964 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR964 gene: GAM13717 target protein, GAM22231 target protein, GAM154230 target protein and GAM177987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13717, GAM22231, GAM154230 and GAM177987

GR965 BM150255 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 965(GR965) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR965 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR965 gene was detected is described hereinabove with reference to Figs. 8-18.

GR965 gene encodes GR965 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR965 precursor RNA folds spatially, forming GR965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR965 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR965 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4605 precursor RNA, GAM7726 precursor RNA and GAM218136 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4605 RNA, GAM7726 RNA and GAM218136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4605 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4605 target RNA into GAM4605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7726 target RNA into GAM7726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218136 target RNA into GAM218136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR965 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR965 gene: GAM4605 target protein, GAM7726 target protein and GAM218136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4605, GAM7726 and GAM218136

GR966 AW362772 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 966(GR966) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR966 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR966 gene was detected is described hereinabove with reference to Figs. 8-18.

GR966 gene encodes GR966 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR966 precursor RNA folds spatially, forming GR966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR966 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR966 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116825 precursor RNA and GAM221691 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116825 RNA and GAM221691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116825 target RNA into GAM116825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221691 target RNA into GAM221691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR966 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR966 gene: GAM116825 target protein and GAM221691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116825 and GAM221691

GR967 BG539376 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 967(GR967) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR967 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR967 gene was detected is described hereinabove with reference to Figs. 8-18.

GR967 gene encodes GR967 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR967 precursor RNA folds spatially, forming GR967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR967 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR967 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM176711 precursor RNA and GAM224372 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM176711 RNA and GAM224372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM176711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176711 target RNA into GAM176711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224372 target RNA into GAM224372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR967 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR967 gene: GAM176711 target protein and GAM224372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM176711 and GAM224372

GR968 AU098876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 968(GR968) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR968 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR968 gene was detected is described hereinabove with reference to Figs. 8-18.

GR968 gene encodes GR968 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR968 precursor RNA folds spatially, forming GR968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR968 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR968 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM103074 precursor RNA and GAM308816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103074 RNA and GAM308816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103074 target RNA into GAM103074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308816 target RNA into GAM308816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR968 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR968 gene: GAM103074 target protein and GAM308816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103074 and GAM308816

GR969 BG534213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 969(GR969) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR969 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR969 gene was detected is described hereinabove with reference to Figs. 8-18.

GR969 gene encodes GR969 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR969 precursor RNA folds spatially, forming GR969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR969 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR969 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7794 precursor RNA, GAM165591 precursor RNA, GAM226722 precursor RNA and GAM235633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7794 RNA, GAM165591 RNA, GAM226722 RNA and GAM235633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7794 target RNA into GAM7794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165591 target RNA into GAM165591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226722 target RNA into GAM226722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235633 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235633 target RNA into GAM235633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR969 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR969 gene: GAM7794 target protein, GAM165591 target protein, GAM226722 target protein and GAM235633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM7794, GAM165591, GAM226722 and GAM235633

GR970 BI838006 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 970(GR970) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR970 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR970 gene was detected is described hereinabove with reference to Figs. 8-18.

GR970 gene encodes GR970 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR970 precursor RNA folds spatially, forming GR970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR970 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR970 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM174576 precursor RNA, GAM240496 precursor RNA and GAM285286 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM174576 RNA, GAM240496 RNA and GAM285286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM174576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174576 target RNA into GAM174576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM240496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240496 target RNA into GAM240496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285286 target RNA into GAM285286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR970 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR970 gene: GAM174576 target protein, GAM240496 target protein and GAM285286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM174576, GAM240496 and GAM285286

GR971 BF239179 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 971(GR971) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR971 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR971 gene was detected is described hereinabove with reference to Figs. 8-18.

GR971 gene encodes GR971 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR971 precursor RNA folds spatially, forming GR971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR971 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR971 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR971 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5793 precursor RNA and GAM293906 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5793 RNA and GAM293906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5793 target RNA into GAM5793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293906 target RNA into GAM293906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR971 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR971 gene: GAM5793 target protein and GAM293906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5793 and GAM293906

GR972 BG025358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 972(GR972) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR972 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR972 gene was detected is described hereinabove with reference to Figs. 8-18.

GR972 gene encodes GR972 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR972 precursor RNA folds spatially, forming GR972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR972 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR972 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58254 precursor RNA and GAM230293 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58254 RNA and GAM230293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58254 target RNA into GAM58254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230293 target RNA into GAM230293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR972 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR972 gene: GAM58254 target protein and GAM230293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58254 and GAM230293

GR973 BI545256 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 973(GR973) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR973 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR973 gene was detected is described hereinabove with reference to Figs. 8-18.

GR973 gene encodes GR973 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR973 precursor RNA folds spatially, forming GR973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR973 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR973 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2322 precursor RNA and GAM176925 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2322 RNA and GAM176925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2322 target RNA into GAM2322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176925 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176925 target RNA into GAM176925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR973 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR973 gene: GAM2322 target protein and GAM176925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2322 and GAM176925

GR974 N71987 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 974(GR974) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR974 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR974 gene was detected is described hereinabove with reference to Figs. 8-18.

GR974 gene encodes GR974 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR974 precursor RNA folds spatially, forming GR974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR974 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR974 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM49929 precursor RNA, GAM277508 precursor RNA and GAM295869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49929 RNA, GAM277508 RNA and GAM295869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM49929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49929 target RNA into GAM49929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277508 target RNA into GAM277508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295869 target RNA into GAM295869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR974 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR974 gene: GAM49929 target protein, GAM277508 target protein and GAM295869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49929, GAM277508 and GAM295869

GR975 AA081627 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 975(GR975) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR975 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR975 gene was detected is described hereinabove with reference to Figs. 8-18.

GR975 gene encodes GR975 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR975 precursor RNA folds spatially, forming GR975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR975 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR975 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56183 precursor RNA and GAM95555 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56183 RNA and GAM95555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56183 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56183 target RNA into GAM56183 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95555 target RNA into GAM95555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR975 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR975 gene: GAM56183 target protein and GAM95555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56183 and GAM95555

GR976 AA826327 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 976(GR976) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR976 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR976 gene was detected is described hereinabove with reference to Figs. 8-18.

GR976 gene encodes GR976 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR976 precursor RNA folds spatially, forming GR976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR976 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR976 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7379 precursor RNA and GAM103461 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7379 RNA and GAM103461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7379 target RNA into GAM7379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103461 target RNA into GAM103461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR976 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR976 gene: GAM7379 target protein and GAM103461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7379 and GAM103461

GR977 BE565258 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 977(GR977) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR977 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR977 gene was detected is described hereinabove with reference to Figs. 8-18.

GR977 gene encodes GR977 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR977 precursor RNA folds spatially, forming GR977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR977 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR977 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1570 precursor RNA, GAM4386 precursor RNA, GAM20029 precursor RNA and GAM151223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1570 RNA, GAM4386 RNA, GAM20029 RNA and GAM151223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1570 target RNA into GAM1570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4386 target RNA into GAM4386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20029 target RNA into GAM20029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151223 target RNA into GAM151223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR977 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR977 gene: GAM1570 target protein, GAM4386 target protein, GAM20029 target protein and GAM151223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1570, GAM4386, GAM20029 and GAM151223

GR978 BE271971 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 978(GR978) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR978 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR978 gene was detected is described hereinabove with reference to Figs. 8-18.

GR978 gene encodes GR978 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR978 precursor RNA folds spatially, forming GR978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR978 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR978 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6634 precursor RNA and GAM216635 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6634 RNA and GAM216635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6634 target RNA into GAM6634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216635 target RNA into GAM216635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR978 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR978 gene: GAM6634 target protein and GAM216635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6634 and GAM216635

GR979 BM272358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 979(GR979) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR979 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR979 gene was detected is described hereinabove with reference to Figs. 8-18.

GR979 gene encodes GR979 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR979 precursor RNA folds spatially, forming GR979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR979 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR979 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1888 precursor RNA and GAM233521 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1888 RNA and GAM233521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1888 target RNA into

GAM1888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233521 target RNA into GAM233521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR979 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR979 gene: GAM1888 target protein and GAM233521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1888 and GAM233521

GR980 N53541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 980(GR980) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR980 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR980 gene was detected is described hereinabove with reference to Figs. 8-18.

GR980 gene encodes GR980 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR980 precursor RNA folds spatially, forming GR980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR980 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR980 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1642 precursor RNA and GAM168301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1642 RNA and GAM168301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1642 target RNA into GAM1642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168301 target RNA into GAM168301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR980 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR980 gene: GAM1642 target protein and GAM168301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1642 and GAM168301

GR981 BI084535 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 981(GR981) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR981 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR981 gene was detected is described hereinabove with reference to Figs. 8-18.

GR981 gene encodes GR981 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR981 precursor RNA folds spatially, forming GR981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR981

folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR981 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM339 precursor RNA, GAM751 precursor RNA and GAM3458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM339 RNA, GAM751 RNA and GAM3458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM339 target RNA into GAM339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM751 target RNA into GAM751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3458 target RNA into GAM3458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR981 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR981 gene: GAM339 target

protein, GAM751 target protein and GAM3458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM339, GAM751 and GAM3458

GR982 AW817214 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 982(GR982) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR982 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR982 gene was detected is described hereinabove with reference to Figs. 8-18.

GR982 gene encodes GR982 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR982 precursor RNA folds spatially, forming GR982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR982 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR982 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83987 precursor RNA and GAM148937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83987 RNA and GAM148937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83987 target RNA into GAM83987 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148937 target RNA into GAM148937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR982 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR982 gene: GAM83987 target protein and GAM148937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83987 and GAM148937

GR983 AI915093 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 983(GR983) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR983 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR983 gene was detected is described hereinabove with reference to Figs. 8-18.

GR983 gene encodes GR983 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR983 precursor RNA folds spatially, forming GR983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR983 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR983 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1823 precursor RNA and GAM275978 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1823 RNA and GAM275978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1823 target RNA into GAM1823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275978 target RNA into GAM275978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR983 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR983 gene: GAM1823 target protein and GAM275978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1823 and GAM275978

GR984 AA100986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 984(GR984) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR984 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR984 gene was detected is described hereinabove with reference to Figs. 8-18.

GR984 gene encodes GR984 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR984 precursor RNA folds spatially, forming GR984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR984 folded precursor RNA comprises a plurality of what is known in the art as

`hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR984 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM76820 precursor RNA, GAM159156 precursor RNA and GAM199585 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76820 RNA, GAM159156 RNA and GAM199585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76820 target RNA into GAM76820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159156 target RNA into GAM159156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199585 target RNA into GAM199585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR984 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR984 gene: GAM76820 target protein, GAM159156 target protein and GAM199585 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76820, GAM159156 and GAM199585

GR985 BG031590 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 985(GR985) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR985 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR985 gene was detected is described hereinabove with reference to Figs. 8-18.

GR985 gene encodes GR985 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR985 precursor RNA folds spatially, forming GR985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR985 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR985 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1499 precursor RNA, GAM19866 precursor RNA, GAM198199 precursor RNA and GAM258801 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1499 RNA, GAM19866 RNA, GAM198199 RNA and GAM258801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1499 target RNA into GAM1499 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19866 target RNA into GAM19866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198199 target RNA into GAM198199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258801 target RNA into GAM258801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR985 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR985 gene: GAM1499 target protein, GAM19866 target protein, GAM198199 target protein and GAM258801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1499, GAM19866, GAM198199 and GAM258801

GR986 BI117562 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 986(GR986) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR986 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR986 gene was detected is described hereinabove with reference to Figs. 8-18.

GR986 gene encodes GR986 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR986 precursor RNA folds spatially, forming GR986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR986 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR986 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1958 precursor RNA and GAM7800 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1958 RNA and GAM7800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1958 target RNA into GAM1958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7800 target RNA into GAM7800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR986 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR986 gene: GAM1958 target protein and GAM7800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1958 and GAM7800

GR987 BG528599 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 987(GR987) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR987 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR987 gene was detected is described hereinabove with reference to Figs. 8-18.

GR987 gene encodes GR987 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR987 precursor RNA folds spatially, forming GR987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR987 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR987 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6817 precursor RNA and GAM334418 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6817 RNA and GAM334418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6817 target RNA into GAM6817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334418

target RNA into GAM334418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR987 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR987 gene: GAM6817 target protein and GAM334418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6817 and GAM334418

GR988 AI042277 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 988(GR988) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR988 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR988 gene was detected is described hereinabove with reference to Figs. 8-18.

GR988 gene encodes GR988 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR988 precursor RNA folds spatially, forming GR988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR988 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR988 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6251 precursor RNA, GAM59058 precursor RNA and GAM113427 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6251 RNA, GAM59058 RNA and GAM113427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6251 target RNA into GAM6251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59058 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59058 target RNA into GAM59058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113427 target RNA into GAM113427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR988 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR988 gene: GAM6251 target protein, GAM59058 target protein and GAM113427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6251, GAM59058 and GAM113427

GR989 BE796358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 989(GR989) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR989 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR989 gene was detected is described hereinabove with reference to Figs. 8-18.

GR989 gene encodes GR989 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR989 precursor RNA folds spatially, forming GR989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR989 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR989 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217083 precursor RNA and GAM287305 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217083 RNA and GAM287305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217083 target RNA into GAM217083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287305 target RNA into GAM287305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR989 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR989 gene: GAM217083 target protein and GAM287305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217083 and GAM287305

GR990 AA837511 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

990(GR990) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR990 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR990 gene was detected is described hereinabove with reference to Figs. 8-18.

GR990 gene encodes GR990 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR990 precursor RNA folds spatially, forming GR990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR990 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR990 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121797 precursor RNA and GAM142521 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121797 RNA and GAM142521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121797 target RNA into GAM121797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142521 target RNA into GAM142521 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR990 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR990 gene: GAM121797 target protein and GAM142521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121797 and GAM142521

GR991 BE615077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 991(GR991) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR991 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR991 gene was detected is described hereinabove with reference to Figs. 8-18.

GR991 gene encodes GR991 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR991 precursor RNA folds spatially, forming GR991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR991 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR991 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6060 precursor RNA, GAM217940 precursor RNA, GAM239782 precursor RNA and GAM321413 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6060 RNA, GAM217940 RNA, GAM239782 RNA and GAM321413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6060 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6060 target RNA into GAM6060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217940 target RNA into GAM217940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239782 target RNA into GAM239782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321413 target RNA into GAM321413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR991 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR991 gene: GAM6060 target protein, GAM217940 target protein, GAM239782 target protein and GAM321413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6060, GAM217940, GAM239782 and GAM321413

GR992 BG428799 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 992(GR992) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR992 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR992 gene was detected is described hereinabove with reference to Figs. 8-18.

GR992 gene encodes GR992 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR992 precursor RNA folds spatially, forming GR992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR992 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR992 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4221 precursor RNA and GAM228432 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4221 RNA and GAM228432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4221 target RNA into GAM4221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228432 target RNA into GAM228432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR992 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR992 gene: GAM4221 target

protein and GAM228432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4221 and GAM228432

GR993 AI090853 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 993(GR993) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR993 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR993 gene was detected is described hereinabove with reference to Figs. 8-18.

GR993 gene encodes GR993 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR993 precursor RNA folds spatially, forming GR993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR993 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR993 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6816 precursor RNA, GAM46018 precursor RNA, GAM236762 precursor RNA and GAM277790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6816 RNA, GAM46018 RNA, GAM236762 RNA and GAM277790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6816 target RNA into GAM6816 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46018 target RNA into GAM46018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236762 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236762 target RNA into GAM236762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277790 target RNA into GAM277790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR993 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR993 gene: GAM6816 target protein, GAM46018 target protein, GAM236762 target protein and GAM277790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6816, GAM46018, GAM236762 and GAM277790

GR994 BE549314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 994(GR994) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR994 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR994 gene was detected is described hereinabove with reference to Figs. 8-18.

GR994 gene encodes GR994 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR994 precursor RNA folds spatially, forming GR994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR994 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR994 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM8151 precursor RNA, GAM119800 precursor RNA, GAM282025 precursor RNA and GAM324303 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8151 RNA, GAM119800 RNA, GAM282025 RNA and GAM324303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8151 target RNA into GAM8151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119800 target RNA into GAM119800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282025 target RNA into GAM282025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM324303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324303 target RNA into GAM324303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR994 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR994 gene: GAM8151 target protein, GAM119800 target protein, GAM282025 target protein and GAM324303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8151, GAM119800, GAM282025 and GAM324303

GR995 BF509706 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 995(GR995) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR995 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR995 gene was detected is described hereinabove with reference to Figs. 8-18.

GR995 gene encodes GR995 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR995 precursor RNA folds spatially, forming GR995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR995 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR995 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1451 precursor RNA and GAM178177 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM1451 RNA and GAM178177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1451 target RNA into GAM1451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178177 target RNA into GAM178177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR995 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR995 gene: GAM1451 target protein and GAM178177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1451 and GAM178177

GR996 BG720716 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 996(GR996) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR996 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR996 gene was detected is described hereinabove with reference to Figs. 8-18.

GR996 gene encodes GR996 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR996 precursor RNA folds spatially, forming GR996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR996 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR996 precursor RNA comprises a plurality of segments,

the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1442 precursor RNA and GAM5395 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1442 RNA and GAM5395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1442 target RNA into GAM1442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5395 target RNA into GAM5395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR996 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR996 gene: GAM1442 target protein and GAM5395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1442 and GAM5395

GR997 BG827539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 997(GR997) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR997 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR997 gene was detected is described hereinabove with reference to Figs. 8-18.

GR997 gene encodes GR997 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR997 precursor RNA folds spatially, forming GR997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR997 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR997 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM878 precursor RNA and GAM23320 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM878 RNA and GAM23320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM878 target RNA into GAM878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23320 target RNA into GAM23320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR997 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR997 gene: GAM878 target protein and GAM23320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM878 and GAM23320

GR998 BM849488 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 998(GR998) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR998 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR998 gene was detected is described hereinabove with reference to Figs. 8-18.

GR998 gene encodes GR998 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR998 precursor RNA folds spatially, forming GR998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR998 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR998 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99529 precursor RNA and GAM188569 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99529 RNA and GAM188569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99529 target RNA into GAM99529 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188569 target RNA into GAM188569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR998 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR998 gene: GAM99529 target protein and GAM188569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99529 and GAM188569

GR999 T64641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 999(GR999) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR999 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR999 gene was detected is described hereinabove with reference to Figs. 8-18.

GR999 gene encodes GR999 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR999 precursor RNA folds spatially, forming GR999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR999 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR999 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM76805 precursor RNA and GAM105301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76805 RNA and GAM105301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76805 target RNA into GAM76805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105301 target RNA into GAM105301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR999 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR999 gene: GAM76805 target protein and GAM105301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76805 and GAM105301

GR1000 AI671733 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1000(GR1000) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1000 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1000 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1000 gene encodes GR1000 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1000 precursor RNA folds spatially, forming GR1000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1000 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1000 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2491 precursor RNA and GAM274711 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2491 RNA and GAM274711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2491 target RNA into GAM2491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274711 target RNA into GAM274711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1000 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1000 gene: GAM2491 target protein and GAM274711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2491 and GAM274711

GR1001 BE047594 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1001(GR1001) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1001 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1001 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1001 gene encodes GR1001 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1001 precursor RNA folds spatially, forming GR1001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1001 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1001 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1793 precursor RNA and GAM298934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1793 RNA and GAM298934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1793 target RNA into GAM1793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298934 target RNA into GAM298934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1001 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1001 gene: GAM1793 target protein and GAM298934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1793 and GAM298934

GR1002 BE901330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1002(GR1002) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1002 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1002 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1002 gene encodes GR1002 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1002 precursor RNA folds spatially, forming GR1002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1002 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1002 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2038 precursor RNA and GAM266454 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2038 RNA and GAM266454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2038 target RNA into GAM2038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266454 target RNA into GAM266454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1002 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1002 gene: GAM2038 target protein and GAM266454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2038 and GAM266454

GR1003 AW978610 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1003(GR1003) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1003 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1003 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1003 gene encodes GR1003 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1003 precursor RNA folds spatially, forming GR1003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1003 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1003 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3254 precursor RNA, GAM7016 precursor RNA and GAM30562 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3254 RNA, GAM7016 RNA and GAM30562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3254 target RNA into GAM3254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7016 target RNA into GAM7016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30562 target RNA into GAM30562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1003 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1003 gene: GAM3254 target protein, GAM7016 target protein and GAM30562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3254, GAM7016 and GAM30562

GR1004 BQ004353 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1004(GR1004) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1004 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1004 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1004 gene encodes GR1004 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1004 precursor RNA folds spatially, forming GR1004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1004 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1004 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178197 precursor RNA and GAM259881 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178197 RNA and GAM259881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178197 target RNA into GAM178197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259881 target RNA into GAM259881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1004 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1004 gene: GAM178197 target protein and GAM259881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178197 and GAM259881

GR1005 BG773828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1005(GR1005) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1005 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1005 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1005 gene encodes GR1005 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1005 precursor RNA folds spatially, forming GR1005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1005 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1005 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20781 precursor RNA and GAM132571 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20781 RNA and GAM132571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20781

target RNA into GAM20781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132571 target RNA into GAM132571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1005 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1005 gene: GAM20781 target protein and GAM132571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20781 and GAM132571

GR1006 AA622345 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1006(GR1006) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1006 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1006 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1006 gene encodes GR1006 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1006 precursor RNA folds spatially, forming GR1006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1006 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1006 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1678 precursor RNA and GAM3093 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1678 RNA and GAM3093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1678 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1678 target RNA into GAM1678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3093 target RNA into GAM3093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1006 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1006 gene: GAM1678 target protein and GAM3093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1678 and GAM3093

GR1007 BF569161 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1007(GR1007) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1007 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1007 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1007 gene encodes GR1007 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1007 precursor RNA folds spatially, forming GR1007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1007 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1007 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM185547 precursor RNA and GAM196817 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM185547 RNA and GAM196817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM185547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185547 target RNA into GAM185547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196817 target RNA into GAM196817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1007 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1007 gene: GAM185547 target protein and GAM196817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM185547 and GAM196817

GR1008 BG547758 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1008(GR1008) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1008 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1008 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1008 gene encodes GR1008 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1008 precursor RNA folds spatially, forming GR1008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1008 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1008 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58742 precursor RNA and GAM103473 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58742 RNA and GAM103473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58742 target RNA into GAM58742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103473 target RNA into GAM103473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1008 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1008 gene: GAM58742 target protein and GAM103473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58742 and GAM103473

GR1009 AL708961 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1009(GR1009) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1009 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1009 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1009 gene encodes GR1009 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1009 precursor RNA folds spatially, forming GR1009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1009 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1009 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7136 precursor RNA and GAM300958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7136 RNA and GAM300958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7136 target RNA into GAM7136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300958 target RNA into GAM300958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1009 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1009 gene: GAM7136 target protein and GAM300958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7136 and GAM300958

GR1010 AI688501 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1010(GR1010) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1010 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1010 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1010 gene encodes GR1010 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1010 precursor RNA folds spatially, forming GR1010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1010 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1010 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM44431 precursor RNA and GAM108614 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44431 RNA and GAM108614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44431 target RNA into GAM44431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108614 target RNA into GAM108614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1010 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1010 gene: GAM44431 target protein and GAM108614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44431 and GAM108614

GR1011 N39519 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1011(GR1011) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1011 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1011 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1011 gene encodes GR1011 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1011 precursor RNA folds spatially, forming GR1011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1011 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1011 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM216981 precursor RNA and GAM324664 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM216981 RNA and GAM324664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM216981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216981 target RNA into GAM216981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324664 target RNA into GAM324664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1011 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1011 gene: GAM216981 target protein and GAM324664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM216981 and GAM324664

GR1012 R98936 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1012(GR1012) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1012 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1012 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1012 gene encodes GR1012 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1012 precursor RNA folds spatially, forming GR1012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1012 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1012 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162451 precursor RNA and GAM176459 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162451 RNA and GAM176459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162451 target RNA into GAM162451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176459 target RNA into GAM176459 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1012 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1012 gene: GAM162451 target protein and GAM176459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162451 and GAM176459

GR1013 BF132994 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1013(GR1013) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1013 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1013 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1013 gene encodes GR1013 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1013 precursor RNA folds spatially, forming GR1013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1013 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1013 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54152 precursor RNA and GAM150091 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54152 RNA and GAM150091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM54152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54152 target RNA into GAM54152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150091 target RNA into GAM150091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1013 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1013 gene: GAM54152 target protein and GAM150091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54152 and GAM150091

GR1014 BI522786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1014(GR1014) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1014 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1014 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1014 gene encodes GR1014 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1014 precursor RNA folds spatially, forming GR1014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1014 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1014 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4

separate GAM precursor RNAs, GAM164052 precursor RNA, GAM262704 precursor RNA, GAM314536 precursor RNA and GAM323415 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164052 RNA, GAM262704 RNA, GAM314536 RNA and GAM323415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164052 target RNA into GAM164052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262704 target RNA into GAM262704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314536 target RNA into GAM314536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323415 target RNA into GAM323415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1014 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1014 gene: GAM164052 target protein, GAM262704 target protein, GAM314536 target protein and GAM323415

target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164052, GAM262704, GAM314536 and GAM323415

GR1015 BG575117 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1015(GR1015) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1015 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1015 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1015 gene encodes GR1015 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1015 precursor RNA folds spatially, forming GR1015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1015 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1015 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM540 precursor RNA and GAM259834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM540 RNA and GAM259834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM540 target RNA into GAM540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259834 target RNA into GAM259834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1015 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1015 gene: GAM540 target protein and GAM259834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM540 and GAM259834

GR1016 BE260656 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1016(GR1016) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1016 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1016 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1016 gene encodes GR1016 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1016 precursor RNA folds spatially, forming GR1016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1016 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1016 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7426 precursor RNA, GAM8405 precursor RNA and GAM112901 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7426 RNA, GAM8405 RNA and GAM112901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7426 target RNA into GAM7426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8405 target RNA into GAM8405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112901 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112901 target RNA into GAM112901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1016 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1016 gene: GAM7426 target protein, GAM8405 target protein and GAM112901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7426, GAM8405 and GAM112901

GR1017 AA148468 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1017(GR1017) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1017 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1017

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1017 gene encodes GR1017 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1017 precursor RNA folds spatially, forming GR1017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1017 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1017 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM147264 precursor RNA and GAM244067 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147264 RNA and GAM244067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147264 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147264 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147264 target RNA into GAM147264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244067 target RNA into GAM244067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1017 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1017 gene: GAM147264 target protein and GAM244067 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147264 and GAM244067

GR1018 AA293751 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1018(GR1018) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1018 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1018 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1018 gene encodes GR1018 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1018 precursor RNA folds spatially, forming GR1018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1018 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1018 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3840 precursor RNA and GAM27157 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3840 RNA and GAM27157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3840 target RNA into GAM3840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27157 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27157 target RNA into GAM27157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1018 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1018 gene: GAM3840 target protein and GAM27157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3840 and GAM27157

GR1019 BM810361 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1019(GR1019) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1019 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1019 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1019 gene encodes GR1019 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1019 precursor RNA folds spatially, forming GR1019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1019 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1019 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM119247 precursor RNA, GAM243042 precursor RNA and GAM307352 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119247 RNA, GAM243042 RNA and GAM307352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119247 target RNA into GAM119247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243042 target RNA into GAM243042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307352 target RNA into GAM307352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1019 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1019 gene: GAM119247 target protein, GAM243042 target protein and GAM307352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119247, GAM243042 and GAM307352

GR1020 AI818139 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1020(GR1020) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1020 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1020 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1020 gene encodes GR1020 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1020 precursor RNA folds spatially, forming GR1020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1020 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1020 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4706 precursor RNA and GAM310899 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4706 RNA and GAM310899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4706 target RNA into GAM4706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310899 target RNA into GAM310899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1020 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1020 gene: GAM4706 target protein and GAM310899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4706 and GAM310899

GR1021 BG179629 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1021(GR1021) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1021 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1021 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1021 gene encodes GR1021 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1021 precursor RNA folds spatially, forming GR1021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1021 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1021 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM136722 precursor RNA and GAM296652 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM136722 RNA and GAM296652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM136722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136722 target RNA into GAM136722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM296652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296652 target RNA into GAM296652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1021 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1021 gene: GAM136722 target protein and GAM296652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM136722 and GAM296652

GR1022 AW970041 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1022(GR1022) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1022 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1022 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1022 gene encodes GR1022 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1022 precursor RNA folds spatially, forming GR1022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1022 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1022 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3774 precursor RNA and GAM157325 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3774 RNA and GAM157325 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3774 target RNA into GAM3774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157325 target RNA into GAM157325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1022 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1022 gene: GAM3774 target protein and GAM157325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3774 and GAM157325

GR1023 AI700776 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1023(GR1023) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1023 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1023 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1023 gene encodes GR1023 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1023 precursor RNA folds spatially, forming GR1023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1023 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1023 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6053 precursor RNA, GAM86965 precursor RNA and GAM259730 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6053 RNA, GAM86965 RNA and GAM259730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6053 target RNA into GAM6053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86965 target RNA into GAM86965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259730 target RNA into GAM259730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1023 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1023 gene: GAM6053 target protein, GAM86965 target protein and GAM259730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6053, GAM86965 and

GAM259730

GR1024 AV652489 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1024(GR1024) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1024 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1024 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1024 gene encodes GR1024 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1024 precursor RNA folds spatially, forming GR1024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1024 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1024 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2699 precursor RNA, GAM3003 precursor RNA and GAM183223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2699 RNA, GAM3003 RNA and GAM183223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2699 target RNA into GAM2699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3003 target RNA into GAM3003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183223 target RNA into GAM183223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1024 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1024 gene: GAM2699 target protein, GAM3003 target protein and GAM183223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2699, GAM3003 and GAM183223

GR1025 AW861225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1025(GR1025) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1025 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1025 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1025 gene encodes GR1025 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1025 precursor RNA folds spatially, forming GR1025 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1025 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1025 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1025 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1071 precursor RNA, GAM292256 precursor RNA and GAM294636 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1071 RNA, GAM292256 RNA and GAM294636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1071 target RNA into GAM1071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292256 target RNA into GAM292256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294636 target RNA into GAM294636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1025 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1025 gene: GAM1071 target protein, GAM292256 target protein and GAM294636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1071, GAM292256 and GAM294636

GR1026 BM682061 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1026(GR1026) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1026 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1026 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1026 gene encodes GR1026 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1026 precursor RNA folds spatially, forming GR1026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1026 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1026 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM75846 precursor RNA, GAM137981 precursor RNA, GAM307830 precursor RNA and GAM329294 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM75846 RNA, GAM137981 RNA, GAM307830 RNA and GAM329294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75846 target RNA into GAM75846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137981

target RNA into GAM137981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307830 target RNA into GAM307830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329294 target RNA into GAM329294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1026 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1026 gene: GAM75846 target protein, GAM137981 target protein, GAM307830 target protein and GAM329294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75846, GAM137981, GAM307830 and GAM329294

GR1027 AI935377 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1027(GR1027) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1027 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1027 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1027 gene encodes GR1027 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1027 precursor RNA folds spatially, forming GR1027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1027 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1027 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM49102 precursor RNA, GAM160255 precursor RNA and GAM185724 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49102 RNA, GAM160255 RNA and GAM185724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49102 target RNA into GAM49102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160255 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160255 target RNA into GAM160255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185724 target RNA into GAM185724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1027 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1027 gene: GAM49102 target protein, GAM160255 target protein and GAM185724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49102, GAM160255 and

GAM185724

GR1028 AA868111 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1028(GR1028) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1028 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1028 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1028 gene encodes GR1028 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1028 precursor RNA folds spatially, forming GR1028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1028 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1028 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257799 precursor RNA and GAM320841 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257799 RNA and GAM320841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257799 target RNA into GAM257799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320841 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320841 target RNA into GAM320841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1028 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1028 gene: GAM257799 target protein and GAM320841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257799 and GAM320841

GR1029 AW271218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1029(GR1029) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1029 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1029 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1029 gene encodes GR1029 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1029 precursor RNA folds spatially, forming GR1029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1029 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1029 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217935 precursor RNA and GAM286412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217935 RNA and GAM286412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM217935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217935 target RNA into GAM217935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286412 target RNA into GAM286412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1029 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1029 gene: GAM217935 target protein and GAM286412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217935 and GAM286412

GR1030 BF827163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1030(GR1030) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1030 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1030 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1030 gene encodes GR1030 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1030 precursor RNA folds spatially, forming GR1030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1030 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1030 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3249 precursor RNA and GAM26145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3249 RNA and GAM26145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3249 target RNA into GAM3249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26145 target RNA into GAM26145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1030 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1030 gene: GAM3249 target protein and GAM26145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3249 and GAM26145

GR1031 BF126533 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1031(GR1031) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1031 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1031

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1031 gene encodes GR1031 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1031 precursor RNA folds spatially, forming GR1031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1031 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1031 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24324 precursor RNA, GAM119701 precursor RNA and GAM288485 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24324 RNA, GAM119701 RNA and GAM288485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24324 target RNA into GAM24324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119701 target RNA into GAM119701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288485 target RNA into GAM288485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1031 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1031 gene: GAM24324 target protein, GAM119701 target protein and GAM288485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24324, GAM119701 and GAM288485

GR1032 AI123607 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1032(GR1032) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1032 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1032 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1032 gene encodes GR1032 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1032 precursor RNA folds spatially, forming GR1032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1032 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1032 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116431 precursor RNA and GAM178196 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116431 RNA and GAM178196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116431 target RNA into GAM116431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178196 target RNA into GAM178196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1032 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1032 gene: GAM116431 target protein and GAM178196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116431 and GAM178196

GR1033 BG036364 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1033(GR1033) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1033 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1033 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1033 gene encodes GR1033 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1033 precursor RNA folds spatially, forming GR1033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1033 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1033 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1825 precursor RNA, GAM127912 precursor RNA and GAM314414 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1825 RNA, GAM127912 RNA and GAM314414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1825 target RNA into GAM1825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127912 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127912 target RNA into GAM127912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314414 target RNA into GAM314414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1033 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1033 gene: GAM1825 target protein, GAM127912 target protein and GAM314414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1825, GAM127912 and GAM314414

GR1034 AI287499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1034(GR1034) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1034 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1034 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1034 gene encodes GR1034 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1034 precursor RNA folds spatially, forming GR1034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1034 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1034 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59800 precursor RNA and GAM333498 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59800 RNA and GAM333498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59800 target RNA into GAM59800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333498 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333498 target RNA into GAM333498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1034 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1034 gene: GAM59800 target protein and GAM333498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59800 and GAM333498

GR1035 BQ051783 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1035(GR1035) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1035 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1035 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1035 gene encodes GR1035 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1035 precursor RNA folds spatially, forming GR1035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1035 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1035 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7178 precursor RNA and GAM294067 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7178 RNA and GAM294067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7178 target RNA into GAM7178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294067 target RNA into GAM294067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1035 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1035 gene: GAM7178 target protein and GAM294067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7178 and GAM294067

GR1036 BE777900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1036(GR1036) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1036 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1036 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1036 gene encodes GR1036 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1036 precursor RNA folds spatially, forming GR1036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1036 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1036 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM103734 precursor RNA and GAM224364 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103734 RNA and GAM224364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103734 target RNA into GAM103734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224364 target RNA into GAM224364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1036 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1036 gene: GAM103734 target protein and GAM224364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103734 and GAM224364

GR1037 AA442112 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1037(GR1037) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1037 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1037 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1037 gene encodes GR1037 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1037 precursor RNA folds spatially, forming GR1037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1037 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1037 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119587 precursor RNA and GAM175506 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119587 RNA and GAM175506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119587 target RNA into GAM119587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175506 target RNA into GAM175506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1037 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1037 gene: GAM119587 target protein and GAM175506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM119587 and GAM175506

GR1038 BM742994 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1038(GR1038) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1038 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1038 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1038 gene encodes GR1038 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1038 precursor RNA folds spatially, forming GR1038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1038 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1038 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79006 precursor RNA and GAM190285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79006 RNA and GAM190285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79006 target RNA into GAM79006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190285 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190285 target RNA into GAM190285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1038 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1038 gene: GAM79006 target protein and GAM190285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79006 and GAM190285

GR1039 AI654788 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1039(GR1039) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1039 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1039 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1039 gene encodes GR1039 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1039 precursor RNA folds spatially, forming GR1039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1039 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1039 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9212 precursor RNA and GAM180987 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9212 RNA and GAM180987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM9212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9212 target RNA into GAM9212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180987 target RNA into GAM180987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1039 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1039 gene: GAM9212 target protein and GAM180987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9212 and GAM180987

GR1040 BF108155 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1040(GR1040) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1040 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1040 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1040 gene encodes GR1040 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1040 precursor RNA folds spatially, forming GR1040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1040 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1040 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88672 precursor RNA and GAM277509 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88672 RNA and GAM277509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88672 target RNA into GAM88672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277509 target RNA into GAM277509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1040 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1040 gene: GAM88672 target protein and GAM277509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88672 and GAM277509

GR1041 BF700428 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1041(GR1041) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1041 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1041

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1041 gene encodes GR1041 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1041 precursor RNA folds spatially, forming GR1041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1041 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1041 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5393 precursor RNA, GAM7107 precursor RNA and GAM205044 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5393 RNA, GAM7107 RNA and GAM205044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5393 target RNA into GAM5393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7107 target RNA into GAM7107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205044 target RNA into GAM205044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1041 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1041 gene: GAM5393 target protein, GAM7107 target protein and GAM205044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5393, GAM7107 and GAM205044

GR1042 BG715316 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1042(GR1042) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1042 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1042 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1042 gene encodes GR1042 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1042 precursor RNA folds spatially, forming GR1042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1042 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1042 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4321 precursor RNA, GAM181118 precursor RNA and GAM276133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4321 RNA, GAM181118 RNA and GAM276133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM4321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4321 target RNA into GAM4321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181118 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181118 target RNA into GAM181118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276133 target RNA into GAM276133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1042 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1042 gene: GAM4321 target protein, GAM181118 target protein and GAM276133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4321, GAM181118 and GAM276133

GR1043 BE256554 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1043(GR1043) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1043 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1043 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1043 gene encodes GR1043 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1043 precursor RNA folds spatially, forming GR1043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1043 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1043 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM18995 precursor RNA and GAM99487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18995 RNA and GAM99487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18995 target RNA into GAM18995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99487 target RNA into GAM99487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1043 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1043 gene: GAM18995 target protein and GAM99487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18995 and GAM99487

GR1044 BG248117 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1044(GR1044) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1044 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1044 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1044 gene encodes GR1044 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1044 precursor RNA folds spatially, forming GR1044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1044 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1044 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM61606 precursor RNA, GAM109303 precursor RNA and GAM304870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM61606 RNA, GAM109303 RNA and GAM304870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM61606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61606 target RNA into GAM61606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109303 target RNA into GAM109303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304870 target RNA into GAM304870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1044 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1044 gene: GAM61606 target protein, GAM109303 target protein and GAM304870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM61606, GAM109303 and GAM304870

GR1045 BE089375 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1045(GR1045) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1045 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1045 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1045 gene encodes GR1045 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1045 precursor RNA folds spatially, forming GR1045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1045 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1045 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2109 precursor RNA and GAM6096 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2109 RNA and GAM6096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2109 target RNA into GAM2109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6096 target RNA into GAM6096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1045 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1045 gene: GAM2109 target protein and GAM6096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2109 and GAM6096

GR1046 BI906835 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1046(GR1046) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1046 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1046 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1046 gene encodes GR1046 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1046 precursor RNA folds spatially, forming GR1046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1046 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1046 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM169104 precursor RNA and GAM185818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM169104 RNA and GAM185818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM169104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169104 target RNA into GAM169104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185818 target RNA into GAM185818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1046 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1046 gene: GAM169104 target protein and GAM185818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM169104 and GAM185818

GR1047 BF305711 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1047(GR1047) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1047 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1047 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1047 gene encodes GR1047 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1047 precursor RNA folds spatially, forming GR1047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1047 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1047 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2512 precursor RNA and GAM50887 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2512 RNA and GAM50887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2512 target RNA into GAM2512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50887

target RNA into GAM50887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1047 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1047 gene: GAM2512 target protein and GAM50887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2512 and GAM50887

GR1048 AW593719 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1048(GR1048) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1048 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1048 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1048 gene encodes GR1048 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1048 precursor RNA folds spatially, forming GR1048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1048 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1048 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM176040 precursor RNA and GAM194301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM176040 RNA and GAM194301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM176040 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176040 target RNA into GAM176040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194301 target RNA into GAM194301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1048 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1048 gene: GAM176040 target protein and GAM194301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM176040 and GAM194301

GR1049 BM998062 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1049(GR1049) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1049 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1049 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1049 gene encodes GR1049 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1049 precursor RNA folds spatially, forming GR1049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1049 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1049 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1049 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5932 precursor RNA and GAM102866 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5932 RNA and GAM102866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5932 target RNA into GAM5932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102866 target RNA into GAM102866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1049 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1049 gene: GAM5932 target protein and GAM102866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5932 and GAM102866

GR1050 BF675085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1050(GR1050) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1050 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1050 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1050 gene encodes GR1050 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1050 precursor RNA folds spatially, forming GR1050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1050 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1050 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM93793 precursor RNA, GAM123977 precursor RNA, GAM185852 precursor RNA and GAM231238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93793 RNA, GAM123977 RNA, GAM185852 RNA and GAM231238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93793 target RNA into GAM93793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123977 target RNA into GAM123977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185852 target RNA into GAM185852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231238 target RNA into GAM231238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1050 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1050 gene: GAM93793 target protein, GAM123977 target protein, GAM185852 target protein and GAM231238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93793, GAM123977, GAM185852 and GAM231238

GR1051 BI548903 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1051(GR1051) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1051 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1051 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1051 gene encodes GR1051 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1051 precursor RNA folds spatially, forming GR1051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1051 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1051 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2422 precursor RNA, GAM3710 precursor RNA, GAM82958 precursor RNA and GAM289846 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2422 RNA, GAM3710 RNA, GAM82958 RNA and GAM289846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2422 target RNA into GAM2422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3710 target RNA into GAM3710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82958 target RNA into GAM82958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289846 target RNA into GAM289846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1051 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1051 gene: GAM2422 target protein, GAM3710 target protein, GAM82958 target protein and GAM289846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2422, GAM3710, GAM82958 and GAM289846

GR1052 BQ027873 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1052(GR1052) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1052 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1052 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1052 gene encodes GR1052 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1052 precursor RNA folds spatially, forming GR1052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1052 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1052 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41771 precursor RNA and GAM279865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41771 RNA and GAM279865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41771 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41771 target RNA into GAM41771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279865 target RNA into GAM279865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1052 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1052 gene: GAM41771 target protein and GAM279865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41771 and GAM279865

GR1053 BG216351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1053(GR1053) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1053 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1053 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1053 gene encodes GR1053 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1053 precursor RNA folds spatially, forming GR1053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1053 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1053 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM211940 precursor RNA and GAM219690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM211940 RNA and GAM219690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM211940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211940 target RNA into GAM211940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219690 target RNA into GAM219690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1053 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1053 gene: GAM211940 target protein and GAM219690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM211940 and GAM219690

GR1054 AA278577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1054(GR1054) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1054 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1054 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1054 gene encodes GR1054 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1054 precursor RNA folds spatially, forming GR1054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1054 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1054 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6086 precursor RNA, GAM191494 precursor RNA and GAM279152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6086 RNA, GAM191494 RNA and GAM279152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6086 target RNA into GAM6086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191494 target RNA into GAM191494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279152 target RNA into GAM279152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1054 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1054 gene: GAM6086 target protein, GAM191494 target protein and GAM279152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6086, GAM191494 and GAM279152

GR1055 BM803986 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1055(GR1055) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1055 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1055 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1055 gene encodes GR1055 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1055 precursor RNA folds spatially, forming GR1055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1055 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1055 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7023 precursor RNA, GAM200799 precursor RNA and GAM299518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7023 RNA, GAM200799 RNA and GAM299518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7023 target RNA into GAM7023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200799 target RNA into GAM200799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299518 target RNA into GAM299518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1055 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1055 gene: GAM7023 target protein, GAM200799 target protein and GAM299518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7023, GAM200799 and GAM299518

GR1056 AA424325 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1056(GR1056) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1056 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1056 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1056 gene encodes GR1056 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1056 precursor RNA folds spatially, forming GR1056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1056 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1056 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM141759 precursor RNA and GAM335986 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM141759 RNA and GAM335986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM141759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141759 target RNA into GAM141759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335986 target RNA into GAM335986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1056 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1056 gene: GAM141759 target protein and GAM335986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM141759 and GAM335986

GR1057 AW249037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1057(GR1057) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1057 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1057 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1057 gene encodes GR1057 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1057 precursor RNA folds spatially, forming GR1057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1057 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1057 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM102544 precursor RNA, GAM159319 precursor RNA and GAM191272 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102544 RNA, GAM159319 RNA and GAM191272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102544 target RNA into GAM102544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159319 target RNA into GAM159319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191272 target RNA into GAM191272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1057 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1057 gene: GAM102544 target protein, GAM159319 target protein and GAM191272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102544, GAM159319 and GAM191272

GR1058 BF897781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1058(GR1058) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1058 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1058 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1058 gene encodes GR1058 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1058 precursor RNA folds spatially, forming GR1058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1058 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1058 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36 precursor RNA and GAM6883 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36 RNA and GAM6883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of

Fig. 8, thereby inhibiting translation of GAM36 target RNA into GAM36 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6883 target RNA into GAM6883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1058 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1058 gene: GAM36 target protein and GAM6883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36 and GAM6883

GR1059 BF815060 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1059(GR1059) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1059 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1059 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1059 gene encodes GR1059 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1059 precursor RNA folds spatially, forming GR1059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1059 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1059 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67761 precursor RNA and GAM193025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67761 RNA and GAM193025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67761 target RNA into GAM67761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193025 target RNA into GAM193025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1059 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1059 gene: GAM67761 target protein and GAM193025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67761 and GAM193025

GR1060 BF984290 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1060(GR1060) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1060 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1060 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1060 gene encodes GR1060 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1060 precursor RNA folds spatially, forming GR1060 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1060 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1060 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1060 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM155124 precursor RNA and GAM252237 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM155124 RNA and GAM252237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM155124 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155124 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155124 target RNA into GAM155124 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252237 target RNA into GAM252237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1060 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1060 gene: GAM155124 target protein and GAM252237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM155124 and GAM252237

GR1061 BM726369 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1061(GR1061) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1061 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1061 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1061 gene encodes GR1061 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1061 precursor RNA folds spatially, forming GR1061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1061 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1061 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM275924 precursor RNA and GAM299456 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM275924 RNA and GAM299456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM275924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275924 target RNA into GAM275924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299456 target RNA into GAM299456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1061 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1061 gene: GAM275924 target protein and GAM299456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM275924 and GAM299456

GR1062 BI763434 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1062(GR1062) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1062 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1062 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1062 gene encodes GR1062 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1062 precursor RNA folds spatially, forming GR1062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1062 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1062 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96919 precursor RNA and GAM218911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96919 RNA and GAM218911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96919 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96919 target RNA into GAM96919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218911 target RNA into GAM218911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1062 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1062 gene: GAM96919 target protein and GAM218911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96919 and GAM218911

GR1063 AI733972 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1063(GR1063) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1063 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1063 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1063 gene encodes GR1063 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1063 precursor RNA folds spatially, forming GR1063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1063 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1063 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM84363 precursor RNA, GAM160270 precursor RNA

and GAM216826 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM84363 RNA, GAM160270 RNA and GAM216826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM84363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84363 target RNA into GAM84363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160270 target RNA into GAM160270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216826 target RNA into GAM216826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1063 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1063 gene: GAM84363 target protein, GAM160270 target protein and GAM216826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM84363, GAM160270 and GAM216826

GR1064 BF695153 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1064(GR1064) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1064 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1064 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1064 gene encodes GR1064 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1064 precursor RNA folds spatially, forming GR1064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1064 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1064 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5120 precursor RNA and GAM66866 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5120 RNA and GAM66866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5120 target RNA into GAM5120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66866 target RNA into GAM66866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1064 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1064 gene: GAM5120 target protein and GAM66866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5120 and GAM66866

GR1065 BF361001 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1065(GR1065) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1065 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1065 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1065 gene encodes GR1065 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1065 precursor RNA folds spatially, forming GR1065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1065 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1065 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48075 precursor RNA and GAM192205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48075 RNA and GAM192205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48075 target RNA into GAM48075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192205 target RNA into GAM192205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1065 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1065 gene: GAM48075 target protein and GAM192205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48075 and GAM192205

GR1066 AL704138 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1066(GR1066) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1066 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1066 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1066 gene encodes GR1066 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1066 precursor RNA folds spatially, forming GR1066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1066 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1066 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5244 precursor RNA, GAM56006 precursor RNA and GAM85623 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5244 RNA, GAM56006 RNA and GAM85623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5244 target RNA into GAM5244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56006 target RNA into GAM56006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85623 target RNA into GAM85623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1066 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1066 gene: GAM5244 target protein, GAM56006 target protein and GAM85623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5244, GAM56006 and GAM85623

GR1067 BM453114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1067(GR1067) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1067 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1067 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1067 gene encodes GR1067 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1067 precursor RNA folds spatially, forming GR1067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1067 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1067 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM66188 precursor RNA and GAM93148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM66188 RNA and GAM93148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM66188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66188 target RNA into GAM66188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93148 target RNA into GAM93148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1067 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1067 gene: GAM66188 target protein and GAM93148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM66188 and GAM93148

GR1068 AW579187 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1068(GR1068) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1068 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1068 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1068 gene encodes GR1068 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1068 precursor RNA folds spatially, forming GR1068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1068 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1068 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7886 precursor RNA, GAM139991 precursor RNA and GAM167637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7886 RNA, GAM139991 RNA and GAM167637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7886 target RNA into GAM7886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139991 target RNA into GAM139991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167637 target RNA into GAM167637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1068 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1068 gene: GAM7886 target protein, GAM139991 target protein and GAM167637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7886, GAM139991 and GAM167637

GR1069 BE540415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1069(GR1069) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1069 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1069 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1069 gene encodes GR1069 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1069 precursor RNA folds spatially, forming GR1069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1069 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1069 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20220 precursor RNA and GAM112159 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20220 RNA and GAM112159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20220 target RNA into GAM20220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112159 target RNA into GAM112159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1069 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1069 gene: GAM20220 target protein and GAM112159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20220 and GAM112159

GR1070 AI016229 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1070(GR1070) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1070 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1070 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1070 gene encodes GR1070 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1070 precursor RNA folds spatially, forming GR1070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1070 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1070 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1648 precursor RNA, GAM272890 precursor RNA and GAM336028 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1648 RNA, GAM272890 RNA and GAM336028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1648 target RNA into GAM1648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272890 target RNA into GAM272890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM336028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336028 target RNA into GAM336028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1070 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1070 gene: GAM1648 target protein, GAM272890 target protein and GAM336028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1648, GAM272890 and GAM336028

GR1071 BI861085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1071(GR1071) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1071 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1071 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1071 gene encodes GR1071 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1071 precursor RNA folds spatially, forming GR1071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1071 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1071 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM75914 precursor RNA and GAM135939 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM75914 RNA and GAM135939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75914 target RNA into GAM75914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135939 target RNA into GAM135939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1071 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1071 gene: GAM75914 target protein and GAM135939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75914 and GAM135939

GR1072 BE069322 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1072(GR1072) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1072 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1072 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1072 gene encodes GR1072 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1072 precursor RNA folds spatially, forming GR1072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1072 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1072 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2897 precursor RNA, GAM6395 precursor RNA and GAM262277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2897 RNA, GAM6395 RNA and GAM262277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2897 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2897 target RNA into GAM2897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6395 target RNA into GAM6395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262277 target RNA into GAM262277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1072 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1072 gene: GAM2897 target protein, GAM6395 target protein and GAM262277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM2897, GAM6395 and GAM262277

GR1073 BF526736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1073(GR1073) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1073 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1073 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1073 gene encodes GR1073 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1073 precursor RNA folds spatially, forming GR1073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1073 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1073 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM52920 precursor RNA and GAM273550 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52920 RNA and GAM273550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52920 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52920 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52920 target RNA into GAM52920 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM273550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273550 target RNA into GAM273550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1073 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1073 gene: GAM52920 target protein and GAM273550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52920 and GAM273550

GR1074 AI829443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1074(GR1074) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1074 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1074 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1074 gene encodes GR1074 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1074 precursor RNA folds spatially, forming GR1074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1074 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1074 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6871 precursor RNA and GAM7285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6871 RNA and GAM7285 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6871 target RNA into GAM6871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7285 target RNA into GAM7285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1074 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1074 gene: GAM6871 target protein and GAM7285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6871 and GAM7285

GR1075 BM893920 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1075(GR1075) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1075 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1075 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1075 gene encodes GR1075 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1075 precursor RNA folds spatially, forming GR1075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1075 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1075 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3011 precursor RNA and GAM186215 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3011 RNA and GAM186215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3011 target RNA into GAM3011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186215 target RNA into GAM186215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1075 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1075 gene: GAM3011 target protein and GAM186215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3011 and GAM186215

GR1076 AA128131 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1076(GR1076) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1076 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1076 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1076 gene encodes GR1076 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1076 precursor RNA folds spatially, forming GR1076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1076 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1076 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM38202 precursor RNA, GAM67376 precursor RNA and GAM291277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38202 RNA, GAM67376 RNA and GAM291277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38202 target RNA into GAM38202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67376 target RNA into GAM67376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291277 target RNA into GAM291277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1076 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1076 gene: GAM38202 target protein, GAM67376 target protein and GAM291277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM38202, GAM67376 and GAM291277

GR1077 AA527466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1077(GR1077) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1077 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1077 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1077 gene encodes GR1077 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1077 precursor RNA folds spatially, forming GR1077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1077 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1077 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4385 precursor RNA and GAM6931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4385 RNA and GAM6931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM4385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4385 target RNA into GAM4385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6931 target RNA into GAM6931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1077 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1077 gene: GAM4385 target protein and GAM6931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4385 and GAM6931

GR1078 BE783923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1078(GR1078) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1078 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1078 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1078 gene encodes GR1078 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1078 precursor RNA folds spatially, forming GR1078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1078 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1078 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88207 precursor RNA and GAM135975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88207 RNA and GAM135975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88207 target RNA into GAM88207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135975 target RNA into GAM135975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1078 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1078 gene: GAM88207 target protein and GAM135975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88207 and GAM135975

GR1079 AW965387 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1079(GR1079) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1079 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1079

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1079 gene encodes GR1079 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1079 precursor RNA folds spatially, forming GR1079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1079 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1079 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2929 precursor RNA and GAM328915 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2929 RNA and GAM328915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2929 target RNA into GAM2929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328915 target RNA into GAM328915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1079 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1079 gene: GAM2929 target protein and GAM328915 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2929 and GAM328915

GR1080 BG170353 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1080(GR1080) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1080 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1080 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1080 gene encodes GR1080 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1080 precursor RNA folds spatially, forming GR1080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1080 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1080 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1615 precursor RNA and GAM264714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1615 RNA and GAM264714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1615 target RNA into GAM1615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264714 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264714 target RNA into GAM264714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1080 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1080 gene: GAM1615 target protein and GAM264714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1615 and GAM264714

GR1081 AA633639 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1081(GR1081) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1081 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1081 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1081 gene encodes GR1081 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1081 precursor RNA folds spatially, forming GR1081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1081 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1081 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM61655 precursor RNA and GAM137801 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM61655 RNA and GAM137801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM61655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61655 target RNA into GAM61655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137801 target RNA into GAM137801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1081 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1081 gene: GAM61655 target protein and GAM137801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM61655 and GAM137801

GR1082 BG433481 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1082(GR1082) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1082 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1082 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1082 gene encodes GR1082 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1082 precursor RNA folds spatially, forming GR1082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1082 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1082 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM244436 precursor RNA and GAM334160 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM244436 RNA and GAM334160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM244436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244436 target RNA into GAM244436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334160 target RNA into GAM334160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1082 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1082 gene: GAM244436 target protein and GAM334160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM244436 and GAM334160

GR1083 BE383577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1083(GR1083) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1083 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1083 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1083 gene encodes GR1083 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1083 precursor RNA folds spatially, forming GR1083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1083 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1083 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM174 precursor RNA, GAM6927 precursor RNA and GAM97393 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM174 RNA, GAM6927 RNA and GAM97393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174 target RNA into GAM174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6927 target RNA into GAM6927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97393 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97393 target RNA into GAM97393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1083 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1083 gene: GAM174 target protein, GAM6927 target protein and GAM97393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM174, GAM6927 and GAM97393

GR1084 AV705618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1084(GR1084) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1084 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1084 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1084 gene encodes GR1084 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1084 precursor RNA folds spatially, forming GR1084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1084 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1084 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM941 precursor RNA and GAM207345 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM941 RNA and GAM207345 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM941 target RNA into GAM941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207345 target RNA into GAM207345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1084 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1084 gene: GAM941 target protein and GAM207345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM941 and GAM207345

GR1085 W68265 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1085(GR1085) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1085 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1085 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1085 gene encodes GR1085 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1085 precursor RNA folds spatially, forming GR1085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1085 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1085 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98269 precursor RNA and GAM244115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98269 RNA and GAM244115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98269 target RNA into GAM98269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244115 target RNA into GAM244115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1085 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1085 gene: GAM98269 target protein and GAM244115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98269 and GAM244115

GR1086 BG491490 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1086(GR1086) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1086 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1086 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1086 gene encodes GR1086 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1086 precursor RNA folds spatially, forming GR1086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1086 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1086 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2594 precursor RNA and GAM19016 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2594 RNA and GAM19016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2594 target RNA into GAM2594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19016 target RNA into GAM19016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1086 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1086 gene: GAM2594 target

protein and GAM19016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2594 and GAM19016

GR1087 BE397516 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1087(GR1087) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1087 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1087 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1087 gene encodes GR1087 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1087 precursor RNA folds spatially, forming GR1087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1087 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1087 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM199748 precursor RNA and GAM270938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM199748 RNA and GAM270938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM199748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199748 target RNA into GAM199748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270938 target RNA into GAM270938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1087 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1087 gene: GAM199748 target protein and GAM270938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM199748 and GAM270938

GR1088 BF340741 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1088(GR1088) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1088 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1088 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1088 gene encodes GR1088 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1088 precursor RNA folds spatially, forming GR1088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1088 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1088 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14935 precursor RNA and GAM41395 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14935 RNA and GAM41395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14935 target RNA into GAM14935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM41395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41395 target RNA into GAM41395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1088 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1088 gene: GAM14935 target protein and GAM41395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14935 and GAM41395

GR1089 F09507 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1089(GR1089) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1089 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1089 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1089 gene encodes GR1089 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1089 precursor RNA folds spatially, forming GR1089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1089 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1089 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6891 precursor RNA and GAM189306 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6891 RNA and GAM189306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6891 target RNA into GAM6891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189306 target RNA into GAM189306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1089 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1089 gene: GAM6891 target protein and GAM189306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6891 and GAM189306

GR1090 BG938921 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1090(GR1090) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1090 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1090 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1090 gene encodes GR1090 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1090 precursor RNA folds spatially, forming GR1090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1090 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1090 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6916 precursor RNA, GAM81206 precursor RNA and GAM234005 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6916 RNA, GAM81206 RNA and GAM234005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6916 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6916 target RNA into GAM6916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81206 target RNA into GAM81206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM234005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234005 target RNA into GAM234005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1090 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1090 gene: GAM6916 target protein, GAM81206 target protein and GAM234005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6916, GAM81206 and GAM234005

GR1091 AA464277 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1091(GR1091) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1091 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1091 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1091 gene encodes GR1091 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1091 precursor RNA folds spatially, forming GR1091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1091 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1091 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115 precursor RNA and GAM128877 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM115 RNA and GAM128877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115 target RNA into GAM115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128877 target RNA into GAM128877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1091 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1091 gene: GAM115 target protein and GAM128877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115 and GAM128877

GR1092 AI521369 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1092(GR1092) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1092 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1092 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1092 gene encodes GR1092 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1092 precursor RNA folds spatially, forming GR1092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1092 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1092 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2576 precursor RNA, GAM177167 precursor RNA and GAM282196 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2576 RNA, GAM177167 RNA and GAM282196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2576 target RNA into GAM2576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177167 target RNA into GAM177167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282196 target RNA into GAM282196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1092 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1092 gene: GAM2576 target protein, GAM177167 target protein and GAM282196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM2576, GAM177167 and GAM282196

GR1093 BG116135 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1093(GR1093) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1093 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1093 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1093 gene encodes GR1093 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1093 precursor RNA folds spatially, forming GR1093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1093 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1093 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4525 precursor RNA, GAM87765 precursor RNA and GAM208238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4525 RNA, GAM87765 RNA and GAM208238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4525 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4525 target RNA into GAM4525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87765 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87765 target RNA into GAM87765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208238 target RNA into GAM208238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1093 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1093 gene: GAM4525 target protein, GAM87765 target protein and GAM208238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4525, GAM87765 and GAM208238

GR1094 BF082074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1094(GR1094) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1094 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1094 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1094 gene encodes GR1094 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1094 precursor RNA folds spatially, forming GR1094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1094 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1094 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM106120 precursor RNA and GAM203752 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106120 RNA and GAM203752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106120 target RNA into GAM106120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203752 target RNA into GAM203752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1094 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1094 gene: GAM106120 target protein and GAM203752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106120 and GAM203752

GR1095 AW577146 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1095(GR1095) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1095 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1095 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1095 gene encodes GR1095 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1095 precursor RNA folds spatially, forming GR1095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1095 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1095 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM134 precursor RNA, GAM62518 precursor RNA and GAM207062 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM134 RNA, GAM62518 RNA and GAM207062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134 target RNA into GAM134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62518 target RNA into GAM62518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207062 target RNA into GAM207062 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1095 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1095 gene: GAM134 target protein, GAM62518 target protein and GAM207062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM134, GAM62518 and GAM207062

GR1096 AI801578 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1096(GR1096) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1096 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1096 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1096 gene encodes GR1096 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1096 precursor RNA folds spatially, forming GR1096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1096 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1096 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4618 precursor RNA, GAM7391 precursor RNA and GAM8045 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4618 RNA, GAM7391 RNA and GAM8045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4618 target RNA into GAM4618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7391 target RNA into GAM7391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8045 target RNA into GAM8045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1096 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1096 gene: GAM4618 target protein, GAM7391 target protein and GAM8045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4618, GAM7391 and GAM8045

GR1097 BI255324 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1097(GR1097) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1097 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1097 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1097 gene encodes GR1097 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1097 precursor RNA folds spatially, forming GR1097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1097 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1097 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM138817 precursor RNA and GAM203365 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM138817 RNA and GAM203365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM138817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138817 target RNA into GAM138817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203365 target RNA into GAM203365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1097 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1097 gene: GAM138817 target protein and GAM203365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM138817 and GAM203365

GR1098 BI760452 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1098(GR1098) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1098 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1098 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1098 gene encodes GR1098 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1098 precursor RNA folds spatially, forming GR1098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1098 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1098 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57324 precursor RNA and GAM170283 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57324 RNA and GAM170283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57324 target RNA into GAM57324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170283 target RNA into GAM170283 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1098 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1098 gene: GAM57324 target protein and GAM170283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57324 and GAM170283

GR1099 BE245157 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1099(GR1099) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1099 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1099 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1099 gene encodes GR1099 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1099 precursor RNA folds spatially, forming GR1099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1099 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1099 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4444 precursor RNA and GAM50733 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4444 RNA and GAM50733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4444 target RNA into GAM4444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50733 target RNA into GAM50733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1099 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1099 gene: GAM4444 target protein and GAM50733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4444 and GAM50733

GR1100 BF978134 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1100(GR1100) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1100 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1100 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1100 gene encodes GR1100 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1100 precursor RNA folds spatially, forming GR1100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1100 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1100 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM8211 precursor RNA and GAM25810 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8211 RNA and GAM25810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8211 target RNA into GAM8211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM25810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25810 target RNA into GAM25810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1100 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1100 gene: GAM8211 target protein and GAM25810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8211 and GAM25810

GR1101 BM560915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1101(GR1101) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1101 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1101 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1101 gene encodes GR1101 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1101 precursor RNA folds spatially, forming GR1101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1101 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1101 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4450 precursor RNA and GAM100016 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4450 RNA and GAM100016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4450 target RNA into GAM4450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100016 target RNA into GAM100016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1101 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1101 gene: GAM4450 target protein and GAM100016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4450 and GAM100016

GR1102 H45871 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1102(GR1102) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1102 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1102 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1102 gene encodes GR1102 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1102 precursor RNA folds spatially, forming GR1102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1102 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1102 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1613 precursor RNA and GAM108635 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1613 RNA and GAM108635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1613 target RNA into GAM1613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108635 target RNA into GAM108635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1102 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1102 gene: GAM1613 target protein and GAM108635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1613 and GAM108635

GR1103 BF592372 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1103(GR1103) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1103 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1103 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1103 gene encodes GR1103 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1103 precursor RNA folds spatially, forming GR1103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1103 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1103 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63451 precursor RNA, GAM172454 precursor RNA and GAM330221 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63451 RNA, GAM172454 RNA and GAM330221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63451 target RNA into GAM63451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172454 target RNA into GAM172454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330221 target RNA into GAM330221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1103 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1103 gene: GAM63451 target protein, GAM172454 target protein and GAM330221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63451, GAM172454 and GAM330221

GR1104 AI222924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1104(GR1104) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1104 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1104 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1104 gene encodes GR1104 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1104 precursor RNA folds spatially, forming GR1104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1104 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1104 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17818 precursor RNA and GAM323174 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17818 RNA and GAM323174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17818 target RNA into GAM17818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323174 target RNA into GAM323174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1104 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1104 gene: GAM17818 target protein and GAM323174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17818 and GAM323174

GR1105 BE732198 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1105(GR1105) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1105 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1105 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1105 gene encodes GR1105 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1105 precursor RNA folds spatially, forming GR1105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1105 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1105 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6145 precursor RNA, GAM8088 precursor RNA, GAM59500 precursor RNA and GAM302144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6145 RNA, GAM8088 RNA, GAM59500 RNA and GAM302144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6145 target RNA into GAM6145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM8088 target RNA into GAM8088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59500 target RNA into GAM59500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302144 target RNA into GAM302144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1105 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1105 gene: GAM6145 target protein, GAM8088 target protein, GAM59500 target protein and GAM302144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6145, GAM8088, GAM59500 and GAM302144

GR1106 BI767711 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1106(GR1106) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1106 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1106 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1106 gene encodes GR1106 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1106 precursor RNA folds spatially, forming GR1106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1106 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1106 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM33 precursor RNA, GAM7458 precursor RNA, GAM212600 precursor RNA and GAM233554 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33 RNA, GAM7458 RNA, GAM212600 RNA and GAM233554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33 target RNA into GAM33 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7458 target RNA into GAM7458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212600 target RNA into GAM212600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233554 target RNA into GAM233554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1106 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1106 gene: GAM33 target protein, GAM7458 target protein, GAM212600 target protein and GAM233554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33, GAM7458, GAM212600 and GAM233554

GR1107 AI768321 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1107(GR1107) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1107 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1107 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1107 gene encodes GR1107 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1107 precursor RNA folds spatially, forming GR1107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1107 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1107 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3142 precursor RNA, GAM87174 precursor RNA and GAM320019 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3142 RNA, GAM87174 RNA and GAM320019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3142 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3142 target RNA into GAM3142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87174 target RNA into GAM87174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320019 target RNA into GAM320019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1107 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1107 gene: GAM3142 target protein, GAM87174 target protein and GAM320019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3142, GAM87174 and GAM320019

GR1108 BE464779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1108(GR1108) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1108 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1108 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1108 gene encodes GR1108 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1108 precursor RNA folds spatially, forming GR1108 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1108 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1108 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM635 precursor RNA and GAM159109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM635 RNA and GAM159109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM635 target RNA into GAM635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159109 target RNA into GAM159109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1108 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1108 gene: GAM635 target protein and GAM159109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM635 and GAM159109

GR1109 BG255022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1109(GR1109) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1109 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1109 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1109 gene encodes GR1109 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1109 precursor RNA folds spatially, forming GR1109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1109 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1109 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67786 precursor RNA and GAM290755 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67786 RNA and GAM290755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67786 target RNA into GAM67786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290755 target RNA into GAM290755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1109 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1109 gene: GAM67786 target protein and GAM290755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67786 and GAM290755

GR1110 BI459482 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1110(GR1110) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1110 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1110 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1110 gene encodes GR1110 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1110 precursor RNA folds spatially, forming GR1110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1110 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1110 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4300 precursor RNA, GAM5878 precursor RNA and GAM184144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4300 RNA, GAM5878 RNA and GAM184144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4300 target RNA into GAM4300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5878 target RNA into GAM5878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184144 target RNA into GAM184144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1110 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1110 gene: GAM4300 target protein, GAM5878 target protein and GAM184144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4300, GAM5878 and GAM184144

GR1111 AA975010 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1111(GR1111) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1111 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1111 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1111 gene encodes GR1111 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1111 precursor RNA folds spatially, forming GR1111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1111 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1111 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1983 precursor RNA and GAM113208 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1983 RNA and GAM113208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1983 target RNA into GAM1983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113208 target RNA into GAM113208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1111 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1111 gene: GAM1983 target protein and GAM113208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1983 and GAM113208

GR1112 AA454647 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1112(GR1112) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1112 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1112 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1112 gene encodes GR1112 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1112 precursor RNA folds spatially, forming GR1112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1112 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1112 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2054 precursor RNA, GAM18639 precursor RNA and GAM289300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2054 RNA, GAM18639 RNA and GAM289300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2054 target RNA into GAM2054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM18639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18639 target RNA into GAM18639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289300 target RNA into GAM289300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1112 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1112 gene: GAM2054 target protein, GAM18639 target protein and GAM289300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2054, GAM18639 and GAM289300

GR1113 BE155004 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1113(GR1113) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1113 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1113 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1113 gene encodes GR1113 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1113 precursor RNA folds spatially, forming GR1113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1113 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1113 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM173642 precursor RNA, GAM248758 precursor RNA and GAM291960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173642 RNA, GAM248758 RNA and GAM291960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173642 target RNA into GAM173642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248758 target RNA into GAM248758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291960 target RNA into GAM291960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1113 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1113 gene: GAM173642 target protein, GAM248758 target protein and GAM291960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173642, GAM248758 and GAM291960

GR1114 BG496045 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1114(GR1114) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1114 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1114 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1114 gene encodes GR1114 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1114 precursor RNA folds spatially, forming GR1114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1114 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1114 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2368 precursor RNA, GAM271955 precursor RNA and GAM309656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2368 RNA, GAM271955 RNA and GAM309656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2368 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2368 target RNA into GAM2368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271955 target RNA into GAM271955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309656 target RNA into GAM309656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1114 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1114 gene: GAM2368 target protein, GAM271955 target protein and GAM309656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2368, GAM271955 and GAM309656

GR1115 AI752022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1115(GR1115) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1115 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1115 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1115 gene encodes GR1115 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1115 precursor RNA folds spatially, forming GR1115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1115 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1115 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2947 precursor RNA, GAM25779 precursor RNA and GAM146974 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2947 RNA, GAM25779 RNA and GAM146974 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2947 target RNA into GAM2947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM25779 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25779 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25779 target RNA into GAM25779 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146974 target RNA into GAM146974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1115 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1115 gene: GAM2947 target protein, GAM25779 target protein and GAM146974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2947, GAM25779 and GAM146974

GR1116 BG744391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1116(GR1116) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1116 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1116 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1116 gene encodes GR1116 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1116 precursor RNA folds spatially, forming GR1116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1116 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1116 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM64405 precursor RNA, GAM78693 precursor RNA, GAM97491 precursor RNA and GAM328812 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64405 RNA, GAM78693 RNA, GAM97491 RNA and GAM328812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64405 target RNA into GAM64405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78693 target RNA into GAM78693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97491 target RNA into GAM97491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328812 target RNA into GAM328812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1116 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1116 gene: GAM64405 target protein, GAM78693 target protein, GAM97491 target protein and GAM328812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64405, GAM78693, GAM97491 and GAM328812

GR1117 BF092861 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1117(GR1117) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1117 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1117 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1117 gene encodes GR1117 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1117 precursor RNA folds spatially, forming GR1117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1117 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1117 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1202 precursor RNA, GAM7578 precursor RNA, GAM134049 precursor RNA and GAM202491 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1202 RNA, GAM7578 RNA, GAM134049 RNA and GAM202491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1202 target RNA into GAM1202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7578 target RNA into GAM7578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134049 target RNA into GAM134049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202491 target RNA into GAM202491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1117 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1117 gene: GAM1202 target protein, GAM7578 target protein, GAM134049 target protein and GAM202491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1202, GAM7578, GAM134049 and GAM202491

GR1118 BE392043 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1118(GR1118) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1118 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1118 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1118 gene encodes GR1118 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1118 precursor RNA folds spatially, forming GR1118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1118 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1118 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93873 precursor RNA and GAM220113 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93873 RNA and GAM220113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93873 target RNA into GAM93873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220113 target RNA into GAM220113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1118 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1118 gene: GAM93873 target protein and GAM220113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93873 and GAM220113

GR1119 BG620780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1119(GR1119) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1119 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1119 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1119 gene encodes GR1119 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1119 precursor RNA folds spatially, forming GR1119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1119 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1119 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM3950 precursor RNA, GAM5206 precursor RNA, GAM6712 precursor RNA, GAM131234 precursor RNA and GAM330543 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3950 RNA, GAM5206 RNA, GAM6712 RNA, GAM131234 RNA and GAM330543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3950 target RNA into GAM3950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5206 target RNA into GAM5206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6712 target RNA into GAM6712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131234 target RNA into GAM131234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330543 target RNA into GAM330543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1119 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1119 gene: GAM3950 target protein, GAM5206 target protein, GAM6712 target protein, GAM131234 target protein and GAM330543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM3950, GAM5206, GAM6712, GAM131234 and GAM330543

GR1120 AA989453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1120(GR1120) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1120 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1120 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1120 gene encodes GR1120 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1120 precursor RNA folds spatially, forming GR1120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1120 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1120 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100857 precursor RNA and GAM137690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100857 RNA and GAM137690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100857 target RNA into GAM100857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137690 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137690 target RNA into GAM137690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1120 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1120 gene: GAM100857 target protein and GAM137690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100857 and GAM137690

GR1121 BG988676 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1121(GR1121) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1121 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1121 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1121 gene encodes GR1121 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1121 precursor RNA folds spatially, forming GR1121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1121 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1121 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM124008 precursor RNA and GAM219793 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM124008 RNA and GAM219793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM124008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124008 target RNA into GAM124008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219793 target RNA into GAM219793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1121 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1121 gene: GAM124008 target protein and GAM219793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM124008 and GAM219793

GR1122 BE973284 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1122(GR1122) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1122 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1122 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1122 gene encodes GR1122 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1122 precursor RNA folds spatially, forming GR1122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1122 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1122 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM87485 precursor RNA, GAM109173 precursor RNA and GAM150934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87485 RNA, GAM109173 RNA and GAM150934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87485 target RNA into GAM87485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109173 target RNA into GAM109173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150934 target RNA into GAM150934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1122 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1122 gene: GAM87485 target protein, GAM109173 target protein and GAM150934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87485, GAM109173 and GAM150934

GR1123 AA737636 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1123(GR1123) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1123 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1123 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1123 gene encodes GR1123 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1123 precursor RNA folds spatially, forming GR1123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1123 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1123 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM177212 precursor RNA and GAM239873 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177212 RNA and GAM239873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM177212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177212 target RNA into GAM177212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239873 target RNA into GAM239873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1123 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1123 gene: GAM177212 target protein and GAM239873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177212 and GAM239873

GR1124 BG700990 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1124(GR1124) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1124 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1124 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1124 gene encodes GR1124 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1124 precursor RNA folds spatially, forming GR1124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1124 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1124 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3493 precursor RNA, GAM6207 precursor RNA, GAM153367 precursor RNA and GAM216780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3493 RNA, GAM6207 RNA, GAM153367 RNA and GAM216780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of

which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3493 target RNA into GAM3493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6207 target RNA into GAM6207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM153367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153367 target RNA into GAM153367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216780 target RNA into GAM216780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1124 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1124 gene: GAM3493 target protein, GAM6207 target protein, GAM153367 target protein and GAM216780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3493, GAM6207, GAM153367 and GAM216780

GR1125 BG476641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1125(GR1125) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1125 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1125 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1125 gene encodes GR1125 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1125 precursor RNA folds spatially, forming GR1125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1125 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1125 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4930 precursor RNA and GAM7251 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4930 RNA and GAM7251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4930 target RNA into GAM4930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7251 target RNA into GAM7251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1125 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1125 gene: GAM4930 target protein and GAM7251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4930 and GAM7251

GR1126 AA483983 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1126(GR1126) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1126 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1126 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1126 gene encodes GR1126 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1126 precursor RNA folds spatially, forming GR1126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1126 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1126 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1535 precursor RNA and GAM3025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1535 RNA and GAM3025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1535 target RNA into GAM1535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3025 target RNA into GAM3025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1126 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1126 gene: GAM1535 target protein and GAM3025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1535 and GAM3025

GR1127 BF197077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1127(GR1127) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1127 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1127 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1127 gene encodes GR1127 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1127 precursor RNA folds spatially, forming GR1127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1127 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1127 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8143 precursor RNA and GAM205404 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8143 RNA and GAM205404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8143 target RNA into GAM8143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205404 target RNA into GAM205404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1127 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1127 gene: GAM8143 target protein and GAM205404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8143 and GAM205404

GR1128 AA679828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1128(GR1128) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1128 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1128 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1128 gene encodes GR1128 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1128 precursor RNA folds spatially, forming GR1128 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1128 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1128 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100108 precursor RNA and GAM299292 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100108 RNA and GAM299292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100108 target RNA into GAM100108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299292 target RNA into GAM299292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1128 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1128 gene: GAM100108 target protein and GAM299292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100108 and GAM299292

GR1129 BQ068424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1129(GR1129) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1129 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1129 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1129 gene encodes GR1129 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1129 precursor RNA folds spatially, forming GR1129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1129 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1129 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53299 precursor RNA and GAM244002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53299 RNA and GAM244002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53299 target RNA into GAM53299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244002 target RNA into GAM244002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1129 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1129 gene: GAM53299 target protein and GAM244002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53299 and GAM244002

GR1130 BG248626 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1130(GR1130) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1130 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1130 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1130 gene encodes GR1130 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1130 precursor RNA folds spatially, forming GR1130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1130 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1130 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM239407 precursor RNA and GAM246065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM239407 RNA and GAM246065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM239407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239407 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239407 target RNA into GAM239407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246065 target RNA into GAM246065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1130 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1130 gene: GAM239407 target protein and GAM246065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM239407 and GAM246065

GR1131 BM782367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1131(GR1131) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1131 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1131 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1131 gene encodes GR1131 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1131 precursor RNA folds spatially, forming GR1131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1131 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1131 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM90455 precursor RNA, GAM196319 precursor RNA

and GAM260145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90455 RNA, GAM196319 RNA and GAM260145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90455 target RNA into GAM90455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196319 target RNA into GAM196319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260145 target RNA into GAM260145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1131 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1131 gene: GAM90455 target protein, GAM196319 target protein and GAM260145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90455, GAM196319 and GAM260145

GR1132 BG105948 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1132(GR1132) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1132 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1132 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1132 gene encodes GR1132 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1132 precursor RNA folds spatially, forming GR1132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1132 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1132 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132223 precursor RNA and GAM164971 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132223 RNA and GAM164971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132223 target RNA into GAM132223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164971 target RNA into GAM164971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1132 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1132 gene: GAM132223 target protein and GAM164971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132223 and GAM164971

GR1133 AA918415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1133(GR1133) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1133 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1133 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1133 gene encodes GR1133 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1133 precursor RNA folds spatially, forming GR1133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1133 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1133 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4881 precursor RNA, GAM67567 precursor RNA and GAM281130 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4881 RNA, GAM67567 RNA and GAM281130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4881 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4881 target RNA into GAM4881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67567 target RNA into GAM67567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281130 target RNA into GAM281130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1133 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1133 gene: GAM4881 target protein, GAM67567 target protein and GAM281130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4881, GAM67567 and GAM281130

GR1134 BI819534 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1134(GR1134) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1134 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1134 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1134 gene encodes GR1134 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1134 precursor RNA folds spatially, forming GR1134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1134 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1134 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM145972 precursor RNA and GAM280683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM145972 RNA and GAM280683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM145972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145972 target RNA into GAM145972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280683 target RNA into GAM280683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1134 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1134 gene: GAM145972 target protein and GAM280683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM145972 and GAM280683

GR1135 BM663186 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1135(GR1135) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1135 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1135 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1135 gene encodes GR1135 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1135 precursor RNA folds spatially, forming GR1135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1135 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1135 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM166613 precursor RNA and GAM186637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM166613 RNA and GAM186637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM166613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166613 target RNA into GAM166613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186637 target RNA into GAM186637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1135 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1135 gene: GAM166613 target protein and GAM186637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM166613 and GAM186637

GR1136 BF971467 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1136(GR1136) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1136 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1136 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1136 gene encodes GR1136 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1136 precursor RNA folds spatially, forming GR1136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1136 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1136 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3690 precursor RNA and GAM194691 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3690 RNA and GAM194691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3690 target RNA into GAM3690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194691 target RNA into GAM194691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1136 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1136 gene: GAM3690 target protein and GAM194691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3690 and GAM194691

GR1137 T98770 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1137(GR1137) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1137 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1137 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1137 gene encodes GR1137 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1137 precursor RNA folds spatially, forming GR1137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1137 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1137 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16251 precursor RNA and GAM127233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16251 RNA and GAM127233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16251 target RNA into GAM16251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127233 target RNA into GAM127233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1137 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1137 gene: GAM16251 target protein and GAM127233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16251 and GAM127233

GR1138 R28190 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1138(GR1138) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1138 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1138 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1138 gene encodes GR1138 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1138 precursor RNA folds spatially, forming GR1138 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1138 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1138 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5109 precursor RNA, GAM11560 precursor RNA and GAM164859 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5109 RNA, GAM11560 RNA and GAM164859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5109 target RNA into GAM5109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11560 target RNA into GAM11560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164859 target RNA into GAM164859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1138 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1138 gene: GAM5109 target protein, GAM11560 target protein and GAM164859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5109, GAM11560 and GAM164859

GR1139 BG121608 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1139(GR1139) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1139 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1139 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1139 gene encodes GR1139 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1139 precursor RNA folds spatially, forming GR1139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1139 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1139 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99289 precursor RNA and GAM102367 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99289 RNA and GAM102367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99289 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99289 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99289

target RNA into GAM99289 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102367 target RNA into GAM102367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1139 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1139 gene: GAM99289 target protein and GAM102367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99289 and GAM102367

GR1140 BF570034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1140(GR1140) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1140 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1140 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1140 gene encodes GR1140 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1140 precursor RNA folds spatially, forming GR1140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1140 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1140 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM247737 precursor RNA and GAM275895 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM247737 RNA and GAM275895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM247737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247737 target RNA into GAM247737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275895 target RNA into GAM275895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1140 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1140 gene: GAM247737 target protein and GAM275895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM247737 and GAM275895

GR1141 BI008142 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1141(GR1141) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1141 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1141 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1141 gene encodes GR1141 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1141 precursor RNA folds spatially, forming GR1141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1141 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1141 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49528 precursor RNA and GAM73181 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49528 RNA and GAM73181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49528 target RNA into GAM49528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73181 target RNA into GAM73181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1141 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1141 gene: GAM49528 target protein and GAM73181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49528 and GAM73181

GR1142 BI915013 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1142(GR1142) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1142 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1142 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1142 gene encodes GR1142 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1142 precursor RNA folds spatially, forming GR1142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1142 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1142 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM960 precursor RNA and GAM4436 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM960 RNA and GAM4436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM960 target RNA into GAM960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4436 target RNA into GAM4436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1142 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1142 gene: GAM960 target protein and GAM4436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM960 and GAM4436

GR1143 R69925 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1143(GR1143) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1143 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1143 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1143 gene encodes GR1143 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1143 precursor RNA folds spatially, forming GR1143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1143 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1143 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5849 precursor RNA, GAM104747 precursor RNA and GAM326102 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5849 RNA, GAM104747 RNA and GAM326102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5849 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5849 target RNA into GAM5849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104747 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104747 target RNA into GAM104747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326102 target RNA into GAM326102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1143 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1143 gene: GAM5849 target protein, GAM104747 target protein and GAM326102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5849, GAM104747 and GAM326102

GR1144 BF763071 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1144(GR1144) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1144 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1144 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1144 gene encodes GR1144 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1144 precursor RNA folds spatially, forming GR1144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1144 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1144 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM64311 precursor RNA, GAM79567 precursor RNA and GAM223862 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64311 RNA, GAM79567 RNA and GAM223862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64311 target RNA into GAM64311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79567 target RNA into GAM79567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223862 target RNA into GAM223862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1144 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1144 gene: GAM64311 target protein, GAM79567 target protein and GAM223862 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64311, GAM79567 and GAM223862

GR1145 AW884481 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1145(GR1145) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1145 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1145 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1145 gene encodes GR1145 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1145 precursor RNA folds spatially, forming GR1145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1145 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1145 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM53257 precursor RNA, GAM79705 precursor RNA and GAM249721 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53257 RNA, GAM79705 RNA and GAM249721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53257 target RNA into GAM53257 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79705 target RNA into GAM79705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249721 target RNA into GAM249721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1145 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1145 gene: GAM53257 target protein, GAM79705 target protein and GAM249721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53257, GAM79705 and GAM249721

GR1146 BF678818 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1146(GR1146) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1146 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1146 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1146 gene encodes GR1146 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1146 precursor RNA folds spatially, forming GR1146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1146 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1146 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM306967 precursor RNA and GAM311746 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM306967 RNA and GAM311746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM306967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306967 target RNA into GAM306967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311746 target RNA into GAM311746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1146 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1146 gene: GAM306967 target protein and GAM311746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM306967 and GAM311746

GR1147 BI161178 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1147(GR1147) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1147 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1147

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1147 gene encodes GR1147 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1147 precursor RNA folds spatially, forming GR1147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1147 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1147 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM181462 precursor RNA and GAM279650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM181462 RNA and GAM279650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM181462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181462 target RNA into GAM181462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279650 target RNA into GAM279650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1147 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1147 gene: GAM181462 target protein and GAM279650 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM181462 and GAM279650

GR1148 AW451658 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1148(GR1148) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1148 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1148 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1148 gene encodes GR1148 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1148 precursor RNA folds spatially, forming GR1148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1148 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1148 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM191248 precursor RNA and GAM195820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM191248 RNA and GAM195820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM191248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191248 target RNA into GAM191248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195820 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195820 target RNA into GAM195820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1148 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1148 gene: GAM191248 target protein and GAM195820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM191248 and GAM195820

GR1149 BG832073 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1149(GR1149) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1149 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1149 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1149 gene encodes GR1149 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1149 precursor RNA folds spatially, forming GR1149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1149 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1149 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3158 precursor RNA, GAM49667 precursor RNA and GAM68341 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3158 RNA, GAM49667 RNA and GAM68341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3158 target RNA into GAM3158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49667 target RNA into GAM49667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68341 target RNA into GAM68341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1149 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1149 gene: GAM3158 target protein, GAM49667 target protein and GAM68341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3158, GAM49667 and GAM68341

GR1150 BM926931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1150(GR1150) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1150 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1150 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1150 gene encodes GR1150 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1150 precursor RNA folds spatially, forming GR1150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1150 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1150 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1891 precursor RNA, GAM5785 precursor RNA, GAM178006 precursor RNA and GAM263265 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1891 RNA, GAM5785 RNA, GAM178006 RNA and GAM263265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1891 target RNA into GAM1891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5785 target RNA into GAM5785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178006

target RNA into GAM178006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263265 target RNA into GAM263265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1150 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1150 gene: GAM1891 target protein, GAM5785 target protein, GAM178006 target protein and GAM263265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1891, GAM5785, GAM178006 and GAM263265

GR1151 BF309171 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1151(GR1151) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1151 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1151 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1151 gene encodes GR1151 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1151 precursor RNA folds spatially, forming GR1151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1151 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1151 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM54588 precursor RNA, GAM78947 precursor RNA, GAM219822 precursor RNA and GAM277866 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54588 RNA, GAM78947 RNA, GAM219822 RNA and GAM277866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54588 target RNA into GAM54588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78947 target RNA into GAM78947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219822 target RNA into GAM219822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277866 target RNA into GAM277866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1151 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1151 gene: GAM54588 target protein, GAM78947 target protein, GAM219822 target protein and GAM277866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM54588, GAM78947, GAM219822 and GAM277866

GR1152 AV662216 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1152(GR1152) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1152 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1152 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1152 gene encodes GR1152 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1152 precursor RNA folds spatially, forming GR1152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1152 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1152 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40818 precursor RNA and GAM158604 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40818 RNA and GAM158604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40818 target RNA into GAM40818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158604 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158604 target RNA into GAM158604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1152 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1152 gene: GAM40818 target protein and GAM158604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40818 and GAM158604

GR1153 R21871 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1153(GR1153) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1153 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1153 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1153 gene encodes GR1153 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1153 precursor RNA folds spatially, forming GR1153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1153 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1153 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2670 precursor RNA and GAM300147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2670 RNA and GAM300147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM2670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2670 target RNA into GAM2670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300147 target RNA into GAM300147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1153 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1153 gene: GAM2670 target protein and GAM300147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2670 and GAM300147

GR1154 N24888 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1154(GR1154) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1154 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1154 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1154 gene encodes GR1154 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1154 precursor RNA folds spatially, forming GR1154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1154 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1154 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3656 precursor RNA and GAM50073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3656 RNA and GAM50073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3656 target RNA into GAM3656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50073 target RNA into GAM50073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1154 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1154 gene: GAM3656 target protein and GAM50073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3656 and GAM50073

GR1155 BF206597 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1155(GR1155) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1155 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1155

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1155 gene encodes GR1155 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1155 precursor RNA folds spatially, forming GR1155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1155 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1155 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM255 precursor RNA and GAM5036 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM255 RNA and GAM5036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255 target RNA into GAM255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5036 target RNA into GAM5036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1155 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1155 gene: GAM255 target protein and GAM5036 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM255 and GAM5036

GR1156 BG400614 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1156(GR1156) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1156 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1156 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1156 gene encodes GR1156 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1156 precursor RNA folds spatially, forming GR1156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1156 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1156 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM198767 precursor RNA and GAM304707 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM198767 RNA and GAM304707 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM198767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198767 target RNA into GAM198767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304707 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304707 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304707 target RNA into GAM304707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1156 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1156 gene: GAM198767 target protein and GAM304707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM198767 and GAM304707

GR1157 BF942352 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1157(GR1157) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1157 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1157 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1157 gene encodes GR1157 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1157 precursor RNA folds spatially, forming GR1157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1157 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1157 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5591 precursor RNA and GAM306839 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5591 RNA and GAM306839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5591 target RNA into GAM5591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306839 target RNA into GAM306839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1157 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1157 gene: GAM5591 target protein and GAM306839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5591 and GAM306839

GR1158 AW300606 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1158(GR1158) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1158 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1158 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1158 gene encodes GR1158 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1158 precursor RNA folds spatially, forming GR1158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1158 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1158 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3448 precursor RNA and GAM222466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3448 RNA and GAM222466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3448 target RNA into GAM3448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222466 target RNA into GAM222466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1158 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1158 gene: GAM3448 target protein and GAM222466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3448 and GAM222466

GR1159 AW902480 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1159(GR1159) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1159 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1159 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1159 gene encodes GR1159 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1159 precursor RNA folds spatially, forming GR1159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1159 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1159 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121370 precursor RNA and GAM303934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121370 RNA and GAM303934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121370 target RNA into GAM121370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303934 target RNA into GAM303934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1159 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1159 gene: GAM121370 target protein and GAM303934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121370 and GAM303934

GR1160 BF955464 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1160(GR1160) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1160 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1160 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1160 gene encodes GR1160 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1160 precursor RNA folds spatially, forming GR1160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1160 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1160 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM32629 precursor RNA, GAM101656 precursor RNA and GAM148877 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32629 RNA, GAM101656 RNA and GAM148877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32629

target RNA into GAM32629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101656 target RNA into GAM101656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148877 target RNA into GAM148877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1160 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1160 gene: GAM32629 target protein, GAM101656 target protein and GAM148877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32629, GAM101656 and GAM148877

GR1161 BF790721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1161(GR1161) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1161 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1161 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1161 gene encodes GR1161 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1161 precursor RNA folds spatially, forming GR1161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1161 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1161 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM113288 precursor RNA, GAM173092 precursor RNA and GAM255643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113288 RNA, GAM173092 RNA and GAM255643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113288 target RNA into GAM113288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173092 target RNA into GAM173092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255643 target RNA into GAM255643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1161 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1161 gene: GAM113288 target protein, GAM173092 target protein and GAM255643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113288, GAM173092 and

GAM255643

GR1162 BQ102486 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1162(GR1162) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1162 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1162 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1162 gene encodes GR1162 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1162 precursor RNA folds spatially, forming GR1162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1162 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1162 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM985 precursor RNA and GAM185430 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM985 RNA and GAM185430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM985 target RNA into GAM985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185430 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185430 target RNA into GAM185430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1162 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1162 gene: GAM985 target protein and GAM185430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM985 and GAM185430

GR1163 BM543271 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1163(GR1163) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1163 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1163 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1163 gene encodes GR1163 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1163 precursor RNA folds spatially, forming GR1163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1163 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1163 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1767 precursor RNA, GAM7038 precursor RNA and GAM209966 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1767 RNA, GAM7038 RNA and GAM209966 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1767 target RNA into GAM1767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7038 target RNA into GAM7038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209966 target RNA into GAM209966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1163 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1163 gene: GAM1767 target protein, GAM7038 target protein and GAM209966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1767, GAM7038 and GAM209966

GR1164 BF573648 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1164(GR1164) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1164 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1164 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1164 gene encodes GR1164 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1164 precursor RNA folds spatially, forming GR1164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1164 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1164 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5334 precursor RNA and GAM229570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5334 RNA and GAM229570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5334 target RNA into GAM5334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229570 target RNA into GAM229570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1164 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1164 gene: GAM5334 target protein and GAM229570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5334 and GAM229570

GR1165 AA318714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1165(GR1165) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1165 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1165 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1165 gene encodes GR1165 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1165 precursor RNA folds spatially, forming GR1165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1165 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1165 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM177313 precursor RNA and GAM197754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177313 RNA and GAM197754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM177313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177313 target RNA into GAM177313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197754 target RNA into GAM197754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1165 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1165 gene: GAM177313 target protein and GAM197754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177313 and GAM197754

GR1166 BI028135 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1166(GR1166) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1166 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1166 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1166 gene encodes GR1166 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1166 precursor RNA folds spatially, forming GR1166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1166 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1166 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5810 precursor RNA, GAM122009 precursor RNA and GAM289396 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5810 RNA, GAM122009 RNA and GAM289396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM5810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5810 target RNA into GAM5810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122009 target RNA into GAM122009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289396 target RNA into GAM289396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1166 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1166 gene: GAM5810 target protein, GAM122009 target protein and GAM289396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5810, GAM122009 and GAM289396

GR1167 AA025342 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1167(GR1167) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1167 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1167 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1167 gene encodes GR1167 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1167 precursor RNA folds spatially, forming GR1167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1167 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1167 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2442 precursor RNA, GAM2479 precursor RNA and GAM285924 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2442 RNA, GAM2479 RNA and GAM285924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2442 target RNA into GAM2442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2479 target RNA into GAM2479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285924 target RNA into GAM285924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1167 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1167 gene: GAM2442 target protein, GAM2479 target protein and GAM285924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2442, GAM2479 and GAM285924

GR1168 BM693558 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1168(GR1168) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1168 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1168 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1168 gene encodes GR1168 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1168 precursor RNA folds spatially, forming GR1168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1168 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1168 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6668 precursor RNA and GAM320627 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6668 RNA and GAM320627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6668 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6668 target RNA into GAM6668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320627 target RNA into GAM320627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1168 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1168 gene: GAM6668 target protein and GAM320627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6668 and GAM320627

GR1169 AI681621 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1169(GR1169) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1169 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1169 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1169 gene encodes GR1169 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1169 precursor RNA folds spatially, forming GR1169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1169 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1169 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM535 precursor RNA, GAM6402 precursor RNA and

GAM111383 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM535 RNA, GAM6402 RNA and GAM111383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM535 target RNA into GAM535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6402 target RNA into GAM6402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111383 target RNA into GAM111383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1169 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1169 gene: GAM535 target protein, GAM6402 target protein and GAM111383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM535, GAM6402 and GAM111383

GR1170 BG761074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1170(GR1170) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1170 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1170 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1170 gene encodes GR1170 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1170 precursor RNA folds spatially, forming GR1170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1170 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1170 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM19839 precursor RNA, GAM96989 precursor RNA and GAM223816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19839 RNA, GAM96989 RNA and GAM223816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19839 target RNA into GAM19839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96989 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96989 target RNA into GAM96989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223816 target RNA into GAM223816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1170 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1170 gene: GAM19839 target protein, GAM96989 target protein and GAM223816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19839, GAM96989 and GAM223816

GR1171 BM835283 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1171(GR1171) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1171 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1171 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1171 gene encodes GR1171 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1171 precursor RNA folds spatially, forming GR1171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1171 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1171 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM50715 precursor RNA, GAM135547 precursor RNA and GAM223843 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50715 RNA, GAM135547 RNA and GAM223843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50715 target RNA into GAM50715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135547 target RNA into GAM135547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223843 target RNA into GAM223843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1171 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1171 gene: GAM50715 target protein, GAM135547 target protein and GAM223843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50715, GAM135547 and GAM223843

GR1172 BF855137 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1172(GR1172) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1172 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1172 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1172 gene encodes GR1172 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1172 precursor RNA folds spatially, forming GR1172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1172 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1172 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1124 precursor RNA, GAM43448 precursor RNA and GAM192676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1124 RNA, GAM43448 RNA and GAM192676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1124 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1124 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1124 target RNA into GAM1124 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43448 target RNA into GAM43448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192676 target RNA into GAM192676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1172 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1172 gene: GAM1124 target protein, GAM43448 target protein and GAM192676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1124, GAM43448 and GAM192676

GR1173 BG674030 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1173(GR1173) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1173 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1173 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1173 gene encodes GR1173 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1173 precursor RNA folds spatially, forming GR1173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1173 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1173 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5112 precursor RNA and GAM6331 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5112 RNA and GAM6331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM5112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5112 target RNA into GAM5112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6331 target RNA into GAM6331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1173 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1173 gene: GAM5112 target protein and GAM6331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5112 and GAM6331

GR1174 BG189743 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1174(GR1174) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1174 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1174 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1174 gene encodes GR1174 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1174 precursor RNA folds spatially, forming GR1174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1174 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1174 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180322 precursor RNA and GAM259196 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180322 RNA and GAM259196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180322 target RNA into GAM180322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259196 target RNA into GAM259196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1174 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1174 gene: GAM180322 target protein and GAM259196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180322 and GAM259196

GR1175 AA602403 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1175(GR1175) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1175 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1175

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1175 gene encodes GR1175 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1175 precursor RNA folds spatially, forming GR1175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1175 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1175 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM174272 precursor RNA and GAM302543 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM174272 RNA and GAM302543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM174272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174272 target RNA into GAM174272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302543 target RNA into GAM302543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1175 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1175 gene: GAM174272 target protein and GAM302543 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM174272 and GAM302543

GR1176 AL079724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1176(GR1176) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1176 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1176 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1176 gene encodes GR1176 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1176 precursor RNA folds spatially, forming GR1176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1176 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1176 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73529 precursor RNA and GAM324876 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73529 RNA and GAM324876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73529 target RNA into GAM73529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324876 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324876 target RNA into GAM324876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1176 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1176 gene: GAM73529 target protein and GAM324876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73529 and GAM324876

GR1177 BQ016571 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1177(GR1177) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1177 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1177 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1177 gene encodes GR1177 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1177 precursor RNA folds spatially, forming GR1177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1177 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1177 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1013 precursor RNA and GAM67710 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM1013 RNA and GAM67710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1013 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1013 target RNA into GAM1013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67710 target RNA into GAM67710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1177 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1177 gene: GAM1013 target protein and GAM67710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1013 and GAM67710

GR1178 AW135430 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1178(GR1178) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1178 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1178 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1178 gene encodes GR1178 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1178 precursor RNA folds spatially, forming GR1178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1178 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1178 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7815 precursor RNA and GAM112721 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7815 RNA and GAM112721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7815 target RNA into GAM7815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112721 target RNA into GAM112721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1178 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1178 gene: GAM7815 target protein and GAM112721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7815 and GAM112721

GR1179 BE563650 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1179(GR1179) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1179 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1179 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1179 gene encodes GR1179 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1179 precursor RNA folds spatially, forming GR1179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1179 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1179 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6624 precursor RNA and GAM119307 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6624 RNA and GAM119307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6624 target RNA into GAM6624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119307 target RNA into GAM119307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1179 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1179 gene: GAM6624 target protein and GAM119307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6624 and GAM119307

GR1180 BI197689 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1180(GR1180) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1180 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1180 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1180 gene encodes GR1180 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1180 precursor RNA folds spatially, forming GR1180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1180 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1180 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90894 precursor RNA and GAM101660 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90894 RNA and GAM101660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90894 target RNA into GAM90894 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101660 target RNA into GAM101660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1180 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1180 gene: GAM90894 target protein and GAM101660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90894 and GAM101660

GR1181 BF684444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1181(GR1181) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1181 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1181 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1181 gene encodes GR1181 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1181 precursor RNA folds spatially, forming GR1181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1181 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1181 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM827 precursor RNA and GAM22811 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM827 RNA and GAM22811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM827 target RNA into GAM827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22811 target RNA into GAM22811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1181 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1181 gene: GAM827 target protein and GAM22811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM827 and GAM22811

GR1182 BE182684 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1182(GR1182) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1182 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1182 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1182 gene encodes GR1182 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1182 precursor RNA folds spatially, forming GR1182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1182 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1182 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7864 precursor RNA and GAM59319 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7864 RNA and GAM59319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7864 target RNA into GAM7864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59319 target RNA into GAM59319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1182 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1182 gene: GAM7864 target protein and GAM59319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7864 and GAM59319

GR1183 AW752712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1183(GR1183) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1183 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1183 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1183 gene encodes GR1183 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1183 precursor RNA folds spatially, forming GR1183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1183 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1183 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50759 precursor RNA and GAM125588 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50759 RNA and GAM125588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50759 target RNA into GAM50759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125588 target RNA into GAM125588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1183 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1183 gene: GAM50759 target protein and GAM125588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50759 and GAM125588

GR1184 AW499881 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1184(GR1184) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1184 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1184 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1184 gene encodes GR1184 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1184 precursor RNA folds spatially, forming GR1184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1184 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1184 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1356 precursor RNA, GAM20311 precursor RNA and GAM26630 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1356 RNA, GAM20311 RNA and GAM26630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1356 target RNA into GAM1356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20311 target RNA into GAM20311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26630 target RNA into GAM26630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1184 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1184 gene: GAM1356 target protein, GAM20311 target protein and GAM26630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1356, GAM20311 and GAM26630

GR1185 BM971435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1185(GR1185) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1185 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1185 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1185 gene encodes GR1185 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1185 precursor RNA folds spatially, forming GR1185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1185 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1185 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3279 precursor RNA and GAM24754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3279 RNA and GAM24754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3279 target RNA into GAM3279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24754 target RNA into GAM24754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1185 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1185 gene: GAM3279 target protein and GAM24754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3279 and GAM24754

GR1186 AI902694 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1186(GR1186) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1186 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1186 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1186 gene encodes GR1186 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1186 precursor RNA folds spatially, forming GR1186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1186 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1186 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83761 precursor RNA and GAM271675 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83761 RNA and GAM271675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83761 target RNA into GAM83761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271675 target RNA into GAM271675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1186 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1186 gene: GAM83761 target protein and GAM271675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83761 and GAM271675

GR1187 AW993682 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1187(GR1187) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1187 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1187 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1187 gene encodes GR1187 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1187 precursor RNA folds spatially, forming GR1187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1187 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1187 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2008 precursor RNA, GAM35379 precursor RNA and GAM169487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2008 RNA, GAM35379 RNA and GAM169487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2008 target RNA into GAM2008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35379 target RNA into GAM35379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169487 target RNA into GAM169487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1187 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1187 gene: GAM2008 target protein, GAM35379 target protein and GAM169487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2008, GAM35379 and GAM169487

GR1188 BF895388 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1188(GR1188) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1188 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1188 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1188 gene encodes GR1188 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1188 precursor RNA folds spatially, forming GR1188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1188 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1188 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM778 precursor RNA and GAM2555 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM778 RNA and GAM2555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM778 target RNA into GAM778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2555 target RNA into GAM2555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1188 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1188 gene: GAM778 target protein and GAM2555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM778 and GAM2555

GR1189 AW368303 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1189(GR1189) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1189 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1189 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1189 gene encodes GR1189 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1189 precursor RNA folds spatially, forming GR1189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1189 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1189 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM91426 precursor RNA, GAM162767 precursor RNA and GAM318472 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91426 RNA, GAM162767 RNA and GAM318472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91426 target RNA into GAM91426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162767 target RNA into GAM162767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318472 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318472 target RNA into GAM318472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1189 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1189 gene: GAM91426 target protein, GAM162767 target protein and GAM318472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91426, GAM162767 and GAM318472

GR1190 AI334078 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1190(GR1190) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1190 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1190 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1190 gene encodes GR1190 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1190 precursor RNA folds spatially, forming GR1190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1190 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1190 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM23390 precursor RNA and GAM154966 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23390 RNA and GAM154966 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23390 target RNA into GAM23390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154966 target RNA into GAM154966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1190 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1190 gene: GAM23390 target protein and GAM154966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23390 and GAM154966

GR1191 BG204779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1191(GR1191) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1191 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1191 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1191 gene encodes GR1191 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1191 precursor RNA folds spatially, forming GR1191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1191 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1191 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM163150 precursor RNA, GAM202713 precursor RNA and GAM248645 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM163150 RNA, GAM202713 RNA and GAM248645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM163150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163150 target RNA into GAM163150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202713 target RNA into GAM202713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248645 target RNA into GAM248645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1191 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1191 gene: GAM163150 target protein, GAM202713 target protein and GAM248645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM163150, GAM202713 and

GAM248645

GR1192 BE281202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1192(GR1192) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1192 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1192 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1192 gene encodes GR1192 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1192 precursor RNA folds spatially, forming GR1192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1192 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1192 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4324 precursor RNA, GAM82315 precursor RNA, GAM215931 precursor RNA and GAM266567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4324 RNA, GAM82315 RNA, GAM215931 RNA and GAM266567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4324 target RNA into GAM4324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM82315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82315 target RNA into GAM82315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215931 target RNA into GAM215931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266567 target RNA into GAM266567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1192 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1192 gene: GAM4324 target protein, GAM82315 target protein, GAM215931 target protein and GAM266567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4324, GAM82315, GAM215931 and GAM266567

GR1193 BG420306 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1193(GR1193) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1193 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1193 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1193 gene encodes GR1193 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1193 precursor RNA folds spatially, forming GR1193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1193 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1193 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8037 precursor RNA, GAM115477 precursor RNA and GAM232244 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8037 RNA, GAM115477 RNA and GAM232244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8037 target RNA into GAM8037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115477 target RNA into GAM115477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232244 target RNA into GAM232244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1193 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1193 gene: GAM8037 target

protein, GAM115477 target protein and GAM232244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8037, GAM115477 and GAM232244

GR1194 T34334 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1194(GR1194) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1194 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1194 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1194 gene encodes GR1194 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1194 precursor RNA folds spatially, forming GR1194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1194 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1194 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM287353 precursor RNA and GAM326550 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM287353 RNA and GAM326550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM287353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287353 target RNA into GAM287353 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326550 target RNA into GAM326550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1194 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1194 gene: GAM287353 target protein and GAM326550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM287353 and GAM326550

GR1195 BM712753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1195(GR1195) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1195 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1195 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1195 gene encodes GR1195 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1195 precursor RNA folds spatially, forming GR1195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1195 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1195 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM127730 precursor RNA and GAM149600 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127730 RNA and GAM149600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127730 target RNA into GAM127730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149600 target RNA into GAM149600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1195 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1195 gene: GAM127730 target protein and GAM149600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127730 and GAM149600

GR1196 BF694163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1196(GR1196) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1196 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1196 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1196 gene encodes GR1196 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1196 precursor RNA folds spatially, forming GR1196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1196 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1196 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4187 precursor RNA and GAM112740 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4187 RNA and GAM112740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4187 target RNA into GAM4187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112740 target RNA into GAM112740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1196 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1196 gene: GAM4187 target protein and GAM112740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4187 and GAM112740

GR1197 BE866248 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1197(GR1197) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1197 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1197 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1197 gene encodes GR1197 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1197 precursor RNA folds spatially, forming GR1197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1197 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1197 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM107612 precursor RNA, GAM118231 precursor RNA, GAM246998 precursor RNA and GAM297716 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM107612 RNA, GAM118231 RNA, GAM246998 RNA and GAM297716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM107612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107612 target RNA into GAM107612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118231 target RNA into GAM118231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246998 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246998 target RNA into GAM246998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297716 target RNA into GAM297716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1197 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1197 gene: GAM107612 target protein, GAM118231 target protein, GAM246998 target protein and GAM297716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM107612, GAM118231, GAM246998 and GAM297716

GR1198 AI370766 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1198(GR1198) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1198 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1198 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1198 gene encodes GR1198 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1198 precursor RNA folds spatially, forming GR1198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1198 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1198 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119636 precursor RNA and GAM139880 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119636 RNA and GAM139880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119636 target RNA into GAM119636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139880 target RNA into GAM139880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1198 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1198 gene: GAM119636 target protein and GAM139880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119636 and GAM139880

GR1199 BE900439 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1199(GR1199) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1199 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1199 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1199 gene encodes GR1199 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1199 precursor RNA folds spatially, forming GR1199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1199 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1199 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8181 precursor RNA and GAM150960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8181 RNA and GAM150960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8181 target RNA into GAM8181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150960 target RNA into GAM150960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1199 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1199 gene: GAM8181 target protein and GAM150960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM8181 and GAM150960

GR1200 BE551343 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1200(GR1200) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1200 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1200 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1200 gene encodes GR1200 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1200 precursor RNA folds spatially, forming GR1200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1200 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1200 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24977 precursor RNA and GAM155050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24977 RNA and GAM155050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24977 target RNA into GAM24977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM155050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155050 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155050 target RNA into GAM155050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1200 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1200 gene: GAM24977 target protein and GAM155050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24977 and GAM155050

GR1201 AW379341 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1201(GR1201) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1201 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1201 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1201 gene encodes GR1201 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1201 precursor RNA folds spatially, forming GR1201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1201 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1201 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1268 precursor RNA, GAM88505 precursor RNA and GAM329412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1268 RNA, GAM88505 RNA and GAM329412 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1268 target RNA into GAM1268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88505 target RNA into GAM88505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329412 target RNA into GAM329412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1201 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1201 gene: GAM1268 target protein, GAM88505 target protein and GAM329412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1268, GAM88505 and GAM329412

GR1202 BF240281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1202(GR1202) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1202 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1202 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1202 gene encodes GR1202 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1202 precursor RNA folds spatially, forming GR1202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1202 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1202 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94185 precursor RNA and GAM246491 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94185 RNA and GAM246491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94185 target RNA into GAM94185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246491 target RNA into GAM246491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1202 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1202 gene: GAM94185 target protein and GAM246491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94185 and GAM246491

GR1203 AA814242 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1203(GR1203) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1203 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1203 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1203 gene encodes GR1203 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1203 precursor RNA folds spatially, forming GR1203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1203 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1203 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM600 precursor RNA and GAM177467 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM600 RNA and GAM177467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM600 target RNA into GAM600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177467 target RNA into GAM177467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1203 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1203 gene: GAM600 target protein and GAM177467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM600 and GAM177467

GR1204 AW778912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1204(GR1204) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1204 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1204 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1204 gene encodes GR1204 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1204 precursor RNA folds spatially, forming GR1204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1204 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1204 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7807 precursor RNA and GAM8919 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7807 RNA and GAM8919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7807 target RNA into GAM7807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8919 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8919 target RNA into GAM8919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1204 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1204 gene: GAM7807 target protein and GAM8919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7807 and GAM8919

GR1205 BE268893 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1205(GR1205) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1205 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1205 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1205 gene encodes GR1205 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1205 precursor RNA folds spatially, forming GR1205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1205 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1205 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM285 precursor RNA and GAM178419 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM285 RNA and GAM178419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285 target RNA into GAM285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178419 target RNA into GAM178419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1205 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1205 gene: GAM285 target protein and GAM178419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM285 and GAM178419

GR1206 BM127768 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1206(GR1206) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1206 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1206 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1206 gene encodes GR1206 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1206 precursor RNA folds spatially, forming GR1206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1206 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1206 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM310181 precursor RNA and GAM311082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM310181 RNA and GAM311082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM310181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310181 target RNA into GAM310181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311082 target RNA into GAM311082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1206 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1206 gene: GAM310181 target protein and GAM311082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM310181 and GAM311082

GR1207 BG013745 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1207(GR1207) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1207 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1207 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1207 gene encodes GR1207 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1207 precursor RNA folds spatially, forming GR1207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1207 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1207 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68837 precursor RNA and GAM126725 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68837 RNA and GAM126725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68837 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68837 target RNA into GAM68837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM126725 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126725 target RNA into GAM126725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1207 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1207 gene: GAM68837 target protein and GAM126725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68837 and GAM126725

GR1208 BE613824 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1208(GR1208) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1208 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1208 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1208 gene encodes GR1208 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1208 precursor RNA folds spatially, forming GR1208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1208 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1208 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM38452 precursor RNA and GAM224067 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38452 RNA and GAM224067 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38452 target RNA into GAM38452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224067 target RNA into GAM224067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1208 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1208 gene: GAM38452 target protein and GAM224067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM38452 and GAM224067

GR1209 AI290799 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1209(GR1209) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1209 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1209 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1209 gene encodes GR1209 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1209 precursor RNA folds spatially, forming GR1209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1209 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1209 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM703 precursor RNA, GAM73074 precursor RNA and GAM88024 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM703 RNA, GAM73074 RNA and GAM88024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM703 target RNA into GAM703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73074 target RNA into GAM73074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88024 target RNA into GAM88024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1209 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1209 gene: GAM703 target protein, GAM73074 target protein and GAM88024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM703, GAM73074 and

GAM88024

GR1210 BE834649 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1210(GR1210) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1210 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1210 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1210 gene encodes GR1210 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1210 precursor RNA folds spatially, forming GR1210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1210 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1210 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3602 precursor RNA, GAM106910 precursor RNA and GAM165757 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3602 RNA, GAM106910 RNA and GAM165757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3602 target RNA into GAM3602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM106910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106910 target RNA into GAM106910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165757 target RNA into GAM165757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1210 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1210 gene: GAM3602 target protein, GAM106910 target protein and GAM165757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3602, GAM106910 and GAM165757

GR1211 BG212008 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1211(GR1211) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1211 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1211 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1211 gene encodes GR1211 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1211 precursor RNA folds spatially, forming GR1211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1211 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1211 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1211 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2167 precursor RNA, GAM3210 precursor RNA and GAM268487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2167 RNA, GAM3210 RNA and GAM268487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2167 target RNA into GAM2167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3210 target RNA into GAM3210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268487 target RNA into GAM268487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1211 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1211 gene: GAM2167 target protein, GAM3210 target protein and GAM268487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2167, GAM3210 and GAM268487

GR1212 BG532392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1212(GR1212) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1212 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1212 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1212 gene encodes GR1212 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1212 precursor RNA folds spatially, forming GR1212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1212 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1212 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54151 precursor RNA and GAM157704 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54151 RNA and GAM157704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54151 target RNA into GAM54151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157704 target RNA into GAM157704 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1212 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1212 gene: GAM54151 target protein and GAM157704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54151 and GAM157704

GR1213 BI551811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1213(GR1213) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1213 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1213 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1213 gene encodes GR1213 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1213 precursor RNA folds spatially, forming GR1213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1213 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1213 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5700 precursor RNA and GAM50654 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5700 RNA and GAM50654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5700 target RNA into GAM5700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50654 target RNA into GAM50654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1213 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1213 gene: GAM5700 target protein and GAM50654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5700 and GAM50654

GR1214 AI084190 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1214(GR1214) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1214 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1214 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1214 gene encodes GR1214 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1214 precursor RNA folds spatially, forming GR1214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1214 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1214 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM113635 precursor RNA and GAM220395 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113635 RNA and GAM220395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113635 target RNA into GAM113635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220395 target RNA into GAM220395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1214 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1214 gene: GAM113635 target protein and GAM220395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113635 and GAM220395

GR1215 AI656453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1215(GR1215) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1215 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1215 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1215 gene encodes GR1215 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1215 precursor RNA folds spatially, forming GR1215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1215 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1215 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM79612 precursor RNA, GAM152166 precursor RNA and GAM211578 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79612 RNA, GAM152166 RNA and GAM211578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79612 target RNA into GAM79612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152166 target RNA into GAM152166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211578 target RNA into GAM211578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1215 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1215 gene: GAM79612 target protein, GAM152166 target protein and GAM211578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79612, GAM152166 and GAM211578

GR1216 BI520696 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1216(GR1216) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1216 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1216 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1216 gene encodes GR1216 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1216 precursor RNA folds spatially, forming GR1216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1216 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1216 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3824 precursor RNA, GAM92149 precursor RNA and GAM220963 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3824 RNA, GAM92149 RNA and GAM220963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3824 target RNA into GAM3824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92149 target RNA into GAM92149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220963 target RNA into GAM220963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1216 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1216 gene: GAM3824 target protein, GAM92149 target protein and GAM220963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3824, GAM92149 and GAM220963

GR1217 AA777020 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1217(GR1217) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1217 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1217 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1217 gene encodes GR1217 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1217 precursor RNA folds spatially, forming GR1217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1217 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1217 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM169469 precursor RNA and GAM272299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM169469 RNA and GAM272299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM169469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169469 target RNA into GAM169469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272299 target RNA into GAM272299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1217 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1217 gene: GAM169469 target protein and GAM272299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM169469 and GAM272299

GR1218 BE545252 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1218(GR1218) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1218 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1218 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1218 gene encodes GR1218 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1218 precursor RNA folds spatially, forming GR1218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1218 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1218 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49829 precursor RNA and GAM256285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49829 RNA and GAM256285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49829 target RNA into GAM49829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256285 target RNA into GAM256285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1218 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1218 gene: GAM49829 target protein and GAM256285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49829 and GAM256285

GR1219 AI921908 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1219(GR1219) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1219 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1219 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1219 gene encodes GR1219 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1219 precursor RNA folds spatially, forming GR1219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1219 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1219 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49879 precursor RNA and GAM135643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49879 RNA and GAM135643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49879 target RNA into GAM49879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135643 target RNA into GAM135643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1219 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1219 gene: GAM49879 target protein and GAM135643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49879 and GAM135643

GR1220 R93305 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1220(GR1220) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1220 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1220 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1220 gene encodes GR1220 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1220 precursor RNA folds spatially, forming GR1220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1220 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1220 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36880 precursor RNA and GAM211236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36880 RNA and GAM211236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36880 target RNA into GAM36880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211236 target RNA into GAM211236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1220 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1220 gene: GAM36880 target protein and GAM211236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36880 and GAM211236

GR1221 BF183240 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1221(GR1221) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1221 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1221 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1221 gene encodes GR1221 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1221 precursor RNA folds spatially, forming GR1221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1221 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1221 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM881 precursor RNA and GAM208166 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM881 RNA and GAM208166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM881 target RNA into GAM881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208166 target RNA into GAM208166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1221 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1221 gene: GAM881 target protein and GAM208166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM881 and GAM208166

GR1222 N76690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1222(GR1222) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1222 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1222 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1222 gene encodes GR1222 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1222 precursor RNA folds spatially, forming GR1222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1222 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1222 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57429 precursor RNA and GAM252518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57429 RNA and GAM252518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57429 target RNA into GAM57429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252518 target RNA into GAM252518 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1222 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1222 gene: GAM57429 target protein and GAM252518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57429 and GAM252518

GR1223 BE617827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1223(GR1223) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1223 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1223 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1223 gene encodes GR1223 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1223 precursor RNA folds spatially, forming GR1223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1223 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1223 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM173338 precursor RNA and GAM240783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173338 RNA and GAM240783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM173338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173338 target RNA into GAM173338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240783 target RNA into GAM240783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1223 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1223 gene: GAM173338 target protein and GAM240783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173338 and GAM240783

GR1224 BM811453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1224(GR1224) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1224 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1224 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1224 gene encodes GR1224 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1224 precursor RNA folds spatially, forming GR1224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1224 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1224 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM7999 precursor RNA, GAM72520 precursor RNA and GAM96869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7999 RNA, GAM72520 RNA and GAM96869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7999 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7999 target RNA into GAM7999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72520 target RNA into GAM72520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96869 target RNA into GAM96869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1224 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1224 gene: GAM7999 target protein, GAM72520 target protein and GAM96869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7999, GAM72520 and GAM96869

GR1225 BG396331 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1225(GR1225) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1225 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1225 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1225 gene encodes GR1225 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1225 precursor RNA folds spatially, forming GR1225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1225 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1225 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM102940 precursor RNA, GAM223126 precursor RNA and GAM283354 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102940 RNA, GAM223126 RNA and GAM283354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102940 target RNA into GAM102940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223126 target RNA into GAM223126 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283354 target RNA into GAM283354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1225 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1225 gene: GAM102940 target protein, GAM223126 target protein and GAM283354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102940, GAM223126 and GAM283354

GR1226 BG026430 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1226(GR1226) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1226 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1226 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1226 gene encodes GR1226 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1226 precursor RNA folds spatially, forming GR1226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1226 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1226 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49286 precursor RNA and GAM134720 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49286 RNA and GAM134720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49286 target RNA into GAM49286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134720 target RNA into GAM134720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1226 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1226 gene: GAM49286 target protein and GAM134720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49286 and GAM134720

GR1227 BG719231 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1227(GR1227) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1227 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1227 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1227 gene encodes GR1227 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1227 precursor RNA folds spatially, forming GR1227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1227 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1227 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3976 precursor RNA, GAM139157 precursor RNA and GAM180261 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3976 RNA, GAM139157 RNA and GAM180261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3976 target RNA into GAM3976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139157 target RNA into GAM139157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180261 target RNA into GAM180261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1227 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1227 gene: GAM3976 target

protein, GAM139157 target protein and GAM180261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3976, GAM139157 and GAM180261

GR1228 BG567342 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1228(GR1228) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1228 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1228 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1228 gene encodes GR1228 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1228 precursor RNA folds spatially, forming GR1228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1228 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1228 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8340 precursor RNA and GAM107609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8340 RNA and GAM107609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8340 target RNA into GAM8340 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107609 target RNA into GAM107609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1228 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1228 gene: GAM8340 target protein and GAM107609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8340 and GAM107609

GR1229 BG427537 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1229(GR1229) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1229 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1229 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1229 gene encodes GR1229 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1229 precursor RNA folds spatially, forming GR1229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1229 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1229 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM70560 precursor RNA, GAM137639 precursor RNA and GAM318928 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70560 RNA, GAM137639 RNA and GAM318928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70560 target RNA into GAM70560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137639 target RNA into GAM137639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318928 target RNA into GAM318928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1229 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1229 gene: GAM70560 target protein, GAM137639 target protein and GAM318928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70560, GAM137639 and GAM318928

GR1230 AI382730 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1230(GR1230) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1230 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1230 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1230 gene encodes GR1230 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1230 precursor RNA folds spatially, forming GR1230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1230 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1230 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1597 precursor RNA and GAM279540 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1597 RNA and GAM279540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1597 target RNA into GAM1597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279540 target RNA into GAM279540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1230 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1230 gene: GAM1597 target

protein and GAM279540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1597 and GAM279540

GR1231 AV736666 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1231(GR1231) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1231 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1231 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1231 gene encodes GR1231 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1231 precursor RNA folds spatially, forming GR1231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1231 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1231 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100220 precursor RNA and GAM101597 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100220 RNA and GAM101597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100220 target RNA into GAM100220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101597 target RNA into GAM101597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1231 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1231 gene: GAM100220 target protein and GAM101597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100220 and GAM101597

GR1232 BQ026228 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1232(GR1232) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1232 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1232 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1232 gene encodes GR1232 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1232 precursor RNA folds spatially, forming GR1232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1232 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1232 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM261532 precursor RNA and GAM336073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM261532 RNA and GAM336073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM261532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261532 target RNA into GAM261532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336073 target RNA into GAM336073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1232 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1232 gene: GAM261532 target protein and GAM336073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM261532 and GAM336073

GR1233 BF510780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1233(GR1233) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1233 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1233 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1233 gene encodes GR1233 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1233 precursor RNA folds spatially, forming GR1233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1233 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1233 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25752 precursor RNA and GAM212520 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25752 RNA and GAM212520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25752 target RNA into GAM25752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212520 target RNA into GAM212520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1233 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1233 gene: GAM25752 target protein and GAM212520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25752 and GAM212520

GR1234 BG769843 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1234(GR1234) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1234 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1234 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1234 gene encodes GR1234 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1234 precursor RNA folds spatially, forming GR1234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1234 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1234 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2331 precursor RNA, GAM6855 precursor RNA and GAM8423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2331 RNA, GAM6855 RNA and GAM8423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2331 target RNA into GAM2331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6855 target RNA into GAM6855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8423 target RNA into GAM8423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1234 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1234 gene: GAM2331 target protein, GAM6855 target protein and GAM8423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2331, GAM6855 and GAM8423

GR1235 AA300219 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1235(GR1235) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1235 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1235 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1235 gene encodes GR1235 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1235 precursor RNA folds spatially, forming GR1235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1235 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1235 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3777 precursor RNA and GAM7719 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3777 RNA and GAM7719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3777 target RNA into GAM3777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7719 target RNA into GAM7719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1235 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1235 gene: GAM3777 target protein and GAM7719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3777 and GAM7719

GR1236 BQ003319 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1236(GR1236) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1236 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1236 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1236 gene encodes GR1236 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1236 precursor RNA folds spatially, forming GR1236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1236 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1236 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2230 precursor RNA and GAM228235 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2230 RNA and GAM228235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2230 target RNA into GAM2230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228235 target RNA into GAM228235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1236 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1236 gene: GAM2230 target protein and GAM228235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2230 and GAM228235

GR1237 BG614082 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1237(GR1237) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1237 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1237 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1237 gene encodes GR1237 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1237 precursor RNA folds spatially, forming GR1237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1237 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1237 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM130113 precursor RNA, GAM149659 precursor RNA and GAM222564 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM130113 RNA, GAM149659 RNA and GAM222564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM130113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130113 target RNA into GAM130113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149659 target RNA into GAM149659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222564 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222564 target RNA into GAM222564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1237 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1237 gene: GAM130113 target protein, GAM149659 target protein and GAM222564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM130113, GAM149659 and GAM222564

GR1238 AI423326 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1238(GR1238) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1238 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1238 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1238 gene encodes GR1238 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1238 precursor RNA folds spatially, forming GR1238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1238 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1238 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12208 precursor RNA and GAM209983 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12208 RNA and GAM209983 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12208 target RNA into GAM12208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209983 target RNA into GAM209983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1238 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1238 gene: GAM12208 target protein and GAM209983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12208 and GAM209983

GR1239 AL701097 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1239(GR1239) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1239 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1239 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1239 gene encodes GR1239 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1239 precursor RNA folds spatially, forming GR1239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1239 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1239 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1712 precursor RNA, GAM148701 precursor RNA, GAM192955 precursor RNA and GAM331154 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1712 RNA, GAM148701 RNA, GAM192955 RNA and GAM331154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1712 target RNA into GAM1712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148701 target RNA into GAM148701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192955 target RNA into GAM192955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331154 target RNA into GAM331154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1239 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1239 gene: GAM1712 target protein, GAM148701 target protein, GAM192955 target protein and GAM331154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1712, GAM148701, GAM192955 and GAM331154

GR1240 AI732843 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1240(GR1240) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1240 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1240 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1240 gene encodes GR1240 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1240 precursor RNA folds spatially, forming GR1240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1240 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1240 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2137 precursor RNA, GAM136290 precursor RNA and GAM172926 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2137 RNA, GAM136290 RNA and GAM172926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM2137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2137 target RNA into GAM2137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136290 target RNA into GAM136290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172926 target RNA into GAM172926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1240 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1240 gene: GAM2137 target protein, GAM136290 target protein and GAM172926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2137, GAM136290 and GAM172926

GR1241 BM805676 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1241(GR1241) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1241 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1241 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1241 gene encodes GR1241 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1241 precursor RNA folds spatially, forming GR1241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1241 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1241 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM224334 precursor RNA, GAM236226 precursor RNA and GAM275536 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224334 RNA, GAM236226 RNA and GAM275536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224334 target RNA into GAM224334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236226 target RNA into GAM236226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275536 target RNA into GAM275536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1241 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1241 gene: GAM224334 target

protein, GAM236226 target protein and GAM275536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224334, GAM236226 and GAM275536

GR1242 BM747285 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1242(GR1242) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1242 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1242 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1242 gene encodes GR1242 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1242 precursor RNA folds spatially, forming GR1242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1242 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1242 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122538 precursor RNA and GAM219818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122538 RNA and GAM219818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122538 target RNA into GAM122538 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219818 target RNA into GAM219818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1242 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1242 gene: GAM122538 target protein and GAM219818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122538 and GAM219818

GR1243 AW976576 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1243(GR1243) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1243 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1243 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1243 gene encodes GR1243 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1243 precursor RNA folds spatially, forming GR1243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1243 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1243 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM46908 precursor RNA, GAM223685 precursor RNA and GAM301778 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46908 RNA, GAM223685 RNA and GAM301778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46908 target RNA into GAM46908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223685 target RNA into GAM223685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301778 target RNA into GAM301778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1243 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1243 gene: GAM46908 target protein, GAM223685 target protein and GAM301778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46908, GAM223685 and GAM301778

GR1244 AA442884 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1244(GR1244) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1244 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1244 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1244 gene encodes GR1244 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1244 precursor RNA folds spatially, forming GR1244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1244 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1244 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3522 precursor RNA and GAM4714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3522 RNA and GAM4714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3522 target RNA into GAM3522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4714 target RNA into GAM4714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1244 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1244 gene: GAM3522 target

protein and GAM4714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3522 and GAM4714

GR1245 BE074535 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1245(GR1245) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1245 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1245 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1245 gene encodes GR1245 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1245 precursor RNA folds spatially, forming GR1245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1245 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1245 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM34938 precursor RNA, GAM51661 precursor RNA and GAM280727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34938 RNA, GAM51661 RNA and GAM280727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34938 target RNA into GAM34938 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51661 target RNA into GAM51661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280727 target RNA into GAM280727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1245 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1245 gene: GAM34938 target protein, GAM51661 target protein and GAM280727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34938, GAM51661 and GAM280727

GR1246 BE794718 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1246(GR1246) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1246 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1246 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1246 gene encodes GR1246 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1246 precursor RNA folds spatially, forming GR1246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1246 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1246 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM104345 precursor RNA and GAM219165 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM104345 RNA and GAM219165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM104345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104345 target RNA into GAM104345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219165 target RNA into GAM219165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1246 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1246 gene: GAM104345 target protein and GAM219165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM104345 and GAM219165

GR1247 BG714521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1247(GR1247) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1247 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1247

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1247 gene encodes GR1247 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1247 precursor RNA folds spatially, forming GR1247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1247 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1247 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4374 precursor RNA, GAM64185 precursor RNA and GAM275560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4374 RNA, GAM64185 RNA and GAM275560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4374 target RNA into GAM4374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64185 target RNA into GAM64185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275560 target RNA into GAM275560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1247 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1247 gene: GAM4374 target protein, GAM64185 target protein and GAM275560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4374, GAM64185 and GAM275560

GR1248 AW610043 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1248(GR1248) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1248 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1248 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1248 gene encodes GR1248 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1248 precursor RNA folds spatially, forming GR1248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1248 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1248 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1663 precursor RNA, GAM7652 precursor RNA and GAM206734 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1663 RNA, GAM7652 RNA and GAM206734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM1663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1663 target RNA into GAM1663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7652 target RNA into GAM7652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206734 target RNA into GAM206734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1248 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1248 gene: GAM1663 target protein, GAM7652 target protein and GAM206734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1663, GAM7652 and GAM206734

GR1249 BG527713 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1249(GR1249) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1249 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1249 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1249 gene encodes GR1249 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1249 precursor RNA folds spatially, forming GR1249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1249 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1249 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128351 precursor RNA and GAM248462 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128351 RNA and GAM248462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128351 target RNA into GAM128351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248462 target RNA into GAM248462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1249 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1249 gene: GAM128351 target protein and GAM248462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128351 and GAM248462

GR1250 BE326521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1250(GR1250) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1250 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1250 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1250 gene encodes GR1250 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1250 precursor RNA folds spatially, forming GR1250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1250 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1250 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM51343 precursor RNA, GAM165356 precursor RNA and GAM314616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51343 RNA, GAM165356 RNA and GAM314616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51343 target RNA into GAM51343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165356 target RNA into GAM165356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314616 target RNA into GAM314616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1250 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1250 gene: GAM51343 target protein, GAM165356 target protein and GAM314616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51343, GAM165356 and GAM314616

GR1251 BF361997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1251(GR1251) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1251 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1251 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1251 gene encodes GR1251 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1251 precursor RNA folds spatially, forming GR1251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1251 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1251 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5755 precursor RNA and GAM157511 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5755 RNA and GAM157511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5755 target RNA into GAM5755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157511 target RNA into GAM157511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1251 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1251 gene: GAM5755 target protein and GAM157511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5755 and GAM157511

GR1252 AA648387 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1252(GR1252) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1252 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1252 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1252 gene encodes GR1252 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1252 precursor RNA folds spatially, forming GR1252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1252 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1252 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM59088 precursor RNA, GAM235034 precursor RNA and GAM335955 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59088 RNA, GAM235034 RNA and GAM335955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59088 target RNA into GAM59088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235034 target RNA into GAM235034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335955 target RNA into GAM335955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1252 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1252 gene: GAM59088 target protein, GAM235034 target protein and GAM335955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59088, GAM235034 and GAM335955

GR1253 AW856916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1253(GR1253) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1253 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1253 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1253 gene encodes GR1253 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1253 precursor RNA folds spatially, forming GR1253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1253 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1253 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM124477 precursor RNA, GAM246953 precursor RNA and GAM325545 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM124477 RNA, GAM246953 RNA and GAM325545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM124477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124477 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124477 target RNA into GAM124477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246953 target RNA into GAM246953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325545 target RNA into GAM325545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1253 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1253 gene: GAM124477 target protein, GAM246953 target protein and GAM325545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM124477, GAM246953 and GAM325545

GR1254 AI860435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1254(GR1254) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1254 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1254 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1254 gene encodes GR1254 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1254 precursor RNA folds spatially, forming GR1254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1254 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1254 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5420 precursor RNA, GAM200160 precursor RNA and GAM224983 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5420 RNA, GAM200160 RNA and GAM224983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5420 target RNA into GAM5420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200160 target RNA into GAM200160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224983 target RNA into GAM224983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1254 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1254 gene: GAM5420 target protein, GAM200160 target protein and GAM224983 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5420, GAM200160 and GAM224983

GR1255 BE693814 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1255(GR1255) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1255 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1255 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1255 gene encodes GR1255 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1255 precursor RNA folds spatially, forming GR1255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1255 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1255 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128764 precursor RNA and GAM213000 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128764 RNA and GAM213000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128764 target RNA into GAM128764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213000 target RNA into GAM213000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1255 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1255 gene: GAM128764 target protein and GAM213000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128764 and GAM213000

GR1256 AI933633 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1256(GR1256) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1256 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1256 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1256 gene encodes GR1256 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1256 precursor RNA folds spatially, forming GR1256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1256 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1256 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM186493 precursor RNA, GAM225662 precursor RNA and GAM290997 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM186493 RNA, GAM225662 RNA and GAM290997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM186493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186493 target RNA into GAM186493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225662 target RNA into GAM225662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290997 target RNA into GAM290997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1256 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1256 gene: GAM186493 target protein, GAM225662 target protein and GAM290997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM186493, GAM225662 and GAM290997

GR1257 AI445471 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1257(GR1257) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1257 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1257

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1257 gene encodes GR1257 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1257 precursor RNA folds spatially, forming GR1257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1257 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1257 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4608 precursor RNA and GAM89400 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4608 RNA and GAM89400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4608 target RNA into GAM4608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89400 target RNA into GAM89400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1257 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1257 gene: GAM4608 target protein and GAM89400 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4608 and GAM89400

GR1258 BF529033 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1258(GR1258) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1258 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1258 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1258 gene encodes GR1258 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1258 precursor RNA folds spatially, forming GR1258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1258 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1258 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10795 precursor RNA and GAM271525 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10795 RNA and GAM271525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10795 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10795 target RNA into GAM10795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271525 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271525 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271525 target RNA into GAM271525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1258 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1258 gene: GAM10795 target protein and GAM271525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10795 and GAM271525

GR1259 BG389288 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1259(GR1259) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1259 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1259 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1259 gene encodes GR1259 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1259 precursor RNA folds spatially, forming GR1259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1259 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1259 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105376 precursor RNA and GAM112288 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM105376 RNA and GAM112288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105376 target RNA into GAM105376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112288 target RNA into GAM112288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1259 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1259 gene: GAM105376 target protein and GAM112288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105376 and GAM112288

GR1260 AA890274 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1260(GR1260) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1260 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1260 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1260 gene encodes GR1260 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1260 precursor RNA folds spatially, forming GR1260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1260 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1260 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4314 precursor RNA and GAM314663 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4314 RNA and GAM314663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4314 target RNA into GAM4314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314663 target RNA into GAM314663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1260 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1260 gene: GAM4314 target protein and GAM314663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4314 and GAM314663

GR1261 BE537754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1261(GR1261) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1261 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1261 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1261 gene encodes GR1261 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1261 precursor RNA folds spatially, forming GR1261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1261 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1261 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131921 precursor RNA and GAM164524 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131921 RNA and GAM164524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131921 target RNA into GAM131921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164524 target RNA into GAM164524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1261 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1261 gene: GAM131921 target protein and GAM164524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131921 and GAM164524

GR1262 AI092180 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1262(GR1262) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1262 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1262 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1262 gene encodes GR1262 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1262 precursor RNA folds spatially, forming GR1262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1262 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1262 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM143183 precursor RNA and GAM164511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143183 RNA and GAM164511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143183 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143183 target RNA into GAM143183 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164511 target RNA into GAM164511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1262 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1262 gene: GAM143183 target protein and GAM164511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM143183 and GAM164511

GR1263 AA532754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1263(GR1263) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1263 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1263 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1263 gene encodes GR1263 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1263 precursor RNA folds spatially, forming GR1263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1263 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1263 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM112197 precursor RNA, GAM114097 precursor RNA and GAM209918 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112197 RNA, GAM114097 RNA and GAM209918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112197 target RNA into GAM112197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114097 target RNA into GAM114097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209918 target RNA into GAM209918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1263 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1263 gene: GAM112197 target protein, GAM114097 target protein and GAM209918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112197, GAM114097 and GAM209918

GR1264 AL708206 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1264(GR1264) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1264 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1264 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1264 gene encodes GR1264 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1264 precursor RNA folds spatially, forming GR1264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1264 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1264 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM144993 precursor RNA, GAM261179 precursor RNA and GAM299405 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144993 RNA, GAM261179 RNA and GAM299405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144993 target RNA into GAM144993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261179 target RNA into GAM261179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299405 target RNA into GAM299405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1264 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1264 gene: GAM144993 target protein, GAM261179 target protein and GAM299405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144993, GAM261179 and GAM299405

GR1265 BQ059656 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1265(GR1265) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1265 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1265 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1265 gene encodes GR1265 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1265 precursor RNA folds spatially, forming GR1265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1265 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1265 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6499 precursor RNA and GAM316324 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6499 RNA and GAM316324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM6499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6499 target RNA into GAM6499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316324 target RNA into GAM316324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1265 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1265 gene: GAM6499 target protein and GAM316324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6499 and GAM316324

GR1266 BG704874 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1266(GR1266) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1266 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1266 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1266 gene encodes GR1266 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1266 precursor RNA folds spatially, forming GR1266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1266 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1266 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4887 precursor RNA, GAM65305 precursor RNA, GAM131269 precursor RNA and GAM326301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4887 RNA, GAM65305 RNA, GAM131269 RNA and GAM326301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4887 target RNA into GAM4887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65305 target RNA into GAM65305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131269 target RNA into GAM131269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326301 target RNA into GAM326301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1266 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1266 gene: GAM4887 target protein, GAM65305 target protein, GAM131269 target protein and GAM326301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4887, GAM65305, GAM131269 and GAM326301

GR1267 AU150389 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1267(GR1267) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1267 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1267 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1267 gene encodes GR1267 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1267 precursor RNA folds spatially, forming GR1267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1267 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1267 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4014 precursor RNA and GAM5802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4014 RNA and GAM5802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4014 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4014 target RNA into GAM4014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5802 target RNA into GAM5802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1267 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1267 gene: GAM4014 target protein and GAM5802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4014 and GAM5802

GR1268 BF824855 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1268(GR1268) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1268 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1268 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1268 gene encodes GR1268 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1268 precursor RNA folds spatially, forming GR1268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1268 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1268 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2621 precursor RNA, GAM7471 precursor RNA and GAM291194 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2621 RNA, GAM7471 RNA and GAM291194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2621 target RNA into GAM2621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7471 target RNA into GAM7471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291194 target RNA into GAM291194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1268 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1268 gene: GAM2621 target protein, GAM7471 target protein and GAM291194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2621, GAM7471 and GAM291194

GR1269 AW237565 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1269(GR1269) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1269 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1269 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1269 gene encodes GR1269 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1269 precursor RNA folds spatially, forming GR1269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1269 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1269 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7100 precursor RNA and GAM8574 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7100 RNA and GAM8574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7100 target RNA into GAM7100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8574 target RNA into GAM8574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1269 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1269 gene: GAM7100 target protein and GAM8574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7100 and GAM8574

GR1270 BM888308 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1270(GR1270) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1270 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1270 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1270 gene encodes GR1270 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1270 precursor RNA folds spatially, forming GR1270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1270 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1270 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM8640 precursor RNA, GAM53503 precursor RNA, GAM239918 precursor RNA and GAM248526 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8640 RNA, GAM53503 RNA, GAM239918 RNA and GAM248526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8640 target RNA into GAM8640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53503 target RNA into GAM53503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239918 target RNA into GAM239918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248526 target RNA into GAM248526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1270 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1270 gene: GAM8640 target protein, GAM53503 target protein, GAM239918 target protein and GAM248526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8640, GAM53503, GAM239918 and GAM248526

GR1271 AV720492 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1271(GR1271) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1271 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1271 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1271 gene encodes GR1271 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1271 precursor RNA folds spatially, forming GR1271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1271 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1271 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8366 precursor RNA and GAM336089 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8366 RNA and GAM336089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8366 target RNA into GAM8366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336089 target RNA into GAM336089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1271 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1271 gene: GAM8366 target protein and GAM336089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM8366 and GAM336089

GR1272 BG819836 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1272(GR1272) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1272 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1272 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1272 gene encodes GR1272 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1272 precursor RNA folds spatially, forming GR1272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1272 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1272 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6644 precursor RNA, GAM61568 precursor RNA and GAM298139 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6644 RNA, GAM61568 RNA and GAM298139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6644 target RNA into GAM6644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM61568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61568 target RNA into GAM61568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298139 target RNA into GAM298139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1272 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1272 gene: GAM6644 target protein, GAM61568 target protein and GAM298139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6644, GAM61568 and GAM298139

GR1273 AA513575 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1273(GR1273) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1273 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1273 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1273 gene encodes GR1273 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1273 precursor RNA folds spatially, forming GR1273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1273 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1273 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1273 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM144532 precursor RNA and GAM181616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144532 RNA and GAM181616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144532 target RNA into GAM144532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181616 target RNA into GAM181616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1273 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1273 gene: GAM144532 target protein and GAM181616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144532 and GAM181616

GR1274 BF246283 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1274(GR1274) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1274 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1274 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1274 gene encodes GR1274 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1274 precursor RNA folds spatially, forming GR1274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1274 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1274 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6448 precursor RNA and GAM124426 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6448 RNA and GAM124426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6448 target RNA into GAM6448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124426 target RNA into GAM124426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1274 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1274 gene: GAM6448 target protein and GAM124426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6448 and GAM124426

GR1275 BI457683 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1275(GR1275) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1275 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1275 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1275 gene encodes GR1275 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1275 precursor RNA folds spatially, forming GR1275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1275 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1275 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69152 precursor RNA and GAM210448 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69152 RNA and GAM210448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69152 target RNA into GAM69152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210448 target RNA into GAM210448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1275 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1275 gene: GAM69152 target protein and GAM210448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69152 and GAM210448

GR1276 BF514280 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1276(GR1276) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1276 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1276 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1276 gene encodes GR1276 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1276 precursor RNA folds spatially, forming GR1276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1276 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1276 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3378 precursor RNA, GAM4757 precursor RNA and GAM27859 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3378 RNA, GAM4757 RNA and GAM27859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM3378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3378 target RNA into GAM3378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4757 target RNA into GAM4757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27859 target RNA into GAM27859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1276 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1276 gene: GAM3378 target protein, GAM4757 target protein and GAM27859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3378, GAM4757 and GAM27859

GR1277 BG032350 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1277(GR1277) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1277 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1277 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1277 gene encodes GR1277 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1277 precursor RNA folds spatially, forming GR1277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1277 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1277 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM106551 precursor RNA, GAM326487 precursor RNA and GAM328184 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106551 RNA, GAM326487 RNA and GAM328184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106551 target RNA into GAM106551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326487 target RNA into GAM326487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328184 target RNA into GAM328184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1277 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1277 gene: GAM106551 target protein, GAM326487 target protein and GAM328184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106551, GAM326487 and GAM328184

GR1278 BG956109 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1278(GR1278) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1278 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1278 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1278 gene encodes GR1278 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1278 precursor RNA folds spatially, forming GR1278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1278 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1278 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM364 precursor RNA and GAM255944 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM364 RNA and GAM255944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM364 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM364 target RNA into GAM364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255944 target RNA into GAM255944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1278 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1278 gene: GAM364 target protein and GAM255944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM364 and GAM255944

GR1279 AA112177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1279(GR1279) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1279 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1279 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1279 gene encodes GR1279 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1279 precursor RNA folds spatially, forming GR1279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1279 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1279 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2119 precursor RNA and GAM7390 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2119 RNA and GAM7390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2119 target RNA into GAM2119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7390 target RNA into GAM7390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1279 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1279 gene: GAM2119 target protein and GAM7390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2119 and GAM7390

GR1280 BM728423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1280(GR1280) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1280 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1280 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1280 gene encodes GR1280 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1280 precursor RNA folds spatially, forming GR1280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1280 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1280 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2341 precursor RNA, GAM60024 precursor RNA and GAM305878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2341 RNA, GAM60024 RNA and GAM305878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2341 target RNA into GAM2341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60024 target RNA into GAM60024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305878 target RNA into GAM305878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1280 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1280 gene: GAM2341 target protein, GAM60024 target protein and GAM305878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2341, GAM60024 and GAM305878

GR1281 BF983174 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1281(GR1281) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1281 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1281 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1281 gene encodes GR1281 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1281 precursor RNA folds spatially, forming GR1281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1281 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1281 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4573 precursor RNA and GAM122182 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4573 RNA and GAM122182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4573 target RNA into GAM4573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122182 target RNA into GAM122182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1281 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1281 gene: GAM4573 target protein and GAM122182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4573 and GAM122182

GR1282 BG218083 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1282(GR1282) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1282 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1282 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1282 gene encodes GR1282 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1282 precursor RNA folds spatially, forming GR1282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1282 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1282 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2538 precursor RNA, GAM6505 precursor RNA and GAM145622 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2538 RNA, GAM6505 RNA and GAM145622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2538 target RNA into GAM2538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6505 target RNA into GAM6505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145622 target RNA into GAM145622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1282 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1282 gene: GAM2538 target protein, GAM6505 target protein and GAM145622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2538, GAM6505 and GAM145622

GR1283 AI277713 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1283(GR1283) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1283 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1283 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1283 gene encodes GR1283 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1283 precursor RNA folds spatially, forming GR1283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1283 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1283 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM254612 precursor RNA and GAM311380 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM254612 RNA and GAM311380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM254612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254612 target RNA into GAM254612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311380 target RNA into GAM311380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1283 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1283 gene: GAM254612 target protein and GAM311380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM254612 and GAM311380

GR1284 BM018915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1284(GR1284) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1284 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1284 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1284 gene encodes GR1284 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1284 precursor RNA folds spatially, forming GR1284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1284 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1284 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7394 precursor RNA and GAM13883 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7394 RNA and GAM13883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7394 target RNA into GAM7394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13883 target RNA into GAM13883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1284 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1284 gene: GAM7394 target protein and GAM13883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7394 and GAM13883

GR1285 BM310269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1285(GR1285) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1285 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1285 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1285 gene encodes GR1285 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1285 precursor RNA folds spatially, forming GR1285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1285 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1285 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7563 precursor RNA, GAM129903 precursor RNA and GAM197644 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7563 RNA, GAM129903 RNA and GAM197644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7563 target RNA into GAM7563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129903 target RNA into GAM129903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197644 target RNA into GAM197644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1285 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1285 gene: GAM7563 target protein, GAM129903 target protein and GAM197644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7563, GAM129903 and GAM197644

GR1286 BF699674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1286(GR1286) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1286 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1286 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1286 gene encodes GR1286 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1286 precursor RNA folds spatially, forming GR1286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1286 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1286 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM98138 precursor RNA, GAM139634 precursor RNA, GAM186339 precursor RNA and GAM203359 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98138 RNA, GAM139634 RNA, GAM186339 RNA and GAM203359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98138 target RNA into GAM98138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139634 target RNA into GAM139634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM186339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186339 target RNA into GAM186339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203359 target RNA into GAM203359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1286 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1286 gene: GAM98138 target protein, GAM139634 target protein, GAM186339 target protein and GAM203359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98138, GAM139634, GAM186339 and GAM203359

GR1287 AI953980 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1287(GR1287) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1287 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1287 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1287 gene encodes GR1287 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1287 precursor RNA folds spatially, forming GR1287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1287 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1287 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1287 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94271 precursor RNA and GAM336095 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94271 RNA and GAM336095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94271 target RNA into GAM94271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336095 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336095 target RNA into GAM336095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1287 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1287 gene: GAM94271 target protein and GAM336095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94271 and GAM336095

GR1288 AA744241 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1288(GR1288) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1288 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1288 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1288 gene encodes GR1288 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1288 precursor RNA folds spatially, forming GR1288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1288 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1288 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3516 precursor RNA and GAM210712 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3516 RNA and GAM210712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3516 target RNA into GAM3516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210712 target RNA into GAM210712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1288 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1288 gene: GAM3516 target protein and GAM210712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3516 and GAM210712

GR1289 BI547903 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1289(GR1289) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1289 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1289 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1289 gene encodes GR1289 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1289 precursor RNA folds spatially, forming GR1289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1289 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1289 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2915 precursor RNA, GAM35835 precursor RNA and GAM194983 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2915 RNA, GAM35835 RNA and GAM194983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2915 target RNA into GAM2915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35835 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35835 target RNA into GAM35835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194983 target RNA into GAM194983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1289 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1289 gene: GAM2915 target protein, GAM35835 target protein and GAM194983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2915, GAM35835 and GAM194983

GR1290 AW592889 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1290(GR1290) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1290 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1290 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1290 gene encodes GR1290 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1290 precursor RNA folds spatially, forming GR1290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1290 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1290 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM19390 precursor RNA and GAM28363 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19390 RNA and GAM28363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19390 target RNA into GAM19390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28363 target RNA into GAM28363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1290 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1290 gene: GAM19390 target protein and GAM28363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19390 and GAM28363

GR1291 BE258081 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1291(GR1291) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1291 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1291 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1291 gene encodes GR1291 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1291 precursor RNA folds spatially, forming GR1291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1291 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1291 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2436 precursor RNA and GAM300471 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2436 RNA and GAM300471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2436 target RNA into GAM2436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300471 target RNA into GAM300471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1291 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1291 gene: GAM2436 target protein and GAM300471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2436 and GAM300471

GR1292 N57949 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1292(GR1292) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1292 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1292 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1292 gene encodes GR1292 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1292 precursor RNA folds spatially, forming GR1292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1292 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1292 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM157286 precursor RNA, GAM167286 precursor RNA and GAM263143 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM157286 RNA, GAM167286 RNA and GAM263143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM157286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157286 target RNA into GAM157286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167286 target RNA into GAM167286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263143 target RNA into GAM263143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1292 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1292 gene: GAM157286 target protein, GAM167286 target protein and GAM263143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM157286, GAM167286 and GAM263143

GR1293 AV696071 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1293(GR1293) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1293 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1293 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1293 gene encodes GR1293 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1293 precursor RNA folds spatially, forming GR1293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1293 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1293 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM876 precursor RNA, GAM47936 precursor RNA and

GAM132280 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM876 RNA, GAM47936 RNA and GAM132280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM876 target RNA into GAM876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47936 target RNA into GAM47936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132280 target RNA into GAM132280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1293 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1293 gene: GAM876 target protein, GAM47936 target protein and GAM132280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM876, GAM47936 and GAM132280

GR1294 BI601519 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1294(GR1294) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1294 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1294 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1294 gene encodes GR1294 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1294 precursor RNA folds spatially, forming GR1294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1294 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1294 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63550 precursor RNA and GAM132397 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63550 RNA and GAM132397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63550 target RNA into GAM63550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132397 target RNA into GAM132397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1294 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1294 gene: GAM63550 target protein and GAM132397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63550 and GAM132397

GR1295 AA911048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1295(GR1295) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1295 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1295 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1295 gene encodes GR1295 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1295 precursor RNA folds spatially, forming GR1295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1295 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1295 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90430 precursor RNA and GAM134600 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90430 RNA and GAM134600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90430 target RNA into GAM90430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134600 target RNA into GAM134600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1295 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1295 gene: GAM90430 target protein and GAM134600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90430 and GAM134600

GR1296 BF337512 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1296(GR1296) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1296 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1296 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1296 gene encodes GR1296 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1296 precursor RNA folds spatially, forming GR1296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1296 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1296 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59102 precursor RNA and GAM219006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59102 RNA and GAM219006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59102 target RNA into GAM59102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219006 target RNA into GAM219006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1296 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1296 gene: GAM59102 target protein and GAM219006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59102 and GAM219006

GR1297 AW139561 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1297(GR1297) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1297 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1297 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1297 gene encodes GR1297 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1297 precursor RNA folds spatially, forming GR1297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1297 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1297 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6224 precursor RNA and GAM323290 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6224 RNA and GAM323290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6224 target RNA into GAM6224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323290 target RNA into GAM323290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1297 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1297 gene: GAM6224 target protein and GAM323290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6224 and GAM323290

GR1298 BG495320 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1298(GR1298) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1298 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1298 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1298 gene encodes GR1298 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1298 precursor RNA folds spatially, forming GR1298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1298 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1298 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2034 precursor RNA, GAM31017 precursor RNA and GAM99065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2034 RNA, GAM31017 RNA and GAM99065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2034 target RNA into GAM2034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31017 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31017

target RNA into GAM31017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99065 target RNA into GAM99065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1298 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1298 gene: GAM2034 target protein, GAM31017 target protein and GAM99065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2034, GAM31017 and GAM99065

GR1299 BI918138 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1299(GR1299) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1299 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1299 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1299 gene encodes GR1299 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1299 precursor RNA folds spatially, forming GR1299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1299 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1299 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM79467 precursor RNA, GAM110360 precursor RNA and GAM193907 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79467 RNA, GAM110360 RNA and GAM193907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79467 target RNA into GAM79467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110360 target RNA into GAM110360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193907 target RNA into GAM193907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1299 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1299 gene: GAM79467 target protein, GAM110360 target protein and GAM193907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79467, GAM110360 and GAM193907

GR1300 F32213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1300(GR1300) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1300 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1300 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1300 gene encodes GR1300 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1300 precursor RNA folds spatially, forming GR1300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1300 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1300 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4175 precursor RNA and GAM7529 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4175 RNA and GAM7529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4175 target RNA into GAM4175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7529 target RNA into GAM7529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1300 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1300 gene: GAM4175 target protein and GAM7529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4175 and GAM7529

GR1301 BG698367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1301(GR1301) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1301 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1301 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1301 gene encodes GR1301 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1301 precursor RNA folds spatially, forming GR1301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1301 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1301 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM344 precursor RNA and GAM71205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM344 RNA and GAM71205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM344 target RNA into

GAM344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71205 target RNA into GAM71205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1301 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1301 gene: GAM344 target protein and GAM71205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM344 and GAM71205

GR1302 AL048237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1302(GR1302) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1302 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1302 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1302 gene encodes GR1302 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1302 precursor RNA folds spatially, forming GR1302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1302 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1302 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM146970 precursor RNA and GAM249402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146970 RNA and GAM249402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM146970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146970 target RNA into GAM146970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249402 target RNA into GAM249402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1302 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1302 gene: GAM146970 target protein and GAM249402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM146970 and GAM249402

GR1303 AA677415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1303(GR1303) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1303 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1303 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1303 gene encodes GR1303 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1303 precursor RNA folds spatially, forming GR1303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1303 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1303 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM176185 precursor RNA, GAM216818 precursor RNA and GAM229840 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM176185 RNA, GAM216818 RNA and GAM229840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM176185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176185 target RNA into GAM176185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216818 target RNA into GAM216818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229840 target RNA into GAM229840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1303 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1303 gene: GAM176185 target

protein, GAM216818 target protein and GAM229840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM176185, GAM216818 and GAM229840

GR1304 AW873120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1304(GR1304) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1304 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1304 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1304 gene encodes GR1304 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1304 precursor RNA folds spatially, forming GR1304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1304 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1304 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM282557 precursor RNA and GAM336033 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM282557 RNA and GAM336033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM282557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282557 target RNA into GAM282557 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336033 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336033 target RNA into GAM336033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1304 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1304 gene: GAM282557 target protein and GAM336033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM282557 and GAM336033

GR1305 AL548756 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1305(GR1305) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1305 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1305 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1305 gene encodes GR1305 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1305 precursor RNA folds spatially, forming GR1305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1305 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1305 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13224 precursor RNA and GAM130984 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13224 RNA and GAM130984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13224 target RNA into GAM13224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130984 target RNA into GAM130984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1305 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1305 gene: GAM13224 target protein and GAM130984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13224 and GAM130984

GR1306 BM802997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1306(GR1306) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1306 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1306 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1306 gene encodes GR1306 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1306 precursor RNA folds spatially, forming GR1306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1306 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1306 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20658 precursor RNA and GAM206852 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20658 RNA and GAM206852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20658 target RNA into GAM20658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206852 target RNA into GAM206852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1306 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1306 gene: GAM20658 target protein and GAM206852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20658 and GAM206852

GR1307 AA471055 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1307(GR1307) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1307 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1307 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1307 gene encodes GR1307 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1307 precursor RNA folds spatially, forming GR1307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1307 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1307 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7639 precursor RNA, GAM51770 precursor RNA, GAM93119 precursor RNA and GAM261279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7639 RNA, GAM51770 RNA, GAM93119 RNA and GAM261279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7639 target RNA into GAM7639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51770 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51770 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51770 target RNA into GAM51770 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93119 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93119 target RNA into GAM93119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261279 target RNA into GAM261279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1307 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1307 gene: GAM7639 target protein, GAM51770 target protein, GAM93119 target protein and GAM261279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7639, GAM51770, GAM93119 and GAM261279

GR1308 BF574986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1308(GR1308) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1308 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1308 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1308 gene encodes GR1308 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1308 precursor RNA folds spatially, forming GR1308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1308 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1308 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1567 precursor RNA and GAM26119 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1567 RNA and GAM26119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1567 target RNA into GAM1567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26119 target RNA into GAM26119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1308 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1308 gene: GAM1567 target protein and GAM26119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1567 and GAM26119

GR1309 AA932383 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1309(GR1309) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1309 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1309 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1309 gene encodes GR1309 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1309 precursor RNA folds spatially, forming GR1309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1309 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1309 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3578 precursor RNA, GAM114620 precursor RNA, GAM210126 precursor RNA and GAM217557 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3578 RNA, GAM114620 RNA, GAM210126 RNA and GAM217557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3578 target RNA into GAM3578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114620 target RNA into GAM114620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210126 target RNA into GAM210126 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217557 target RNA into GAM217557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1309 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1309 gene: GAM3578 target protein, GAM114620 target protein, GAM210126 target protein and GAM217557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3578, GAM114620, GAM210126 and GAM217557

GR1310 BE259128 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1310(GR1310) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1310 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1310 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1310 gene encodes GR1310 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1310 precursor RNA folds spatially, forming GR1310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1310 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1310 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM37372 precursor RNA, GAM124371 precursor RNA and GAM240128 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM37372 RNA, GAM124371 RNA and GAM240128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM37372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37372 target RNA into GAM37372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124371 target RNA into GAM124371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240128 target RNA into GAM240128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1310 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1310 gene: GAM37372 target protein, GAM124371 target protein and GAM240128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM37372, GAM124371 and GAM240128

GR1311 BM994909 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1311(GR1311) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1311 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1311 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1311 gene encodes GR1311 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1311 precursor RNA folds spatially, forming GR1311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1311 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1311 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM145378 precursor RNA and GAM336107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM145378 RNA and GAM336107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM145378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145378 target RNA into GAM145378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336107 target RNA into GAM336107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1311 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1311 gene: GAM145378 target protein and GAM336107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM145378 and GAM336107

GR1312 BF316710 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1312(GR1312) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1312 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1312 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1312 gene encodes GR1312 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1312 precursor RNA folds spatially, forming GR1312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1312 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1312 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM1019 precursor RNA, GAM99494 precursor RNA, GAM107261 precursor RNA, GAM150018 precursor RNA and GAM259294 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1019 RNA, GAM99494 RNA, GAM107261 RNA, GAM150018 RNA and GAM259294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1019 target RNA into

GAM1019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99494 target RNA into GAM99494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107261 target RNA into GAM107261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150018 target RNA into GAM150018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259294 target RNA into GAM259294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1312 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1312 gene: GAM1019 target protein, GAM99494 target protein, GAM107261 target protein, GAM150018 target protein and GAM259294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1019, GAM99494, GAM107261, GAM150018 and GAM259294

GR1313 BI668157 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1313(GR1313) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1313 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1313 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1313 gene encodes GR1313 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1313 precursor RNA folds spatially, forming GR1313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1313 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1313 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1870 precursor RNA, GAM15562 precursor RNA and GAM59342 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1870 RNA, GAM15562 RNA and GAM59342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1870 target RNA into GAM1870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15562 target RNA into GAM15562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59342 target RNA into GAM59342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1313 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1313 gene: GAM1870 target protein, GAM15562 target protein and GAM59342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1870, GAM15562 and GAM59342

GR1314 AV707029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1314(GR1314) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1314 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1314 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1314 gene encodes GR1314 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1314 precursor RNA folds spatially, forming GR1314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1314 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1314 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM80071 precursor RNA and GAM305032 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM80071 RNA and GAM305032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM80071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80071 target RNA into GAM80071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305032 target RNA into GAM305032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1314 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1314 gene: GAM80071 target protein and GAM305032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM80071 and GAM305032

GR1315 H08654 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1315(GR1315) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1315 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1315 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1315 gene encodes GR1315 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1315 precursor RNA folds spatially, forming GR1315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1315 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1315 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7870 precursor RNA and GAM216230 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7870 RNA and GAM216230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7870 target RNA into GAM7870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216230 target RNA into GAM216230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1315 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1315 gene: GAM7870 target protein and GAM216230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7870 and GAM216230

GR1316 AW896665 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1316(GR1316) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1316 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1316 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1316 gene encodes GR1316 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1316 precursor RNA folds spatially, forming GR1316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1316 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1316 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1624 precursor RNA and GAM141071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1624 RNA and GAM141071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1624 target RNA into GAM1624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141071 target RNA into GAM141071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1316 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1316 gene: GAM1624 target protein and GAM141071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1624 and GAM141071

GR1317 BM010362 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1317(GR1317) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1317 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1317 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1317 gene encodes GR1317 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1317 precursor RNA folds spatially, forming GR1317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1317 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1317 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6132 precursor RNA and GAM289749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6132 RNA and GAM289749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6132 target RNA into GAM6132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289749 target RNA into GAM289749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1317 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1317 gene: GAM6132 target protein and GAM289749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6132 and GAM289749

GR1318 R31131 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1318(GR1318) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1318 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1318 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1318 gene encodes GR1318 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1318 precursor RNA folds spatially, forming GR1318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1318 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1318 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM15622 precursor RNA, GAM154715 precursor RNA and GAM334697 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15622 RNA, GAM154715 RNA and GAM334697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15622 target RNA into GAM15622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154715 target RNA into GAM154715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334697 target RNA into GAM334697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1318 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1318 gene: GAM15622 target protein, GAM154715 target protein and GAM334697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15622, GAM154715 and GAM334697

GR1319 BM044394 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1319(GR1319) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1319 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1319 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1319 gene encodes GR1319 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1319 precursor RNA folds spatially, forming GR1319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1319 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1319 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3455 precursor RNA, GAM7091 precursor RNA, GAM149749 precursor RNA and GAM249857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3455 RNA, GAM7091 RNA, GAM149749 RNA and GAM249857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3455 target RNA into GAM3455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7091 target RNA into GAM7091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM149749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149749 target RNA into GAM149749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249857 target RNA into GAM249857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1319 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1319 gene: GAM3455 target protein, GAM7091 target protein, GAM149749 target protein and GAM249857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3455, GAM7091, GAM149749 and GAM249857

GR1320 BF921304 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1320(GR1320) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1320 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1320 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1320 gene encodes GR1320 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1320 precursor RNA folds spatially, forming GR1320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1320 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1320 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1320 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM101715 precursor RNA, GAM123210 precursor RNA, GAM126509 precursor RNA and GAM139713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101715 RNA, GAM123210 RNA, GAM126509 RNA and GAM139713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101715 target RNA into GAM101715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123210 target RNA into GAM123210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126509 target RNA into GAM126509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139713 target RNA into GAM139713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1320 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1320 gene: GAM101715 target

protein, GAM123210 target protein, GAM126509 target protein and GAM139713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101715, GAM123210, GAM126509 and GAM139713

GR1321 AA446801 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1321(GR1321) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1321 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1321 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1321 gene encodes GR1321 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1321 precursor RNA folds spatially, forming GR1321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1321 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1321 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM44151 precursor RNA and GAM146602 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44151 RNA and GAM146602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44151 target RNA into GAM44151 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146602 target RNA into GAM146602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1321 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1321 gene: GAM44151 target protein and GAM146602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44151 and GAM146602

GR1322 BF106137 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1322(GR1322) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1322 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1322 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1322 gene encodes GR1322 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1322 precursor RNA folds spatially, forming GR1322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1322 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1322 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM501 precursor RNA and GAM239913 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM501 RNA and GAM239913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM501 target RNA into GAM501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239913 target RNA into GAM239913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1322 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1322 gene: GAM501 target protein and GAM239913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM501 and GAM239913

GR1323 AI280279 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1323(GR1323) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1323 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1323 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1323 gene encodes GR1323 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1323 precursor RNA folds spatially, forming GR1323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1323 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1323 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM62779 precursor RNA, GAM95143 precursor RNA and GAM121704 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM62779 RNA, GAM95143 RNA and GAM121704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM62779 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62779 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62779 target RNA into GAM62779 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95143 target RNA into GAM95143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121704 target RNA into GAM121704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1323 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1323 gene: GAM62779 target protein, GAM95143 target protein and GAM121704 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM62779, GAM95143 and GAM121704

GR1324 AW945238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1324(GR1324) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1324 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1324 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1324 gene encodes GR1324 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1324 precursor RNA folds spatially, forming GR1324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1324 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1324 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM139801 precursor RNA and GAM146464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM139801 RNA and GAM146464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM139801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139801 target RNA into GAM139801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146464 target RNA into GAM146464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1324 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1324 gene: GAM139801 target protein and GAM146464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM139801 and GAM146464

GR1325 AI203651 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1325(GR1325) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1325 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1325 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1325 gene encodes GR1325 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1325 precursor RNA folds spatially, forming GR1325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1325 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1325 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6052 precursor RNA and GAM8146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6052 RNA and GAM8146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6052 target RNA into GAM6052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8146 target RNA into GAM8146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1325 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1325 gene: GAM6052 target protein and GAM8146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6052 and GAM8146

GR1326 T85037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1326(GR1326) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1326 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1326 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1326 gene encodes GR1326 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1326 precursor RNA folds spatially, forming GR1326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1326 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1326 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM137885 precursor RNA and GAM236936 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM137885 RNA and GAM236936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM137885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137885 target RNA into GAM137885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236936 target RNA into GAM236936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1326 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1326 gene: GAM137885 target protein and GAM236936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM137885 and GAM236936

GR1327 AW169002 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1327(GR1327) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1327 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1327 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1327 gene encodes GR1327 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1327 precursor RNA folds spatially, forming GR1327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1327 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1327 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM172784 precursor RNA and GAM253615 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM172784 RNA and GAM253615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM172784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172784 target RNA into GAM172784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253615 target RNA into GAM253615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1327 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1327 gene: GAM172784 target protein and GAM253615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM172784 and GAM253615

GR1328 AA715171 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1328(GR1328) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1328 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1328 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1328 gene encodes GR1328 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1328 precursor RNA folds spatially, forming GR1328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1328 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1328 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM92297 precursor RNA, GAM112233 precursor RNA and GAM240860 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92297 RNA, GAM112233 RNA and GAM240860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92297 target RNA into GAM92297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112233 target RNA into GAM112233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240860 target RNA into GAM240860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1328 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1328 gene: GAM92297 target protein, GAM112233 target protein and GAM240860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92297, GAM112233 and GAM240860

GR1329 BE539572 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1329(GR1329) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1329 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1329 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1329 gene encodes GR1329 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1329 precursor RNA folds spatially, forming GR1329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1329 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1329 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM9086 precursor RNA, GAM148794 precursor RNA, GAM172774 precursor RNA and GAM235401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9086 RNA, GAM148794 RNA, GAM172774 RNA and GAM235401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9086 target RNA into GAM9086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148794 target RNA into GAM148794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172774 target RNA into GAM172774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235401 target RNA into GAM235401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1329 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1329 gene: GAM9086 target protein, GAM148794 target protein, GAM172774 target protein and GAM235401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9086, GAM148794, GAM172774 and GAM235401

GR1330 AA486173 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1330(GR1330) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1330 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1330 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1330 gene encodes GR1330 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1330 precursor RNA folds spatially, forming GR1330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1330 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1330 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM882 precursor RNA and GAM229259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM882 RNA and GAM229259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM882 target RNA into GAM882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229259 target RNA into GAM229259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1330 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1330 gene: GAM882 target protein and GAM229259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM882 and GAM229259

GR1331 R23260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1331(GR1331) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1331 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1331 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1331 gene encodes GR1331 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1331 precursor RNA folds spatially, forming GR1331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1331 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1331 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM278475 precursor RNA and GAM309177 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM278475 RNA and GAM309177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM278475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278475 target RNA into GAM278475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309177 target RNA into GAM309177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1331 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1331 gene: GAM278475 target protein and GAM309177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM278475 and GAM309177

GR1332 BF953105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1332(GR1332) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1332 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1332 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1332 gene encodes GR1332 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1332 precursor RNA folds spatially, forming GR1332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1332 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1332 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63693 precursor RNA, GAM172211 precursor RNA and GAM260757 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63693 RNA, GAM172211 RNA and GAM260757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63693 target RNA into GAM63693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172211 target RNA into GAM172211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260757 target RNA into GAM260757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1332 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1332 gene: GAM63693 target protein, GAM172211 target protein and GAM260757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63693, GAM172211 and GAM260757

GR1333 BE728552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1333(GR1333) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1333 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1333 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1333 gene encodes GR1333 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1333 precursor RNA folds spatially, forming GR1333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1333 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1333 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6365 precursor RNA and GAM88658 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6365 RNA and GAM88658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6365 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6365 target RNA into GAM6365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88658 target RNA into GAM88658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1333 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1333 gene: GAM6365 target protein and GAM88658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6365 and GAM88658

GR1334 AA970399 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1334(GR1334) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1334 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1334 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1334 gene encodes GR1334 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1334 precursor RNA folds spatially, forming GR1334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1334 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1334 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119215 precursor RNA and GAM180030 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119215 RNA and GAM180030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119215 target RNA into GAM119215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180030 target RNA into GAM180030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1334 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1334 gene: GAM119215 target protein and GAM180030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119215 and GAM180030

GR1335 R52771 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1335(GR1335) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1335 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1335 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1335 gene encodes GR1335 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1335 precursor RNA folds spatially, forming GR1335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1335 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1335 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1251 precursor RNA, GAM124875 precursor RNA and GAM145082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1251 RNA, GAM124875 RNA and GAM145082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1251 target RNA into GAM1251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124875 target RNA into GAM124875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145082 target RNA into GAM145082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1335 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1335 gene: GAM1251 target protein, GAM124875 target protein and GAM145082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1251, GAM124875 and GAM145082

GR1336 AL602057 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1336(GR1336) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1336 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1336 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1336 gene encodes GR1336 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1336 precursor RNA folds spatially, forming GR1336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1336 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1336 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4173 precursor RNA and GAM108217 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4173 RNA and GAM108217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4173 target RNA into GAM4173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108217 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108217 target RNA into GAM108217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1336 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1336 gene: GAM4173 target protein and GAM108217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4173 and GAM108217

GR1337 BM797485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1337(GR1337) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1337 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1337 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1337 gene encodes GR1337 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1337 precursor RNA folds spatially, forming GR1337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1337 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1337 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM165840 precursor RNA and GAM183254 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165840 RNA and GAM183254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165840 target RNA into GAM165840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183254 target RNA into GAM183254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1337 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1337 gene: GAM165840 target protein and GAM183254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165840 and GAM183254

GR1338 BF773165 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1338(GR1338) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1338 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1338 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1338 gene encodes GR1338 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1338 precursor RNA folds spatially, forming GR1338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1338 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1338 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57895 precursor RNA and GAM209732 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57895 RNA and GAM209732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57895 target RNA into GAM57895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209732 target RNA into GAM209732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1338 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1338 gene: GAM57895 target protein and GAM209732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57895 and GAM209732

GR1339 BM987655 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1339(GR1339) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1339 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1339 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1339 gene encodes GR1339 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1339 precursor RNA folds spatially, forming GR1339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1339 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1339 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88380 precursor RNA and GAM166536 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88380 RNA and GAM166536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88380 target RNA into GAM88380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166536 target RNA into GAM166536 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1339 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1339 gene: GAM88380 target protein and GAM166536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88380 and GAM166536

GR1340 BI226052 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1340(GR1340) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1340 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1340 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1340 gene encodes GR1340 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1340 precursor RNA folds spatially, forming GR1340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1340 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1340 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93270 precursor RNA and GAM227109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93270 RNA and GAM227109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM93270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93270 target RNA into GAM93270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227109 target RNA into GAM227109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1340 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1340 gene: GAM93270 target protein and GAM227109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93270 and GAM227109

GR1341 AA884420 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1341(GR1341) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1341 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1341 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1341 gene encodes GR1341 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1341 precursor RNA folds spatially, forming GR1341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1341 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1341 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM117302 precursor RNA and GAM293952 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117302 RNA and GAM293952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117302 target RNA into GAM117302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293952 target RNA into GAM293952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1341 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1341 gene: GAM117302 target protein and GAM293952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117302 and GAM293952

GR1342 BG338317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1342(GR1342) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1342 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1342 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1342 gene encodes GR1342 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1342 precursor RNA folds spatially, forming GR1342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1342 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1342 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64845 precursor RNA and GAM146901 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64845 RNA and GAM146901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64845 target RNA into GAM64845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146901 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146901 target RNA into GAM146901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1342 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1342 gene: GAM64845 target protein and GAM146901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64845 and GAM146901

GR1343 BF998808 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1343(GR1343) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1343 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1343 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1343 gene encodes GR1343 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1343 precursor RNA folds spatially, forming GR1343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1343 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1343 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1224 precursor RNA, GAM102526 precursor RNA and GAM313679 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1224 RNA, GAM102526 RNA and GAM313679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1224 target RNA into GAM1224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102526 target RNA into GAM102526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313679 target RNA into GAM313679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1343 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1343 gene: GAM1224 target protein, GAM102526 target protein and GAM313679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1224, GAM102526 and GAM313679

GR1344 BQ006395 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1344(GR1344) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1344 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1344 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1344 gene encodes GR1344 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1344 precursor RNA folds spatially, forming GR1344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1344 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1344 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6514 precursor RNA and GAM195160 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6514 RNA and GAM195160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6514 target RNA into GAM6514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195160 target RNA into GAM195160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1344 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1344 gene: GAM6514 target protein and GAM195160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6514 and GAM195160

GR1345 BG996825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1345(GR1345) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1345 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1345 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1345 gene encodes GR1345 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1345 precursor RNA folds spatially, forming GR1345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1345 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1345 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6929 precursor RNA and GAM75413 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6929 RNA and GAM75413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6929 target RNA into GAM6929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75413 target RNA into GAM75413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1345 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1345 gene: GAM6929 target protein and GAM75413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6929 and GAM75413

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1346(GR1346) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1346 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1346 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1346 gene encodes GR1346 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1346 precursor RNA folds spatially, forming GR1346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1346 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1346 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1979 precursor RNA, GAM20093 precursor RNA and GAM259216 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1979 RNA, GAM20093 RNA and GAM259216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1979 target RNA into GAM1979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20093 target RNA into GAM20093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259216 target RNA into GAM259216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1346 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1346 gene: GAM1979 target protein, GAM20093 target protein and GAM259216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1979, GAM20093 and GAM259216

GR1347 BG193459 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1347(GR1347) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1347 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1347 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1347 gene encodes GR1347 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1347 precursor RNA folds spatially, forming GR1347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1347 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1347 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM242600 precursor RNA and GAM296875 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM242600 RNA and GAM296875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM242600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242600 target RNA into GAM242600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296875 target RNA into GAM296875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1347 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1347 gene: GAM242600 target protein and GAM296875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM242600 and GAM296875

GR1348 BF364894 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1348(GR1348) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1348 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1348 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1348 gene encodes GR1348 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1348 precursor RNA folds spatially, forming GR1348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1348 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1348 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM208542 precursor RNA, GAM253356 precursor RNA and GAM315593 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208542 RNA, GAM253356 RNA and GAM315593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208542 target RNA into GAM208542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253356 target RNA into GAM253356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315593 target RNA into GAM315593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1348 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1348 gene: GAM208542 target protein, GAM253356 target protein and GAM315593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208542, GAM253356 and GAM315593

GR1349 BG876475 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1349(GR1349) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1349 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1349 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1349 gene encodes GR1349 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1349 precursor RNA folds spatially, forming GR1349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1349 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1349 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6281 precursor RNA and GAM309272 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6281 RNA and GAM309272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6281 target RNA into GAM6281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309272 target RNA into GAM309272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1349 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1349 gene: GAM6281 target protein and GAM309272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6281 and GAM309272

GR1350 BM696661 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1350(GR1350) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1350 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1350 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1350 gene encodes GR1350 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1350 precursor RNA folds spatially, forming GR1350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1350 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1350 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM684 precursor RNA and GAM2452 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM684 RNA and GAM2452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM684 target RNA into GAM684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2452 target RNA into GAM2452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1350 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1350 gene: GAM684 target protein and GAM2452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM684 and GAM2452

GR1351 BM051358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1351(GR1351) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1351 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1351 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1351 gene encodes GR1351 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1351 precursor RNA folds spatially, forming GR1351 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1351 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1351 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM860 precursor RNA, GAM20423 precursor RNA and GAM31100 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM860 RNA, GAM20423 RNA and GAM31100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM860 target RNA into GAM860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20423 target RNA into GAM20423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31100 target RNA into GAM31100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1351 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1351 gene: GAM860 target protein, GAM20423 target protein and GAM31100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM860, GAM20423 and GAM31100

GR1352 BM562151 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1352(GR1352) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1352 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1352 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1352 gene encodes GR1352 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1352 precursor RNA folds spatially, forming GR1352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1352 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1352 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM38517 precursor RNA and GAM135933 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38517 RNA and GAM135933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38517

target RNA into GAM38517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135933 target RNA into GAM135933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1352 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1352 gene: GAM38517 target protein and GAM135933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM38517 and GAM135933

GR1353 BG745351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1353(GR1353) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1353 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1353 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1353 gene encodes GR1353 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1353 precursor RNA folds spatially, forming GR1353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1353 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1353 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM62337 precursor RNA, GAM89226 precursor RNA, GAM102659 precursor RNA and GAM213453 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment,

corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM62337 RNA, GAM89226 RNA, GAM102659 RNA and GAM213453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM62337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62337 target RNA into GAM62337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89226 target RNA into GAM89226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102659 target RNA into GAM102659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213453 target RNA into GAM213453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1353 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1353 gene: GAM62337 target protein, GAM89226 target protein, GAM102659 target protein and GAM213453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM62337, GAM89226, GAM102659 and GAM213453

GR1354 BF309829 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1354(GR1354) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1354 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1354 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1354 gene encodes GR1354 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1354 precursor RNA folds spatially, forming GR1354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1354 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1354 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3792 precursor RNA and GAM4664 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3792 RNA and GAM4664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3792 target RNA into GAM3792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4664 target RNA into GAM4664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1354 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1354 gene: GAM3792 target protein and GAM4664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3792 and GAM4664

GR1355 BE206262 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1355(GR1355) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1355 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1355 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1355 gene encodes GR1355 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1355 precursor RNA folds spatially, forming GR1355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1355 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1355 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM28969 precursor RNA, GAM49010 precursor RNA and GAM159152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28969 RNA, GAM49010 RNA and GAM159152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM28969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28969 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28969 target RNA into GAM28969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49010 target RNA into GAM49010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159152 target RNA into GAM159152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1355 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1355 gene: GAM28969 target protein, GAM49010 target protein and GAM159152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28969, GAM49010 and GAM159152

GR1356 BI193103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1356(GR1356) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1356 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1356 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1356 gene encodes GR1356 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1356 precursor RNA folds spatially, forming GR1356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1356 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1356 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM676 precursor RNA, GAM129457 precursor RNA and GAM236319 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM676 RNA, GAM129457 RNA and GAM236319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM676 target RNA into GAM676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129457 target RNA into GAM129457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236319 target RNA into GAM236319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1356 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1356 gene: GAM676 target protein, GAM129457 target protein and GAM236319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM676, GAM129457 and GAM236319

GR1357 BF571033 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1357(GR1357) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1357 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1357 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1357 gene encodes GR1357 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1357 precursor RNA folds spatially, forming GR1357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1357 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1357 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM757 precursor RNA, GAM162249 precursor RNA and GAM289825 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM757 RNA, GAM162249 RNA and GAM289825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM757 target RNA into GAM757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162249 target RNA into GAM162249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289825 target RNA into GAM289825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1357 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1357 gene: GAM757 target protein, GAM162249 target protein and GAM289825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM757, GAM162249 and GAM289825

GR1358 AW997883 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1358(GR1358) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1358 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1358 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1358 gene encodes GR1358 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1358 precursor RNA folds spatially, forming GR1358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1358 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1358 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12431 precursor RNA and GAM311102 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12431 RNA and GAM311102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12431 target RNA into GAM12431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311102 target RNA into GAM311102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1358 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1358 gene: GAM12431 target protein and GAM311102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12431 and GAM311102

GR1359 BG654949 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1359(GR1359) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1359 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1359 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1359 gene encodes GR1359 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1359 precursor RNA folds spatially, forming GR1359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1359 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1359 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1403 precursor RNA, GAM184942 precursor RNA, GAM186265 precursor RNA and GAM197926 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1403 RNA, GAM184942 RNA, GAM186265 RNA and GAM197926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1403 target RNA into GAM1403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184942 target RNA into GAM184942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186265 target RNA into GAM186265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197926 target RNA into GAM197926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1359 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1359 gene: GAM1403 target protein, GAM184942 target protein, GAM186265 target protein and GAM197926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1403, GAM184942, GAM186265 and GAM197926

GR1360 BM969385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1360(GR1360) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1360 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1360 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1360 gene encodes GR1360 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1360 precursor RNA folds spatially, forming GR1360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1360 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1360 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM61421 precursor RNA, GAM237866 precursor RNA and GAM310338 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM61421 RNA, GAM237866 RNA and GAM310338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM61421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61421 target RNA into GAM61421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237866 target RNA into GAM237866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310338 target RNA into GAM310338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1360 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1360 gene: GAM61421 target protein, GAM237866 target protein and GAM310338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM61421, GAM237866 and GAM310338

GR1361 BG481885 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1361(GR1361) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1361 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1361 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1361 gene encodes GR1361 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1361 precursor RNA folds spatially, forming GR1361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1361 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1361 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20450 precursor RNA and GAM72650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20450 RNA and GAM72650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20450 target RNA into GAM20450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72650 target RNA into GAM72650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1361 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1361 gene: GAM20450 target protein and GAM72650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20450 and GAM72650

GR1362 BF742868 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1362(GR1362) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1362 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1362 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1362 gene encodes GR1362 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1362 precursor RNA folds spatially, forming GR1362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1362 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1362 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM272050 precursor RNA and GAM305037 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM272050 RNA and GAM305037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM272050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272050 target RNA into GAM272050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305037 target RNA into GAM305037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1362 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1362 gene: GAM272050 target protein and GAM305037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM272050 and GAM305037

GR1363 BE278243 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1363(GR1363) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1363 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1363 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1363 gene encodes GR1363 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1363 precursor RNA folds spatially, forming GR1363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1363 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1363 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM123025 precursor RNA, GAM204016 precursor RNA, GAM231839 precursor RNA and GAM331218 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM123025 RNA, GAM204016 RNA, GAM231839 RNA and GAM331218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM123025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123025 target RNA into GAM123025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204016 target RNA into GAM204016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231839 target RNA into GAM231839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331218 target RNA into GAM331218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1363 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1363 gene: GAM123025 target protein, GAM204016 target protein, GAM231839 target protein and GAM331218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM123025, GAM204016, GAM231839 and GAM331218

GR1364 BG419018 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1364(GR1364) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1364 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1364 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1364 gene encodes GR1364 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1364 precursor RNA folds spatially, forming GR1364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1364 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1364 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3619 precursor RNA, GAM64366 precursor RNA and GAM182623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3619 RNA, GAM64366 RNA and GAM182623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3619 target RNA into GAM3619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64366 target RNA into GAM64366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182623 target RNA into GAM182623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1364 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1364 gene: GAM3619 target protein, GAM64366 target protein and GAM182623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3619, GAM64366 and GAM182623

GR1365 BM785310 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1365(GR1365) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1365 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1365 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1365 gene encodes GR1365 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1365 precursor RNA folds spatially, forming GR1365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1365 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1365 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6354 precursor RNA and GAM6872 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6354 RNA and GAM6872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6354 target RNA into GAM6354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6872 target RNA into GAM6872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1365 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1365 gene: GAM6354 target protein and GAM6872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6354 and GAM6872

GR1366 BG911577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1366(GR1366) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1366 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1366 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1366 gene encodes GR1366 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1366 precursor RNA folds spatially, forming GR1366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1366 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1366 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8478 precursor RNA and GAM222736 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8478 RNA and GAM222736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8478 target RNA into GAM8478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222736 target RNA into GAM222736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1366 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1366 gene: GAM8478 target protein and GAM222736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8478 and GAM222736

GR1367 BI791559 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1367(GR1367) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1367 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1367 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1367 gene encodes GR1367 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1367 precursor RNA folds spatially, forming GR1367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1367 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1367 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19272 precursor RNA and GAM331846 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19272 RNA and GAM331846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19272 target RNA into GAM19272 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331846 target RNA into GAM331846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1367 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1367 gene: GAM19272 target protein and GAM331846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19272 and GAM331846

GR1368 BG202367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1368(GR1368) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1368 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1368 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1368 gene encodes GR1368 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1368 precursor RNA folds spatially, forming GR1368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1368 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1368 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60273 precursor RNA and GAM255396 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60273 RNA and GAM255396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60273 target RNA into GAM60273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255396 target RNA into GAM255396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1368 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1368 gene: GAM60273 target protein and GAM255396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60273 and GAM255396

GR1369 BF838132 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1369(GR1369) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1369 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1369 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1369 gene encodes GR1369 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1369 precursor RNA folds spatially, forming GR1369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1369 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1369 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3322 precursor RNA, GAM4811 precursor RNA and GAM57334 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3322 RNA, GAM4811 RNA and GAM57334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3322 target RNA into GAM3322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4811 target RNA into GAM4811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57334 target RNA into GAM57334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1369 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1369 gene: GAM3322 target protein, GAM4811 target protein and GAM57334 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3322, GAM4811 and GAM57334

GR1370 BI597140 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1370(GR1370) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1370 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1370 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1370 gene encodes GR1370 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1370 precursor RNA folds spatially, forming GR1370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1370 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1370 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM219415 precursor RNA and GAM251656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219415 RNA and GAM251656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219415 target RNA into GAM219415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251656 target RNA into GAM251656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1370 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1370 gene: GAM219415 target protein and GAM251656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219415 and GAM251656

GR1371 D60944 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1371(GR1371) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1371 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1371 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1371 gene encodes GR1371 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1371 precursor RNA folds spatially, forming GR1371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1371 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1371 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM75012 precursor RNA, GAM108618 precursor RNA and GAM116045 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM75012 RNA, GAM108618 RNA and GAM116045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75012 target RNA into GAM75012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108618 target RNA into GAM108618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116045 target RNA into GAM116045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1371 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1371 gene: GAM75012 target protein, GAM108618 target protein and GAM116045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75012, GAM108618 and GAM116045

GR1372 BI462585 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1372(GR1372) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1372 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1372

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1372 gene encodes GR1372 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1372 precursor RNA folds spatially, forming GR1372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1372 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1372 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7176 precursor RNA and GAM26824 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7176 RNA and GAM26824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7176 target RNA into GAM7176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26824 target RNA into GAM26824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1372 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1372 gene: GAM7176 target protein and GAM26824 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7176 and GAM26824

GR1373 BM832063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1373(GR1373) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1373 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1373 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1373 gene encodes GR1373 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1373 precursor RNA folds spatially, forming GR1373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1373 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1373 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48706 precursor RNA and GAM137993 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48706 RNA and GAM137993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48706 target RNA into GAM48706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137993 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137993 target RNA into GAM137993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1373 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1373 gene: GAM48706 target protein and GAM137993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48706 and GAM137993

GR1374 BE045132 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1374(GR1374) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1374 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1374 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1374 gene encodes GR1374 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1374 precursor RNA folds spatially, forming GR1374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1374 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1374 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM44140 precursor RNA, GAM152816 precursor RNA and GAM296474 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44140 RNA, GAM152816 RNA and GAM296474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44140 target RNA into GAM44140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152816 target RNA into GAM152816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296474 target RNA into GAM296474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1374 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1374 gene: GAM44140 target protein, GAM152816 target protein and GAM296474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44140, GAM152816 and GAM296474

GR1375 BF062152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1375(GR1375) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1375 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1375 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1375 gene encodes GR1375 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1375 precursor RNA folds spatially, forming GR1375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1375 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1375 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2454 precursor RNA, GAM23205 precursor RNA and GAM221294 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2454 RNA, GAM23205 RNA and GAM221294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2454 target RNA into GAM2454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23205 target RNA into GAM23205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221294

target RNA into GAM221294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1375 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1375 gene: GAM2454 target protein, GAM23205 target protein and GAM221294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2454, GAM23205 and GAM221294

GR1376 BM704750 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1376(GR1376) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1376 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1376 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1376 gene encodes GR1376 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1376 precursor RNA folds spatially, forming GR1376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1376 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1376 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3238 precursor RNA, GAM173300 precursor RNA and GAM248471 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3238 RNA, GAM173300 RNA and GAM248471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3238 target RNA into GAM3238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173300 target RNA into GAM173300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248471 target RNA into GAM248471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1376 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1376 gene: GAM3238 target protein, GAM173300 target protein and GAM248471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3238, GAM173300 and GAM248471

GR1377 BE296846 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1377(GR1377) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1377 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1377 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1377 gene encodes GR1377 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1377 precursor RNA folds spatially, forming GR1377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1377 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1377 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208852 precursor RNA and GAM278660 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208852 RNA and GAM278660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208852 target RNA into GAM208852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278660 target RNA into GAM278660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1377 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1377 gene: GAM208852 target protein and GAM278660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208852 and GAM278660

GR1378 AI056742 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1378(GR1378) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1378 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1378 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1378 gene encodes GR1378 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1378 precursor RNA folds spatially, forming GR1378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1378 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1378 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4273 precursor RNA and GAM259647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4273 RNA and GAM259647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4273 target RNA into GAM4273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259647

target RNA into GAM259647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1378 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1378 gene: GAM4273 target protein and GAM259647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4273 and GAM259647

GR1379 BI913652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1379(GR1379) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1379 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1379 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1379 gene encodes GR1379 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1379 precursor RNA folds spatially, forming GR1379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1379 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1379 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1236 precursor RNA and GAM280816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1236 RNA and GAM280816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1236 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1236 target RNA into GAM1236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280816 target RNA into GAM280816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1379 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1379 gene: GAM1236 target protein and GAM280816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1236 and GAM280816

GR1380 BE569031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1380(GR1380) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1380 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1380 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1380 gene encodes GR1380 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1380 precursor RNA folds spatially, forming GR1380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1380 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1380 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1380 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8732 precursor RNA and GAM131467 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8732 RNA and GAM131467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8732 target RNA into GAM8732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131467 target RNA into GAM131467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1380 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1380 gene: GAM8732 target protein and GAM131467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8732 and GAM131467

GR1381 BE738423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1381(GR1381) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1381 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1381 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1381 gene encodes GR1381 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1381 precursor RNA folds spatially, forming GR1381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1381 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1381 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5043 precursor RNA and GAM205073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5043 RNA and GAM205073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5043 target RNA into GAM5043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205073 target RNA into GAM205073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1381 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1381 gene: GAM5043 target protein and GAM205073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5043 and GAM205073

GR1382 R17865 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1382(GR1382) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1382 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1382 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1382 gene encodes GR1382 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1382 precursor RNA folds spatially, forming GR1382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1382 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1382 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7972 precursor RNA, GAM8160 precursor RNA and GAM29028 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7972 RNA, GAM8160 RNA and GAM29028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7972 target RNA into GAM7972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8160 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8160 target RNA into GAM8160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29028 target RNA into GAM29028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1382 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1382 gene: GAM7972 target protein, GAM8160 target protein and GAM29028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7972, GAM8160 and GAM29028

GR1383 AA456843 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1383(GR1383) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1383 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1383 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1383 gene encodes GR1383 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1383 precursor RNA folds spatially, forming GR1383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1383 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1383 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM135348 precursor RNA and GAM208187 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM135348 RNA and GAM208187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM135348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135348 target RNA into GAM135348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208187 target RNA into GAM208187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1383 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1383 gene: GAM135348 target protein and GAM208187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM135348 and GAM208187

GR1384 BF934720 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1384(GR1384) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1384 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1384 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1384 gene encodes GR1384 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1384 precursor RNA folds spatially, forming GR1384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1384 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1384 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4482 precursor RNA and GAM8352 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4482 RNA and GAM8352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4482 target RNA into GAM4482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8352 target RNA into GAM8352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1384 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1384 gene: GAM4482 target protein and GAM8352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4482 and GAM8352

GR1385 BI009784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1385(GR1385) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1385 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1385 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1385 gene encodes GR1385 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1385 precursor RNA folds spatially, forming GR1385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1385 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1385 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7056 precursor RNA, GAM160875 precursor RNA, GAM258727 precursor RNA and GAM264366 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7056 RNA, GAM160875 RNA, GAM258727 RNA and GAM264366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7056 target RNA into GAM7056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160875 target RNA into GAM160875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258727 target RNA into GAM258727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264366 target RNA into GAM264366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1385 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1385 gene: GAM7056 target protein, GAM160875 target protein, GAM258727 target protein and GAM264366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7056, GAM160875, GAM258727 and GAM264366

GR1386 BG681246 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1386(GR1386) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1386 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1386 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1386 gene encodes GR1386 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1386 precursor RNA folds spatially, forming GR1386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1386 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1386 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM162307 precursor RNA, GAM218409 precursor RNA and GAM264301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162307 RNA, GAM218409 RNA and GAM264301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162307 target RNA into GAM162307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218409 target RNA into GAM218409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264301 target RNA into GAM264301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1386 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1386 gene: GAM162307 target protein, GAM218409 target protein and GAM264301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162307, GAM218409 and GAM264301

GR1387 BE882188 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1387(GR1387) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1387 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1387 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1387 gene encodes GR1387 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1387 precursor RNA folds spatially, forming GR1387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1387 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1387 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM225060 precursor RNA and GAM278489 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM225060 RNA and GAM278489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM225060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225060 target RNA into GAM225060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278489 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278489 target RNA into GAM278489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1387 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1387 gene: GAM225060 target protein and GAM278489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM225060 and GAM278489

GR1388 AW294037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1388(GR1388) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1388 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1388 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1388 gene encodes GR1388 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1388 precursor RNA folds spatially, forming GR1388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1388 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1388 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6562 precursor RNA and GAM129844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM6562 RNA and GAM129844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6562 target RNA into GAM6562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129844 target RNA into GAM129844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1388 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1388 gene: GAM6562 target protein and GAM129844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6562 and GAM129844

GR1389 BE467579 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1389(GR1389) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1389 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1389 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1389 gene encodes GR1389 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1389 precursor RNA folds spatially, forming GR1389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1389 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1389 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3584 precursor RNA and GAM53598 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3584 RNA and GAM53598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3584 target RNA into GAM3584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53598 target RNA into GAM53598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1389 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1389 gene: GAM3584 target protein and GAM53598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3584 and GAM53598

GR1390 AA181314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1390(GR1390) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1390 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1390 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1390 gene encodes GR1390 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1390 precursor RNA folds spatially, forming GR1390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1390 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1390 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68093 precursor RNA and GAM205084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68093 RNA and GAM205084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68093 target RNA into GAM68093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205084 target RNA into GAM205084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1390 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1390 gene: GAM68093 target protein and GAM205084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68093 and GAM205084

GR1391 BG753210 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1391(GR1391) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1391 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1391 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1391 gene encodes GR1391 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1391 precursor RNA folds spatially, forming GR1391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1391 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1391 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM77299 precursor RNA, GAM82689 precursor RNA and GAM173727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77299 RNA, GAM82689 RNA and GAM173727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77299

target RNA into GAM77299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82689 target RNA into GAM82689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173727 target RNA into GAM173727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1391 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1391 gene: GAM77299 target protein, GAM82689 target protein and GAM173727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77299, GAM82689 and GAM173727

GR1392 BM146114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1392(GR1392) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1392 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1392 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1392 gene encodes GR1392 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1392 precursor RNA folds spatially, forming GR1392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1392 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1392 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2586 precursor RNA and GAM305568 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2586 RNA and GAM305568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2586 target RNA into GAM2586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305568 target RNA into GAM305568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1392 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1392 gene: GAM2586 target protein and GAM305568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2586 and GAM305568

GR1393 AV684414 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1393(GR1393) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1393 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1393 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1393 gene encodes GR1393 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1393 precursor RNA folds spatially, forming GR1393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1393 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1393 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3008 precursor RNA and GAM162360 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3008 RNA and GAM162360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3008 target RNA into GAM3008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162360 target RNA into GAM162360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1393 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1393 gene: GAM3008 target

protein and GAM162360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3008 and GAM162360

GR1394 AW630378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1394(GR1394) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1394 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1394 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1394 gene encodes GR1394 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1394 precursor RNA folds spatially, forming GR1394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1394 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1394 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM156105 precursor RNA and GAM185659 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM156105 RNA and GAM185659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM156105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156105 target RNA into GAM156105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185659 target RNA into GAM185659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1394 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1394 gene: GAM156105 target protein and GAM185659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM156105 and GAM185659

GR1395 BF870168 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1395(GR1395) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1395 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1395 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1395 gene encodes GR1395 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1395 precursor RNA folds spatially, forming GR1395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1395 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1395 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM917 precursor RNA, GAM256272 precursor RNA and GAM268576 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM917 RNA, GAM256272 RNA and GAM268576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM917 target RNA into GAM917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256272 target RNA into GAM256272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268576 target RNA into GAM268576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1395 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1395 gene: GAM917 target protein, GAM256272 target protein and GAM268576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM917, GAM256272 and GAM268576

GR1396 AI683738 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1396(GR1396) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1396 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1396

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1396 gene encodes GR1396 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1396 precursor RNA folds spatially, forming GR1396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1396 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1396 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM147826 precursor RNA, GAM168717 precursor RNA, GAM292466 precursor RNA and GAM336046 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147826 RNA, GAM168717 RNA, GAM292466 RNA and GAM336046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147826 target RNA into GAM147826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168717 target RNA into GAM168717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292466 target RNA into GAM292466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336046 target RNA into GAM336046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1396 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1396 gene: GAM147826 target protein, GAM168717 target protein, GAM292466 target protein and GAM336046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147826, GAM168717, GAM292466 and GAM336046

GR1397 BM738092 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1397(GR1397) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1397 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1397 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1397 gene encodes GR1397 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1397 precursor RNA folds spatially, forming GR1397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1397 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1397 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM33459 precursor RNA and GAM63813 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33459 RNA and GAM63813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33459 target RNA into GAM33459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63813 target RNA into GAM63813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1397 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1397 gene: GAM33459 target protein and GAM63813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33459 and GAM63813

GR1398 AI393521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1398(GR1398) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1398 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1398 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1398 gene encodes GR1398 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1398 precursor RNA folds spatially, forming GR1398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1398 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1398 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120552 precursor RNA and GAM292592 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120552 RNA and GAM292592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120552 target RNA into GAM120552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292592 target RNA into GAM292592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1398 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1398 gene: GAM120552 target protein and GAM292592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120552 and GAM292592

GR1399 BG563887 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1399(GR1399) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1399 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1399 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1399 gene encodes GR1399 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1399 precursor RNA folds spatially, forming GR1399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1399 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1399 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1034 precursor RNA, GAM4035 precursor RNA and GAM15373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1034 RNA, GAM4035 RNA and GAM15373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1034 target RNA into GAM1034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4035 target RNA into

GAM4035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15373 target RNA into GAM15373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1399 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1399 gene: GAM1034 target protein, GAM4035 target protein and GAM15373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1034, GAM4035 and GAM15373

GR1400 BG770869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1400(GR1400) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1400 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1400 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1400 gene encodes GR1400 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1400 precursor RNA folds spatially, forming GR1400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1400 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1400 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5302 precursor RNA and GAM60348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5302 RNA and GAM60348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5302 target RNA into GAM5302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60348 target RNA into GAM60348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1400 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1400 gene: GAM5302 target protein and GAM60348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5302 and GAM60348

GR1401 BM313870 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1401(GR1401) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1401 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1401 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1401 gene encodes GR1401 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1401 precursor RNA folds spatially, forming GR1401 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1401 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1401 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16417 precursor RNA and GAM107631 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16417 RNA and GAM107631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16417 target RNA into GAM16417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107631 target RNA into GAM107631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1401 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1401 gene: GAM16417 target protein and GAM107631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16417 and GAM107631

GR1402 AA780852 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1402(GR1402) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1402 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1402 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1402 gene encodes GR1402 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1402 precursor RNA folds spatially, forming GR1402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1402 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1402 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6569 precursor RNA and GAM28448 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6569 RNA and GAM28448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6569 target RNA into GAM6569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28448 target RNA into GAM28448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1402 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1402 gene: GAM6569 target protein and GAM28448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6569 and GAM28448

GR1403 BG033473 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1403(GR1403) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1403 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1403 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1403 gene encodes GR1403 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1403 precursor RNA folds spatially, forming GR1403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1403 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1403 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM155473 precursor RNA, GAM270001 precursor RNA and GAM290052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM155473 RNA, GAM270001 RNA and GAM290052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM155473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM155473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155473 target RNA into GAM155473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270001 target RNA into GAM270001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290052 target RNA into GAM290052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1403 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1403 gene: GAM155473 target protein, GAM270001 target protein and GAM290052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM155473, GAM270001 and GAM290052

GR1404 BI828046 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1404(GR1404) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1404 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1404 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1404 gene encodes GR1404 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1404 precursor RNA folds spatially, forming GR1404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1404 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1404 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8690 precursor RNA and GAM262646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8690 RNA and GAM262646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8690 target RNA into GAM8690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262646 target RNA into GAM262646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1404 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1404 gene: GAM8690 target protein and GAM262646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8690 and GAM262646

GR1405 BF507740 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1405(GR1405) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1405 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1405 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1405 gene encodes GR1405 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1405 precursor RNA folds spatially, forming GR1405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1405 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1405 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM183159 precursor RNA, GAM205986 precursor RNA and GAM309353 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM183159 RNA, GAM205986 RNA and GAM309353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM183159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183159 target RNA into GAM183159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205986 target RNA into GAM205986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309353 target RNA into GAM309353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1405 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1405 gene: GAM183159 target protein, GAM205986 target protein and GAM309353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM183159, GAM205986 and GAM309353

GR1406 BI519537 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1406(GR1406) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1406 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1406 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1406 gene encodes GR1406 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1406 precursor RNA folds spatially, forming GR1406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1406 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1406 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115257 precursor RNA and GAM233934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115257 RNA and GAM233934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115257 target RNA into GAM115257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233934 target RNA into GAM233934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1406 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1406 gene: GAM115257 target protein and GAM233934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115257 and GAM233934

GR1407 N46864 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1407(GR1407) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1407 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1407 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1407 gene encodes GR1407 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1407 precursor RNA folds spatially, forming GR1407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1407 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1407 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1544 precursor RNA and GAM6835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1544 RNA and GAM6835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1544 target RNA into GAM1544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6835 target RNA into GAM6835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1407 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1407 gene: GAM1544 target protein and GAM6835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1544 and GAM6835

GR1408 AA037215 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1408(GR1408) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1408 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1408 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1408 gene encodes GR1408 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1408 precursor RNA folds spatially, forming GR1408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1408 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1408 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8222 precursor RNA and GAM136974 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8222 RNA and GAM136974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8222 target RNA into GAM8222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136974 target RNA into GAM136974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1408 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1408 gene: GAM8222 target protein and GAM136974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8222 and GAM136974

GR1409 BE616953 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1409(GR1409) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1409 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1409 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1409 gene encodes GR1409 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1409 precursor RNA folds spatially, forming GR1409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1409 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1409 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2939 precursor RNA and GAM4833 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2939 RNA and GAM4833 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2939 target RNA into GAM2939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4833 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4833 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4833 target RNA into GAM4833 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1409 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1409 gene: GAM2939 target protein and GAM4833 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2939 and GAM4833

GR1410 BM857630 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1410(GR1410) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1410 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1410 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1410 gene encodes GR1410 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1410 precursor RNA folds spatially, forming GR1410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1410 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1410 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1150 precursor RNA and GAM241977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1150 RNA and GAM241977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1150 target RNA into GAM1150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241977 target RNA into GAM241977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1410 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1410 gene: GAM1150 target protein and GAM241977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1150 and GAM241977

GR1411 AW733072 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1411(GR1411) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1411 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1411 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1411 gene encodes GR1411 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1411 precursor RNA folds spatially, forming GR1411 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1411 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1411 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20769 precursor RNA and GAM270915 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20769 RNA and GAM270915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20769 target RNA into GAM20769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270915 target RNA into GAM270915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1411 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1411 gene: GAM20769 target protein and GAM270915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20769 and GAM270915

GR1412 BF511433 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1412(GR1412) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1412 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1412 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1412 gene encodes GR1412 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1412 precursor RNA folds spatially, forming GR1412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1412 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1412 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88137 precursor RNA and GAM200233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88137 RNA and GAM200233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88137 target RNA into GAM88137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200233 target RNA into GAM200233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1412 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1412 gene: GAM88137 target protein and GAM200233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88137 and GAM200233

GR1413 BG028439 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1413(GR1413) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1413 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1413 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1413 gene encodes GR1413 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1413 precursor RNA folds spatially, forming GR1413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1413 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1413 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3707 precursor RNA and GAM47156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3707 RNA and GAM47156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3707 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3707 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3707 target RNA into GAM3707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47156 target RNA into GAM47156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1413 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1413 gene: GAM3707 target protein and GAM47156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3707 and GAM47156

GR1414 BE312573 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1414(GR1414) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1414 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1414 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1414 gene encodes GR1414 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1414 precursor RNA folds spatially, forming GR1414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1414 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1414 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31312 precursor RNA and GAM319202 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31312 RNA and GAM319202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31312 target RNA into GAM31312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319202 target RNA into GAM319202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1414 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1414 gene: GAM31312 target protein and GAM319202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31312 and GAM319202

GR1415 BQ024309 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1415(GR1415) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1415 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1415 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1415 gene encodes GR1415 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1415 precursor RNA folds spatially, forming GR1415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1415 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1415 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4909 precursor RNA, GAM5668 precursor RNA and GAM181412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4909 RNA, GAM5668 RNA and GAM181412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4909 target RNA into GAM4909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5668 target RNA into GAM5668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181412 target RNA into GAM181412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1415 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1415 gene: GAM4909 target protein, GAM5668 target protein and GAM181412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4909, GAM5668 and GAM181412

GR1416 BF223992 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1416(GR1416) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1416 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1416 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1416 gene encodes GR1416 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1416 precursor RNA folds spatially, forming GR1416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1416 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1416 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4047 precursor RNA and GAM7977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4047 RNA and GAM7977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4047 target RNA into GAM4047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7977 target RNA into GAM7977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1416 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1416 gene: GAM4047 target protein and GAM7977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4047 and GAM7977

GR1417 BG572460 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1417(GR1417) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1417 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1417 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1417 gene encodes GR1417 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1417 precursor RNA folds spatially, forming GR1417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1417 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1417 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8669 precursor RNA and GAM26250 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8669 RNA and GAM26250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8669 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8669 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8669 target RNA into GAM8669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26250 target RNA into GAM26250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1417 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1417 gene: GAM8669 target protein and GAM26250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8669 and GAM26250

GR1418 BI834782 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1418(GR1418) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1418 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1418 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1418 gene encodes GR1418 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1418 precursor RNA folds spatially, forming GR1418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1418 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1418 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1763 precursor RNA, GAM158363 precursor RNA and GAM207640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1763 RNA, GAM158363 RNA and GAM207640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1763 target RNA into GAM1763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158363 target RNA into GAM158363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207640 target RNA into GAM207640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1418 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1418 gene: GAM1763 target protein, GAM158363 target protein and GAM207640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1763, GAM158363 and GAM207640

GR1419 AA570163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1419(GR1419) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1419 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1419 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1419 gene encodes GR1419 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1419 precursor RNA folds spatially, forming GR1419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1419 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1419 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6348 precursor RNA, GAM6913 precursor RNA and GAM156565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6348 RNA, GAM6913 RNA and GAM156565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6348 target RNA into GAM6348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6913 target RNA into GAM6913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156565 target RNA into GAM156565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1419 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1419 gene: GAM6348 target protein, GAM6913 target protein and GAM156565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6348, GAM6913 and GAM156565

GR1420 BI058577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1420(GR1420) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1420 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1420 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1420 gene encodes GR1420 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1420 precursor RNA folds spatially, forming GR1420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1420 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1420 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM14608 precursor RNA, GAM148730 precursor RNA and GAM333461 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14608 RNA, GAM148730 RNA and GAM333461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14608 target RNA into GAM14608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148730 target RNA into GAM148730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333461 target RNA into GAM333461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1420 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1420 gene: GAM14608 target protein, GAM148730 target protein and GAM333461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14608, GAM148730 and GAM333461

GR1421 N62084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1421(GR1421) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1421 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1421 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1421 gene encodes GR1421 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1421 precursor RNA folds spatially, forming GR1421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1421 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1421 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3787 precursor RNA and GAM22018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3787 RNA and GAM22018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3787 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3787 target RNA into GAM3787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22018 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22018 target RNA into GAM22018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1421 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1421 gene: GAM3787 target protein and GAM22018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3787 and GAM22018

GR1422 BG220813 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1422(GR1422) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1422 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1422 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1422 gene encodes GR1422 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1422 precursor RNA folds spatially, forming GR1422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1422 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1422 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM154058 precursor RNA and GAM212609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM154058 RNA and GAM212609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM154058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154058 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154058 target RNA into GAM154058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212609 target RNA into GAM212609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1422 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1422 gene: GAM154058 target protein and GAM212609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM154058 and GAM212609

GR1423 BG426034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1423(GR1423) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1423 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1423 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1423 gene encodes GR1423 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1423 precursor RNA folds spatially, forming GR1423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1423 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1423 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM97119 precursor RNA and GAM308551 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97119 RNA and GAM308551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97119 target RNA into GAM97119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308551 target RNA into GAM308551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1423 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1423 gene: GAM97119 target protein and GAM308551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97119 and GAM308551

GR1424 AW974015 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1424(GR1424) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1424 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1424 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1424 gene encodes GR1424 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1424 precursor RNA folds spatially, forming GR1424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1424 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1424 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162717 precursor RNA and GAM239503 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162717 RNA and GAM239503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162717 target RNA into GAM162717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239503 target RNA into GAM239503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1424 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1424 gene: GAM162717 target protein and GAM239503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162717 and GAM239503

GR1425 BI491172 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1425(GR1425) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1425 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1425 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1425 gene encodes GR1425 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1425 precursor RNA folds spatially, forming GR1425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1425 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1425 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM74641 precursor RNA, GAM299229 precursor RNA and GAM315511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74641 RNA, GAM299229 RNA and GAM315511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74641

target RNA into GAM74641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299229 target RNA into GAM299229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315511 target RNA into GAM315511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1425 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1425 gene: GAM74641 target protein, GAM299229 target protein and GAM315511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74641, GAM299229 and GAM315511

GR1426 BF185245 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1426(GR1426) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1426 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1426 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1426 gene encodes GR1426 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1426 precursor RNA folds spatially, forming GR1426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1426 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1426 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5822 precursor RNA and GAM144003 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5822 RNA and GAM144003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5822 target RNA into GAM5822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144003 target RNA into GAM144003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1426 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1426 gene: GAM5822 target protein and GAM144003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5822 and GAM144003

GR1427 AA812003 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1427(GR1427) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1427 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1427 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1427 gene encodes GR1427 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1427 precursor RNA folds spatially, forming GR1427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1427 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1427 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM53388 precursor RNA, GAM136176 precursor RNA and GAM204987 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53388 RNA, GAM136176 RNA and GAM204987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53388 target RNA into GAM53388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136176 target RNA into GAM136176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204987 target RNA into GAM204987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1427 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1427 gene: GAM53388 target protein, GAM136176 target protein and GAM204987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53388, GAM136176 and GAM204987

GR1428 T40919 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1428(GR1428) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1428 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1428 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1428 gene encodes GR1428 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1428 precursor RNA folds spatially, forming GR1428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1428 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1428 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14817 precursor RNA and GAM76878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14817 RNA and GAM76878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM14817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14817 target RNA into GAM14817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76878 target RNA into GAM76878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1428 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1428 gene: GAM14817 target protein and GAM76878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14817 and GAM76878

GR1429 BE856847 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1429(GR1429) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1429 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1429 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1429 gene encodes GR1429 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1429 precursor RNA folds spatially, forming GR1429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1429 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1429 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7310 precursor RNA, GAM35662 precursor RNA and GAM195428 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7310 RNA, GAM35662 RNA and GAM195428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7310 target RNA into GAM7310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35662 target RNA into GAM35662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195428 target RNA into GAM195428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1429 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1429 gene: GAM7310 target protein, GAM35662 target protein and GAM195428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7310, GAM35662 and GAM195428

GR1430 AL712122 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1430(GR1430) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1430 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1430 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1430 gene encodes GR1430 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1430 precursor RNA folds spatially, forming GR1430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1430 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1430 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM11740 precursor RNA, GAM12334 precursor RNA, GAM174049 precursor RNA and GAM238670 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11740 RNA, GAM12334 RNA, GAM174049 RNA and GAM238670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11740 target RNA into GAM11740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM12334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12334 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12334 target RNA into GAM12334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174049 target RNA into GAM174049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238670 target RNA into GAM238670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1430 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1430 gene: GAM11740 target protein, GAM12334 target protein, GAM174049 target protein and GAM238670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11740, GAM12334, GAM174049 and GAM238670

GR1431 BG762282 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1431(GR1431) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1431 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1431 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1431 gene encodes GR1431 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1431 precursor RNA folds spatially, forming GR1431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1431 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1431 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM790 precursor RNA and GAM46588 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM790 RNA and GAM46588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM790 target RNA into GAM790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46588 target RNA into GAM46588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1431 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1431 gene: GAM790 target protein and GAM46588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM790 and GAM46588

GR1432 BM480424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1432(GR1432) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1432 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1432 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1432 gene encodes GR1432 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1432 precursor RNA folds spatially, forming GR1432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1432 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1432 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7248 precursor RNA, GAM217156 precursor RNA and GAM291016 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7248 RNA, GAM217156 RNA and GAM291016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7248 target RNA into GAM7248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217156 target RNA into GAM217156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291016 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291016 target RNA into GAM291016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1432 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1432 gene: GAM7248 target protein, GAM217156 target protein and GAM291016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7248, GAM217156 and GAM291016

GR1433 AI887321 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1433(GR1433) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1433 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1433 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1433 gene encodes GR1433 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1433 precursor RNA folds spatially, forming GR1433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1433 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1433 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM203608 precursor RNA and GAM241608 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM203608 RNA and GAM241608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM203608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203608 target RNA into GAM203608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241608 target RNA into GAM241608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1433 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1433 gene: GAM203608 target protein and GAM241608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM203608 and GAM241608

GR1434 AW967847 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1434(GR1434) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1434 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1434 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1434 gene encodes GR1434 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1434 precursor RNA folds spatially, forming GR1434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1434 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1434 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5407 precursor RNA and GAM15454 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5407 RNA and GAM15454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5407 target RNA into GAM5407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15454 target RNA into GAM15454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1434 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1434 gene: GAM5407 target protein and GAM15454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5407 and GAM15454

GR1435 AI695465 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1435(GR1435) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1435 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1435 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1435 gene encodes GR1435 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1435 precursor RNA folds spatially, forming GR1435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1435 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1435 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6848 precursor RNA, GAM189503 precursor RNA and GAM280940 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6848 RNA, GAM189503 RNA and GAM280940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6848 target RNA into GAM6848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189503 target RNA into GAM189503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM280940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280940 target RNA into GAM280940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1435 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1435 gene: GAM6848 target protein, GAM189503 target protein and GAM280940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6848, GAM189503 and GAM280940

GR1436 AA596062 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1436(GR1436) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1436 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1436 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1436 gene encodes GR1436 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1436 precursor RNA folds spatially, forming GR1436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1436 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1436 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3933 precursor RNA, GAM7856 precursor RNA and GAM85851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3933 RNA, GAM7856 RNA and GAM85851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3933 target RNA into GAM3933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7856 target RNA into GAM7856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85851 target RNA into GAM85851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1436 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1436 gene: GAM3933 target protein, GAM7856 target protein and GAM85851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3933, GAM7856 and GAM85851

GR1437 BG723583 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1437(GR1437) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1437 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1437 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1437 gene encodes GR1437 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1437 precursor RNA folds spatially, forming GR1437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1437 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1437 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2494 precursor RNA and GAM247843 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2494 RNA and GAM247843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2494 target RNA into GAM2494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247843 target RNA into GAM247843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1437 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1437 gene: GAM2494 target protein and GAM247843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2494 and GAM247843

GR1438 BM758789 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1438(GR1438) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1438 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1438 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1438 gene encodes GR1438 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1438 precursor RNA folds spatially, forming GR1438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1438 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1438 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7995 precursor RNA and GAM167048 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7995 RNA and GAM167048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7995 target RNA into GAM7995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM167048 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167048 target RNA into GAM167048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1438 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1438 gene: GAM7995 target protein and GAM167048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7995 and GAM167048

GR1439 AI675511 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1439(GR1439) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1439 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1439 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1439 gene encodes GR1439 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1439 precursor RNA folds spatially, forming GR1439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1439 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1439 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5648 precursor RNA, GAM7421 precursor RNA and GAM266569 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5648 RNA, GAM7421 RNA and GAM266569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5648 target RNA into GAM5648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7421 target RNA into GAM7421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266569 target RNA into GAM266569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1439 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1439 gene: GAM5648 target protein, GAM7421 target protein and GAM266569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5648, GAM7421 and GAM266569

GR1440 BF822201 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1440(GR1440) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1440 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1440 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1440 gene encodes GR1440 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1440 precursor RNA folds spatially, forming GR1440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1440 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1440 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM85776 precursor RNA, GAM159223 precursor RNA and GAM293865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85776 RNA, GAM159223 RNA and GAM293865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85776 target RNA into GAM85776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159223 target RNA into GAM159223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293865 target RNA into GAM293865 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1440 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1440 gene: GAM85776 target protein, GAM159223 target protein and GAM293865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85776, GAM159223 and GAM293865

GR1441 AW340255 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1441(GR1441) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1441 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1441 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1441 gene encodes GR1441 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1441 precursor RNA folds spatially, forming GR1441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1441 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1441 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1521 precursor RNA, GAM40529 precursor RNA and GAM200703 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1521 RNA, GAM40529 RNA and GAM200703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1521 target RNA into GAM1521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40529 target RNA into GAM40529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200703 target RNA into GAM200703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1441 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1441 gene: GAM1521 target protein, GAM40529 target protein and GAM200703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1521, GAM40529 and GAM200703

GR1442 BE906287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1442(GR1442) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1442 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1442 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1442 gene encodes GR1442 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1442 precursor RNA folds spatially, forming GR1442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1442 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1442 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4041 precursor RNA and GAM60545 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4041 RNA and GAM60545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4041 target RNA into GAM4041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60545 target RNA into GAM60545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1442 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1442 gene: GAM4041 target protein and GAM60545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4041 and GAM60545

GR1443 BG432108 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1443(GR1443) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1443 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1443 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1443 gene encodes GR1443 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1443 precursor RNA folds spatially, forming GR1443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1443 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1443 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1070 precursor RNA and GAM2620 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1070 RNA and GAM2620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1070 target RNA into GAM1070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2620 target RNA into GAM2620 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1443 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1443 gene: GAM1070 target protein and GAM2620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1070 and GAM2620

GR1444 AI094662 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1444(GR1444) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1444 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1444 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1444 gene encodes GR1444 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1444 precursor RNA folds spatially, forming GR1444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1444 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1444 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36354 precursor RNA and GAM130657 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36354 RNA and GAM130657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM36354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36354 target RNA into GAM36354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130657 target RNA into GAM130657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1444 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1444 gene: GAM36354 target protein and GAM130657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36354 and GAM130657

GR1445 AA069633 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1445(GR1445) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1445 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1445 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1445 gene encodes GR1445 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1445 precursor RNA folds spatially, forming GR1445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1445 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1445 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM78520 precursor RNA and GAM100595 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78520 RNA and GAM100595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78520 target RNA into GAM78520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100595 target RNA into GAM100595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1445 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1445 gene: GAM78520 target protein and GAM100595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78520 and GAM100595

GR1446 BF688407 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1446(GR1446) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1446 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1446 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1446 gene encodes GR1446 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1446 precursor RNA folds spatially, forming GR1446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1446 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1446 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6405 precursor RNA, GAM40197 precursor RNA and GAM112762 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6405 RNA, GAM40197 RNA and GAM112762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6405 target RNA into GAM6405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40197 target RNA into GAM40197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112762 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112762 target RNA into GAM112762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1446 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1446 gene: GAM6405 target protein, GAM40197 target protein and GAM112762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6405, GAM40197 and GAM112762

GR1447 BF986673 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1447(GR1447) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1447 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1447 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1447 gene encodes GR1447 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1447 precursor RNA folds spatially, forming GR1447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1447 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1447 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM70358 precursor RNA and GAM158948 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70358 RNA and GAM158948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70358 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70358 target RNA into GAM70358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158948 target RNA into GAM158948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1447 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1447 gene: GAM70358 target protein and GAM158948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70358 and GAM158948

GR1448 BM723348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1448(GR1448) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1448 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1448 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1448 gene encodes GR1448 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1448 precursor RNA folds spatially, forming GR1448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1448 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1448 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217583 precursor RNA and GAM242990 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217583 RNA and GAM242990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217583 target RNA into GAM217583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242990 target RNA into GAM242990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1448 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1448 gene: GAM217583 target protein and GAM242990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217583 and GAM242990

GR1449 N80399 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1449(GR1449) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1449 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1449 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1449 gene encodes GR1449 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1449 precursor RNA folds spatially, forming GR1449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1449 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1449 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21821 precursor RNA and GAM284560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21821 RNA and GAM284560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21821 target RNA into GAM21821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284560 target RNA into GAM284560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1449 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1449 gene: GAM21821 target protein and GAM284560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21821 and GAM284560

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1450(GR1450) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1450 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1450 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1450 gene encodes GR1450 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1450 precursor RNA folds spatially, forming GR1450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1450 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1450 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32692 precursor RNA and GAM114375 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32692 RNA and GAM114375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32692 target RNA into GAM32692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114375

target RNA into GAM114375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1450 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1450 gene: GAM32692 target protein and GAM114375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32692 and GAM114375

GR1451 AI927827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1451(GR1451) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1451 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1451 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1451 gene encodes GR1451 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1451 precursor RNA folds spatially, forming GR1451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1451 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1451 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM765 precursor RNA and GAM825 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM765 RNA and GAM825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM765 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM765 target RNA into GAM765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM825 target RNA into GAM825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1451 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1451 gene: GAM765 target protein and GAM825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM765 and GAM825

GR1452 N27722 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1452(GR1452) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1452 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1452 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1452 gene encodes GR1452 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1452 precursor RNA folds spatially, forming GR1452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1452 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1452 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1452 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58655 precursor RNA and GAM115097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58655 RNA and GAM115097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58655 target RNA into GAM58655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115097 target RNA into GAM115097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1452 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1452 gene: GAM58655 target protein and GAM115097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58655 and GAM115097

GR1453 AW263551 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1453(GR1453) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1453 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1453 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1453 gene encodes GR1453 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1453 precursor RNA folds spatially, forming GR1453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1453 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1453 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4487 precursor RNA and GAM4785 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4487 RNA and GAM4785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4487 target RNA into GAM4487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4785 target RNA into GAM4785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1453 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1453 gene: GAM4487 target protein and GAM4785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4487 and GAM4785

GR1454 BE063527 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1454(GR1454) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1454 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1454 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1454 gene encodes GR1454 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1454 precursor RNA folds spatially, forming GR1454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1454 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1454 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2370 precursor RNA, GAM8512 precursor RNA and GAM261581 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2370 RNA, GAM8512 RNA and GAM261581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2370 target RNA into GAM2370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8512 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8512 target RNA into GAM8512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261581 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261581 target RNA into GAM261581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1454 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1454 gene: GAM2370 target protein, GAM8512 target protein and GAM261581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2370, GAM8512 and GAM261581

GR1455 BI766091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1455(GR1455) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1455 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1455 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1455 gene encodes GR1455 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1455 precursor RNA folds spatially, forming GR1455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1455 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1455 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM306206 precursor RNA and GAM319296 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM306206 RNA and GAM319296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM306206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306206 target RNA into GAM306206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319296 target RNA into GAM319296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1455 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1455 gene: GAM306206 target protein and GAM319296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM306206 and GAM319296

GR1456 BG531744 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1456(GR1456) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1456 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1456 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1456 gene encodes GR1456 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1456 precursor RNA folds spatially, forming GR1456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1456 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1456 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2305 precursor RNA and GAM257466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2305 RNA and GAM257466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2305 target RNA into GAM2305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257466 target RNA into GAM257466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1456 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1456 gene: GAM2305 target protein and GAM257466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2305 and GAM257466

GR1457 AL707038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1457(GR1457) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1457 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1457 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1457 gene encodes GR1457 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1457 precursor RNA folds spatially, forming GR1457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1457 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1457 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121227 precursor RNA and GAM212761 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121227 RNA and GAM212761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121227 target RNA into GAM121227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212761 target RNA into GAM212761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1457 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1457 gene: GAM121227 target protein and GAM212761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121227 and GAM212761

GR1458 BE972514 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1458(GR1458) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1458 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1458 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1458 gene encodes GR1458 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1458 precursor RNA folds spatially, forming GR1458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1458 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1458 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5951 precursor RNA and GAM93967 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5951 RNA and GAM93967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5951 target RNA into GAM5951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93967 target RNA into GAM93967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1458 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1458 gene: GAM5951 target protein and GAM93967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5951 and GAM93967

GR1459 BF531032 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1459(GR1459) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1459 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1459 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1459 gene encodes GR1459 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1459 precursor RNA folds spatially, forming GR1459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1459 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1459 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM548 precursor RNA and GAM233610 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM548 RNA and GAM233610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM548 target RNA into GAM548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233610 target RNA into GAM233610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1459 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1459 gene: GAM548 target protein and GAM233610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM548 and GAM233610

GR1460 AI143396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1460(GR1460) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1460 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1460 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1460 gene encodes GR1460 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1460 precursor RNA folds spatially, forming GR1460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1460 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1460 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29348 precursor RNA and GAM305394 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29348 RNA and GAM305394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29348 target RNA into GAM29348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305394 target RNA into GAM305394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1460 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1460 gene: GAM29348 target protein and GAM305394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM29348 and GAM305394

GR1461 BE270292 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1461(GR1461) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1461 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1461 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1461 gene encodes GR1461 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1461 precursor RNA folds spatially, forming GR1461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1461 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1461 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM160325 precursor RNA and GAM247433 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM160325 RNA and GAM247433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM160325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160325 target RNA into GAM160325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247433 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247433 target RNA into GAM247433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1461 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1461 gene: GAM160325 target protein and GAM247433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM160325 and GAM247433

GR1462 BF697885 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1462(GR1462) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1462 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1462 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1462 gene encodes GR1462 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1462 precursor RNA folds spatially, forming GR1462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1462 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1462 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1973 precursor RNA and GAM105775 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1973 RNA and GAM105775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM1973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1973 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1973 target RNA into GAM1973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105775 target RNA into GAM105775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1462 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1462 gene: GAM1973 target protein and GAM105775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1973 and GAM105775

GR1463 AA115727 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1463(GR1463) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1463 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1463 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1463 gene encodes GR1463 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1463 precursor RNA folds spatially, forming GR1463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1463 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1463 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7802 precursor RNA and GAM279034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7802 RNA and GAM279034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7802 target RNA into GAM7802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279034 target RNA into GAM279034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1463 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1463 gene: GAM7802 target protein and GAM279034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7802 and GAM279034

GR1464 AI858817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1464(GR1464) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1464 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1464

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1464 gene encodes GR1464 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1464 precursor RNA folds spatially, forming GR1464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1464 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1464 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM137361 precursor RNA, GAM300098 precursor RNA and GAM334776 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM137361 RNA, GAM300098 RNA and GAM334776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM137361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137361 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137361 target RNA into GAM137361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300098 target RNA into GAM300098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334776 target RNA into GAM334776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1464 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1464 gene: GAM137361 target protein, GAM300098 target protein and GAM334776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM137361, GAM300098 and GAM334776

GR1465 AW960654 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1465(GR1465) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1465 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1465 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1465 gene encodes GR1465 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1465 precursor RNA folds spatially, forming GR1465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1465 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1465 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM249293 precursor RNA and GAM278088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM249293 RNA and GAM278088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM249293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249293 target RNA into GAM249293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278088 target RNA into GAM278088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1465 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1465 gene: GAM249293 target protein and GAM278088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM249293 and GAM278088

GR1466 AA730685 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1466(GR1466) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1466 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1466 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1466 gene encodes GR1466 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1466 precursor RNA folds spatially, forming GR1466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1466 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1466 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24701 precursor RNA and GAM245780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24701 RNA and GAM245780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24701 target RNA into GAM24701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245780 target RNA into GAM245780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1466 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1466 gene: GAM24701 target protein and GAM245780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24701 and GAM245780

GR1467 BQ065895 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1467(GR1467) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1467 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1467 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1467 gene encodes GR1467 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1467 precursor RNA folds spatially, forming GR1467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1467 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1467 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM100000 precursor RNA, GAM128871 precursor RNA, GAM219247 precursor RNA and GAM271308 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100000 RNA, GAM128871 RNA, GAM219247 RNA and GAM271308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100000 target RNA into GAM100000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128871 target RNA into GAM128871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219247

target RNA into GAM219247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271308 target RNA into GAM271308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1467 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1467 gene: GAM100000 target protein, GAM128871 target protein, GAM219247 target protein and GAM271308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100000, GAM128871, GAM219247 and GAM271308

GR1468 AV729741 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1468(GR1468) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1468 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1468 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1468 gene encodes GR1468 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1468 precursor RNA folds spatially, forming GR1468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1468 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1468 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7054 precursor RNA, GAM161053 precursor RNA and GAM190664 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7054 RNA, GAM161053 RNA and GAM190664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7054 target RNA into GAM7054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161053 target RNA into GAM161053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190664 target RNA into GAM190664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1468 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1468 gene: GAM7054 target protein, GAM161053 target protein and GAM190664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7054, GAM161053 and GAM190664

GR1469 BF805259 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1469(GR1469) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1469 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1469 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1469 gene encodes GR1469 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1469 precursor RNA folds spatially, forming GR1469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1469 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1469 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM106174 precursor RNA, GAM116600 precursor RNA and GAM330941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106174 RNA, GAM116600 RNA and GAM330941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106174 target RNA into GAM106174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116600 target RNA into GAM116600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM330941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330941 target RNA into GAM330941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1469 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1469 gene: GAM106174 target protein, GAM116600 target protein and GAM330941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106174, GAM116600 and GAM330941

GR1470 AI968566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1470(GR1470) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1470 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1470 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1470 gene encodes GR1470 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1470 precursor RNA folds spatially, forming GR1470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1470 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1470 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM632 precursor RNA and GAM2265 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM632 RNA and GAM2265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM632 target RNA into GAM632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2265 target RNA into GAM2265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1470 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1470 gene: GAM632 target protein and GAM2265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM632 and GAM2265

GR1471 BE676074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1471(GR1471) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1471 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1471 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1471 gene encodes GR1471 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1471 precursor RNA folds spatially, forming GR1471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1471 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1471 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2182 precursor RNA, GAM6332 precursor RNA and GAM22204 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2182 RNA, GAM6332 RNA and GAM22204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2182 target RNA into GAM2182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6332 target RNA into GAM6332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22204 target RNA into GAM22204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1471 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1471 gene: GAM2182 target protein, GAM6332 target protein and GAM22204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM2182, GAM6332 and GAM22204

GR1472 BG619210 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1472(GR1472) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1472 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1472 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1472 gene encodes GR1472 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1472 precursor RNA folds spatially, forming GR1472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1472 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1472 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM103313 precursor RNA and GAM113642 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103313 RNA and GAM113642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103313 target RNA into GAM103313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM113642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113642 target RNA into GAM113642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1472 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1472 gene: GAM103313 target protein and GAM113642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103313 and GAM113642

GR1473 AI659385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1473(GR1473) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1473 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1473 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1473 gene encodes GR1473 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1473 precursor RNA folds spatially, forming GR1473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1473 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1473 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7159 precursor RNA, GAM210256 precursor RNA and GAM223525 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7159 RNA, GAM210256 RNA and GAM223525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7159 target RNA into GAM7159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210256 target RNA into GAM210256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223525 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223525 target RNA into GAM223525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1473 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1473 gene: GAM7159 target protein, GAM210256 target protein and GAM223525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7159, GAM210256 and GAM223525

GR1474 BI869909 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1474(GR1474) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1474 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1474 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1474 gene encodes GR1474 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1474 precursor RNA folds spatially, forming GR1474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1474 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1474 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM95559 precursor RNA, GAM166741 precursor RNA and GAM179776 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95559 RNA, GAM166741 RNA and GAM179776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95559 target RNA into GAM95559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166741 target RNA into GAM166741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179776 target RNA into GAM179776 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1474 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1474 gene: GAM95559 target protein, GAM166741 target protein and GAM179776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95559, GAM166741 and GAM179776

GR1475 BE546515 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1475(GR1475) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1475 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1475 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1475 gene encodes GR1475 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1475 precursor RNA folds spatially, forming GR1475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1475 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1475 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM132 precursor RNA, GAM8567 precursor RNA and GAM99634 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132 RNA, GAM8567 RNA and GAM99634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132 target RNA into GAM132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8567 target RNA into GAM8567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99634 target RNA into GAM99634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1475 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1475 gene: GAM132 target protein, GAM8567 target protein and GAM99634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132, GAM8567 and GAM99634

GR1476 AA613572 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1476(GR1476) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1476 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1476 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1476 gene encodes GR1476 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1476 precursor RNA folds spatially, forming GR1476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1476 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1476 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4581 precursor RNA, GAM178165 precursor RNA and GAM213579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4581 RNA, GAM178165 RNA and GAM213579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4581 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4581 target RNA into GAM4581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178165 target RNA into GAM178165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213579 target RNA into GAM213579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1476 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1476 gene: GAM4581 target protein, GAM178165 target protein and GAM213579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4581, GAM178165 and GAM213579

GR1477 AI719291 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1477(GR1477) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1477 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1477 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1477 gene encodes GR1477 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1477 precursor RNA folds spatially, forming GR1477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1477 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1477 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM283 precursor RNA and GAM211030 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM283 RNA and GAM211030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM283 target RNA into GAM283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211030 target RNA into GAM211030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1477 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1477 gene: GAM283 target protein and GAM211030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM283 and GAM211030

GR1478 AA852225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1478(GR1478) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1478 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1478 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1478 gene encodes GR1478 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1478 precursor RNA folds spatially, forming GR1478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1478 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1478 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM236323 precursor RNA and GAM305850 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM236323 RNA and GAM305850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM236323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236323 target RNA into GAM236323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305850 target RNA into GAM305850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1478 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1478 gene: GAM236323 target protein and GAM305850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM236323 and GAM305850

GR1479 BI458079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1479(GR1479) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1479 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1479 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1479 gene encodes GR1479 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1479 precursor RNA folds spatially, forming GR1479 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1479 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1479 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM663 precursor RNA, GAM60510 precursor RNA and GAM208934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM663 RNA, GAM60510 RNA and GAM208934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM663 target RNA into GAM663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60510 target RNA into GAM60510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208934 target RNA into GAM208934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1479 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1479 gene: GAM663 target protein, GAM60510 target protein and GAM208934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM663, GAM60510 and GAM208934

GR1480 AI869986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1480(GR1480) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1480 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1480 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1480 gene encodes GR1480 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1480 precursor RNA folds spatially, forming GR1480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1480 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1480 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7721 precursor RNA, GAM187555 precursor RNA and GAM336092 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7721 RNA, GAM187555 RNA and GAM336092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7721 target RNA into GAM7721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187555 target RNA into GAM187555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336092 target RNA into GAM336092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1480 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1480 gene: GAM7721 target protein, GAM187555 target protein and GAM336092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7721, GAM187555 and GAM336092

GR1481 AW806690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1481(GR1481) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1481 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1481 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1481 gene encodes GR1481 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1481 precursor RNA folds spatially, forming GR1481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1481 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1481 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM149125 precursor RNA and GAM178914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM149125 RNA and GAM178914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM149125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149125 target RNA into GAM149125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178914 target RNA into GAM178914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1481 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1481 gene: GAM149125 target protein and GAM178914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM149125 and GAM178914

GR1482 BM918853 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1482(GR1482) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1482 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1482 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1482 gene encodes GR1482 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1482 precursor RNA folds spatially, forming GR1482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1482 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1482 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152567 precursor RNA and GAM252529 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152567 RNA and GAM252529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152567 target RNA into GAM152567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252529 target RNA into GAM252529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1482 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1482 gene: GAM152567 target protein and GAM252529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152567 and GAM252529

GR1483 AI950909 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1483(GR1483) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1483 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1483 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1483 gene encodes GR1483 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1483 precursor RNA folds spatially, forming GR1483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1483 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1483 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180736 precursor RNA and GAM306111 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180736 RNA and GAM306111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180736 target RNA into GAM180736 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306111 target RNA into GAM306111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1483 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1483 gene: GAM180736 target protein and GAM306111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180736 and GAM306111

GR1484 BF673264 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1484(GR1484) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1484 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1484 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1484 gene encodes GR1484 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1484 precursor RNA folds spatially, forming GR1484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1484 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1484 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257907 precursor RNA and GAM320319 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257907 RNA and GAM320319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257907 target RNA into GAM257907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320319 target RNA into GAM320319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1484 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1484 gene: GAM257907 target protein and GAM320319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257907 and GAM320319

GR1485 AA084541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1485(GR1485) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1485 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1485 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1485 gene encodes GR1485 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1485 precursor RNA folds spatially, forming GR1485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1485 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1485 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1671 precursor RNA and GAM16447 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1671 RNA and GAM16447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1671 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1671 target RNA into GAM1671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16447 target RNA into GAM16447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1485 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1485 gene: GAM1671 target protein and GAM16447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1671 and GAM16447

GR1486 AA831022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1486(GR1486) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1486 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1486 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1486 gene encodes GR1486 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1486 precursor RNA folds spatially, forming GR1486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1486 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1486 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM311059 precursor RNA and GAM333577 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM311059 RNA and GAM333577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM311059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311059 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311059 target RNA into GAM311059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333577 target RNA into GAM333577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1486 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1486 gene: GAM311059 target protein and GAM333577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM311059 and GAM333577

GR1487 AA742775 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1487(GR1487) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1487 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1487 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1487 gene encodes GR1487 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1487 precursor RNA folds spatially, forming GR1487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1487 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1487 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM727 precursor RNA, GAM23393 precursor RNA and GAM307285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM727 RNA, GAM23393 RNA and GAM307285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM727 target RNA into GAM727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23393 target RNA into GAM23393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307285 target RNA into GAM307285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1487 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1487 gene: GAM727 target protein, GAM23393 target protein and GAM307285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM727, GAM23393 and GAM307285

GR1488 BG717651 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1488(GR1488) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1488 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1488 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1488 gene encodes GR1488 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1488 precursor RNA folds spatially, forming GR1488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1488 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1488 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4230 precursor RNA, GAM108548 precursor RNA, GAM112444 precursor RNA and GAM319485 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4230 RNA, GAM108548 RNA, GAM112444 RNA and GAM319485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4230 target RNA into GAM4230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108548 target RNA into GAM108548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112444 target RNA into GAM112444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319485 target RNA into GAM319485 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1488 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1488 gene: GAM4230 target protein, GAM108548 target protein, GAM112444 target protein and GAM319485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4230, GAM108548, GAM112444 and GAM319485

GR1489 BI547171 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1489(GR1489) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1489 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1489 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1489 gene encodes GR1489 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1489 precursor RNA folds spatially, forming GR1489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1489 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1489 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2862 precursor RNA and GAM5676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2862 RNA and GAM5676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2862 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2862 target RNA into GAM2862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5676 target RNA into GAM5676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1489 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1489 gene: GAM2862 target protein and GAM5676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2862 and GAM5676

GR1490 AA503665 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1490(GR1490) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1490 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1490 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1490 gene encodes GR1490 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1490 precursor RNA folds spatially, forming GR1490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1490 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1490 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1490 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM71983 precursor RNA, GAM224196 precursor RNA and GAM281208 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71983 RNA, GAM224196 RNA and GAM281208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71983 target RNA into GAM71983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224196 target RNA into GAM224196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281208 target RNA into GAM281208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1490 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1490 gene: GAM71983 target protein, GAM224196 target protein and GAM281208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71983, GAM224196 and GAM281208

GR1491 BE621383 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1491(GR1491) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1491 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1491 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1491 gene encodes GR1491 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1491 precursor RNA folds spatially, forming GR1491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1491 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1491 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4816 precursor RNA and GAM5256 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4816 RNA and GAM5256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4816 target RNA into GAM4816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5256 target RNA into GAM5256 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1491 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1491 gene: GAM4816 target protein and GAM5256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4816 and GAM5256

GR1492 BG185907 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1492(GR1492) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1492 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1492 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1492 gene encodes GR1492 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1492 precursor RNA folds spatially, forming GR1492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1492 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1492 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM191 precursor RNA, GAM154955 precursor RNA and GAM309874 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM191 RNA, GAM154955 RNA and GAM309874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM191 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191 target RNA into GAM191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154955 target RNA into GAM154955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309874 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309874 target RNA into GAM309874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1492 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1492 gene: GAM191 target protein, GAM154955 target protein and GAM309874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM191, GAM154955 and GAM309874

GR1493 AW051663 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1493(GR1493) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1493 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1493 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1493 gene encodes GR1493 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1493 precursor RNA folds spatially, forming GR1493 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1493 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1493 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1493 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM39704 precursor RNA, GAM69985 precursor RNA and GAM74567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39704 RNA, GAM69985 RNA and GAM74567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39704 target RNA into GAM39704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69985 target RNA into GAM69985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74567 target RNA into GAM74567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1493 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1493 gene: GAM39704 target protein, GAM69985 target protein and GAM74567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39704, GAM69985 and GAM74567

GR1494 BF980390 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1494(GR1494) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1494 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1494 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1494 gene encodes GR1494 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1494 precursor RNA folds spatially, forming GR1494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1494 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1494 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6098 precursor RNA, GAM8615 precursor RNA and GAM36991 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6098 RNA, GAM8615 RNA and GAM36991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6098 target RNA into GAM6098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8615 target RNA into GAM8615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36991 target RNA into GAM36991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1494 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1494 gene: GAM6098 target protein, GAM8615 target protein and GAM36991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6098, GAM8615 and GAM36991

GR1495 BM686835 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1495(GR1495) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1495 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1495 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1495 gene encodes GR1495 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1495 precursor RNA folds spatially, forming GR1495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1495 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1495 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM123676 precursor RNA, GAM157908 precursor RNA, GAM164635 precursor RNA and GAM240444 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM123676 RNA, GAM157908 RNA, GAM164635 RNA and GAM240444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM123676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123676 target RNA into GAM123676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157908 target RNA into GAM157908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164635 target RNA into GAM164635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240444 target RNA into GAM240444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1495 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1495 gene: GAM123676 target protein, GAM157908 target protein, GAM164635 target protein and GAM240444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM123676, GAM157908, GAM164635 and GAM240444

GR1496 AA430217 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1496(GR1496) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1496 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1496 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1496 gene encodes GR1496 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1496 precursor RNA folds spatially, forming GR1496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1496 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1496 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7531 precursor RNA and GAM208084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7531 RNA and GAM208084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7531 target RNA into GAM7531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208084 target RNA into GAM208084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1496 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1496 gene: GAM7531 target protein and GAM208084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7531 and GAM208084

GR1497 BG977485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1497(GR1497) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1497 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1497 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1497 gene encodes GR1497 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1497 precursor RNA folds spatially, forming GR1497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1497 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1497 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM1719 precursor RNA, GAM255267 precursor RNA and GAM289498 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1719 RNA, GAM255267 RNA and GAM289498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1719 target RNA into GAM1719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255267 target RNA into GAM255267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289498 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289498 target RNA into GAM289498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1497 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1497 gene: GAM1719 target protein, GAM255267 target protein and GAM289498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1719, GAM255267 and GAM289498

GR1498 BQ058287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1498(GR1498) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1498 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1498 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1498 gene encodes GR1498 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1498 precursor RNA folds spatially, forming GR1498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1498 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1498 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5066 precursor RNA and GAM216093 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5066 RNA and GAM216093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5066 target RNA into GAM5066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216093 target RNA into GAM216093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1498 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1498 gene: GAM5066 target protein and GAM216093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5066 and GAM216093

GR1499 BE387292 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1499(GR1499) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1499 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1499 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1499 gene encodes GR1499 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1499 precursor RNA folds spatially, forming GR1499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1499 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1499 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5384 precursor RNA, GAM7612 precursor RNA, GAM228655 precursor RNA and GAM291687 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5384 RNA, GAM7612 RNA, GAM228655 RNA and GAM291687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5384 target RNA into GAM5384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7612 target RNA into GAM7612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228655 target RNA into GAM228655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291687 target RNA into GAM291687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1499 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1499 gene: GAM5384 target protein, GAM7612 target protein, GAM228655 target protein and GAM291687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5384, GAM7612, GAM228655 and GAM291687

GR1500 AW192466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1500(GR1500) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1500 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1500

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1500 gene encodes GR1500 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1500 precursor RNA folds spatially, forming GR1500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1500 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1500 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6177 precursor RNA and GAM22110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6177 RNA and GAM22110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6177 target RNA into GAM6177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22110 target RNA into GAM22110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1500 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1500 gene: GAM6177 target protein and GAM22110 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6177 and GAM22110

GR1501 BG501465 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1501(GR1501) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1501 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1501 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1501 gene encodes GR1501 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1501 precursor RNA folds spatially, forming GR1501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1501 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1501 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7111 precursor RNA, GAM8190 precursor RNA, GAM127759 precursor RNA and GAM204162 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7111 RNA, GAM8190 RNA, GAM127759 RNA and GAM204162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7111 target RNA into GAM7111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8190 target RNA into GAM8190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127759 target RNA into GAM127759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204162 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204162 target RNA into GAM204162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1501 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1501 gene: GAM7111 target protein, GAM8190 target protein, GAM127759 target protein and GAM204162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7111, GAM8190, GAM127759 and GAM204162

GR1502 BM906540 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1502(GR1502) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1502 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1502 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1502 gene encodes GR1502 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1502 precursor RNA folds spatially, forming GR1502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1502 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1502 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM272809 precursor RNA and GAM318381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM272809 RNA and GAM318381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM272809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272809 target RNA into GAM272809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318381 target RNA into GAM318381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1502 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1502 gene: GAM272809 target protein and GAM318381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM272809 and GAM318381

GR1503 BG436336 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1503(GR1503) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1503 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1503 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1503 gene encodes GR1503 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1503 precursor RNA folds spatially, forming GR1503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1503 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1503 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM109719 precursor RNA, GAM164538 precursor RNA and GAM211410 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM109719 RNA, GAM164538 RNA and GAM211410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM109719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109719 target RNA into GAM109719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164538

target RNA into GAM164538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211410 target RNA into GAM211410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1503 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1503 gene: GAM109719 target protein, GAM164538 target protein and GAM211410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM109719, GAM164538 and GAM211410

GR1504 AI126936 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1504(GR1504) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1504 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1504 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1504 gene encodes GR1504 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1504 precursor RNA folds spatially, forming GR1504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1504 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1504 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM227615 precursor RNA and GAM237130 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM227615 RNA and GAM237130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM227615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227615 target RNA into GAM227615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237130 target RNA into GAM237130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1504 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1504 gene: GAM227615 target protein and GAM237130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM227615 and GAM237130

GR1505 BI524164 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1505(GR1505) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1505 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1505 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1505 gene encodes GR1505 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1505 precursor RNA folds spatially, forming GR1505 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1505 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1505 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63728 precursor RNA and GAM284053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63728 RNA and GAM284053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63728 target RNA into GAM63728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284053 target RNA into GAM284053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1505 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1505 gene: GAM63728 target protein and GAM284053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63728 and GAM284053

GR1506 BE959565 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1506(GR1506) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1506 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1506 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1506 gene encodes GR1506 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1506 precursor RNA folds spatially, forming GR1506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1506 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1506 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM27081 precursor RNA and GAM334135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27081 RNA and GAM334135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27081 target RNA into GAM27081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334135 target RNA into GAM334135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1506 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1506 gene: GAM27081 target protein and GAM334135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27081 and GAM334135

GR1507 AW021198 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1507(GR1507) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1507 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1507 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1507 gene encodes GR1507 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1507 precursor RNA folds spatially, forming GR1507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1507 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1507 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM104848 precursor RNA, GAM181450 precursor RNA and GAM186116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM104848 RNA, GAM181450 RNA and GAM186116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM104848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM104848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104848 target RNA into GAM104848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181450 target RNA into GAM181450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186116 target RNA into GAM186116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1507 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1507 gene: GAM104848 target protein, GAM181450 target protein and GAM186116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM104848, GAM181450 and GAM186116

GR1508 BQ001257 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1508(GR1508) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1508 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1508 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1508 gene encodes GR1508 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1508 precursor RNA folds spatially, forming GR1508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1508 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1508 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3658 precursor RNA and GAM5078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3658 RNA and GAM5078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3658 target RNA into GAM3658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5078 target RNA into GAM5078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1508 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1508 gene: GAM3658 target protein and GAM5078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3658 and GAM5078

GR1509 H14891 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1509(GR1509) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1509 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1509 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1509 gene encodes GR1509 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1509 precursor RNA folds spatially, forming GR1509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1509 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1509 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8369 precursor RNA and GAM188831 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8369 RNA and GAM188831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8369 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8369 target RNA into GAM8369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188831 target RNA into GAM188831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1509 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1509 gene: GAM8369 target protein and GAM188831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8369 and GAM188831

GR1510 BG177913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1510(GR1510) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1510 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1510 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1510 gene encodes GR1510 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1510 precursor RNA folds spatially, forming GR1510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1510 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1510 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2970 precursor RNA and GAM188960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2970 RNA and GAM188960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2970 target RNA into GAM2970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188960 target RNA into GAM188960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1510 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1510 gene: GAM2970 target protein and GAM188960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2970 and GAM188960

GR1511 BG251208 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1511(GR1511) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1511 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1511 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1511 gene encodes GR1511 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1511 precursor RNA folds spatially, forming GR1511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1511 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1511 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM224543 precursor RNA, GAM258143 precursor RNA and GAM271438 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224543 RNA, GAM258143 RNA and GAM271438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224543 target RNA into GAM224543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258143 target RNA into GAM258143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271438 target RNA into GAM271438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1511 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1511 gene: GAM224543 target protein, GAM258143 target protein and GAM271438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224543, GAM258143 and GAM271438

GR1512 BF341817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1512(GR1512) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1512 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1512 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1512 gene encodes GR1512 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1512 precursor RNA folds spatially, forming GR1512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1512 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1512 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM99297 precursor RNA, GAM209970 precursor RNA and GAM253078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99297 RNA, GAM209970 RNA and GAM253078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99297 target RNA into GAM99297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209970 target RNA into GAM209970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253078 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253078 target RNA into GAM253078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1512 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1512 gene: GAM99297 target protein, GAM209970 target protein and GAM253078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99297, GAM209970 and GAM253078

GR1513 BF975268 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1513(GR1513) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1513 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1513 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1513 gene encodes GR1513 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1513 precursor RNA folds spatially, forming GR1513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1513 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1513 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63410 precursor RNA and GAM228714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63410 RNA and GAM228714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63410 target RNA into GAM63410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228714 target RNA into GAM228714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1513 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1513 gene: GAM63410 target protein and GAM228714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63410 and GAM228714

GR1514 BI086753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1514(GR1514) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1514 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1514 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1514 gene encodes GR1514 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1514 precursor RNA folds spatially, forming GR1514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1514 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1514 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM292187 precursor RNA and GAM317384 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM292187 RNA and GAM317384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM292187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292187 target RNA into GAM292187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317384 target RNA into GAM317384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1514 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1514 gene: GAM292187 target protein and GAM317384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM292187 and GAM317384

GR1515 BM748767 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1515(GR1515) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1515 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1515 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1515 gene encodes GR1515 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1515 precursor RNA folds spatially, forming GR1515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1515 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1515 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2229 precursor RNA and GAM53249 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2229 RNA and GAM53249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2229 target RNA into GAM2229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53249 target RNA into GAM53249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1515 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1515 gene: GAM2229 target protein and GAM53249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2229 and GAM53249

GR1516 BG942134 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1516(GR1516) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1516 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1516 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1516 gene encodes GR1516 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1516 precursor RNA folds spatially, forming GR1516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1516 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1516 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM159375 precursor RNA and GAM201570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM159375 RNA and GAM201570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM159375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159375

target RNA into GAM159375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201570 target RNA into GAM201570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1516 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1516 gene: GAM159375 target protein and GAM201570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM159375 and GAM201570

GR1517 AV722088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1517(GR1517) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1517 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1517 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1517 gene encodes GR1517 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1517 precursor RNA folds spatially, forming GR1517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1517 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1517 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1728 precursor RNA, GAM117892 precursor RNA and GAM194872 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1728 RNA, GAM117892 RNA and GAM194872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1728 target RNA into GAM1728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117892 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117892 target RNA into GAM117892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194872 target RNA into GAM194872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1517 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1517 gene: GAM1728 target protein, GAM117892 target protein and GAM194872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1728, GAM117892 and GAM194872

GR1518 BF892721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1518(GR1518) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1518 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1518 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1518 gene encodes GR1518 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1518 precursor RNA folds spatially, forming GR1518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1518 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1518 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM238587 precursor RNA and GAM285217 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM238587 RNA and GAM285217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM238587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238587 target RNA into GAM238587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285217 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285217 target RNA into GAM285217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1518 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1518 gene: GAM238587 target protein and GAM285217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM238587 and GAM285217

GR1519 BE791702 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1519(GR1519) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1519 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1519 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1519 gene encodes GR1519 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1519 precursor RNA folds spatially, forming GR1519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1519 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1519 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM357 precursor RNA, GAM2144 precursor RNA and GAM186723 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM357 RNA, GAM2144 RNA and GAM186723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM357 target RNA into

GAM357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2144 target RNA into GAM2144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186723 target RNA into GAM186723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1519 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1519 gene: GAM357 target protein, GAM2144 target protein and GAM186723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM357, GAM2144 and GAM186723

GR1520 R42880 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1520(GR1520) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1520 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1520 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1520 gene encodes GR1520 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1520 precursor RNA folds spatially, forming GR1520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1520 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1520 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8674 precursor RNA and GAM336057 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8674 RNA and GAM336057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8674 target RNA into GAM8674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336057 target RNA into GAM336057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1520 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1520 gene: GAM8674 target protein and GAM336057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8674 and GAM336057

GR1521 BM461955 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1521(GR1521) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1521 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1521 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1521 gene encodes GR1521 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1521 precursor RNA folds spatially, forming GR1521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1521 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1521 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7079 precursor RNA and GAM27682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7079 RNA and GAM27682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7079 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7079 target RNA into GAM7079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27682 target RNA into GAM27682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1521 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1521 gene: GAM7079 target

protein and GAM27682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7079 and GAM27682

GR1522 AA628539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1522(GR1522) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1522 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1522 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1522 gene encodes GR1522 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1522 precursor RNA folds spatially, forming GR1522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1522 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1522 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM958 precursor RNA and GAM199623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM958 RNA and GAM199623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM958 target RNA into GAM958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199623 target RNA into GAM199623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1522 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1522 gene: GAM958 target protein and GAM199623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM958 and GAM199623

GR1523 BF692574 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1523(GR1523) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1523 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1523 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1523 gene encodes GR1523 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1523 precursor RNA folds spatially, forming GR1523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1523 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1523 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120021 precursor RNA and GAM247548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120021 RNA and GAM247548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120021 target RNA into GAM120021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247548 target RNA into GAM247548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1523 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1523 gene: GAM120021 target protein and GAM247548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120021 and GAM247548

GR1524 BG391746 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1524(GR1524) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1524 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1524 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1524 gene encodes GR1524 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1524 precursor RNA folds spatially, forming GR1524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1524 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1524 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41870 precursor RNA and GAM97524 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41870 RNA and GAM97524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41870 target RNA into GAM41870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97524 target RNA into GAM97524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1524 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1524 gene: GAM41870 target protein and GAM97524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41870 and GAM97524

GR1525 BG612232 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1525(GR1525) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1525 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1525 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1525 gene encodes GR1525 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1525 precursor RNA folds spatially, forming GR1525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1525 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1525 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM76108 precursor RNA and GAM279909 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76108 RNA and GAM279909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76108 target RNA into GAM76108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279909 target RNA into GAM279909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1525 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1525 gene: GAM76108 target protein and GAM279909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76108 and GAM279909

GR1526 AA255873 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1526(GR1526) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1526 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1526 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1526 gene encodes GR1526 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1526 precursor RNA folds spatially, forming GR1526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1526 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1526 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48402 precursor RNA and GAM300579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48402 RNA and GAM300579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48402

target RNA into GAM48402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300579 target RNA into GAM300579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1526 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1526 gene: GAM48402 target protein and GAM300579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48402 and GAM300579

GR1527 AF147078 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1527(GR1527) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1527 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1527 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1527 gene encodes GR1527 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1527 precursor RNA folds spatially, forming GR1527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1527 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1527 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7044 precursor RNA and GAM160423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7044 RNA and GAM160423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7044 target RNA into GAM7044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160423 target RNA into GAM160423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1527 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1527 gene: GAM7044 target protein and GAM160423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7044 and GAM160423

GR1528 BG775174 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1528(GR1528) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1528 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1528 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1528 gene encodes GR1528 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1528 precursor RNA folds spatially, forming GR1528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1528 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1528 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253044 precursor RNA and GAM254619 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253044 RNA and GAM254619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253044 target RNA into GAM253044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254619 target RNA into GAM254619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1528 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1528 gene: GAM253044 target protein and GAM254619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253044 and GAM254619

GR1529 BI262047 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1529(GR1529) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1529 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1529 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1529 gene encodes GR1529 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1529 precursor RNA folds spatially, forming GR1529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1529 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1529 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4103 precursor RNA and GAM104612 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4103 RNA and GAM104612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4103 target RNA into GAM4103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104612 target RNA into GAM104612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1529 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1529 gene: GAM4103 target protein and GAM104612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4103 and GAM104612

GR1530 BG328374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1530(GR1530) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1530 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1530 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1530 gene encodes GR1530 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1530 precursor RNA folds spatially, forming GR1530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1530 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1530 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8209 precursor RNA and GAM162413 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8209 RNA and GAM162413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8209 target RNA into GAM8209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162413 target RNA into GAM162413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1530 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1530 gene: GAM8209 target protein and GAM162413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8209 and GAM162413

GR1531 AA927321 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1531(GR1531) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1531 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1531 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1531 gene encodes GR1531 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1531 precursor RNA folds spatially, forming GR1531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1531 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1531 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1298 precursor RNA and GAM1644 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1298 RNA and GAM1644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1298 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1298 target RNA into GAM1298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1644 target RNA into GAM1644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1531 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1531 gene: GAM1298 target protein and GAM1644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1298 and GAM1644

GR1532 AV688907 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1532(GR1532) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1532 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1532 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1532 gene encodes GR1532 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1532 precursor RNA folds spatially, forming GR1532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1532 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1532 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4260 precursor RNA and GAM207464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4260 RNA and GAM207464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4260 target RNA into GAM4260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207464 target RNA into GAM207464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1532 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1532 gene: GAM4260 target protein and GAM207464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4260 and GAM207464

GR1533 BF325837 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1533(GR1533) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1533 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1533 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1533 gene encodes GR1533 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1533 precursor RNA folds spatially, forming GR1533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1533 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1533 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1873 precursor RNA and GAM6228 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1873 RNA and GAM6228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1873 target RNA into GAM1873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6228 target RNA into GAM6228 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1533 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1533 gene: GAM1873 target protein and GAM6228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1873 and GAM6228

GR1534 AI241581 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1534(GR1534) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1534 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1534 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1534 gene encodes GR1534 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1534 precursor RNA folds spatially, forming GR1534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1534 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1534 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3251 precursor RNA, GAM101664 precursor RNA and GAM196769 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3251 RNA, GAM101664 RNA and GAM196769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3251 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3251 target RNA into GAM3251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101664 target RNA into GAM101664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196769 target RNA into GAM196769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1534 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1534 gene: GAM3251 target protein, GAM101664 target protein and GAM196769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3251, GAM101664 and GAM196769

GR1535 BG122900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1535(GR1535) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1535 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1535 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1535 gene encodes GR1535 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1535 precursor RNA folds spatially, forming GR1535 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1535 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1535 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1535 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM224526 precursor RNA and GAM327156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224526 RNA and GAM327156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224526 target RNA into GAM224526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327156 target RNA into GAM327156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1535 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1535 gene: GAM224526 target protein and GAM327156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224526 and GAM327156

GR1536 BM007492 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1536(GR1536) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1536 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1536 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1536 gene encodes GR1536 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1536 precursor RNA folds spatially, forming GR1536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1536 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1536 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2506 precursor RNA, GAM207742 precursor RNA and GAM262560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2506 RNA, GAM207742 RNA and GAM262560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2506 target RNA into GAM2506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207742 target RNA into GAM207742 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262560 target RNA into GAM262560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1536 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1536 gene: GAM2506 target protein, GAM207742 target protein and GAM262560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2506, GAM207742 and GAM262560

GR1537 BE502758 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1537(GR1537) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1537 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1537 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1537 gene encodes GR1537 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1537 precursor RNA folds spatially, forming GR1537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1537 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1537 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5981 precursor RNA and GAM6601 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5981 RNA and GAM6601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5981 target RNA into GAM5981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6601 target RNA into GAM6601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1537 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1537 gene: GAM5981 target protein and GAM6601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5981 and GAM6601

GR1538 T89662 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1538(GR1538) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1538 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1538 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1538 gene encodes GR1538 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1538 precursor RNA folds spatially, forming GR1538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1538 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1538 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7296 precursor RNA and GAM320261 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7296 RNA and GAM320261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7296 target RNA into GAM7296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320261 target RNA into GAM320261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1538 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1538 gene: GAM7296 target protein and GAM320261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7296 and GAM320261

GR1539 BF105024 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1539(GR1539) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1539 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1539 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1539 gene encodes GR1539 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1539 precursor RNA folds spatially, forming GR1539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1539 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1539 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3657 precursor RNA and GAM258773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3657 RNA and GAM258773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3657 target RNA into GAM3657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258773 target RNA into GAM258773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1539 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1539 gene: GAM3657 target protein and GAM258773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3657 and GAM258773

GR1540 BG499220 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1540(GR1540) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1540 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1540 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1540 gene encodes GR1540 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1540 precursor RNA folds spatially, forming GR1540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1540 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1540 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122325 precursor RNA and GAM284555 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122325 RNA and GAM284555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122325 target RNA into GAM122325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284555 target RNA into GAM284555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1540 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1540 gene: GAM122325 target protein and GAM284555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122325 and GAM284555

GR1541 AW935888 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1541(GR1541) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1541 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1541 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1541 gene encodes GR1541 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1541 precursor RNA folds spatially, forming GR1541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1541 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1541 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131083 precursor RNA and GAM209188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131083 RNA and GAM209188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131083 target RNA into GAM131083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209188 target RNA into GAM209188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1541 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1541 gene: GAM131083 target protein and GAM209188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131083 and GAM209188

GR1542 BE780076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1542(GR1542) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1542 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1542 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1542 gene encodes GR1542 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1542 precursor RNA folds spatially, forming GR1542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1542 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1542 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8225 precursor RNA and GAM139979 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8225 RNA and GAM139979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8225 target RNA into GAM8225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139979 target RNA into GAM139979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1542 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1542 gene: GAM8225 target protein and GAM139979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8225 and GAM139979

GR1543 BM993891 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1543(GR1543) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1543 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1543 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1543 gene encodes GR1543 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1543 precursor RNA folds spatially, forming GR1543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1543 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1543 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM316143 precursor RNA and GAM316247 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM316143 RNA and GAM316247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM316143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316143 target RNA into GAM316143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316247 target RNA into GAM316247 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1543 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1543 gene: GAM316143 target protein and GAM316247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM316143 and GAM316247

GR1544 BF576164 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1544(GR1544) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1544 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1544 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1544 gene encodes GR1544 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1544 precursor RNA folds spatially, forming GR1544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1544 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1544 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM39587 precursor RNA and GAM117377 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39587 RNA and GAM117377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM39587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39587 target RNA into GAM39587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117377 target RNA into GAM117377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1544 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1544 gene: GAM39587 target protein and GAM117377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39587 and GAM117377

GR1545 BM786861 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1545(GR1545) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1545 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1545 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1545 gene encodes GR1545 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1545 precursor RNA folds spatially, forming GR1545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1545 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1545 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM206931 precursor RNA and GAM210986 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM206931 RNA and GAM210986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM206931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206931 target RNA into GAM206931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210986 target RNA into GAM210986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1545 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1545 gene: GAM206931 target protein and GAM210986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM206931 and GAM210986

GR1546 AI821940 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1546(GR1546) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1546 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1546 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1546 gene encodes GR1546 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1546 precursor RNA folds spatially, forming GR1546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1546 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1546 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1779 precursor RNA and GAM166650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1779 RNA and GAM166650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1779 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1779 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1779 target RNA into GAM1779 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166650 target RNA into GAM166650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1546 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1546 gene: GAM1779 target protein and GAM166650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1779 and GAM166650

GR1547 BI222454 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1547(GR1547) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1547 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1547 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1547 gene encodes GR1547 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1547 precursor RNA folds spatially, forming GR1547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1547 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1547 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM12512 precursor RNA, GAM204469 precursor RNA and GAM273640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12512 RNA, GAM204469 RNA and GAM273640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12512 target RNA into GAM12512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204469 target RNA into GAM204469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273640 target RNA into GAM273640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1547 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1547 gene: GAM12512 target protein, GAM204469 target protein and GAM273640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12512, GAM204469 and GAM273640

GR1548 AI554417 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1548(GR1548) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1548 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1548 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1548 gene encodes GR1548 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1548 precursor RNA folds spatially, forming GR1548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1548 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1548 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4654 precursor RNA, GAM21693 precursor RNA and

GAM107205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4654 RNA, GAM21693 RNA and GAM107205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4654 target RNA into GAM4654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21693 target RNA into GAM21693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107205 target RNA into GAM107205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1548 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1548 gene: GAM4654 target protein, GAM21693 target protein and GAM107205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4654, GAM21693 and GAM107205

GR1549 BG928536 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1549(GR1549) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1549 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1549 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1549 gene encodes GR1549 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1549 precursor RNA folds spatially, forming GR1549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1549 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1549 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9600 precursor RNA and GAM212636 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9600 RNA and GAM212636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9600 target RNA into GAM9600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212636 target RNA into GAM212636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1549 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1549 gene: GAM9600 target protein and GAM212636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9600 and GAM212636

GR1550 BI252071 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1550(GR1550) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1550 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1550 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1550 gene encodes GR1550 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1550 precursor RNA folds spatially, forming GR1550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1550 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1550 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65055 precursor RNA and GAM114925 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65055 RNA and GAM114925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65055 target RNA into GAM65055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114925 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114925 target RNA into GAM114925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1550 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1550 gene: GAM65055 target protein and GAM114925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65055 and GAM114925

GR1551 AA458469 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1551(GR1551) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1551 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1551 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1551 gene encodes GR1551 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1551 precursor RNA folds spatially, forming GR1551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1551 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1551 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM93629 precursor RNA, GAM117421 precursor RNA and GAM120918 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93629 RNA, GAM117421 RNA and GAM120918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93629 target RNA into GAM93629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117421 target RNA into GAM117421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120918 target RNA into GAM120918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1551 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1551 gene: GAM93629 target protein, GAM117421 target protein and GAM120918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93629, GAM117421 and GAM120918

GR1552 BI916845 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1552(GR1552) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1552 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1552 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1552 gene encodes GR1552 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1552 precursor RNA folds spatially, forming GR1552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1552 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1552 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4039 precursor RNA and GAM5144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4039 RNA and GAM5144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4039 target RNA into GAM4039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5144 target RNA into GAM5144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1552 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1552 gene: GAM4039 target protein and GAM5144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4039 and GAM5144

GR1553 BG696483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1553(GR1553) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1553 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1553 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1553 gene encodes GR1553 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1553 precursor RNA folds spatially, forming GR1553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1553 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1553 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6608 precursor RNA and GAM59654 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6608 RNA and GAM59654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6608 target RNA into GAM6608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59654 target RNA into GAM59654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1553 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1553 gene: GAM6608 target protein and GAM59654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6608 and GAM59654

GR1554 BM676063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1554(GR1554) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1554 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1554 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1554 gene encodes GR1554 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1554 precursor RNA folds spatially, forming GR1554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1554 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1554 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM46421 precursor RNA, GAM131801 precursor RNA and GAM318158 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46421 RNA, GAM131801 RNA and GAM318158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46421 target RNA into GAM46421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131801 target RNA into GAM131801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318158 target RNA into GAM318158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1554 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1554 gene: GAM46421 target protein, GAM131801 target protein and GAM318158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46421, GAM131801 and GAM318158

GR1555 BE251397 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1555(GR1555) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1555 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1555 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1555 gene encodes GR1555 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1555 precursor RNA folds spatially, forming GR1555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1555 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1555 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20281 precursor RNA and GAM36791 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20281 RNA and GAM36791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20281 target RNA into GAM20281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36791 target RNA into GAM36791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1555 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1555 gene: GAM20281 target protein and GAM36791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20281 and GAM36791

GR1556 BM982686 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1556(GR1556) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1556 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1556 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1556 gene encodes GR1556 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1556 precursor RNA folds spatially, forming GR1556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1556 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1556 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM105081 precursor RNA, GAM286729 precursor RNA and GAM315672 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105081 RNA, GAM286729 RNA and GAM315672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105081 target RNA into GAM105081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286729 target RNA into GAM286729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315672 target RNA into GAM315672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1556 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1556 gene: GAM105081 target protein, GAM286729 target protein and GAM315672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105081, GAM286729 and GAM315672

GR1557 R18811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1557(GR1557) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1557 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1557 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1557 gene encodes GR1557 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1557 precursor RNA folds spatially, forming GR1557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1557 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1557 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2092 precursor RNA and GAM7205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2092 RNA and GAM7205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2092 target RNA into GAM2092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7205 target RNA into GAM7205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1557 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1557 gene: GAM2092 target protein and GAM7205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2092 and GAM7205

GR1558 BE788410 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1558(GR1558) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1558 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1558 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1558 gene encodes GR1558 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1558 precursor RNA folds spatially, forming GR1558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1558 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1558 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7450 precursor RNA and GAM10184 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7450 RNA and GAM10184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7450 target RNA into GAM7450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM10184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10184 target RNA into GAM10184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1558 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1558 gene: GAM7450 target protein and GAM10184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7450 and GAM10184

GR1559 BF338264 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1559(GR1559) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1559 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1559 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1559 gene encodes GR1559 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1559 precursor RNA folds spatially, forming GR1559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1559 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1559 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM254593 precursor RNA, GAM273218 precursor RNA and GAM296540 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM254593 RNA, GAM273218 RNA and GAM296540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM254593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254593

target RNA into GAM254593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273218 target RNA into GAM273218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296540 target RNA into GAM296540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1559 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1559 gene: GAM254593 target protein, GAM273218 target protein and GAM296540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM254593, GAM273218 and GAM296540

GR1560 AW517051 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1560(GR1560) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1560 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1560 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1560 gene encodes GR1560 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1560 precursor RNA folds spatially, forming GR1560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1560 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1560 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM291142 precursor RNA and GAM315496 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM291142 RNA and GAM315496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM291142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291142 target RNA into GAM291142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315496 target RNA into GAM315496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1560 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1560 gene: GAM291142 target protein and GAM315496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM291142 and GAM315496

GR1561 BF114783 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1561(GR1561) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1561 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1561 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1561 gene encodes GR1561 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1561 precursor RNA folds spatially, forming GR1561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1561 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1561 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM723 precursor RNA and GAM6780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM723 RNA and GAM6780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM723 target RNA into GAM723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6780 target RNA into GAM6780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1561 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1561 gene: GAM723 target

protein and GAM6780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM723 and GAM6780

GR1562 AA214633 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1562(GR1562) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1562 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1562 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1562 gene encodes GR1562 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1562 precursor RNA folds spatially, forming GR1562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1562 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1562 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7927 precursor RNA and GAM16681 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7927 RNA and GAM16681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7927 target RNA into GAM7927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16681 target RNA into GAM16681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1562 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1562 gene: GAM7927 target protein and GAM16681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7927 and GAM16681

GR1563 AL046118 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1563(GR1563) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1563 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1563 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1563 gene encodes GR1563 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1563 precursor RNA folds spatially, forming GR1563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1563 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1563 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24386 precursor RNA and GAM71997 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24386 RNA and GAM71997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24386 target RNA into GAM24386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71997 target RNA into GAM71997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1563 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1563 gene: GAM24386 target protein and GAM71997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24386 and GAM71997

GR1564 AI264819 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1564(GR1564) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1564 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1564 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1564 gene encodes GR1564 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1564 precursor RNA folds spatially, forming GR1564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1564 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1564 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM932 precursor RNA, GAM8596 precursor RNA and GAM64278 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM932 RNA, GAM8596 RNA and GAM64278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM932 target RNA into GAM932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8596 target RNA into GAM8596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64278 target RNA into GAM64278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1564 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1564 gene: GAM932 target protein, GAM8596 target protein and GAM64278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM932, GAM8596 and GAM64278

GR1565 AW952316 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1565(GR1565) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1565 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1565 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1565 gene encodes GR1565 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1565 precursor RNA folds spatially, forming GR1565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1565 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1565 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2112 precursor RNA and GAM193898 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2112 RNA and GAM193898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2112 target RNA into GAM2112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193898 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193898 target RNA into GAM193898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1565 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1565 gene: GAM2112 target protein and GAM193898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2112 and GAM193898

GR1566 BF663927 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1566(GR1566) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1566 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1566 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1566 gene encodes GR1566 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1566 precursor RNA folds spatially, forming GR1566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1566 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1566 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4957 precursor RNA and GAM152837 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4957 RNA and GAM152837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4957 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4957 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4957 target RNA into GAM4957 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152837 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152837 target RNA into GAM152837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1566 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1566 gene: GAM4957 target protein and GAM152837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4957 and GAM152837

GR1567 AI798828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1567(GR1567) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1567 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1567 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1567 gene encodes GR1567 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1567 precursor RNA folds spatially, forming GR1567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1567 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1567 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230426 precursor RNA and GAM282820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230426 RNA and GAM282820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230426 target RNA into GAM230426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282820 target RNA into GAM282820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1567 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1567 gene: GAM230426 target protein and GAM282820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230426 and GAM282820

GR1568 AW440057 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1568(GR1568) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1568 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1568 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1568 gene encodes GR1568 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1568 precursor RNA folds spatially, forming GR1568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1568 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1568 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54222 precursor RNA and GAM178137 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54222 RNA and GAM178137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54222 target RNA into GAM54222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178137 target RNA into GAM178137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1568 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1568 gene: GAM54222 target protein and GAM178137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54222 and GAM178137

GR1569 AA665475 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1569(GR1569) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1569 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1569 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1569 gene encodes GR1569 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1569 precursor RNA folds spatially, forming GR1569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1569 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1569 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8134 precursor RNA and GAM8245 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8134 RNA and GAM8245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8134 target RNA into GAM8134 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8245 target RNA into GAM8245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1569 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1569 gene: GAM8134 target protein and GAM8245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8134 and GAM8245

GR1570 BF059439 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1570(GR1570) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1570 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1570 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1570 gene encodes GR1570 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1570 precursor RNA folds spatially, forming GR1570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1570 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1570 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7246 precursor RNA, GAM60344 precursor RNA and GAM114034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7246 RNA, GAM60344 RNA and GAM114034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7246 target RNA into GAM7246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60344 target RNA into GAM60344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114034 target RNA into GAM114034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1570 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1570 gene: GAM7246 target protein, GAM60344 target protein and GAM114034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7246, GAM60344 and GAM114034

GR1571 AA969341 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1571(GR1571) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1571 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1571 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1571 gene encodes GR1571 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1571 precursor RNA folds spatially, forming GR1571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1571 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1571 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM98789 precursor RNA, GAM249780 precursor RNA and GAM301982 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98789 RNA, GAM249780 RNA and GAM301982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98789 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98789 target RNA into GAM98789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249780 target RNA into GAM249780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301982 target RNA into GAM301982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1571 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1571 gene: GAM98789 target protein, GAM249780 target protein and GAM301982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98789, GAM249780 and GAM301982

GR1572 BF541362 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1572(GR1572) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1572 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1572 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1572 gene encodes GR1572 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1572 precursor RNA folds spatially, forming GR1572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1572 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1572 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM269020 precursor RNA and GAM314714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM269020 RNA and GAM314714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM269020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269020 target RNA into GAM269020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314714 target RNA into GAM314714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1572 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1572 gene: GAM269020 target protein and GAM314714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM269020 and GAM314714

GR1573 AA709317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1573(GR1573) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1573 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1573 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1573 gene encodes GR1573 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1573 precursor RNA folds spatially, forming GR1573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1573 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1573 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53 precursor RNA and GAM224673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53 RNA and GAM224673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53 target RNA into GAM53 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224673 target RNA into GAM224673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1573 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1573 gene: GAM53 target protein and GAM224673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53 and GAM224673

GR1574 AV649257 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1574(GR1574) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1574 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1574

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1574 gene encodes GR1574 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1574 precursor RNA folds spatially, forming GR1574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1574 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1574 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152123 precursor RNA and GAM321513 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152123 RNA and GAM321513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152123 target RNA into GAM152123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321513 target RNA into GAM321513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1574 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1574 gene: GAM152123 target protein and GAM321513 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152123 and GAM321513

GR1575 W77897 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1575(GR1575) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1575 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1575 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1575 gene encodes GR1575 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1575 precursor RNA folds spatially, forming GR1575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1575 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1575 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2243 precursor RNA, GAM328254 precursor RNA and GAM336285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2243 RNA, GAM328254 RNA and GAM336285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2243 target RNA into GAM2243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328254 target RNA into GAM328254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336285 target RNA into GAM336285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1575 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1575 gene: GAM2243 target protein, GAM328254 target protein and GAM336285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2243, GAM328254 and GAM336285

GR1576 BM668483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1576(GR1576) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1576 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1576 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1576 gene encodes GR1576 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1576 precursor RNA folds spatially, forming GR1576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1576 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1576 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM101993 precursor RNA and GAM157391 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101993 RNA and GAM157391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101993 target RNA into GAM101993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157391 target RNA into GAM157391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1576 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1576 gene: GAM101993 target protein and GAM157391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101993 and GAM157391

GR1577 BE255176 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1577(GR1577) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1577 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1577 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1577 gene encodes GR1577 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1577 precursor RNA folds spatially, forming GR1577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1577 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1577 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13473 precursor RNA and GAM72394 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13473 RNA and GAM72394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13473 target RNA into GAM13473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72394 target RNA into GAM72394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1577 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1577 gene: GAM13473 target protein and GAM72394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13473 and GAM72394

GR1578 AV700312 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1578(GR1578) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1578 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1578 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1578 gene encodes GR1578 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1578 precursor RNA folds spatially, forming GR1578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1578 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1578 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM134112 precursor RNA, GAM174096 precursor RNA, GAM261963 precursor RNA and GAM298797 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM134112 RNA, GAM174096 RNA, GAM261963 RNA and GAM298797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM134112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134112 target RNA into GAM134112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174096 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174096 target RNA into GAM174096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261963 target RNA into GAM261963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298797 target RNA into GAM298797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1578 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1578 gene: GAM134112 target protein, GAM174096 target protein, GAM261963 target protein and GAM298797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM134112, GAM174096, GAM261963 and GAM298797

GR1579 BF914541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1579(GR1579) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1579 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1579 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1579 gene encodes GR1579 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1579 precursor RNA folds spatially, forming GR1579 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1579 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1579 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3466 precursor RNA and GAM5888 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3466 RNA and GAM5888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3466 target RNA into GAM3466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5888 target RNA into GAM5888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1579 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1579 gene: GAM3466 target protein and GAM5888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3466 and GAM5888

GR1580 BE537466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1580(GR1580) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1580 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1580 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1580 gene encodes GR1580 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1580 precursor RNA folds spatially, forming GR1580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1580 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1580 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM218817 precursor RNA, GAM219715 precursor RNA and GAM260836 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218817 RNA, GAM219715 RNA and GAM260836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218817 target RNA into GAM218817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219715 target RNA into GAM219715 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260836 target RNA into GAM260836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1580 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1580 gene: GAM218817 target protein, GAM219715 target protein and GAM260836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218817, GAM219715 and GAM260836

GR1581 AI497633 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1581(GR1581) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1581 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1581 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1581 gene encodes GR1581 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1581 precursor RNA folds spatially, forming GR1581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1581 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1581 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7261 precursor RNA and GAM145376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7261 RNA and GAM145376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7261 target RNA into GAM7261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145376 target RNA into GAM145376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1581 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1581 gene: GAM7261 target protein and GAM145376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7261 and GAM145376

GR1582 BM689178 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1582(GR1582) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1582 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1582 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1582 gene encodes GR1582 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1582 precursor RNA folds spatially, forming GR1582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1582 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1582 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79500 precursor RNA and GAM120364 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79500 RNA and GAM120364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79500 target RNA into GAM79500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120364 target RNA into GAM120364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1582 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1582 gene: GAM79500 target protein and GAM120364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79500 and GAM120364

GR1583 BE163467 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1583(GR1583) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1583 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1583 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1583 gene encodes GR1583 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1583 precursor RNA folds spatially, forming GR1583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1583 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1583 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM57592 precursor RNA, GAM117426 precursor RNA and GAM334639 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57592 RNA, GAM117426 RNA and GAM334639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57592 target RNA into GAM57592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117426 target RNA into GAM117426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334639 target RNA into GAM334639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1583 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1583 gene: GAM57592 target protein, GAM117426 target protein and GAM334639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57592, GAM117426 and GAM334639

GR1584 AA478680 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1584(GR1584) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1584 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1584 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1584 gene encodes GR1584 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1584 precursor RNA folds spatially, forming GR1584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1584 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1584 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129358 precursor RNA and GAM229645 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129358 RNA and GAM229645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129358 target RNA into GAM129358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229645 target RNA into GAM229645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1584 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1584 gene: GAM129358 target protein and GAM229645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129358 and GAM229645

GR1585 BM045254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1585(GR1585) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1585 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1585 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1585 gene encodes GR1585 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1585 precursor RNA folds spatially, forming GR1585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1585 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1585 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2373 precursor RNA and GAM255371 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2373 RNA and GAM255371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2373 target RNA into GAM2373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255371 target RNA into GAM255371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1585 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1585 gene: GAM2373 target protein and GAM255371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2373 and GAM255371

GR1586 BG741378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1586(GR1586) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1586 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1586 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1586 gene encodes GR1586 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1586 precursor RNA folds spatially, forming GR1586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1586 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1586 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4577 precursor RNA and GAM229108 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4577 RNA and GAM229108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4577 target RNA into GAM4577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229108 target RNA into GAM229108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1586 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1586 gene: GAM4577 target protein and GAM229108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4577 and GAM229108

GR1587 BG654416 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1587(GR1587) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1587 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1587 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1587 gene encodes GR1587 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1587 precursor RNA folds spatially, forming GR1587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1587 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1587 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1688 precursor RNA and GAM315434 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1688 RNA and GAM315434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1688 target RNA into GAM1688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315434 target RNA into GAM315434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1587 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1587 gene: GAM1688 target protein and GAM315434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1688 and GAM315434

GR1588 BF993825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1588(GR1588) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1588 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1588 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1588 gene encodes GR1588 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1588 precursor RNA folds spatially, forming GR1588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1588 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1588 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3850 precursor RNA and GAM126782 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3850 RNA and GAM126782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3850 target RNA into GAM3850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126782 target RNA into GAM126782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1588 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1588 gene: GAM3850 target protein and GAM126782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3850 and GAM126782

GR1589 BG479712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1589(GR1589) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1589 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1589 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1589 gene encodes GR1589 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1589 precursor RNA folds spatially, forming GR1589 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1589 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1589 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102785 precursor RNA and GAM169950 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102785 RNA and GAM169950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102785 target RNA into GAM102785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169950 target RNA into GAM169950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1589 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1589 gene: GAM102785 target protein and GAM169950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102785 and GAM169950

GR1590 BF739273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1590(GR1590) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1590 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1590 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1590 gene encodes GR1590 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1590 precursor RNA folds spatially, forming GR1590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1590 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1590 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5333 precursor RNA and GAM17464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5333 RNA and GAM17464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5333 target RNA into GAM5333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17464 target RNA into GAM17464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1590 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1590 gene: GAM5333 target protein and GAM17464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5333 and GAM17464

GR1591 BI552631 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1591(GR1591) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1591 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1591 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1591 gene encodes GR1591 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1591 precursor RNA folds spatially, forming GR1591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1591 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1591 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM387 precursor RNA, GAM2360 precursor RNA and GAM304564 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM387 RNA, GAM2360 RNA and GAM304564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM387 target RNA into GAM387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2360 target RNA into GAM2360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304564 target RNA into GAM304564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1591 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1591 gene: GAM387 target protein, GAM2360 target protein and GAM304564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM387, GAM2360 and GAM304564

GR1592 BI461803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1592(GR1592) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1592 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1592 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1592 gene encodes GR1592 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1592 precursor RNA folds spatially, forming GR1592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1592 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1592 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53555 precursor RNA and GAM192608 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53555 RNA and GAM192608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53555 target RNA into GAM53555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192608 target RNA into GAM192608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1592 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1592 gene: GAM53555 target protein and GAM192608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53555 and GAM192608

GR1593 BG403452 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1593(GR1593) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1593 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1593 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1593 gene encodes GR1593 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1593 precursor RNA folds spatially, forming GR1593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1593 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1593 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7512 precursor RNA, GAM72293 precursor RNA and GAM103393 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7512 RNA, GAM72293 RNA and GAM103393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7512 target RNA into GAM7512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72293 target RNA into GAM72293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103393 target RNA into GAM103393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1593 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1593 gene: GAM7512 target protein, GAM72293 target protein and GAM103393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7512, GAM72293 and GAM103393

GR1594 BI772122 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1594(GR1594) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1594 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1594 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1594 gene encodes GR1594 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1594 precursor RNA folds spatially, forming GR1594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1594 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1594 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4255 precursor RNA, GAM24258 precursor RNA and GAM200806 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4255 RNA, GAM24258 RNA and GAM200806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4255 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4255 target RNA into GAM4255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24258 target RNA into GAM24258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200806 target RNA into GAM200806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1594 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1594 gene: GAM4255 target protein, GAM24258 target protein and GAM200806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4255, GAM24258 and GAM200806

GR1595 R09932 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1595(GR1595) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1595 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1595 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1595 gene encodes GR1595 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1595 precursor RNA folds spatially, forming GR1595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1595 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1595 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM258614 precursor RNA and GAM329838 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM258614 RNA and GAM329838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM258614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258614 target RNA into GAM258614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329838 target RNA into GAM329838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1595 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1595 gene: GAM258614 target

protein and GAM329838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM258614 and GAM329838

GR1596 BG536450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1596(GR1596) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1596 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1596 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1596 gene encodes GR1596 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1596 precursor RNA folds spatially, forming GR1596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1596 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1596 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM34057 precursor RNA, GAM60659 precursor RNA and GAM97318 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34057 RNA, GAM60659 RNA and GAM97318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34057 target RNA into GAM34057 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60659 target RNA into GAM60659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97318 target RNA into GAM97318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1596 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1596 gene: GAM34057 target protein, GAM60659 target protein and GAM97318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34057, GAM60659 and GAM97318

GR1597 BM083372 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1597(GR1597) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1597 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1597 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1597 gene encodes GR1597 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1597 precursor RNA folds spatially, forming GR1597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1597 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1597 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34752 precursor RNA and GAM221622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34752 RNA and GAM221622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34752 target RNA into GAM34752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221622 target RNA into GAM221622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1597 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1597 gene: GAM34752 target protein and GAM221622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34752 and GAM221622

GR1598 W96443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1598(GR1598) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1598 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1598

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1598 gene encodes GR1598 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1598 precursor RNA folds spatially, forming GR1598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1598 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1598 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1907 precursor RNA and GAM6000 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1907 RNA and GAM6000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1907 target RNA into GAM1907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6000 target RNA into GAM6000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1598 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1598 gene: GAM1907 target protein and GAM6000 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1907 and GAM6000

GR1599 BM698349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1599(GR1599) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1599 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1599 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1599 gene encodes GR1599 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1599 precursor RNA folds spatially, forming GR1599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1599 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1599 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8508 precursor RNA and GAM28513 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8508 RNA and GAM28513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8508 target RNA into GAM8508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28513 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28513 target RNA into GAM28513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1599 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1599 gene: GAM8508 target protein and GAM28513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8508 and GAM28513

GR1600 D45447 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1600(GR1600) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1600 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1600 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1600 gene encodes GR1600 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1600 precursor RNA folds spatially, forming GR1600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1600 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1600 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM149069 precursor RNA and GAM209031 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM149069 RNA and GAM209031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM149069 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149069 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149069 target RNA into GAM149069 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209031 target RNA into GAM209031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1600 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1600 gene: GAM149069 target protein and GAM209031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM149069 and GAM209031

GR1601 BF307374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1601(GR1601) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1601 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1601 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1601 gene encodes GR1601 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1601 precursor RNA folds spatially, forming GR1601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1601 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1601 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4310 precursor RNA and GAM158494 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4310 RNA and GAM158494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4310 target RNA into GAM4310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158494 target RNA into GAM158494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1601 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1601 gene: GAM4310 target protein and GAM158494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4310 and GAM158494

GR1602 BG113787 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1602(GR1602) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1602 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1602 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1602 gene encodes GR1602 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1602 precursor RNA folds spatially, forming GR1602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1602 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1602 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180489 precursor RNA and GAM305326 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180489 RNA and GAM305326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180489 target RNA into GAM180489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305326 target RNA into GAM305326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1602 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1602 gene: GAM180489 target protein and GAM305326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180489 and GAM305326

GR1603 BE736540 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1603(GR1603) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1603 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1603 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1603 gene encodes GR1603 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1603 precursor RNA folds spatially, forming GR1603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1603 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1603 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM101057 precursor RNA and GAM176346 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101057 RNA and GAM176346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101057 target RNA into GAM101057 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176346 target RNA into GAM176346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1603 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1603 gene: GAM101057 target protein and GAM176346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101057 and GAM176346

GR1604 BF676876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1604(GR1604) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1604 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1604 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1604 gene encodes GR1604 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1604 precursor RNA folds spatially, forming GR1604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1604 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1604 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM27096 precursor RNA and GAM88958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27096 RNA and GAM88958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27096 target RNA into GAM27096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88958 target RNA into GAM88958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1604 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1604 gene: GAM27096 target protein and GAM88958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27096 and GAM88958

GR1605 BI002624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1605(GR1605) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1605 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1605 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1605 gene encodes GR1605 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1605 precursor RNA folds spatially, forming GR1605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1605 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1605 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM33348 precursor RNA and GAM108173 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33348 RNA and GAM108173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33348 target RNA into GAM33348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108173 target RNA into GAM108173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1605 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1605 gene: GAM33348 target protein and GAM108173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33348 and GAM108173

GR1606 BG829997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1606(GR1606) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1606 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1606 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1606 gene encodes GR1606 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1606 precursor RNA folds spatially, forming GR1606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1606 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1606 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM936 precursor RNA, GAM8610 precursor RNA and GAM230169 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM936 RNA, GAM8610 RNA and GAM230169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM936 target RNA into GAM936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8610 target RNA into GAM8610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230169 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230169 target RNA into GAM230169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1606 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1606 gene: GAM936 target protein, GAM8610 target protein and GAM230169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM936, GAM8610 and GAM230169

GR1607 BM549582 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1607(GR1607) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1607 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1607 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1607 gene encodes GR1607 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1607 precursor RNA folds spatially, forming GR1607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1607 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1607 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1951 precursor RNA and GAM236967 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1951 RNA and GAM236967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1951 target RNA into GAM1951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236967 target RNA into GAM236967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1607 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1607 gene: GAM1951 target protein and GAM236967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1951 and GAM236967

GR1608 BG424969 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1608(GR1608) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1608 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1608 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1608 gene encodes GR1608 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1608 precursor RNA folds spatially, forming GR1608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1608 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1608 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7408 precursor RNA, GAM82299 precursor RNA and GAM289382 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7408 RNA, GAM82299 RNA and GAM289382 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7408 target RNA into GAM7408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82299 target RNA into GAM82299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289382 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289382 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289382 target RNA into GAM289382 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1608 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1608 gene: GAM7408 target protein, GAM82299 target protein and GAM289382 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7408, GAM82299 and GAM289382

GR1609 BG878287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1609(GR1609) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1609 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1609 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1609 gene encodes GR1609 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1609 precursor RNA folds spatially, forming GR1609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1609 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1609 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM71299 precursor RNA and GAM176103 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71299 RNA and GAM176103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71299 target RNA into GAM71299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176103 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176103 target RNA into GAM176103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1609 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1609 gene: GAM71299 target protein and GAM176103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71299 and GAM176103

GR1610 BI822381 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1610(GR1610) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1610 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1610 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1610 gene encodes GR1610 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1610 precursor RNA folds spatially, forming GR1610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1610 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1610 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3620 precursor RNA, GAM102345 precursor RNA and GAM319963 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3620 RNA, GAM102345 RNA and GAM319963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3620 target RNA into GAM3620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102345 target RNA into GAM102345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319963 target RNA into GAM319963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1610 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1610 gene: GAM3620 target protein, GAM102345 target protein and GAM319963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3620, GAM102345 and GAM319963

GR1611 BE567332 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1611(GR1611) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1611 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1611 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1611 gene encodes GR1611 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1611 precursor RNA folds spatially, forming GR1611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1611 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1611 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110820 precursor RNA and GAM215957 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110820 RNA and GAM215957 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110820 target RNA into GAM110820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215957 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215957 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215957 target RNA into GAM215957 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1611 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1611 gene: GAM110820 target protein and GAM215957 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110820 and GAM215957

GR1612 BE876959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1612(GR1612) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1612 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1612 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1612 gene encodes GR1612 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1612 precursor RNA folds spatially, forming GR1612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1612 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1612 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM112780 precursor RNA and GAM221389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112780 RNA and GAM221389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112780 target RNA into GAM112780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM221389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221389 target RNA into GAM221389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1612 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1612 gene: GAM112780 target protein and GAM221389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112780 and GAM221389

GR1613 BF931534 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1613(GR1613) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1613 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1613 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1613 gene encodes GR1613 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1613 precursor RNA folds spatially, forming GR1613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1613 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1613 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM214927 precursor RNA and GAM327928 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM214927 RNA and GAM327928 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM214927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214927 target RNA into GAM214927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327928 target RNA into GAM327928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1613 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1613 gene: GAM214927 target protein and GAM327928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM214927 and GAM327928

GR1614 BI194131 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1614(GR1614) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1614 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1614 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1614 gene encodes GR1614 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1614 precursor RNA folds spatially, forming GR1614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1614 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1614 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM62022 precursor RNA and GAM242256 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM62022 RNA and GAM242256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM62022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62022 target RNA into GAM62022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242256 target RNA into GAM242256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1614 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1614 gene: GAM62022 target protein and GAM242256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM62022 and GAM242256

GR1615 BF204163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1615(GR1615) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1615 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1615 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1615 gene encodes GR1615 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1615 precursor RNA folds spatially, forming GR1615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1615 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1615 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM140 precursor RNA and GAM8585 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140 RNA and GAM8585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140 target RNA into GAM140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8585 target RNA into GAM8585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1615 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1615 gene: GAM140 target

protein and GAM8585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140 and GAM8585

GR1616 BM148930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1616(GR1616) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1616 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1616 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1616 gene encodes GR1616 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1616 precursor RNA folds spatially, forming GR1616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1616 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1616 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3370 precursor RNA and GAM6679 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3370 RNA and GAM6679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3370 target RNA into GAM3370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6679 target RNA into GAM6679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1616 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1616 gene: GAM3370 target protein and GAM6679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3370 and GAM6679

GR1617 AW291079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1617(GR1617) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1617 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1617 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1617 gene encodes GR1617 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1617 precursor RNA folds spatially, forming GR1617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1617 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1617 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM227856 precursor RNA and GAM235755 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM227856 RNA and GAM235755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM227856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227856 target RNA into GAM227856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235755 target RNA into GAM235755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1617 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1617 gene: GAM227856 target protein and GAM235755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM227856 and GAM235755

GR1618 BG195957 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1618(GR1618) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1618 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1618 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1618 gene encodes GR1618 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1618 precursor RNA folds spatially, forming GR1618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1618 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1618 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM172460 precursor RNA and GAM245067 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM172460 RNA and GAM245067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM172460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172460 target RNA into GAM172460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245067 target RNA into GAM245067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1618 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1618 gene: GAM172460 target protein and GAM245067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM172460 and GAM245067

GR1619 BG118884 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1619(GR1619) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1619 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1619 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1619 gene encodes GR1619 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1619 precursor RNA folds spatially, forming GR1619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1619 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1619 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM449 precursor RNA, GAM151952 precursor RNA and GAM277818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM449 RNA, GAM151952 RNA and GAM277818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM449 target RNA into GAM449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151952 target RNA into GAM151952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM277818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277818 target RNA into GAM277818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1619 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1619 gene: GAM449 target protein, GAM151952 target protein and GAM277818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM449, GAM151952 and GAM277818

GR1620 BM708890 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1620(GR1620) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1620 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1620 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1620 gene encodes GR1620 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1620 precursor RNA folds spatially, forming GR1620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1620 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1620 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4137 precursor RNA and GAM81900 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4137 RNA and GAM81900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4137 target RNA into GAM4137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81900 target RNA into GAM81900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1620 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1620 gene: GAM4137 target protein and GAM81900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4137 and GAM81900

GR1621 AI682437 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1621(GR1621) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1621 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1621 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1621 gene encodes GR1621 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1621 precursor RNA folds spatially, forming GR1621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1621 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1621 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178247 precursor RNA and GAM336133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178247 RNA and GAM336133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178247 target RNA into GAM178247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336133 target RNA into GAM336133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1621 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1621 gene: GAM178247 target protein and GAM336133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178247 and GAM336133

GR1622 AV656442 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1622(GR1622) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1622 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1622 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1622 gene encodes GR1622 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1622 precursor RNA folds spatially, forming GR1622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1622 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1622 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM43982 precursor RNA and GAM237241 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43982 RNA and GAM237241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43982 target RNA into GAM43982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237241 target RNA into GAM237241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1622 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1622 gene: GAM43982 target protein and GAM237241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43982 and GAM237241

GR1623 BE409687 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1623(GR1623) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1623 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1623 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1623 gene encodes GR1623 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1623 precursor RNA folds spatially, forming GR1623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1623 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1623 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM993 precursor RNA and GAM154093 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM993 RNA and GAM154093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM993 target RNA into GAM993 target protein, herein schematically represented by GAM1 TARGET PROTEIN

through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154093 target RNA into GAM154093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1623 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1623 gene: GAM993 target protein and GAM154093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM993 and GAM154093

GR1624 BG003431 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1624(GR1624) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1624 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1624 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1624 gene encodes GR1624 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1624 precursor RNA folds spatially, forming GR1624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1624 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1624 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2570 precursor RNA and GAM39470 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2570 RNA and GAM39470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2570 target RNA into GAM2570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM39470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39470 target RNA into GAM39470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1624 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1624 gene: GAM2570 target protein and GAM39470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2570 and GAM39470

GR1625 BI913014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1625(GR1625) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1625 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1625 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1625 gene encodes GR1625 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1625 precursor RNA folds spatially, forming GR1625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1625 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1625 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5022 precursor RNA and GAM202025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5022 RNA and GAM202025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5022 target RNA into GAM5022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202025 target RNA into GAM202025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1625 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1625 gene: GAM5022 target protein and GAM202025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5022 and GAM202025

GR1626 BF089881 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1626(GR1626) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1626 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1626 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1626 gene encodes GR1626 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1626 precursor RNA folds spatially, forming GR1626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1626 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1626 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM198034 precursor RNA and GAM285443 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM198034 RNA and GAM285443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM198034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198034 target RNA into GAM198034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285443 target RNA into GAM285443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1626 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1626 gene: GAM198034 target protein and GAM285443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM198034 and GAM285443

GR1627 AW469274 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1627(GR1627) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1627 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1627 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1627 gene encodes GR1627 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1627 precursor RNA folds spatially, forming GR1627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1627 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1627 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57251 precursor RNA and GAM136453 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57251 RNA and GAM136453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57251 target RNA into GAM57251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136453 target RNA into GAM136453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1627 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1627 gene: GAM57251 target protein and GAM136453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57251 and GAM136453

GR1628 BI562017 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1628(GR1628) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1628 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1628 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1628 gene encodes GR1628 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1628 precursor RNA folds spatially, forming GR1628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1628 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1628 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM58816 precursor RNA, GAM103071 precursor RNA and GAM103238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58816 RNA, GAM103071 RNA and GAM103238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58816 target RNA into GAM58816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103071 target RNA into GAM103071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103238 target RNA into GAM103238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1628 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1628 gene: GAM58816 target protein, GAM103071 target protein and GAM103238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58816, GAM103071 and GAM103238

GR1629 BE747350 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1629(GR1629) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1629 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1629 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1629 gene encodes GR1629 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1629 precursor RNA folds spatially, forming GR1629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1629 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1629 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78652 precursor RNA and GAM298670 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78652 RNA and GAM298670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78652 target RNA into GAM78652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298670 target RNA into GAM298670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1629 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1629 gene: GAM78652 target protein and GAM298670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78652 and GAM298670

GR1630 BF311778 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1630(GR1630) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1630 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1630 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1630 gene encodes GR1630 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1630 precursor RNA folds spatially, forming GR1630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1630 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1630 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM91846 precursor RNA, GAM150019 precursor RNA and GAM253941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91846 RNA, GAM150019 RNA and GAM253941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91846 target RNA into GAM91846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150019 target RNA into GAM150019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253941 target RNA into GAM253941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1630 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1630 gene: GAM91846 target protein, GAM150019 target protein and GAM253941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91846, GAM150019 and GAM253941

GR1631 BG288108 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1631(GR1631) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1631 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1631 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1631 gene encodes GR1631 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1631 precursor RNA folds spatially, forming GR1631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1631 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1631 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65447 precursor RNA and GAM83640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65447 RNA and GAM83640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65447 target RNA into GAM65447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83640 target RNA into GAM83640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1631 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1631 gene: GAM65447 target protein and GAM83640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65447 and GAM83640

GR1632 AI810189 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1632(GR1632) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1632 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1632 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1632 gene encodes GR1632 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1632 precursor RNA folds spatially, forming GR1632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1632 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1632 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM239796 precursor RNA and GAM327400 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM239796 RNA and GAM327400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM239796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239796 target RNA into GAM239796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327400 target RNA into GAM327400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1632 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1632 gene: GAM239796 target protein and GAM327400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM239796 and GAM327400

GR1633 BM841564 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1633(GR1633) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1633 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1633 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1633 gene encodes GR1633 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1633 precursor RNA folds spatially, forming GR1633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1633 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1633 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13657 precursor RNA and GAM80835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13657 RNA and GAM80835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13657 target RNA into GAM13657 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80835 target RNA into GAM80835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1633 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1633 gene: GAM13657 target protein and GAM80835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13657 and GAM80835

GR1634 BG542529 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1634(GR1634) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1634 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1634 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1634 gene encodes GR1634 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1634 precursor RNA folds spatially, forming GR1634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1634 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1634 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM112180 precursor RNA and GAM149192 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112180 RNA and GAM149192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112180 target RNA into GAM112180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149192 target RNA into GAM149192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1634 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1634 gene: GAM112180 target protein and GAM149192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112180 and GAM149192

GR1635 BF571921 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1635(GR1635) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1635 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1635 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1635 gene encodes GR1635 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1635 precursor RNA folds spatially, forming GR1635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1635 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1635 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20056 precursor RNA and GAM278620 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20056 RNA and GAM278620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20056 target RNA into GAM20056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278620 target RNA into GAM278620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1635 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1635 gene: GAM20056 target protein and GAM278620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20056 and GAM278620

GR1636 AW893522 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1636(GR1636) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1636 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1636 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1636 gene encodes GR1636 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1636 precursor RNA folds spatially, forming GR1636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1636 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1636 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5572 precursor RNA and GAM110738 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5572 RNA and GAM110738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5572 target RNA into GAM5572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110738 target RNA into GAM110738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1636 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1636 gene: GAM5572 target protein and GAM110738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5572 and GAM110738

GR1637 BM724857 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1637(GR1637) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1637 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1637 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1637 gene encodes GR1637 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1637 precursor RNA folds spatially, forming GR1637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1637 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1637 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM130920 precursor RNA and GAM153959 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM130920 RNA and GAM153959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM130920 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130920 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130920 target RNA into GAM130920 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM153959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153959 target RNA into GAM153959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1637 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1637 gene: GAM130920 target protein and GAM153959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM130920 and GAM153959

GR1638 BG766018 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1638(GR1638) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1638 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1638 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1638 gene encodes GR1638 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1638 precursor RNA folds spatially, forming GR1638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1638 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1638 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1847 precursor RNA, GAM117864 precursor RNA and GAM194623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1847 RNA, GAM117864 RNA and GAM194623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1847 target RNA into GAM1847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117864 target RNA into GAM117864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194623 target RNA into GAM194623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1638 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1638 gene: GAM1847 target protein, GAM117864 target protein and GAM194623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1847, GAM117864 and GAM194623

GR1639 AI692977 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1639(GR1639) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1639 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1639 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1639 gene encodes GR1639 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1639 precursor RNA folds spatially, forming GR1639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1639 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1639 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58979 precursor RNA and GAM63518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58979 RNA and GAM63518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58979 target RNA into GAM58979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63518 target RNA into GAM63518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1639 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1639 gene: GAM58979 target protein and GAM63518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58979 and GAM63518

GR1640 AW752914 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1640(GR1640) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1640 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1640 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1640 gene encodes GR1640 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1640 precursor RNA folds spatially, forming GR1640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1640 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1640 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM155318 precursor RNA and GAM219080 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM155318 RNA and GAM219080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM155318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155318

target RNA into GAM155318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219080 target RNA into GAM219080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1640 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1640 gene: GAM155318 target protein and GAM219080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM155318 and GAM219080

GR1641 BF881274 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1641(GR1641) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1641 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1641 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1641 gene encodes GR1641 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1641 precursor RNA folds spatially, forming GR1641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1641 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1641 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1971 precursor RNA and GAM39940 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1971 RNA and GAM39940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1971 target RNA into GAM1971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM39940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39940 target RNA into GAM39940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1641 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1641 gene: GAM1971 target protein and GAM39940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1971 and GAM39940

GR1642 AA588637 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1642(GR1642) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1642 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1642 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1642 gene encodes GR1642 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1642 precursor RNA folds spatially, forming GR1642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1642 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1642 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM23127 precursor RNA and GAM258055 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23127 RNA and GAM258055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23127 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23127 target RNA into GAM23127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258055 target RNA into GAM258055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1642 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1642 gene: GAM23127 target protein and GAM258055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23127 and GAM258055

GR1643 BM264265 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1643(GR1643) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1643 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1643 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1643 gene encodes GR1643 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1643 precursor RNA folds spatially, forming GR1643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1643 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1643 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152119 precursor RNA and GAM202763 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152119 RNA and GAM202763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152119 target RNA into GAM152119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202763 target RNA into GAM202763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1643 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1643 gene: GAM152119 target protein and GAM202763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152119 and GAM202763

GR1644 AW338048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1644(GR1644) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1644 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1644 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1644 gene encodes GR1644 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1644 precursor RNA folds spatially, forming GR1644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1644 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1644 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM280 precursor RNA and GAM237884 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM280 RNA and GAM237884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280 target RNA into GAM280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237884 target RNA into GAM237884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1644 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1644 gene: GAM280 target protein and GAM237884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM280 and GAM237884

GR1645 AI376925 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1645(GR1645) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1645 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1645 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1645 gene encodes GR1645 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1645 precursor RNA folds spatially, forming GR1645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1645 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1645 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM315384 precursor RNA and GAM324533 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM315384 RNA and GAM324533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM315384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315384 target RNA into GAM315384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324533 target RNA into GAM324533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1645 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1645 gene: GAM315384 target protein and GAM324533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM315384 and GAM324533

GR1646 AV757282 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1646(GR1646) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1646 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1646 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1646 gene encodes GR1646 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1646 precursor RNA folds spatially, forming GR1646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1646 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1646 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1421 precursor RNA, GAM3107 precursor RNA and GAM29911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1421 RNA, GAM3107 RNA and GAM29911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1421 target RNA into GAM1421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3107 target RNA into GAM3107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29911 target RNA into GAM29911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1646 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1646 gene: GAM1421 target protein, GAM3107 target protein and GAM29911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1421, GAM3107 and GAM29911

GR1647 BE045945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1647(GR1647) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1647 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1647 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1647 gene encodes GR1647 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1647 precursor RNA folds spatially, forming GR1647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1647 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1647 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2198 precursor RNA and GAM33011 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2198 RNA and GAM33011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2198 target RNA into GAM2198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33011 target RNA into GAM33011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1647 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1647 gene: GAM2198 target protein and GAM33011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2198 and GAM33011

GR1648 BF686616 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1648(GR1648) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1648 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1648 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1648 gene encodes GR1648 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1648 precursor RNA folds spatially, forming GR1648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1648 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1648 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3686 precursor RNA and GAM111268 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3686 RNA and GAM111268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3686 target RNA into GAM3686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111268 target RNA into GAM111268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1648 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1648 gene: GAM3686 target protein and GAM111268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3686 and GAM111268

GR1649 AI052408 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1649(GR1649) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1649 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1649 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1649 gene encodes GR1649 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1649 precursor RNA folds spatially, forming GR1649 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1649 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1649 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM206099 precursor RNA, GAM272736 precursor RNA and GAM289348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM206099 RNA, GAM272736 RNA and GAM289348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM206099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206099 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206099 target RNA into GAM206099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272736 target RNA into GAM272736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289348 target RNA into GAM289348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1649 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1649 gene: GAM206099 target protein, GAM272736 target protein and GAM289348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM206099, GAM272736 and GAM289348

GR1650 BG214746 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1650(GR1650) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1650 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1650 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1650 gene encodes GR1650 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1650 precursor RNA folds spatially, forming GR1650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1650 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1650 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1988 precursor RNA and GAM238461 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1988 RNA and GAM238461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1988 target RNA into

GAM1988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238461 target RNA into GAM238461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1650 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1650 gene: GAM1988 target protein and GAM238461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1988 and GAM238461

GR1651 BI518866 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1651(GR1651) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1651 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1651 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1651 gene encodes GR1651 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1651 precursor RNA folds spatially, forming GR1651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1651 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1651 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM228 precursor RNA, GAM62400 precursor RNA and GAM148671 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM228 RNA, GAM62400 RNA and GAM148671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228 target RNA into GAM228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62400 target RNA into GAM62400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148671 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148671 target RNA into GAM148671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1651 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1651 gene: GAM228 target protein, GAM62400 target protein and GAM148671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM228, GAM62400 and GAM148671

GR1652 BF508211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1652(GR1652) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1652 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1652 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1652 gene encodes GR1652 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1652 precursor RNA folds spatially, forming GR1652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1652 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1652 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5203 precursor RNA and GAM116513 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5203 RNA and GAM116513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5203 target RNA into GAM5203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116513 target RNA into GAM116513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1652 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1652 gene: GAM5203 target protein and GAM116513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5203 and GAM116513

GR1653 AU121736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1653(GR1653) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1653 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1653 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1653 gene encodes GR1653 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1653 precursor RNA folds spatially, forming GR1653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1653 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1653 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3573 precursor RNA and GAM131313 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3573 RNA and GAM131313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3573 target RNA into GAM3573 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131313 target RNA into GAM131313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1653 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1653 gene: GAM3573 target protein and GAM131313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3573 and GAM131313

GR1654 AI089155 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1654(GR1654) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1654 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1654 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1654 gene encodes GR1654 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1654 precursor RNA folds spatially, forming GR1654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1654 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1654 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4861 precursor RNA and GAM316107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4861 RNA and GAM316107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4861 target RNA into GAM4861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316107 target RNA into GAM316107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1654 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1654 gene: GAM4861 target protein and GAM316107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4861 and GAM316107

GR1655 BG434786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1655(GR1655) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1655 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1655 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1655 gene encodes GR1655 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1655 precursor RNA folds spatially, forming GR1655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1655 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1655 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM136 precursor RNA and GAM37161 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM136 RNA and GAM37161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136 target RNA into GAM136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37161 target RNA into GAM37161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1655 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1655 gene: GAM136 target protein and GAM37161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM136 and GAM37161

GR1656 BG577330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1656(GR1656) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1656 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1656 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1656 gene encodes GR1656 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1656 precursor RNA folds spatially, forming GR1656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1656 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1656 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3133 precursor RNA, GAM151936 precursor RNA and GAM247853 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3133 RNA, GAM151936 RNA and GAM247853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3133 target RNA into GAM3133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151936 target RNA into GAM151936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247853 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247853 target RNA into GAM247853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1656 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1656 gene: GAM3133 target protein, GAM151936 target protein and GAM247853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3133, GAM151936 and GAM247853

GR1657 BQ055523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1657(GR1657) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1657 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1657 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1657 gene encodes GR1657 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1657 precursor RNA folds spatially, forming GR1657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1657 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1657 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM32024 precursor RNA, GAM102288 precursor RNA and GAM245239 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32024 RNA, GAM102288 RNA and GAM245239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32024 target RNA into GAM32024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102288 target RNA into GAM102288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245239 target RNA into GAM245239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1657 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1657 gene: GAM32024 target protein, GAM102288 target protein and GAM245239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32024, GAM102288 and GAM245239

GR1658 BF210367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1658(GR1658) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1658 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1658

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1658 gene encodes GR1658 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1658 precursor RNA folds spatially, forming GR1658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1658 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1658 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3334 precursor RNA, GAM255546 precursor RNA and GAM298674 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3334 RNA, GAM255546 RNA and GAM298674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3334 target RNA into GAM3334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255546 target RNA into GAM255546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298674 target RNA into GAM298674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1658 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1658 gene: GAM3334 target protein, GAM255546 target protein and GAM298674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3334, GAM255546 and GAM298674

GR1659 BI856072 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1659(GR1659) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1659 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1659 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1659 gene encodes GR1659 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1659 precursor RNA folds spatially, forming GR1659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1659 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1659 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6678 precursor RNA and GAM147263 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6678 RNA and GAM147263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6678 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6678 target RNA into GAM6678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147263 target RNA into GAM147263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1659 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1659 gene: GAM6678 target protein and GAM147263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6678 and GAM147263

GR1660 BF437443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1660(GR1660) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1660 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1660 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1660 gene encodes GR1660 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1660 precursor RNA folds spatially, forming GR1660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1660 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1660 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6725 precursor RNA, GAM98481 precursor RNA, GAM162292 precursor RNA and GAM283711 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6725 RNA, GAM98481 RNA, GAM162292 RNA and GAM283711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6725 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6725 target RNA into GAM6725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98481 target RNA into GAM98481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162292 target RNA into GAM162292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283711 target RNA into GAM283711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1660 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1660 gene: GAM6725 target protein, GAM98481 target protein, GAM162292 target protein and GAM283711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6725, GAM98481, GAM162292 and GAM283711

GR1661 BF891623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1661(GR1661) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1661 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1661 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1661 gene encodes GR1661 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1661 precursor RNA folds spatially, forming GR1661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1661 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1661 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3669 precursor RNA and GAM26809 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3669 RNA and GAM26809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3669 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3669 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3669 target RNA into GAM3669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26809 target RNA into GAM26809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1661 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1661 gene: GAM3669 target protein and GAM26809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3669 and GAM26809

GR1662 BE903904 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1662(GR1662) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1662 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1662 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1662 gene encodes GR1662 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1662 precursor RNA folds spatially, forming GR1662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1662 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1662 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM780 precursor RNA and GAM6990 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM780 RNA and GAM6990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM780 target RNA into GAM780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6990 target RNA into GAM6990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1662 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1662 gene: GAM780 target protein and GAM6990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM780 and GAM6990

GR1663 BM904520 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1663(GR1663) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1663 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1663 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1663 gene encodes GR1663 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1663 precursor RNA folds spatially, forming GR1663 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1663 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1663 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3182 precursor RNA and GAM182353 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3182 RNA and GAM182353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3182 target RNA into GAM3182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182353 target RNA into GAM182353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1663 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1663 gene: GAM3182 target protein and GAM182353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3182 and GAM182353

GR1664 AI341953 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1664(GR1664) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1664 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1664 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1664 gene encodes GR1664 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1664 precursor RNA folds spatially, forming GR1664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1664 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1664 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM322088 precursor RNA and GAM331588 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM322088 RNA and GAM331588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM322088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322088 target RNA into GAM322088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331588 target RNA into GAM331588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1664 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1664 gene: GAM322088 target protein and GAM331588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM322088 and GAM331588

GR1665 AA829150 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1665(GR1665) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1665 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1665 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1665 gene encodes GR1665 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1665 precursor RNA folds spatially, forming GR1665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1665 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1665 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM75319 precursor RNA and GAM266685 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM75319 RNA and GAM266685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75319 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75319 target RNA into GAM75319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266685 target RNA into GAM266685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1665 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1665 gene: GAM75319 target protein and GAM266685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75319 and GAM266685

GR1666 AW269747 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1666(GR1666) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1666 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1666 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1666 gene encodes GR1666 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1666 precursor RNA folds spatially, forming GR1666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1666 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1666 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM294418 precursor RNA and GAM333305 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM294418 RNA and GAM333305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM294418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294418 target RNA into GAM294418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333305 target RNA into GAM333305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1666 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1666 gene: GAM294418 target protein and GAM333305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM294418 and GAM333305

GR1667 AI114443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1667(GR1667) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1667 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1667 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1667 gene encodes GR1667 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1667 precursor RNA folds spatially, forming GR1667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1667 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1667 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5229 precursor RNA, GAM12207 precursor RNA and GAM35106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5229 RNA, GAM12207 RNA and GAM35106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5229 target RNA into GAM5229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM12207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12207 target RNA into GAM12207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35106 target RNA into GAM35106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1667 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1667 gene: GAM5229 target protein, GAM12207 target protein and GAM35106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5229, GAM12207 and GAM35106

GR1668 AI678941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1668(GR1668) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1668 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1668 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1668 gene encodes GR1668 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1668 precursor RNA folds spatially, forming GR1668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1668 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1668 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1780 precursor RNA and GAM310475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1780 RNA and GAM310475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1780 target RNA into GAM1780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310475 target RNA into GAM310475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1668 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1668 gene: GAM1780 target protein and GAM310475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1780 and GAM310475

GR1669 BE271261 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1669(GR1669) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1669 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1669 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1669 gene encodes GR1669 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1669 precursor RNA folds spatially, forming GR1669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1669 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1669 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2548 precursor RNA, GAM4527 precursor RNA and GAM4818 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2548 RNA, GAM4527 RNA and GAM4818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2548 target RNA into GAM2548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4527 target RNA into GAM4527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4818 target RNA into GAM4818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1669 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1669 gene: GAM2548 target protein, GAM4527 target protein and GAM4818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2548, GAM4527 and GAM4818

GR1670 AA351165 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1670(GR1670) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1670 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1670 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1670 gene encodes GR1670 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1670 precursor RNA folds spatially, forming GR1670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1670 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1670 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2709 precursor RNA, GAM8426 precursor RNA and GAM78794 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2709 RNA, GAM8426 RNA and GAM78794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2709 target RNA into GAM2709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8426 target RNA into GAM8426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78794 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78794 target RNA into GAM78794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1670 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1670 gene: GAM2709 target protein, GAM8426 target protein and GAM78794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2709, GAM8426 and GAM78794

GR1671 AA292190 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1671(GR1671) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1671 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1671 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1671 gene encodes GR1671 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1671 precursor RNA folds spatially, forming GR1671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1671 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1671 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6664 precursor RNA and GAM105107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6664 RNA and GAM105107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6664 target RNA into GAM6664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105107 target RNA into GAM105107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1671 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1671 gene: GAM6664 target protein and GAM105107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6664 and GAM105107

GR1672 AI937533 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1672(GR1672) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1672 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1672 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1672 gene encodes GR1672 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1672 precursor RNA folds spatially, forming GR1672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1672 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1672 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8320 precursor RNA and GAM147880 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8320 RNA and GAM147880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8320 target RNA into GAM8320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147880 target RNA into GAM147880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1672 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1672 gene: GAM8320 target protein and GAM147880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8320 and GAM147880

GR1673 AV731819 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1673(GR1673) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1673 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1673 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1673 gene encodes GR1673 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1673 precursor RNA folds spatially, forming GR1673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1673 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1673 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6054 precursor RNA and GAM144309 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6054 RNA and GAM144309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6054 target RNA into GAM6054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144309 target RNA into GAM144309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1673 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1673 gene: GAM6054 target protein and GAM144309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6054 and GAM144309

GR1674 H94793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1674(GR1674) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1674 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1674 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1674 gene encodes GR1674 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1674 precursor RNA folds spatially, forming GR1674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1674 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1674 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM87798 precursor RNA, GAM139731 precursor RNA and GAM240810 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87798 RNA, GAM139731 RNA and GAM240810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87798 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87798 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87798 target RNA into GAM87798 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139731 target RNA into GAM139731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240810 target RNA into GAM240810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1674 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1674 gene: GAM87798 target protein, GAM139731 target protein and GAM240810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87798, GAM139731 and GAM240810

GR1675 BM854224 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1675(GR1675) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1675 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1675 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1675 gene encodes GR1675 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1675 precursor RNA folds spatially, forming GR1675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1675 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1675 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4320 precursor RNA and GAM6667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4320 RNA and GAM6667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4320 target RNA into GAM4320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6667 target RNA into GAM6667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1675 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1675 gene: GAM4320 target protein and GAM6667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4320 and GAM6667

GR1676 BF831632 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1676(GR1676) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1676 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1676 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1676 gene encodes GR1676 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1676 precursor RNA folds spatially, forming GR1676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1676 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1676 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4704 precursor RNA and GAM8609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4704 RNA and GAM8609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4704 target RNA into GAM4704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8609 target RNA into GAM8609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1676 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1676 gene: GAM4704 target protein and GAM8609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4704 and GAM8609

GR1677 AW363946 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1677(GR1677) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1677 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1677 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1677 gene encodes GR1677 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1677 precursor RNA folds spatially, forming GR1677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1677 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1677 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4683 precursor RNA and GAM19634 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4683 RNA and GAM19634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4683 target RNA into GAM4683 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19634 target RNA into GAM19634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1677 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1677 gene: GAM4683 target protein and GAM19634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4683 and GAM19634

GR1678 BE620070 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1678(GR1678) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1678 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1678 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1678 gene encodes GR1678 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1678 precursor RNA folds spatially, forming GR1678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1678 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1678 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM108122 precursor RNA and GAM209310 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108122 RNA and GAM209310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108122 target RNA into GAM108122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209310 target RNA into GAM209310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1678 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1678 gene: GAM108122 target protein and GAM209310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108122 and GAM209310

GR1679 BF674401 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1679(GR1679) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1679 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1679 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1679 gene encodes GR1679 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1679 precursor RNA folds spatially, forming GR1679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1679 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1679 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM11756 precursor RNA and GAM266546 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11756 RNA and GAM266546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11756 target RNA into GAM11756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266546 target RNA into GAM266546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1679 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1679 gene: GAM11756 target protein and GAM266546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11756 and GAM266546

GR1680 N66378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1680(GR1680) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1680 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1680 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1680 gene encodes GR1680 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1680 precursor RNA folds spatially, forming GR1680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1680 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1680 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM106486 precursor RNA and GAM307956 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106486 RNA and GAM307956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106486 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106486 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106486 target RNA into GAM106486 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307956 target RNA into GAM307956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1680 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1680 gene: GAM106486 target protein and GAM307956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106486 and GAM307956

GR1681 AW601845 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1681(GR1681) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1681 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1681 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1681 gene encodes GR1681 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1681 precursor RNA folds spatially, forming GR1681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1681 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1681 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4139 precursor RNA and GAM5327 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4139 RNA and GAM5327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4139 target RNA into GAM4139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5327 target RNA into GAM5327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1681 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1681 gene: GAM4139 target protein and GAM5327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4139 and GAM5327

GR1682 BE314293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1682(GR1682) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1682 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1682 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1682 gene encodes GR1682 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1682 precursor RNA folds spatially, forming GR1682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1682 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1682 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7197 precursor RNA, GAM107352 precursor RNA, GAM233317 precursor RNA and GAM320899 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7197 RNA, GAM107352 RNA, GAM233317 RNA and GAM320899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7197 target RNA into GAM7197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107352 target RNA into GAM107352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233317 target RNA into GAM233317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320899 target RNA into GAM320899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1682 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1682 gene: GAM7197 target protein, GAM107352 target protein, GAM233317 target protein and GAM320899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM7197, GAM107352, GAM233317 and GAM320899

GR1683 BF351130 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1683(GR1683) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1683 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1683 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1683 gene encodes GR1683 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1683 precursor RNA folds spatially, forming GR1683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1683 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1683 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2921 precursor RNA and GAM6473 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2921 RNA and GAM6473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2921 target RNA into GAM2921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6473 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6473 target RNA into GAM6473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1683 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1683 gene: GAM2921 target protein and GAM6473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2921 and GAM6473

GR1684 BQ073517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1684(GR1684) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1684 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1684 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1684 gene encodes GR1684 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1684 precursor RNA folds spatially, forming GR1684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1684 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1684 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1237 precursor RNA and GAM116442 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1237 RNA and GAM116442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM1237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1237 target RNA into GAM1237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116442 target RNA into GAM116442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1684 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1684 gene: GAM1237 target protein and GAM116442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1237 and GAM116442

GR1685 BG399098 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1685(GR1685) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1685 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1685 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1685 gene encodes GR1685 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1685 precursor RNA folds spatially, forming GR1685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1685 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1685 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM22749 precursor RNA, GAM261488 precursor RNA and GAM295717 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22749 RNA, GAM261488 RNA and GAM295717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22749 target RNA into GAM22749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261488 target RNA into GAM261488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295717 target RNA into GAM295717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1685 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1685 gene: GAM22749 target protein, GAM261488 target protein and GAM295717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22749, GAM261488 and GAM295717

GR1686 AI717989 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1686(GR1686) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1686 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1686 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1686 gene encodes GR1686 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1686 precursor RNA folds spatially, forming GR1686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1686 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1686 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98435 precursor RNA and GAM227018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98435 RNA and GAM227018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98435 target RNA into GAM98435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227018 target RNA into GAM227018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1686 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1686 gene: GAM98435 target protein and GAM227018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98435 and GAM227018

GR1687 AU117022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1687(GR1687) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1687 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1687 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1687 gene encodes GR1687 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1687 precursor RNA folds spatially, forming GR1687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1687 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1687 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM45156 precursor RNA and GAM197934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45156 RNA and GAM197934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45156 target RNA into GAM45156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197934 target RNA into GAM197934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1687 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1687 gene: GAM45156 target protein and GAM197934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45156 and GAM197934

GR1688 T47960 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1688(GR1688) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1688 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1688 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1688 gene encodes GR1688 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1688 precursor RNA folds spatially, forming GR1688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1688 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1688 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96474 precursor RNA and GAM292084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96474 RNA and GAM292084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96474 target RNA into GAM96474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292084 target RNA into GAM292084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1688 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1688 gene: GAM96474 target protein and GAM292084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96474 and GAM292084

GR1689 BF218122 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1689(GR1689) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1689 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1689 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1689 gene encodes GR1689 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1689 precursor RNA folds spatially, forming GR1689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1689 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1689 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3531 precursor RNA, GAM173385 precursor RNA and GAM281587 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3531 RNA, GAM173385 RNA and GAM281587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3531 target RNA into GAM3531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173385 target RNA into GAM173385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281587

target RNA into GAM281587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1689 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1689 gene: GAM3531 target protein, GAM173385 target protein and GAM281587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3531, GAM173385 and GAM281587

GR1690 AA609560 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1690(GR1690) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1690 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1690 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1690 gene encodes GR1690 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1690 precursor RNA folds spatially, forming GR1690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1690 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1690 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119760 precursor RNA and GAM255496 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119760 RNA and GAM255496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119760 target RNA into GAM119760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255496 target RNA into GAM255496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1690 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1690 gene: GAM119760 target protein and GAM255496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119760 and GAM255496

GR1691 AW971766 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1691(GR1691) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1691 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1691 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1691 gene encodes GR1691 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1691 precursor RNA folds spatially, forming GR1691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1691 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1691 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM433 precursor RNA and GAM24195 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM433 RNA and GAM24195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM433 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM433 target RNA into GAM433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24195 target RNA into GAM24195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1691 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1691 gene: GAM433 target protein and GAM24195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM433 and GAM24195

GR1692 AI031540 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1692(GR1692) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1692 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1692 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1692 gene encodes GR1692 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1692 precursor RNA folds spatially, forming GR1692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1692 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1692 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM143849 precursor RNA and GAM177863 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143849 RNA and GAM177863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143849 target RNA into GAM143849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177863 target RNA into GAM177863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1692 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1692 gene: GAM143849 target protein and GAM177863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM143849 and GAM177863

GR1693 BI907425 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1693(GR1693) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1693 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1693 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1693 gene encodes GR1693 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1693 precursor RNA folds spatially, forming GR1693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1693 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1693 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM173613 precursor RNA and GAM281181 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173613 RNA and GAM281181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173613 target RNA into GAM173613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281181 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281181 target RNA into GAM281181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1693 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1693 gene: GAM173613 target protein and GAM281181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173613 and GAM281181

GR1694 BE265607 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1694(GR1694) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1694 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1694 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1694 gene encodes GR1694 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1694 precursor RNA folds spatially, forming GR1694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1694 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1694 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6370 precursor RNA and GAM266463 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6370 RNA and GAM266463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM6370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6370 target RNA into GAM6370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266463 target RNA into GAM266463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1694 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1694 gene: GAM6370 target protein and GAM266463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6370 and GAM266463

GR1695 AA088875 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1695(GR1695) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1695 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1695 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1695 gene encodes GR1695 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1695 precursor RNA folds spatially, forming GR1695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1695 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1695 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6779 precursor RNA and GAM304416 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6779 RNA and GAM304416 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6779 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6779 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6779 target RNA into GAM6779 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304416 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304416 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304416 target RNA into GAM304416 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1695 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1695 gene: GAM6779 target protein and GAM304416 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6779 and GAM304416

GR1696 BG979925 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1696(GR1696) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1696 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1696

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1696 gene encodes GR1696 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1696 precursor RNA folds spatially, forming GR1696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1696 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1696 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8289 precursor RNA, GAM304782 precursor RNA and GAM327292 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8289 RNA, GAM304782 RNA and GAM327292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8289 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8289 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8289 target RNA into GAM8289 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304782 target RNA into GAM304782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327292 target RNA into GAM327292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1696 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1696 gene: GAM8289 target protein, GAM304782 target protein and GAM327292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8289, GAM304782 and GAM327292

GR1697 AW384818 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1697(GR1697) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1697 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1697 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1697 gene encodes GR1697 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1697 precursor RNA folds spatially, forming GR1697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1697 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1697 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119120 precursor RNA and GAM220050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119120 RNA and GAM220050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119120 target RNA into GAM119120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220050 target RNA into GAM220050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1697 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1697 gene: GAM119120 target protein and GAM220050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119120 and GAM220050

GR1698 AI866752 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1698(GR1698) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1698 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1698 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1698 gene encodes GR1698 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1698 precursor RNA folds spatially, forming GR1698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1698 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1698 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1037 precursor RNA and GAM189475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1037 RNA and GAM189475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1037 target RNA into GAM1037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189475 target RNA into GAM189475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1698 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1698 gene: GAM1037 target protein and GAM189475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1037 and GAM189475

GR1699 BG188035 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1699(GR1699) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1699 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1699 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1699 gene encodes GR1699 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1699 precursor RNA folds spatially, forming GR1699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1699 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1699 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162241 precursor RNA and GAM186968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162241 RNA and GAM186968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162241 target RNA into GAM162241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186968 target RNA into GAM186968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1699 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1699 gene: GAM162241 target protein and GAM186968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162241 and GAM186968

GR1700 BF031225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1700(GR1700) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1700 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1700 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1700 gene encodes GR1700 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1700 precursor RNA folds spatially, forming GR1700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1700 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1700 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41412 precursor RNA, GAM60663 precursor RNA and GAM153994 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41412 RNA, GAM60663 RNA and GAM153994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41412 target RNA into GAM41412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60663 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60663 target RNA into GAM60663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM153994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153994 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153994 target RNA into GAM153994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1700 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1700 gene: GAM41412 target protein, GAM60663 target protein and GAM153994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41412, GAM60663 and GAM153994

GR1701 AA235343 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1701(GR1701) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1701 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1701 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1701 gene encodes GR1701 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1701 precursor RNA folds spatially, forming GR1701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1701 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1701 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM66011 precursor RNA and GAM331060 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM66011 RNA and GAM331060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM66011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66011 target RNA into GAM66011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331060 target RNA into GAM331060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1701 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1701 gene: GAM66011 target protein and GAM331060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM66011 and GAM331060

GR1702 AW580840 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1702(GR1702) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1702 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1702 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1702 gene encodes GR1702 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1702 precursor RNA folds spatially, forming GR1702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1702 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1702 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40596 precursor RNA and GAM72769 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40596 RNA and GAM72769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40596 target RNA into GAM40596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72769 target RNA into GAM72769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1702 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1702 gene: GAM40596 target protein and GAM72769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM40596 and GAM72769

GR1703 BG251817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1703(GR1703) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1703 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1703 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1703 gene encodes GR1703 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1703 precursor RNA folds spatially, forming GR1703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1703 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1703 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90401 precursor RNA and GAM222412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90401 RNA and GAM222412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90401 target RNA into GAM90401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222412 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222412 target RNA into GAM222412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1703 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1703 gene: GAM90401 target protein and GAM222412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90401 and GAM222412

GR1704 BI549469 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1704(GR1704) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1704 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1704 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1704 gene encodes GR1704 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1704 precursor RNA folds spatially, forming GR1704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1704 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1704 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1651 precursor RNA and GAM4278 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1651 RNA and GAM4278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM1651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1651 target RNA into GAM1651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4278 target RNA into GAM4278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1704 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1704 gene: GAM1651 target protein and GAM4278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1651 and GAM4278

GR1705 BE547801 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1705(GR1705) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1705 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1705 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1705 gene encodes GR1705 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1705 precursor RNA folds spatially, forming GR1705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1705 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1705 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7604 precursor RNA and GAM320499 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7604 RNA and GAM320499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7604 target RNA into GAM7604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320499 target RNA into GAM320499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1705 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1705 gene: GAM7604 target protein and GAM320499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7604 and GAM320499

GR1706 AW245315 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1706(GR1706) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1706 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1706

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1706 gene encodes GR1706 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1706 precursor RNA folds spatially, forming GR1706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1706 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1706 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM54513 precursor RNA, GAM62007 precursor RNA and GAM278714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54513 RNA, GAM62007 RNA and GAM278714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54513 target RNA into GAM54513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62007 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62007 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62007 target RNA into GAM62007 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278714 target RNA into GAM278714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1706 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1706 gene: GAM54513 target protein, GAM62007 target protein and GAM278714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54513, GAM62007 and GAM278714

GR1707 AW021820 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1707(GR1707) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1707 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1707 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1707 gene encodes GR1707 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1707 precursor RNA folds spatially, forming GR1707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1707 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1707 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1689 precursor RNA and GAM122475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1689 RNA and GAM122475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1689 target RNA into GAM1689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122475 target RNA into GAM122475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1707 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1707 gene: GAM1689 target protein and GAM122475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1689 and GAM122475

GR1708 BF984668 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1708(GR1708) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1708 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1708 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1708 gene encodes GR1708 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1708 precursor RNA folds spatially, forming GR1708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1708 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1708 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM271948 precursor RNA and GAM322078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM271948 RNA and GAM322078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM271948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271948 target RNA into GAM271948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322078 target RNA into GAM322078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1708 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1708 gene: GAM271948 target protein and GAM322078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM271948 and GAM322078

GR1709 BG392941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1709(GR1709) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1709 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1709 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1709 gene encodes GR1709 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1709 precursor RNA folds spatially, forming GR1709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1709 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1709 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4694 precursor RNA, GAM79032 precursor RNA and GAM306978 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4694 RNA, GAM79032 RNA and GAM306978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4694 target RNA into GAM4694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79032 target RNA into GAM79032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306978

target RNA into GAM306978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1709 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1709 gene: GAM4694 target protein, GAM79032 target protein and GAM306978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4694, GAM79032 and GAM306978

GR1710 BI764403 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1710(GR1710) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1710 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1710 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1710 gene encodes GR1710 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1710 precursor RNA folds spatially, forming GR1710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1710 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1710 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257793 precursor RNA and GAM297355 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257793 RNA and GAM297355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257793 target RNA into GAM257793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297355 target RNA into GAM297355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1710 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1710 gene: GAM257793 target protein and GAM297355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257793 and GAM297355

GR1711 BM750003 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1711(GR1711) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1711 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1711 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1711 gene encodes GR1711 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1711 precursor RNA folds spatially, forming GR1711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1711 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1711 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7702 precursor RNA and GAM268916 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7702 RNA and GAM268916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7702 target RNA into GAM7702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268916 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268916 target RNA into GAM268916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1711 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1711 gene: GAM7702 target protein and GAM268916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7702 and GAM268916

GR1712 AI670054 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1712(GR1712) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1712 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1712 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1712 gene encodes GR1712 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1712 precursor RNA folds spatially, forming GR1712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1712 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1712 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM462 precursor RNA, GAM3469 precursor RNA and GAM242413 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM462 RNA, GAM3469 RNA and GAM242413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM462 target RNA into GAM462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3469 target RNA into GAM3469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242413 target RNA into GAM242413 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1712 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1712 gene: GAM462 target protein, GAM3469 target protein and GAM242413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM462, GAM3469 and GAM242413

GR1713 AA524047 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1713(GR1713) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1713 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1713 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1713 gene encodes GR1713 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1713 precursor RNA folds spatially, forming GR1713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1713 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1713 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM137312 precursor RNA and GAM175466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM137312 RNA and GAM175466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM137312 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137312 target RNA into GAM137312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175466 target RNA into GAM175466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1713 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1713 gene: GAM137312 target protein and GAM175466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM137312 and GAM175466

GR1714 BI088523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1714(GR1714) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1714 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1714 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1714 gene encodes GR1714 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1714 precursor RNA folds spatially, forming GR1714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1714 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1714 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1714 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6119 precursor RNA and GAM270024 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6119 RNA and GAM270024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6119 target RNA into GAM6119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270024 target RNA into GAM270024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1714 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1714 gene: GAM6119 target protein and GAM270024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6119 and GAM270024

GR1715 AA639194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1715(GR1715) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1715 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1715 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1715 gene encodes GR1715 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1715 precursor RNA folds spatially, forming GR1715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1715 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1715 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM40804 precursor RNA, GAM208045 precursor RNA and GAM210481 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40804 RNA, GAM208045 RNA and GAM210481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40804 target RNA into GAM40804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208045 target RNA into GAM208045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210481 target RNA into GAM210481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1715 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1715 gene: GAM40804 target protein, GAM208045 target protein and GAM210481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40804, GAM208045 and GAM210481

GR1716 AI985941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1716(GR1716) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1716 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1716 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1716 gene encodes GR1716 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1716 precursor RNA folds spatially, forming GR1716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1716 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1716 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8312 precursor RNA and GAM12711 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8312 RNA and GAM12711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8312 target RNA into GAM8312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM12711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12711 target RNA into GAM12711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1716 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1716 gene: GAM8312 target protein and GAM12711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8312 and GAM12711

GR1717 AL705501 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1717(GR1717) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1717 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1717 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1717 gene encodes GR1717 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1717 precursor RNA folds spatially, forming GR1717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1717 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1717 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM44423 precursor RNA and GAM255882 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44423 RNA and GAM255882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44423 target RNA into GAM44423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255882 target RNA into GAM255882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1717 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1717 gene: GAM44423 target protein and GAM255882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44423 and GAM255882

GR1718 AA993273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1718(GR1718) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1718 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1718 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1718 gene encodes GR1718 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1718 precursor RNA folds spatially, forming GR1718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1718 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1718 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2936 precursor RNA and GAM173815 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2936 RNA and GAM173815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2936 target RNA into GAM2936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173815 target RNA into GAM173815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1718 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1718 gene: GAM2936 target protein and GAM173815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2936 and GAM173815

GR1719 BF671287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1719(GR1719) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1719 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1719 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1719 gene encodes GR1719 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1719 precursor RNA folds spatially, forming GR1719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1719 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1719 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7961 precursor RNA, GAM224360 precursor RNA and GAM300828 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7961 RNA, GAM224360 RNA and GAM300828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7961 target RNA into GAM7961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224360 target RNA into GAM224360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300828 target RNA into GAM300828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1719 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1719 gene: GAM7961 target protein, GAM224360 target protein and GAM300828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7961, GAM224360 and GAM300828

GR1720 R45250 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1720(GR1720) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1720 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1720 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1720 gene encodes GR1720 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1720 precursor RNA folds spatially, forming GR1720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1720 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1720 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6701 precursor RNA and GAM44839 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6701 RNA and GAM44839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6701 target RNA into GAM6701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44839 target RNA into GAM44839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1720 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1720 gene: GAM6701 target protein and GAM44839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6701 and GAM44839

GR1721 AI435817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1721(GR1721) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1721 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1721 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1721 gene encodes GR1721 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1721 precursor RNA folds spatially, forming GR1721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1721 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1721 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3778 precursor RNA and GAM119348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3778 RNA and GAM119348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3778 target RNA into GAM3778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119348 target RNA into GAM119348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1721 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1721 gene: GAM3778 target protein and GAM119348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3778 and GAM119348

GR1722 AA729423 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1722(GR1722) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1722 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1722 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1722 gene encodes GR1722 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1722 precursor RNA folds spatially, forming GR1722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1722 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1722 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM209682 precursor RNA and GAM258531 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM209682 RNA and GAM258531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM209682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209682 target RNA into GAM209682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258531

target RNA into GAM258531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1722 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1722 gene: GAM209682 target protein and GAM258531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM209682 and GAM258531

GR1723 AW004004 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1723(GR1723) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1723 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1723 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1723 gene encodes GR1723 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1723 precursor RNA folds spatially, forming GR1723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1723 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1723 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4461 precursor RNA and GAM127889 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4461 RNA and GAM127889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4461 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4461 target RNA into GAM4461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127889 target RNA into GAM127889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1723 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1723 gene: GAM4461 target protein and GAM127889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4461 and GAM127889

GR1724 BE700058 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1724(GR1724) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1724 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1724 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1724 gene encodes GR1724 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1724 precursor RNA folds spatially, forming GR1724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1724 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1724 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1724 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13057 precursor RNA and GAM246835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13057 RNA and GAM246835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13057 target RNA into GAM13057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246835 target RNA into GAM246835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1724 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1724 gene: GAM13057 target protein and GAM246835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13057 and GAM246835

GR1725 AI831201 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1725(GR1725) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1725 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1725 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1725 gene encodes GR1725 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1725 precursor RNA folds spatially, forming GR1725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1725 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1725 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7699 precursor RNA and GAM171855 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7699 RNA and GAM171855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7699 target RNA into GAM7699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171855 target RNA into GAM171855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1725 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1725 gene: GAM7699 target protein and GAM171855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7699 and GAM171855

GR1726 AV723997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1726(GR1726) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1726 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1726 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1726 gene encodes GR1726 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1726 precursor RNA folds spatially, forming GR1726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1726 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1726 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2483 precursor RNA and GAM193328 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2483 RNA and GAM193328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2483 target RNA into GAM2483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193328 target RNA into GAM193328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1726 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1726 gene: GAM2483 target protein and GAM193328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2483 and GAM193328

GR1727 AI308197 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1727(GR1727) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1727 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1727 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1727 gene encodes GR1727 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1727 precursor RNA folds spatially, forming GR1727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1727 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1727 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4715 precursor RNA and GAM178172 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4715 RNA and GAM178172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4715 target RNA into GAM4715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178172 target RNA into GAM178172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1727 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1727 gene: GAM4715 target protein and GAM178172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4715 and GAM178172

GR1728 BF129638 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1728(GR1728) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1728 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1728 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1728 gene encodes GR1728 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1728 precursor RNA folds spatially, forming GR1728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1728 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1728 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM119595 precursor RNA, GAM215603 precursor RNA and GAM297893 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119595 RNA, GAM215603 RNA and GAM297893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119595 target RNA into GAM119595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215603 target RNA into GAM215603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297893 target RNA into GAM297893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1728 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1728 gene: GAM119595 target protein, GAM215603 target protein and GAM297893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119595, GAM215603 and GAM297893

GR1729 BE378801 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1729(GR1729) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1729 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1729 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1729 gene encodes GR1729 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1729 precursor RNA folds spatially, forming GR1729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1729 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1729 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5811 precursor RNA and GAM107675 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5811 RNA and GAM107675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5811 target RNA into GAM5811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107675 target RNA into GAM107675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1729 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1729 gene: GAM5811 target protein and GAM107675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5811 and GAM107675

GR1730 T18926 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1730(GR1730) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1730 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1730 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1730 gene encodes GR1730 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1730 precursor RNA folds spatially, forming GR1730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1730 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1730 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3275 precursor RNA and GAM134943 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3275 RNA and GAM134943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3275 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3275 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3275 target RNA into GAM3275 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134943 target RNA into GAM134943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1730 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1730 gene: GAM3275 target protein and GAM134943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3275 and GAM134943

GR1731 BG231951 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1731(GR1731) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1731 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1731 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1731 gene encodes GR1731 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1731 precursor RNA folds spatially, forming GR1731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1731 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1731 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3366 precursor RNA and GAM25128 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3366 RNA and GAM25128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3366 target RNA into GAM3366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM25128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25128 target RNA into GAM25128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1731 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1731 gene: GAM3366 target protein and GAM25128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3366 and GAM25128

GR1732 BF666693 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1732(GR1732) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1732 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1732 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1732 gene encodes GR1732 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1732 precursor RNA folds spatially, forming GR1732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1732 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1732 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4893 precursor RNA, GAM66200 precursor RNA, GAM220690 precursor RNA and GAM313830 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4893 RNA, GAM66200 RNA, GAM220690 RNA and GAM313830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4893 target RNA into GAM4893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66200 target RNA into GAM66200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220690 target RNA into GAM220690 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313830 target RNA into GAM313830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1732 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1732 gene: GAM4893 target protein, GAM66200 target protein, GAM220690 target protein and GAM313830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4893, GAM66200, GAM220690 and GAM313830

GR1733 BM016964 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1733(GR1733) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1733 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1733 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1733 gene encodes GR1733 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1733 precursor RNA folds spatially, forming GR1733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1733 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1733 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM797 precursor RNA, GAM224041 precursor RNA, GAM224705 precursor RNA and GAM245569 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment,

corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM797 RNA, GAM224041 RNA, GAM224705 RNA and GAM245569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM797 target RNA into GAM797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224041 target RNA into GAM224041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224705 target RNA into GAM224705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245569 target RNA into GAM245569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1733 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1733 gene: GAM797 target protein, GAM224041 target protein, GAM224705 target protein and GAM245569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM797, GAM224041, GAM224705 and GAM245569

GR1734 BI546327 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1734(GR1734) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1734 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1734 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1734 gene encodes GR1734 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1734 precursor RNA folds spatially, forming GR1734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1734 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1734 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1737 precursor RNA, GAM79041 precursor RNA and GAM175966 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1737 RNA, GAM79041 RNA and GAM175966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1737 target RNA into GAM1737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79041 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79041 target RNA into GAM79041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175966 target RNA into GAM175966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1734 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1734 gene: GAM1737 target protein, GAM79041 target protein and GAM175966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1737, GAM79041 and GAM175966

GR1735 BG505805 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1735(GR1735) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1735 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1735 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1735 gene encodes GR1735 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1735 precursor RNA folds spatially, forming GR1735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1735 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1735 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM43551 precursor RNA and GAM44172 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43551 RNA and GAM44172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43551 target RNA into GAM43551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44172 target RNA into GAM44172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1735 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1735 gene: GAM43551 target protein and GAM44172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43551 and GAM44172

GR1736 BE259911 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1736(GR1736) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1736 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1736 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1736 gene encodes GR1736 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1736 precursor RNA folds spatially, forming GR1736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1736 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1736 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM91506 precursor RNA and GAM231142 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91506 RNA and GAM231142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91506 target RNA into GAM91506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231142 target RNA into GAM231142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1736 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1736 gene: GAM91506 target protein and GAM231142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91506 and GAM231142

GR1737 BI868502 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1737(GR1737) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1737 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1737 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1737 gene encodes GR1737 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1737 precursor RNA folds spatially, forming GR1737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1737 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1737 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5064 precursor RNA, GAM141979 precursor RNA and GAM241249 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5064 RNA, GAM141979 RNA and GAM241249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5064 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5064 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5064 target RNA into GAM5064 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141979 target RNA into GAM141979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241249 target RNA into GAM241249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1737 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1737 gene: GAM5064 target protein, GAM141979 target protein and GAM241249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5064, GAM141979 and GAM241249

GR1738 BG617199 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1738(GR1738) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1738 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1738 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1738 gene encodes GR1738 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1738 precursor RNA folds spatially, forming GR1738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1738 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1738 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4076 precursor RNA and GAM221362 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4076 RNA and GAM221362 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4076 target RNA into GAM4076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221362 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221362 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221362 target RNA into GAM221362 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1738 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1738 gene: GAM4076 target protein and GAM221362 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4076 and GAM221362

GR1739 BG034931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1739(GR1739) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1739 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1739 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1739 gene encodes GR1739 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1739 precursor RNA folds spatially, forming GR1739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1739 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1739 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3857 precursor RNA, GAM5924 precursor RNA and GAM232151 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3857 RNA, GAM5924 RNA and GAM232151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3857 target RNA into GAM3857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5924 target RNA into GAM5924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232151 target RNA into GAM232151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1739 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1739 gene: GAM3857 target protein, GAM5924 target protein and GAM232151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3857, GAM5924 and GAM232151

GR1740 BG178629 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1740(GR1740) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1740 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1740 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1740 gene encodes GR1740 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1740 precursor RNA folds spatially, forming GR1740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1740 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1740 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3539 precursor RNA and GAM203512 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3539 RNA and GAM203512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3539 target RNA into GAM3539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203512 target RNA into GAM203512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1740 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1740 gene: GAM3539 target protein and GAM203512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3539 and GAM203512

GR1741 BI256661 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1741(GR1741) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1741 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1741 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1741 gene encodes GR1741 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1741 precursor RNA folds spatially, forming GR1741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1741 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1741 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM148560 precursor RNA, GAM207700 precursor RNA and GAM244064 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM148560 RNA, GAM207700 RNA and GAM244064 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM148560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148560 target RNA into GAM148560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207700 target RNA into GAM207700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244064 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244064 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244064 target RNA into GAM244064 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1741 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1741 gene: GAM148560 target protein, GAM207700 target protein and GAM244064 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM148560, GAM207700 and GAM244064

GR1742 AI739300 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1742(GR1742) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1742 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1742 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1742 gene encodes GR1742 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1742 precursor RNA folds spatially, forming GR1742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1742 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1742 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1765 precursor RNA, GAM6609 precursor RNA and GAM68524 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1765 RNA, GAM6609 RNA and GAM68524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1765 target RNA into GAM1765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6609 target RNA into GAM6609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68524 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68524 target RNA into GAM68524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1742 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1742 gene: GAM1765 target protein, GAM6609 target protein and GAM68524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1765, GAM6609 and GAM68524

GR1743 R33924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1743(GR1743) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1743 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1743 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1743 gene encodes GR1743 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1743 precursor RNA folds spatially, forming GR1743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1743 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1743 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2068 precursor RNA and GAM117976 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2068 RNA and GAM117976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2068 target RNA into GAM2068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117976 target RNA into GAM117976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1743 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1743 gene: GAM2068 target protein and GAM117976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2068 and GAM117976

GR1744 AV711203 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1744(GR1744) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1744 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1744 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1744 gene encodes GR1744 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1744 precursor RNA folds spatially, forming GR1744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1744 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1744 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98324 precursor RNA and GAM122788 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98324 RNA and GAM122788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98324 target RNA into GAM98324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122788 target RNA into GAM122788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1744 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1744 gene: GAM98324 target protein and GAM122788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98324 and GAM122788

GR1745 AI283384 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1745(GR1745) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1745 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1745 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1745 gene encodes GR1745 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1745 precursor RNA folds spatially, forming GR1745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1745 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1745 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116927 precursor RNA and GAM312949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116927 RNA and GAM312949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116927 target RNA into GAM116927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312949 target RNA into GAM312949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1745 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1745 gene: GAM116927 target protein and GAM312949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116927 and GAM312949

GR1746 BM423498 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1746(GR1746) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1746 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1746 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1746 gene encodes GR1746 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1746 precursor RNA folds spatially, forming GR1746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1746 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1746 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1897 precursor RNA, GAM5898 precursor RNA and GAM279622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1897 RNA, GAM5898 RNA and GAM279622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1897 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1897 target RNA into GAM1897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5898 target RNA into GAM5898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279622 target RNA into GAM279622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1746 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1746 gene: GAM1897 target protein, GAM5898 target protein and GAM279622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1897, GAM5898 and GAM279622

GR1747 AI963218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1747(GR1747) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1747 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1747 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1747 gene encodes GR1747 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1747 precursor RNA folds spatially, forming GR1747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1747 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1747 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3189 precursor RNA and GAM163386 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3189 RNA and GAM163386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3189 target RNA into GAM3189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163386 target RNA into GAM163386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1747 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1747 gene: GAM3189 target protein and GAM163386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3189 and GAM163386

GR1748 BQ000082 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1748(GR1748) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1748 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1748 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1748 gene encodes GR1748 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1748 precursor RNA folds spatially, forming GR1748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1748 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1748 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34029 precursor RNA and GAM146807 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34029 RNA and GAM146807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34029 target RNA into GAM34029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146807 target RNA into GAM146807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1748 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1748 gene: GAM34029 target protein and GAM146807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34029 and GAM146807

GR1749 BI752748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1749(GR1749) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1749 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1749 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1749 gene encodes GR1749 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1749 precursor RNA folds spatially, forming GR1749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1749 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1749 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1666 precursor RNA, GAM222445 precursor RNA and GAM296458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1666 RNA, GAM222445 RNA and GAM296458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1666 target RNA into

GAM1666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222445 target RNA into GAM222445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296458 target RNA into GAM296458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1749 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1749 gene: GAM1666 target protein, GAM222445 target protein and GAM296458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1666, GAM222445 and GAM296458

GR1750 BM740055 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1750(GR1750) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1750 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1750 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1750 gene encodes GR1750 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1750 precursor RNA folds spatially, forming GR1750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1750 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1750 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6754 precursor RNA, GAM44871 precursor RNA and GAM314782 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6754 RNA, GAM44871 RNA and GAM314782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6754 target RNA into GAM6754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44871 target RNA into GAM44871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314782 target RNA into GAM314782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1750 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1750 gene: GAM6754 target protein, GAM44871 target protein and GAM314782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6754, GAM44871 and

GAM314782

GR1751 AA843181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1751(GR1751) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1751 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1751 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1751 gene encodes GR1751 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1751 precursor RNA folds spatially, forming GR1751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1751 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1751 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1478 precursor RNA, GAM5706 precursor RNA, GAM36593 precursor RNA and GAM287308 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1478 RNA, GAM5706 RNA, GAM36593 RNA and GAM287308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1478 target RNA into GAM1478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5706 target RNA into GAM5706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36593 target RNA into GAM36593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287308 target RNA into GAM287308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1751 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1751 gene: GAM1478 target protein, GAM5706 target protein, GAM36593 target protein and GAM287308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1478, GAM5706, GAM36593 and GAM287308

GR1752 AI640523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1752(GR1752) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1752 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1752 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1752 gene encodes GR1752 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1752 precursor RNA folds spatially, forming GR1752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1752 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1752 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7049 precursor RNA and GAM8231 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7049 RNA and GAM8231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7049 target RNA into GAM7049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8231 target RNA into GAM8231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1752 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1752 gene: GAM7049 target protein and GAM8231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7049 and GAM8231

GR1753 BE965702 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1753(GR1753) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1753 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1753 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1753 gene encodes GR1753 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1753 precursor RNA folds spatially, forming GR1753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1753 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1753 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1931 precursor RNA and GAM141471 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1931 RNA and GAM141471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1931 target RNA into GAM1931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141471 target RNA into GAM141471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1753 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1753 gene: GAM1931 target protein and GAM141471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1931 and GAM141471

GR1754 BF512749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1754(GR1754) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1754 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1754 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1754 gene encodes GR1754 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1754 precursor RNA folds spatially, forming GR1754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1754 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1754 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM922 precursor RNA and GAM240706 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM922 RNA and GAM240706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM922 target RNA into GAM922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240706 target RNA into GAM240706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1754 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1754 gene: GAM922 target protein and GAM240706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM922 and GAM240706

GR1755 BI062431 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1755(GR1755) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1755 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1755 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1755 gene encodes GR1755 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1755 precursor RNA folds spatially, forming GR1755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1755 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1755 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM134528 precursor RNA, GAM210933 precursor RNA and GAM248495 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM134528 RNA, GAM210933 RNA and GAM248495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM134528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134528 target RNA into GAM134528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210933 target RNA into GAM210933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248495 target RNA into GAM248495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1755 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1755 gene: GAM134528 target protein, GAM210933 target protein and GAM248495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM134528, GAM210933 and GAM248495

GR1756 BE543107 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1756(GR1756) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1756 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1756 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1756 gene encodes GR1756 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1756 precursor RNA folds spatially, forming GR1756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1756 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1756 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM400 precursor RNA, GAM72252 precursor RNA, GAM216562 precursor RNA and GAM224400 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM400 RNA, GAM72252 RNA, GAM216562 RNA and GAM224400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM400 target RNA into GAM400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72252 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72252 target RNA into GAM72252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216562 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216562 target RNA into GAM216562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224400 target RNA into GAM224400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1756 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1756 gene: GAM400 target protein, GAM72252 target protein, GAM216562 target protein and GAM224400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM400, GAM72252, GAM216562 and GAM224400

GR1757 H12923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1757(GR1757) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1757 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1757 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1757 gene encodes GR1757 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1757 precursor RNA folds spatially, forming GR1757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1757 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1757 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM13588 precursor RNA, GAM47120 precursor RNA and GAM261379 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13588 RNA, GAM47120 RNA and GAM261379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13588 target RNA into GAM13588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47120 target RNA into GAM47120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261379 target RNA into GAM261379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1757 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1757 gene: GAM13588 target protein, GAM47120 target protein and GAM261379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13588, GAM47120 and GAM261379

GR1758 AI127261 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1758(GR1758) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1758 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1758 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1758 gene encodes GR1758 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1758 precursor RNA folds spatially, forming GR1758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1758 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1758 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128822 precursor RNA and GAM148044 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128822 RNA and GAM148044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128822 target RNA into GAM128822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148044

target RNA into GAM148044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1758 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1758 gene: GAM128822 target protein and GAM148044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128822 and GAM148044

GR1759 BF921077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1759(GR1759) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1759 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1759 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1759 gene encodes GR1759 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1759 precursor RNA folds spatially, forming GR1759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1759 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1759 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2487 precursor RNA and GAM188040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2487 RNA and GAM188040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2487 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2487 target RNA into GAM2487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188040 target RNA into GAM188040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1759 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1759 gene: GAM2487 target protein and GAM188040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2487 and GAM188040

GR1760 T78363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1760(GR1760) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1760 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1760 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1760 gene encodes GR1760 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1760 precursor RNA folds spatially, forming GR1760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1760 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1760 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1760 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5681 precursor RNA and GAM328073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5681 RNA and GAM328073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5681 target RNA into GAM5681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328073 target RNA into GAM328073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1760 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1760 gene: GAM5681 target protein and GAM328073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5681 and GAM328073

GR1761 BG106303 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1761(GR1761) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1761 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1761 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1761 gene encodes GR1761 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1761 precursor RNA folds spatially, forming GR1761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1761 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1761 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4686 precursor RNA, GAM11371 precursor RNA, GAM146925 precursor RNA and GAM199555 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4686 RNA, GAM11371 RNA, GAM146925 RNA and GAM199555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4686 target RNA into GAM4686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11371 target RNA into GAM11371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146925 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146925 target RNA into GAM146925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199555 target RNA into GAM199555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1761 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1761 gene: GAM4686 target protein, GAM11371 target protein, GAM146925 target protein and GAM199555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4686, GAM11371, GAM146925 and GAM199555

GR1762 AW269947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1762(GR1762) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1762 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1762 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1762 gene encodes GR1762 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1762 precursor RNA folds spatially, forming GR1762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1762 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1762 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4882 precursor RNA and GAM108164 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4882 RNA and GAM108164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4882 target RNA into GAM4882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108164 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108164 target RNA into GAM108164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1762 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1762 gene: GAM4882 target protein and GAM108164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4882 and GAM108164

GR1763 AA644654 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1763(GR1763) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1763 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1763 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1763 gene encodes GR1763 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1763 precursor RNA folds spatially, forming GR1763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1763 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1763 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4827 precursor RNA and GAM5970 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4827 RNA and GAM5970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4827 target RNA into GAM4827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5970 target RNA into GAM5970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1763 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1763 gene: GAM4827 target protein and GAM5970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4827 and GAM5970

GR1764 AI935331 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1764(GR1764) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1764 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1764 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1764 gene encodes GR1764 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1764 precursor RNA folds spatially, forming GR1764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1764 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1764 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8279 precursor RNA, GAM154137 precursor RNA and GAM157905 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8279 RNA, GAM154137 RNA and GAM157905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8279 target RNA into GAM8279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154137 target RNA into GAM154137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157905 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157905 target RNA into GAM157905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1764 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1764 gene: GAM8279 target protein, GAM154137 target protein and GAM157905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8279, GAM154137 and GAM157905

GR1765 BG760374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1765(GR1765) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1765 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1765 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1765 gene encodes GR1765 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1765 precursor RNA folds spatially, forming GR1765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1765 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1765 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM187549 precursor RNA and GAM271865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM187549 RNA and GAM271865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM187549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187549 target RNA into GAM187549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271865 target RNA into GAM271865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1765 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1765 gene: GAM187549 target protein and GAM271865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM187549 and GAM271865

GR1766 BF309828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1766(GR1766) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1766 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1766 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1766 gene encodes GR1766 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1766 precursor RNA folds spatially, forming GR1766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1766 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1766 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2873 precursor RNA, GAM68484 precursor RNA and GAM106055 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2873 RNA, GAM68484 RNA and GAM106055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2873 target RNA into GAM2873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68484 target RNA into GAM68484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106055 target RNA into GAM106055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1766 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1766 gene: GAM2873 target protein, GAM68484 target protein and GAM106055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2873, GAM68484 and GAM106055

GR1767 AW606694 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1767(GR1767) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1767 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1767 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1767 gene encodes GR1767 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1767 precursor RNA folds spatially, forming GR1767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1767 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1767 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189682 precursor RNA and GAM248488 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189682 RNA and GAM248488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189682 target RNA into GAM189682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248488 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248488 target RNA into GAM248488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1767 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1767 gene: GAM189682 target protein and GAM248488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189682 and GAM248488

GR1768 BE792356 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1768(GR1768) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1768 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1768 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1768 gene encodes GR1768 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1768 precursor RNA folds spatially, forming GR1768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1768 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1768 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM64847 precursor RNA, GAM116788 precursor RNA and GAM258423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64847 RNA, GAM116788 RNA and GAM258423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64847 target RNA into GAM64847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116788 target RNA into GAM116788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258423 target RNA into GAM258423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1768 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1768 gene: GAM64847 target protein, GAM116788 target protein and GAM258423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64847, GAM116788 and GAM258423

GR1769 BM817774 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1769(GR1769) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1769 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1769 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1769 gene encodes GR1769 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1769 precursor RNA folds spatially, forming GR1769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1769 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1769 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4641 precursor RNA and GAM89589 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4641 RNA and GAM89589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4641 target RNA into GAM4641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89589 target RNA into GAM89589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1769 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1769 gene: GAM4641 target protein and GAM89589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4641 and GAM89589

GR1770 R25714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1770(GR1770) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1770 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1770 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1770 gene encodes GR1770 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1770 precursor RNA folds spatially, forming GR1770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1770 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1770 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94495 precursor RNA and GAM300490 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94495 RNA and GAM300490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94495 target RNA into GAM94495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM300490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300490 target RNA into GAM300490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1770 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1770 gene: GAM94495 target protein and GAM300490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94495 and GAM300490

GR1771 AA136910 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1771(GR1771) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1771 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1771 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1771 gene encodes GR1771 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1771 precursor RNA folds spatially, forming GR1771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1771 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1771 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152532 precursor RNA and GAM334017 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152532 RNA and GAM334017 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152532 target RNA into GAM152532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334017 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334017 target RNA into GAM334017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1771 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1771 gene: GAM152532 target protein and GAM334017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152532 and GAM334017

GR1772 AA436731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1772(GR1772) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1772 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1772 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1772 gene encodes GR1772 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1772 precursor RNA folds spatially, forming GR1772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1772 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1772 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5135 precursor RNA, GAM18458 precursor RNA and GAM295673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5135 RNA, GAM18458 RNA and GAM295673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5135 target RNA into GAM5135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM18458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18458 target RNA into GAM18458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295673 target RNA into GAM295673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1772 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1772 gene: GAM5135 target protein, GAM18458 target protein and GAM295673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5135, GAM18458 and

GAM295673

GR1773 BF125096 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1773(GR1773) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1773 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1773 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1773 gene encodes GR1773 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1773 precursor RNA folds spatially, forming GR1773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1773 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1773 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM988 precursor RNA and GAM285096 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM988 RNA and GAM285096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM988 target RNA into GAM988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285096 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285096 target RNA into GAM285096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1773 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1773 gene: GAM988 target protein and GAM285096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM988 and GAM285096

GR1774 BG470475 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1774(GR1774) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1774 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1774 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1774 gene encodes GR1774 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1774 precursor RNA folds spatially, forming GR1774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1774 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1774 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM879 precursor RNA and GAM125640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM879 RNA and GAM125640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM879 target RNA into GAM879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125640 target RNA into GAM125640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1774 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1774 gene: GAM879 target protein and GAM125640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM879 and GAM125640

GR1775 AV758903 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1775(GR1775) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1775 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1775 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1775 gene encodes GR1775 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1775 precursor RNA folds spatially, forming GR1775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1775 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1775 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM149519 precursor RNA and GAM278675 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM149519 RNA and GAM278675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM149519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149519 target RNA into GAM149519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278675 target RNA into GAM278675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1775 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1775 gene: GAM149519 target protein and GAM278675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM149519 and GAM278675

GR1776 BI041731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1776(GR1776) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1776 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1776

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1776 gene encodes GR1776 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1776 precursor RNA folds spatially, forming GR1776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1776 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1776 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1194 precursor RNA, GAM5879 precursor RNA and GAM80493 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1194 RNA, GAM5879 RNA and GAM80493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1194 target RNA into GAM1194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5879 target RNA into GAM5879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80493 target RNA into GAM80493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1776 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1776 gene: GAM1194 target protein, GAM5879 target protein and GAM80493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1194, GAM5879 and GAM80493

GR1777 BF934560 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1777(GR1777) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1777 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1777 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1777 gene encodes GR1777 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1777 precursor RNA folds spatially, forming GR1777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1777 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1777 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4936 precursor RNA and GAM223290 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4936 RNA and GAM223290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4936 target RNA into GAM4936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223290 target RNA into GAM223290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1777 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1777 gene: GAM4936 target protein and GAM223290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4936 and GAM223290

GR1778 AW661804 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1778(GR1778) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1778 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1778 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1778 gene encodes GR1778 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1778 precursor RNA folds spatially, forming GR1778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1778 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1778 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM20378 precursor RNA, GAM257319 precursor RNA and GAM257931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20378 RNA, GAM257319 RNA and GAM257931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20378 target RNA into GAM20378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257319 target RNA into GAM257319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257931 target RNA into GAM257931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1778 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1778 gene: GAM20378 target protein, GAM257319 target protein and GAM257931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20378, GAM257319 and GAM257931

GR1779 AW295796 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1779(GR1779) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1779 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1779 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1779 gene encodes GR1779 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1779 precursor RNA folds spatially, forming GR1779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1779 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1779 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60996 precursor RNA and GAM184158 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60996 RNA and GAM184158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60996 target RNA into GAM60996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184158 target RNA into GAM184158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1779 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1779 gene: GAM60996 target protein and GAM184158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60996 and GAM184158

GR1780 BM048737 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1780(GR1780) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1780 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1780 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1780 gene encodes GR1780 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1780 precursor RNA folds spatially, forming GR1780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1780 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1780 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM8460 precursor RNA, GAM50473 precursor RNA, GAM59689 precursor RNA, GAM257272 precursor RNA and GAM267696 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8460 RNA, GAM50473 RNA, GAM59689 RNA, GAM257272 RNA and GAM267696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8460 target RNA into GAM8460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50473 target RNA into GAM50473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59689 target RNA into GAM59689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257272 target RNA into GAM257272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267696 target RNA into GAM267696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1780 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1780 gene: GAM8460 target protein, GAM50473 target protein, GAM59689 target protein, GAM257272 target protein and GAM267696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM8460, GAM50473, GAM59689, GAM257272 and GAM267696

GR1781 BM806303 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1781(GR1781) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1781 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1781 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1781 gene encodes GR1781 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1781 precursor RNA folds spatially, forming GR1781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1781 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1781 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM200385 precursor RNA and GAM256392 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM200385 RNA and GAM256392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM200385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200385 target RNA into GAM200385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256392 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256392 target RNA into GAM256392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1781 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1781 gene: GAM200385 target protein and GAM256392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM200385 and GAM256392

GR1782 AA836357 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1782(GR1782) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1782 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1782 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1782 gene encodes GR1782 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1782 precursor RNA folds spatially, forming GR1782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1782 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1782 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4876 precursor RNA, GAM8510 precursor RNA and GAM127930 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4876 RNA, GAM8510 RNA and GAM127930 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4876 target RNA into GAM4876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8510 target RNA into GAM8510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127930 target RNA into GAM127930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1782 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1782 gene: GAM4876 target protein, GAM8510 target protein and GAM127930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4876, GAM8510 and GAM127930

GR1783 BG111145 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1783(GR1783) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1783 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1783 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1783 gene encodes GR1783 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1783 precursor RNA folds spatially, forming GR1783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1783 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1783 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5991 precursor RNA, GAM69717 precursor RNA and GAM149495 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5991 RNA, GAM69717 RNA and GAM149495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5991 target RNA into GAM5991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69717 target RNA into GAM69717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149495 target RNA into GAM149495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1783 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1783 gene: GAM5991 target protein, GAM69717 target protein and GAM149495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5991, GAM69717 and GAM149495

GR1784 BM998621 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1784(GR1784) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1784 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1784 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1784 gene encodes GR1784 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1784 precursor RNA folds spatially, forming GR1784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1784 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1784 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4233 precursor RNA, GAM7644 precursor RNA and GAM156806 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4233 RNA, GAM7644 RNA and GAM156806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4233 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4233 target RNA into GAM4233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7644 target RNA into GAM7644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156806 target RNA into GAM156806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1784 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1784 gene: GAM4233 target protein, GAM7644 target protein and GAM156806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4233, GAM7644 and GAM156806

GR1785 BG768877 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1785(GR1785) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1785 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1785 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1785 gene encodes GR1785 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1785 precursor RNA folds spatially, forming GR1785 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1785 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1785 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48582 precursor RNA and GAM116104 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48582 RNA and GAM116104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48582 target RNA into GAM48582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116104 target RNA into GAM116104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1785 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1785 gene: GAM48582 target protein and GAM116104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48582 and GAM116104

GR1786 BE543268 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1786(GR1786) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1786 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1786 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1786 gene encodes GR1786 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1786 precursor RNA folds spatially, forming GR1786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1786 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1786 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3358 precursor RNA and GAM329276 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3358 RNA and GAM329276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3358 target RNA into GAM3358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329276 target RNA into GAM329276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1786 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1786 gene: GAM3358 target protein and GAM329276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3358 and GAM329276

GR1787 AU120328 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1787(GR1787) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1787 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1787 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1787 gene encodes GR1787 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1787 precursor RNA folds spatially, forming GR1787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1787 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1787 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM220171 precursor RNA and GAM281232 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM220171 RNA and GAM281232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM220171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220171 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220171 target RNA into GAM220171 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281232 target RNA into GAM281232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1787 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1787 gene: GAM220171 target protein and GAM281232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM220171 and GAM281232

GR1788 BF530814 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1788(GR1788) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1788 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1788 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1788 gene encodes GR1788 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1788 precursor RNA folds spatially, forming GR1788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1788 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1788 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM95881 precursor RNA, GAM269701 precursor RNA

and GAM293203 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95881 RNA, GAM269701 RNA and GAM293203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95881 target RNA into GAM95881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269701 target RNA into GAM269701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293203 target RNA into GAM293203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1788 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1788 gene: GAM95881 target protein, GAM269701 target protein and GAM293203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95881, GAM269701 and GAM293203

GR1789 AA630397 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1789(GR1789) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1789 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1789 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1789 gene encodes GR1789 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1789 precursor RNA folds spatially, forming GR1789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1789 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1789 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3245 precursor RNA, GAM99542 precursor RNA and GAM281407 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3245 RNA, GAM99542 RNA and GAM281407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3245 target RNA into GAM3245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99542 target RNA into GAM99542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281407 target RNA into GAM281407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1789 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1789 gene: GAM3245 target protein, GAM99542 target protein and GAM281407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3245, GAM99542 and GAM281407

GR1790 BF701404 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1790(GR1790) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1790 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1790 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1790 gene encodes GR1790 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1790 precursor RNA folds spatially, forming GR1790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1790 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1790 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3310 precursor RNA and GAM257962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3310 RNA and GAM257962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3310 target RNA into GAM3310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257962 target RNA into GAM257962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1790 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1790 gene: GAM3310 target protein and GAM257962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3310 and GAM257962

GR1791 AA424022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1791(GR1791) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1791 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1791 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1791 gene encodes GR1791 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1791 precursor RNA folds spatially, forming GR1791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1791 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1791 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116886 precursor RNA and GAM223586 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116886 RNA and GAM223586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116886 target RNA into GAM116886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223586 target RNA into GAM223586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1791 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1791 gene: GAM116886 target protein and GAM223586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116886 and GAM223586

GR1792 BF903340 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1792(GR1792) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1792 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1792 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1792 gene encodes GR1792 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1792 precursor RNA folds spatially, forming GR1792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1792 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1792 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8112 precursor RNA and GAM92775 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8112 RNA and GAM92775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8112 target RNA into GAM8112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92775 target RNA into GAM92775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1792 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1792 gene: GAM8112 target protein and GAM92775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8112 and GAM92775

GR1793 AA682982 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1793(GR1793) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1793 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1793 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1793 gene encodes GR1793 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1793 precursor RNA folds spatially, forming GR1793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1793 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1793 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM9928 precursor RNA, GAM35820 precursor RNA and GAM131238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9928 RNA, GAM35820 RNA and GAM131238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9928 target RNA into GAM9928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35820 target RNA into GAM35820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131238 target RNA into GAM131238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1793 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1793 gene: GAM9928 target protein, GAM35820 target protein and GAM131238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9928, GAM35820 and GAM131238

GR1794 AW246433 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1794(GR1794) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1794 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1794 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1794 gene encodes GR1794 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1794 precursor RNA folds spatially, forming GR1794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1794 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1794 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180745 precursor RNA and GAM255809 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180745 RNA and GAM255809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180745 target RNA into GAM180745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255809 target RNA into GAM255809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1794 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1794 gene: GAM180745 target protein and GAM255809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180745 and GAM255809

GR1795 H01620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1795(GR1795) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1795 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1795 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1795 gene encodes GR1795 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1795 precursor RNA folds spatially, forming GR1795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1795 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1795 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16740 precursor RNA and GAM33530 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16740 RNA and GAM33530 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16740 target RNA into GAM16740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33530 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33530 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33530 target RNA into GAM33530 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1795 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1795 gene: GAM16740 target protein and GAM33530 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16740 and GAM33530

GR1796 BM991800 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1796(GR1796) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1796 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1796 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1796 gene encodes GR1796 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1796 precursor RNA folds spatially, forming GR1796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1796 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1796 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM491 precursor RNA, GAM113077 precursor RNA and GAM336031 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM491 RNA, GAM113077 RNA and GAM336031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM491 target RNA into GAM491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113077 target RNA into GAM113077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336031 target RNA into GAM336031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1796 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1796 gene: GAM491 target protein, GAM113077 target protein and GAM336031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM491, GAM113077 and GAM336031

GR1797 BF759724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1797(GR1797) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1797 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1797 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1797 gene encodes GR1797 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1797 precursor RNA folds spatially, forming GR1797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1797 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1797 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111574 precursor RNA and GAM175412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111574 RNA and GAM175412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111574 target RNA into GAM111574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175412 target RNA into GAM175412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1797 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1797 gene: GAM111574 target protein and GAM175412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111574 and GAM175412

GR1798 BI457784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1798(GR1798) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1798 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1798 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1798 gene encodes GR1798 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1798 precursor RNA folds spatially, forming GR1798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1798 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1798 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4333 precursor RNA and GAM262087 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4333 RNA and GAM262087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4333 target RNA into GAM4333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262087 target RNA into GAM262087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1798 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1798 gene: GAM4333 target protein and GAM262087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4333 and GAM262087

GR1799 BI827624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1799(GR1799) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1799 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1799 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1799 gene encodes GR1799 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1799 precursor RNA folds spatially, forming GR1799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1799 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1799 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7356 precursor RNA, GAM13184 precursor RNA and GAM122555 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7356 RNA, GAM13184 RNA and GAM122555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7356 target RNA into

GAM7356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13184 target RNA into GAM13184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122555 target RNA into GAM122555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1799 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1799 gene: GAM7356 target protein, GAM13184 target protein and GAM122555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7356, GAM13184 and GAM122555

GR1800 AA460859 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1800(GR1800) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1800 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1800 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1800 gene encodes GR1800 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1800 precursor RNA folds spatially, forming GR1800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1800 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1800 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM854 precursor RNA, GAM7647 precursor RNA and GAM92715 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM854 RNA, GAM7647 RNA and GAM92715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM854 target RNA into GAM854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7647 target RNA into GAM7647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92715 target RNA into GAM92715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1800 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1800 gene: GAM854 target protein, GAM7647 target protein and GAM92715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM854, GAM7647 and

GAM92715

GR1801 AA120947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1801(GR1801) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1801 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1801 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1801 gene encodes GR1801 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1801 precursor RNA folds spatially, forming GR1801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1801 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1801 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73842 precursor RNA and GAM304155 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73842 RNA and GAM304155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73842 target RNA into GAM73842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304155 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304155 target RNA into GAM304155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1801 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1801 gene: GAM73842 target protein and GAM304155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73842 and GAM304155

GR1802 AV730494 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1802(GR1802) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1802 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1802 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1802 gene encodes GR1802 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1802 precursor RNA folds spatially, forming GR1802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1802 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1802 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16895 precursor RNA and GAM132781 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16895 RNA and GAM132781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM16895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16895 target RNA into GAM16895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132781 target RNA into GAM132781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1802 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1802 gene: GAM16895 target protein and GAM132781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16895 and GAM132781

GR1803 BF574935 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1803(GR1803) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1803 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1803 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1803 gene encodes GR1803 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1803 precursor RNA folds spatially, forming GR1803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1803 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1803 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2588 precursor RNA and GAM48961 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2588 RNA and GAM48961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2588 target RNA into GAM2588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48961 target RNA into GAM48961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1803 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1803 gene: GAM2588 target protein and GAM48961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2588 and GAM48961

GR1804 AW750698 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1804(GR1804) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1804 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1804

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1804 gene encodes GR1804 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1804 precursor RNA folds spatially, forming GR1804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1804 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1804 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM238918 precursor RNA and GAM277738 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM238918 RNA and GAM277738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM238918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238918 target RNA into GAM238918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277738 target RNA into GAM277738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1804 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1804 gene: GAM238918 target protein and GAM277738 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM238918 and GAM277738

GR1805 BG220468 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1805(GR1805) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1805 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1805 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1805 gene encodes GR1805 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1805 precursor RNA folds spatially, forming GR1805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1805 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1805 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189556 precursor RNA and GAM287764 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189556 RNA and GAM287764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189556 target RNA into GAM189556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287764 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287764 target RNA into GAM287764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1805 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1805 gene: GAM189556 target protein and GAM287764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189556 and GAM287764

GR1806 BQ010367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1806(GR1806) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1806 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1806 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1806 gene encodes GR1806 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1806 precursor RNA folds spatially, forming GR1806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1806 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1806 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2190 precursor RNA and GAM8268 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2190 RNA and GAM8268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2190 target RNA into GAM2190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8268 target RNA into GAM8268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1806 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1806 gene: GAM2190 target protein and GAM8268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2190 and GAM8268

GR1807 AW998287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1807(GR1807) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1807 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1807 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1807 gene encodes GR1807 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1807 precursor RNA folds spatially, forming GR1807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1807 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1807 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM611 precursor RNA and GAM307692 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM611 RNA and GAM307692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM611 target RNA into GAM611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307692 target RNA into GAM307692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1807 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1807 gene: GAM611 target protein and GAM307692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM611 and GAM307692

GR1808 BF315516 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1808(GR1808) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1808 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1808 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1808 gene encodes GR1808 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1808 precursor RNA folds spatially, forming GR1808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1808 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1808 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116803 precursor RNA and GAM132580 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116803 RNA and GAM132580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116803 target RNA into GAM116803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132580 target RNA into GAM132580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1808 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1808 gene: GAM116803 target protein and GAM132580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116803 and GAM132580

GR1809 BG054851 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1809(GR1809) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1809 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1809 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1809 gene encodes GR1809 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1809 precursor RNA folds spatially, forming GR1809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1809 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1809 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4550 precursor RNA, GAM5513 precursor RNA, GAM111234 precursor RNA and GAM268475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4550 RNA, GAM5513 RNA, GAM111234 RNA and GAM268475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4550 target RNA into

GAM4550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5513 target RNA into GAM5513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111234 target RNA into GAM111234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268475 target RNA into GAM268475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1809 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1809 gene: GAM4550 target protein, GAM5513 target protein, GAM111234 target protein and GAM268475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4550, GAM5513, GAM111234 and GAM268475

GR1810 BG284268 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1810(GR1810) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1810 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1810 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1810 gene encodes GR1810 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1810 precursor RNA folds spatially, forming GR1810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1810 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1810 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM219556 precursor RNA and GAM310737 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219556 RNA and GAM310737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219556 target RNA into GAM219556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310737 target RNA into GAM310737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1810 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1810 gene: GAM219556 target protein and GAM310737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219556 and GAM310737

GR1811 BI763710 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1811(GR1811) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1811 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1811 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1811 gene encodes GR1811 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1811 precursor RNA folds spatially, forming GR1811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1811 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1811 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM250685 precursor RNA and GAM264851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM250685 RNA and GAM264851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM250685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250685 target RNA into GAM250685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264851 target RNA into GAM264851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1811 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1811 gene: GAM250685 target protein and GAM264851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM250685 and GAM264851

GR1812 BE278440 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1812(GR1812) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1812 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1812 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1812 gene encodes GR1812 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1812 precursor RNA folds spatially, forming GR1812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1812 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1812 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5139 precursor RNA, GAM152297 precursor RNA and GAM336753 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5139 RNA, GAM152297 RNA and GAM336753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5139 target RNA into GAM5139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152297 target RNA into GAM152297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336753 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336753 target RNA into GAM336753 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1812 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1812 gene: GAM5139 target protein, GAM152297 target protein and GAM336753 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5139, GAM152297 and GAM336753

GR1813 AI720510 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1813(GR1813) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1813 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1813 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1813 gene encodes GR1813 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1813 precursor RNA folds spatially, forming GR1813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1813 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1813 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM190496 precursor RNA and GAM204223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM190496 RNA and GAM204223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM190496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190496 target RNA into GAM190496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204223 target RNA into GAM204223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1813 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1813 gene: GAM190496 target protein and GAM204223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM190496 and GAM204223

GR1814 BG481287 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1814(GR1814) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1814 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1814 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1814 gene encodes GR1814 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1814 precursor RNA folds spatially, forming GR1814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1814 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1814 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4389 precursor RNA and GAM230079 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4389 RNA and GAM230079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4389 target RNA into GAM4389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230079 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230079

target RNA into GAM230079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1814 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1814 gene: GAM4389 target protein and GAM230079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4389 and GAM230079

GR1815 BM017173 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1815(GR1815) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1815 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1815 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1815 gene encodes GR1815 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1815 precursor RNA folds spatially, forming GR1815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1815 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1815 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6649 precursor RNA and GAM173030 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6649 RNA and GAM173030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6649 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6649 target RNA into GAM6649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173030 target RNA into GAM173030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1815 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1815 gene: GAM6649 target protein and GAM173030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6649 and GAM173030

GR1816 BM702365 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1816(GR1816) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1816 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1816 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1816 gene encodes GR1816 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1816 precursor RNA folds spatially, forming GR1816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1816 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1816 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1816 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2201 precursor RNA, GAM217063 precursor RNA and GAM229650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2201 RNA, GAM217063 RNA and GAM229650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2201 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2201 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2201 target RNA into GAM2201 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217063 target RNA into GAM217063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229650 target RNA into GAM229650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1816 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1816 gene: GAM2201 target protein, GAM217063 target protein and GAM229650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2201, GAM217063 and GAM229650

GR1817 BG654552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1817(GR1817) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1817 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1817 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1817 gene encodes GR1817 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1817 precursor RNA folds spatially, forming GR1817 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1817 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1817 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1817 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2286 precursor RNA, GAM97661 precursor RNA and GAM128967 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2286 RNA, GAM97661 RNA and GAM128967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2286 target RNA into GAM2286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97661

target RNA into GAM97661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128967 target RNA into GAM128967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1817 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1817 gene: GAM2286 target protein, GAM97661 target protein and GAM128967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2286, GAM97661 and GAM128967

GR1818 AI438930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1818(GR1818) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1818 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1818 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1818 gene encodes GR1818 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1818 precursor RNA folds spatially, forming GR1818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1818 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1818 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM119 precursor RNA, GAM6377 precursor RNA and GAM297697 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119 RNA, GAM6377 RNA and GAM297697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119 target RNA into GAM119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6377 target RNA into GAM6377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297697 target RNA into GAM297697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1818 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1818 gene: GAM119 target protein, GAM6377 target protein and GAM297697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119, GAM6377 and GAM297697

GR1819 AW004869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1819(GR1819) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1819 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1819 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1819 gene encodes GR1819 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1819 precursor RNA folds spatially, forming GR1819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1819 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1819 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM191312 precursor RNA and GAM233238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM191312 RNA and GAM233238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM191312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191312 target RNA into GAM191312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233238 target RNA into GAM233238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1819 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1819 gene: GAM191312 target protein and GAM233238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM191312 and GAM233238

GR1820 R46236 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1820(GR1820) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1820 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1820 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1820 gene encodes GR1820 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1820 precursor RNA folds spatially, forming GR1820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1820 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1820 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26262 precursor RNA and GAM330658 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26262 RNA and GAM330658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26262 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26262 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26262

target RNA into GAM26262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330658 target RNA into GAM330658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1820 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1820 gene: GAM26262 target protein and GAM330658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26262 and GAM330658

GR1821 BI715270 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1821(GR1821) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1821 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1821 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1821 gene encodes GR1821 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1821 precursor RNA folds spatially, forming GR1821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1821 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1821 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM2697 precursor RNA, GAM6784 precursor RNA, GAM80415 precursor RNA, GAM110165 precursor RNA and GAM170656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2697 RNA, GAM6784 RNA, GAM80415 RNA, GAM110165 RNA and GAM170656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2697 target RNA into GAM2697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6784 target RNA into GAM6784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80415 target RNA into GAM80415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110165 target RNA into GAM110165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170656 target RNA into GAM170656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1821 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1821 gene: GAM2697 target protein, GAM6784 target protein, GAM80415 target protein, GAM110165 target protein and GAM170656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2697, GAM6784, GAM80415, GAM110165 and GAM170656

GR1822 BM012779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1822(GR1822) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1822 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1822 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1822 gene encodes GR1822 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1822 precursor RNA folds spatially, forming GR1822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1822 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1822 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5689 precursor RNA and GAM257589 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5689 RNA and GAM257589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5689 target RNA into GAM5689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257589 target RNA into GAM257589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1822 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1822 gene: GAM5689 target protein and GAM257589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5689 and GAM257589

GR1823 AU143893 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1823(GR1823) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1823 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1823 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1823 gene encodes GR1823 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1823 precursor RNA folds spatially, forming GR1823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1823 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1823 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5919 precursor RNA, GAM6888 precursor RNA, GAM96549 precursor RNA and GAM210136 precursor RNA,herein schematically

represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5919 RNA, GAM6888 RNA, GAM96549 RNA and GAM210136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5919 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5919 target RNA into GAM5919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6888 target RNA into GAM6888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96549 target RNA into GAM96549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210136 target RNA into GAM210136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1823 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1823 gene: GAM5919 target protein, GAM6888 target protein, GAM96549 target protein and GAM210136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with

reference to Table 6, hereby incorporated by reference, with references to GAM5919, GAM6888, GAM96549 and GAM210136

GR1824 H43876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1824(GR1824) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1824 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1824 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1824 gene encodes GR1824 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1824 precursor RNA folds spatially, forming GR1824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1824 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1824 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4012 precursor RNA and GAM318112 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4012 RNA and GAM318112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4012 target RNA into GAM4012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM318112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318112 target RNA into GAM318112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1824 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1824 gene: GAM4012 target protein and GAM318112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4012 and GAM318112

GR1825 BI545421 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1825(GR1825) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1825 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1825 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1825 gene encodes GR1825 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1825 precursor RNA folds spatially, forming GR1825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1825 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1825 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180254 precursor RNA and GAM189611 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180254 RNA and GAM189611 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180254 target RNA into GAM180254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189611 target RNA into GAM189611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1825 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1825 gene: GAM180254 target protein and GAM189611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180254 and GAM189611

GR1826 BM151724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1826(GR1826) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1826 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1826 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1826 gene encodes GR1826 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1826 precursor RNA folds spatially, forming GR1826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1826 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1826 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2185 precursor RNA and GAM6071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2185 RNA and GAM6071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2185 target RNA into GAM2185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6071 target RNA into GAM6071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1826 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1826 gene: GAM2185 target protein and GAM6071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2185 and GAM6071

GR1827 AW170361 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1827(GR1827) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1827 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1827 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1827 gene encodes GR1827 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1827 precursor RNA folds spatially, forming GR1827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1827 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1827 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19940 precursor RNA and GAM44643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19940 RNA and GAM44643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19940 target RNA into GAM19940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44643 target RNA into GAM44643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1827 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1827 gene: GAM19940 target

protein and GAM44643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19940 and GAM44643

GR1828 AI971261 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1828(GR1828) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1828 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1828 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1828 gene encodes GR1828 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1828 precursor RNA folds spatially, forming GR1828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1828 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1828 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3823 precursor RNA and GAM294296 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3823 RNA and GAM294296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3823 target RNA into GAM3823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294296 target RNA into GAM294296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1828 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1828 gene: GAM3823 target protein and GAM294296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3823 and GAM294296

GR1829 AI890495 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1829(GR1829) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1829 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1829 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1829 gene encodes GR1829 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1829 precursor RNA folds spatially, forming GR1829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1829 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1829 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8337 precursor RNA and GAM313237 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8337 RNA and GAM313237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8337 target RNA into GAM8337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313237 target RNA into GAM313237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1829 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1829 gene: GAM8337 target protein and GAM313237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8337 and GAM313237

GR1830 BE045560 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1830(GR1830) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1830 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1830 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1830 gene encodes GR1830 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1830 precursor RNA folds spatially, forming GR1830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1830 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1830 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM94521 precursor RNA, GAM178935 precursor RNA and GAM300932 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94521 RNA, GAM178935 RNA and GAM300932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94521 target RNA into GAM94521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178935 target RNA into GAM178935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300932 target RNA into GAM300932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1830 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1830 gene: GAM94521 target protein, GAM178935 target protein and GAM300932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94521, GAM178935 and GAM300932

GR1831 BG723252 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1831(GR1831) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1831 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1831 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1831 gene encodes GR1831 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1831 precursor RNA folds spatially, forming GR1831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1831 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1831 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50325 precursor RNA and GAM89116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50325 RNA and GAM89116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50325 target RNA into GAM50325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89116 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89116 target RNA into GAM89116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1831 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1831 gene: GAM50325 target protein and GAM89116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50325 and GAM89116

GR1832 BM669890 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1832(GR1832) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1832 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1832 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1832 gene encodes GR1832 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1832 precursor RNA folds spatially, forming GR1832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1832 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1832 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5815 precursor RNA and GAM242571 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5815 RNA and GAM242571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5815 target RNA into GAM5815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242571 target RNA into GAM242571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1832 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1832 gene: GAM5815 target protein and GAM242571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5815 and GAM242571

GR1833 BF062831 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1833(GR1833) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1833 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1833 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1833 gene encodes GR1833 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1833 precursor RNA folds spatially, forming GR1833 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1833 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1833 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1833 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM150208 precursor RNA and GAM205403 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM150208 RNA and GAM205403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM150208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150208 target RNA into GAM150208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205403 target RNA into GAM205403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1833 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1833 gene: GAM150208 target protein and GAM205403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM150208 and GAM205403

GR1834 BE297095 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1834(GR1834) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1834 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1834 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1834 gene encodes GR1834 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1834 precursor RNA folds spatially, forming GR1834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1834 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1834 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1480 precursor RNA, GAM2415 precursor RNA, GAM7339 precursor RNA and GAM72850 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1480 RNA, GAM2415 RNA, GAM7339 RNA and GAM72850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1480 target RNA into GAM1480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2415 target RNA into GAM2415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7339 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7339 target RNA into GAM7339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72850 target RNA into GAM72850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1834 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1834 gene: GAM1480 target protein, GAM2415 target protein, GAM7339 target protein and GAM72850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1480, GAM2415, GAM7339 and GAM72850

GR1835 AW198093 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1835(GR1835) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1835 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1835 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1835 gene encodes GR1835 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1835 precursor RNA folds spatially, forming GR1835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1835 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1835 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM55288 precursor RNA and GAM242770 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55288 RNA and GAM242770 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55288 target RNA into GAM55288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242770 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242770 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242770 target RNA into GAM242770 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1835 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1835 gene: GAM55288 target protein and GAM242770 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55288 and GAM242770

GR1836 BI856610 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1836(GR1836) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1836 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1836 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1836 gene encodes GR1836 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1836 precursor RNA folds spatially, forming GR1836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1836 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1836 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5494 precursor RNA, GAM5893 precursor RNA and GAM50450 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5494 RNA, GAM5893 RNA and GAM50450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5494 target RNA into GAM5494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5893 target RNA into GAM5893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50450 target RNA into GAM50450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1836 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1836 gene: GAM5494 target protein, GAM5893 target protein and GAM50450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5494, GAM5893 and GAM50450

GR1837 BE569145 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1837(GR1837) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1837 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1837 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1837 gene encodes GR1837 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1837 precursor RNA folds spatially, forming GR1837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1837 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1837 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7979 precursor RNA and GAM148788 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7979 RNA and GAM148788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7979 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7979 target RNA into GAM7979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148788 target RNA into GAM148788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1837 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1837 gene: GAM7979 target protein and GAM148788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7979 and GAM148788

GR1838 AI499243 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1838(GR1838) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1838 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1838 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1838 gene encodes GR1838 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1838 precursor RNA folds spatially, forming GR1838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1838 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1838 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3552 precursor RNA and GAM227107 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3552 RNA and GAM227107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3552 target RNA into GAM3552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227107 target RNA into GAM227107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1838 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1838 gene: GAM3552 target protein and GAM227107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3552 and GAM227107

GR1839 AW571605 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1839(GR1839) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1839 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1839 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1839 gene encodes GR1839 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1839 precursor RNA folds spatially, forming GR1839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1839 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1839 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189427 precursor RNA and GAM269277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189427 RNA and GAM269277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189427 target RNA into GAM189427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269277 target RNA into GAM269277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1839 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1839 gene: GAM189427 target protein and GAM269277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189427 and GAM269277

GR1840 BG953562 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1840(GR1840) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1840 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1840 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1840 gene encodes GR1840 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1840 precursor RNA folds spatially, forming GR1840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1840 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1840 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM11132 precursor RNA and GAM313835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11132 RNA and GAM313835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11132 target RNA into GAM11132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313835

target RNA into GAM313835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1840 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1840 gene: GAM11132 target protein and GAM313835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11132 and GAM313835

GR1841 AA922981 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1841(GR1841) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1841 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1841 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1841 gene encodes GR1841 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1841 precursor RNA folds spatially, forming GR1841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1841 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1841 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10848 precursor RNA and GAM93514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10848 RNA and GAM93514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10848 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10848 target RNA into GAM10848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93514 target RNA into GAM93514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1841 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1841 gene: GAM10848 target protein and GAM93514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10848 and GAM93514

GR1842 AV722795 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1842(GR1842) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1842 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1842 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1842 gene encodes GR1842 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1842 precursor RNA folds spatially, forming GR1842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1842 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1842 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1842 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM469 precursor RNA, GAM5765 precursor RNA and GAM101024 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM469 RNA, GAM5765 RNA and GAM101024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM469 target RNA into GAM469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5765 target RNA into GAM5765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101024 target RNA into GAM101024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1842 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1842 gene: GAM469 target protein, GAM5765 target protein and GAM101024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM469, GAM5765 and GAM101024

GR1843 T50031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1843(GR1843) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1843 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1843 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1843 gene encodes GR1843 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1843 precursor RNA folds spatially, forming GR1843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1843 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1843 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2127 precursor RNA and GAM335540 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2127 RNA and GAM335540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2127 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2127 target RNA into GAM2127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335540 target RNA into GAM335540 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1843 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1843 gene: GAM2127 target protein and GAM335540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2127 and GAM335540

GR1844 BE250113 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1844(GR1844) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1844 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1844 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1844 gene encodes GR1844 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1844 precursor RNA folds spatially, forming GR1844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1844 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1844 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5338 precursor RNA and GAM101112 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5338 RNA and GAM101112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5338 target RNA into GAM5338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101112 target RNA into GAM101112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1844 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1844 gene: GAM5338 target protein and GAM101112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5338 and GAM101112

GR1845 BE882863 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1845(GR1845) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1845 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1845 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1845 gene encodes GR1845 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1845 precursor RNA folds spatially, forming GR1845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1845 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1845 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM5132 precursor RNA and GAM5482 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5132 RNA and GAM5482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5132 target RNA into GAM5132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5482 target RNA into GAM5482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1845 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1845 gene: GAM5132 target protein and GAM5482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5132 and GAM5482

GR1846 BG929234 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1846(GR1846) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1846 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1846 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1846 gene encodes GR1846 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1846 precursor RNA folds spatially, forming GR1846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1846 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1846 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7372 precursor RNA and GAM91047 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7372 RNA and GAM91047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7372 target RNA into GAM7372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91047 target RNA into GAM91047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1846 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1846 gene: GAM7372 target protein and GAM91047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7372 and GAM91047

GR1847 BG257773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1847(GR1847) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1847 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1847 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1847 gene encodes GR1847 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1847 precursor RNA folds spatially, forming GR1847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1847 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1847 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5219 precursor RNA and GAM307997 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5219 RNA and GAM307997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5219 target RNA into GAM5219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307997 target RNA into GAM307997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1847 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1847 gene: GAM5219 target protein and GAM307997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5219 and GAM307997

GR1848 BI254392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1848(GR1848) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1848 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1848 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1848 gene encodes GR1848 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1848 precursor RNA folds spatially, forming GR1848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1848 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1848 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM95614 precursor RNA, GAM111444 precursor RNA and GAM285714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95614 RNA, GAM111444 RNA and GAM285714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95614 target RNA into GAM95614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111444 target RNA into GAM111444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285714 target RNA into GAM285714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1848 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1848 gene: GAM95614 target protein, GAM111444 target protein and GAM285714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95614, GAM111444 and GAM285714

GR1849 AA775297 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1849(GR1849) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1849 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1849 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1849 gene encodes GR1849 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1849 precursor RNA folds spatially, forming GR1849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1849 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1849 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31878 precursor RNA and GAM174911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31878 RNA and GAM174911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31878 target RNA into GAM31878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174911 target RNA into GAM174911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1849 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1849 gene: GAM31878 target protein and GAM174911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31878 and GAM174911

GR1850 AI744323 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1850(GR1850) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1850 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1850 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1850 gene encodes GR1850 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1850 precursor RNA folds spatially, forming GR1850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1850 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1850 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2852 precursor RNA and GAM176902 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2852 RNA and GAM176902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2852 target RNA into GAM2852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176902

target RNA into GAM176902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1850 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1850 gene: GAM2852 target protein and GAM176902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2852 and GAM176902

GR1851 BE536177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1851(GR1851) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1851 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1851 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1851 gene encodes GR1851 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1851 precursor RNA folds spatially, forming GR1851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1851 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1851 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2593 precursor RNA, GAM5107 precursor RNA and GAM96657 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2593 RNA, GAM5107 RNA and GAM96657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2593 target RNA into GAM2593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5107 target RNA into GAM5107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96657 target RNA into GAM96657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1851 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1851 gene: GAM2593 target protein, GAM5107 target protein and GAM96657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2593, GAM5107 and GAM96657

GR1852 BE314366 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1852(GR1852) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1852 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1852 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1852 gene encodes GR1852 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1852 precursor RNA folds spatially, forming GR1852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1852 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1852 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4263 precursor RNA, GAM7469 precursor RNA, GAM183903 precursor RNA and GAM320616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4263 RNA, GAM7469 RNA, GAM183903 RNA and GAM320616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4263 target RNA into GAM4263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7469 target RNA into GAM7469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183903 target RNA into GAM183903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320616 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320616 target RNA into GAM320616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1852 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1852 gene: GAM4263 target protein, GAM7469 target protein, GAM183903 target protein and GAM320616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4263, GAM7469, GAM183903 and GAM320616

GR1853 AI148462 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1853(GR1853) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1853 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1853 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1853 gene encodes GR1853 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1853 precursor RNA folds spatially, forming GR1853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1853 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1853 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM195324 precursor RNA and GAM295019 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM195324 RNA and GAM295019 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM195324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195324 target RNA into GAM195324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295019 target RNA into GAM295019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1853 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1853 gene: GAM195324 target protein and GAM295019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM195324 and GAM295019

GR1854 AW953501 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1854(GR1854) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1854 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1854 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1854 gene encodes GR1854 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1854 precursor RNA folds spatially, forming GR1854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1854 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1854 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2541 precursor RNA and GAM154620 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2541 RNA and GAM154620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2541 target RNA into GAM2541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154620 target RNA into GAM154620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1854 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1854 gene: GAM2541 target protein and GAM154620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2541 and GAM154620

GR1855 BF363698 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1855(GR1855) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1855 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1855 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1855 gene encodes GR1855 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1855 precursor RNA folds spatially, forming GR1855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1855 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1855 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM44019 precursor RNA and GAM150001 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44019 RNA and GAM150001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44019 target RNA into GAM44019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150001 target RNA into GAM150001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1855 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1855 gene: GAM44019 target

protein and GAM150001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44019 and GAM150001

GR1856 BG773997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1856(GR1856) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1856 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1856 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1856 gene encodes GR1856 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1856 precursor RNA folds spatially, forming GR1856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1856 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1856 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3644 precursor RNA and GAM160353 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3644 RNA and GAM160353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3644 target RNA into GAM3644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160353 target RNA into GAM160353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1856 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1856 gene: GAM3644 target protein and GAM160353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3644 and GAM160353

GR1857 BF203456 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1857(GR1857) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1857 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1857 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1857 gene encodes GR1857 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1857 precursor RNA folds spatially, forming GR1857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1857 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1857 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5752 precursor RNA and GAM106163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5752 RNA and GAM106163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5752 target RNA into GAM5752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106163 target RNA into GAM106163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1857 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1857 gene: GAM5752 target protein and GAM106163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5752 and GAM106163

GR1858 BG617731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1858(GR1858) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1858 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1858 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1858 gene encodes GR1858 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1858 precursor RNA folds spatially, forming GR1858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1858 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1858 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1265 precursor RNA, GAM184463 precursor RNA and GAM269869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1265 RNA, GAM184463 RNA and GAM269869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1265 target RNA into GAM1265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184463 target RNA into GAM184463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269869 target RNA into GAM269869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1858 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1858 gene: GAM1265 target protein, GAM184463 target protein and GAM269869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1265, GAM184463 and GAM269869

GR1859 BI604080 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1859(GR1859) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1859 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1859 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1859 gene encodes GR1859 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1859 precursor RNA folds spatially, forming GR1859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1859 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1859 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4556 precursor RNA, GAM12062 precursor RNA and GAM312901 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4556 RNA, GAM12062 RNA and GAM312901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4556 target RNA into GAM4556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM12062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12062 target RNA into GAM12062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312901 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312901 target RNA into GAM312901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1859 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1859 gene: GAM4556 target protein, GAM12062 target protein and GAM312901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4556, GAM12062 and GAM312901

GR1860 R13355 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1860(GR1860) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1860 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1860 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1860 gene encodes GR1860 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1860 precursor RNA folds spatially, forming GR1860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1860 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1860 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM939 precursor RNA and GAM3483 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM939 RNA and GAM3483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM939 target RNA into GAM939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3483 target RNA into GAM3483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1860 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1860 gene: GAM939 target protein and GAM3483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM939 and GAM3483

GR1861 AA659303 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1861(GR1861) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1861 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1861 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1861 gene encodes GR1861 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1861 precursor RNA folds spatially, forming GR1861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1861 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1861 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6910 precursor RNA, GAM30010 precursor RNA and GAM267823 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6910 RNA, GAM30010 RNA and GAM267823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6910 target RNA into GAM6910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30010 target RNA into GAM30010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267823

target RNA into GAM267823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1861 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1861 gene: GAM6910 target protein, GAM30010 target protein and GAM267823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6910, GAM30010 and GAM267823

GR1862 BM980572 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1862(GR1862) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1862 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1862 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1862 gene encodes GR1862 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1862 precursor RNA folds spatially, forming GR1862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1862 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1862 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1360 precursor RNA, GAM118141 precursor RNA and GAM218154 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1360 RNA, GAM118141 RNA and GAM218154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1360 target RNA into GAM1360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118141 target RNA into GAM118141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218154 target RNA into GAM218154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1862 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1862 gene: GAM1360 target protein, GAM118141 target protein and GAM218154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1360, GAM118141 and GAM218154

GR1863 BI057726 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1863(GR1863) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1863 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1863 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1863 gene encodes GR1863 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1863 precursor RNA folds spatially, forming GR1863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1863 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1863 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3639 precursor RNA and GAM281459 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3639 RNA and GAM281459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3639 target RNA into GAM3639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281459 target RNA into GAM281459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1863 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1863 gene: GAM3639 target protein and GAM281459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3639 and GAM281459

GR1864 AA903584 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1864(GR1864) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1864 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1864 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1864 gene encodes GR1864 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1864 precursor RNA folds spatially, forming GR1864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1864 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1864 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM148 precursor RNA, GAM1501 precursor RNA and GAM319751 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM148 RNA, GAM1501 RNA and GAM319751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148 target RNA into GAM148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1501 target RNA into GAM1501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319751 target RNA into GAM319751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1864 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1864 gene: GAM148 target protein, GAM1501 target protein and GAM319751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM148, GAM1501 and GAM319751

GR1865 AI671510 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1865(GR1865) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1865 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1865 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1865 gene encodes GR1865 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1865 precursor RNA folds spatially, forming GR1865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1865 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1865 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208628 precursor RNA and GAM335744 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208628 RNA and GAM335744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208628 target RNA into GAM208628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335744 target RNA into GAM335744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1865 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1865 gene: GAM208628 target protein and GAM335744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208628 and GAM335744

GR1866 BF570858 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1866(GR1866) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1866 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1866 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1866 gene encodes GR1866 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1866 precursor RNA folds spatially, forming GR1866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1866 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1866 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26439 precursor RNA and GAM255691 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26439 RNA and GAM255691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26439 target RNA into GAM26439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255691 target RNA into GAM255691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1866 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1866 gene: GAM26439 target protein and GAM255691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26439 and GAM255691

GR1867 AW367299 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1867(GR1867) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1867 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1867 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1867 gene encodes GR1867 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1867 precursor RNA folds spatially, forming GR1867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1867 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1867 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6049 precursor RNA, GAM152212 precursor RNA and GAM332843 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6049 RNA, GAM152212 RNA and GAM332843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6049 target RNA into GAM6049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152212

target RNA into GAM152212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332843 target RNA into GAM332843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1867 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1867 gene: GAM6049 target protein, GAM152212 target protein and GAM332843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6049, GAM152212 and GAM332843

GR1868 BF092221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1868(GR1868) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1868 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1868 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1868 gene encodes GR1868 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1868 precursor RNA folds spatially, forming GR1868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1868 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1868 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4939 precursor RNA, GAM131038 precursor RNA and GAM321516 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4939 RNA, GAM131038 RNA and GAM321516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4939 target RNA into GAM4939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131038 target RNA into GAM131038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321516 target RNA into GAM321516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1868 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1868 gene: GAM4939 target protein, GAM131038 target protein and GAM321516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4939, GAM131038 and GAM321516

GR1869 AA450158 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1869(GR1869) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1869 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1869 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1869 gene encodes GR1869 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1869 precursor RNA folds spatially, forming GR1869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1869 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1869 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8397 precursor RNA and GAM219408 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8397 RNA and GAM219408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8397 target RNA into GAM8397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219408 target RNA into GAM219408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1869 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1869 gene: GAM8397 target protein and GAM219408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8397 and GAM219408

GR1870 BF742694 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1870(GR1870) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1870 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1870 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1870 gene encodes GR1870 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1870 precursor RNA folds spatially, forming GR1870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1870 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1870 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM66844 precursor RNA, GAM115691 precursor RNA and GAM132590 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM66844 RNA, GAM115691 RNA and GAM132590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM66844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66844 target RNA into GAM66844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115691 target RNA into GAM115691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132590 target RNA into GAM132590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1870 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1870 gene: GAM66844 target protein, GAM115691 target protein and GAM132590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM66844, GAM115691 and GAM132590

GR1871 BG717468 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1871(GR1871) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1871 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1871 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1871 gene encodes GR1871 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1871 precursor RNA folds spatially, forming GR1871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1871 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1871 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24184 precursor RNA, GAM35324 precursor RNA and GAM230962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24184 RNA, GAM35324 RNA and GAM230962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24184 target RNA into GAM24184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35324 target RNA into GAM35324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230962 target RNA into GAM230962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1871 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1871 gene: GAM24184 target protein, GAM35324 target protein and GAM230962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM24184, GAM35324 and GAM230962

GR1872 F27628 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1872(GR1872) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1872 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1872 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1872 gene encodes GR1872 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1872 precursor RNA folds spatially, forming GR1872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1872 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1872 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6482 precursor RNA and GAM258842 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6482 RNA and GAM258842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6482 target RNA into GAM6482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM258842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258842 target RNA into GAM258842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1872 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1872 gene: GAM6482 target protein and GAM258842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6482 and GAM258842

GR1873 BG500328 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1873(GR1873) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1873 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1873 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1873 gene encodes GR1873 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1873 precursor RNA folds spatially, forming GR1873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1873 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1873 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM52859 precursor RNA and GAM332542 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52859 RNA and GAM332542 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52859 target RNA into GAM52859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332542 target RNA into GAM332542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1873 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1873 gene: GAM52859 target protein and GAM332542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52859 and GAM332542

GR1874 AA554380 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1874(GR1874) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1874 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1874 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1874 gene encodes GR1874 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1874 precursor RNA folds spatially, forming GR1874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1874 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1874 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2575 precursor RNA, GAM4200 precursor RNA and GAM35527 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2575 RNA, GAM4200 RNA and GAM35527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2575 target RNA into GAM2575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4200 target RNA into GAM4200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35527 target RNA into GAM35527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1874 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1874 gene: GAM2575 target protein, GAM4200 target protein and GAM35527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2575, GAM4200 and

GAM35527

GR1875 BF207757 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1875(GR1875) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1875 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1875 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1875 gene encodes GR1875 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1875 precursor RNA folds spatially, forming GR1875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1875 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1875 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7164 precursor RNA and GAM141052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7164 RNA and GAM141052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7164 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7164 target RNA into GAM7164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141052 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141052 target RNA into GAM141052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1875 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1875 gene: GAM7164 target protein and GAM141052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7164 and GAM141052

GR1876 M78749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1876(GR1876) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1876 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1876 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1876 gene encodes GR1876 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1876 precursor RNA folds spatially, forming GR1876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1876 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1876 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM45456 precursor RNA and GAM191793 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45456 RNA and GAM191793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM45456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45456 target RNA into GAM45456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191793 target RNA into GAM191793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1876 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1876 gene: GAM45456 target protein and GAM191793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45456 and GAM191793

GR1877 AI817625 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1877(GR1877) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1877 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1877 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1877 gene encodes GR1877 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1877 precursor RNA folds spatially, forming GR1877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1877 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1877 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM244 precursor RNA and GAM323387 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM244 RNA and GAM323387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244 target RNA into GAM244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323387 target RNA into GAM323387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1877 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1877 gene: GAM244 target protein and GAM323387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM244 and GAM323387

GR1878 BM753088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1878(GR1878) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1878 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1878

gene was detected is described hereinabove with reference to Figs. 8-18.

GR1878 gene encodes GR1878 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1878 precursor RNA folds spatially, forming GR1878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1878 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1878 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM38604 precursor RNA and GAM247030 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38604 RNA and GAM247030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38604 target RNA into GAM38604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247030 target RNA into GAM247030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1878 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1878 gene: GAM38604 target protein and GAM247030 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM38604 and GAM247030

GR1879 BE080650 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1879(GR1879) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1879 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1879 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1879 gene encodes GR1879 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1879 precursor RNA folds spatially, forming GR1879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1879 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1879 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22234 precursor RNA and GAM234651 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22234 RNA and GAM234651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22234 target RNA into GAM22234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234651 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234651 target RNA into GAM234651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1879 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1879 gene: GAM22234 target protein and GAM234651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22234 and GAM234651

GR1880 AA293218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1880(GR1880) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1880 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1880 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1880 gene encodes GR1880 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1880 precursor RNA folds spatially, forming GR1880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1880 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1880 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3877 precursor RNA and GAM312863 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3877 RNA and GAM312863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3877 target RNA into GAM3877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312863 target RNA into GAM312863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1880 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1880 gene: GAM3877 target protein and GAM312863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3877 and GAM312863

GR1881 R88651 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1881(GR1881) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1881 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1881 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1881 gene encodes GR1881 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1881 precursor RNA folds spatially, forming GR1881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1881 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1881 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3642 precursor RNA and GAM183766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3642 RNA and GAM183766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3642 target RNA into GAM3642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183766 target RNA into GAM183766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1881 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1881 gene: GAM3642 target protein and GAM183766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3642 and GAM183766

GR1882 BF986169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1882(GR1882) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1882 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1882 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1882 gene encodes GR1882 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1882 precursor RNA folds spatially, forming GR1882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1882 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1882 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3764 precursor RNA, GAM38734 precursor RNA and GAM161950 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3764 RNA, GAM38734 RNA and GAM161950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3764 target RNA into GAM3764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38734 target RNA into GAM38734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161950 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161950 target RNA into GAM161950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1882 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1882 gene: GAM3764 target protein, GAM38734 target protein and GAM161950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3764, GAM38734 and GAM161950

GR1883 BG177598 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1883(GR1883) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1883 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1883 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1883 gene encodes GR1883 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1883 precursor RNA folds spatially, forming GR1883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1883 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1883 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM149759 precursor RNA, GAM206795 precursor RNA and GAM271035 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM149759 RNA, GAM206795 RNA and GAM271035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM149759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149759 target RNA into GAM149759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206795 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206795 target RNA into GAM206795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271035 target RNA into GAM271035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1883 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1883 gene: GAM149759 target protein, GAM206795 target protein and GAM271035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM149759, GAM206795 and GAM271035

GR1884 BG707911 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1884(GR1884) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1884 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1884 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1884 gene encodes GR1884 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1884 precursor RNA folds spatially, forming GR1884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1884 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1884 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM36474 precursor RNA, GAM191505 precursor RNA and GAM219598 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36474 RNA, GAM191505 RNA and GAM219598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36474 target RNA into GAM36474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191505 target RNA into GAM191505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219598 target RNA into GAM219598 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1884 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1884 gene: GAM36474 target protein, GAM191505 target protein and GAM219598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36474, GAM191505 and GAM219598

GR1885 AV658181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1885(GR1885) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1885 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1885 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1885 gene encodes GR1885 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1885 precursor RNA folds spatially, forming GR1885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1885 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1885 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM28958 precursor RNA and GAM228110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28958 RNA and GAM228110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM28958 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28958 target RNA into GAM28958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228110 target RNA into GAM228110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1885 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1885 gene: GAM28958 target protein and GAM228110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28958 and GAM228110

GR1886 BI912591 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1886(GR1886) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1886 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1886 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1886 gene encodes GR1886 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1886 precursor RNA folds spatially, forming GR1886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1886 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1886 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1886 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4086 precursor RNA and GAM5289 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4086 RNA and GAM5289 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4086 target RNA into GAM4086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5289 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5289 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5289 target RNA into GAM5289 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1886 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1886 gene: GAM4086 target protein and GAM5289 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4086 and GAM5289

GR1887 BQ052307 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1887(GR1887) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1887 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1887 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1887 gene encodes GR1887 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1887 precursor RNA folds spatially, forming GR1887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1887 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1887 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1740 precursor RNA, GAM53507 precursor RNA and GAM194277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1740 RNA, GAM53507 RNA and GAM194277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1740 target RNA into GAM1740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53507 target RNA into GAM53507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194277 target RNA into GAM194277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1887 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1887 gene: GAM1740 target protein, GAM53507 target protein and GAM194277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1740, GAM53507 and GAM194277

GR1888 AI634359 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1888(GR1888) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1888 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1888 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1888 gene encodes GR1888 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1888 precursor RNA folds spatially, forming GR1888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1888 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1888 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8216 precursor RNA and GAM280598 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8216 RNA and GAM280598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8216 target RNA into GAM8216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280598 target RNA into GAM280598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1888 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1888 gene: GAM8216 target protein and GAM280598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8216 and GAM280598

GR1889 BM914091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1889(GR1889) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1889 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1889 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1889 gene encodes GR1889 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1889 precursor RNA folds spatially, forming GR1889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1889 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1889 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM1991 precursor RNA, GAM5175 precursor RNA and GAM294453 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1991 RNA, GAM5175 RNA and GAM294453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1991 target RNA into GAM1991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5175 target RNA into GAM5175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294453 target RNA into GAM294453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1889 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1889 gene: GAM1991 target protein, GAM5175 target protein and GAM294453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1991, GAM5175 and GAM294453

GR1890 BG874328 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1890(GR1890) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1890 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1890 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1890 gene encodes GR1890 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1890 precursor RNA folds spatially, forming GR1890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1890 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1890 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7516 precursor RNA, GAM7773 precursor RNA and GAM148221 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7516 RNA, GAM7773 RNA and GAM148221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7516 target RNA into GAM7516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7773 target RNA into GAM7773 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148221 target RNA into GAM148221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1890 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1890 gene: GAM7516 target protein, GAM7773 target protein and GAM148221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7516, GAM7773 and GAM148221

GR1891 AW081135 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1891(GR1891) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1891 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1891 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1891 gene encodes GR1891 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1891 precursor RNA folds spatially, forming GR1891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1891 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1891 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM59927 precursor RNA, GAM223223 precursor RNA and GAM307407 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59927 RNA, GAM223223 RNA and GAM307407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59927 target RNA into GAM59927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223223 target RNA into GAM223223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307407 target RNA into GAM307407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1891 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1891 gene: GAM59927 target protein, GAM223223 target protein and GAM307407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59927, GAM223223 and GAM307407

GR1892 AI651603 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1892(GR1892) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1892 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1892 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1892 gene encodes GR1892 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1892 precursor RNA folds spatially, forming GR1892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1892 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1892 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM50697 precursor RNA, GAM105357 precursor RNA and GAM177672 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50697 RNA, GAM105357 RNA and GAM177672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50697 target RNA into GAM50697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105357 target RNA into GAM105357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177672 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177672 target RNA into GAM177672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1892 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1892 gene: GAM50697 target protein, GAM105357 target protein and GAM177672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50697, GAM105357 and GAM177672

GR1893 R76379 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1893(GR1893) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1893 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1893 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1893 gene encodes GR1893 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1893 precursor RNA folds spatially, forming GR1893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1893 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1893 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM250172 precursor RNA and GAM301056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM250172 RNA and GAM301056 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM250172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250172 target RNA into GAM250172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301056 target RNA into GAM301056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1893 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1893 gene: GAM250172 target protein and GAM301056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM250172 and GAM301056

GR1894 BM744062 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1894(GR1894) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1894 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1894 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1894 gene encodes GR1894 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1894 precursor RNA folds spatially, forming GR1894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1894 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1894 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6820 precursor RNA and GAM103331 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6820 RNA and GAM103331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6820 target RNA into GAM6820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103331 target RNA into GAM103331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1894 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1894 gene: GAM6820 target protein and GAM103331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6820 and GAM103331

GR1895 AW388849 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1895(GR1895) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1895 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1895 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1895 gene encodes GR1895 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1895 precursor RNA folds spatially, forming GR1895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1895 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1895 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM866 precursor RNA and GAM251771 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM866 RNA and GAM251771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM866 target RNA into GAM866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251771 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251771 target RNA into GAM251771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1895 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1895 gene: GAM866 target

protein and GAM251771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM866 and GAM251771

GR1896 AI026952 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1896(GR1896) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1896 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1896 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1896 gene encodes GR1896 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1896 precursor RNA folds spatially, forming GR1896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1896 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1896 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM139577 precursor RNA and GAM281099 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM139577 RNA and GAM281099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM139577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139577 target RNA into GAM139577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281099 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281099 target RNA into GAM281099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1896 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1896 gene: GAM139577 target protein and GAM281099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM139577 and GAM281099

GR1897 BG703697 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1897(GR1897) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1897 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1897 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1897 gene encodes GR1897 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1897 precursor RNA folds spatially, forming GR1897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1897 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1897 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1455 precursor RNA and GAM168047 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1455 RNA and GAM168047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1455 target RNA into GAM1455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168047 target RNA into GAM168047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1897 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1897 gene: GAM1455 target protein and GAM168047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1455 and GAM168047

GR1898 AW105244 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1898(GR1898) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1898 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1898 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1898 gene encodes GR1898 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1898 precursor RNA folds spatially, forming GR1898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1898 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1898 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10662 precursor RNA and GAM38131 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10662 RNA and GAM38131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10662 target RNA into GAM10662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38131 target RNA into GAM38131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1898 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1898 gene: GAM10662 target protein and GAM38131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10662 and GAM38131

GR1899 AW853739 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1899(GR1899) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1899 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1899 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1899 gene encodes GR1899 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1899 precursor RNA folds spatially, forming GR1899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1899 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1899 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM229671 precursor RNA and GAM269980 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM229671 RNA and GAM269980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM229671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229671 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229671 target RNA into GAM229671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269980 target RNA into GAM269980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1899 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1899 gene: GAM229671 target protein and GAM269980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM229671 and GAM269980

GR1900 BF846607 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1900(GR1900) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1900 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1900 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1900 gene encodes GR1900 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1900 precursor RNA folds spatially, forming GR1900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1900 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1900 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4524 precursor RNA and GAM127522 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4524 RNA and GAM127522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4524 target RNA into

GAM4524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127522 target RNA into GAM127522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1900 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1900 gene: GAM4524 target protein and GAM127522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4524 and GAM127522

GR1901 BG495123 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1901(GR1901) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1901 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1901 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1901 gene encodes GR1901 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1901 precursor RNA folds spatially, forming GR1901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1901 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1901 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM196284 precursor RNA and GAM258425 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196284 RNA and GAM258425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196284 target RNA into GAM196284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258425 target RNA into GAM258425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1901 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1901 gene: GAM196284 target protein and GAM258425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196284 and GAM258425

GR1902 AA745502 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1902(GR1902) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1902 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1902 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1902 gene encodes GR1902 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1902 precursor RNA folds spatially, forming GR1902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1902 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1902 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253622 precursor RNA and GAM271937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253622 RNA and GAM271937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253622 target RNA into GAM253622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271937 target RNA into GAM271937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1902 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1902 gene: GAM253622 target protein and GAM271937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253622 and GAM271937

GR1903 BI196722 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1903(GR1903) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1903 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1903 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1903 gene encodes GR1903 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1903 precursor RNA folds spatially, forming GR1903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1903 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1903 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM271028 precursor RNA and GAM285328 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM271028 RNA and GAM285328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM271028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271028 target RNA into GAM271028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285328 target RNA into GAM285328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1903 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1903 gene: GAM271028 target protein and GAM285328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM271028 and GAM285328

GR1904 H78119 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1904(GR1904) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1904 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1904 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1904 gene encodes GR1904 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1904 precursor RNA folds spatially, forming GR1904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1904 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1904 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3459 precursor RNA and GAM217069 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3459 RNA and GAM217069 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3459 target RNA into GAM3459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217069 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217069 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217069 target RNA into GAM217069 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1904 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1904 gene: GAM3459 target protein and GAM217069 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3459 and GAM217069

GR1905 BF821072 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1905(GR1905) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1905 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1905 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1905 gene encodes GR1905 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1905 precursor RNA folds spatially, forming GR1905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1905 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1905 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10755 precursor RNA and GAM235512 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10755 RNA and GAM235512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10755 target RNA into GAM10755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235512 target RNA into GAM235512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1905 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1905 gene: GAM10755 target protein and GAM235512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10755 and GAM235512

GR1906 AW150169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1906(GR1906) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1906 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1906 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1906 gene encodes GR1906 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1906 precursor RNA folds spatially, forming GR1906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1906 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1906 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7823 precursor RNA, GAM77131 precursor RNA, GAM127438 precursor RNA and GAM279164 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7823 RNA, GAM77131 RNA, GAM127438 RNA and GAM279164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7823 target RNA into GAM7823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77131 target RNA into GAM77131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127438 target RNA into GAM127438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279164 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279164 target RNA into GAM279164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1906 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1906 gene: GAM7823 target protein, GAM77131 target protein, GAM127438 target protein and GAM279164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7823, GAM77131, GAM127438 and GAM279164

GR1907 BI549025 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1907(GR1907) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1907 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1907 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1907 gene encodes GR1907 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1907 precursor RNA folds spatially, forming GR1907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1907 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1907 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM77132 precursor RNA, GAM97449 precursor RNA, GAM219373 precursor RNA and GAM239134 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM77132 RNA, GAM97449 RNA, GAM219373 RNA and GAM239134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77132 target RNA into GAM77132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97449 target RNA into GAM97449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219373 target RNA into GAM219373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239134 target RNA into GAM239134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1907 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1907 gene: GAM77132 target protein, GAM97449 target protein, GAM219373 target protein and GAM239134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77132, GAM97449, GAM219373 and GAM239134

GR1908 BF869405 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1908(GR1908) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1908 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1908 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1908 gene encodes GR1908 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1908 precursor RNA folds spatially, forming GR1908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1908 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1908 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4234 precursor RNA, GAM119727 precursor RNA and GAM265987 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4234 RNA, GAM119727 RNA and GAM265987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4234 target RNA into GAM4234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119727 target RNA into GAM119727 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265987 target RNA into GAM265987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1908 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1908 gene: GAM4234 target protein, GAM119727 target protein and GAM265987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4234, GAM119727 and GAM265987

GR1909 BF980137 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1909(GR1909) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1909 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1909 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1909 gene encodes GR1909 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1909 precursor RNA folds spatially, forming GR1909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1909 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1909 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6918 precursor RNA and GAM109279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6918 RNA and GAM109279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6918 target RNA into GAM6918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109279 target RNA into GAM109279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1909 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1909 gene: GAM6918 target protein and GAM109279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6918 and GAM109279

GR1910 AW836279 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1910(GR1910) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1910 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1910 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1910 gene encodes GR1910 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1910 precursor RNA folds spatially, forming GR1910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1910 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1910 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM138568 precursor RNA, GAM201241 precursor RNA and GAM225008 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM138568 RNA, GAM201241 RNA and GAM225008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM138568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138568 target RNA into GAM138568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201241 target RNA into GAM201241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225008 target RNA into GAM225008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1910 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1910 gene: GAM138568 target

protein, GAM201241 target protein and GAM225008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM138568, GAM201241 and GAM225008

GR1911 BQ071813 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1911(GR1911) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1911 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1911 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1911 gene encodes GR1911 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1911 precursor RNA folds spatially, forming GR1911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1911 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1911 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8597 precursor RNA and GAM307677 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8597 RNA and GAM307677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8597 target RNA into GAM8597 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307677 target RNA into GAM307677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1911 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1911 gene: GAM8597 target protein and GAM307677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8597 and GAM307677

GR1912 BG167176 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1912(GR1912) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1912 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1912 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1912 gene encodes GR1912 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1912 precursor RNA folds spatially, forming GR1912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1912 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1912 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM232042 precursor RNA and GAM323339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM232042 RNA and GAM323339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM232042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232042 target RNA into GAM232042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323339 target RNA into GAM323339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1912 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1912 gene: GAM232042 target protein and GAM323339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM232042 and GAM323339

GR1913 BF805191 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1913(GR1913) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1913 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1913 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1913 gene encodes GR1913 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1913 precursor RNA folds spatially, forming GR1913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1913 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1913 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6800 precursor RNA and GAM253896 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6800 RNA and GAM253896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6800 target RNA into GAM6800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253896 target RNA into GAM253896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1913 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1913 gene: GAM6800 target protein and GAM253896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6800 and GAM253896

GR1914 AU155996 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1914(GR1914) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR1914 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1914 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1914 gene encodes GR1914 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1914 precursor RNA folds spatially, forming GR1914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1914 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1914 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12730 precursor RNA and GAM162642 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12730 RNA and GAM162642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12730 target RNA into GAM12730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162642 target RNA into GAM162642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1914 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1914 gene: GAM12730 target protein and GAM162642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12730 and GAM162642

GR1915 BM726548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1915(GR1915) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1915 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1915 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1915 gene encodes GR1915 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1915 precursor RNA folds spatially, forming GR1915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1915 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1915 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5468 precursor RNA and GAM262576 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5468 RNA and GAM262576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5468 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM5468 target RNA into GAM5468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262576 target RNA into GAM262576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1915 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1915 gene: GAM5468 target protein and GAM262576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5468 and GAM262576

GR1916 BF997852 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1916(GR1916) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1916 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1916 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1916 gene encodes GR1916 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1916 precursor RNA folds spatially, forming GR1916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1916 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1916 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM54977 precursor RNA, GAM79273 precursor RNA and GAM173282 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54977 RNA, GAM79273 RNA and GAM173282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54977 target RNA into GAM54977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79273 target RNA into GAM79273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173282 target RNA into GAM173282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1916 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1916 gene: GAM54977 target protein, GAM79273 target protein and GAM173282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54977, GAM79273 and GAM173282

GR1917 AA740288 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1917(GR1917) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1917 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1917 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1917 gene encodes GR1917 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1917 precursor RNA folds spatially, forming GR1917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1917 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1917 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6776 precursor RNA and GAM84926 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6776 RNA and GAM84926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6776 target RNA into GAM6776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84926 target RNA into GAM84926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1917 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1917 gene: GAM6776 target protein and GAM84926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6776 and GAM84926

GR1918 AL703041 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1918(GR1918) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1918 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1918 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1918 gene encodes GR1918 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1918 precursor RNA folds spatially, forming GR1918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1918 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1918 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74015 precursor RNA and GAM271031 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74015 RNA and GAM271031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74015

target RNA into GAM74015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271031 target RNA into GAM271031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1918 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1918 gene: GAM74015 target protein and GAM271031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74015 and GAM271031

GR1919 BI596604 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1919(GR1919) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1919 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1919 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1919 gene encodes GR1919 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1919 precursor RNA folds spatially, forming GR1919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1919 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1919 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM147 precursor RNA and GAM223205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147 RNA and GAM223205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147 target RNA into GAM147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223205 target RNA into GAM223205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1919 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1919 gene: GAM147 target protein and GAM223205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147 and GAM223205

GR1920 AL048744 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1920(GR1920) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1920 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1920 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1920 gene encodes GR1920 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1920 precursor RNA folds spatially, forming GR1920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1920 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1920 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25722 precursor RNA and GAM27784 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25722 RNA and GAM27784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25722 target RNA into GAM25722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27784 target RNA into GAM27784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1920 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1920 gene: GAM25722 target protein and GAM27784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25722 and GAM27784

GR1921 BI224324 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1921(GR1921) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR1921 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1921 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1921 gene encodes GR1921 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1921 precursor RNA folds spatially, forming GR1921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1921 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1921 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6636 precursor RNA and GAM133537 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6636 RNA and GAM133537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6636 target RNA into GAM6636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133537 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133537 target RNA into GAM133537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1921 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1921 gene: GAM6636 target protein and GAM133537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6636 and GAM133537

GR1922 AA527121 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1922(GR1922) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1922 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1922 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1922 gene encodes GR1922 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1922 precursor RNA folds spatially, forming GR1922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1922 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1922 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6928 precursor RNA and GAM174785 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6928 RNA and GAM174785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6928 target RNA into GAM6928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174785 target RNA into GAM174785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1922 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1922 gene: GAM6928 target protein and GAM174785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6928 and GAM174785

GR1923 BF216912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1923(GR1923) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1923 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1923 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1923 gene encodes GR1923 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1923 precursor RNA folds spatially, forming GR1923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1923 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1923 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32544 precursor RNA and GAM235694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32544 RNA and GAM235694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32544 target RNA into GAM32544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235694 target RNA into GAM235694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1923 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1923 gene: GAM32544 target protein and GAM235694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32544 and GAM235694

GR1924 BM932077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1924(GR1924) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1924 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1924 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1924 gene encodes GR1924 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1924 precursor RNA folds spatially, forming GR1924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1924 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1924 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6503 precursor RNA and GAM80388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6503 RNA and GAM80388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6503 target RNA into GAM6503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80388 target RNA into GAM80388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1924 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1924 gene: GAM6503 target protein and GAM80388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6503 and GAM80388

GR1925 AW897814 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

1925(GR1925) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1925 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1925 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1925 gene encodes GR1925 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1925 precursor RNA folds spatially, forming GR1925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1925 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1925 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32788 precursor RNA and GAM55907 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32788 RNA and GAM55907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32788 target RNA into GAM32788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55907 target RNA into GAM55907 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1925 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1925 gene: GAM32788 target protein and GAM55907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32788 and GAM55907

GR1926 BG200241 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1926(GR1926) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1926 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1926 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1926 gene encodes GR1926 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1926 precursor RNA folds spatially, forming GR1926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1926 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1926 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7761 precursor RNA and GAM333448 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7761 RNA and GAM333448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7761 target RNA into GAM7761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333448 target RNA into GAM333448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1926 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1926 gene: GAM7761 target protein and GAM333448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7761 and GAM333448

GR1927 BI092370 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1927(GR1927) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1927 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1927 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1927 gene encodes GR1927 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1927 precursor RNA folds spatially, forming GR1927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1927 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1927 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM257155 precursor RNA and GAM308694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257155 RNA and GAM308694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257155 target RNA into GAM257155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308694 target RNA into GAM308694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1927 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1927 gene: GAM257155 target protein and GAM308694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257155 and GAM308694

GR1928 BF185254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1928(GR1928) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1928 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1928 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1928 gene encodes GR1928 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1928 precursor RNA folds spatially, forming GR1928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1928 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1928 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7150 precursor RNA, GAM216484 precursor RNA and GAM311438 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7150 RNA, GAM216484 RNA and GAM311438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7150 target RNA into GAM7150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216484 target RNA into GAM216484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311438 target RNA into GAM311438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1928 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1928 gene: GAM7150 target protein, GAM216484 target protein and GAM311438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7150, GAM216484 and GAM311438

GR1929 BF349559 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1929(GR1929) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1929 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1929 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1929 gene encodes GR1929 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1929 precursor RNA folds spatially, forming GR1929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1929 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1929 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM186432 precursor RNA and GAM220253 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM186432 RNA and GAM220253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM186432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186432 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186432 target RNA into GAM186432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220253 target RNA into GAM220253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1929 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1929 gene: GAM186432 target protein and GAM220253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM186432 and GAM220253

GR1930 BI916109 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1930(GR1930) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1930 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1930 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1930 gene encodes GR1930 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1930 precursor RNA folds spatially, forming GR1930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1930 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1930 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1506 precursor RNA and GAM168149 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1506 RNA and GAM168149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1506 target RNA into GAM1506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168149 target RNA into GAM168149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1930 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1930 gene: GAM1506 target protein and GAM168149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1506 and GAM168149

GR1931 BE621500 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1931(GR1931) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1931 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1931 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1931 gene encodes GR1931 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1931 precursor RNA folds spatially, forming GR1931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1931 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1931 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM142815 precursor RNA, GAM274533 precursor RNA and GAM299224 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142815 RNA, GAM274533 RNA and GAM299224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142815 target RNA into GAM142815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274533 target RNA into GAM274533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299224 target RNA into GAM299224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR1931 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1931 gene: GAM142815 target protein, GAM274533 target protein and GAM299224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142815, GAM274533 and GAM299224

GR1932 AW052079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1932(GR1932) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1932 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1932 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1932 gene encodes GR1932 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1932 precursor RNA folds spatially, forming GR1932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1932 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1932 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55194 precursor RNA, GAM205021 precursor RNA and GAM270163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55194 RNA, GAM205021 RNA and GAM270163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55194 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55194 target RNA into GAM55194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205021 target RNA into GAM205021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270163 target RNA into GAM270163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1932 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1932 gene: GAM55194 target protein, GAM205021 target protein and GAM270163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55194, GAM205021 and GAM270163

GR1933 AI791435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1933(GR1933) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1933 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1933 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1933 gene encodes GR1933 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1933 precursor RNA folds spatially, forming GR1933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1933 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1933 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM196 precursor RNA, GAM59177 precursor RNA and GAM260848 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196 RNA, GAM59177 RNA and GAM260848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196 target RNA into GAM196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59177 target RNA into GAM59177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260848 target RNA into GAM260848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1933 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1933 gene: GAM196 target protein, GAM59177 target protein and GAM260848 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196, GAM59177 and GAM260848

GR1934 BG206391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1934(GR1934) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1934 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1934 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1934 gene encodes GR1934 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1934 precursor RNA folds spatially, forming GR1934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1934 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1934 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3502 precursor RNA and GAM88623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3502 RNA and GAM88623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3502 target RNA into GAM3502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88623 target RNA into GAM88623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1934 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1934 gene: GAM3502 target protein and GAM88623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3502 and GAM88623

GR1935 AA706348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1935(GR1935) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1935 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1935 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1935 gene encodes GR1935 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1935 precursor RNA folds spatially, forming GR1935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1935 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1935 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2146 precursor RNA and GAM11386 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2146 RNA and GAM11386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2146 target RNA into GAM2146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11386 target RNA into GAM11386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1935 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1935 gene: GAM2146 target protein and GAM11386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2146 and GAM11386

GR1936 BF516152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1936(GR1936) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1936 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1936 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1936 gene encodes GR1936 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1936 precursor RNA folds spatially, forming GR1936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1936 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1936 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3815 precursor RNA, GAM50587 precursor RNA and GAM178096 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3815 RNA, GAM50587 RNA and GAM178096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3815 target RNA into GAM3815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50587 target RNA into GAM50587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178096 target RNA into GAM178096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1936 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1936 gene: GAM3815 target protein, GAM50587 target protein and GAM178096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3815, GAM50587 and GAM178096

GR1937 BF884793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1937(GR1937) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1937 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1937 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1937 gene encodes GR1937 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1937 precursor RNA folds spatially, forming GR1937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1937 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1937 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1026 precursor RNA and GAM1476 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1026 RNA and GAM1476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1026 target RNA into GAM1026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1476 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1476 target RNA into GAM1476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1937 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1937 gene: GAM1026 target protein and GAM1476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1026 and GAM1476

GR1938 AI218569 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1938(GR1938) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1938 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1938 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1938 gene encodes GR1938 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1938 precursor RNA folds spatially, forming GR1938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1938 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1938 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36714 precursor RNA and GAM89029 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM36714 RNA and GAM89029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36714 target RNA into GAM36714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89029 target RNA into GAM89029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1938 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1938 gene: GAM36714 target protein and GAM89029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36714 and GAM89029

GR1939 AA489023 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1939(GR1939) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1939 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1939 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1939 gene encodes GR1939 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1939 precursor RNA folds spatially, forming GR1939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1939 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1939 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6435 precursor RNA and GAM323647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6435 RNA and GAM323647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6435 target RNA into GAM6435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323647 target RNA into GAM323647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1939 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1939 gene: GAM6435 target protein and GAM323647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6435 and GAM323647

GR1940 BG677445 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1940(GR1940) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1940 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1940 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1940 gene encodes GR1940 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1940 precursor RNA folds spatially, forming GR1940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1940 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1940 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24764 precursor RNA, GAM150071 precursor RNA and GAM185945 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24764 RNA, GAM150071 RNA and GAM185945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24764 target RNA into GAM24764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150071 target RNA into GAM150071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185945 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185945 target RNA into GAM185945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1940 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1940 gene: GAM24764 target protein, GAM150071 target protein and GAM185945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24764, GAM150071 and GAM185945

GR1941 BG116556 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1941(GR1941) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1941 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1941 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1941 gene encodes GR1941 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1941 precursor RNA folds spatially, forming GR1941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1941 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1941 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2168 precursor RNA and GAM4151 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2168 RNA and GAM4151 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2168 target RNA into GAM2168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4151 target RNA into GAM4151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1941 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1941 gene: GAM2168 target protein and GAM4151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2168 and GAM4151

GR1942 BF892633 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1942(GR1942) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1942 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1942 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1942 gene encodes GR1942 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1942 precursor RNA folds spatially, forming GR1942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1942 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1942 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7921 precursor RNA, GAM194046 precursor RNA and GAM304406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7921 RNA, GAM194046 RNA and GAM304406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7921 target RNA into GAM7921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194046 target RNA into GAM194046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304406 target RNA into GAM304406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1942 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1942 gene: GAM7921 target protein, GAM194046 target protein and GAM304406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7921, GAM194046 and

GR1943 AI078849 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1943(GR1943) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1943 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1943 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1943 gene encodes GR1943 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1943 precursor RNA folds spatially, forming GR1943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1943 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1943 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1909 precursor RNA, GAM162293 precursor RNA and GAM185953 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1909 RNA, GAM162293 RNA and GAM185953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1909 target RNA into GAM1909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM162293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162293 target RNA into GAM162293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185953 target RNA into GAM185953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1943 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1943 gene: GAM1909 target protein, GAM162293 target protein and GAM185953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1909, GAM162293 and GAM185953

GR1944 BF688318 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1944(GR1944) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1944 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1944 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1944 gene encodes GR1944 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1944 precursor RNA folds spatially, forming GR1944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1944 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1944 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1944 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3944 precursor RNA and GAM149802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3944 RNA and GAM149802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3944 target RNA into GAM3944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149802 target RNA into GAM149802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1944 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1944 gene: GAM3944 target protein and GAM149802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3944 and GAM149802

GR1945 BF692342 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1945(GR1945) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1945 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1945 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1945 gene encodes GR1945 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1945 precursor RNA folds spatially, forming GR1945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1945 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1945 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7556 precursor RNA and GAM168387 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7556 RNA and GAM168387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7556 target RNA into GAM7556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168387 target RNA into GAM168387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1945 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1945 gene: GAM7556 target protein and GAM168387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7556 and GAM168387

GR1946 AA505714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1946(GR1946) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1946 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1946 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1946 gene encodes GR1946 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1946 precursor RNA folds spatially, forming GR1946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1946 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1946 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3191 precursor RNA and GAM61569 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3191 RNA and GAM61569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3191 target RNA into GAM3191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61569 target RNA into GAM61569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1946 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1946 gene: GAM3191 target protein and GAM61569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3191 and GAM61569

GR1947 AI569839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1947(GR1947) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1947 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1947 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1947 gene encodes GR1947 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1947 precursor RNA folds spatially, forming GR1947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1947 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1947 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM206049 precursor RNA and GAM314450 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM206049 RNA and GAM314450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM206049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206049 target RNA into GAM206049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314450 target RNA into GAM314450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1947 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1947 gene: GAM206049 target protein and GAM314450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM206049 and GAM314450

GR1948 BE710665 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1948(GR1948) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1948 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1948 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1948 gene encodes GR1948 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1948 precursor RNA folds spatially, forming GR1948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1948 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1948 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24674 precursor RNA and GAM229554 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24674 RNA and GAM229554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24674 target RNA into GAM24674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229554 target RNA into GAM229554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1948 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1948 gene: GAM24674 target protein and GAM229554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24674 and GAM229554

GR1949 AA604198 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1949(GR1949) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1949 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1949 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1949 gene encodes GR1949 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1949 precursor RNA folds spatially, forming GR1949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1949 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1949 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5845 precursor RNA, GAM47357 precursor RNA and GAM146277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5845 RNA, GAM47357 RNA and GAM146277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5845 target RNA into GAM5845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47357 target RNA into GAM47357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146277

target RNA into GAM146277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1949 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1949 gene: GAM5845 target protein, GAM47357 target protein and GAM146277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5845, GAM47357 and GAM146277

GR1950 BG542244 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1950(GR1950) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1950 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1950 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1950 gene encodes GR1950 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1950 precursor RNA folds spatially, forming GR1950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1950 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1950 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192087 precursor RNA and GAM320916 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192087 RNA and GAM320916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192087 target RNA into GAM192087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320916 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320916 target RNA into GAM320916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1950 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1950 gene: GAM192087 target protein and GAM320916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192087 and GAM320916

GR1951 BG828130 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1951(GR1951) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1951 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1951 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1951 gene encodes GR1951 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1951 precursor RNA folds spatially, forming GR1951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1951 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1951 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM390 precursor RNA, GAM26128 precursor RNA, GAM83147 precursor RNA and GAM130278 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM390 RNA, GAM26128 RNA, GAM83147 RNA and GAM130278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM390 target RNA into GAM390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26128 target RNA into GAM26128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83147 target RNA into GAM83147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130278 target RNA into GAM130278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1951 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1951 gene: GAM390 target protein, GAM26128 target protein, GAM83147 target protein and GAM130278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM390, GAM26128, GAM83147 and GAM130278

GR1952 AA225898 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1952(GR1952) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1952 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1952 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1952 gene encodes GR1952 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1952 precursor RNA folds spatially, forming GR1952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1952 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1952 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1341 precursor RNA and GAM4507 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1341 RNA and GAM4507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1341 target RNA into

GAM1341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4507 target RNA into GAM4507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1952 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1952 gene: GAM1341 target protein and GAM4507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1341 and GAM4507

GR1953 BG291240 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1953(GR1953) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1953 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1953 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1953 gene encodes GR1953 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1953 precursor RNA folds spatially, forming GR1953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1953 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1953 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67763 precursor RNA and GAM231133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67763 RNA and GAM231133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67763 target RNA into GAM67763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231133 target RNA into GAM231133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1953 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1953 gene: GAM67763 target protein and GAM231133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67763 and GAM231133

GR1954 BF036449 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1954(GR1954) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1954 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1954 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1954 gene encodes GR1954 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1954 precursor RNA folds spatially, forming GR1954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR1954 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1954 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM44184 precursor RNA, GAM111494 precursor RNA and GAM165188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44184 RNA, GAM111494 RNA and GAM165188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44184 target RNA into GAM44184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111494 target RNA into GAM111494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165188 target RNA into GAM165188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1954 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1954 gene: GAM44184 target

protein, GAM111494 target protein and GAM165188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44184, GAM111494 and GAM165188

GR1955 BF241590 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1955(GR1955) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1955 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1955 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1955 gene encodes GR1955 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1955 precursor RNA folds spatially, forming GR1955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1955 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1955 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6339 precursor RNA, GAM231795 precursor RNA and GAM311267 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6339 RNA, GAM231795 RNA and GAM311267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6339 target RNA into

GAM6339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231795 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231795 target RNA into GAM231795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311267 target RNA into GAM311267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1955 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1955 gene: GAM6339 target protein, GAM231795 target protein and GAM311267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6339, GAM231795 and GAM311267

GR1956 BE270380 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1956(GR1956) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1956 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1956 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1956 gene encodes GR1956 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1956 precursor RNA folds spatially, forming GR1956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1956 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1956 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM26037 precursor RNA, GAM257419 precursor RNA, GAM271148 precursor RNA, GAM289171 precursor RNA and GAM290885 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26037 RNA, GAM257419 RNA, GAM271148 RNA, GAM289171 RNA and GAM290885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26037 target RNA into GAM26037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257419 target RNA into GAM257419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271148 target RNA into GAM271148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289171 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289171 target RNA into GAM289171 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290885 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290885 target RNA into GAM290885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1956 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1956 gene: GAM26037 target protein, GAM257419 target protein, GAM271148 target protein, GAM289171 target protein and GAM290885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26037, GAM257419, GAM271148, GAM289171 and GAM290885

GR1957 BG744688 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1957(GR1957) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1957 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1957 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1957 gene encodes GR1957 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1957 precursor RNA folds spatially, forming GR1957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1957 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1957 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM508 precursor RNA, GAM8497 precursor RNA and GAM290783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM508 RNA, GAM8497 RNA and GAM290783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM508 target RNA into GAM508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8497 target RNA into GAM8497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290783 target RNA into GAM290783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1957 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1957 gene: GAM508 target protein, GAM8497 target protein and GAM290783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM508, GAM8497 and GAM290783

GR1958 BM923884 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1958(GR1958) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1958 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1958 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1958 gene encodes GR1958 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1958 precursor RNA folds spatially, forming GR1958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1958 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1958 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM107512 precursor RNA and GAM217984 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM107512 RNA and GAM217984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM107512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107512 target RNA into GAM107512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217984 target RNA into GAM217984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1958 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1958 gene: GAM107512 target

protein and GAM217984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM107512 and GAM217984

GR1959 BG563698 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1959(GR1959) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1959 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1959 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1959 gene encodes GR1959 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1959 precursor RNA folds spatially, forming GR1959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1959 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1959 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3349 precursor RNA, GAM145510 precursor RNA and GAM282581 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3349 RNA, GAM145510 RNA and GAM282581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3349 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3349 target RNA into GAM3349 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145510 target RNA into GAM145510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282581 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282581 target RNA into GAM282581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1959 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1959 gene: GAM3349 target protein, GAM145510 target protein and GAM282581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3349, GAM145510 and GAM282581

GR1960 BI906923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1960(GR1960) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1960 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1960 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1960 gene encodes GR1960 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1960 precursor RNA folds spatially, forming GR1960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1960 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1960 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM173909 precursor RNA, GAM272074 precursor RNA and GAM283195 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173909 RNA, GAM272074 RNA and GAM283195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173909 target RNA into GAM173909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272074 target RNA into GAM272074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283195 target RNA into GAM283195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1960 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1960 gene: GAM173909 target protein, GAM272074 target protein and GAM283195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173909, GAM272074 and GAM283195

GR1961 BF337296 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1961(GR1961) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1961 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1961 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1961 gene encodes GR1961 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1961 precursor RNA folds spatially, forming GR1961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1961 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1961 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM221766 precursor RNA, GAM262644 precursor RNA and GAM265511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221766 RNA, GAM262644 RNA and GAM265511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221766 target RNA into GAM221766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262644 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262644 target RNA into GAM262644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265511 target RNA into GAM265511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1961 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1961 gene: GAM221766 target protein, GAM262644 target protein and GAM265511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221766, GAM262644 and GAM265511

GR1962 BG212844 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1962(GR1962) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1962 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1962 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1962 gene encodes GR1962 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1962 precursor RNA folds spatially, forming GR1962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1962 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1962 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM602 precursor RNA and GAM138988 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM602 RNA and GAM138988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM602 target RNA into GAM602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM138988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138988 target RNA into GAM138988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1962 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1962 gene: GAM602 target protein and GAM138988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM602 and GAM138988

GR1963 R35987 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1963(GR1963) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1963 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1963 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1963 gene encodes GR1963 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR1963 precursor RNA folds spatially, forming GR1963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1963 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1963 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69193 precursor RNA and GAM168355 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69193 RNA and GAM168355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69193 target RNA into GAM69193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168355 target RNA into GAM168355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1963 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1963 gene: GAM69193 target protein and GAM168355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69193 and GAM168355

GR1964 BE676172 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1964(GR1964) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1964 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1964 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1964 gene encodes GR1964 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1964 precursor RNA folds spatially, forming GR1964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1964 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1964 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68660 precursor RNA and GAM230937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68660 RNA and GAM230937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68660 target RNA into GAM68660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230937 target RNA into GAM230937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1964 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1964 gene: GAM68660 target protein and GAM230937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68660 and GAM230937

GR1965 AI804761 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1965(GR1965) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1965 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1965 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1965 gene encodes GR1965 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1965 precursor RNA folds spatially, forming GR1965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1965 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1965 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110088 precursor RNA and GAM336082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110088 RNA and GAM336082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110088 target RNA into GAM110088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336082 target RNA into GAM336082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1965 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1965 gene: GAM110088 target protein and GAM336082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110088 and GAM336082

GR1966 AI419437 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1966(GR1966) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1966 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1966 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1966 gene encodes GR1966 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1966 precursor RNA folds spatially, forming GR1966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1966 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1966 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM92 precursor RNA, GAM95167 precursor RNA and GAM175103 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92 RNA, GAM95167 RNA and GAM175103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92 target RNA into GAM92 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95167 target RNA into GAM95167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175103 target RNA into GAM175103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1966 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1966 gene: GAM92 target protein, GAM95167 target protein and GAM175103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92, GAM95167 and GAM175103

GR1967 BF182937 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 1967(GR1967) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1967 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1967 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1967 gene encodes GR1967 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1967 precursor RNA folds spatially, forming GR1967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1967 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1967 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40141 precursor RNA and GAM224544 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40141 RNA and GAM224544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40141 target RNA into GAM40141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224544

target RNA into GAM224544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1967 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1967 gene: GAM40141 target protein and GAM224544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40141 and GAM224544

GR1968 AA988625 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1968(GR1968) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1968 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1968 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1968 gene encodes GR1968 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1968 precursor RNA folds spatially, forming GR1968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1968 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1968 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1578 precursor RNA, GAM7491 precursor RNA and GAM122413 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1578 RNA, GAM7491 RNA and GAM122413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1578 target RNA into GAM1578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7491 target RNA into GAM7491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122413 target RNA into GAM122413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1968 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1968 gene: GAM1578 target protein, GAM7491 target protein and GAM122413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1578, GAM7491 and GAM122413

GR1969 BG490193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1969(GR1969) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1969 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1969 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1969 gene encodes GR1969 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1969 precursor RNA folds spatially, forming GR1969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1969 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1969 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2323 precursor RNA, GAM7325 precursor RNA and GAM302675 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2323 RNA, GAM7325 RNA and GAM302675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2323 target RNA into GAM2323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7325 target RNA into GAM7325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302675 target RNA into GAM302675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1969 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1969 gene: GAM2323 target protein, GAM7325 target protein and GAM302675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2323, GAM7325 and GAM302675

GR1970 BI118185 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1970(GR1970) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1970 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1970 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1970 gene encodes GR1970 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1970 precursor RNA folds spatially, forming GR1970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1970 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1970 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM52522 precursor RNA, GAM124439 precursor RNA and GAM215073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52522 RNA, GAM124439 RNA and GAM215073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52522 target RNA into GAM52522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124439 target RNA into GAM124439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215073 target RNA into GAM215073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1970 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1970 gene: GAM52522 target protein, GAM124439 target protein and GAM215073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52522, GAM124439 and GAM215073

GR1971 AW877451 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1971(GR1971) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1971 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1971 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1971 gene encodes GR1971 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1971 precursor RNA folds spatially, forming GR1971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1971 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR1971 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM25823 precursor RNA, GAM43773 precursor RNA and GAM279349 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25823 RNA, GAM43773 RNA and GAM279349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25823 target RNA into GAM25823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43773 target RNA into GAM43773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279349 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279349 target RNA into GAM279349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1971 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1971 gene: GAM25823 target protein, GAM43773 target protein and GAM279349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25823, GAM43773 and GAM279349

GR1972 BI770411 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1972(GR1972) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1972 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1972 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1972 gene encodes GR1972 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1972 precursor RNA folds spatially, forming GR1972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1972 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1972 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM47436 precursor RNA and GAM307084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47436 RNA and GAM307084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47436 target RNA into GAM47436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307084 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307084 target RNA into GAM307084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1972 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1972 gene: GAM47436 target protein and GAM307084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47436 and GAM307084

GR1973 BG027912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1973(GR1973) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1973 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1973 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1973 gene encodes GR1973 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1973 precursor RNA folds spatially, forming GR1973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1973 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1973 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7855 precursor RNA and GAM57650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7855 RNA and GAM57650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7855 target RNA into GAM7855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57650 target RNA into GAM57650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1973 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1973 gene: GAM7855 target protein and GAM57650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7855 and GAM57650

GR1974 BE145905 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1974(GR1974) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1974 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1974 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1974 gene encodes GR1974 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1974 precursor RNA folds spatially, forming GR1974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1974 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1974 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16853 precursor RNA and GAM139941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16853 RNA and GAM139941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16853 target RNA into GAM16853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139941 target RNA into GAM139941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1974 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1974 gene: GAM16853 target protein and GAM139941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16853 and GAM139941

GR1975 AI923209 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1975(GR1975) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1975 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1975 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1975 gene encodes GR1975 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1975 precursor RNA folds spatially, forming GR1975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1975 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1975 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM92306 precursor RNA and GAM287119 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92306 RNA and GAM287119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92306 target RNA into GAM92306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287119 target RNA into GAM287119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1975 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR1975 gene: GAM92306 target protein and GAM287119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92306 and GAM287119

GR1976 AL596832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1976(GR1976) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1976 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1976 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1976 gene encodes GR1976 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1976 precursor RNA folds spatially, forming GR1976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1976 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1976 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5068 precursor RNA, GAM6632 precursor RNA and GAM8260 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5068 RNA, GAM6632 RNA and GAM8260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5068 target RNA into

GAM5068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6632 target RNA into GAM6632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8260 target RNA into GAM8260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1976 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1976 gene: GAM5068 target protein, GAM6632 target protein and GAM8260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5068, GAM6632 and GAM8260

GR1977 BE833268 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1977(GR1977) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1977 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1977 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1977 gene encodes GR1977 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1977 precursor RNA folds spatially, forming GR1977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1977 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1977 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM219727 precursor RNA and GAM267761 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219727 RNA and GAM267761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219727 target RNA into GAM219727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267761 target RNA into GAM267761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1977 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1977 gene: GAM219727 target protein and GAM267761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219727 and GAM267761

GR1978 BE393762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1978(GR1978) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1978 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1978 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1978 gene encodes GR1978 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1978 precursor RNA folds spatially, forming GR1978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1978 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1978 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3441 precursor RNA, GAM6854 precursor RNA and GAM34736 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3441 RNA, GAM6854 RNA and GAM34736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3441 target RNA into GAM3441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6854 target RNA into GAM6854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34736 target RNA into GAM34736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1978 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1978 gene: GAM3441 target protein, GAM6854 target protein and GAM34736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3441, GAM6854 and GAM34736

GR1979 BI552696 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1979(GR1979) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1979 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1979 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1979 gene encodes GR1979 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1979 precursor RNA folds spatially, forming GR1979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1979 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1979 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152996 precursor RNA and GAM288186 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152996 RNA and GAM288186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM152996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152996 target RNA into GAM152996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288186 target RNA into GAM288186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1979 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1979 gene: GAM152996 target protein and GAM288186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152996 and GAM288186

GR1980 AW974835 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1980(GR1980) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1980 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1980 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1980 gene encodes GR1980 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1980 precursor RNA folds spatially, forming GR1980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1980 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1980 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM54964 precursor RNA, GAM76104 precursor RNA and GAM218673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54964 RNA, GAM76104 RNA and GAM218673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54964 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54964 target RNA into GAM54964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76104 target RNA into GAM76104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218673 target RNA into GAM218673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1980 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1980 gene: GAM54964 target protein, GAM76104 target protein and GAM218673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54964, GAM76104 and GAM218673

GR1981 BG122007 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1981(GR1981) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1981 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1981 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1981 gene encodes GR1981 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1981 precursor RNA folds spatially, forming GR1981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1981 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1981 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5436 precursor RNA and GAM323982 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5436 RNA and GAM323982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5436 target RNA into GAM5436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323982 target RNA into GAM323982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1981 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1981 gene: GAM5436 target protein and GAM323982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5436 and GAM323982

GR1982 BG696125 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1982(GR1982) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1982 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1982 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1982 gene encodes GR1982 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1982 precursor RNA folds spatially, forming GR1982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1982 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1982 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM504 precursor RNA and GAM1869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM504 RNA and GAM1869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM504 target RNA into GAM504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1869 target RNA into GAM1869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1982 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1982 gene: GAM504 target protein and GAM1869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM504 and GAM1869

GR1983 AA722166 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1983(GR1983) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1983 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1983 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1983 gene encodes GR1983 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1983 precursor RNA folds spatially, forming GR1983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1983 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1983 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2200 precursor RNA, GAM6890 precursor RNA and GAM269233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2200 RNA, GAM6890 RNA and GAM269233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2200 target RNA into GAM2200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6890 target RNA into GAM6890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269233 target RNA into GAM269233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1983 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1983 gene: GAM2200 target protein, GAM6890 target protein and GAM269233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2200, GAM6890 and GAM269233

GR1984 AV742158 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1984(GR1984) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1984 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1984 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1984 gene encodes GR1984 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1984 precursor RNA folds spatially, forming GR1984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1984 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1984 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63695 precursor RNA and GAM245339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63695 RNA and GAM245339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63695 target RNA into GAM63695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245339 target RNA into GAM245339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1984 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1984 gene: GAM63695 target protein and GAM245339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63695 and GAM245339

GR1985 AA399293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1985(GR1985) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1985 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1985 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1985 gene encodes GR1985 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1985 precursor RNA folds spatially, forming GR1985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1985 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1985 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26348 precursor RNA and GAM261760 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26348 RNA and GAM261760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26348 target RNA into GAM26348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261760 target RNA into GAM261760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1985 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1985 gene: GAM26348 target protein and GAM261760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26348 and GAM261760

GR1986 AW410409 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1986(GR1986) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1986 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1986 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1986 gene encodes GR1986 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1986 precursor RNA folds spatially, forming GR1986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1986 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1986 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6960 precursor RNA and GAM7409 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6960 RNA and GAM7409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6960 target RNA into GAM6960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7409 target RNA into GAM7409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1986 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1986 gene: GAM6960 target protein and GAM7409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6960 and GAM7409

GR1987 BF511385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1987(GR1987) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1987 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1987 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1987 gene encodes GR1987 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1987 precursor RNA folds spatially, forming GR1987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1987 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1987 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171776 precursor RNA and GAM252146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171776 RNA and GAM252146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171776 target RNA into GAM171776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252146 target RNA into GAM252146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1987 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1987 gene: GAM171776 target protein and GAM252146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM171776 and GAM252146

GR1988 BG425725 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1988(GR1988) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1988 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1988 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1988 gene encodes GR1988 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1988 precursor RNA folds spatially, forming GR1988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1988 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1988 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5238 precursor RNA and GAM60846 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5238 RNA and GAM60846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5238 target RNA into GAM5238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60846 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60846 target RNA into GAM60846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1988 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1988 gene: GAM5238 target protein and GAM60846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5238 and GAM60846

GR1989 BI006374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1989(GR1989) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1989 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1989 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1989 gene encodes GR1989 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1989 precursor RNA folds spatially, forming GR1989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1989 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1989 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73203 precursor RNA and GAM115100 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73203 RNA and GAM115100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM73203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73203 target RNA into GAM73203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115100 target RNA into GAM115100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1989 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1989 gene: GAM73203 target protein and GAM115100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73203 and GAM115100

GR1990 BF930907 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1990(GR1990) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1990 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1990 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1990 gene encodes GR1990 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1990 precursor RNA folds spatially, forming GR1990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1990 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1990 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR1990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4058 precursor RNA, GAM26004 precursor RNA and GAM244784 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4058 RNA, GAM26004 RNA and GAM244784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4058 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4058 target RNA into GAM4058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26004 target RNA into GAM26004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244784 target RNA into GAM244784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1990 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1990 gene: GAM4058 target protein, GAM26004 target protein and GAM244784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4058, GAM26004 and GAM244784

GR1991 BG104597 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1991(GR1991) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1991 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1991 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1991 gene encodes GR1991 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1991 precursor RNA folds spatially, forming GR1991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1991 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1991 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4868 precursor RNA and GAM270944 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4868 RNA and GAM270944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4868 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4868 target RNA into GAM4868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270944 target RNA into GAM270944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1991 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1991 gene: GAM4868 target protein and GAM270944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4868 and GAM270944

GR1992 BI009037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1992(GR1992) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1992 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1992 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1992 gene encodes GR1992 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1992 precursor RNA folds spatially, forming GR1992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1992 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1992 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7703 precursor RNA and GAM85269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7703 RNA and GAM85269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7703 target RNA into GAM7703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85269 target RNA into GAM85269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1992 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1992 gene: GAM7703 target protein and GAM85269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7703 and GAM85269

GR1993 BF114887 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1993(GR1993) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1993 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1993 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1993 gene encodes GR1993 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1993 precursor RNA folds spatially, forming GR1993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1993 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1993 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM214420 precursor RNA and GAM274575 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM214420 RNA and GAM274575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM214420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214420 target RNA into GAM214420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274575 target RNA into GAM274575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1993 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1993 gene: GAM214420 target protein and GAM274575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM214420 and GAM274575

GR1994 T65327 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1994(GR1994) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1994 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1994 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1994 gene encodes GR1994 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1994 precursor RNA folds spatially, forming GR1994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1994 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1994 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2592 precursor RNA and GAM3548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2592 RNA and GAM3548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2592 target RNA into GAM2592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3548 target RNA into GAM3548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1994 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1994 gene: GAM2592 target protein and GAM3548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2592 and GAM3548

GR1995 AA146988 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1995(GR1995) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1995 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1995 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1995 gene encodes GR1995 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1995 precursor RNA folds spatially, forming GR1995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1995 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1995 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2124 precursor RNA and GAM3118 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2124 RNA and GAM3118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2124 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2124 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2124 target RNA into GAM2124 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3118 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3118 target RNA into GAM3118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1995 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1995 gene: GAM2124 target protein and GAM3118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2124 and GAM3118

GR1996 BI495824 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1996(GR1996) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1996 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1996 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1996 gene encodes GR1996 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1996 precursor RNA folds spatially, forming GR1996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1996 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1996 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8387 precursor RNA and GAM112155 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8387 RNA and GAM112155 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8387 target RNA into GAM8387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112155 target RNA into GAM112155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1996 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1996 gene: GAM8387 target protein and GAM112155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8387 and GAM112155

GR1997 BE260029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1997(GR1997) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1997 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1997 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1997 gene encodes GR1997 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1997 precursor RNA folds spatially, forming GR1997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1997 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1997 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6343 precursor RNA and GAM153427 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6343 RNA and GAM153427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6343 target RNA into GAM6343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM153427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153427 target RNA into GAM153427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1997 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1997 gene: GAM6343 target protein and GAM153427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6343 and GAM153427

GR1998 BM041784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1998(GR1998) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1998 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR1998 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1998 gene encodes GR1998 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1998 precursor RNA folds spatially, forming GR1998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1998 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1998 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257664 precursor RNA and GAM276705 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257664 RNA and GAM276705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257664 target RNA into GAM257664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276705 target RNA into GAM276705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1998 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1998 gene: GAM257664 target

protein and GAM276705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257664 and GAM276705

GR1999 BG576793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 1999(GR1999) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR1999 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR1999 gene was detected is described hereinabove with reference to Figs. 8-18.

GR1999 gene encodes GR1999 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR1999 precursor RNA folds spatially, forming GR1999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR1999 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR1999 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR1999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM194617 precursor RNA, GAM280182 precursor RNA and GAM330435 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM194617 RNA, GAM280182 RNA and GAM330435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM194617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194617 target RNA into GAM194617 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280182 target RNA into GAM280182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330435 target RNA into GAM330435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR1999 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR1999 gene: GAM194617 target protein, GAM280182 target protein and GAM330435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM194617, GAM280182 and GAM330435

GR2000 BM802254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2000(GR2000) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2000 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2000 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2000 gene encodes GR2000 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2000 precursor RNA folds spatially, forming GR2000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2000 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2000 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1102 precursor RNA and GAM291217 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1102 RNA and GAM291217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1102 target RNA into GAM1102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291217 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291217 target RNA into GAM291217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2000 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2000 gene: GAM1102 target protein and GAM291217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1102 and GAM291217

GR2001 AI741382 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2001(GR2001) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2001 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2001

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2001 gene encodes GR2001 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2001 precursor RNA folds spatially, forming GR2001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2001 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2001 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93 precursor RNA and GAM230692 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93 RNA and GAM230692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93 target RNA into GAM93 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230692 target RNA into GAM230692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2001 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2001 gene: GAM93 target protein and GAM230692 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93 and GAM230692

GR2002 BF541087 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2002(GR2002) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2002 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2002 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2002 gene encodes GR2002 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2002 precursor RNA folds spatially, forming GR2002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2002 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2002 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6077 precursor RNA, GAM225166 precursor RNA and GAM260356 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6077 RNA, GAM225166 RNA and GAM260356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6077 target RNA into GAM6077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225166 target RNA into GAM225166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260356 target RNA into GAM260356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2002 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2002 gene: GAM6077 target protein, GAM225166 target protein and GAM260356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6077, GAM225166 and GAM260356

GR2003 BI826104 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2003(GR2003) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2003 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2003 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2003 gene encodes GR2003 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2003 precursor RNA folds spatially, forming GR2003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2003 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2003 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3281 precursor RNA, GAM199658 precursor RNA and GAM280601 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3281 RNA, GAM199658 RNA and GAM280601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3281 target RNA into GAM3281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199658 target RNA into GAM199658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280601 target RNA into GAM280601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2003 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2003 gene: GAM3281 target protein, GAM199658 target protein and GAM280601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3281, GAM199658 and GAM280601

GR2004 AV732225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2004(GR2004) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2004 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2004 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2004 gene encodes GR2004 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2004 precursor RNA folds spatially, forming GR2004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2004 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2004 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM219 precursor RNA, GAM228237 precursor RNA and GAM275985 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219 RNA, GAM228237 RNA and GAM275985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219 target RNA into GAM219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228237 target RNA into GAM228237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275985 target RNA into GAM275985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2004 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2004 gene: GAM219 target protein, GAM228237 target protein and GAM275985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219, GAM228237 and GAM275985

GR2005 R14764 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2005(GR2005) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2005 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2005 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2005 gene encodes GR2005 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2005 precursor RNA folds spatially, forming GR2005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2005 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2005 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4028 precursor RNA and GAM77600 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4028 RNA and GAM77600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4028 target RNA into GAM4028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77600 target RNA into GAM77600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2005 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2005 gene: GAM4028 target protein and GAM77600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4028 and GAM77600

GR2006 BG460971 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2006(GR2006) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2006 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2006 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2006 gene encodes GR2006 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2006 precursor RNA folds spatially, forming GR2006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2006 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2006 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2694 precursor RNA and GAM225599 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2694 RNA and GAM225599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2694 target RNA into GAM2694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225599 target RNA into GAM225599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2006 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2006 gene: GAM2694 target protein and GAM225599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2694 and GAM225599

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2007(GR2007) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2007 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2007 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2007 gene encodes GR2007 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2007 precursor RNA folds spatially, forming GR2007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2007 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2007 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7600 precursor RNA and GAM329760 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7600 RNA and GAM329760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7600 target RNA into GAM7600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329760

target RNA into GAM329760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2007 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2007 gene: GAM7600 target protein and GAM329760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7600 and GAM329760

GR2008 AA442688 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2008(GR2008) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2008 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2008 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2008 gene encodes GR2008 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2008 precursor RNA folds spatially, forming GR2008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2008 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2008 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55757 precursor RNA and GAM264799 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55757 RNA and GAM264799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55757 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55757 target RNA into GAM55757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264799 target RNA into GAM264799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2008 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2008 gene: GAM55757 target protein and GAM264799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55757 and GAM264799

GR2009 BF757618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2009(GR2009) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2009 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2009 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2009 gene encodes GR2009 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2009 precursor RNA folds spatially, forming GR2009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2009 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2009 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2009 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM1659 precursor RNA, GAM5787 precursor RNA, GAM6657 precursor RNA, GAM288679 precursor RNA and GAM316699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1659 RNA, GAM5787 RNA, GAM6657 RNA, GAM288679 RNA and GAM316699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1659 target RNA into GAM1659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5787 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5787 target RNA into GAM5787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6657 target RNA into GAM6657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288679 target RNA into GAM288679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316699 target RNA into GAM316699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2009 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2009 gene: GAM1659 target protein, GAM5787 target protein, GAM6657 target protein, GAM288679 target protein and GAM316699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1659, GAM5787, GAM6657, GAM288679 and GAM316699

GR2010 AI422419 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2010(GR2010) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2010 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2010 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2010 gene encodes GR2010 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2010 precursor RNA folds spatially, forming GR2010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2010 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2010 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19280 precursor RNA and GAM65258 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19280 RNA and GAM65258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19280 target RNA into GAM19280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65258 target RNA into GAM65258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2010 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2010 gene: GAM19280 target protein and GAM65258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19280 and GAM65258

GR2011 BF571802 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2011(GR2011) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2011 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2011 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2011 gene encodes GR2011 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2011 precursor RNA folds spatially, forming GR2011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2011 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2011 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM15470 precursor RNA, GAM26533 precursor RNA and GAM202643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15470 RNA, GAM26533 RNA and GAM202643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15470 target RNA into GAM15470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26533 target RNA into GAM26533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202643 target RNA into GAM202643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2011 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2011 gene: GAM15470 target protein, GAM26533 target protein and GAM202643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15470, GAM26533 and GAM202643

GR2012 BM826286 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2012(GR2012) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2012 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2012 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2012 gene encodes GR2012 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2012 precursor RNA folds spatially, forming GR2012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2012 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2012 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4253 precursor RNA and GAM164691 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4253 RNA and GAM164691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4253 target RNA into GAM4253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164691 target RNA into GAM164691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2012 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2012 gene: GAM4253 target protein and GAM164691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4253 and GAM164691

GR2013 T82827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2013(GR2013) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2013 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2013 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2013 gene encodes GR2013 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2013 precursor RNA folds spatially, forming GR2013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2013 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2013 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4214 precursor RNA, GAM7929 precursor RNA and GAM165422 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4214 RNA, GAM7929 RNA and GAM165422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4214 target RNA into GAM4214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7929 target RNA into GAM7929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165422 target RNA into GAM165422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2013 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2013 gene: GAM4214 target protein, GAM7929 target protein and GAM165422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4214, GAM7929 and GAM165422

GR2014 BE813011 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2014(GR2014) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2014 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2014 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2014 gene encodes GR2014 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2014 precursor RNA folds spatially, forming GR2014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2014 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2014 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4330 precursor RNA, GAM185039 precursor RNA and GAM253134 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4330 RNA, GAM185039 RNA and GAM253134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4330 target RNA into GAM4330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185039 target RNA into GAM185039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253134 target RNA into GAM253134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2014 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2014 gene: GAM4330 target protein, GAM185039 target protein and GAM253134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4330, GAM185039 and GAM253134

GR2015 BM678113 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2015(GR2015) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2015 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2015 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2015 gene encodes GR2015 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2015 precursor RNA folds spatially, forming GR2015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2015 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2015 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12948 precursor RNA and GAM306506 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12948 RNA and GAM306506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12948 target RNA into GAM12948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306506 target RNA into GAM306506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2015 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2015 gene: GAM12948 target protein and GAM306506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12948 and GAM306506

GR2016 AI933051 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2016(GR2016) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2016 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2016 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2016 gene encodes GR2016 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2016 precursor RNA folds spatially, forming GR2016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2016 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2016 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32200 precursor RNA and GAM271771 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32200 RNA and GAM271771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32200 target RNA into GAM32200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271771 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271771 target RNA into GAM271771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2016 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2016 gene: GAM32200 target protein and GAM271771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32200 and GAM271771

GR2017 BF130789 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2017(GR2017) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2017 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2017 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2017 gene encodes GR2017 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2017 precursor RNA folds spatially, forming GR2017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2017 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2017 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81508 precursor RNA and GAM172149 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81508 RNA and GAM172149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81508 target RNA into GAM81508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172149 target RNA into GAM172149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2017 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2017 gene: GAM81508 target protein and GAM172149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81508 and GAM172149

GR2018 AV750129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2018(GR2018) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2018 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2018 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2018 gene encodes GR2018 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2018 precursor RNA folds spatially, forming GR2018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2018 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2018 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7796 precursor RNA, GAM203641 precursor RNA and GAM268979 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7796 RNA, GAM203641 RNA and GAM268979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7796 target RNA into GAM7796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203641

target RNA into GAM203641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268979 target RNA into GAM268979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2018 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2018 gene: GAM7796 target protein, GAM203641 target protein and GAM268979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7796, GAM203641 and GAM268979

GR2019 BE255283 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2019(GR2019) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2019 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2019 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2019 gene encodes GR2019 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2019 precursor RNA folds spatially, forming GR2019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2019 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2019 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230046 precursor RNA and GAM265020 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230046 RNA and GAM265020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230046 target RNA into GAM230046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265020 target RNA into GAM265020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2019 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2019 gene: GAM230046 target protein and GAM265020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230046 and GAM265020

GR2020 R21366 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2020(GR2020) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2020 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2020 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2020 gene encodes GR2020 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2020 precursor RNA folds spatially, forming GR2020 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2020 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2020 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1086 precursor RNA, GAM3873 precursor RNA and GAM6078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1086 RNA, GAM3873 RNA and GAM6078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1086 target RNA into GAM1086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3873 target RNA into GAM3873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6078 target RNA into GAM6078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2020 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2020 gene: GAM1086 target protein, GAM3873 target protein and GAM6078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1086, GAM3873 and GAM6078

GR2021 AA654979 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2021(GR2021) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2021 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2021 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2021 gene encodes GR2021 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2021 precursor RNA folds spatially, forming GR2021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2021 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2021 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3227 precursor RNA, GAM8529 precursor RNA and GAM214625 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3227 RNA, GAM8529 RNA and GAM214625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3227 target RNA into GAM3227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8529 target RNA into GAM8529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214625 target RNA into GAM214625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2021 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2021 gene: GAM3227 target protein, GAM8529 target protein and GAM214625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3227, GAM8529 and GAM214625

GR2022 BI521933 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2022(GR2022) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2022 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2022 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2022 gene encodes GR2022 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2022 precursor RNA folds spatially, forming GR2022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2022 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2022 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM19241 precursor RNA, GAM49758 precursor RNA and GAM61702 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19241 RNA, GAM49758 RNA and GAM61702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19241 target RNA into GAM19241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49758 target RNA into GAM49758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61702 target RNA into GAM61702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2022 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2022 gene: GAM19241 target protein, GAM49758 target protein and GAM61702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM19241, GAM49758 and GAM61702

GR2023 BQ009378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2023(GR2023) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2023 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2023 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2023 gene encodes GR2023 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2023 precursor RNA folds spatially, forming GR2023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2023 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2023 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM97869 precursor RNA and GAM336078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97869 RNA and GAM336078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97869 target RNA into GAM97869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM336078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336078 target RNA into GAM336078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2023 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2023 gene: GAM97869 target protein and GAM336078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97869 and GAM336078

GR2024 BI831221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2024(GR2024) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2024 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2024 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2024 gene encodes GR2024 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2024 precursor RNA folds spatially, forming GR2024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2024 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2024 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30252 precursor RNA and GAM190712 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30252 RNA and GAM190712 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30252 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30252 target RNA into GAM30252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190712 target RNA into GAM190712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2024 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2024 gene: GAM30252 target protein and GAM190712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30252 and GAM190712

GR2025 BF914378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2025(GR2025) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2025 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2025 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2025 gene encodes GR2025 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2025 precursor RNA folds spatially, forming GR2025 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2025 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2025 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2025 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM222332 precursor RNA and GAM272381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM222332 RNA and GAM272381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM222332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222332 target RNA into GAM222332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272381 target RNA into GAM272381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2025 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2025 gene: GAM222332 target protein and GAM272381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM222332 and GAM272381

GR2026 BM795225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2026(GR2026) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2026 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2026 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2026 gene encodes GR2026 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2026 precursor RNA folds spatially, forming GR2026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2026 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2026 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM260545 precursor RNA and GAM269147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM260545 RNA and GAM269147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM260545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260545 target RNA into GAM260545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269147 target RNA into GAM269147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2026 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2026 gene: GAM260545 target

protein and GAM269147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM260545 and GAM269147

GR2027 BF525901 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2027(GR2027) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2027 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2027 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2027 gene encodes GR2027 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2027 precursor RNA folds spatially, forming GR2027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2027 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2027 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM126508 precursor RNA, GAM217012 precursor RNA and GAM305552 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126508 RNA, GAM217012 RNA and GAM305552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126508 target RNA into GAM126508 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217012 target RNA into GAM217012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305552 target RNA into GAM305552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2027 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2027 gene: GAM126508 target protein, GAM217012 target protein and GAM305552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126508, GAM217012 and GAM305552

GR2028 BM050444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2028(GR2028) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2028 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2028 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2028 gene encodes GR2028 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2028 precursor RNA folds spatially, forming GR2028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2028 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2028 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7184 precursor RNA, GAM7974 precursor RNA, GAM245054 precursor RNA and GAM288637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7184 RNA, GAM7974 RNA, GAM245054 RNA and GAM288637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7184 target RNA into GAM7184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7974 target RNA into GAM7974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245054 target RNA into GAM245054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288637 target RNA into GAM288637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2028 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2028 gene: GAM7184 target protein, GAM7974 target protein, GAM245054 target protein and GAM288637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7184, GAM7974, GAM245054 and GAM288637

GR2029 AW205940 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2029(GR2029) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2029 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2029 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2029 gene encodes GR2029 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2029 precursor RNA folds spatially, forming GR2029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2029 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2029 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3500 precursor RNA, GAM13459 precursor RNA and GAM53158 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3500 RNA, GAM13459 RNA and GAM53158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3500 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3500 target RNA into GAM3500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13459 target RNA into GAM13459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53158 target RNA into GAM53158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2029 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2029 gene: GAM3500 target protein, GAM13459 target protein and GAM53158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3500, GAM13459 and GAM53158

GR2030 BG478555 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2030(GR2030) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2030 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2030 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2030 gene encodes GR2030 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2030 precursor RNA folds spatially, forming GR2030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2030 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2030 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132954 precursor RNA and GAM217331 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132954 RNA and GAM217331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132954 target RNA into GAM132954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217331 target RNA into GAM217331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2030 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2030 gene: GAM132954 target protein and GAM217331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132954 and GAM217331

GR2031 BM021309 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2031(GR2031) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2031 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2031 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2031 gene encodes GR2031 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2031 precursor RNA folds spatially, forming GR2031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2031 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2031 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2998 precursor RNA and GAM229454 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2998 RNA and GAM229454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2998 target RNA into GAM2998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229454 target RNA into GAM229454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2031 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2031 gene: GAM2998 target protein and GAM229454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2998 and GAM229454

GR2032 BF246889 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2032(GR2032) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2032 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2032 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2032 gene encodes GR2032 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2032 precursor RNA folds spatially, forming GR2032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2032 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2032 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM125422 precursor RNA and GAM321500 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125422 RNA and GAM321500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125422 target RNA into GAM125422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321500 target RNA into GAM321500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2032 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2032 gene: GAM125422 target protein and GAM321500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125422 and GAM321500

GR2033 BM693659 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2033(GR2033) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2033 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2033 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2033 gene encodes GR2033 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2033 precursor RNA folds spatially, forming GR2033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2033 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2033 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7905 precursor RNA and GAM151521 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7905 RNA and GAM151521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7905 target RNA into GAM7905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151521 target RNA into GAM151521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2033 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2033 gene: GAM7905 target protein and GAM151521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7905 and GAM151521

GR2034 BF575947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2034(GR2034) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2034 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2034 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2034 gene encodes GR2034 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2034 precursor RNA folds spatially, forming GR2034 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2034 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2034 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4170 precursor RNA and GAM232228 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4170 RNA and GAM232228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4170 target RNA into GAM4170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232228 target RNA into GAM232228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2034 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2034 gene: GAM4170 target protein and GAM232228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4170 and GAM232228

GR2035 BG112924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2035(GR2035) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2035 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2035 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2035 gene encodes GR2035 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2035 precursor RNA folds spatially, forming GR2035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2035 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2035 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1459 precursor RNA, GAM244621 precursor RNA and GAM327198 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1459 RNA, GAM244621 RNA and GAM327198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1459 target RNA into GAM1459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244621 target RNA into GAM244621 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327198 target RNA into GAM327198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2035 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2035 gene: GAM1459 target protein, GAM244621 target protein and GAM327198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1459, GAM244621 and GAM327198

GR2036 BG761133 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2036(GR2036) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2036 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2036 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2036 gene encodes GR2036 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2036 precursor RNA folds spatially, forming GR2036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2036 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2036 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1493 precursor RNA and GAM2120 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1493 RNA and GAM2120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1493 target RNA into GAM1493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2120 target RNA into GAM2120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2036 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2036 gene: GAM1493 target protein and GAM2120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1493 and GAM2120

GR2037 BG214421 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2037(GR2037) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2037 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2037 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2037 gene encodes GR2037 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2037 precursor RNA folds spatially, forming GR2037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2037 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2037 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6326 precursor RNA and GAM209949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6326 RNA and GAM209949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6326 target RNA into GAM6326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209949 target RNA into GAM209949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2037 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2037 gene: GAM6326 target protein and GAM209949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6326 and GAM209949

GR2038 BG956822 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2038(GR2038) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2038 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2038 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2038 gene encodes GR2038 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2038 precursor RNA folds spatially, forming GR2038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2038 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2038 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM28954 precursor RNA and GAM255903 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28954 RNA and GAM255903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM28954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28954 target RNA into GAM28954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255903 target RNA into GAM255903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2038 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2038 gene: GAM28954 target protein and GAM255903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28954 and GAM255903

GR2039 BI262499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2039(GR2039) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2039 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2039 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2039 gene encodes GR2039 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2039 precursor RNA folds spatially, forming GR2039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2039 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2039 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM309 precursor RNA and GAM8067 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM309 RNA and GAM8067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309 target RNA into GAM309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8067 target RNA into GAM8067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2039 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2039 gene: GAM309 target protein and GAM8067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM309 and GAM8067

GR2040 AW979276 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2040(GR2040) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2040 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2040 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2040 gene encodes GR2040 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2040 precursor RNA folds spatially, forming GR2040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2040 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2040 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM153285 precursor RNA, GAM176807 precursor RNA and GAM177396 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM153285 RNA, GAM176807 RNA and GAM177396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM153285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153285 target RNA into GAM153285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176807 target RNA into GAM176807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177396 target RNA into GAM177396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2040 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2040 gene: GAM153285 target protein, GAM176807 target protein and GAM177396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM153285, GAM176807 and GAM177396

GR2041 BF902242 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2041(GR2041) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2041 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2041 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2041 gene encodes GR2041 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2041 precursor RNA folds spatially, forming GR2041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2041 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2041 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3082 precursor RNA, GAM3827 precursor RNA and GAM224471 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3082 RNA, GAM3827 RNA and GAM224471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3082 target RNA into GAM3082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3827 target RNA into GAM3827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224471 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224471 target RNA into GAM224471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2041 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2041 gene: GAM3082 target protein, GAM3827 target protein and GAM224471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3082, GAM3827 and GAM224471

GR2042 AA426493 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2042(GR2042) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2042 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2042 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2042 gene encodes GR2042 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2042 precursor RNA folds spatially, forming GR2042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2042 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2042 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102547 precursor RNA and GAM206871 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102547 RNA and GAM206871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102547 target RNA into GAM102547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206871 target RNA into GAM206871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2042 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2042 gene: GAM102547 target protein and GAM206871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102547 and GAM206871

GR2043 AI951742 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2043(GR2043) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2043 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2043 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2043 gene encodes GR2043 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2043 precursor RNA folds spatially, forming GR2043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2043 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2043 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1011 precursor RNA, GAM64245 precursor RNA, GAM106652 precursor RNA and GAM113604 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1011 RNA, GAM64245 RNA, GAM106652 RNA and GAM113604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1011 target RNA into GAM1011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64245 target RNA into GAM64245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106652 target RNA into GAM106652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113604 target RNA into GAM113604 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2043 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2043 gene: GAM1011 target protein, GAM64245 target protein, GAM106652 target protein and GAM113604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1011, GAM64245, GAM106652 and GAM113604

GR2044 BG033180 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2044(GR2044) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2044 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2044 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2044 gene encodes GR2044 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2044 precursor RNA folds spatially, forming GR2044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2044 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2044 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4434 precursor RNA, GAM228074 precursor RNA and GAM328082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4434 RNA, GAM228074 RNA and GAM328082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4434 target RNA into GAM4434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228074 target RNA into GAM228074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328082 target RNA into GAM328082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2044 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2044 gene: GAM4434 target protein, GAM228074 target protein and GAM328082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4434, GAM228074 and GAM328082

GR2045 BG259413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2045(GR2045) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2045 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2045 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2045 gene encodes GR2045 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2045 precursor RNA folds spatially, forming GR2045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2045 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2045 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM57131 precursor RNA, GAM74013 precursor RNA and GAM252987 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57131 RNA, GAM74013 RNA and GAM252987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57131 target RNA into GAM57131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74013 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74013 target RNA into GAM74013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252987 target RNA into GAM252987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2045 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2045 gene: GAM57131 target protein, GAM74013 target protein and GAM252987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57131, GAM74013 and GAM252987

GR2046 BQ016592 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2046(GR2046) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2046 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2046 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2046 gene encodes GR2046 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2046 precursor RNA folds spatially, forming GR2046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2046 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2046 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7887 precursor RNA and GAM318218 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7887 RNA and GAM318218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7887 target RNA into GAM7887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318218 target RNA into GAM318218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2046 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2046 gene: GAM7887 target protein and GAM318218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7887 and GAM318218

GR2047 AA703253 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2047(GR2047) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2047 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2047 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2047 gene encodes GR2047 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2047 precursor RNA folds spatially, forming GR2047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2047 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2047 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM72942 precursor RNA and GAM105026 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72942 RNA and GAM105026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72942 target RNA into GAM72942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105026 target RNA into GAM105026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2047 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2047 gene: GAM72942 target protein and GAM105026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72942 and GAM105026

GR2048 BF950761 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2048(GR2048) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2048 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2048 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2048 gene encodes GR2048 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2048 precursor RNA folds spatially, forming GR2048 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2048 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2048 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1593 precursor RNA, GAM3428 precursor RNA, GAM215285 precursor RNA and GAM272857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1593 RNA, GAM3428 RNA, GAM215285 RNA and GAM272857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1593 target RNA into GAM1593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3428 target RNA into GAM3428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215285 target RNA into GAM215285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272857 target RNA into GAM272857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2048 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2048 gene: GAM1593 target protein, GAM3428 target protein, GAM215285 target protein and GAM272857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1593, GAM3428, GAM215285 and GAM272857

GR2049 H10913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2049(GR2049) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2049 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2049 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2049 gene encodes GR2049 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2049 precursor RNA folds spatially, forming GR2049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2049 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2049 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM291738 precursor RNA and GAM296229 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM291738 RNA and GAM296229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM291738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291738 target RNA into GAM291738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296229 target RNA into GAM296229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2049 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2049 gene: GAM291738 target protein and GAM296229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM291738 and GAM296229

GR2050 BF766317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2050(GR2050) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2050 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2050 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2050 gene encodes GR2050 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2050 precursor RNA folds spatially, forming GR2050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2050 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2050 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2590 precursor RNA and GAM37420 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2590 RNA and GAM37420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2590 target RNA into GAM2590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37420 target RNA into GAM37420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2050 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2050 gene: GAM2590 target protein and GAM37420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2590 and GAM37420

GR2051 BE789929 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2051(GR2051) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2051 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2051

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2051 gene encodes GR2051 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2051 precursor RNA folds spatially, forming GR2051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2051 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2051 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2782 precursor RNA and GAM55781 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2782 RNA and GAM55781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2782 target RNA into GAM2782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55781 target RNA into GAM55781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2051 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2051 gene: GAM2782 target protein and GAM55781 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2782 and GAM55781

GR2052 AI912354 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2052(GR2052) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2052 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2052 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2052 gene encodes GR2052 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2052 precursor RNA folds spatially, forming GR2052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2052 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2052 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM11964 precursor RNA and GAM264198 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11964 RNA and GAM264198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11964 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11964 target RNA into GAM11964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264198 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264198 target RNA into GAM264198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2052 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2052 gene: GAM11964 target protein and GAM264198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11964 and GAM264198

GR2053 BI760575 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2053(GR2053) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2053 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2053 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2053 gene encodes GR2053 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2053 precursor RNA folds spatially, forming GR2053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2053 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2053 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM17231 precursor RNA, GAM268390 precursor RNA and GAM304542 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17231 RNA, GAM268390 RNA and GAM304542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17231 target RNA into GAM17231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268390 target RNA into GAM268390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304542 target RNA into GAM304542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2053 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2053 gene: GAM17231 target protein, GAM268390 target protein and GAM304542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17231, GAM268390 and GAM304542

GR2054 BM847454 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2054(GR2054) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2054 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2054 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2054 gene encodes GR2054 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2054 precursor RNA folds spatially, forming GR2054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2054 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2054 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM108455 precursor RNA, GAM118493 precursor RNA and GAM305650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108455 RNA, GAM118493 RNA and GAM305650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108455 target RNA into GAM108455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118493 target RNA into GAM118493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305650

target RNA into GAM305650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2054 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2054 gene: GAM108455 target protein, GAM118493 target protein and GAM305650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108455, GAM118493 and GAM305650

GR2055 AW952699 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2055(GR2055) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2055 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2055 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2055 gene encodes GR2055 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2055 precursor RNA folds spatially, forming GR2055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2055 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2055 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3881 precursor RNA and GAM164801 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3881 RNA and GAM164801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3881 target RNA into GAM3881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164801 target RNA into GAM164801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2055 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2055 gene: GAM3881 target protein and GAM164801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3881 and GAM164801

GR2056 BE878157 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2056(GR2056) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2056 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2056 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2056 gene encodes GR2056 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2056 precursor RNA folds spatially, forming GR2056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2056 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2056 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM70268 precursor RNA and GAM139183 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70268 RNA and GAM139183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70268 target RNA into GAM70268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139183 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139183 target RNA into GAM139183 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2056 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2056 gene: GAM70268 target protein and GAM139183 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70268 and GAM139183

GR2057 BG774734 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2057(GR2057) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2057 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2057 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2057 gene encodes GR2057 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2057 precursor RNA folds spatially, forming GR2057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2057 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2057 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM233006 precursor RNA and GAM305871 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM233006 RNA and GAM305871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM233006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233006 target RNA into GAM233006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305871 target RNA into GAM305871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2057 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2057 gene: GAM233006 target protein and GAM305871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM233006 and GAM305871

GR2058 AI672650 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2058(GR2058) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2058 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2058 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2058 gene encodes GR2058 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2058 precursor RNA folds spatially, forming GR2058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2058 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2058 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM307 precursor RNA, GAM2733 precursor RNA and GAM128782 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM307 RNA, GAM2733 RNA and GAM128782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307 target RNA into GAM307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM2733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2733 target RNA into GAM2733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128782 target RNA into GAM128782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2058 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2058 gene: GAM307 target protein, GAM2733 target protein and GAM128782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM307, GAM2733 and GAM128782

GR2059 AI347915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2059(GR2059) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2059 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2059 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2059 gene encodes GR2059 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2059 precursor RNA folds spatially, forming GR2059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2059 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2059 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2059 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46690 precursor RNA and GAM289564 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46690 RNA and GAM289564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46690 target RNA into GAM46690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289564 target RNA into GAM289564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2059 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2059 gene: GAM46690 target protein and GAM289564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46690 and GAM289564

GR2060 BE567377 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2060(GR2060) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2060 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2060 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2060 gene encodes GR2060 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2060 precursor RNA folds spatially, forming GR2060 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2060 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2060 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2060 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1955 precursor RNA, GAM20569 precursor RNA and GAM76836 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1955 RNA, GAM20569 RNA and GAM76836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1955 target RNA into GAM1955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20569 target RNA into GAM20569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76836 target RNA into GAM76836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2060 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2060 gene: GAM1955 target protein, GAM20569 target protein and GAM76836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1955, GAM20569 and GAM76836

GR2061 BG939224 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2061(GR2061) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2061 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2061 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2061 gene encodes GR2061 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2061 precursor RNA folds spatially, forming GR2061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2061 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2061 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1487 precursor RNA and GAM85138 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1487 RNA and GAM85138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM1487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1487 target RNA into GAM1487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85138 target RNA into GAM85138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2061 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2061 gene: GAM1487 target protein and GAM85138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1487 and GAM85138

GR2062 AV712566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2062(GR2062) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2062 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2062 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2062 gene encodes GR2062 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2062 precursor RNA folds spatially, forming GR2062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2062 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2062 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM85108 precursor RNA and GAM281601 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85108 RNA and GAM281601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85108 target RNA into GAM85108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281601 target RNA into GAM281601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2062 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2062 gene: GAM85108 target protein and GAM281601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85108 and GAM281601

GR2063 AI500578 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2063(GR2063) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2063 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2063 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2063 gene encodes GR2063 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2063 precursor RNA folds spatially, forming GR2063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2063 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2063 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2418 precursor RNA and GAM7619 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2418 RNA and GAM7619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2418 target RNA into GAM2418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7619 target RNA into GAM7619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2063 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2063 gene: GAM2418 target protein and GAM7619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2418 and GAM7619

GR2064 BI838400 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2064(GR2064) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2064 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2064 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2064 gene encodes GR2064 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2064 precursor RNA folds spatially, forming GR2064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2064 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2064 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59864 precursor RNA and GAM257410 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59864 RNA and GAM257410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59864 target RNA into GAM59864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257410 target RNA into GAM257410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2064 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2064 gene: GAM59864 target protein and GAM257410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59864 and GAM257410

GR2065 AW376156 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2065(GR2065) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2065 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2065 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2065 gene encodes GR2065 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2065 precursor RNA folds spatially, forming GR2065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2065 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2065 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM248158 precursor RNA and GAM259339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM248158 RNA and GAM259339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM248158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248158 target RNA into GAM248158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259339 target RNA into GAM259339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2065 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2065 gene: GAM248158 target protein and GAM259339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM248158 and GAM259339

GR2066 BI255714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2066(GR2066) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2066 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2066 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2066 gene encodes GR2066 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2066 precursor RNA folds spatially, forming GR2066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2066 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2066 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8534 precursor RNA and GAM275456 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8534 RNA and GAM275456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8534 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8534 target RNA into GAM8534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275456 target RNA into GAM275456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2066 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2066 gene: GAM8534 target protein and GAM275456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8534 and GAM275456

GR2067 BI544951 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2067(GR2067) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2067 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2067 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2067 gene encodes GR2067 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2067 precursor RNA folds spatially, forming GR2067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2067 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2067 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM99583 precursor RNA, GAM126987 precursor RNA and GAM324090 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99583 RNA, GAM126987 RNA and GAM324090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99583 target RNA into GAM99583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126987 target RNA into GAM126987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324090 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324090 target RNA into GAM324090 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2067 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2067 gene: GAM99583 target protein, GAM126987 target protein and GAM324090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99583, GAM126987 and GAM324090

GR2068 BE280049 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2068(GR2068) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2068 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2068 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2068 gene encodes GR2068 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2068 precursor RNA folds spatially, forming GR2068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2068 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2068 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM40260 precursor RNA, GAM243431 precursor RNA, GAM281495 precursor RNA and GAM307396 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40260 RNA, GAM243431 RNA, GAM281495 RNA and GAM307396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40260 target RNA into GAM40260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243431 target RNA into GAM243431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281495 target RNA into GAM281495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307396 target RNA into GAM307396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2068 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2068 gene: GAM40260 target protein, GAM243431 target protein, GAM281495 target protein and GAM307396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40260, GAM243431, GAM281495 and GAM307396

GR2069 H45786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2069(GR2069) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2069 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2069 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2069 gene encodes GR2069 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2069 precursor RNA folds spatially, forming GR2069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2069 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2069 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6238 precursor RNA and GAM97528 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6238 RNA and GAM97528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6238 target RNA into GAM6238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97528 target RNA into GAM97528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2069 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2069 gene: GAM6238 target protein and GAM97528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6238 and GAM97528

GR2070 AW582582 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2070(GR2070) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2070 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2070 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2070 gene encodes GR2070 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2070 precursor RNA folds spatially, forming GR2070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2070 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2070 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3231 precursor RNA, GAM6762 precursor RNA and GAM300565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3231 RNA, GAM6762 RNA and GAM300565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3231 target RNA into

GAM3231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6762 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6762 target RNA into GAM6762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300565 target RNA into GAM300565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2070 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2070 gene: GAM3231 target protein, GAM6762 target protein and GAM300565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3231, GAM6762 and GAM300565

GR2071 AV700438 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2071(GR2071) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2071 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2071 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2071 gene encodes GR2071 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2071 precursor RNA folds spatially, forming GR2071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2071 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2071 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4115 precursor RNA and GAM6650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4115 RNA and GAM6650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4115 target RNA into GAM4115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6650 target RNA into GAM6650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2071 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2071 gene: GAM4115 target protein and GAM6650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4115 and GAM6650

GR2072 BE747365 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2072(GR2072) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2072 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2072 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2072 gene encodes GR2072 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2072 precursor RNA folds spatially, forming GR2072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2072 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2072 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2239 precursor RNA and GAM255057 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2239 RNA and GAM255057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2239 target RNA into GAM2239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255057 target RNA into GAM255057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2072 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2072 gene: GAM2239 target

protein and GAM255057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2239 and GAM255057

GR2073 BG397361 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2073(GR2073) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2073 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2073 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2073 gene encodes GR2073 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2073 precursor RNA folds spatially, forming GR2073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2073 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2073 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2819 precursor RNA and GAM219313 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2819 RNA and GAM219313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2819 target RNA into GAM2819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219313 target RNA into GAM219313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2073 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2073 gene: GAM2819 target protein and GAM219313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2819 and GAM219313

GR2074 BG623122 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2074(GR2074) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2074 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2074 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2074 gene encodes GR2074 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2074 precursor RNA folds spatially, forming GR2074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2074 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2074 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM264029 precursor RNA, GAM300509 precursor RNA and GAM312338 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM264029 RNA, GAM300509 RNA and GAM312338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM264029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264029 target RNA into GAM264029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300509 target RNA into GAM300509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312338 target RNA into GAM312338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2074 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2074 gene: GAM264029 target protein, GAM300509 target protein and GAM312338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM264029, GAM300509 and GAM312338

GR2075 AI767245 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2075(GR2075) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2075 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2075

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2075 gene encodes GR2075 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2075 precursor RNA folds spatially, forming GR2075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2075 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2075 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105501 precursor RNA and GAM208869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105501 RNA and GAM208869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105501 target RNA into GAM105501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208869 target RNA into GAM208869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2075 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2075 gene: GAM105501 target protein and GAM208869 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105501 and GAM208869

GR2076 AW961886 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2076(GR2076) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2076 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2076 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2076 gene encodes GR2076 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2076 precursor RNA folds spatially, forming GR2076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2076 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2076 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM72538 precursor RNA, GAM116654 precursor RNA, GAM160091 precursor RNA and GAM318909 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72538 RNA, GAM116654 RNA, GAM160091 RNA and GAM318909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72538 target RNA into GAM72538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116654 target RNA into GAM116654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160091 target RNA into GAM160091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318909 target RNA into GAM318909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2076 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2076 gene: GAM72538 target protein, GAM116654 target protein, GAM160091 target protein and GAM318909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72538, GAM116654, GAM160091 and GAM318909

GR2077 BI061125 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2077(GR2077) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2077 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2077 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2077 gene encodes GR2077 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2077 precursor RNA folds spatially, forming GR2077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2077 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2077 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208357 precursor RNA and GAM265394 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208357 RNA and GAM265394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208357 target RNA into GAM208357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265394 target RNA into GAM265394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2077 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2077 gene: GAM208357 target protein and GAM265394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208357 and GAM265394

GR2078 BQ028137 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2078(GR2078) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2078 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2078 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2078 gene encodes GR2078 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2078 precursor RNA folds spatially, forming GR2078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2078 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2078 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4773 precursor RNA and GAM36565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4773 RNA and GAM36565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4773 target RNA into GAM4773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36565 target RNA into GAM36565 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2078 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2078 gene: GAM4773 target protein and GAM36565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4773 and GAM36565

GR2079 R51198 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2079(GR2079) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2079 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2079 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2079 gene encodes GR2079 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2079 precursor RNA folds spatially, forming GR2079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2079 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2079 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7434 precursor RNA and GAM175570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7434 RNA and GAM175570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7434 target RNA into GAM7434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175570 target RNA into GAM175570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2079 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2079 gene: GAM7434 target protein and GAM175570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7434 and GAM175570

GR2080 AI991878 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2080(GR2080) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2080 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2080 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2080 gene encodes GR2080 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2080 precursor RNA folds spatially, forming GR2080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2080 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2080 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM127687 precursor RNA, GAM178521 precursor RNA and GAM224402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127687 RNA, GAM178521 RNA and GAM224402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127687 target RNA into GAM127687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178521 target RNA into GAM178521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224402 target RNA into GAM224402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2080 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2080 gene: GAM127687 target protein, GAM178521 target protein and GAM224402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127687, GAM178521 and GAM224402

GR2081 AA453576 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2081(GR2081) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2081 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2081 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2081 gene encodes GR2081 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2081 precursor RNA folds spatially, forming GR2081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2081 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2081 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM127910 precursor RNA and GAM294514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127910 RNA and GAM294514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127910 target RNA into GAM127910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294514 target RNA into GAM294514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2081 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2081 gene: GAM127910 target protein and GAM294514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127910 and GAM294514

GR2082 AW364787 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2082(GR2082) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2082 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2082 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2082 gene encodes GR2082 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2082 precursor RNA folds spatially, forming GR2082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2082 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2082 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5761 precursor RNA and GAM124812 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5761 RNA and GAM124812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5761 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5761 target RNA into GAM5761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124812 target RNA into GAM124812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2082 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2082 gene: GAM5761 target protein and GAM124812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5761 and GAM124812

GR2083 BF090145 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2083(GR2083) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2083 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2083 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2083 gene encodes GR2083 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2083 precursor RNA folds spatially, forming GR2083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2083 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2083 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM222 precursor RNA, GAM3447 precursor RNA and

GAM3655 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM222 RNA, GAM3447 RNA and GAM3655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222 target RNA into GAM222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3447 target RNA into GAM3447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3655 target RNA into GAM3655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2083 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2083 gene: GAM222 target protein, GAM3447 target protein and GAM3655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM222, GAM3447 and GAM3655

GR2084 BE003480 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2084(GR2084) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2084 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2084 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2084 gene encodes GR2084 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2084 precursor RNA folds spatially, forming GR2084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2084 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2084 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95458 precursor RNA and GAM123008 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95458 RNA and GAM123008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95458 target RNA into GAM95458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123008 target RNA into GAM123008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2084 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2084 gene: GAM95458 target protein and GAM123008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95458 and GAM123008

GR2085 N99182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2085(GR2085) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2085 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2085 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2085 gene encodes GR2085 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2085 precursor RNA folds spatially, forming GR2085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2085 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2085 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM146485 precursor RNA and GAM319616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146485 RNA and GAM319616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM146485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146485 target RNA into GAM146485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319616 target RNA into GAM319616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2085 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2085 gene: GAM146485 target protein and GAM319616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM146485 and GAM319616

GR2086 BE780184 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2086(GR2086) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2086 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2086 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2086 gene encodes GR2086 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2086 precursor RNA folds spatially, forming GR2086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2086 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2086 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM247 precursor RNA, GAM129354 precursor RNA and GAM289924 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM247 RNA, GAM129354 RNA and GAM289924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247 target RNA into GAM247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129354 target RNA into GAM129354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289924 target RNA into GAM289924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2086 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2086 gene: GAM247 target protein, GAM129354 target protein and GAM289924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM247, GAM129354 and GAM289924

GR2087 BG251473 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2087(GR2087) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2087 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2087 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2087 gene encodes GR2087 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2087 precursor RNA folds spatially, forming GR2087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2087 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2087 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM18391 precursor RNA and GAM93725 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18391 RNA and GAM93725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18391 target RNA into GAM18391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93725 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93725 target RNA into GAM93725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2087 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2087 gene: GAM18391 target protein and GAM93725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18391 and GAM93725

GR2088 BI225481 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2088(GR2088) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2088 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2088 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2088 gene encodes GR2088 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2088 precursor RNA folds spatially, forming GR2088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2088 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2088 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4607 precursor RNA and GAM248052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4607 RNA and GAM248052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4607 target RNA into GAM4607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248052 target RNA into GAM248052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2088 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2088 gene: GAM4607 target protein and GAM248052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4607 and GAM248052

GR2089 BF737966 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2089(GR2089) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2089 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2089 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2089 gene encodes GR2089 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2089 precursor RNA folds spatially, forming GR2089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2089 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2089 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM301 precursor RNA and GAM453 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM301 RNA and GAM453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301 target RNA into GAM301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM453 target RNA into GAM453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2089 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2089 gene: GAM301 target protein and GAM453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM301 and GAM453

GR2090 BG534178 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2090(GR2090) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2090 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2090 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2090 gene encodes GR2090 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2090 precursor RNA folds spatially, forming GR2090 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2090 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2090 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162572 precursor RNA and GAM288426 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162572 RNA and GAM288426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162572 target RNA into GAM162572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288426 target RNA into GAM288426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2090 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2090 gene: GAM162572 target protein and GAM288426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162572 and GAM288426

GR2091 AI751889 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2091(GR2091) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2091 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2091 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2091 gene encodes GR2091 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2091 precursor RNA folds spatially, forming GR2091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2091 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2091 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5518 precursor RNA, GAM75366 precursor RNA and GAM91458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5518 RNA, GAM75366 RNA and GAM91458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5518 target RNA into GAM5518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75366 target RNA into GAM75366 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91458 target RNA into GAM91458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2091 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2091 gene: GAM5518 target protein, GAM75366 target protein and GAM91458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5518, GAM75366 and GAM91458

GR2092 AI656172 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2092(GR2092) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2092 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2092 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2092 gene encodes GR2092 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2092 precursor RNA folds spatially, forming GR2092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2092 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2092 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40 precursor RNA and GAM6686 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40 RNA and GAM6686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40 target RNA into GAM40 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6686 target RNA into GAM6686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2092 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2092 gene: GAM40 target protein and GAM6686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40 and GAM6686

GR2093 BE894352 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2093(GR2093) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2093 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2093 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2093 gene encodes GR2093 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2093 precursor RNA folds spatially, forming GR2093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2093 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2093 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM91898 precursor RNA and GAM108426 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91898 RNA and GAM108426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91898 target RNA into GAM91898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108426 target RNA into GAM108426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2093 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2093 gene: GAM91898 target protein and GAM108426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91898 and GAM108426

GR2094 AI151407 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2094(GR2094) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2094 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2094 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2094 gene encodes GR2094 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2094 precursor RNA folds spatially, forming GR2094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2094 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2094 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM43805 precursor RNA, GAM46825 precursor RNA and GAM246194 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43805 RNA, GAM46825 RNA and GAM246194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43805 target RNA into GAM43805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46825 target RNA into GAM46825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246194 target RNA into GAM246194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2094 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2094 gene: GAM43805 target protein, GAM46825 target protein and GAM246194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43805, GAM46825 and GAM246194

GR2095 AI969710 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2095(GR2095) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2095 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2095 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2095 gene encodes GR2095 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2095 precursor RNA folds spatially, forming GR2095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2095 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2095 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM280669 precursor RNA and GAM310856 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM280669 RNA and GAM310856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM280669 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280669 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280669 target RNA into GAM280669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310856 target RNA into GAM310856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2095 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2095 gene: GAM280669 target protein and GAM310856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM280669 and GAM310856

GR2096 BG107185 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2096(GR2096) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2096 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2096 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2096 gene encodes GR2096 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2096 precursor RNA folds spatially, forming GR2096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2096 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2096 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1673 precursor RNA, GAM4413 precursor RNA, GAM68256 precursor RNA and GAM71101 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1673 RNA, GAM4413 RNA, GAM68256 RNA and GAM71101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1673 target RNA into GAM1673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4413 target RNA into GAM4413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68256 target RNA into GAM68256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71101

target RNA into GAM71101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2096 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2096 gene: GAM1673 target protein, GAM4413 target protein, GAM68256 target protein and GAM71101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1673, GAM4413, GAM68256 and GAM71101

GR2097 H60657 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2097(GR2097) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2097 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2097 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2097 gene encodes GR2097 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2097 precursor RNA folds spatially, forming GR2097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2097 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2097 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM123890 precursor RNA and GAM182236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM123890 RNA and GAM182236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM123890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123890 target RNA into GAM123890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182236 target RNA into GAM182236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2097 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2097 gene: GAM123890 target protein and GAM182236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM123890 and GAM182236

GR2098 BG184718 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2098(GR2098) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2098 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2098 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2098 gene encodes GR2098 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2098 precursor RNA folds spatially, forming GR2098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2098 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2098 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7153 precursor RNA and GAM264678 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7153 RNA and GAM264678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7153 target RNA into GAM7153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264678 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264678 target RNA into GAM264678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2098 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2098 gene: GAM7153 target protein and GAM264678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7153 and GAM264678

GR2099 BG616635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2099(GR2099) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2099 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2099 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2099 gene encodes GR2099 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2099 precursor RNA folds spatially, forming GR2099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2099 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2099 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56693 precursor RNA and GAM144511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56693 RNA and GAM144511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56693 target RNA into GAM56693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144511 target RNA into GAM144511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2099 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2099 gene: GAM56693 target protein and GAM144511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM56693 and GAM144511

GR2100 BF307193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2100(GR2100) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2100 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2100 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2100 gene encodes GR2100 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2100 precursor RNA folds spatially, forming GR2100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2100 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2100 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8097 precursor RNA and GAM87466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8097 RNA and GAM87466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8097 target RNA into GAM8097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87466 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87466 target RNA into GAM87466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2100 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2100 gene: GAM8097 target protein and GAM87466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8097 and GAM87466

GR2101 AA917786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2101(GR2101) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2101 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2101 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2101 gene encodes GR2101 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2101 precursor RNA folds spatially, forming GR2101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2101 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2101 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56209 precursor RNA and GAM182065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56209 RNA and GAM182065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM56209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56209 target RNA into GAM56209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182065 target RNA into GAM182065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2101 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2101 gene: GAM56209 target protein and GAM182065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56209 and GAM182065

GR2102 BE616295 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2102(GR2102) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2102 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2102 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2102 gene encodes GR2102 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2102 precursor RNA folds spatially, forming GR2102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2102 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2102 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4865 precursor RNA, GAM8174 precursor RNA and GAM273190 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4865 RNA, GAM8174 RNA and GAM273190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4865 target RNA into GAM4865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8174 target RNA into GAM8174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273190 target RNA into GAM273190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2102 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2102 gene: GAM4865 target protein, GAM8174 target protein and GAM273190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4865, GAM8174 and GAM273190

GR2103 BI045811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2103(GR2103) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2103 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2103 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2103 gene encodes GR2103 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2103 precursor RNA folds spatially, forming GR2103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2103 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2103 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM195836 precursor RNA and GAM303087 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM195836 RNA and GAM303087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM195836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195836 target RNA into GAM195836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303087 target RNA into GAM303087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2103 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2103 gene: GAM195836 target protein and GAM303087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM195836 and GAM303087

GR2104 R60545 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2104(GR2104) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2104 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2104 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2104 gene encodes GR2104 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2104 precursor RNA folds spatially, forming GR2104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2104 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2104 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8177 precursor RNA and GAM8381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8177 RNA and GAM8381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8177 target RNA into GAM8177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8381 target RNA into GAM8381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2104 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2104 gene: GAM8177 target protein and GAM8381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8177 and GAM8381

GR2105 AI471691 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2105(GR2105) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2105 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2105 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2105 gene encodes GR2105 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2105 precursor RNA folds spatially, forming GR2105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2105 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2105 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM170495 precursor RNA, GAM241978 precursor RNA and GAM329070 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170495 RNA, GAM241978 RNA and GAM329070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170495 target RNA into GAM170495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241978 target RNA into GAM241978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329070 target RNA into GAM329070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2105 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2105 gene: GAM170495 target protein, GAM241978 target protein and GAM329070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170495, GAM241978 and GAM329070

GR2106 BG770204 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2106(GR2106) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2106 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2106 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2106 gene encodes GR2106 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2106 precursor RNA folds spatially, forming GR2106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2106 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2106 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6378 precursor RNA, GAM239483 precursor RNA and GAM272377 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6378 RNA, GAM239483 RNA and GAM272377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6378 target RNA into GAM6378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239483 target RNA into GAM239483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272377 target RNA into GAM272377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2106 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2106 gene: GAM6378 target protein, GAM239483 target protein and GAM272377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6378, GAM239483 and GAM272377

GR2107 BM783345 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2107(GR2107) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2107 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2107 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2107 gene encodes GR2107 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2107 precursor RNA folds spatially, forming GR2107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2107 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2107 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65734 precursor RNA and GAM211391 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65734 RNA and GAM211391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65734 target RNA into GAM65734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211391 target RNA into GAM211391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2107 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2107 gene: GAM65734 target protein and GAM211391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65734 and GAM211391

GR2108 BE251590 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2108(GR2108) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2108 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2108 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2108 gene encodes GR2108 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2108 precursor RNA folds spatially, forming GR2108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2108 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2108 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6625 precursor RNA and GAM99146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6625 RNA and GAM99146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6625 target RNA into GAM6625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99146 target RNA into GAM99146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2108 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2108 gene: GAM6625 target protein and GAM99146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6625 and GAM99146

GR2109 AW518597 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2109(GR2109) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2109 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2109 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2109 gene encodes GR2109 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2109 precursor RNA folds spatially, forming GR2109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2109 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2109 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM89398 precursor RNA and GAM182715 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89398 RNA and GAM182715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89398 target RNA into GAM89398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182715

target RNA into GAM182715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2109 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2109 gene: GAM89398 target protein and GAM182715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89398 and GAM182715

GR2110 AA531578 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2110(GR2110) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2110 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2110 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2110 gene encodes GR2110 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2110 precursor RNA folds spatially, forming GR2110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2110 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2110 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM91182 precursor RNA and GAM295256 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91182 RNA and GAM295256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91182 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91182 target RNA into GAM91182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295256 target RNA into GAM295256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2110 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2110 gene: GAM91182 target protein and GAM295256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91182 and GAM295256

GR2111 BG505514 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2111(GR2111) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2111 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2111 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2111 gene encodes GR2111 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2111 precursor RNA folds spatially, forming GR2111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2111 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2111 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2111 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM142977 precursor RNA and GAM216913 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142977 RNA and GAM216913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142977 target RNA into GAM142977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216913 target RNA into GAM216913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2111 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2111 gene: GAM142977 target protein and GAM216913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142977 and GAM216913

GR2112 AL700770 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2112(GR2112) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2112 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2112 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2112 gene encodes GR2112 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2112 precursor RNA folds spatially, forming GR2112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2112 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2112 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM232639 precursor RNA and GAM254169 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM232639 RNA and GAM254169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM232639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232639 target RNA into GAM232639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254169 target RNA into GAM254169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2112 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2112 gene: GAM232639 target protein and GAM254169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM232639 and GAM254169

GR2113 BF204153 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2113(GR2113) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2113 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2113 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2113 gene encodes GR2113 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2113 precursor RNA folds spatially, forming GR2113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2113 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2113 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM170435 precursor RNA and GAM177246 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170435 RNA and GAM177246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170435 target RNA into GAM170435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177246 target RNA into GAM177246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2113 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2113 gene: GAM170435 target protein and GAM177246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170435 and GAM177246

GR2114 AV651916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2114(GR2114) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2114 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2114 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2114 gene encodes GR2114 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2114 precursor RNA folds spatially, forming GR2114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2114 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2114 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM47549 precursor RNA and GAM255373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47549 RNA and GAM255373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47549 target RNA into GAM47549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255373 target RNA into GAM255373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2114 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2114 gene: GAM47549 target protein and GAM255373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47549 and GAM255373

GR2115 H83719 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2115(GR2115) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2115 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2115 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2115 gene encodes GR2115 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2115 precursor RNA folds spatially, forming GR2115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2115 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2115 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM33337 precursor RNA and GAM176643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33337 RNA and GAM176643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33337 target RNA into GAM33337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176643 target RNA into GAM176643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2115 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2115 gene: GAM33337 target protein and GAM176643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33337 and GAM176643

GR2116 BF379928 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2116(GR2116) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2116 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2116 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2116 gene encodes GR2116 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2116 precursor RNA folds spatially, forming GR2116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2116 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2116 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6607 precursor RNA, GAM17586 precursor RNA and GAM299279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6607 RNA, GAM17586 RNA and GAM299279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6607 target RNA into GAM6607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17586 target RNA into GAM17586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299279

target RNA into GAM299279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2116 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2116 gene: GAM6607 target protein, GAM17586 target protein and GAM299279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6607, GAM17586 and GAM299279

GR2117 BM461434 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2117(GR2117) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2117 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2117 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2117 gene encodes GR2117 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2117 precursor RNA folds spatially, forming GR2117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2117 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2117 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM305 precursor RNA and GAM36790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM305 RNA and GAM36790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305 target RNA into GAM305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36790 target RNA into GAM36790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2117 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2117 gene: GAM305 target protein and GAM36790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM305 and GAM36790

GR2118 AW085754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2118(GR2118) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2118 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2118 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2118 gene encodes GR2118 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2118 precursor RNA folds spatially, forming GR2118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2118 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2118 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88093 precursor RNA and GAM133875 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88093 RNA and GAM133875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88093 target RNA into GAM88093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133875 target RNA into GAM133875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2118 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2118 gene: GAM88093 target protein and GAM133875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88093 and GAM133875

GR2119 BI561473 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2119(GR2119) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2119 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2119 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2119 gene encodes GR2119 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2119 precursor RNA folds spatially, forming GR2119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2119 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2119 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM47263 precursor RNA and GAM215173 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47263 RNA and GAM215173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47263 target RNA into GAM47263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215173 target RNA into GAM215173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2119 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2119 gene: GAM47263 target protein and GAM215173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM47263 and GAM215173

GR2120 AA764809 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2120(GR2120) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2120 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2120 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2120 gene encodes GR2120 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2120 precursor RNA folds spatially, forming GR2120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2120 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2120 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21842 precursor RNA and GAM178173 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21842 RNA and GAM178173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21842 target RNA into GAM21842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178173 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178173 target RNA into GAM178173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2120 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2120 gene: GAM21842 target protein and GAM178173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21842 and GAM178173

GR2121 BG877250 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2121(GR2121) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2121 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2121 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2121 gene encodes GR2121 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2121 precursor RNA folds spatially, forming GR2121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2121 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2121 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6037 precursor RNA, GAM17454 precursor RNA and GAM200071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6037 RNA, GAM17454 RNA and GAM200071 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6037 target RNA into GAM6037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17454 target RNA into GAM17454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200071 target RNA into GAM200071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2121 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2121 gene: GAM6037 target protein, GAM17454 target protein and GAM200071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6037, GAM17454 and GAM200071

GR2122 AI245869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2122(GR2122) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2122 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2122 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2122 gene encodes GR2122 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2122 precursor RNA folds spatially, forming GR2122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2122 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2122 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26865 precursor RNA and GAM142422 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26865 RNA and GAM142422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26865 target RNA into GAM26865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142422 target RNA into GAM142422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2122 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2122 gene: GAM26865 target protein and GAM142422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26865 and GAM142422

GR2123 BG386698 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2123(GR2123) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2123 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2123 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2123 gene encodes GR2123 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2123 precursor RNA folds spatially, forming GR2123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2123 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2123 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133130 precursor RNA and GAM269293 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133130 RNA and GAM269293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133130 target RNA into GAM133130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269293 target RNA into GAM269293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2123 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2123 gene: GAM133130 target protein and GAM269293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133130 and GAM269293

GR2124 BF856014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2124(GR2124) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2124 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2124 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2124 gene encodes GR2124 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2124 precursor RNA folds spatially, forming GR2124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2124 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2124 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM227 precursor RNA and GAM48145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM227 RNA and GAM48145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227 target RNA into GAM227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48145 target RNA into GAM48145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2124 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2124 gene: GAM227 target protein and GAM48145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM227 and GAM48145

GR2125 BF830930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2125(GR2125) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2125 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2125 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2125 gene encodes GR2125 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2125 precursor RNA folds spatially, forming GR2125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2125 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2125 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5119 precursor RNA and GAM271314 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5119 RNA and GAM271314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5119 target RNA into GAM5119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271314 target RNA into GAM271314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2125 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2125 gene: GAM5119 target protein and GAM271314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5119 and GAM271314

GR2126 BE674169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2126(GR2126) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2126 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2126 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2126 gene encodes GR2126 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2126 precursor RNA folds spatially, forming GR2126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2126 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2126 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM61966 precursor RNA and GAM166888 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM61966 RNA and GAM166888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM61966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61966 target RNA into GAM61966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166888 target RNA into GAM166888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2126 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2126 gene: GAM61966 target protein and GAM166888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM61966 and GAM166888

GR2127 BG178232 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2127(GR2127) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2127 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2127 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2127 gene encodes GR2127 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2127 precursor RNA folds spatially, forming GR2127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2127 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2127 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53980 precursor RNA and GAM122479 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53980 RNA and GAM122479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53980 target RNA into GAM53980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM122479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122479 target RNA into GAM122479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2127 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2127 gene: GAM53980 target protein and GAM122479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53980 and GAM122479

GR2128 AW062805 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2128(GR2128) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2128 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2128 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2128 gene encodes GR2128 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2128 precursor RNA folds spatially, forming GR2128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2128 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2128 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM2379 precursor RNA, GAM8306 precursor RNA, GAM8706 precursor RNA, GAM96276 precursor RNA and GAM300180 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2379 RNA, GAM8306 RNA, GAM8706 RNA, GAM96276 RNA and GAM300180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2379 target RNA into GAM2379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8306 target RNA into GAM8306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8706 target RNA into GAM8706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96276 target RNA into GAM96276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300180 target RNA into GAM300180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2128 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2128 gene: GAM2379 target protein, GAM8306 target protein, GAM8706 target protein, GAM96276 target

protein and GAM300180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2379, GAM8306, GAM8706, GAM96276 and GAM300180

GR2129 AW895380 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2129(GR2129) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2129 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2129 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2129 gene encodes GR2129 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2129 precursor RNA folds spatially, forming GR2129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2129 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2129 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36717 precursor RNA and GAM264676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36717 RNA and GAM264676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36717 target RNA into GAM36717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264676 target RNA into GAM264676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2129 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2129 gene: GAM36717 target protein and GAM264676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36717 and GAM264676

GR2130 BE085265 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2130(GR2130) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2130 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2130 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2130 gene encodes GR2130 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2130 precursor RNA folds spatially, forming GR2130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2130 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2130 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3454 precursor RNA and GAM38071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3454 RNA and GAM38071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3454 target RNA into GAM3454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38071 target RNA into GAM38071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2130 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2130 gene: GAM3454 target protein and GAM38071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3454 and GAM38071

GR2131 R67850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2131(GR2131) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2131 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2131 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2131 gene encodes GR2131 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2131 precursor RNA folds spatially, forming GR2131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2131 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2131 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6903 precursor RNA and GAM182869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6903 RNA and GAM182869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6903 target RNA into GAM6903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182869 target RNA into GAM182869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2131 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2131 gene: GAM6903 target protein and GAM182869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6903 and GAM182869

GR2132 BM908413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2132(GR2132) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2132 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2132 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2132 gene encodes GR2132 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2132 precursor RNA folds spatially, forming GR2132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2132 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2132 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81075 precursor RNA and GAM132928 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81075 RNA and GAM132928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81075 target RNA into GAM81075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132928 target RNA into GAM132928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2132 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2132 gene: GAM81075 target protein and GAM132928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81075 and GAM132928

GR2133 AI860184 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2133(GR2133) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2133 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2133 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2133 gene encodes GR2133 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2133 precursor RNA folds spatially, forming GR2133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2133 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2133 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1591 precursor RNA and GAM151801 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1591 RNA and GAM151801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1591 target RNA into

GAM1591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151801 target RNA into GAM151801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2133 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2133 gene: GAM1591 target protein and GAM151801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1591 and GAM151801

GR2134 AW406997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2134(GR2134) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2134 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2134 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2134 gene encodes GR2134 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2134 precursor RNA folds spatially, forming GR2134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2134 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2134 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5251 precursor RNA, GAM33886 precursor RNA and GAM128434 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5251 RNA, GAM33886 RNA and GAM128434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5251 target RNA into GAM5251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33886 target RNA into GAM33886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128434 target RNA into GAM128434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2134 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2134 gene: GAM5251 target protein, GAM33886 target protein and GAM128434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5251, GAM33886 and GAM128434

GR2135 BM478896 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2135(GR2135) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2135 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2135 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2135 gene encodes GR2135 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2135 precursor RNA folds spatially, forming GR2135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2135 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2135 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2602 precursor RNA, GAM34956 precursor RNA and GAM217733 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2602 RNA, GAM34956 RNA and GAM217733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2602 target RNA into GAM2602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34956 target RNA into GAM34956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217733 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217733 target RNA into GAM217733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2135 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2135 gene: GAM2602 target protein, GAM34956 target protein and GAM217733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2602, GAM34956 and GAM217733

GR2136 BE966319 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2136(GR2136) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2136 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2136 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2136 gene encodes GR2136 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2136 precursor RNA folds spatially, forming GR2136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2136 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2136 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM218862 precursor RNA and GAM300572 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218862 RNA and GAM300572 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218862 target RNA into GAM218862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300572 target RNA into GAM300572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2136 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2136 gene: GAM218862 target protein and GAM300572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218862 and GAM300572

GR2137 AI613332 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2137(GR2137) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2137 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2137 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2137 gene encodes GR2137 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2137 precursor RNA folds spatially, forming GR2137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2137 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2137 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM160092 precursor RNA, GAM167654 precursor RNA and GAM304778 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM160092 RNA, GAM167654 RNA and GAM304778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM160092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160092 target RNA into GAM160092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167654 target RNA into GAM167654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304778 target RNA into GAM304778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2137 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2137 gene: GAM160092 target protein, GAM167654 target protein and GAM304778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM160092, GAM167654 and

GAM304778

GR2138 BF680312 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2138(GR2138) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2138 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2138 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2138 gene encodes GR2138 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2138 precursor RNA folds spatially, forming GR2138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2138 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2138 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2991 precursor RNA, GAM170327 precursor RNA and GAM190709 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2991 RNA, GAM170327 RNA and GAM190709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2991 target RNA into GAM2991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM170327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170327 target RNA into GAM170327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190709 target RNA into GAM190709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2138 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2138 gene: GAM2991 target protein, GAM170327 target protein and GAM190709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2991, GAM170327 and GAM190709

GR2139 BQ060769 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2139(GR2139) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2139 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2139 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2139 gene encodes GR2139 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2139 precursor RNA folds spatially, forming GR2139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2139 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2139 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2139 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM168277 precursor RNA, GAM256501 precursor RNA and GAM282516 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM168277 RNA, GAM256501 RNA and GAM282516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM168277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168277 target RNA into GAM168277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256501 target RNA into GAM256501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282516 target RNA into GAM282516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2139 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2139 gene: GAM168277 target protein, GAM256501 target protein and GAM282516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM168277, GAM256501 and GAM282516

GR2140 AL708082 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2140(GR2140) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2140 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2140 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2140 gene encodes GR2140 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2140 precursor RNA folds spatially, forming GR2140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2140 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2140 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3731 precursor RNA and GAM224100 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3731 RNA and GAM224100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3731 target RNA into GAM3731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224100 target RNA into GAM224100 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2140 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2140 gene: GAM3731 target protein and GAM224100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3731 and GAM224100

GR2141 AA788719 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2141(GR2141) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2141 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2141 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2141 gene encodes GR2141 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2141 precursor RNA folds spatially, forming GR2141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2141 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2141 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM179988 precursor RNA and GAM319775 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM179988 RNA and GAM319775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM179988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM179988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179988 target RNA into GAM179988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319775 target RNA into GAM319775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2141 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2141 gene: GAM179988 target protein and GAM319775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM179988 and GAM319775

GR2142 AW851424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2142(GR2142) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2142 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2142 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2142 gene encodes GR2142 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2142 precursor RNA folds spatially, forming GR2142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2142 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2142 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM3560 precursor RNA, GAM11205 precursor RNA and GAM295190 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3560 RNA, GAM11205 RNA and GAM295190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3560 target RNA into GAM3560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11205 target RNA into GAM11205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295190 target RNA into GAM295190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2142 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2142 gene: GAM3560 target protein, GAM11205 target protein and GAM295190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3560, GAM11205 and GAM295190

GR2143 BF881257 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2143(GR2143) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2143 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2143 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2143 gene encodes GR2143 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2143 precursor RNA folds spatially, forming GR2143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2143 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2143 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1978 precursor RNA, GAM194885 precursor RNA and GAM232634 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1978 RNA, GAM194885 RNA and GAM232634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1978 target RNA into GAM1978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194885 target RNA into GAM194885 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232634 target RNA into GAM232634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2143 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2143 gene: GAM1978 target protein, GAM194885 target protein and GAM232634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1978, GAM194885 and GAM232634

GR2144 AW118551 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2144(GR2144) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2144 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2144 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2144 gene encodes GR2144 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2144 precursor RNA folds spatially, forming GR2144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2144 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2144 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM114357 precursor RNA and GAM153005 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM114357 RNA and GAM153005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM114357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114357 target RNA into GAM114357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM153005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153005 target RNA into GAM153005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2144 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2144 gene: GAM114357 target protein and GAM153005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM114357 and GAM153005

GR2145 AV660680 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2145(GR2145) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2145 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2145 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2145 gene encodes GR2145 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2145 precursor RNA folds spatially, forming GR2145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2145 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2145 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1027 precursor RNA, GAM1661 precursor RNA and GAM141681 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1027 RNA, GAM1661 RNA and GAM141681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1027 target RNA into GAM1027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1661 target RNA into GAM1661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141681 target RNA into GAM141681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2145 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2145 gene: GAM1027 target

protein, GAM1661 target protein and GAM141681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1027, GAM1661 and GAM141681

GR2146 AW022173 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2146(GR2146) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2146 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2146 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2146 gene encodes GR2146 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2146 precursor RNA folds spatially, forming GR2146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2146 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2146 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6824 precursor RNA, GAM128108 precursor RNA and GAM320532 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6824 RNA, GAM128108 RNA and GAM320532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6824 target RNA into

GAM6824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128108 target RNA into GAM128108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320532 target RNA into GAM320532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2146 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2146 gene: GAM6824 target protein, GAM128108 target protein and GAM320532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6824, GAM128108 and GAM320532

GR2147 AA021427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2147(GR2147) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2147 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2147 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2147 gene encodes GR2147 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2147 precursor RNA folds spatially, forming GR2147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2147 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2147 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM58734 precursor RNA, GAM116093 precursor RNA and GAM330247 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58734 RNA, GAM116093 RNA and GAM330247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58734 target RNA into GAM58734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116093 target RNA into GAM116093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330247 target RNA into GAM330247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2147 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2147 gene: GAM58734 target protein, GAM116093 target protein and GAM330247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58734, GAM116093 and

GAM330247

GR2148 BG497715 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2148(GR2148) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2148 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2148 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2148 gene encodes GR2148 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2148 precursor RNA folds spatially, forming GR2148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2148 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2148 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM149213 precursor RNA and GAM263671 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM149213 RNA and GAM263671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM149213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149213 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149213 target RNA into GAM149213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263671 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263671 target RNA into GAM263671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2148 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2148 gene: GAM149213 target protein and GAM263671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM149213 and GAM263671

GR2149 BQ051349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2149(GR2149) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2149 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2149 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2149 gene encodes GR2149 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2149 precursor RNA folds spatially, forming GR2149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2149 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2149 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1308 precursor RNA and GAM38152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1308 RNA and GAM38152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM1308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1308 target RNA into GAM1308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38152 target RNA into GAM38152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2149 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2149 gene: GAM1308 target protein and GAM38152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1308 and GAM38152

GR2150 AU159079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2150(GR2150) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2150 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2150 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2150 gene encodes GR2150 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2150 precursor RNA folds spatially, forming GR2150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2150 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2150 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3834 precursor RNA, GAM260253 precursor RNA and GAM278548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3834 RNA, GAM260253 RNA and GAM278548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3834 target RNA into GAM3834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260253 target RNA into GAM260253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278548 target RNA into GAM278548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2150 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2150 gene: GAM3834 target protein, GAM260253 target protein and GAM278548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3834, GAM260253 and GAM278548

GR2151 BF984657 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2151(GR2151) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2151 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2151 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2151 gene encodes GR2151 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2151 precursor RNA folds spatially, forming GR2151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2151 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2151 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7583 precursor RNA and GAM284018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7583 RNA and GAM284018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7583 target RNA into GAM7583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284018 target RNA into GAM284018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2151 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2151 gene: GAM7583 target protein and GAM284018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7583 and GAM284018

GR2152 AI636056 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2152(GR2152) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2152 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2152 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2152 gene encodes GR2152 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2152 precursor RNA folds spatially, forming GR2152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2152 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2152 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4993 precursor RNA and GAM168771 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4993 RNA and GAM168771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4993 target RNA into GAM4993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168771 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168771 target RNA into GAM168771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2152 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2152 gene: GAM4993 target protein and GAM168771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4993 and GAM168771

GR2153 BI600179 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2153(GR2153) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2153 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2153 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2153 gene encodes GR2153 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2153 precursor RNA folds spatially, forming GR2153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2153 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2153 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM233320 precursor RNA and GAM306425 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM233320 RNA and GAM306425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM233320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233320 target RNA into GAM233320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306425 target RNA into GAM306425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2153 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2153 gene: GAM233320 target protein and GAM306425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM233320 and GAM306425

GR2154 AA601630 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2154(GR2154) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2154 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2154 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2154 gene encodes GR2154 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2154 precursor RNA folds spatially, forming GR2154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2154 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2154 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6485 precursor RNA, GAM7106 precursor RNA and GAM267519 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6485 RNA, GAM7106 RNA and GAM267519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6485 target RNA into GAM6485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7106 target RNA into GAM7106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267519

target RNA into GAM267519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2154 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2154 gene: GAM6485 target protein, GAM7106 target protein and GAM267519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6485, GAM7106 and GAM267519

GR2155 BG540627 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2155(GR2155) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2155 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2155 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2155 gene encodes GR2155 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2155 precursor RNA folds spatially, forming GR2155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2155 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2155 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3864 precursor RNA and GAM5253 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3864 RNA and GAM5253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3864 target RNA into GAM3864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5253 target RNA into GAM5253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2155 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2155 gene: GAM3864 target protein and GAM5253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3864 and GAM5253

GR2156 AI024865 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2156(GR2156) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2156 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2156 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2156 gene encodes GR2156 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2156 precursor RNA folds spatially, forming GR2156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2156 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2156 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8048 precursor RNA, GAM83337 precursor RNA and GAM144380 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8048 RNA, GAM83337 RNA and GAM144380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8048 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8048 target RNA into GAM8048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83337 target RNA into GAM83337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144380 target RNA into GAM144380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2156 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2156 gene: GAM8048 target protein, GAM83337 target protein and GAM144380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8048, GAM83337 and GAM144380

GR2157 BF671252 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2157(GR2157) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2157 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2157 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2157 gene encodes GR2157 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2157 precursor RNA folds spatially, forming GR2157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2157 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2157 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6887 precursor RNA and GAM228094 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6887 RNA and GAM228094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6887 target RNA into GAM6887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228094

target RNA into GAM228094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2157 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2157 gene: GAM6887 target protein and GAM228094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6887 and GAM228094

GR2158 BI871749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2158(GR2158) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2158 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2158 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2158 gene encodes GR2158 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2158 precursor RNA folds spatially, forming GR2158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2158 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2158 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM296819 precursor RNA and GAM323722 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM296819 RNA and GAM323722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM296819 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296819 target RNA into GAM296819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323722 target RNA into GAM323722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2158 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2158 gene: GAM296819 target protein and GAM323722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM296819 and GAM323722

GR2159 BM728667 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2159(GR2159) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2159 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2159 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2159 gene encodes GR2159 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2159 precursor RNA folds spatially, forming GR2159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2159 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2159 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2159 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5523 precursor RNA, GAM228989 precursor RNA and GAM299269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5523 RNA, GAM228989 RNA and GAM299269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5523 target RNA into GAM5523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228989 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228989 target RNA into GAM228989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299269 target RNA into GAM299269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2159 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2159 gene: GAM5523 target protein, GAM228989 target protein and GAM299269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5523, GAM228989 and GAM299269

GR2160 BI548079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2160(GR2160) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2160 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2160 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2160 gene encodes GR2160 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2160 precursor RNA folds spatially, forming GR2160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2160 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2160 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2395 precursor RNA and GAM216485 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2395 RNA and GAM216485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2395 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2395 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2395 target RNA into GAM2395 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216485 target RNA into GAM216485 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2160 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2160 gene: GAM2395 target protein and GAM216485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2395 and GAM216485

GR2161 AA337095 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2161(GR2161) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2161 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2161 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2161 gene encodes GR2161 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2161 precursor RNA folds spatially, forming GR2161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2161 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2161 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41972 precursor RNA and GAM43637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41972 RNA and GAM43637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM41972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41972 target RNA into GAM41972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43637 target RNA into GAM43637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2161 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2161 gene: GAM41972 target protein and GAM43637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41972 and GAM43637

GR2162 AA063205 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2162(GR2162) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2162 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2162 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2162 gene encodes GR2162 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2162 precursor RNA folds spatially, forming GR2162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2162 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2162 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM13436 precursor RNA and GAM121001 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13436 RNA and GAM121001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13436 target RNA into GAM13436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121001 target RNA into GAM121001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2162 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2162 gene: GAM13436 target protein and GAM121001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13436 and GAM121001

GR2163 AA720729 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2163(GR2163) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2163 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2163 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2163 gene encodes GR2163 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2163 precursor RNA folds spatially, forming GR2163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2163 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2163 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4168 precursor RNA, GAM6744 precursor RNA and GAM176175 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4168 RNA, GAM6744 RNA and GAM176175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4168 target RNA into GAM4168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6744 target RNA into GAM6744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176175 target RNA into GAM176175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2163 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2163 gene: GAM4168 target protein, GAM6744 target protein and GAM176175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4168, GAM6744 and GAM176175

GR2164 BE177402 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2164(GR2164) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2164 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2164 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2164 gene encodes GR2164 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2164 precursor RNA folds spatially, forming GR2164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2164 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2164 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67767 precursor RNA and GAM330985 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67767 RNA and GAM330985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67767 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67767 target RNA into GAM67767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330985 target RNA into GAM330985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2164 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2164 gene: GAM67767 target protein and GAM330985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67767 and GAM330985

GR2165 BG202122 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2165(GR2165) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2165 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2165 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2165 gene encodes GR2165 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2165 precursor RNA folds spatially, forming GR2165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2165 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2165 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56974 precursor RNA and GAM300816 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56974 RNA and GAM300816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56974 target RNA into GAM56974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300816 target RNA into GAM300816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2165 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2165 gene: GAM56974 target protein and GAM300816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56974 and GAM300816

GR2166 W48735 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2166(GR2166) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2166 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2166 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2166 gene encodes GR2166 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2166 precursor RNA folds spatially, forming GR2166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2166 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2166 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189490 precursor RNA and GAM243022 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189490 RNA and GAM243022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189490 target RNA into GAM189490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243022 target RNA into GAM243022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2166 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2166 gene: GAM189490 target protein and GAM243022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189490 and GAM243022

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2167(GR2167) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2167 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2167 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2167 gene encodes GR2167 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2167 precursor RNA folds spatially, forming GR2167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2167 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2167 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82891 precursor RNA and GAM297343 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82891 RNA and GAM297343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82891 target RNA into GAM82891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297343

target RNA into GAM297343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2167 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2167 gene: GAM82891 target protein and GAM297343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82891 and GAM297343

GR2168 BG424088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2168(GR2168) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2168 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2168 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2168 gene encodes GR2168 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2168 precursor RNA folds spatially, forming GR2168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2168 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2168 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8264 precursor RNA and GAM251181 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8264 RNA and GAM251181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8264 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8264 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8264 target RNA into GAM8264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251181 target RNA into GAM251181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2168 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2168 gene: GAM8264 target protein and GAM251181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8264 and GAM251181

GR2169 BE562282 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2169(GR2169) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2169 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2169 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2169 gene encodes GR2169 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2169 precursor RNA folds spatially, forming GR2169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2169 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2169 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2169 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM962 precursor RNA, GAM64802 precursor RNA and GAM293913 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM962 RNA, GAM64802 RNA and GAM293913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM962 target RNA into GAM962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64802 target RNA into GAM64802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293913 target RNA into GAM293913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2169 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2169 gene: GAM962 target protein, GAM64802 target protein and GAM293913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM962, GAM64802 and GAM293913

GR2170 BF891187 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2170(GR2170) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2170 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2170 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2170 gene encodes GR2170 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2170 precursor RNA folds spatially, forming GR2170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2170 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2170 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM48093 precursor RNA, GAM53310 precursor RNA and GAM178135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48093 RNA, GAM53310 RNA and GAM178135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48093 target RNA into GAM48093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53310

target RNA into GAM53310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178135 target RNA into GAM178135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2170 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2170 gene: GAM48093 target protein, GAM53310 target protein and GAM178135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48093, GAM53310 and GAM178135

GR2171 BE271352 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2171(GR2171) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2171 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2171 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2171 gene encodes GR2171 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2171 precursor RNA folds spatially, forming GR2171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2171 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2171 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4945 precursor RNA and GAM148837 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4945 RNA and GAM148837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4945 target RNA into GAM4945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148837 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148837 target RNA into GAM148837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2171 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2171 gene: GAM4945 target protein and GAM148837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4945 and GAM148837

GR2172 BG118577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2172(GR2172) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2172 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2172 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2172 gene encodes GR2172 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2172 precursor RNA folds spatially, forming GR2172 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2172 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2172 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5421 precursor RNA, GAM7573 precursor RNA and GAM229210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5421 RNA, GAM7573 RNA and GAM229210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5421 target RNA into GAM5421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7573 target RNA into GAM7573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229210 target RNA into GAM229210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2172 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2172 gene: GAM5421 target protein, GAM7573 target protein and GAM229210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5421, GAM7573 and GAM229210

GR2173 AA985120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2173(GR2173) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2173 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2173 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2173 gene encodes GR2173 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2173 precursor RNA folds spatially, forming GR2173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2173 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2173 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41405 precursor RNA, GAM60462 precursor RNA and GAM142166 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41405 RNA, GAM60462 RNA and GAM142166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41405 target RNA into GAM41405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60462 target RNA into GAM60462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142166 target RNA into GAM142166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2173 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2173 gene: GAM41405 target protein, GAM60462 target protein and GAM142166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41405, GAM60462 and GAM142166

GR2174 BF229079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2174(GR2174) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2174 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2174 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2174 gene encodes GR2174 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2174 precursor RNA folds spatially, forming GR2174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2174 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2174 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3419 precursor RNA and GAM8546 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3419 RNA and GAM8546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3419 target RNA into GAM3419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8546 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8546 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8546 target RNA into GAM8546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2174 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2174 gene: GAM3419 target protein and GAM8546 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3419 and GAM8546

GR2175 BG001333 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2175(GR2175) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2175 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2175 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2175 gene encodes GR2175 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2175 precursor RNA folds spatially, forming GR2175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2175 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2175 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM70562 precursor RNA and GAM224547 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70562 RNA and GAM224547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70562 target RNA into GAM70562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224547 target RNA into GAM224547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2175 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2175 gene: GAM70562 target protein and GAM224547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70562 and GAM224547

GR2176 R38456 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2176(GR2176) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2176 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2176 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2176 gene encodes GR2176 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2176 precursor RNA folds spatially, forming GR2176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2176 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2176 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6082 precursor RNA, GAM26866 precursor RNA and GAM305189 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6082 RNA, GAM26866 RNA and GAM305189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6082 target RNA into

GAM6082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26866 target RNA into GAM26866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305189 target RNA into GAM305189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2176 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2176 gene: GAM6082 target protein, GAM26866 target protein and GAM305189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6082, GAM26866 and GAM305189

GR2177 BG548655 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2177(GR2177) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2177 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2177 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2177 gene encodes GR2177 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2177 precursor RNA folds spatially, forming GR2177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2177 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2177 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2598 precursor RNA and GAM23011 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2598 RNA and GAM23011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2598 target RNA into GAM2598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23011 target RNA into GAM23011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2177 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2177 gene: GAM2598 target protein and GAM23011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2598 and GAM23011

GR2178 BF508156 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2178(GR2178) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2178 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2178 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2178 gene encodes GR2178 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2178 precursor RNA folds spatially, forming GR2178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2178 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2178 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM125119 precursor RNA and GAM158813 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125119 RNA and GAM158813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125119 target RNA into GAM125119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158813 target RNA into GAM158813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2178 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2178 gene: GAM125119 target

protein and GAM158813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125119 and GAM158813

GR2179 N41805 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2179(GR2179) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2179 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2179 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2179 gene encodes GR2179 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2179 precursor RNA folds spatially, forming GR2179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2179 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2179 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM798 precursor RNA and GAM3012 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM798 RNA and GAM3012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM798 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM798 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM798 target RNA into GAM798 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3012 target RNA into GAM3012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2179 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2179 gene: GAM798 target protein and GAM3012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM798 and GAM3012

GR2180 BE395085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2180(GR2180) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2180 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2180 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2180 gene encodes GR2180 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2180 precursor RNA folds spatially, forming GR2180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2180 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2180 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7039 precursor RNA, GAM99749 precursor RNA, GAM242352 precursor RNA and GAM306834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7039 RNA, GAM99749 RNA, GAM242352 RNA and GAM306834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7039 target RNA into GAM7039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99749 target RNA into GAM99749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242352 target RNA into GAM242352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306834 target RNA into GAM306834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2180 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2180 gene: GAM7039 target protein, GAM99749 target protein, GAM242352 target protein and GAM306834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7039, GAM99749, GAM242352 and GAM306834

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2181(GR2181) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2181 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2181 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2181 gene encodes GR2181 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2181 precursor RNA folds spatially, forming GR2181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2181 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2181 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM271043 precursor RNA and GAM305923 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM271043 RNA and GAM305923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM271043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271043 target RNA into GAM271043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305923 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305923

target RNA into GAM305923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2181 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2181 gene: GAM271043 target protein and GAM305923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM271043 and GAM305923

GR2182 AL546762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2182(GR2182) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2182 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2182 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2182 gene encodes GR2182 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2182 precursor RNA folds spatially, forming GR2182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2182 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2182 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM279528 precursor RNA and GAM284081 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM279528 RNA and GAM284081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM279528 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279528 target RNA into GAM279528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284081 target RNA into GAM284081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2182 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2182 gene: GAM279528 target protein and GAM284081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM279528 and GAM284081

GR2183 BF218090 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2183(GR2183) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2183 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2183 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2183 gene encodes GR2183 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2183 precursor RNA folds spatially, forming GR2183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2183 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2183 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2183 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17707 precursor RNA and GAM310870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17707 RNA and GAM310870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17707 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17707 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17707 target RNA into GAM17707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310870 target RNA into GAM310870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2183 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2183 gene: GAM17707 target protein and GAM310870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17707 and GAM310870

GR2184 BF792456 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2184(GR2184) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2184 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2184 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2184 gene encodes GR2184 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2184 precursor RNA folds spatially, forming GR2184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2184 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2184 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM241269 precursor RNA and GAM292563 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM241269 RNA and GAM292563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM241269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241269 target RNA into GAM241269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292563 target RNA into GAM292563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2184 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2184 gene: GAM241269 target protein and GAM292563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM241269 and GAM292563

GR2185 AI368221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2185(GR2185) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2185 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2185 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2185 gene encodes GR2185 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2185 precursor RNA folds spatially, forming GR2185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2185 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2185 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM830 precursor RNA and GAM6844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM830 RNA and GAM6844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM830 target RNA into GAM830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6844 target RNA into GAM6844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2185 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2185 gene: GAM830 target protein and GAM6844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM830 and GAM6844

GR2186 BE728975 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2186(GR2186) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2186 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2186 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2186 gene encodes GR2186 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2186 precursor RNA folds spatially, forming GR2186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2186 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2186 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4490 precursor RNA, GAM243384 precursor RNA and GAM249976 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4490 RNA, GAM243384 RNA and GAM249976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM4490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4490 target RNA into GAM4490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243384 target RNA into GAM243384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249976 target RNA into GAM249976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2186 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2186 gene: GAM4490 target protein, GAM243384 target protein and GAM249976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4490, GAM243384 and GAM249976

GR2187 BE837291 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2187(GR2187) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2187 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2187 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2187 gene encodes GR2187 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2187 precursor RNA folds spatially, forming GR2187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2187 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2187 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131946 precursor RNA and GAM132259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131946 RNA and GAM132259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131946 target RNA into GAM131946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132259 target RNA into GAM132259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2187 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2187 gene: GAM131946 target protein and GAM132259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131946 and GAM132259

GR2188 BF696196 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2188(GR2188) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2188 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2188 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2188 gene encodes GR2188 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2188 precursor RNA folds spatially, forming GR2188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2188 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2188 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM931 precursor RNA, GAM115875 precursor RNA and GAM335676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM931 RNA, GAM115875 RNA and GAM335676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM931 target RNA into GAM931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115875 target RNA into GAM115875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335676 target RNA into GAM335676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2188 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2188 gene: GAM931 target protein, GAM115875 target protein and GAM335676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM931, GAM115875 and GAM335676

GR2189 BI768194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2189(GR2189) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2189 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2189 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2189 gene encodes GR2189 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2189 precursor RNA folds spatially, forming GR2189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2189 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2189 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32550 precursor RNA and GAM114212 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32550 RNA and GAM114212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32550 target RNA into GAM32550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114212 target RNA into GAM114212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2189 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2189 gene: GAM32550 target protein and GAM114212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32550 and GAM114212

GR2190 AA481204 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2190(GR2190) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2190 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2190 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2190 gene encodes GR2190 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2190 precursor RNA folds spatially, forming GR2190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2190 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2190 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158814 precursor RNA and GAM172995 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158814 RNA and GAM172995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158814 target RNA into GAM158814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172995 target RNA into GAM172995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2190 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2190 gene: GAM158814 target protein and GAM172995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158814 and GAM172995

GR2191 BG686774 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2191(GR2191) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2191 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2191 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2191 gene encodes GR2191 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2191 precursor RNA folds spatially, forming GR2191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2191 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2191 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7676 precursor RNA, GAM66743 precursor RNA, GAM89889 precursor RNA and GAM160933 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7676 RNA, GAM66743 RNA, GAM89889 RNA and GAM160933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7676 target RNA into GAM7676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66743 target RNA into GAM66743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89889 target RNA into GAM89889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160933 target RNA into GAM160933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2191 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2191 gene: GAM7676 target protein, GAM66743 target protein, GAM89889 target protein and GAM160933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7676, GAM66743, GAM89889 and GAM160933

GR2192 BF594758 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2192(GR2192) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2192 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2192 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2192 gene encodes GR2192 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2192 precursor RNA folds spatially, forming GR2192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2192 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2192 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM151057 precursor RNA and GAM307391 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM151057 RNA and GAM307391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM151057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151057 target RNA into GAM151057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307391 target RNA into GAM307391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2192 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2192 gene: GAM151057 target protein and GAM307391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM151057 and GAM307391

GR2193 BG570120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2193(GR2193) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2193 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2193 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2193 gene encodes GR2193 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2193 precursor RNA folds spatially, forming GR2193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2193 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2193 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM310818 precursor RNA and GAM314581 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM310818 RNA and GAM314581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM310818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310818 target RNA into GAM310818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314581 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314581 target RNA into GAM314581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2193 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2193 gene: GAM310818 target protein and GAM314581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM310818 and GAM314581

GR2194 BE265833 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2194(GR2194) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2194 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2194 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2194 gene encodes GR2194 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2194 precursor RNA folds spatially, forming GR2194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2194 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2194 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2215 precursor RNA and GAM135351 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2215 RNA and GAM135351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2215 target RNA into GAM2215 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135351 target RNA into GAM135351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2194 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2194 gene: GAM2215 target protein and GAM135351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2215 and GAM135351

GR2195 BG122869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2195(GR2195) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2195 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2195 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2195 gene encodes GR2195 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2195 precursor RNA folds spatially, forming GR2195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2195 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2195 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6723 precursor RNA and GAM156659 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6723 RNA and GAM156659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6723 target RNA into GAM6723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156659 target RNA into GAM156659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2195 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2195 gene: GAM6723 target protein and GAM156659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6723 and GAM156659

GR2196 AI571301 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2196(GR2196) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2196 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2196 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2196 gene encodes GR2196 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2196 precursor RNA folds spatially, forming GR2196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2196 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2196 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6970 precursor RNA and GAM49579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6970 RNA and GAM49579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6970 target RNA into GAM6970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49579 target RNA into GAM49579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2196 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2196 gene: GAM6970 target protein and GAM49579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6970 and GAM49579

GR2197 BG740983 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2197(GR2197) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2197 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2197 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2197 gene encodes GR2197 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2197 precursor RNA folds spatially, forming GR2197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2197 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2197 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1438 precursor RNA, GAM3165 precursor RNA, GAM250431 precursor RNA and GAM331625 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1438 RNA, GAM3165 RNA, GAM250431 RNA and GAM331625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1438 target RNA into GAM1438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3165 target RNA into GAM3165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250431 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250431 target RNA into GAM250431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331625 target RNA into GAM331625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2197 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2197 gene: GAM1438 target protein, GAM3165 target protein, GAM250431 target protein and GAM331625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1438, GAM3165, GAM250431 and GAM331625

GR2198 AI222432 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2198(GR2198) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2198 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2198 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2198 gene encodes GR2198 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2198 precursor RNA folds spatially, forming GR2198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2198 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2198 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3178 precursor RNA, GAM7031 precursor RNA, GAM73632 precursor RNA and GAM110734 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3178 RNA, GAM7031 RNA, GAM73632 RNA and GAM110734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3178 target RNA into GAM3178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7031 target RNA into GAM7031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73632 target RNA into GAM73632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110734 target RNA into GAM110734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2198 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2198 gene: GAM3178 target protein, GAM7031 target protein, GAM73632 target protein and GAM110734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3178, GAM7031, GAM73632 and GAM110734

GR2199 BI911793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2199(GR2199) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2199 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2199 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2199 gene encodes GR2199 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2199 precursor RNA folds spatially, forming GR2199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2199 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2199 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4922 precursor RNA and GAM148271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4922 RNA and GAM148271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4922 target RNA into

GAM4922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148271 target RNA into GAM148271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2199 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2199 gene: GAM4922 target protein and GAM148271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4922 and GAM148271

GR2200 BF031297 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2200(GR2200) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2200 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2200 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2200 gene encodes GR2200 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2200 precursor RNA folds spatially, forming GR2200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2200 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2200 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2417 precursor RNA, GAM183659 precursor RNA and GAM320380 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2417 RNA, GAM183659 RNA and GAM320380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2417 target RNA into GAM2417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183659 target RNA into GAM183659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320380 target RNA into GAM320380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2200 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2200 gene: GAM2417 target protein, GAM183659 target protein and GAM320380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2417, GAM183659 and GAM320380

GR2201 AA082599 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2201(GR2201) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2201 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2201 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2201 gene encodes GR2201 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2201 precursor RNA folds spatially, forming GR2201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2201 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2201 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM182154 precursor RNA and GAM242804 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM182154 RNA and GAM242804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM182154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182154 target RNA into GAM182154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242804 target RNA into GAM242804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2201 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2201 gene: GAM182154 target protein and GAM242804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM182154 and GAM242804

GR2202 BE149553 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2202(GR2202) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2202 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2202 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2202 gene encodes GR2202 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2202 precursor RNA folds spatially, forming GR2202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2202 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2202 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM146082 precursor RNA and GAM199974 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146082 RNA and GAM199974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM146082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146082 target RNA into GAM146082 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199974 target RNA into GAM199974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2202 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2202 gene: GAM146082 target protein and GAM199974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM146082 and GAM199974

GR2203 BG701483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2203(GR2203) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2203 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2203 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2203 gene encodes GR2203 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2203 precursor RNA folds spatially, forming GR2203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2203 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2203 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257802 precursor RNA and GAM261985 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257802 RNA and GAM261985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257802 target RNA into GAM257802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261985 target RNA into GAM261985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2203 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2203 gene: GAM257802 target protein and GAM261985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257802 and GAM261985

GR2204 AA732835 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2204(GR2204) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2204 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2204 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2204 gene encodes GR2204 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2204 precursor RNA folds spatially, forming GR2204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2204 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2204 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4628 precursor RNA and GAM178178 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4628 RNA and GAM178178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4628 target RNA into GAM4628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178178 target RNA into GAM178178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2204 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2204 gene: GAM4628 target protein and GAM178178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4628 and GAM178178

GR2205 AI921722 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2205(GR2205) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2205 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2205 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2205 gene encodes GR2205 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2205 precursor RNA folds spatially, forming GR2205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2205 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2205 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3585 precursor RNA and GAM233382 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3585 RNA and GAM233382 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3585 target RNA into GAM3585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233382 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233382 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233382 target RNA into GAM233382 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2205 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2205 gene: GAM3585 target protein and GAM233382 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3585 and GAM233382

GR2206 BE547822 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2206(GR2206) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2206 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2206 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2206 gene encodes GR2206 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2206 precursor RNA folds spatially, forming GR2206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2206 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2206 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM318519 precursor RNA and GAM326801 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM318519 RNA and GAM326801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM318519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318519 target RNA into GAM318519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326801 target RNA into GAM326801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2206 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2206 gene: GAM318519 target protein and GAM326801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM318519 and GAM326801

GR2207 BG429924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2207(GR2207) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2207 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2207 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2207 gene encodes GR2207 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2207 precursor RNA folds spatially, forming GR2207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2207 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2207 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1824 precursor RNA and GAM90126 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1824 RNA and GAM90126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1824 target RNA into GAM1824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90126 target RNA into GAM90126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2207 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2207 gene: GAM1824 target protein and GAM90126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1824 and GAM90126

GR2208 BE389188 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2208(GR2208) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2208 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2208 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2208 gene encodes GR2208 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2208 precursor RNA folds spatially, forming GR2208 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2208 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2208 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3172 precursor RNA and GAM240426 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3172 RNA and GAM240426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3172 target RNA into GAM3172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240426 target RNA into GAM240426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2208 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2208 gene: GAM3172 target protein and GAM240426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3172 and GAM240426

GR2209 BG990841 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2209(GR2209) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2209 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2209 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2209 gene encodes GR2209 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2209 precursor RNA folds spatially, forming GR2209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2209 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2209 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1599 precursor RNA and GAM54899 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1599 RNA and GAM54899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1599 target RNA into GAM1599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54899 target RNA into GAM54899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2209 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2209 gene: GAM1599 target protein and GAM54899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1599 and GAM54899

GR2210 W22014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2210(GR2210) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2210 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2210 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2210 gene encodes GR2210 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2210 precursor RNA folds spatially, forming GR2210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2210 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2210 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM72698 precursor RNA and GAM308437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72698 RNA and GAM308437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72698 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72698 target RNA into GAM72698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308437 target RNA into GAM308437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2210 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2210 gene: GAM72698 target protein and GAM308437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72698 and GAM308437

GR2211 AI697348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2211(GR2211) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2211 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2211 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2211 gene encodes GR2211 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2211 precursor RNA folds spatially, forming GR2211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2211 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2211 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM101114 precursor RNA and GAM267123 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101114 RNA and GAM267123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101114 target RNA into GAM101114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267123 target RNA into GAM267123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2211 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2211 gene: GAM101114 target protein and GAM267123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101114 and GAM267123

GR2212 BG024414 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2212(GR2212) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2212 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2212 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2212 gene encodes GR2212 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2212 precursor RNA folds spatially, forming GR2212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2212 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2212 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2988 precursor RNA, GAM219081 precursor RNA and GAM223911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2988 RNA, GAM219081 RNA and GAM223911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2988 target RNA into GAM2988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219081 target RNA into GAM219081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223911 target RNA into GAM223911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2212 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2212 gene: GAM2988 target protein, GAM219081 target protein and GAM223911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2988, GAM219081 and GAM223911

GR2213 BI161479 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2213(GR2213) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2213 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2213 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2213 gene encodes GR2213 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2213 precursor RNA folds spatially, forming GR2213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2213 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2213 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8061 precursor RNA and GAM250897 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8061 RNA and GAM250897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8061 target RNA into GAM8061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250897 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250897 target RNA into GAM250897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2213 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2213 gene: GAM8061 target protein and GAM250897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8061 and GAM250897

GR2214 BQ068514 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2214(GR2214) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2214 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2214 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2214 gene encodes GR2214 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2214 precursor RNA folds spatially, forming GR2214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2214 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2214 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24428 precursor RNA, GAM159562 precursor RNA and GAM223591 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24428 RNA, GAM159562 RNA and GAM223591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24428 target RNA into GAM24428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159562 target RNA into GAM159562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223591 target RNA into GAM223591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2214 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2214 gene: GAM24428 target protein, GAM159562 target protein and GAM223591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24428, GAM159562 and GAM223591

GR2215 AA496025 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2215(GR2215) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2215 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2215 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2215 gene encodes GR2215 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2215 precursor RNA folds spatially, forming GR2215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2215 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2215 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM553 precursor RNA and GAM4006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM553 RNA and GAM4006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM553 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM553 target RNA into GAM553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4006 target RNA into GAM4006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2215 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2215 gene: GAM553 target protein and GAM4006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM553 and GAM4006

GR2216 AL601324 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2216(GR2216) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2216 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2216 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2216 gene encodes GR2216 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2216 precursor RNA folds spatially, forming GR2216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2216 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2216 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM145966 precursor RNA and GAM247084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM145966 RNA and GAM247084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM145966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145966 target RNA into GAM145966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247084 target RNA into GAM247084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2216 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2216 gene: GAM145966 target protein and GAM247084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM145966 and GAM247084

GR2217 AA618273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2217(GR2217) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2217 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2217 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2217 gene encodes GR2217 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2217 precursor RNA folds spatially, forming GR2217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2217 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2217 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM48603 precursor RNA, GAM268935 precursor RNA and GAM281356 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48603 RNA, GAM268935 RNA and GAM281356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48603 target RNA into GAM48603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268935 target RNA into GAM268935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281356 target RNA into GAM281356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2217 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2217 gene: GAM48603 target protein, GAM268935 target protein and GAM281356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48603, GAM268935 and GAM281356

GR2218 BG208267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2218(GR2218) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2218 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2218 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2218 gene encodes GR2218 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2218 precursor RNA folds spatially, forming GR2218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2218 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2218 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM197167 precursor RNA, GAM202152 precursor RNA, GAM306958 precursor RNA and GAM319025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM197167 RNA, GAM202152 RNA, GAM306958 RNA and GAM319025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM197167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197167 target RNA into GAM197167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202152 target RNA into GAM202152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM306958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306958 target RNA into GAM306958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319025 target RNA into GAM319025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2218 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2218 gene: GAM197167 target protein, GAM202152 target protein, GAM306958 target protein and GAM319025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM197167, GAM202152, GAM306958 and GAM319025

GR2219 BI460309 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2219(GR2219) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2219 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2219 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2219 gene encodes GR2219 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2219 precursor RNA folds spatially, forming GR2219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2219 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2219 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2219 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 6 separate GAM precursor RNAs, GAM404 precursor RNA, GAM84831 precursor RNA, GAM104337 precursor RNA, GAM122877 precursor RNA, GAM207523 precursor RNA and GAM315344 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM404 RNA, GAM84831 RNA, GAM104337 RNA, GAM122877 RNA, GAM207523 RNA and GAM315344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM404 target RNA into GAM404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84831 target RNA into GAM84831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104337 target RNA into GAM104337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122877 target RNA into GAM122877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207523 target RNA into GAM207523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315344 target RNA into GAM315344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2219 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2219 gene: GAM404 target protein, GAM84831 target protein, GAM104337 target protein, GAM122877 target protein, GAM207523 target protein and GAM315344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM404, GAM84831, GAM104337, GAM122877, GAM207523 and GAM315344

GR2220 BE703847 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2220(GR2220) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2220 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2220 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2220 gene encodes GR2220 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2220 precursor RNA folds spatially, forming GR2220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2220 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2220 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM217497 precursor RNA and GAM284151 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217497 RNA and GAM284151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217497 target RNA into GAM217497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284151 target RNA into GAM284151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2220 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2220 gene: GAM217497 target protein and GAM284151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217497 and GAM284151

GR2221 AW628714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2221(GR2221) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2221 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2221 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2221 gene encodes GR2221 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2221 precursor RNA folds spatially, forming GR2221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2221 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2221 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM71438 precursor RNA, GAM94339 precursor RNA and GAM315476 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71438 RNA, GAM94339 RNA and GAM315476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71438 target RNA into GAM71438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94339 target RNA into GAM94339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315476 target RNA into GAM315476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2221 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2221 gene: GAM71438 target protein, GAM94339 target protein and GAM315476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71438, GAM94339 and GAM315476

GR2222 BG492991 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2222(GR2222) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2222 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2222 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2222 gene encodes GR2222 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2222 precursor RNA folds spatially, forming GR2222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2222 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2222 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7866 precursor RNA, GAM171903 precursor RNA and GAM244054 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7866 RNA, GAM171903 RNA and GAM244054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7866 target RNA into GAM7866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171903 target RNA into GAM171903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244054 target RNA into GAM244054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2222 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2222 gene: GAM7866 target protein, GAM171903 target protein and GAM244054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7866, GAM171903 and GAM244054

GR2223 BF338098 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2223(GR2223) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2223 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2223 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2223 gene encodes GR2223 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2223 precursor RNA folds spatially, forming GR2223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2223 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2223 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1838 precursor RNA, GAM177133 precursor RNA and GAM220046 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1838 RNA, GAM177133 RNA and GAM220046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1838 target RNA into GAM1838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177133 target RNA into GAM177133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220046 target RNA into GAM220046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2223 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2223 gene: GAM1838 target

protein, GAM177133 target protein and GAM220046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1838, GAM177133 and GAM220046

GR2224 BG829514 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2224(GR2224) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2224 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2224 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2224 gene encodes GR2224 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2224 precursor RNA folds spatially, forming GR2224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2224 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2224 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8425 precursor RNA and GAM270288 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8425 RNA and GAM270288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8425 target RNA into GAM8425 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270288 target RNA into GAM270288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2224 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2224 gene: GAM8425 target protein and GAM270288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8425 and GAM270288

GR2225 BI458444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2225(GR2225) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2225 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2225 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2225 gene encodes GR2225 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2225 precursor RNA folds spatially, forming GR2225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2225 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2225 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5410 precursor RNA and GAM209041 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5410 RNA and GAM209041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5410 target RNA into GAM5410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209041 target RNA into GAM209041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2225 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2225 gene: GAM5410 target protein and GAM209041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5410 and GAM209041

GR2226 BG997306 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2226(GR2226) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2226 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2226 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2226 gene encodes GR2226 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2226 precursor RNA folds spatially, forming GR2226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2226 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2226 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5246 precursor RNA, GAM240632 precursor RNA and GAM247514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5246 RNA, GAM240632 RNA and GAM247514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5246 target RNA into GAM5246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240632 target RNA into GAM240632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247514 target RNA into GAM247514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2226 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2226 gene: GAM5246 target protein, GAM240632 target protein and GAM247514 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5246, GAM240632 and GAM247514

GR2227 AW959126 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2227(GR2227) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2227 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2227 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2227 gene encodes GR2227 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2227 precursor RNA folds spatially, forming GR2227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2227 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2227 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM222181 precursor RNA and GAM259107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM222181 RNA and GAM259107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM222181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222181 target RNA into GAM222181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259107 target RNA into GAM259107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2227 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2227 gene: GAM222181 target protein and GAM259107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM222181 and GAM259107

GR2228 BM822991 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2228(GR2228) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2228 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2228 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2228 gene encodes GR2228 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2228 precursor RNA folds spatially, forming GR2228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2228 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2228 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50660 precursor RNA and GAM123347 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50660 RNA and GAM123347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50660 target RNA into GAM50660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123347 target RNA into GAM123347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2228 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2228 gene: GAM50660 target protein and GAM123347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50660 and GAM123347

GR2229 AA830461 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2229(GR2229) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2229 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2229 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2229 gene encodes GR2229 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2229 precursor RNA folds spatially, forming GR2229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2229 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2229 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM230673 precursor RNA, GAM290744 precursor RNA and GAM335994 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230673 RNA, GAM290744 RNA and GAM335994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230673 target RNA into GAM230673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290744 target RNA into GAM290744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335994 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335994 target RNA into GAM335994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2229 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2229 gene: GAM230673 target protein, GAM290744 target protein and GAM335994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230673, GAM290744 and GAM335994

GR2230 BG745663 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2230(GR2230) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2230 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2230 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2230 gene encodes GR2230 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2230 precursor RNA folds spatially, forming GR2230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2230 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2230 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM47849 precursor RNA, GAM78290 precursor RNA and GAM250188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47849 RNA, GAM78290 RNA and GAM250188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47849 target RNA into GAM47849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78290 target RNA into GAM78290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250188 target RNA into GAM250188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2230 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2230 gene: GAM47849 target protein, GAM78290 target protein and GAM250188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47849, GAM78290 and GAM250188

GR2231 AW992959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2231(GR2231) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2231 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2231 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2231 gene encodes GR2231 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2231 precursor RNA folds spatially, forming GR2231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2231 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2231 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2056 precursor RNA and GAM3683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2056 RNA and GAM3683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2056 target RNA into GAM2056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3683 target RNA into GAM3683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2231 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2231 gene: GAM2056 target protein and GAM3683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2056 and GAM3683

GR2232 BG280843 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2232(GR2232) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2232 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2232 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2232 gene encodes GR2232 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2232 precursor RNA folds spatially, forming GR2232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2232 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2232 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2502 precursor RNA and GAM7453 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2502 RNA and GAM7453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2502 target RNA into GAM2502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7453 target RNA into GAM7453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2232 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2232 gene: GAM2502 target protein and GAM7453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2502 and GAM7453

GR2233 BM697126 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2233(GR2233) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2233 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2233 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2233 gene encodes GR2233 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2233 precursor RNA folds spatially, forming GR2233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2233 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2233 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6315 precursor RNA and GAM325417 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6315 RNA and GAM325417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6315 target RNA into GAM6315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM325417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325417 target RNA into GAM325417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2233 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2233 gene: GAM6315 target protein and GAM325417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6315 and GAM325417

GR2234 BM051940 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2234(GR2234) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2234 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2234 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2234 gene encodes GR2234 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2234 precursor RNA folds spatially, forming GR2234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2234 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2234 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63670 precursor RNA and GAM81074 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63670 RNA and GAM81074 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63670 target RNA into GAM63670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81074 target RNA into GAM81074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2234 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2234 gene: GAM63670 target protein and GAM81074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63670 and GAM81074

GR2235 BF568743 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2235(GR2235) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2235 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2235 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2235 gene encodes GR2235 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2235 precursor RNA folds spatially, forming GR2235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2235 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2235 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6206 precursor RNA, GAM178162 precursor RNA and GAM192238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6206 RNA, GAM178162 RNA and GAM192238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6206 target RNA into GAM6206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178162 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178162 target RNA into GAM178162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192238 target RNA into GAM192238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2235 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2235 gene: GAM6206 target protein, GAM178162 target protein and GAM192238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6206, GAM178162 and

GAM192238

GR2236 AI739265 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2236(GR2236) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2236 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2236 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2236 gene encodes GR2236 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2236 precursor RNA folds spatially, forming GR2236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2236 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2236 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3554 precursor RNA, GAM121314 precursor RNA and GAM261541 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3554 RNA, GAM121314 RNA and GAM261541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3554 target RNA into GAM3554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM121314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121314 target RNA into GAM121314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261541 target RNA into GAM261541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2236 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2236 gene: GAM3554 target protein, GAM121314 target protein and GAM261541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3554, GAM121314 and GAM261541

GR2237 AA846624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2237(GR2237) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2237 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2237 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2237 gene encodes GR2237 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2237 precursor RNA folds spatially, forming GR2237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2237 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2237 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2237 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM174678 precursor RNA and GAM328191 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM174678 RNA and GAM328191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM174678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174678 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174678 target RNA into GAM174678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328191 target RNA into GAM328191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2237 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2237 gene: GAM174678 target protein and GAM328191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM174678 and GAM328191

GR2238 BG252942 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2238(GR2238) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2238 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2238 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2238 gene encodes GR2238 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2238 precursor RNA folds spatially, forming GR2238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2238 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2238 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105887 precursor RNA and GAM156704 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105887 RNA and GAM156704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105887 target RNA into GAM105887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156704 target RNA into GAM156704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2238 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2238 gene: GAM105887 target protein and GAM156704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105887 and GAM156704

GR2239 AA635658 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2239(GR2239) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2239 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2239 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2239 gene encodes GR2239 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2239 precursor RNA folds spatially, forming GR2239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2239 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2239 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7326 precursor RNA, GAM226107 precursor RNA and GAM235961 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7326 RNA, GAM226107 RNA and GAM235961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7326 target RNA into GAM7326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226107 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226107 target RNA into GAM226107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235961 target RNA into GAM235961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2239 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2239 gene: GAM7326 target protein, GAM226107 target protein and GAM235961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7326, GAM226107 and GAM235961

GR2240 BG108396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2240(GR2240) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2240 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2240 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2240 gene encodes GR2240 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2240 precursor RNA folds spatially, forming GR2240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2240 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2240 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM2030 precursor RNA and GAM55247 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2030 RNA and GAM55247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2030 target RNA into GAM2030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55247 target RNA into GAM55247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2240 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2240 gene: GAM2030 target protein and GAM55247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2030 and GAM55247

GR2241 BE268363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2241(GR2241) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2241 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2241 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2241 gene encodes GR2241 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2241 precursor RNA folds spatially, forming GR2241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2241 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2241 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1092 precursor RNA and GAM64752 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1092 RNA and GAM64752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1092 target RNA into GAM1092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64752 target RNA into GAM64752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2241 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2241 gene: GAM1092 target protein and GAM64752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1092 and GAM64752

GR2242 BF248378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2242(GR2242) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2242 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2242 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2242 gene encodes GR2242 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2242 precursor RNA folds spatially, forming GR2242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2242 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2242 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129227 precursor RNA and GAM159348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129227 RNA and GAM159348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129227 target RNA into GAM129227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159348 target RNA into GAM159348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2242 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2242 gene: GAM129227 target protein and GAM159348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129227 and GAM159348

GR2243 AI949531 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2243(GR2243) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2243 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2243 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2243 gene encodes GR2243 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2243 precursor RNA folds spatially, forming GR2243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2243 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2243 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM220235 precursor RNA and GAM298135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM220235 RNA and GAM298135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM220235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220235 target RNA into GAM220235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298135 target RNA into GAM298135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2243 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2243 gene: GAM220235 target protein and GAM298135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM220235 and GAM298135

GR2244 BF307952 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2244(GR2244) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2244 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2244 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2244 gene encodes GR2244 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2244 precursor RNA folds spatially, forming GR2244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2244 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2244 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59388 precursor RNA and GAM72097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59388 RNA and GAM72097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59388 target RNA into GAM59388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72097 target RNA into GAM72097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2244 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2244 gene: GAM59388 target protein and GAM72097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59388 and GAM72097

GR2245 AV726466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2245(GR2245) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2245 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2245 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2245 gene encodes GR2245 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2245 precursor RNA folds spatially, forming GR2245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2245 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2245 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM190075 precursor RNA and GAM196531 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM190075 RNA and GAM196531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM190075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190075 target RNA into GAM190075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196531 target RNA into GAM196531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2245 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2245 gene: GAM190075 target protein and GAM196531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM190075 and GAM196531

GR2246 AW949838 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2246(GR2246) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2246 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2246 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2246 gene encodes GR2246 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2246 precursor RNA folds spatially, forming GR2246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2246 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2246 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1344 precursor RNA, GAM13889 precursor RNA, GAM40145 precursor RNA and GAM277704 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1344 RNA, GAM13889 RNA, GAM40145 RNA and GAM277704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1344 target RNA into GAM1344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM13889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13889 target RNA into GAM13889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40145 target RNA into GAM40145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277704 target RNA into GAM277704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2246 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2246 gene: GAM1344 target protein, GAM13889 target protein, GAM40145 target protein and GAM277704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1344, GAM13889, GAM40145 and GAM277704

GR2247 AI478911 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2247(GR2247) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2247 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2247 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2247 gene encodes GR2247 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2247 precursor RNA folds spatially, forming GR2247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2247 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2247 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM297367 precursor RNA and GAM327102 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM297367 RNA and GAM327102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM297367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297367 target RNA into GAM297367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327102 target RNA into GAM327102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2247 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2247 gene: GAM297367 target protein and GAM327102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM297367 and GAM327102

GR2248 BG978453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2248(GR2248) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2248 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2248 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2248 gene encodes GR2248 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2248 precursor RNA folds spatially, forming GR2248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2248 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2248 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74574 precursor RNA and GAM179805 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74574 RNA and GAM179805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74574 target RNA into GAM74574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179805 target RNA into GAM179805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2248 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2248 gene: GAM74574 target protein and GAM179805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74574 and GAM179805

GR2249 BF699309 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2249(GR2249) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2249 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2249 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2249 gene encodes GR2249 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2249 precursor RNA folds spatially, forming GR2249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2249 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2249 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM166 precursor RNA and GAM8588 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM166 RNA and GAM8588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166 target RNA into GAM166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8588 target RNA into GAM8588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2249 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2249 gene: GAM166 target protein and GAM8588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM166 and GAM8588

GR2250 BM687148 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2250(GR2250) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2250 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2250 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2250 gene encodes GR2250 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2250 precursor RNA folds spatially, forming GR2250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2250 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2250 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM159038 precursor RNA, GAM191210 precursor RNA and GAM208270 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM159038 RNA, GAM191210 RNA and GAM208270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM159038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159038 target RNA into GAM159038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191210 target RNA into GAM191210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208270 target RNA into GAM208270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2250 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2250 gene: GAM159038 target protein, GAM191210 target protein and GAM208270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM159038, GAM191210 and GAM208270

GR2251 BE541959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2251(GR2251) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2251 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2251 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2251 gene encodes GR2251 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2251 precursor RNA folds spatially, forming GR2251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2251 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2251 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5704 precursor RNA and GAM334840 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5704 RNA and GAM334840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5704 target RNA into GAM5704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334840 target RNA into GAM334840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2251 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2251 gene: GAM5704 target protein and GAM334840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5704 and GAM334840

GR2252 BG574908 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2252(GR2252) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2252 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2252 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2252 gene encodes GR2252 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2252 precursor RNA folds spatially, forming GR2252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2252 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2252 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8106 precursor RNA and GAM35694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8106 RNA and GAM35694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM8106 target RNA into GAM8106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35694 target RNA into GAM35694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2252 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2252 gene: GAM8106 target protein and GAM35694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8106 and GAM35694

GR2253 BE292935 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2253(GR2253) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2253 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2253 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2253 gene encodes GR2253 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2253 precursor RNA folds spatially, forming GR2253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2253 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2253 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2880 precursor RNA, GAM5604 precursor RNA, GAM64942 precursor RNA and GAM235049 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2880 RNA, GAM5604 RNA, GAM64942 RNA and GAM235049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2880 target RNA into GAM2880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5604 target RNA into GAM5604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64942 target RNA into GAM64942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235049 target RNA into GAM235049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2253 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2253 gene: GAM2880 target protein, GAM5604 target protein, GAM64942 target protein and GAM235049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to

GAM2880, GAM5604, GAM64942 and GAM235049

GR2254 BF312721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2254(GR2254) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2254 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2254 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2254 gene encodes GR2254 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2254 precursor RNA folds spatially, forming GR2254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2254 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2254 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM80876 precursor RNA, GAM163618 precursor RNA and GAM223226 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM80876 RNA, GAM163618 RNA and GAM223226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM80876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80876 target RNA into GAM80876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM163618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163618 target RNA into GAM163618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223226 target RNA into GAM223226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2254 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2254 gene: GAM80876 target protein, GAM163618 target protein and GAM223226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM80876, GAM163618 and GAM223226

GR2255 BG120166 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2255(GR2255) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2255 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2255 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2255 gene encodes GR2255 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2255 precursor RNA folds spatially, forming GR2255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2255 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2255 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2255 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1994 precursor RNA, GAM8629 precursor RNA and GAM97932 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1994 RNA, GAM8629 RNA and GAM97932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1994 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1994 target RNA into GAM1994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8629 target RNA into GAM8629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97932 target RNA into GAM97932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2255 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2255 gene: GAM1994 target protein, GAM8629 target protein and GAM97932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1994, GAM8629 and GAM97932

GR2256 BM809336 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2256(GR2256) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2256 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2256 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2256 gene encodes GR2256 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2256 precursor RNA folds spatially, forming GR2256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2256 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2256 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1173 precursor RNA, GAM8961 precursor RNA and GAM267243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1173 RNA, GAM8961 RNA and GAM267243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1173 target RNA into GAM1173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8961 target RNA into

GAM8961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267243 target RNA into GAM267243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2256 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2256 gene: GAM1173 target protein, GAM8961 target protein and GAM267243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1173, GAM8961 and GAM267243

GR2257 BG236821 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2257(GR2257) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2257 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2257 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2257 gene encodes GR2257 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2257 precursor RNA folds spatially, forming GR2257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2257 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2257 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM82064 precursor RNA, GAM199165 precursor RNA and GAM215258 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82064 RNA, GAM199165 RNA and GAM215258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82064 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82064 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82064 target RNA into GAM82064 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199165 target RNA into GAM199165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215258 target RNA into GAM215258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2257 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2257 gene: GAM82064 target protein, GAM199165 target protein and GAM215258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82064, GAM199165 and GAM215258

GR2258 AW188001 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2258(GR2258) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2258 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2258 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2258 gene encodes GR2258 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2258 precursor RNA folds spatially, forming GR2258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2258 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2258 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2896 precursor RNA and GAM318802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2896 RNA and GAM318802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2896 target RNA into GAM2896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318802 target RNA into GAM318802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2258 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2258 gene: GAM2896 target protein and GAM318802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2896 and GAM318802

GR2259 BG675068 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2259(GR2259) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2259 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2259 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2259 gene encodes GR2259 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2259 precursor RNA folds spatially, forming GR2259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2259 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2259 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM630 precursor RNA and GAM88091 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM630 RNA and GAM88091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM630 target RNA into

GAM630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88091 target RNA into GAM88091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2259 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2259 gene: GAM630 target protein and GAM88091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM630 and GAM88091

GR2260 BI463053 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2260(GR2260) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2260 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2260 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2260 gene encodes GR2260 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2260 precursor RNA folds spatially, forming GR2260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2260 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2260 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5179 precursor RNA, GAM208853 precursor RNA and GAM260192 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5179 RNA, GAM208853 RNA and GAM260192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5179 target RNA into GAM5179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208853 target RNA into GAM208853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260192 target RNA into GAM260192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2260 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2260 gene: GAM5179 target protein, GAM208853 target protein and GAM260192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5179, GAM208853 and GAM260192

GR2261 AV751619 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2261(GR2261) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2261 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2261 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2261 gene encodes GR2261 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2261 precursor RNA folds spatially, forming GR2261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2261 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2261 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2990 precursor RNA, GAM4083 precursor RNA and GAM28241 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2990 RNA, GAM4083 RNA and GAM28241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2990 target RNA into GAM2990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4083 target RNA into GAM4083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28241 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28241 target RNA into GAM28241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2261 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2261 gene: GAM2990 target protein, GAM4083 target protein and GAM28241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2990, GAM4083 and GAM28241

GR2262 BI793269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2262(GR2262) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2262 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2262 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2262 gene encodes GR2262 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2262 precursor RNA folds spatially, forming GR2262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2262 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2262 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189583 precursor RNA and GAM315794 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189583 RNA and GAM315794 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189583 target RNA into GAM189583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315794 target RNA into GAM315794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2262 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2262 gene: GAM189583 target protein and GAM315794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189583 and GAM315794

GR2263 BE260865 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2263(GR2263) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2263 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2263 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2263 gene encodes GR2263 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2263 precursor RNA folds spatially, forming GR2263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2263 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2263 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM30517 precursor RNA, GAM101969 precursor RNA and GAM258732 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30517 RNA, GAM101969 RNA and GAM258732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30517 target RNA into GAM30517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101969 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101969 target RNA into GAM101969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258732 target RNA into GAM258732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2263 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2263 gene: GAM30517 target protein, GAM101969 target protein and GAM258732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30517, GAM101969 and

GR2264 AW275185 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2264(GR2264) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2264 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2264 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2264 gene encodes GR2264 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2264 precursor RNA folds spatially, forming GR2264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2264 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2264 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12656 precursor RNA and GAM248019 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12656 RNA and GAM248019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12656 target RNA into GAM12656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248019 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248019 target RNA into GAM248019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2264 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2264 gene: GAM12656 target protein and GAM248019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM12656 and GAM248019

GR2265 BF925341 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2265(GR2265) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2265 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2265 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2265 gene encodes GR2265 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2265 precursor RNA folds spatially, forming GR2265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2265 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2265 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM109256 precursor RNA and GAM112723 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM109256 RNA and GAM112723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM109256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109256 target RNA into GAM109256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112723 target RNA into GAM112723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2265 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2265 gene: GAM109256 target protein and GAM112723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM109256 and GAM112723

GR2266 H17564 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2266(GR2266) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2266 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2266 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2266 gene encodes GR2266 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2266 precursor RNA folds spatially, forming GR2266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2266 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2266 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6408 precursor RNA, GAM14078 precursor RNA and GAM262020 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6408 RNA, GAM14078 RNA and GAM262020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6408 target RNA into GAM6408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14078 target RNA into GAM14078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262020 target RNA into GAM262020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2266 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2266 gene: GAM6408 target protein, GAM14078 target protein and GAM262020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6408, GAM14078 and GAM262020

GR2267 AI240087 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2267(GR2267) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2267 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2267 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2267 gene encodes GR2267 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2267 precursor RNA folds spatially, forming GR2267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2267 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2267 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6926 precursor RNA, GAM24911 precursor RNA and GAM131242 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6926 RNA, GAM24911 RNA and GAM131242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6926 target RNA into GAM6926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24911 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24911 target RNA into GAM24911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131242 target RNA into GAM131242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2267 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2267 gene: GAM6926 target protein, GAM24911 target protein and GAM131242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6926, GAM24911 and GAM131242

GR2268 BG753855 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2268(GR2268) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2268 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2268 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2268 gene encodes GR2268 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2268 precursor RNA folds spatially, forming GR2268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2268 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2268 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4

separate GAM precursor RNAs, GAM998 precursor RNA, GAM6925 precursor RNA, GAM28246 precursor RNA and GAM51804 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM998 RNA, GAM6925 RNA, GAM28246 RNA and GAM51804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM998 target RNA into GAM998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6925 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6925 target RNA into GAM6925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28246 target RNA into GAM28246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51804 target RNA into GAM51804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2268 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2268 gene: GAM998 target protein, GAM6925 target protein, GAM28246 target protein and GAM51804 target

protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM998, GAM6925, GAM28246 and GAM51804

GR2269 T68074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2269(GR2269) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2269 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2269 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2269 gene encodes GR2269 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2269 precursor RNA folds spatially, forming GR2269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2269 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2269 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6426 precursor RNA and GAM187372 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6426 RNA and GAM187372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6426 target RNA into GAM6426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187372 target RNA into GAM187372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2269 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2269 gene: GAM6426 target protein and GAM187372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6426 and GAM187372

GR2270 AA405083 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2270(GR2270) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2270 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2270 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2270 gene encodes GR2270 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2270 precursor RNA folds spatially, forming GR2270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2270 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2270 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4558 precursor RNA and GAM63169 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4558 RNA and GAM63169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4558 target RNA into GAM4558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63169 target RNA into GAM63169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2270 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2270 gene: GAM4558 target protein and GAM63169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4558 and GAM63169

GR2271 AI056600 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2271(GR2271) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2271 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2271 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2271 gene encodes GR2271 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2271 precursor RNA folds spatially, forming GR2271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2271 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2271 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM216 precursor RNA and GAM178174 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM216 RNA and GAM178174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216 target RNA into GAM216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178174 target RNA into GAM178174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2271 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2271 gene: GAM216 target protein and GAM178174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM216 and GAM178174

GR2272 BM833256 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2272(GR2272) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2272 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2272 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2272 gene encodes GR2272 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2272 precursor RNA folds spatially, forming GR2272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2272 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2272 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3228 precursor RNA, GAM50006 precursor RNA and GAM129364 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3228 RNA, GAM50006 RNA and GAM129364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3228 target RNA into GAM3228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50006 target RNA into GAM50006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM129364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129364 target RNA into GAM129364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2272 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2272 gene: GAM3228 target protein, GAM50006 target protein and GAM129364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3228, GAM50006 and GAM129364

GR2273 BI010790 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2273(GR2273) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2273 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2273 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2273 gene encodes GR2273 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2273 precursor RNA folds spatially, forming GR2273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2273 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2273 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM529 precursor RNA, GAM2128 precursor RNA and GAM30783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM529 RNA, GAM2128 RNA and GAM30783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM529 target RNA into GAM529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2128 target RNA into GAM2128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30783 target RNA into GAM30783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2273 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2273 gene: GAM529 target protein, GAM2128 target protein and GAM30783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM529, GAM2128 and GAM30783

GR2274 R16955 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2274(GR2274) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2274 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2274 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2274 gene encodes GR2274 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2274 precursor RNA folds spatially, forming GR2274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2274 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2274 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74101 precursor RNA and GAM159790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74101 RNA and GAM159790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74101 target RNA into GAM74101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159790 target RNA into GAM159790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2274 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2274 gene: GAM74101 target protein and GAM159790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74101 and GAM159790

GR2275 N57399 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2275(GR2275) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2275 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2275 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2275 gene encodes GR2275 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2275 precursor RNA folds spatially, forming GR2275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2275 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2275 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM132823 precursor RNA, GAM305769 precursor RNA and GAM316209 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132823 RNA, GAM305769 RNA and GAM316209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132823 target RNA into GAM132823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305769 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305769 target RNA into GAM305769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316209 target RNA into GAM316209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2275 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2275 gene: GAM132823 target protein, GAM305769 target protein and GAM316209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132823, GAM305769 and GAM316209

GR2276 T16218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2276(GR2276) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2276 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2276 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2276 gene encodes GR2276 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2276 precursor RNA folds spatially, forming GR2276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2276 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2276 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3218 precursor RNA and GAM147684 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3218 RNA and GAM147684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3218 target RNA into GAM3218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147684 target RNA into GAM147684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2276 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2276 gene: GAM3218 target protein and GAM147684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3218 and GAM147684

GR2277 BF242576 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2277(GR2277) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2277 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2277 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2277 gene encodes GR2277 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2277 precursor RNA folds spatially, forming GR2277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2277 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2277 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2637 precursor RNA and GAM175902 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2637 RNA and GAM175902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2637 target RNA into GAM2637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175902 target RNA into GAM175902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2277 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2277 gene: GAM2637 target protein and GAM175902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM2637 and GAM175902

GR2278 BM146245 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2278(GR2278) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2278 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2278 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2278 gene encodes GR2278 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2278 precursor RNA folds spatially, forming GR2278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2278 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2278 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4399 precursor RNA, GAM257510 precursor RNA and GAM260849 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4399 RNA, GAM257510 RNA and GAM260849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4399 target RNA into GAM4399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM257510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257510 target RNA into GAM257510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260849 target RNA into GAM260849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2278 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2278 gene: GAM4399 target protein, GAM257510 target protein and GAM260849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4399, GAM257510 and GAM260849

GR2279 BG105426 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2279(GR2279) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2279 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2279 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2279 gene encodes GR2279 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2279 precursor RNA folds spatially, forming GR2279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2279 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2279 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2279 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6411 precursor RNA and GAM8612 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6411 RNA and GAM8612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6411 target RNA into GAM6411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8612 target RNA into GAM8612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2279 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2279 gene: GAM6411 target protein and GAM8612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6411 and GAM8612

GR2280 AA176982 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2280(GR2280) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2280 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2280 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2280 gene encodes GR2280 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2280 precursor RNA folds spatially, forming GR2280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2280 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2280 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3526 precursor RNA, GAM121716 precursor RNA and GAM244713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3526 RNA, GAM121716 RNA and GAM244713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3526 target RNA into GAM3526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121716 target RNA into GAM121716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244713 target RNA into GAM244713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2280 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2280 gene: GAM3526 target protein, GAM121716 target protein and GAM244713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3526, GAM121716 and GAM244713

GR2281 AA910580 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2281(GR2281) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2281 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2281 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2281 gene encodes GR2281 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2281 precursor RNA folds spatially, forming GR2281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2281 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2281 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100298 precursor RNA and GAM104420 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100298 RNA and GAM104420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM100298 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100298 target RNA into GAM100298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104420 target RNA into GAM104420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2281 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2281 gene: GAM100298 target protein and GAM104420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100298 and GAM104420

GR2282 BE890083 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2282(GR2282) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2282 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2282 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2282 gene encodes GR2282 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2282 precursor RNA folds spatially, forming GR2282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2282 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2282 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM40174 precursor RNA and GAM138392 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40174 RNA and GAM138392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40174 target RNA into GAM40174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM138392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138392 target RNA into GAM138392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2282 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2282 gene: GAM40174 target protein and GAM138392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40174 and GAM138392

GR2283 BE615627 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2283(GR2283) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2283 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2283 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2283 gene encodes GR2283 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2283 precursor RNA folds spatially, forming GR2283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2283 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2283 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8322 precursor RNA and GAM194484 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8322 RNA and GAM194484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8322 target RNA into GAM8322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194484 target RNA into GAM194484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2283 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2283 gene: GAM8322 target protein and GAM194484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8322 and GAM194484

GR2284 AA676297 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2284(GR2284) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2284 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2284 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2284 gene encodes GR2284 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2284 precursor RNA folds spatially, forming GR2284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2284 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2284 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4380 precursor RNA, GAM107102 precursor RNA and GAM113984 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4380 RNA, GAM107102 RNA and GAM113984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4380 target RNA into GAM4380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107102 target RNA into GAM107102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113984 target RNA into GAM113984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2284 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2284 gene: GAM4380 target protein, GAM107102 target protein and GAM113984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4380, GAM107102 and GAM113984

GR2285 AW889059 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2285(GR2285) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2285 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2285 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2285 gene encodes GR2285 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2285 precursor RNA folds spatially, forming GR2285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2285 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2285 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2374 precursor RNA and GAM50936 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2374 RNA and GAM50936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2374 target RNA into GAM2374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50936 target RNA into GAM50936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2285 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2285 gene: GAM2374 target protein and GAM50936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2374 and GAM50936

GR2286 BI918183 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2286(GR2286) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2286 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2286 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2286 gene encodes GR2286 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2286 precursor RNA folds spatially, forming GR2286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2286 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2286 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3723 precursor RNA and GAM250291 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3723 RNA and GAM250291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3723 target RNA into GAM3723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250291 target RNA into GAM250291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2286 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2286 gene: GAM3723 target protein and GAM250291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3723 and GAM250291

GR2287 AW317068 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2287(GR2287) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2287 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2287 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2287 gene encodes GR2287 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2287 precursor RNA folds spatially, forming GR2287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2287 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2287 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5477 precursor RNA and GAM188640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5477 RNA and GAM188640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5477 target RNA into GAM5477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188640

target RNA into GAM188640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2287 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2287 gene: GAM5477 target protein and GAM188640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5477 and GAM188640

GR2288 BI601866 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2288(GR2288) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2288 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2288 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2288 gene encodes GR2288 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2288 precursor RNA folds spatially, forming GR2288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2288 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2288 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM97643 precursor RNA and GAM321078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97643 RNA and GAM321078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97643 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97643 target RNA into GAM97643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321078 target RNA into GAM321078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2288 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2288 gene: GAM97643 target protein and GAM321078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97643 and GAM321078

GR2289 BQ026236 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2289(GR2289) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2289 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2289 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2289 gene encodes GR2289 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2289 precursor RNA folds spatially, forming GR2289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2289 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2289 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2289 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6738 precursor RNA and GAM208667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6738 RNA and GAM208667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6738 target RNA into GAM6738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208667 target RNA into GAM208667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2289 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2289 gene: GAM6738 target protein and GAM208667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6738 and GAM208667

GR2290 BM314052 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2290(GR2290) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2290 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2290 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2290 gene encodes GR2290 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2290 precursor RNA folds spatially, forming GR2290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2290 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2290 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM256683 precursor RNA and GAM295689 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM256683 RNA and GAM295689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM256683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256683 target RNA into GAM256683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295689 target RNA into GAM295689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2290 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2290 gene: GAM256683 target protein and GAM295689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM256683 and GAM295689

GR2291 BM680283 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2291(GR2291) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2291 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2291 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2291 gene encodes GR2291 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2291 precursor RNA folds spatially, forming GR2291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2291 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2291 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19384 precursor RNA and GAM55824 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19384 RNA and GAM55824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19384 target RNA into GAM19384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55824 target RNA into GAM55824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2291 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2291 gene: GAM19384 target protein and GAM55824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19384 and GAM55824

GR2292 AW466908 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2292(GR2292) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2292 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2292 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2292 gene encodes GR2292 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2292 precursor RNA folds spatially, forming GR2292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2292 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2292 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53296 precursor RNA and GAM121842 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53296 RNA and GAM121842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53296 target RNA into GAM53296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121842 target RNA into GAM121842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2292 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2292 gene: GAM53296 target protein and GAM121842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53296 and GAM121842

GR2293 BI519775 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2293(GR2293) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2293 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2293 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2293 gene encodes GR2293 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2293 precursor RNA folds spatially, forming GR2293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2293 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2293 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118063 precursor RNA and GAM245114 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118063 RNA and GAM245114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118063 target RNA into GAM118063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245114 target RNA into GAM245114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2293 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2293 gene: GAM118063 target protein and GAM245114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118063 and GAM245114

GR2294 BM803270 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2294(GR2294) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2294 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2294 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2294 gene encodes GR2294 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2294 precursor RNA folds spatially, forming GR2294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2294 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2294 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7913 precursor RNA, GAM178370 precursor RNA and GAM211379 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7913 RNA, GAM178370 RNA and GAM211379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7913 target RNA into GAM7913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178370 target RNA into GAM178370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211379

target RNA into GAM211379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2294 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2294 gene: GAM7913 target protein, GAM178370 target protein and GAM211379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7913, GAM178370 and GAM211379

GR2295 BG942400 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2295(GR2295) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2295 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2295 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2295 gene encodes GR2295 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2295 precursor RNA folds spatially, forming GR2295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2295 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2295 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79677 precursor RNA and GAM199168 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79677 RNA and GAM199168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79677 target RNA into GAM79677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199168 target RNA into GAM199168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2295 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2295 gene: GAM79677 target protein and GAM199168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79677 and GAM199168

GR2296 BM725416 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2296(GR2296) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2296 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2296 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2296 gene encodes GR2296 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2296 precursor RNA folds spatially, forming GR2296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2296 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2296 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57415 precursor RNA and GAM131243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57415 RNA and GAM131243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57415 target RNA into GAM57415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131243 target RNA into GAM131243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2296 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2296 gene: GAM57415 target protein and GAM131243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57415 and GAM131243

GR2297 AW134550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2297(GR2297) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2297 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2297 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2297 gene encodes GR2297 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2297 precursor RNA folds spatially, forming GR2297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2297 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2297 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM787 precursor RNA, GAM40296 precursor RNA and GAM266870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM787 RNA, GAM40296 RNA and GAM266870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM787 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM787 target RNA into GAM787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40296 target RNA into GAM40296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266870 target RNA into GAM266870 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2297 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2297 gene: GAM787 target protein, GAM40296 target protein and GAM266870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM787, GAM40296 and GAM266870

GR2298 AL048043 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2298(GR2298) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2298 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2298 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2298 gene encodes GR2298 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2298 precursor RNA folds spatially, forming GR2298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2298 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2298 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM212564 precursor RNA and GAM239025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM212564 RNA and GAM239025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM212564 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212564 target RNA into GAM212564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239025 target RNA into GAM239025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2298 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2298 gene: GAM212564 target protein and GAM239025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM212564 and GAM239025

GR2299 BI048340 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2299(GR2299) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2299 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2299 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2299 gene encodes GR2299 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2299 precursor RNA folds spatially, forming GR2299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2299 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2299 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2299 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46307 precursor RNA and GAM194504 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46307 RNA and GAM194504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46307 target RNA into GAM46307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194504 target RNA into GAM194504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2299 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2299 gene: GAM46307 target protein and GAM194504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46307 and GAM194504

GR2300 AA569486 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2300(GR2300) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2300 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2300 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2300 gene encodes GR2300 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2300 precursor RNA folds spatially, forming GR2300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2300 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2300 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM927 precursor RNA and GAM71768 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM927 RNA and GAM71768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM927 target RNA into GAM927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71768 target RNA into GAM71768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2300 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2300 gene: GAM927 target protein and GAM71768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM927 and GAM71768

GR2301 BI493045 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2301(GR2301) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2301 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2301 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2301 gene encodes GR2301 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2301 precursor RNA folds spatially, forming GR2301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2301 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2301 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM21353 precursor RNA, GAM157114 precursor RNA and GAM290938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21353 RNA, GAM157114 RNA and GAM290938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21353 target RNA into GAM21353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157114 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157114 target RNA into GAM157114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290938 target RNA into GAM290938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2301 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2301 gene: GAM21353 target protein, GAM157114 target protein and GAM290938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21353, GAM157114 and GAM290938

GR2302 AI908874 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2302(GR2302) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2302 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2302 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2302 gene encodes GR2302 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2302 precursor RNA folds spatially, forming GR2302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2302 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2302 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM26531 precursor RNA and GAM243963 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26531 RNA and GAM243963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26531 target RNA into GAM26531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243963 target RNA into GAM243963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2302 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2302 gene: GAM26531 target protein and GAM243963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26531 and GAM243963

GR2303 AV692439 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2303(GR2303) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2303 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2303 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2303 gene encodes GR2303 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2303 precursor RNA folds spatially, forming GR2303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2303 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2303 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1358 precursor RNA and GAM166388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1358 RNA and GAM166388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1358 target RNA into GAM1358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166388 target RNA into GAM166388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2303 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2303 gene: GAM1358 target protein and GAM166388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1358 and GAM166388

GR2304 BE072333 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2304(GR2304) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2304 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2304 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2304 gene encodes GR2304 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2304 precursor RNA folds spatially, forming GR2304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2304 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2304 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1342 precursor RNA and GAM131376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1342 RNA and GAM131376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1342 target RNA into GAM1342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131376 target RNA into GAM131376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2304 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2304 gene: GAM1342 target protein and GAM131376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1342 and GAM131376

GR2305 BI256848 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2305(GR2305) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2305 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2305 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2305 gene encodes GR2305 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2305 precursor RNA folds spatially, forming GR2305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2305 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2305 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM437 precursor RNA and GAM282454 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM437 RNA and GAM282454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM437 target RNA into GAM437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282454 target RNA into GAM282454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2305 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2305 gene: GAM437 target protein and GAM282454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM437 and GAM282454

GR2306 BI669413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2306(GR2306) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2306 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2306 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2306 gene encodes GR2306 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2306 precursor RNA folds spatially, forming GR2306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2306 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2306 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM117588 precursor RNA, GAM150204 precursor RNA, GAM158229 precursor RNA and GAM306008 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117588 RNA, GAM150204 RNA, GAM158229 RNA and GAM306008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117588 target RNA into GAM117588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150204 target RNA into GAM150204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158229 target RNA into GAM158229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306008 target RNA into GAM306008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2306 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2306 gene: GAM117588 target protein, GAM150204 target protein, GAM158229 target protein and GAM306008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117588, GAM150204, GAM158229 and GAM306008

GR2307 AI682370 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2307(GR2307) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2307 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2307 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2307 gene encodes GR2307 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2307 precursor RNA folds spatially, forming GR2307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2307 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2307 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99767 precursor RNA and GAM102333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99767 RNA and GAM102333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99767

target RNA into GAM99767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102333 target RNA into GAM102333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2307 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2307 gene: GAM99767 target protein and GAM102333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99767 and GAM102333

GR2308 BE253022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2308(GR2308) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2308 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2308 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2308 gene encodes GR2308 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2308 precursor RNA folds spatially, forming GR2308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2308 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2308 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1281 precursor RNA and GAM5580 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1281 RNA and GAM5580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1281 target RNA into GAM1281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5580 target RNA into GAM5580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2308 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2308 gene: GAM1281 target protein and GAM5580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1281 and GAM5580

GR2309 BE061131 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2309(GR2309) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2309 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2309 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2309 gene encodes GR2309 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2309 precursor RNA folds spatially, forming GR2309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2309 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2309 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7943 precursor RNA and GAM8698 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7943 RNA and GAM8698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7943 target RNA into GAM7943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8698 target RNA into GAM8698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2309 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2309 gene: GAM7943 target protein and GAM8698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7943 and GAM8698

GR2310 BI824952 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2310(GR2310) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2310 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2310 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2310 gene encodes GR2310 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2310 precursor RNA folds spatially, forming GR2310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2310 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2310 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2881 precursor RNA, GAM8692 precursor RNA, GAM270390 precursor RNA and GAM277412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2881 RNA, GAM8692 RNA, GAM270390 RNA and GAM277412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2881 target RNA into GAM2881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8692 target RNA into GAM8692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270390 target RNA into GAM270390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277412 target RNA into GAM277412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2310 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2310 gene: GAM2881 target protein, GAM8692 target protein, GAM270390 target protein and GAM277412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2881, GAM8692, GAM270390 and GAM277412

GR2311 H09391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2311(GR2311) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2311 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2311 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2311 gene encodes GR2311 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2311 precursor RNA folds spatially, forming GR2311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2311 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2311 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7534 precursor RNA and GAM225344 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7534 RNA and GAM225344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7534 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7534 target RNA into GAM7534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225344 target RNA into GAM225344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2311 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2311 gene: GAM7534 target protein and GAM225344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7534 and GAM225344

GR2312 AU118079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2312(GR2312) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2312 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2312 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2312 gene encodes GR2312 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2312 precursor RNA folds spatially, forming GR2312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2312 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2312 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM72344 precursor RNA, GAM79221 precursor RNA and GAM79269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72344 RNA, GAM79221 RNA and GAM79269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72344 target RNA into GAM72344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79221 target RNA into GAM79221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79269

target RNA into GAM79269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2312 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2312 gene: GAM72344 target protein, GAM79221 target protein and GAM79269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72344, GAM79221 and GAM79269

GR2313 BE302892 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2313(GR2313) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2313 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2313 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2313 gene encodes GR2313 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2313 precursor RNA folds spatially, forming GR2313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2313 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2313 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2155 precursor RNA and GAM298892 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2155 RNA and GAM298892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2155 target RNA into GAM2155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298892 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298892 target RNA into GAM298892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2313 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2313 gene: GAM2155 target protein and GAM298892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2155 and GAM298892

GR2314 AV760768 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2314(GR2314) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2314 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2314 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2314 gene encodes GR2314 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2314 precursor RNA folds spatially, forming GR2314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2314 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2314 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3043 precursor RNA and GAM22138 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3043 RNA and GAM22138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3043 target RNA into GAM3043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22138 target RNA into GAM22138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2314 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2314 gene: GAM3043 target protein and GAM22138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3043 and GAM22138

GR2315 AA150387 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2315(GR2315) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2315 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2315 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2315 gene encodes GR2315 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2315 precursor RNA folds spatially, forming GR2315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2315 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2315 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM264502 precursor RNA and GAM280561 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM264502 RNA and GAM280561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM264502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264502 target RNA into GAM264502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280561 target RNA into GAM280561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2315 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2315 gene: GAM264502 target protein and GAM280561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM264502 and GAM280561

GR2316 AA748450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2316(GR2316) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2316 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2316 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2316 gene encodes GR2316 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2316 precursor RNA folds spatially, forming GR2316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2316 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2316 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1515 precursor RNA and GAM14302 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1515 RNA and GAM14302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1515 target RNA into GAM1515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14302 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14302 target RNA into GAM14302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2316 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2316 gene: GAM1515 target protein and GAM14302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1515 and GAM14302

GR2317 AW362941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2317(GR2317) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2317 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2317 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2317 gene encodes GR2317 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2317 precursor RNA folds spatially, forming GR2317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2317 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2317 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31780 precursor RNA and GAM129160 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31780 RNA and GAM129160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM31780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31780 target RNA into GAM31780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129160 target RNA into GAM129160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2317 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2317 gene: GAM31780 target protein and GAM129160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31780 and GAM129160

GR2318 T40460 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2318(GR2318) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2318 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2318 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2318 gene encodes GR2318 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2318 precursor RNA folds spatially, forming GR2318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2318 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2318 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164340 precursor RNA and GAM184646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164340 RNA and GAM184646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164340 target RNA into GAM164340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184646 target RNA into GAM184646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2318 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2318 gene: GAM164340 target protein and GAM184646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164340 and GAM184646

GR2319 BG762495 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2319(GR2319) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2319 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2319

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2319 gene encodes GR2319 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2319 precursor RNA folds spatially, forming GR2319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2319 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2319 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4961 precursor RNA and GAM117479 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4961 RNA and GAM117479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4961 target RNA into GAM4961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117479 target RNA into GAM117479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2319 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2319 gene: GAM4961 target protein and GAM117479 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4961 and GAM117479

GR2320 AW001528 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2320(GR2320) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2320 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2320 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2320 gene encodes GR2320 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2320 precursor RNA folds spatially, forming GR2320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2320 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2320 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM16192 precursor RNA, GAM115377 precursor RNA and GAM194188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16192 RNA, GAM115377 RNA and GAM194188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16192 target RNA into GAM16192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115377 target RNA into GAM115377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194188 target RNA into GAM194188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2320 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2320 gene: GAM16192 target protein, GAM115377 target protein and GAM194188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16192, GAM115377 and GAM194188

GR2321 AL711723 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2321(GR2321) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2321 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2321 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2321 gene encodes GR2321 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2321 precursor RNA folds spatially, forming GR2321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2321 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2321 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22386 precursor RNA and GAM298696 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22386 RNA and GAM298696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22386 target RNA into GAM22386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298696 target RNA into GAM298696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2321 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2321 gene: GAM22386 target protein and GAM298696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22386 and GAM298696

GR2322 AW905266 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2322(GR2322) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2322 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2322 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2322 gene encodes GR2322 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2322 precursor RNA folds spatially, forming GR2322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2322 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2322 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8723 precursor RNA, GAM160866 precursor RNA and GAM328253 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8723 RNA, GAM160866 RNA and GAM328253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8723 target RNA into GAM8723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160866 target RNA into GAM160866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328253

target RNA into GAM328253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2322 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2322 gene: GAM8723 target protein, GAM160866 target protein and GAM328253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8723, GAM160866 and GAM328253

GR2323 AU142936 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2323(GR2323) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2323 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2323 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2323 gene encodes GR2323 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2323 precursor RNA folds spatially, forming GR2323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2323 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2323 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3695 precursor RNA and GAM100913 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3695 RNA and GAM100913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3695 target RNA into GAM3695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100913 target RNA into GAM100913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2323 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2323 gene: GAM3695 target protein and GAM100913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3695 and GAM100913

GR2324 BG621576 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2324(GR2324) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2324 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2324 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2324 gene encodes GR2324 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2324 precursor RNA folds spatially, forming GR2324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2324 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2324 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68751 precursor RNA and GAM136126 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68751 RNA and GAM136126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68751 target RNA into GAM68751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136126 target RNA into GAM136126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2324 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2324 gene: GAM68751 target protein and GAM136126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68751 and GAM136126

GR2325 BE327400 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2325(GR2325) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2325 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2325 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2325 gene encodes GR2325 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2325 precursor RNA folds spatially, forming GR2325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2325 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2325 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6321 precursor RNA, GAM102692 precursor RNA and GAM221851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6321 RNA, GAM102692 RNA and GAM221851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6321 target RNA into GAM6321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102692 target RNA into GAM102692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221851 target RNA into GAM221851 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2325 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2325 gene: GAM6321 target protein, GAM102692 target protein and GAM221851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6321, GAM102692 and GAM221851

GR2326 BF103273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2326(GR2326) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2326 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2326 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2326 gene encodes GR2326 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2326 precursor RNA folds spatially, forming GR2326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2326 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2326 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6590 precursor RNA and GAM65135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6590 RNA and GAM65135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6590 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6590 target RNA into GAM6590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65135 target RNA into GAM65135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2326 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2326 gene: GAM6590 target protein and GAM65135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6590 and GAM65135

GR2327 BM674204 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2327(GR2327) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2327 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2327 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2327 gene encodes GR2327 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2327 precursor RNA folds spatially, forming GR2327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2327 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2327 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2327 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM213 precursor RNA and GAM5187 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM213 RNA and GAM5187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213 target RNA into GAM213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5187 target RNA into GAM5187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2327 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2327 gene: GAM213 target protein and GAM5187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM213 and GAM5187

GR2328 AW502250 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2328(GR2328) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2328 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2328 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2328 gene encodes GR2328 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2328 precursor RNA folds spatially, forming GR2328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2328 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2328 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM7226 precursor RNA, GAM79008 precursor RNA, GAM106618 precursor RNA, GAM178807 precursor RNA and GAM230061 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7226 RNA, GAM79008 RNA, GAM106618 RNA, GAM178807 RNA and GAM230061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7226 target RNA into GAM7226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79008 target RNA into GAM79008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106618 target RNA into GAM106618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178807 target RNA into GAM178807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230061 target RNA into GAM230061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2328 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2328 gene: GAM7226 target protein, GAM79008 target protein, GAM106618 target protein, GAM178807 target protein and GAM230061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7226, GAM79008, GAM106618, GAM178807 and GAM230061

GR2329 BE778205 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2329(GR2329) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2329 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2329 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2329 gene encodes GR2329 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2329 precursor RNA folds spatially, forming GR2329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2329 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2329 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64758 precursor RNA and GAM295233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64758 RNA and GAM295233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64758 target RNA into GAM64758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295233 target RNA into GAM295233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2329 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2329 gene: GAM64758 target protein and GAM295233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64758 and GAM295233

GR2330 R52632 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2330(GR2330) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2330 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2330

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2330 gene encodes GR2330 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2330 precursor RNA folds spatially, forming GR2330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2330 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2330 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2061 precursor RNA and GAM41202 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2061 RNA and GAM41202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2061 target RNA into GAM2061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM41202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41202 target RNA into GAM41202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2330 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2330 gene: GAM2061 target protein and GAM41202 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2061 and GAM41202

GR2331 BE618780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2331(GR2331) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2331 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2331 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2331 gene encodes GR2331 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2331 precursor RNA folds spatially, forming GR2331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2331 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2331 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2676 precursor RNA and GAM6896 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2676 RNA and GAM6896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2676 target RNA into GAM2676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6896 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6896 target RNA into GAM6896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2331 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2331 gene: GAM2676 target protein and GAM6896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2676 and GAM6896

GR2332 BM988202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2332(GR2332) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2332 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2332 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2332 gene encodes GR2332 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2332 precursor RNA folds spatially, forming GR2332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2332 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2332 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM47565 precursor RNA, GAM329859 precursor RNA and GAM335447 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47565 RNA, GAM329859 RNA and GAM335447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47565 target RNA into GAM47565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329859 target RNA into GAM329859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335447 target RNA into GAM335447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2332 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2332 gene: GAM47565 target protein, GAM329859 target protein and GAM335447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47565, GAM329859 and GAM335447

GR2333 AA534603 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2333(GR2333) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2333 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2333 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2333 gene encodes GR2333 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2333 precursor RNA folds spatially, forming GR2333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2333 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2333 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1252 precursor RNA and GAM33172 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1252 RNA and GAM33172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1252 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1252 target RNA into GAM1252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33172 target RNA into GAM33172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2333 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2333 gene: GAM1252 target protein and GAM33172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1252 and GAM33172

GR2334 BE538084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2334(GR2334) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2334 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2334 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2334 gene encodes GR2334 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2334 precursor RNA folds spatially, forming GR2334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2334 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2334 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56 precursor RNA and GAM182595 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56 RNA and GAM182595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56 target RNA into GAM56 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM182595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182595 target RNA into GAM182595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2334 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2334 gene: GAM56 target protein and GAM182595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56 and GAM182595

GR2335 BF823203 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2335(GR2335) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2335 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2335 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2335 gene encodes GR2335 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2335 precursor RNA folds spatially, forming GR2335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2335 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2335 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4203 precursor RNA and GAM319170 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4203 RNA and GAM319170 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4203 target RNA into GAM4203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319170 target RNA into GAM319170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2335 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2335 gene: GAM4203 target protein and GAM319170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4203 and GAM319170

GR2336 AV702463 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2336(GR2336) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2336 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2336 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2336 gene encodes GR2336 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2336 precursor RNA folds spatially, forming GR2336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2336 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2336 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM166058 precursor RNA and GAM318458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM166058 RNA and GAM318458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM166058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166058 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166058 target RNA into GAM166058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318458 target RNA into GAM318458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2336 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2336 gene: GAM166058 target protein and GAM318458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM166058 and GAM318458

GR2337 BI830281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2337(GR2337) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2337 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2337 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2337 gene encodes GR2337 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2337 precursor RNA folds spatially, forming GR2337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2337 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2337 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69570 precursor RNA and GAM79726 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69570 RNA and GAM79726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69570 target RNA into GAM69570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79726 target RNA into GAM79726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2337 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2337 gene: GAM69570 target

protein and GAM79726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69570 and GAM79726

GR2338 BM797986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2338(GR2338) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2338 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2338 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2338 gene encodes GR2338 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2338 precursor RNA folds spatially, forming GR2338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2338 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2338 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3784 precursor RNA, GAM126857 precursor RNA and GAM276449 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3784 RNA, GAM126857 RNA and GAM276449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3784 target RNA into GAM3784 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126857 target RNA into GAM126857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276449 target RNA into GAM276449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2338 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2338 gene: GAM3784 target protein, GAM126857 target protein and GAM276449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3784, GAM126857 and GAM276449

GR2339 BE256924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2339(GR2339) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2339 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2339 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2339 gene encodes GR2339 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2339 precursor RNA folds spatially, forming GR2339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2339 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2339 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM221557 precursor RNA and GAM294085 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221557 RNA and GAM294085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221557 target RNA into GAM221557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294085 target RNA into GAM294085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2339 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2339 gene: GAM221557 target protein and GAM294085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221557 and GAM294085

GR2340 BF674834 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2340(GR2340) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2340 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2340

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2340 gene encodes GR2340 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2340 precursor RNA folds spatially, forming GR2340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2340 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2340 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM26593 precursor RNA, GAM44482 precursor RNA and GAM84529 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26593 RNA, GAM44482 RNA and GAM84529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26593 target RNA into GAM26593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44482 target RNA into GAM44482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84529 target RNA into GAM84529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2340 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2340 gene: GAM26593 target protein, GAM44482 target protein and GAM84529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26593, GAM44482 and GAM84529

GR2341 AW753211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2341(GR2341) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2341 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2341 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2341 gene encodes GR2341 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2341 precursor RNA folds spatially, forming GR2341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2341 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2341 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1516 precursor RNA, GAM3876 precursor RNA and GAM193102 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1516 RNA, GAM3876 RNA and GAM193102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM1516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1516 target RNA into GAM1516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3876 target RNA into GAM3876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193102 target RNA into GAM193102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2341 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2341 gene: GAM1516 target protein, GAM3876 target protein and GAM193102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1516, GAM3876 and GAM193102

GR2342 BI226548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2342(GR2342) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2342 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2342 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2342 gene encodes GR2342 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2342 precursor RNA folds spatially, forming GR2342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2342 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2342 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM277200 precursor RNA and GAM305857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM277200 RNA and GAM305857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM277200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277200 target RNA into GAM277200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305857 target RNA into GAM305857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2342 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2342 gene: GAM277200 target protein and GAM305857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM277200 and GAM305857

GR2343 AI857758 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2343(GR2343) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2343 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2343 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2343 gene encodes GR2343 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2343 precursor RNA folds spatially, forming GR2343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2343 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2343 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32141 precursor RNA and GAM36473 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32141 RNA and GAM36473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32141 target RNA into GAM32141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36473 target RNA into GAM36473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2343 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2343 gene: GAM32141 target protein and GAM36473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32141 and GAM36473

GR2344 BM551002 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2344(GR2344) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2344 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2344 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2344 gene encodes GR2344 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2344 precursor RNA folds spatially, forming GR2344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2344 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2344 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7015 precursor RNA and GAM107059 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7015 RNA and GAM107059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7015 target RNA into GAM7015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107059 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107059 target RNA into GAM107059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2344 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2344 gene: GAM7015 target protein and GAM107059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7015 and GAM107059

GR2345 BG195749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2345(GR2345) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2345 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2345 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2345 gene encodes GR2345 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2345 precursor RNA folds spatially, forming GR2345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2345 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2345 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10046 precursor RNA and GAM15507 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10046 RNA and GAM15507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10046 target RNA into GAM10046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15507 target RNA into GAM15507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2345 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2345 gene: GAM10046 target protein and GAM15507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10046 and GAM15507

GR2346 AA730453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2346(GR2346) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2346 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2346 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2346 gene encodes GR2346 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2346 precursor RNA folds spatially, forming GR2346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2346 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2346 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3917 precursor RNA and GAM81188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3917 RNA and GAM81188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3917 target RNA into GAM3917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81188 target RNA into GAM81188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2346 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2346 gene: GAM3917 target protein and GAM81188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM3917 and GAM81188

GR2347 AL706610 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2347(GR2347) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2347 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2347 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2347 gene encodes GR2347 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2347 precursor RNA folds spatially, forming GR2347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2347 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2347 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2701 precursor RNA and GAM6606 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2701 RNA and GAM6606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2701 target RNA into GAM2701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6606 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6606 target RNA into GAM6606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2347 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2347 gene: GAM2701 target protein and GAM6606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2701 and GAM6606

GR2348 BM767015 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2348(GR2348) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2348 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2348 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2348 gene encodes GR2348 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2348 precursor RNA folds spatially, forming GR2348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2348 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2348 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5029 precursor RNA and GAM142154 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5029 RNA and GAM142154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM5029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5029 target RNA into GAM5029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142154 target RNA into GAM142154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2348 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2348 gene: GAM5029 target protein and GAM142154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5029 and GAM142154

GR2349 BM928334 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2349(GR2349) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2349 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2349 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2349 gene encodes GR2349 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2349 precursor RNA folds spatially, forming GR2349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2349 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2349 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180743 precursor RNA and GAM234734 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180743 RNA and GAM234734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180743 target RNA into GAM180743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234734 target RNA into GAM234734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2349 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2349 gene: GAM180743 target protein and GAM234734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180743 and GAM234734

GR2350 BF814010 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2350(GR2350) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2350 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2350

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2350 gene encodes GR2350 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2350 precursor RNA folds spatially, forming GR2350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2350 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2350 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2607 precursor RNA, GAM3783 precursor RNA and GAM132179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2607 RNA, GAM3783 RNA and GAM132179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2607 target RNA into GAM2607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3783 target RNA into GAM3783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132179 target RNA into GAM132179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2350 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2350 gene: GAM2607 target protein, GAM3783 target protein and GAM132179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2607, GAM3783 and GAM132179

GR2351 BG720711 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2351(GR2351) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2351 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2351 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2351 gene encodes GR2351 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2351 precursor RNA folds spatially, forming GR2351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2351 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2351 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6419 precursor RNA, GAM117481 precursor RNA and GAM191679 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6419 RNA, GAM117481 RNA and GAM191679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM6419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6419 target RNA into GAM6419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117481 target RNA into GAM117481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191679 target RNA into GAM191679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2351 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2351 gene: GAM6419 target protein, GAM117481 target protein and GAM191679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6419, GAM117481 and GAM191679

GR2352 BF028700 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2352(GR2352) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2352 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2352 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2352 gene encodes GR2352 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2352 precursor RNA folds spatially, forming GR2352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2352 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2352 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4211 precursor RNA and GAM208882 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4211 RNA and GAM208882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4211 target RNA into GAM4211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208882 target RNA into GAM208882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2352 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2352 gene: GAM4211 target protein and GAM208882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4211 and GAM208882

GR2353 AI656935 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2353(GR2353) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2353 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2353 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2353 gene encodes GR2353 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2353 precursor RNA folds spatially, forming GR2353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2353 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2353 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM112181 precursor RNA and GAM334851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112181 RNA and GAM334851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112181 target RNA into GAM112181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334851 target RNA into GAM334851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2353 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2353 gene: GAM112181 target protein and GAM334851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112181 and GAM334851

GR2354 BI870028 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2354(GR2354) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2354 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2354 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2354 gene encodes GR2354 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2354 precursor RNA folds spatially, forming GR2354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2354 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2354 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM137657 precursor RNA, GAM214070 precursor RNA and GAM215865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM137657 RNA, GAM214070 RNA and GAM215865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM137657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137657 target RNA into GAM137657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214070 target RNA into GAM214070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215865 target RNA into GAM215865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2354 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2354 gene: GAM137657 target protein, GAM214070 target protein and GAM215865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM137657, GAM214070 and GAM215865

GR2355 AA521084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2355(GR2355) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2355 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2355 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2355 gene encodes GR2355 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2355 precursor RNA folds spatially, forming GR2355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2355 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2355 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5713 precursor RNA, GAM99460 precursor RNA, GAM137465 precursor RNA and GAM246525 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5713 RNA, GAM99460 RNA, GAM137465 RNA and GAM246525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5713 target RNA into GAM5713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99460 target RNA into GAM99460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137465 target RNA into GAM137465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM246525 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246525 target RNA into GAM246525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2355 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2355 gene: GAM5713 target protein, GAM99460 target protein, GAM137465 target protein and GAM246525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5713, GAM99460, GAM137465 and GAM246525

GR2356 BM919570 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2356(GR2356) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2356 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2356 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2356 gene encodes GR2356 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2356 precursor RNA folds spatially, forming GR2356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2356 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2356 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM609 precursor RNA, GAM72852 precursor RNA and GAM298997 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM609 RNA, GAM72852 RNA and GAM298997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM609 target RNA into GAM609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72852 target RNA into GAM72852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298997 target RNA into GAM298997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2356 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2356 gene: GAM609 target protein, GAM72852 target protein and GAM298997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM609, GAM72852 and GAM298997

GR2357 BI908567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2357(GR2357) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2357 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2357 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2357 gene encodes GR2357 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2357 precursor RNA folds spatially, forming GR2357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2357 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2357 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM289982 precursor RNA and GAM290549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM289982 RNA and GAM290549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM289982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289982 target RNA into GAM289982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290549 target RNA into GAM290549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2357 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2357 gene: GAM289982 target protein and GAM290549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM289982 and GAM290549

GR2358 BF671775 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2358(GR2358) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2358 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2358 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2358 gene encodes GR2358 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2358 precursor RNA folds spatially, forming GR2358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2358 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2358 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM168418 precursor RNA, GAM224679 precursor RNA and GAM235205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM168418 RNA, GAM224679 RNA and GAM235205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM168418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168418 target RNA into GAM168418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224679 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224679 target RNA into GAM224679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235205 target RNA into GAM235205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2358 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2358 gene: GAM168418 target protein, GAM224679 target protein and GAM235205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM168418, GAM224679 and GAM235205

GR2359 BQ083011 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2359(GR2359) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2359 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2359 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2359 gene encodes GR2359 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2359 precursor RNA folds spatially, forming GR2359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2359 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2359 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7863 precursor RNA and GAM219210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7863 RNA and GAM219210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7863 target RNA into GAM7863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219210 target RNA into GAM219210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2359 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2359 gene: GAM7863 target protein and GAM219210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7863 and GAM219210

GR2360 BE184222 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2360(GR2360) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2360 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2360 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2360 gene encodes GR2360 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2360 precursor RNA folds spatially, forming GR2360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2360 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2360 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4595 precursor RNA, GAM133626 precursor RNA and GAM227061 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4595 RNA, GAM133626 RNA and GAM227061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4595 target RNA into GAM4595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133626 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133626 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133626 target RNA into GAM133626 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227061 target RNA into GAM227061 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2360 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2360 gene: GAM4595 target protein, GAM133626 target protein and GAM227061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4595, GAM133626 and GAM227061

GR2361 AL699525 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2361(GR2361) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2361 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2361 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2361 gene encodes GR2361 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2361 precursor RNA folds spatially, forming GR2361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2361 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2361 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94037 precursor RNA and GAM237556 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94037 RNA and GAM237556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94037 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94037 target RNA into GAM94037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237556 target RNA into GAM237556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2361 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2361 gene: GAM94037 target protein and GAM237556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94037 and GAM237556

GR2362 BF204858 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2362(GR2362) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2362 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2362 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2362 gene encodes GR2362 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2362 precursor RNA folds spatially, forming GR2362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2362 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2362 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2362 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM30831 precursor RNA, GAM60225 precursor RNA and GAM100688 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30831 RNA, GAM60225 RNA and GAM100688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30831 target RNA into GAM30831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60225 target RNA into GAM60225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100688 target RNA into GAM100688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2362 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2362 gene: GAM30831 target protein, GAM60225 target protein and GAM100688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30831, GAM60225 and GAM100688

GR2363 BG005129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2363(GR2363) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2363 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2363 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2363 gene encodes GR2363 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2363 precursor RNA folds spatially, forming GR2363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2363 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2363 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5042 precursor RNA and GAM195717 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5042 RNA and GAM195717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5042 target RNA into GAM5042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195717 target RNA into GAM195717 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2363 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2363 gene: GAM5042 target protein and GAM195717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5042 and GAM195717

GR2364 BG830386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2364(GR2364) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2364 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2364 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2364 gene encodes GR2364 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2364 precursor RNA folds spatially, forming GR2364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2364 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2364 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65666 precursor RNA and GAM276932 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65666 RNA and GAM276932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM65666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65666 target RNA into GAM65666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276932 target RNA into GAM276932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2364 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2364 gene: GAM65666 target protein and GAM276932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65666 and GAM276932

GR2365 AA503365 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2365(GR2365) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2365 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2365 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2365 gene encodes GR2365 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2365 precursor RNA folds spatially, forming GR2365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2365 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2365 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM2187 precursor RNA and GAM212049 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2187 RNA and GAM212049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2187 target RNA into GAM2187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212049 target RNA into GAM212049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2365 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2365 gene: GAM2187 target protein and GAM212049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2187 and GAM212049

GR2366 BI547267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2366(GR2366) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2366 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2366 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2366 gene encodes GR2366 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2366 precursor RNA folds spatially, forming GR2366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2366 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2366 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3343 precursor RNA, GAM7971 precursor RNA and GAM147358 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3343 RNA, GAM7971 RNA and GAM147358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3343 target RNA into GAM3343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7971 target RNA into GAM7971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147358 target RNA into GAM147358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2366 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2366 gene: GAM3343 target protein, GAM7971 target protein and GAM147358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3343, GAM7971 and GAM147358

GR2367 BE696186 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2367(GR2367) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2367 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2367 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2367 gene encodes GR2367 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2367 precursor RNA folds spatially, forming GR2367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2367 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2367 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM140405 precursor RNA and GAM242295 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140405 RNA and GAM242295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140405 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140405 target RNA into GAM140405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242295 target RNA into GAM242295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2367 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2367 gene: GAM140405 target protein and GAM242295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140405 and GAM242295

GR2368 AW382269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2368(GR2368) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2368 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2368 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2368 gene encodes GR2368 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2368 precursor RNA folds spatially, forming GR2368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2368 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2368 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118060 precursor RNA and GAM269847 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118060 RNA and GAM269847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118060 target RNA into GAM118060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269847 target RNA into GAM269847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2368 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2368 gene: GAM118060 target protein and GAM269847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118060 and GAM269847

GR2369 W79224 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2369(GR2369) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2369 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2369 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2369 gene encodes GR2369 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2369 precursor RNA folds spatially, forming GR2369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2369 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2369 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2000 precursor RNA, GAM7805 precursor RNA and GAM55293 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2000 RNA, GAM7805 RNA and GAM55293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2000 target RNA into GAM2000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7805 target RNA into GAM7805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55293 target RNA into GAM55293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2369 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2369 gene: GAM2000 target protein, GAM7805 target protein and GAM55293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2000, GAM7805 and GAM55293

GR2370 AI073816 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2370(GR2370) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2370 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2370 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2370 gene encodes GR2370 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2370 precursor RNA folds spatially, forming GR2370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2370 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2370 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM125 precursor RNA and GAM6804 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125 RNA and GAM6804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125 target RNA into GAM125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6804 target RNA into GAM6804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2370 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2370 gene: GAM125 target protein and GAM6804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125 and GAM6804

GR2371 BI199518 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2371(GR2371) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2371 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2371 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2371 gene encodes GR2371 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2371 precursor RNA folds spatially, forming GR2371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2371 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2371 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4267 precursor RNA, GAM11046 precursor RNA and GAM271565 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4267 RNA, GAM11046 RNA and GAM271565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4267 target RNA into GAM4267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11046 target RNA into GAM11046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271565 target RNA into GAM271565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2371 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2371 gene: GAM4267 target protein, GAM11046 target protein and GAM271565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4267, GAM11046 and GAM271565

GR2372 Z40804 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2372(GR2372) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2372 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2372 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2372 gene encodes GR2372 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2372 precursor RNA folds spatially, forming GR2372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2372 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2372 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM187811 precursor RNA and GAM283302 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM187811 RNA and GAM283302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM187811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187811 target RNA into GAM187811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283302 target RNA into GAM283302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2372 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2372 gene: GAM187811 target protein and GAM283302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM187811 and GAM283302

GR2373 BG179611 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2373(GR2373) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2373 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2373 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2373 gene encodes GR2373 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2373 precursor RNA folds spatially, forming GR2373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2373 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2373 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7219 precursor RNA and GAM24601 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7219 RNA and GAM24601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7219 target RNA into GAM7219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24601 target RNA into GAM24601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2373 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2373 gene: GAM7219 target protein and GAM24601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7219 and GAM24601

GR2374 BI524444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2374(GR2374) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2374 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2374 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2374 gene encodes GR2374 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2374 precursor RNA folds spatially, forming GR2374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2374 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2374 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM503 precursor RNA, GAM191963 precursor RNA and GAM326591 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM503 RNA, GAM191963 RNA and GAM326591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM503 target RNA into GAM503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191963 target RNA into GAM191963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326591 target RNA into GAM326591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2374 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2374 gene: GAM503 target protein, GAM191963 target protein and GAM326591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM503, GAM191963 and GAM326591

GR2375 W55947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2375(GR2375) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2375 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2375 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2375 gene encodes GR2375 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2375 precursor RNA folds spatially, forming GR2375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2375 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2375 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2715 precursor RNA, GAM34418 precursor RNA and GAM51276 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2715 RNA, GAM34418 RNA and GAM51276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2715 target RNA into GAM2715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34418 target RNA into GAM34418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM51276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51276 target RNA into GAM51276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2375 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2375 gene: GAM2715 target protein, GAM34418 target protein and GAM51276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2715, GAM34418 and GAM51276

GR2376 BG539348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2376(GR2376) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2376 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2376 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2376 gene encodes GR2376 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2376 precursor RNA folds spatially, forming GR2376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2376 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2376 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM679 precursor RNA and GAM58398 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM679 RNA and GAM58398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM679 target RNA into GAM679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58398 target RNA into GAM58398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2376 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2376 gene: GAM679 target protein and GAM58398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM679 and GAM58398

GR2377 BF839862 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2377(GR2377) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2377 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2377 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2377 gene encodes GR2377 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2377 precursor RNA folds spatially, forming GR2377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2377 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2377 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2314 precursor RNA and GAM287754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2314 RNA and GAM287754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2314 target RNA into GAM2314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287754 target RNA into GAM287754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2377 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2377 gene: GAM2314 target protein and GAM287754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2314 and GAM287754

GR2378 BG896426 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2378(GR2378) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2378 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2378 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2378 gene encodes GR2378 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2378 precursor RNA folds spatially, forming GR2378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2378 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2378 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133850 precursor RNA and GAM251895 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133850 RNA and GAM251895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133850 target RNA into GAM133850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251895 target RNA into GAM251895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2378 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2378 gene: GAM133850 target protein and GAM251895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133850 and GAM251895

GR2379 BF343624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2379(GR2379) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2379 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2379 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2379 gene encodes GR2379 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2379 precursor RNA folds spatially, forming GR2379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2379 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2379 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4655 precursor RNA, GAM6075 precursor RNA and GAM200209 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4655 RNA, GAM6075 RNA and GAM200209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4655 target RNA into

GAM4655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6075 target RNA into GAM6075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200209 target RNA into GAM200209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2379 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2379 gene: GAM4655 target protein, GAM6075 target protein and GAM200209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4655, GAM6075 and GAM200209

GR2380 BI087007 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2380(GR2380) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2380 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2380 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2380 gene encodes GR2380 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2380 precursor RNA folds spatially, forming GR2380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2380 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2380 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1759 precursor RNA, GAM73079 precursor RNA and GAM287481 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1759 RNA, GAM73079 RNA and GAM287481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1759 target RNA into GAM1759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73079 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73079 target RNA into GAM73079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287481 target RNA into GAM287481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2380 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2380 gene: GAM1759 target protein, GAM73079 target protein and GAM287481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1759, GAM73079 and

GAM287481

GR2381 BM748983 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2381(GR2381) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2381 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2381 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2381 gene encodes GR2381 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2381 precursor RNA folds spatially, forming GR2381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2381 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2381 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7376 precursor RNA and GAM13485 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7376 RNA and GAM13485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7376 target RNA into GAM7376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13485 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13485 target RNA into GAM13485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2381 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2381 gene: GAM7376 target protein and GAM13485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7376 and GAM13485

GR2382 AI373612 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2382(GR2382) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2382 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2382 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2382 gene encodes GR2382 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2382 precursor RNA folds spatially, forming GR2382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2382 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2382 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7456 precursor RNA and GAM288930 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7456 RNA and GAM288930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM7456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7456 target RNA into GAM7456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288930 target RNA into GAM288930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2382 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2382 gene: GAM7456 target protein and GAM288930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7456 and GAM288930

GR2383 AW370581 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2383(GR2383) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2383 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2383 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2383 gene encodes GR2383 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2383 precursor RNA folds spatially, forming GR2383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2383 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2383 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM52502 precursor RNA and GAM71365 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52502 RNA and GAM71365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52502 target RNA into GAM52502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71365 target RNA into GAM71365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2383 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2383 gene: GAM52502 target protein and GAM71365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52502 and GAM71365

GR2384 BM462115 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2384(GR2384) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2384 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2384

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2384 gene encodes GR2384 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2384 precursor RNA folds spatially, forming GR2384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2384 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2384 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73549 precursor RNA and GAM319292 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73549 RNA and GAM319292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73549 target RNA into GAM73549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319292 target RNA into GAM319292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2384 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2384 gene: GAM73549 target protein and GAM319292 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73549 and GAM319292

GR2385 BE671615 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2385(GR2385) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2385 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2385 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2385 gene encodes GR2385 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2385 precursor RNA folds spatially, forming GR2385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2385 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2385 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM116635 precursor RNA, GAM306180 precursor RNA and GAM322881 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116635 RNA, GAM306180 RNA and GAM322881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116635 target RNA into GAM116635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306180 target RNA into GAM306180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322881 target RNA into GAM322881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2385 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2385 gene: GAM116635 target protein, GAM306180 target protein and GAM322881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116635, GAM306180 and GAM322881

GR2386 BG203414 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2386(GR2386) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2386 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2386 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2386 gene encodes GR2386 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2386 precursor RNA folds spatially, forming GR2386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2386 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2386 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM468 precursor RNA, GAM7790 precursor RNA, GAM88724 precursor RNA and GAM320853 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM468 RNA, GAM7790 RNA, GAM88724 RNA and GAM320853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM468 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM468 target RNA into GAM468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7790 target RNA into GAM7790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88724 target RNA into GAM88724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320853 target RNA into GAM320853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2386 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2386 gene: GAM468 target protein, GAM7790 target protein, GAM88724 target protein and GAM320853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM468, GAM7790, GAM88724 and GAM320853

GR2387 BE247038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2387(GR2387) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2387 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2387 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2387 gene encodes GR2387 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2387 precursor RNA folds spatially, forming GR2387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2387 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2387 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1904 precursor RNA and GAM207222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1904 RNA and GAM207222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1904 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1904 target RNA into GAM1904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207222 target RNA into GAM207222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2387 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2387 gene: GAM1904 target protein and GAM207222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1904 and GAM207222

GR2388 BF978034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2388(GR2388) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2388 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2388 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2388 gene encodes GR2388 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2388 precursor RNA folds spatially, forming GR2388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2388 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2388 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1841 precursor RNA and GAM227662 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1841 RNA and GAM227662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1841 target RNA into GAM1841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227662 target RNA into GAM227662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2388 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2388 gene: GAM1841 target protein and GAM227662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1841 and GAM227662

GR2389 BI913999 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2389(GR2389) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2389 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2389 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2389 gene encodes GR2389 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2389 precursor RNA folds spatially, forming GR2389 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2389 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2389 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88502 precursor RNA and GAM239640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88502 RNA and GAM239640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88502 target RNA into GAM88502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239640 target RNA into GAM239640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2389 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2389 gene: GAM88502 target protein and GAM239640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88502 and GAM239640

GR2390 BF087227 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2390(GR2390) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2390 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2390 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2390 gene encodes GR2390 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2390 precursor RNA folds spatially, forming GR2390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2390 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2390 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2050 precursor RNA, GAM119811 precursor RNA and GAM191002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2050 RNA, GAM119811 RNA and GAM191002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2050 target RNA into GAM2050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119811 target RNA into GAM119811 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191002 target RNA into GAM191002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2390 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2390 gene: GAM2050 target protein, GAM119811 target protein and GAM191002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2050, GAM119811 and GAM191002

GR2391 AI300523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2391(GR2391) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2391 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2391 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2391 gene encodes GR2391 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2391 precursor RNA folds spatially, forming GR2391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2391 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2391 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5682 precursor RNA, GAM112135 precursor RNA and GAM286269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5682 RNA, GAM112135 RNA and GAM286269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5682 target RNA into GAM5682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112135 target RNA into GAM112135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286269 target RNA into GAM286269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2391 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2391 gene: GAM5682 target protein, GAM112135 target protein and GAM286269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5682, GAM112135 and GAM286269

GR2392 BG775490 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2392(GR2392) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2392 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2392 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2392 gene encodes GR2392 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2392 precursor RNA folds spatially, forming GR2392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2392 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2392 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4889 precursor RNA and GAM277661 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4889 RNA and GAM277661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4889 target RNA into GAM4889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277661 target RNA into GAM277661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2392 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2392 gene: GAM4889 target protein and GAM277661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4889 and GAM277661

GR2393 BI560350 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2393(GR2393) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2393 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2393 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2393 gene encodes GR2393 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2393 precursor RNA folds spatially, forming GR2393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2393 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2393 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4808 precursor RNA and GAM4938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4808 RNA and GAM4938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4808 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4808 target RNA into GAM4808 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4938 target RNA into GAM4938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2393 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2393 gene: GAM4808 target protein and GAM4938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4808 and GAM4938

GR2394 BI858439 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2394(GR2394) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2394 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2394 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2394 gene encodes GR2394 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2394 precursor RNA folds spatially, forming GR2394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2394 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2394 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM412 precursor RNA, GAM4657 precursor RNA and GAM7269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM412 RNA, GAM4657 RNA and GAM7269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM412 target RNA into GAM412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4657 target RNA into GAM4657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7269 target RNA into GAM7269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2394 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2394 gene: GAM412 target protein, GAM4657 target protein and GAM7269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM412, GAM4657 and GAM7269

GR2395 AW817834 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2395(GR2395) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2395 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2395 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2395 gene encodes GR2395 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2395 precursor RNA folds spatially, forming GR2395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2395 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2395 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2204 precursor RNA, GAM34935 precursor RNA and GAM159783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2204 RNA, GAM34935 RNA and GAM159783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2204 target RNA into GAM2204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34935 target RNA into GAM34935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159783 target RNA into GAM159783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2395 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2395 gene: GAM2204 target protein, GAM34935 target protein and GAM159783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2204, GAM34935 and GAM159783

GR2396 BG700971 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2396(GR2396) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2396 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2396 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2396 gene encodes GR2396 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2396 precursor RNA folds spatially, forming GR2396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2396 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2396 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3524 precursor RNA and GAM248270 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3524 RNA and GAM248270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM3524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3524 target RNA into GAM3524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248270 target RNA into GAM248270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2396 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2396 gene: GAM3524 target protein and GAM248270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3524 and GAM248270

GR2397 BF763762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2397(GR2397) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2397 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2397 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2397 gene encodes GR2397 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2397 precursor RNA folds spatially, forming GR2397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2397 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2397 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2580 precursor RNA, GAM62970 precursor RNA and GAM114778 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2580 RNA, GAM62970 RNA and GAM114778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2580 target RNA into GAM2580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62970 target RNA into GAM62970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114778 target RNA into GAM114778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2397 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2397 gene: GAM2580 target protein, GAM62970 target protein and GAM114778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2580, GAM62970 and GAM114778

GR2398 AI392873 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2398(GR2398) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2398 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2398 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2398 gene encodes GR2398 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2398 precursor RNA folds spatially, forming GR2398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2398 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2398 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6066 precursor RNA, GAM109241 precursor RNA and GAM115049 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6066 RNA, GAM109241 RNA and GAM115049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6066 target RNA into GAM6066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109241 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109241 target RNA into GAM109241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115049 target RNA into GAM115049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2398 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2398 gene: GAM6066 target protein, GAM109241 target protein and GAM115049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6066, GAM109241 and GAM115049

GR2399 BF663891 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2399(GR2399) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2399 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2399 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2399 gene encodes GR2399 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2399 precursor RNA folds spatially, forming GR2399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2399 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2399 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM64184 precursor RNA and GAM99218 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64184 RNA and GAM99218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64184 target RNA into GAM64184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99218 target RNA into GAM99218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2399 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2399 gene: GAM64184 target protein and GAM99218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64184 and GAM99218

GR2400 BG216102 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2400(GR2400) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2400 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2400 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2400 gene encodes GR2400 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2400 precursor RNA folds spatially, forming GR2400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2400 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2400 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM199343 precursor RNA and GAM315254 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM199343 RNA and GAM315254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM199343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199343 target RNA into GAM199343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315254 target RNA into GAM315254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2400 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2400 gene: GAM199343 target protein and GAM315254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM199343 and GAM315254

GR2401 AA343041 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2401(GR2401) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2401 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2401 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2401 gene encodes GR2401 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2401 precursor RNA folds spatially, forming GR2401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2401 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2401 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM158 precursor RNA, GAM35383 precursor RNA and GAM125033 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158 RNA, GAM35383 RNA and GAM125033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158 target RNA into GAM158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35383 target RNA into GAM35383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125033 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125033 target RNA into GAM125033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2401 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2401 gene: GAM158 target protein, GAM35383 target protein and GAM125033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158, GAM35383 and GAM125033

GR2402 W25701 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2402(GR2402) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2402 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2402 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2402 gene encodes GR2402 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2402 precursor RNA folds spatially, forming GR2402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2402 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2402 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60589 precursor RNA and GAM92637 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60589 RNA and GAM92637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60589 target RNA into GAM60589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92637 target RNA into GAM92637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2402 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2402 gene: GAM60589 target protein and GAM92637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60589 and GAM92637

GR2403 BG492163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2403(GR2403) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2403 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2403 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2403 gene encodes GR2403 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2403 precursor RNA folds spatially, forming GR2403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2403 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2403 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3462 precursor RNA, GAM207045 precursor RNA, GAM208841 precursor RNA and GAM258811 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3462 RNA, GAM207045 RNA, GAM208841 RNA and GAM258811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3462 target RNA into GAM3462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207045 target RNA into GAM207045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208841 target RNA into GAM208841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM258811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258811 target RNA into GAM258811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2403 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2403 gene: GAM3462 target protein, GAM207045 target protein, GAM208841 target protein and GAM258811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3462, GAM207045, GAM208841 and GAM258811

GR2404 BF685404 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2404(GR2404) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2404 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2404 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2404 gene encodes GR2404 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2404 precursor RNA folds spatially, forming GR2404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2404 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2404 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164409 precursor RNA and GAM326895 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM164409 RNA and GAM326895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164409 target RNA into GAM164409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326895 target RNA into GAM326895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2404 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2404 gene: GAM164409 target protein and GAM326895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164409 and GAM326895

GR2405 AI572685 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2405(GR2405) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2405 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2405 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2405 gene encodes GR2405 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2405 precursor RNA folds spatially, forming GR2405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2405 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2405 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1207 precursor RNA, GAM24675 precursor RNA and GAM332640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1207 RNA, GAM24675 RNA and GAM332640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1207 target RNA into GAM1207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24675 target RNA into GAM24675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332640 target RNA into GAM332640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2405 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2405 gene: GAM1207 target protein, GAM24675 target protein and GAM332640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM1207, GAM24675 and GAM332640

GR2406 BF509115 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2406(GR2406) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2406 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2406 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2406 gene encodes GR2406 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2406 precursor RNA folds spatially, forming GR2406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2406 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2406 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM196649 precursor RNA and GAM257829 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196649 RNA and GAM257829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196649 target RNA into GAM196649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM257829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257829 target RNA into GAM257829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2406 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2406 gene: GAM196649 target protein and GAM257829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196649 and GAM257829

GR2407 AA780757 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2407(GR2407) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2407 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2407 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2407 gene encodes GR2407 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2407 precursor RNA folds spatially, forming GR2407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2407 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2407 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM984 precursor RNA and GAM298262 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM984 RNA and GAM298262 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM984 target RNA into GAM984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298262 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298262 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298262 target RNA into GAM298262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2407 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2407 gene: GAM984 target protein and GAM298262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM984 and GAM298262

GR2408 BF955161 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2408(GR2408) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2408 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2408 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2408 gene encodes GR2408 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2408 precursor RNA folds spatially, forming GR2408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2408 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2408 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM22328 precursor RNA, GAM144085 precursor RNA and GAM177791 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22328 RNA, GAM144085 RNA and GAM177791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22328 target RNA into GAM22328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144085 target RNA into GAM144085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177791 target RNA into GAM177791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2408 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2408 gene: GAM22328 target protein, GAM144085 target protein and GAM177791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22328, GAM144085 and

GR2409 R93627 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2409(GR2409) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2409 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2409 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2409 gene encodes GR2409 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2409 precursor RNA folds spatially, forming GR2409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2409 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2409 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3665 precursor RNA and GAM246322 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3665 RNA and GAM246322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3665 target RNA into GAM3665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246322 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246322 target RNA into GAM246322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2409 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2409 gene: GAM3665 target protein and GAM246322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3665 and GAM246322

GR2410 BG388636 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2410(GR2410) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2410 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2410 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2410 gene encodes GR2410 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2410 precursor RNA folds spatially, forming GR2410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2410 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2410 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4249 precursor RNA and GAM123742 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4249 RNA and GAM123742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM4249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4249 target RNA into GAM4249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123742 target RNA into GAM123742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2410 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2410 gene: GAM4249 target protein and GAM123742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4249 and GAM123742

GR2411 AI811593 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2411(GR2411) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2411 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2411 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2411 gene encodes GR2411 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2411 precursor RNA folds spatially, forming GR2411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2411 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2411 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7198 precursor RNA and GAM93440 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7198 RNA and GAM93440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7198 target RNA into GAM7198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93440 target RNA into GAM93440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2411 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2411 gene: GAM7198 target protein and GAM93440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7198 and GAM93440

GR2412 BG546955 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2412(GR2412) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2412 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2412

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2412 gene encodes GR2412 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2412 precursor RNA folds spatially, forming GR2412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2412 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2412 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152469 precursor RNA and GAM250712 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152469 RNA and GAM250712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM152469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152469 target RNA into GAM152469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250712 target RNA into GAM250712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2412 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2412 gene: GAM152469 target protein and GAM250712 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152469 and GAM250712

GR2413 BE872668 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2413(GR2413) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2413 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2413 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2413 gene encodes GR2413 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2413 precursor RNA folds spatially, forming GR2413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2413 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2413 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM52246 precursor RNA and GAM96191 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52246 RNA and GAM96191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM52246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52246 target RNA into GAM52246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96191 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96191 target RNA into GAM96191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2413 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2413 gene: GAM52246 target protein and GAM96191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52246 and GAM96191

GR2414 AW613608 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2414(GR2414) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2414 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2414 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2414 gene encodes GR2414 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2414 precursor RNA folds spatially, forming GR2414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2414 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2414 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM971 precursor RNA and GAM115207 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM971 RNA and GAM115207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM971 target RNA into GAM971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115207 target RNA into GAM115207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2414 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2414 gene: GAM971 target protein and GAM115207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM971 and GAM115207

GR2415 BF667871 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2415(GR2415) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2415 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2415 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2415 gene encodes GR2415 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2415 precursor RNA folds spatially, forming GR2415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2415 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2415 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5695 precursor RNA and GAM277499 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5695 RNA and GAM277499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5695 target RNA into GAM5695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277499 target RNA into GAM277499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2415 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2415 gene: GAM5695 target protein and GAM277499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5695 and GAM277499

GR2416 BG705402 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2416(GR2416) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2416 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2416 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2416 gene encodes GR2416 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2416 precursor RNA folds spatially, forming GR2416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2416 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2416 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1861 precursor RNA, GAM2810 precursor RNA and GAM96968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1861 RNA, GAM2810 RNA and GAM96968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1861 target RNA into GAM1861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2810 target RNA into GAM2810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96968 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96968 target RNA into GAM96968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2416 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2416 gene: GAM1861 target protein, GAM2810 target protein and GAM96968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1861, GAM2810 and GAM96968

GR2417 BG433195 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2417(GR2417) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2417 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2417 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2417 gene encodes GR2417 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2417 precursor RNA folds spatially, forming GR2417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2417 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2417 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4470 precursor RNA, GAM36244 precursor RNA, GAM147021 precursor RNA and GAM256443 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4470 RNA, GAM36244 RNA, GAM147021 RNA and GAM256443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4470 target RNA into GAM4470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM36244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36244 target RNA into GAM36244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147021 target RNA into GAM147021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256443 target RNA into GAM256443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2417 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2417 gene: GAM4470 target protein, GAM36244 target protein, GAM147021 target protein and GAM256443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4470, GAM36244, GAM147021 and GAM256443

GR2418 BG170345 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2418(GR2418) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2418 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2418 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2418 gene encodes GR2418 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2418 precursor RNA folds spatially, forming GR2418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2418 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2418 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM165103 precursor RNA, GAM296094 precursor RNA and GAM331756 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165103 RNA, GAM296094 RNA and GAM331756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165103 target RNA into GAM165103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296094 target RNA into GAM296094 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331756 target RNA into GAM331756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2418 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2418 gene: GAM165103 target protein, GAM296094 target protein and GAM331756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165103, GAM296094 and GAM331756

GR2419 BG210251 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2419(GR2419) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2419 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2419 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2419 gene encodes GR2419 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2419 precursor RNA folds spatially, forming GR2419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2419 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2419 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM75863 precursor RNA and GAM314240 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM75863 RNA and GAM314240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM75863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75863 target RNA into GAM75863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314240 target RNA into GAM314240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2419 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2419 gene: GAM75863 target protein and GAM314240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM75863 and GAM314240

GR2420 BF057773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2420(GR2420) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2420 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2420 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2420 gene encodes GR2420 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2420 precursor RNA folds spatially, forming GR2420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2420 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2420 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4662 precursor RNA, GAM85353 precursor RNA and GAM226440 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4662 RNA, GAM85353 RNA and GAM226440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4662 target RNA into GAM4662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85353 target RNA into GAM85353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226440 target RNA into GAM226440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2420 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2420 gene: GAM4662 target

protein, GAM85353 target protein and GAM226440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4662, GAM85353 and GAM226440

GR2421 AI280136 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2421(GR2421) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2421 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2421 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2421 gene encodes GR2421 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2421 precursor RNA folds spatially, forming GR2421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2421 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2421 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7742 precursor RNA and GAM257860 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7742 RNA and GAM257860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7742 target RNA into GAM7742 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257860 target RNA into GAM257860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2421 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2421 gene: GAM7742 target protein and GAM257860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7742 and GAM257860

GR2422 AA811855 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2422(GR2422) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2422 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2422 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2422 gene encodes GR2422 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2422 precursor RNA folds spatially, forming GR2422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2422 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2422 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM114374 precursor RNA and GAM288227 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM114374 RNA and GAM288227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM114374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114374 target RNA into GAM114374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288227 target RNA into GAM288227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2422 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2422 gene: GAM114374 target protein and GAM288227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM114374 and GAM288227

GR2423 BF970831 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2423(GR2423) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2423 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2423 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2423 gene encodes GR2423 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2423 precursor RNA folds spatially, forming GR2423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2423 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2423 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15982 precursor RNA and GAM273811 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15982 RNA and GAM273811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15982 target RNA into GAM15982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273811 target RNA into GAM273811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2423 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2423 gene: GAM15982 target protein and GAM273811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15982 and GAM273811

GR2424 AW970166 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2424(GR2424) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2424 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2424 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2424 gene encodes GR2424 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2424 precursor RNA folds spatially, forming GR2424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2424 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2424 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM204447 precursor RNA and GAM335974 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM204447 RNA and GAM335974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM204447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204447 target RNA into GAM204447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335974 target RNA into GAM335974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2424 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2424 gene: GAM204447 target protein and GAM335974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM204447 and GAM335974

GR2425 AV652677 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2425(GR2425) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2425 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2425 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2425 gene encodes GR2425 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2425 precursor RNA folds spatially, forming GR2425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2425 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2425 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM346 precursor RNA, GAM7914 precursor RNA and GAM224746 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM346 RNA, GAM7914 RNA and GAM224746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM346 target RNA into GAM346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7914 target RNA into GAM7914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224746 target RNA into GAM224746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2425 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2425 gene: GAM346 target protein, GAM7914 target protein and GAM224746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM346, GAM7914 and GAM224746

GR2426 AW862249 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2426(GR2426) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2426 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2426 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2426 gene encodes GR2426 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2426 precursor RNA folds spatially, forming GR2426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2426 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2426 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8127 precursor RNA and GAM294083 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8127 RNA and GAM294083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8127 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8127 target RNA into GAM8127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294083 target RNA into GAM294083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2426 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2426 gene: GAM8127 target protein and GAM294083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8127 and GAM294083

GR2427 BF791314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2427(GR2427) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2427 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2427 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2427 gene encodes GR2427 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2427 precursor RNA folds spatially, forming GR2427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2427 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2427 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192465 precursor RNA and GAM250873 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192465 RNA and GAM250873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192465 target RNA into GAM192465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250873 target RNA into GAM250873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2427 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2427 gene: GAM192465 target protein and GAM250873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192465 and GAM250873

GR2428 AI823550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2428(GR2428) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2428 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2428 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2428 gene encodes GR2428 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2428 precursor RNA folds spatially, forming GR2428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2428 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2428 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1305 precursor RNA and GAM279406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1305 RNA and GAM279406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1305 target RNA into

GAM1305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279406 target RNA into GAM279406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2428 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2428 gene: GAM1305 target protein and GAM279406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1305 and GAM279406

GR2429 R22726 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2429(GR2429) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2429 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2429 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2429 gene encodes GR2429 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2429 precursor RNA folds spatially, forming GR2429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2429 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2429 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM510 precursor RNA and GAM83998 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM510 RNA and GAM83998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM510 target RNA into GAM510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83998 target RNA into GAM83998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2429 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2429 gene: GAM510 target protein and GAM83998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM510 and GAM83998

GR2430 AL600465 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2430(GR2430) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2430 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2430 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2430 gene encodes GR2430 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2430 precursor RNA folds spatially, forming GR2430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2430 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2430 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM117475 precursor RNA and GAM200343 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117475 RNA and GAM200343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117475 target RNA into GAM117475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200343 target RNA into GAM200343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2430 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2430 gene: GAM117475 target protein and GAM200343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117475 and GAM200343

GR2431 BE717834 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2431(GR2431) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2431 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2431 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2431 gene encodes GR2431 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2431 precursor RNA folds spatially, forming GR2431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2431 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2431 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM329479 precursor RNA and GAM334275 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM329479 RNA and GAM334275 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM329479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329479 target RNA into GAM329479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334275 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334275 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334275 target RNA into GAM334275 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2431 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2431 gene: GAM329479 target protein and GAM334275 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM329479 and GAM334275

GR2432 AW272157 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2432(GR2432) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2432 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2432 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2432 gene encodes GR2432 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2432 precursor RNA folds spatially, forming GR2432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2432 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2432 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM100004 precursor RNA, GAM191890 precursor RNA and GAM266644 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100004 RNA, GAM191890 RNA and GAM266644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100004 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100004 target RNA into GAM100004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191890 target RNA into GAM191890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266644 target RNA into GAM266644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2432 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2432 gene: GAM100004 target protein, GAM191890 target protein and GAM266644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100004, GAM191890 and GAM266644

GR2433 BG496853 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2433(GR2433) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2433 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2433 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2433 gene encodes GR2433 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2433 precursor RNA folds spatially, forming GR2433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2433 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2433 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM157085 precursor RNA and GAM248506 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM157085 RNA and GAM248506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM157085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157085 target RNA into GAM157085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248506 target RNA into GAM248506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2433 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2433 gene: GAM157085 target protein and GAM248506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM157085 and GAM248506

GR2434 AA595780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2434(GR2434) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2434 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2434 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2434 gene encodes GR2434 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2434 precursor RNA folds spatially, forming GR2434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2434 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2434 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM112001 precursor RNA, GAM116446 precursor RNA and GAM297871 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112001 RNA, GAM116446 RNA and GAM297871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112001 target RNA into GAM112001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116446 target RNA into GAM116446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297871 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297871 target RNA into GAM297871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2434 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2434 gene: GAM112001 target protein, GAM116446 target protein and GAM297871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112001, GAM116446 and GAM297871

GR2435 BG821876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2435(GR2435) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2435 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2435 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2435 gene encodes GR2435 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2435 precursor RNA folds spatially, forming GR2435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2435 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2435 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26169 precursor RNA and GAM128777 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26169 RNA and GAM128777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26169 target RNA into GAM26169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128777 target RNA into GAM128777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2435 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2435 gene: GAM26169 target protein and GAM128777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26169 and GAM128777

GR2436 AV734773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2436(GR2436) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2436 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2436 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2436 gene encodes GR2436 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2436 precursor RNA folds spatially, forming GR2436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2436 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2436 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36885 precursor RNA and GAM294308 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36885 RNA and GAM294308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36885 target RNA into GAM36885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294308 target RNA into GAM294308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2436 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2436 gene: GAM36885 target protein and GAM294308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36885 and GAM294308

GR2437 AI094405 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2437(GR2437) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2437 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2437 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2437 gene encodes GR2437 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2437 precursor RNA folds spatially, forming GR2437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2437 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2437 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2335 precursor RNA and GAM78351 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2335 RNA and GAM78351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2335 target RNA into GAM2335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78351 target RNA into GAM78351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2437 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2437 gene: GAM2335 target protein and GAM78351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2335 and GAM78351

GR2438 BM759319 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2438(GR2438) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2438 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2438 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2438 gene encodes GR2438 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2438 precursor RNA folds spatially, forming GR2438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2438 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2438 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164622 precursor RNA and GAM280269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164622 RNA and GAM280269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164622

target RNA into GAM164622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280269 target RNA into GAM280269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2438 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2438 gene: GAM164622 target protein and GAM280269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164622 and GAM280269

GR2439 BE835691 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2439(GR2439) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2439 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2439 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2439 gene encodes GR2439 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2439 precursor RNA folds spatially, forming GR2439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2439 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2439 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4860 precursor RNA and GAM189575 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4860 RNA and GAM189575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4860 target RNA into GAM4860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189575 target RNA into GAM189575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2439 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2439 gene: GAM4860 target protein and GAM189575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4860 and GAM189575

GR2440 N27021 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2440(GR2440) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2440 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2440 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2440 gene encodes GR2440 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2440 precursor RNA folds spatially, forming GR2440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2440 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2440 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3265 precursor RNA and GAM165178 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3265 RNA and GAM165178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3265 target RNA into GAM3265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165178 target RNA into GAM165178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2440 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2440 gene: GAM3265 target protein and GAM165178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3265 and GAM165178

GR2441 AI432543 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2441(GR2441) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2441 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2441 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2441 gene encodes GR2441 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2441 precursor RNA folds spatially, forming GR2441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2441 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2441 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM737 precursor RNA and GAM328938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM737 RNA and GAM328938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM737 target RNA into GAM737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328938 target RNA into GAM328938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2441 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2441 gene: GAM737 target protein and GAM328938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM737 and GAM328938

GR2442 AA483894 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2442(GR2442) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2442 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2442 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2442 gene encodes GR2442 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2442 precursor RNA folds spatially, forming GR2442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2442 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2442 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7236 precursor RNA and GAM233152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7236 RNA and GAM233152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7236 target RNA into GAM7236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233152 target RNA into GAM233152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2442 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2442 gene: GAM7236 target protein and GAM233152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7236 and GAM233152

GR2443 BF184156 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2443(GR2443) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2443 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2443 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2443 gene encodes GR2443 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2443 precursor RNA folds spatially, forming GR2443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2443 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2443 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM466 precursor RNA, GAM27782 precursor RNA and GAM198056 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM466 RNA, GAM27782 RNA and GAM198056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM466 target RNA into GAM466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27782 target RNA into GAM27782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198056 target RNA into GAM198056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2443 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2443 gene: GAM466 target protein, GAM27782 target protein and GAM198056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM466, GAM27782 and GAM198056

GR2444 BE272708 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2444(GR2444) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2444 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2444 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2444 gene encodes GR2444 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2444 precursor RNA folds spatially, forming GR2444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2444 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2444 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1621 precursor RNA, GAM4034 precursor RNA and GAM201317 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1621 RNA, GAM4034 RNA and GAM201317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1621 target RNA into GAM1621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4034 target RNA into GAM4034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201317 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201317 target RNA into GAM201317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2444 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2444 gene: GAM1621 target protein, GAM4034 target protein and GAM201317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1621, GAM4034 and GAM201317

GR2445 AA069561 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2445(GR2445) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2445 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2445 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2445 gene encodes GR2445 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2445 precursor RNA folds spatially, forming GR2445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2445 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2445 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105315 precursor RNA and GAM323921 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105315 RNA and GAM323921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105315 target RNA into GAM105315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323921 target RNA into GAM323921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2445 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2445 gene: GAM105315 target protein and GAM323921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105315 and GAM323921

GR2446 BG339674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2446(GR2446) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2446 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2446 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2446 gene encodes GR2446 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2446 precursor RNA folds spatially, forming GR2446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2446 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2446 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55866 precursor RNA and GAM100017 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55866 RNA and GAM100017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55866 target RNA into GAM55866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100017 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100017 target RNA into GAM100017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2446 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2446 gene: GAM55866 target protein and GAM100017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55866 and GAM100017

GR2447 AW593847 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2447(GR2447) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2447 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2447 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2447 gene encodes GR2447 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2447 precursor RNA folds spatially, forming GR2447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2447 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2447 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1028 precursor RNA, GAM8594 precursor RNA and GAM251197 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1028 RNA, GAM8594 RNA and GAM251197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1028 target RNA into GAM1028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8594 target RNA into GAM8594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM251197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251197 target RNA into GAM251197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2447 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2447 gene: GAM1028 target protein, GAM8594 target protein and GAM251197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1028, GAM8594 and GAM251197

GR2448 AI927208 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2448(GR2448) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2448 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2448 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2448 gene encodes GR2448 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2448 precursor RNA folds spatially, forming GR2448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2448 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2448 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM298282 precursor RNA and GAM320345 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM298282 RNA and GAM320345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM298282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298282 target RNA into GAM298282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320345 target RNA into GAM320345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2448 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2448 gene: GAM298282 target protein and GAM320345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM298282 and GAM320345

GR2449 BG031189 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2449(GR2449) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2449 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2449 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2449 gene encodes GR2449 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2449 precursor RNA folds spatially, forming GR2449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2449 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2449 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM135976 precursor RNA and GAM280162 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM135976 RNA and GAM280162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM135976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135976 target RNA into GAM135976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280162 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280162 target RNA into GAM280162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2449 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2449 gene: GAM135976 target protein and GAM280162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM135976 and GAM280162

GR2450 BI766433 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2450(GR2450) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2450 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2450 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2450 gene encodes GR2450 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2450 precursor RNA folds spatially, forming GR2450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2450 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2450 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8014 precursor RNA, GAM114839 precursor RNA and GAM223460 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8014 RNA, GAM114839 RNA and GAM223460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8014 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8014 target RNA into GAM8014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114839 target RNA into GAM114839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223460 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223460 target RNA into GAM223460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2450 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2450 gene: GAM8014 target protein, GAM114839 target protein and GAM223460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8014, GAM114839 and GAM223460

GR2451 BM046607 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2451(GR2451) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2451 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2451 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2451 gene encodes GR2451 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2451 precursor RNA folds spatially, forming GR2451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2451 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2451 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM23322 precursor RNA and GAM59944 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23322 RNA and GAM59944 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23322 target RNA into GAM23322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59944 target RNA into GAM59944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2451 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2451 gene: GAM23322 target protein and GAM59944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23322 and GAM59944

GR2452 BF219253 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2452(GR2452) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2452 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2452 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2452 gene encodes GR2452 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2452 precursor RNA folds spatially, forming GR2452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2452 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2452 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83859 precursor RNA and GAM206457 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83859 RNA and GAM206457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83859 target RNA into GAM83859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206457 target RNA into GAM206457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2452 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2452 gene: GAM83859 target protein and GAM206457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83859 and GAM206457

GR2453 BF877525 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2453(GR2453) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2453 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2453 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2453 gene encodes GR2453 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2453 precursor RNA folds spatially, forming GR2453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2453 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2453 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM21753 precursor RNA, GAM241891 precursor RNA and GAM314717 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21753 RNA, GAM241891 RNA and GAM314717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21753 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21753 target RNA into GAM21753 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241891 target RNA into GAM241891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314717 target RNA into GAM314717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2453 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2453 gene: GAM21753 target protein, GAM241891 target protein and GAM314717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21753, GAM241891 and GAM314717

GR2454 BG741550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2454(GR2454) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2454 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2454 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2454 gene encodes GR2454 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2454 precursor RNA folds spatially, forming GR2454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2454 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2454 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM9005 precursor RNA, GAM40082 precursor RNA and GAM319312 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9005 RNA, GAM40082 RNA and GAM319312 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9005 target RNA into GAM9005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40082 target RNA into GAM40082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319312 target RNA into GAM319312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2454 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2454 gene: GAM9005 target protein, GAM40082 target protein and GAM319312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9005, GAM40082 and GAM319312

GR2455 BF907732 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2455(GR2455) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2455 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2455 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2455 gene encodes GR2455 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2455 precursor RNA folds spatially, forming GR2455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2455 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2455 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1902 precursor RNA, GAM44570 precursor RNA and GAM125922 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1902 RNA, GAM44570 RNA and GAM125922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1902 target RNA into GAM1902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44570 target RNA into GAM44570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125922 target RNA into GAM125922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2455 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2455 gene: GAM1902 target protein, GAM44570 target protein and GAM125922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1902, GAM44570 and GAM125922

GR2456 BI461846 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2456(GR2456) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2456 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2456 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2456 gene encodes GR2456 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2456 precursor RNA folds spatially, forming GR2456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2456 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2456 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3200 precursor RNA, GAM168485 precursor RNA, GAM218259 precursor RNA and GAM330359 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3200 RNA, GAM168485 RNA, GAM218259 RNA and GAM330359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3200 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3200 target RNA into GAM3200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168485 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168485 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168485 target RNA into GAM168485 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218259 target RNA into GAM218259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330359 target RNA into GAM330359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2456 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2456 gene: GAM3200 target protein, GAM168485 target protein, GAM218259 target protein and GAM330359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3200, GAM168485, GAM218259 and GAM330359

GR2457 BQ014318 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2457(GR2457) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2457 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2457 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2457 gene encodes GR2457 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2457 precursor RNA folds spatially, forming GR2457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2457 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2457 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM251565 precursor RNA and GAM313896 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM251565 RNA and GAM313896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM251565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251565 target RNA into GAM251565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313896 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313896 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313896 target RNA into GAM313896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2457 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2457 gene: GAM251565 target

protein and GAM313896 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM251565 and GAM313896

GR2458 BF133197 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2458(GR2458) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2458 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2458 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2458 gene encodes GR2458 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2458 precursor RNA folds spatially, forming GR2458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2458 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2458 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7575 precursor RNA and GAM25567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7575 RNA and GAM25567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7575 target RNA into GAM7575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM25567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25567 target RNA into GAM25567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2458 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2458 gene: GAM7575 target protein and GAM25567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7575 and GAM25567

GR2459 AW965478 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2459(GR2459) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2459 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2459 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2459 gene encodes GR2459 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2459 precursor RNA folds spatially, forming GR2459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2459 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2459 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM158846 precursor RNA, GAM167582 precursor RNA and GAM167667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158846 RNA, GAM167582 RNA and GAM167667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158846 target RNA into GAM158846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167582 target RNA into GAM167582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167667 target RNA into GAM167667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2459 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2459 gene: GAM158846 target protein, GAM167582 target protein and GAM167667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158846, GAM167582 and GAM167667

GR2460 BG109510 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2460(GR2460) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2460 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2460

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2460 gene encodes GR2460 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2460 precursor RNA folds spatially, forming GR2460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2460 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2460 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5650 precursor RNA, GAM182559 precursor RNA, GAM252803 precursor RNA and GAM294718 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5650 RNA, GAM182559 RNA, GAM252803 RNA and GAM294718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5650 target RNA into GAM5650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182559 target RNA into GAM182559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252803 target RNA into GAM252803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294718 target RNA into GAM294718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2460 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2460 gene: GAM5650 target protein, GAM182559 target protein, GAM252803 target protein and GAM294718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5650, GAM182559, GAM252803 and GAM294718

GR2461 BG980412 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2461(GR2461) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2461 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2461 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2461 gene encodes GR2461 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2461 precursor RNA folds spatially, forming GR2461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2461 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2461 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55576 precursor RNA and GAM214003 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55576 RNA and GAM214003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55576 target RNA into GAM55576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214003 target RNA into GAM214003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2461 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2461 gene: GAM55576 target protein and GAM214003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55576 and GAM214003

GR2462 BM810648 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2462(GR2462) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2462 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2462 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2462 gene encodes GR2462 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2462 precursor RNA folds spatially, forming GR2462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2462 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2462 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5106 precursor RNA and GAM33787 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5106 RNA and GAM33787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5106 target RNA into GAM5106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33787 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33787 target RNA into GAM33787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2462 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2462 gene: GAM5106 target protein and GAM33787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5106 and GAM33787

GR2463 BG620660 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2463(GR2463) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2463 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2463 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2463 gene encodes GR2463 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2463 precursor RNA folds spatially, forming GR2463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2463 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2463 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM10873 precursor RNA, GAM168068 precursor RNA and GAM268239 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10873 RNA, GAM168068 RNA and GAM268239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10873 target RNA into GAM10873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168068

target RNA into GAM168068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268239 target RNA into GAM268239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2463 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2463 gene: GAM10873 target protein, GAM168068 target protein and GAM268239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10873, GAM168068 and GAM268239

GR2464 AI760922 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2464(GR2464) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2464 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2464 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2464 gene encodes GR2464 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2464 precursor RNA folds spatially, forming GR2464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2464 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2464 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1531 precursor RNA and GAM40187 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1531 RNA and GAM40187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1531 target RNA into GAM1531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40187 target RNA into GAM40187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2464 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2464 gene: GAM1531 target protein and GAM40187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1531 and GAM40187

GR2465 BM083832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2465(GR2465) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2465 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2465 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2465 gene encodes GR2465 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2465 precursor RNA folds spatially, forming GR2465 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2465 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2465 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120617 precursor RNA and GAM124845 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120617 RNA and GAM124845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120617 target RNA into GAM120617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124845 target RNA into GAM124845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2465 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2465 gene: GAM120617 target protein and GAM124845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120617 and GAM124845

GR2466 BI772184 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2466(GR2466) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2466 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2466 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2466 gene encodes GR2466 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2466 precursor RNA folds spatially, forming GR2466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2466 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2466 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM3594 precursor RNA, GAM5947 precursor RNA, GAM6095 precursor RNA, GAM6254 precursor RNA and GAM156163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3594 RNA, GAM5947 RNA, GAM6095 RNA, GAM6254 RNA and GAM156163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3594 target RNA into GAM3594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5947 target RNA into GAM5947 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6095 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6095 target RNA into GAM6095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6254 target RNA into GAM6254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156163 target RNA into GAM156163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2466 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2466 gene: GAM3594 target protein, GAM5947 target protein, GAM6095 target protein, GAM6254 target protein and GAM156163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3594, GAM5947, GAM6095, GAM6254 and GAM156163

GR2467 BG476562 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2467(GR2467) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2467 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2467 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2467 gene encodes GR2467 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2467 precursor RNA folds spatially, forming GR2467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2467 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2467 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3536 precursor RNA and GAM229806 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3536 RNA and GAM229806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3536 target RNA into GAM3536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229806 target RNA into GAM229806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2467 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2467 gene: GAM3536 target protein and GAM229806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3536 and GAM229806

GR2468 AA417364 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2468(GR2468) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2468 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2468 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2468 gene encodes GR2468 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2468 precursor RNA folds spatially, forming GR2468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2468 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2468 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM236774 precursor RNA and GAM312593 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM236774 RNA and GAM312593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM236774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236774 target RNA into GAM236774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312593

target RNA into GAM312593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2468 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2468 gene: GAM236774 target protein and GAM312593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM236774 and GAM312593

GR2469 BF727371 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2469(GR2469) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2469 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2469 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2469 gene encodes GR2469 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2469 precursor RNA folds spatially, forming GR2469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2469 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2469 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2627 precursor RNA and GAM6109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2627 RNA and GAM6109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2627 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2627 target RNA into GAM2627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6109 target RNA into GAM6109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2469 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2469 gene: GAM2627 target protein and GAM6109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2627 and GAM6109

GR2470 BE564584 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2470(GR2470) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2470 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2470 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2470 gene encodes GR2470 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2470 precursor RNA folds spatially, forming GR2470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2470 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2470 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2470 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM76112 precursor RNA, GAM186337 precursor RNA and GAM250922 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76112 RNA, GAM186337 RNA and GAM250922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76112 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76112 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76112 target RNA into GAM76112 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186337 target RNA into GAM186337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250922 target RNA into GAM250922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2470 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2470 gene: GAM76112 target protein, GAM186337 target protein and GAM250922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76112, GAM186337 and GAM250922

GR2471 BG248507 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2471(GR2471) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2471 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2471 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2471 gene encodes GR2471 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2471 precursor RNA folds spatially, forming GR2471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2471 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2471 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7459 precursor RNA, GAM206149 precursor RNA and GAM265976 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7459 RNA, GAM206149 RNA and GAM265976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7459 target RNA into GAM7459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206149

target RNA into GAM206149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265976 target RNA into GAM265976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2471 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2471 gene: GAM7459 target protein, GAM206149 target protein and GAM265976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7459, GAM206149 and GAM265976

GR2472 BF746880 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2472(GR2472) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2472 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2472 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2472 gene encodes GR2472 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2472 precursor RNA folds spatially, forming GR2472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2472 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2472 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM183 precursor RNA and GAM2981 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM183 RNA and GAM2981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM183 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183 target RNA into GAM183 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2981 target RNA into GAM2981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2472 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2472 gene: GAM183 target protein and GAM2981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM183 and GAM2981

GR2473 BG746856 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2473(GR2473) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2473 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2473 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2473 gene encodes GR2473 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2473 precursor RNA folds spatially, forming GR2473 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2473 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2473 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1638 precursor RNA, GAM2392 precursor RNA and GAM258591 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1638 RNA, GAM2392 RNA and GAM258591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1638 target RNA into GAM1638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2392 target RNA into GAM2392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258591 target RNA into GAM258591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2473 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2473 gene: GAM1638 target protein, GAM2392 target protein and GAM258591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1638, GAM2392 and GAM258591

GR2474 BI765499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2474(GR2474) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2474 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2474 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2474 gene encodes GR2474 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2474 precursor RNA folds spatially, forming GR2474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2474 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2474 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57576 precursor RNA and GAM199670 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57576 RNA and GAM199670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57576

target RNA into GAM57576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199670 target RNA into GAM199670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2474 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2474 gene: GAM57576 target protein and GAM199670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57576 and GAM199670

GR2475 AA648923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2475(GR2475) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2475 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2475 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2475 gene encodes GR2475 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2475 precursor RNA folds spatially, forming GR2475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2475 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2475 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93639 precursor RNA and GAM140875 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93639 RNA and GAM140875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93639 target RNA into GAM93639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140875 target RNA into GAM140875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2475 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2475 gene: GAM93639 target protein and GAM140875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93639 and GAM140875

GR2476 AI435541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2476(GR2476) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2476 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2476 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2476 gene encodes GR2476 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2476 precursor RNA folds spatially, forming GR2476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2476 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2476 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32085 precursor RNA and GAM296259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32085 RNA and GAM296259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32085 target RNA into GAM32085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296259 target RNA into GAM296259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2476 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2476 gene: GAM32085 target protein and GAM296259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32085 and GAM296259

GR2477 AA378066 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2477(GR2477) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2477 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2477 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2477 gene encodes GR2477 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2477 precursor RNA folds spatially, forming GR2477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2477 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2477 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3117 precursor RNA and GAM61889 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3117 RNA and GAM61889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3117 target RNA into GAM3117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61889 target RNA into GAM61889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2477 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2477 gene: GAM3117 target protein and GAM61889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3117 and GAM61889

GR2478 BG105940 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2478(GR2478) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2478 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2478 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2478 gene encodes GR2478 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2478 precursor RNA folds spatially, forming GR2478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2478 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2478 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162326 precursor RNA and GAM307373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162326 RNA and GAM307373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162326 target RNA into GAM162326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307373 target RNA into GAM307373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2478 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2478 gene: GAM162326 target protein and GAM307373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162326 and GAM307373

GR2479 BI003221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2479(GR2479) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2479 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2479 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2479 gene encodes GR2479 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2479 precursor RNA folds spatially, forming GR2479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2479 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2479 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM562 precursor RNA and GAM209050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM562 RNA and GAM209050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM562 target RNA into GAM562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209050 target RNA into GAM209050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2479 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2479 gene: GAM562 target protein and GAM209050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM562 and GAM209050

GR2480 BF243901 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2480(GR2480) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2480 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2480 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2480 gene encodes GR2480 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2480 precursor RNA folds spatially, forming GR2480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2480 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2480 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM97881 precursor RNA and GAM285844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97881 RNA and GAM285844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97881 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97881 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97881 target RNA into GAM97881 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285844 target RNA into GAM285844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2480 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2480 gene: GAM97881 target protein and GAM285844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97881 and GAM285844

GR2481 BM700811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2481(GR2481) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2481 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2481 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2481 gene encodes GR2481 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2481 precursor RNA folds spatially, forming GR2481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2481 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2481 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5883 precursor RNA and GAM18929 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5883 RNA and GAM18929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5883 target RNA into GAM5883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM18929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18929 target RNA into GAM18929 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2481 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2481 gene: GAM5883 target protein and GAM18929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5883 and GAM18929

GR2482 AA873034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2482(GR2482) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2482 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2482 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2482 gene encodes GR2482 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2482 precursor RNA folds spatially, forming GR2482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2482 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2482 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM107668 precursor RNA, GAM117076 precursor RNA and GAM187998 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM107668 RNA, GAM117076 RNA and GAM187998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM107668 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107668 target RNA into GAM107668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117076 target RNA into GAM117076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187998 target RNA into GAM187998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2482 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2482 gene: GAM107668 target protein, GAM117076 target protein and GAM187998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM107668, GAM117076 and GAM187998

GR2483 BG674023 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2483(GR2483) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2483 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2483 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2483 gene encodes GR2483 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2483 precursor RNA folds spatially, forming GR2483 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2483 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2483 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208269 precursor RNA and GAM220576 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208269 RNA and GAM220576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208269 target RNA into GAM208269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220576 target RNA into GAM220576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2483 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2483 gene: GAM208269 target protein and GAM220576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208269 and GAM220576

GR2484 AI984759 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2484(GR2484) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2484 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2484 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2484 gene encodes GR2484 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2484 precursor RNA folds spatially, forming GR2484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2484 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2484 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4347 precursor RNA, GAM164050 precursor RNA and GAM247424 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4347 RNA, GAM164050 RNA and GAM247424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4347 target RNA into GAM4347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164050 target RNA into GAM164050 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247424 target RNA into GAM247424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2484 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2484 gene: GAM4347 target protein, GAM164050 target protein and GAM247424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4347, GAM164050 and GAM247424

GR2485 BQ005872 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2485(GR2485) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2485 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2485 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2485 gene encodes GR2485 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2485 precursor RNA folds spatially, forming GR2485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2485 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2485 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5172 precursor RNA and GAM168531 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5172 RNA and GAM168531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5172 target RNA into GAM5172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168531 target RNA into GAM168531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2485 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2485 gene: GAM5172 target protein and GAM168531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5172 and GAM168531

GR2486 BE834722 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2486(GR2486) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2486 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2486 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2486 gene encodes GR2486 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2486 precursor RNA folds spatially, forming GR2486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2486 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2486 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16557 precursor RNA and GAM198963 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16557 RNA and GAM198963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16557 target RNA into GAM16557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198963 target RNA into GAM198963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2486 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2486 gene: GAM16557 target protein and GAM198963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16557 and GAM198963

GR2487 AW593080 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2487(GR2487) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2487 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2487 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2487 gene encodes GR2487 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2487 precursor RNA folds spatially, forming GR2487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2487 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2487 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM104768 precursor RNA, GAM107347 precursor RNA and GAM286730 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM104768 RNA, GAM107347 RNA and GAM286730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM104768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104768 target RNA into GAM104768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107347 target RNA into GAM107347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286730 target RNA into GAM286730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2487 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2487 gene: GAM104768 target protein, GAM107347 target protein and GAM286730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM104768, GAM107347 and GAM286730

GR2488 BM681652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2488(GR2488) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2488 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2488 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2488 gene encodes GR2488 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2488 precursor RNA folds spatially, forming GR2488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2488 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2488 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM39802 precursor RNA and GAM252094 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39802 RNA and GAM252094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39802 target RNA into GAM39802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252094 target RNA into GAM252094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2488 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2488 gene: GAM39802 target protein and GAM252094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39802 and GAM252094

GR2489 BF308760 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2489(GR2489) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2489 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2489 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2489 gene encodes GR2489 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2489 precursor RNA folds spatially, forming GR2489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2489 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2489 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3095 precursor RNA and GAM171817 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3095 RNA and GAM171817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3095 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3095 target RNA into GAM3095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171817 target RNA into GAM171817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2489 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2489 gene: GAM3095 target protein and GAM171817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3095 and GAM171817

GR2490 BG282740 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2490(GR2490) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2490 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2490 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2490 gene encodes GR2490 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2490 precursor RNA folds spatially, forming GR2490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2490 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2490 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5163 precursor RNA and GAM108242 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5163 RNA and GAM108242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5163 target RNA into GAM5163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108242 target RNA into GAM108242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2490 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2490 gene: GAM5163 target protein and GAM108242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5163 and GAM108242

GR2491 N59063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2491(GR2491) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2491 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2491 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2491 gene encodes GR2491 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2491 precursor RNA folds spatially, forming GR2491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2491 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2491 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3129 precursor RNA and GAM195526 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3129 RNA and GAM195526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3129 target RNA into GAM3129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195526 target RNA into GAM195526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2491 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2491 gene: GAM3129 target protein and GAM195526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3129 and GAM195526

GR2492 BE276027 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2492(GR2492) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2492 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2492 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2492 gene encodes GR2492 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2492 precursor RNA folds spatially, forming GR2492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2492 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2492 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5629 precursor RNA and GAM99733 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5629 RNA and GAM99733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5629 target RNA into GAM5629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99733 target RNA into GAM99733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2492 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2492 gene: GAM5629 target protein and GAM99733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5629 and GAM99733

GR2493 BG491471 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2493(GR2493) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2493 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2493 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2493 gene encodes GR2493 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2493 precursor RNA folds spatially, forming GR2493 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2493 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2493 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2493 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133406 precursor RNA and GAM254616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133406 RNA and GAM254616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133406 target RNA into GAM133406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254616 target RNA into GAM254616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2493 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2493 gene: GAM133406 target protein and GAM254616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133406 and GAM254616

GR2494 AW995783 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2494(GR2494) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2494 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2494 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2494 gene encodes GR2494 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2494 precursor RNA folds spatially, forming GR2494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2494 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2494 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36607 precursor RNA and GAM211417 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36607 RNA and GAM211417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36607 target RNA into GAM36607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211417 target RNA into GAM211417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2494 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2494 gene: GAM36607 target protein and GAM211417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36607 and GAM211417

GR2495 BF510330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2495(GR2495) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2495 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2495 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2495 gene encodes GR2495 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2495 precursor RNA folds spatially, forming GR2495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2495 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2495 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM425 precursor RNA and GAM147694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM425 RNA and GAM147694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM425 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM425 target RNA into GAM425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147694 target RNA into GAM147694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2495 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2495 gene: GAM425 target protein and GAM147694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM425 and GAM147694

GR2496 BM148968 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2496(GR2496) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2496 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2496 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2496 gene encodes GR2496 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2496 precursor RNA folds spatially, forming GR2496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2496 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2496 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM608 precursor RNA and GAM6698 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM608 RNA and GAM6698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM608 target RNA into GAM608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6698 target RNA into GAM6698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2496 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2496 gene: GAM608 target protein and GAM6698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM608 and GAM6698

GR2497 BI259827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2497(GR2497) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2497 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2497 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2497 gene encodes GR2497 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2497 precursor RNA folds spatially, forming GR2497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2497 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2497 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4560 precursor RNA and GAM74878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4560 RNA and GAM74878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4560 target RNA into GAM4560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74878 target RNA into GAM74878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2497 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2497 gene: GAM4560 target protein and GAM74878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4560 and GAM74878

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2498(GR2498) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2498 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2498 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2498 gene encodes GR2498 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2498 precursor RNA folds spatially, forming GR2498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2498 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2498 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM114706 precursor RNA and GAM241089 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM114706 RNA and GAM241089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM114706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114706 target RNA into GAM114706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241089

target RNA into GAM241089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2498 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2498 gene: GAM114706 target protein and GAM241089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM114706 and GAM241089

GR2499 BG217990 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2499(GR2499) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2499 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2499 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2499 gene encodes GR2499 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2499 precursor RNA folds spatially, forming GR2499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2499 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2499 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2532 precursor RNA, GAM233248 precursor RNA and GAM328508 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2532 RNA, GAM233248 RNA and GAM328508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2532 target RNA into GAM2532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233248 target RNA into GAM233248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328508 target RNA into GAM328508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2499 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2499 gene: GAM2532 target protein, GAM233248 target protein and GAM328508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2532, GAM233248 and GAM328508

GR2500 BG756745 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2500(GR2500) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2500 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2500 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2500 gene encodes GR2500 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2500 precursor RNA folds spatially, forming GR2500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2500 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2500 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM53406 precursor RNA, GAM59013 precursor RNA and GAM115791 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53406 RNA, GAM59013 RNA and GAM115791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53406 target RNA into GAM53406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59013 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59013 target RNA into GAM59013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115791 target RNA into GAM115791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2500 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2500 gene: GAM53406 target protein, GAM59013 target protein and GAM115791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53406, GAM59013 and GAM115791

GR2501 BF127395 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2501(GR2501) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2501 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2501 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2501 gene encodes GR2501 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2501 precursor RNA folds spatially, forming GR2501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2501 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2501 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7338 precursor RNA, GAM53947 precursor RNA and GAM283480 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7338 RNA, GAM53947 RNA and GAM283480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7338 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7338 target RNA into GAM7338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53947 target RNA into GAM53947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283480 target RNA into GAM283480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2501 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2501 gene: GAM7338 target protein, GAM53947 target protein and GAM283480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7338, GAM53947 and GAM283480

GR2502 AI126759 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2502(GR2502) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2502 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2502 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2502 gene encodes GR2502 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2502 precursor RNA folds spatially, forming GR2502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2502 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2502 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM51830 precursor RNA, GAM242074 precursor RNA and GAM333656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51830 RNA, GAM242074 RNA and GAM333656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51830 target RNA into GAM51830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242074 target RNA into GAM242074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333656 target RNA into GAM333656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2502 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2502 gene: GAM51830 target protein, GAM242074 target protein and GAM333656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51830, GAM242074 and GAM333656

GR2503 BM013361 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2503(GR2503) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2503 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2503 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2503 gene encodes GR2503 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2503 precursor RNA folds spatially, forming GR2503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2503 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2503 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM159511 precursor RNA and GAM332545 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM159511 RNA and GAM332545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM159511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159511 target RNA into GAM159511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332545 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332545 target RNA into GAM332545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2503 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2503 gene: GAM159511 target protein and GAM332545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM159511 and GAM332545

GR2504 BF238332 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2504(GR2504) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2504 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2504 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2504 gene encodes GR2504 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2504 precursor RNA folds spatially, forming GR2504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2504 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2504 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59172 precursor RNA and GAM256242 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM59172 RNA and GAM256242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59172 target RNA into GAM59172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256242 target RNA into GAM256242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2504 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2504 gene: GAM59172 target protein and GAM256242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59172 and GAM256242

GR2505 BI016304 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2505(GR2505) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2505 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2505 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2505 gene encodes GR2505 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2505 precursor RNA folds spatially, forming GR2505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2505 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2505 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM37 precursor RNA and GAM158789 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM37 RNA and GAM158789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM37 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37 target RNA into GAM37 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158789 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158789 target RNA into GAM158789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2505 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2505 gene: GAM37 target protein and GAM158789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM37 and GAM158789

GR2506 AW577148 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2506(GR2506) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2506 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2506 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2506 gene encodes GR2506 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2506 precursor RNA folds spatially, forming GR2506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2506 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2506 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3698 precursor RNA, GAM34687 precursor RNA, GAM238244 precursor RNA and GAM294949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3698 RNA, GAM34687 RNA, GAM238244 RNA and GAM294949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3698 target RNA into GAM3698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34687 target RNA into GAM34687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238244 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238244 target RNA into GAM238244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294949 target RNA into GAM294949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2506 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2506 gene: GAM3698 target protein, GAM34687 target protein, GAM238244 target protein and GAM294949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3698, GAM34687, GAM238244 and GAM294949

GR2507 H15250 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2507(GR2507) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2507 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2507 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2507 gene encodes GR2507 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2507 precursor RNA folds spatially, forming GR2507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2507 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2507 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM42248 precursor RNA and GAM207325 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42248 RNA and GAM207325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42248 target RNA into GAM42248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207325 target RNA into GAM207325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2507 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2507 gene: GAM42248 target protein and GAM207325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42248 and GAM207325

GR2508 BF569443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2508(GR2508) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2508 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2508 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2508 gene encodes GR2508 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2508 precursor RNA folds spatially, forming GR2508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2508 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2508 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1131 precursor RNA and GAM4767 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1131 RNA and GAM4767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1131 target RNA into GAM1131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4767 target RNA into GAM4767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2508 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2508 gene: GAM1131 target protein and GAM4767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1131 and GAM4767

GR2509 BG115639 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2509(GR2509) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2509 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2509 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2509 gene encodes GR2509 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2509 precursor RNA folds spatially, forming GR2509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2509 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2509 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41246 precursor RNA, GAM82793 precursor RNA and GAM137470 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41246 RNA, GAM82793 RNA and GAM137470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41246 target RNA into GAM41246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82793 target RNA into GAM82793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137470 target RNA into GAM137470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2509 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2509 gene: GAM41246 target protein, GAM82793 target protein and GAM137470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41246, GAM82793 and GAM137470

GR2510 BG945978 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2510(GR2510) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2510 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2510 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2510 gene encodes GR2510 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2510 precursor RNA folds spatially, forming GR2510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2510 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2510 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM20818 precursor RNA, GAM111618 precursor RNA

and GAM325393 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20818 RNA, GAM111618 RNA and GAM325393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20818 target RNA into GAM20818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111618 target RNA into GAM111618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325393 target RNA into GAM325393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2510 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2510 gene: GAM20818 target protein, GAM111618 target protein and GAM325393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20818, GAM111618 and GAM325393

GR2511 AW956909 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2511(GR2511) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2511 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2511 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2511 gene encodes GR2511 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2511 precursor RNA folds spatially, forming GR2511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2511 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2511 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5911 precursor RNA, GAM115035 precursor RNA, GAM212980 precursor RNA and GAM250752 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5911 RNA, GAM115035 RNA, GAM212980 RNA and GAM250752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5911 target RNA into GAM5911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115035 target RNA into GAM115035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212980 target RNA into GAM212980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250752 target RNA into GAM250752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2511 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2511 gene: GAM5911 target protein, GAM115035 target protein, GAM212980 target protein and GAM250752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5911, GAM115035, GAM212980 and GAM250752

GR2512 AI206459 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2512(GR2512) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2512 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2512 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2512 gene encodes GR2512 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2512 precursor RNA folds spatially, forming GR2512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2512 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2512 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7225 precursor RNA, GAM10921 precursor RNA and GAM110056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7225 RNA, GAM10921 RNA and GAM110056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7225 target RNA into GAM7225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM10921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10921 target RNA into GAM10921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110056 target RNA into GAM110056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2512 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2512 gene: GAM7225 target protein, GAM10921 target protein and GAM110056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7225, GAM10921 and GAM110056

GR2513 AW665024 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2513(GR2513) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2513 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2513 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2513 gene encodes GR2513 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2513 precursor RNA folds spatially, forming GR2513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2513 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2513 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30855 precursor RNA and GAM190461 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30855 RNA and GAM190461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30855 target RNA into GAM30855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190461 target RNA into GAM190461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2513 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2513 gene: GAM30855 target protein and GAM190461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30855 and GAM190461

GR2514 BM842301 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2514(GR2514) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2514 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2514 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2514 gene encodes GR2514 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2514 precursor RNA folds spatially, forming GR2514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2514 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2514 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM284948 precursor RNA and GAM294299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM284948 RNA and GAM294299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM284948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284948 target RNA into GAM284948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294299 target RNA into GAM294299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2514 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2514 gene: GAM284948 target protein and GAM294299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM284948 and GAM294299

GR2515 BE887366 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2515(GR2515) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2515 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2515 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2515 gene encodes GR2515 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2515 precursor RNA folds spatially, forming GR2515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2515 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2515 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1312 precursor RNA and GAM57463 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1312 RNA and GAM57463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1312 target RNA into GAM1312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57463 target RNA into GAM57463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2515 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2515 gene: GAM1312 target protein and GAM57463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1312 and GAM57463

GR2516 BI755448 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2516(GR2516) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2516 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2516 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2516 gene encodes GR2516 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2516 precursor RNA folds spatially, forming GR2516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2516 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2516 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81008 precursor RNA and GAM149643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81008 RNA and GAM149643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81008 target RNA into GAM81008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149643 target RNA into GAM149643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2516 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2516 gene: GAM81008 target protein and GAM149643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM81008 and GAM149643

GR2517 BI489238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2517(GR2517) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2517 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2517 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2517 gene encodes GR2517 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2517 precursor RNA folds spatially, forming GR2517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2517 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2517 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178111 precursor RNA and GAM189331 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178111 RNA and GAM189331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178111 target RNA into GAM178111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189331 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189331 target RNA into GAM189331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2517 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2517 gene: GAM178111 target protein and GAM189331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178111 and GAM189331

GR2518 AI809773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2518(GR2518) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2518 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2518 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2518 gene encodes GR2518 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2518 precursor RNA folds spatially, forming GR2518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2518 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2518 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8662 precursor RNA, GAM46155 precursor RNA and GAM173444 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8662 RNA, GAM46155 RNA and GAM173444 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8662 target RNA into GAM8662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46155 target RNA into GAM46155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173444 target RNA into GAM173444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2518 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2518 gene: GAM8662 target protein, GAM46155 target protein and GAM173444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8662, GAM46155 and GAM173444

GR2519 BF894866 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2519(GR2519) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2519 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2519 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2519 gene encodes GR2519 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2519 precursor RNA folds spatially, forming GR2519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2519 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2519 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7708 precursor RNA and GAM8024 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7708 RNA and GAM8024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7708 target RNA into GAM7708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8024 target RNA into GAM8024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2519 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2519 gene: GAM7708 target protein and GAM8024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7708 and GAM8024

GR2520 BQ018551 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2520(GR2520) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2520 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2520 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2520 gene encodes GR2520 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2520 precursor RNA folds spatially, forming GR2520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2520 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2520 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2528 precursor RNA and GAM4210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2528 RNA and GAM4210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2528 target RNA into GAM2528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4210 target RNA into GAM4210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2520 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2520 gene: GAM2528 target protein and GAM4210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2528 and GAM4210

GR2521 AI963043 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2521(GR2521) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2521 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2521 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2521 gene encodes GR2521 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2521 precursor RNA folds spatially, forming GR2521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2521 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2521 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171 precursor RNA and GAM1818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171 RNA and GAM1818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171 target RNA into GAM171 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1818 target RNA into GAM1818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2521 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2521 gene: GAM171 target protein and GAM1818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171 and GAM1818

GR2522 BE542494 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2522(GR2522) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2522 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2522 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2522 gene encodes GR2522 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2522 precursor RNA folds spatially, forming GR2522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2522 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2522 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM950 precursor RNA, GAM109012 precursor RNA, GAM114811 precursor RNA and GAM322429 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM950 RNA, GAM109012 RNA, GAM114811 RNA and GAM322429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM950 target RNA into GAM950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109012 target RNA into GAM109012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114811 target RNA into GAM114811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322429 target RNA into GAM322429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2522 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2522 gene: GAM950 target protein, GAM109012 target protein, GAM114811 target protein and GAM322429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM950, GAM109012, GAM114811 and GAM322429

GR2523 BG613580 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2523(GR2523) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2523 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2523 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2523 gene encodes GR2523 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2523 precursor RNA folds spatially, forming GR2523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2523 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2523 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3616 precursor RNA and GAM85243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3616 RNA and GAM85243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3616 target RNA into GAM3616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85243 target RNA into GAM85243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2523 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2523 gene: GAM3616 target protein and GAM85243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3616 and GAM85243

GR2524 AI749326 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2524(GR2524) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2524 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2524 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2524 gene encodes GR2524 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2524 precursor RNA folds spatially, forming GR2524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2524 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2524 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM224 precursor RNA, GAM6442 precursor RNA and GAM178078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224 RNA, GAM6442 RNA and GAM178078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224 target RNA into GAM224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6442 target RNA into GAM6442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178078 target RNA into GAM178078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2524 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2524 gene: GAM224 target protein, GAM6442 target protein and GAM178078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224, GAM6442 and GAM178078

GR2525 AA632590 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2525(GR2525) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2525 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2525 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2525 gene encodes GR2525 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2525 precursor RNA folds spatially, forming GR2525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2525 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2525 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3759 precursor RNA, GAM176608 precursor RNA and GAM267464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3759 RNA, GAM176608 RNA and GAM267464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3759 target RNA into GAM3759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176608 target RNA into GAM176608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM267464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267464 target RNA into GAM267464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2525 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2525 gene: GAM3759 target protein, GAM176608 target protein and GAM267464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3759, GAM176608 and GAM267464

GR2526 AW902566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2526(GR2526) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2526 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2526 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2526 gene encodes GR2526 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2526 precursor RNA folds spatially, forming GR2526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2526 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2526 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74036 precursor RNA and GAM80317 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM74036 RNA and GAM80317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74036 target RNA into GAM74036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80317 target RNA into GAM80317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2526 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2526 gene: GAM74036 target protein and GAM80317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74036 and GAM80317

GR2527 BI667343 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2527(GR2527) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2527 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2527 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2527 gene encodes GR2527 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2527 precursor RNA folds spatially, forming GR2527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2527 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2527 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM126456 precursor RNA, GAM277090 precursor RNA and GAM301197 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126456 RNA, GAM277090 RNA and GAM301197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126456 target RNA into GAM126456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277090 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277090 target RNA into GAM277090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301197 target RNA into GAM301197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2527 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2527 gene: GAM126456 target protein, GAM277090 target protein and GAM301197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM126456, GAM277090 and GAM301197

GR2528 BM008016 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2528(GR2528) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2528 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2528 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2528 gene encodes GR2528 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2528 precursor RNA folds spatially, forming GR2528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2528 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2528 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5760 precursor RNA, GAM181513 precursor RNA and GAM333722 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5760 RNA, GAM181513 RNA and GAM333722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5760 target RNA into GAM5760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181513 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181513 target RNA into GAM181513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333722 target RNA into GAM333722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2528 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2528 gene: GAM5760 target protein, GAM181513 target protein and GAM333722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5760, GAM181513 and GAM333722

GR2529 BE617872 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2529(GR2529) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2529 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2529 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2529 gene encodes GR2529 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2529 precursor RNA folds spatially, forming GR2529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2529 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2529 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM163 precursor RNA, GAM21176 precursor RNA and GAM63851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM163 RNA, GAM21176 RNA and GAM63851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163 target RNA into GAM163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21176 target RNA into GAM21176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63851 target RNA into GAM63851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2529 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2529 gene: GAM163 target protein, GAM21176 target protein and GAM63851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM163, GAM21176 and GAM63851

GR2530 H05586 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2530(GR2530) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2530 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2530 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2530 gene encodes GR2530 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2530 precursor RNA folds spatially, forming GR2530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2530 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2530 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM249327 precursor RNA, GAM285046 precursor RNA and GAM311019 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM249327 RNA, GAM285046 RNA and GAM311019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM249327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249327 target RNA into GAM249327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285046 target RNA into GAM285046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311019 target RNA into GAM311019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2530 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2530 gene: GAM249327 target protein, GAM285046 target protein and GAM311019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM249327, GAM285046 and GAM311019

GR2531 BE902729 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2531(GR2531) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2531 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2531 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2531 gene encodes GR2531 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2531 precursor RNA folds spatially, forming GR2531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2531 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2531 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM159811 precursor RNA and GAM223725 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM159811 RNA and GAM223725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM159811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159811 target RNA into GAM159811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223725 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223725 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223725 target RNA into GAM223725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2531 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2531 gene: GAM159811 target protein and GAM223725 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM159811 and GAM223725

GR2532 BI223221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2532(GR2532) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2532 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2532 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2532 gene encodes GR2532 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2532 precursor RNA folds spatially, forming GR2532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2532 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2532 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58826 precursor RNA and GAM71659 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58826 RNA and GAM71659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58826 target RNA into GAM58826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71659 target RNA into GAM71659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2532 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2532 gene: GAM58826 target protein and GAM71659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58826 and GAM71659

GR2533 AA448332 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2533(GR2533) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2533 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2533 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2533 gene encodes GR2533 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2533 precursor RNA folds spatially, forming GR2533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2533 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2533 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM28612 precursor RNA and GAM213728 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28612 RNA and GAM213728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM28612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28612 target RNA into GAM28612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213728 target RNA into GAM213728 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2533 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2533 gene: GAM28612 target protein and GAM213728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28612 and GAM213728

GR2534 AI051876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2534(GR2534) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2534 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2534 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2534 gene encodes GR2534 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2534 precursor RNA folds spatially, forming GR2534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2534 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2534 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM118414 precursor RNA, GAM131488 precursor RNA and GAM185141 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118414 RNA, GAM131488 RNA and GAM185141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118414 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118414 target RNA into GAM118414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131488 target RNA into GAM131488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185141 target RNA into GAM185141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2534 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2534 gene: GAM118414 target protein, GAM131488 target protein and GAM185141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118414, GAM131488 and GAM185141

GR2535 AV693085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2535(GR2535) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2535 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2535 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2535 gene encodes GR2535 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2535 precursor RNA folds spatially, forming GR2535 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2535 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2535 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2535 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4355 precursor RNA, GAM11708 precursor RNA and GAM90025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4355 RNA, GAM11708 RNA and GAM90025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4355 target RNA into GAM4355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11708 target RNA into GAM11708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90025 target RNA into GAM90025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2535 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2535 gene: GAM4355 target protein, GAM11708 target protein and GAM90025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4355, GAM11708 and GAM90025

GR2536 BF093585 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2536(GR2536) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2536 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2536 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2536 gene encodes GR2536 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2536 precursor RNA folds spatially, forming GR2536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2536 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2536 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3044 precursor RNA, GAM3154 precursor RNA, GAM6263 precursor RNA and GAM65021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3044 RNA, GAM3154 RNA, GAM6263 RNA and GAM65021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3044 target RNA into GAM3044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3154 target RNA into GAM3154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6263 target RNA into GAM6263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65021 target RNA into GAM65021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2536 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2536 gene: GAM3044 target protein, GAM3154 target protein, GAM6263 target protein and GAM65021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3044, GAM3154, GAM6263 and GAM65021

GR2537 AU133015 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2537(GR2537) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2537 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2537 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2537 gene encodes GR2537 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2537 precursor RNA folds spatially, forming GR2537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2537 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2537 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM198982 precursor RNA, GAM258969 precursor RNA and GAM315976 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM198982 RNA, GAM258969 RNA and GAM315976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM198982 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198982 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198982 target RNA into GAM198982 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258969 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258969 target RNA into GAM258969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315976 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315976 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315976 target RNA into GAM315976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2537 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2537 gene: GAM198982 target protein, GAM258969 target protein and GAM315976 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM198982, GAM258969 and GAM315976

GR2538 BE515238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2538(GR2538) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2538 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2538 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2538 gene encodes GR2538 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2538 precursor RNA folds spatially, forming GR2538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2538 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2538 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5361 precursor RNA, GAM30531 precursor RNA and GAM118858 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5361 RNA, GAM30531 RNA and GAM118858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5361 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5361 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5361 target RNA into GAM5361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30531 target RNA into GAM30531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118858 target RNA into GAM118858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2538 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2538 gene: GAM5361 target protein, GAM30531 target protein and GAM118858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5361, GAM30531 and GAM118858

GR2539 BG912967 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2539(GR2539) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2539 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2539 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2539 gene encodes GR2539 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2539 precursor RNA folds spatially, forming GR2539 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2539 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2539 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2428 precursor RNA and GAM64755 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2428 RNA and GAM64755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2428 target RNA into GAM2428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64755 target RNA into GAM64755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2539 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2539 gene: GAM2428 target protein and GAM64755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2428 and GAM64755

GR2540 BM993956 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2540(GR2540) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2540 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2540 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2540 gene encodes GR2540 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2540 precursor RNA folds spatially, forming GR2540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2540 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2540 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2840 precursor RNA and GAM114590 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2840 RNA and GAM114590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2840 target RNA into GAM2840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114590 target RNA into GAM114590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2540 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2540 gene: GAM2840 target protein and GAM114590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2840 and GAM114590

GR2541 AA156315 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2541(GR2541) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2541 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2541 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2541 gene encodes GR2541 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2541 precursor RNA folds spatially, forming GR2541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2541 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2541 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4948 precursor RNA and GAM129193 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4948 RNA and GAM129193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4948 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4948 target RNA into GAM4948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129193 target RNA into GAM129193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2541 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2541 gene: GAM4948 target protein and GAM129193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4948 and GAM129193

GR2542 BE253747 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2542(GR2542) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2542 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2542 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2542 gene encodes GR2542 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2542 precursor RNA folds spatially, forming GR2542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2542 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2542 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2383 precursor RNA and GAM108444 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2383 RNA and GAM108444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2383 target RNA into GAM2383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108444 target RNA into GAM108444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2542 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2542 gene: GAM2383 target protein and GAM108444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2383 and GAM108444

GR2543 BI252415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2543(GR2543) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2543 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2543 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2543 gene encodes GR2543 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2543 precursor RNA folds spatially, forming GR2543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2543 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2543 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM117738 precursor RNA and GAM189567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117738 RNA and GAM189567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117738 target RNA into GAM117738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189567 target RNA into GAM189567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2543 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2543 gene: GAM117738 target protein and GAM189567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117738 and GAM189567

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2544(GR2544) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2544 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2544 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2544 gene encodes GR2544 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2544 precursor RNA folds spatially, forming GR2544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2544 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2544 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM793 precursor RNA, GAM93664 precursor RNA, GAM182843 precursor RNA and GAM242083 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM793 RNA, GAM93664 RNA, GAM182843 RNA and GAM242083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM793 target RNA into GAM793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93664 target RNA into GAM93664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182843 target RNA into GAM182843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242083 target RNA into GAM242083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2544 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2544 gene: GAM793 target protein, GAM93664 target protein, GAM182843 target protein and GAM242083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM793, GAM93664, GAM182843 and GAM242083

GR2545 AW136796 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2545(GR2545) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2545 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2545 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2545 gene encodes GR2545 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2545 precursor RNA folds spatially, forming GR2545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2545 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2545 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79444 precursor RNA and GAM145091 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79444 RNA and GAM145091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79444 target RNA into GAM79444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145091 target RNA into GAM145091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2545 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2545 gene: GAM79444 target protein and GAM145091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79444 and GAM145091

GR2546 BI835125 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2546(GR2546) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2546 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2546 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2546 gene encodes GR2546 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2546 precursor RNA folds spatially, forming GR2546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2546 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2546 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55682 precursor RNA, GAM95648 precursor RNA and GAM135548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55682 RNA, GAM95648 RNA and GAM135548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55682 target RNA into GAM55682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95648 target RNA into GAM95648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135548 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135548 target RNA into GAM135548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2546 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2546 gene: GAM55682 target protein, GAM95648 target protein and GAM135548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55682, GAM95648 and GAM135548

GR2547 AI540118 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2547(GR2547) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2547 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2547 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2547 gene encodes GR2547 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2547 precursor RNA folds spatially, forming GR2547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2547 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2547 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7330 precursor RNA, GAM50688 precursor RNA and GAM80205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7330 RNA, GAM50688 RNA and GAM80205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7330 target RNA into GAM7330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50688 target RNA into GAM50688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80205 target RNA into GAM80205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2547 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2547 gene: GAM7330 target protein, GAM50688 target protein and GAM80205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7330, GAM50688 and GAM80205

GR2548 BE043091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2548(GR2548) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2548 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2548 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2548 gene encodes GR2548 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2548 precursor RNA folds spatially, forming GR2548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2548 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2548 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM140391 precursor RNA, GAM190181 precursor RNA and GAM207545 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140391 RNA, GAM190181 RNA and GAM207545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140391 target RNA into GAM140391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190181 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190181 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190181 target RNA into GAM190181 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207545 target RNA into GAM207545 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2548 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2548 gene: GAM140391 target protein, GAM190181 target protein and GAM207545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140391, GAM190181 and GAM207545

GR2549 BI828427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2549(GR2549) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2549 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2549 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2549 gene encodes GR2549 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2549 precursor RNA folds spatially, forming GR2549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2549 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2549 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM35741 precursor RNA, GAM46718 precursor RNA and GAM171478 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM35741 RNA, GAM46718 RNA and GAM171478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM35741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35741 target RNA into GAM35741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46718 target RNA into GAM46718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171478 target RNA into GAM171478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2549 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2549 gene: GAM35741 target protein, GAM46718 target protein and GAM171478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM35741, GAM46718 and GAM171478

GR2550 BI916922 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2550(GR2550) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2550 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2550 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2550 gene encodes GR2550 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2550 precursor RNA folds spatially, forming GR2550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2550 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2550 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26253 precursor RNA and GAM217191 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26253 RNA and GAM217191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26253 target RNA into GAM26253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217191 target RNA into GAM217191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2550 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2550 gene: GAM26253 target protein and GAM217191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26253 and GAM217191

GR2551 AA548541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2551(GR2551) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2551 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2551 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2551 gene encodes GR2551 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2551 precursor RNA folds spatially, forming GR2551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2551 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2551 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3754 precursor RNA, GAM5582 precursor RNA and GAM203868 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3754 RNA, GAM5582 RNA and GAM203868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3754 target RNA into GAM3754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5582 target RNA into

GAM5582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203868 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203868 target RNA into GAM203868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2551 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2551 gene: GAM3754 target protein, GAM5582 target protein and GAM203868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3754, GAM5582 and GAM203868

GR2552 AW752720 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2552(GR2552) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2552 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2552 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2552 gene encodes GR2552 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2552 precursor RNA folds spatially, forming GR2552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2552 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2552 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM250 precursor RNA and GAM239846 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM250 RNA and GAM239846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250 target RNA into GAM250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239846 target RNA into GAM239846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2552 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2552 gene: GAM250 target protein and GAM239846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM250 and GAM239846

GR2553 AW499941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2553(GR2553) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2553 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2553 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2553 gene encodes GR2553 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2553 precursor RNA folds spatially, forming GR2553 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2553 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2553 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1946 precursor RNA and GAM173769 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1946 RNA and GAM173769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1946 target RNA into GAM1946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173769 target RNA into GAM173769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2553 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2553 gene: GAM1946 target protein and GAM173769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1946 and GAM173769

GR2554 BE772267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2554(GR2554) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2554 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2554 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2554 gene encodes GR2554 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2554 precursor RNA folds spatially, forming GR2554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2554 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2554 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM422 precursor RNA and GAM37033 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM422 RNA and GAM37033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM422 target RNA into GAM422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37033 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37033 target RNA into GAM37033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2554 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2554 gene: GAM422 target protein and GAM37033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM422 and GAM37033

GR2555 BI523631 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2555(GR2555) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2555 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2555 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2555 gene encodes GR2555 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2555 precursor RNA folds spatially, forming GR2555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2555 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2555 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM82151 precursor RNA, GAM223436 precursor RNA and GAM233437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82151 RNA, GAM223436 RNA and GAM233437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM82151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82151 target RNA into GAM82151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223436 target RNA into GAM223436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233437 target RNA into GAM233437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2555 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2555 gene: GAM82151 target protein, GAM223436 target protein and GAM233437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82151, GAM223436 and GAM233437

GR2556 AA304448 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2556(GR2556) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2556 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2556 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2556 gene encodes GR2556 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2556 precursor RNA folds spatially, forming GR2556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2556 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2556 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM952 precursor RNA and GAM211797 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM952 RNA and GAM211797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM952 target RNA into GAM952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211797 target RNA into GAM211797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2556 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2556 gene: GAM952 target protein and GAM211797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM952 and GAM211797

GR2557 BE258410 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2557(GR2557) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2557 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2557 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2557 gene encodes GR2557 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2557 precursor RNA folds spatially, forming GR2557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2557 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2557 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3599 precursor RNA and GAM17646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3599 RNA and GAM17646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3599 target RNA into GAM3599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17646 target RNA into GAM17646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2557 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2557 gene: GAM3599 target protein and GAM17646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3599 and GAM17646

GR2558 AI361021 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2558(GR2558) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2558 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2558 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2558 gene encodes GR2558 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2558 precursor RNA folds spatially, forming GR2558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2558 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2558 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM297359 precursor RNA and GAM311184 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM297359 RNA and GAM311184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM297359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297359 target RNA into GAM297359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311184 target RNA into GAM311184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2558 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2558 gene: GAM297359 target protein and GAM311184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM297359 and GAM311184

GR2559 BI600958 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2559(GR2559) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2559 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2559 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2559 gene encodes GR2559 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2559 precursor RNA folds spatially, forming GR2559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2559 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2559 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7985 precursor RNA, GAM57165 precursor RNA and GAM257615 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7985 RNA, GAM57165 RNA and GAM257615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7985 target RNA into GAM7985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57165 target RNA into GAM57165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257615 target RNA into GAM257615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2559 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2559 gene: GAM7985 target protein, GAM57165 target protein and GAM257615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7985, GAM57165 and GAM257615

GR2560 BM982913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2560(GR2560) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2560 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2560 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2560 gene encodes GR2560 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2560 precursor RNA folds spatially, forming GR2560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2560 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2560 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17622 precursor RNA and GAM123834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17622 RNA and GAM123834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17622 target RNA into GAM17622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123834 target RNA into GAM123834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2560 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2560 gene: GAM17622 target protein and GAM123834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17622 and GAM123834

GR2561 AI798097 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2561(GR2561) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2561 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2561 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2561 gene encodes GR2561 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2561 precursor RNA folds spatially, forming GR2561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2561 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2561 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1519 precursor RNA and GAM225801 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1519 RNA and GAM225801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1519 target RNA into GAM1519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225801 target RNA into GAM225801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2561 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2561 gene: GAM1519 target protein and GAM225801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1519 and GAM225801

GR2562 AA665046 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2562(GR2562) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2562 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2562 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2562 gene encodes GR2562 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2562 precursor RNA folds spatially, forming GR2562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2562 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2562 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259776 precursor RNA and GAM293410 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259776 RNA and GAM293410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259776 target RNA into GAM259776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293410 target RNA into GAM293410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2562 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2562 gene: GAM259776 target protein and GAM293410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259776 and GAM293410

GR2563 BE538776 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2563(GR2563) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2563 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2563 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2563 gene encodes GR2563 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2563 precursor RNA folds spatially, forming GR2563 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2563 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2563 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3547 precursor RNA, GAM38529 precursor RNA and GAM324735 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3547 RNA, GAM38529 RNA and GAM324735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3547 target RNA into GAM3547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM38529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38529 target RNA into GAM38529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324735 target RNA into GAM324735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2563 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2563 gene: GAM3547 target protein, GAM38529 target protein and GAM324735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3547, GAM38529 and GAM324735

GR2564 AI904659 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2564(GR2564) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2564 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2564 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2564 gene encodes GR2564 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2564 precursor RNA folds spatially, forming GR2564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2564 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2564 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM179453 precursor RNA and GAM269494 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM179453 RNA and GAM269494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM179453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179453

target RNA into GAM179453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269494 target RNA into GAM269494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2564 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2564 gene: GAM179453 target protein and GAM269494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM179453 and GAM269494

GR2565 AA907910 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2565(GR2565) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2565 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2565 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2565 gene encodes GR2565 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2565 precursor RNA folds spatially, forming GR2565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2565 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2565 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3386 precursor RNA, GAM62685 precursor RNA and GAM294215 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3386 RNA, GAM62685 RNA and GAM294215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3386 target RNA into GAM3386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62685 target RNA into GAM62685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294215 target RNA into GAM294215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2565 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2565 gene: GAM3386 target protein, GAM62685 target protein and GAM294215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3386, GAM62685 and GAM294215

GR2566 BE935502 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2566(GR2566) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2566 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2566 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2566 gene encodes GR2566 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2566 precursor RNA folds spatially, forming GR2566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2566 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2566 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4863 precursor RNA, GAM8315 precursor RNA and GAM331632 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4863 RNA, GAM8315 RNA and GAM331632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4863 target RNA into GAM4863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8315 target RNA into GAM8315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331632 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331632 target RNA into GAM331632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2566 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2566 gene: GAM4863 target protein, GAM8315 target protein and GAM331632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4863, GAM8315 and GAM331632

GR2567 BM855040 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2567(GR2567) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2567 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2567 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2567 gene encodes GR2567 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2567 precursor RNA folds spatially, forming GR2567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2567 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2567 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1306 precursor RNA and GAM271556 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1306 RNA and GAM271556 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1306 target RNA into GAM1306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271556 target RNA into GAM271556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2567 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2567 gene: GAM1306 target protein and GAM271556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1306 and GAM271556

GR2568 BF108843 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2568(GR2568) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2568 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2568 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2568 gene encodes GR2568 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2568 precursor RNA folds spatially, forming GR2568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2568 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2568 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM11033 precursor RNA, GAM176467 precursor RNA and GAM329274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11033 RNA, GAM176467 RNA and GAM329274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11033 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11033 target RNA into GAM11033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176467 target RNA into GAM176467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329274 target RNA into GAM329274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2568 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2568 gene: GAM11033 target protein, GAM176467 target protein and GAM329274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11033, GAM176467 and

GAM329274

GR2569 AI338091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2569(GR2569) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2569 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2569 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2569 gene encodes GR2569 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2569 precursor RNA folds spatially, forming GR2569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2569 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2569 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6200 precursor RNA and GAM28327 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6200 RNA and GAM28327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6200 target RNA into GAM6200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28327 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28327 target RNA into GAM28327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2569 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2569 gene: GAM6200 target protein and GAM28327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6200 and GAM28327

GR2570 BF988504 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2570(GR2570) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2570 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2570 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2570 gene encodes GR2570 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2570 precursor RNA folds spatially, forming GR2570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2570 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2570 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM159455 precursor RNA and GAM191814 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM159455 RNA and GAM191814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM159455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159455 target RNA into GAM159455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191814 target RNA into GAM191814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2570 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2570 gene: GAM159455 target protein and GAM191814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM159455 and GAM191814

GR2571 BE783639 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2571(GR2571) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2571 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2571 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2571 gene encodes GR2571 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2571 precursor RNA folds spatially, forming GR2571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2571 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2571 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7460 precursor RNA, GAM111729 precursor RNA and GAM258398 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7460 RNA, GAM111729 RNA and GAM258398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7460 target RNA into GAM7460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111729 target RNA into GAM111729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258398 target RNA into GAM258398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2571 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2571 gene: GAM7460 target protein, GAM111729 target protein and GAM258398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7460, GAM111729 and GAM258398

GR2572 BG254769 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2572(GR2572) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2572 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2572 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2572 gene encodes GR2572 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2572 precursor RNA folds spatially, forming GR2572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2572 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2572 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119540 precursor RNA and GAM305457 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119540 RNA and GAM305457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119540 target RNA into GAM119540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305457 target RNA into GAM305457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2572 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2572 gene: GAM119540 target protein and GAM305457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119540 and GAM305457

GR2573 BF304751 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2573(GR2573) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2573 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2573 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2573 gene encodes GR2573 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2573 precursor RNA folds spatially, forming GR2573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2573 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2573 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5453 precursor RNA and GAM65519 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5453 RNA and GAM65519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5453 target RNA into GAM5453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65519 target RNA into GAM65519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2573 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2573 gene: GAM5453 target protein and GAM65519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5453 and GAM65519

GR2574 BM264508 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2574(GR2574) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2574 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2574 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2574 gene encodes GR2574 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2574 precursor RNA folds spatially, forming GR2574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2574 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2574 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7462 precursor RNA and GAM83894 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7462 RNA and GAM83894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7462 target RNA into GAM7462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83894 target RNA into GAM83894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2574 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2574 gene: GAM7462 target protein and GAM83894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7462 and GAM83894

GR2575 AU100160 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2575(GR2575) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2575 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2575 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2575 gene encodes GR2575 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2575 precursor RNA folds spatially, forming GR2575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2575 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2575 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96923 precursor RNA and GAM272831 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96923 RNA and GAM272831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96923 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96923 target RNA into GAM96923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272831 target RNA into GAM272831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2575 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2575 gene: GAM96923 target protein and GAM272831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96923 and GAM272831

GR2576 AV761939 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2576(GR2576) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2576 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2576 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2576 gene encodes GR2576 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2576 precursor RNA folds spatially, forming GR2576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2576 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2576 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM10257 precursor RNA, GAM40505 precursor RNA and GAM110232 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10257 RNA, GAM40505 RNA and GAM110232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10257 target RNA into GAM10257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40505 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40505 target RNA into GAM40505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110232 target RNA into GAM110232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2576 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2576 gene: GAM10257 target protein, GAM40505 target protein and GAM110232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10257, GAM40505 and GAM110232

GR2577 T47042 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2577(GR2577) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2577 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2577 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2577 gene encodes GR2577 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2577 precursor RNA folds spatially, forming GR2577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2577 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2577 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2258 precursor RNA and GAM273318 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2258 RNA and GAM273318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2258 target RNA into GAM2258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273318 target RNA into GAM273318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2577 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2577 gene: GAM2258 target protein and GAM273318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2258 and GAM273318

GR2578 AI493403 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2578(GR2578) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2578 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2578 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2578 gene encodes GR2578 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2578 precursor RNA folds spatially, forming GR2578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2578 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2578 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1857 precursor RNA, GAM187079 precursor RNA, GAM210836 precursor RNA and GAM313211 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1857 RNA, GAM187079 RNA, GAM210836 RNA and GAM313211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1857 target RNA into GAM1857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187079 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187079 target RNA into GAM187079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210836 target RNA into GAM210836 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313211 target RNA into GAM313211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2578 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2578 gene: GAM1857 target protein, GAM187079 target protein, GAM210836 target protein and GAM313211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1857, GAM187079, GAM210836 and GAM313211

GR2579 AW948332 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2579(GR2579) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2579 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2579 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2579 gene encodes GR2579 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2579 precursor RNA folds spatially, forming GR2579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2579 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2579 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2493 precursor RNA and GAM89370 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2493 RNA and GAM89370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2493 target RNA into GAM2493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89370 target RNA into GAM89370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2579 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2579 gene: GAM2493 target protein and GAM89370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2493 and GAM89370

GR2580 BI037602 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2580(GR2580) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2580 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2580 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2580 gene encodes GR2580 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2580 precursor RNA folds spatially, forming GR2580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2580 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2580 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253857 precursor RNA and GAM281536 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253857 RNA and GAM281536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253857 target RNA into GAM253857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281536 target RNA into GAM281536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2580 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2580 gene: GAM253857 target protein and GAM281536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253857 and GAM281536

GR2581 BM720539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2581(GR2581) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2581 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2581 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2581 gene encodes GR2581 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2581 precursor RNA folds spatially, forming GR2581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2581 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2581 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1475 precursor RNA and GAM163285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1475 RNA and GAM163285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1475 target RNA into GAM1475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163285 target RNA into GAM163285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2581 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2581 gene: GAM1475 target protein and GAM163285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1475 and GAM163285

GR2582 BF527825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2582(GR2582) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2582 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2582 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2582 gene encodes GR2582 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2582 precursor RNA folds spatially, forming GR2582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2582 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2582 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1684 precursor RNA and GAM147474 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1684 RNA and GAM147474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1684 target RNA into GAM1684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147474 target RNA into GAM147474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2582 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2582 gene: GAM1684 target protein and GAM147474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1684 and GAM147474

GR2583 AA504604 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2583(GR2583) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2583 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2583 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2583 gene encodes GR2583 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2583 precursor RNA folds spatially, forming GR2583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2583 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2583 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1491 precursor RNA and GAM93113 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1491 RNA and GAM93113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1491 target RNA into GAM1491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93113 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93113 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93113 target RNA into GAM93113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2583 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2583 gene: GAM1491 target protein and GAM93113 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1491 and GAM93113

GR2584 BG400307 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2584(GR2584) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2584 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2584 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2584 gene encodes GR2584 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2584 precursor RNA folds spatially, forming GR2584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2584 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2584 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2734 precursor RNA, GAM5388 precursor RNA, GAM5484 precursor RNA and GAM32749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2734 RNA, GAM5388 RNA, GAM5484 RNA and GAM32749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2734 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2734 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2734 target RNA into GAM2734 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5388 target RNA into GAM5388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5484 target RNA into GAM5484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32749 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32749 target RNA into GAM32749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2584 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2584 gene: GAM2734 target protein, GAM5388 target protein, GAM5484 target protein and GAM32749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2734, GAM5388, GAM5484 and GAM32749

GR2585 BE393245 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2585(GR2585) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2585 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2585 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2585 gene encodes GR2585 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2585 precursor RNA folds spatially, forming GR2585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2585 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2585 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7492 precursor RNA, GAM97315 precursor RNA and GAM293997 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7492 RNA, GAM97315 RNA and GAM293997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7492 target RNA into GAM7492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97315 target RNA into GAM97315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293997 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293997 target RNA into GAM293997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2585 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2585 gene: GAM7492 target protein, GAM97315 target protein and GAM293997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7492, GAM97315 and GAM293997

GR2586 H51782 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2586(GR2586) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2586 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2586 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2586 gene encodes GR2586 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2586 precursor RNA folds spatially, forming GR2586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2586 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2586 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM38153 precursor RNA and GAM200551 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38153 RNA and GAM200551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38153 target RNA into GAM38153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200551 target RNA into GAM200551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2586 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2586 gene: GAM38153 target protein and GAM200551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM38153 and GAM200551

GR2587 AI866624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2587(GR2587) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2587 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2587 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2587 gene encodes GR2587 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2587 precursor RNA folds spatially, forming GR2587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2587 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2587 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19884 precursor RNA and GAM178227 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19884 RNA and GAM178227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19884 target RNA into GAM19884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178227 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178227 target RNA into GAM178227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2587 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2587 gene: GAM19884 target protein and GAM178227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19884 and GAM178227

GR2588 BM760524 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2588(GR2588) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2588 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2588 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2588 gene encodes GR2588 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2588 precursor RNA folds spatially, forming GR2588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2588 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2588 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM248 precursor RNA, GAM7217 precursor RNA and GAM76168 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM248 RNA, GAM7217 RNA and GAM76168 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248 target RNA into GAM248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7217 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7217 target RNA into GAM7217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76168 target RNA into GAM76168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2588 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2588 gene: GAM248 target protein, GAM7217 target protein and GAM76168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM248, GAM7217 and GAM76168

GR2589 AL710101 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2589(GR2589) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2589 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2589 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2589 gene encodes GR2589 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2589 precursor RNA folds spatially, forming GR2589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2589 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2589 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1807 precursor RNA, GAM110258 precursor RNA and GAM223526 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1807 RNA, GAM110258 RNA and GAM223526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1807 target RNA into GAM1807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110258 target RNA into GAM110258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223526 target RNA into GAM223526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2589 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2589 gene: GAM1807 target protein, GAM110258 target protein and GAM223526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1807, GAM110258 and GAM223526

GR2590 BE093552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2590(GR2590) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2590 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2590 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2590 gene encodes GR2590 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2590 precursor RNA folds spatially, forming GR2590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2590 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2590 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1867 precursor RNA and GAM4806 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1867 RNA and GAM4806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM1867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1867 target RNA into GAM1867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4806 target RNA into GAM4806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2590 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2590 gene: GAM1867 target protein and GAM4806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1867 and GAM4806

GR2591 BI116348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2591(GR2591) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2591 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2591 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2591 gene encodes GR2591 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2591 precursor RNA folds spatially, forming GR2591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2591 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2591 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM5821 precursor RNA and GAM257552 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5821 RNA and GAM257552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5821 target RNA into GAM5821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257552 target RNA into GAM257552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2591 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2591 gene: GAM5821 target protein and GAM257552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5821 and GAM257552

GR2592 BI549786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2592(GR2592) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2592 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2592 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2592 gene encodes GR2592 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2592 precursor RNA folds spatially, forming GR2592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2592 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2592 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1687 precursor RNA, GAM1999 precursor RNA and GAM29249 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1687 RNA, GAM1999 RNA and GAM29249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1687 target RNA into GAM1687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1999 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1999 target RNA into GAM1999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29249 target RNA into GAM29249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2592 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2592 gene: GAM1687 target protein, GAM1999 target protein and GAM29249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1687, GAM1999 and GAM29249

GR2593 BF837424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2593(GR2593) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2593 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2593 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2593 gene encodes GR2593 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2593 precursor RNA folds spatially, forming GR2593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2593 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2593 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1876 precursor RNA, GAM27575 precursor RNA and GAM134526 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1876 RNA, GAM27575 RNA and GAM134526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM1876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1876 target RNA into GAM1876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27575 target RNA into GAM27575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134526 target RNA into GAM134526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2593 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2593 gene: GAM1876 target protein, GAM27575 target protein and GAM134526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1876, GAM27575 and GAM134526

GR2594 BG537464 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2594(GR2594) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2594 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2594 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2594 gene encodes GR2594 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2594 precursor RNA folds spatially, forming GR2594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2594 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2594 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3793 precursor RNA and GAM14649 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3793 RNA and GAM14649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3793 target RNA into GAM3793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14649 target RNA into GAM14649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2594 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2594 gene: GAM3793 target protein and GAM14649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3793 and GAM14649

GR2595 BE715527 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2595(GR2595) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2595 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2595 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2595 gene encodes GR2595 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2595 precursor RNA folds spatially, forming GR2595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2595 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2595 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5866 precursor RNA and GAM163389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5866 RNA and GAM163389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5866 target RNA into GAM5866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163389 target RNA into GAM163389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2595 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2595 gene: GAM5866 target protein and GAM163389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5866 and GAM163389

GR2596 AW393031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2596(GR2596) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2596 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2596 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2596 gene encodes GR2596 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2596 precursor RNA folds spatially, forming GR2596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2596 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2596 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4017 precursor RNA and GAM85055 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4017 RNA and GAM85055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4017 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4017 target RNA into GAM4017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85055 target RNA into GAM85055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2596 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2596 gene: GAM4017 target protein and GAM85055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4017 and GAM85055

GR2597 BE973986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2597(GR2597) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2597 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2597 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2597 gene encodes GR2597 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2597 precursor RNA folds spatially, forming GR2597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2597 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2597 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM781 precursor RNA, GAM2888 precursor RNA, GAM291504 precursor RNA and GAM320651 precursor RNA,herein schematically

represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM781 RNA, GAM2888 RNA, GAM291504 RNA and GAM320651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM781 target RNA into GAM781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2888 target RNA into GAM2888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291504 target RNA into GAM291504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320651 target RNA into GAM320651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2597 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2597 gene: GAM781 target protein, GAM2888 target protein, GAM291504 target protein and GAM320651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with

reference to Table 6, hereby incorporated by reference, with references to GAM781, GAM2888, GAM291504 and GAM320651

GR2598 AW842125 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2598(GR2598) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2598 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2598 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2598 gene encodes GR2598 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2598 precursor RNA folds spatially, forming GR2598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2598 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2598 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57836 precursor RNA and GAM303646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57836 RNA and GAM303646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57836 target RNA into GAM57836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM303646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303646 target RNA into GAM303646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2598 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2598 gene: GAM57836 target protein and GAM303646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57836 and GAM303646

GR2599 BF672074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2599(GR2599) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2599 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2599 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2599 gene encodes GR2599 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2599 precursor RNA folds spatially, forming GR2599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2599 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2599 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM185045 precursor RNA and GAM266842 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM185045 RNA and GAM266842 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM185045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185045 target RNA into GAM185045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266842 target RNA into GAM266842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2599 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2599 gene: GAM185045 target protein and GAM266842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM185045 and GAM266842

GR2600 AA992786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2600(GR2600) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2600 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2600 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2600 gene encodes GR2600 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2600 precursor RNA folds spatially, forming GR2600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2600 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2600 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6232 precursor RNA and GAM183998 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6232 RNA and GAM183998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6232 target RNA into GAM6232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183998 target RNA into GAM183998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2600 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2600 gene: GAM6232 target protein and GAM183998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6232 and GAM183998

GR2601 BG198523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2601(GR2601) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2601 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2601 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2601 gene encodes GR2601 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2601 precursor RNA folds spatially, forming GR2601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2601 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2601 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM930 precursor RNA and GAM84109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM930 RNA and GAM84109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM930 target RNA into GAM930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84109 target RNA into GAM84109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2601 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2601 gene: GAM930 target

protein and GAM84109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM930 and GAM84109

GR2602 D55872 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2602(GR2602) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2602 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2602 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2602 gene encodes GR2602 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2602 precursor RNA folds spatially, forming GR2602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2602 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2602 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM249010 precursor RNA and GAM324439 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM249010 RNA and GAM324439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM249010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249010 target RNA into GAM249010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324439 target RNA into GAM324439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2602 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2602 gene: GAM249010 target protein and GAM324439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM249010 and GAM324439

GR2603 BI913221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2603(GR2603) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2603 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2603 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2603 gene encodes GR2603 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2603 precursor RNA folds spatially, forming GR2603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2603 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2603 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8023 precursor RNA and GAM95629 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8023 RNA and GAM95629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8023 target RNA into GAM8023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95629 target RNA into GAM95629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2603 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2603 gene: GAM8023 target protein and GAM95629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8023 and GAM95629

GR2604 AL705253 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2604(GR2604) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2604 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2604 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2604 gene encodes GR2604 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2604 precursor RNA folds spatially, forming GR2604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2604 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2604 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM144804 precursor RNA, GAM193088 precursor RNA and GAM272483 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144804 RNA, GAM193088 RNA and GAM272483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144804 target RNA into GAM144804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193088 target RNA into GAM193088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272483 target RNA into GAM272483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2604 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2604 gene: GAM144804 target protein, GAM193088 target protein and GAM272483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144804, GAM193088 and GAM272483

GR2605 BF981447 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2605(GR2605) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2605 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2605 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2605 gene encodes GR2605 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2605 precursor RNA folds spatially, forming GR2605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2605 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2605 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2496 precursor RNA and GAM215803 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2496 RNA and GAM215803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2496 target RNA into GAM2496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215803 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215803 target RNA into GAM215803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2605 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2605 gene: GAM2496 target protein and GAM215803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2496 and GAM215803

GR2606 BF996756 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2606(GR2606) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2606 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2606 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2606 gene encodes GR2606 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2606 precursor RNA folds spatially, forming GR2606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2606 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2606 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9393 precursor RNA and GAM199858 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM9393 RNA and GAM199858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9393 target RNA into GAM9393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199858 target RNA into GAM199858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2606 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2606 gene: GAM9393 target protein and GAM199858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9393 and GAM199858

GR2607 BI089487 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2607(GR2607) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2607 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2607 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2607 gene encodes GR2607 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2607 precursor RNA folds spatially, forming GR2607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2607 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2607 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2657 precursor RNA and GAM175980 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2657 RNA and GAM175980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2657 target RNA into GAM2657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175980 target RNA into GAM175980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2607 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2607 gene: GAM2657 target protein and GAM175980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2657 and GAM175980

GR2608 AI829973 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2608(GR2608) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2608 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2608 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2608 gene encodes GR2608 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2608 precursor RNA folds spatially, forming GR2608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2608 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2608 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2466 precursor RNA, GAM82201 precursor RNA and GAM271452 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2466 RNA, GAM82201 RNA and GAM271452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2466 target RNA into GAM2466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82201 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82201 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82201 target RNA into GAM82201 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271452 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271452 target RNA into GAM271452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2608 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2608 gene: GAM2466 target protein, GAM82201 target protein and GAM271452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2466, GAM82201 and GAM271452

GR2609 BM467065 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2609(GR2609) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2609 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2609 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2609 gene encodes GR2609 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2609 precursor RNA folds spatially, forming GR2609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2609 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2609 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5541 precursor RNA and GAM278941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5541 RNA and GAM278941 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5541 target RNA into GAM5541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278941 target RNA into GAM278941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2609 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2609 gene: GAM5541 target protein and GAM278941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5541 and GAM278941

GR2610 BF370354 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2610(GR2610) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2610 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2610 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2610 gene encodes GR2610 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2610 precursor RNA folds spatially, forming GR2610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2610 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2610 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6340 precursor RNA and GAM256344 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6340 RNA and GAM256344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6340 target RNA into GAM6340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256344 target RNA into GAM256344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2610 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2610 gene: GAM6340 target protein and GAM256344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6340 and GAM256344

GR2611 BM969770 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2611(GR2611) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2611 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2611 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2611 gene encodes GR2611 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2611 precursor RNA folds spatially, forming GR2611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2611 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2611 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2585 precursor RNA and GAM11587 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2585 RNA and GAM11587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2585 target RNA into GAM2585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11587 target RNA into GAM11587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2611 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2611 gene: GAM2585 target

protein and GAM11587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2585 and GAM11587

GR2612 BG183139 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2612(GR2612) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2612 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2612 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2612 gene encodes GR2612 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2612 precursor RNA folds spatially, forming GR2612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2612 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2612 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM108809 precursor RNA, GAM139631 precursor RNA and GAM159761 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108809 RNA, GAM139631 RNA and GAM159761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108809 target RNA into GAM108809 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139631 target RNA into GAM139631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159761 target RNA into GAM159761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2612 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2612 gene: GAM108809 target protein, GAM139631 target protein and GAM159761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108809, GAM139631 and GAM159761

GR2613 BG776798 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2613(GR2613) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2613 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2613 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2613 gene encodes GR2613 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2613 precursor RNA folds spatially, forming GR2613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2613 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2613 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM144101 precursor RNA and GAM208705 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144101 RNA and GAM208705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144101 target RNA into GAM144101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208705 target RNA into GAM208705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2613 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2613 gene: GAM144101 target protein and GAM208705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144101 and GAM208705

GR2614 AA256666 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2614(GR2614) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2614 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2614

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2614 gene encodes GR2614 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2614 precursor RNA folds spatially, forming GR2614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2614 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2614 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM261433 precursor RNA and GAM326491 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM261433 RNA and GAM326491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM261433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261433 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261433 target RNA into GAM261433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326491 target RNA into GAM326491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2614 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2614 gene: GAM261433 target protein and GAM326491 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM261433 and GAM326491

GR2615 BI553818 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2615(GR2615) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2615 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2615 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2615 gene encodes GR2615 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2615 precursor RNA folds spatially, forming GR2615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2615 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2615 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2746 precursor RNA, GAM3745 precursor RNA and GAM62677 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2746 RNA, GAM3745 RNA and GAM62677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2746 target RNA into GAM2746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3745 target RNA into GAM3745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62677 target RNA into GAM62677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2615 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2615 gene: GAM2746 target protein, GAM3745 target protein and GAM62677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2746, GAM3745 and GAM62677

GR2616 AW814885 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2616(GR2616) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2616 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2616 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2616 gene encodes GR2616 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2616 precursor RNA folds spatially, forming GR2616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2616 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2616 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM489 precursor RNA, GAM73528 precursor RNA and GAM303949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM489 RNA, GAM73528 RNA and GAM303949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM489 target RNA into GAM489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73528 target RNA into GAM73528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303949 target RNA into GAM303949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2616 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2616 gene: GAM489 target protein, GAM73528 target protein and GAM303949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM489, GAM73528 and GAM303949

GR2617 BF082911 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2617(GR2617) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2617 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2617 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2617 gene encodes GR2617 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2617 precursor RNA folds spatially, forming GR2617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2617 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2617 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM42 precursor RNA, GAM582 precursor RNA and GAM310180 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42 RNA, GAM582 RNA and GAM310180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42 target RNA into GAM42 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM582 target RNA into GAM582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310180 target RNA into GAM310180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2617 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2617 gene: GAM42 target protein, GAM582 target protein and GAM310180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42, GAM582 and GAM310180

GR2618 BF976459 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2618(GR2618) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2618 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2618 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2618 gene encodes GR2618 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2618 precursor RNA folds spatially, forming GR2618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2618 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2618 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM8526 precursor RNA, GAM91531 precursor RNA,

GAM264178 precursor RNA and GAM272865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8526 RNA, GAM91531 RNA, GAM264178 RNA and GAM272865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8526 target RNA into GAM8526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91531 target RNA into GAM91531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264178 target RNA into GAM264178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272865 target RNA into GAM272865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2618 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2618 gene: GAM8526 target protein, GAM91531 target protein, GAM264178 target protein and GAM272865 target protein, herein schematically represented by GAM1 TARGET PROTEIN

through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8526, GAM91531, GAM264178 and GAM272865

GR2619 BQ063688 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2619(GR2619) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2619 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2619 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2619 gene encodes GR2619 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2619 precursor RNA folds spatially, forming GR2619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2619 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2619 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3916 precursor RNA and GAM319676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3916 RNA and GAM319676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3916 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3916 target RNA into GAM3916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319676 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319676 target RNA into GAM319676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2619 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2619 gene: GAM3916 target protein and GAM319676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3916 and GAM319676

GR2620 BG831263 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2620(GR2620) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2620 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2620 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2620 gene encodes GR2620 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2620 precursor RNA folds spatially, forming GR2620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2620 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2620 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM19178 precursor RNA, GAM73130 precursor RNA and GAM275053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19178 RNA, GAM73130 RNA and GAM275053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19178 target RNA into GAM19178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73130 target RNA into GAM73130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275053 target RNA into GAM275053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2620 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2620 gene: GAM19178 target protein, GAM73130 target protein and GAM275053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19178, GAM73130 and GAM275053

GR2621 AW884581 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2621(GR2621) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2621 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2621 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2621 gene encodes GR2621 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2621 precursor RNA folds spatially, forming GR2621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2621 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2621 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7892 precursor RNA and GAM217703 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7892 RNA and GAM217703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7892 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7892 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7892 target RNA into GAM7892 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217703 target RNA into GAM217703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2621 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2621 gene: GAM7892 target protein and GAM217703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7892 and GAM217703

GR2622 BM917077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2622(GR2622) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2622 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2622 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2622 gene encodes GR2622 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2622 precursor RNA folds spatially, forming GR2622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2622 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2622 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM140651 precursor RNA and GAM248876 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140651 RNA and GAM248876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140651 target RNA into GAM140651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM248876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248876 target RNA into GAM248876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2622 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2622 gene: GAM140651 target protein and GAM248876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140651 and GAM248876

GR2623 BG714520 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2623(GR2623) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2623 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2623 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2623 gene encodes GR2623 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2623 precursor RNA folds spatially, forming GR2623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2623 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2623 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2319 precursor RNA and GAM6020 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2319 RNA and GAM6020 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2319 target RNA into GAM2319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6020 target RNA into GAM6020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2623 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2623 gene: GAM2319 target protein and GAM6020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2319 and GAM6020

GR2624 BF678026 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2624(GR2624) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2624 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2624 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2624 gene encodes GR2624 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2624 precursor RNA folds spatially, forming GR2624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2624 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2624 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM153149 precursor RNA and GAM238213 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM153149 RNA and GAM238213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM153149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153149 target RNA into GAM153149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238213 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238213 target RNA into GAM238213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2624 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2624 gene: GAM153149 target protein and GAM238213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM153149 and GAM238213

GR2625 BI597250 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2625(GR2625) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2625 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2625 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2625 gene encodes GR2625 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2625 precursor RNA folds spatially, forming GR2625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2625 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2625 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95986 precursor RNA and GAM221038 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95986 RNA and GAM221038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95986 target RNA into GAM95986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221038 target RNA into GAM221038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2625 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2625 gene: GAM95986 target

protein and GAM221038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95986 and GAM221038

GR2626 R72582 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2626(GR2626) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2626 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2626 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2626 gene encodes GR2626 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2626 precursor RNA folds spatially, forming GR2626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2626 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2626 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM27020 precursor RNA and GAM241800 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27020 RNA and GAM241800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27020 target RNA into GAM27020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241800 target RNA into GAM241800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2626 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2626 gene: GAM27020 target protein and GAM241800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27020 and GAM241800

GR2627 BG772518 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2627(GR2627) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2627 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2627 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2627 gene encodes GR2627 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2627 precursor RNA folds spatially, forming GR2627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2627 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2627 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM617 precursor RNA, GAM716 precursor RNA and GAM198670 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM617 RNA, GAM716 RNA and GAM198670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM617 target RNA into GAM617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM716 target RNA into GAM716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198670 target RNA into GAM198670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2627 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2627 gene: GAM617 target protein, GAM716 target protein and GAM198670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM617, GAM716 and GAM198670

GR2628 AV655017 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2628(GR2628) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2628 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2628

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2628 gene encodes GR2628 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2628 precursor RNA folds spatially, forming GR2628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2628 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2628 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1406 precursor RNA, GAM6383 precursor RNA and GAM293817 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1406 RNA, GAM6383 RNA and GAM293817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1406 target RNA into GAM1406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6383 target RNA into GAM6383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293817 target RNA into GAM293817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2628 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2628 gene: GAM1406 target protein, GAM6383 target protein and GAM293817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1406, GAM6383 and GAM293817

GR2629 BE465213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2629(GR2629) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2629 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2629 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2629 gene encodes GR2629 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2629 precursor RNA folds spatially, forming GR2629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2629 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2629 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM141780 precursor RNA and GAM181297 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM141780 RNA and GAM181297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM141780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141780 target RNA into GAM141780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181297 target RNA into GAM181297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2629 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2629 gene: GAM141780 target protein and GAM181297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM141780 and GAM181297

GR2630 BF432128 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2630(GR2630) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2630 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2630 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2630 gene encodes GR2630 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2630 precursor RNA folds spatially, forming GR2630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2630 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2630 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90623 precursor RNA and GAM153292 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90623 RNA and GAM153292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90623 target RNA into GAM90623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM153292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153292 target RNA into GAM153292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2630 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2630 gene: GAM90623 target protein and GAM153292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90623 and GAM153292

GR2631 BM449767 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2631(GR2631) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2631 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2631 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2631 gene encodes GR2631 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2631 precursor RNA folds spatially, forming GR2631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2631 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2631 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM208564 precursor RNA, GAM218006 precursor RNA and GAM259300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208564 RNA, GAM218006 RNA and GAM259300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208564 target RNA into GAM208564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218006 target RNA into GAM218006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259300

target RNA into GAM259300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2631 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2631 gene: GAM208564 target protein, GAM218006 target protein and GAM259300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208564, GAM218006 and GAM259300

GR2632 BE695289 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2632(GR2632) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2632 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2632 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2632 gene encodes GR2632 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2632 precursor RNA folds spatially, forming GR2632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2632 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2632 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM61187 precursor RNA and GAM183313 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM61187 RNA and GAM183313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM61187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61187 target RNA into GAM61187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183313 target RNA into GAM183313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2632 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2632 gene: GAM61187 target protein and GAM183313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM61187 and GAM183313

GR2633 AW379385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2633(GR2633) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2633 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2633 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2633 gene encodes GR2633 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2633 precursor RNA folds spatially, forming GR2633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2633 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2633 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM322876 precursor RNA and GAM334378 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM322876 RNA and GAM334378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM322876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322876 target RNA into GAM322876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334378 target RNA into GAM334378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2633 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2633 gene: GAM322876 target protein and GAM334378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM322876 and GAM334378

GR2634 R33744 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2634(GR2634) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2634 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2634 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2634 gene encodes GR2634 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2634 precursor RNA folds spatially, forming GR2634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2634 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2634 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22969 precursor RNA and GAM76432 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22969 RNA and GAM76432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22969 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22969 target RNA into GAM22969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76432 target RNA into GAM76432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2634 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2634 gene: GAM22969 target protein and GAM76432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM22969 and GAM76432

GR2635 AW014922 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2635(GR2635) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2635 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2635 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2635 gene encodes GR2635 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2635 precursor RNA folds spatially, forming GR2635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2635 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2635 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM25657 precursor RNA, GAM128579 precursor RNA, GAM255355 precursor RNA and GAM297850 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25657 RNA, GAM128579 RNA, GAM255355 RNA and GAM297850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25657 target RNA into GAM25657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM128579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128579 target RNA into GAM128579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255355 target RNA into GAM255355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297850 target RNA into GAM297850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2635 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2635 gene: GAM25657 target protein, GAM128579 target protein, GAM255355 target protein and GAM297850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25657, GAM128579, GAM255355 and GAM297850

GR2636 H68670 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2636(GR2636) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2636 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2636 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2636 gene encodes GR2636 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2636 precursor RNA folds spatially, forming GR2636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2636 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2636 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM312 precursor RNA, GAM3919 precursor RNA, GAM6189 precursor RNA and GAM177507 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM312 RNA, GAM3919 RNA, GAM6189 RNA and GAM177507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312 target RNA into GAM312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3919 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3919 target RNA into GAM3919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6189 target RNA into GAM6189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177507 target RNA into GAM177507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2636 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2636 gene: GAM312 target protein, GAM3919 target protein, GAM6189 target protein and GAM177507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM312, GAM3919, GAM6189 and GAM177507

GR2637 BM558102 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2637(GR2637) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2637 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2637 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2637 gene encodes GR2637 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2637 precursor RNA folds spatially, forming GR2637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2637 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2637 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM105110 precursor RNA, GAM125840 precursor RNA, GAM201979 precursor RNA and GAM334449 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105110 RNA, GAM125840 RNA, GAM201979 RNA and GAM334449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA,

each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105110 target RNA into GAM105110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125840 target RNA into GAM125840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201979 target RNA into GAM201979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334449 target RNA into GAM334449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2637 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2637 gene: GAM105110 target protein, GAM125840 target protein, GAM201979 target protein and GAM334449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105110, GAM125840, GAM201979 and GAM334449

GR2638 W33153 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2638(GR2638) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2638 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2638 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2638 gene encodes GR2638 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2638 precursor RNA folds spatially, forming GR2638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2638 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2638 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM182990 precursor RNA and GAM198560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM182990 RNA and GAM198560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM182990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182990 target RNA into GAM182990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198560 target RNA into GAM198560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2638 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2638 gene: GAM182990 target protein and GAM198560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM182990 and GAM198560

GR2639 BE386745 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2639(GR2639) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2639 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2639 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2639 gene encodes GR2639 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2639 precursor RNA folds spatially, forming GR2639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2639 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2639 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4786 precursor RNA and GAM241951 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4786 RNA and GAM241951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4786 target RNA into GAM4786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241951 target RNA into GAM241951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2639 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2639 gene: GAM4786 target protein and GAM241951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4786 and GAM241951

GR2640 BI063620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2640(GR2640) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2640 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2640 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2640 gene encodes GR2640 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2640 precursor RNA folds spatially, forming GR2640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2640 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2640 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM85576 precursor RNA, GAM259111 precursor RNA and GAM316955 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85576 RNA, GAM259111 RNA and GAM316955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85576 target RNA into GAM85576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259111 target RNA into GAM259111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316955 target RNA into GAM316955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2640 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2640 gene: GAM85576 target protein, GAM259111 target protein and GAM316955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85576, GAM259111 and GAM316955

GR2641 BG389264 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2641(GR2641) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2641 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2641 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2641 gene encodes GR2641 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2641 precursor RNA folds spatially, forming GR2641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2641 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2641 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128739 precursor RNA and GAM134363 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128739 RNA and GAM134363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128739 target RNA into GAM128739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134363 target RNA into GAM134363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2641 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2641 gene: GAM128739 target protein and GAM134363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128739 and GAM134363

GR2642 BG013658 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2642(GR2642) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2642 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2642 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2642 gene encodes GR2642 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2642 precursor RNA folds spatially, forming GR2642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2642 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2642 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3769 precursor RNA, GAM5080 precursor RNA, GAM23147 precursor RNA and GAM286017 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3769 RNA, GAM5080 RNA, GAM23147 RNA and GAM286017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3769 target RNA into GAM3769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5080 target RNA into GAM5080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23147 target RNA into GAM23147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286017 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286017 target RNA into GAM286017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2642 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2642 gene: GAM3769 target protein, GAM5080 target protein, GAM23147 target protein and GAM286017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3769, GAM5080, GAM23147 and GAM286017

GR2643 BM768986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2643(GR2643) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2643 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2643 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2643 gene encodes GR2643 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2643 precursor RNA folds spatially, forming GR2643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2643 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2643 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5576 precursor RNA and GAM214958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5576 RNA and GAM214958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5576 target RNA into GAM5576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214958 target RNA into GAM214958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2643 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2643 gene: GAM5576 target protein and GAM214958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5576 and GAM214958

GR2644 BM741803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2644(GR2644) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2644 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2644 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2644 gene encodes GR2644 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2644 precursor RNA folds spatially, forming GR2644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2644 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2644 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM140764 precursor RNA and GAM243421 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140764 RNA and GAM243421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140764 target RNA into GAM140764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243421 target RNA into GAM243421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2644 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2644 gene: GAM140764 target protein and GAM243421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140764 and GAM243421

GR2645 AA001713 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2645(GR2645) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2645 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2645 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2645 gene encodes GR2645 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2645 precursor RNA folds spatially, forming GR2645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2645 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2645 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1843 precursor RNA and GAM9131 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1843 RNA and GAM9131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1843 target RNA into GAM1843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9131 target RNA into GAM9131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2645 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2645 gene: GAM1843 target protein and GAM9131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1843 and GAM9131

GR2646 BF790517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2646(GR2646) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2646 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2646 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2646 gene encodes GR2646 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2646 precursor RNA folds spatially, forming GR2646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2646 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2646 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM92828 precursor RNA and GAM124719 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92828 RNA and GAM124719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92828 target RNA into GAM92828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124719 target RNA into GAM124719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2646 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2646 gene: GAM92828 target protein and GAM124719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92828 and GAM124719

GR2647 W00896 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2647(GR2647) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2647 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2647 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2647 gene encodes GR2647 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2647 precursor RNA folds spatially, forming GR2647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2647 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2647 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM68743 precursor RNA, GAM156690 precursor RNA and GAM273748 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68743 RNA, GAM156690 RNA and GAM273748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68743 target RNA into GAM68743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156690 target RNA into GAM156690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273748

target RNA into GAM273748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2647 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2647 gene: GAM68743 target protein, GAM156690 target protein and GAM273748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68743, GAM156690 and GAM273748

GR2648 AI376671 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2648(GR2648) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2648 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2648 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2648 gene encodes GR2648 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2648 precursor RNA folds spatially, forming GR2648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2648 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2648 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM45811 precursor RNA and GAM99663 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45811 RNA and GAM99663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45811 target RNA into GAM45811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99663 target RNA into GAM99663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2648 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2648 gene: GAM45811 target protein and GAM99663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45811 and GAM99663

GR2649 AA326203 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2649(GR2649) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2649 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2649 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2649 gene encodes GR2649 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2649 precursor RNA folds spatially, forming GR2649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2649 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2649 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6186 precursor RNA and GAM136745 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6186 RNA and GAM136745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6186 target RNA into GAM6186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136745 target RNA into GAM136745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2649 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2649 gene: GAM6186 target protein and GAM136745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6186 and GAM136745

GR2650 AA689577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2650(GR2650) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2650 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2650 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2650 gene encodes GR2650 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2650 precursor RNA folds spatially, forming GR2650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2650 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2650 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6703 precursor RNA and GAM258313 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6703 RNA and GAM258313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6703 target RNA into GAM6703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258313 target RNA into GAM258313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2650 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2650 gene: GAM6703 target protein and GAM258313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM6703 and GAM258313

GR2651 BG211701 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2651(GR2651) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2651 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2651 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2651 gene encodes GR2651 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2651 precursor RNA folds spatially, forming GR2651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2651 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2651 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2609 precursor RNA, GAM8946 precursor RNA and GAM300288 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2609 RNA, GAM8946 RNA and GAM300288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2609 target RNA into GAM2609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8946 target RNA into GAM8946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300288 target RNA into GAM300288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2651 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2651 gene: GAM2609 target protein, GAM8946 target protein and GAM300288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2609, GAM8946 and GAM300288

GR2652 BF589744 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2652(GR2652) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2652 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2652 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2652 gene encodes GR2652 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2652 precursor RNA folds spatially, forming GR2652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2652 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2652 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2652 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4697 precursor RNA, GAM22960 precursor RNA, GAM74137 precursor RNA and GAM233484 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4697 RNA, GAM22960 RNA, GAM74137 RNA and GAM233484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4697 target RNA into GAM4697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22960 target RNA into GAM22960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74137 target RNA into GAM74137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233484 target RNA into GAM233484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2652 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2652 gene: GAM4697 target

protein, GAM22960 target protein, GAM74137 target protein and GAM233484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4697, GAM22960, GAM74137 and GAM233484

GR2653 AA587516 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2653(GR2653) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2653 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2653 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2653 gene encodes GR2653 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2653 precursor RNA folds spatially, forming GR2653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2653 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2653 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6864 precursor RNA and GAM312897 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6864 RNA and GAM312897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6864 target RNA into GAM6864 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312897 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312897 target RNA into GAM312897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2653 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2653 gene: GAM6864 target protein and GAM312897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6864 and GAM312897

GR2654 R24173 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2654(GR2654) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2654 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2654 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2654 gene encodes GR2654 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2654 precursor RNA folds spatially, forming GR2654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2654 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2654 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1530 precursor RNA and GAM228484 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1530 RNA and GAM228484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1530 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1530 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1530 target RNA into GAM1530 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228484 target RNA into GAM228484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2654 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2654 gene: GAM1530 target protein and GAM228484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1530 and GAM228484

GR2655 BG573553 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2655(GR2655) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2655 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2655 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2655 gene encodes GR2655 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2655 precursor RNA folds spatially, forming GR2655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2655 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2655 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2028 precursor RNA and GAM3796 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2028 RNA and GAM3796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2028 target RNA into GAM2028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3796 target RNA into GAM3796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2655 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2655 gene: GAM2028 target protein and GAM3796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2028 and GAM3796

GR2656 AL598825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2656(GR2656) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2656 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2656 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2656 gene encodes GR2656 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2656 precursor RNA folds spatially, forming GR2656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2656 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2656 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM79323 precursor RNA, GAM134945 precursor RNA and GAM292991 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79323 RNA, GAM134945 RNA and GAM292991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79323 target RNA into GAM79323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134945 target RNA into GAM134945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292991 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292991 target RNA into GAM292991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2656 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2656 gene: GAM79323 target protein, GAM134945 target protein and GAM292991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79323, GAM134945 and GAM292991

GR2657 BF213945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2657(GR2657) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2657 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2657 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2657 gene encodes GR2657 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2657 precursor RNA folds spatially, forming GR2657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2657 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2657 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM287118 precursor RNA and GAM295073 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM287118 RNA and GAM295073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM287118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287118 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287118 target RNA into GAM287118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295073 target RNA into GAM295073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2657 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2657 gene: GAM287118 target protein and GAM295073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM287118 and GAM295073

GR2658 AA948348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2658(GR2658) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2658 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2658 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2658 gene encodes GR2658 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2658 precursor RNA folds spatially, forming GR2658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2658 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2658 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8188 precursor RNA and GAM298068 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8188 RNA and GAM298068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8188 target RNA into GAM8188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298068 target RNA into GAM298068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2658 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2658 gene: GAM8188 target protein and GAM298068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8188 and GAM298068

GR2659 BG026242 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2659(GR2659) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2659 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2659 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2659 gene encodes GR2659 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2659 precursor RNA folds spatially, forming GR2659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2659 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2659 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3959 precursor RNA and GAM46431 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3959 RNA and GAM46431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3959 target RNA into GAM3959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46431 target RNA into GAM46431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2659 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2659 gene: GAM3959 target protein and GAM46431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3959 and GAM46431

GR2660 AI087791 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2660(GR2660) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2660 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2660 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2660 gene encodes GR2660 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2660 precursor RNA folds spatially, forming GR2660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2660 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2660 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6215 precursor RNA and GAM178088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6215 RNA and GAM178088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6215 target RNA into

GAM6215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178088 target RNA into GAM178088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2660 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2660 gene: GAM6215 target protein and GAM178088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6215 and GAM178088

GR2661 AA470808 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2661(GR2661) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2661 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2661 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2661 gene encodes GR2661 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2661 precursor RNA folds spatially, forming GR2661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2661 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2661 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM51555 precursor RNA and GAM228553 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51555 RNA and GAM228553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51555 target RNA into GAM51555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228553 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228553 target RNA into GAM228553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2661 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2661 gene: GAM51555 target protein and GAM228553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51555 and GAM228553

GR2662 BG427516 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2662(GR2662) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2662 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2662 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2662 gene encodes GR2662 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2662 precursor RNA folds spatially, forming GR2662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2662 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2662 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7874 precursor RNA and GAM112056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7874 RNA and GAM112056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7874 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7874 target RNA into GAM7874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112056 target RNA into GAM112056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2662 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2662 gene: GAM7874 target protein and GAM112056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7874 and GAM112056

GR2663 BF951928 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2663(GR2663) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2663 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2663 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2663 gene encodes GR2663 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2663 precursor RNA folds spatially, forming GR2663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2663 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2663 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98357 precursor RNA and GAM309931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98357 RNA and GAM309931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98357 target RNA into GAM98357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309931 target RNA into GAM309931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2663 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2663 gene: GAM98357 target protein and GAM309931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98357 and GAM309931

GR2664 AI589754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2664(GR2664) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2664 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2664 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2664 gene encodes GR2664 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2664 precursor RNA folds spatially, forming GR2664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2664 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2664 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257880 precursor RNA and GAM302091 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257880 RNA and GAM302091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257880 target RNA into GAM257880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302091 target RNA into GAM302091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2664 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2664 gene: GAM257880 target protein and GAM302091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257880 and GAM302091

GR2665 AA188064 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2665(GR2665) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2665 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2665 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2665 gene encodes GR2665 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2665 precursor RNA folds spatially, forming GR2665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2665 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2665 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4568 precursor RNA and GAM320729 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4568 RNA and GAM320729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4568 target RNA into GAM4568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320729 target RNA into GAM320729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2665 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2665 gene: GAM4568 target protein and GAM320729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4568 and GAM320729

GR2666 BF684104 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2666(GR2666) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2666 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2666 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2666 gene encodes GR2666 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2666 precursor RNA folds spatially, forming GR2666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2666 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2666 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM19624 precursor RNA, GAM219047 precursor RNA and GAM287006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19624 RNA, GAM219047 RNA and GAM287006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19624 target RNA into GAM19624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219047 target RNA into GAM219047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287006 target RNA into GAM287006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2666 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2666 gene: GAM19624 target protein, GAM219047 target protein and GAM287006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19624, GAM219047 and GAM287006

GR2667 BG340599 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2667(GR2667) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2667 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2667 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2667 gene encodes GR2667 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2667 precursor RNA folds spatially, forming GR2667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2667 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2667 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6003 precursor RNA and GAM289664 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6003 RNA and GAM289664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6003 target RNA into GAM6003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289664 target RNA into GAM289664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2667 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2667 gene: GAM6003 target protein and GAM289664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6003 and GAM289664

GR2668 BF314451 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2668(GR2668) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2668 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2668 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2668 gene encodes GR2668 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2668 precursor RNA folds spatially, forming GR2668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2668 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2668 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM113738 precursor RNA and GAM290161 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113738 RNA and GAM290161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113738 target RNA into GAM113738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290161 target RNA into GAM290161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2668 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2668 gene: GAM113738 target protein and GAM290161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113738 and GAM290161

GR2669 BF873607 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2669(GR2669) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2669 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2669 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2669 gene encodes GR2669 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2669 precursor RNA folds spatially, forming GR2669 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2669 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2669 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48269 precursor RNA and GAM226285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48269 RNA and GAM226285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48269 target RNA into GAM48269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226285 target RNA into GAM226285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2669 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2669 gene: GAM48269 target protein and GAM226285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48269 and GAM226285

GR2670 BF222195 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2670(GR2670) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2670 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2670 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2670 gene encodes GR2670 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2670 precursor RNA folds spatially, forming GR2670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2670 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2670 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM89004 precursor RNA and GAM89436 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89004 RNA and GAM89436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89004 target RNA into GAM89004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89436 target RNA into GAM89436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2670 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2670 gene: GAM89004 target protein and GAM89436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89004 and GAM89436

GR2671 AI240767 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2671(GR2671) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2671 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2671 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2671 gene encodes GR2671 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2671 precursor RNA folds spatially, forming GR2671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2671 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2671 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1297 precursor RNA and GAM139737 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1297 RNA and GAM139737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1297 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1297 target RNA into GAM1297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139737 target RNA into GAM139737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2671 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2671 gene: GAM1297 target protein and GAM139737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1297 and GAM139737

GR2672 BG503563 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2672(GR2672) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2672 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2672 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2672 gene encodes GR2672 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2672 precursor RNA folds spatially, forming GR2672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2672 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2672 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM190500 precursor RNA and GAM305890 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM190500 RNA and GAM305890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM190500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190500 target RNA into GAM190500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305890 target RNA into GAM305890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2672 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2672 gene: GAM190500 target protein and GAM305890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM190500 and GAM305890

GR2673 AA808588 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2673(GR2673) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2673 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2673 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2673 gene encodes GR2673 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2673 precursor RNA folds spatially, forming GR2673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2673 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2673 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM44083 precursor RNA, GAM128791 precursor RNA and GAM308130 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44083 RNA, GAM128791 RNA and GAM308130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44083 target RNA into GAM44083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128791 target RNA into GAM128791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308130 target RNA into GAM308130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2673 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2673 gene: GAM44083 target protein, GAM128791 target protein and GAM308130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44083, GAM128791 and GAM308130

GR2674 R18470 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2674(GR2674) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2674 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2674 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2674 gene encodes GR2674 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2674 precursor RNA folds spatially, forming GR2674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2674 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2674 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9711 precursor RNA and GAM136888 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9711 RNA and GAM136888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9711 target RNA into GAM9711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136888 target RNA into GAM136888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2674 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2674 gene: GAM9711 target protein and GAM136888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9711 and GAM136888

GR2675 BG121483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2675(GR2675) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2675 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2675 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2675 gene encodes GR2675 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2675 precursor RNA folds spatially, forming GR2675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2675 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2675 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164931 precursor RNA and GAM320629 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164931 RNA and GAM320629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164931 target RNA into GAM164931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320629 target RNA into GAM320629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2675 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2675 gene: GAM164931 target protein and GAM320629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164931 and GAM320629

GR2676 N30768 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2676(GR2676) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2676 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2676 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2676 gene encodes GR2676 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2676 precursor RNA folds spatially, forming GR2676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2676 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2676 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4156 precursor RNA and GAM135119 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4156 RNA and GAM135119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4156 target RNA into GAM4156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135119 target RNA into GAM135119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2676 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2676 gene: GAM4156 target protein and GAM135119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4156 and GAM135119

GR2677 AI628372 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2677(GR2677) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2677 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2677 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2677 gene encodes GR2677 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2677 precursor RNA folds spatially, forming GR2677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2677 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2677 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM9631 precursor RNA, GAM40228 precursor RNA and GAM195817 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9631 RNA, GAM40228 RNA and GAM195817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9631 target RNA into GAM9631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40228

target RNA into GAM40228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195817 target RNA into GAM195817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2677 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2677 gene: GAM9631 target protein, GAM40228 target protein and GAM195817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9631, GAM40228 and GAM195817

GR2678 AI263223 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2678(GR2678) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2678 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2678 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2678 gene encodes GR2678 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2678 precursor RNA folds spatially, forming GR2678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2678 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2678 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171847 precursor RNA and GAM203220 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171847 RNA and GAM203220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171847 target RNA into GAM171847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203220 target RNA into GAM203220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2678 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2678 gene: GAM171847 target protein and GAM203220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171847 and GAM203220

GR2679 AW610369 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2679(GR2679) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2679 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2679 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2679 gene encodes GR2679 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2679 precursor RNA folds spatially, forming GR2679 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2679 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2679 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7425 precursor RNA, GAM127562 precursor RNA and GAM159301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7425 RNA, GAM127562 RNA and GAM159301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7425 target RNA into GAM7425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127562 target RNA into GAM127562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159301 target RNA into GAM159301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2679 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2679 gene: GAM7425 target protein, GAM127562 target protein and GAM159301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7425, GAM127562 and GAM159301

GR2680 BE397720 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2680(GR2680) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2680 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2680 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2680 gene encodes GR2680 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2680 precursor RNA folds spatially, forming GR2680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2680 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2680 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4493 precursor RNA, GAM94615 precursor RNA and GAM282086 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4493 RNA, GAM94615 RNA and GAM282086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4493 target RNA into GAM4493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94615 target RNA into GAM94615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282086 target RNA into GAM282086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2680 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2680 gene: GAM4493 target protein, GAM94615 target protein and GAM282086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4493, GAM94615 and GAM282086

GR2681 AA828648 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2681(GR2681) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2681 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2681 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2681 gene encodes GR2681 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2681 precursor RNA folds spatially, forming GR2681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2681 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2681 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5687 precursor RNA and GAM126493 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5687 RNA and GAM126493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5687 target RNA into GAM5687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126493 target RNA into GAM126493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2681 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2681 gene: GAM5687 target protein and GAM126493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5687 and GAM126493

GR2682 AI936456 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2682(GR2682) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2682 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2682 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2682 gene encodes GR2682 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2682 precursor RNA folds spatially, forming GR2682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2682 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2682 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM288459 precursor RNA and GAM294865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM288459 RNA and GAM294865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM288459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288459 target RNA into GAM288459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294865 target RNA into GAM294865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2682 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2682 gene: GAM288459 target protein and GAM294865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM288459 and GAM294865

GR2683 AI821126 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2683(GR2683) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2683 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2683 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2683 gene encodes GR2683 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2683 precursor RNA folds spatially, forming GR2683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2683 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2683 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5696 precursor RNA and GAM55072 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5696 RNA and GAM55072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5696 target RNA into GAM5696 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55072 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55072 target RNA into GAM55072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2683 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2683 gene: GAM5696 target protein and GAM55072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5696 and GAM55072

GR2684 BF331360 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2684(GR2684) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2684 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2684 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2684 gene encodes GR2684 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2684 precursor RNA folds spatially, forming GR2684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2684 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2684 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46419 precursor RNA and GAM276793 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46419 RNA and GAM276793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46419 target RNA into GAM46419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276793 target RNA into GAM276793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2684 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2684 gene: GAM46419 target protein and GAM276793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46419 and GAM276793

GR2685 AV728723 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2685(GR2685) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2685 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2685 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2685 gene encodes GR2685 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2685 precursor RNA folds spatially, forming GR2685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2685 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2685 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4422 precursor RNA and GAM6491 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4422 RNA and GAM6491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4422 target RNA into GAM4422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6491 target RNA into GAM6491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2685 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2685 gene: GAM4422 target protein and GAM6491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4422 and GAM6491

GR2686 BE559762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2686(GR2686) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2686 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2686 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2686 gene encodes GR2686 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2686 precursor RNA folds spatially, forming GR2686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2686 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2686 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7502 precursor RNA and GAM108684 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7502 RNA and GAM108684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7502 target RNA into GAM7502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108684 target RNA into GAM108684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2686 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2686 gene: GAM7502 target protein and GAM108684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7502 and GAM108684

GR2687 AW857428 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2687(GR2687) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2687 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2687 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2687 gene encodes GR2687 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2687 precursor RNA folds spatially, forming GR2687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2687 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2687 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57453 precursor RNA and GAM229947 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57453 RNA and GAM229947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57453 target RNA into GAM57453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229947 target RNA into GAM229947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2687 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2687 gene: GAM57453 target protein and GAM229947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57453 and GAM229947

GR2688 BF689870 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2688(GR2688) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2688 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2688 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2688 gene encodes GR2688 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2688 precursor RNA folds spatially, forming GR2688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2688 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2688 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4638 precursor RNA and GAM5293 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4638 RNA and GAM5293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4638 target RNA into GAM4638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5293 target RNA into GAM5293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2688 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2688 gene: GAM4638 target protein and GAM5293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4638 and GAM5293

GR2689 BE269480 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2689(GR2689) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2689 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2689 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2689 gene encodes GR2689 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2689 precursor RNA folds spatially, forming GR2689 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2689 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2689 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM167728 precursor RNA and GAM268080 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM167728 RNA and GAM268080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM167728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167728 target RNA into GAM167728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268080 target RNA into GAM268080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2689 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2689 gene: GAM167728 target protein and GAM268080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM167728 and GAM268080

GR2690 AI401421 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2690(GR2690) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2690 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2690 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2690 gene encodes GR2690 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2690 precursor RNA folds spatially, forming GR2690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2690 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2690 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM276953 precursor RNA and GAM319945 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM276953 RNA and GAM319945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM276953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276953 target RNA into GAM276953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319945 target RNA into GAM319945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2690 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2690 gene: GAM276953 target protein and GAM319945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM276953 and GAM319945

GR2691 BE158356 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2691(GR2691) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2691 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2691 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2691 gene encodes GR2691 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2691 precursor RNA folds spatially, forming GR2691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2691 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2691 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26636 precursor RNA and GAM277148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26636 RNA and GAM277148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26636 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26636 target RNA into GAM26636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277148 target RNA into GAM277148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2691 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2691 gene: GAM26636 target protein and GAM277148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26636 and GAM277148

GR2692 BM689489 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2692(GR2692) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2692 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2692 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2692 gene encodes GR2692 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2692 precursor RNA folds spatially, forming GR2692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2692 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2692 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6975 precursor RNA, GAM168443 precursor RNA

and GAM305357 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6975 RNA, GAM168443 RNA and GAM305357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6975 target RNA into GAM6975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168443 target RNA into GAM168443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305357 target RNA into GAM305357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2692 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2692 gene: GAM6975 target protein, GAM168443 target protein and GAM305357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6975, GAM168443 and GAM305357

GR2693 AA975378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2693(GR2693) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2693 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2693 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2693 gene encodes GR2693 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2693 precursor RNA folds spatially, forming GR2693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2693 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2693 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM89569 precursor RNA, GAM178203 precursor RNA and GAM198177 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89569 RNA, GAM178203 RNA and GAM198177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89569 target RNA into GAM89569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178203 target RNA into GAM178203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198177 target RNA into GAM198177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2693 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2693 gene: GAM89569 target protein, GAM178203 target protein and GAM198177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89569, GAM178203 and GAM198177

GR2694 AL698386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2694(GR2694) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2694 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2694 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2694 gene encodes GR2694 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2694 precursor RNA folds spatially, forming GR2694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2694 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2694 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3855 precursor RNA, GAM28570 precursor RNA and GAM326315 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3855 RNA, GAM28570 RNA and GAM326315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3855 target RNA into GAM3855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28570 target RNA into GAM28570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326315 target RNA into GAM326315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2694 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2694 gene: GAM3855 target protein, GAM28570 target protein and GAM326315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3855, GAM28570 and GAM326315

GR2695 BF968254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2695(GR2695) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2695 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2695 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2695 gene encodes GR2695 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2695 precursor RNA folds spatially, forming GR2695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2695 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2695 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8007 precursor RNA, GAM42631 precursor RNA and GAM135353 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8007 RNA, GAM42631 RNA and GAM135353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8007 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8007 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8007 target RNA into GAM8007 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM42631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42631 target RNA into GAM42631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135353 target RNA into GAM135353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2695 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2695 gene: GAM8007 target protein, GAM42631 target protein and GAM135353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8007, GAM42631 and GAM135353

GR2696 BQ073792 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2696(GR2696) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2696 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2696 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2696 gene encodes GR2696 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2696 precursor RNA folds spatially, forming GR2696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2696 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2696 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3471 precursor RNA, GAM57067 precursor RNA, GAM112674 precursor RNA and GAM146993 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3471 RNA, GAM57067 RNA, GAM112674 RNA and GAM146993

RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3471 target RNA into GAM3471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57067 target RNA into GAM57067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112674 target RNA into GAM112674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146993 target RNA into GAM146993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2696 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2696 gene: GAM3471 target protein, GAM57067 target protein, GAM112674 target protein and GAM146993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3471, GAM57067, GAM112674 and GAM146993

GR2697 R83395 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2697(GR2697) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2697 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2697 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2697 gene encodes GR2697 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2697 precursor RNA folds spatially, forming GR2697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2697 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2697 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3938 precursor RNA, GAM68552 precursor RNA and GAM331006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3938 RNA, GAM68552 RNA and GAM331006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3938 target RNA into GAM3938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68552 target RNA into GAM68552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331006 target RNA into GAM331006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2697 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2697 gene: GAM3938 target protein, GAM68552 target protein and GAM331006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3938, GAM68552 and GAM331006

GR2698 BG026138 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2698(GR2698) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2698 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2698 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2698 gene encodes GR2698 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2698 precursor RNA folds spatially, forming GR2698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2698 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2698 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1665 precursor RNA and GAM2863 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1665 RNA and GAM2863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1665 target RNA into GAM1665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2863 target RNA into GAM2863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2698 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2698 gene: GAM1665 target protein and GAM2863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1665 and GAM2863

GR2699 AW367467 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2699(GR2699) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2699 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2699 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2699 gene encodes GR2699 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2699 precursor RNA folds spatially, forming GR2699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2699 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2699 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6937 precursor RNA, GAM73817 precursor RNA and GAM170533 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6937 RNA, GAM73817 RNA and GAM170533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6937 target RNA into GAM6937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73817 target RNA into GAM73817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170533 target RNA into GAM170533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2699 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2699 gene: GAM6937 target protein, GAM73817 target protein and GAM170533 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6937, GAM73817 and GAM170533

GR2700 BF884422 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2700(GR2700) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2700 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2700 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2700 gene encodes GR2700 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2700 precursor RNA folds spatially, forming GR2700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2700 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2700 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM20012 precursor RNA, GAM35945 precursor RNA and GAM99497 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20012 RNA, GAM35945 RNA and GAM99497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20012 target RNA into GAM20012 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35945 target RNA into GAM35945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99497 target RNA into GAM99497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2700 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2700 gene: GAM20012 target protein, GAM35945 target protein and GAM99497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20012, GAM35945 and GAM99497

GR2701 AI680080 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2701(GR2701) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2701 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2701 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2701 gene encodes GR2701 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2701 precursor RNA folds spatially, forming GR2701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2701 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2701 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM255146 precursor RNA and GAM277777 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM255146 RNA and GAM277777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM255146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255146 target RNA into GAM255146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277777 target RNA into GAM277777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2701 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2701 gene: GAM255146 target protein and GAM277777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM255146 and GAM277777

GR2702 BG780005 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2702(GR2702) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2702 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2702

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2702 gene encodes GR2702 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2702 precursor RNA folds spatially, forming GR2702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2702 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2702 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4050 precursor RNA and GAM7148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4050 RNA and GAM7148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4050 target RNA into GAM4050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7148 target RNA into GAM7148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2702 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2702 gene: GAM4050 target protein and GAM7148 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4050 and GAM7148

GR2703 BE562658 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2703(GR2703) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2703 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2703 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2703 gene encodes GR2703 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2703 precursor RNA folds spatially, forming GR2703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2703 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2703 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM116640 precursor RNA and GAM213681 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116640 RNA and GAM213681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116640 target RNA into GAM116640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213681 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213681 target RNA into GAM213681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2703 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2703 gene: GAM116640 target protein and GAM213681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116640 and GAM213681

GR2704 BM839026 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2704(GR2704) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2704 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2704 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2704 gene encodes GR2704 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2704 precursor RNA folds spatially, forming GR2704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2704 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2704 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM159495 precursor RNA and GAM263633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM159495 RNA and GAM263633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM159495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159495 target RNA into GAM159495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263633 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263633 target RNA into GAM263633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2704 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2704 gene: GAM159495 target protein and GAM263633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM159495 and GAM263633

GR2705 BF245714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2705(GR2705) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2705 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2705 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2705 gene encodes GR2705 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2705 precursor RNA folds spatially, forming GR2705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2705 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2705 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM154472 precursor RNA, GAM263845 precursor RNA and GAM302083 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM154472 RNA, GAM263845 RNA and GAM302083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM154472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154472 target RNA into GAM154472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263845 target RNA into GAM263845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302083 target RNA into GAM302083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2705 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2705 gene: GAM154472 target protein, GAM263845 target protein and GAM302083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM154472, GAM263845 and GAM302083

GR2706 BG723092 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2706(GR2706) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2706 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2706 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2706 gene encodes GR2706 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2706 precursor RNA folds spatially, forming GR2706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2706 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2706 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM442 precursor RNA and GAM240507 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM442 RNA and GAM240507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM442 target RNA into GAM442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM240507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240507 target RNA into GAM240507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2706 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2706 gene: GAM442 target protein and GAM240507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM442 and GAM240507

GR2707 AW779571 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2707(GR2707) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2707 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2707 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2707 gene encodes GR2707 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2707 precursor RNA folds spatially, forming GR2707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2707 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2707 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1441 precursor RNA and GAM322914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1441 RNA and GAM322914 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1441 target RNA into GAM1441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322914 target RNA into GAM322914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2707 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2707 gene: GAM1441 target protein and GAM322914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1441 and GAM322914

GR2708 BI545736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2708(GR2708) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2708 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2708 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2708 gene encodes GR2708 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2708 precursor RNA folds spatially, forming GR2708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2708 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2708 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1865 precursor RNA, GAM19347 precursor RNA, GAM124465 precursor RNA and GAM257819 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1865 RNA, GAM19347 RNA, GAM124465 RNA and GAM257819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1865 target RNA into GAM1865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19347 target RNA into GAM19347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124465 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124465 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124465 target RNA into GAM124465 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257819 target RNA into GAM257819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2708 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2708 gene: GAM1865 target protein, GAM19347 target protein, GAM124465 target protein and GAM257819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1865, GAM19347, GAM124465 and GAM257819

GR2709 BF515198 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2709(GR2709) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2709 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2709 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2709 gene encodes GR2709 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2709 precursor RNA folds spatially, forming GR2709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2709 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2709 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2942 precursor RNA, GAM41461 precursor RNA and GAM214655 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2942 RNA, GAM41461 RNA and GAM214655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM2942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2942 target RNA into GAM2942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM41461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41461 target RNA into GAM41461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214655 target RNA into GAM214655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2709 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2709 gene: GAM2942 target protein, GAM41461 target protein and GAM214655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2942, GAM41461 and GAM214655

GR2710 BE857986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2710(GR2710) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2710 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2710 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2710 gene encodes GR2710 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2710 precursor RNA folds spatially, forming GR2710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2710 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2710 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8135 precursor RNA and GAM60947 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8135 RNA and GAM60947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8135 target RNA into GAM8135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60947 target RNA into GAM60947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2710 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2710 gene: GAM8135 target protein and GAM60947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8135 and GAM60947

GR2711 AI889520 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2711(GR2711) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2711 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2711 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2711 gene encodes GR2711 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2711 precursor RNA folds spatially, forming GR2711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2711 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2711 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63096 precursor RNA, GAM131710 precursor RNA and GAM253235 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63096 RNA, GAM131710 RNA and GAM253235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63096 target RNA into GAM63096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131710 target RNA into GAM131710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253235 target RNA into GAM253235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2711 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2711 gene: GAM63096 target protein, GAM131710 target protein and GAM253235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63096, GAM131710 and GAM253235

GR2712 BE045685 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2712(GR2712) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2712 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2712 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2712 gene encodes GR2712 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2712 precursor RNA folds spatially, forming GR2712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2712 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2712 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8175 precursor RNA and GAM229766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8175 RNA and GAM229766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8175 target RNA into GAM8175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229766 target RNA into GAM229766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2712 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2712 gene: GAM8175 target protein and GAM229766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8175 and GAM229766

GR2713 BM722566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2713(GR2713) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2713 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2713 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2713 gene encodes GR2713 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2713 precursor RNA folds spatially, forming GR2713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2713 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2713 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM218528 precursor RNA and GAM228922 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218528 RNA and GAM228922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218528 target RNA into GAM218528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228922 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228922 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228922 target RNA into GAM228922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2713 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2713 gene: GAM218528 target protein and GAM228922 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218528 and GAM228922

GR2714 BF696091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2714(GR2714) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2714 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2714 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2714 gene encodes GR2714 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2714 precursor RNA folds spatially, forming GR2714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2714 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2714 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4003 precursor RNA and GAM170223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4003 RNA and GAM170223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4003 target RNA into GAM4003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170223 target RNA into GAM170223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2714 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2714 gene: GAM4003 target protein and GAM170223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4003 and GAM170223

GR2715 BE613401 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2715(GR2715) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2715 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2715 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2715 gene encodes GR2715 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2715 precursor RNA folds spatially, forming GR2715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2715 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2715 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1580 precursor RNA, GAM147829 precursor RNA and GAM162467 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1580 RNA, GAM147829 RNA and GAM162467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1580 target RNA into GAM1580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147829 target RNA into GAM147829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162467 target RNA into GAM162467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2715 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2715 gene: GAM1580 target protein, GAM147829 target protein and GAM162467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1580, GAM147829 and GAM162467

GR2716 BF892485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2716(GR2716) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2716 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2716 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2716 gene encodes GR2716 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2716 precursor RNA folds spatially, forming GR2716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2716 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2716 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8086 precursor RNA and GAM236348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8086 RNA and GAM236348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8086 target RNA into GAM8086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236348 target RNA into GAM236348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2716 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2716 gene: GAM8086 target protein and GAM236348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8086 and GAM236348

GR2717 N84335 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2717(GR2717) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2717 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2717 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2717 gene encodes GR2717 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2717 precursor RNA folds spatially, forming GR2717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2717 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2717 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5076 precursor RNA and GAM248981 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5076 RNA and GAM248981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5076 target RNA into GAM5076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248981 target RNA into GAM248981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2717 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2717 gene: GAM5076 target protein and GAM248981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5076 and GAM248981

GR2718 BE297785 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2718(GR2718) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2718 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2718 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2718 gene encodes GR2718 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2718 precursor RNA folds spatially, forming GR2718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2718 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2718 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4900 precursor RNA, GAM119329 precursor RNA and GAM201394 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4900 RNA, GAM119329 RNA and GAM201394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4900 target RNA into GAM4900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119329 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119329 target RNA into GAM119329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201394 target RNA into GAM201394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2718 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2718 gene: GAM4900 target protein, GAM119329 target protein and GAM201394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4900, GAM119329 and GAM201394

GR2719 BI094789 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2719(GR2719) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2719 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2719 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2719 gene encodes GR2719 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2719 precursor RNA folds spatially, forming GR2719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2719 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2719 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5953 precursor RNA and GAM201190 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5953 RNA and GAM201190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5953 target RNA into GAM5953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201190 target RNA into GAM201190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2719 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2719 gene: GAM5953 target protein and GAM201190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5953 and GAM201190

GR2720 BG828871 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2720(GR2720) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2720 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2720 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2720 gene encodes GR2720 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2720 precursor RNA folds spatially, forming GR2720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2720 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2720 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6496 precursor RNA and GAM125014 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6496 RNA and GAM125014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6496 target RNA into GAM6496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125014 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125014 target RNA into GAM125014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2720 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2720 gene: GAM6496 target protein and GAM125014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6496 and GAM125014

GR2721 BE884249 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2721(GR2721) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2721 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2721 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2721 gene encodes GR2721 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2721 precursor RNA folds spatially, forming GR2721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2721 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2721 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM247070 precursor RNA and GAM308455 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM247070 RNA and GAM308455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM247070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247070 target RNA into GAM247070 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308455 target RNA into GAM308455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2721 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2721 gene: GAM247070 target protein and GAM308455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM247070 and GAM308455

GR2722 BM310116 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2722(GR2722) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2722 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2722 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2722 gene encodes GR2722 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2722 precursor RNA folds spatially, forming GR2722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2722 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2722 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM310622 precursor RNA and GAM336104 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM310622 RNA and GAM336104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM310622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310622 target RNA into GAM310622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336104 target RNA into GAM336104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2722 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2722 gene: GAM310622 target protein and GAM336104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM310622 and GAM336104

GR2723 BF306623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2723(GR2723) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2723 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2723 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2723 gene encodes GR2723 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2723 precursor RNA folds spatially, forming GR2723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2723 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2723 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1628 precursor RNA, GAM5490 precursor RNA and GAM62579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1628 RNA, GAM5490 RNA and GAM62579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1628 target RNA into GAM1628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5490 target RNA into GAM5490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62579 target RNA into GAM62579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2723 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2723 gene: GAM1628 target protein, GAM5490 target protein and GAM62579 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1628, GAM5490 and GAM62579

GR2724 R98423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2724(GR2724) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2724 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2724 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2724 gene encodes GR2724 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2724 precursor RNA folds spatially, forming GR2724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2724 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2724 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM247925 precursor RNA and GAM329989 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM247925 RNA and GAM329989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM247925 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247925 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247925 target RNA into GAM247925 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329989 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329989 target RNA into GAM329989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2724 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2724 gene: GAM247925 target protein and GAM329989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM247925 and GAM329989

GR2725 BG717034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2725(GR2725) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2725 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2725 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2725 gene encodes GR2725 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2725 precursor RNA folds spatially, forming GR2725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2725 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2725 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM131300 precursor RNA, GAM147914 precursor RNA and GAM257845 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131300 RNA, GAM147914 RNA and GAM257845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131300 target RNA into GAM131300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147914 target RNA into GAM147914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257845 target RNA into GAM257845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2725 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2725 gene: GAM131300 target protein, GAM147914 target protein and GAM257845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131300, GAM147914 and GAM257845

GR2726 BG429424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2726(GR2726) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2726 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2726

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2726 gene encodes GR2726 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2726 precursor RNA folds spatially, forming GR2726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2726 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2726 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1660 precursor RNA, GAM4106 precursor RNA and GAM150335 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1660 RNA, GAM4106 RNA and GAM150335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1660 target RNA into GAM1660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4106 target RNA into GAM4106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150335 target RNA into GAM150335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2726 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2726 gene: GAM1660 target protein, GAM4106 target protein and GAM150335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1660, GAM4106 and GAM150335

GR2727 BE548027 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2727(GR2727) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2727 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2727 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2727 gene encodes GR2727 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2727 precursor RNA folds spatially, forming GR2727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2727 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2727 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM146035 precursor RNA, GAM213690 precursor RNA and GAM314238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146035 RNA, GAM213690 RNA and GAM314238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM146035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146035 target RNA into GAM146035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213690 target RNA into GAM213690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314238 target RNA into GAM314238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2727 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2727 gene: GAM146035 target protein, GAM213690 target protein and GAM314238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM146035, GAM213690 and GAM314238

GR2728 BE065557 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2728(GR2728) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2728 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2728 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2728 gene encodes GR2728 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2728 precursor RNA folds spatially, forming GR2728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2728 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2728 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5360 precursor RNA and GAM18990 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5360 RNA and GAM18990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5360 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5360 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5360 target RNA into GAM5360 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM18990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18990 target RNA into GAM18990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2728 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2728 gene: GAM5360 target protein and GAM18990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5360 and GAM18990

GR2729 N48803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2729(GR2729) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2729 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2729 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2729 gene encodes GR2729 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2729 precursor RNA folds spatially, forming GR2729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2729 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2729 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128057 precursor RNA and GAM300350 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128057 RNA and GAM300350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128057 target RNA into GAM128057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300350 target RNA into GAM300350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2729 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2729 gene: GAM128057 target protein and GAM300350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128057 and GAM300350

GR2730 AI041569 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2730(GR2730) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2730 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2730 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2730 gene encodes GR2730 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2730 precursor RNA folds spatially, forming GR2730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2730 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2730 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM142282 precursor RNA, GAM329295 precursor RNA and GAM335480 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142282 RNA, GAM329295 RNA and GAM335480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142282 target RNA into GAM142282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329295 target RNA into GAM329295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335480 target RNA into GAM335480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2730 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2730 gene: GAM142282 target protein, GAM329295 target protein and GAM335480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142282, GAM329295 and GAM335480

GR2731 BE314502 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2731(GR2731) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2731 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2731 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2731 gene encodes GR2731 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2731 precursor RNA folds spatially, forming GR2731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2731 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2731 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4522 precursor RNA, GAM8249 precursor RNA, GAM193678 precursor RNA and GAM272428 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4522 RNA, GAM8249 RNA, GAM193678 RNA and GAM272428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4522 target RNA into GAM4522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8249 target RNA into GAM8249 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193678 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193678 target RNA into GAM193678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM272428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272428 target RNA into GAM272428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2731 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2731 gene: GAM4522 target protein, GAM8249 target protein, GAM193678 target protein and GAM272428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4522, GAM8249, GAM193678 and GAM272428

GR2732 BE833810 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2732(GR2732) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2732 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2732 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2732 gene encodes GR2732 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2732 precursor RNA folds spatially, forming GR2732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2732 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2732 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM134108 precursor RNA and GAM197145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM134108 RNA and GAM197145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM134108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134108 target RNA into GAM134108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197145 target RNA into GAM197145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2732 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2732 gene: GAM134108 target protein and GAM197145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM134108 and GAM197145

GR2733 BG528942 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2733(GR2733) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2733 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2733 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2733 gene encodes GR2733 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2733 precursor RNA folds spatially, forming GR2733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2733 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2733 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5275 precursor RNA and GAM288710 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5275 RNA and GAM288710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5275 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5275 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5275 target RNA into GAM5275 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288710 target RNA into GAM288710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2733 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2733 gene: GAM5275 target protein and GAM288710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5275 and GAM288710

GR2734 BE617487 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2734(GR2734) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2734 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2734 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2734 gene encodes GR2734 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2734 precursor RNA folds spatially, forming GR2734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2734 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2734 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM747 precursor RNA, GAM3724 precursor RNA and GAM8516 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM747 RNA, GAM3724 RNA and GAM8516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM747 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM747 target RNA into GAM747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3724 target RNA into GAM3724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8516 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8516 target RNA into GAM8516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2734 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2734 gene: GAM747 target protein, GAM3724 target protein and GAM8516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM747, GAM3724 and GAM8516

GR2735 BG774252 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2735(GR2735) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2735 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2735 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2735 gene encodes GR2735 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2735 precursor RNA folds spatially, forming GR2735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2735 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2735 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM153 precursor RNA and GAM64693 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM153 RNA and GAM64693 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM153 target RNA into GAM153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64693 target RNA into GAM64693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2735 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2735 gene: GAM153 target protein and GAM64693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM153 and GAM64693

GR2736 BG189451 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2736(GR2736) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2736 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2736 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2736 gene encodes GR2736 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2736 precursor RNA folds spatially, forming GR2736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2736 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2736 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3549 precursor RNA and GAM284648 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3549 RNA and GAM284648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3549 target RNA into GAM3549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284648 target RNA into GAM284648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2736 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2736 gene: GAM3549 target protein and GAM284648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3549 and GAM284648

GR2737 AI086829 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2737(GR2737) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2737 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2737 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2737 gene encodes GR2737 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2737 precursor RNA folds spatially, forming GR2737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2737 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2737 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32614 precursor RNA and GAM155958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32614 RNA and GAM155958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32614 target RNA into GAM32614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM155958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155958 target RNA into GAM155958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2737 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2737 gene: GAM32614 target

protein and GAM155958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32614 and GAM155958

GR2738 BE270681 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2738(GR2738) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2738 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2738 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2738 gene encodes GR2738 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2738 precursor RNA folds spatially, forming GR2738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2738 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2738 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1171 precursor RNA, GAM119501 precursor RNA and GAM142495 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1171 RNA, GAM119501 RNA and GAM142495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1171 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1171 target RNA into GAM1171 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119501 target RNA into GAM119501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142495 target RNA into GAM142495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2738 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2738 gene: GAM1171 target protein, GAM119501 target protein and GAM142495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1171, GAM119501 and GAM142495

GR2739 BQ004674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2739(GR2739) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2739 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2739 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2739 gene encodes GR2739 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2739 precursor RNA folds spatially, forming GR2739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2739 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2739 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM229555 precursor RNA and GAM334916 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM229555 RNA and GAM334916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM229555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229555 target RNA into GAM229555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334916 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334916 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334916 target RNA into GAM334916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2739 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2739 gene: GAM229555 target protein and GAM334916 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM229555 and GAM334916

GR2740 AI870385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2740(GR2740) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2740 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2740

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2740 gene encodes GR2740 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2740 precursor RNA folds spatially, forming GR2740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2740 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2740 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2559 precursor RNA and GAM33924 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2559 RNA and GAM33924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2559 target RNA into GAM2559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33924 target RNA into GAM33924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2740 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2740 gene: GAM2559 target protein and GAM33924 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2559 and GAM33924

GR2741 AA614691 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2741(GR2741) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2741 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2741 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2741 gene encodes GR2741 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2741 precursor RNA folds spatially, forming GR2741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2741 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2741 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1108 precursor RNA and GAM264519 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1108 RNA and GAM264519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1108 target RNA into GAM1108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264519 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264519 target RNA into GAM264519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2741 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2741 gene: GAM1108 target protein and GAM264519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1108 and GAM264519

GR2742 AI922677 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2742(GR2742) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2742 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2742 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2742 gene encodes GR2742 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2742 precursor RNA folds spatially, forming GR2742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2742 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2742 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3492 precursor RNA, GAM141027 precursor RNA, GAM148123 precursor RNA and GAM178220 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3492 RNA, GAM141027 RNA, GAM148123 RNA and GAM178220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3492 target RNA into GAM3492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141027 target RNA into GAM141027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148123 target RNA into GAM148123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178220 target RNA into GAM178220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2742 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2742 gene: GAM3492 target protein, GAM141027 target protein, GAM148123 target protein and GAM178220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3492, GAM141027, GAM148123 and GAM178220

GR2743 BI057842 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2743(GR2743) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2743 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2743 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2743 gene encodes GR2743 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2743 precursor RNA folds spatially, forming GR2743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2743 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2743 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5307 precursor RNA and GAM29138 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5307 RNA and GAM29138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5307 target RNA into GAM5307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29138 target RNA into GAM29138 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2743 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2743 gene: GAM5307 target protein and GAM29138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5307 and GAM29138

GR2744 BI553054 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2744(GR2744) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2744 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2744 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2744 gene encodes GR2744 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2744 precursor RNA folds spatially, forming GR2744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2744 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2744 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25025 precursor RNA and GAM60327 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25025 RNA and GAM60327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM25025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25025 target RNA into GAM25025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60327 target RNA into GAM60327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2744 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2744 gene: GAM25025 target protein and GAM60327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25025 and GAM60327

GR2745 AW007215 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2745(GR2745) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2745 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2745 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2745 gene encodes GR2745 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2745 precursor RNA folds spatially, forming GR2745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2745 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2745 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM2577 precursor RNA and GAM8130 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2577 RNA and GAM8130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2577 target RNA into GAM2577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8130 target RNA into GAM8130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2745 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2745 gene: GAM2577 target protein and GAM8130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2577 and GAM8130

GR2746 BI523372 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2746(GR2746) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2746 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2746 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2746 gene encodes GR2746 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2746 precursor RNA folds spatially, forming GR2746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2746 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2746 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6962 precursor RNA and GAM240147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6962 RNA and GAM240147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6962 target RNA into GAM6962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240147 target RNA into GAM240147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2746 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2746 gene: GAM6962 target protein and GAM240147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6962 and GAM240147

GR2747 BF132554 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2747(GR2747) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2747 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2747 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2747 gene encodes GR2747 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2747 precursor RNA folds spatially, forming GR2747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2747 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2747 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM201559 precursor RNA and GAM281337 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM201559 RNA and GAM281337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM201559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201559 target RNA into GAM201559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281337 target RNA into GAM281337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2747 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2747 gene: GAM201559 target protein and GAM281337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM201559 and GAM281337

GR2748 BG390713 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2748(GR2748) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2748 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2748 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2748 gene encodes GR2748 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2748 precursor RNA folds spatially, forming GR2748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2748 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2748 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM201936 precursor RNA and GAM253535 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM201936 RNA and GAM253535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM201936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201936 target RNA into GAM201936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253535 target RNA into GAM253535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2748 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2748 gene: GAM201936 target protein and GAM253535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM201936 and GAM253535

GR2749 AI825056 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2749(GR2749) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2749 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2749 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2749 gene encodes GR2749 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2749 precursor RNA folds spatially, forming GR2749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2749 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2749 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM219012 precursor RNA and GAM219066 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219012 RNA and GAM219066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219012 target RNA into GAM219012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219066 target RNA into GAM219066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2749 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2749 gene: GAM219012 target protein and GAM219066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219012 and GAM219066

GR2750 BE621854 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2750(GR2750) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2750 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2750 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2750 gene encodes GR2750 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2750 precursor RNA folds spatially, forming GR2750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2750 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2750 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5751 precursor RNA and GAM251110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5751 RNA and GAM251110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5751 target RNA into GAM5751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251110 target RNA into GAM251110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2750 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2750 gene: GAM5751 target protein and GAM251110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM5751 and GAM251110

GR2751 BG505479 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2751(GR2751) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2751 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2751 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2751 gene encodes GR2751 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2751 precursor RNA folds spatially, forming GR2751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2751 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2751 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM227278 precursor RNA and GAM237303 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM227278 RNA and GAM237303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM227278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227278 target RNA into GAM227278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237303 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237303 target RNA into GAM237303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2751 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2751 gene: GAM227278 target protein and GAM237303 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM227278 and GAM237303

GR2752 AL602797 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2752(GR2752) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2752 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2752 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2752 gene encodes GR2752 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2752 precursor RNA folds spatially, forming GR2752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2752 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2752 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2434 precursor RNA and GAM162187 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2434 RNA and GAM162187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM2434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2434 target RNA into GAM2434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162187 target RNA into GAM162187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2752 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2752 gene: GAM2434 target protein and GAM162187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2434 and GAM162187

GR2753 BM473145 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2753(GR2753) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2753 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2753 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2753 gene encodes GR2753 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2753 precursor RNA folds spatially, forming GR2753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2753 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2753 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM6129 precursor RNA, GAM44799 precursor RNA, GAM81668 precursor RNA, GAM94312 precursor RNA and GAM265074 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6129 RNA, GAM44799 RNA, GAM81668 RNA, GAM94312 RNA and GAM265074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6129 target RNA into GAM6129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM44799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44799 target RNA into GAM44799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81668 target RNA into GAM81668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94312 target RNA into GAM94312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM265074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265074 target RNA into GAM265074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2753 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2753 gene: GAM6129 target protein, GAM44799 target protein, GAM81668 target protein, GAM94312 target protein and GAM265074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6129, GAM44799, GAM81668, GAM94312 and GAM265074

GR2754 AW969610 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2754(GR2754) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2754 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2754 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2754 gene encodes GR2754 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2754 precursor RNA folds spatially, forming GR2754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2754 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2754 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20387 precursor RNA and GAM224367 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM20387 RNA and GAM224367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20387 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20387 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20387 target RNA into GAM20387 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224367 target RNA into GAM224367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2754 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2754 gene: GAM20387 target protein and GAM224367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20387 and GAM224367

GR2755 AI127188 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2755(GR2755) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2755 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2755 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2755 gene encodes GR2755 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2755 precursor RNA folds spatially, forming GR2755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2755 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2755 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM280409 precursor RNA and GAM328388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM280409 RNA and GAM328388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM280409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280409 target RNA into GAM280409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328388 target RNA into GAM328388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2755 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2755 gene: GAM280409 target protein and GAM328388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM280409 and GAM328388

GR2756 BE930572 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2756(GR2756) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2756 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2756 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2756 gene encodes GR2756 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2756 precursor RNA folds spatially, forming GR2756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2756 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2756 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM216708 precursor RNA and GAM306389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM216708 RNA and GAM306389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM216708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216708 target RNA into GAM216708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306389 target RNA into GAM306389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2756 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2756 gene: GAM216708 target protein and GAM306389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM216708 and GAM306389

GR2757 BQ056780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2757(GR2757) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2757 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2757 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2757 gene encodes GR2757 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2757 precursor RNA folds spatially, forming GR2757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2757 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2757 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM103334 precursor RNA and GAM246396 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103334 RNA and GAM246396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103334 target RNA into GAM103334 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246396 target RNA into GAM246396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2757 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2757 gene: GAM103334 target protein and GAM246396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103334 and GAM246396

GR2758 BE081075 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2758(GR2758) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2758 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2758 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2758 gene encodes GR2758 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2758 precursor RNA folds spatially, forming GR2758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2758 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2758 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1652 precursor RNA and GAM179279 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1652 RNA and GAM179279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1652 target RNA into GAM1652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179279 target RNA into GAM179279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2758 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2758 gene: GAM1652 target protein and GAM179279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1652 and GAM179279

GR2759 AA761549 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2759(GR2759) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2759 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2759 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2759 gene encodes GR2759 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2759 precursor RNA folds spatially, forming GR2759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2759 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2759 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM82459 precursor RNA, GAM223939 precursor RNA and GAM285272 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82459 RNA, GAM223939 RNA and GAM285272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82459 target RNA into GAM82459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223939 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223939 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223939 target RNA into GAM223939 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285272 target RNA into GAM285272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2759 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2759 gene: GAM82459 target protein, GAM223939 target protein and GAM285272 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82459, GAM223939 and GAM285272

GR2760 BG707794 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2760(GR2760) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2760 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2760 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2760 gene encodes GR2760 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2760 precursor RNA folds spatially, forming GR2760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2760 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2760 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM27590 precursor RNA and GAM294838 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27590 RNA and GAM294838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27590 target RNA into GAM27590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294838 target RNA into GAM294838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2760 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2760 gene: GAM27590 target protein and GAM294838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27590 and GAM294838

GR2761 BE781874 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2761(GR2761) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2761 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2761 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2761 gene encodes GR2761 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2761 precursor RNA folds spatially, forming GR2761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2761 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2761 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM188068 precursor RNA and GAM209592 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM188068 RNA and GAM209592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM188068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188068 target RNA into GAM188068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209592 target RNA into GAM209592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2761 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2761 gene: GAM188068 target protein and GAM209592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM188068 and GAM209592

GR2762 AA551372 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2762(GR2762) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2762 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2762 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2762 gene encodes GR2762 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2762 precursor RNA folds spatially, forming GR2762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2762 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2762 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM221570 precursor RNA and GAM279807 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221570 RNA and GAM279807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221570 target RNA into GAM221570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279807 target RNA into GAM279807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2762 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2762 gene: GAM221570 target protein and GAM279807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221570 and GAM279807

GR2763 BF984806 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2763(GR2763) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2763 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2763 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2763 gene encodes GR2763 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2763 precursor RNA folds spatially, forming GR2763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2763 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2763 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM224615 precursor RNA and GAM258107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224615 RNA and GAM258107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224615 target RNA into GAM224615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258107 target RNA into GAM258107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2763 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2763 gene: GAM224615 target protein and GAM258107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224615 and GAM258107

GR2764 AI633583 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2764(GR2764) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2764 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2764 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2764 gene encodes GR2764 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2764 precursor RNA folds spatially, forming GR2764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2764 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2764 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM543 precursor RNA and GAM239773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM543 RNA and GAM239773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM543 target RNA into

GAM543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239773 target RNA into GAM239773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2764 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2764 gene: GAM543 target protein and GAM239773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM543 and GAM239773

GR2765 AA644275 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2765(GR2765) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2765 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2765 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2765 gene encodes GR2765 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2765 precursor RNA folds spatially, forming GR2765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2765 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2765 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1549 precursor RNA and GAM315738 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1549 RNA and GAM315738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1549 target RNA into GAM1549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315738 target RNA into GAM315738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2765 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2765 gene: GAM1549 target protein and GAM315738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1549 and GAM315738

GR2766 BF828496 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2766(GR2766) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2766 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2766 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2766 gene encodes GR2766 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2766 precursor RNA folds spatially, forming GR2766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2766 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2766 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7839 precursor RNA and GAM91483 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7839 RNA and GAM91483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7839 target RNA into GAM7839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91483 target RNA into GAM91483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2766 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2766 gene: GAM7839 target protein and GAM91483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7839 and GAM91483

GR2767 BM914490 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2767(GR2767) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2767 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2767 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2767 gene encodes GR2767 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2767 precursor RNA folds spatially, forming GR2767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2767 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2767 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM831 precursor RNA and GAM254012 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM831 RNA and GAM254012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM831 target RNA into GAM831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254012 target RNA into GAM254012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2767 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2767 gene: GAM831 target protein and GAM254012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM831 and GAM254012

GR2768 BG250844 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2768(GR2768) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2768 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2768 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2768 gene encodes GR2768 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2768 precursor RNA folds spatially, forming GR2768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2768 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2768 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88728 precursor RNA and GAM219196 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88728 RNA and GAM219196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88728 target RNA into GAM88728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219196 target RNA into GAM219196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2768 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2768 gene: GAM88728 target protein and GAM219196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88728 and GAM219196

GR2769 BG702915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2769(GR2769) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2769 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2769 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2769 gene encodes GR2769 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2769 precursor RNA folds spatially, forming GR2769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2769 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2769 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM6783 precursor RNA, GAM160481 precursor RNA, GAM258400 precursor RNA, GAM285397 precursor RNA and GAM304101 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6783 RNA, GAM160481 RNA, GAM258400 RNA, GAM285397 RNA and GAM304101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6783 target RNA into GAM6783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160481 target RNA into GAM160481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258400 target RNA into GAM258400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285397 target RNA into GAM285397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304101 target RNA into GAM304101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2769 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2769 gene: GAM6783 target protein, GAM160481 target protein, GAM258400 target protein, GAM285397 target protein and GAM304101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6783, GAM160481, GAM258400, GAM285397 and GAM304101

GR2770 BG611338 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2770(GR2770) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2770 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2770 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2770 gene encodes GR2770 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2770 precursor RNA folds spatially, forming GR2770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2770 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2770 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM60107 precursor RNA, GAM182204 precursor RNA and GAM306908 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60107 RNA, GAM182204 RNA and GAM306908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60107 target RNA into GAM60107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182204 target RNA into GAM182204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306908 target RNA into GAM306908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2770 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2770 gene: GAM60107 target protein, GAM182204 target protein and GAM306908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60107, GAM182204 and GAM306908

GR2771 BG469029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2771(GR2771) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2771 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2771 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2771 gene encodes GR2771 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2771 precursor RNA folds spatially, forming GR2771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2771 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2771 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM117 precursor RNA, GAM6396 precursor RNA, GAM95008 precursor RNA and GAM219424 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117 RNA, GAM6396 RNA, GAM95008 RNA and GAM219424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117 target RNA into GAM117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6396 target RNA into GAM6396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95008 target RNA into GAM95008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219424 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219424 target RNA into GAM219424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2771 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2771 gene: GAM117 target protein, GAM6396 target protein, GAM95008 target protein and GAM219424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117, GAM6396, GAM95008 and GAM219424

GR2772 AI097103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2772(GR2772) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2772 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2772 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2772 gene encodes GR2772 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2772 precursor RNA folds spatially, forming GR2772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2772 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2772 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM36781 precursor RNA, GAM66050 precursor RNA and GAM261420 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM36781 RNA, GAM66050 RNA and GAM261420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36781 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36781 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36781 target RNA into GAM36781 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66050 target RNA into GAM66050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261420 target RNA into GAM261420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2772 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2772 gene: GAM36781 target protein, GAM66050 target protein and GAM261420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36781, GAM66050 and GAM261420

GR2773 BE793013 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2773(GR2773) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2773 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2773 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2773 gene encodes GR2773 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2773 precursor RNA folds spatially, forming GR2773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2773 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2773 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1039 precursor RNA, GAM6141 precursor RNA and GAM6373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1039 RNA, GAM6141 RNA and GAM6373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1039 target RNA into GAM1039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6141 target RNA into GAM6141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6373 target RNA into GAM6373 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2773 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2773 gene: GAM1039 target protein, GAM6141 target protein and GAM6373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1039, GAM6141 and GAM6373

GR2774 AA436058 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2774(GR2774) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2774 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2774 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2774 gene encodes GR2774 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2774 precursor RNA folds spatially, forming GR2774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2774 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2774 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3203 precursor RNA and GAM235443 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3203 RNA and GAM235443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3203 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3203 target RNA into GAM3203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235443 target RNA into GAM235443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2774 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2774 gene: GAM3203 target protein and GAM235443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3203 and GAM235443

GR2775 AI026154 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2775(GR2775) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2775 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2775 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2775 gene encodes GR2775 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2775 precursor RNA folds spatially, forming GR2775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2775 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2775 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2775 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6070 precursor RNA and GAM296476 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6070 RNA and GAM296476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6070 target RNA into GAM6070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296476 target RNA into GAM296476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2775 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2775 gene: GAM6070 target protein and GAM296476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6070 and GAM296476

GR2776 BE263712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2776(GR2776) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2776 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2776 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2776 gene encodes GR2776 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2776 precursor RNA folds spatially, forming GR2776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2776 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2776 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM7074 precursor RNA, GAM11463 precursor RNA, GAM68631 precursor RNA, GAM186248 precursor RNA and GAM289941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7074 RNA, GAM11463 RNA, GAM68631 RNA, GAM186248 RNA and GAM289941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7074 target RNA into GAM7074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11463 target RNA into GAM11463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68631 target RNA into GAM68631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186248 target RNA into GAM186248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289941 target RNA into GAM289941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2776 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2776 gene: GAM7074 target protein, GAM11463 target protein, GAM68631 target protein, GAM186248 target protein and GAM289941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7074, GAM11463, GAM68631, GAM186248 and GAM289941

GR2777 BM806596 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2777(GR2777) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2777 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2777 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2777 gene encodes GR2777 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2777 precursor RNA folds spatially, forming GR2777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2777 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2777 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1953 precursor RNA and GAM23714 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1953 RNA and GAM23714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1953 target RNA into GAM1953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23714 target RNA into GAM23714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2777 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2777 gene: GAM1953 target protein and GAM23714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1953 and GAM23714

GR2778 BM998900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2778(GR2778) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2778 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2778 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2778 gene encodes GR2778 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2778 precursor RNA folds spatially, forming GR2778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2778 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2778 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM28193 precursor RNA, GAM256173 precursor RNA and GAM282070 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28193 RNA, GAM256173 RNA and GAM282070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM28193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28193 target RNA into GAM28193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256173 target RNA into GAM256173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282070

target RNA into GAM282070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2778 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2778 gene: GAM28193 target protein, GAM256173 target protein and GAM282070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28193, GAM256173 and GAM282070

GR2779 AV650552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2779(GR2779) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2779 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2779 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2779 gene encodes GR2779 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2779 precursor RNA folds spatially, forming GR2779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2779 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2779 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132539 precursor RNA and GAM231823 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132539 RNA and GAM231823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132539 target RNA into GAM132539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231823 target RNA into GAM231823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2779 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2779 gene: GAM132539 target protein and GAM231823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132539 and GAM231823

GR2780 BE543635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2780(GR2780) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2780 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2780 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2780 gene encodes GR2780 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2780 precursor RNA folds spatially, forming GR2780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2780 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2780 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2419 precursor RNA, GAM277314 precursor RNA and GAM283422 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2419 RNA, GAM277314 RNA and GAM283422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2419 target RNA into GAM2419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277314 target RNA into GAM277314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283422 target RNA into GAM283422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2780 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2780 gene: GAM2419 target protein, GAM277314 target protein and GAM283422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2419, GAM277314 and GAM283422

GR2781 AA835910 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2781(GR2781) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2781 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2781 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2781 gene encodes GR2781 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2781 precursor RNA folds spatially, forming GR2781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2781 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2781 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4967 precursor RNA, GAM177366 precursor RNA and GAM324127 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4967 RNA, GAM177366 RNA and GAM324127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4967 target RNA into GAM4967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177366 target RNA into GAM177366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324127 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324127 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324127 target RNA into GAM324127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2781 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2781 gene: GAM4967 target protein, GAM177366 target protein and GAM324127 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4967, GAM177366 and GAM324127

GR2782 AA421401 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2782(GR2782) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2782 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2782 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2782 gene encodes GR2782 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2782 precursor RNA folds spatially, forming GR2782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2782 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2782 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3150 precursor RNA and GAM284588 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3150 RNA and GAM284588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3150 target RNA into GAM3150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284588 target RNA into GAM284588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2782 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2782 gene: GAM3150 target protein and GAM284588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3150 and GAM284588

GR2783 AV731097 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2783(GR2783) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2783 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2783 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2783 gene encodes GR2783 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2783 precursor RNA folds spatially, forming GR2783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2783 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2783 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3184 precursor RNA, GAM181106 precursor RNA, GAM277400 precursor RNA and GAM308927 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3184 RNA, GAM181106 RNA, GAM277400 RNA and GAM308927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3184 target RNA into GAM3184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181106 target RNA into GAM181106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277400 target RNA into GAM277400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308927 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308927 target RNA into GAM308927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2783 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2783 gene: GAM3184 target protein, GAM181106 target protein, GAM277400 target protein and GAM308927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3184, GAM181106, GAM277400 and GAM308927

GR2784 BI869644 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2784(GR2784) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2784 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2784 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2784 gene encodes GR2784 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2784 precursor RNA folds spatially, forming GR2784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2784 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2784 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM20952 precursor RNA, GAM37822 precursor RNA and GAM311248 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM20952 RNA, GAM37822 RNA and GAM311248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20952 target RNA into GAM20952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37822 target RNA into GAM37822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311248 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311248 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311248 target RNA into GAM311248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2784 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2784 gene: GAM20952 target protein, GAM37822 target protein and GAM311248 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20952, GAM37822 and GAM311248

GR2785 BF815763 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2785(GR2785) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2785 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2785 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2785 gene encodes GR2785 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2785 precursor RNA folds spatially, forming GR2785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2785 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2785 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM168600 precursor RNA, GAM232324 precursor RNA and GAM310170 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM168600 RNA, GAM232324 RNA and GAM310170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM168600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168600 target RNA into GAM168600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232324 target RNA into GAM232324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310170 target RNA into GAM310170 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2785 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2785 gene: GAM168600 target protein, GAM232324 target protein and GAM310170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM168600, GAM232324 and GAM310170

GR2786 BF530721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2786(GR2786) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2786 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2786 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2786 gene encodes GR2786 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2786 precursor RNA folds spatially, forming GR2786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2786 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2786 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM463 precursor RNA and GAM307362 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM463 RNA and GAM307362 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM463 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM463 target RNA into GAM463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307362 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307362 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307362 target RNA into GAM307362 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2786 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2786 gene: GAM463 target protein and GAM307362 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM463 and GAM307362

GR2787 BG171562 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2787(GR2787) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2787 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2787 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2787 gene encodes GR2787 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2787 precursor RNA folds spatially, forming GR2787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2787 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2787 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2787 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2884 precursor RNA, GAM58476 precursor RNA, GAM157125 precursor RNA and GAM229748 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2884 RNA, GAM58476 RNA, GAM157125 RNA and GAM229748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2884 target RNA into GAM2884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58476 target RNA into GAM58476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157125 target RNA into GAM157125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229748 target RNA into GAM229748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2787 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2787 gene: GAM2884 target

protein, GAM58476 target protein, GAM157125 target protein and GAM229748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2884, GAM58476, GAM157125 and GAM229748

GR2788 BI549227 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2788(GR2788) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2788 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2788 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2788 gene encodes GR2788 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2788 precursor RNA folds spatially, forming GR2788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2788 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2788 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5111 precursor RNA, GAM100334 precursor RNA and GAM318464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5111 RNA, GAM100334 RNA and GAM318464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5111 target RNA into

GAM5111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100334 target RNA into GAM100334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318464 target RNA into GAM318464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2788 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2788 gene: GAM5111 target protein, GAM100334 target protein and GAM318464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5111, GAM100334 and GAM318464

GR2789 AI859465 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2789(GR2789) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2789 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2789 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2789 gene encodes GR2789 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2789 precursor RNA folds spatially, forming GR2789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2789 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2789 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3055 precursor RNA and GAM16341 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3055 RNA and GAM16341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3055 target RNA into GAM3055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16341 target RNA into GAM16341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2789 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2789 gene: GAM3055 target protein and GAM16341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3055 and GAM16341

GR2790 BF701212 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2790(GR2790) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2790 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2790 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2790 gene encodes GR2790 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2790 precursor RNA folds spatially, forming GR2790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2790 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2790 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6507 precursor RNA, GAM64436 precursor RNA and GAM172070 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6507 RNA, GAM64436 RNA and GAM172070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6507 target RNA into GAM6507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64436 target RNA into GAM64436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172070 target RNA into GAM172070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2790 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2790 gene: GAM6507 target protein, GAM64436 target protein and GAM172070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6507, GAM64436 and GAM172070

GR2791 AA291622 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2791(GR2791) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2791 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2791 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2791 gene encodes GR2791 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2791 precursor RNA folds spatially, forming GR2791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2791 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2791 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7384 precursor RNA and GAM114125 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7384 RNA and GAM114125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM7384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7384 target RNA into GAM7384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114125 target RNA into GAM114125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2791 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2791 gene: GAM7384 target protein and GAM114125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7384 and GAM114125

GR2792 BF672917 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2792(GR2792) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2792 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2792 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2792 gene encodes GR2792 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2792 precursor RNA folds spatially, forming GR2792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2792 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2792 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM35 precursor RNA and GAM286718 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM35 RNA and GAM286718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM35 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35 target RNA into GAM35 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286718 target RNA into GAM286718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2792 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2792 gene: GAM35 target protein and GAM286718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM35 and GAM286718

GR2793 BM455178 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2793(GR2793) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2793 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2793

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2793 gene encodes GR2793 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2793 precursor RNA folds spatially, forming GR2793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2793 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2793 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121582 precursor RNA and GAM218210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121582 RNA and GAM218210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121582 target RNA into GAM121582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218210 target RNA into GAM218210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2793 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2793 gene: GAM121582 target protein and GAM218210 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121582 and GAM218210

GR2794 AL702646 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2794(GR2794) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2794 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2794 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2794 gene encodes GR2794 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2794 precursor RNA folds spatially, forming GR2794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2794 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2794 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1589 precursor RNA and GAM70399 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1589 RNA and GAM70399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1589 target RNA into GAM1589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70399 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70399 target RNA into GAM70399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2794 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2794 gene: GAM1589 target protein and GAM70399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1589 and GAM70399

GR2795 BM992959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2795(GR2795) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2795 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2795 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2795 gene encodes GR2795 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2795 precursor RNA folds spatially, forming GR2795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2795 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2795 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3653 precursor RNA and GAM53057 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3653 RNA and GAM53057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3653 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3653 target RNA into GAM3653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53057 target RNA into GAM53057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2795 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2795 gene: GAM3653 target protein and GAM53057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3653 and GAM53057

GR2796 BF902833 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2796(GR2796) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2796 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2796 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2796 gene encodes GR2796 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2796 precursor RNA folds spatially, forming GR2796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2796 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2796 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7435 precursor RNA and GAM324669 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7435 RNA and GAM324669 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7435 target RNA into GAM7435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324669 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324669 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324669 target RNA into GAM324669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2796 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2796 gene: GAM7435 target protein and GAM324669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7435 and GAM324669

GR2797 BI457832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2797(GR2797) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2797 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2797 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2797 gene encodes GR2797 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2797 precursor RNA folds spatially, forming GR2797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2797 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2797 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM27664 precursor RNA and GAM64918 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27664 RNA and GAM64918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27664 target RNA into GAM27664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64918 target RNA into GAM64918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2797 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2797 gene: GAM27664 target protein and GAM64918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27664 and GAM64918

GR2798 AA743483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2798(GR2798) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2798 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2798 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2798 gene encodes GR2798 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2798 precursor RNA folds spatially, forming GR2798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2798 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2798 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5399 precursor RNA, GAM123157 precursor RNA and GAM327240 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5399 RNA, GAM123157 RNA and GAM327240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5399 target RNA into

GAM5399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123157 target RNA into GAM123157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327240 target RNA into GAM327240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2798 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2798 gene: GAM5399 target protein, GAM123157 target protein and GAM327240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5399, GAM123157 and GAM327240

GR2799 BG218818 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2799(GR2799) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2799 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2799 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2799 gene encodes GR2799 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2799 precursor RNA folds spatially, forming GR2799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2799 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2799 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53984 precursor RNA and GAM287646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53984 RNA and GAM287646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53984 target RNA into GAM53984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287646 target RNA into GAM287646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2799 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2799 gene: GAM53984 target protein and GAM287646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53984 and GAM287646

GR2800 AU157521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2800(GR2800) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2800 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2800 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2800 gene encodes GR2800 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2800 precursor RNA folds spatially, forming GR2800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2800 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2800 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM294560 precursor RNA and GAM320376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM294560 RNA and GAM320376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM294560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294560 target RNA into GAM294560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320376 target RNA into GAM320376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2800 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2800 gene: GAM294560 target

protein and GAM320376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM294560 and GAM320376

GR2801 BE539689 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2801(GR2801) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2801 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2801 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2801 gene encodes GR2801 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2801 precursor RNA folds spatially, forming GR2801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2801 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2801 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8348 precursor RNA, GAM195050 precursor RNA and GAM230541 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8348 RNA, GAM195050 RNA and GAM230541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8348 target RNA into GAM8348 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195050 target RNA into GAM195050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230541 target RNA into GAM230541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2801 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2801 gene: GAM8348 target protein, GAM195050 target protein and GAM230541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8348, GAM195050 and GAM230541

GR2802 BG036931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2802(GR2802) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2802 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2802 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2802 gene encodes GR2802 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2802 precursor RNA folds spatially, forming GR2802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2802 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2802 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19010 precursor RNA and GAM56266 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19010 RNA and GAM56266 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19010 target RNA into GAM19010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56266 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56266 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56266 target RNA into GAM56266 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2802 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2802 gene: GAM19010 target protein and GAM56266 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19010 and GAM56266

GR2803 AI934951 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2803(GR2803) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2803 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2803

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2803 gene encodes GR2803 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2803 precursor RNA folds spatially, forming GR2803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2803 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2803 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3498 precursor RNA and GAM200890 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3498 RNA and GAM200890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3498 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3498 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3498 target RNA into GAM3498 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200890 target RNA into GAM200890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2803 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2803 gene: GAM3498 target protein and GAM200890 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3498 and GAM200890

GR2804 AA525176 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2804(GR2804) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2804 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2804 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2804 gene encodes GR2804 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2804 precursor RNA folds spatially, forming GR2804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2804 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2804 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1473 precursor RNA and GAM269134 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1473 RNA and GAM269134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1473 target RNA into GAM1473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269134 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269134 target RNA into GAM269134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2804 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2804 gene: GAM1473 target protein and GAM269134 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1473 and GAM269134

GR2805 BE259432 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2805(GR2805) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2805 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2805 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2805 gene encodes GR2805 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2805 precursor RNA folds spatially, forming GR2805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2805 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2805 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM84934 precursor RNA, GAM100345 precursor RNA and GAM127070 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM84934 RNA, GAM100345 RNA and GAM127070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM84934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84934 target RNA into GAM84934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100345 target RNA into GAM100345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127070 target RNA into GAM127070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2805 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2805 gene: GAM84934 target protein, GAM100345 target protein and GAM127070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM84934, GAM100345 and GAM127070

GR2806 BM017203 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2806(GR2806) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2806 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2806 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2806 gene encodes GR2806 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2806 precursor RNA folds spatially, forming GR2806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2806 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2806 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34619 precursor RNA and GAM132885 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34619 RNA and GAM132885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34619 target RNA into GAM34619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132885 target RNA into GAM132885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2806 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2806 gene: GAM34619 target protein and GAM132885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34619 and GAM132885

GR2807 AI720408 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2807(GR2807) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2807 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2807 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2807 gene encodes GR2807 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2807 precursor RNA folds spatially, forming GR2807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2807 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2807 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM216582 precursor RNA and GAM241732 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM216582 RNA and GAM241732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM216582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216582 target RNA into GAM216582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM241732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241732 target RNA into GAM241732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2807 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2807 gene: GAM216582 target protein and GAM241732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM216582 and GAM241732

GR2808 BE379791 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2808(GR2808) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2808 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2808 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2808 gene encodes GR2808 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2808 precursor RNA folds spatially, forming GR2808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2808 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2808 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM91178 precursor RNA, GAM176011 precursor RNA and GAM278301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM91178 RNA, GAM176011 RNA and GAM278301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91178 target RNA into GAM91178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176011 target RNA into GAM176011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278301 target RNA into GAM278301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2808 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2808 gene: GAM91178 target protein, GAM176011 target protein and GAM278301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91178, GAM176011 and GAM278301

GR2809 BG433980 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2809(GR2809) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2809 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2809 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2809 gene encodes GR2809 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2809 precursor RNA folds spatially, forming GR2809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2809 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2809 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM100673 precursor RNA, GAM104948 precursor RNA and GAM320461 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100673 RNA, GAM104948 RNA and GAM320461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100673 target RNA into GAM100673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104948 target RNA into GAM104948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320461 target RNA into GAM320461 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2809 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2809 gene: GAM100673 target protein, GAM104948 target protein and GAM320461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100673, GAM104948 and GAM320461

GR2810 BF980037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2810(GR2810) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2810 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2810 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2810 gene encodes GR2810 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2810 precursor RNA folds spatially, forming GR2810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2810 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2810 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53142 precursor RNA and GAM223792 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53142 RNA and GAM223792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53142 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53142 target RNA into GAM53142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223792 target RNA into GAM223792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2810 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2810 gene: GAM53142 target protein and GAM223792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53142 and GAM223792

GR2811 BM012984 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2811(GR2811) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2811 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2811 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2811 gene encodes GR2811 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2811 precursor RNA folds spatially, forming GR2811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2811 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2811 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2811 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6736 precursor RNA and GAM152861 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6736 RNA and GAM152861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6736 target RNA into GAM6736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152861 target RNA into GAM152861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2811 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2811 gene: GAM6736 target protein and GAM152861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6736 and GAM152861

GR2812 BE219623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2812(GR2812) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2812 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2812 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2812 gene encodes GR2812 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2812 precursor RNA folds spatially, forming GR2812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2812 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2812 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM8450 precursor RNA, GAM69271 precursor RNA, GAM224478 precursor RNA and GAM229437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8450 RNA, GAM69271 RNA, GAM224478 RNA and GAM229437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8450 target RNA into GAM8450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69271 target RNA into GAM69271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224478 target RNA into GAM224478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229437 target RNA into GAM229437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2812 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2812 gene: GAM8450 target protein, GAM69271 target protein, GAM224478 target protein and GAM229437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8450, GAM69271, GAM224478 and GAM229437

GR2813 BF341360 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2813(GR2813) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2813 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2813 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2813 gene encodes GR2813 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2813 precursor RNA folds spatially, forming GR2813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2813 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2813 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4914 precursor RNA and GAM47152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4914 RNA and GAM47152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4914 target RNA into GAM4914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47152 target RNA into GAM47152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2813 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2813 gene: GAM4914 target protein and GAM47152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4914 and GAM47152

GR2814 BG480609 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2814(GR2814) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2814 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2814 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2814 gene encodes GR2814 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2814 precursor RNA folds spatially, forming GR2814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2814 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2814 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5411 precursor RNA and GAM28437 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5411 RNA and GAM28437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5411 target RNA into GAM5411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28437 target RNA into GAM28437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2814 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2814 gene: GAM5411 target protein and GAM28437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5411 and GAM28437

GR2815 BI667556 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2815(GR2815) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2815 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2815 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2815 gene encodes GR2815 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2815 precursor RNA folds spatially, forming GR2815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2815 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2815 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3480 precursor RNA, GAM6653 precursor RNA and GAM283503 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3480 RNA, GAM6653 RNA and GAM283503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3480 target RNA into GAM3480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6653 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6653 target RNA into GAM6653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283503 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283503 target RNA into GAM283503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2815 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2815 gene: GAM3480 target protein, GAM6653 target protein and GAM283503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3480, GAM6653 and GAM283503

GR2816 AA705720 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2816(GR2816) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2816 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2816 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2816 gene encodes GR2816 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2816 precursor RNA folds spatially, forming GR2816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2816 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2816 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM111611 precursor RNA, GAM196208 precursor RNA, GAM254008 precursor RNA and GAM321175 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111611 RNA, GAM196208 RNA, GAM254008 RNA and GAM321175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111611 target RNA into GAM111611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196208 target RNA into GAM196208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254008 target RNA into GAM254008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321175 target RNA into GAM321175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2816 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2816 gene: GAM111611 target protein, GAM196208 target protein, GAM254008 target protein and GAM321175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111611, GAM196208, GAM254008 and GAM321175

GR2817 AV716365 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2817(GR2817) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2817 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2817 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2817 gene encodes GR2817 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2817 precursor RNA folds spatially, forming GR2817 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2817 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2817 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2817 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2756 precursor RNA and GAM326903 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2756 RNA and GAM326903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2756 target RNA into GAM2756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326903

target RNA into GAM326903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2817 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2817 gene: GAM2756 target protein and GAM326903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2756 and GAM326903

GR2818 D20024 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2818(GR2818) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2818 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2818 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2818 gene encodes GR2818 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2818 precursor RNA folds spatially, forming GR2818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2818 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2818 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31906 precursor RNA and GAM203822 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31906 RNA and GAM203822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31906 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31906 target RNA into GAM31906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203822 target RNA into GAM203822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2818 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2818 gene: GAM31906 target protein and GAM203822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31906 and GAM203822

GR2819 AI538915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2819(GR2819) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2819 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2819 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2819 gene encodes GR2819 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2819 precursor RNA folds spatially, forming GR2819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2819 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2819 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2819 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6158 precursor RNA, GAM134630 precursor RNA and GAM336061 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6158 RNA, GAM134630 RNA and GAM336061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6158 target RNA into GAM6158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134630 target RNA into GAM134630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336061 target RNA into GAM336061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2819 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2819 gene: GAM6158 target protein, GAM134630 target protein and GAM336061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6158, GAM134630 and GAM336061

GR2820 BF974942 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2820(GR2820) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2820 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2820 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2820 gene encodes GR2820 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2820 precursor RNA folds spatially, forming GR2820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2820 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2820 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM49377 precursor RNA, GAM259839 precursor RNA and GAM277178 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49377 RNA, GAM259839 RNA and GAM277178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49377 target RNA into GAM49377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259839

target RNA into GAM259839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277178 target RNA into GAM277178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2820 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2820 gene: GAM49377 target protein, GAM259839 target protein and GAM277178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49377, GAM259839 and GAM277178

GR2821 BM975779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2821(GR2821) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2821 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2821 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2821 gene encodes GR2821 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2821 precursor RNA folds spatially, forming GR2821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2821 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2821 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55120 precursor RNA and GAM288617 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55120 RNA and GAM288617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55120 target RNA into GAM55120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288617 target RNA into GAM288617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2821 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2821 gene: GAM55120 target protein and GAM288617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55120 and GAM288617

GR2822 BG988070 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2822(GR2822) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2822 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2822 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2822 gene encodes GR2822 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2822 precursor RNA folds spatially, forming GR2822 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2822 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2822 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4044 precursor RNA, GAM70477 precursor RNA and GAM222580 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4044 RNA, GAM70477 RNA and GAM222580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4044 target RNA into GAM4044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70477 target RNA into GAM70477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222580 target RNA into GAM222580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2822 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2822 gene: GAM4044 target protein, GAM70477 target protein and GAM222580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4044, GAM70477 and GAM222580

GR2823 BG676866 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2823(GR2823) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2823 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2823 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2823 gene encodes GR2823 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2823 precursor RNA folds spatially, forming GR2823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2823 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2823 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM35863 precursor RNA and GAM296682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM35863 RNA and GAM296682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM35863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35863

target RNA into GAM35863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296682 target RNA into GAM296682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2823 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2823 gene: GAM35863 target protein and GAM296682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM35863 and GAM296682

GR2824 BG116392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2824(GR2824) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2824 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2824 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2824 gene encodes GR2824 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2824 precursor RNA folds spatially, forming GR2824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2824 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2824 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM37963 precursor RNA, GAM140610 precursor RNA and GAM301450 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM37963 RNA, GAM140610 RNA and GAM301450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM37963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37963 target RNA into GAM37963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140610 target RNA into GAM140610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301450 target RNA into GAM301450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2824 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2824 gene: GAM37963 target protein, GAM140610 target protein and GAM301450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM37963, GAM140610 and GAM301450

GR2825 AV700541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2825(GR2825) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2825 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2825 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2825 gene encodes GR2825 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2825 precursor RNA folds spatially, forming GR2825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2825 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2825 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1068 precursor RNA, GAM24750 precursor RNA and GAM123926 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1068 RNA, GAM24750 RNA and GAM123926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1068 target RNA into GAM1068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24750 target RNA into GAM24750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123926 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123926 target RNA into GAM123926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2825 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2825 gene: GAM1068 target protein, GAM24750 target protein and GAM123926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1068, GAM24750 and GAM123926

GR2826 BE712641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2826(GR2826) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2826 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2826 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2826 gene encodes GR2826 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2826 precursor RNA folds spatially, forming GR2826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2826 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2826 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1894 precursor RNA and GAM3149 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1894 RNA and GAM3149 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1894 target RNA into GAM1894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3149 target RNA into GAM3149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2826 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2826 gene: GAM1894 target protein and GAM3149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1894 and GAM3149

GR2827 W44406 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2827(GR2827) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2827 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2827 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2827 gene encodes GR2827 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2827 precursor RNA folds spatially, forming GR2827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2827 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2827 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM51126 precursor RNA and GAM52763 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51126 RNA and GAM52763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51126 target RNA into GAM51126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52763 target RNA into GAM52763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2827 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2827 gene: GAM51126 target protein and GAM52763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51126 and GAM52763

GR2828 BF770019 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2828(GR2828) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2828 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2828 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2828 gene encodes GR2828 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2828 precursor RNA folds spatially, forming GR2828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2828 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2828 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67312 precursor RNA and GAM267263 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67312 RNA and GAM267263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67312 target RNA into GAM67312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267263 target RNA into GAM267263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2828 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2828 gene: GAM67312 target

protein and GAM267263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67312 and GAM267263

GR2829 BG939837 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2829(GR2829) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2829 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2829 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2829 gene encodes GR2829 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2829 precursor RNA folds spatially, forming GR2829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2829 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2829 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171872 precursor RNA and GAM223538 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171872 RNA and GAM223538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171872 target RNA into GAM171872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223538 target RNA into GAM223538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2829 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2829 gene: GAM171872 target protein and GAM223538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171872 and GAM223538

GR2830 BF966063 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2830(GR2830) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2830 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2830 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2830 gene encodes GR2830 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2830 precursor RNA folds spatially, forming GR2830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2830 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2830 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1488 precursor RNA, GAM108105 precursor RNA, GAM266056 precursor RNA and GAM270235 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1488 RNA, GAM108105 RNA, GAM266056 RNA and GAM270235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1488 target RNA into GAM1488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108105 target RNA into GAM108105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266056 target RNA into GAM266056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270235 target RNA into GAM270235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2830 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2830 gene: GAM1488 target protein, GAM108105 target protein, GAM266056 target protein and GAM270235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1488, GAM108105, GAM266056 and GAM270235

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2831(GR2831) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2831 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2831 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2831 gene encodes GR2831 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2831 precursor RNA folds spatially, forming GR2831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2831 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2831 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM170558 precursor RNA and GAM215729 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170558 RNA and GAM215729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170558 target RNA into GAM170558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215729

target RNA into GAM215729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2831 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2831 gene: GAM170558 target protein and GAM215729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170558 and GAM215729

GR2832 AI568385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2832(GR2832) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2832 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2832 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2832 gene encodes GR2832 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2832 precursor RNA folds spatially, forming GR2832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2832 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2832 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM156390 precursor RNA and GAM166698 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM156390 RNA and GAM166698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM156390 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156390 target RNA into GAM156390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166698 target RNA into GAM166698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2832 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2832 gene: GAM156390 target protein and GAM166698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM156390 and GAM166698

GR2833 AW500201 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2833(GR2833) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2833 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2833 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2833 gene encodes GR2833 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2833 precursor RNA folds spatially, forming GR2833 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2833 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2833 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2833 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6504 precursor RNA and GAM185464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6504 RNA and GAM185464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6504 target RNA into GAM6504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185464 target RNA into GAM185464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2833 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2833 gene: GAM6504 target protein and GAM185464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6504 and GAM185464

GR2834 BE169054 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2834(GR2834) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2834 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2834 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2834 gene encodes GR2834 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2834 precursor RNA folds spatially, forming GR2834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2834 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2834 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7215 precursor RNA, GAM112439 precursor RNA and GAM325913 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7215 RNA, GAM112439 RNA and GAM325913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7215 target RNA into GAM7215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112439 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112439 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112439 target RNA into GAM112439 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325913 target RNA into GAM325913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2834 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2834 gene: GAM7215 target protein, GAM112439 target protein and GAM325913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7215, GAM112439 and GAM325913

GR2835 AA505579 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2835(GR2835) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2835 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2835 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2835 gene encodes GR2835 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2835 precursor RNA folds spatially, forming GR2835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2835 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2835 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM114871 precursor RNA and GAM178727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM114871 RNA and GAM178727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM114871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM114871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114871 target RNA into GAM114871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178727 target RNA into GAM178727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2835 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2835 gene: GAM114871 target protein and GAM178727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM114871 and GAM178727

GR2836 AA224430 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2836(GR2836) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2836 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2836 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2836 gene encodes GR2836 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2836 precursor RNA folds spatially, forming GR2836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2836 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2836 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM8011 precursor RNA and GAM313021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8011 RNA and GAM313021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8011 target RNA into GAM8011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313021 target RNA into GAM313021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2836 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2836 gene: GAM8011 target protein and GAM313021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8011 and GAM313021

GR2837 AA971447 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2837(GR2837) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2837 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2837 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2837 gene encodes GR2837 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2837 precursor RNA folds spatially, forming GR2837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2837 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2837 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2159 precursor RNA, GAM5719 precursor RNA and GAM7207 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2159 RNA, GAM5719 RNA and GAM7207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2159 target RNA into GAM2159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5719 target RNA into GAM5719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7207 target RNA into GAM7207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2837 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2837 gene: GAM2159 target protein, GAM5719 target protein and GAM7207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2159, GAM5719 and GAM7207

GR2838 BG622398 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2838(GR2838) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2838 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2838 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2838 gene encodes GR2838 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2838 precursor RNA folds spatially, forming GR2838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2838 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2838 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1166 precursor RNA and GAM47406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1166 RNA and GAM47406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1166 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1166 target RNA into GAM1166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47406 target RNA into GAM47406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2838 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2838 gene: GAM1166 target protein and GAM47406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1166 and GAM47406

GR2839 BI601237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2839(GR2839) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2839 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2839 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2839 gene encodes GR2839 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2839 precursor RNA folds spatially, forming GR2839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2839 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2839 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3755 precursor RNA, GAM49656 precursor RNA and

GAM102722 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3755 RNA, GAM49656 RNA and GAM102722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3755 target RNA into GAM3755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49656 target RNA into GAM49656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102722 target RNA into GAM102722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2839 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2839 gene: GAM3755 target protein, GAM49656 target protein and GAM102722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3755, GAM49656 and GAM102722

GR2840 BF036685 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2840(GR2840) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2840 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2840 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2840 gene encodes GR2840 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2840 precursor RNA folds spatially, forming GR2840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2840 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2840 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4829 precursor RNA, GAM130083 precursor RNA and GAM149800 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4829 RNA, GAM130083 RNA and GAM149800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4829 target RNA into GAM4829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130083 target RNA into GAM130083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149800 target RNA into GAM149800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2840 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2840 gene: GAM4829 target protein, GAM130083 target protein and GAM149800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4829, GAM130083 and GAM149800

GR2841 BF670271 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2841(GR2841) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2841 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2841 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2841 gene encodes GR2841 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2841 precursor RNA folds spatially, forming GR2841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2841 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2841 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM117460 precursor RNA and GAM325331 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117460 RNA and GAM325331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117460 target RNA into GAM117460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325331 target RNA into GAM325331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2841 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2841 gene: GAM117460 target protein and GAM325331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117460 and GAM325331

GR2842 AI991005 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2842(GR2842) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2842 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2842 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2842 gene encodes GR2842 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2842 precursor RNA folds spatially, forming GR2842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2842 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2842 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19353 precursor RNA and GAM257604 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19353 RNA and GAM257604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19353 target RNA into GAM19353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257604 target RNA into GAM257604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2842 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2842 gene: GAM19353 target protein and GAM257604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19353 and GAM257604

GR2843 BF092718 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2843(GR2843) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2843 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2843 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2843 gene encodes GR2843 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2843 precursor RNA folds spatially, forming GR2843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2843 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2843 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM186880 precursor RNA and GAM207503 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM186880 RNA and GAM207503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM186880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186880 target RNA into GAM186880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207503 target RNA into GAM207503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2843 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2843 gene: GAM186880 target protein and GAM207503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM186880 and GAM207503

GR2844 BI254966 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2844(GR2844) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2844 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2844 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2844 gene encodes GR2844 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2844 precursor RNA folds spatially, forming GR2844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2844 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2844 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM209235 precursor RNA and GAM271930 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM209235 RNA and GAM271930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM209235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209235 target RNA into GAM209235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271930 target RNA into GAM271930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2844 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2844 gene: GAM209235 target protein and GAM271930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM209235 and GAM271930

GR2845 BE536314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2845(GR2845) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2845 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2845 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2845 gene encodes GR2845 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2845 precursor RNA folds spatially, forming GR2845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2845 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2845 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129236 precursor RNA and GAM284394 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129236 RNA and GAM284394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129236 target RNA into GAM129236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284394 target RNA into GAM284394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2845 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2845 gene: GAM129236 target protein and GAM284394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129236 and GAM284394

GR2846 W69317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2846(GR2846) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2846 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2846 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2846 gene encodes GR2846 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2846 precursor RNA folds spatially, forming GR2846 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2846 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2846 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16116 precursor RNA and GAM154120 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16116 RNA and GAM154120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16116 target RNA into GAM16116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154120 target RNA into GAM154120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2846 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2846 gene: GAM16116 target protein and GAM154120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16116 and GAM154120

GR2847 BF335566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2847(GR2847) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2847 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2847 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2847 gene encodes GR2847 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2847 precursor RNA folds spatially, forming GR2847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2847 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2847 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46260 precursor RNA and GAM173344 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46260 RNA and GAM173344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46260 target RNA into GAM46260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173344 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173344 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173344 target RNA into GAM173344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2847 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2847 gene: GAM46260 target protein and GAM173344 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46260 and GAM173344

GR2848 BG474694 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2848(GR2848) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2848 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2848 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2848 gene encodes GR2848 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2848 precursor RNA folds spatially, forming GR2848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2848 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2848 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM961 precursor RNA and GAM103746 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM961 RNA and GAM103746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM961 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM961 target RNA into GAM961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103746 target RNA into GAM103746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2848 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2848 gene: GAM961 target protein and GAM103746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM961 and GAM103746

GR2849 BI458270 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2849(GR2849) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2849 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2849 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2849 gene encodes GR2849 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2849 precursor RNA folds spatially, forming GR2849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2849 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2849 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7024 precursor RNA and GAM316339 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7024 RNA and GAM316339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7024 target RNA into GAM7024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316339 target RNA into GAM316339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2849 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2849 gene: GAM7024 target protein and GAM316339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7024 and GAM316339

GR2850 BM006891 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2850(GR2850) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2850 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2850 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2850 gene encodes GR2850 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2850 precursor RNA folds spatially, forming GR2850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2850 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2850 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5748 precursor RNA, GAM6582 precursor RNA, GAM183722 precursor RNA and GAM201761 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5748 RNA, GAM6582 RNA, GAM183722 RNA and GAM201761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5748 target RNA into GAM5748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6582 target RNA into GAM6582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183722 target RNA into GAM183722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM201761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201761 target RNA into GAM201761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2850 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2850 gene: GAM5748 target protein, GAM6582 target protein, GAM183722 target protein and GAM201761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5748, GAM6582, GAM183722 and GAM201761

GR2851 AI146432 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2851(GR2851) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2851 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2851 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2851 gene encodes GR2851 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2851 precursor RNA folds spatially, forming GR2851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2851 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2851 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2234 precursor RNA and GAM18706 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2234 RNA and GAM18706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2234 target RNA into GAM2234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM18706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18706 target RNA into GAM18706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2851 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2851 gene: GAM2234 target protein and GAM18706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2234 and GAM18706

GR2852 BG489969 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2852(GR2852) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2852 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2852 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2852 gene encodes GR2852 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2852 precursor RNA folds spatially, forming GR2852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2852 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2852 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM81638 precursor RNA and GAM306407 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81638 RNA and GAM306407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81638 target RNA into GAM81638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306407 target RNA into GAM306407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2852 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2852 gene: GAM81638 target protein and GAM306407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM81638 and GAM306407

GR2853 AW955269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2853(GR2853) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2853 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2853 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2853 gene encodes GR2853 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2853 precursor RNA folds spatially, forming GR2853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2853 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2853 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4125 precursor RNA and GAM307412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4125 RNA and GAM307412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4125 target RNA into GAM4125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307412 target RNA into GAM307412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2853 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2853 gene: GAM4125 target protein and GAM307412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4125 and GAM307412

GR2854 BF665259 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2854(GR2854) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2854 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2854 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2854 gene encodes GR2854 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2854 precursor RNA folds spatially, forming GR2854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2854 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2854 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3444 precursor RNA, GAM4397 precursor RNA, GAM206405 precursor RNA and GAM238483 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3444 RNA, GAM4397 RNA, GAM206405 RNA and GAM238483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3444 target RNA into

GAM3444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4397 target RNA into GAM4397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206405 target RNA into GAM206405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238483 target RNA into GAM238483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2854 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2854 gene: GAM3444 target protein, GAM4397 target protein, GAM206405 target protein and GAM238483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3444, GAM4397, GAM206405 and GAM238483

GR2855 BE741747 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2855(GR2855) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2855 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2855 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2855 gene encodes GR2855 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2855 precursor RNA folds spatially, forming GR2855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2855 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2855 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50 precursor RNA and GAM58835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50 RNA and GAM58835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50 target RNA into GAM50 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58835 target RNA into GAM58835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2855 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2855 gene: GAM50 target protein and GAM58835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50 and GAM58835

GR2856 AA243088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2856(GR2856) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2856 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2856 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2856 gene encodes GR2856 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2856 precursor RNA folds spatially, forming GR2856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2856 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2856 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM147625 precursor RNA and GAM240165 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147625 RNA and GAM240165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147625 target RNA into GAM147625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240165 target RNA into GAM240165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2856 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2856 gene: GAM147625 target protein and GAM240165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147625 and GAM240165

GR2857 BE148708 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2857(GR2857) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2857 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2857 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2857 gene encodes GR2857 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2857 precursor RNA folds spatially, forming GR2857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2857 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2857 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105217 precursor RNA and GAM241718 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105217 RNA and GAM241718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105217 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105217 target RNA into GAM105217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241718 target RNA into GAM241718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2857 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2857 gene: GAM105217 target protein and GAM241718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105217 and GAM241718

GR2858 AW512842 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2858(GR2858) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2858 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2858 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2858 gene encodes GR2858 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2858 precursor RNA folds spatially, forming GR2858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2858 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2858 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5383 precursor RNA and GAM312964 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5383 RNA and GAM312964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5383 target RNA into GAM5383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312964 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312964 target RNA into GAM312964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2858 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2858 gene: GAM5383 target protein and GAM312964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5383 and GAM312964

GR2859 F28235 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2859(GR2859) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2859 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2859 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2859 gene encodes GR2859 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2859 precursor RNA folds spatially, forming GR2859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2859 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2859 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM419 precursor RNA and GAM298238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM419 RNA and GAM298238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM419 target RNA into GAM419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298238 target RNA into GAM298238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2859 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2859 gene: GAM419 target protein and GAM298238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM419 and GAM298238

GR2860 BF374501 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2860(GR2860) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2860 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2860 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2860 gene encodes GR2860 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2860 precursor RNA folds spatially, forming GR2860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2860 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2860 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1269 precursor RNA and GAM180307 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1269 RNA and GAM180307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1269 target RNA into GAM1269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180307 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180307 target RNA into GAM180307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2860 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2860 gene: GAM1269 target protein and GAM180307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1269 and GAM180307

GR2861 AL589278 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2861(GR2861) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2861 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2861 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2861 gene encodes GR2861 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2861 precursor RNA folds spatially, forming GR2861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2861 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2861 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7811 precursor RNA, GAM52251 precursor RNA and GAM57115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7811 RNA, GAM52251 RNA and GAM57115 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7811 target RNA into GAM7811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52251 target RNA into GAM52251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57115 target RNA into GAM57115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2861 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2861 gene: GAM7811 target protein, GAM52251 target protein and GAM57115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7811, GAM52251 and GAM57115

GR2862 BG615692 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2862(GR2862) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2862 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2862 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2862 gene encodes GR2862 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2862 precursor RNA folds spatially, forming GR2862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2862 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2862 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5045 precursor RNA and GAM89235 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5045 RNA and GAM89235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5045 target RNA into GAM5045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89235 target RNA into GAM89235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2862 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2862 gene: GAM5045 target protein and GAM89235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5045 and GAM89235

GR2863 BG336320 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2863(GR2863) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2863 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2863 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2863 gene encodes GR2863 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2863 precursor RNA folds spatially, forming GR2863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2863 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2863 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26747 precursor RNA and GAM256822 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26747 RNA and GAM256822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26747 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26747 target RNA into GAM26747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256822 target RNA into GAM256822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2863 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2863 gene: GAM26747 target protein and GAM256822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26747 and GAM256822

GR2864 AV743186 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2864(GR2864) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2864 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2864 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2864 gene encodes GR2864 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2864 precursor RNA folds spatially, forming GR2864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2864 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2864 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5588 precursor RNA and GAM123740 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5588 RNA and GAM123740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5588 target RNA into GAM5588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123740 target RNA into GAM123740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2864 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2864 gene: GAM5588 target protein and GAM123740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5588 and GAM123740

GR2865 AW411152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2865(GR2865) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2865 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2865 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2865 gene encodes GR2865 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2865 precursor RNA folds spatially, forming GR2865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2865 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2865 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3232 precursor RNA and GAM14135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3232 RNA and GAM14135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3232 target RNA into GAM3232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM14135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14135 target RNA into GAM14135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2865 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2865 gene: GAM3232 target protein and GAM14135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3232 and GAM14135

GR2866 BQ062565 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2866(GR2866) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2866 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2866 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2866 gene encodes GR2866 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2866 precursor RNA folds spatially, forming GR2866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2866 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2866 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21408 precursor RNA and GAM107218 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21408 RNA and GAM107218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21408 target RNA into GAM21408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107218 target RNA into GAM107218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2866 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2866 gene: GAM21408 target protein and GAM107218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21408 and GAM107218

GR2867 AA721529 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2867(GR2867) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2867 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2867 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2867 gene encodes GR2867 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2867 precursor RNA folds spatially, forming GR2867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2867 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2867 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM97523 precursor RNA and GAM123136 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97523 RNA and GAM123136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97523 target RNA into GAM97523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM123136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123136 target RNA into GAM123136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2867 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2867 gene: GAM97523 target protein and GAM123136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97523 and GAM123136

GR2868 BE394448 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2868(GR2868) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2868 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2868 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2868 gene encodes GR2868 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2868 precursor RNA folds spatially, forming GR2868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2868 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2868 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3587 precursor RNA and GAM52401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3587 RNA and GAM52401 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3587 target RNA into GAM3587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52401 target RNA into GAM52401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2868 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2868 gene: GAM3587 target protein and GAM52401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3587 and GAM52401

GR2869 BI006747 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2869(GR2869) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2869 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2869 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2869 gene encodes GR2869 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2869 precursor RNA folds spatially, forming GR2869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2869 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2869 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM448 precursor RNA and GAM252044 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM448 RNA and GAM252044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM448 target RNA into GAM448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252044 target RNA into GAM252044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2869 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2869 gene: GAM448 target protein and GAM252044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM448 and GAM252044

GR2870 BM664348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2870(GR2870) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2870 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2870 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2870 gene encodes GR2870 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2870 precursor RNA folds spatially, forming GR2870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2870 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2870 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM213864 precursor RNA and GAM297394 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM213864 RNA and GAM297394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM213864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213864 target RNA into GAM213864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297394 target RNA into GAM297394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2870 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2870 gene: GAM213864 target

protein and GAM297394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM213864 and GAM297394

GR2871 BG254129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2871(GR2871) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2871 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2871 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2871 gene encodes GR2871 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2871 precursor RNA folds spatially, forming GR2871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2871 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2871 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2478 precursor RNA and GAM30723 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2478 RNA and GAM30723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2478 target RNA into GAM2478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30723 target RNA into GAM30723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2871 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2871 gene: GAM2478 target protein and GAM30723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2478 and GAM30723

GR2872 AA658119 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2872(GR2872) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2872 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2872 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2872 gene encodes GR2872 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2872 precursor RNA folds spatially, forming GR2872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2872 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2872 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5994 precursor RNA and GAM6133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5994 RNA and GAM6133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5994 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5994 target RNA into GAM5994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6133 target RNA into GAM6133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2872 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2872 gene: GAM5994 target protein and GAM6133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5994 and GAM6133

GR2873 R66523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2873(GR2873) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2873 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2873 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2873 gene encodes GR2873 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2873 precursor RNA folds spatially, forming GR2873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2873 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2873 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM123 precursor RNA, GAM282623 precursor RNA and GAM299865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM123 RNA, GAM282623 RNA and GAM299865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123 target RNA into GAM123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282623 target RNA into GAM282623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299865 target RNA into GAM299865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2873 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2873 gene: GAM123 target protein, GAM282623 target protein and GAM299865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM123, GAM282623 and GAM299865

GR2874 BF207314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2874(GR2874) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2874 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2874 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2874 gene encodes GR2874 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2874 precursor RNA folds spatially, forming GR2874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2874 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2874 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 6 separate GAM precursor RNAs, GAM1972 precursor RNA, GAM91807 precursor RNA, GAM96491 precursor RNA, GAM113294 precursor RNA, GAM228016 precursor RNA and GAM243018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1972 RNA, GAM91807 RNA, GAM96491 RNA, GAM113294 RNA, GAM228016 RNA and GAM243018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1972 target RNA into GAM1972 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91807 target RNA into GAM91807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96491 target RNA into GAM96491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113294 target RNA into GAM113294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228016 target RNA into GAM228016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243018 target RNA into GAM243018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2874 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2874 gene: GAM1972 target protein, GAM91807 target protein, GAM96491 target protein, GAM113294 target protein, GAM228016 target protein and GAM243018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM1972, GAM91807, GAM96491, GAM113294, GAM228016 and GAM243018

GR2875 BF742570 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2875(GR2875) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2875 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2875 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2875 gene encodes GR2875 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2875 precursor RNA folds spatially, forming GR2875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2875 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2875 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1647 precursor RNA and GAM305339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1647 RNA and GAM305339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1647 target RNA into GAM1647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM305339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305339 target RNA into GAM305339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2875 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2875 gene: GAM1647 target protein and GAM305339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1647 and GAM305339

GR2876 BI461945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2876(GR2876) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2876 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2876 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2876 gene encodes GR2876 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2876 precursor RNA folds spatially, forming GR2876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2876 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2876 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82092 precursor RNA and GAM277672 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82092 RNA and GAM277672 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82092 target RNA into GAM82092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277672 target RNA into GAM277672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2876 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2876 gene: GAM82092 target protein and GAM277672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82092 and GAM277672

GR2877 BM042762 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2877(GR2877) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2877 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2877 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2877 gene encodes GR2877 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2877 precursor RNA folds spatially, forming GR2877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2877 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2877 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5735 precursor RNA and GAM166624 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5735 RNA and GAM166624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5735 target RNA into GAM5735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166624 target RNA into GAM166624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2877 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2877 gene: GAM5735 target protein and GAM166624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5735 and GAM166624

GR2878 AW105417 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2878(GR2878) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2878 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2878 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2878 gene encodes GR2878 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2878 precursor RNA folds spatially, forming GR2878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2878 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2878 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM62399 precursor RNA and GAM323187 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM62399 RNA and GAM323187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM62399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62399 target RNA into GAM62399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323187 target RNA into GAM323187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2878 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2878 gene: GAM62399 target

protein and GAM323187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM62399 and GAM323187

GR2879 BF677089 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2879(GR2879) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2879 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2879 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2879 gene encodes GR2879 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2879 precursor RNA folds spatially, forming GR2879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2879 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2879 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2081 precursor RNA, GAM7541 precursor RNA and GAM181845 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2081 RNA, GAM7541 RNA and GAM181845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2081 target RNA into GAM2081 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7541 target RNA into GAM7541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181845 target RNA into GAM181845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2879 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2879 gene: GAM2081 target protein, GAM7541 target protein and GAM181845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2081, GAM7541 and GAM181845

GR2880 BM693244 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2880(GR2880) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2880 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2880 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2880 gene encodes GR2880 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2880 precursor RNA folds spatially, forming GR2880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2880 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2880 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM168501 precursor RNA and GAM322726 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM168501 RNA and GAM322726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM168501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168501 target RNA into GAM168501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322726 target RNA into GAM322726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2880 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2880 gene: GAM168501 target protein and GAM322726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM168501 and GAM322726

GR2881 M77920 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2881(GR2881) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2881 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2881

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2881 gene encodes GR2881 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2881 precursor RNA folds spatially, forming GR2881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2881 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2881 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM254605 precursor RNA and GAM306056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM254605 RNA and GAM306056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM254605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254605 target RNA into GAM254605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306056 target RNA into GAM306056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2881 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2881 gene: GAM254605 target protein and GAM306056 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM254605 and GAM306056

GR2882 BF930574 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2882(GR2882) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2882 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2882 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2882 gene encodes GR2882 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2882 precursor RNA folds spatially, forming GR2882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2882 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2882 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95036 precursor RNA and GAM116522 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95036 RNA and GAM116522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95036 target RNA into GAM95036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116522 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116522 target RNA into GAM116522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2882 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2882 gene: GAM95036 target protein and GAM116522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95036 and GAM116522

GR2883 BI912855 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2883(GR2883) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2883 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2883 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2883 gene encodes GR2883 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2883 precursor RNA folds spatially, forming GR2883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2883 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2883 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM205394 precursor RNA, GAM214210 precursor RNA and GAM228805 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM205394 RNA, GAM214210 RNA and GAM228805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM205394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205394 target RNA into GAM205394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214210 target RNA into GAM214210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228805 target RNA into GAM228805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2883 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2883 gene: GAM205394 target protein, GAM214210 target protein and GAM228805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM205394, GAM214210 and GAM228805

GR2884 R75935 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2884(GR2884) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2884 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2884 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2884 gene encodes GR2884 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2884 precursor RNA folds spatially, forming GR2884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2884 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2884 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13871 precursor RNA and GAM318412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13871 RNA and GAM318412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13871 target RNA into GAM13871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318412 target RNA into GAM318412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2884 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2884 gene: GAM13871 target protein and GAM318412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13871 and GAM318412

GR2885 BI197189 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2885(GR2885) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2885 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2885 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2885 gene encodes GR2885 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2885 precursor RNA folds spatially, forming GR2885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2885 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2885 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63288 precursor RNA, GAM148852 precursor RNA and GAM229905 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63288 RNA, GAM148852 RNA and GAM229905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63288 target RNA into GAM63288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148852 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148852 target RNA into GAM148852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229905 target RNA into GAM229905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2885 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2885 gene: GAM63288 target protein, GAM148852 target protein and GAM229905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63288, GAM148852 and GAM229905

GR2886 R25559 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2886(GR2886) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2886 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2886 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2886 gene encodes GR2886 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2886 precursor RNA folds spatially, forming GR2886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2886 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2886 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2912 precursor RNA, GAM7013 precursor RNA and GAM251008 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2912 RNA, GAM7013 RNA and GAM251008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2912 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2912 target RNA into GAM2912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7013 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7013 target RNA into GAM7013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251008 target RNA into GAM251008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2886 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2886 gene: GAM2912 target protein, GAM7013 target protein and GAM251008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2912, GAM7013 and GAM251008

GR2887 AA011443 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2887(GR2887) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2887 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2887 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2887 gene encodes GR2887 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2887 precursor RNA folds spatially, forming GR2887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2887 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2887 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55162 precursor RNA and GAM197904 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55162 RNA and GAM197904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55162 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55162 target RNA into GAM55162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197904 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197904

target RNA into GAM197904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2887 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2887 gene: GAM55162 target protein and GAM197904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55162 and GAM197904

GR2888 W90121 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2888(GR2888) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2888 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2888 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2888 gene encodes GR2888 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2888 precursor RNA folds spatially, forming GR2888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2888 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2888 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM161464 precursor RNA and GAM215673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM161464 RNA and GAM215673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM161464 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161464 target RNA into GAM161464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215673 target RNA into GAM215673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2888 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2888 gene: GAM161464 target protein and GAM215673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM161464 and GAM215673

GR2889 BM547778 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2889(GR2889) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2889 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2889 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2889 gene encodes GR2889 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2889 precursor RNA folds spatially, forming GR2889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2889 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2889 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2889 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63944 precursor RNA, GAM97158 precursor RNA and GAM125720 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63944 RNA, GAM97158 RNA and GAM125720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63944 target RNA into GAM63944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97158 target RNA into GAM97158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125720 target RNA into GAM125720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2889 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2889 gene: GAM63944 target protein, GAM97158 target protein and GAM125720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63944, GAM97158 and GAM125720

GR2890 T73363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2890(GR2890) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2890 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2890 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2890 gene encodes GR2890 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2890 precursor RNA folds spatially, forming GR2890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2890 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2890 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM123440 precursor RNA and GAM224380 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM123440 RNA and GAM224380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM123440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123440 target RNA into GAM123440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224380 target RNA into GAM224380 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2890 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2890 gene: GAM123440 target protein and GAM224380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM123440 and GAM224380

GR2891 AA331777 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2891(GR2891) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2891 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2891 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2891 gene encodes GR2891 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2891 precursor RNA folds spatially, forming GR2891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2891 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2891 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46691 precursor RNA and GAM308791 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46691 RNA and GAM308791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM46691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46691 target RNA into GAM46691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308791 target RNA into GAM308791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2891 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2891 gene: GAM46691 target protein and GAM308791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46691 and GAM308791

GR2892 R88158 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2892(GR2892) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2892 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2892 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2892 gene encodes GR2892 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2892 precursor RNA folds spatially, forming GR2892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2892 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2892 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM4390 precursor RNA and GAM13900 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4390 RNA and GAM13900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4390 target RNA into GAM4390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13900 target RNA into GAM13900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2892 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2892 gene: GAM4390 target protein and GAM13900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4390 and GAM13900

GR2893 BF845869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2893(GR2893) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2893 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2893 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2893 gene encodes GR2893 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2893 precursor RNA folds spatially, forming GR2893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2893 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2893 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5414 precursor RNA, GAM51963 precursor RNA and GAM262179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5414 RNA, GAM51963 RNA and GAM262179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5414 target RNA into GAM5414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM51963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51963 target RNA into GAM51963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262179 target RNA into GAM262179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2893 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2893 gene: GAM5414 target protein, GAM51963 target protein and GAM262179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5414, GAM51963 and GAM262179

GR2894 H75701 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2894(GR2894) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2894 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2894 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2894 gene encodes GR2894 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2894 precursor RNA folds spatially, forming GR2894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2894 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2894 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM73648 precursor RNA, GAM88700 precursor RNA and GAM151590 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73648 RNA, GAM88700 RNA and GAM151590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM73648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73648 target RNA into GAM73648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88700 target RNA into GAM88700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151590 target RNA into GAM151590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2894 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2894 gene: GAM73648 target protein, GAM88700 target protein and GAM151590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73648, GAM88700 and GAM151590

GR2895 BI821555 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2895(GR2895) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2895 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2895 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2895 gene encodes GR2895 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2895 precursor RNA folds spatially, forming GR2895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2895 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2895 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM126580 precursor RNA and GAM326681 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126580 RNA and GAM326681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126580 target RNA into GAM126580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326681 target RNA into GAM326681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2895 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2895 gene: GAM126580 target protein and GAM326681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126580 and GAM326681

GR2896 AW452024 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2896(GR2896) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2896 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2896 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2896 gene encodes GR2896 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2896 precursor RNA folds spatially, forming GR2896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2896 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2896 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60366 precursor RNA and GAM230570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60366 RNA and GAM230570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60366 target RNA into GAM60366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230570 target RNA into GAM230570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2896 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2896 gene: GAM60366 target protein and GAM230570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60366 and GAM230570

GR2897 AI913322 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2897(GR2897) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2897 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2897 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2897 gene encodes GR2897 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2897 precursor RNA folds spatially, forming GR2897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2897 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2897 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM128800 precursor RNA, GAM209649 precursor RNA and GAM219605 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128800 RNA, GAM209649 RNA and GAM219605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128800 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128800 target RNA into GAM128800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209649 target RNA into GAM209649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219605 target RNA into GAM219605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2897 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2897 gene: GAM128800 target protein, GAM209649 target protein and GAM219605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128800, GAM209649 and GAM219605

GR2898 AW152386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2898(GR2898) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2898 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2898 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2898 gene encodes GR2898 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2898 precursor RNA folds spatially, forming GR2898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2898 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2898 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7514 precursor RNA and GAM111407 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7514 RNA and GAM111407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7514 target RNA into GAM7514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111407 target RNA into GAM111407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2898 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2898 gene: GAM7514 target protein and GAM111407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7514 and GAM111407

GR2899 BG110784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2899(GR2899) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2899 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2899 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2899 gene encodes GR2899 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2899 precursor RNA folds spatially, forming GR2899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2899 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2899 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM343 precursor RNA, GAM7983 precursor RNA and GAM105692 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM343 RNA, GAM7983 RNA and GAM105692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM343 target RNA into GAM343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7983 target RNA into GAM7983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105692 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105692 target RNA into GAM105692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2899 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2899 gene: GAM343 target protein, GAM7983 target protein and GAM105692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM343, GAM7983 and GAM105692

GR2900 BF868954 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2900(GR2900) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2900 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2900 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2900 gene encodes GR2900 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2900 precursor RNA folds spatially, forming GR2900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2900 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2900 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4111 precursor RNA and GAM89654 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4111 RNA and GAM89654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4111 target RNA into GAM4111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89654 target RNA into GAM89654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2900 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2900 gene: GAM4111 target protein and GAM89654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4111 and GAM89654

GR2901 BF950136 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2901(GR2901) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2901 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2901 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2901 gene encodes GR2901 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2901 precursor RNA folds spatially, forming GR2901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2901 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2901 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM14141 precursor RNA, GAM22603 precursor RNA and GAM142424 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14141 RNA, GAM22603 RNA and GAM142424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14141 target RNA into GAM14141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22603 target RNA into GAM22603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142424 target RNA into GAM142424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2901 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2901 gene: GAM14141 target protein, GAM22603 target protein and GAM142424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14141, GAM22603 and GAM142424

GR2902 BM050664 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2902(GR2902) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2902 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2902 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2902 gene encodes GR2902 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2902 precursor RNA folds spatially, forming GR2902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2902 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2902 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM90081 precursor RNA, GAM99623 precursor RNA, GAM272253 precursor RNA and GAM308894 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90081 RNA, GAM99623 RNA, GAM272253 RNA and GAM308894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90081 target RNA into GAM90081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99623 target RNA into GAM99623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272253 target RNA into GAM272253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308894 target RNA into GAM308894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2902 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2902 gene: GAM90081 target protein, GAM99623 target protein, GAM272253 target protein and GAM308894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90081, GAM99623, GAM272253 and GAM308894

GR2903 AV690595 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2903(GR2903) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2903 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2903 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2903 gene encodes GR2903 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2903 precursor RNA folds spatially, forming GR2903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2903 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2903 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM18372 precursor RNA, GAM119106 precursor RNA, GAM258588 precursor RNA and GAM271642 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18372 RNA, GAM119106 RNA, GAM258588 RNA and GAM271642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18372 target RNA into GAM18372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119106 target RNA into GAM119106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258588 target RNA into GAM258588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271642 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271642 target RNA into GAM271642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2903 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2903 gene: GAM18372 target protein, GAM119106 target protein, GAM258588 target protein and GAM271642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18372, GAM119106, GAM258588 and GAM271642

GR2904 BF216611 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2904(GR2904) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2904 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2904 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2904 gene encodes GR2904 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2904 precursor RNA folds spatially, forming GR2904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2904 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2904 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3002 precursor RNA, GAM92551 precursor RNA and GAM273059 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3002 RNA, GAM92551 RNA and GAM273059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3002 target RNA into GAM3002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92551 target RNA into GAM92551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273059 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273059 target RNA into GAM273059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2904 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2904 gene: GAM3002 target protein, GAM92551 target protein and GAM273059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3002, GAM92551 and GAM273059

GR2905 BQ010809 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2905(GR2905) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2905 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2905 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2905 gene encodes GR2905 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2905 precursor RNA folds spatially, forming GR2905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2905 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2905 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM889 precursor RNA and GAM6223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM889 RNA and GAM6223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM889 target RNA into GAM889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6223 target RNA into GAM6223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2905 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2905 gene: GAM889 target protein and GAM6223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM889 and GAM6223

GR2906 BI827748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2906(GR2906) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2906 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2906 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2906 gene encodes GR2906 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2906 precursor RNA folds spatially, forming GR2906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2906 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2906 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8384 precursor RNA, GAM60434 precursor RNA and GAM264326 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8384 RNA, GAM60434 RNA and GAM264326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8384 target RNA into GAM8384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM60434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60434 target RNA into GAM60434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264326 target RNA into GAM264326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2906 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2906 gene: GAM8384 target protein, GAM60434 target protein and GAM264326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8384, GAM60434 and GAM264326

GR2907 AV763188 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2907(GR2907) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2907 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2907 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2907 gene encodes GR2907 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2907 precursor RNA folds spatially, forming GR2907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2907 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2907 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2907 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM31799 precursor RNA, GAM133103 precursor RNA and GAM194142 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31799 RNA, GAM133103 RNA and GAM194142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31799 target RNA into GAM31799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133103 target RNA into GAM133103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194142 target RNA into GAM194142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2907 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2907 gene: GAM31799 target protein, GAM133103 target protein and GAM194142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31799, GAM133103 and GAM194142

GR2908 AL048544 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2908(GR2908) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2908 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2908 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2908 gene encodes GR2908 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2908 precursor RNA folds spatially, forming GR2908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2908 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2908 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM270574 precursor RNA and GAM272471 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM270574 RNA and GAM272471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM270574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270574 target RNA into GAM270574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272471 target RNA into GAM272471 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2908 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2908 gene: GAM270574 target protein and GAM272471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM270574 and GAM272471

GR2909 BE408151 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2909(GR2909) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2909 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2909 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2909 gene encodes GR2909 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2909 precursor RNA folds spatially, forming GR2909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2909 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2909 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6828 precursor RNA and GAM294469 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6828 RNA and GAM294469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM6828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6828 target RNA into GAM6828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294469 target RNA into GAM294469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2909 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2909 gene: GAM6828 target protein and GAM294469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6828 and GAM294469

GR2910 BG282313 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2910(GR2910) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2910 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2910 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2910 gene encodes GR2910 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2910 precursor RNA folds spatially, forming GR2910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2910 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2910 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM4097 precursor RNA, GAM107192 precursor RNA and GAM206194 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4097 RNA, GAM107192 RNA and GAM206194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4097 target RNA into GAM4097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107192 target RNA into GAM107192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206194 target RNA into GAM206194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2910 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2910 gene: GAM4097 target protein, GAM107192 target protein and GAM206194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4097, GAM107192 and GAM206194

GR2911 AW984140 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2911(GR2911) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2911 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2911 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2911 gene encodes GR2911 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2911 precursor RNA folds spatially, forming GR2911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2911 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2911 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM203334 precursor RNA and GAM210098 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM203334 RNA and GAM210098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM203334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203334 target RNA into GAM203334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210098 target RNA into GAM210098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2911 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2911 gene: GAM203334 target protein and GAM210098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM203334 and GAM210098

GR2912 BF315304 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2912(GR2912) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2912 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2912 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2912 gene encodes GR2912 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2912 precursor RNA folds spatially, forming GR2912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2912 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2912 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7727 precursor RNA, GAM95501 precursor RNA and GAM273627 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7727 RNA, GAM95501 RNA and GAM273627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7727 target RNA into GAM7727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95501 target RNA into GAM95501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273627 target RNA into GAM273627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2912 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2912 gene: GAM7727 target protein, GAM95501 target protein and GAM273627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7727, GAM95501 and GAM273627

GR2913 BM966745 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2913(GR2913) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2913 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2913 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2913 gene encodes GR2913 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2913 precursor RNA folds spatially, forming GR2913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2913 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2913 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1323 precursor RNA, GAM3711 precursor RNA and GAM245176 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1323 RNA, GAM3711 RNA and GAM245176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1323 target RNA into GAM1323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3711 target RNA into GAM3711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245176 target RNA into GAM245176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2913 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2913 gene: GAM1323 target

protein, GAM3711 target protein and GAM245176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1323, GAM3711 and GAM245176

GR2914 AA805508 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2914(GR2914) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2914 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2914 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2914 gene encodes GR2914 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2914 precursor RNA folds spatially, forming GR2914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2914 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2914 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM226 precursor RNA, GAM4229 precursor RNA and GAM7682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM226 RNA, GAM4229 RNA and GAM7682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226 target RNA into

GAM226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4229 target RNA into GAM4229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7682 target RNA into GAM7682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2914 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2914 gene: GAM226 target protein, GAM4229 target protein and GAM7682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM226, GAM4229 and GAM7682

GR2915 AA478008 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2915(GR2915) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2915 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2915 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2915 gene encodes GR2915 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2915 precursor RNA folds spatially, forming GR2915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2915 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2915 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM285885 precursor RNA and GAM316480 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM285885 RNA and GAM316480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM285885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285885 target RNA into GAM285885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316480 target RNA into GAM316480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2915 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2915 gene: GAM285885 target protein and GAM316480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM285885 and GAM316480

GR2916 AW301202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2916(GR2916) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2916 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR2916 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2916 gene encodes GR2916 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2916 precursor RNA folds spatially, forming GR2916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2916 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2916 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110857 precursor RNA and GAM156667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110857 RNA and GAM156667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110857 target RNA into GAM110857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156667 target RNA into GAM156667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2916 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2916 gene: GAM110857 target

protein and GAM156667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110857 and GAM156667

GR2917 BE732409 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2917(GR2917) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2917 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2917 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2917 gene encodes GR2917 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2917 precursor RNA folds spatially, forming GR2917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2917 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2917 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7711 precursor RNA, GAM158255 precursor RNA and GAM231227 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7711 RNA, GAM158255 RNA and GAM231227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7711 target RNA into GAM7711 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158255 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158255 target RNA into GAM158255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231227 target RNA into GAM231227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2917 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2917 gene: GAM7711 target protein, GAM158255 target protein and GAM231227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7711, GAM158255 and GAM231227

GR2918 BG911399 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2918(GR2918) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2918 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2918 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2918 gene encodes GR2918 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2918 precursor RNA folds spatially, forming GR2918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2918 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2918 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158643 precursor RNA and GAM286243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158643 RNA and GAM286243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158643 target RNA into GAM158643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286243 target RNA into GAM286243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2918 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2918 gene: GAM158643 target protein and GAM286243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158643 and GAM286243

GR2919 BE278817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2919(GR2919) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2919 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2919

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2919 gene encodes GR2919 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2919 precursor RNA folds spatially, forming GR2919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2919 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2919 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55269 precursor RNA, GAM97390 precursor RNA and GAM217744 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55269 RNA, GAM97390 RNA and GAM217744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55269 target RNA into GAM55269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97390 target RNA into GAM97390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217744 target RNA into GAM217744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2919 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2919 gene: GAM55269 target protein, GAM97390 target protein and GAM217744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55269, GAM97390 and GAM217744

GR2920 R19425 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2920(GR2920) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2920 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2920 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2920 gene encodes GR2920 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2920 precursor RNA folds spatially, forming GR2920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2920 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2920 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM234710 precursor RNA and GAM268780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM234710 RNA and GAM268780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM234710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234710 target RNA into GAM234710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268780 target RNA into GAM268780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2920 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2920 gene: GAM234710 target protein and GAM268780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM234710 and GAM268780

GR2921 BF681438 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2921(GR2921) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2921 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2921 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2921 gene encodes GR2921 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2921 precursor RNA folds spatially, forming GR2921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2921 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2921 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2706 precursor RNA, GAM80466 precursor RNA, GAM185854 precursor RNA and GAM275466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2706 RNA, GAM80466 RNA, GAM185854 RNA and GAM275466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2706 target RNA into GAM2706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80466 target RNA into GAM80466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185854 target RNA into GAM185854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275466 target RNA into GAM275466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2921 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2921 gene: GAM2706 target protein, GAM80466 target protein, GAM185854 target protein and GAM275466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2706, GAM80466, GAM185854 and GAM275466

GR2922 BG199595 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2922(GR2922) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2922 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2922 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2922 gene encodes GR2922 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2922 precursor RNA folds spatially, forming GR2922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2922 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2922 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1359 precursor RNA and GAM152836 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1359 RNA and GAM152836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1359 target RNA into GAM1359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152836 target RNA into GAM152836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2922 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2922 gene: GAM1359 target protein and GAM152836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1359 and GAM152836

GR2923 BF185724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2923(GR2923) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2923 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2923 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2923 gene encodes GR2923 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2923 precursor RNA folds spatially, forming GR2923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2923 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2923 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM167705 precursor RNA, GAM172565 precursor RNA, GAM242887 precursor RNA and GAM306696 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM167705 RNA, GAM172565 RNA, GAM242887 RNA and GAM306696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM167705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167705 target RNA into GAM167705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172565 target RNA into GAM172565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242887 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242887 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242887 target RNA into GAM242887 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306696 target RNA into GAM306696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2923 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2923 gene: GAM167705 target protein, GAM172565 target protein, GAM242887 target protein and GAM306696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM167705, GAM172565, GAM242887 and GAM306696

GR2924 AI344044 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2924(GR2924) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2924 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2924 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2924 gene encodes GR2924 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2924 precursor RNA folds spatially, forming GR2924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2924 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2924 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82825 precursor RNA and GAM335728 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82825 RNA and GAM335728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82825 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82825 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82825 target RNA into GAM82825 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335728 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335728 target RNA into GAM335728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2924 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2924 gene: GAM82825 target protein and GAM335728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82825 and GAM335728

GR2925 AI672467 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2925(GR2925) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2925 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2925 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2925 gene encodes GR2925 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2925 precursor RNA folds spatially, forming GR2925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2925 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2925 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2474 precursor RNA and GAM247597 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2474 RNA and GAM247597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM2474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2474 target RNA into GAM2474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247597 target RNA into GAM247597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2925 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2925 gene: GAM2474 target protein and GAM247597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2474 and GAM247597

GR2926 BE879870 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2926(GR2926) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2926 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2926 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2926 gene encodes GR2926 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2926 precursor RNA folds spatially, forming GR2926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2926 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2926 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87 precursor RNA and GAM279371 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87 RNA and GAM279371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87 target RNA into GAM87 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279371 target RNA into GAM279371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2926 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2926 gene: GAM87 target protein and GAM279371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87 and GAM279371

GR2927 AW376950 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2927(GR2927) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2927 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2927

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2927 gene encodes GR2927 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2927 precursor RNA folds spatially, forming GR2927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2927 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2927 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6090 precursor RNA and GAM22329 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6090 RNA and GAM22329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6090 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6090 target RNA into GAM6090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22329 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22329 target RNA into GAM22329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2927 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2927 gene: GAM6090 target protein and GAM22329 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6090 and GAM22329

GR2928 AI683009 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2928(GR2928) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2928 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2928 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2928 gene encodes GR2928 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2928 precursor RNA folds spatially, forming GR2928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2928 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2928 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82960 precursor RNA and GAM314381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82960 RNA and GAM314381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82960 target RNA into GAM82960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314381 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314381 target RNA into GAM314381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2928 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2928 gene: GAM82960 target protein and GAM314381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82960 and GAM314381

GR2929 BG775105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2929(GR2929) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2929 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2929 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2929 gene encodes GR2929 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2929 precursor RNA folds spatially, forming GR2929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2929 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2929 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3380 precursor RNA and GAM218754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3380 RNA and GAM218754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3380 target RNA into GAM3380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218754 target RNA into GAM218754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2929 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2929 gene: GAM3380 target protein and GAM218754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3380 and GAM218754

GR2930 AW809299 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2930(GR2930) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2930 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2930 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2930 gene encodes GR2930 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2930 precursor RNA folds spatially, forming GR2930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2930 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2930 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4588 precursor RNA, GAM135758 precursor RNA and GAM150701 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4588 RNA, GAM135758 RNA and GAM150701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4588 target RNA into GAM4588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135758 target RNA into GAM135758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150701 target RNA into GAM150701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2930 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2930 gene: GAM4588 target protein, GAM135758 target protein and GAM150701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM4588, GAM135758 and GAM150701

GR2931 BM848081 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2931(GR2931) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2931 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2931 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2931 gene encodes GR2931 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2931 precursor RNA folds spatially, forming GR2931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2931 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2931 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM23501 precursor RNA, GAM152470 precursor RNA and GAM270102 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23501 RNA, GAM152470 RNA and GAM270102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23501 target RNA into GAM23501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152470 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152470 target RNA into GAM152470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270102 target RNA into GAM270102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2931 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2931 gene: GAM23501 target protein, GAM152470 target protein and GAM270102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23501, GAM152470 and GAM270102

GR2932 BF888478 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2932(GR2932) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2932 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2932 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2932 gene encodes GR2932 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2932 precursor RNA folds spatially, forming GR2932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2932 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2932 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3156 precursor RNA and GAM128258 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3156 RNA and GAM128258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3156 target RNA into GAM3156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128258 target RNA into GAM128258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2932 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2932 gene: GAM3156 target protein and GAM128258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3156 and GAM128258

GR2933 BG427905 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2933(GR2933) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2933 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2933 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2933 gene encodes GR2933 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2933 precursor RNA folds spatially, forming GR2933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2933 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2933 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4758 precursor RNA and GAM283417 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4758 RNA and GAM283417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4758 target RNA into GAM4758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283417 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283417 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283417 target RNA into GAM283417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2933 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2933 gene: GAM4758 target protein and GAM283417 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM4758 and GAM283417

GR2934 AA364527 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2934(GR2934) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2934 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2934 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2934 gene encodes GR2934 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2934 precursor RNA folds spatially, forming GR2934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2934 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2934 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM186026 precursor RNA and GAM203156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM186026 RNA and GAM203156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM186026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186026 target RNA into GAM186026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203156 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203156 target RNA into GAM203156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2934 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2934 gene: GAM186026 target protein and GAM203156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM186026 and GAM203156

GR2935 AU142674 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2935(GR2935) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2935 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2935 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2935 gene encodes GR2935 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2935 precursor RNA folds spatially, forming GR2935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2935 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2935 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM52096 precursor RNA and GAM109727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM52096 RNA and GAM109727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM52096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52096 target RNA into GAM52096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109727 target RNA into GAM109727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2935 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2935 gene: GAM52096 target protein and GAM109727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM52096 and GAM109727

GR2936 AL712469 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2936(GR2936) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2936 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2936 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2936 gene encodes GR2936 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2936 precursor RNA folds spatially, forming GR2936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2936 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2936 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR2936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM108685 precursor RNA and GAM299867 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108685 RNA and GAM299867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108685 target RNA into GAM108685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299867 target RNA into GAM299867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2936 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2936 gene: GAM108685 target protein and GAM299867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108685 and GAM299867

GR2937 BE271537 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2937(GR2937) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2937 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2937

gene was detected is described hereinabove with reference to Figs. 8-18.

GR2937 gene encodes GR2937 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2937 precursor RNA folds spatially, forming GR2937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2937 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2937 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6362 precursor RNA and GAM81488 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6362 RNA and GAM81488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6362 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6362 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6362 target RNA into GAM6362 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM81488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81488 target RNA into GAM81488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2937 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2937 gene: GAM6362 target protein and GAM81488 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6362 and GAM81488

GR2938 BM172443 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2938(GR2938) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2938 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2938 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2938 gene encodes GR2938 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2938 precursor RNA folds spatially, forming GR2938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2938 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2938 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM224648 precursor RNA and GAM227563 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM224648 RNA and GAM227563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM224648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224648 target RNA into GAM224648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227563 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227563 target RNA into GAM227563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2938 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2938 gene: GAM224648 target protein and GAM227563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM224648 and GAM227563

GR2939 AV764215 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2939(GR2939) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2939 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2939 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2939 gene encodes GR2939 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2939 precursor RNA folds spatially, forming GR2939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2939 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2939 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8414 precursor RNA and GAM273812 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM8414 RNA and GAM273812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8414 target RNA into GAM8414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273812 target RNA into GAM273812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2939 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2939 gene: GAM8414 target protein and GAM273812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8414 and GAM273812

GR2940 AW771423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2940(GR2940) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2940 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2940 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2940 gene encodes GR2940 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2940 precursor RNA folds spatially, forming GR2940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2940 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2940 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3302 precursor RNA, GAM4966 precursor RNA, GAM8072 precursor RNA and GAM156517 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3302 RNA, GAM4966 RNA, GAM8072 RNA and GAM156517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3302 target RNA into GAM3302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4966 target RNA into GAM4966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8072 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8072 target RNA into GAM8072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156517 target RNA into GAM156517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2940 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2940 gene: GAM3302 target protein, GAM4966 target protein, GAM8072 target protein and GAM156517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3302, GAM4966, GAM8072 and GAM156517

GR2941 AI077816 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2941(GR2941) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2941 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2941 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2941 gene encodes GR2941 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2941 precursor RNA folds spatially, forming GR2941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2941 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2941 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM211561 precursor RNA and GAM281469 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM211561 RNA and GAM281469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM211561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM211561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211561 target RNA into GAM211561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281469 target RNA into GAM281469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2941 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2941 gene: GAM211561 target protein and GAM281469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM211561 and GAM281469

GR2942 BE280664 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2942(GR2942) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2942 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2942 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2942 gene encodes GR2942 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2942 precursor RNA folds spatially, forming GR2942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2942 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2942 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM6778 precursor RNA and GAM102594 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6778 RNA and GAM102594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6778 target RNA into GAM6778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102594 target RNA into GAM102594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2942 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2942 gene: GAM6778 target protein and GAM102594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6778 and GAM102594

GR2943 BM893684 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2943(GR2943) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2943 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2943 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2943 gene encodes GR2943 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2943 precursor RNA folds spatially, forming GR2943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2943 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2943 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM863 precursor RNA, GAM3989 precursor RNA, GAM131277 precursor RNA and GAM142285 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM863 RNA, GAM3989 RNA, GAM131277 RNA and GAM142285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM863 target RNA into GAM863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3989 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3989 target RNA into GAM3989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131277 target RNA into GAM131277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142285 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142285 target RNA into GAM142285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2943 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2943 gene: GAM863 target protein, GAM3989 target protein, GAM131277 target protein and GAM142285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM863, GAM3989, GAM131277 and GAM142285

GR2944 AI366813 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2944(GR2944) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2944 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2944 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2944 gene encodes GR2944 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2944 precursor RNA folds spatially, forming GR2944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2944 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2944 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM605 precursor RNA and GAM316667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM605 RNA and GAM316667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM605 target RNA into GAM605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316667 target RNA into GAM316667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2944 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2944 gene: GAM605 target protein and GAM316667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM605 and GAM316667

GR2945 BG397165 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2945(GR2945) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2945 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2945 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2945 gene encodes GR2945 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2945 precursor RNA folds spatially, forming GR2945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2945 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2945 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6597 precursor RNA and GAM154199 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6597 RNA and GAM154199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6597 target RNA into GAM6597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154199 target RNA into GAM154199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2945 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2945 gene: GAM6597 target protein and GAM154199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6597 and GAM154199

GR2946 N50487 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2946(GR2946) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2946 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2946 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2946 gene encodes GR2946 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2946 precursor RNA folds spatially, forming GR2946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2946 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2946 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM290645 precursor RNA and GAM295897 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM290645 RNA and GAM295897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM290645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290645 target RNA into GAM290645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295897 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295897 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295897 target RNA into GAM295897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2946 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2946 gene: GAM290645 target protein and GAM295897 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM290645 and GAM295897

GR2947 BM704199 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2947(GR2947) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2947 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2947 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2947 gene encodes GR2947 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2947 precursor RNA folds spatially, forming GR2947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2947 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2947 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM232538 precursor RNA and GAM333520 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM232538 RNA and GAM333520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM232538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232538

target RNA into GAM232538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333520 target RNA into GAM333520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2947 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2947 gene: GAM232538 target protein and GAM333520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM232538 and GAM333520

GR2948 BE006333 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2948(GR2948) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2948 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2948 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2948 gene encodes GR2948 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2948 precursor RNA folds spatially, forming GR2948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2948 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2948 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM44523 precursor RNA, GAM147222 precursor RNA and GAM280551 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44523 RNA, GAM147222 RNA and GAM280551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44523 target RNA into GAM44523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147222 target RNA into GAM147222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280551 target RNA into GAM280551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2948 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2948 gene: GAM44523 target protein, GAM147222 target protein and GAM280551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44523, GAM147222 and GAM280551

GR2949 BE550375 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2949(GR2949) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2949 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2949 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2949 gene encodes GR2949 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2949 precursor RNA folds spatially, forming GR2949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2949 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2949 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3664 precursor RNA and GAM272767 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3664 RNA and GAM272767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3664 target RNA into GAM3664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272767 target RNA into GAM272767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2949 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR2949 gene: GAM3664 target protein and GAM272767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3664 and GAM272767

GR2950 AW009088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2950(GR2950) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2950 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2950 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2950 gene encodes GR2950 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2950 precursor RNA folds spatially, forming GR2950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2950 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2950 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178180 precursor RNA and GAM258096 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178180 RNA and GAM258096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178180 target RNA into GAM178180 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258096 target RNA into GAM258096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2950 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2950 gene: GAM178180 target protein and GAM258096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178180 and GAM258096

GR2951 BF881108 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2951(GR2951) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2951 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2951 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2951 gene encodes GR2951 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2951 precursor RNA folds spatially, forming GR2951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2951 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2951 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122441 precursor RNA and GAM172377 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122441 RNA and GAM172377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122441 target RNA into GAM122441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172377 target RNA into GAM172377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2951 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2951 gene: GAM122441 target protein and GAM172377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122441 and GAM172377

GR2952 AA612806 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2952(GR2952) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2952 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2952 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2952 gene encodes GR2952 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2952 precursor RNA folds spatially, forming GR2952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2952 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2952 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3202 precursor RNA and GAM5409 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3202 RNA and GAM5409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3202 target RNA into GAM3202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5409 target RNA into GAM5409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2952 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2952 gene: GAM3202 target protein and GAM5409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3202 and GAM5409

GR2953 BF512513 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2953(GR2953) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2953 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2953 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2953 gene encodes GR2953 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2953 precursor RNA folds spatially, forming GR2953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2953 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2953 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM182662 precursor RNA and GAM249858 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM182662 RNA and GAM249858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM182662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182662 target RNA into GAM182662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249858 target RNA into GAM249858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2953 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2953 gene: GAM182662 target protein and GAM249858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM182662 and GAM249858

GR2954 AA098924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2954(GR2954) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2954 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2954 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2954 gene encodes GR2954 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2954 precursor RNA folds spatially, forming GR2954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2954 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2954 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM14356 precursor RNA, GAM124445 precursor RNA and GAM171659 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14356 RNA, GAM124445 RNA and GAM171659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14356 target RNA into GAM14356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124445 target RNA into GAM124445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171659 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171659 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171659 target RNA into GAM171659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2954 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2954 gene: GAM14356 target protein, GAM124445 target protein and GAM171659 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14356, GAM124445 and GAM171659

GR2955 BI061748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2955(GR2955) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2955 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2955 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2955 gene encodes GR2955 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2955 precursor RNA folds spatially, forming GR2955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2955 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2955 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6305 precursor RNA and GAM246591 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6305 RNA and GAM246591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6305 target RNA into GAM6305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246591 target RNA into GAM246591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2955 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2955 gene: GAM6305 target protein and GAM246591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6305 and GAM246591

GR2956 BQ028513 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2956(GR2956) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2956 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2956 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2956 gene encodes GR2956 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2956 precursor RNA folds spatially, forming GR2956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2956 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2956 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM181951 precursor RNA, GAM263306 precursor RNA, GAM284601 precursor RNA and GAM308580 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM181951 RNA, GAM263306 RNA, GAM284601 RNA and GAM308580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM181951 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181951 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181951 target RNA into GAM181951 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263306 target RNA into GAM263306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM284601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284601 target RNA into GAM284601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308580 target RNA into GAM308580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2956 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2956 gene: GAM181951 target protein, GAM263306 target protein, GAM284601 target protein and GAM308580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM181951, GAM263306, GAM284601 and GAM308580

GR2957 BG721885 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2957(GR2957) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2957 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2957 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2957 gene encodes GR2957 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2957 precursor RNA folds spatially, forming GR2957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2957 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2957 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2957 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6302 precursor RNA, GAM99399 precursor RNA and GAM106298 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6302 RNA, GAM99399 RNA and GAM106298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6302 target RNA into GAM6302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99399 target RNA into GAM99399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106298 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106298 target RNA into GAM106298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2957 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2957 gene: GAM6302 target protein, GAM99399 target protein and GAM106298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6302, GAM99399 and GAM106298

GR2958 AI921635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

2958(GR2958) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2958 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2958 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2958 gene encodes GR2958 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2958 precursor RNA folds spatially, forming GR2958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2958 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2958 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54308 precursor RNA and GAM219828 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54308 RNA and GAM219828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54308 target RNA into GAM54308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219828 target RNA into GAM219828 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2958 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2958 gene: GAM54308 target protein and GAM219828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54308 and GAM219828

GR2959 BE545049 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2959(GR2959) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2959 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2959 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2959 gene encodes GR2959 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2959 precursor RNA folds spatially, forming GR2959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2959 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2959 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48597 precursor RNA and GAM255084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48597 RNA and GAM255084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM48597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48597 target RNA into GAM48597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255084 target RNA into GAM255084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2959 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2959 gene: GAM48597 target protein and GAM255084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48597 and GAM255084

GR2960 BF690377 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2960(GR2960) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2960 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2960 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2960 gene encodes GR2960 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2960 precursor RNA folds spatially, forming GR2960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2960 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2960 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM114148 precursor RNA, GAM192497 precursor RNA and GAM288915 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM114148 RNA, GAM192497 RNA and GAM288915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM114148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114148 target RNA into GAM114148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192497 target RNA into GAM192497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288915 target RNA into GAM288915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2960 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2960 gene: GAM114148 target protein, GAM192497 target protein and GAM288915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM114148, GAM192497 and GAM288915

GR2961 BI907029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2961(GR2961) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2961 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2961 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2961 gene encodes GR2961 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2961 precursor RNA folds spatially, forming GR2961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2961 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2961 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7488 precursor RNA and GAM283652 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7488 RNA and GAM283652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7488 target RNA into GAM7488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283652 target RNA into GAM283652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2961 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2961 gene: GAM7488 target protein and GAM283652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7488 and GAM283652

GR2962 BG533558 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2962(GR2962) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2962 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2962 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2962 gene encodes GR2962 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2962 precursor RNA folds spatially, forming GR2962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2962 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2962 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34173 precursor RNA and GAM233165 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34173 RNA and GAM233165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34173 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34173 target RNA into GAM34173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233165 target RNA into GAM233165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2962 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2962 gene: GAM34173 target protein and GAM233165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34173 and GAM233165

GR2963 N33545 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2963(GR2963) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2963 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2963 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2963 gene encodes GR2963 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2963 precursor RNA folds spatially, forming GR2963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2963 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2963 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2317 precursor RNA, GAM174702 precursor RNA

and GAM190917 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2317 RNA, GAM174702 RNA and GAM190917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2317 target RNA into GAM2317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174702 target RNA into GAM174702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190917 target RNA into GAM190917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2963 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2963 gene: GAM2317 target protein, GAM174702 target protein and GAM190917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2317, GAM174702 and GAM190917

GR2964 BG207843 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2964(GR2964) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2964 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2964 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2964 gene encodes GR2964 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2964 precursor RNA folds spatially, forming GR2964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2964 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2964 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM90731 precursor RNA, GAM204374 precursor RNA and GAM247637 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90731 RNA, GAM204374 RNA and GAM247637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90731 target RNA into GAM90731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204374 target RNA into GAM204374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247637 target RNA into GAM247637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2964 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2964 gene: GAM90731 target protein, GAM204374 target protein and GAM247637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90731, GAM204374 and GAM247637

GR2965 BI551949 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2965(GR2965) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2965 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2965 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2965 gene encodes GR2965 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2965 precursor RNA folds spatially, forming GR2965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2965 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2965 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78879 precursor RNA and GAM99608 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78879 RNA and GAM99608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78879 target RNA into GAM78879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99608 target RNA into GAM99608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2965 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2965 gene: GAM78879 target protein and GAM99608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78879 and GAM99608

GR2966 H30526 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2966(GR2966) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2966 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2966 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2966 gene encodes GR2966 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2966 precursor RNA folds spatially, forming GR2966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2966 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2966 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119503 precursor RNA and GAM271968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119503 RNA and GAM271968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119503 target RNA into GAM119503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271968 target RNA into GAM271968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2966 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2966 gene: GAM119503 target protein and GAM271968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119503 and GAM271968

GR2967 AI694548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2967(GR2967) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR2967 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2967 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2967 gene encodes GR2967 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2967 precursor RNA folds spatially, forming GR2967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2967 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2967 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM126189 precursor RNA and GAM296844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126189 RNA and GAM296844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126189 target RNA into GAM126189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296844 target RNA into GAM296844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR2967 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2967 gene: GAM126189 target protein and GAM296844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126189 and GAM296844

GR2968 BI046444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2968(GR2968) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2968 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2968 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2968 gene encodes GR2968 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2968 precursor RNA folds spatially, forming GR2968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2968 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2968 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26419 precursor RNA and GAM107040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26419 RNA and GAM107040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26419 target RNA into GAM26419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107040 target RNA into GAM107040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2968 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2968 gene: GAM26419 target protein and GAM107040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26419 and GAM107040

GR2969 AA559274 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2969(GR2969) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2969 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2969 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2969 gene encodes GR2969 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2969 precursor RNA folds spatially, forming GR2969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2969 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2969 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM214272 precursor RNA and GAM295421 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM214272 RNA and GAM295421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM214272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214272 target RNA into GAM214272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295421 target RNA into GAM295421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2969 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2969 gene: GAM214272 target protein and GAM295421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM214272 and GAM295421

GR2970 AW273333 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2970(GR2970) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2970 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2970 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2970 gene encodes GR2970 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2970 precursor RNA folds spatially, forming GR2970 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2970 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2970 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1159 precursor RNA and GAM270108 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1159 RNA and GAM270108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1159 target RNA into GAM1159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270108 target RNA into GAM270108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2970 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2970 gene: GAM1159 target protein and GAM270108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1159 and GAM270108

GR2971 BI544964 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2971(GR2971) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2971 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2971 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2971 gene encodes GR2971 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2971 precursor RNA folds spatially, forming GR2971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2971 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2971 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1620 precursor RNA, GAM8388 precursor RNA and GAM159466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1620 RNA, GAM8388 RNA and GAM159466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1620 target RNA into GAM1620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8388 target RNA into GAM8388 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159466 target RNA into GAM159466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2971 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2971 gene: GAM1620 target protein, GAM8388 target protein and GAM159466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1620, GAM8388 and GAM159466

GR2972 BF223298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2972(GR2972) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2972 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2972 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2972 gene encodes GR2972 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2972 precursor RNA folds spatially, forming GR2972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2972 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2972 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4592 precursor RNA and GAM6879 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4592 RNA and GAM6879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4592 target RNA into GAM4592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6879 target RNA into GAM6879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2972 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2972 gene: GAM4592 target protein and GAM6879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4592 and GAM6879

GR2973 BM718264 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2973(GR2973) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2973 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2973 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2973 gene encodes GR2973 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2973 precursor RNA folds spatially, forming GR2973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR2973 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2973 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM112210 precursor RNA and GAM218501 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112210 RNA and GAM218501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112210 target RNA into GAM112210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218501 target RNA into GAM218501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2973 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2973 gene: GAM112210 target protein and GAM218501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112210 and GAM218501

GR2974 BI114649 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2974(GR2974) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR2974 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2974 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2974 gene encodes GR2974 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2974 precursor RNA folds spatially, forming GR2974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2974 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2974 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64794 precursor RNA and GAM205673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64794 RNA and GAM205673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64794 target RNA into GAM64794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205673 target RNA into GAM205673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2974 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2974 gene: GAM64794 target protein and GAM205673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64794 and GAM205673

GR2975 AI039874 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2975(GR2975) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2975 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2975 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2975 gene encodes GR2975 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2975 precursor RNA folds spatially, forming GR2975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2975 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2975 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2057 precursor RNA, GAM6328 precursor RNA and GAM272188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2057 RNA, GAM6328 RNA and GAM272188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2057 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2057 target RNA into GAM2057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6328 target RNA into GAM6328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272188 target RNA into GAM272188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2975 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2975 gene: GAM2057 target protein, GAM6328 target protein and GAM272188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2057, GAM6328 and GAM272188

GR2976 BI838766 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2976(GR2976) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2976 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2976 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2976 gene encodes GR2976 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2976 precursor RNA folds spatially, forming GR2976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2976 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2976 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM112393 precursor RNA, GAM150282 precursor RNA and GAM239635 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM112393 RNA, GAM150282 RNA and GAM239635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM112393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112393 target RNA into GAM112393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150282 target RNA into GAM150282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239635 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239635 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239635 target RNA into GAM239635 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2976 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2976 gene: GAM112393 target protein, GAM150282 target protein and GAM239635 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM112393, GAM150282 and GAM239635

GR2977 AI089665 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2977(GR2977) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2977 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2977 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2977 gene encodes GR2977 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2977 precursor RNA folds spatially, forming GR2977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2977 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2977 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM251412 precursor RNA and GAM271246 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM251412 RNA and GAM271246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM251412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251412 target RNA into GAM251412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271246 target RNA into GAM271246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2977 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2977 gene: GAM251412 target protein and GAM271246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM251412 and GAM271246

GR2978 AI655828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2978(GR2978) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2978 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2978 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2978 gene encodes GR2978 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2978 precursor RNA folds spatially, forming GR2978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2978 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2978 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158597 precursor RNA and GAM212469 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158597 RNA and GAM212469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158597 target RNA into GAM158597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212469 target RNA into GAM212469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2978 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2978 gene: GAM158597 target protein and GAM212469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158597 and GAM212469

GR2979 AI313236 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2979(GR2979) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2979 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2979 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2979 gene encodes GR2979 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2979 precursor RNA folds spatially, forming GR2979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2979 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR2979 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8329 precursor RNA, GAM90694 precursor RNA and GAM253314 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8329 RNA, GAM90694 RNA and GAM253314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8329 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8329 target RNA into GAM8329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90694 target RNA into GAM90694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253314 target RNA into GAM253314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2979 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2979 gene: GAM8329 target protein, GAM90694 target protein and GAM253314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8329, GAM90694 and GAM253314

GR2980 BF306965 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2980(GR2980) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2980 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2980 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2980 gene encodes GR2980 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2980 precursor RNA folds spatially, forming GR2980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2980 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2980 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6201 precursor RNA, GAM57366 precursor RNA and GAM305728 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6201 RNA, GAM57366 RNA and GAM305728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6201 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6201 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6201 target RNA into GAM6201 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57366 target RNA into GAM57366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305728 target RNA into GAM305728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2980 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2980 gene: GAM6201 target protein, GAM57366 target protein and GAM305728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6201, GAM57366 and GAM305728

GR2981 BG391958 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2981(GR2981) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2981 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2981 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2981 gene encodes GR2981 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2981 precursor RNA folds spatially, forming GR2981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2981 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2981 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM84 precursor RNA and GAM85056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM84 RNA and GAM85056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM84 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84 target RNA into GAM84 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85056 target RNA into GAM85056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2981 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2981 gene: GAM84 target protein and GAM85056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM84 and GAM85056

GR2982 BG829646 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2982(GR2982) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2982 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2982 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2982 gene encodes GR2982 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2982 precursor RNA folds spatially, forming GR2982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2982 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2982 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7787 precursor RNA and GAM252179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7787 RNA and GAM252179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7787 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7787 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7787 target RNA into GAM7787 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252179 target RNA into GAM252179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2982 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2982 gene: GAM7787 target protein and GAM252179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7787 and GAM252179

GR2983 BM807698 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2983(GR2983) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2983 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2983 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2983 gene encodes GR2983 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2983 precursor RNA folds spatially, forming GR2983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2983 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2983 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM64227 precursor RNA, GAM99768 precursor RNA and GAM110333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64227 RNA, GAM99768 RNA and GAM110333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64227 target RNA into GAM64227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99768 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99768 target RNA into GAM99768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110333 target RNA into GAM110333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2983 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2983 gene: GAM64227 target protein, GAM99768 target protein and GAM110333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64227, GAM99768 and GAM110333

GR2984 AA772569 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2984(GR2984) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2984 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2984 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2984 gene encodes GR2984 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2984 precursor RNA folds spatially, forming GR2984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2984 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2984 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM661 precursor RNA, GAM56508 precursor RNA and GAM249827 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM661 RNA, GAM56508 RNA and GAM249827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM661 target RNA into GAM661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56508 target RNA into GAM56508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249827 target RNA into GAM249827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2984 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2984 gene: GAM661 target protein, GAM56508 target protein and GAM249827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM661, GAM56508 and GAM249827

GR2985 AV652124 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2985(GR2985) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2985 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2985 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2985 gene encodes GR2985 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2985 precursor RNA folds spatially, forming GR2985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2985 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2985 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM42940 precursor RNA and GAM203268 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42940 RNA and GAM203268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42940 target RNA into GAM42940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203268

target RNA into GAM203268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2985 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2985 gene: GAM42940 target protein and GAM203268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42940 and GAM203268

GR2986 AA886865 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2986(GR2986) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2986 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2986 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2986 gene encodes GR2986 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2986 precursor RNA folds spatially, forming GR2986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2986 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2986 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM598 precursor RNA and GAM178034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM598 RNA and GAM178034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM598 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM598 target RNA into GAM598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178034 target RNA into GAM178034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2986 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2986 gene: GAM598 target protein and GAM178034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM598 and GAM178034

GR2987 AI122789 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2987(GR2987) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2987 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2987 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2987 gene encodes GR2987 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2987 precursor RNA folds spatially, forming GR2987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2987 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2987 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2987 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM38223 precursor RNA and GAM111621 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM38223 RNA and GAM111621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM38223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM38223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM38223 target RNA into GAM38223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111621 target RNA into GAM111621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2987 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2987 gene: GAM38223 target protein and GAM111621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM38223 and GAM111621

GR2988 AI857438 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2988(GR2988) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2988 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2988 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2988 gene encodes GR2988 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2988 precursor RNA folds spatially, forming GR2988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2988 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2988 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4104 precursor RNA and GAM234489 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4104 RNA and GAM234489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4104 target RNA into GAM4104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234489 target RNA into GAM234489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2988 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2988 gene: GAM4104 target protein and GAM234489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4104 and GAM234489

GR2989 AW070934 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2989(GR2989) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2989 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2989 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2989 gene encodes GR2989 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2989 precursor RNA folds spatially, forming GR2989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2989 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2989 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1016 precursor RNA and GAM3341 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1016 RNA and GAM3341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1016 target RNA into GAM1016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3341 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3341 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3341 target RNA into GAM3341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2989 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2989 gene: GAM1016 target protein and GAM3341 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1016 and GAM3341

GR2990 AW975886 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2990(GR2990) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2990 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2990 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2990 gene encodes GR2990 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2990 precursor RNA folds spatially, forming GR2990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2990 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2990 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3889 precursor RNA, GAM37531 precursor RNA and GAM322268 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3889 RNA, GAM37531 RNA and GAM322268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM3889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3889 target RNA into GAM3889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM37531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37531 target RNA into GAM37531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322268 target RNA into GAM322268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2990 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2990 gene: GAM3889 target protein, GAM37531 target protein and GAM322268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3889, GAM37531 and GAM322268

GR2991 AL700120 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2991(GR2991) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2991 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2991 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2991 gene encodes GR2991 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR2991 precursor RNA folds spatially, forming GR2991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2991 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2991 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8644 precursor RNA and GAM99054 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8644 RNA and GAM99054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8644 target RNA into GAM8644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99054 target RNA into GAM99054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2991 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2991 gene: GAM8644 target protein and GAM99054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8644 and GAM99054

GR2992 BG177129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2992(GR2992) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2992 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2992 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2992 gene encodes GR2992 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2992 precursor RNA folds spatially, forming GR2992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2992 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2992 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192174 precursor RNA and GAM232066 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192174 RNA and GAM232066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192174 target RNA into GAM192174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232066 target RNA into GAM232066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2992 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2992 gene: GAM192174 target protein and GAM232066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192174 and GAM232066

GR2993 BF541052 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2993(GR2993) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2993 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2993 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2993 gene encodes GR2993 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2993 precursor RNA folds spatially, forming GR2993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2993 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2993 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM242 precursor RNA and GAM4851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM242 RNA and GAM4851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242 target RNA into GAM242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4851 target RNA into GAM4851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2993 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2993 gene: GAM242 target protein and GAM4851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM242 and GAM4851

GR2994 AA293149 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2994(GR2994) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2994 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2994 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2994 gene encodes GR2994 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2994 precursor RNA folds spatially, forming GR2994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2994 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2994 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM371 precursor RNA, GAM154811 precursor RNA and GAM237802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM371 RNA, GAM154811 RNA and GAM237802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM371 target RNA into GAM371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154811 target RNA into GAM154811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237802 target RNA into GAM237802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2994 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2994 gene: GAM371 target protein, GAM154811 target protein and GAM237802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM371, GAM154811 and GAM237802

GR2995 BM461607 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 2995(GR2995) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2995 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2995 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2995 gene encodes GR2995 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2995 precursor RNA folds spatially, forming GR2995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2995 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2995 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM211374 precursor RNA and GAM282441 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM211374 RNA and GAM282441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM211374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211374 target RNA into GAM211374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282441

target RNA into GAM282441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2995 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2995 gene: GAM211374 target protein and GAM282441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM211374 and GAM282441

GR2996 H20642 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2996(GR2996) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2996 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2996 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2996 gene encodes GR2996 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2996 precursor RNA folds spatially, forming GR2996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2996 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2996 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41326 precursor RNA and GAM102002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41326 RNA and GAM102002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41326 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41326 target RNA into GAM41326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102002 target RNA into GAM102002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2996 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2996 gene: GAM41326 target protein and GAM102002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41326 and GAM102002

GR2997 BG576317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2997(GR2997) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2997 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2997 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2997 gene encodes GR2997 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2997 precursor RNA folds spatially, forming GR2997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2997 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2997 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2997 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2358 precursor RNA and GAM5567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2358 RNA and GAM5567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2358 target RNA into GAM2358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5567 target RNA into GAM5567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2997 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2997 gene: GAM2358 target protein and GAM5567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2358 and GAM5567

GR2998 AI023825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2998(GR2998) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2998 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2998 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2998 gene encodes GR2998 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2998 precursor RNA folds spatially, forming GR2998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2998 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2998 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3767 precursor RNA and GAM254628 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3767 RNA and GAM254628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3767 target RNA into GAM3767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254628 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254628 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254628 target RNA into GAM254628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2998 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2998 gene: GAM3767 target protein and GAM254628 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3767 and GAM254628

GR2999 AI740784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 2999(GR2999) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR2999 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR2999 gene was detected is described hereinabove with reference to Figs. 8-18.

GR2999 gene encodes GR2999 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR2999 precursor RNA folds spatially, forming GR2999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR2999 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR2999 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR2999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6833 precursor RNA and GAM219308 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6833 RNA and GAM219308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6833 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6833 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6833 target RNA into GAM6833 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219308 target RNA into GAM219308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR2999 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR2999 gene: GAM6833 target protein and GAM219308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6833 and GAM219308

GR3000 BG528347 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3000(GR3000) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3000 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3000 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3000 gene encodes GR3000 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3000 precursor RNA folds spatially, forming GR3000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3000 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3000 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73972 precursor RNA and GAM218968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73972 RNA and GAM218968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73972 target RNA into GAM73972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218968 target RNA into GAM218968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3000 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3000 gene: GAM73972 target protein and GAM218968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73972 and GAM218968

GR3001 BE260259 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3001(GR3001) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3001 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3001 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3001 gene encodes GR3001 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3001 precursor RNA folds spatially, forming GR3001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3001 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3001 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3603 precursor RNA, GAM5004 precursor RNA and GAM112954 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3603 RNA, GAM5004 RNA and GAM112954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3603 target RNA into GAM3603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5004 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5004 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5004 target RNA into GAM5004 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112954 target RNA into GAM112954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3001 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3001 gene: GAM3603 target protein, GAM5004 target protein and GAM112954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3603, GAM5004 and GAM112954

GR3002 BQ004189 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3002(GR3002) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3002 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3002 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3002 gene encodes GR3002 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3002 precursor RNA folds spatially, forming GR3002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3002 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3002 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3715 precursor RNA and GAM5796 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3715 RNA and GAM5796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3715 target RNA into GAM3715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM5796 target RNA into GAM5796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3002 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3002 gene: GAM3715 target protein and GAM5796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3715 and GAM5796

GR3003 BG460260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3003(GR3003) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3003 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3003 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3003 gene encodes GR3003 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3003 precursor RNA folds spatially, forming GR3003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3003 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3003 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM286144 precursor RNA and GAM323271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM286144 RNA and GAM323271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM286144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286144 target RNA into GAM286144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323271 target RNA into GAM323271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3003 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3003 gene: GAM286144 target protein and GAM323271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM286144 and GAM323271

GR3004 BE813828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3004(GR3004) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3004 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3004 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3004 gene encodes GR3004 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3004 precursor RNA folds spatially, forming GR3004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3004 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3004 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88067 precursor RNA and GAM258586 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88067 RNA and GAM258586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88067 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88067 target RNA into GAM88067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258586 target RNA into GAM258586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3004 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3004 gene: GAM88067 target protein and GAM258586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88067 and GAM258586

GR3005 AA758795 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3005(GR3005) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3005 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3005 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3005 gene encodes GR3005 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3005 precursor RNA folds spatially, forming GR3005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3005 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3005 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3230 precursor RNA, GAM4682 precursor RNA, GAM31620 precursor RNA and GAM293460 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3230 RNA, GAM4682 RNA, GAM31620 RNA and GAM293460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3230 target RNA into GAM3230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4682 target RNA into GAM4682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31620 target RNA into GAM31620 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293460 target RNA into GAM293460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3005 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3005 gene: GAM3230 target protein, GAM4682 target protein, GAM31620 target protein and GAM293460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3230, GAM4682, GAM31620 and GAM293460

GR3006 AI268836 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3006(GR3006) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3006 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3006 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3006 gene encodes GR3006 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3006 precursor RNA folds spatially, forming GR3006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3006 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3006 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM420 precursor RNA and GAM221699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM420 RNA and GAM221699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM420 target RNA into GAM420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221699 target RNA into GAM221699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3006 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3006 gene: GAM420 target protein and GAM221699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM420 and GAM221699

GR3007 BG337000 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3007(GR3007) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3007 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3007 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3007 gene encodes GR3007 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3007 precursor RNA folds spatially, forming GR3007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3007 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3007 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM34726 precursor RNA, GAM134083 precursor RNA and GAM245266 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34726 RNA, GAM134083 RNA and GAM245266 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34726 target RNA into GAM34726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134083 target RNA into GAM134083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245266 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245266 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245266 target RNA into GAM245266 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3007 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3007 gene: GAM34726 target

protein, GAM134083 target protein and GAM245266 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34726, GAM134083 and GAM245266

GR3008 BG715609 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3008(GR3008) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3008 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3008 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3008 gene encodes GR3008 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3008 precursor RNA folds spatially, forming GR3008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3008 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3008 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8472 precursor RNA and GAM270232 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8472 RNA and GAM270232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8472 target RNA into GAM8472 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270232 target RNA into GAM270232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3008 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3008 gene: GAM8472 target protein and GAM270232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8472 and GAM270232

GR3009 BE620336 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3009(GR3009) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3009 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3009 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3009 gene encodes GR3009 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3009 precursor RNA folds spatially, forming GR3009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3009 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3009 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7496 precursor RNA, GAM80670 precursor RNA, GAM170410 precursor RNA and GAM198908 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7496 RNA, GAM80670 RNA, GAM170410 RNA and GAM198908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7496 target RNA into GAM7496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80670 target RNA into GAM80670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170410 target RNA into GAM170410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198908 target RNA into GAM198908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3009 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3009 gene: GAM7496 target protein, GAM80670 target protein, GAM170410 target protein and GAM198908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7496, GAM80670, GAM170410 and GAM198908

GR3010 AA531406 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3010(GR3010) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3010 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3010 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3010 gene encodes GR3010 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3010 precursor RNA folds spatially, forming GR3010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3010 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3010 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4510 precursor RNA and GAM251135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4510 RNA and GAM251135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4510 target RNA into GAM4510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251135 target RNA into GAM251135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3010 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3010 gene: GAM4510 target protein and GAM251135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4510 and GAM251135

GR3011 AL707784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3011(GR3011) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3011 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3011 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3011 gene encodes GR3011 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3011 precursor RNA folds spatially, forming GR3011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3011 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3011 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5548 precursor RNA and GAM236448 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5548 RNA and GAM236448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5548 target RNA into GAM5548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236448 target RNA into GAM236448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3011 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3011 gene: GAM5548 target protein and GAM236448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5548 and GAM236448

GR3012 BG569869 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3012(GR3012) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3012 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3012 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3012 gene encodes GR3012 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3012 precursor RNA folds spatially, forming GR3012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3012 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3012 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2924 precursor RNA and GAM4680 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2924 RNA and GAM4680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2924 target RNA into GAM2924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4680 target RNA into GAM4680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3012 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3012 gene: GAM2924 target protein and GAM4680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2924 and GAM4680

GR3013 AW854075 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3013(GR3013) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3013 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3013 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3013 gene encodes GR3013 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3013 precursor RNA folds spatially, forming GR3013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3013 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3013 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM62093 precursor RNA and GAM279847 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM62093 RNA and GAM279847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM62093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62093 target RNA into GAM62093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279847 target RNA into GAM279847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3013 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3013 gene: GAM62093 target protein and GAM279847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM62093 and GAM279847

GR3014 BE384014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3014(GR3014) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3014 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3014 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3014 gene encodes GR3014 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3014 precursor RNA folds spatially, forming GR3014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3014 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3014 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64644 precursor RNA and GAM320975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64644 RNA and GAM320975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64644 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64644 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64644 target RNA into GAM64644 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320975 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320975 target RNA into GAM320975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3014 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3014 gene: GAM64644 target protein and GAM320975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64644 and GAM320975

GR3015 AV726061 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3015(GR3015) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3015 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3015 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3015 gene encodes GR3015 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3015 precursor RNA folds spatially, forming GR3015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3015 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3015 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM167535 precursor RNA, GAM182049 precursor RNA and GAM257291 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM167535 RNA, GAM182049 RNA and GAM257291 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM167535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167535 target RNA into GAM167535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182049 target RNA into GAM182049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257291 target RNA into GAM257291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3015 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3015 gene: GAM167535 target protein, GAM182049 target protein and GAM257291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM167535, GAM182049 and GAM257291

GR3016 BF826968 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3016(GR3016) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3016 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3016 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3016 gene encodes GR3016 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3016 precursor RNA folds spatially, forming GR3016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3016 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3016 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM248927 precursor RNA and GAM324662 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM248927 RNA and GAM324662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM248927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248927 target RNA into GAM248927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324662 target RNA into GAM324662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3016 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3016 gene: GAM248927 target protein and GAM324662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM248927 and GAM324662

GR3017 BM795910 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3017(GR3017) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3017 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3017 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3017 gene encodes GR3017 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3017 precursor RNA folds spatially, forming GR3017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3017 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3017 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5459 precursor RNA and GAM163460 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5459 RNA and GAM163460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5459 target RNA into GAM5459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163460 target RNA into GAM163460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3017 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3017 gene: GAM5459 target protein and GAM163460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5459 and GAM163460

GR3018 AW838399 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3018(GR3018) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3018 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3018 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3018 gene encodes GR3018 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3018 precursor RNA folds spatially, forming GR3018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3018 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3018 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26383 precursor RNA and GAM183638 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26383 RNA and GAM183638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26383 target RNA into GAM26383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183638 target RNA into GAM183638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3018 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3018 gene: GAM26383 target protein and GAM183638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26383 and GAM183638

GR3019 BF525784 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3019(GR3019) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3019 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3019 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3019 gene encodes GR3019 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3019 precursor RNA folds spatially, forming GR3019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3019 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3019 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3237 precursor RNA, GAM42358 precursor RNA and GAM97110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3237 RNA, GAM42358 RNA and GAM97110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3237 target RNA into GAM3237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM42358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42358 target RNA into GAM42358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97110 target RNA into GAM97110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3019 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3019 gene: GAM3237 target protein, GAM42358 target protein and GAM97110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3237, GAM42358 and GAM97110

GR3020 AA641950 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3020(GR3020) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3020 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3020 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3020 gene encodes GR3020 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3020 precursor RNA folds spatially, forming GR3020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3020 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3020 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1222 precursor RNA and GAM1859 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1222 RNA and GAM1859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1222 target RNA into GAM1222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1859 target RNA into GAM1859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3020 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3020 gene: GAM1222 target protein and GAM1859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1222 and GAM1859

GR3021 BG166179 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3021(GR3021) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3021 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3021 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3021 gene encodes GR3021 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3021 precursor RNA folds spatially, forming GR3021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3021 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3021 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM89798 precursor RNA and GAM139828 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89798 RNA and GAM139828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89798 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89798 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89798 target RNA into GAM89798 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139828 target RNA into GAM139828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3021 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3021 gene: GAM89798 target protein and GAM139828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89798 and GAM139828

GR3022 AA742637 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3022(GR3022) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3022 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3022 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3022 gene encodes GR3022 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3022 precursor RNA folds spatially, forming GR3022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3022 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3022 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1179 precursor RNA, GAM188543 precursor RNA and GAM308364 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1179 RNA, GAM188543 RNA and GAM308364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1179 target RNA into GAM1179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188543 target RNA into GAM188543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308364 target RNA into GAM308364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3022 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3022 gene: GAM1179 target protein, GAM188543 target protein and GAM308364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1179, GAM188543 and GAM308364

GR3023 AW387260 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3023(GR3023) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3023 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3023 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3023 gene encodes GR3023 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3023 precursor RNA folds spatially, forming GR3023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3023 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3023 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM280097 precursor RNA and GAM290713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM280097 RNA and GAM290713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM280097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280097 target RNA into GAM280097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290713

target RNA into GAM290713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3023 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3023 gene: GAM280097 target protein and GAM290713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM280097 and GAM290713

GR3024 AW206239 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3024(GR3024) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3024 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3024 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3024 gene encodes GR3024 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3024 precursor RNA folds spatially, forming GR3024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3024 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3024 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1981 precursor RNA and GAM247717 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1981 RNA and GAM247717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1981 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1981 target RNA into GAM1981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247717 target RNA into GAM247717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3024 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3024 gene: GAM1981 target protein and GAM247717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1981 and GAM247717

GR3025 AA853989 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3025(GR3025) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3025 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3025 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3025 gene encodes GR3025 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3025 precursor RNA folds spatially, forming GR3025 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3025 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3025 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3025 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM71046 precursor RNA and GAM126304 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71046 RNA and GAM126304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71046 target RNA into GAM71046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126304 target RNA into GAM126304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3025 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3025 gene: GAM71046 target protein and GAM126304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71046 and GAM126304

GR3026 BM724183 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3026(GR3026) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3026 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3026 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3026 gene encodes GR3026 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3026 precursor RNA folds spatially, forming GR3026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3026 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3026 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7117 precursor RNA and GAM82617 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7117 RNA and GAM82617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7117 target RNA into GAM7117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82617 target RNA into GAM82617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3026 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3026 gene: GAM7117 target protein and GAM82617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7117 and GAM82617

GR3027 BM671673 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3027(GR3027) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3027 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3027 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3027 gene encodes GR3027 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3027 precursor RNA folds spatially, forming GR3027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3027 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3027 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM92267 precursor RNA, GAM136553 precursor RNA and GAM236549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92267 RNA, GAM136553 RNA and GAM236549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92267 target RNA into GAM92267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136553 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136553 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136553 target RNA into GAM136553 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236549 target RNA into GAM236549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3027 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3027 gene: GAM92267 target protein, GAM136553 target protein and GAM236549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92267, GAM136553 and GAM236549

GR3028 AW969259 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3028(GR3028) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3028 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3028 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3028 gene encodes GR3028 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3028 precursor RNA folds spatially, forming GR3028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3028 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3028 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM104021 precursor RNA and GAM229870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM104021 RNA and GAM229870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM104021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104021 target RNA into GAM104021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229870 target RNA into GAM229870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3028 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3028 gene: GAM104021 target protein and GAM229870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM104021 and GAM229870

GR3029 BF984567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3029(GR3029) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3029 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3029 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3029 gene encodes GR3029 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3029 precursor RNA folds spatially, forming GR3029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3029 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3029 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9995 precursor RNA and GAM309691 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9995 RNA and GAM309691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9995 target RNA into GAM9995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309691 target RNA into GAM309691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3029 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3029 gene: GAM9995 target protein and GAM309691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9995 and GAM309691

GR3030 BF246628 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3030(GR3030) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3030 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3030 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3030 gene encodes GR3030 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3030 precursor RNA folds spatially, forming GR3030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3030 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3030 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2789 precursor RNA and GAM185876 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2789 RNA and GAM185876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2789 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2789 target RNA into GAM2789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185876 target RNA into GAM185876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3030 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3030 gene: GAM2789 target protein and GAM185876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2789 and GAM185876

GR3031 BQ053181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3031(GR3031) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3031 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3031 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3031 gene encodes GR3031 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3031 precursor RNA folds spatially, forming GR3031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3031 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3031 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4514 precursor RNA and GAM118274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4514 RNA and GAM118274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4514 target RNA into GAM4514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118274 target RNA into GAM118274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3031 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3031 gene: GAM4514 target protein and GAM118274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4514 and GAM118274

GR3032 BG706125 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3032(GR3032) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3032 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3032 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3032 gene encodes GR3032 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3032 precursor RNA folds spatially, forming GR3032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3032 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3032 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM261 precursor RNA and GAM271199 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM261 RNA and GAM271199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261 target RNA into GAM261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271199 target RNA into GAM271199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3032 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3032 gene: GAM261 target protein and GAM271199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM261 and GAM271199

GR3033 T32930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3033(GR3033) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3033 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3033 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3033 gene encodes GR3033 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3033 precursor RNA folds spatially, forming GR3033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3033 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3033 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3729 precursor RNA and GAM172676 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3729 RNA and GAM172676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3729 target RNA into GAM3729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172676 target RNA into GAM172676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3033 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3033 gene: GAM3729 target protein and GAM172676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM3729 and GAM172676

GR3034 AI635524 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3034(GR3034) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3034 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3034 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3034 gene encodes GR3034 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3034 precursor RNA folds spatially, forming GR3034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3034 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3034 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4109 precursor RNA and GAM205082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4109 RNA and GAM205082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4109 target RNA into GAM4109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205082 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205082 target RNA into GAM205082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3034 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3034 gene: GAM4109 target protein and GAM205082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4109 and GAM205082

GR3035 AW026179 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3035(GR3035) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3035 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3035 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3035 gene encodes GR3035 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3035 precursor RNA folds spatially, forming GR3035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3035 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3035 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96611 precursor RNA and GAM219514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96611 RNA and GAM219514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM96611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96611 target RNA into GAM96611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219514 target RNA into GAM219514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3035 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3035 gene: GAM96611 target protein and GAM219514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96611 and GAM219514

GR3036 BF901667 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3036(GR3036) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3036 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3036 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3036 gene encodes GR3036 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3036 precursor RNA folds spatially, forming GR3036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3036 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3036 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4403 precursor RNA, GAM72065 precursor RNA and GAM256258 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4403 RNA, GAM72065 RNA and GAM256258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4403 target RNA into GAM4403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72065 target RNA into GAM72065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256258 target RNA into GAM256258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3036 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3036 gene: GAM4403 target protein, GAM72065 target protein and GAM256258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4403, GAM72065 and GAM256258

GR3037 AA508146 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3037(GR3037) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3037 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3037 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3037 gene encodes GR3037 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3037 precursor RNA folds spatially, forming GR3037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3037 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3037 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4379 precursor RNA, GAM29008 precursor RNA, GAM96173 precursor RNA and GAM220065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4379 RNA, GAM29008 RNA, GAM96173 RNA and GAM220065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4379 target RNA into GAM4379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29008 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29008 target RNA into GAM29008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96173 target RNA into GAM96173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220065 target RNA into GAM220065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3037 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3037 gene: GAM4379 target protein, GAM29008 target protein, GAM96173 target protein and GAM220065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4379, GAM29008, GAM96173 and GAM220065

GR3038 BG032731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3038(GR3038) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3038 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3038 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3038 gene encodes GR3038 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3038 precursor RNA folds spatially, forming GR3038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3038 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3038 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM89664 precursor RNA and GAM249682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89664 RNA and GAM249682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89664 target RNA into GAM89664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249682 target RNA into GAM249682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3038 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3038 gene: GAM89664 target protein and GAM249682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89664 and GAM249682

GR3039 AI951392 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3039(GR3039) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3039 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3039 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3039 gene encodes GR3039 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3039 precursor RNA folds spatially, forming GR3039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3039 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3039 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM64501 precursor RNA, GAM66330 precursor RNA and GAM237006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64501 RNA, GAM66330 RNA and GAM237006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64501 target RNA into GAM64501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66330 target RNA into GAM66330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237006 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237006 target RNA into GAM237006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3039 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3039 gene: GAM64501 target protein, GAM66330 target protein and GAM237006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64501, GAM66330 and GAM237006

GR3040 BI868211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3040(GR3040) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3040 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3040 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3040 gene encodes GR3040 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3040 precursor RNA folds spatially, forming GR3040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3040 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3040 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7073 precursor RNA, GAM72956 precursor RNA and GAM280276 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7073 RNA, GAM72956 RNA and GAM280276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7073 target RNA into GAM7073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72956 target RNA into GAM72956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280276 target RNA into GAM280276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3040 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3040 gene: GAM7073 target protein, GAM72956 target protein and GAM280276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7073, GAM72956 and GAM280276

GR3041 BF670799 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3041(GR3041) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3041 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3041

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3041 gene encodes GR3041 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3041 precursor RNA folds spatially, forming GR3041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3041 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3041 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6046 precursor RNA, GAM29034 precursor RNA and GAM149203 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6046 RNA, GAM29034 RNA and GAM149203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6046 target RNA into GAM6046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29034 target RNA into GAM29034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149203 target RNA into GAM149203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3041 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3041 gene: GAM6046 target protein, GAM29034 target protein and GAM149203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6046, GAM29034 and GAM149203

GR3042 BG960271 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3042(GR3042) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3042 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3042 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3042 gene encodes GR3042 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3042 precursor RNA folds spatially, forming GR3042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3042 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3042 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4087 precursor RNA and GAM101610 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4087 RNA and GAM101610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4087 target RNA into GAM4087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101610 target RNA into GAM101610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3042 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3042 gene: GAM4087 target protein and GAM101610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4087 and GAM101610

GR3043 BM997817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3043(GR3043) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3043 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3043 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3043 gene encodes GR3043 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3043 precursor RNA folds spatially, forming GR3043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3043 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3043 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93605 precursor RNA and GAM300253 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93605 RNA and GAM300253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93605 target RNA into GAM93605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300253 target RNA into GAM300253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3043 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3043 gene: GAM93605 target protein and GAM300253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93605 and GAM300253

GR3044 BG504948 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3044(GR3044) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3044 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3044 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3044 gene encodes GR3044 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3044 precursor RNA folds spatially, forming GR3044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3044 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3044 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM959 precursor RNA and GAM169106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM959 RNA and GAM169106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM959 target RNA into GAM959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169106 target RNA into GAM169106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3044 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3044 gene: GAM959 target protein and GAM169106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM959 and GAM169106

GR3045 BF347765 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3045(GR3045) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3045 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3045 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3045 gene encodes GR3045 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3045 precursor RNA folds spatially, forming GR3045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3045 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3045 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3456 precursor RNA and GAM7771 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3456 RNA and GAM7771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3456 target RNA into GAM3456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7771 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7771 target RNA into GAM7771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3045 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3045 gene: GAM3456 target protein and GAM7771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3456 and GAM7771

GR3046 R36738 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3046(GR3046) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3046 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3046 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3046 gene encodes GR3046 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3046 precursor RNA folds spatially, forming GR3046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3046 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3046 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121316 precursor RNA and GAM245960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121316 RNA and GAM245960 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121316 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121316 target RNA into GAM121316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245960 target RNA into GAM245960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3046 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3046 gene: GAM121316 target protein and GAM245960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121316 and GAM245960

GR3047 BF666252 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3047(GR3047) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3047 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3047 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3047 gene encodes GR3047 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3047 precursor RNA folds spatially, forming GR3047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3047 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3047 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180466 precursor RNA and GAM309713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180466 RNA and GAM309713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180466 target RNA into GAM180466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309713 target RNA into GAM309713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3047 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3047 gene: GAM180466 target protein and GAM309713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180466 and GAM309713

GR3048 AA480825 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3048(GR3048) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3048 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3048 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3048 gene encodes GR3048 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3048 precursor RNA folds spatially, forming GR3048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3048 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3048 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26461 precursor RNA and GAM118144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26461 RNA and GAM118144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26461 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26461 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26461 target RNA into GAM26461 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118144 target RNA into GAM118144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3048 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3048 gene: GAM26461 target

protein and GAM118144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26461 and GAM118144

GR3049 BI752371 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3049(GR3049) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3049 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3049 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3049 gene encodes GR3049 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3049 precursor RNA folds spatially, forming GR3049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3049 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3049 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4496 precursor RNA, GAM6849 precursor RNA and GAM278373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4496 RNA, GAM6849 RNA and GAM278373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4496 target RNA into GAM4496 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6849 target RNA into GAM6849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278373 target RNA into GAM278373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3049 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3049 gene: GAM4496 target protein, GAM6849 target protein and GAM278373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4496, GAM6849 and GAM278373

GR3050 AW952936 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3050(GR3050) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3050 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3050 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3050 gene encodes GR3050 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3050 precursor RNA folds spatially, forming GR3050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3050 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3050 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29 precursor RNA and GAM4005 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29 RNA and GAM4005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29 target RNA into GAM29 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4005 target RNA into GAM4005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3050 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3050 gene: GAM29 target protein and GAM4005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29 and GAM4005

GR3051 AA195834 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3051(GR3051) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3051 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3051

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3051 gene encodes GR3051 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3051 precursor RNA folds spatially, forming GR3051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3051 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3051 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7486 precursor RNA, GAM297477 precursor RNA and GAM310209 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7486 RNA, GAM297477 RNA and GAM310209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7486 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7486 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7486 target RNA into GAM7486 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297477 target RNA into GAM297477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310209 target RNA into GAM310209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3051 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3051 gene: GAM7486 target protein, GAM297477 target protein and GAM310209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7486, GAM297477 and GAM310209

GR3052 BG284135 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3052(GR3052) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3052 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3052 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3052 gene encodes GR3052 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3052 precursor RNA folds spatially, forming GR3052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3052 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3052 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5630 precursor RNA, GAM80193 precursor RNA, GAM241504 precursor RNA and GAM246235 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5630 RNA, GAM80193 RNA, GAM241504 RNA and GAM246235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of

which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5630 target RNA into GAM5630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80193 target RNA into GAM80193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241504 target RNA into GAM241504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246235 target RNA into GAM246235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3052 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3052 gene: GAM5630 target protein, GAM80193 target protein, GAM241504 target protein and GAM246235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5630, GAM80193, GAM241504 and GAM246235

GR3053 AW182059 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3053(GR3053) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3053 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3053 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3053 gene encodes GR3053 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3053 precursor RNA folds spatially, forming GR3053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3053 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3053 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM103422 precursor RNA and GAM208938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103422 RNA and GAM208938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103422 target RNA into GAM103422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208938 target RNA into GAM208938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3053 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3053 gene: GAM103422 target protein and GAM208938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103422 and GAM208938

GR3054 AA984760 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3054(GR3054) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3054 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3054 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3054 gene encodes GR3054 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3054 precursor RNA folds spatially, forming GR3054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3054 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3054 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM805 precursor RNA and GAM53416 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM805 RNA and GAM53416 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM805 target RNA into GAM805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53416 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53416 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53416 target RNA into GAM53416 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3054 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3054 gene: GAM805 target protein and GAM53416 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM805 and GAM53416

GR3055 BG117892 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3055(GR3055) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3055 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3055 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3055 gene encodes GR3055 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3055 precursor RNA folds spatially, forming GR3055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3055 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3055 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14949 precursor RNA and GAM184720 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14949 RNA and GAM184720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14949 target RNA into GAM14949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184720 target RNA into GAM184720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3055 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3055 gene: GAM14949 target protein and GAM184720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14949 and GAM184720

GR3056 BF060765 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3056(GR3056) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3056 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3056 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3056 gene encodes GR3056 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3056 precursor RNA folds spatially, forming GR3056 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3056 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3056 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7582 precursor RNA and GAM26812 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7582 RNA and GAM26812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7582 target RNA into GAM7582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26812 target RNA into GAM26812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3056 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3056 gene: GAM7582 target protein and GAM26812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7582 and GAM26812

GR3057 AL046813 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3057(GR3057) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3057 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3057 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3057 gene encodes GR3057 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3057 precursor RNA folds spatially, forming GR3057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3057 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3057 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7032 precursor RNA and GAM125603 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7032 RNA and GAM125603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7032 target RNA into GAM7032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125603 target RNA into GAM125603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3057 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3057 gene: GAM7032 target protein and GAM125603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7032 and GAM125603

GR3058 BG942811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3058(GR3058) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3058 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3058 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3058 gene encodes GR3058 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3058 precursor RNA folds spatially, forming GR3058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3058 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3058 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM80600 precursor RNA and GAM268086 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM80600 RNA and GAM268086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM80600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80600 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80600 target RNA into GAM80600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268086 target RNA into GAM268086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3058 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3058 gene: GAM80600 target protein and GAM268086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM80600 and GAM268086

GR3059 AW574718 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3059(GR3059) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3059 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3059 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3059 gene encodes GR3059 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3059 precursor RNA folds spatially, forming GR3059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3059 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3059 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM286499 precursor RNA and GAM320016 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM286499 RNA and GAM320016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM286499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286499 target RNA into GAM286499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320016 target RNA into GAM320016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3059 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3059 gene: GAM286499 target protein and GAM320016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM286499 and GAM320016

GR3060 BE730182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3060(GR3060) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3060 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3060 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3060 gene encodes GR3060 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3060 precursor RNA folds spatially, forming GR3060 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3060 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3060 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3060 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2726 precursor RNA, GAM4850 precursor RNA, GAM6390 precursor RNA and GAM7213 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2726 RNA, GAM4850 RNA, GAM6390 RNA and GAM7213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2726 target RNA into GAM2726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4850 target RNA into GAM4850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6390 target RNA into GAM6390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7213 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7213 target RNA into GAM7213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3060 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3060 gene: GAM2726 target protein, GAM4850 target protein, GAM6390 target protein and GAM7213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2726, GAM4850, GAM6390 and GAM7213

GR3061 AI800824 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3061(GR3061) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3061 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3061 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3061 gene encodes GR3061 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3061 precursor RNA folds spatially, forming GR3061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3061 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3061 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5247 precursor RNA and GAM286173 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5247 RNA and GAM286173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5247 target RNA into GAM5247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286173 target RNA into GAM286173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3061 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3061 gene: GAM5247 target protein and GAM286173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5247 and GAM286173

GR3062 AV692588 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3062(GR3062) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3062 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3062 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3062 gene encodes GR3062 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3062 precursor RNA folds spatially, forming GR3062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3062 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3062 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7071 precursor RNA, GAM113361 precursor RNA and GAM278615 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7071 RNA, GAM113361 RNA and GAM278615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7071 target RNA into GAM7071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113361 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113361 target RNA into GAM113361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278615 target RNA into GAM278615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3062 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3062 gene: GAM7071 target protein, GAM113361 target protein and GAM278615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM7071, GAM113361 and GAM278615

GR3063 BM974595 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3063(GR3063) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3063 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3063 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3063 gene encodes GR3063 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3063 precursor RNA folds spatially, forming GR3063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3063 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3063 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM94 precursor RNA, GAM2397 precursor RNA and GAM105074 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94 RNA, GAM2397 RNA and GAM105074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94 target RNA into GAM94 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2397 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2397 target RNA into GAM2397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105074 target RNA into GAM105074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3063 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3063 gene: GAM94 target protein, GAM2397 target protein and GAM105074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94, GAM2397 and GAM105074

GR3064 BF978591 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3064(GR3064) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3064 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3064 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3064 gene encodes GR3064 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3064 precursor RNA folds spatially, forming GR3064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3064 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3064 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM214 precursor RNA and GAM332755 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM214 RNA and GAM332755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214 target RNA into GAM214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332755 target RNA into GAM332755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3064 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3064 gene: GAM214 target protein and GAM332755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM214 and GAM332755

GR3065 BF090211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3065(GR3065) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3065 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3065 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3065 gene encodes GR3065 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3065 precursor RNA folds spatially, forming GR3065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3065 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3065 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM32186 precursor RNA, GAM258764 precursor RNA and GAM302287 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32186 RNA, GAM258764 RNA and GAM302287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32186 target RNA into GAM32186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258764 target RNA into GAM258764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302287 target RNA into GAM302287 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3065 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3065 gene: GAM32186 target protein, GAM258764 target protein and GAM302287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32186, GAM258764 and GAM302287

GR3066 AW962618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3066(GR3066) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3066 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3066 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3066 gene encodes GR3066 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3066 precursor RNA folds spatially, forming GR3066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3066 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3066 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM885 precursor RNA and GAM175518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM885 RNA and GAM175518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM885 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM885 target RNA into GAM885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175518 target RNA into GAM175518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3066 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3066 gene: GAM885 target protein and GAM175518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM885 and GAM175518

GR3067 BG684182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3067(GR3067) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3067 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3067 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3067 gene encodes GR3067 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3067 precursor RNA folds spatially, forming GR3067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3067 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3067 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3067 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM3681 precursor RNA, GAM8157 precursor RNA, GAM22804 precursor RNA, GAM96573 precursor RNA and GAM305480 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3681 RNA, GAM8157 RNA, GAM22804 RNA, GAM96573 RNA and GAM305480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3681 target RNA into GAM3681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8157 target RNA into GAM8157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22804 target RNA into GAM22804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96573 target RNA into GAM96573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305480 target RNA into GAM305480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3067 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3067 gene: GAM3681 target protein, GAM8157 target protein, GAM22804 target protein, GAM96573 target protein and GAM305480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3681, GAM8157, GAM22804, GAM96573 and GAM305480

GR3068 AI003607 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3068(GR3068) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3068 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3068 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3068 gene encodes GR3068 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3068 precursor RNA folds spatially, forming GR3068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3068 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3068 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM275032 precursor RNA and GAM290388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM275032 RNA and GAM290388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM275032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275032 target RNA into GAM275032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290388 target RNA into GAM290388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3068 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3068 gene: GAM275032 target protein and GAM290388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM275032 and GAM290388

GR3069 BI225685 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3069(GR3069) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3069 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3069 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3069 gene encodes GR3069 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3069 precursor RNA folds spatially, forming GR3069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3069 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3069 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2365 precursor RNA and GAM7510 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2365 RNA and GAM7510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2365 target RNA into GAM2365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7510 target RNA into GAM7510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3069 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3069 gene: GAM2365 target protein and GAM7510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2365 and GAM7510

GR3070 BG256957 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3070(GR3070) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3070 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3070 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3070 gene encodes GR3070 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3070 precursor RNA folds spatially, forming GR3070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3070 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3070 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7661 precursor RNA, GAM241111 precursor RNA and GAM331136 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7661 RNA, GAM241111 RNA and GAM331136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7661 target RNA into GAM7661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241111 target RNA into GAM241111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331136

target RNA into GAM331136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3070 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3070 gene: GAM7661 target protein, GAM241111 target protein and GAM331136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7661, GAM241111 and GAM331136

GR3071 W86626 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3071(GR3071) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3071 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3071 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3071 gene encodes GR3071 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3071 precursor RNA folds spatially, forming GR3071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3071 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3071 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM164541 precursor RNA, GAM189627 precursor RNA and GAM254514 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164541 RNA, GAM189627 RNA and GAM254514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164541 target RNA into GAM164541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189627 target RNA into GAM189627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254514 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254514 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254514 target RNA into GAM254514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3071 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3071 gene: GAM164541 target protein, GAM189627 target protein and GAM254514 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164541, GAM189627 and GAM254514

GR3072 BF105474 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3072(GR3072) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3072 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3072 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3072 gene encodes GR3072 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3072 precursor RNA folds spatially, forming GR3072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3072 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3072 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7701 precursor RNA, GAM11944 precursor RNA and GAM129732 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7701 RNA, GAM11944 RNA and GAM129732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7701 target RNA into GAM7701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11944 target RNA into GAM11944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129732 target RNA into GAM129732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3072 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3072 gene: GAM7701 target protein, GAM11944 target protein and GAM129732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7701, GAM11944 and GAM129732

GR3073 BF032452 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3073(GR3073) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3073 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3073 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3073 gene encodes GR3073 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3073 precursor RNA folds spatially, forming GR3073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3073 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3073 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1408 precursor RNA, GAM5770 precursor RNA and GAM223427 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1408 RNA, GAM5770 RNA and GAM223427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1408 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1408 target RNA into GAM1408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5770 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5770 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5770 target RNA into GAM5770 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223427 target RNA into GAM223427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3073 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3073 gene: GAM1408 target protein, GAM5770 target protein and GAM223427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1408, GAM5770 and GAM223427

GR3074 AI751642 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3074(GR3074) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3074 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3074 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3074 gene encodes GR3074 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3074 precursor RNA folds spatially, forming GR3074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3074 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3074 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM270950 precursor RNA and GAM302847 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM270950 RNA and GAM302847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM270950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270950 target RNA into GAM270950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302847 target RNA into GAM302847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3074 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3074 gene: GAM270950 target protein and GAM302847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM270950 and GAM302847

GR3075 BG701349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3075(GR3075) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3075 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3075 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3075 gene encodes GR3075 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3075 precursor RNA folds spatially, forming GR3075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3075 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3075 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM64010 precursor RNA, GAM235129 precursor RNA and GAM258106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64010 RNA, GAM235129 RNA and GAM258106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64010 target RNA into GAM64010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235129 target RNA into GAM235129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258106 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258106 target RNA into GAM258106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3075 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3075 gene: GAM64010 target protein, GAM235129 target protein and GAM258106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64010, GAM235129 and GAM258106

GR3076 AA732572 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3076(GR3076) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3076 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3076 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3076 gene encodes GR3076 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3076 precursor RNA folds spatially, forming GR3076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3076 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3076 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6048 precursor RNA, GAM192580 precursor RNA and GAM207097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6048 RNA, GAM192580 RNA and GAM207097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6048 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6048 target RNA into GAM6048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192580 target RNA into GAM192580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207097 target RNA into GAM207097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3076 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3076 gene: GAM6048 target protein, GAM192580 target protein and GAM207097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6048, GAM192580 and GAM207097

GR3077 BE503193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3077(GR3077) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3077 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3077

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3077 gene encodes GR3077 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3077 precursor RNA folds spatially, forming GR3077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3077 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3077 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM105442 precursor RNA and GAM300088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM105442 RNA and GAM300088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM105442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105442 target RNA into GAM105442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM300088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM300088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM300088 target RNA into GAM300088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3077 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3077 gene: GAM105442 target protein and GAM300088 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM105442 and GAM300088

GR3078 AI570533 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3078(GR3078) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3078 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3078 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3078 gene encodes GR3078 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3078 precursor RNA folds spatially, forming GR3078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3078 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3078 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1496 precursor RNA, GAM6355 precursor RNA and GAM13813 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1496 RNA, GAM6355 RNA and GAM13813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1496 target RNA into GAM1496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6355 target RNA into GAM6355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13813 target RNA into GAM13813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3078 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3078 gene: GAM1496 target protein, GAM6355 target protein and GAM13813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1496, GAM6355 and GAM13813

GR3079 BG106754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3079(GR3079) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3079 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3079 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3079 gene encodes GR3079 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3079 precursor RNA folds spatially, forming GR3079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3079 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3079 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96998 precursor RNA and GAM319307 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96998 RNA and GAM319307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96998 target RNA into GAM96998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319307 target RNA into GAM319307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3079 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3079 gene: GAM96998 target protein and GAM319307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96998 and GAM319307

GR3080 H59640 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3080(GR3080) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3080 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3080 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3080 gene encodes GR3080 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3080 precursor RNA folds spatially, forming GR3080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3080 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3080 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM318327 precursor RNA and GAM334727 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM318327 RNA and GAM334727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM318327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318327 target RNA into GAM318327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334727 target RNA into GAM334727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3080 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3080 gene: GAM318327 target protein and GAM334727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM318327 and GAM334727

GR3081 AI460290 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3081(GR3081) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3081 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3081 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3081 gene encodes GR3081 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3081 precursor RNA folds spatially, forming GR3081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3081 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3081 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4257 precursor RNA and GAM105079 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4257 RNA and GAM105079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4257 target RNA into GAM4257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105079 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM105079 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105079 target RNA into GAM105079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3081 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3081 gene: GAM4257 target protein and GAM105079 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4257 and GAM105079

GR3082 BG994868 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3082(GR3082) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3082 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3082 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3082 gene encodes GR3082 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3082 precursor RNA folds spatially, forming GR3082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3082 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3082 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2448 precursor RNA and GAM279943 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2448 RNA and GAM279943 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2448 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2448 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2448 target RNA into GAM2448 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279943 target RNA into GAM279943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3082 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3082 gene: GAM2448 target protein and GAM279943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2448 and GAM279943

GR3083 BI604188 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3083(GR3083) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3083 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3083 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3083 gene encodes GR3083 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3083 precursor RNA folds spatially, forming GR3083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3083 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3083 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM147833 precursor RNA and GAM261683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM147833 RNA and GAM261683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM147833 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147833 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147833 target RNA into GAM147833 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261683 target RNA into GAM261683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3083 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3083 gene: GAM147833 target protein and GAM261683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM147833 and GAM261683

GR3084 AA679362 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3084(GR3084) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3084 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3084 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3084 gene encodes GR3084 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3084 precursor RNA folds spatially, forming GR3084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3084 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3084 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM113884 precursor RNA and GAM169565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113884 RNA and GAM169565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113884 target RNA into GAM113884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169565 target RNA into GAM169565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3084 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3084 gene: GAM113884 target

protein and GAM169565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113884 and GAM169565

GR3085 BE389650 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3085(GR3085) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3085 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3085 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3085 gene encodes GR3085 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3085 precursor RNA folds spatially, forming GR3085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3085 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3085 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM254941 precursor RNA and GAM267661 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM254941 RNA and GAM267661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM254941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254941 target RNA into GAM254941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267661 target RNA into GAM267661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3085 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3085 gene: GAM254941 target protein and GAM267661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM254941 and GAM267661

GR3086 AI149922 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3086(GR3086) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3086 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3086 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3086 gene encodes GR3086 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3086 precursor RNA folds spatially, forming GR3086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3086 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3086 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3582 precursor RNA, GAM31996 precursor RNA and GAM186228 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3582 RNA, GAM31996 RNA and GAM186228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3582 target RNA into GAM3582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31996 target RNA into GAM31996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186228 target RNA into GAM186228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3086 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3086 gene: GAM3582 target protein, GAM31996 target protein and GAM186228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3582, GAM31996 and GAM186228

GR3087 BG323254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3087(GR3087) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3087 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3087

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3087 gene encodes GR3087 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3087 precursor RNA folds spatially, forming GR3087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3087 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3087 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM103073 precursor RNA, GAM131642 precursor RNA and GAM259528 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103073 RNA, GAM131642 RNA and GAM259528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103073 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103073 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103073 target RNA into GAM103073 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131642 target RNA into GAM131642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259528 target RNA into GAM259528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3087 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3087 gene: GAM103073 target protein, GAM131642 target protein and GAM259528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103073, GAM131642 and GAM259528

GR3088 BG473495 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3088(GR3088) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3088 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3088 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3088 gene encodes GR3088 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3088 precursor RNA folds spatially, forming GR3088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3088 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3088 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6297 precursor RNA, GAM194039 precursor RNA and GAM231028 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6297 RNA, GAM194039 RNA and GAM231028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM6297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6297 target RNA into GAM6297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194039 target RNA into GAM194039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231028 target RNA into GAM231028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3088 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3088 gene: GAM6297 target protein, GAM194039 target protein and GAM231028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6297, GAM194039 and GAM231028

GR3089 BG927847 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3089(GR3089) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3089 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3089 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3089 gene encodes GR3089 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3089 precursor RNA folds spatially, forming GR3089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3089 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3089 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM150207 precursor RNA and GAM266070 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM150207 RNA and GAM266070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM150207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150207 target RNA into GAM150207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266070 target RNA into GAM266070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3089 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3089 gene: GAM150207 target protein and GAM266070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM150207 and GAM266070

GR3090 BI820703 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3090(GR3090) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3090 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3090 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3090 gene encodes GR3090 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3090 precursor RNA folds spatially, forming GR3090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3090 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3090 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99214 precursor RNA and GAM266827 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99214 RNA and GAM266827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99214 target RNA into GAM99214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266827 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266827 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266827 target RNA into GAM266827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3090 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3090 gene: GAM99214 target protein and GAM266827 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99214 and GAM266827

GR3091 AA494202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3091(GR3091) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3091 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3091 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3091 gene encodes GR3091 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3091 precursor RNA folds spatially, forming GR3091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3091 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3091 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM36444 precursor RNA, GAM244555 precursor RNA and GAM310098 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36444 RNA, GAM244555 RNA and GAM310098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36444 target RNA into GAM36444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244555 target RNA into GAM244555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310098 target RNA into GAM310098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3091 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3091 gene: GAM36444 target protein, GAM244555 target protein and GAM310098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36444, GAM244555 and GAM310098

GR3092 AL601094 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3092(GR3092) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3092 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3092 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3092 gene encodes GR3092 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3092 precursor RNA folds spatially, forming GR3092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3092 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3092 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1489 precursor RNA and GAM5057 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1489 RNA and GAM5057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1489 target RNA into GAM1489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5057 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5057 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5057 target RNA into GAM5057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3092 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3092 gene: GAM1489 target protein and GAM5057 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1489 and GAM5057

GR3093 BG621128 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3093(GR3093) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3093 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3093 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3093 gene encodes GR3093 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3093 precursor RNA folds spatially, forming GR3093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3093 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3093 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM56397 precursor RNA, GAM62263 precursor RNA and GAM99847 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56397 RNA, GAM62263 RNA and GAM99847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56397 target RNA into GAM56397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62263 target RNA into GAM62263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99847 target RNA into GAM99847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3093 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3093 gene: GAM56397 target protein, GAM62263 target protein and GAM99847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56397, GAM62263 and GAM99847

GR3094 BI461391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3094(GR3094) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3094 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3094 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3094 gene encodes GR3094 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3094 precursor RNA folds spatially, forming GR3094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3094 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3094 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162383 precursor RNA and GAM332754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162383 RNA and GAM332754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162383 target RNA into GAM162383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332754 target RNA into GAM332754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3094 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3094 gene: GAM162383 target protein and GAM332754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162383 and GAM332754

GR3095 BM011681 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3095(GR3095) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3095 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3095 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3095 gene encodes GR3095 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3095 precursor RNA folds spatially, forming GR3095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3095 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3095 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4718 precursor RNA and GAM214857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4718 RNA and GAM214857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4718 target RNA into GAM4718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214857 target RNA into GAM214857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3095 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3095 gene: GAM4718 target protein and GAM214857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4718 and GAM214857

GR3096 BF840949 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3096(GR3096) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3096 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3096 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3096 gene encodes GR3096 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3096 precursor RNA folds spatially, forming GR3096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3096 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3096 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4002 precursor RNA and GAM21225 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4002 RNA and GAM21225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4002 target RNA into GAM4002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM21225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21225 target RNA into GAM21225 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3096 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3096 gene: GAM4002 target protein and GAM21225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4002 and GAM21225

GR3097 BM981018 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3097(GR3097) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3097 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3097 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3097 gene encodes GR3097 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3097 precursor RNA folds spatially, forming GR3097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3097 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3097 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65594 precursor RNA and GAM116885 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65594 RNA and GAM116885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM65594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65594 target RNA into GAM65594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116885 target RNA into GAM116885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3097 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3097 gene: GAM65594 target protein and GAM116885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65594 and GAM116885

GR3098 BM921793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3098(GR3098) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3098 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3098 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3098 gene encodes GR3098 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3098 precursor RNA folds spatially, forming GR3098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3098 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3098 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM47270 precursor RNA, GAM62444 precursor RNA and GAM118785 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47270 RNA, GAM62444 RNA and GAM118785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47270 target RNA into GAM47270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62444 target RNA into GAM62444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118785 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118785 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118785 target RNA into GAM118785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3098 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3098 gene: GAM47270 target protein, GAM62444 target protein and GAM118785 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47270, GAM62444 and GAM118785

GR3099 AV704638 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3099(GR3099) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3099 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3099 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3099 gene encodes GR3099 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3099 precursor RNA folds spatially, forming GR3099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3099 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3099 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31389 precursor RNA and GAM269241 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31389 RNA and GAM269241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31389 target RNA into GAM31389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269241 target RNA into GAM269241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3099 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3099 gene: GAM31389 target protein and GAM269241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31389 and GAM269241

GR3100 BF203967 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3100(GR3100) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3100 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3100 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3100 gene encodes GR3100 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3100 precursor RNA folds spatially, forming GR3100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3100 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3100 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM23575 precursor RNA and GAM179656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23575 RNA and GAM179656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23575 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23575 target RNA into GAM23575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179656 target RNA into GAM179656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3100 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3100 gene: GAM23575 target protein and GAM179656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23575 and GAM179656

GR3101 AW630135 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3101(GR3101) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3101 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3101 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3101 gene encodes GR3101 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3101 precursor RNA folds spatially, forming GR3101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3101 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3101 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4711 precursor RNA and GAM221273 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4711 RNA and GAM221273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4711 target RNA into GAM4711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221273 target RNA into GAM221273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3101 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3101 gene: GAM4711 target protein and GAM221273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4711 and GAM221273

GR3102 BI480899 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3102(GR3102) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3102 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3102 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3102 gene encodes GR3102 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3102 precursor RNA folds spatially, forming GR3102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3102 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3102 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2217 precursor RNA and GAM294449 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2217 RNA and GAM294449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2217 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2217 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2217 target RNA into GAM2217 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294449 target RNA into GAM294449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3102 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3102 gene: GAM2217 target protein and GAM294449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2217 and GAM294449

GR3103 BF756311 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3103(GR3103) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3103 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3103 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3103 gene encodes GR3103 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3103 precursor RNA folds spatially, forming GR3103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3103 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3103 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM142212 precursor RNA and GAM158552 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142212 RNA and GAM158552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142212 target RNA into GAM142212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158552

target RNA into GAM158552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3103 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3103 gene: GAM142212 target protein and GAM158552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142212 and GAM158552

GR3104 BF570430 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3104(GR3104) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3104 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3104 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3104 gene encodes GR3104 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3104 precursor RNA folds spatially, forming GR3104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3104 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3104 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM39583 precursor RNA, GAM232518 precursor RNA and GAM314367 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39583 RNA, GAM232518 RNA and GAM314367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39583 target RNA into GAM39583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232518 target RNA into GAM232518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314367 target RNA into GAM314367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3104 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3104 gene: GAM39583 target protein, GAM232518 target protein and GAM314367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39583, GAM232518 and GAM314367

GR3105 BI198218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3105(GR3105) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3105 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3105 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3105 gene encodes GR3105 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3105 precursor RNA folds spatially, forming GR3105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3105 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3105 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3296 precursor RNA, GAM6379 precursor RNA, GAM261608 precursor RNA and GAM330243 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3296 RNA, GAM6379 RNA, GAM261608 RNA and GAM330243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3296 target RNA into GAM3296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6379 target RNA into GAM6379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261608 target RNA into GAM261608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330243 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330243 target RNA into GAM330243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3105 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3105 gene: GAM3296 target protein, GAM6379 target protein, GAM261608 target protein and GAM330243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3296, GAM6379, GAM261608 and GAM330243

GR3106 AW449748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3106(GR3106) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3106 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3106 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3106 gene encodes GR3106 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3106 precursor RNA folds spatially, forming GR3106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3106 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3106 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3841 precursor RNA and GAM178208 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3841 RNA and GAM178208 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3841 target RNA into GAM3841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178208 target RNA into GAM178208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3106 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3106 gene: GAM3841 target protein and GAM178208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3841 and GAM178208

GR3107 BQ069302 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3107(GR3107) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3107 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3107 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3107 gene encodes GR3107 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3107 precursor RNA folds spatially, forming GR3107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3107 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3107 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73880 precursor RNA and GAM323043 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73880 RNA and GAM323043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73880 target RNA into GAM73880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323043 target RNA into GAM323043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3107 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3107 gene: GAM73880 target protein and GAM323043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73880 and GAM323043

GR3108 BI561779 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3108(GR3108) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3108 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3108 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3108 gene encodes GR3108 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3108 precursor RNA folds spatially, forming GR3108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3108 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3108 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM176118 precursor RNA and GAM230022 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM176118 RNA and GAM230022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM176118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176118 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176118 target RNA into GAM176118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230022 target RNA into GAM230022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3108 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3108 gene: GAM176118 target

protein and GAM230022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM176118 and GAM230022

GR3109 R14241 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3109(GR3109) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3109 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3109 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3109 gene encodes GR3109 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3109 precursor RNA folds spatially, forming GR3109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3109 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3109 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7671 precursor RNA, GAM232074 precursor RNA and GAM257583 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7671 RNA, GAM232074 RNA and GAM257583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7671 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7671 target RNA into GAM7671 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232074 target RNA into GAM232074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257583 target RNA into GAM257583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3109 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3109 gene: GAM7671 target protein, GAM232074 target protein and GAM257583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7671, GAM232074 and GAM257583

GR3110 BI826450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3110(GR3110) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3110 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3110 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3110 gene encodes GR3110 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3110 precursor RNA folds spatially, forming GR3110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3110 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3110 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM432 precursor RNA and GAM124830 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM432 RNA and GAM124830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM432 target RNA into GAM432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124830 target RNA into GAM124830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3110 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3110 gene: GAM432 target protein and GAM124830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM432 and GAM124830

GR3111 BG746085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3111(GR3111) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3111 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3111

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3111 gene encodes GR3111 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3111 precursor RNA folds spatially, forming GR3111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3111 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3111 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4292 precursor RNA, GAM7685 precursor RNA and GAM218302 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4292 RNA, GAM7685 RNA and GAM218302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4292 target RNA into GAM4292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7685 target RNA into GAM7685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218302 target RNA into GAM218302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3111 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3111 gene: GAM4292 target protein, GAM7685 target protein and GAM218302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4292, GAM7685 and GAM218302

GR3112 R67459 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3112(GR3112) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3112 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3112 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3112 gene encodes GR3112 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3112 precursor RNA folds spatially, forming GR3112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3112 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3112 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM261536 precursor RNA, GAM284852 precursor RNA and GAM297803 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM261536 RNA, GAM284852 RNA and GAM297803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM261536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261536 target RNA into GAM261536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284852 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284852 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284852 target RNA into GAM284852 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297803 target RNA into GAM297803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3112 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3112 gene: GAM261536 target protein, GAM284852 target protein and GAM297803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM261536, GAM284852 and GAM297803

GR3113 BQ009527 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3113(GR3113) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3113 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3113 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3113 gene encodes GR3113 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3113 precursor RNA folds spatially, forming GR3113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3113 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3113 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM165350 precursor RNA and GAM178159 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165350 RNA and GAM178159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165350 target RNA into GAM165350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178159 target RNA into GAM178159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3113 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3113 gene: GAM165350 target protein and GAM178159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165350 and GAM178159

GR3114 BM479305 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3114(GR3114) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3114 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3114 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3114 gene encodes GR3114 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3114 precursor RNA folds spatially, forming GR3114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3114 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3114 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32288 precursor RNA and GAM333683 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32288 RNA and GAM333683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32288 target RNA into GAM32288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333683 target RNA into GAM333683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3114 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3114 gene: GAM32288 target protein and GAM333683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32288 and GAM333683

GR3115 BF310457 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3115(GR3115) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3115 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3115 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3115 gene encodes GR3115 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3115 precursor RNA folds spatially, forming GR3115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3115 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3115 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM125716 precursor RNA and GAM265109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125716 RNA and GAM265109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125716 target RNA into GAM125716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265109 target RNA into GAM265109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3115 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3115 gene: GAM125716 target protein and GAM265109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125716 and GAM265109

GR3116 Z45603 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3116(GR3116) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3116 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3116 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3116 gene encodes GR3116 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3116 precursor RNA folds spatially, forming GR3116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3116 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3116 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60335 precursor RNA and GAM295436 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60335 RNA and GAM295436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60335 target RNA into GAM60335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295436 target RNA into GAM295436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3116 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3116 gene: GAM60335 target protein and GAM295436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60335 and GAM295436

GR3117 BI832414 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3117(GR3117) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3117 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3117 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3117 gene encodes GR3117 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3117 precursor RNA folds spatially, forming GR3117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3117 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3117 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM512 precursor RNA and GAM681 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM512 RNA and GAM681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM512 target RNA into GAM512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM681 target RNA into GAM681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3117 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3117 gene: GAM512 target protein and GAM681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM512 and GAM681

GR3118 BM757850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3118(GR3118) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3118 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3118 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3118 gene encodes GR3118 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3118 precursor RNA folds spatially, forming GR3118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3118 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3118 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8525 precursor RNA and GAM178672 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8525 RNA and GAM178672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8525 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8525 target RNA into GAM8525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178672 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178672 target RNA into GAM178672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3118 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3118 gene: GAM8525 target protein and GAM178672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8525 and GAM178672

GR3119 BF686128 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3119(GR3119) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3119 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3119 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3119 gene encodes GR3119 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3119 precursor RNA folds spatially, forming GR3119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3119 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3119 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM209842 precursor RNA and GAM283639 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM209842 RNA and GAM283639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM209842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209842 target RNA into GAM209842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283639 target RNA into GAM283639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3119 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3119 gene: GAM209842 target protein and GAM283639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM209842 and GAM283639

GR3120 C06385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3120(GR3120) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3120 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3120 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3120 gene encodes GR3120 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3120 precursor RNA folds spatially, forming GR3120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3120 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3120 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2582 precursor RNA and GAM250135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2582 RNA and GAM250135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2582 target RNA into GAM2582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250135 target RNA into GAM250135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3120 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3120 gene: GAM2582 target protein and GAM250135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2582 and GAM250135

GR3121 AA166733 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3121(GR3121) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3121 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3121

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3121 gene encodes GR3121 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3121 precursor RNA folds spatially, forming GR3121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3121 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3121 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83445 precursor RNA and GAM152962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83445 RNA and GAM152962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83445 target RNA into GAM83445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152962 target RNA into GAM152962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3121 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3121 gene: GAM83445 target protein and GAM152962 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83445 and GAM152962

GR3122 AA782038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3122(GR3122) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3122 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3122 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3122 gene encodes GR3122 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3122 precursor RNA folds spatially, forming GR3122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3122 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3122 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6350 precursor RNA and GAM232965 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6350 RNA and GAM232965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6350 target RNA into GAM6350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232965 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232965 target RNA into GAM232965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3122 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3122 gene: GAM6350 target protein and GAM232965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6350 and GAM232965

GR3123 BF436652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3123(GR3123) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3123 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3123 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3123 gene encodes GR3123 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3123 precursor RNA folds spatially, forming GR3123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3123 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3123 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24681 precursor RNA and GAM146517 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM24681 RNA and GAM146517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24681 target RNA into GAM24681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146517 target RNA into GAM146517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3123 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3123 gene: GAM24681 target protein and GAM146517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24681 and GAM146517

GR3124 BM930769 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3124(GR3124) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3124 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3124 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3124 gene encodes GR3124 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3124 precursor RNA folds spatially, forming GR3124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3124 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3124 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM207028 precursor RNA and GAM318432 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM207028 RNA and GAM318432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM207028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207028 target RNA into GAM207028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318432 target RNA into GAM318432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3124 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3124 gene: GAM207028 target protein and GAM318432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM207028 and GAM318432

GR3125 BF317157 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3125(GR3125) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3125 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3125 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3125 gene encodes GR3125 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3125 precursor RNA folds spatially, forming GR3125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3125 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3125 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5313 precursor RNA and GAM280309 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5313 RNA and GAM280309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5313 target RNA into GAM5313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280309 target RNA into GAM280309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3125 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3125 gene: GAM5313 target protein and GAM280309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5313 and GAM280309

GR3126 BG478000 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3126(GR3126) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3126 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3126 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3126 gene encodes GR3126 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3126 precursor RNA folds spatially, forming GR3126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3126 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3126 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1412 precursor RNA, GAM124172 precursor RNA, GAM277733 precursor RNA and GAM305595 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1412 RNA, GAM124172 RNA, GAM277733 RNA and GAM305595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1412 target RNA into

GAM1412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124172 target RNA into GAM124172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277733 target RNA into GAM277733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305595 target RNA into GAM305595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3126 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3126 gene: GAM1412 target protein, GAM124172 target protein, GAM277733 target protein and GAM305595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1412, GAM124172, GAM277733 and GAM305595

GR3127 AU131450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3127(GR3127) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3127 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3127 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3127 gene encodes GR3127 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3127 precursor RNA folds spatially, forming GR3127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3127 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3127 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25623 precursor RNA and GAM246136 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25623 RNA and GAM246136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25623 target RNA into GAM25623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246136 target RNA into GAM246136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3127 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3127 gene: GAM25623 target protein and GAM246136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25623 and GAM246136

GR3128 BG912652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3128(GR3128) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3128 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3128 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3128 gene encodes GR3128 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3128 precursor RNA folds spatially, forming GR3128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3128 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3128 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM263909 precursor RNA and GAM269811 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM263909 RNA and GAM269811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM263909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263909 target RNA into GAM263909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269811 target RNA into GAM269811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3128 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3128 gene: GAM263909 target protein and GAM269811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM263909 and GAM269811

GR3129 AW749351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3129(GR3129) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3129 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3129 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3129 gene encodes GR3129 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3129 precursor RNA folds spatially, forming GR3129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3129 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3129 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189681 precursor RNA and GAM327218 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189681 RNA and GAM327218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189681 target RNA into GAM189681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327218 target RNA into GAM327218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3129 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3129 gene: GAM189681 target protein and GAM327218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189681 and GAM327218

GR3130 BG674711 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3130(GR3130) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3130 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3130 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3130 gene encodes GR3130 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3130 precursor RNA folds spatially, forming GR3130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3130 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3130 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM396 precursor RNA, GAM6863 precursor RNA and GAM154867 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM396 RNA, GAM6863 RNA and GAM154867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM396 target RNA into GAM396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6863 target RNA into GAM6863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154867 target RNA into GAM154867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3130 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3130 gene: GAM396 target protein, GAM6863 target protein and GAM154867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM396, GAM6863 and GAM154867

GR3131 AW129195 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3131(GR3131) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3131 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3131 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3131 gene encodes GR3131 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3131 precursor RNA folds spatially, forming GR3131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3131 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3131 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73856 precursor RNA and GAM241630 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73856 RNA and GAM241630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73856 target RNA into GAM73856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241630

target RNA into GAM241630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3131 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3131 gene: GAM73856 target protein and GAM241630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73856 and GAM241630

GR3132 AA334910 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3132(GR3132) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3132 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3132 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3132 gene encodes GR3132 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3132 precursor RNA folds spatially, forming GR3132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3132 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3132 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4824 precursor RNA and GAM49977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4824 RNA and GAM49977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4824 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4824 target RNA into GAM4824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49977 target RNA into GAM49977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3132 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3132 gene: GAM4824 target protein and GAM49977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4824 and GAM49977

GR3133 BF574499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3133(GR3133) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3133 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3133 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3133 gene encodes GR3133 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3133 precursor RNA folds spatially, forming GR3133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3133 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3133 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3133 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79627 precursor RNA and GAM307032 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79627 RNA and GAM307032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79627 target RNA into GAM79627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307032 target RNA into GAM307032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3133 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3133 gene: GAM79627 target protein and GAM307032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79627 and GAM307032

GR3134 BM005945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3134(GR3134) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3134 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3134 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3134 gene encodes GR3134 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3134 precursor RNA folds spatially, forming GR3134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3134 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3134 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119301 precursor RNA and GAM154699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119301 RNA and GAM154699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119301 target RNA into GAM119301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154699 target RNA into GAM154699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3134 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3134 gene: GAM119301 target protein and GAM154699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119301 and GAM154699

GR3135 BI029560 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3135(GR3135) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3135 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3135 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3135 gene encodes GR3135 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3135 precursor RNA folds spatially, forming GR3135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3135 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3135 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM47629 precursor RNA, GAM113708 precursor RNA and GAM162872 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47629 RNA, GAM113708 RNA and GAM162872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47629 target RNA into GAM47629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113708 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113708 target RNA into GAM113708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162872 target RNA into GAM162872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3135 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3135 gene: GAM47629 target protein, GAM113708 target protein and GAM162872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47629, GAM113708 and GAM162872

GR3136 AI189780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3136(GR3136) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3136 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3136 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3136 gene encodes GR3136 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3136 precursor RNA folds spatially, forming GR3136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3136 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3136 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM26786 precursor RNA, GAM100211 precursor RNA and GAM291351 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26786 RNA, GAM100211 RNA and GAM291351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26786 target RNA into GAM26786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100211 target RNA into GAM100211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291351 target RNA into GAM291351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3136 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3136 gene: GAM26786 target protein, GAM100211 target protein and GAM291351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26786, GAM100211 and GAM291351

GR3137 AA701994 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3137(GR3137) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3137 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3137 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3137 gene encodes GR3137 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3137 precursor RNA folds spatially, forming GR3137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3137 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3137 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171412 precursor RNA and GAM318287 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171412 RNA and GAM318287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171412 target RNA into GAM171412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318287 target RNA into GAM318287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3137 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3137 gene: GAM171412 target protein and GAM318287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171412 and GAM318287

GR3138 BG112811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3138(GR3138) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3138 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3138 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3138 gene encodes GR3138 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3138 precursor RNA folds spatially, forming GR3138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3138 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3138 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7574 precursor RNA and GAM145291 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7574 RNA and GAM145291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7574 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7574 target RNA into GAM7574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145291 target RNA into GAM145291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3138 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3138 gene: GAM7574 target protein and GAM145291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7574 and GAM145291

GR3139 BI600238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3139(GR3139) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3139 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3139 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3139 gene encodes GR3139 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3139 precursor RNA folds spatially, forming GR3139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3139 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3139 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM113888 precursor RNA, GAM146961 precursor RNA

and GAM238050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113888 RNA, GAM146961 RNA and GAM238050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113888 target RNA into GAM113888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146961 target RNA into GAM146961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238050 target RNA into GAM238050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3139 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3139 gene: GAM113888 target protein, GAM146961 target protein and GAM238050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113888, GAM146961 and GAM238050

GR3140 H80304 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3140(GR3140) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3140 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3140 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3140 gene encodes GR3140 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3140 precursor RNA folds spatially, forming GR3140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3140 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3140 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5125 precursor RNA, GAM118666 precursor RNA, GAM161170 precursor RNA and GAM261011 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5125 RNA, GAM118666 RNA, GAM161170 RNA and GAM261011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5125 target RNA into GAM5125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118666 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118666 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118666 target RNA into GAM118666 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161170 target RNA into GAM161170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261011 target RNA into GAM261011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3140 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3140 gene: GAM5125 target protein, GAM118666 target protein, GAM161170 target protein and GAM261011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5125, GAM118666, GAM161170 and GAM261011

GR3141 BF764786 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3141(GR3141) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3141 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3141 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3141 gene encodes GR3141 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3141 precursor RNA folds spatially, forming GR3141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3141 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3141 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM18035 precursor RNA and GAM226886 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18035 RNA and GAM226886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18035 target RNA into GAM18035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226886 target RNA into GAM226886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3141 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3141 gene: GAM18035 target protein and GAM226886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18035 and GAM226886

GR3142 BM875768 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3142(GR3142) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3142 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3142 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3142 gene encodes GR3142 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3142 precursor RNA folds spatially, forming GR3142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3142 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3142 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4371 precursor RNA and GAM251910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4371 RNA and GAM251910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4371 target RNA into GAM4371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251910 target RNA into GAM251910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3142 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3142 gene: GAM4371 target protein and GAM251910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4371 and GAM251910

GR3143 AA059482 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3143(GR3143) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3143 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3143 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3143 gene encodes GR3143 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3143 precursor RNA folds spatially, forming GR3143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3143 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3143 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6023 precursor RNA, GAM260880 precursor RNA and GAM261690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6023 RNA, GAM260880 RNA and GAM261690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6023 target RNA into GAM6023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260880 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260880 target RNA into GAM260880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261690 target RNA into GAM261690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3143 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3143 gene: GAM6023 target protein, GAM260880 target protein and GAM261690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6023, GAM260880 and GAM261690

GR3144 AI091863 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3144(GR3144) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3144 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3144 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3144 gene encodes GR3144 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3144 precursor RNA folds spatially, forming GR3144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3144 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3144 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM97247 precursor RNA, GAM114729 precursor RNA and GAM290339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97247 RNA, GAM114729 RNA and GAM290339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97247 target RNA into GAM97247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114729 target RNA into GAM114729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290339 target RNA into GAM290339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3144 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3144 gene: GAM97247 target protein, GAM114729 target protein and GAM290339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97247, GAM114729 and GAM290339

GR3145 BE890416 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3145(GR3145) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3145 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3145 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3145 gene encodes GR3145 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3145 precursor RNA folds spatially, forming GR3145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3145 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3145 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM662 precursor RNA, GAM268143 precursor RNA and GAM299311 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM662 RNA, GAM268143 RNA and GAM299311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM662 target RNA into GAM662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268143 target RNA into GAM268143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299311 target RNA into GAM299311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3145 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3145 gene: GAM662 target protein, GAM268143 target protein and GAM299311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM662, GAM268143 and GAM299311

GR3146 BG771260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3146(GR3146) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3146 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3146 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3146 gene encodes GR3146 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3146 precursor RNA folds spatially, forming GR3146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3146 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3146 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8318 precursor RNA and GAM329850 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8318 RNA and GAM329850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8318 target RNA into GAM8318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329850 target RNA into GAM329850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3146 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3146 gene: GAM8318 target protein and GAM329850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8318 and GAM329850

GR3147 BI520197 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3147(GR3147) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3147 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3147 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3147 gene encodes GR3147 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3147 precursor RNA folds spatially, forming GR3147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3147 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3147 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63834 precursor RNA and GAM270233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63834 RNA and GAM270233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63834 target RNA into GAM63834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270233 target RNA into GAM270233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3147 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3147 gene: GAM63834 target protein and GAM270233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63834 and GAM270233

GR3148 BM353477 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3148(GR3148) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3148 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3148 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3148 gene encodes GR3148 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3148 precursor RNA folds spatially, forming GR3148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3148 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3148 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7243 precursor RNA and GAM17429 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7243 RNA and GAM17429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7243 target RNA into GAM7243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17429 target RNA into GAM17429 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3148 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3148 gene: GAM7243 target protein and GAM17429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7243 and GAM17429

GR3149 BF224138 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3149(GR3149) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3149 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3149 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3149 gene encodes GR3149 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3149 precursor RNA folds spatially, forming GR3149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3149 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3149 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM11903 precursor RNA, GAM58150 precursor RNA and GAM261324 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11903 RNA, GAM58150 RNA and GAM261324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11903 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11903 target RNA into GAM11903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58150 target RNA into GAM58150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261324 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261324 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261324 target RNA into GAM261324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3149 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3149 gene: GAM11903 target protein, GAM58150 target protein and GAM261324 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11903, GAM58150 and GAM261324

GR3150 BF509004 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3150(GR3150) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3150 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3150 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3150 gene encodes GR3150 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3150 precursor RNA folds spatially, forming GR3150 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3150 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3150 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM60048 precursor RNA, GAM254150 precursor RNA and GAM257901 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60048 RNA, GAM254150 RNA and GAM257901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60048 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60048 target RNA into GAM60048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254150 target RNA into GAM254150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257901 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257901 target RNA into GAM257901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3150 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3150 gene: GAM60048 target protein, GAM254150 target protein and GAM257901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60048, GAM254150 and GAM257901

GR3151 BF851433 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3151(GR3151) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3151 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3151 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3151 gene encodes GR3151 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3151 precursor RNA folds spatially, forming GR3151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3151 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3151 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1350 precursor RNA, GAM149737 precursor RNA and GAM321958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1350 RNA, GAM149737 RNA and GAM321958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1350 target RNA into GAM1350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149737 target RNA into GAM149737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321958 target RNA into GAM321958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3151 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3151 gene: GAM1350 target protein, GAM149737 target protein and GAM321958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1350, GAM149737 and GAM321958

GR3152 AA780413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3152(GR3152) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3152 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3152 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3152 gene encodes GR3152 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3152 precursor RNA folds spatially, forming GR3152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3152 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3152 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM88012 precursor RNA, GAM98657 precursor RNA and GAM298377 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88012 RNA, GAM98657 RNA and GAM298377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88012 target RNA into GAM88012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98657 target RNA into GAM98657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298377 target RNA into GAM298377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3152 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3152 gene: GAM88012 target protein, GAM98657 target protein and GAM298377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM88012, GAM98657 and GAM298377

GR3153 R93540 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3153(GR3153) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3153 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3153 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3153 gene encodes GR3153 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3153 precursor RNA folds spatially, forming GR3153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3153 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3153 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM51857 precursor RNA, GAM148531 precursor RNA and GAM250593 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51857 RNA, GAM148531 RNA and GAM250593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51857 target RNA into GAM51857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148531 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148531 target RNA into GAM148531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250593 target RNA into GAM250593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3153 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3153 gene: GAM51857 target protein, GAM148531 target protein and GAM250593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51857, GAM148531 and GAM250593

GR3154 BM726235 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3154(GR3154) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3154 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3154 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3154 gene encodes GR3154 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3154 precursor RNA folds spatially, forming GR3154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3154 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3154 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8586 precursor RNA, GAM47572 precursor RNA and GAM270168 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8586 RNA, GAM47572 RNA and GAM270168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8586 target RNA into GAM8586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47572 target RNA into GAM47572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270168 target RNA into GAM270168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3154 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3154 gene: GAM8586 target protein, GAM47572 target protein and GAM270168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8586, GAM47572 and GAM270168

GR3155 BI825101 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3155(GR3155) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3155 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3155 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3155 gene encodes GR3155 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3155 precursor RNA folds spatially, forming GR3155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3155 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3155 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3147 precursor RNA and GAM102624 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3147 RNA and GAM102624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3147 target RNA into GAM3147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102624

target RNA into GAM102624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3155 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3155 gene: GAM3147 target protein and GAM102624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3147 and GAM102624

GR3156 BF217406 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3156(GR3156) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3156 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3156 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3156 gene encodes GR3156 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3156 precursor RNA folds spatially, forming GR3156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3156 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3156 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4171 precursor RNA, GAM113410 precursor RNA and GAM168941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4171 RNA, GAM113410 RNA and GAM168941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4171 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4171 target RNA into GAM4171 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113410 target RNA into GAM113410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168941 target RNA into GAM168941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3156 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3156 gene: GAM4171 target protein, GAM113410 target protein and GAM168941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4171, GAM113410 and GAM168941

GR3157 AA569153 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3157(GR3157) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3157 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3157 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3157 gene encodes GR3157 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3157 precursor RNA folds spatially, forming GR3157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3157 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3157 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4648 precursor RNA and GAM201864 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4648 RNA and GAM201864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4648 target RNA into GAM4648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201864 target RNA into GAM201864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3157 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3157 gene: GAM4648 target protein and GAM201864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4648 and GAM201864

GR3158 BG427368 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3158(GR3158) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3158 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3158 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3158 gene encodes GR3158 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3158 precursor RNA folds spatially, forming GR3158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3158 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3158 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10511 precursor RNA and GAM172044 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10511 RNA and GAM172044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10511 target RNA into GAM10511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172044 target RNA into GAM172044 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3158 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3158 gene: GAM10511 target protein and GAM172044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10511 and GAM172044

GR3159 AW613970 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3159(GR3159) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3159 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3159 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3159 gene encodes GR3159 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3159 precursor RNA folds spatially, forming GR3159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3159 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3159 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7539 precursor RNA and GAM258611 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7539 RNA and GAM258611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7539 target RNA into GAM7539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258611 target RNA into GAM258611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3159 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3159 gene: GAM7539 target protein and GAM258611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7539 and GAM258611

GR3160 BG546900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3160(GR3160) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3160 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3160 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3160 gene encodes GR3160 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3160 precursor RNA folds spatially, forming GR3160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3160 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3160 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM197061 precursor RNA and GAM334616 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM197061 RNA and GAM334616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM197061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197061 target RNA into GAM197061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334616 target RNA into GAM334616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3160 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3160 gene: GAM197061 target protein and GAM334616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM197061 and GAM334616

GR3161 BG029071 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3161(GR3161) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3161 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3161 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3161 gene encodes GR3161 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3161 precursor RNA folds spatially, forming GR3161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3161 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3161 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6269 precursor RNA and GAM6399 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6269 RNA and GAM6399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6269 target RNA into GAM6269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6399 target RNA into GAM6399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3161 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3161 gene: GAM6269 target protein and GAM6399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6269 and GAM6399

GR3162 BF683772 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3162(GR3162) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3162 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3162 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3162 gene encodes GR3162 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3162 precursor RNA folds spatially, forming GR3162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3162 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3162 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3551 precursor RNA and GAM276103 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3551 RNA and GAM276103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3551 target RNA into GAM3551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276103 target RNA into GAM276103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3162 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3162 gene: GAM3551 target protein and GAM276103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3551 and GAM276103

GR3163 BM719705 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3163(GR3163) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3163 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3163 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3163 gene encodes GR3163 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3163 precursor RNA folds spatially, forming GR3163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3163 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3163 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4326 precursor RNA, GAM74497 precursor RNA and GAM202911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4326 RNA, GAM74497 RNA and GAM202911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4326 target RNA into GAM4326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74497 target RNA into GAM74497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202911 target RNA into GAM202911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3163 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3163 gene: GAM4326 target protein, GAM74497 target protein and GAM202911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4326, GAM74497 and GAM202911

GR3164 AV760821 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3164(GR3164) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3164 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3164 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3164 gene encodes GR3164 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3164 precursor RNA folds spatially, forming GR3164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3164 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3164 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM172116 precursor RNA and GAM260505 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM172116 RNA and GAM260505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM172116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172116 target RNA into GAM172116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260505 target RNA into GAM260505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3164 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3164 gene: GAM172116 target protein and GAM260505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM172116 and GAM260505

GR3165 BI493182 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3165(GR3165) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3165 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3165 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3165 gene encodes GR3165 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3165 precursor RNA folds spatially, forming GR3165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3165 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3165 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133173 precursor RNA and GAM166482 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133173 RNA and GAM166482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133173 target RNA into GAM133173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166482

target RNA into GAM166482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3165 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3165 gene: GAM133173 target protein and GAM166482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133173 and GAM166482

GR3166 BF184888 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3166(GR3166) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3166 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3166 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3166 gene encodes GR3166 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3166 precursor RNA folds spatially, forming GR3166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3166 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3166 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26089 precursor RNA and GAM192400 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26089 RNA and GAM192400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26089 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26089 target RNA into GAM26089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192400 target RNA into GAM192400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3166 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3166 gene: GAM26089 target protein and GAM192400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26089 and GAM192400

GR3167 BG209838 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3167(GR3167) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3167 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3167 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3167 gene encodes GR3167 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3167 precursor RNA folds spatially, forming GR3167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3167 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3167 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3167 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4777 precursor RNA and GAM200463 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4777 RNA and GAM200463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4777 target RNA into GAM4777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200463 target RNA into GAM200463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3167 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3167 gene: GAM4777 target protein and GAM200463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4777 and GAM200463

GR3168 AI032307 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3168(GR3168) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3168 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3168 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3168 gene encodes GR3168 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3168 precursor RNA folds spatially, forming GR3168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3168 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3168 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94936 precursor RNA and GAM180051 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94936 RNA and GAM180051 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94936 target RNA into GAM94936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180051 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180051 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180051 target RNA into GAM180051 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3168 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3168 gene: GAM94936 target protein and GAM180051 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94936 and GAM180051

GR3169 AU117205 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3169(GR3169) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3169 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3169 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3169 gene encodes GR3169 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3169 precursor RNA folds spatially, forming GR3169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3169 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3169 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3318 precursor RNA and GAM247490 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3318 RNA and GAM247490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3318 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3318 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3318 target RNA into GAM3318 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247490 target RNA into GAM247490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3169 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3169 gene: GAM3318 target protein and GAM247490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3318 and GAM247490

GR3170 BE304781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3170(GR3170) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3170 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3170 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3170 gene encodes GR3170 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3170 precursor RNA folds spatially, forming GR3170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3170 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3170 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4866 precursor RNA and GAM216677 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4866 RNA and GAM216677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4866 target RNA into GAM4866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216677 target RNA into GAM216677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3170 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3170 gene: GAM4866 target protein and GAM216677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4866 and GAM216677

GR3171 AI018240 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3171(GR3171) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3171 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3171 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3171 gene encodes GR3171 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3171 precursor RNA folds spatially, forming GR3171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3171 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3171 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2158 precursor RNA and GAM206549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2158 RNA and GAM206549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2158 target RNA into GAM2158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206549 target RNA into GAM206549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3171 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3171 gene: GAM2158 target protein and GAM206549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2158 and GAM206549

GR3172 AA609291 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3172(GR3172) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3172 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3172 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3172 gene encodes GR3172 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3172 precursor RNA folds spatially, forming GR3172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3172 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3172 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3995 precursor RNA and GAM23118 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3995 RNA and GAM23118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3995 target RNA into GAM3995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23118 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23118 target RNA into GAM23118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3172 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3172 gene: GAM3995 target protein and GAM23118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3995 and GAM23118

GR3173 AL711589 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3173(GR3173) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3173 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3173 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3173 gene encodes GR3173 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3173 precursor RNA folds spatially, forming GR3173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3173 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3173 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM137196 precursor RNA, GAM147375 precursor RNA and GAM163161 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM137196 RNA, GAM147375 RNA and GAM163161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM137196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137196 target RNA into GAM137196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147375 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147375 target RNA into GAM147375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163161 target RNA into GAM163161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3173 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3173 gene: GAM137196 target protein, GAM147375 target protein and GAM163161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM137196, GAM147375 and GAM163161

GR3174 R79069 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3174(GR3174) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3174 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3174 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3174 gene encodes GR3174 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3174 precursor RNA folds spatially, forming GR3174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3174 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3174 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5150 precursor RNA and GAM154861 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5150 RNA and GAM154861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5150 target RNA into GAM5150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154861 target RNA into GAM154861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3174 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3174 gene: GAM5150 target protein and GAM154861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5150 and GAM154861

GR3175 AI702532 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3175(GR3175) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3175 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3175 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3175 gene encodes GR3175 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3175 precursor RNA folds spatially, forming GR3175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3175 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3175 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1583 precursor RNA, GAM166458 precursor RNA and GAM191056 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1583 RNA, GAM166458 RNA and GAM191056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1583 target RNA into GAM1583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166458 target RNA into GAM166458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191056 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191056 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191056 target RNA into GAM191056 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3175 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3175 gene: GAM1583 target protein, GAM166458 target protein and GAM191056 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1583, GAM166458 and GAM191056

GR3176 T35675 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3176(GR3176) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3176 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3176 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3176 gene encodes GR3176 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3176 precursor RNA folds spatially, forming GR3176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3176 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3176 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM233403 precursor RNA and GAM236030 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM233403 RNA and GAM236030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM233403 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233403 target RNA into GAM233403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236030 target RNA into GAM236030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3176 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3176 gene: GAM233403 target protein and GAM236030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM233403 and GAM236030

GR3177 AA746817 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3177(GR3177) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3177 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3177 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3177 gene encodes GR3177 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3177 precursor RNA folds spatially, forming GR3177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3177 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3177 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3177 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM231454 precursor RNA and GAM328488 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM231454 RNA and GAM328488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM231454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231454 target RNA into GAM231454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328488 target RNA into GAM328488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3177 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3177 gene: GAM231454 target protein and GAM328488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM231454 and GAM328488

GR3178 BG763453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3178(GR3178) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3178 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3178 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3178 gene encodes GR3178 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3178 precursor RNA folds spatially, forming GR3178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3178 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3178 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54592 precursor RNA and GAM224464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54592 RNA and GAM224464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54592 target RNA into GAM54592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224464 target RNA into GAM224464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3178 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3178 gene: GAM54592 target protein and GAM224464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54592 and GAM224464

GR3179 BG823193 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3179(GR3179) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3179 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3179 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3179 gene encodes GR3179 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3179 precursor RNA folds spatially, forming GR3179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3179 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3179 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM528 precursor RNA and GAM6857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM528 RNA and GAM6857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM528 target RNA into GAM528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6857 target RNA into GAM6857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3179 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3179 gene: GAM528 target protein and GAM6857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM528 and GAM6857

GR3180 AA082079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3180(GR3180) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3180 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3180 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3180 gene encodes GR3180 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3180 precursor RNA folds spatially, forming GR3180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3180 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3180 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM97927 precursor RNA and GAM111026 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM97927 RNA and GAM111026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM97927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97927 target RNA into GAM97927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111026 target RNA into GAM111026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3180 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3180 gene: GAM97927 target protein and GAM111026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM97927 and GAM111026

GR3181 BM504493 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3181(GR3181) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3181 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3181 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3181 gene encodes GR3181 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3181 precursor RNA folds spatially, forming GR3181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3181 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3181 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM146906 precursor RNA and GAM291970 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146906 RNA and GAM291970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM146906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146906 target RNA into GAM146906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291970 target RNA into GAM291970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3181 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3181 gene: GAM146906 target protein and GAM291970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM146906 and GAM291970

GR3182 N73006 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3182(GR3182) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3182 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3182 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3182 gene encodes GR3182 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3182 precursor RNA folds spatially, forming GR3182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3182 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3182 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3496 precursor RNA and GAM119025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3496 RNA and GAM119025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3496 target RNA into GAM3496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119025 target RNA into GAM119025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3182 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3182 gene: GAM3496 target protein and GAM119025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3496 and GAM119025

GR3183 AI351766 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3183(GR3183) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3183 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3183 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3183 gene encodes GR3183 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3183 precursor RNA folds spatially, forming GR3183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3183 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3183 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM58618 precursor RNA, GAM70067 precursor RNA and GAM220474 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58618 RNA, GAM70067 RNA and GAM220474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58618 target RNA into GAM58618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70067 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70067 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70067 target RNA into GAM70067 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220474 target RNA into GAM220474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3183 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3183 gene: GAM58618 target protein, GAM70067 target protein and GAM220474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58618, GAM70067 and GAM220474

GR3184 BF173530 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3184(GR3184) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3184 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3184 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3184 gene encodes GR3184 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3184 precursor RNA folds spatially, forming GR3184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3184 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3184 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4672 precursor RNA, GAM173675 precursor RNA and GAM222283 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4672 RNA, GAM173675 RNA and GAM222283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4672 target RNA into GAM4672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173675 target RNA into GAM173675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222283 target RNA into GAM222283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3184 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3184 gene: GAM4672 target protein, GAM173675 target protein and GAM222283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4672, GAM173675 and GAM222283

GR3185 BE619421 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3185(GR3185) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3185 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3185 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3185 gene encodes GR3185 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3185 precursor RNA folds spatially, forming GR3185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3185 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3185 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7694 precursor RNA and GAM254878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7694 RNA and GAM254878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7694 target RNA into GAM7694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254878

target RNA into GAM254878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3185 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3185 gene: GAM7694 target protein and GAM254878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7694 and GAM254878

GR3186 BF983362 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3186(GR3186) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3186 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3186 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3186 gene encodes GR3186 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3186 precursor RNA folds spatially, forming GR3186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3186 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3186 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM88218 precursor RNA and GAM131874 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88218 RNA and GAM131874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88218 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88218 target RNA into GAM88218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131874 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131874 target RNA into GAM131874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3186 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3186 gene: GAM88218 target protein and GAM131874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88218 and GAM131874

GR3187 BG432473 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3187(GR3187) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3187 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3187 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3187 gene encodes GR3187 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3187 precursor RNA folds spatially, forming GR3187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3187 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3187 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3187 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM126842 precursor RNA and GAM225816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126842 RNA and GAM225816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126842 target RNA into GAM126842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225816 target RNA into GAM225816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3187 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3187 gene: GAM126842 target protein and GAM225816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126842 and GAM225816

GR3188 BG720352 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3188(GR3188) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3188 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3188 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3188 gene encodes GR3188 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3188 precursor RNA folds spatially, forming GR3188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3188 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3188 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5915 precursor RNA, GAM6022 precursor RNA and GAM257733 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5915 RNA, GAM6022 RNA and GAM257733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5915 target RNA into GAM5915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6022 target RNA into GAM6022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257733 target RNA into GAM257733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3188 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3188 gene: GAM5915 target protein, GAM6022 target protein and GAM257733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5915, GAM6022 and GAM257733

GR3189 BE273028 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3189(GR3189) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3189 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3189 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3189 gene encodes GR3189 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3189 precursor RNA folds spatially, forming GR3189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3189 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3189 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110094 precursor RNA and GAM128358 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110094 RNA and GAM128358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM110094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110094 target RNA into GAM110094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128358 target RNA into GAM128358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3189 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3189 gene: GAM110094 target protein and GAM128358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110094 and GAM128358

GR3190 AW363466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3190(GR3190) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3190 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3190 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3190 gene encodes GR3190 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3190 precursor RNA folds spatially, forming GR3190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3190 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3190 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM2797 precursor RNA and GAM8234 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2797 RNA and GAM8234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2797 target RNA into GAM2797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8234 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8234 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8234 target RNA into GAM8234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3190 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3190 gene: GAM2797 target protein and GAM8234 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2797 and GAM8234

GR3191 AI879128 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3191(GR3191) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3191 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3191 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3191 gene encodes GR3191 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3191 precursor RNA folds spatially, forming GR3191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3191 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3191 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7472 precursor RNA and GAM214834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7472 RNA and GAM214834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7472 target RNA into GAM7472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214834 target RNA into GAM214834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3191 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3191 gene: GAM7472 target protein and GAM214834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7472 and GAM214834

GR3192 AA297410 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3192(GR3192) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3192 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3192 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3192 gene encodes GR3192 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3192 precursor RNA folds spatially, forming GR3192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3192 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3192 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3413 precursor RNA and GAM47573 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3413 RNA and GAM47573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3413 target RNA into GAM3413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47573 target RNA into GAM47573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3192 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3192 gene: GAM3413 target protein and GAM47573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3413 and GAM47573

GR3193 BF822386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3193(GR3193) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3193 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3193 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3193 gene encodes GR3193 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3193 precursor RNA folds spatially, forming GR3193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3193 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3193 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM275890 precursor RNA, GAM277974 precursor RNA and GAM291284 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM275890 RNA, GAM277974 RNA and GAM291284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM275890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275890 target RNA into GAM275890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277974 target RNA into GAM277974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291284 target RNA into GAM291284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3193 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3193 gene: GAM275890 target protein, GAM277974 target protein and GAM291284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM275890, GAM277974 and GAM291284

GR3194 BG568182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3194(GR3194) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3194 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3194 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3194 gene encodes GR3194 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3194 precursor RNA folds spatially, forming GR3194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3194 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3194 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2784 precursor RNA and GAM114914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2784 RNA and GAM114914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2784 target RNA into GAM2784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114914 target RNA into GAM114914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3194 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3194 gene: GAM2784 target protein and GAM114914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2784 and GAM114914

GR3195 AA810948 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3195(GR3195) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3195 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3195 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3195 gene encodes GR3195 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3195 precursor RNA folds spatially, forming GR3195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3195 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3195 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2641 precursor RNA and GAM142917 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2641 RNA and GAM142917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2641 target RNA into GAM2641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142917

target RNA into GAM142917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3195 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3195 gene: GAM2641 target protein and GAM142917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2641 and GAM142917

GR3196 AI674631 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3196(GR3196) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3196 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3196 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3196 gene encodes GR3196 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3196 precursor RNA folds spatially, forming GR3196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3196 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3196 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM624 precursor RNA and GAM304197 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM624 RNA and GAM304197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM624 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM624 target RNA into GAM624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304197 target RNA into GAM304197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3196 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3196 gene: GAM624 target protein and GAM304197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM624 and GAM304197

GR3197 BE905281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3197(GR3197) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3197 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3197 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3197 gene encodes GR3197 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3197 precursor RNA folds spatially, forming GR3197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3197 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3197 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3197 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5639 precursor RNA, GAM5729 precursor RNA and GAM320283 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5639 RNA, GAM5729 RNA and GAM320283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5639 target RNA into GAM5639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5729 target RNA into GAM5729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320283 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320283 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320283 target RNA into GAM320283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3197 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3197 gene: GAM5639 target protein, GAM5729 target protein and GAM320283 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5639, GAM5729 and GAM320283

GR3198 AW754181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3198(GR3198) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3198 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3198 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3198 gene encodes GR3198 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3198 precursor RNA folds spatially, forming GR3198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3198 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3198 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5062 precursor RNA, GAM125684 precursor RNA and GAM199263 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5062 RNA, GAM125684 RNA and GAM199263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5062 target RNA into GAM5062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125684

target RNA into GAM125684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199263 target RNA into GAM199263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3198 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3198 gene: GAM5062 target protein, GAM125684 target protein and GAM199263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5062, GAM125684 and GAM199263

GR3199 AA279246 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3199(GR3199) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3199 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3199 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3199 gene encodes GR3199 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3199 precursor RNA folds spatially, forming GR3199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3199 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3199 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24751 precursor RNA and GAM198423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24751 RNA and GAM198423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24751 target RNA into GAM24751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198423 target RNA into GAM198423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3199 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3199 gene: GAM24751 target protein and GAM198423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24751 and GAM198423

GR3200 BF895635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3200(GR3200) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3200 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3200 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3200 gene encodes GR3200 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3200 precursor RNA folds spatially, forming GR3200 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3200 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3200 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69899 precursor RNA and GAM165841 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69899 RNA and GAM165841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69899 target RNA into GAM69899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165841 target RNA into GAM165841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3200 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3200 gene: GAM69899 target protein and GAM165841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69899 and GAM165841

GR3201 H29248 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3201(GR3201) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3201 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3201 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3201 gene encodes GR3201 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3201 precursor RNA folds spatially, forming GR3201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3201 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3201 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4161 precursor RNA and GAM163270 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4161 RNA and GAM163270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4161 target RNA into GAM4161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163270 target RNA into GAM163270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3201 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3201 gene: GAM4161 target protein and GAM163270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4161 and GAM163270

GR3202 AI656907 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3202(GR3202) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3202 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3202 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3202 gene encodes GR3202 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3202 precursor RNA folds spatially, forming GR3202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3202 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3202 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM237679 precursor RNA, GAM252593 precursor RNA and GAM328236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM237679 RNA, GAM252593 RNA and GAM328236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM237679 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM237679 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237679 target RNA into GAM237679 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252593 target RNA into GAM252593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328236 target RNA into GAM328236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3202 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3202 gene: GAM237679 target protein, GAM252593 target protein and GAM328236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM237679, GAM252593 and GAM328236

GR3203 AI866363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3203(GR3203) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3203 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3203 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3203 gene encodes GR3203 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3203 precursor RNA folds spatially, forming GR3203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3203 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3203 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58862 precursor RNA and GAM324388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58862 RNA and GAM324388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58862 target RNA into GAM58862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324388 target RNA into GAM324388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3203 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3203 gene: GAM58862 target protein and GAM324388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58862 and GAM324388

GR3204 BF130380 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3204(GR3204) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3204 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3204 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3204 gene encodes GR3204 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3204 precursor RNA folds spatially, forming GR3204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3204 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3204 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3501 precursor RNA, GAM217717 precursor RNA, GAM219111 precursor RNA and GAM309619 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3501 RNA, GAM217717 RNA, GAM219111 RNA and GAM309619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3501 target RNA into GAM3501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217717 target RNA into GAM217717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219111 target RNA into GAM219111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309619 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309619 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309619 target RNA into GAM309619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3204 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3204 gene: GAM3501 target protein, GAM217717 target protein, GAM219111 target protein and GAM309619 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3501, GAM217717, GAM219111 and GAM309619

GR3205 AA829788 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3205(GR3205) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3205 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3205 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3205 gene encodes GR3205 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3205 precursor RNA folds spatially, forming GR3205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3205 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3205 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM127442 precursor RNA, GAM142198 precursor RNA and GAM334148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127442 RNA, GAM142198 RNA and GAM334148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127442 target RNA into GAM127442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142198 target RNA into GAM142198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334148 target RNA into GAM334148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3205 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3205 gene: GAM127442 target protein, GAM142198 target protein and GAM334148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127442, GAM142198 and GAM334148

GR3206 BE970114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3206(GR3206) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3206 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3206 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3206 gene encodes GR3206 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3206 precursor RNA folds spatially, forming GR3206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3206 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3206 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3062 precursor RNA, GAM72864 precursor RNA and GAM318068 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3062 RNA, GAM72864 RNA and GAM318068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3062 target RNA into GAM3062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72864 target RNA into GAM72864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318068 target RNA into GAM318068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3206 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3206 gene: GAM3062 target protein, GAM72864 target protein and GAM318068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3062, GAM72864 and GAM318068

GR3207 AL706367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3207(GR3207) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3207 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3207 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3207 gene encodes GR3207 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3207 precursor RNA folds spatially, forming GR3207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3207 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3207 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208783 precursor RNA and GAM265174 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208783 RNA and GAM265174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208783 target RNA into GAM208783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265174 target RNA into GAM265174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3207 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3207 gene: GAM208783 target protein and GAM265174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208783 and GAM265174

GR3208 BE156487 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3208(GR3208) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3208 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3208 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3208 gene encodes GR3208 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3208 precursor RNA folds spatially, forming GR3208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3208 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3208 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3529 precursor RNA and GAM162884 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3529 RNA and GAM162884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3529 target RNA into GAM3529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162884 target RNA into GAM162884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3208 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3208 gene: GAM3529 target protein and GAM162884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3529 and GAM162884

GR3209 AW238607 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3209(GR3209) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3209 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3209 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3209 gene encodes GR3209 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3209 precursor RNA folds spatially, forming GR3209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3209 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3209 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1006 precursor RNA and GAM243738 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1006 RNA and GAM243738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1006 target RNA into GAM1006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243738 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243738 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243738

target RNA into GAM243738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3209 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3209 gene: GAM1006 target protein and GAM243738 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1006 and GAM243738

GR3210 AA740781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3210(GR3210) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3210 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3210 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3210 gene encodes GR3210 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3210 precursor RNA folds spatially, forming GR3210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3210 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3210 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2583 precursor RNA, GAM92990 precursor RNA and GAM238179 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2583 RNA, GAM92990 RNA and GAM238179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2583 target RNA into GAM2583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92990 target RNA into GAM92990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238179 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238179 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238179 target RNA into GAM238179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3210 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3210 gene: GAM2583 target protein, GAM92990 target protein and GAM238179 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2583, GAM92990 and GAM238179

GR3211 AA514285 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3211(GR3211) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3211 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3211 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3211 gene encodes GR3211 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3211 precursor RNA folds spatially, forming GR3211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3211 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3211 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1040 precursor RNA and GAM285210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1040 RNA and GAM285210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1040 target RNA into GAM1040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285210 target RNA into GAM285210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3211 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3211 gene: GAM1040 target protein and GAM285210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1040 and GAM285210

GR3212 AA625137 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3212(GR3212) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3212 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3212 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3212 gene encodes GR3212 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3212 precursor RNA folds spatially, forming GR3212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3212 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3212 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM204200 precursor RNA and GAM293721 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM204200 RNA and GAM293721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM204200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204200 target RNA into GAM204200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293721 target RNA into GAM293721 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3212 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3212 gene: GAM204200 target protein and GAM293721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM204200 and GAM293721

GR3213 AA634882 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3213(GR3213) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3213 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3213 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3213 gene encodes GR3213 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3213 precursor RNA folds spatially, forming GR3213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3213 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3213 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5093 precursor RNA and GAM23901 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5093 RNA and GAM23901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5093 target RNA into GAM5093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23901 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23901 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23901 target RNA into GAM23901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3213 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3213 gene: GAM5093 target protein and GAM23901 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5093 and GAM23901

GR3214 BE268546 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3214(GR3214) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3214 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3214 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3214 gene encodes GR3214 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3214 precursor RNA folds spatially, forming GR3214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3214 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3214 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4

separate GAM precursor RNAs, GAM122046 precursor RNA, GAM168792 precursor RNA, GAM273412 precursor RNA and GAM274229 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122046 RNA, GAM168792 RNA, GAM273412 RNA and GAM274229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122046 target RNA into GAM122046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168792 target RNA into GAM168792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273412 target RNA into GAM273412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274229 target RNA into GAM274229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3214 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3214 gene: GAM122046 target protein, GAM168792 target protein, GAM273412 target protein and GAM274229

target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122046, GAM168792, GAM273412 and GAM274229

GR3215 BF671659 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3215(GR3215) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3215 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3215 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3215 gene encodes GR3215 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3215 precursor RNA folds spatially, forming GR3215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3215 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3215 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3345 precursor RNA, GAM3374 precursor RNA and GAM279615 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3345 RNA, GAM3374 RNA and GAM279615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3345 target RNA into GAM3345 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3374 target RNA into GAM3374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279615 target RNA into GAM279615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3215 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3215 gene: GAM3345 target protein, GAM3374 target protein and GAM279615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3345, GAM3374 and GAM279615

GR3216 BQ061207 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3216(GR3216) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3216 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3216 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3216 gene encodes GR3216 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3216 precursor RNA folds spatially, forming GR3216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3216 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3216 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6299 precursor RNA and GAM123195 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6299 RNA and GAM123195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6299 target RNA into GAM6299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123195 target RNA into GAM123195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3216 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3216 gene: GAM6299 target protein and GAM123195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6299 and GAM123195

GR3217 AL698625 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3217(GR3217) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3217 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3217

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3217 gene encodes GR3217 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3217 precursor RNA folds spatially, forming GR3217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3217 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3217 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1721 precursor RNA and GAM4184 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1721 RNA and GAM4184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1721 target RNA into GAM1721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4184 target RNA into GAM4184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3217 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3217 gene: GAM1721 target protein and GAM4184 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1721 and GAM4184

GR3218 BE958944 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3218(GR3218) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3218 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3218 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3218 gene encodes GR3218 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3218 precursor RNA folds spatially, forming GR3218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3218 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3218 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM80542 precursor RNA and GAM169844 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM80542 RNA and GAM169844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM80542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80542 target RNA into GAM80542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169844 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169844 target RNA into GAM169844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3218 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3218 gene: GAM80542 target protein and GAM169844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM80542 and GAM169844

GR3219 AW804911 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3219(GR3219) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3219 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3219 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3219 gene encodes GR3219 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3219 precursor RNA folds spatially, forming GR3219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3219 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3219 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM202393 precursor RNA and GAM249836 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM202393 RNA and GAM249836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM202393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202393 target RNA into GAM202393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM249836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249836 target RNA into GAM249836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3219 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3219 gene: GAM202393 target protein and GAM249836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM202393 and GAM249836

GR3220 BG252759 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3220(GR3220) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3220 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3220 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3220 gene encodes GR3220 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3220 precursor RNA folds spatially, forming GR3220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3220 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3220 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2886 precursor RNA, GAM219426 precursor RNA and GAM328820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2886 RNA, GAM219426 RNA and GAM328820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2886 target RNA into GAM2886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219426 target RNA into GAM219426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328820 target RNA into GAM328820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3220 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3220 gene: GAM2886 target protein, GAM219426 target protein and GAM328820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM2886, GAM219426 and GAM328820

GR3221 AA503279 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3221(GR3221) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3221 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3221 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3221 gene encodes GR3221 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3221 precursor RNA folds spatially, forming GR3221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3221 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3221 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM143137 precursor RNA and GAM169509 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143137 RNA and GAM169509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143137 target RNA into GAM143137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM169509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169509 target RNA into GAM169509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3221 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3221 gene: GAM143137 target protein and GAM169509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM143137 and GAM169509

GR3222 AA845097 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3222(GR3222) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3222 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3222 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3222 gene encodes GR3222 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3222 precursor RNA folds spatially, forming GR3222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3222 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3222 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4441 precursor RNA, GAM8196 precursor RNA and GAM97898 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4441 RNA, GAM8196 RNA and GAM97898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4441 target RNA into GAM4441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8196 target RNA into GAM8196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97898 target RNA into GAM97898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3222 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3222 gene: GAM4441 target protein, GAM8196 target protein and GAM97898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4441, GAM8196 and GAM97898

GR3223 BE545939 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3223(GR3223) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3223 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3223 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3223 gene encodes GR3223 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3223 precursor RNA folds spatially, forming GR3223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3223 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3223 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158612 precursor RNA and GAM173973 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158612 RNA and GAM173973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158612 target RNA into GAM158612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173973 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173973 target RNA into GAM173973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3223 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3223 gene: GAM158612 target protein and GAM173973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM158612 and GAM173973

GR3224 AA983237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3224(GR3224) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3224 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3224 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3224 gene encodes GR3224 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3224 precursor RNA folds spatially, forming GR3224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3224 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3224 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3357 precursor RNA and GAM133641 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3357 RNA and GAM133641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3357 target RNA into GAM3357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133641 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133641 target RNA into GAM133641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3224 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3224 gene: GAM3357 target protein and GAM133641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3357 and GAM133641

GR3225 AW833323 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3225(GR3225) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3225 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3225 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3225 gene encodes GR3225 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3225 precursor RNA folds spatially, forming GR3225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3225 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3225 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3952 precursor RNA, GAM207466 precursor RNA and GAM280447 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3952 RNA, GAM207466 RNA and GAM280447 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3952 target RNA into GAM3952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM207466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM207466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM207466 target RNA into GAM207466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280447 target RNA into GAM280447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3225 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3225 gene: GAM3952 target protein, GAM207466 target protein and GAM280447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3952, GAM207466 and GAM280447

GR3226 AA128916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3226(GR3226) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3226 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3226 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3226 gene encodes GR3226 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3226 precursor RNA folds spatially, forming GR3226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3226 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3226 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM121834 precursor RNA and GAM199000 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM121834 RNA and GAM199000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM121834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121834 target RNA into GAM121834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199000 target RNA into GAM199000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3226 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3226 gene: GAM121834 target protein and GAM199000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM121834 and GAM199000

GR3227 AI963858 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3227(GR3227) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3227 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3227 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3227 gene encodes GR3227 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3227 precursor RNA folds spatially, forming GR3227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3227 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3227 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM191804 precursor RNA, GAM310767 precursor RNA and GAM310786 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM191804 RNA, GAM310767 RNA and GAM310786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM191804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191804 target RNA into GAM191804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310767 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310767 target RNA into GAM310767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310786 target RNA into GAM310786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3227 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3227 gene: GAM191804 target protein, GAM310767 target protein and GAM310786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM191804, GAM310767 and GAM310786

GR3228 BI090078 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3228(GR3228) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3228 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3228 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3228 gene encodes GR3228 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3228 precursor RNA folds spatially, forming GR3228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3228 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3228 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM2236 precursor RNA, GAM66859 precursor RNA and GAM247931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2236 RNA, GAM66859 RNA and GAM247931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2236 target RNA into GAM2236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66859 target RNA into GAM66859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247931 target RNA into GAM247931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3228 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3228 gene: GAM2236 target protein, GAM66859 target protein and GAM247931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2236, GAM66859 and GAM247931

GR3229 AI638007 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3229(GR3229) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3229 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3229 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3229 gene encodes GR3229 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3229 precursor RNA folds spatially, forming GR3229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3229 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3229 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1227 precursor RNA, GAM6394 precursor RNA and GAM96747 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1227 RNA, GAM6394 RNA and GAM96747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1227 target RNA into GAM1227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6394 target RNA into GAM6394 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96747 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96747 target RNA into GAM96747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3229 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3229 gene: GAM1227 target protein, GAM6394 target protein and GAM96747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1227, GAM6394 and GAM96747

GR3230 BI860420 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3230(GR3230) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3230 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3230 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3230 gene encodes GR3230 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3230 precursor RNA folds spatially, forming GR3230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3230 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3230 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM210 precursor RNA, GAM1753 precursor RNA and GAM8274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM210 RNA, GAM1753 RNA and GAM8274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210 target RNA into GAM210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1753 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1753 target RNA into GAM1753 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8274 target RNA into GAM8274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3230 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3230 gene: GAM210 target protein, GAM1753 target protein and GAM8274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM210, GAM1753 and GAM8274

GR3231 BG614589 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3231(GR3231) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3231 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3231 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3231 gene encodes GR3231 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3231 precursor RNA folds spatially, forming GR3231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3231 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3231 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM104006 precursor RNA, GAM190231 precursor RNA and GAM291208 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM104006 RNA, GAM190231 RNA and GAM291208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM104006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104006 target RNA into GAM104006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM190231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM190231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM190231 target RNA into GAM190231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291208 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291208 target RNA into GAM291208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3231 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3231 gene: GAM104006 target protein, GAM190231 target protein and GAM291208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM104006, GAM190231 and GAM291208

GR3232 BF110941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3232(GR3232) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3232 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3232 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3232 gene encodes GR3232 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3232 precursor RNA folds spatially, forming GR3232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3232 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3232 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65299 precursor RNA and GAM234791 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65299 RNA and GAM234791 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65299 target RNA into GAM65299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234791 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234791 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234791 target RNA into GAM234791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3232 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3232 gene: GAM65299 target protein and GAM234791 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65299 and GAM234791

GR3233 BE696228 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3233(GR3233) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3233 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3233 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3233 gene encodes GR3233 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3233 precursor RNA folds spatially, forming GR3233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3233 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3233 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM37045 precursor RNA and GAM194719 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM37045 RNA and GAM194719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM37045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM37045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM37045 target RNA into GAM37045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194719 target RNA into GAM194719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3233 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3233 gene: GAM37045 target protein and GAM194719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM37045 and GAM194719

GR3234 AI829715 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3234(GR3234) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3234 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3234 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3234 gene encodes GR3234 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3234 precursor RNA folds spatially, forming GR3234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3234 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3234 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60477 precursor RNA and GAM316116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60477 RNA and GAM316116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60477 target RNA into GAM60477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316116 target RNA into GAM316116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3234 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3234 gene: GAM60477 target

protein and GAM316116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60477 and GAM316116

GR3235 AW382909 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3235(GR3235) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3235 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3235 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3235 gene encodes GR3235 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3235 precursor RNA folds spatially, forming GR3235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3235 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3235 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM282942 precursor RNA and GAM298943 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM282942 RNA and GAM298943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM282942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282942 target RNA into GAM282942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298943 target RNA into GAM298943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3235 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3235 gene: GAM282942 target protein and GAM298943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM282942 and GAM298943

GR3236 AW515683 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3236(GR3236) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3236 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3236 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3236 gene encodes GR3236 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3236 precursor RNA folds spatially, forming GR3236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3236 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3236 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4537 precursor RNA and GAM56853 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4537 RNA and GAM56853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4537 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4537 target RNA into GAM4537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56853 target RNA into GAM56853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3236 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3236 gene: GAM4537 target protein and GAM56853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4537 and GAM56853

GR3237 BF698446 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3237(GR3237) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3237 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3237 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3237 gene encodes GR3237 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3237 precursor RNA folds spatially, forming GR3237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3237 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3237 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4185 precursor RNA, GAM5846 precursor RNA and GAM7593 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4185 RNA, GAM5846 RNA and GAM7593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4185 target RNA into GAM4185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5846 target RNA into GAM5846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7593 target RNA into GAM7593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3237 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3237 gene: GAM4185 target protein, GAM5846 target protein and GAM7593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4185, GAM5846 and GAM7593

GR3238 BG436531 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3238(GR3238) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3238 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3238 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3238 gene encodes GR3238 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3238 precursor RNA folds spatially, forming GR3238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3238 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3238 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15029 precursor RNA and GAM212101 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15029 RNA and GAM212101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15029 target RNA into GAM15029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212101 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212101 target RNA into GAM212101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3238 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3238 gene: GAM15029 target protein and GAM212101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15029 and GAM212101

GR3239 BE787716 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3239(GR3239) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3239 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3239 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3239 gene encodes GR3239 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3239 precursor RNA folds spatially, forming GR3239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3239 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3239 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63422 precursor RNA, GAM99890 precursor RNA and GAM146845 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63422 RNA, GAM99890 RNA and GAM146845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63422 target RNA into GAM63422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99890 target RNA into GAM99890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146845 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146845 target RNA into GAM146845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3239 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3239 gene: GAM63422 target protein, GAM99890 target protein and GAM146845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63422, GAM99890 and GAM146845

GR3240 BF513576 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3240(GR3240) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3240 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3240 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3240 gene encodes GR3240 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3240 precursor RNA folds spatially, forming GR3240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3240 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3240 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3383 precursor RNA, GAM92783 precursor RNA and GAM278618 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3383 RNA, GAM92783 RNA and GAM278618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3383 target RNA into GAM3383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92783 target RNA into GAM92783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278618

target RNA into GAM278618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3240 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3240 gene: GAM3383 target protein, GAM92783 target protein and GAM278618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3383, GAM92783 and GAM278618

GR3241 AV718805 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3241(GR3241) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3241 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3241 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3241 gene encodes GR3241 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3241 precursor RNA folds spatially, forming GR3241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3241 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3241 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46826 precursor RNA and GAM109602 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46826 RNA and GAM109602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46826 target RNA into GAM46826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109602 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109602 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109602 target RNA into GAM109602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3241 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3241 gene: GAM46826 target protein and GAM109602 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46826 and GAM109602

GR3242 BG978840 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3242(GR3242) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3242 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3242 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3242 gene encodes GR3242 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3242 precursor RNA folds spatially, forming GR3242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3242 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3242 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM221992 precursor RNA, GAM239741 precursor RNA and GAM258026 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221992 RNA, GAM239741 RNA and GAM258026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221992 target RNA into GAM221992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239741 target RNA into GAM239741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258026 target RNA into GAM258026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3242 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3242 gene: GAM221992 target protein, GAM239741 target protein and GAM258026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221992, GAM239741 and GAM258026

GR3243 AI288471 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3243(GR3243) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3243 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3243 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3243 gene encodes GR3243 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3243 precursor RNA folds spatially, forming GR3243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3243 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3243 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM213288 precursor RNA and GAM270374 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM213288 RNA and GAM270374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM213288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213288 target RNA into GAM213288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270374

target RNA into GAM270374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3243 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3243 gene: GAM213288 target protein and GAM270374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM213288 and GAM270374

GR3244 BG236279 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3244(GR3244) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3244 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3244 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3244 gene encodes GR3244 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3244 precursor RNA folds spatially, forming GR3244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3244 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3244 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3590 precursor RNA and GAM156915 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3590 RNA and GAM156915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3590 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3590 target RNA into GAM3590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156915 target RNA into GAM156915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3244 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3244 gene: GAM3590 target protein and GAM156915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3590 and GAM156915

GR3245 BE386923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3245(GR3245) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3245 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3245 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3245 gene encodes GR3245 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3245 precursor RNA folds spatially, forming GR3245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3245 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3245 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3245 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1433 precursor RNA and GAM272744 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1433 RNA and GAM272744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1433 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1433 target RNA into GAM1433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272744 target RNA into GAM272744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3245 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3245 gene: GAM1433 target protein and GAM272744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1433 and GAM272744

GR3246 BI335254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3246(GR3246) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3246 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3246 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3246 gene encodes GR3246 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3246 precursor RNA folds spatially, forming GR3246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3246 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3246 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM722 precursor RNA, GAM2333 precursor RNA and GAM255393 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM722 RNA, GAM2333 RNA and GAM255393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM722 target RNA into GAM722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2333 target RNA into GAM2333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255393 target RNA into GAM255393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3246 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3246 gene: GAM722 target protein, GAM2333 target protein and GAM255393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM722, GAM2333 and GAM255393

GR3247 AA251386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3247(GR3247) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3247 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3247 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3247 gene encodes GR3247 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3247 precursor RNA folds spatially, forming GR3247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3247 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3247 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2114 precursor RNA, GAM2992 precursor RNA and GAM62103 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2114 RNA, GAM2992 RNA and GAM62103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2114 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2114 target RNA into GAM2114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2992 target RNA into GAM2992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62103 target RNA into GAM62103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3247 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3247 gene: GAM2114 target protein, GAM2992 target protein and GAM62103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2114, GAM2992 and GAM62103

GR3248 BF667812 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3248(GR3248) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3248 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3248 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3248 gene encodes GR3248 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3248 precursor RNA folds spatially, forming GR3248 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3248 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3248 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56116 precursor RNA and GAM68165 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56116 RNA and GAM68165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56116 target RNA into GAM56116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68165 target RNA into GAM68165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3248 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3248 gene: GAM56116 target protein and GAM68165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56116 and GAM68165

GR3249 BF887841 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3249(GR3249) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3249 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3249 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3249 gene encodes GR3249 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3249 precursor RNA folds spatially, forming GR3249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3249 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3249 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM103226 precursor RNA, GAM104277 precursor RNA and GAM163690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103226 RNA, GAM104277 RNA and GAM163690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103226 target RNA into GAM103226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104277 target RNA into GAM104277 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163690 target RNA into GAM163690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3249 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3249 gene: GAM103226 target protein, GAM104277 target protein and GAM163690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103226, GAM104277 and GAM163690

GR3250 BF692958 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3250(GR3250) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3250 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3250 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3250 gene encodes GR3250 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3250 precursor RNA folds spatially, forming GR3250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3250 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3250 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5081 precursor RNA and GAM102512 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5081 RNA and GAM102512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5081 target RNA into GAM5081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102512 target RNA into GAM102512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3250 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3250 gene: GAM5081 target protein and GAM102512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5081 and GAM102512

GR3251 BG574489 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3251(GR3251) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3251 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3251 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3251 gene encodes GR3251 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3251 precursor RNA folds spatially, forming GR3251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3251 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3251 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2072 precursor RNA and GAM91821 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2072 RNA and GAM91821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2072 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2072 target RNA into GAM2072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91821 target RNA into GAM91821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3251 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3251 gene: GAM2072 target protein and GAM91821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2072 and GAM91821

GR3252 BF342541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3252(GR3252) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3252 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3252 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3252 gene encodes GR3252 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3252 precursor RNA folds spatially, forming GR3252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3252 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3252 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3260 precursor RNA, GAM150511 precursor RNA and GAM225945 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3260 RNA, GAM150511 RNA and GAM225945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3260 target RNA into GAM3260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150511 target RNA into GAM150511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225945 target RNA into GAM225945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3252 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3252 gene: GAM3260 target protein, GAM150511 target protein and GAM225945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3260, GAM150511 and GAM225945

GR3253 BG526990 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3253(GR3253) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3253 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3253 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3253 gene encodes GR3253 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3253 precursor RNA folds spatially, forming GR3253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3253 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3253 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM45757 precursor RNA, GAM95670 precursor RNA and GAM258153 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45757 RNA, GAM95670 RNA and GAM258153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45757 target RNA into GAM45757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95670 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95670 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95670 target RNA into GAM95670 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258153 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258153 target RNA into GAM258153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3253 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3253 gene: GAM45757 target protein, GAM95670 target protein and GAM258153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45757, GAM95670 and GAM258153

GR3254 BQ051655 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3254(GR3254) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3254 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3254 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3254 gene encodes GR3254 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3254 precursor RNA folds spatially, forming GR3254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3254 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3254 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6111 precursor RNA, GAM96610 precursor RNA and GAM275834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6111 RNA, GAM96610 RNA and GAM275834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6111 target RNA into GAM6111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96610 target RNA into GAM96610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275834 target RNA into GAM275834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3254 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3254 gene: GAM6111 target protein, GAM96610 target protein and GAM275834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6111, GAM96610 and GAM275834

GR3255 BI837100 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3255(GR3255) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3255 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3255 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3255 gene encodes GR3255 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3255 precursor RNA folds spatially, forming GR3255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3255 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3255 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4316 precursor RNA, GAM100226 precursor RNA, GAM185483 precursor RNA and GAM260585 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4316 RNA, GAM100226 RNA, GAM185483 RNA and GAM260585

RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4316 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4316 target RNA into GAM4316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100226 target RNA into GAM100226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185483 target RNA into GAM185483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260585 target RNA into GAM260585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3255 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3255 gene: GAM4316 target protein, GAM100226 target protein, GAM185483 target protein and GAM260585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4316, GAM100226, GAM185483 and GAM260585

GR3256 AW371180 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3256(GR3256) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3256 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3256 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3256 gene encodes GR3256 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3256 precursor RNA folds spatially, forming GR3256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3256 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3256 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM77821 precursor RNA and GAM216706 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77821 RNA and GAM216706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77821 target RNA into GAM77821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216706 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216706 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216706 target RNA into GAM216706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3256 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3256 gene: GAM77821 target protein and GAM216706 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77821 and GAM216706

GR3257 BM463121 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3257(GR3257) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3257 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3257 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3257 gene encodes GR3257 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3257 precursor RNA folds spatially, forming GR3257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3257 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3257 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58905 precursor RNA and GAM100617 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58905 RNA and GAM100617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58905 target RNA into GAM58905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100617 target RNA into GAM100617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3257 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3257 gene: GAM58905 target protein and GAM100617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58905 and GAM100617

GR3258 BG714932 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3258(GR3258) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3258 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3258 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3258 gene encodes GR3258 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3258 precursor RNA folds spatially, forming GR3258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3258 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3258 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM92135 precursor RNA, GAM147849 precursor RNA and GAM260558 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92135 RNA, GAM147849 RNA and GAM260558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92135 target RNA into GAM92135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147849 target RNA into GAM147849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260558 target RNA into GAM260558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3258 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3258 gene: GAM92135 target protein, GAM147849 target protein and GAM260558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92135, GAM147849 and GAM260558

GR3259 BM742150 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3259(GR3259) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3259 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3259 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3259 gene encodes GR3259 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3259 precursor RNA folds spatially, forming GR3259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3259 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3259 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7843 precursor RNA, GAM7894 precursor RNA and GAM49517 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7843 RNA, GAM7894 RNA and GAM49517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7843 target RNA into GAM7843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7894 target RNA into GAM7894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49517 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49517 target RNA into GAM49517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3259 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3259 gene: GAM7843 target protein, GAM7894 target protein and GAM49517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7843, GAM7894 and GAM49517

GR3260 AI139789 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3260(GR3260) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3260 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3260 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3260 gene encodes GR3260 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3260 precursor RNA folds spatially, forming GR3260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3260 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3260 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM33962 precursor RNA, GAM178176 precursor RNA and GAM180040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33962 RNA, GAM178176 RNA and GAM180040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33962 target RNA into GAM33962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178176 target RNA into GAM178176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180040 target RNA into GAM180040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3260 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3260 gene: GAM33962 target protein, GAM178176 target protein and GAM180040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33962, GAM178176 and GAM180040

GR3261 BM015037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3261(GR3261) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3261 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3261

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3261 gene encodes GR3261 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3261 precursor RNA folds spatially, forming GR3261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3261 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3261 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13850 precursor RNA and GAM251499 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13850 RNA and GAM251499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13850 target RNA into GAM13850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251499 target RNA into GAM251499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3261 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3261 gene: GAM13850 target protein and GAM251499 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13850 and GAM251499

GR3262 BM907583 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3262(GR3262) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3262 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3262 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3262 gene encodes GR3262 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3262 precursor RNA folds spatially, forming GR3262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3262 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3262 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM22170 precursor RNA, GAM58721 precursor RNA and GAM162050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22170 RNA, GAM58721 RNA and GAM162050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22170 target RNA into GAM22170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58721 target RNA into GAM58721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162050 target RNA into GAM162050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3262 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3262 gene: GAM22170 target protein, GAM58721 target protein and GAM162050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22170, GAM58721 and GAM162050

GR3263 AW015912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3263(GR3263) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3263 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3263 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3263 gene encodes GR3263 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3263 precursor RNA folds spatially, forming GR3263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3263 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3263 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99723 precursor RNA and GAM178109 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99723 RNA and GAM178109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99723 target RNA into GAM99723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178109 target RNA into GAM178109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3263 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3263 gene: GAM99723 target protein and GAM178109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99723 and GAM178109

GR3264 N54823 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3264(GR3264) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3264 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3264 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3264 gene encodes GR3264 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3264 precursor RNA folds spatially, forming GR3264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3264 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3264 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1948 precursor RNA, GAM11596 precursor RNA, GAM206842 precursor RNA and GAM261639 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1948 RNA, GAM11596 RNA, GAM206842 RNA and GAM261639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1948 target RNA into GAM1948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11596 target RNA into GAM11596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206842

target RNA into GAM206842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261639 target RNA into GAM261639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3264 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3264 gene: GAM1948 target protein, GAM11596 target protein, GAM206842 target protein and GAM261639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1948, GAM11596, GAM206842 and GAM261639

GR3265 BI063973 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3265(GR3265) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3265 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3265 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3265 gene encodes GR3265 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3265 precursor RNA folds spatially, forming GR3265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3265 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3265 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102246 precursor RNA and GAM222954 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102246 RNA and GAM222954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102246 target RNA into GAM102246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222954 target RNA into GAM222954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3265 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3265 gene: GAM102246 target protein and GAM222954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102246 and GAM222954

GR3266 BG775942 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3266(GR3266) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3266 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3266 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3266 gene encodes GR3266 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3266 precursor RNA folds spatially, forming GR3266 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3266 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3266 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3992 precursor RNA, GAM7844 precursor RNA, GAM115648 precursor RNA and GAM248357 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3992 RNA, GAM7844 RNA, GAM115648 RNA and GAM248357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3992 target RNA into GAM3992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7844 target RNA into GAM7844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115648 target RNA into GAM115648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248357 target RNA into GAM248357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3266 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3266 gene: GAM3992 target protein, GAM7844 target protein, GAM115648 target protein and GAM248357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3992, GAM7844, GAM115648 and GAM248357

GR3267 BE090096 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3267(GR3267) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3267 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3267 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3267 gene encodes GR3267 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3267 precursor RNA folds spatially, forming GR3267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3267 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3267 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM795 precursor RNA and GAM4832 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM795 RNA and GAM4832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM795 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM795 target RNA into GAM795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4832 target RNA into GAM4832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3267 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3267 gene: GAM795 target protein and GAM4832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM795 and GAM4832

GR3268 BF663232 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3268(GR3268) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3268 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3268 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3268 gene encodes GR3268 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3268 precursor RNA folds spatially, forming GR3268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3268 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3268 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7393 precursor RNA, GAM48655 precursor RNA, GAM60289 precursor RNA and GAM116080 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7393 RNA, GAM48655 RNA, GAM60289 RNA and GAM116080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7393 target RNA into GAM7393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48655 target RNA into GAM48655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60289 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60289 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60289 target RNA into GAM60289 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116080 target RNA into GAM116080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3268 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3268 gene: GAM7393 target protein, GAM48655 target protein, GAM60289 target protein and GAM116080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7393, GAM48655, GAM60289 and GAM116080

GR3269 R29031 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3269(GR3269) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3269 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3269 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3269 gene encodes GR3269 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3269 precursor RNA folds spatially, forming GR3269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3269 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3269 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM144165 precursor RNA and GAM221436 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144165 RNA and GAM221436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144165 target RNA into GAM144165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221436 target RNA into GAM221436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3269 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3269 gene: GAM144165 target protein and GAM221436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144165 and GAM221436

GR3270 AA668835 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3270(GR3270) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3270 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3270 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3270 gene encodes GR3270 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3270 precursor RNA folds spatially, forming GR3270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3270 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3270 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3883 precursor RNA and GAM5840 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3883 RNA and GAM5840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3883 target RNA into GAM3883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5840 target RNA into GAM5840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3270 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3270 gene: GAM3883 target protein and GAM5840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3883 and GAM5840

GR3271 AL520618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3271(GR3271) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3271 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3271 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3271 gene encodes GR3271 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3271 precursor RNA folds spatially, forming GR3271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3271 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3271 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5435 precursor RNA and GAM116251 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5435 RNA and GAM116251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5435 target RNA into GAM5435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116251 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116251 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116251 target RNA into GAM116251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3271 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3271 gene: GAM5435 target protein and GAM116251 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5435 and GAM116251

GR3272 BI918680 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3272(GR3272) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3272 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3272 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3272 gene encodes GR3272 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3272 precursor RNA folds spatially, forming GR3272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3272 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3272 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM6675 precursor RNA, GAM84629 precursor RNA, GAM98276 precursor RNA, GAM258047 precursor RNA and GAM277586 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6675 RNA, GAM84629 RNA, GAM98276 RNA, GAM258047 RNA and GAM277586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6675 target RNA into GAM6675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84629 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84629 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84629

target RNA into GAM84629 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98276 target RNA into GAM98276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258047 target RNA into GAM258047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277586 target RNA into GAM277586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3272 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3272 gene: GAM6675 target protein, GAM84629 target protein, GAM98276 target protein, GAM258047 target protein and GAM277586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6675, GAM84629, GAM98276, GAM258047 and GAM277586

GR3273 BF763366 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3273(GR3273) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3273 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3273 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3273 gene encodes GR3273 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3273 precursor RNA folds spatially, forming GR3273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3273 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3273 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM247959 precursor RNA and GAM262353 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM247959 RNA and GAM262353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM247959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247959 target RNA into GAM247959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262353 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262353 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262353 target RNA into GAM262353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3273 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3273 gene: GAM247959 target protein and GAM262353 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM247959 and GAM262353

GR3274 AI572152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3274(GR3274) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3274 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3274 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3274 gene encodes GR3274 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3274 precursor RNA folds spatially, forming GR3274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3274 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3274 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83941 precursor RNA and GAM278872 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83941 RNA and GAM278872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83941 target RNA into GAM83941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278872 target RNA into GAM278872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3274 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3274 gene: GAM83941 target protein and GAM278872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83941 and GAM278872

GR3275 F33390 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3275(GR3275) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3275 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3275 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3275 gene encodes GR3275 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3275 precursor RNA folds spatially, forming GR3275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3275 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3275 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1273 precursor RNA, GAM56810 precursor RNA and GAM206645 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1273 RNA, GAM56810 RNA and GAM206645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1273 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1273 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1273 target RNA into GAM1273 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56810 target RNA into GAM56810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206645 target RNA into GAM206645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3275 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3275 gene: GAM1273 target protein, GAM56810 target protein and GAM206645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1273, GAM56810 and GAM206645

GR3276 W25397 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3276(GR3276) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3276 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3276 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3276 gene encodes GR3276 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3276 precursor RNA folds spatially, forming GR3276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3276 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3276 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2776 precursor RNA and GAM209630 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2776 RNA and GAM209630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2776 target RNA into GAM2776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209630 target RNA into GAM209630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3276 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3276 gene: GAM2776 target protein and GAM209630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2776 and GAM209630

GR3277 AW134766 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3277(GR3277) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3277 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3277 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3277 gene encodes GR3277 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3277 precursor RNA folds spatially, forming GR3277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3277 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3277 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2562 precursor RNA and GAM107161 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2562 RNA and GAM107161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2562 target RNA into GAM2562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107161

target RNA into GAM107161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3277 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3277 gene: GAM2562 target protein and GAM107161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2562 and GAM107161

GR3278 BG699038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3278(GR3278) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3278 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3278 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3278 gene encodes GR3278 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3278 precursor RNA folds spatially, forming GR3278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3278 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3278 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8147 precursor RNA, GAM144477 precursor RNA and GAM310386 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8147 RNA, GAM144477 RNA and GAM310386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8147 target RNA into GAM8147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144477 target RNA into GAM144477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310386 target RNA into GAM310386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3278 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3278 gene: GAM8147 target protein, GAM144477 target protein and GAM310386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8147, GAM144477 and GAM310386

GR3279 AV694566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3279(GR3279) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3279 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3279 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3279 gene encodes GR3279 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3279 precursor RNA folds spatially, forming GR3279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3279 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3279 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4521 precursor RNA, GAM49009 precursor RNA and GAM214529 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4521 RNA, GAM49009 RNA and GAM214529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4521 target RNA into GAM4521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM49009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49009 target RNA into GAM49009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214529 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214529 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214529 target RNA into GAM214529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3279 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3279 gene: GAM4521 target protein, GAM49009 target protein and GAM214529 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4521, GAM49009 and GAM214529

GR3280 BF103503 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3280(GR3280) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3280 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3280 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3280 gene encodes GR3280 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3280 precursor RNA folds spatially, forming GR3280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3280 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3280 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69 precursor RNA and GAM149710 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69 RNA and GAM149710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of

Fig. 8, thereby inhibiting translation of GAM69 target RNA into GAM69 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149710 target RNA into GAM149710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3280 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3280 gene: GAM69 target protein and GAM149710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69 and GAM149710

GR3281 AA203434 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3281(GR3281) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3281 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3281 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3281 gene encodes GR3281 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3281 precursor RNA folds spatially, forming GR3281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3281 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3281 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69024 precursor RNA and GAM126083 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69024 RNA and GAM126083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69024 target RNA into GAM69024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126083 target RNA into GAM126083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3281 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3281 gene: GAM69024 target protein and GAM126083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69024 and GAM126083

GR3282 H09919 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3282(GR3282) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3282 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3282 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3282 gene encodes GR3282 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3282 precursor RNA folds spatially, forming GR3282 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3282 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3282 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133409 precursor RNA and GAM200297 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133409 RNA and GAM200297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133409 target RNA into GAM133409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200297 target RNA into GAM200297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3282 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3282 gene: GAM133409 target protein and GAM200297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133409 and GAM200297

GR3283 BI257752 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3283(GR3283) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3283 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3283 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3283 gene encodes GR3283 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3283 precursor RNA folds spatially, forming GR3283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3283 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3283 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4081 precursor RNA and GAM125799 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4081 RNA and GAM125799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4081 target RNA into GAM4081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125799 target RNA into GAM125799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3283 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3283 gene: GAM4081 target protein and GAM125799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4081 and GAM125799

GR3284 H30844 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3284(GR3284) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3284 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3284 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3284 gene encodes GR3284 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3284 precursor RNA folds spatially, forming GR3284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3284 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3284 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3600 precursor RNA, GAM170761 precursor RNA and GAM195048 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3600 RNA, GAM170761 RNA and GAM195048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3600 target RNA into GAM3600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170761 target RNA into GAM170761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195048 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195048 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195048 target RNA into GAM195048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3284 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3284 gene: GAM3600 target protein, GAM170761 target protein and GAM195048 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3600, GAM170761 and GAM195048

GR3285 BE258591 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3285(GR3285) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3285 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3285 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3285 gene encodes GR3285 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3285 precursor RNA folds spatially, forming GR3285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3285 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3285 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1453 precursor RNA, GAM4477 precursor RNA and GAM219667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1453 RNA, GAM4477 RNA and GAM219667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1453 target RNA into GAM1453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4477 target RNA into GAM4477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219667 target RNA into GAM219667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3285 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3285 gene: GAM1453 target

protein, GAM4477 target protein and GAM219667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1453, GAM4477 and GAM219667

GR3286 BE747460 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3286(GR3286) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3286 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3286 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3286 gene encodes GR3286 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3286 precursor RNA folds spatially, forming GR3286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3286 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3286 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7412 precursor RNA and GAM8351 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7412 RNA and GAM8351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7412 target RNA into GAM7412 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8351 target RNA into GAM8351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3286 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3286 gene: GAM7412 target protein and GAM8351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7412 and GAM8351

GR3287 R49085 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3287(GR3287) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3287 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3287 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3287 gene encodes GR3287 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3287 precursor RNA folds spatially, forming GR3287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3287 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3287 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM733 precursor RNA and GAM174821 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM733 RNA and GAM174821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM733 target RNA into GAM733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174821 target RNA into GAM174821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3287 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3287 gene: GAM733 target protein and GAM174821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM733 and GAM174821

GR3288 AA694048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3288(GR3288) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3288 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3288 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3288 gene encodes GR3288 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3288 precursor RNA folds spatially, forming GR3288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3288 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3288 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24956 precursor RNA and GAM171136 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24956 RNA and GAM171136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24956 target RNA into GAM24956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171136 target RNA into GAM171136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3288 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3288 gene: GAM24956 target protein and GAM171136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24956 and GAM171136

GR3289 BM676386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3289(GR3289) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3289 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3289 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3289 gene encodes GR3289 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3289 precursor RNA folds spatially, forming GR3289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3289 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3289 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5430 precursor RNA and GAM6764 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5430 RNA and GAM6764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5430 target RNA into GAM5430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6764 target RNA into GAM6764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3289 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3289 gene: GAM5430 target protein and GAM6764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5430 and GAM6764

GR3290 BM010796 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3290(GR3290) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3290 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3290 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3290 gene encodes GR3290 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3290 precursor RNA folds spatially, forming GR3290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3290 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3290 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5830 precursor RNA, GAM33918 precursor RNA and GAM215594 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5830 RNA, GAM33918 RNA and GAM215594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5830 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5830 target RNA into GAM5830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33918 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33918 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33918 target RNA into GAM33918 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215594 target RNA into GAM215594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3290 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3290 gene: GAM5830 target protein, GAM33918 target protein and GAM215594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5830, GAM33918 and GAM215594

GR3291 BE780325 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3291(GR3291) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3291 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3291 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3291 gene encodes GR3291 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3291 precursor RNA folds spatially, forming GR3291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3291 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3291 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM808 precursor RNA, GAM4150 precursor RNA, GAM4198 precursor RNA and GAM273229 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM808 RNA, GAM4150 RNA, GAM4198 RNA and GAM273229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM808 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM808 target RNA into GAM808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4150 target RNA into GAM4150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4198 target RNA into GAM4198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273229 target RNA into GAM273229 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3291 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3291 gene: GAM808 target protein, GAM4150 target protein, GAM4198 target protein and GAM273229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM808, GAM4150, GAM4198 and GAM273229

GR3292 AI279299 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3292(GR3292) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3292 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3292 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3292 gene encodes GR3292 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3292 precursor RNA folds spatially, forming GR3292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3292 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3292 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4665 precursor RNA, GAM250649 precursor RNA and GAM318029 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4665 RNA, GAM250649 RNA and GAM318029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4665 target RNA into GAM4665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250649 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250649 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250649 target RNA into GAM250649 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318029 target RNA into GAM318029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3292 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3292 gene: GAM4665 target protein, GAM250649 target protein and GAM318029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4665, GAM250649 and GAM318029

GR3293 AI199214 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3293(GR3293) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3293 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3293 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3293 gene encodes GR3293 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3293 precursor RNA folds spatially, forming GR3293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3293 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3293 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4068 precursor RNA and GAM99969 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4068 RNA and GAM99969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4068 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4068 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4068 target RNA into GAM4068 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99969 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99969 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99969 target RNA into GAM99969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3293 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3293 gene: GAM4068 target protein and GAM99969 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4068 and GAM99969

GR3294 AI762437 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3294(GR3294) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3294 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3294 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3294 gene encodes GR3294 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3294 precursor RNA folds spatially, forming GR3294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3294 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3294 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34522 precursor RNA and GAM275299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34522 RNA and GAM275299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34522 target RNA into GAM34522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275299 target RNA into GAM275299 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3294 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3294 gene: GAM34522 target protein and GAM275299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34522 and GAM275299

GR3295 AW862800 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3295(GR3295) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3295 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3295 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3295 gene encodes GR3295 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3295 precursor RNA folds spatially, forming GR3295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3295 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3295 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4383 precursor RNA and GAM6152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4383 RNA and GAM6152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4383 target RNA into GAM4383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6152 target RNA into GAM6152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3295 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3295 gene: GAM4383 target protein and GAM6152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4383 and GAM6152

GR3296 BF058105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3296(GR3296) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3296 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3296 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3296 gene encodes GR3296 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3296 precursor RNA folds spatially, forming GR3296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3296 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3296 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM98 precursor RNA, GAM88372 precursor RNA and GAM286472 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98 RNA, GAM88372 RNA and GAM286472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98 target RNA into GAM98 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88372 target RNA into GAM88372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286472 target RNA into GAM286472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3296 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3296 gene: GAM98 target protein, GAM88372 target protein and GAM286472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98, GAM88372 and GAM286472

GR3297 BF922105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3297(GR3297) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3297 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3297 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3297 gene encodes GR3297 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3297 precursor RNA folds spatially, forming GR3297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3297 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3297 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2123 precursor RNA and GAM154573 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2123 RNA and GAM154573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2123 target RNA into GAM2123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154573 target RNA into GAM154573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3297 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3297 gene: GAM2123 target protein and GAM154573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2123 and GAM154573

GR3298 AA649729 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3298(GR3298) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3298 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3298 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3298 gene encodes GR3298 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3298 precursor RNA folds spatially, forming GR3298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3298 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3298 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4018 precursor RNA, GAM82038 precursor RNA and GAM85839 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4018 RNA, GAM82038 RNA and GAM85839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4018 target RNA into GAM4018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82038 target RNA into GAM82038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85839 target RNA into GAM85839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3298 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3298 gene: GAM4018 target protein, GAM82038 target protein and GAM85839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4018, GAM82038 and GAM85839

GR3299 AL044760 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3299(GR3299) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3299 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3299 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3299 gene encodes GR3299 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3299 precursor RNA folds spatially, forming GR3299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3299 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3299 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1110 precursor RNA and GAM308713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1110 RNA and GAM308713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1110 target RNA into GAM1110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308713 target RNA into GAM308713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3299 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3299 gene: GAM1110 target protein and GAM308713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1110 and GAM308713

GR3300 R22115 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3300(GR3300) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3300 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3300 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3300 gene encodes GR3300 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3300 precursor RNA folds spatially, forming GR3300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3300 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3300 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM11282 precursor RNA and GAM292943 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11282 RNA and GAM292943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11282 target RNA into GAM11282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292943 target RNA into GAM292943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3300 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3300 gene: GAM11282 target protein and GAM292943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11282 and GAM292943

GR3301 AL599828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3301(GR3301) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3301 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3301 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3301 gene encodes GR3301 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3301 precursor RNA folds spatially, forming GR3301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3301 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3301 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6255 precursor RNA, GAM52473 precursor RNA, GAM141701 precursor RNA and GAM158820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6255 RNA, GAM52473 RNA, GAM141701 RNA and GAM158820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6255 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6255 target RNA into GAM6255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52473 target RNA into GAM52473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141701 target RNA into GAM141701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158820 target RNA into GAM158820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3301 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3301 gene: GAM6255 target protein, GAM52473 target protein, GAM141701 target protein and GAM158820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6255, GAM52473, GAM141701 and GAM158820

GR3302 AV654086 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3302(GR3302) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3302 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3302 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3302 gene encodes GR3302 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3302 precursor RNA folds spatially, forming GR3302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3302 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3302 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM238800 precursor RNA, GAM241385 precursor RNA and GAM268559 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM238800 RNA, GAM241385 RNA and GAM268559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM238800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238800 target RNA into GAM238800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241385 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241385 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241385 target RNA into GAM241385 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268559

target RNA into GAM268559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3302 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3302 gene: GAM238800 target protein, GAM241385 target protein and GAM268559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM238800, GAM241385 and GAM268559

GR3303 BG496688 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3303(GR3303) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3303 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3303 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3303 gene encodes GR3303 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3303 precursor RNA folds spatially, forming GR3303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3303 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3303 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM73223 precursor RNA, GAM258999 precursor RNA and GAM282177 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73223 RNA, GAM258999 RNA and GAM282177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73223 target RNA into GAM73223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258999 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258999 target RNA into GAM258999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282177 target RNA into GAM282177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3303 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3303 gene: GAM73223 target protein, GAM258999 target protein and GAM282177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73223, GAM258999 and GAM282177

GR3304 AA968528 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3304(GR3304) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3304 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3304 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3304 gene encodes GR3304 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3304 precursor RNA folds spatially, forming GR3304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3304 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3304 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5146 precursor RNA and GAM126773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5146 RNA and GAM126773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5146 target RNA into GAM5146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126773 target RNA into GAM126773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3304 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3304 gene: GAM5146 target protein and GAM126773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5146 and GAM126773

GR3305 BF733855 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3305(GR3305) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3305 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3305 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3305 gene encodes GR3305 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3305 precursor RNA folds spatially, forming GR3305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3305 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3305 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253042 precursor RNA and GAM291646 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253042 RNA and GAM291646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253042 target RNA into GAM253042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291646 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291646 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291646

target RNA into GAM291646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3305 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3305 gene: GAM253042 target protein and GAM291646 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253042 and GAM291646

GR3306 AA714202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3306(GR3306) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3306 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3306 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3306 gene encodes GR3306 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3306 precursor RNA folds spatially, forming GR3306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3306 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3306 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8441 precursor RNA and GAM259456 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8441 RNA and GAM259456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8441 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8441 target RNA into GAM8441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259456 target RNA into GAM259456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3306 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3306 gene: GAM8441 target protein and GAM259456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8441 and GAM259456

GR3307 AW934993 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3307(GR3307) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3307 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3307 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3307 gene encodes GR3307 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3307 precursor RNA folds spatially, forming GR3307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3307 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3307 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3307 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM403 precursor RNA and GAM129317 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM403 RNA and GAM129317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM403 target RNA into GAM403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129317 target RNA into GAM129317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3307 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3307 gene: GAM403 target protein and GAM129317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM403 and GAM129317

GR3308 AI822081 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3308(GR3308) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3308 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3308 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3308 gene encodes GR3308 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3308 precursor RNA folds spatially, forming GR3308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3308 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3308 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2552 precursor RNA and GAM303081 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2552 RNA and GAM303081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2552 target RNA into GAM2552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303081 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303081 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303081 target RNA into GAM303081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3308 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3308 gene: GAM2552 target protein and GAM303081 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2552 and GAM303081

GR3309 AW504839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3309(GR3309) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3309 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3309 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3309 gene encodes GR3309 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3309 precursor RNA folds spatially, forming GR3309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3309 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3309 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM109748 precursor RNA and GAM157914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM109748 RNA and GAM157914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM109748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109748 target RNA into GAM109748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157914 target RNA into GAM157914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3309 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3309 gene: GAM109748 target protein and GAM157914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM109748 and GAM157914

GR3310 AI624958 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3310(GR3310) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3310 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3310 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3310 gene encodes GR3310 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3310 precursor RNA folds spatially, forming GR3310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3310 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3310 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM73368 precursor RNA, GAM131169 precursor RNA and GAM197888 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73368 RNA, GAM131169 RNA and GAM197888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM73368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73368 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73368 target RNA into GAM73368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131169 target RNA into GAM131169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197888 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197888 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197888 target RNA into GAM197888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3310 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3310 gene: GAM73368 target protein, GAM131169 target protein and GAM197888 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73368, GAM131169 and GAM197888

GR3311 AA442349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3311(GR3311) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3311 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3311 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3311 gene encodes GR3311 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3311 precursor RNA folds spatially, forming GR3311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3311 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3311 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM79464 precursor RNA, GAM173484 precursor RNA and GAM213131 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79464 RNA, GAM173484 RNA and GAM213131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79464 target RNA into GAM79464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173484 target RNA into GAM173484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213131 target RNA into GAM213131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3311 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3311 gene: GAM79464 target protein, GAM173484 target protein and GAM213131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79464, GAM173484 and GAM213131

GR3312 BM669038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3312(GR3312) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3312 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3312 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3312 gene encodes GR3312 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3312 precursor RNA folds spatially, forming GR3312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3312 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3312 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7754 precursor RNA, GAM39340 precursor RNA and GAM212642 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7754 RNA, GAM39340 RNA and GAM212642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7754 target RNA into GAM7754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM39340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39340 target RNA into GAM39340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212642 target RNA into GAM212642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3312 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3312 gene: GAM7754 target protein, GAM39340 target protein and GAM212642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7754, GAM39340 and GAM212642

GR3313 BM697396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3313(GR3313) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3313 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3313 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3313 gene encodes GR3313 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3313 precursor RNA folds spatially, forming GR3313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3313 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3313 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99441 precursor RNA and GAM257269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99441 RNA and GAM257269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99441 target RNA into GAM99441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257269 target RNA into GAM257269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3313 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3313 gene: GAM99441 target protein and GAM257269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99441 and GAM257269

GR3314 BF995146 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3314(GR3314) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3314 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3314 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3314 gene encodes GR3314 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3314 precursor RNA folds spatially, forming GR3314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3314 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3314 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5299 precursor RNA and GAM5622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5299 RNA and GAM5622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5299 target RNA into GAM5299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5622 target RNA into GAM5622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3314 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3314 gene: GAM5299 target protein and GAM5622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5299 and GAM5622

GR3315 BG339481 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3315(GR3315) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3315 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3315 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3315 gene encodes GR3315 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3315 precursor RNA folds spatially, forming GR3315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3315 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3315 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5207 precursor RNA, GAM195803 precursor RNA and GAM196451 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5207 RNA, GAM195803 RNA and GAM196451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5207 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5207 target RNA into GAM5207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195803 target RNA into GAM195803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196451 target RNA into GAM196451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3315 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3315 gene: GAM5207 target protein, GAM195803 target protein and GAM196451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5207, GAM195803 and GAM196451

GR3316 BG742138 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3316(GR3316) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3316 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3316 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3316 gene encodes GR3316 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3316 precursor RNA folds spatially, forming GR3316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3316 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3316 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49374 precursor RNA and GAM68149 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49374 RNA and GAM68149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49374 target RNA into GAM49374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68149 target RNA into GAM68149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3316 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3316 gene: GAM49374 target protein and GAM68149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49374 and GAM68149

GR3317 BM798185 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3317(GR3317) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3317 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3317 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3317 gene encodes GR3317 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3317 precursor RNA folds spatially, forming GR3317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3317 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3317 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5950 precursor RNA and GAM202910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5950 RNA and GAM202910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5950 target RNA into GAM5950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM202910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM202910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM202910 target RNA into GAM202910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3317 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3317 gene: GAM5950 target protein and GAM202910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5950 and GAM202910

GR3318 T96095 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3318(GR3318) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3318 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3318 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3318 gene encodes GR3318 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3318 precursor RNA folds spatially, forming GR3318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3318 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3318 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM310374 precursor RNA and GAM335684 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM310374 RNA and GAM335684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM310374 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310374 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310374 target RNA into GAM310374 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335684 target RNA into GAM335684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3318 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3318 gene: GAM310374 target protein and GAM335684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM310374 and GAM335684

GR3319 BM552001 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3319(GR3319) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3319 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3319 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3319 gene encodes GR3319 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3319 precursor RNA folds spatially, forming GR3319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3319 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3319 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2671 precursor RNA, GAM57269 precursor RNA and GAM107265 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2671 RNA, GAM57269 RNA and GAM107265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2671 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2671 target RNA into GAM2671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57269 target RNA into GAM57269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107265 target RNA into GAM107265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3319 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3319 gene: GAM2671 target protein, GAM57269 target protein and GAM107265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2671, GAM57269 and GAM107265

GR3320 H62564 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3320(GR3320) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3320 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3320 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3320 gene encodes GR3320 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3320 precursor RNA folds spatially, forming GR3320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3320 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3320 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM139900 precursor RNA and GAM296590 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM139900 RNA and GAM296590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM139900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139900 target RNA into GAM139900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296590 target RNA into GAM296590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3320 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3320 gene: GAM139900 target protein and GAM296590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM139900 and GAM296590

GR3321 BI000631 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3321(GR3321) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3321 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3321 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3321 gene encodes GR3321 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3321 precursor RNA folds spatially, forming GR3321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3321 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3321 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131 precursor RNA and GAM216082 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131 RNA and GAM216082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131 target RNA into

GAM131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216082 target RNA into GAM216082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3321 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3321 gene: GAM131 target protein and GAM216082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131 and GAM216082

GR3322 BI551175 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3322(GR3322) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3322 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3322 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3322 gene encodes GR3322 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3322 precursor RNA folds spatially, forming GR3322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3322 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3322 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM36488 precursor RNA, GAM161985 precursor RNA and GAM216471 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36488 RNA, GAM161985 RNA and GAM216471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36488 target RNA into GAM36488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161985 target RNA into GAM161985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216471 target RNA into GAM216471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3322 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3322 gene: GAM36488 target protein, GAM161985 target protein and GAM216471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36488, GAM161985 and GAM216471

GR3323 BM929424 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3323(GR3323) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3323 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3323 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3323 gene encodes GR3323 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3323 precursor RNA folds spatially, forming GR3323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3323 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3323 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68959 precursor RNA and GAM209941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68959 RNA and GAM209941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68959 target RNA into GAM68959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209941 target RNA into GAM209941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3323 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3323 gene: GAM68959 target protein and GAM209941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68959 and GAM209941

GR3324 BI909004 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3324(GR3324) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3324 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3324 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3324 gene encodes GR3324 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3324 precursor RNA folds spatially, forming GR3324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3324 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3324 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3965 precursor RNA and GAM107396 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3965 RNA and GAM107396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3965 target RNA into GAM3965 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107396 target RNA into GAM107396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3324 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3324 gene: GAM3965 target protein and GAM107396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3965 and GAM107396

GR3325 BF571547 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3325(GR3325) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3325 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3325 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3325 gene encodes GR3325 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3325 precursor RNA folds spatially, forming GR3325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3325 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3325 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122772 precursor RNA and GAM200194 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122772 RNA and GAM200194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122772 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122772 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122772 target RNA into GAM122772 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200194 target RNA into GAM200194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3325 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3325 gene: GAM122772 target protein and GAM200194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122772 and GAM200194

GR3326 BG661358 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3326(GR3326) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3326 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3326 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3326 gene encodes GR3326 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3326 precursor RNA folds spatially, forming GR3326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3326 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3326 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM9302 precursor RNA, GAM161560 precursor RNA and GAM206866 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9302 RNA, GAM161560 RNA and GAM206866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9302 target RNA into GAM9302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161560 target RNA into GAM161560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206866 target RNA into GAM206866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3326 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3326 gene: GAM9302 target protein, GAM161560 target protein and GAM206866 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9302, GAM161560 and GAM206866

GR3327 BF307706 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3327(GR3327) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3327 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3327 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3327 gene encodes GR3327 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3327 precursor RNA folds spatially, forming GR3327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3327 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3327 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7565 precursor RNA and GAM121277 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7565 RNA and GAM121277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7565 target RNA into GAM7565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121277 target RNA into GAM121277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3327 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3327 gene: GAM7565 target protein and GAM121277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7565 and GAM121277

GR3328 BG401330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3328(GR3328) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3328 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3328 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3328 gene encodes GR3328 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3328 precursor RNA folds spatially, forming GR3328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3328 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3328 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM264672 precursor RNA and GAM272859 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM264672 RNA and GAM272859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM264672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264672 target RNA into GAM264672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272859 target RNA into GAM272859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3328 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3328 gene: GAM264672 target protein and GAM272859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM264672 and GAM272859

GR3329 BE464660 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3329(GR3329) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3329 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3329 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3329 gene encodes GR3329 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3329 precursor RNA folds spatially, forming GR3329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3329 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3329 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM221 precursor RNA and GAM217959 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221 RNA and GAM217959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221 target RNA into GAM221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217959 target RNA into GAM217959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3329 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3329 gene: GAM221 target protein and GAM217959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221 and GAM217959

GR3330 BQ100839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3330(GR3330) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3330 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3330 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3330 gene encodes GR3330 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3330 precursor RNA folds spatially, forming GR3330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3330 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3330 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM171527 precursor RNA and GAM295941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM171527 RNA and GAM295941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM171527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171527 target RNA into GAM171527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295941 target RNA into GAM295941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3330 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3330 gene: GAM171527 target protein and GAM295941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM171527 and GAM295941

GR3331 AW090524 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3331(GR3331) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3331 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3331 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3331 gene encodes GR3331 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3331 precursor RNA folds spatially, forming GR3331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3331 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3331 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6092 precursor RNA, GAM7788 precursor RNA and GAM148156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6092 RNA, GAM7788 RNA and GAM148156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM6092 target RNA into GAM6092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7788 target RNA into GAM7788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148156 target RNA into GAM148156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3331 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3331 gene: GAM6092 target protein, GAM7788 target protein and GAM148156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6092, GAM7788 and GAM148156

GR3332 BM826876 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3332(GR3332) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3332 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3332 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3332 gene encodes GR3332 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3332 precursor RNA folds spatially, forming GR3332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3332 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3332 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM247621 precursor RNA and GAM297272 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM247621 RNA and GAM297272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM247621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247621 target RNA into GAM247621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297272 target RNA into GAM297272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3332 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3332 gene: GAM247621 target protein and GAM297272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM247621 and GAM297272

GR3333 AI560144 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3333(GR3333) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3333 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3333 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3333 gene encodes GR3333 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3333 precursor RNA folds spatially, forming GR3333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3333 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3333 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6148 precursor RNA and GAM163645 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6148 RNA and GAM163645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6148 target RNA into GAM6148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM163645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163645 target RNA into GAM163645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3333 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3333 gene: GAM6148 target protein and GAM163645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6148 and GAM163645

GR3334 BG120145 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3334(GR3334) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3334 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3334 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3334 gene encodes GR3334 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3334 precursor RNA folds spatially, forming GR3334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3334 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3334 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4469 precursor RNA, GAM15427 precursor RNA and GAM103541 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4469 RNA, GAM15427 RNA and GAM103541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4469 target RNA into

GAM4469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15427 target RNA into GAM15427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103541 target RNA into GAM103541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3334 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3334 gene: GAM4469 target protein, GAM15427 target protein and GAM103541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4469, GAM15427 and GAM103541

GR3335 BI199956 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3335(GR3335) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3335 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3335 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3335 gene encodes GR3335 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3335 precursor RNA folds spatially, forming GR3335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3335 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3335 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM82177 precursor RNA and GAM278316 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82177 RNA and GAM278316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82177 target RNA into GAM82177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278316 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278316 target RNA into GAM278316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3335 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3335 gene: GAM82177 target protein and GAM278316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82177 and GAM278316

GR3336 BM972534 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3336(GR3336) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3336 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3336 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3336 gene encodes GR3336 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3336 precursor RNA folds spatially, forming GR3336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3336 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3336 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178166 precursor RNA and GAM265107 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178166 RNA and GAM265107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178166 target RNA into GAM178166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265107 target RNA into GAM265107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3336 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3336 gene: GAM178166 target

protein and GAM265107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178166 and GAM265107

GR3337 BF312330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3337(GR3337) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3337 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3337 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3337 gene encodes GR3337 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3337 precursor RNA folds spatially, forming GR3337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3337 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3337 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6249 precursor RNA, GAM74049 precursor RNA, GAM193371 precursor RNA and GAM201758 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6249 RNA, GAM74049 RNA, GAM193371 RNA and GAM201758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6249 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6249 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6249 target RNA into GAM6249 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74049 target RNA into GAM74049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193371 target RNA into GAM193371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201758 target RNA into GAM201758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3337 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3337 gene: GAM6249 target protein, GAM74049 target protein, GAM193371 target protein and GAM201758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6249, GAM74049, GAM193371 and GAM201758

GR3338 BG757111 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3338(GR3338) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3338 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3338 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3338 gene encodes GR3338 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3338 precursor RNA folds spatially, forming GR3338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3338 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3338 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87642 precursor RNA and GAM279776 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87642 RNA and GAM279776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87642 target RNA into GAM87642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279776 target RNA into GAM279776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3338 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3338 gene: GAM87642 target protein and GAM279776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87642 and GAM279776

GR3339 BG538787 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3339(GR3339) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3339 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3339 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3339 gene encodes GR3339 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3339 precursor RNA folds spatially, forming GR3339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3339 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3339 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78812 precursor RNA and GAM292870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78812 RNA and GAM292870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78812 target RNA into GAM78812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292870

target RNA into GAM292870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3339 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3339 gene: GAM78812 target protein and GAM292870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78812 and GAM292870

GR3340 BI914185 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3340(GR3340) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3340 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3340 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3340 gene encodes GR3340 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3340 precursor RNA folds spatially, forming GR3340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3340 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3340 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3114 precursor RNA and GAM6144 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3114 RNA and GAM6144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3114 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3114 target RNA into GAM3114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6144 target RNA into GAM6144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3340 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3340 gene: GAM3114 target protein and GAM6144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3114 and GAM6144

GR3341 AW996710 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3341(GR3341) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3341 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3341 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3341 gene encodes GR3341 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3341 precursor RNA folds spatially, forming GR3341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3341 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3341 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3341 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5838 precursor RNA and GAM43594 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5838 RNA and GAM43594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5838 target RNA into GAM5838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43594 target RNA into GAM43594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3341 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3341 gene: GAM5838 target protein and GAM43594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5838 and GAM43594

GR3342 BE873517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3342(GR3342) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3342 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3342 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3342 gene encodes GR3342 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3342 precursor RNA folds spatially, forming GR3342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3342 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3342 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM106350 precursor RNA and GAM298898 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106350 RNA and GAM298898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106350 target RNA into GAM106350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298898 target RNA into GAM298898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3342 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3342 gene: GAM106350 target protein and GAM298898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106350 and GAM298898

GR3343 F06760 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3343(GR3343) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3343 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3343 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3343 gene encodes GR3343 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3343 precursor RNA folds spatially, forming GR3343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3343 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3343 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM199491 precursor RNA and GAM291403 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM199491 RNA and GAM291403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM199491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199491 target RNA into GAM199491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291403 target RNA into GAM291403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3343 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3343 gene: GAM199491 target protein and GAM291403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM199491 and GAM291403

GR3344 BI818265 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3344(GR3344) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3344 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3344 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3344 gene encodes GR3344 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3344 precursor RNA folds spatially, forming GR3344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3344 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3344 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2900 precursor RNA and GAM89643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2900 RNA and GAM89643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2900 target RNA into GAM2900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89643 target RNA into GAM89643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3344 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3344 gene: GAM2900 target protein and GAM89643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2900 and GAM89643

GR3345 BG024647 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3345(GR3345) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3345 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3345 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3345 gene encodes GR3345 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3345 precursor RNA folds spatially, forming GR3345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3345 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3345 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM139320 precursor RNA and GAM258491 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM139320 RNA and GAM258491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM139320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139320 target RNA into GAM139320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258491 target RNA into GAM258491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3345 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3345 gene: GAM139320 target protein and GAM258491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM139320 and GAM258491

GR3346 BM785953 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3346(GR3346) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3346 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3346 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3346 gene encodes GR3346 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3346 precursor RNA folds spatially, forming GR3346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3346 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3346 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8192 precursor RNA, GAM178598 precursor RNA and GAM336501 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8192 RNA, GAM178598 RNA and GAM336501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8192 target RNA into GAM8192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178598 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178598 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178598 target RNA into GAM178598 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336501

target RNA into GAM336501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3346 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3346 gene: GAM8192 target protein, GAM178598 target protein and GAM336501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8192, GAM178598 and GAM336501

GR3347 BM837163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3347(GR3347) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3347 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3347 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3347 gene encodes GR3347 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3347 precursor RNA folds spatially, forming GR3347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3347 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3347 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM170903 precursor RNA and GAM282587 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170903 RNA and GAM282587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170903 target RNA into GAM170903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282587 target RNA into GAM282587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3347 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3347 gene: GAM170903 target protein and GAM282587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170903 and GAM282587

GR3348 BF381232 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3348(GR3348) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3348 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3348 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3348 gene encodes GR3348 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3348 precursor RNA folds spatially, forming GR3348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3348 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3348 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM187263 precursor RNA and GAM264267 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM187263 RNA and GAM264267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM187263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187263 target RNA into GAM187263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264267 target RNA into GAM264267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3348 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3348 gene: GAM187263 target protein and GAM264267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM187263 and GAM264267

GR3349 BI464337 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3349(GR3349) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3349 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3349 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3349 gene encodes GR3349 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3349 precursor RNA folds spatially, forming GR3349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3349 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3349 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1170 precursor RNA, GAM17540 precursor RNA and GAM150589 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1170 RNA, GAM17540 RNA and GAM150589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1170 target RNA into GAM1170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17540 target RNA into GAM17540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150589 target RNA into GAM150589 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3349 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3349 gene: GAM1170 target protein, GAM17540 target protein and GAM150589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1170, GAM17540 and GAM150589

GR3350 BG328114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3350(GR3350) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3350 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3350 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3350 gene encodes GR3350 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3350 precursor RNA folds spatially, forming GR3350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3350 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3350 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4483 precursor RNA, GAM117392 precursor RNA and GAM308788 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4483 RNA, GAM117392 RNA and GAM308788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4483 target RNA into GAM4483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117392 target RNA into GAM117392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308788 target RNA into GAM308788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3350 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3350 gene: GAM4483 target protein, GAM117392 target protein and GAM308788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4483, GAM117392 and GAM308788

GR3351 AI372979 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3351(GR3351) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3351 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3351 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3351 gene encodes GR3351 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3351 precursor RNA folds spatially, forming GR3351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3351 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3351 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM260808 precursor RNA and GAM271006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM260808 RNA and GAM271006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM260808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260808 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260808 target RNA into GAM260808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271006 target RNA into GAM271006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3351 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3351 gene: GAM260808 target protein and GAM271006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM260808 and GAM271006

GR3352 BE514348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3352(GR3352) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3352 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3352 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3352 gene encodes GR3352 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3352 precursor RNA folds spatially, forming GR3352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3352 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3352 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3423 precursor RNA and GAM224370 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3423 RNA and GAM224370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3423 target RNA into GAM3423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224370 target RNA into GAM224370 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3352 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3352 gene: GAM3423 target protein and GAM224370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3423 and GAM224370

GR3353 BF575522 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3353(GR3353) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3353 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3353 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3353 gene encodes GR3353 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3353 precursor RNA folds spatially, forming GR3353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3353 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3353 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53793 precursor RNA and GAM179532 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53793 RNA and GAM179532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM53793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53793 target RNA into GAM53793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179532 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179532 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179532 target RNA into GAM179532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3353 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3353 gene: GAM53793 target protein and GAM179532 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53793 and GAM179532

GR3354 BG422363 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3354(GR3354) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3354 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3354 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3354 gene encodes GR3354 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3354 precursor RNA folds spatially, forming GR3354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3354 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3354 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM615 precursor RNA and GAM290093 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM615 RNA and GAM290093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM615 target RNA into GAM615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290093 target RNA into GAM290093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3354 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3354 gene: GAM615 target protein and GAM290093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM615 and GAM290093

GR3355 BF939850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3355(GR3355) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3355 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3355 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3355 gene encodes GR3355 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3355 precursor RNA folds spatially, forming GR3355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3355 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3355 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3355 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7358 precursor RNA, GAM198009 precursor RNA and GAM257632 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7358 RNA, GAM198009 RNA and GAM257632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7358 target RNA into GAM7358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM198009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM198009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM198009 target RNA into GAM198009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257632 target RNA into GAM257632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3355 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3355 gene: GAM7358 target protein, GAM198009 target protein and GAM257632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7358, GAM198009 and GAM257632

GR3356 BF749815 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3356(GR3356) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3356 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3356 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3356 gene encodes GR3356 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3356 precursor RNA folds spatially, forming GR3356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3356 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3356 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3356 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM98664 precursor RNA and GAM140432 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98664 RNA and GAM140432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98664 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98664 target RNA into GAM98664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140432 target RNA into GAM140432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3356 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3356 gene: GAM98664 target protein and GAM140432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98664 and GAM140432

GR3357 BG682218 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3357(GR3357) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3357 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3357 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3357 gene encodes GR3357 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3357 precursor RNA folds spatially, forming GR3357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3357 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3357 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3357 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3963 precursor RNA, GAM78061 precursor RNA and

GAM171995 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3963 RNA, GAM78061 RNA and GAM171995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3963 target RNA into GAM3963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78061 target RNA into GAM78061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171995 target RNA into GAM171995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3357 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3357 gene: GAM3963 target protein, GAM78061 target protein and GAM171995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3963, GAM78061 and GAM171995

GR3358 BF679043 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3358(GR3358) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3358 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3358 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3358 gene encodes GR3358 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3358 precursor RNA folds spatially, forming GR3358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3358 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3358 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3358 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31626 precursor RNA and GAM321623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31626 RNA and GAM321623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31626 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31626 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31626 target RNA into GAM31626 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321623 target RNA into GAM321623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3358 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3358 gene: GAM31626 target protein and GAM321623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31626 and GAM321623

GR3359 AW440845 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3359(GR3359) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3359 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3359 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3359 gene encodes GR3359 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3359 precursor RNA folds spatially, forming GR3359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3359 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3359 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3359 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6839 precursor RNA and GAM107135 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6839 RNA and GAM107135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6839 target RNA into GAM6839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107135 target RNA into GAM107135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3359 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3359 gene: GAM6839 target protein and GAM107135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6839 and GAM107135

GR3360 BM563050 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3360(GR3360) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3360 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3360 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3360 gene encodes GR3360 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3360 precursor RNA folds spatially, forming GR3360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3360 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3360 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3360 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6441 precursor RNA and GAM290172 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6441 RNA and GAM290172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6441 target RNA into GAM6441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290172 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290172 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290172 target RNA into GAM290172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3360 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3360 gene: GAM6441 target protein and GAM290172 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6441 and GAM290172

GR3361 BG483738 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3361(GR3361) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3361 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3361 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3361 gene encodes GR3361 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3361 precursor RNA folds spatially, forming GR3361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3361 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3361 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3361 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM299 precursor RNA and GAM314713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM299 RNA and GAM314713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299 target RNA into GAM299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314713 target RNA into GAM314713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3361 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3361 gene: GAM299 target protein and GAM314713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM299 and GAM314713

GR3362 BF087967 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3362(GR3362) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3362 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3362 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3362 gene encodes GR3362 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3362 precursor RNA folds spatially, forming GR3362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3362 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3362 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3362 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5228 precursor RNA and GAM82212 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5228 RNA and GAM82212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5228 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5228 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5228 target RNA into GAM5228 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82212 target RNA into GAM82212 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3362 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3362 gene: GAM5228 target protein and GAM82212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5228 and GAM82212

GR3363 AA923807 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3363(GR3363) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3363 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3363 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3363 gene encodes GR3363 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3363 precursor RNA folds spatially, forming GR3363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3363 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3363 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3363 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2096 precursor RNA and GAM323934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2096 RNA and GAM323934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM2096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2096 target RNA into GAM2096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323934 target RNA into GAM323934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3363 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3363 gene: GAM2096 target protein and GAM323934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2096 and GAM323934

GR3364 AI239893 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3364(GR3364) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3364 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3364 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3364 gene encodes GR3364 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3364 precursor RNA folds spatially, forming GR3364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3364 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3364 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3364 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM3797 precursor RNA and GAM252043 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3797 RNA and GAM252043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3797 target RNA into GAM3797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252043 target RNA into GAM252043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3364 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3364 gene: GAM3797 target protein and GAM252043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3797 and GAM252043

GR3365 AI375491 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3365(GR3365) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3365 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3365 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3365 gene encodes GR3365 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3365 precursor RNA folds spatially, forming GR3365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3365 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3365 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3365 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4748 precursor RNA and GAM176402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4748 RNA and GAM176402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4748 target RNA into GAM4748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176402 target RNA into GAM176402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3365 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3365 gene: GAM4748 target protein and GAM176402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4748 and GAM176402

GR3366 BG031156 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3366(GR3366) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3366 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3366 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3366 gene encodes GR3366 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3366 precursor RNA folds spatially, forming GR3366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3366 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3366 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3366 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95070 precursor RNA and GAM334357 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95070 RNA and GAM334357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95070 target RNA into GAM95070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334357 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334357 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334357 target RNA into GAM334357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3366 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3366 gene: GAM95070 target protein and GAM334357 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95070 and GAM334357

GR3367 BM905168 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3367(GR3367) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3367 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3367 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3367 gene encodes GR3367 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3367 precursor RNA folds spatially, forming GR3367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3367 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3367 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3367 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6027 precursor RNA and GAM184973 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6027 RNA and GAM184973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6027 target RNA into GAM6027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184973 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184973 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184973 target RNA into GAM184973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3367 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3367 gene: GAM6027 target protein and GAM184973 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6027 and GAM184973

GR3368 BI038366 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3368(GR3368) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3368 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3368 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3368 gene encodes GR3368 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3368 precursor RNA folds spatially, forming GR3368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3368 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3368 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3368 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5314 precursor RNA and GAM206780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5314 RNA and GAM206780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5314 target RNA into GAM5314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206780 target RNA into GAM206780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3368 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3368 gene: GAM5314 target protein and GAM206780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5314 and GAM206780

GR3369 BF872160 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3369(GR3369) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3369 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3369 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3369 gene encodes GR3369 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3369 precursor RNA folds spatially, forming GR3369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3369 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3369 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3369 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM91170 precursor RNA, GAM265917 precursor RNA and GAM327563 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91170 RNA, GAM265917 RNA and GAM327563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91170 target RNA into GAM91170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265917 target RNA into GAM265917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327563 target RNA into GAM327563 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3369 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3369 gene: GAM91170 target protein, GAM265917 target protein and GAM327563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91170, GAM265917 and GAM327563

GR3370 BI524035 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3370(GR3370) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3370 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3370 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3370 gene encodes GR3370 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3370 precursor RNA folds spatially, forming GR3370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3370 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3370 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3370 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM915 precursor RNA and GAM135459 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM915 RNA and GAM135459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM915 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM915 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM915 target RNA into GAM915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135459 target RNA into GAM135459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3370 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3370 gene: GAM915 target protein and GAM135459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM915 and GAM135459

GR3371 AI700192 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3371(GR3371) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3371 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3371 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3371 gene encodes GR3371 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3371 precursor RNA folds spatially, forming GR3371 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3371 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3371 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3371 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3902 precursor RNA and GAM121595 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3902 RNA and GAM121595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3902 target RNA into GAM3902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121595 target RNA into GAM121595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3371 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3371 gene: GAM3902 target protein and GAM121595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3902 and GAM121595

GR3372 BI835678 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3372(GR3372) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3372 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3372 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3372 gene encodes GR3372 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3372 precursor RNA folds spatially, forming GR3372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3372 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3372 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3372 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5317 precursor RNA, GAM118826 precursor RNA and GAM240773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5317 RNA, GAM118826 RNA and GAM240773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5317 target RNA into GAM5317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118826 target RNA into GAM118826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240773 target RNA into GAM240773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3372 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3372 gene: GAM5317 target protein, GAM118826 target protein and GAM240773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5317, GAM118826 and GAM240773

GR3373 BF687945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3373(GR3373) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3373 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3373 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3373 gene encodes GR3373 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3373 precursor RNA folds spatially, forming GR3373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3373 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3373 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3373 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM990 precursor RNA, GAM1618 precursor RNA and GAM134247 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM990 RNA, GAM1618 RNA and GAM134247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM990 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM990 target RNA into GAM990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1618 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1618 target RNA into GAM1618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134247 target RNA into GAM134247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3373 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3373 gene: GAM990 target protein, GAM1618 target protein and GAM134247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM990, GAM1618 and GAM134247

GR3374 AU121369 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3374(GR3374) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3374 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3374 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3374 gene encodes GR3374 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3374 precursor RNA folds spatially, forming GR3374 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3374 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3374 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3374 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5557 precursor RNA and GAM5678 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5557 RNA and GAM5678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5557 target RNA into GAM5557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5678 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5678 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5678 target RNA into GAM5678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3374 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3374 gene: GAM5557 target protein and GAM5678 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5557 and GAM5678

GR3375 BM452100 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3375(GR3375) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3375 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3375 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3375 gene encodes GR3375 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3375 precursor RNA folds spatially, forming GR3375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3375 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3375 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3375 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM13285 precursor RNA, GAM120134 precursor RNA and GAM274097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13285 RNA, GAM120134 RNA and GAM274097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13285 target RNA into GAM13285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120134 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120134 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120134 target RNA into GAM120134 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274097 target RNA into GAM274097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3375 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3375 gene: GAM13285 target protein, GAM120134 target protein and GAM274097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13285, GAM120134 and GAM274097

GR3376 AI050753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3376(GR3376) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3376 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3376 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3376 gene encodes GR3376 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3376 precursor RNA folds spatially, forming GR3376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3376 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3376 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3376 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5379 precursor RNA and GAM243250 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5379 RNA and GAM243250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5379 target RNA into GAM5379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243250 target RNA into GAM243250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3376 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3376 gene: GAM5379 target protein and GAM243250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5379 and GAM243250

GR3377 BF382900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3377(GR3377) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3377 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3377 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3377 gene encodes GR3377 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3377 precursor RNA folds spatially, forming GR3377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3377 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3377 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3377 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87097 precursor RNA and GAM179621 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87097 RNA and GAM179621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87097 target RNA into GAM87097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179621 target RNA into GAM179621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3377 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3377 gene: GAM87097 target protein and GAM179621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87097 and GAM179621

GR3378 AA548152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3378(GR3378) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3378 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3378 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3378 gene encodes GR3378 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3378 precursor RNA folds spatially, forming GR3378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3378 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3378 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3378 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM71965 precursor RNA and GAM286414 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71965 RNA and GAM286414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71965 target RNA into GAM71965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286414 target RNA into GAM286414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3378 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3378 gene: GAM71965 target protein and GAM286414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71965 and GAM286414

GR3379 BF886539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3379(GR3379) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3379 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3379 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3379 gene encodes GR3379 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3379 precursor RNA folds spatially, forming GR3379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3379 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3379 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3379 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90116 precursor RNA and GAM116539 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90116 RNA and GAM116539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90116 target RNA into GAM90116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116539 target RNA into GAM116539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3379 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3379 gene: GAM90116 target protein and GAM116539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90116 and GAM116539

GR3380 BF210699 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3380(GR3380) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3380 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3380 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3380 gene encodes GR3380 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3380 precursor RNA folds spatially, forming GR3380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3380 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3380 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3380 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM838 precursor RNA, GAM79850 precursor RNA and GAM271854 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM838 RNA, GAM79850 RNA and GAM271854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM838 target RNA into GAM838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79850 target RNA into GAM79850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271854 target RNA into GAM271854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3380 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3380 gene: GAM838 target protein, GAM79850 target protein and GAM271854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM838, GAM79850 and GAM271854

GR3381 BG431627 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3381(GR3381) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3381 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3381 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3381 gene encodes GR3381 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3381 precursor RNA folds spatially, forming GR3381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3381 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3381 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3381 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7882 precursor RNA, GAM16683 precursor RNA and GAM140541 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7882 RNA, GAM16683 RNA and GAM140541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7882 target RNA into GAM7882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16683 target RNA into GAM16683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140541 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140541 target RNA into GAM140541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3381 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3381 gene: GAM7882 target protein, GAM16683 target protein and GAM140541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7882, GAM16683 and GAM140541

GR3382 BM727259 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3382(GR3382) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3382 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3382 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3382 gene encodes GR3382 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3382 precursor RNA folds spatially, forming GR3382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3382 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3382 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3382 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM83437 precursor RNA, GAM208078 precursor RNA and GAM214193 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83437 RNA, GAM208078 RNA and GAM214193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83437 target RNA into GAM83437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208078 target RNA into GAM208078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214193 target RNA into GAM214193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3382 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3382 gene: GAM83437 target protein, GAM208078 target protein and GAM214193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83437, GAM208078 and GAM214193

GR3383 BG573071 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3383(GR3383) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3383 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3383

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3383 gene encodes GR3383 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3383 precursor RNA folds spatially, forming GR3383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3383 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3383 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3383 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7230 precursor RNA and GAM179131 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7230 RNA and GAM179131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7230 target RNA into GAM7230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179131 target RNA into GAM179131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3383 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3383 gene: GAM7230 target protein and GAM179131 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7230 and GAM179131

GR3384 R95094 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3384(GR3384) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3384 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3384 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3384 gene encodes GR3384 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3384 precursor RNA folds spatially, forming GR3384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3384 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3384 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3384 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM85425 precursor RNA and GAM119349 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85425 RNA and GAM119349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85425 target RNA into GAM85425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119349 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119349 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119349 target RNA into GAM119349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3384 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3384 gene: GAM85425 target protein and GAM119349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85425 and GAM119349

GR3385 AI677875 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3385(GR3385) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3385 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3385 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3385 gene encodes GR3385 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3385 precursor RNA folds spatially, forming GR3385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3385 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3385 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3385 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8361 precursor RNA and GAM307703 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM8361 RNA and GAM307703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8361 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8361 target RNA into GAM8361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307703 target RNA into GAM307703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3385 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3385 gene: GAM8361 target protein and GAM307703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8361 and GAM307703

GR3386 BG435143 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3386(GR3386) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3386 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3386 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3386 gene encodes GR3386 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3386 precursor RNA folds spatially, forming GR3386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3386 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3386 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3386 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM142723 precursor RNA and GAM214803 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142723 RNA and GAM214803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142723 target RNA into GAM142723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214803 target RNA into GAM214803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3386 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3386 gene: GAM142723 target protein and GAM214803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142723 and GAM214803

GR3387 AA602992 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3387(GR3387) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3387 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3387 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3387 gene encodes GR3387 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3387 precursor RNA folds spatially, forming GR3387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3387 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3387 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3387 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22697 precursor RNA and GAM222528 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22697 RNA and GAM222528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22697 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22697 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22697 target RNA into GAM22697 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222528 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222528 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222528 target RNA into GAM222528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3387 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3387 gene: GAM22697 target protein and GAM222528 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22697 and GAM222528

GR3388 BE670351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3388(GR3388) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3388 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3388 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3388 gene encodes GR3388 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3388 precursor RNA folds spatially, forming GR3388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3388 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3388 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3388 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM19645 precursor RNA, GAM113573 precursor RNA and GAM260158 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19645 RNA, GAM113573 RNA and GAM260158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19645

target RNA into GAM19645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113573 target RNA into GAM113573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260158 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260158 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260158 target RNA into GAM260158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3388 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3388 gene: GAM19645 target protein, GAM113573 target protein and GAM260158 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19645, GAM113573 and GAM260158

GR3389 BF692048 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3389(GR3389) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3389 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3389 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3389 gene encodes GR3389 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3389 precursor RNA folds spatially, forming GR3389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3389 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3389 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3389 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36730 precursor RNA and GAM297732 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36730 RNA and GAM297732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36730 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36730 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36730 target RNA into GAM36730 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297732 target RNA into GAM297732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3389 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3389 gene: GAM36730 target protein and GAM297732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36730 and GAM297732

GR3390 AW268916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3390(GR3390) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3390 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3390 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3390 gene encodes GR3390 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3390 precursor RNA folds spatially, forming GR3390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3390 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3390 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3390 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115682 precursor RNA and GAM217894 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115682 RNA and GAM217894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115682 target RNA into GAM115682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217894 target RNA into GAM217894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3390 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3390 gene: GAM115682 target

protein and GAM217894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115682 and GAM217894

GR3391 AI925243 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3391(GR3391) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3391 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3391 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3391 gene encodes GR3391 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3391 precursor RNA folds spatially, forming GR3391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3391 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3391 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3391 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM154538 precursor RNA and GAM245117 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM154538 RNA and GAM245117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM154538 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154538 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154538 target RNA into GAM154538 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245117 target RNA into GAM245117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3391 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3391 gene: GAM154538 target protein and GAM245117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM154538 and GAM245117

GR3392 AV738051 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3392(GR3392) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3392 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3392 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3392 gene encodes GR3392 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3392 precursor RNA folds spatially, forming GR3392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3392 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3392 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3392 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3609 precursor RNA and GAM167271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3609 RNA and GAM167271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3609 target RNA into GAM3609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167271 target RNA into GAM167271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3392 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3392 gene: GAM3609 target protein and GAM167271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3609 and GAM167271

GR3393 AA304196 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3393(GR3393) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3393 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3393 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3393 gene encodes GR3393 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3393 precursor RNA folds spatially, forming GR3393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3393 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3393 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3393 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131974 precursor RNA and GAM232988 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131974 RNA and GAM232988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131974 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131974 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131974 target RNA into GAM131974 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232988 target RNA into GAM232988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3393 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3393 gene: GAM131974 target protein and GAM232988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131974 and GAM232988

GR3394 AA766803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3394(GR3394) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3394 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3394 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3394 gene encodes GR3394 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3394 precursor RNA folds spatially, forming GR3394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3394 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3394 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3394 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1192 precursor RNA, GAM162119 precursor RNA and GAM232053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1192 RNA, GAM162119 RNA and GAM232053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1192 target RNA into GAM1192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162119 target RNA into GAM162119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM232053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232053 target RNA into GAM232053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3394 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3394 gene: GAM1192 target protein, GAM162119 target protein and GAM232053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1192, GAM162119 and GAM232053

GR3395 AA621061 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3395(GR3395) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3395 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3395 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3395 gene encodes GR3395 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3395 precursor RNA folds spatially, forming GR3395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3395 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3395 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3395 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM868 precursor RNA and GAM279507 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM868 RNA and GAM279507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM868 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM868 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM868 target RNA into GAM868 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279507 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279507 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279507 target RNA into GAM279507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3395 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3395 gene: GAM868 target protein and GAM279507 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM868 and GAM279507

GR3396 BE561476 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3396(GR3396) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3396 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3396 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3396 gene encodes GR3396 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3396 precursor RNA folds spatially, forming GR3396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3396 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3396 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3396 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1365 precursor RNA and GAM147873 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1365 RNA and GAM147873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1365 target RNA into GAM1365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147873 target RNA into GAM147873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3396 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3396 gene: GAM1365 target protein and GAM147873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1365 and GAM147873

GR3397 BF675325 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3397(GR3397) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3397 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3397 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3397 gene encodes GR3397 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3397 precursor RNA folds spatially, forming GR3397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3397 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3397 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3397 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM170489 precursor RNA, GAM180998 precursor RNA, GAM228883 precursor RNA and GAM301190 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170489 RNA, GAM180998 RNA, GAM228883 RNA and GAM301190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170489 target RNA into GAM170489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180998 target RNA into GAM180998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228883 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228883 target RNA into GAM228883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301190 target RNA into GAM301190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3397 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3397 gene: GAM170489 target protein, GAM180998 target protein, GAM228883 target protein and GAM301190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170489, GAM180998, GAM228883 and GAM301190

GR3398 AI028406 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3398(GR3398) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3398 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3398 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3398 gene encodes GR3398 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3398 precursor RNA folds spatially, forming GR3398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3398 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3398 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3398 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM784 precursor RNA and GAM3094 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM784 RNA and GAM3094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM784 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM784 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM784 target RNA into GAM784 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3094 target RNA into GAM3094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3398 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3398 gene: GAM784 target protein and GAM3094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM784 and GAM3094

GR3399 AI733518 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3399(GR3399) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3399 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3399 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3399 gene encodes GR3399 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3399 precursor RNA folds spatially, forming GR3399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3399 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3399 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3399 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2482 precursor RNA and GAM99480 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2482 RNA and GAM99480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2482 target RNA into GAM2482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99480 target RNA into GAM99480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3399 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3399 gene: GAM2482 target protein and GAM99480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2482 and GAM99480

GR3400 AA344137 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3400(GR3400) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3400 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3400 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3400 gene encodes GR3400 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3400 precursor RNA folds spatially, forming GR3400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3400 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3400 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3400 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7094 precursor RNA and GAM65835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7094 RNA and GAM65835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7094 target RNA into GAM7094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65835 target RNA into GAM65835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3400 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3400 gene: GAM7094 target protein and GAM65835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7094 and GAM65835

GR3401 BM856802 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3401(GR3401) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3401 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3401 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3401 gene encodes GR3401 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3401 precursor RNA folds spatially, forming GR3401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3401 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3401 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3401 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55631 precursor RNA and GAM155752 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55631 RNA and GAM155752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55631 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55631 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55631 target RNA into GAM55631 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM155752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155752 target RNA into GAM155752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3401 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3401 gene: GAM55631 target protein and GAM155752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55631 and GAM155752

GR3402 BE937622 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3402(GR3402) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3402 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3402 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3402 gene encodes GR3402 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3402 precursor RNA folds spatially, forming GR3402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3402 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3402 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3402 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM54366 precursor RNA and GAM134527 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54366 RNA and GAM134527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54366 target RNA into GAM54366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134527 target RNA into GAM134527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3402 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3402 gene: GAM54366 target protein and GAM134527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM54366 and GAM134527

GR3403 AA523099 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3403(GR3403) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3403 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3403 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3403 gene encodes GR3403 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3403 precursor RNA folds spatially, forming GR3403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3403 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3403 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3403 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM146085 precursor RNA and GAM193359 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM146085 RNA and GAM193359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM146085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146085 target RNA into GAM146085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193359 target RNA into GAM193359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3403 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3403 gene: GAM146085 target protein and GAM193359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM146085 and GAM193359

GR3404 AA282913 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3404(GR3404) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3404 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3404 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3404 gene encodes GR3404 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3404 precursor RNA folds spatially, forming GR3404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3404 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3404 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3404 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM133021 precursor RNA and GAM133274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM133021 RNA and GAM133274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM133021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133021 target RNA into GAM133021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133274 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133274 target RNA into GAM133274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3404 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3404 gene: GAM133021 target protein and GAM133274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM133021 and GAM133274

GR3405 AI904529 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3405(GR3405) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3405 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3405 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3405 gene encodes GR3405 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3405 precursor RNA folds spatially, forming GR3405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3405 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3405 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3405 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM554 precursor RNA, GAM2610 precursor RNA and GAM116230 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM554 RNA, GAM2610 RNA and GAM116230 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM554 target RNA into GAM554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2610 target RNA into GAM2610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116230 target RNA into GAM116230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3405 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3405 gene: GAM554 target protein, GAM2610 target protein and GAM116230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM554, GAM2610 and GAM116230

GR3406 AW798805 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3406(GR3406) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3406 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3406 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3406 gene encodes GR3406 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3406 precursor RNA folds spatially, forming GR3406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3406 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3406 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3406 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM71044 precursor RNA and GAM199005 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71044 RNA and GAM199005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71044 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71044 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71044 target RNA into GAM71044 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199005 target RNA into GAM199005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3406 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3406 gene: GAM71044 target protein and GAM199005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71044 and GAM199005

GR3407 AI669407 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3407(GR3407) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3407 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3407 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3407 gene encodes GR3407 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3407 precursor RNA folds spatially, forming GR3407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3407 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3407 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3407 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5176 precursor RNA and GAM103879 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5176 RNA and GAM103879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5176 target RNA into GAM5176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103879 target RNA into GAM103879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3407 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3407 gene: GAM5176 target protein and GAM103879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5176 and GAM103879

GR3408 BE313289 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3408(GR3408) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3408 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3408 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3408 gene encodes GR3408 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3408 precursor RNA folds spatially, forming GR3408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3408 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3408 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3408 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3859 precursor RNA, GAM7431 precursor RNA and GAM332430 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3859 RNA, GAM7431 RNA and GAM332430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM3859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3859 target RNA into GAM3859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7431 target RNA into GAM7431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332430 target RNA into GAM332430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3408 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3408 gene: GAM3859 target protein, GAM7431 target protein and GAM332430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3859, GAM7431 and GAM332430

GR3409 AI336833 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3409(GR3409) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3409 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3409 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3409 gene encodes GR3409 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3409 precursor RNA folds spatially, forming GR3409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3409 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3409 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3409 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1063 precursor RNA and GAM263340 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1063 RNA and GAM263340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1063 target RNA into GAM1063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263340 target RNA into GAM263340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3409 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3409 gene: GAM1063 target protein and GAM263340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1063 and GAM263340

GR3410 BE870335 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3410(GR3410) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3410 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3410 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3410 gene encodes GR3410 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3410 precursor RNA folds spatially, forming GR3410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3410 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3410 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3410 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM132967 precursor RNA, GAM157856 precursor RNA, GAM183807 precursor RNA and GAM302077 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132967 RNA, GAM157856 RNA, GAM183807 RNA and GAM302077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132967 target RNA into GAM132967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157856 target RNA into GAM157856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183807 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183807 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183807 target RNA into GAM183807 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302077 target RNA into GAM302077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3410 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3410 gene: GAM132967 target protein, GAM157856 target protein, GAM183807 target protein and GAM302077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132967, GAM157856, GAM183807 and GAM302077

GR3411 BM926319 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3411(GR3411) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3411 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3411 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3411 gene encodes GR3411 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3411 precursor RNA folds spatially, forming GR3411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3411 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3411 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3411 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63447 precursor RNA, GAM108780 precursor RNA and GAM216559 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63447 RNA, GAM108780 RNA and GAM216559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63447 target RNA into GAM63447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108780 target RNA into GAM108780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216559 target RNA into GAM216559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3411 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3411 gene: GAM63447 target protein, GAM108780 target protein and GAM216559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63447, GAM108780 and GAM216559

GR3412 BG724116 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3412(GR3412) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3412 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3412 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3412 gene encodes GR3412 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3412 precursor RNA folds spatially, forming GR3412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3412 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3412 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3412 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102924 precursor RNA and GAM104865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102924 RNA and GAM104865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102924 target RNA into GAM102924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104865 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104865 target RNA into GAM104865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3412 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3412 gene: GAM102924 target protein and GAM104865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102924 and GAM104865

GR3413 BF987390 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3413(GR3413) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3413 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3413 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3413 gene encodes GR3413 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3413 precursor RNA folds spatially, forming GR3413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3413 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3413 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3413 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5966 precursor RNA, GAM208429 precursor RNA and GAM260547 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5966 RNA, GAM208429 RNA and GAM260547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5966 target RNA into GAM5966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208429 target RNA into GAM208429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260547 target RNA into GAM260547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3413 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3413 gene: GAM5966 target protein, GAM208429 target protein and GAM260547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5966, GAM208429 and GAM260547

GR3414 AW970807 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3414(GR3414) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3414 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3414 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3414 gene encodes GR3414 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3414 precursor RNA folds spatially, forming GR3414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3414 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3414 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3414 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8630 precursor RNA and GAM214458 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8630 RNA and GAM214458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8630 target RNA into GAM8630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214458 target RNA into GAM214458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3414 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3414 gene: GAM8630 target protein and GAM214458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8630 and GAM214458

GR3415 BM271973 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3415(GR3415) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3415 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3415 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3415 gene encodes GR3415 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3415 precursor RNA folds spatially, forming GR3415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3415 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3415 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3415 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8359 precursor RNA and GAM212566 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8359 RNA and GAM212566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8359 target RNA into GAM8359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM212566 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212566 target RNA into GAM212566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3415 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3415 gene: GAM8359 target protein and GAM212566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8359 and GAM212566

GR3416 BG767046 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3416(GR3416) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3416 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3416 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3416 gene encodes GR3416 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3416 precursor RNA folds spatially, forming GR3416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3416 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3416 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3416 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3789 precursor RNA, GAM185857 precursor RNA and GAM271304 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3789 RNA, GAM185857 RNA and GAM271304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3789 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3789 target RNA into GAM3789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185857 target RNA into GAM185857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271304 target RNA into GAM271304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3416 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3416 gene: GAM3789 target protein, GAM185857 target protein and GAM271304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3789, GAM185857 and GAM271304

GR3417 AI094306 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3417(GR3417) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3417 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3417 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3417 gene encodes GR3417 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3417 precursor RNA folds spatially, forming GR3417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3417 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3417 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3417 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1701 precursor RNA and GAM3660 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1701 RNA and GAM3660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1701 target RNA into GAM1701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3660 target RNA into GAM3660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3417 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3417 gene: GAM1701 target protein and GAM3660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM1701 and GAM3660

GR3418 BF218782 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3418(GR3418) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3418 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3418 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3418 gene encodes GR3418 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3418 precursor RNA folds spatially, forming GR3418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3418 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3418 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3418 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM107 precursor RNA, GAM89963 precursor RNA, GAM132354 precursor RNA and GAM250835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM107 RNA, GAM89963 RNA, GAM132354 RNA and GAM250835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM107 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107 target RNA into GAM107 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM89963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89963 target RNA into GAM89963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132354 target RNA into GAM132354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250835 target RNA into GAM250835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3418 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3418 gene: GAM107 target protein, GAM89963 target protein, GAM132354 target protein and GAM250835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM107, GAM89963, GAM132354 and GAM250835

GR3419 BE062324 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3419(GR3419) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3419 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3419 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3419 gene encodes GR3419 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3419 precursor RNA folds spatially, forming GR3419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3419 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3419 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3419 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM199 precursor RNA, GAM848 precursor RNA and GAM2435 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM199 RNA, GAM848 RNA and GAM2435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199 target RNA into GAM199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM848 target RNA into GAM848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2435 target RNA into GAM2435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3419 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3419 gene: GAM199 target

protein, GAM848 target protein and GAM2435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM199, GAM848 and GAM2435

GR3420 R82573 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3420(GR3420) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3420 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3420 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3420 gene encodes GR3420 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3420 precursor RNA folds spatially, forming GR3420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3420 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3420 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3420 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4753 precursor RNA and GAM307806 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4753 RNA and GAM307806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4753 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4753 target RNA into GAM4753 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307806 target RNA into GAM307806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3420 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3420 gene: GAM4753 target protein and GAM307806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4753 and GAM307806

GR3421 AA253039 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3421(GR3421) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3421 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3421 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3421 gene encodes GR3421 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3421 precursor RNA folds spatially, forming GR3421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3421 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3421 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3421 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM47411 precursor RNA, GAM182222 precursor RNA, GAM283999 precursor RNA and GAM310724 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47411 RNA, GAM182222 RNA, GAM283999 RNA and GAM310724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47411 target RNA into GAM47411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182222 target RNA into GAM182222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283999 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283999 target RNA into GAM283999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310724 target RNA into GAM310724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3421 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3421 gene: GAM47411 target protein, GAM182222 target protein, GAM283999 target protein and GAM310724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47411, GAM182222, GAM283999 and GAM310724

GR3422 AW021522 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3422(GR3422) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3422 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3422 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3422 gene encodes GR3422 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3422 precursor RNA folds spatially, forming GR3422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3422 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3422 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3422 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM350 precursor RNA and GAM245877 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM350 RNA and GAM245877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM350 target RNA into GAM350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245877 target RNA into GAM245877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3422 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3422 gene: GAM350 target protein and GAM245877 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM350 and GAM245877

GR3423 BF907398 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3423(GR3423) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3423 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3423 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3423 gene encodes GR3423 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3423 precursor RNA folds spatially, forming GR3423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3423 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3423 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3423 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8469 precursor RNA and GAM8606 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8469 RNA and GAM8606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8469 target RNA into GAM8469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8606 target RNA into GAM8606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3423 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3423 gene: GAM8469 target protein and GAM8606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8469 and GAM8606

GR3424 BF352794 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3424(GR3424) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3424 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3424 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3424 gene encodes GR3424 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3424 precursor RNA folds spatially, forming GR3424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3424 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3424 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3424 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8345 precursor RNA, GAM203893 precursor RNA and GAM326483 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8345 RNA, GAM203893 RNA and GAM326483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8345 target RNA into GAM8345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203893 target RNA into GAM203893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326483 target RNA into GAM326483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3424 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3424 gene: GAM8345 target protein, GAM203893 target protein and GAM326483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8345, GAM203893 and GAM326483

GR3425 AI299353 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3425(GR3425) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3425 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3425 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3425 gene encodes GR3425 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3425 precursor RNA folds spatially, forming GR3425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3425 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3425 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3425 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14674 precursor RNA and GAM167655 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14674 RNA and GAM167655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14674 target RNA into GAM14674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167655

target RNA into GAM167655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3425 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3425 gene: GAM14674 target protein and GAM167655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14674 and GAM167655

GR3426 AU151943 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3426(GR3426) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3426 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3426 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3426 gene encodes GR3426 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3426 precursor RNA folds spatially, forming GR3426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3426 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3426 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3426 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131500 precursor RNA and GAM185470 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131500 RNA and GAM185470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131500 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131500 target RNA into GAM131500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185470 target RNA into GAM185470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3426 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3426 gene: GAM131500 target protein and GAM185470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131500 and GAM185470

GR3427 AW965591 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3427(GR3427) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3427 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3427 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3427 gene encodes GR3427 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3427 precursor RNA folds spatially, forming GR3427 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3427 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3427 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3427 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132988 precursor RNA and GAM277337 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132988 RNA and GAM277337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132988 target RNA into GAM132988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277337 target RNA into GAM277337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3427 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3427 gene: GAM132988 target protein and GAM277337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132988 and GAM277337

GR3428 AL709699 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3428(GR3428) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3428 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3428 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3428 gene encodes GR3428 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3428 precursor RNA folds spatially, forming GR3428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3428 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3428 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3428 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM39 precursor RNA and GAM317935 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39 RNA and GAM317935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39 target RNA into GAM39 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317935 target RNA into GAM317935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3428 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3428 gene: GAM39 target protein and GAM317935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39 and GAM317935

GR3429 BG188868 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3429(GR3429) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3429 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3429 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3429 gene encodes GR3429 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3429 precursor RNA folds spatially, forming GR3429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3429 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3429 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3429 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM14927 precursor RNA, GAM55237 precursor RNA, GAM84536 precursor RNA, GAM186552 precursor RNA and GAM298309 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14927 RNA, GAM55237 RNA, GAM84536 RNA, GAM186552 RNA and GAM298309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14927 target RNA into GAM14927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55237 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55237 target RNA into GAM55237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84536 target RNA into GAM84536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186552 target RNA into GAM186552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298309 target RNA into GAM298309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3429 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3429 gene: GAM14927 target protein, GAM55237 target protein, GAM84536 target protein, GAM186552 target protein and GAM298309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14927, GAM55237, GAM84536, GAM186552 and GAM298309

GR3430 AA114014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3430(GR3430) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3430 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3430

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3430 gene encodes GR3430 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3430 precursor RNA folds spatially, forming GR3430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3430 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3430 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3430 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5091 precursor RNA and GAM269145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5091 RNA and GAM269145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5091 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5091 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5091 target RNA into GAM5091 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269145 target RNA into GAM269145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3430 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3430 gene: GAM5091 target protein and GAM269145 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5091 and GAM269145

GR3431 BI870671 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3431(GR3431) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3431 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3431 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3431 gene encodes GR3431 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3431 precursor RNA folds spatially, forming GR3431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3431 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3431 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3431 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2225 precursor RNA, GAM3872 precursor RNA and GAM269941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2225 RNA, GAM3872 RNA and GAM269941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2225 target RNA into GAM2225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3872 target RNA into GAM3872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269941 target RNA into GAM269941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3431 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3431 gene: GAM2225 target protein, GAM3872 target protein and GAM269941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2225, GAM3872 and GAM269941

GR3432 BF029123 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3432(GR3432) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3432 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3432 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3432 gene encodes GR3432 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3432 precursor RNA folds spatially, forming GR3432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3432 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3432 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3432 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6923 precursor RNA and GAM187704 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6923 RNA and GAM187704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6923 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6923 target RNA into GAM6923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187704 target RNA into GAM187704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3432 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3432 gene: GAM6923 target protein and GAM187704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6923 and GAM187704

GR3433 BM810738 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3433(GR3433) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3433 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3433 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3433 gene encodes GR3433 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3433 precursor RNA folds spatially, forming GR3433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3433 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3433 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3433 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6327 precursor RNA and GAM8627 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6327 RNA and GAM8627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6327 target RNA into GAM6327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8627 target RNA into GAM8627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3433 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3433 gene: GAM6327 target protein and GAM8627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6327 and GAM8627

GR3434 BI550152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3434(GR3434) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3434 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3434 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3434 gene encodes GR3434 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3434 precursor RNA folds spatially, forming GR3434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3434 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3434 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3434 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4770 precursor RNA and GAM219804 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4770 RNA and GAM219804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4770 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4770 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4770 target RNA into GAM4770 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM219804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219804 target RNA into GAM219804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3434 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3434 gene: GAM4770 target protein and GAM219804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4770 and GAM219804

GR3435 AA416943 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3435(GR3435) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3435 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3435 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3435 gene encodes GR3435 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3435 precursor RNA folds spatially, forming GR3435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3435 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3435 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3435 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM151585 precursor RNA and GAM183876 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM151585 RNA and GAM183876 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM151585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151585 target RNA into GAM151585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183876 target RNA into GAM183876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3435 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3435 gene: GAM151585 target protein and GAM183876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM151585 and GAM183876

GR3436 AI760237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3436(GR3436) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3436 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3436 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3436 gene encodes GR3436 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3436 precursor RNA folds spatially, forming GR3436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3436 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3436 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3436 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM118578 precursor RNA, GAM130842 precursor RNA and GAM283662 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118578 RNA, GAM130842 RNA and GAM283662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118578 target RNA into GAM118578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130842 target RNA into GAM130842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283662 target RNA into GAM283662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3436 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3436 gene: GAM118578 target protein, GAM130842 target protein and GAM283662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118578, GAM130842 and

GAM283662

GR3437 BI439736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3437(GR3437) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3437 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3437 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3437 gene encodes GR3437 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3437 precursor RNA folds spatially, forming GR3437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3437 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3437 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3437 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164961 precursor RNA and GAM304971 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164961 RNA and GAM304971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164961 target RNA into GAM164961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304971 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304971 target RNA into GAM304971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3437 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3437 gene: GAM164961 target protein and GAM304971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164961 and GAM304971

GR3438 BF672018 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3438(GR3438) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3438 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3438 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3438 gene encodes GR3438 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3438 precursor RNA folds spatially, forming GR3438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3438 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3438 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3438 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119487 precursor RNA and GAM269515 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119487 RNA and GAM269515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM119487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119487 target RNA into GAM119487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269515 target RNA into GAM269515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3438 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3438 gene: GAM119487 target protein and GAM269515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119487 and GAM269515

GR3439 BQ067105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3439(GR3439) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3439 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3439 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3439 gene encodes GR3439 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3439 precursor RNA folds spatially, forming GR3439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3439 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3439 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3439 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM70559 precursor RNA, GAM217911 precursor RNA and GAM268098 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70559 RNA, GAM217911 RNA and GAM268098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70559 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70559 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70559 target RNA into GAM70559 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217911 target RNA into GAM217911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268098 target RNA into GAM268098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3439 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3439 gene: GAM70559 target protein, GAM217911 target protein and GAM268098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70559, GAM217911 and GAM268098

GR3440 AW401635 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3440(GR3440) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3440 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3440 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3440 gene encodes GR3440 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3440 precursor RNA folds spatially, forming GR3440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3440 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3440 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3440 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM297861 precursor RNA and GAM316999 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM297861 RNA and GAM316999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM297861 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297861 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297861 target RNA into GAM297861 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316999 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316999 target RNA into GAM316999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3440 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3440 gene: GAM297861 target protein and GAM316999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM297861 and GAM316999

GR3441 BE547198 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3441(GR3441) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3441 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3441 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3441 gene encodes GR3441 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3441 precursor RNA folds spatially, forming GR3441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3441 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3441 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3441 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM122481 precursor RNA, GAM238278 precursor RNA and GAM319306 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122481 RNA, GAM238278 RNA and GAM319306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM122481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122481 target RNA into GAM122481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238278 target RNA into GAM238278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319306 target RNA into GAM319306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3441 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3441 gene: GAM122481 target protein, GAM238278 target protein and GAM319306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122481, GAM238278 and GAM319306

GR3442 AW243069 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3442(GR3442) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3442 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3442 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3442 gene encodes GR3442 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3442 precursor RNA folds spatially, forming GR3442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3442 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3442 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3442 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2293 precursor RNA and GAM146832 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2293 RNA and GAM146832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2293 target RNA into GAM2293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146832 target RNA into GAM146832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3442 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3442 gene: GAM2293 target protein and GAM146832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2293 and GAM146832

GR3443 AI984305 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3443(GR3443) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3443 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3443 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3443 gene encodes GR3443 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3443 precursor RNA folds spatially, forming GR3443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3443 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3443 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3443 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3390 precursor RNA and GAM16689 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3390 RNA and GAM16689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3390 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3390 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3390 target RNA into GAM3390 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16689 target RNA into GAM16689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3443 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3443 gene: GAM3390 target protein and GAM16689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3390 and GAM16689

GR3444 BG531284 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3444(GR3444) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3444 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3444 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3444 gene encodes GR3444 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3444 precursor RNA folds spatially, forming GR3444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3444 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3444 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3444 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3292 precursor RNA, GAM57410 precursor RNA and GAM173314 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3292 RNA, GAM57410 RNA and GAM173314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3292 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3292 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3292 target RNA into GAM3292 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57410 target RNA into GAM57410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173314 target RNA into GAM173314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3444 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3444 gene: GAM3292 target protein, GAM57410 target protein and GAM173314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3292, GAM57410 and GAM173314

GR3445 AI435076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3445(GR3445) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3445 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3445 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3445 gene encodes GR3445 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3445 precursor RNA folds spatially, forming GR3445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3445 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3445 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3445 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36704 precursor RNA and GAM333851 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36704 RNA and GAM333851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36704 target RNA into GAM36704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333851 target RNA into GAM333851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3445 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3445 gene: GAM36704 target protein and GAM333851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36704 and GAM333851

GR3446 AA083228 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3446(GR3446) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3446 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3446 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3446 gene encodes GR3446 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3446 precursor RNA folds spatially, forming GR3446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3446 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3446 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3446 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM88866 precursor RNA, GAM275090 precursor RNA and GAM306603 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88866 RNA, GAM275090 RNA and GAM306603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88866 target RNA into GAM88866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275090 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275090 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275090 target RNA into GAM275090 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306603 target RNA into GAM306603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3446 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3446 gene: GAM88866 target protein, GAM275090 target protein and GAM306603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88866, GAM275090 and GAM306603

GR3447 AL704618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3447(GR3447) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3447 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3447 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3447 gene encodes GR3447 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3447 precursor RNA folds spatially, forming GR3447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3447 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3447 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3447 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM106947 precursor RNA, GAM197043 precursor RNA and GAM253256 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM106947 RNA, GAM197043 RNA and GAM253256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106947 target RNA into GAM106947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197043 target RNA into GAM197043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253256 target RNA into GAM253256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3447 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3447 gene: GAM106947 target protein, GAM197043 target protein and GAM253256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106947, GAM197043 and GAM253256

GR3448 BG718146 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3448(GR3448) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3448 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3448 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3448 gene encodes GR3448 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3448 precursor RNA folds spatially, forming GR3448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3448 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3448 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3448 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78157 precursor RNA and GAM307001 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78157 RNA and GAM307001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78157 target RNA into GAM78157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307001 target RNA into GAM307001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3448 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3448 gene: GAM78157 target protein and GAM307001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78157 and GAM307001

GR3449 AA992149 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3449(GR3449) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3449 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3449 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3449 gene encodes GR3449 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3449 precursor RNA folds spatially, forming GR3449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3449 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3449 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3449 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM132389 precursor RNA, GAM178082 precursor RNA and GAM209639 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132389 RNA, GAM178082 RNA and GAM209639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132389 target RNA into GAM132389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178082 target RNA into GAM178082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209639 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209639 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209639 target RNA into GAM209639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3449 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3449 gene: GAM132389 target protein, GAM178082 target protein and GAM209639 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132389, GAM178082 and GAM209639

GR3450 AI017103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3450(GR3450) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3450 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3450 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3450 gene encodes GR3450 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3450 precursor RNA folds spatially, forming GR3450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3450 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3450 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3450 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM446 precursor RNA and GAM56962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM446 RNA and GAM56962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM446 target RNA into GAM446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56962 target RNA into GAM56962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3450 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3450 gene: GAM446 target protein and GAM56962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM446 and GAM56962

GR3451 AI126388 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3451(GR3451) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3451 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3451 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3451 gene encodes GR3451 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3451 precursor RNA folds spatially, forming GR3451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3451 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3451 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3451 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM99966 precursor RNA and GAM186124 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99966 RNA and GAM186124 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99966 target RNA into GAM99966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186124 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186124 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186124 target RNA into GAM186124 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3451 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3451 gene: GAM99966 target protein and GAM186124 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99966 and GAM186124

GR3452 AW003077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3452(GR3452) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3452 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3452 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3452 gene encodes GR3452 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3452 precursor RNA folds spatially, forming GR3452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3452 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3452 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3452 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM50657 precursor RNA, GAM136005 precursor RNA, GAM242214 precursor RNA and GAM330486 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50657 RNA, GAM136005 RNA, GAM242214 RNA and GAM330486 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50657 target RNA into GAM50657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136005 target RNA into GAM136005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242214 target RNA into GAM242214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330486 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330486 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330486 target RNA into GAM330486 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3452 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3452 gene: GAM50657 target protein, GAM136005 target protein, GAM242214 target protein and GAM330486 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50657, GAM136005, GAM242214 and GAM330486

GR3453 BM744878 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3453(GR3453) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3453 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3453 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3453 gene encodes GR3453 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3453 precursor RNA folds spatially, forming GR3453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3453 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3453 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3453 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7879 precursor RNA and GAM97381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7879 RNA and GAM97381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7879 target RNA into GAM7879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97381 target RNA into GAM97381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3453 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3453 gene: GAM7879 target protein and GAM97381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7879 and GAM97381

GR3454 AA745148 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3454(GR3454) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3454 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3454 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3454 gene encodes GR3454 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3454 precursor RNA folds spatially, forming GR3454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3454 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3454 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3454 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM78842 precursor RNA, GAM92298 precursor RNA and GAM112232 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78842 RNA, GAM92298 RNA and GAM112232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78842 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78842 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78842 target RNA into GAM78842 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92298 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92298 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92298 target RNA into GAM92298 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112232 target RNA into GAM112232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3454 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3454 gene: GAM78842 target protein, GAM92298 target protein and GAM112232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78842, GAM92298 and GAM112232

GR3455 BF981227 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3455(GR3455) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3455 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3455 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3455 gene encodes GR3455 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3455 precursor RNA folds spatially, forming GR3455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3455 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3455 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3455 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4

separate GAM precursor RNAs, GAM8407 precursor RNA, GAM77655 precursor RNA, GAM270106 precursor RNA and GAM324703 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8407 RNA, GAM77655 RNA, GAM270106 RNA and GAM324703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8407 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8407 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8407 target RNA into GAM8407 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77655 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77655 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77655 target RNA into GAM77655 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270106 target RNA into GAM270106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324703 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324703 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324703 target RNA into GAM324703 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3455 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3455 gene: GAM8407 target protein, GAM77655 target protein, GAM270106 target protein and GAM324703

target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8407, GAM77655, GAM270106 and GAM324703

GR3456 AA230126 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3456(GR3456) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3456 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3456 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3456 gene encodes GR3456 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3456 precursor RNA folds spatially, forming GR3456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3456 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3456 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3456 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM136941 precursor RNA and GAM305299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM136941 RNA and GAM305299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM136941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136941 target RNA into GAM136941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305299 target RNA into GAM305299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3456 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3456 gene: GAM136941 target protein and GAM305299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM136941 and GAM305299

GR3457 BE093957 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3457(GR3457) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3457 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3457 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3457 gene encodes GR3457 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3457 precursor RNA folds spatially, forming GR3457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3457 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3457 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3457 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3276 precursor RNA and GAM149766 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3276 RNA and GAM149766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3276 target RNA into GAM3276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149766 target RNA into GAM149766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3457 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3457 gene: GAM3276 target protein and GAM149766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3276 and GAM149766

GR3458 H25616 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3458(GR3458) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3458 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3458 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3458 gene encodes GR3458 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3458 precursor RNA folds spatially, forming GR3458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3458 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3458 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3458 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM142258 precursor RNA and GAM188148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142258 RNA and GAM188148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142258 target RNA into GAM142258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188148 target RNA into GAM188148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3458 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3458 gene: GAM142258 target protein and GAM188148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142258 and GAM188148

GR3459 BG777753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3459(GR3459) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3459 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3459 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3459 gene encodes GR3459 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3459 precursor RNA folds spatially, forming GR3459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3459 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3459 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3459 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM18111 precursor RNA and GAM139236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18111 RNA and GAM139236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18111 target RNA into GAM18111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM139236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139236 target RNA into GAM139236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3459 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3459 gene: GAM18111 target protein and GAM139236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18111 and GAM139236

GR3460 BI765800 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3460(GR3460) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3460 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3460 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3460 gene encodes GR3460 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3460 precursor RNA folds spatially, forming GR3460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3460 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3460 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3460 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM60047 precursor RNA, GAM149664 precursor RNA and GAM271174 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60047 RNA, GAM149664 RNA and GAM271174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60047 target RNA into GAM60047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149664 target RNA into GAM149664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271174 target RNA into GAM271174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3460 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3460 gene: GAM60047 target protein, GAM149664 target protein and GAM271174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60047, GAM149664 and GAM271174

GR3461 BF820082 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3461(GR3461) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3461 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3461 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3461 gene encodes GR3461 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3461 precursor RNA folds spatially, forming GR3461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3461 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3461 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3461 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM290480 precursor RNA and GAM312944 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM290480 RNA and GAM312944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM290480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290480 target RNA into GAM290480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312944 target RNA into GAM312944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3461 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3461 gene: GAM290480 target protein and GAM312944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM290480 and GAM312944

GR3462 AW593301 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3462(GR3462) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3462 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3462 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3462 gene encodes GR3462 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3462 precursor RNA folds spatially, forming GR3462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3462 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3462 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3462 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM49104 precursor RNA and GAM185097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49104 RNA and GAM185097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49104 target RNA into GAM49104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185097 target RNA into GAM185097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3462 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3462 gene: GAM49104 target protein and GAM185097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49104 and GAM185097

GR3463 BE834791 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3463(GR3463) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3463 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3463 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3463 gene encodes GR3463 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3463 precursor RNA folds spatially, forming GR3463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3463 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3463 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3463 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7820 precursor RNA and GAM8600 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7820 RNA and GAM8600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7820 target RNA into GAM7820 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8600 target RNA into GAM8600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3463 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3463 gene: GAM7820 target protein and GAM8600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7820 and GAM8600

GR3464 BF510039 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3464(GR3464) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3464 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3464 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3464 gene encodes GR3464 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3464 precursor RNA folds spatially, forming GR3464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3464 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3464 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3464 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2515 precursor RNA, GAM5335 precursor RNA and GAM11020 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2515 RNA, GAM5335 RNA and GAM11020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2515 target RNA into GAM2515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5335 target RNA into GAM5335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11020 target RNA into GAM11020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3464 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3464 gene: GAM2515 target protein, GAM5335 target protein and GAM11020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2515, GAM5335 and GAM11020

GR3465 BM804812 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3465(GR3465) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3465 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3465 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3465 gene encodes GR3465 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3465 precursor RNA folds spatially, forming GR3465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3465 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3465 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3465 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM288641 precursor RNA and GAM291696 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM288641 RNA and GAM291696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM288641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288641 target RNA into GAM288641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291696 target RNA into GAM291696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3465 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3465 gene: GAM288641 target

protein and GAM291696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM288641 and GAM291696

GR3466 N58386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3466(GR3466) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3466 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3466 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3466 gene encodes GR3466 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3466 precursor RNA folds spatially, forming GR3466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3466 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3466 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3466 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2510 precursor RNA and GAM326358 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2510 RNA and GAM326358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2510 target RNA into GAM2510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326358 target RNA into GAM326358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3466 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3466 gene: GAM2510 target protein and GAM326358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2510 and GAM326358

GR3467 BG471366 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3467(GR3467) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3467 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3467 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3467 gene encodes GR3467 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3467 precursor RNA folds spatially, forming GR3467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3467 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3467 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3467 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM172566 precursor RNA and GAM306968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM172566 RNA and GAM306968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM172566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172566 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172566 target RNA into GAM172566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306968 target RNA into GAM306968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3467 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3467 gene: GAM172566 target protein and GAM306968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM172566 and GAM306968

GR3468 BE077409 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3468(GR3468) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3468 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3468 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3468 gene encodes GR3468 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3468 precursor RNA folds spatially, forming GR3468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3468 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3468 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3468 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8293 precursor RNA, GAM65114 precursor RNA and GAM294755 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8293 RNA, GAM65114 RNA and GAM294755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8293 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8293 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8293 target RNA into GAM8293 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65114 target RNA into GAM65114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294755 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294755 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294755 target RNA into GAM294755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3468 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3468 gene: GAM8293 target protein, GAM65114 target protein and GAM294755 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8293, GAM65114 and GAM294755

GR3469 BE795389 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3469(GR3469) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3469 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3469 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3469 gene encodes GR3469 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3469 precursor RNA folds spatially, forming GR3469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3469 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3469 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3469 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6270 precursor RNA and GAM8556 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6270 RNA and GAM8556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6270 target RNA into GAM6270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8556 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8556 target RNA into GAM8556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3469 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3469 gene: GAM6270 target protein and GAM8556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6270 and GAM8556

GR3470 BG946247 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3470(GR3470) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3470 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3470 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3470 gene encodes GR3470 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3470 precursor RNA folds spatially, forming GR3470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3470 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3470 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3470 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3654 precursor RNA, GAM7846 precursor RNA and GAM135907 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3654 RNA, GAM7846 RNA and GAM135907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3654 target RNA into GAM3654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7846 target RNA into GAM7846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135907 target RNA into GAM135907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3470 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3470 gene: GAM3654 target protein, GAM7846 target protein and GAM135907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3654, GAM7846 and GAM135907

GR3471 BI546955 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3471(GR3471) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3471 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3471 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3471 gene encodes GR3471 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3471 precursor RNA folds spatially, forming GR3471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3471 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3471 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3471 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4523 precursor RNA and GAM243399 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4523 RNA and GAM243399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4523 target RNA into GAM4523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243399 target RNA into GAM243399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3471 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3471 gene: GAM4523 target protein and GAM243399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4523 and GAM243399

GR3472 BG217107 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3472(GR3472) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3472 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3472 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3472 gene encodes GR3472 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3472 precursor RNA folds spatially, forming GR3472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3472 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3472 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3472 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM278943 precursor RNA and GAM334240 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM278943 RNA and GAM334240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM278943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278943 target RNA into GAM278943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM334240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334240 target RNA into GAM334240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3472 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3472 gene: GAM278943 target protein and GAM334240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM278943 and GAM334240

GR3473 BI260446 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3473(GR3473) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3473 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3473 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3473 gene encodes GR3473 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3473 precursor RNA folds spatially, forming GR3473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3473 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3473 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3473 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118966 precursor RNA and GAM222491 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118966 RNA and GAM222491 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118966 target RNA into GAM118966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222491 target RNA into GAM222491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3473 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3473 gene: GAM118966 target protein and GAM222491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118966 and GAM222491

GR3474 AW958006 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3474(GR3474) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3474 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3474 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3474 gene encodes GR3474 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3474 precursor RNA folds spatially, forming GR3474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3474 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3474 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3474 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58768 precursor RNA and GAM314592 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58768 RNA and GAM314592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58768 target RNA into GAM58768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314592 target RNA into GAM314592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3474 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3474 gene: GAM58768 target protein and GAM314592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58768 and GAM314592

GR3475 BG179234 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3475(GR3475) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3475 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3475 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3475 gene encodes GR3475 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3475 precursor RNA folds spatially, forming GR3475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3475 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3475 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3475 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63726 precursor RNA and GAM201938 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63726 RNA and GAM201938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63726 target RNA into GAM63726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201938 target RNA into GAM201938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3475 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3475 gene: GAM63726 target

protein and GAM201938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63726 and GAM201938

GR3476 BF127768 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3476(GR3476) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3476 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3476 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3476 gene encodes GR3476 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3476 precursor RNA folds spatially, forming GR3476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3476 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3476 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3476 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4907 precursor RNA and GAM270740 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4907 RNA and GAM270740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4907 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4907 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4907 target RNA into GAM4907 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270740 target RNA into GAM270740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3476 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3476 gene: GAM4907 target protein and GAM270740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4907 and GAM270740

GR3477 BF238182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3477(GR3477) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3477 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3477 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3477 gene encodes GR3477 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3477 precursor RNA folds spatially, forming GR3477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3477 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3477 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3477 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM252720 precursor RNA and GAM330975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM252720 RNA and GAM330975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM252720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252720 target RNA into GAM252720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330975 target RNA into GAM330975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3477 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3477 gene: GAM252720 target protein and GAM330975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM252720 and GAM330975

GR3478 AI863642 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3478(GR3478) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3478 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3478 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3478 gene encodes GR3478 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3478 precursor RNA folds spatially, forming GR3478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3478 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3478 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3478 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1504 precursor RNA and GAM23466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1504 RNA and GAM23466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1504 target RNA into GAM1504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23466 target RNA into GAM23466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3478 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3478 gene: GAM1504 target protein and GAM23466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1504 and GAM23466

GR3479 BG709603 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3479(GR3479) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3479 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3479 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3479 gene encodes GR3479 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3479 precursor RNA folds spatially, forming GR3479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3479 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3479 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3479 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5235 precursor RNA, GAM65523 precursor RNA and GAM217820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5235 RNA, GAM65523 RNA and GAM217820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5235 target RNA into GAM5235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65523 target RNA into GAM65523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM217820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217820 target RNA into GAM217820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3479 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3479 gene: GAM5235 target protein, GAM65523 target protein and GAM217820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5235, GAM65523 and GAM217820

GR3480 AA740231 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3480(GR3480) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3480 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3480 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3480 gene encodes GR3480 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3480 precursor RNA folds spatially, forming GR3480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3480 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3480 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3480 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM143719 precursor RNA and GAM174317 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM143719 RNA and GAM174317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143719 target RNA into GAM143719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174317 target RNA into GAM174317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3480 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3480 gene: GAM143719 target protein and GAM174317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM143719 and GAM174317

GR3481 AW380791 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3481(GR3481) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3481 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3481 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3481 gene encodes GR3481 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3481 precursor RNA folds spatially, forming GR3481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3481 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3481 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3481 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM49279 precursor RNA, GAM52936 precursor RNA, GAM54470 precursor RNA and GAM234846 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM49279 RNA, GAM52936 RNA, GAM54470 RNA and GAM234846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM49279 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM49279 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM49279 target RNA into GAM49279 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52936 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52936 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52936 target RNA into GAM52936 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54470 target RNA into GAM54470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234846 target RNA into GAM234846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3481 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3481 gene: GAM49279 target protein, GAM52936 target protein, GAM54470 target protein and GAM234846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM49279, GAM52936, GAM54470 and GAM234846

GR3482 BE262177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3482(GR3482) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3482 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3482 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3482 gene encodes GR3482 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3482 precursor RNA folds spatially, forming GR3482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3482 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3482 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3482 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3997 precursor RNA, GAM4634 precursor RNA, GAM117157 precursor RNA and GAM316147 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3997 RNA, GAM4634 RNA, GAM117157 RNA and GAM316147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3997 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3997 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3997 target RNA into GAM3997 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4634 target RNA into GAM4634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117157 target RNA into GAM117157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316147 target RNA into GAM316147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3482 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3482 gene: GAM3997 target protein, GAM4634 target protein, GAM117157 target protein and GAM316147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3997, GAM4634, GAM117157 and GAM316147

GR3483 BF668305 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3483(GR3483) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3483 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3483 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3483 gene encodes GR3483 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3483 precursor RNA folds spatially, forming GR3483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3483 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3483 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3483 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM139438 precursor RNA and GAM208336 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM139438 RNA and GAM208336 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM139438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM139438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM139438 target RNA into GAM139438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208336 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208336 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208336 target RNA into GAM208336 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3483 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3483 gene: GAM139438 target

protein and GAM208336 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM139438 and GAM208336

GR3484 BI757134 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3484(GR3484) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3484 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3484 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3484 gene encodes GR3484 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3484 precursor RNA folds spatially, forming GR3484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3484 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3484 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3484 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM131700 precursor RNA and GAM225518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM131700 RNA and GAM225518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM131700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131700 target RNA into GAM131700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225518 target RNA into GAM225518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3484 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3484 gene: GAM131700 target protein and GAM225518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM131700 and GAM225518

GR3485 BQ000918 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3485(GR3485) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3485 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3485 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3485 gene encodes GR3485 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3485 precursor RNA folds spatially, forming GR3485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3485 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3485 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3485 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128724 precursor RNA and GAM288882 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128724 RNA and GAM288882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128724 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128724 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128724 target RNA into GAM128724 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288882 target RNA into GAM288882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3485 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3485 gene: GAM128724 target protein and GAM288882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128724 and GAM288882

GR3486 AV721174 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3486(GR3486) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3486 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3486 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3486 gene encodes GR3486 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3486 precursor RNA folds spatially, forming GR3486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3486 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3486 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3486 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1435 precursor RNA, GAM5499 precursor RNA and GAM121484 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1435 RNA, GAM5499 RNA and GAM121484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1435 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1435 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1435 target RNA into GAM1435 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5499 target RNA into GAM5499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121484 target RNA into GAM121484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3486 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3486 gene: GAM1435 target protein, GAM5499 target protein and GAM121484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1435, GAM5499 and GAM121484

GR3487 BM917776 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3487(GR3487) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3487 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3487 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3487 gene encodes GR3487 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3487 precursor RNA folds spatially, forming GR3487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3487 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3487 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3487 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2086 precursor RNA and GAM237840 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2086 RNA and GAM237840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2086 target RNA into GAM2086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237840 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237840 target RNA into GAM237840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3487 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3487 gene: GAM2086 target protein and GAM237840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2086 and GAM237840

GR3488 AW194413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3488(GR3488) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3488 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3488 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3488 gene encodes GR3488 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3488 precursor RNA folds spatially, forming GR3488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3488 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3488 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3488 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7998 precursor RNA and GAM53789 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7998 RNA and GAM53789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7998 target RNA into GAM7998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53789 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53789 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53789 target RNA into GAM53789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3488 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3488 gene: GAM7998 target protein and GAM53789 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7998 and GAM53789

GR3489 BF696520 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3489(GR3489) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3489 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3489 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3489 gene encodes GR3489 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3489 precursor RNA folds spatially, forming GR3489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3489 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3489 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3489 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4721 precursor RNA, GAM5336 precursor RNA and GAM260739 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4721 RNA, GAM5336 RNA and GAM260739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4721 target RNA into GAM4721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5336 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5336 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5336 target RNA into GAM5336 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260739 target RNA into GAM260739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3489 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3489 gene: GAM4721 target protein, GAM5336 target protein and GAM260739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM4721, GAM5336 and GAM260739

GR3490 BE695695 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3490(GR3490) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3490 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3490 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3490 gene encodes GR3490 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3490 precursor RNA folds spatially, forming GR3490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3490 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3490 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3490 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7126 precursor RNA and GAM256912 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7126 RNA and GAM256912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7126 target RNA into GAM7126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM256912 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256912 target RNA into GAM256912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3490 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3490 gene: GAM7126 target protein and GAM256912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7126 and GAM256912

GR3491 AI638748 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3491(GR3491) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3491 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3491 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3491 gene encodes GR3491 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3491 precursor RNA folds spatially, forming GR3491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3491 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3491 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3491 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM241348 precursor RNA and GAM276093 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM241348 RNA and GAM276093 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM241348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM241348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241348 target RNA into GAM241348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276093 target RNA into GAM276093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3491 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3491 gene: GAM241348 target protein and GAM276093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM241348 and GAM276093

GR3492 BQ059442 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3492(GR3492) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3492 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3492 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3492 gene encodes GR3492 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3492 precursor RNA folds spatially, forming GR3492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3492 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3492 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3492 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7145 precursor RNA, GAM80863 precursor RNA and GAM315257 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7145 RNA, GAM80863 RNA and GAM315257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7145 target RNA into GAM7145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80863 target RNA into GAM80863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315257 target RNA into GAM315257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3492 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3492 gene: GAM7145 target protein, GAM80863 target protein and GAM315257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7145, GAM80863 and

GAM315257

GR3493 AA631785 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3493(GR3493) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3493 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3493 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3493 gene encodes GR3493 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3493 precursor RNA folds spatially, forming GR3493 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3493 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3493 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3493 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM92124 precursor RNA and GAM307618 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92124 RNA and GAM307618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92124 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92124 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92124 target RNA into GAM92124 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307618 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307618 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307618 target RNA into GAM307618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3493 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3493 gene: GAM92124 target protein and GAM307618 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92124 and GAM307618

GR3494 BG613499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3494(GR3494) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3494 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3494 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3494 gene encodes GR3494 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3494 precursor RNA folds spatially, forming GR3494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3494 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3494 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3494 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4105 precursor RNA and GAM4250 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4105 RNA and GAM4250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM4105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4105 target RNA into GAM4105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4250 target RNA into GAM4250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3494 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3494 gene: GAM4105 target protein and GAM4250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4105 and GAM4250

GR3495 AA687606 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3495(GR3495) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3495 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3495 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3495 gene encodes GR3495 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3495 precursor RNA folds spatially, forming GR3495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3495 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3495 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3495 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM221587 precursor RNA and GAM273686 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221587 RNA and GAM273686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221587 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221587 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221587 target RNA into GAM221587 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273686 target RNA into GAM273686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3495 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3495 gene: GAM221587 target protein and GAM273686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221587 and GAM273686

GR3496 AL598369 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3496(GR3496) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3496 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3496

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3496 gene encodes GR3496 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3496 precursor RNA folds spatially, forming GR3496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3496 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3496 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3496 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM397 precursor RNA, GAM175615 precursor RNA and GAM273858 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM397 RNA, GAM175615 RNA and GAM273858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM397 target RNA into GAM397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175615 target RNA into GAM175615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273858 target RNA into GAM273858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3496 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3496 gene: GAM397 target protein, GAM175615 target protein and GAM273858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM397, GAM175615 and GAM273858

GR3497 BF577286 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3497(GR3497) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3497 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3497 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3497 gene encodes GR3497 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3497 precursor RNA folds spatially, forming GR3497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3497 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3497 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3497 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41947 precursor RNA, GAM98623 precursor RNA and GAM197985 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41947 RNA, GAM98623 RNA and GAM197985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM41947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41947 target RNA into GAM41947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98623 target RNA into GAM98623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197985 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197985 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197985 target RNA into GAM197985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3497 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3497 gene: GAM41947 target protein, GAM98623 target protein and GAM197985 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41947, GAM98623 and GAM197985

GR3498 BM008568 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3498(GR3498) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3498 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3498 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3498 gene encodes GR3498 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3498 precursor RNA folds spatially, forming GR3498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3498 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3498 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3498 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3504 precursor RNA and GAM256096 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3504 RNA and GAM256096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3504 target RNA into GAM3504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256096 target RNA into GAM256096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3498 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3498 gene: GAM3504 target protein and GAM256096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3504 and GAM256096

GR3499 U52841 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3499(GR3499) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3499 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3499 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3499 gene encodes GR3499 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3499 precursor RNA folds spatially, forming GR3499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3499 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3499 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3499 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65365 precursor RNA and GAM191696 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65365 RNA and GAM191696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65365 target RNA into GAM65365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191696 target RNA into GAM191696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3499 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3499 gene: GAM65365 target protein and GAM191696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65365 and GAM191696

GR3500 AA455327 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3500(GR3500) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3500 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3500 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3500 gene encodes GR3500 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3500 precursor RNA folds spatially, forming GR3500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3500 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3500 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3500 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29491 precursor RNA and GAM31752 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29491 RNA and GAM31752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29491 target RNA into GAM29491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31752 target RNA into GAM31752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3500 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3500 gene: GAM29491 target protein and GAM31752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29491 and GAM31752

GR3501 BE535776 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3501(GR3501) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3501 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3501 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3501 gene encodes GR3501 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3501 precursor RNA folds spatially, forming GR3501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3501 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3501 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3501 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM175769 precursor RNA, GAM277585 precursor RNA and GAM327704 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM175769 RNA, GAM277585 RNA and GAM327704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM175769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175769 target RNA into GAM175769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277585 target RNA into GAM277585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327704 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327704 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327704 target RNA into GAM327704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3501 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3501 gene: GAM175769 target protein, GAM277585 target protein and GAM327704 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM175769, GAM277585 and GAM327704

GR3502 BI602277 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3502(GR3502) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3502 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3502 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3502 gene encodes GR3502 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3502 precursor RNA folds spatially, forming GR3502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3502 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3502 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3502 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM348 precursor RNA, GAM2612 precursor RNA and GAM7116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM348 RNA, GAM2612 RNA and GAM7116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM348 target RNA into GAM348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2612 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2612 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM2612 target RNA into GAM2612 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7116 target RNA into GAM7116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3502 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3502 gene: GAM348 target protein, GAM2612 target protein and GAM7116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM348, GAM2612 and GAM7116

GR3503 BG495959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3503(GR3503) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3503 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3503 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3503 gene encodes GR3503 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3503 precursor RNA folds spatially, forming GR3503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3503 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3503 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3503 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4165 precursor RNA, GAM213223 precursor RNA and GAM281025 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4165 RNA, GAM213223 RNA and GAM281025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4165 target RNA into GAM4165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213223 target RNA into GAM213223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281025 target RNA into GAM281025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3503 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3503 gene: GAM4165 target protein, GAM213223 target protein and GAM281025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4165, GAM213223 and GAM281025

GR3504 BG913781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3504(GR3504) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3504 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3504 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3504 gene encodes GR3504 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3504 precursor RNA folds spatially, forming GR3504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3504 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3504 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3504 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM874 precursor RNA and GAM1511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM874 RNA and GAM1511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM874 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM874 target RNA into GAM874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1511 target RNA into GAM1511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3504 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3504 gene: GAM874 target protein and GAM1511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM874 and GAM1511

GR3505 BE778755 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3505(GR3505) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3505 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3505 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3505 gene encodes GR3505 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3505 precursor RNA folds spatially, forming GR3505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3505 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3505 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3505 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM43577 precursor RNA and GAM154633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43577 RNA and GAM154633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43577 target RNA into GAM43577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154633 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154633 target RNA into GAM154633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3505 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3505 gene: GAM43577 target protein and GAM154633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43577 and GAM154633

GR3506 BI223473 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3506(GR3506) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3506 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3506 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3506 gene encodes GR3506 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3506 precursor RNA folds spatially, forming GR3506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3506 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3506 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3506 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6518 precursor RNA and GAM221035 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6518 RNA and GAM221035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6518 target RNA into GAM6518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221035 target RNA into GAM221035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3506 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3506 gene: GAM6518 target protein and GAM221035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6518 and GAM221035

GR3507 BG329460 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3507(GR3507) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3507 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3507 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3507 gene encodes GR3507 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3507 precursor RNA folds spatially, forming GR3507 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3507 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3507 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3507 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM102 precursor RNA, GAM93865 precursor RNA and GAM148233 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102 RNA, GAM93865 RNA and GAM148233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102 target RNA into GAM102 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93865 target RNA into GAM93865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148233 target RNA into GAM148233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3507 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3507 gene: GAM102 target protein, GAM93865 target protein and GAM148233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102, GAM93865 and GAM148233

GR3508 AW902575 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3508(GR3508) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3508 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3508 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3508 gene encodes GR3508 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3508 precursor RNA folds spatially, forming GR3508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3508 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3508 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3508 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM88743 precursor RNA, GAM225884 precursor RNA and GAM232502 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM88743 RNA, GAM225884 RNA and GAM232502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM88743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88743 target RNA into GAM88743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225884 target RNA into GAM225884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232502 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232502 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232502 target RNA into GAM232502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3508 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3508 gene: GAM88743 target protein, GAM225884 target protein and GAM232502 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM88743, GAM225884 and GAM232502

GR3509 AA947596 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3509(GR3509) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3509 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3509 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3509 gene encodes GR3509 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3509 precursor RNA folds spatially, forming GR3509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3509 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3509 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3509 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3032 precursor RNA and GAM5716 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3032 RNA and GAM5716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3032 target RNA into GAM3032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5716 target RNA into GAM5716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3509 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3509 gene: GAM3032 target protein and GAM5716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3032 and GAM5716

GR3510 BG163315 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3510(GR3510) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3510 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3510 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3510 gene encodes GR3510 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3510 precursor RNA folds spatially, forming GR3510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3510 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3510 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3510 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1075 precursor RNA and GAM284731 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1075 RNA and GAM284731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1075 target RNA into GAM1075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284731 target RNA into GAM284731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3510 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3510 gene: GAM1075 target protein and GAM284731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1075 and GAM284731

GR3511 BM670340 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3511(GR3511) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3511 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3511 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3511 gene encodes GR3511 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3511 precursor RNA folds spatially, forming GR3511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3511 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3511 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3511 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM122446 precursor RNA, GAM141705 precursor RNA, GAM173849 precursor RNA and GAM284564 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122446 RNA, GAM141705 RNA, GAM173849 RNA and GAM284564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122446

target RNA into GAM122446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141705 target RNA into GAM141705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173849 target RNA into GAM173849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284564 target RNA into GAM284564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3511 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3511 gene: GAM122446 target protein, GAM141705 target protein, GAM173849 target protein and GAM284564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122446, GAM141705, GAM173849 and GAM284564

GR3512 BM788803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3512(GR3512) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3512 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3512 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3512 gene encodes GR3512 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3512 precursor RNA folds spatially, forming GR3512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3512 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3512 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3512 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM143109 precursor RNA, GAM213672 precursor RNA and GAM258333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143109 RNA, GAM213672 RNA and GAM258333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143109 target RNA into GAM143109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213672 target RNA into GAM213672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258333 target RNA into GAM258333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3512 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3512 gene: GAM143109 target protein, GAM213672 target protein and GAM258333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM143109, GAM213672 and GAM258333

GR3513 BF951715 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3513(GR3513) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3513 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3513 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3513 gene encodes GR3513 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3513 precursor RNA folds spatially, forming GR3513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3513 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3513 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3513 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2771 precursor RNA, GAM8294 precursor RNA and GAM116490 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2771 RNA, GAM8294 RNA and GAM116490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2771 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM2771 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2771 target RNA into GAM2771 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8294 target RNA into GAM8294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116490 target RNA into GAM116490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3513 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3513 gene: GAM2771 target protein, GAM8294 target protein and GAM116490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2771, GAM8294 and GAM116490

GR3514 BI670280 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3514(GR3514) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3514 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3514 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3514 gene encodes GR3514 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3514 precursor RNA folds spatially, forming GR3514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3514 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3514 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3514 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM99288 precursor RNA, GAM175786 precursor RNA and GAM264743 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99288 RNA, GAM175786 RNA and GAM264743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99288 target RNA into GAM99288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175786 target RNA into GAM175786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM264743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264743 target RNA into GAM264743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3514 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3514 gene: GAM99288 target

protein, GAM175786 target protein and GAM264743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99288, GAM175786 and GAM264743

GR3515 BG697086 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3515(GR3515) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3515 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3515 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3515 gene encodes GR3515 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3515 precursor RNA folds spatially, forming GR3515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3515 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3515 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3515 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5303 precursor RNA and GAM224381 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5303 RNA and GAM224381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5303 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5303 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5303 target RNA into GAM5303 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224381 target RNA into GAM224381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3515 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3515 gene: GAM5303 target protein and GAM224381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5303 and GAM224381

GR3516 AI583976 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3516(GR3516) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3516 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3516 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3516 gene encodes GR3516 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3516 precursor RNA folds spatially, forming GR3516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3516 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3516 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3516 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM71047 precursor RNA and GAM84914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM71047 RNA and GAM84914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM71047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71047 target RNA into GAM71047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84914 target RNA into GAM84914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3516 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3516 gene: GAM71047 target protein and GAM84914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM71047 and GAM84914

GR3517 BG340324 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3517(GR3517) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3517 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3517 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3517 gene encodes GR3517 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3517 precursor RNA folds spatially, forming GR3517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3517 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3517 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3517 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8599 precursor RNA, GAM102735 precursor RNA and GAM301520 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8599 RNA, GAM102735 RNA and GAM301520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8599 target RNA into GAM8599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102735 target RNA into GAM102735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301520 target RNA into GAM301520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3517 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3517 gene: GAM8599 target protein, GAM102735 target protein and GAM301520 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8599, GAM102735 and GAM301520

GR3518 AA469026 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3518(GR3518) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3518 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3518 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3518 gene encodes GR3518 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3518 precursor RNA folds spatially, forming GR3518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3518 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3518 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3518 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM175651 precursor RNA and GAM181926 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM175651 RNA and GAM181926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM175651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175651 target RNA into GAM175651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181926 target RNA into GAM181926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3518 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3518 gene: GAM175651 target protein and GAM181926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM175651 and GAM181926

GR3519 BM800730 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3519(GR3519) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3519 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3519 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3519 gene encodes GR3519 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3519 precursor RNA folds spatially, forming GR3519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3519 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3519 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3519 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3437 precursor RNA and GAM128488 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3437 RNA and GAM128488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3437 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3437 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3437 target RNA into GAM3437 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128488 target RNA into GAM128488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3519 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3519 gene: GAM3437 target protein and GAM128488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3437 and GAM128488

GR3520 AL134352 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3520(GR3520) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3520 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3520 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3520 gene encodes GR3520 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3520 precursor RNA folds spatially, forming GR3520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3520 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3520 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3520 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5641 precursor RNA, GAM183135 precursor RNA and GAM254315 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5641 RNA, GAM183135 RNA and GAM254315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5641 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5641 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5641 target RNA into GAM5641 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183135 target RNA into GAM183135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254315 target RNA into GAM254315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3520 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3520 gene: GAM5641 target protein, GAM183135 target protein and GAM254315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5641, GAM183135 and GAM254315

GR3521 BG502628 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3521(GR3521) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3521 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3521 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3521 gene encodes GR3521 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3521 precursor RNA folds spatially, forming GR3521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3521 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3521 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3521 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5020 precursor RNA, GAM5174 precursor RNA and GAM334560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5020 RNA, GAM5174 RNA and GAM334560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5020 target RNA into GAM5020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5174 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5174 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5174 target RNA into GAM5174 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334560 target RNA into GAM334560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3521 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3521 gene: GAM5020 target protein, GAM5174 target protein and GAM334560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5020, GAM5174 and GAM334560

GR3522 R18254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3522(GR3522) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3522 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3522 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3522 gene encodes GR3522 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3522 precursor RNA folds spatially, forming GR3522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3522 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3522 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3522 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8709 precursor RNA, GAM86806 precursor RNA and GAM223031 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8709 RNA, GAM86806 RNA and GAM223031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8709 target RNA into GAM8709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86806 target RNA into GAM86806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223031 target RNA into GAM223031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3522 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3522 gene: GAM8709 target protein, GAM86806 target protein and GAM223031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8709, GAM86806 and GAM223031

GR3523 BF795226 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3523(GR3523) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3523 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3523 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3523 gene encodes GR3523 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3523 precursor RNA folds spatially, forming GR3523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3523 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3523 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3523 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41570 precursor RNA and GAM120928 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41570 RNA and GAM120928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41570 target RNA into GAM41570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120928 target RNA into GAM120928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3523 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3523 gene: GAM41570 target protein and GAM120928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41570 and GAM120928

GR3524 BG121019 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3524(GR3524) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3524 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3524 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3524 gene encodes GR3524 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3524 precursor RNA folds spatially, forming GR3524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3524 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3524 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3524 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7232 precursor RNA and GAM242405 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7232 RNA and GAM242405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7232 target RNA into GAM7232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242405 target RNA into GAM242405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3524 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3524 gene: GAM7232 target protein and GAM242405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7232 and GAM242405

GR3525 AW166212 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3525(GR3525) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3525 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3525 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3525 gene encodes GR3525 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3525 precursor RNA folds spatially, forming GR3525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3525 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3525 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3525 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4384 precursor RNA and GAM167966 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4384 RNA and GAM167966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4384 target RNA into GAM4384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167966 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167966 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167966 target RNA into GAM167966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3525 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3525 gene: GAM4384 target protein and GAM167966 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4384 and GAM167966

GR3526 BE539114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3526(GR3526) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3526 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3526 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3526 gene encodes GR3526 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3526 precursor RNA folds spatially, forming GR3526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3526 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3526 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3526 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3063 precursor RNA, GAM40177 precursor RNA and GAM317805 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3063 RNA, GAM40177 RNA and GAM317805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3063 target RNA into GAM3063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40177 target RNA into GAM40177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317805 target RNA into GAM317805 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3526 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3526 gene: GAM3063 target protein, GAM40177 target protein and GAM317805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3063, GAM40177 and GAM317805

GR3527 AA207261 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3527(GR3527) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3527 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3527 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3527 gene encodes GR3527 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3527 precursor RNA folds spatially, forming GR3527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3527 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3527 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3527 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM53653 precursor RNA, GAM110847 precursor RNA and GAM115409 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53653 RNA, GAM110847 RNA and GAM115409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53653 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53653 target RNA into GAM53653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110847 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110847 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110847 target RNA into GAM110847 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115409 target RNA into GAM115409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3527 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3527 gene: GAM53653 target protein, GAM110847 target protein and GAM115409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53653, GAM110847 and GAM115409

GR3528 AA707864 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3528(GR3528) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3528 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3528 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3528 gene encodes GR3528 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3528 precursor RNA folds spatially, forming GR3528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3528 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3528 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3528 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM195226 precursor RNA and GAM326286 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM195226 RNA and GAM326286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM195226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195226 target RNA into GAM195226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326286 target RNA into GAM326286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3528 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3528 gene: GAM195226 target protein and GAM326286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM195226 and GAM326286

GR3529 AI627472 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3529(GR3529) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3529 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3529 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3529 gene encodes GR3529 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3529 precursor RNA folds spatially, forming GR3529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3529 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3529 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3529 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1149 precursor RNA, GAM180503 precursor RNA and GAM188267 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1149 RNA, GAM180503 RNA and GAM188267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1149 target RNA into GAM1149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180503

target RNA into GAM180503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188267 target RNA into GAM188267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3529 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3529 gene: GAM1149 target protein, GAM180503 target protein and GAM188267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1149, GAM180503 and GAM188267

GR3530 BE254690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3530(GR3530) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3530 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3530 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3530 gene encodes GR3530 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3530 precursor RNA folds spatially, forming GR3530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3530 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3530 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3530 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM15657 precursor RNA, GAM266714 precursor RNA and GAM287647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15657 RNA, GAM266714 RNA and GAM287647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15657 target RNA into GAM15657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266714 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266714 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266714 target RNA into GAM266714 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287647 target RNA into GAM287647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3530 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3530 gene: GAM15657 target protein, GAM266714 target protein and GAM287647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15657, GAM266714 and GAM287647

GR3531 AA443426 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3531(GR3531) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3531 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3531 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3531 gene encodes GR3531 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3531 precursor RNA folds spatially, forming GR3531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3531 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3531 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3531 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8343 precursor RNA and GAM125991 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8343 RNA and GAM125991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8343 target RNA into GAM8343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125991 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125991 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125991 target RNA into GAM125991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3531 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3531 gene: GAM8343 target protein and GAM125991 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8343 and GAM125991

GR3532 T84453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3532(GR3532) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3532 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3532 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3532 gene encodes GR3532 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3532 precursor RNA folds spatially, forming GR3532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3532 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3532 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3532 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM595 precursor RNA and GAM8364 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM595 RNA and GAM8364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM595 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM595 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM595 target RNA into

GAM595 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8364 target RNA into GAM8364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3532 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3532 gene: GAM595 target protein and GAM8364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM595 and GAM8364

GR3533 AI524105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3533(GR3533) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3533 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3533 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3533 gene encodes GR3533 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3533 precursor RNA folds spatially, forming GR3533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3533 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3533 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3533 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM219441 precursor RNA and GAM336084 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219441 RNA and GAM336084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219441 target RNA into GAM219441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336084 target RNA into GAM336084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3533 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3533 gene: GAM219441 target protein and GAM336084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219441 and GAM336084

GR3534 AL040354 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3534(GR3534) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3534 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3534 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3534 gene encodes GR3534 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3534 precursor RNA folds spatially, forming GR3534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3534 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3534 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3534 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5264 precursor RNA, GAM327169 precursor RNA and GAM336000 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5264 RNA, GAM327169 RNA and GAM336000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5264 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5264 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5264 target RNA into GAM5264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327169 target RNA into GAM327169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336000 target RNA into GAM336000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3534 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3534 gene: GAM5264 target

protein, GAM327169 target protein and GAM336000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5264, GAM327169 and GAM336000

GR3535 R52059 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3535(GR3535) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3535 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3535 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3535 gene encodes GR3535 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3535 precursor RNA folds spatially, forming GR3535 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3535 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3535 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3535 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM269376 precursor RNA and GAM318599 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM269376 RNA and GAM318599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM269376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269376 target RNA into GAM269376 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318599 target RNA into GAM318599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3535 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3535 gene: GAM269376 target protein and GAM318599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM269376 and GAM318599

GR3536 AW503208 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3536(GR3536) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3536 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3536 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3536 gene encodes GR3536 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3536 precursor RNA folds spatially, forming GR3536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3536 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3536 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3536 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2967 precursor RNA and GAM53014 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2967 RNA and GAM53014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2967 target RNA into GAM2967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53014 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53014 target RNA into GAM53014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3536 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3536 gene: GAM2967 target protein and GAM53014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2967 and GAM53014

GR3537 BF330418 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3537(GR3537) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3537 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3537 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3537 gene encodes GR3537 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3537 precursor RNA folds spatially, forming GR3537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3537 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3537 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3537 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3223 precursor RNA and GAM115299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3223 RNA and GAM115299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3223 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3223 target RNA into GAM3223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115299 target RNA into GAM115299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3537 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3537 gene: GAM3223 target protein and GAM115299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3223 and GAM115299

GR3538 AI820589 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3538(GR3538) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3538 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3538 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3538 gene encodes GR3538 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3538 precursor RNA folds spatially, forming GR3538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3538 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3538 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3538 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3393 precursor RNA, GAM24013 precursor RNA and GAM145945 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3393 RNA, GAM24013 RNA and GAM145945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3393 target RNA into GAM3393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24013 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24013 target RNA into GAM24013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145945 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145945 target RNA into GAM145945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3538 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3538 gene: GAM3393 target protein, GAM24013 target protein and GAM145945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3393, GAM24013 and GAM145945

GR3539 BM690480 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3539(GR3539) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3539 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3539 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3539 gene encodes GR3539 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3539 precursor RNA folds spatially, forming GR3539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3539 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3539 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3539 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4037 precursor RNA and GAM282155 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4037 RNA and GAM282155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4037 target RNA into GAM4037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282155 target RNA into GAM282155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3539 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3539 gene: GAM4037 target protein and GAM282155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4037 and GAM282155

GR3540 BM988278 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3540(GR3540) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3540 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3540 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3540 gene encodes GR3540 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3540 precursor RNA folds spatially, forming GR3540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3540 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3540 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3540 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4340 precursor RNA and GAM101911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4340 RNA and GAM101911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4340 target RNA into GAM4340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101911 target RNA into GAM101911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3540 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3540 gene: GAM4340 target protein and GAM101911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4340 and GAM101911

GR3541 AL697428 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3541(GR3541) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3541 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3541 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3541 gene encodes GR3541 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3541 precursor RNA folds spatially, forming GR3541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3541 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3541 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3541 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM76547 precursor RNA and GAM253163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76547 RNA and GAM253163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76547 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76547 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76547 target RNA into GAM76547 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253163 target RNA into GAM253163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3541 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3541 gene: GAM76547 target protein and GAM253163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76547 and GAM253163

GR3542 BG981180 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3542(GR3542) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3542 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3542 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3542 gene encodes GR3542 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3542 precursor RNA folds spatially, forming GR3542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3542 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3542 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3542 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM59638 precursor RNA and GAM186422 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59638 RNA and GAM186422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59638 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59638 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59638

target RNA into GAM59638 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186422 target RNA into GAM186422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3542 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3542 gene: GAM59638 target protein and GAM186422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59638 and GAM186422

GR3543 BF968170 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3543(GR3543) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3543 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3543 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3543 gene encodes GR3543 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3543 precursor RNA folds spatially, forming GR3543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3543 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3543 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3543 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1555 precursor RNA and GAM3986 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1555 RNA and GAM3986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1555 target RNA into GAM1555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3986 target RNA into GAM3986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3543 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3543 gene: GAM1555 target protein and GAM3986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1555 and GAM3986

GR3544 AV647717 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3544(GR3544) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3544 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3544 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3544 gene encodes GR3544 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3544 precursor RNA folds spatially, forming GR3544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3544 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3544 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3544 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118443 precursor RNA and GAM132358 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118443 RNA and GAM132358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118443 target RNA into GAM118443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM132358 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132358 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132358 target RNA into GAM132358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3544 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3544 gene: GAM118443 target protein and GAM132358 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118443 and GAM132358

GR3545 BF056064 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3545(GR3545) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3545 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3545 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3545 gene encodes GR3545 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3545 precursor RNA folds spatially, forming GR3545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3545 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3545 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3545 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4911 precursor RNA, GAM22009 precursor RNA and GAM200361 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4911 RNA, GAM22009 RNA and GAM200361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4911 target RNA into GAM4911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22009 target RNA into GAM22009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM200361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM200361 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM200361 target RNA into GAM200361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3545 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3545 gene: GAM4911 target protein, GAM22009 target protein and GAM200361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4911, GAM22009 and GAM200361

GR3546 BG400114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3546(GR3546) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3546 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3546 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3546 gene encodes GR3546 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3546 precursor RNA folds spatially, forming GR3546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3546 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3546 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3546 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2574 precursor RNA and GAM331652 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2574 RNA and GAM331652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2574 target RNA into GAM2574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331652 target RNA into GAM331652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3546 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3546 gene: GAM2574 target protein and GAM331652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2574 and GAM331652

GR3547 BM761194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3547(GR3547) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3547 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3547 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3547 gene encodes GR3547 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3547 precursor RNA folds spatially, forming GR3547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3547 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3547 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3547 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96967 precursor RNA and GAM318550 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96967 RNA and GAM318550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM96967 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96967 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96967 target RNA into GAM96967 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318550 target RNA into GAM318550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3547 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3547 gene: GAM96967 target protein and GAM318550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96967 and GAM318550

GR3548 BI458595 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3548(GR3548) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3548 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3548 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3548 gene encodes GR3548 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3548 precursor RNA folds spatially, forming GR3548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3548 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3548 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3548 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5166 precursor RNA, GAM6211 precursor RNA and GAM245489 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5166 RNA, GAM6211 RNA and GAM245489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5166 target RNA into GAM5166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6211 target RNA into GAM6211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245489 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245489 target RNA into GAM245489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3548 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3548 gene: GAM5166 target protein, GAM6211 target protein and GAM245489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5166, GAM6211 and GAM245489

GR3549 BM542808 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3549(GR3549) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3549 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3549 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3549 gene encodes GR3549 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3549 precursor RNA folds spatially, forming GR3549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3549 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3549 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3549 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5237 precursor RNA and GAM7306 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5237 RNA and GAM7306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5237 target RNA into GAM5237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7306 target RNA into GAM7306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3549 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3549 gene: GAM5237 target protein and GAM7306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5237 and GAM7306

GR3550 N78401 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3550(GR3550) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3550 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3550 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3550 gene encodes GR3550 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3550 precursor RNA folds spatially, forming GR3550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3550 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3550 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3550 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1608 precursor RNA, GAM115034 precursor RNA and GAM316960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1608 RNA, GAM115034 RNA and GAM316960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1608 target RNA into GAM1608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115034 target RNA into GAM115034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316960 target RNA into GAM316960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3550 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3550 gene: GAM1608 target protein, GAM115034 target protein and GAM316960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1608, GAM115034 and GAM316960

GR3551 BI116826 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3551(GR3551) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3551 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3551 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3551 gene encodes GR3551 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3551 precursor RNA folds spatially, forming GR3551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3551 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3551 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3551 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5213 precursor RNA, GAM98168 precursor RNA and GAM212170 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5213 RNA, GAM98168 RNA and GAM212170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5213 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5213 target RNA into GAM5213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM98168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98168 target RNA into GAM98168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212170 target RNA into GAM212170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3551 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3551 gene: GAM5213 target protein, GAM98168 target protein and GAM212170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5213, GAM98168 and GAM212170

GR3552 BF837223 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3552(GR3552) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3552 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3552 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3552 gene encodes GR3552 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3552 precursor RNA folds spatially, forming GR3552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3552 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3552 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3552 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3705 precursor RNA and GAM4963 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3705 RNA and GAM4963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3705 target RNA into GAM3705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4963 target RNA into GAM4963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3552 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3552 gene: GAM3705 target protein and GAM4963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3705 and GAM4963

GR3553 BG482494 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3553(GR3553) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3553 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3553 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3553 gene encodes GR3553 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3553 precursor RNA folds spatially, forming GR3553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3553 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3553 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3553 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1046 precursor RNA and GAM263342 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1046 RNA and GAM263342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1046 target RNA into GAM1046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263342 target RNA into GAM263342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3553 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3553 gene: GAM1046 target protein and GAM263342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1046 and GAM263342

GR3554 BF996540 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3554(GR3554) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3554 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3554 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3554 gene encodes GR3554 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3554 precursor RNA folds spatially, forming GR3554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3554 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3554 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3554 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9839 precursor RNA and GAM195754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9839 RNA and GAM195754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9839 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9839 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9839 target RNA into GAM9839 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM195754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195754 target RNA into GAM195754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3554 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3554 gene: GAM9839 target protein and GAM195754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9839 and GAM195754

GR3555 BI913484 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3555(GR3555) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3555 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3555 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3555 gene encodes GR3555 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3555 precursor RNA folds spatially, forming GR3555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3555 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3555 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3555 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM21582 precursor RNA, GAM79497 precursor RNA and GAM109040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM21582 RNA, GAM79497 RNA and GAM109040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21582 target RNA into GAM21582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79497 target RNA into GAM79497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109040 target RNA into GAM109040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3555 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3555 gene: GAM21582 target protein, GAM79497 target protein and GAM109040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21582, GAM79497 and GAM109040

GR3556 BM701905 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3556(GR3556) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3556 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3556 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3556 gene encodes GR3556 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3556 precursor RNA folds spatially, forming GR3556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3556 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3556 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3556 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM6513 precursor RNA, GAM15301 precursor RNA, GAM165438 precursor RNA, GAM274570 precursor RNA and GAM289869 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6513 RNA, GAM15301 RNA, GAM165438 RNA, GAM274570 RNA and GAM289869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6513 target RNA into GAM6513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15301 target RNA into GAM15301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM165438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165438 target RNA into GAM165438 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274570 target RNA into GAM274570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289869 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289869 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289869 target RNA into GAM289869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3556 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3556 gene: GAM6513 target protein, GAM15301 target protein, GAM165438 target protein, GAM274570 target protein and GAM289869 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6513, GAM15301, GAM165438, GAM274570 and GAM289869

GR3557 BG743149 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3557(GR3557) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3557 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3557 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3557 gene encodes GR3557 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3557 precursor RNA folds spatially, forming GR3557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3557 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3557 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3557 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1286 precursor RNA and GAM16774 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1286 RNA and GAM16774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1286 target RNA into GAM1286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16774 target RNA into GAM16774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3557 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3557 gene: GAM1286 target protein and GAM16774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1286 and GAM16774

GR3558 BF196757 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3558(GR3558) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3558 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3558 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3558 gene encodes GR3558 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3558 precursor RNA folds spatially, forming GR3558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3558 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3558 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3558 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM162935 precursor RNA and GAM304021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM162935 RNA and GAM304021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM162935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162935 target RNA into GAM162935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304021 target RNA into GAM304021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3558 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3558 gene: GAM162935 target

protein and GAM304021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM162935 and GAM304021

GR3559 BF369462 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3559(GR3559) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3559 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3559 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3559 gene encodes GR3559 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3559 precursor RNA folds spatially, forming GR3559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3559 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3559 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3559 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM256883 precursor RNA, GAM267215 precursor RNA and GAM295797 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM256883 RNA, GAM267215 RNA and GAM295797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM256883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256883 target RNA into GAM256883 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267215 target RNA into GAM267215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295797 target RNA into GAM295797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3559 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3559 gene: GAM256883 target protein, GAM267215 target protein and GAM295797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM256883, GAM267215 and GAM295797

GR3560 BM048993 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3560(GR3560) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3560 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3560 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3560 gene encodes GR3560 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3560 precursor RNA folds spatially, forming GR3560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3560 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3560 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3560 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM46403 precursor RNA and GAM118756 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM46403 RNA and GAM118756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM46403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46403 target RNA into GAM46403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118756 target RNA into GAM118756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3560 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3560 gene: GAM46403 target protein and GAM118756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM46403 and GAM118756

GR3561 BF745849 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3561(GR3561) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3561 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3561

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3561 gene encodes GR3561 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3561 precursor RNA folds spatially, forming GR3561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3561 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3561 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3561 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM60 precursor RNA, GAM9034 precursor RNA and GAM141373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60 RNA, GAM9034 RNA and GAM141373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60 target RNA into GAM60 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9034 target RNA into GAM9034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141373 target RNA into GAM141373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3561 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3561 gene: GAM60 target protein, GAM9034 target protein and GAM141373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60, GAM9034 and GAM141373

GR3562 BI559374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3562(GR3562) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3562 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3562 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3562 gene encodes GR3562 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3562 precursor RNA folds spatially, forming GR3562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3562 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3562 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3562 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3269 precursor RNA, GAM126287 precursor RNA and GAM315140 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3269 RNA, GAM126287 RNA and GAM315140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM3269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3269 target RNA into GAM3269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM126287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126287 target RNA into GAM126287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315140 target RNA into GAM315140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3562 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3562 gene: GAM3269 target protein, GAM126287 target protein and GAM315140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3269, GAM126287 and GAM315140

GR3563 R70894 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3563(GR3563) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3563 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3563 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3563 gene encodes GR3563 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3563 precursor RNA folds spatially, forming GR3563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3563 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3563 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3563 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM29398 precursor RNA, GAM103965 precursor RNA and GAM335371 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29398 RNA, GAM103965 RNA and GAM335371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29398 target RNA into GAM29398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103965 target RNA into GAM103965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335371 target RNA into GAM335371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3563 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3563 gene: GAM29398 target protein, GAM103965 target protein and GAM335371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29398, GAM103965 and GAM335371

GR3564 BG545194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3564(GR3564) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3564 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3564 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3564 gene encodes GR3564 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3564 precursor RNA folds spatially, forming GR3564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3564 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3564 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3564 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5426 precursor RNA, GAM5483 precursor RNA, GAM124653 precursor RNA and GAM214813 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5426 RNA, GAM5483 RNA, GAM124653 RNA and GAM214813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM5426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5426 target RNA into GAM5426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5483 target RNA into GAM5483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124653 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124653 target RNA into GAM124653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214813 target RNA into GAM214813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3564 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3564 gene: GAM5426 target protein, GAM5483 target protein, GAM124653 target protein and GAM214813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5426, GAM5483, GAM124653 and GAM214813

GR3565 BG115332 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3565(GR3565) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3565 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3565

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3565 gene encodes GR3565 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3565 precursor RNA folds spatially, forming GR3565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3565 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3565 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3565 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6933 precursor RNA and GAM256782 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6933 RNA and GAM256782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6933 target RNA into GAM6933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256782 target RNA into GAM256782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3565 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3565 gene: GAM6933 target protein and GAM256782 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6933 and GAM256782

GR3566 BM978681 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3566(GR3566) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3566 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3566 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3566 gene encodes GR3566 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3566 precursor RNA folds spatially, forming GR3566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3566 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3566 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3566 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2430 precursor RNA and GAM17077 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2430 RNA and GAM17077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2430 target RNA into GAM2430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17077 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17077 target RNA into GAM17077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3566 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3566 gene: GAM2430 target protein and GAM17077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2430 and GAM17077

GR3567 BI597286 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3567(GR3567) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3567 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3567 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3567 gene encodes GR3567 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3567 precursor RNA folds spatially, forming GR3567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3567 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3567 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3567 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1327 precursor RNA and GAM193281 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM1327 RNA and GAM193281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1327 target RNA into GAM1327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193281 target RNA into GAM193281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3567 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3567 gene: GAM1327 target protein and GAM193281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1327 and GAM193281

GR3568 BG749255 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3568(GR3568) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3568 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3568 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3568 gene encodes GR3568 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3568 precursor RNA folds spatially, forming GR3568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3568 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3568 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3568 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6138 precursor RNA and GAM234984 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6138 RNA and GAM234984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6138 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6138 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6138 target RNA into GAM6138 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234984 target RNA into GAM234984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3568 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3568 gene: GAM6138 target protein and GAM234984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6138 and GAM234984

GR3569 BF934421 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3569(GR3569) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3569 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3569 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3569 gene encodes GR3569 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3569 precursor RNA folds spatially, forming GR3569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3569 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3569 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3569 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3756 precursor RNA and GAM45365 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3756 RNA and GAM45365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3756 target RNA into GAM3756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM45365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45365 target RNA into GAM45365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3569 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3569 gene: GAM3756 target protein and GAM45365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3756 and GAM45365

GR3570 BM127082 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3570(GR3570) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3570 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3570 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3570 gene encodes GR3570 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3570 precursor RNA folds spatially, forming GR3570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3570 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3570 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3570 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM877 precursor RNA and GAM256878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM877 RNA and GAM256878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM877 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM877 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM877 target RNA into GAM877 target protein, herein schematically represented by GAM1 TARGET PROTEIN

through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256878 target RNA into GAM256878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3570 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3570 gene: GAM877 target protein and GAM256878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM877 and GAM256878

GR3571 F31440 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3571(GR3571) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3571 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3571 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3571 gene encodes GR3571 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3571 precursor RNA folds spatially, forming GR3571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3571 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3571 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3571 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7202 precursor RNA, GAM107229 precursor RNA and GAM278569 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7202 RNA, GAM107229 RNA and GAM278569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7202 target RNA into GAM7202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107229 target RNA into GAM107229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278569 target RNA into GAM278569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3571 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3571 gene: GAM7202 target protein, GAM107229 target protein and GAM278569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7202, GAM107229 and GAM278569

GR3572 BF083295 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3572(GR3572) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3572 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3572 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3572 gene encodes GR3572 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3572 precursor RNA folds spatially, forming GR3572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3572 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3572 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3572 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1508 precursor RNA, GAM100797 precursor RNA and GAM247335 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1508 RNA, GAM100797 RNA and GAM247335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1508 target RNA into GAM1508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100797 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100797 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100797 target RNA into GAM100797 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247335 target RNA into GAM247335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3572 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3572 gene: GAM1508 target protein, GAM100797 target protein and GAM247335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1508, GAM100797 and GAM247335

GR3573 BI917339 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3573(GR3573) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3573 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3573 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3573 gene encodes GR3573 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3573 precursor RNA folds spatially, forming GR3573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3573 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3573 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3573 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM177840 precursor RNA and GAM323609 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177840 RNA and GAM323609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM177840 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177840 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177840 target RNA into GAM177840 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323609 target RNA into GAM323609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3573 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3573 gene: GAM177840 target protein and GAM323609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177840 and GAM323609

GR3574 AW276024 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3574(GR3574) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3574 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3574 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3574 gene encodes GR3574 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3574 precursor RNA folds spatially, forming GR3574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3574 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3574 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3574 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1809 precursor RNA and GAM281933 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1809 RNA and GAM281933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1809 target RNA into GAM1809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281933 target RNA into GAM281933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3574 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3574 gene: GAM1809 target protein and GAM281933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1809 and GAM281933

GR3575 BE207219 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3575(GR3575) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3575 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3575

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3575 gene encodes GR3575 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3575 precursor RNA folds spatially, forming GR3575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3575 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3575 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3575 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34917 precursor RNA and GAM305873 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34917 RNA and GAM305873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34917 target RNA into GAM34917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305873 target RNA into GAM305873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3575 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3575 gene: GAM34917 target protein and GAM305873 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34917 and GAM305873

GR3576 BM712475 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3576(GR3576) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3576 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3576 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3576 gene encodes GR3576 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3576 precursor RNA folds spatially, forming GR3576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3576 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3576 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3576 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73531 precursor RNA and GAM322780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73531 RNA and GAM322780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73531 target RNA into GAM73531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322780 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322780 target RNA into GAM322780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3576 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3576 gene: GAM73531 target protein and GAM322780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73531 and GAM322780

GR3577 BM834491 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3577(GR3577) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3577 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3577 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3577 gene encodes GR3577 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3577 precursor RNA folds spatially, forming GR3577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3577 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3577 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3577 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM106563 precursor RNA and GAM296549 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM106563 RNA and GAM296549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM106563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106563 target RNA into GAM106563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296549 target RNA into GAM296549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3577 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3577 gene: GAM106563 target protein and GAM296549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM106563 and GAM296549

GR3578 BE000822 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3578(GR3578) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3578 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3578 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3578 gene encodes GR3578 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3578 precursor RNA folds spatially, forming GR3578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3578 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3578 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3578 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM39215 precursor RNA and GAM176640 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39215 RNA and GAM176640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39215 target RNA into GAM39215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176640 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176640 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176640 target RNA into GAM176640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3578 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3578 gene: GAM39215 target protein and GAM176640 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39215 and GAM176640

GR3579 BF205386 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3579(GR3579) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3579 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3579 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3579 gene encodes GR3579 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3579 precursor RNA folds spatially, forming GR3579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3579 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3579 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3579 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM72971 precursor RNA, GAM129536 precursor RNA and GAM317608 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72971 RNA, GAM129536 RNA and GAM317608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72971 target RNA into GAM72971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM129536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129536 target RNA into GAM129536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317608 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317608 target RNA into GAM317608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3579 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3579 gene: GAM72971 target protein, GAM129536 target protein and GAM317608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72971, GAM129536 and GAM317608

GR3580 BF761240 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3580(GR3580) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3580 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3580 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3580 gene encodes GR3580 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3580 precursor RNA folds spatially, forming GR3580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3580 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3580 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3580 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5783 precursor RNA and GAM291104 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5783 RNA and GAM291104 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5783 target RNA into GAM5783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291104 target RNA into GAM291104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3580 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3580 gene: GAM5783 target protein and GAM291104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5783 and GAM291104

GR3581 AW467318 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3581(GR3581) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3581 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3581 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3581 gene encodes GR3581 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3581 precursor RNA folds spatially, forming GR3581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3581 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3581 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3581 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25093 precursor RNA and GAM59429 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25093 RNA and GAM59429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25093 target RNA into GAM25093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59429 target RNA into GAM59429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3581 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3581 gene: GAM25093 target protein and GAM59429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25093 and GAM59429

GR3582 BE746537 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3582(GR3582) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3582 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3582 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3582 gene encodes GR3582 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3582 precursor RNA folds spatially, forming GR3582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3582 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3582 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3582 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2210 precursor RNA, GAM69447 precursor RNA and GAM151904 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2210 RNA, GAM69447 RNA and GAM151904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2210 target RNA into GAM2210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69447 target RNA into GAM69447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151904 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151904 target RNA into GAM151904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3582 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3582 gene: GAM2210 target protein, GAM69447 target protein and GAM151904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2210, GAM69447 and GAM151904

GR3583 AW673146 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3583(GR3583) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3583 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3583 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3583 gene encodes GR3583 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3583 precursor RNA folds spatially, forming GR3583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3583 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3583 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3583 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2718 precursor RNA and GAM5780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2718 RNA and GAM5780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM2718 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2718 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2718 target RNA into GAM2718 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5780 target RNA into GAM5780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3583 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3583 gene: GAM2718 target protein and GAM5780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2718 and GAM5780

GR3584 BE888999 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3584(GR3584) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3584 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3584 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3584 gene encodes GR3584 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3584 precursor RNA folds spatially, forming GR3584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3584 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3584 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3584 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3170 precursor RNA, GAM6561 precursor RNA, GAM13563 precursor RNA and GAM215812 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3170 RNA, GAM6561 RNA, GAM13563 RNA and GAM215812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3170 target RNA into GAM3170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6561 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6561 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6561 target RNA into GAM6561 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13563 target RNA into GAM13563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215812 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215812 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215812 target RNA into GAM215812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3584 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3584 gene: GAM3170 target protein, GAM6561 target protein, GAM13563 target protein and GAM215812 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3170, GAM6561, GAM13563 and GAM215812

GR3585 BM771014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3585(GR3585) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3585 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3585 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3585 gene encodes GR3585 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3585 precursor RNA folds spatially, forming GR3585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3585 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3585 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3585 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1080 precursor RNA and GAM306495 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1080 RNA and GAM306495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1080 target RNA into GAM1080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306495 target RNA into GAM306495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3585 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3585 gene: GAM1080 target protein and GAM306495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1080 and GAM306495

GR3586 BI823450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3586(GR3586) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3586 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3586 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3586 gene encodes GR3586 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3586 precursor RNA folds spatially, forming GR3586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3586 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3586 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3586 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM15773 precursor RNA, GAM24352 precursor RNA and GAM245394 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15773 RNA, GAM24352 RNA and GAM245394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15773 target RNA into GAM15773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24352 target RNA into GAM24352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245394 target RNA into GAM245394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3586 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3586 gene: GAM15773 target protein, GAM24352 target protein and GAM245394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15773, GAM24352 and GAM245394

GR3587 AI075008 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3587(GR3587) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3587 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3587 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3587 gene encodes GR3587 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3587 precursor RNA folds spatially, forming GR3587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3587 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3587 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3587 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM167593 precursor RNA and GAM188765 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM167593 RNA and GAM188765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM167593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167593 target RNA into GAM167593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188765 target RNA into GAM188765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3587 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3587 gene: GAM167593 target protein and GAM188765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM167593 and GAM188765

GR3588 BQ019339 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3588(GR3588) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3588 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3588 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3588 gene encodes GR3588 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3588 precursor RNA folds spatially, forming GR3588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3588 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3588 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3588 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1769 precursor RNA, GAM157610 precursor RNA, GAM162859 precursor RNA and GAM191066 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1769 RNA, GAM157610 RNA, GAM162859 RNA and GAM191066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1769 target RNA into GAM1769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157610 target RNA into GAM157610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162859 target RNA into GAM162859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191066 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191066 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191066 target RNA into GAM191066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3588 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3588 gene: GAM1769 target protein, GAM157610 target protein, GAM162859 target protein and GAM191066 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1769, GAM157610, GAM162859 and GAM191066

GR3589 T66815 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3589(GR3589) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3589 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3589 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3589 gene encodes GR3589 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3589 precursor RNA folds spatially, forming GR3589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3589 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3589 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3589 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257924 precursor RNA and GAM276571 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257924 RNA and GAM276571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257924 target RNA into GAM257924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276571 target RNA into GAM276571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3589 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3589 gene: GAM257924 target protein and GAM276571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM257924 and GAM276571

GR3590 BI195024 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3590(GR3590) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3590 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3590 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3590 gene encodes GR3590 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3590 precursor RNA folds spatially, forming GR3590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3590 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3590 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3590 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259921 precursor RNA and GAM260511 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259921 RNA and GAM260511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259921 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259921 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259921 target RNA into GAM259921 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260511 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260511 target RNA into GAM260511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3590 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3590 gene: GAM259921 target protein and GAM260511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259921 and GAM260511

GR3591 BG288879 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3591(GR3591) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3591 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3591 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3591 gene encodes GR3591 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3591 precursor RNA folds spatially, forming GR3591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3591 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3591 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3591 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM76479 precursor RNA and GAM123823 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76479 RNA and GAM123823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM76479 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76479 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76479 target RNA into GAM76479 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123823 target RNA into GAM123823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3591 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3591 gene: GAM76479 target protein and GAM123823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76479 and GAM123823

GR3592 BE090149 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3592(GR3592) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3592 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3592 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3592 gene encodes GR3592 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3592 precursor RNA folds spatially, forming GR3592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3592 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3592 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3592 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48231 precursor RNA and GAM284146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48231 RNA and GAM284146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48231 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48231 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48231 target RNA into GAM48231 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284146 target RNA into GAM284146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3592 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3592 gene: GAM48231 target protein and GAM284146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48231 and GAM284146

GR3593 AI824096 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3593(GR3593) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3593 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3593

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3593 gene encodes GR3593 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3593 precursor RNA folds spatially, forming GR3593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3593 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3593 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3593 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87736 precursor RNA and GAM166699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87736 RNA and GAM166699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87736 target RNA into GAM87736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166699 target RNA into GAM166699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3593 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3593 gene: GAM87736 target protein and GAM166699 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87736 and GAM166699

GR3594 AA306341 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3594(GR3594) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3594 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3594 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3594 gene encodes GR3594 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3594 precursor RNA folds spatially, forming GR3594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3594 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3594 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3594 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118441 precursor RNA and GAM314540 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118441 RNA and GAM314540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118441 target RNA into GAM118441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314540 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314540 target RNA into GAM314540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3594 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3594 gene: GAM118441 target protein and GAM314540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118441 and GAM314540

GR3595 BF381099 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3595(GR3595) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3595 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3595 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3595 gene encodes GR3595 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3595 precursor RNA folds spatially, forming GR3595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3595 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3595 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3595 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8129 precursor RNA and GAM88347 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM8129 RNA and GAM88347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8129 target RNA into GAM8129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88347 target RNA into GAM88347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3595 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3595 gene: GAM8129 target protein and GAM88347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8129 and GAM88347

GR3596 BQ057827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3596(GR3596) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3596 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3596 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3596 gene encodes GR3596 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3596 precursor RNA folds spatially, forming GR3596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3596 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3596 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3596 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41033 precursor RNA, GAM60320 precursor RNA and GAM267884 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41033 RNA, GAM60320 RNA and GAM267884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41033 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41033 target RNA into GAM41033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60320 target RNA into GAM60320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267884 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267884 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267884 target RNA into GAM267884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3596 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3596 gene: GAM41033 target protein, GAM60320 target protein and GAM267884 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM41033, GAM60320 and GAM267884

GR3597 BG501730 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3597(GR3597) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3597 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3597 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3597 gene encodes GR3597 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3597 precursor RNA folds spatially, forming GR3597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3597 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3597 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3597 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM84080 precursor RNA and GAM253009 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM84080 RNA and GAM253009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM84080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84080 target RNA into GAM84080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253009 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM253009 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253009 target RNA into GAM253009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3597 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3597 gene: GAM84080 target protein and GAM253009 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM84080 and GAM253009

GR3598 AL602641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3598(GR3598) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3598 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3598 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3598 gene encodes GR3598 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3598 precursor RNA folds spatially, forming GR3598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3598 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3598 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3598 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM42578 precursor RNA, GAM184254 precursor RNA and GAM194220 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM42578 RNA, GAM184254 RNA and GAM194220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42578 target RNA into GAM42578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184254 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184254 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184254 target RNA into GAM184254 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194220 target RNA into GAM194220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3598 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3598 gene: GAM42578 target protein, GAM184254 target protein and GAM194220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42578, GAM184254 and GAM194220

GR3599 AW405663 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3599(GR3599) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3599 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3599 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3599 gene encodes GR3599 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3599 precursor RNA folds spatially, forming GR3599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3599 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3599 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3599 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM12247 precursor RNA and GAM268190 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM12247 RNA and GAM268190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM12247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12247 target RNA into GAM12247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268190 target RNA into GAM268190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3599 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3599 gene: GAM12247 target protein and GAM268190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM12247 and GAM268190

GR3600 AI280966 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3600(GR3600) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3600 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3600 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3600 gene encodes GR3600 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3600 precursor RNA folds spatially, forming GR3600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3600 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3600 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3600 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4001 precursor RNA and GAM103830 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4001 RNA and GAM103830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4001 target RNA into GAM4001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103830 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103830 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103830 target RNA into GAM103830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3600 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3600 gene: GAM4001 target protein and GAM103830 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4001 and GAM103830

GR3601 BE387130 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3601(GR3601) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3601 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3601 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3601 gene encodes GR3601 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3601 precursor RNA folds spatially, forming GR3601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3601 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3601 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3601 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4705 precursor RNA, GAM9051 precursor RNA and GAM121786 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4705 RNA, GAM9051 RNA and GAM121786 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4705 target RNA into GAM4705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9051 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9051 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9051 target RNA into GAM9051 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM121786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM121786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM121786 target RNA into GAM121786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3601 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3601 gene: GAM4705 target protein, GAM9051 target protein and GAM121786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4705, GAM9051 and GAM121786

GR3602 BM475114 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3602(GR3602) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3602 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3602 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3602 gene encodes GR3602 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3602 precursor RNA folds spatially, forming GR3602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3602 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3602 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3602 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55616 precursor RNA, GAM169176 precursor RNA and GAM320489 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55616 RNA, GAM169176 RNA and GAM320489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55616 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55616 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55616 target RNA into GAM55616 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM169176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169176 target RNA into GAM169176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320489 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320489 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320489 target RNA into GAM320489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3602 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3602 gene: GAM55616 target protein, GAM169176 target protein and GAM320489 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55616, GAM169176 and GAM320489

GR3603 BI198769 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3603(GR3603) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3603 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3603 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3603 gene encodes GR3603 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3603 precursor RNA folds spatially, forming GR3603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3603 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3603 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3603 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3928 precursor RNA and GAM206815 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3928 RNA and GAM206815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3928 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3928 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3928 target RNA into GAM3928 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206815 target RNA into GAM206815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3603 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3603 gene: GAM3928 target protein and GAM206815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3928 and GAM206815

GR3604 BG387504 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3604(GR3604) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3604 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3604 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3604 gene encodes GR3604 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3604 precursor RNA folds spatially, forming GR3604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3604 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3604 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3604 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM45442 precursor RNA and GAM291274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45442 RNA and GAM291274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45442 target RNA into GAM45442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291274 target RNA into GAM291274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3604 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3604 gene: GAM45442 target protein and GAM291274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45442 and GAM291274

GR3605 AA761244 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3605(GR3605) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3605 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3605 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3605 gene encodes GR3605 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3605 precursor RNA folds spatially, forming GR3605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3605 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3605 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3605 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7386 precursor RNA, GAM120569 precursor RNA and GAM226281 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7386 RNA, GAM120569 RNA and GAM226281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7386 target RNA into GAM7386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120569 target RNA into GAM120569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226281 target RNA into GAM226281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3605 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3605 gene: GAM7386 target protein, GAM120569 target protein and GAM226281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7386, GAM120569 and GAM226281

GR3606 BE959346 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3606(GR3606) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3606 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3606 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3606 gene encodes GR3606 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3606 precursor RNA folds spatially, forming GR3606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3606 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3606 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3606 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7346 precursor RNA, GAM99337 precursor RNA and GAM218089 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7346 RNA, GAM99337 RNA and GAM218089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7346 target RNA into GAM7346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99337 target RNA into GAM99337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218089 target RNA into GAM218089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3606 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3606 gene: GAM7346 target protein, GAM99337 target protein and GAM218089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7346, GAM99337 and GAM218089

GR3607 R74606 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3607(GR3607) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3607 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3607 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3607 gene encodes GR3607 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3607 precursor RNA folds spatially, forming GR3607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3607 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3607 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3607 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6460 precursor RNA, GAM213765 precursor RNA and GAM291871 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6460 RNA, GAM213765 RNA and GAM291871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6460 target RNA into GAM6460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213765 target RNA into GAM213765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291871 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291871 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291871 target RNA into GAM291871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3607 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3607 gene: GAM6460 target

protein, GAM213765 target protein and GAM291871 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6460, GAM213765 and GAM291871

GR3608 BM748471 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3608(GR3608) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3608 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3608 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3608 gene encodes GR3608 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3608 precursor RNA folds spatially, forming GR3608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3608 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3608 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3608 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4500 precursor RNA and GAM7585 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4500 RNA and GAM7585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4500 target RNA into GAM4500 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7585 target RNA into GAM7585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3608 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3608 gene: GAM4500 target protein and GAM7585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4500 and GAM7585

GR3609 BG177926 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3609(GR3609) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3609 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3609 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3609 gene encodes GR3609 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3609 precursor RNA folds spatially, forming GR3609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3609 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3609 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3609 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM1512 precursor RNA, GAM8365 precursor RNA, GAM78817 precursor RNA, GAM135691 precursor RNA and GAM278858 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1512 RNA, GAM8365 RNA, GAM78817 RNA, GAM135691 RNA and GAM278858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1512 target RNA into GAM1512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8365 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8365 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8365 target RNA into GAM8365 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78817 target RNA into GAM78817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135691 target RNA into GAM135691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278858 target RNA into GAM278858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3609 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3609 gene: GAM1512 target protein, GAM8365 target protein, GAM78817 target protein, GAM135691 target protein and GAM278858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1512, GAM8365, GAM78817, GAM135691 and GAM278858

GR3610 BI597070 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3610(GR3610) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3610 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3610 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3610 gene encodes GR3610 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3610 precursor RNA folds spatially, forming GR3610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3610 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3610 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3610 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM253 precursor RNA, GAM2049 precursor RNA, GAM93849 precursor RNA and GAM286429 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253 RNA, GAM2049 RNA, GAM93849 RNA and GAM286429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253 target RNA into GAM253 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2049 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2049 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2049 target RNA into GAM2049 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93849 target RNA into GAM93849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286429 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286429 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286429 target RNA into GAM286429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3610 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3610 gene: GAM253 target protein, GAM2049 target protein, GAM93849 target protein and GAM286429 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253, GAM2049, GAM93849 and GAM286429

GR3611 BF983226 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3611(GR3611) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3611 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3611 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3611 gene encodes GR3611 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3611 precursor RNA folds spatially, forming GR3611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3611 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3611 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3611 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM225135 precursor RNA and GAM267752 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM225135 RNA and GAM267752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM225135 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225135 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225135 target RNA into GAM225135 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267752 target RNA into GAM267752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3611 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3611 gene: GAM225135 target protein and GAM267752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM225135 and GAM267752

GR3612 AW444792 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3612(GR3612) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3612 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3612 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3612 gene encodes GR3612 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3612 precursor RNA folds spatially, forming GR3612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3612 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3612 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3612 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2063 precursor RNA and GAM245223 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2063 RNA and GAM245223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2063 target RNA into GAM2063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245223 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245223 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245223 target RNA into GAM245223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3612 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3612 gene: GAM2063 target protein and GAM245223 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2063 and GAM245223

GR3613 BE620010 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3613(GR3613) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3613 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3613 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3613 gene encodes GR3613 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3613 precursor RNA folds spatially, forming GR3613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3613 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3613 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3613 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM11300 precursor RNA, GAM113506 precursor RNA and GAM146472 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11300 RNA, GAM113506 RNA and GAM146472 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11300 target RNA into GAM11300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113506 target RNA into GAM113506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146472 target RNA into GAM146472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3613 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3613 gene: GAM11300 target protein, GAM113506 target protein and GAM146472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11300, GAM113506 and GAM146472

GR3614 AW103485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3614(GR3614) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3614 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3614 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3614 gene encodes GR3614 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3614 precursor RNA folds spatially, forming GR3614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3614 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3614 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3614 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM291521 precursor RNA and GAM334115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM291521 RNA and GAM334115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM291521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291521 target RNA into GAM291521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334115 target RNA into GAM334115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3614 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3614 gene: GAM291521 target protein and GAM334115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM291521 and GAM334115

GR3615 AI301900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3615(GR3615) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3615 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3615 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3615 gene encodes GR3615 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3615 precursor RNA folds spatially, forming GR3615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3615 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3615 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3615 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM494 precursor RNA and GAM7383 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM494 RNA and GAM7383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM494 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM494 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM494 target RNA into GAM494 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7383 target RNA into GAM7383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3615 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3615 gene: GAM494 target protein and GAM7383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM494 and GAM7383

GR3616 BM548428 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3616(GR3616) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3616 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3616 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3616 gene encodes GR3616 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3616 precursor RNA folds spatially, forming GR3616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3616 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3616 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3616 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6481 precursor RNA and GAM7060 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6481 RNA and GAM7060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6481 target RNA into GAM6481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7060 target RNA into GAM7060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3616 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3616 gene: GAM6481 target protein and GAM7060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6481 and GAM7060

GR3617 AV683629 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3617(GR3617) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3617 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3617 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3617 gene encodes GR3617 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3617 precursor RNA folds spatially, forming GR3617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3617 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3617 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3617 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3748 precursor RNA and GAM17958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3748 RNA and GAM17958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3748 target RNA into GAM3748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17958 target RNA into GAM17958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3617 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3617 gene: GAM3748 target protein and GAM17958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3748 and GAM17958

GR3618 BE905618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3618(GR3618) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3618 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3618 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3618 gene encodes GR3618 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3618 precursor RNA folds spatially, forming GR3618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3618 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3618 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3618 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM526 precursor RNA and GAM26274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM526 RNA and GAM26274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM526 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM526 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM526 target RNA into GAM526 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26274 target RNA into GAM26274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3618 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3618 gene: GAM526 target protein and GAM26274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM526 and GAM26274

GR3619 AA577322 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3619(GR3619) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3619 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3619 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3619 gene encodes GR3619 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3619 precursor RNA folds spatially, forming GR3619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3619 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3619 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3619 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM211 precursor RNA and GAM319055 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM211 RNA and GAM319055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211 target RNA into GAM211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM319055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319055 target RNA into GAM319055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3619 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3619 gene: GAM211 target protein and GAM319055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM211 and GAM319055

GR3620 BM459731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3620(GR3620) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3620 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3620 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3620 gene encodes GR3620 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3620 precursor RNA folds spatially, forming GR3620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3620 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3620 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3620 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1405 precursor RNA, GAM40084 precursor RNA and GAM221053 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM1405 RNA, GAM40084 RNA and GAM221053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1405 target RNA into GAM1405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40084 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40084 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40084 target RNA into GAM40084 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221053 target RNA into GAM221053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3620 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3620 gene: GAM1405 target protein, GAM40084 target protein and GAM221053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1405, GAM40084 and GAM221053

GR3621 AV695436 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3621(GR3621) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3621 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3621 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3621 gene encodes GR3621 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3621 precursor RNA folds spatially, forming GR3621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3621 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3621 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3621 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM145061 precursor RNA, GAM313169 precursor RNA and GAM317731 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM145061 RNA, GAM313169 RNA and GAM317731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM145061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145061 target RNA into GAM145061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313169 target RNA into GAM313169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317731 target RNA into GAM317731 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3621 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3621 gene: GAM145061 target protein, GAM313169 target protein and GAM317731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM145061, GAM313169 and GAM317731

GR3622 AW383753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3622(GR3622) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3622 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3622 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3622 gene encodes GR3622 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3622 precursor RNA folds spatially, forming GR3622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3622 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3622 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3622 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM99627 precursor RNA, GAM237496 precursor RNA and GAM320914 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM99627 RNA, GAM237496 RNA and GAM320914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM99627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99627 target RNA into GAM99627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237496 target RNA into GAM237496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320914 target RNA into GAM320914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3622 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3622 gene: GAM99627 target protein, GAM237496 target protein and GAM320914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM99627, GAM237496 and GAM320914

GR3623 BG194142 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3623(GR3623) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3623 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3623 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3623 gene encodes GR3623 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3623 precursor RNA folds spatially, forming GR3623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3623 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3623 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3623 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM471 precursor RNA and GAM6942 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM471 RNA and GAM6942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM471 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM471 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM471 target RNA into GAM471 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6942 target RNA into GAM6942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3623 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3623 gene: GAM471 target protein and GAM6942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM471 and GAM6942

GR3624 BI601330 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3624(GR3624) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3624 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3624 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3624 gene encodes GR3624 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3624 precursor RNA folds spatially, forming GR3624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3624 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3624 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3624 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164523 precursor RNA and GAM331567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164523 RNA and GAM331567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164523 target RNA into GAM164523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331567 target RNA into GAM331567 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3624 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3624 gene: GAM164523 target protein and GAM331567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164523 and GAM331567

GR3625 AA330290 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3625(GR3625) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3625 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3625 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3625 gene encodes GR3625 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3625 precursor RNA folds spatially, forming GR3625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3625 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3625 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3625 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM138715 precursor RNA and GAM181570 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM138715 RNA and GAM181570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM138715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM138715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138715 target RNA into GAM138715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181570 target RNA into GAM181570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3625 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3625 gene: GAM138715 target protein and GAM181570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM138715 and GAM181570

GR3626 BI918116 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3626(GR3626) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3626 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3626 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3626 gene encodes GR3626 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3626 precursor RNA folds spatially, forming GR3626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3626 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3626 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3626 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM4301 precursor RNA and GAM308849 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4301 RNA and GAM308849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4301 target RNA into GAM4301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308849 target RNA into GAM308849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3626 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3626 gene: GAM4301 target protein and GAM308849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4301 and GAM308849

GR3627 AW834422 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3627(GR3627) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3627 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3627 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3627 gene encodes GR3627 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3627 precursor RNA folds spatially, forming GR3627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3627 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3627 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3627 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8558 precursor RNA and GAM78820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8558 RNA and GAM78820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8558 target RNA into GAM8558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78820 target RNA into GAM78820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3627 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3627 gene: GAM8558 target protein and GAM78820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8558 and GAM78820

GR3628 BI549396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3628(GR3628) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3628 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3628 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3628 gene encodes GR3628 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3628 precursor RNA folds spatially, forming GR3628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3628 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3628 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3628 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3627 precursor RNA, GAM224023 precursor RNA and GAM262085 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3627 RNA, GAM224023 RNA and GAM262085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3627 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3627 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3627 target RNA into GAM3627 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224023 target RNA into GAM224023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262085 target RNA into GAM262085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3628 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3628 gene: GAM3627 target protein, GAM224023 target protein and GAM262085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3627, GAM224023 and GAM262085

GR3629 AW139370 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3629(GR3629) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3629 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3629 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3629 gene encodes GR3629 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3629 precursor RNA folds spatially, forming GR3629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3629 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3629 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3629 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM130143 precursor RNA and GAM261024 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM130143 RNA and GAM261024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM130143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130143 target RNA into GAM130143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261024 target RNA into GAM261024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3629 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3629 gene: GAM130143 target protein and GAM261024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM130143 and GAM261024

GR3630 AV646213 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3630(GR3630) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3630 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3630 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3630 gene encodes GR3630 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3630 precursor RNA folds spatially, forming GR3630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3630 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3630 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3630 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7660 precursor RNA and GAM295348 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7660 RNA and GAM295348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7660 target RNA into GAM7660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295348 target RNA into GAM295348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3630 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3630 gene: GAM7660 target protein and GAM295348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7660 and GAM295348

GR3631 BF977158 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3631(GR3631) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3631 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3631 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3631 gene encodes GR3631 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3631 precursor RNA folds spatially, forming GR3631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3631 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3631 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3631 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63740 precursor RNA, GAM222851 precursor RNA and GAM273146 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63740 RNA, GAM222851 RNA and GAM273146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63740 target RNA into GAM63740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222851 target RNA into GAM222851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273146 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273146 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273146 target RNA into GAM273146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3631 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3631 gene: GAM63740 target protein, GAM222851 target protein and GAM273146 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63740, GAM222851 and GAM273146

GR3632 BM561260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3632(GR3632) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3632 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3632 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3632 gene encodes GR3632 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3632 precursor RNA folds spatially, forming GR3632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3632 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3632 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3632 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1885 precursor RNA and GAM93566 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1885 RNA and GAM93566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1885 target RNA into GAM1885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93566 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93566 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93566 target RNA into GAM93566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3632 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3632 gene: GAM1885 target protein and GAM93566 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1885 and GAM93566

GR3633 AA287728 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3633(GR3633) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3633 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3633 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3633 gene encodes GR3633 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3633 precursor RNA folds spatially, forming GR3633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3633 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3633 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3633 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8156 precursor RNA and GAM270148 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8156 RNA and GAM270148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8156 target RNA into GAM8156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270148 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270148 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270148 target RNA into GAM270148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3633 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3633 gene: GAM8156 target protein and GAM270148 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8156 and GAM270148

GR3634 BE074254 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3634(GR3634) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3634 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3634 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3634 gene encodes GR3634 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3634 precursor RNA folds spatially, forming GR3634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3634 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3634 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3634 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158432 precursor RNA and GAM319774 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158432 RNA and GAM319774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158432 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158432 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158432 target RNA into GAM158432 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319774 target RNA into GAM319774 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3634 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3634 gene: GAM158432 target protein and GAM319774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158432 and GAM319774

GR3635 BI869827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3635(GR3635) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3635 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3635 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3635 gene encodes GR3635 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3635 precursor RNA folds spatially, forming GR3635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3635 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3635 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3635 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3037 precursor RNA and GAM3436 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3037 RNA and GAM3436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3037 target RNA into GAM3037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3436 target RNA into GAM3436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3635 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3635 gene: GAM3037 target protein and GAM3436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3037 and GAM3436

GR3636 BF217313 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3636(GR3636) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3636 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3636 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3636 gene encodes GR3636 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3636 precursor RNA folds spatially, forming GR3636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3636 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3636 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3636 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM195020 precursor RNA, GAM219352 precursor RNA and GAM272537 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM195020 RNA, GAM219352 RNA and GAM272537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM195020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195020 target RNA into GAM195020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219352 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219352 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219352 target RNA into GAM219352 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272537 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272537 target RNA into GAM272537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3636 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3636 gene: GAM195020 target protein, GAM219352 target protein and GAM272537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM195020, GAM219352 and GAM272537

GR3637 BE185763 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3637(GR3637) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3637 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3637 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3637 gene encodes GR3637 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3637 precursor RNA folds spatially, forming GR3637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3637 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3637 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3637 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24946 precursor RNA and GAM332035 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24946 RNA and GAM332035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24946 target RNA into GAM24946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332035 target RNA into GAM332035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3637 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3637 gene: GAM24946 target protein and GAM332035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24946 and GAM332035

GR3638 BF671623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3638(GR3638) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3638 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3638 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3638 gene encodes GR3638 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3638 precursor RNA folds spatially, forming GR3638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3638 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3638 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3638 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1879 precursor RNA, GAM183567 precursor RNA and GAM209321 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1879 RNA, GAM183567 RNA and GAM209321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM1879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1879 target RNA into GAM1879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183567 target RNA into GAM183567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209321 target RNA into GAM209321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3638 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3638 gene: GAM1879 target protein, GAM183567 target protein and GAM209321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1879, GAM183567 and GAM209321

GR3639 BF349959 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3639(GR3639) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3639 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3639 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3639 gene encodes GR3639 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3639 precursor RNA folds spatially, forming GR3639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3639 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3639 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3639 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM590 precursor RNA, GAM99106 precursor RNA and GAM156694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM590 RNA, GAM99106 RNA and GAM156694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM590 target RNA into GAM590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99106 target RNA into GAM99106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM156694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156694 target RNA into GAM156694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3639 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3639 gene: GAM590 target

protein, GAM99106 target protein and GAM156694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM590, GAM99106 and GAM156694

GR3640 AI014632 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3640(GR3640) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3640 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3640 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3640 gene encodes GR3640 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3640 precursor RNA folds spatially, forming GR3640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3640 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3640 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3640 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6065 precursor RNA and GAM177870 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6065 RNA and GAM177870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6065 target RNA into GAM6065 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177870 target RNA into GAM177870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3640 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3640 gene: GAM6065 target protein and GAM177870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6065 and GAM177870

GR3641 BF184965 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3641(GR3641) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3641 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3641 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3641 gene encodes GR3641 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3641 precursor RNA folds spatially, forming GR3641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3641 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3641 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3641 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3053 precursor RNA and GAM116544 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3053 RNA and GAM116544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3053 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3053 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3053 target RNA into GAM3053 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116544 target RNA into GAM116544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3641 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3641 gene: GAM3053 target protein and GAM116544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3053 and GAM116544

GR3642 BF683504 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3642(GR3642) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3642 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3642 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3642 gene encodes GR3642 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3642 precursor RNA folds spatially, forming GR3642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3642 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3642 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3642 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM564 precursor RNA and GAM6039 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM564 RNA and GAM6039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM564 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM564 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM564 target RNA into GAM564 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6039 target RNA into GAM6039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3642 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3642 gene: GAM564 target protein and GAM6039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM564 and GAM6039

GR3643 AA743406 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3643(GR3643) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3643 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3643 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3643 gene encodes GR3643 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3643 precursor RNA folds spatially, forming GR3643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3643 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3643 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3643 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2036 precursor RNA and GAM309948 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2036 RNA and GAM309948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2036 target RNA into GAM2036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309948 target RNA into GAM309948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3643 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3643 gene: GAM2036 target protein and GAM309948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2036 and GAM309948

GR3644 BQ082019 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3644(GR3644) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3644 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3644 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3644 gene encodes GR3644 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3644 precursor RNA folds spatially, forming GR3644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3644 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3644 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3644 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM240731 precursor RNA, GAM301168 precursor RNA and GAM330212 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM240731 RNA, GAM301168 RNA and GAM330212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM240731 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240731 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240731 target RNA into GAM240731 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301168 target RNA into GAM301168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330212 target RNA into GAM330212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3644 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3644 gene: GAM240731 target protein, GAM301168 target protein and GAM330212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM240731, GAM301168 and GAM330212

GR3645 BF969116 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3645(GR3645) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3645 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3645 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3645 gene encodes GR3645 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3645 precursor RNA folds spatially, forming GR3645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3645 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3645 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3645 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4396 precursor RNA and GAM67515 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4396 RNA and GAM67515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4396 target RNA into GAM4396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67515 target RNA into GAM67515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3645 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3645 gene: GAM4396 target protein and GAM67515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4396 and GAM67515

GR3646 AA234851 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3646(GR3646) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3646 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3646 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3646 gene encodes GR3646 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3646 precursor RNA folds spatially, forming GR3646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3646 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3646 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3646 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4801 precursor RNA, GAM62946 precursor RNA and GAM86470 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4801 RNA, GAM62946 RNA and GAM86470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4801 target RNA into GAM4801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM62946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62946 target RNA into GAM62946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM86470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86470 target RNA into GAM86470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3646 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3646 gene: GAM4801 target protein, GAM62946 target protein and GAM86470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4801, GAM62946 and GAM86470

GR3647 BG537850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3647(GR3647) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3647 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3647 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3647 gene encodes GR3647 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3647 precursor RNA folds spatially, forming GR3647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3647 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3647 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3647 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5505 precursor RNA, GAM28025 precursor RNA and GAM257512 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5505 RNA, GAM28025 RNA and GAM257512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5505 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5505 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5505 target RNA into GAM5505 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28025 target RNA into GAM28025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257512 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257512 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257512 target RNA into GAM257512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3647 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3647 gene: GAM5505 target protein, GAM28025 target protein and GAM257512 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5505, GAM28025 and GAM257512

GR3648 BF795154 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3648(GR3648) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3648 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3648 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3648 gene encodes GR3648 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3648 precursor RNA folds spatially, forming GR3648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3648 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3648 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3648 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM196534 precursor RNA and GAM201935 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196534 RNA and GAM201935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196534 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196534 target RNA into GAM196534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201935 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201935 target RNA into GAM201935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3648 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3648 gene: GAM196534 target protein and GAM201935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196534 and GAM201935

GR3649 BG739833 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3649(GR3649) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3649 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3649 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3649 gene encodes GR3649 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3649 precursor RNA folds spatially, forming GR3649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3649 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3649 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3649 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7848 precursor RNA, GAM251024 precursor RNA and GAM253423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7848 RNA, GAM251024 RNA and GAM253423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7848 target RNA into GAM7848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251024 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251024 target RNA into GAM251024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253423 target RNA into GAM253423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3649 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3649 gene: GAM7848 target protein, GAM251024 target protein and GAM253423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7848, GAM251024 and GAM253423

GR3650 AA716249 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3650(GR3650) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3650 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3650 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3650 gene encodes GR3650 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3650 precursor RNA folds spatially, forming GR3650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3650 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3650 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3650 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM84539 precursor RNA and GAM326210 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM84539 RNA and GAM326210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM84539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84539 target RNA into GAM84539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326210 target RNA into GAM326210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3650 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3650 gene: GAM84539 target protein and GAM326210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM84539 and GAM326210

GR3651 BF033091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3651(GR3651) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3651 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3651 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3651 gene encodes GR3651 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3651 precursor RNA folds spatially, forming GR3651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3651 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3651 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3651 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7775 precursor RNA and GAM285689 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7775 RNA and GAM285689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7775 target RNA into GAM7775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285689 target RNA into GAM285689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3651 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3651 gene: GAM7775 target protein and GAM285689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM7775 and GAM285689

GR3652 BF513421 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3652(GR3652) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3652 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3652 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3652 gene encodes GR3652 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3652 precursor RNA folds spatially, forming GR3652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3652 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3652 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3652 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1160 precursor RNA, GAM2663 precursor RNA and GAM324910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1160 RNA, GAM2663 RNA and GAM324910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1160 target RNA into GAM1160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM2663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2663 target RNA into GAM2663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324910 target RNA into GAM324910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3652 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3652 gene: GAM1160 target protein, GAM2663 target protein and GAM324910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1160, GAM2663 and GAM324910

GR3653 BG202450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3653(GR3653) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3653 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3653 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3653 gene encodes GR3653 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3653 precursor RNA folds spatially, forming GR3653 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3653 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3653 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3653 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5339 precursor RNA, GAM5402 precursor RNA and GAM247262 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5339 RNA, GAM5402 RNA and GAM247262 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5339 target RNA into GAM5339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5402 target RNA into GAM5402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247262 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247262 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247262 target RNA into GAM247262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3653 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3653 gene: GAM5339 target protein, GAM5402 target protein and GAM247262 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5339, GAM5402 and GAM247262

GR3654 AA805202 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3654(GR3654) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3654 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3654 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3654 gene encodes GR3654 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3654 precursor RNA folds spatially, forming GR3654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3654 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3654 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3654 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5305 precursor RNA, GAM199582 precursor RNA, GAM301346 precursor RNA and GAM321654 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5305 RNA, GAM199582 RNA, GAM301346 RNA and GAM321654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5305 target RNA into GAM5305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199582

target RNA into GAM199582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301346 target RNA into GAM301346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321654 target RNA into GAM321654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3654 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3654 gene: GAM5305 target protein, GAM199582 target protein, GAM301346 target protein and GAM321654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5305, GAM199582, GAM301346 and GAM321654

GR3655 BE728178 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3655(GR3655) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3655 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3655 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3655 gene encodes GR3655 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3655 precursor RNA folds spatially, forming GR3655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3655 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3655 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3655 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6821 precursor RNA, GAM7910 precursor RNA and GAM245173 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6821 RNA, GAM7910 RNA and GAM245173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6821 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6821 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6821 target RNA into GAM6821 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7910 target RNA into GAM7910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245173 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245173 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245173 target RNA into GAM245173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3655 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3655 gene: GAM6821 target protein, GAM7910 target protein and GAM245173 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6821, GAM7910 and

GAM245173

GR3656 BG325267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3656(GR3656) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3656 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3656 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3656 gene encodes GR3656 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3656 precursor RNA folds spatially, forming GR3656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3656 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3656 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3656 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8093 precursor RNA, GAM8622 precursor RNA and GAM26817 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8093 RNA, GAM8622 RNA and GAM26817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8093 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8093 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8093 target RNA into GAM8093 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM8622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8622 target RNA into GAM8622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26817 target RNA into GAM26817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3656 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3656 gene: GAM8093 target protein, GAM8622 target protein and GAM26817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8093, GAM8622 and GAM26817

GR3657 BF667539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3657(GR3657) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3657 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3657 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3657 gene encodes GR3657 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3657 precursor RNA folds spatially, forming GR3657 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3657 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3657 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3657 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM251470 precursor RNA and GAM253882 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM251470 RNA and GAM253882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM251470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251470 target RNA into GAM251470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253882 target RNA into GAM253882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3657 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3657 gene: GAM251470 target protein and GAM253882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM251470 and GAM253882

GR3658 BE397870 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3658(GR3658) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3658 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3658 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3658 gene encodes GR3658 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3658 precursor RNA folds spatially, forming GR3658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3658 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3658 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3658 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM43515 precursor RNA and GAM224371 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43515 RNA and GAM224371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43515 target RNA into GAM43515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224371 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224371 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224371 target RNA into GAM224371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3658 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3658 gene: GAM43515 target protein and GAM224371 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43515 and GAM224371

GR3659 BG419293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3659(GR3659) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3659 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3659 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3659 gene encodes GR3659 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3659 precursor RNA folds spatially, forming GR3659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3659 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3659 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3659 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1569 precursor RNA and GAM109211 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1569 RNA and GAM109211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1569 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1569 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1569 target RNA into GAM1569 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109211 target RNA into GAM109211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3659 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3659 gene: GAM1569 target protein and GAM109211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1569 and GAM109211

GR3660 BF342385 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3660(GR3660) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3660 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3660 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3660 gene encodes GR3660 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3660 precursor RNA folds spatially, forming GR3660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3660 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3660 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3660 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM87046 precursor RNA and GAM295402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87046 RNA and GAM295402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87046 target RNA into GAM87046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295402 target RNA into GAM295402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3660 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3660 gene: GAM87046 target protein and GAM295402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87046 and GAM295402

GR3661 BF887802 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3661(GR3661) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3661 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3661 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3661 gene encodes GR3661 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3661 precursor RNA folds spatially, forming GR3661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3661 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3661 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3661 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM76517 precursor RNA, GAM204166 precursor RNA and GAM230652 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76517 RNA, GAM204166 RNA and GAM230652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76517 target RNA into GAM76517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204166 target RNA into GAM204166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230652 target RNA into GAM230652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3661 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3661 gene: GAM76517 target protein, GAM204166 target protein and GAM230652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76517, GAM204166 and GAM230652

GR3662 AA487388 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3662(GR3662) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3662 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3662 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3662 gene encodes GR3662 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3662 precursor RNA folds spatially, forming GR3662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3662 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3662 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3662 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2930 precursor RNA, GAM195378 precursor RNA and GAM291562 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2930 RNA, GAM195378 RNA and GAM291562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2930 target RNA into GAM2930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195378 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195378 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195378 target RNA into GAM195378 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291562 target RNA into GAM291562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3662 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3662 gene: GAM2930 target protein, GAM195378 target protein and GAM291562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2930, GAM195378 and GAM291562

GR3663 AI567729 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3663(GR3663) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3663 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3663 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3663 gene encodes GR3663 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3663 precursor RNA folds spatially, forming GR3663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3663 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3663 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3663 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5909 precursor RNA, GAM6451 precursor RNA and

GAM181579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5909 RNA, GAM6451 RNA and GAM181579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5909 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5909 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5909 target RNA into GAM5909 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6451 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6451 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6451 target RNA into GAM6451 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181579 target RNA into GAM181579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3663 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3663 gene: GAM5909 target protein, GAM6451 target protein and GAM181579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5909, GAM6451 and GAM181579

GR3664 BF175925 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3664(GR3664) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3664 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3664 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3664 gene encodes GR3664 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3664 precursor RNA folds spatially, forming GR3664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3664 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3664 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3664 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM41773 precursor RNA and GAM149675 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41773 RNA and GAM149675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41773 target RNA into GAM41773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149675 target RNA into GAM149675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3664 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3664 gene: GAM41773 target protein and GAM149675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41773 and GAM149675

GR3665 W40339 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3665(GR3665) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3665 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3665 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3665 gene encodes GR3665 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3665 precursor RNA folds spatially, forming GR3665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3665 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3665 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3665 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM143196 precursor RNA and GAM329723 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143196 RNA and GAM329723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143196 target RNA into GAM143196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329723 target RNA into GAM329723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3665 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3665 gene: GAM143196 target protein and GAM329723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM143196 and GAM329723

GR3666 R43781 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3666(GR3666) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3666 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3666 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3666 gene encodes GR3666 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3666 precursor RNA folds spatially, forming GR3666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3666 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3666 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3666 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6194 precursor RNA, GAM54237 precursor RNA, GAM80816 precursor RNA and GAM305609 precursor RNA,herein schematically

represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6194 RNA, GAM54237 RNA, GAM80816 RNA and GAM305609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6194 target RNA into GAM6194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54237 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54237 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54237 target RNA into GAM54237 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80816 target RNA into GAM80816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305609 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305609 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305609 target RNA into GAM305609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3666 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3666 gene: GAM6194 target protein, GAM54237 target protein, GAM80816 target protein and GAM305609 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with

reference to Table 6, hereby incorporated by reference, with references to GAM6194, GAM54237, GAM80816 and GAM305609

GR3667 BG681373 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3667(GR3667) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3667 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3667 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3667 gene encodes GR3667 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3667 precursor RNA folds spatially, forming GR3667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3667 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3667 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3667 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM92543 precursor RNA, GAM147351 precursor RNA, GAM195581 precursor RNA and GAM275295 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM92543 RNA, GAM147351 RNA, GAM195581 RNA and GAM275295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM92543 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92543 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92543 target RNA into GAM92543 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147351 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147351 target RNA into GAM147351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195581 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195581 target RNA into GAM195581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275295 target RNA into GAM275295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3667 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3667 gene: GAM92543 target protein, GAM147351 target protein, GAM195581 target protein and GAM275295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM92543, GAM147351, GAM195581 and GAM275295

GR3668 BE274756 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3668(GR3668) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3668 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3668 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3668 gene encodes GR3668 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3668 precursor RNA folds spatially, forming GR3668 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3668 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3668 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3668 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM254663 precursor RNA and GAM319924 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM254663 RNA and GAM319924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM254663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254663 target RNA into GAM254663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319924 target RNA into GAM319924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3668 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3668 gene: GAM254663 target protein and GAM319924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM254663 and GAM319924

GR3669 AI240278 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3669(GR3669) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3669 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3669 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3669 gene encodes GR3669 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3669 precursor RNA folds spatially, forming GR3669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3669 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3669 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3669 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118539 precursor RNA and GAM336106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118539 RNA and GAM336106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118539 target RNA into GAM118539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336106 target RNA into GAM336106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3669 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3669 gene: GAM118539 target protein and GAM336106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118539 and GAM336106

GR3670 BG829287 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3670(GR3670) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3670 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3670 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3670 gene encodes GR3670 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3670 precursor RNA folds spatially, forming GR3670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3670 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3670 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3670 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6683 precursor RNA, GAM8604 precursor RNA and GAM251151 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6683 RNA, GAM8604 RNA and GAM251151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6683 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM6683 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6683 target RNA into GAM6683 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8604 target RNA into GAM8604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251151 target RNA into GAM251151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3670 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3670 gene: GAM6683 target protein, GAM8604 target protein and GAM251151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6683, GAM8604 and GAM251151

GR3671 BE560113 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3671(GR3671) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3671 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3671 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3671 gene encodes GR3671 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3671 precursor RNA folds spatially, forming GR3671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3671 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3671 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3671 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM24128 precursor RNA and GAM149142 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24128 RNA and GAM149142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24128 target RNA into GAM24128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149142 target RNA into GAM149142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3671 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3671 gene: GAM24128 target protein and GAM149142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24128 and GAM149142

GR3672 BG996320 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3672(GR3672) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3672 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3672 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3672 gene encodes GR3672 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3672 precursor RNA folds spatially, forming GR3672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3672 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3672 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3672 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM257379 precursor RNA and GAM268193 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM257379 RNA and GAM268193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM257379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257379 target RNA into GAM257379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268193 target RNA into GAM268193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3672 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3672 gene: GAM257379 target protein and GAM268193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM257379 and GAM268193

GR3673 BG339092 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3673(GR3673) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3673 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3673 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3673 gene encodes GR3673 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3673 precursor RNA folds spatially, forming GR3673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3673 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3673 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3673 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM57178 precursor RNA, GAM79095 precursor RNA and GAM158671 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57178 RNA, GAM79095 RNA and GAM158671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57178 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57178 target RNA into GAM57178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79095 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79095 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79095 target RNA into GAM79095 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158671 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158671 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158671 target RNA into GAM158671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3673 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3673 gene: GAM57178 target protein, GAM79095 target protein and GAM158671 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57178, GAM79095 and GAM158671

GR3674 AA987712 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3674(GR3674) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3674 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3674 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3674 gene encodes GR3674 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3674 precursor RNA folds spatially, forming GR3674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3674 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3674 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3674 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM101032 precursor RNA, GAM322919 precursor RNA and GAM326332 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101032 RNA, GAM322919 RNA and GAM326332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101032 target RNA into GAM101032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322919 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322919 target RNA into GAM322919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326332 target RNA into GAM326332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3674 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3674 gene: GAM101032 target protein, GAM322919 target protein and GAM326332 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101032, GAM322919 and GAM326332

GR3675 BE697897 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3675(GR3675) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3675 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3675 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3675 gene encodes GR3675 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3675 precursor RNA folds spatially, forming GR3675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3675 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3675 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3675 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5274 precursor RNA, GAM7900 precursor RNA and GAM286873 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5274 RNA, GAM7900 RNA and GAM286873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5274 target RNA into GAM5274 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7900 target RNA into GAM7900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286873 target RNA into GAM286873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3675 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3675 gene: GAM5274 target protein, GAM7900 target protein and GAM286873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5274, GAM7900 and GAM286873

GR3676 BF337749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3676(GR3676) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3676 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3676 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3676 gene encodes GR3676 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3676 precursor RNA folds spatially, forming GR3676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3676 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3676 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3676 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM832 precursor RNA and GAM301712 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM832 RNA and GAM301712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM832 target RNA into GAM832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301712 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301712 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301712 target RNA into GAM301712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3676 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3676 gene: GAM832 target protein and GAM301712 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM832 and GAM301712

GR3677 BE970286 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3677(GR3677) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3677 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3677

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3677 gene encodes GR3677 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3677 precursor RNA folds spatially, forming GR3677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3677 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3677 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3677 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM203621 precursor RNA and GAM219274 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM203621 RNA and GAM219274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM203621 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203621 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203621 target RNA into GAM203621 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219274 target RNA into GAM219274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3677 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3677 gene: GAM203621 target protein and GAM219274 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM203621 and GAM219274

GR3678 BI458302 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3678(GR3678) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3678 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3678 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3678 gene encodes GR3678 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3678 precursor RNA folds spatially, forming GR3678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3678 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3678 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3678 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4392 precursor RNA and GAM5071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4392 RNA and GAM5071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4392 target RNA into GAM4392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5071 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5071 target RNA into GAM5071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3678 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3678 gene: GAM4392 target protein and GAM5071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4392 and GAM5071

GR3679 AI261587 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3679(GR3679) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3679 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3679 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3679 gene encodes GR3679 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3679 precursor RNA folds spatially, forming GR3679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3679 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3679 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3679 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM18720 precursor RNA, GAM177824 precursor RNA and GAM178947 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18720 RNA, GAM177824 RNA and GAM178947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18720 target RNA into GAM18720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177824 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177824 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177824 target RNA into GAM177824 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178947 target RNA into GAM178947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3679 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3679 gene: GAM18720 target protein, GAM177824 target protein and GAM178947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18720, GAM177824 and GAM178947

GR3680 AA732362 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3680(GR3680) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3680 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3680 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3680 gene encodes GR3680 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3680 precursor RNA folds spatially, forming GR3680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3680 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3680 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3680 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3955 precursor RNA and GAM84873 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3955 RNA and GAM84873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3955 target RNA into GAM3955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84873 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84873 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84873 target RNA into GAM84873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3680 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3680 gene: GAM3955 target protein and GAM84873 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3955 and GAM84873

GR3681 BE393408 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3681(GR3681) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3681 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3681 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3681 gene encodes GR3681 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3681 precursor RNA folds spatially, forming GR3681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3681 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3681 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3681 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7239 precursor RNA and GAM287015 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7239 RNA and GAM287015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7239 target RNA into GAM7239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM287015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287015 target RNA into GAM287015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3681 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3681 gene: GAM7239 target protein and GAM287015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7239 and GAM287015

GR3682 BG495548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3682(GR3682) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3682 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3682 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3682 gene encodes GR3682 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3682 precursor RNA folds spatially, forming GR3682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3682 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3682 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3682 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4894 precursor RNA, GAM154831 precursor RNA and GAM196774 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4894 RNA, GAM154831 RNA and GAM196774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4894 target RNA into GAM4894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154831 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154831 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154831 target RNA into GAM154831 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196774 target RNA into GAM196774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3682 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3682 gene: GAM4894 target protein, GAM154831 target protein and GAM196774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4894, GAM154831 and GAM196774

GR3683 BF130551 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3683(GR3683) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3683 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3683 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3683 gene encodes GR3683 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3683 precursor RNA folds spatially, forming GR3683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3683 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3683 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3683 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6904 precursor RNA and GAM57050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6904 RNA and GAM57050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6904 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6904 target RNA into GAM6904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57050 target RNA into GAM57050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3683 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3683 gene: GAM6904 target protein and GAM57050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM6904 and GAM57050

GR3684 W04830 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3684(GR3684) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3684 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3684 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3684 gene encodes GR3684 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3684 precursor RNA folds spatially, forming GR3684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3684 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3684 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3684 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM83863 precursor RNA, GAM125151 precursor RNA and GAM226060 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83863 RNA, GAM125151 RNA and GAM226060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83863 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83863 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83863 target RNA into GAM83863 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125151 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM125151 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125151 target RNA into GAM125151 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226060 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226060 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226060 target RNA into GAM226060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3684 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3684 gene: GAM83863 target protein, GAM125151 target protein and GAM226060 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83863, GAM125151 and GAM226060

GR3685 BG546658 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3685(GR3685) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3685 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3685 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3685 gene encodes GR3685 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3685 precursor RNA folds spatially, forming GR3685 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3685 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3685 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3685 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM13693 precursor RNA, GAM91286 precursor RNA and GAM299029 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13693 RNA, GAM91286 RNA and GAM299029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13693 target RNA into GAM13693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91286 target RNA into GAM91286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299029 target RNA into GAM299029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3685 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3685 gene: GAM13693 target protein, GAM91286 target protein and GAM299029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13693, GAM91286 and GAM299029

GR3686 R98064 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3686(GR3686) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3686 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3686 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3686 gene encodes GR3686 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3686 precursor RNA folds spatially, forming GR3686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3686 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3686 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3686 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4219 precursor RNA and GAM5054 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4219 RNA and GAM5054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4219 target RNA into GAM4219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5054 target RNA into GAM5054 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3686 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3686 gene: GAM4219 target protein and GAM5054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4219 and GAM5054

GR3687 BE157237 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3687(GR3687) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3687 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3687 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3687 gene encodes GR3687 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3687 precursor RNA folds spatially, forming GR3687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3687 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3687 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3687 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM182849 precursor RNA and GAM253686 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM182849 RNA and GAM253686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM182849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM182849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182849 target RNA into GAM182849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253686 target RNA into GAM253686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3687 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3687 gene: GAM182849 target protein and GAM253686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM182849 and GAM253686

GR3688 BG698692 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3688(GR3688) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3688 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3688 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3688 gene encodes GR3688 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3688 precursor RNA folds spatially, forming GR3688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3688 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3688 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3688 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM1645 precursor RNA, GAM134347 precursor RNA and GAM311834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1645 RNA, GAM134347 RNA and GAM311834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1645 target RNA into GAM1645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134347 target RNA into GAM134347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311834 target RNA into GAM311834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3688 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3688 gene: GAM1645 target protein, GAM134347 target protein and GAM311834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1645, GAM134347 and GAM311834

GR3689 BG745182 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3689(GR3689) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3689 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3689 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3689 gene encodes GR3689 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3689 precursor RNA folds spatially, forming GR3689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3689 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3689 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3689 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2411 precursor RNA and GAM7741 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2411 RNA and GAM7741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2411 target RNA into GAM2411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7741 target RNA into GAM7741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3689 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3689 gene: GAM2411 target protein and GAM7741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2411 and GAM7741

GR3690 BG876094 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3690(GR3690) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3690 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3690 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3690 gene encodes GR3690 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3690 precursor RNA folds spatially, forming GR3690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3690 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3690 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3690 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM83106 precursor RNA, GAM161753 precursor RNA and GAM319577 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83106 RNA, GAM161753 RNA and GAM319577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM83106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83106 target RNA into GAM83106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161753 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161753 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161753 target RNA into GAM161753 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319577 target RNA into GAM319577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3690 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3690 gene: GAM83106 target protein, GAM161753 target protein and GAM319577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM83106, GAM161753 and GAM319577

GR3691 AI086773 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3691(GR3691) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3691 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3691 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3691 gene encodes GR3691 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3691 precursor RNA folds spatially, forming GR3691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3691 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3691 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3691 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55769 precursor RNA and GAM84510 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55769 RNA and GAM84510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55769 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55769 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55769 target RNA into GAM55769 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84510 target RNA into GAM84510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3691 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3691 gene: GAM55769 target protein and GAM84510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55769 and GAM84510

GR3692 AW872945 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3692(GR3692) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3692 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3692 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3692 gene encodes GR3692 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3692 precursor RNA folds spatially, forming GR3692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3692 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3692 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3692 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM57606 precursor RNA and GAM230033 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM57606 RNA and GAM230033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM57606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57606 target RNA into GAM57606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230033 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230033 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230033 target RNA into GAM230033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3692 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3692 gene: GAM57606 target protein and GAM230033 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM57606 and GAM230033

GR3693 AL555216 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3693(GR3693) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3693 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3693 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3693 gene encodes GR3693 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3693 precursor RNA folds spatially, forming GR3693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3693 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3693 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3693 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2133 precursor RNA, GAM4481 precursor RNA, GAM5310 precursor RNA and GAM238286 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2133 RNA, GAM4481 RNA, GAM5310 RNA and GAM238286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2133 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2133 target RNA into GAM2133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4481 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4481 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4481 target RNA into GAM4481 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5310 target RNA into GAM5310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238286 target RNA into GAM238286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3693 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3693 gene: GAM2133 target protein, GAM4481 target protein, GAM5310 target protein and GAM238286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2133, GAM4481, GAM5310 and GAM238286

GR3694 BE268893 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3694(GR3694) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3694 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3694 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3694 gene encodes GR3694 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3694 precursor RNA folds spatially, forming GR3694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3694 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3694 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3694 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4089 precursor RNA, GAM179281 precursor RNA and GAM336455 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4089 RNA, GAM179281 RNA and GAM336455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4089 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4089 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4089 target RNA into GAM4089 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179281 target RNA into GAM179281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336455 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336455 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336455

target RNA into GAM336455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3694 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3694 gene: GAM4089 target protein, GAM179281 target protein and GAM336455 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4089, GAM179281 and GAM336455

GR3695 AA614161 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3695(GR3695) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3695 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3695 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3695 gene encodes GR3695 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3695 precursor RNA folds spatially, forming GR3695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3695 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3695 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3695 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM108882 precursor RNA and GAM319145 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM108882 RNA and GAM319145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM108882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108882 target RNA into GAM108882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319145 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319145 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319145 target RNA into GAM319145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3695 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3695 gene: GAM108882 target protein and GAM319145 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM108882 and GAM319145

GR3696 AA814420 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3696(GR3696) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3696 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3696 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3696 gene encodes GR3696 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3696 precursor RNA folds spatially, forming GR3696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3696 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3696 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3696 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1233 precursor RNA and GAM2299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1233 RNA and GAM2299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1233 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1233 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1233 target RNA into GAM1233 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2299 target RNA into GAM2299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3696 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3696 gene: GAM1233 target protein and GAM2299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1233 and GAM2299

GR3697 BG209297 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3697(GR3697) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3697 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3697 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3697 gene encodes GR3697 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3697 precursor RNA folds spatially, forming GR3697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3697 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3697 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3697 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8607 precursor RNA and GAM320312 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8607 RNA and GAM320312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8607 target RNA into GAM8607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320312 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320312 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320312 target RNA into GAM320312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3697 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3697 gene: GAM8607 target protein and GAM320312 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM8607 and GAM320312

GR3698 BG028703 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3698(GR3698) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3698 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3698 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3698 gene encodes GR3698 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3698 precursor RNA folds spatially, forming GR3698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3698 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3698 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3698 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM219698 precursor RNA and GAM255653 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM219698 RNA and GAM255653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM219698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219698 target RNA into GAM219698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255653 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255653 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255653 target RNA into GAM255653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3698 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3698 gene: GAM219698 target protein and GAM255653 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM219698 and GAM255653

GR3699 BI192931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3699(GR3699) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3699 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3699 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3699 gene encodes GR3699 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3699 precursor RNA folds spatially, forming GR3699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3699 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3699 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3699 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32023 precursor RNA and GAM102287 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32023 RNA and GAM102287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM32023 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32023 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32023 target RNA into GAM32023 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102287 target RNA into GAM102287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3699 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3699 gene: GAM32023 target protein and GAM102287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32023 and GAM102287

GR3700 BG426168 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3700(GR3700) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3700 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3700 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3700 gene encodes GR3700 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3700 precursor RNA folds spatially, forming GR3700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3700 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3700 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3700 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8592 precursor RNA and GAM331427 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8592 RNA and GAM331427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8592 target RNA into GAM8592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331427 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331427 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331427 target RNA into GAM331427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3700 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3700 gene: GAM8592 target protein and GAM331427 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8592 and GAM331427

GR3701 AA382934 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3701(GR3701) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3701 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3701

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3701 gene encodes GR3701 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3701 precursor RNA folds spatially, forming GR3701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3701 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3701 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3701 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2885 precursor RNA and GAM161856 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2885 RNA and GAM161856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2885 target RNA into GAM2885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161856 target RNA into GAM161856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3701 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3701 gene: GAM2885 target protein and GAM161856 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2885 and GAM161856

GR3702 BI821986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3702(GR3702) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3702 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3702 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3702 gene encodes GR3702 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3702 precursor RNA folds spatially, forming GR3702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3702 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3702 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3702 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2557 precursor RNA, GAM76632 precursor RNA and GAM103773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2557 RNA, GAM76632 RNA and GAM103773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2557 target RNA into GAM2557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76632 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76632 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76632 target RNA into GAM76632 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103773 target RNA into GAM103773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3702 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3702 gene: GAM2557 target protein, GAM76632 target protein and GAM103773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2557, GAM76632 and GAM103773

GR3703 BG251246 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3703(GR3703) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3703 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3703 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3703 gene encodes GR3703 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3703 precursor RNA folds spatially, forming GR3703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3703 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3703 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3703 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM248278 precursor RNA, GAM267039 precursor RNA and GAM315996 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM248278 RNA, GAM267039 RNA and GAM315996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM248278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248278 target RNA into GAM248278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267039 target RNA into GAM267039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315996 target RNA into GAM315996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3703 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3703 gene: GAM248278 target protein, GAM267039 target protein and GAM315996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM248278, GAM267039 and GAM315996

GR3704 T85733 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3704(GR3704) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3704 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3704 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3704 gene encodes GR3704 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3704 precursor RNA folds spatially, forming GR3704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3704 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3704 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3704 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8265 precursor RNA and GAM195314 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8265 RNA and GAM195314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8265 target RNA into GAM8265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195314 target RNA into GAM195314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3704 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3704 gene: GAM8265 target protein and GAM195314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8265 and GAM195314

GR3705 AA644220 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3705(GR3705) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3705 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3705 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3705 gene encodes GR3705 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3705 precursor RNA folds spatially, forming GR3705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3705 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3705 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3705 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3193 precursor RNA, GAM64206 precursor RNA and GAM299537 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3193 RNA, GAM64206 RNA and GAM299537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3193 target RNA into GAM3193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64206 target RNA into GAM64206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM299537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM299537 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM299537 target RNA into GAM299537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3705 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3705 gene: GAM3193 target protein, GAM64206 target protein and GAM299537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3193, GAM64206 and GAM299537

GR3706 BF111347 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3706(GR3706) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3706 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3706 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3706 gene encodes GR3706 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3706 precursor RNA folds spatially, forming GR3706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3706 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3706 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3706 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4782 precursor RNA and GAM260615 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4782 RNA and GAM260615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4782 target RNA into GAM4782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260615 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260615 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260615 target RNA into GAM260615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3706 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3706 gene: GAM4782 target protein and GAM260615 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4782 and GAM260615

GR3707 BG436423 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3707(GR3707) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3707 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3707 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3707 gene encodes GR3707 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3707 precursor RNA folds spatially, forming GR3707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3707 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3707 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3707 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM66762 precursor RNA and GAM334759 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM66762 RNA and GAM334759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM66762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66762 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66762 target RNA into GAM66762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334759

target RNA into GAM334759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3707 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3707 gene: GAM66762 target protein and GAM334759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM66762 and GAM334759

GR3708 AU125347 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3708(GR3708) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3708 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3708 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3708 gene encodes GR3708 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3708 precursor RNA folds spatially, forming GR3708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3708 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3708 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3708 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4854 precursor RNA, GAM8438 precursor RNA, GAM189642 precursor RNA and GAM232373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4854 RNA, GAM8438 RNA, GAM189642 RNA and GAM232373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4854 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4854 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4854 target RNA into GAM4854 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8438 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8438 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8438 target RNA into GAM8438 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189642 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189642 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189642 target RNA into GAM189642 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232373 target RNA into GAM232373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3708 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3708 gene: GAM4854 target protein, GAM8438 target protein, GAM189642 target protein and GAM232373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4854, GAM8438, GAM189642 and GAM232373

GR3709 H14663 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3709(GR3709) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3709 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3709 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3709 gene encodes GR3709 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3709 precursor RNA folds spatially, forming GR3709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3709 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3709 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3709 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM115406 precursor RNA and GAM172256 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM115406 RNA and GAM172256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM115406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115406 target RNA into GAM115406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172256 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172256 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172256 target RNA into GAM172256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3709 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3709 gene: GAM115406 target protein and GAM172256 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM115406 and GAM172256

GR3710 BF922074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3710(GR3710) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3710 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3710 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3710 gene encodes GR3710 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3710 precursor RNA folds spatially, forming GR3710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3710 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3710 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3710 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM221476 precursor RNA and GAM244026 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM221476 RNA and GAM244026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM221476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221476 target RNA into GAM221476 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244026 target RNA into GAM244026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3710 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3710 gene: GAM221476 target protein and GAM244026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM221476 and GAM244026

GR3711 AI127030 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3711(GR3711) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3711 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3711 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3711 gene encodes GR3711 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3711 precursor RNA folds spatially, forming GR3711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3711 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3711 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3711 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM297 precursor RNA, GAM5169 precursor RNA and GAM35054 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM297 RNA, GAM5169 RNA and GAM35054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM297 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297 target RNA into GAM297 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5169 target RNA into GAM5169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35054 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35054 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35054 target RNA into GAM35054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3711 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3711 gene: GAM297 target protein, GAM5169 target protein and GAM35054 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM297, GAM5169 and GAM35054

GR3712 BM043981 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3712(GR3712) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3712 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3712 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3712 gene encodes GR3712 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3712 precursor RNA folds spatially, forming GR3712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3712 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3712 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3712 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4942 precursor RNA, GAM99875 precursor RNA, GAM191088 precursor RNA and GAM239029 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4942 RNA, GAM99875 RNA, GAM191088 RNA and GAM239029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4942 target RNA into GAM4942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99875 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99875 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99875 target RNA into GAM99875 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191088 target RNA into GAM191088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239029 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239029 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239029 target RNA into GAM239029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3712 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3712 gene: GAM4942 target protein, GAM99875 target protein, GAM191088 target protein and GAM239029 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4942, GAM99875, GAM191088 and GAM239029

GR3713 BI027888 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3713(GR3713) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3713 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3713 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3713 gene encodes GR3713 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3713 precursor RNA folds spatially, forming GR3713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3713 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3713 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3713 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM210322 precursor RNA and GAM293281 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM210322 RNA and GAM293281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM210322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210322 target RNA into GAM210322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293281 target RNA into GAM293281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3713 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3713 gene: GAM210322 target protein and GAM293281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM210322 and GAM293281

GR3714 AW604603 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3714(GR3714) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3714 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3714 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3714 gene encodes GR3714 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3714 precursor RNA folds spatially, forming GR3714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3714 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3714 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3714 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM63363 precursor RNA and GAM63551 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63363 RNA and GAM63551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63363 target RNA into GAM63363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63551 target RNA into GAM63551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3714 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3714 gene: GAM63363 target protein and GAM63551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63363 and GAM63551

GR3715 AW967841 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3715(GR3715) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3715 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3715 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3715 gene encodes GR3715 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3715 precursor RNA folds spatially, forming GR3715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3715 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3715 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3715 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM76691 precursor RNA and GAM297369 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM76691 RNA and GAM297369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM76691 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76691 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76691 target RNA into GAM76691 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297369 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297369 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297369

target RNA into GAM297369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3715 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3715 gene: GAM76691 target protein and GAM297369 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM76691 and GAM297369

GR3716 BF733177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3716(GR3716) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3716 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3716 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3716 gene encodes GR3716 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3716 precursor RNA folds spatially, forming GR3716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3716 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3716 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3716 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM87519 precursor RNA, GAM195359 precursor RNA and GAM226931 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM87519 RNA, GAM195359 RNA and GAM226931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM87519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87519 target RNA into GAM87519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195359 target RNA into GAM195359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226931 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226931 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226931 target RNA into GAM226931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3716 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3716 gene: GAM87519 target protein, GAM195359 target protein and GAM226931 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM87519, GAM195359 and GAM226931

GR3717 BF575104 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3717(GR3717) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3717 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3717 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3717 gene encodes GR3717 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3717 precursor RNA folds spatially, forming GR3717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3717 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3717 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3717 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM41111 precursor RNA, GAM323287 precursor RNA and GAM324239 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM41111 RNA, GAM323287 RNA and GAM324239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM41111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41111 target RNA into GAM41111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323287 target RNA into GAM323287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324239 target RNA into GAM324239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3717 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3717 gene: GAM41111 target protein, GAM323287 target protein and GAM324239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM41111, GAM323287 and GAM324239

GR3718 BI042338 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3718(GR3718) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3718 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3718 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3718 gene encodes GR3718 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3718 precursor RNA folds spatially, forming GR3718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3718 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3718 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3718 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7294 precursor RNA, GAM229330 precursor RNA and GAM321838 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7294 RNA, GAM229330 RNA and GAM321838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7294 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7294 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7294 target RNA into GAM7294 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229330 target RNA into GAM229330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321838 target RNA into GAM321838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3718 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3718 gene: GAM7294 target protein, GAM229330 target protein and GAM321838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7294, GAM229330 and GAM321838

GR3719 BM679680 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3719(GR3719) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3719 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3719 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3719 gene encodes GR3719 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3719 precursor RNA folds spatially, forming GR3719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3719 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3719 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3719 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM28675 precursor RNA and GAM76996 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28675 RNA and GAM76996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM28675 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28675 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28675 target RNA into GAM28675 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76996 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76996 target RNA into GAM76996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3719 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3719 gene: GAM28675 target protein and GAM76996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28675 and GAM76996

GR3720 BF939542 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3720(GR3720) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3720 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3720 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3720 gene encodes GR3720 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3720 precursor RNA folds spatially, forming GR3720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3720 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3720 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3720 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM459 precursor RNA, GAM27910 precursor RNA and GAM269898 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM459 RNA, GAM27910 RNA and GAM269898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM459 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM459 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM459 target RNA into GAM459 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27910 target RNA into GAM27910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM269898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269898 target RNA into GAM269898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3720 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3720 gene: GAM459 target protein, GAM27910 target protein and GAM269898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM459, GAM27910 and GAM269898

GR3721 BF749373 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3721(GR3721) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3721 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3721 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3721 gene encodes GR3721 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3721 precursor RNA folds spatially, forming GR3721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3721 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3721 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3721 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7337 precursor RNA, GAM201568 precursor RNA and GAM254487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7337 RNA, GAM201568 RNA and GAM254487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7337 target RNA into GAM7337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201568 target RNA into GAM201568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254487 target RNA into GAM254487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3721 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3721 gene: GAM7337 target protein, GAM201568 target protein and GAM254487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7337, GAM201568 and GAM254487

GR3722 AA457526 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3722(GR3722) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3722 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3722 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3722 gene encodes GR3722 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3722 precursor RNA folds spatially, forming GR3722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3722 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3722 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3722 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM119693 precursor RNA, GAM208323 precursor RNA and GAM247403 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119693 RNA, GAM208323 RNA and GAM247403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119693 target RNA into GAM119693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208323 target RNA into GAM208323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247403 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247403 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247403

target RNA into GAM247403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3722 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3722 gene: GAM119693 target protein, GAM208323 target protein and GAM247403 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119693, GAM208323 and GAM247403

GR3723 AI434928 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3723(GR3723) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3723 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3723 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3723 gene encodes GR3723 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3723 precursor RNA folds spatially, forming GR3723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3723 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3723 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3723 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM248007 precursor RNA and GAM298000 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM248007 RNA and GAM298000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM248007 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248007 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248007 target RNA into GAM248007 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298000 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298000 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298000 target RNA into GAM298000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3723 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3723 gene: GAM248007 target protein and GAM298000 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM248007 and GAM298000

GR3724 BE262304 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3724(GR3724) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3724 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3724 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3724 gene encodes GR3724 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3724 precursor RNA folds spatially, forming GR3724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3724 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3724 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3724 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2600 precursor RNA, GAM60149 precursor RNA and GAM261299 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2600 RNA, GAM60149 RNA and GAM261299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2600 target RNA into GAM2600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM60149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60149 target RNA into GAM60149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261299 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261299 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261299 target RNA into GAM261299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3724 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3724 gene: GAM2600 target protein, GAM60149 target protein and GAM261299 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2600, GAM60149 and GAM261299

GR3725 BI766019 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3725(GR3725) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3725 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3725 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3725 gene encodes GR3725 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3725 precursor RNA folds spatially, forming GR3725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3725 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3725 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3725 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120085 precursor RNA and GAM310420 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120085 RNA and GAM310420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120085 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120085 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120085 target RNA into GAM120085 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310420 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310420 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310420

target RNA into GAM310420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3725 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3725 gene: GAM120085 target protein and GAM310420 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120085 and GAM310420

GR3726 BG612435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3726(GR3726) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3726 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3726 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3726 gene encodes GR3726 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3726 precursor RNA folds spatially, forming GR3726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3726 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3726 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3726 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM65478 precursor RNA and GAM234349 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM65478 RNA and GAM234349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM65478 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65478 target RNA into GAM65478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234349 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234349 target RNA into GAM234349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3726 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3726 gene: GAM65478 target protein and GAM234349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM65478 and GAM234349

GR3727 BG258038 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3727(GR3727) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3727 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3727 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3727 gene encodes GR3727 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3727 precursor RNA folds spatially, forming GR3727 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3727 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3727 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3727 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM168643 precursor RNA, GAM247313 precursor RNA and GAM302047 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM168643 RNA, GAM247313 RNA and GAM302047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM168643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168643 target RNA into GAM168643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247313 target RNA into GAM247313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302047 target RNA into GAM302047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3727 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3727 gene: GAM168643 target protein, GAM247313 target protein and GAM302047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM168643, GAM247313 and GAM302047

GR3728 BE790205 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3728(GR3728) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3728 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3728 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3728 gene encodes GR3728 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3728 precursor RNA folds spatially, forming GR3728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3728 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3728 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3728 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM44036 precursor RNA and GAM282533 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44036 RNA and GAM282533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44036 target RNA into GAM44036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282533 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282533 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282533 target RNA into GAM282533 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3728 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3728 gene: GAM44036 target protein and GAM282533 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44036 and GAM282533

GR3729 AI927881 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3729(GR3729) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3729 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3729 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3729 gene encodes GR3729 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3729 precursor RNA folds spatially, forming GR3729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3729 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3729 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3729 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM42007 precursor RNA and GAM285687 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42007 RNA and GAM285687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42007 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM42007 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42007 target RNA into GAM42007 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285687 target RNA into GAM285687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3729 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3729 gene: GAM42007 target protein and GAM285687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42007 and GAM285687

GR3730 BG105003 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3730(GR3730) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3730 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3730 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3730 gene encodes GR3730 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3730 precursor RNA folds spatially, forming GR3730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3730 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3730 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3730 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM452 precursor RNA and GAM149541 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM452 RNA and GAM149541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM452 target RNA into GAM452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149541 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149541 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149541 target RNA into GAM149541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3730 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3730 gene: GAM452 target protein and GAM149541 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM452 and GAM149541

GR3731 AW732320 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3731(GR3731) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3731 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3731 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3731 gene encodes GR3731 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3731 precursor RNA folds spatially, forming GR3731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3731 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3731 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3731 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM158109 precursor RNA and GAM224426 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158109 RNA and GAM224426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158109 target RNA into GAM158109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224426 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224426 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224426 target RNA into GAM224426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3731 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3731 gene: GAM158109 target protein and GAM224426 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158109 and GAM224426

GR3732 AA115842 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3732(GR3732) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3732 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3732 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3732 gene encodes GR3732 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3732 precursor RNA folds spatially, forming GR3732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3732 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3732 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3732 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2404 precursor RNA and GAM181269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2404 RNA and GAM181269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2404 target RNA into GAM2404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181269 target RNA into GAM181269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3732 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3732 gene: GAM2404 target protein and GAM181269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2404 and GAM181269

GR3733 AI912710 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3733(GR3733) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3733 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3733 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3733 gene encodes GR3733 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3733 precursor RNA folds spatially, forming GR3733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3733 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3733 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3733 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1970 precursor RNA and GAM316368 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1970 RNA and GAM316368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1970 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1970 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1970 target RNA into GAM1970 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316368 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316368 target RNA into GAM316368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3733 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3733 gene: GAM1970 target protein and GAM316368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1970 and GAM316368

GR3734 BF906391 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3734(GR3734) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3734 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3734 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3734 gene encodes GR3734 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3734 precursor RNA folds spatially, forming GR3734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3734 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3734 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3734 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3250 precursor RNA, GAM122622 precursor RNA and GAM283656 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3250 RNA, GAM122622 RNA and GAM283656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3250 target RNA into GAM3250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122622 target RNA into GAM122622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283656 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283656 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283656 target RNA into GAM283656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3734 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3734 gene: GAM3250 target protein, GAM122622 target protein and GAM283656 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3250, GAM122622 and GAM283656

GR3735 BF763287 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3735(GR3735) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3735 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3735 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3735 gene encodes GR3735 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3735 precursor RNA folds spatially, forming GR3735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3735 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3735 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3735 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129726 precursor RNA and GAM227052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129726 RNA and GAM227052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM129726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129726 target RNA into GAM129726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227052

target RNA into GAM227052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3735 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3735 gene: GAM129726 target protein and GAM227052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129726 and GAM227052

GR3736 AW960101 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3736(GR3736) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3736 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3736 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3736 gene encodes GR3736 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3736 precursor RNA folds spatially, forming GR3736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3736 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3736 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3736 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM11398 precursor RNA, GAM116128 precursor RNA and GAM247072 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11398 RNA, GAM116128 RNA and GAM247072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11398 target RNA into GAM11398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116128 target RNA into GAM116128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247072 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247072 target RNA into GAM247072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3736 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3736 gene: GAM11398 target protein, GAM116128 target protein and GAM247072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11398, GAM116128 and GAM247072

GR3737 BG033485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3737(GR3737) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3737 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3737 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3737 gene encodes GR3737 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3737 precursor RNA folds spatially, forming GR3737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3737 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3737 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3737 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6556 precursor RNA and GAM216754 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6556 RNA and GAM216754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6556 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6556 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6556 target RNA into GAM6556 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216754 target RNA into GAM216754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3737 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3737 gene: GAM6556 target protein and GAM216754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6556 and GAM216754

GR3738 H03550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3738(GR3738) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3738 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3738 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3738 gene encodes GR3738 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3738 precursor RNA folds spatially, forming GR3738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3738 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3738 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3738 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM583 precursor RNA and GAM1850 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM583 RNA and GAM1850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM583 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM583 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM583 target RNA into GAM583 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1850 target RNA into GAM1850 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3738 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3738 gene: GAM583 target protein and GAM1850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM583 and GAM1850

GR3739 BF541008 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3739(GR3739) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3739 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3739 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3739 gene encodes GR3739 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3739 precursor RNA folds spatially, forming GR3739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3739 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3739 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3739 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79858 precursor RNA and GAM276182 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79858 RNA and GAM276182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM79858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79858 target RNA into GAM79858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276182 target RNA into GAM276182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3739 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3739 gene: GAM79858 target protein and GAM276182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79858 and GAM276182

GR3740 AV729719 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3740(GR3740) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3740 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3740 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3740 gene encodes GR3740 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3740 precursor RNA folds spatially, forming GR3740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3740 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3740 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3740 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM8676 precursor RNA and GAM63414 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8676 RNA and GAM63414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8676 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8676 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8676 target RNA into GAM8676 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63414 target RNA into GAM63414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3740 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3740 gene: GAM8676 target protein and GAM63414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8676 and GAM63414

GR3741 BI828032 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3741(GR3741) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3741 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3741 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3741 gene encodes GR3741 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3741 precursor RNA folds spatially, forming GR3741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3741 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3741 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3741 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25960 precursor RNA and GAM261693 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25960 RNA and GAM261693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25960 target RNA into GAM25960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261693 target RNA into GAM261693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3741 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3741 gene: GAM25960 target protein and GAM261693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25960 and GAM261693

GR3742 BF954187 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3742(GR3742) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3742 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3742 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3742 gene encodes GR3742 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3742 precursor RNA folds spatially, forming GR3742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3742 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3742 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3742 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM14885 precursor RNA, GAM118668 precursor RNA and GAM149092 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14885 RNA, GAM118668 RNA and GAM149092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14885 target RNA into GAM14885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118668 target RNA into GAM118668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149092 target RNA into GAM149092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3742 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3742 gene: GAM14885 target protein, GAM118668 target protein and GAM149092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14885, GAM118668 and GAM149092

GR3743 BM050924 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3743(GR3743) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3743 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3743 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3743 gene encodes GR3743 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3743 precursor RNA folds spatially, forming GR3743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3743 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3743 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3743 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6277 precursor RNA and GAM113913 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6277 RNA and GAM113913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6277 target RNA into GAM6277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113913 target RNA into GAM113913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3743 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3743 gene: GAM6277 target protein and GAM113913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6277 and GAM113913

GR3744 BQ011331 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3744(GR3744) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3744 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3744 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3744 gene encodes GR3744 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3744 precursor RNA folds spatially, forming GR3744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3744 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3744 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3744 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM128419 precursor RNA, GAM261518 precursor RNA and GAM329902 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128419 RNA, GAM261518 RNA and GAM329902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128419 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128419 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128419 target RNA into GAM128419 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261518 target RNA into GAM261518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329902 target RNA into GAM329902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3744 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3744 gene: GAM128419 target protein, GAM261518 target protein and GAM329902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128419, GAM261518 and GAM329902

GR3745 BF247608 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3745(GR3745) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3745 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3745 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3745 gene encodes GR3745 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3745 precursor RNA folds spatially, forming GR3745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3745 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3745 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3745 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4947 precursor RNA and GAM320862 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4947 RNA and GAM320862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4947 target RNA into GAM4947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320862 target RNA into GAM320862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3745 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3745 gene: GAM4947 target protein and GAM320862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4947 and GAM320862

GR3746 AA680072 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3746(GR3746) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3746 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3746 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3746 gene encodes GR3746 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3746 precursor RNA folds spatially, forming GR3746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3746 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3746 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3746 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3596 precursor RNA and GAM263949 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3596 RNA and GAM263949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3596 target RNA into GAM3596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263949 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263949 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263949 target RNA into GAM263949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3746 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3746 gene: GAM3596 target protein and GAM263949 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3596 and GAM263949

GR3747 AU135915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3747(GR3747) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3747 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3747 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3747 gene encodes GR3747 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3747 precursor RNA folds spatially, forming GR3747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3747 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3747 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3747 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6515 precursor RNA and GAM8375 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6515 RNA and GAM8375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6515 target RNA into GAM6515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8375 target RNA into GAM8375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3747 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3747 gene: GAM6515 target protein and GAM8375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6515 and GAM8375

GR3748 AW241897 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3748(GR3748) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3748 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3748 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3748 gene encodes GR3748 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3748 precursor RNA folds spatially, forming GR3748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3748 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3748 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3748 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15108 precursor RNA and GAM31584 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15108 RNA and GAM31584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15108 target RNA into GAM15108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31584 target RNA into GAM31584 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3748 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3748 gene: GAM15108 target protein and GAM31584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15108 and GAM31584

GR3749 AA853954 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3749(GR3749) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3749 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3749 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3749 gene encodes GR3749 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3749 precursor RNA folds spatially, forming GR3749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3749 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3749 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3749 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM25760 precursor RNA and GAM282101 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM25760 RNA and GAM282101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM25760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM25760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25760 target RNA into GAM25760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282101 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282101 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282101 target RNA into GAM282101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3749 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3749 gene: GAM25760 target protein and GAM282101 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM25760 and GAM282101

GR3750 BF330296 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3750(GR3750) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3750 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3750 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3750 gene encodes GR3750 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3750 precursor RNA folds spatially, forming GR3750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3750 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3750 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3750 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM20288 precursor RNA, GAM96862 precursor RNA and GAM103126 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20288 RNA, GAM96862 RNA and GAM103126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20288 target RNA into GAM20288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96862 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96862 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96862 target RNA into GAM96862 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103126 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103126 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103126 target RNA into GAM103126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3750 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3750 gene: GAM20288 target protein, GAM96862 target protein and GAM103126 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20288, GAM96862 and GAM103126

GR3751 BG285108 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3751(GR3751) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3751 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3751 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3751 gene encodes GR3751 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3751 precursor RNA folds spatially, forming GR3751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3751 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3751 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3751 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM72751 precursor RNA and GAM168046 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72751 RNA and GAM168046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72751 target RNA into GAM72751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168046 target RNA into GAM168046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3751 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3751 gene: GAM72751 target protein and GAM168046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72751 and GAM168046

GR3752 BG572507 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3752(GR3752) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3752 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3752 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3752 gene encodes GR3752 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3752 precursor RNA folds spatially, forming GR3752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3752 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3752 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3752 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM728 precursor RNA, GAM224450 precursor RNA, GAM292405 precursor RNA and GAM307809 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM728 RNA, GAM224450 RNA, GAM292405 RNA and GAM307809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM728 target RNA into GAM728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224450 target RNA into GAM224450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292405 target RNA into GAM292405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307809 target RNA into GAM307809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3752 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3752 gene: GAM728 target protein, GAM224450 target protein, GAM292405 target protein and GAM307809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM728, GAM224450, GAM292405 and GAM307809

GR3753 AU118775 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3753(GR3753) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3753 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3753

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3753 gene encodes GR3753 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3753 precursor RNA folds spatially, forming GR3753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3753 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3753 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3753 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM101778 precursor RNA, GAM102750 precursor RNA, GAM284423 precursor RNA and GAM285900 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101778 RNA, GAM102750 RNA, GAM284423 RNA and GAM285900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101778 target RNA into GAM101778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102750 target RNA into GAM102750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284423 target RNA into GAM284423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285900 target RNA into GAM285900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3753 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3753 gene: GAM101778 target protein, GAM102750 target protein, GAM284423 target protein and GAM285900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM101778, GAM102750, GAM284423 and GAM285900

GR3754 BG762076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3754(GR3754) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3754 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3754 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3754 gene encodes GR3754 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3754 precursor RNA folds spatially, forming GR3754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3754 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3754 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3754 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4421 precursor RNA, GAM55972 precursor RNA and GAM280942 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4421 RNA, GAM55972 RNA and GAM280942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4421 target RNA into GAM4421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55972 target RNA into GAM55972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280942 target RNA into GAM280942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3754 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3754 gene: GAM4421 target protein, GAM55972 target protein and GAM280942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4421, GAM55972 and GAM280942

GR3755 BE258661 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3755(GR3755) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3755 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3755 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3755 gene encodes GR3755 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3755 precursor RNA folds spatially, forming GR3755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3755 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3755 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3755 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3110 precursor RNA, GAM28034 precursor RNA and GAM253977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3110 RNA, GAM28034 RNA and GAM253977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3110 target RNA into GAM3110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM28034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28034 target RNA into GAM28034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253977 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253977 target RNA into GAM253977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3755 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3755 gene: GAM3110 target protein, GAM28034 target protein and GAM253977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3110, GAM28034 and GAM253977

GR3756 BF698177 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3756(GR3756) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3756 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3756 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3756 gene encodes GR3756 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3756 precursor RNA folds spatially, forming GR3756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3756 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3756 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3756 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM31520 precursor RNA and GAM197405 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31520 RNA and GAM197405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31520 target RNA into GAM31520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197405 target RNA into GAM197405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3756 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3756 gene: GAM31520 target protein and GAM197405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31520 and GAM197405

GR3757 BG220946 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3757(GR3757) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3757 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3757 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3757 gene encodes GR3757 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3757 precursor RNA folds spatially, forming GR3757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3757 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3757 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3757 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM170709 precursor RNA and GAM289121 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170709 RNA and GAM289121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170709 target RNA into GAM170709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289121 target RNA into GAM289121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3757 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3757 gene: GAM170709 target protein and GAM289121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170709 and GAM289121

GR3758 BM703037 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3758(GR3758) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3758 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3758 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3758 gene encodes GR3758 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3758 precursor RNA folds spatially, forming GR3758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3758 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3758 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3758 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79281 precursor RNA and GAM133899 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79281 RNA and GAM133899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79281 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79281 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79281 target RNA into GAM79281 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM133899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM133899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM133899 target RNA into GAM133899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3758 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3758 gene: GAM79281 target protein and GAM133899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79281 and GAM133899

GR3759 BI490641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3759(GR3759) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3759 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3759 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3759 gene encodes GR3759 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3759 precursor RNA folds spatially, forming GR3759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3759 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3759 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3759 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1560 precursor RNA, GAM1658 precursor RNA, GAM66206 precursor RNA and GAM228418 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1560 RNA, GAM1658 RNA, GAM66206 RNA and GAM228418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM1560 target RNA into GAM1560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1658 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1658 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1658 target RNA into GAM1658 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66206 target RNA into GAM66206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228418 target RNA into GAM228418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3759 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3759 gene: GAM1560 target protein, GAM1658 target protein, GAM66206 target protein and GAM228418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1560, GAM1658, GAM66206 and GAM228418

GR3760 BM017373 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3760(GR3760) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3760 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3760 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3760 gene encodes GR3760 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3760 precursor RNA folds spatially, forming GR3760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3760 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3760 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3760 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7410 precursor RNA, GAM178562 precursor RNA and GAM178563 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7410 RNA, GAM178562 RNA and GAM178563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7410 target RNA into GAM7410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178562 target RNA into GAM178562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178563 target RNA into GAM178563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3760 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3760 gene: GAM7410 target protein, GAM178562 target protein and GAM178563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7410, GAM178562 and GAM178563

GR3761 AI990880 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3761(GR3761) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3761 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3761 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3761 gene encodes GR3761 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3761 precursor RNA folds spatially, forming GR3761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3761 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3761 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3761 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM129300 precursor RNA and GAM136857 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM129300 RNA and GAM136857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM129300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM129300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM129300 target RNA into GAM129300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136857 target RNA into GAM136857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3761 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3761 gene: GAM129300 target protein and GAM136857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM129300 and GAM136857

GR3762 AW505269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3762(GR3762) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3762 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3762 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3762 gene encodes GR3762 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3762 precursor RNA folds spatially, forming GR3762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3762 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3762 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3762 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM1291 precursor RNA, GAM8278 precursor RNA and GAM10167 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1291 RNA, GAM8278 RNA and GAM10167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1291 target RNA into GAM1291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8278 target RNA into GAM8278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM10167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10167 target RNA into GAM10167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3762 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3762 gene: GAM1291 target protein, GAM8278 target protein and GAM10167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1291, GAM8278 and GAM10167

GR3763 H42267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3763(GR3763) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3763 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3763 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3763 gene encodes GR3763 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3763 precursor RNA folds spatially, forming GR3763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3763 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3763 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3763 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM91350 precursor RNA, GAM94087 precursor RNA and GAM189647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM91350 RNA, GAM94087 RNA and GAM189647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM91350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91350 target RNA into GAM91350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM94087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94087 target RNA into GAM94087 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189647 target RNA into GAM189647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3763 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3763 gene: GAM91350 target protein, GAM94087 target protein and GAM189647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM91350, GAM94087 and GAM189647

GR3764 AI361281 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3764(GR3764) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3764 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3764 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3764 gene encodes GR3764 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3764 precursor RNA folds spatially, forming GR3764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3764 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3764 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3764 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7952 precursor RNA, GAM253654 precursor RNA and GAM305947 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7952 RNA, GAM253654 RNA and GAM305947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7952 target RNA into GAM7952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253654 target RNA into GAM253654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305947 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305947 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305947 target RNA into GAM305947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3764 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3764 gene: GAM7952 target protein, GAM253654 target protein and GAM305947 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7952, GAM253654 and GAM305947

GR3765 BE294209 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3765(GR3765) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3765 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3765 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3765 gene encodes GR3765 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3765 precursor RNA folds spatially, forming GR3765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3765 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3765 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3765 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111466 precursor RNA and GAM286122 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111466 RNA and GAM286122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111466 target RNA into GAM111466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286122 target RNA into GAM286122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3765 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3765 gene: GAM111466 target protein and GAM286122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111466 and GAM286122

GR3766 BM013175 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3766(GR3766) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3766 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3766 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3766 gene encodes GR3766 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3766 precursor RNA folds spatially, forming GR3766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3766 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3766 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3766 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2080 precursor RNA, GAM53274 precursor RNA and GAM92473 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2080 RNA, GAM53274 RNA and GAM92473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2080 target RNA into

GAM2080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53274 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53274 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53274 target RNA into GAM53274 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92473 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92473 target RNA into GAM92473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3766 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3766 gene: GAM2080 target protein, GAM53274 target protein and GAM92473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2080, GAM53274 and GAM92473

GR3767 T41263 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3767(GR3767) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3767 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3767 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3767 gene encodes GR3767 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3767 precursor RNA folds spatially, forming GR3767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3767 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3767 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3767 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2271 precursor RNA and GAM332361 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2271 RNA and GAM332361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2271 target RNA into GAM2271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332361 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332361 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332361 target RNA into GAM332361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3767 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3767 gene: GAM2271 target protein and GAM332361 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2271 and GAM332361

GR3768 AU143597 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3768(GR3768) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3768 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3768 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3768 gene encodes GR3768 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3768 precursor RNA folds spatially, forming GR3768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3768 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3768 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3768 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78075 precursor RNA and GAM243746 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78075 RNA and GAM243746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78075 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78075 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78075 target RNA into GAM78075 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243746 target RNA into GAM243746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3768 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3768 gene: GAM78075 target

protein and GAM243746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78075 and GAM243746

GR3769 R53341 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3769(GR3769) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3769 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3769 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3769 gene encodes GR3769 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3769 precursor RNA folds spatially, forming GR3769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3769 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3769 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3769 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM531 precursor RNA, GAM5999 precursor RNA and GAM7006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM531 RNA, GAM5999 RNA and GAM7006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM531 target RNA into GAM531 target protein, herein schematically represented by GAM1 TARGET PROTEIN

through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5999 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5999 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5999 target RNA into GAM5999 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7006 target RNA into GAM7006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3769 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3769 gene: GAM531 target protein, GAM5999 target protein and GAM7006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM531, GAM5999 and GAM7006

GR3770 AW997615 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3770(GR3770) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3770 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3770 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3770 gene encodes GR3770 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3770 precursor RNA folds spatially, forming GR3770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3770 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3770 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3770 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM177660 precursor RNA, GAM192668 precursor RNA and GAM282304 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177660 RNA, GAM192668 RNA and GAM282304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM177660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177660 target RNA into GAM177660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192668 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192668 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192668 target RNA into GAM192668 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282304 target RNA into GAM282304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3770 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3770 gene: GAM177660 target protein, GAM192668 target protein and GAM282304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177660, GAM192668 and GAM282304

GR3771 BE874352 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3771(GR3771) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3771 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3771 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3771 gene encodes GR3771 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3771 precursor RNA folds spatially, forming GR3771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3771 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3771 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3771 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM264796 precursor RNA and GAM328475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM264796 RNA and GAM328475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM264796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM264796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM264796 target RNA into GAM264796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328475 target RNA into GAM328475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3771 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3771 gene: GAM264796 target protein and GAM328475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM264796 and GAM328475

GR3772 AW020793 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3772(GR3772) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3772 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3772 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3772 gene encodes GR3772 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3772 precursor RNA folds spatially, forming GR3772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3772 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3772 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3772 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM36496 precursor RNA and GAM323445 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM36496 RNA and GAM323445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM36496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM36496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM36496 target RNA into GAM36496 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323445 target RNA into GAM323445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3772 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3772 gene: GAM36496 target protein and GAM323445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM36496 and GAM323445

GR3773 BM976295 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3773(GR3773) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3773 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3773 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3773 gene encodes GR3773 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3773 precursor RNA folds spatially, forming GR3773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3773 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3773 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3773 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4589 precursor RNA and GAM309072 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4589 RNA and GAM309072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4589 target RNA into GAM4589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309072 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309072 target RNA into GAM309072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3773 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3773 gene: GAM4589 target protein and GAM309072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4589 and GAM309072

GR3774 D44666 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3774(GR3774) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3774 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3774 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3774 gene encodes GR3774 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3774 precursor RNA folds spatially, forming GR3774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3774 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3774 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3774 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95131 precursor RNA and GAM287097 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95131 RNA and GAM287097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95131 target RNA into GAM95131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287097 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287097 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287097 target RNA into GAM287097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3774 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3774 gene: GAM95131 target protein and GAM287097 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95131 and GAM287097

GR3775 BI086709 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3775(GR3775) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3775 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3775 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3775 gene encodes GR3775 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3775 precursor RNA folds spatially, forming GR3775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3775 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3775 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3775 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2744 precursor RNA, GAM4783 precursor RNA and GAM290816 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2744 RNA, GAM4783 RNA and GAM290816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2744 target RNA into GAM2744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4783 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4783 target RNA into GAM4783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290816 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290816 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290816 target RNA into GAM290816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3775 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3775 gene: GAM2744 target protein, GAM4783 target protein and GAM290816 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2744, GAM4783 and GAM290816

GR3776 AV722014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3776(GR3776) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3776 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3776 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3776 gene encodes GR3776 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3776 precursor RNA folds spatially, forming GR3776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3776 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3776 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3776 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM135182 precursor RNA and GAM160195 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM135182 RNA and GAM160195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM135182 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135182 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135182 target RNA into GAM135182 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM160195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM160195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM160195 target RNA into GAM160195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3776 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3776 gene: GAM135182 target protein and GAM160195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM135182 and GAM160195

GR3777 N83906 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3777(GR3777) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3777 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3777 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3777 gene encodes GR3777 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3777 precursor RNA folds spatially, forming GR3777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3777 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3777 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3777 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM83012 precursor RNA and GAM227958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM83012 RNA and GAM227958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM83012 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83012 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83012 target RNA into GAM83012 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227958 target RNA into GAM227958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3777 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3777 gene: GAM83012 target protein and GAM227958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM83012 and GAM227958

GR3778 AW339455 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3778(GR3778) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3778 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3778 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3778 gene encodes GR3778 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3778 precursor RNA folds spatially, forming GR3778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3778 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3778 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3778 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM44924 precursor RNA, GAM119555 precursor RNA and GAM122722 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM44924 RNA, GAM119555 RNA and GAM122722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM44924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM44924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM44924 target RNA into GAM44924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM119555 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM119555 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119555 target RNA into GAM119555 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM122722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122722 target RNA into GAM122722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3778 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3778 gene: GAM44924 target protein, GAM119555 target protein and GAM122722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM44924, GAM119555 and GAM122722

GR3779 BG723858 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3779(GR3779) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3779 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3779 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3779 gene encodes GR3779 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3779 precursor RNA folds spatially, forming GR3779 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3779 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3779 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3779 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3046 precursor RNA, GAM78194 precursor RNA and GAM220003 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3046 RNA, GAM78194 RNA and GAM220003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3046 target RNA into GAM3046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78194 target RNA into GAM78194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220003 target RNA into GAM220003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3779 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3779 gene: GAM3046 target protein, GAM78194 target protein and GAM220003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3046, GAM78194 and GAM220003

GR3780 AI675567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3780(GR3780) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3780 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3780 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3780 gene encodes GR3780 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3780 precursor RNA folds spatially, forming GR3780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3780 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3780 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3780 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM61484 precursor RNA, GAM99950 precursor RNA and GAM259650 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM61484 RNA, GAM99950 RNA and GAM259650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM61484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61484 target RNA into GAM61484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99950

target RNA into GAM99950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259650 target RNA into GAM259650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3780 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3780 gene: GAM61484 target protein, GAM99950 target protein and GAM259650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM61484, GAM99950 and GAM259650

GR3781 BE737715 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3781(GR3781) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3781 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3781 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3781 gene encodes GR3781 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3781 precursor RNA folds spatially, forming GR3781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3781 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3781 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3781 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1940 precursor RNA, GAM24314 precursor RNA and GAM191031 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1940 RNA, GAM24314 RNA and GAM191031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1940 target RNA into GAM1940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24314 target RNA into GAM24314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191031 target RNA into GAM191031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3781 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3781 gene: GAM1940 target protein, GAM24314 target protein and GAM191031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1940, GAM24314 and GAM191031

GR3782 AI057267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3782(GR3782) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3782 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3782 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3782 gene encodes GR3782 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3782 precursor RNA folds spatially, forming GR3782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3782 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3782 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3782 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM95260 precursor RNA, GAM105232 precursor RNA and GAM115236 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95260 RNA, GAM105232 RNA and GAM115236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95260 target RNA into GAM95260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105232 target RNA into GAM105232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115236 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM115236 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115236 target RNA into GAM115236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3782 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3782 gene: GAM95260 target protein, GAM105232 target protein and GAM115236 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95260, GAM105232 and GAM115236

GR3783 BE249930 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3783(GR3783) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3783 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3783 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3783 gene encodes GR3783 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3783 precursor RNA folds spatially, forming GR3783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3783 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3783 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3783 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2822 precursor RNA, GAM48590 precursor RNA and GAM259694 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2822 RNA, GAM48590 RNA and GAM259694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2822 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2822 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2822 target RNA into GAM2822 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48590 target RNA into GAM48590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259694 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259694 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259694 target RNA into GAM259694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3783 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3783 gene: GAM2822 target protein, GAM48590 target protein and GAM259694 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2822, GAM48590 and GAM259694

GR3784 AW754431 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3784(GR3784) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3784 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3784 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3784 gene encodes GR3784 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3784 precursor RNA folds spatially, forming GR3784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3784 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3784 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3784 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4351 precursor RNA and GAM289596 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4351 RNA and GAM289596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4351 target RNA into GAM4351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289596 target RNA into GAM289596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3784 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3784 gene: GAM4351 target protein and GAM289596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4351 and GAM289596

GR3785 BG775167 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3785(GR3785) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3785 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3785 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3785 gene encodes GR3785 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3785 precursor RNA folds spatially, forming GR3785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3785 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3785 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3785 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2020 precursor RNA and GAM308878 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2020 RNA and GAM308878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2020 target RNA into GAM2020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308878 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM308878 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308878 target RNA into GAM308878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3785 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3785 gene: GAM2020 target protein and GAM308878 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2020 and GAM308878

GR3786 BF087992 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3786(GR3786) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3786 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3786 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3786 gene encodes GR3786 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3786 precursor RNA folds spatially, forming GR3786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3786 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3786 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3786 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4959 precursor RNA, GAM8696 precursor RNA and GAM82211 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4959 RNA, GAM8696 RNA and GAM82211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4959 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4959 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4959 target RNA into GAM4959 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8696 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8696 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8696 target RNA into GAM8696 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82211 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82211 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82211 target RNA into GAM82211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3786 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3786 gene: GAM4959 target protein, GAM8696 target protein and GAM82211 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4959, GAM8696 and GAM82211

GR3787 AI184838 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3787(GR3787) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3787 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3787 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3787 gene encodes GR3787 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3787 precursor RNA folds spatially, forming GR3787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3787 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3787 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3787 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM450 precursor RNA, GAM71482 precursor RNA and GAM85128 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM450 RNA, GAM71482 RNA and GAM85128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM450 target RNA into GAM450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM71482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM71482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM71482 target RNA into GAM71482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85128 target RNA into GAM85128 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3787 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3787 gene: GAM450 target protein, GAM71482 target protein and GAM85128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM450, GAM71482 and GAM85128

GR3788 BG531749 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3788(GR3788) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3788 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3788 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3788 gene encodes GR3788 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3788 precursor RNA folds spatially, forming GR3788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3788 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3788 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3788 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8218 precursor RNA and GAM185741 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8218 RNA and GAM185741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8218 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8218 target RNA into GAM8218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185741 target RNA into GAM185741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3788 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3788 gene: GAM8218 target protein and GAM185741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8218 and GAM185741

GR3789 BM145215 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3789(GR3789) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3789 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3789 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3789 gene encodes GR3789 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3789 precursor RNA folds spatially, forming GR3789 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3789 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3789 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3789 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7348 precursor RNA and GAM172052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7348 RNA and GAM172052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7348 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7348 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7348 target RNA into GAM7348 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172052 target RNA into GAM172052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3789 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3789 gene: GAM7348 target protein and GAM172052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7348 and GAM172052

GR3790 AL707264 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3790(GR3790) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3790 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3790 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3790 gene encodes GR3790 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3790 precursor RNA folds spatially, forming GR3790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3790 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3790 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3790 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM244267 precursor RNA and GAM276189 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM244267 RNA and GAM276189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM244267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244267 target RNA into GAM244267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276189 target RNA into GAM276189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3790 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3790 gene: GAM244267 target protein and GAM276189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM244267 and GAM276189

GR3791 BE890454 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3791(GR3791) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3791 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3791 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3791 gene encodes GR3791 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3791 precursor RNA folds spatially, forming GR3791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3791 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3791 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3791 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4737 precursor RNA, GAM8370 precursor RNA, GAM159601 precursor RNA and GAM267600 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4737 RNA, GAM8370 RNA, GAM159601 RNA and GAM267600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4737 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4737 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4737 target RNA into GAM4737 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8370 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8370 target RNA into GAM8370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159601 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159601 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159601 target RNA into GAM159601 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267600 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267600 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267600 target RNA into GAM267600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3791 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3791 gene: GAM4737 target protein, GAM8370 target protein, GAM159601 target protein and GAM267600 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4737, GAM8370, GAM159601 and GAM267600

GR3792 W68282 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3792(GR3792) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3792 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3792 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3792 gene encodes GR3792 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3792 precursor RNA folds spatially, forming GR3792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3792 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3792 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3792 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5337 precursor RNA and GAM150829 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5337 RNA and GAM150829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5337 target RNA into GAM5337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150829 target RNA into GAM150829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3792 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3792 gene: GAM5337 target protein and GAM150829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5337 and GAM150829

GR3793 AI143728 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3793(GR3793) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3793 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3793 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3793 gene encodes GR3793 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3793 precursor RNA folds spatially, forming GR3793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3793 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3793 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3793 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1402 precursor RNA and GAM5433 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1402 RNA and GAM5433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1402 target RNA into GAM1402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5433 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5433 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5433 target RNA into GAM5433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3793 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3793 gene: GAM1402 target protein and GAM5433 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1402 and GAM5433

GR3794 AI742159 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3794(GR3794) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3794 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3794 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3794 gene encodes GR3794 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3794 precursor RNA folds spatially, forming GR3794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3794 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3794 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3794 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3364 precursor RNA and GAM8215 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3364 RNA and GAM8215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3364 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3364 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3364 target RNA into GAM3364 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8215 target RNA into GAM8215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3794 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3794 gene: GAM3364 target protein and GAM8215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3364 and GAM8215

GR3795 BG926131 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3795(GR3795) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3795 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3795 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3795 gene encodes GR3795 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3795 precursor RNA folds spatially, forming GR3795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3795 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3795 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3795 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM156486 precursor RNA, GAM167983 precursor RNA and GAM332333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM156486 RNA, GAM167983 RNA and GAM332333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM156486 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM156486 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM156486 target RNA into GAM156486 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167983 target RNA into GAM167983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332333 target RNA into GAM332333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3795 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3795 gene: GAM156486 target protein, GAM167983 target protein and GAM332333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM156486, GAM167983 and GAM332333

GR3796 BM007199 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3796(GR3796) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3796 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3796 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3796 gene encodes GR3796 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3796 precursor RNA folds spatially, forming GR3796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3796 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3796 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3796 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3597 precursor RNA and GAM275955 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3597 RNA and GAM275955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3597 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3597 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3597 target RNA into GAM3597 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275955 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275955 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275955 target RNA into GAM275955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3796 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3796 gene: GAM3597 target protein and GAM275955 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3597 and GAM275955

GR3797 BE568241 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3797(GR3797) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3797 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3797 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3797 gene encodes GR3797 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3797 precursor RNA folds spatially, forming GR3797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3797 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3797 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3797 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM45160 precursor RNA, GAM147384 precursor RNA and GAM170721 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45160 RNA, GAM147384 RNA and GAM170721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45160 target RNA into GAM45160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147384 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147384 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147384 target RNA into GAM147384 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170721 target RNA into GAM170721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3797 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3797 gene: GAM45160 target protein, GAM147384 target protein and GAM170721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45160, GAM147384 and GAM170721

GR3798 AI660180 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3798(GR3798) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3798 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3798 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3798 gene encodes GR3798 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3798 precursor RNA folds spatially, forming GR3798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3798 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3798 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3798 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7192 precursor RNA and GAM136622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7192 RNA and GAM136622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7192 target RNA into GAM7192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM136622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136622 target RNA into GAM136622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3798 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3798 gene: GAM7192 target protein and GAM136622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7192 and GAM136622

GR3799 AI968595 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3799(GR3799) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3799 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3799 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3799 gene encodes GR3799 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3799 precursor RNA folds spatially, forming GR3799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3799 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3799 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3799 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1230 precursor RNA and GAM284735 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1230 RNA and GAM284735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1230 target RNA into GAM1230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284735 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284735 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284735 target RNA into GAM284735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3799 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3799 gene: GAM1230 target protein and GAM284735 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1230 and GAM284735

GR3800 H53744 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3800(GR3800) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3800 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3800 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3800 gene encodes GR3800 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3800 precursor RNA folds spatially, forming GR3800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3800 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3800 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3800 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7577 precursor RNA and GAM225389 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7577 RNA and GAM225389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7577 target RNA into GAM7577 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225389 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225389 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225389 target RNA into GAM225389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3800 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3800 gene: GAM7577 target protein and GAM225389 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7577 and GAM225389

GR3801 AA912453 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3801(GR3801) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3801 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3801 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3801 gene encodes GR3801 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3801 precursor RNA folds spatially, forming GR3801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3801 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3801 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3801 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3467 precursor RNA and GAM236154 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3467 RNA and GAM236154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3467 target RNA into GAM3467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236154 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236154 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236154 target RNA into GAM236154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3801 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3801 gene: GAM3467 target protein and GAM236154 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3467 and GAM236154

GR3802 R12660 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3802(GR3802) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3802 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3802 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3802 gene encodes GR3802 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3802 precursor RNA folds spatially, forming GR3802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3802 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3802 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3802 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6413 precursor RNA and GAM47702 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6413 RNA and GAM47702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6413 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6413 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6413 target RNA into GAM6413 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM47702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47702 target RNA into GAM47702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3802 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3802 gene: GAM6413 target protein and GAM47702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6413 and GAM47702

GR3803 BG107690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3803(GR3803) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3803 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3803 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3803 gene encodes GR3803 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3803 precursor RNA folds spatially, forming GR3803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3803 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3803 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3803 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78109 precursor RNA and GAM161296 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78109 RNA and GAM161296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78109 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78109 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78109 target RNA into GAM78109 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161296 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161296 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161296 target RNA into GAM161296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3803 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3803 gene: GAM78109 target protein and GAM161296 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78109 and GAM161296

GR3804 T56570 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3804(GR3804) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3804 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3804 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3804 gene encodes GR3804 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3804 precursor RNA folds spatially, forming GR3804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3804 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3804 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3804 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55250 precursor RNA and GAM303990 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55250 RNA and GAM303990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55250 target RNA into GAM55250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM303990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303990 target RNA into GAM303990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3804 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3804 gene: GAM55250 target protein and GAM303990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55250 and GAM303990

GR3805 AI338483 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3805(GR3805) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3805 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3805 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3805 gene encodes GR3805 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3805 precursor RNA folds spatially, forming GR3805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3805 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3805 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3805 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1404 precursor RNA and GAM131903 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1404 RNA and GAM131903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1404 target RNA into GAM1404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131903 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131903 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131903 target RNA into GAM131903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3805 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3805 gene: GAM1404 target protein and GAM131903 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1404 and GAM131903

GR3806 AA159986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3806(GR3806) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3806 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3806 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3806 gene encodes GR3806 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3806 precursor RNA folds spatially, forming GR3806 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3806 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3806 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3806 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM165492 precursor RNA and GAM316343 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165492 RNA and GAM316343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165492 target RNA into GAM165492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316343 target RNA into GAM316343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3806 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3806 gene: GAM165492 target protein and GAM316343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165492 and GAM316343

GR3807 AI870017 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3807(GR3807) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3807 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3807 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3807 gene encodes GR3807 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3807 precursor RNA folds spatially, forming GR3807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3807 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3807 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3807 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2094 precursor RNA, GAM106708 precursor RNA and GAM183937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2094 RNA, GAM106708 RNA and GAM183937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2094 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2094 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2094 target RNA into GAM2094 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106708 target RNA into GAM106708 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183937 target RNA into GAM183937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3807 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3807 gene: GAM2094 target protein, GAM106708 target protein and GAM183937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2094, GAM106708 and GAM183937

GR3808 BF571454 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3808(GR3808) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3808 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3808 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3808 gene encodes GR3808 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3808 precursor RNA folds spatially, forming GR3808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3808 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3808 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3808 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4747 precursor RNA, GAM6382 precursor RNA, GAM90864 precursor RNA and GAM196933 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment,

corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4747 RNA, GAM6382 RNA, GAM90864 RNA and GAM196933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4747 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4747 target RNA into GAM4747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6382 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6382 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6382 target RNA into GAM6382 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90864 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90864 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90864 target RNA into GAM90864 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196933 target RNA into GAM196933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3808 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3808 gene: GAM4747 target protein, GAM6382 target protein, GAM90864 target protein and GAM196933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4747, GAM6382, GAM90864 and GAM196933

GR3809 BF307678 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3809(GR3809) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3809 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3809 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3809 gene encodes GR3809 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3809 precursor RNA folds spatially, forming GR3809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3809 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3809 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3809 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3201 precursor RNA, GAM52478 precursor RNA and GAM96749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3201 RNA, GAM52478 RNA and GAM96749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3201 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3201 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3201 target RNA into GAM3201 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52478 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52478 target RNA into GAM52478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96749 target RNA into GAM96749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3809 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3809 gene: GAM3201 target protein, GAM52478 target protein and GAM96749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3201, GAM52478 and GAM96749

GR3810 BI834643 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3810(GR3810) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3810 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3810 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3810 gene encodes GR3810 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3810 precursor RNA folds spatially, forming GR3810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3810 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3810 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3810 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM100938 precursor RNA and GAM193301 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100938 RNA and GAM193301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100938 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100938 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100938 target RNA into GAM100938 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193301 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193301 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193301 target RNA into GAM193301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3810 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3810 gene: GAM100938 target protein and GAM193301 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100938 and GAM193301

GR3811 BI057938 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3811(GR3811) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3811 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3811 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3811 gene encodes GR3811 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3811 precursor RNA folds spatially, forming GR3811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3811 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3811 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3811 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM80705 precursor RNA and GAM83960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM80705 RNA and GAM83960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM80705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80705 target RNA into GAM80705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM83960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM83960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM83960 target RNA into GAM83960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3811 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3811 gene: GAM80705 target protein and GAM83960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM80705 and GAM83960

GR3812 BE747497 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3812(GR3812) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3812 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3812 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3812 gene encodes GR3812 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3812 precursor RNA folds spatially, forming GR3812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3812 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3812 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3812 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4247 precursor RNA and GAM73250 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4247 RNA and GAM73250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4247 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4247 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4247 target RNA into GAM4247 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM73250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73250 target RNA into GAM73250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3812 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3812 gene: GAM4247 target protein and GAM73250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4247 and GAM73250

GR3813 BG186418 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3813(GR3813) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3813 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3813 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3813 gene encodes GR3813 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3813 precursor RNA folds spatially, forming GR3813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3813 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3813 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3813 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2674 precursor RNA, GAM5100 precursor RNA and GAM54370 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2674 RNA, GAM5100 RNA and GAM54370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2674 target RNA into GAM2674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5100 target RNA into GAM5100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54370 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54370 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54370 target RNA into GAM54370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3813 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3813 gene: GAM2674 target protein, GAM5100 target protein and GAM54370 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2674, GAM5100 and GAM54370

GR3814 BE304839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3814(GR3814) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3814 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3814 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3814 gene encodes GR3814 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3814 precursor RNA folds spatially, forming GR3814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3814 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3814 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3814 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM45828 precursor RNA and GAM224363 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45828 RNA and GAM224363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45828 target RNA into GAM45828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224363 target RNA into GAM224363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3814 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3814 gene: GAM45828 target protein and GAM224363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45828 and GAM224363

GR3815 AI480231 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3815(GR3815) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3815 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3815 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3815 gene encodes GR3815 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3815 precursor RNA folds spatially, forming GR3815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3815 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3815 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3815 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM203707 precursor RNA and GAM260744 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM203707 RNA and GAM260744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM203707 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203707 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203707 target RNA into GAM203707 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260744 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260744

target RNA into GAM260744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3815 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3815 gene: GAM203707 target protein and GAM260744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM203707 and GAM260744

GR3816 AA657754 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3816(GR3816) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3816 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3816 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3816 gene encodes GR3816 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3816 precursor RNA folds spatially, forming GR3816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3816 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3816 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3816 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM154473 precursor RNA and GAM182673 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM154473 RNA and GAM182673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM154473 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154473 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154473 target RNA into GAM154473 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182673 target RNA into GAM182673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3816 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3816 gene: GAM154473 target protein and GAM182673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM154473 and GAM182673

GR3817 BG708650 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3817(GR3817) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3817 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3817 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3817 gene encodes GR3817 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3817 precursor RNA folds spatially, forming GR3817 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3817 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3817 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3817 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7224 precursor RNA and GAM124397 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7224 RNA and GAM124397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7224 target RNA into GAM7224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM124397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124397 target RNA into GAM124397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3817 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3817 gene: GAM7224 target protein and GAM124397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7224 and GAM124397

GR3818 BG877652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3818(GR3818) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3818 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3818 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3818 gene encodes GR3818 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3818 precursor RNA folds spatially, forming GR3818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3818 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3818 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3818 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM70157 precursor RNA, GAM127926 precursor RNA, GAM246076 precursor RNA and GAM266796 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70157 RNA, GAM127926 RNA, GAM246076 RNA and GAM266796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70157 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70157 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70157 target RNA into GAM70157 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM127926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127926 target RNA into GAM127926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246076 target RNA into GAM246076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266796 target RNA into GAM266796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3818 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3818 gene: GAM70157 target protein, GAM127926 target protein, GAM246076 target protein and GAM266796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70157, GAM127926, GAM246076 and GAM266796

GR3819 BM923553 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3819(GR3819) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3819 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3819 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3819 gene encodes GR3819 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3819 precursor RNA folds spatially, forming GR3819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3819 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3819 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3819 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7549 precursor RNA, GAM95027 precursor RNA, GAM237654 precursor RNA and GAM317934 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7549 RNA, GAM95027 RNA, GAM237654 RNA and GAM317934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7549 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7549 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7549 target RNA into GAM7549 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95027 target RNA into GAM95027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM237654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM237654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM237654 target RNA into GAM237654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317934 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317934 target RNA into GAM317934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3819 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3819 gene: GAM7549 target protein, GAM95027 target protein, GAM237654 target protein and GAM317934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7549, GAM95027, GAM237654 and GAM317934

GR3820 BE349917 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3820(GR3820) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3820 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3820 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3820 gene encodes GR3820 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3820 precursor RNA folds spatially, forming GR3820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3820 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3820 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3820 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM290337 precursor RNA and GAM332436 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM290337 RNA and GAM332436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM290337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290337 target RNA into GAM290337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332436 target RNA into GAM332436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3820 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3820 gene: GAM290337 target protein and GAM332436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM290337 and GAM332436

GR3821 BF847695 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3821(GR3821) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3821 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3821 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3821 gene encodes GR3821 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3821 precursor RNA folds spatially, forming GR3821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3821 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3821 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3821 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128574 precursor RNA and GAM179941 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128574 RNA and GAM179941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128574 target RNA into GAM128574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM179941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179941 target RNA into GAM179941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3821 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3821 gene: GAM128574 target protein and GAM179941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128574 and GAM179941

GR3822 AI264856 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3822(GR3822) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3822 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3822 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3822 gene encodes GR3822 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3822 precursor RNA folds spatially, forming GR3822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3822 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3822 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3822 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5041 precursor RNA, GAM23329 precursor RNA and GAM256050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5041 RNA, GAM23329 RNA and GAM256050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5041 target RNA into GAM5041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM23329 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23329 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23329 target RNA into GAM23329 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256050 target RNA into GAM256050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3822 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3822 gene: GAM5041 target protein, GAM23329 target protein and GAM256050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5041, GAM23329 and GAM256050

GR3823 BF204572 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3823(GR3823) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3823 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3823 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3823 gene encodes GR3823 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3823 precursor RNA folds spatially, forming GR3823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3823 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3823 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3823 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7715 precursor RNA, GAM9604 precursor RNA and GAM295721 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7715 RNA, GAM9604 RNA and GAM295721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7715 target RNA into GAM7715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9604 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9604 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM9604 target RNA into GAM9604 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295721 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295721 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295721 target RNA into GAM295721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3823 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3823 gene: GAM7715 target protein, GAM9604 target protein and GAM295721 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7715, GAM9604 and GAM295721

GR3824 BI912875 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3824(GR3824) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3824 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3824 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3824 gene encodes GR3824 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3824 precursor RNA folds spatially, forming GR3824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3824 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3824 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3824 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4313 precursor RNA and GAM5613 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4313 RNA and GAM5613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4313 target RNA into GAM4313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5613 target RNA into GAM5613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3824 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3824 gene: GAM4313 target protein and GAM5613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4313 and GAM5613

GR3825 AA758129 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3825(GR3825) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3825 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3825 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3825 gene encodes GR3825 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3825 precursor RNA folds spatially, forming GR3825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3825 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3825 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3825 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1525 precursor RNA and GAM3805 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1525 RNA and GAM3805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1525 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1525 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1525 target RNA into GAM1525 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3805 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3805 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3805 target RNA into GAM3805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3825 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3825 gene: GAM1525 target protein and GAM3805 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1525 and GAM3805

GR3826 BE938023 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3826(GR3826) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3826 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3826 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3826 gene encodes GR3826 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3826 precursor RNA folds spatially, forming GR3826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3826 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3826 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3826 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64 precursor RNA and GAM231425 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64 RNA and GAM231425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64 target RNA into GAM64 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231425 target RNA into GAM231425 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3826 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3826 gene: GAM64 target protein and GAM231425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64 and GAM231425

GR3827 BM479727 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3827(GR3827) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3827 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3827 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3827 gene encodes GR3827 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3827 precursor RNA folds spatially, forming GR3827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3827 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3827 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3827 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM181776 precursor RNA and GAM294571 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM181776 RNA and GAM294571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM181776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM181776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181776 target RNA into GAM181776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294571 target RNA into GAM294571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3827 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3827 gene: GAM181776 target protein and GAM294571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM181776 and GAM294571

GR3828 H73609 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3828(GR3828) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3828 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3828 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3828 gene encodes GR3828 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3828 precursor RNA folds spatially, forming GR3828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3828 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3828 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3828 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM277207 precursor RNA and GAM286065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM277207 RNA and GAM286065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM277207 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277207 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277207 target RNA into GAM277207 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286065 target RNA into GAM286065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3828 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3828 gene: GAM277207 target protein and GAM286065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM277207 and GAM286065

GR3829 AI283853 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3829(GR3829) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3829 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3829 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3829 gene encodes GR3829 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3829 precursor RNA folds spatially, forming GR3829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3829 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3829 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3829 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM850 precursor RNA, GAM6527 precursor RNA, GAM58748 precursor RNA, GAM284624 precursor RNA and GAM336019 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM850 RNA, GAM6527 RNA, GAM58748 RNA, GAM284624 RNA and GAM336019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM850 target RNA into GAM850 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6527 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6527 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6527 target RNA into GAM6527 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58748 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58748 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58748 target RNA into GAM58748 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284624 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284624 target RNA into GAM284624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336019 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336019 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336019 target RNA into GAM336019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3829 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3829 gene: GAM850 target protein, GAM6527 target protein, GAM58748 target protein, GAM284624 target protein and GAM336019 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM850, GAM6527, GAM58748, GAM284624 and GAM336019

GR3830 BI561961 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3830(GR3830) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3830 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3830 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3830 gene encodes GR3830 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3830 precursor RNA folds spatially, forming GR3830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3830 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3830 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3830 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM113216 precursor RNA and GAM266399 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113216 RNA and GAM266399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113216 target RNA into GAM113216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266399 target RNA into GAM266399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3830 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3830 gene: GAM113216 target protein and GAM266399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113216 and GAM266399

GR3831 BE313621 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3831(GR3831) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3831 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3831 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3831 gene encodes GR3831 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3831 precursor RNA folds spatially, forming GR3831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3831 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3831 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3831 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3880 precursor RNA, GAM8203 precursor RNA, GAM107351 precursor RNA and GAM209220 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3880 RNA, GAM8203 RNA, GAM107351 RNA and GAM209220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3880 target RNA into GAM3880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8203 target RNA into GAM8203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107351 target RNA into GAM107351 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209220 target RNA into GAM209220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3831 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3831 gene: GAM3880 target protein, GAM8203 target protein, GAM107351 target protein and GAM209220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3880, GAM8203, GAM107351 and GAM209220

GR3832 AW468795 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3832(GR3832) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3832 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3832 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3832 gene encodes GR3832 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3832 precursor RNA folds spatially, forming GR3832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3832 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3832 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3832 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM255408 precursor RNA and GAM310579 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM255408 RNA and GAM310579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM255408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255408 target RNA into GAM255408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM310579 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM310579 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM310579 target RNA into GAM310579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3832 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3832 gene: GAM255408 target protein and GAM310579 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM255408 and GAM310579

GR3833 BF987317 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3833(GR3833) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3833 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3833 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3833 gene encodes GR3833 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3833 precursor RNA folds spatially, forming GR3833 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3833 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3833 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3833 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74889 precursor RNA and GAM333040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74889 RNA and GAM333040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74889 target RNA into GAM74889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333040 target RNA into GAM333040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3833 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3833 gene: GAM74889 target protein and GAM333040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74889 and GAM333040

GR3834 BG704227 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3834(GR3834) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3834 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3834 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3834 gene encodes GR3834 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3834 precursor RNA folds spatially, forming GR3834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3834 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3834 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3834 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM570 precursor RNA and GAM6076 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM570 RNA and GAM6076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM570 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM570 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM570 target RNA into GAM570 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6076 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6076 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6076 target RNA into GAM6076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3834 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3834 gene: GAM570 target protein and GAM6076 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM570 and GAM6076

GR3835 AA010620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3835(GR3835) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3835 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3835 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3835 gene encodes GR3835 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3835 precursor RNA folds spatially, forming GR3835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3835 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3835 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3835 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6981 precursor RNA and GAM232783 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6981 RNA and GAM232783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6981 target RNA into GAM6981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM232783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM232783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM232783 target RNA into GAM232783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3835 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3835 gene: GAM6981 target protein and GAM232783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6981 and GAM232783

GR3836 BI194111 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3836(GR3836) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3836 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3836 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3836 gene encodes GR3836 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3836 precursor RNA folds spatially, forming GR3836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3836 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3836 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3836 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1943 precursor RNA, GAM112492 precursor RNA and GAM231841 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1943 RNA, GAM112492 RNA and GAM231841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1943 target RNA into GAM1943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112492 target RNA into GAM112492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231841 target RNA into GAM231841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3836 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3836 gene: GAM1943 target protein, GAM112492 target protein and GAM231841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1943, GAM112492 and GAM231841

GR3837 BM739331 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3837(GR3837) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3837 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3837 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3837 gene encodes GR3837 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3837 precursor RNA folds spatially, forming GR3837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3837 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3837 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3837 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM978 precursor RNA and GAM245306 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM978 RNA and GAM245306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM978 target RNA into GAM978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245306 target RNA into GAM245306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3837 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3837 gene: GAM978 target protein and GAM245306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM978 and GAM245306

GR3838 AW055126 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3838(GR3838) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3838 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3838 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3838 gene encodes GR3838 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3838 precursor RNA folds spatially, forming GR3838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3838 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3838 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3838 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7960 precursor RNA and GAM178958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7960 RNA and GAM178958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7960 target RNA into GAM7960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178958 target RNA into GAM178958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3838 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3838 gene: GAM7960 target protein and GAM178958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7960 and GAM178958

GR3839 R67171 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3839(GR3839) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3839 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3839 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3839 gene encodes GR3839 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3839 precursor RNA folds spatially, forming GR3839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3839 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3839 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3839 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1563 precursor RNA and GAM218030 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1563 RNA and GAM218030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1563 target RNA into GAM1563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218030 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218030 target RNA into GAM218030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3839 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3839 gene: GAM1563 target protein and GAM218030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1563 and GAM218030

GR3840 AW893469 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3840(GR3840) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3840 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3840 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3840 gene encodes GR3840 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3840 precursor RNA folds spatially, forming GR3840 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3840 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3840 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3840 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM3164 precursor RNA, GAM4163 precursor RNA, GAM50132 precursor RNA and GAM150462 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3164 RNA, GAM4163 RNA, GAM50132 RNA and GAM150462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3164 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3164 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3164 target RNA into GAM3164 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4163 target RNA into GAM4163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50132 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50132 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50132 target RNA into GAM50132 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150462 target RNA into GAM150462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3840 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3840 gene: GAM3164 target protein, GAM4163 target protein, GAM50132 target protein and GAM150462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3164, GAM4163, GAM50132 and GAM150462

GR3841 BE062915 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3841(GR3841) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3841 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3841 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3841 gene encodes GR3841 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3841 precursor RNA folds spatially, forming GR3841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3841 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3841 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3841 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM23924 precursor RNA, GAM175848 precursor RNA and GAM261180 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM23924 RNA, GAM175848 RNA and GAM261180 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM23924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM23924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM23924 target RNA into GAM23924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175848 target RNA into GAM175848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261180 target RNA into GAM261180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3841 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3841 gene: GAM23924 target protein, GAM175848 target protein and GAM261180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM23924, GAM175848 and GAM261180

GR3842 AF188523 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3842(GR3842) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3842 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3842 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3842 gene encodes GR3842 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3842 precursor RNA folds spatially, forming GR3842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3842 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3842 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3842 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM206015 precursor RNA and GAM251548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM206015 RNA and GAM251548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM206015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206015 target RNA into GAM206015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251548 target RNA into GAM251548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3842 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3842 gene: GAM206015 target protein and GAM251548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM206015 and GAM251548

GR3843 AV688875 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3843(GR3843) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3843 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3843 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3843 gene encodes GR3843 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3843 precursor RNA folds spatially, forming GR3843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3843 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3843 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3843 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10940 precursor RNA and GAM116682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10940 RNA and GAM116682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10940 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10940 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10940 target RNA into GAM10940 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116682 target RNA into GAM116682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3843 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3843 gene: GAM10940 target protein and GAM116682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10940 and GAM116682

GR3844 BQ072878 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3844(GR3844) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3844 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3844 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3844 gene encodes GR3844 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3844 precursor RNA folds spatially, forming GR3844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3844 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3844 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3844 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM235 precursor RNA, GAM1377 precursor RNA, GAM106607 precursor RNA and GAM277311 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM235 RNA, GAM1377 RNA, GAM106607 RNA and GAM277311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of

which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM235 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235 target RNA into GAM235 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1377 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1377 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1377 target RNA into GAM1377 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106607 target RNA into GAM106607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277311 target RNA into GAM277311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3844 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3844 gene: GAM235 target protein, GAM1377 target protein, GAM106607 target protein and GAM277311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM235, GAM1377, GAM106607 and GAM277311

GR3845 BF871534 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3845(GR3845) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3845 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3845 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3845 gene encodes GR3845 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3845 precursor RNA folds spatially, forming GR3845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3845 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3845 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3845 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3589 precursor RNA and GAM276680 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3589 RNA and GAM276680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3589 target RNA into GAM3589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM276680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276680 target RNA into GAM276680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3845 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3845 gene: GAM3589 target protein and GAM276680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3589 and GAM276680

GR3846 AW117477 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3846(GR3846) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3846 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3846 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3846 gene encodes GR3846 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3846 precursor RNA folds spatially, forming GR3846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3846 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3846 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3846 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM51870 precursor RNA and GAM315078 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM51870 RNA and GAM315078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM51870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM51870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM51870 target RNA into GAM51870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315078 target RNA into GAM315078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3846 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3846 gene: GAM51870 target protein and GAM315078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM51870 and GAM315078

GR3847 BM724329 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3847(GR3847) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3847 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3847 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3847 gene encodes GR3847 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3847 precursor RNA folds spatially, forming GR3847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3847 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3847 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3847 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM342 precursor RNA and GAM85607 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM342 RNA and GAM85607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM342 target RNA into GAM342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM85607 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85607 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85607 target RNA into GAM85607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3847 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3847 gene: GAM342 target protein and GAM85607 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM342 and GAM85607

GR3848 BF352620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3848(GR3848) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3848 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3848 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3848 gene encodes GR3848 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3848 precursor RNA folds spatially, forming GR3848 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3848 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3848 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3848 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM161276 precursor RNA, GAM226865 precursor RNA and GAM311454 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM161276 RNA, GAM226865 RNA and GAM311454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM161276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM161276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161276 target RNA into GAM161276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226865 target RNA into GAM226865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311454 target RNA into GAM311454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3848 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3848 gene: GAM161276 target protein, GAM226865 target protein and GAM311454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM161276, GAM226865 and GAM311454

GR3849 AU152533 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3849(GR3849) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3849 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3849 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3849 gene encodes GR3849 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3849 precursor RNA folds spatially, forming GR3849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3849 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3849 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3849 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1141 precursor RNA and GAM125106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1141 RNA and GAM125106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1141 target RNA into

GAM1141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125106 target RNA into GAM125106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3849 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3849 gene: GAM1141 target protein and GAM125106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1141 and GAM125106

GR3850 AA742231 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3850(GR3850) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3850 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3850 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3850 gene encodes GR3850 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3850 precursor RNA folds spatially, forming GR3850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3850 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3850 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3850 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM167768 precursor RNA, GAM174650 precursor RNA and GAM312205 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM167768 RNA, GAM174650 RNA and GAM312205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM167768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167768 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167768 target RNA into GAM167768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174650 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174650 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174650 target RNA into GAM174650 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312205 target RNA into GAM312205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3850 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3850 gene: GAM167768 target protein, GAM174650 target protein and GAM312205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM167768, GAM174650 and GAM312205

GR3851 BF687715 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3851(GR3851) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3851 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3851 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3851 gene encodes GR3851 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3851 precursor RNA folds spatially, forming GR3851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3851 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3851 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3851 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1203 precursor RNA, GAM63833 precursor RNA and GAM262456 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1203 RNA, GAM63833 RNA and GAM262456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1203 target RNA into GAM1203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63833 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63833 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63833 target RNA into GAM63833 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262456 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262456 target RNA into GAM262456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3851 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3851 gene: GAM1203 target protein, GAM63833 target protein and GAM262456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1203, GAM63833 and GAM262456

GR3852 BG403519 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3852(GR3852) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3852 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3852 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3852 gene encodes GR3852 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3852 precursor RNA folds spatially, forming GR3852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3852 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3852 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3852 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3885 precursor RNA, GAM26447 precursor RNA and GAM154002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3885 RNA, GAM26447 RNA and GAM154002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3885 target RNA into GAM3885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26447 target RNA into GAM26447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM154002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154002 target RNA into GAM154002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3852 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3852 gene: GAM3885 target protein, GAM26447 target protein and GAM154002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3885, GAM26447 and GAM154002

GR3853 BG912823 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3853(GR3853) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3853 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3853 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3853 gene encodes GR3853 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3853 precursor RNA folds spatially, forming GR3853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3853 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3853 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3853 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM31849 precursor RNA, GAM227111 precursor RNA and GAM266278 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM31849 RNA, GAM227111 RNA and GAM266278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM31849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31849 target RNA into GAM31849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227111 target RNA into GAM227111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266278 target RNA into GAM266278 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3853 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3853 gene: GAM31849 target protein, GAM227111 target protein and GAM266278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM31849, GAM227111 and GAM266278

GR3854 AI635288 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3854(GR3854) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3854 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3854 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3854 gene encodes GR3854 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3854 precursor RNA folds spatially, forming GR3854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3854 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3854 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3854 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM64765 precursor RNA and GAM109796 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM64765 RNA and GAM109796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM64765 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64765 target RNA into GAM64765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM109796 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109796 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109796 target RNA into GAM109796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3854 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3854 gene: GAM64765 target protein and GAM109796 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM64765 and GAM109796

GR3855 AW503960 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3855(GR3855) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3855 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3855 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3855 gene encodes GR3855 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3855 precursor RNA folds spatially, forming GR3855 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3855 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3855 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3855 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM282523 precursor RNA and GAM283834 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM282523 RNA and GAM283834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM282523 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282523 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282523 target RNA into GAM282523 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM283834 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM283834 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM283834 target RNA into GAM283834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3855 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3855 gene: GAM282523 target protein and GAM283834 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM282523 and GAM283834

GR3856 BI088286 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3856(GR3856) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3856 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3856 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3856 gene encodes GR3856 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3856 precursor RNA folds spatially, forming GR3856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3856 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3856 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3856 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM954 precursor RNA and GAM8522 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM954 RNA and GAM8522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM954 target RNA into GAM954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8522 target RNA into GAM8522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3856 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3856 gene: GAM954 target protein and GAM8522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM954 and GAM8522

GR3857 AA781839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3857(GR3857) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3857 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3857 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3857 gene encodes GR3857 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3857 precursor RNA folds spatially, forming GR3857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3857 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3857 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3857 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM436 precursor RNA and GAM333372 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM436 RNA and GAM333372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM436 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM436 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM436 target RNA into GAM436 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333372 target RNA into GAM333372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3857 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3857 gene: GAM436 target protein and GAM333372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM436 and GAM333372

GR3858 BI200220 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3858(GR3858) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3858 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3858 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3858 gene encodes GR3858 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3858 precursor RNA folds spatially, forming GR3858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3858 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3858 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3858 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2264 precursor RNA, GAM3782 precursor RNA and GAM195905 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2264 RNA, GAM3782 RNA and GAM195905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs

corresponding to GAM RNA of Fig. 8.

GAM2264 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2264 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2264 target RNA into GAM2264 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3782 target RNA into GAM3782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195905 target RNA into GAM195905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3858 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3858 gene: GAM2264 target protein, GAM3782 target protein and GAM195905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2264, GAM3782 and GAM195905

GR3859 AW402135 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3859(GR3859) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3859 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3859 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3859 gene encodes GR3859 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3859 precursor RNA folds spatially, forming GR3859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3859 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3859 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3859 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM302440 precursor RNA and GAM311133 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM302440 RNA and GAM311133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM302440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302440 target RNA into GAM302440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM311133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM311133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM311133 target RNA into GAM311133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3859 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3859 gene: GAM302440 target protein and GAM311133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM302440 and GAM311133

GR3860 AW021722 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3860(GR3860) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3860 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3860 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3860 gene encodes GR3860 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3860 precursor RNA folds spatially, forming GR3860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3860 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3860 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3860 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26624 precursor RNA and GAM88674 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26624 RNA and GAM88674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26624 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26624 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26624 target RNA into GAM26624 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88674 target RNA into GAM88674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3860 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3860 gene: GAM26624 target protein and GAM88674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26624 and GAM88674

GR3861 BM910974 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3861(GR3861) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3861 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3861 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3861 gene encodes GR3861 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3861 precursor RNA folds spatially, forming GR3861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3861 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3861 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3861 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118855 precursor RNA and GAM242440 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118855 RNA and GAM242440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118855 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118855 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118855 target RNA into GAM118855 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242440 target RNA into GAM242440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3861 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3861 gene: GAM118855 target protein and GAM242440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118855 and GAM242440

GR3862 BF382861 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3862(GR3862) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3862 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3862 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3862 gene encodes GR3862 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3862 precursor RNA folds spatially, forming GR3862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3862 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3862 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3862 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM102685 precursor RNA, GAM151777 precursor RNA and GAM228445 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102685 RNA, GAM151777 RNA and GAM228445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102685 target RNA into GAM102685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM151777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM151777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM151777 target RNA into GAM151777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228445 target RNA into GAM228445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3862 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3862 gene: GAM102685 target protein, GAM151777 target protein and GAM228445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102685, GAM151777 and GAM228445

GR3863 AA334698 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3863(GR3863) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3863 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3863 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3863 gene encodes GR3863 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3863 precursor RNA folds spatially, forming GR3863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3863 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3863 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3863 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192002 precursor RNA and GAM326904 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192002 RNA and GAM326904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192002 target RNA into GAM192002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM326904 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM326904 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM326904

target RNA into GAM326904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3863 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3863 gene: GAM192002 target protein and GAM326904 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192002 and GAM326904

GR3864 AW935236 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3864(GR3864) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3864 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3864 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3864 gene encodes GR3864 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3864 precursor RNA folds spatially, forming GR3864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3864 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3864 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3864 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120882 precursor RNA and GAM334192 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120882 RNA and GAM334192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120882 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120882 target RNA into GAM120882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334192 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334192 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334192 target RNA into GAM334192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3864 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3864 gene: GAM120882 target protein and GAM334192 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120882 and GAM334192

GR3865 BQ053630 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3865(GR3865) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3865 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3865 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3865 gene encodes GR3865 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3865 precursor RNA folds spatially, forming GR3865 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3865 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3865 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3865 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM218116 precursor RNA and GAM270271 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218116 RNA and GAM270271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218116 target RNA into GAM218116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270271 target RNA into GAM270271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3865 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3865 gene: GAM218116 target protein and GAM270271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218116 and GAM270271

GR3866 BE670410 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3866(GR3866) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3866 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3866 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3866 gene encodes GR3866 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3866 precursor RNA folds spatially, forming GR3866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3866 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3866 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3866 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7083 precursor RNA and GAM7519 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7083 RNA and GAM7519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7083 target RNA into GAM7083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7519 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7519 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7519 target RNA into GAM7519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3866 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3866 gene: GAM7083 target protein and GAM7519 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7083 and GAM7519

GR3867 AI554448 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3867(GR3867) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3867 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3867 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3867 gene encodes GR3867 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3867 precursor RNA folds spatially, forming GR3867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3867 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3867 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3867 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132492 precursor RNA and GAM134061 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132492 RNA and GAM134061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132492 target RNA into GAM132492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134061 target RNA into GAM134061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3867 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3867 gene: GAM132492 target protein and GAM134061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132492 and GAM134061

GR3868 AA046077 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3868(GR3868) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3868 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3868 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3868 gene encodes GR3868 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3868 precursor RNA folds spatially, forming GR3868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3868 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3868 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3868 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3742 precursor RNA and GAM67028 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3742 RNA and GAM67028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3742 target RNA into GAM3742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67028 target RNA into GAM67028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3868 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3868 gene: GAM3742 target protein and GAM67028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3742 and GAM67028

GR3869 W46539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3869(GR3869) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3869 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3869 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3869 gene encodes GR3869 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3869 precursor RNA folds spatially, forming GR3869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3869 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3869 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3869 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1919 precursor RNA and GAM182576 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1919 RNA and GAM182576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1919 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1919 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1919 target RNA into GAM1919 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182576 target RNA into GAM182576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3869 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3869 gene: GAM1919 target protein and GAM182576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1919 and GAM182576

GR3870 BG196191 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3870(GR3870) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3870 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3870 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3870 gene encodes GR3870 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3870 precursor RNA folds spatially, forming GR3870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3870 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3870 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3870 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3116 precursor RNA and GAM88596 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3116 RNA and GAM88596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3116 target RNA into GAM3116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88596 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88596 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88596 target RNA into GAM88596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3870 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3870 gene: GAM3116 target protein and GAM88596 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3116 and GAM88596

GR3871 BG340019 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3871(GR3871) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3871 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3871 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3871 gene encodes GR3871 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3871 precursor RNA folds spatially, forming GR3871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3871 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3871 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3871 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8464 precursor RNA, GAM212996 precursor RNA and GAM278900 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8464 RNA, GAM212996 RNA and GAM278900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8464 target RNA into GAM8464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212996 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212996 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212996 target RNA into GAM212996 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278900 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278900 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278900 target RNA into GAM278900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3871 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3871 gene: GAM8464 target protein, GAM212996 target protein and GAM278900 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8464, GAM212996 and GAM278900

GR3872 BE734592 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3872(GR3872) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3872 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3872 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3872 gene encodes GR3872 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3872 precursor RNA folds spatially, forming GR3872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3872 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3872 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3872 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4710 precursor RNA, GAM6972 precursor RNA and GAM255339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4710 RNA, GAM6972 RNA and GAM255339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4710 target RNA into GAM4710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6972 target RNA into GAM6972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255339 target RNA into GAM255339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3872 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3872 gene: GAM4710 target protein, GAM6972 target protein and GAM255339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4710, GAM6972 and GAM255339

GR3873 BF980775 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3873(GR3873) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3873 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3873 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3873 gene encodes GR3873 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3873 precursor RNA folds spatially, forming GR3873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3873 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3873 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3873 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2356 precursor RNA and GAM218349 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2356 RNA and GAM218349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2356 target RNA into GAM2356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218349 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218349

target RNA into GAM218349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3873 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3873 gene: GAM2356 target protein and GAM218349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2356 and GAM218349

GR3874 AA258979 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3874(GR3874) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3874 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3874 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3874 gene encodes GR3874 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3874 precursor RNA folds spatially, forming GR3874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3874 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3874 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3874 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7499 precursor RNA, GAM210110 precursor RNA and GAM290300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7499 RNA, GAM210110 RNA and GAM290300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7499 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7499 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7499 target RNA into GAM7499 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210110 target RNA into GAM210110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290300 target RNA into GAM290300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3874 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3874 gene: GAM7499 target protein, GAM210110 target protein and GAM290300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7499, GAM210110 and GAM290300

GR3875 AI831643 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3875(GR3875) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3875 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3875 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3875 gene encodes GR3875 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3875 precursor RNA folds spatially, forming GR3875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3875 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3875 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3875 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM180115 precursor RNA and GAM280065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM180115 RNA and GAM280065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM180115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180115 target RNA into GAM180115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280065 target RNA into GAM280065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3875 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3875 gene: GAM180115 target protein and GAM280065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM180115 and GAM280065

GR3876 BF819110 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3876(GR3876) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3876 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3876 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3876 gene encodes GR3876 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3876 precursor RNA folds spatially, forming GR3876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3876 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3876 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3876 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM119340 precursor RNA and GAM285028 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM119340 RNA and GAM285028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM119340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM119340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM119340 target RNA into GAM119340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285028 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285028 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285028 target RNA into GAM285028 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3876 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3876 gene: GAM119340 target protein and GAM285028 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM119340 and GAM285028

GR3877 BG169339 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3877(GR3877) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3877 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3877 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3877 gene encodes GR3877 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3877 precursor RNA folds spatially, forming GR3877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3877 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3877 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3877 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM116567 precursor RNA, GAM320309 precursor RNA and GAM331792 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM116567 RNA, GAM320309 RNA and GAM331792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM116567 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116567 target RNA into GAM116567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320309 target RNA into GAM320309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM331792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331792 target RNA into GAM331792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3877 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3877 gene: GAM116567 target protein, GAM320309 target protein and GAM331792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM116567, GAM320309 and GAM331792

GR3878 BI600378 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3878(GR3878) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3878 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3878 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3878 gene encodes GR3878 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3878 precursor RNA folds spatially, forming GR3878 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3878 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3878 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3878 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2794 precursor RNA, GAM212844 precursor RNA and GAM251622 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2794 RNA, GAM212844 RNA and GAM251622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2794 target RNA into GAM2794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212844 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212844 target RNA into GAM212844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251622 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251622 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251622 target RNA into GAM251622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3878 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3878 gene: GAM2794 target protein, GAM212844 target protein and GAM251622 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2794, GAM212844 and GAM251622

GR3879 BM549184 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3879(GR3879) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3879 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3879 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3879 gene encodes GR3879 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3879 precursor RNA folds spatially, forming GR3879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3879 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3879 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3879 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM107488 precursor RNA and GAM279423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM107488 RNA and GAM279423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM107488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107488

target RNA into GAM107488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279423 target RNA into GAM279423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3879 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3879 gene: GAM107488 target protein and GAM279423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM107488 and GAM279423

GR3880 BG425026 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3880(GR3880) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3880 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3880 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3880 gene encodes GR3880 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3880 precursor RNA folds spatially, forming GR3880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3880 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3880 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3880 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1756 precursor RNA, GAM69545 precursor RNA and GAM214466 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1756 RNA, GAM69545 RNA and GAM214466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1756 target RNA into GAM1756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69545 target RNA into GAM69545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214466 target RNA into GAM214466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3880 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3880 gene: GAM1756 target protein, GAM69545 target protein and GAM214466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1756, GAM69545 and GAM214466

GR3881 BF803169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3881(GR3881) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3881 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3881 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3881 gene encodes GR3881 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3881 precursor RNA folds spatially, forming GR3881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3881 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3881 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3881 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8210 precursor RNA and GAM112401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8210 RNA and GAM112401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8210 target RNA into GAM8210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112401 target RNA into GAM112401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3881 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3881 gene: GAM8210 target protein and GAM112401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8210 and GAM112401

GR3882 AA219548 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3882(GR3882) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3882 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3882 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3882 gene encodes GR3882 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3882 precursor RNA folds spatially, forming GR3882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3882 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3882 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3882 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7717 precursor RNA and GAM102715 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7717 RNA and GAM102715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7717 target RNA into GAM7717 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102715 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102715 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102715 target RNA into GAM102715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3882 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3882 gene: GAM7717 target protein and GAM102715 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7717 and GAM102715

GR3883 BF509903 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3883(GR3883) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3883 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3883 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3883 gene encodes GR3883 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3883 precursor RNA folds spatially, forming GR3883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3883 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3883 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3883 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2536 precursor RNA, GAM7122 precursor RNA and GAM273052 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2536 RNA, GAM7122 RNA and GAM273052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2536 target RNA into GAM2536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7122 target RNA into GAM7122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273052 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273052 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273052 target RNA into GAM273052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3883 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3883 gene: GAM2536 target protein, GAM7122 target protein and GAM273052 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2536, GAM7122 and GAM273052

GR3884 BG119479 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3884(GR3884) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3884 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3884 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3884 gene encodes GR3884 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3884 precursor RNA folds spatially, forming GR3884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3884 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3884 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3884 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM366 precursor RNA, GAM13379 precursor RNA and GAM187682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM366 RNA, GAM13379 RNA and GAM187682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM366 target RNA into GAM366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM13379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13379 target RNA into GAM13379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187682 target RNA into GAM187682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3884 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3884 gene: GAM366 target protein, GAM13379 target protein and GAM187682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM366, GAM13379 and GAM187682

GR3885 AA984672 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3885(GR3885) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3885 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3885 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3885 gene encodes GR3885 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3885 precursor RNA folds spatially, forming GR3885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3885 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3885 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3885 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8568 precursor RNA and GAM41452 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8568 RNA and GAM41452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM8568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8568 target RNA into GAM8568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM41452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41452 target RNA into GAM41452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3885 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3885 gene: GAM8568 target protein and GAM41452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8568 and GAM41452

GR3886 BG003609 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3886(GR3886) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3886 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3886 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3886 gene encodes GR3886 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3886 precursor RNA folds spatially, forming GR3886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3886 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3886 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3886 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM19355 precursor RNA and GAM48551 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM19355 RNA and GAM48551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM19355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19355 target RNA into GAM19355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM48551 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48551 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48551 target RNA into GAM48551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3886 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3886 gene: GAM19355 target protein and GAM48551 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM19355 and GAM48551

GR3887 BF886474 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3887(GR3887) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3887 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3887

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3887 gene encodes GR3887 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3887 precursor RNA folds spatially, forming GR3887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3887 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3887 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3887 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM145453 precursor RNA and GAM313219 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM145453 RNA and GAM313219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM145453 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145453 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145453 target RNA into GAM145453 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM313219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313219 target RNA into GAM313219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3887 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3887 gene: GAM145453 target protein and GAM313219 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM145453 and GAM313219

GR3888 BG489444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3888(GR3888) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3888 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3888 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3888 gene encodes GR3888 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3888 precursor RNA folds spatially, forming GR3888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3888 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3888 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3888 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM95245 precursor RNA, GAM106994 precursor RNA and GAM164047 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95245 RNA, GAM106994 RNA and GAM164047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95245 target RNA into GAM95245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106994 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106994 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106994 target RNA into GAM106994 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM164047 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164047 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164047 target RNA into GAM164047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3888 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3888 gene: GAM95245 target protein, GAM106994 target protein and GAM164047 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95245, GAM106994 and GAM164047

GR3889 AI209209 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3889(GR3889) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3889 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3889 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3889 gene encodes GR3889 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3889 precursor RNA folds spatially, forming GR3889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3889 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3889 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3889 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2754 precursor RNA, GAM4584 precursor RNA and GAM221636 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2754 RNA, GAM4584 RNA and GAM221636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2754 target RNA into GAM2754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4584 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4584 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4584 target RNA into GAM4584 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221636 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221636 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221636 target RNA into GAM221636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3889 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3889 gene: GAM2754 target protein, GAM4584 target protein and GAM221636 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2754, GAM4584 and GAM221636

GR3890 BF238029 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3890(GR3890) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3890 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3890 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3890 gene encodes GR3890 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3890 precursor RNA folds spatially, forming GR3890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3890 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3890 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3890 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM95 precursor RNA, GAM2209 precursor RNA and GAM255349 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95 RNA, GAM2209 RNA and GAM255349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95 target RNA into GAM95 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2209 target RNA into GAM2209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255349 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255349 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255349 target RNA into GAM255349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3890 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3890 gene: GAM95 target protein, GAM2209 target protein and GAM255349 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95, GAM2209 and GAM255349

GR3891 AA362931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3891(GR3891) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3891 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3891 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3891 gene encodes GR3891 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3891 precursor RNA folds spatially, forming GR3891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3891 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3891 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3891 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2501 precursor RNA and GAM5221 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2501 RNA and GAM5221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2501 target RNA into GAM2501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5221 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5221 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5221 target RNA into GAM5221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3891 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3891 gene: GAM2501 target protein and GAM5221 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2501 and GAM5221

GR3892 BF668168 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3892(GR3892) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3892 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3892 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3892 gene encodes GR3892 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3892 precursor RNA folds spatially, forming GR3892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3892 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3892 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3892 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2723 precursor RNA, GAM42660 precursor RNA and GAM125397 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2723 RNA, GAM42660 RNA and GAM125397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2723 target RNA into GAM2723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM42660 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42660 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42660 target RNA into GAM42660 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125397 target RNA into GAM125397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR3892 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3892 gene: GAM2723 target protein, GAM42660 target protein and GAM125397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2723, GAM42660 and GAM125397

GR3893 W15466 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3893(GR3893) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3893 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3893 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3893 gene encodes GR3893 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3893 precursor RNA folds spatially, forming GR3893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3893 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3893 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3893 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2284 precursor RNA and GAM79035 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2284 RNA and GAM79035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2284 target RNA into GAM2284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79035 target RNA into GAM79035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3893 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3893 gene: GAM2284 target protein and GAM79035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2284 and GAM79035

GR3894 BE160652 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3894(GR3894) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3894 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3894 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3894 gene encodes GR3894 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3894 precursor RNA folds spatially, forming GR3894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3894 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3894 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3894 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3634 precursor RNA and GAM238510 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3634 RNA and GAM238510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3634 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3634 target RNA into GAM3634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238510 target RNA into GAM238510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3894 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3894 gene: GAM3634 target protein and GAM238510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3634 and GAM238510

GR3895 BE870736 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3895(GR3895) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3895 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3895 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3895 gene encodes GR3895 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3895 precursor RNA folds spatially, forming GR3895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3895 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3895 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3895 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2464 precursor RNA, GAM61152 precursor RNA and GAM266021 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2464 RNA, GAM61152 RNA and GAM266021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2464 target RNA into GAM2464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61152 target RNA into GAM61152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266021 target RNA into GAM266021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3895 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3895 gene: GAM2464 target protein, GAM61152 target protein and GAM266021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2464, GAM61152 and GAM266021

GR3896 BF184396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3896(GR3896) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3896 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3896 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3896 gene encodes GR3896 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3896 precursor RNA folds spatially, forming GR3896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3896 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3896 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3896 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8651 precursor RNA and GAM65700 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8651 RNA and GAM65700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM8651 target RNA into GAM8651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65700 target RNA into GAM65700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3896 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3896 gene: GAM8651 target protein and GAM65700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8651 and GAM65700

GR3897 N49931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3897(GR3897) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3897 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3897 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3897 gene encodes GR3897 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3897 precursor RNA folds spatially, forming GR3897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3897 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3897 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3897 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM321 precursor RNA, GAM77196 precursor RNA and GAM84288 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM321 RNA, GAM77196 RNA and GAM84288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321 target RNA into GAM321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77196 target RNA into GAM77196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84288 target RNA into GAM84288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3897 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3897 gene: GAM321 target protein, GAM77196 target protein and GAM84288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM321, GAM77196 and GAM84288

GR3898 AA610248 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3898(GR3898) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3898 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3898 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3898 gene encodes GR3898 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3898 precursor RNA folds spatially, forming GR3898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3898 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3898 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3898 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6381 precursor RNA, GAM219506 precursor RNA and GAM327626 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6381 RNA, GAM219506 RNA and GAM327626 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6381 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6381 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6381 target RNA into GAM6381 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219506 target RNA into GAM219506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327626 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM327626 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327626 target RNA into GAM327626 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3898 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3898 gene: GAM6381 target protein, GAM219506 target protein and GAM327626 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6381, GAM219506 and GAM327626

GR3899 AI365441 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3899(GR3899) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3899 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3899 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3899 gene encodes GR3899 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3899 precursor RNA folds spatially, forming GR3899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3899 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3899 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3899 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1259 precursor RNA, GAM24588 precursor RNA and GAM226580 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1259 RNA, GAM24588 RNA and GAM226580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1259 target RNA into GAM1259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24588 target RNA into GAM24588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226580 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226580 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226580 target RNA into GAM226580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3899 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3899 gene: GAM1259 target protein, GAM24588 target protein and GAM226580 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1259, GAM24588 and GAM226580

GR3900 BF218656 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3900(GR3900) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3900 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3900 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3900 gene encodes GR3900 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3900 precursor RNA folds spatially, forming GR3900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3900 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3900 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3900 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6202 precursor RNA, GAM170716 precursor RNA and GAM270014 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6202 RNA, GAM170716 RNA and GAM270014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6202 target RNA into GAM6202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170716 target RNA into GAM170716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270014 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270014

target RNA into GAM270014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3900 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3900 gene: GAM6202 target protein, GAM170716 target protein and GAM270014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6202, GAM170716 and GAM270014

GR3901 BF696492 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3901(GR3901) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3901 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3901 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3901 gene encodes GR3901 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3901 precursor RNA folds spatially, forming GR3901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3901 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3901 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3901 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM62908 precursor RNA and GAM330793 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM62908 RNA and GAM330793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM62908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM62908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM62908 target RNA into GAM62908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330793 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330793 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330793 target RNA into GAM330793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3901 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3901 gene: GAM62908 target protein and GAM330793 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM62908 and GAM330793

GR3902 BG288164 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3902(GR3902) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3902 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3902 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3902 gene encodes GR3902 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3902 precursor RNA folds spatially, forming GR3902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3902 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3902 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3902 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4454 precursor RNA, GAM6853 precursor RNA and GAM117811 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4454 RNA, GAM6853 RNA and GAM117811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4454 target RNA into GAM4454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6853 target RNA into GAM6853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117811 target RNA into GAM117811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3902 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3902 gene: GAM4454 target protein, GAM6853 target protein and GAM117811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4454, GAM6853 and GAM117811

GR3903 BF446719 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3903(GR3903) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3903 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3903 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3903 gene encodes GR3903 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3903 precursor RNA folds spatially, forming GR3903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3903 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3903 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3903 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM67325 precursor RNA, GAM93446 precursor RNA and GAM230008 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67325 RNA, GAM93446 RNA and GAM230008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67325 target RNA into GAM67325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93446 target RNA into GAM93446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230008 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230008 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230008 target RNA into GAM230008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3903 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3903 gene: GAM67325 target protein, GAM93446 target protein and GAM230008 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67325, GAM93446 and GAM230008

GR3904 AI810270 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3904(GR3904) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3904 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3904 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3904 gene encodes GR3904 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3904 precursor RNA folds spatially, forming GR3904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3904 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3904 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3904 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53328 precursor RNA and GAM184575 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53328 RNA and GAM184575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53328 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53328 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53328 target RNA into GAM53328 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM184575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM184575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM184575 target RNA into GAM184575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3904 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3904 gene: GAM53328 target protein and GAM184575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53328 and GAM184575

GR3905 BG741298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3905(GR3905) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3905 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3905 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3905 gene encodes GR3905 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3905 precursor RNA folds spatially, forming GR3905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3905 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3905 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3905 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1392 precursor RNA and GAM5647 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1392 RNA and GAM5647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1392 target RNA into GAM1392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5647 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5647 target RNA into GAM5647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3905 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3905 gene: GAM1392 target protein and GAM5647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1392 and GAM5647

GR3906 AI076788 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

3906(GR3906) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3906 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3906 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3906 gene encodes GR3906 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3906 precursor RNA folds spatially, forming GR3906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3906 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3906 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3906 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164106 precursor RNA and GAM288123 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164106 RNA and GAM288123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164106 target RNA into GAM164106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288123 target RNA into GAM288123 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3906 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3906 gene: GAM164106 target protein and GAM288123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164106 and GAM288123

GR3907 AA092751 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3907(GR3907) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3907 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3907 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3907 gene encodes GR3907 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3907 precursor RNA folds spatially, forming GR3907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3907 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3907 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3907 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3285 precursor RNA and GAM8121 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3285 RNA and GAM8121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3285 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM3285 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3285 target RNA into GAM3285 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8121 target RNA into GAM8121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3907 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3907 gene: GAM3285 target protein and GAM8121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3285 and GAM8121

GR3908 BE394567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3908(GR3908) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3908 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3908 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3908 gene encodes GR3908 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3908 precursor RNA folds spatially, forming GR3908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3908 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3908 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3908 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM545 precursor RNA, GAM88290 precursor RNA and GAM120411 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM545 RNA, GAM88290 RNA and GAM120411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM545 target RNA into GAM545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88290 target RNA into GAM88290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120411 target RNA into GAM120411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3908 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3908 gene: GAM545 target protein, GAM88290 target protein and GAM120411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM545, GAM88290 and GAM120411

GR3909 BF893564 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3909(GR3909) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3909 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3909 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3909 gene encodes GR3909 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3909 precursor RNA folds spatially, forming GR3909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3909 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3909 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3909 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74605 precursor RNA and GAM181872 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74605 RNA and GAM181872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74605 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74605 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74605 target RNA into GAM74605 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181872 target RNA into GAM181872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3909 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3909 gene: GAM74605 target protein and GAM181872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74605 and GAM181872

GR3910 BI907314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3910(GR3910) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3910 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3910 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3910 gene encodes GR3910 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3910 precursor RNA folds spatially, forming GR3910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3910 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3910 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3910 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58634 precursor RNA and GAM152325 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58634 RNA and GAM152325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58634 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58634 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58634 target RNA into GAM58634 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152325 target RNA into GAM152325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3910 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3910 gene: GAM58634 target protein and GAM152325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58634 and GAM152325

GR3911 AI693731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3911(GR3911) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3911 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3911 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3911 gene encodes GR3911 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3911 precursor RNA folds spatially, forming GR3911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3911 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3911 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3911 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8511 precursor RNA and GAM297227 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8511 RNA and GAM297227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8511 target RNA into GAM8511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297227 target RNA into GAM297227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3911 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3911 gene: GAM8511 target protein and GAM297227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8511 and GAM297227

GR3912 AA401519 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3912(GR3912) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3912 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3912 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3912 gene encodes GR3912 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3912 precursor RNA folds spatially, forming GR3912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3912 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3912 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3912 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16573 precursor RNA and GAM203478 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16573 RNA and GAM203478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16573 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16573 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16573 target RNA into GAM16573 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM203478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM203478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM203478 target RNA into GAM203478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3912 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3912 gene: GAM16573 target protein and GAM203478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16573 and GAM203478

 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 3913(GR3913) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3913 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3913 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3913 gene encodes GR3913 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3913 precursor RNA folds spatially, forming GR3913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3913 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3913 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3913 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3215 precursor RNA and GAM268693 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3215 RNA and GAM268693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3215 target RNA into GAM3215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268693

target RNA into GAM268693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3913 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3913 gene: GAM3215 target protein and GAM268693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3215 and GAM268693

GR3914 BF154677 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3914(GR3914) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3914 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3914 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3914 gene encodes GR3914 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3914 precursor RNA folds spatially, forming GR3914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3914 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3914 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3914 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4024 precursor RNA and GAM70963 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4024 RNA and GAM70963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4024 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4024 target RNA into GAM4024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70963 target RNA into GAM70963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3914 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3914 gene: GAM4024 target protein and GAM70963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4024 and GAM70963

GR3915 BG565629 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3915(GR3915) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3915 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3915 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3915 gene encodes GR3915 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3915 precursor RNA folds spatially, forming GR3915 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3915 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3915 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3915 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17482 precursor RNA and GAM77242 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17482 RNA and GAM77242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17482 target RNA into GAM17482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77242 target RNA into GAM77242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3915 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3915 gene: GAM17482 target protein and GAM77242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM17482 and GAM77242

GR3916 BI552512 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3916(GR3916) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3916 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3916 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3916 gene encodes GR3916 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3916 precursor RNA folds spatially, forming GR3916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3916 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3916 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3916 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1933 precursor RNA, GAM96606 precursor RNA, GAM253083 precursor RNA and GAM292143 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1933 RNA, GAM96606 RNA, GAM253083 RNA and GAM292143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1933 target RNA into GAM1933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96606 target RNA into GAM96606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253083 target RNA into GAM253083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292143 target RNA into GAM292143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3916 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3916 gene: GAM1933 target protein, GAM96606 target protein, GAM253083 target protein and GAM292143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1933, GAM96606, GAM253083 and GAM292143

GR3917 BI771144 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3917(GR3917) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3917 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3917 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3917 gene encodes GR3917 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3917 precursor RNA folds spatially, forming GR3917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3917 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3917 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3917 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8069 precursor RNA, GAM34021 precursor RNA and GAM170535 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8069 RNA, GAM34021 RNA and GAM170535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8069 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8069 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8069 target RNA into GAM8069 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34021 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34021 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34021 target RNA into GAM34021 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170535 target RNA into GAM170535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3917 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3917 gene: GAM8069 target protein, GAM34021 target protein and GAM170535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8069, GAM34021 and GAM170535

GR3918 BE270152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3918(GR3918) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3918 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3918 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3918 gene encodes GR3918 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3918 precursor RNA folds spatially, forming GR3918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3918 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3918 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3918 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM192652 precursor RNA and GAM298968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM192652 RNA and GAM298968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM192652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192652 target RNA into GAM192652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298968 target RNA into GAM298968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3918 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3918 gene: GAM192652 target

protein and GAM298968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM192652 and GAM298968

GR3919 AI570176 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3919(GR3919) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3919 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3919 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3919 gene encodes GR3919 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3919 precursor RNA folds spatially, forming GR3919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3919 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3919 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3919 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4508 precursor RNA and GAM319979 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4508 RNA and GAM319979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4508 target RNA into GAM4508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319979 target RNA into GAM319979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3919 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3919 gene: GAM4508 target protein and GAM319979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4508 and GAM319979

GR3920 BG122906 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3920(GR3920) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3920 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3920 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3920 gene encodes GR3920 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3920 precursor RNA folds spatially, forming GR3920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3920 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3920 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3920 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3702 precursor RNA, GAM110418 precursor RNA and GAM247633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3702 RNA, GAM110418 RNA and GAM247633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3702 target RNA into GAM3702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110418 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110418 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110418 target RNA into GAM110418 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247633 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247633 target RNA into GAM247633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3920 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3920 gene: GAM3702 target protein, GAM110418 target protein and GAM247633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3702, GAM110418 and GAM247633

GR3921 BM749423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3921(GR3921) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3921 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3921

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3921 gene encodes GR3921 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3921 precursor RNA folds spatially, forming GR3921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3921 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3921 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3921 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6483 precursor RNA and GAM108323 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6483 RNA and GAM108323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6483 target RNA into GAM6483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108323 target RNA into GAM108323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3921 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3921 gene: GAM6483 target protein and GAM108323 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6483 and GAM108323

GR3922 AI822034 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3922(GR3922) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3922 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3922 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3922 gene encodes GR3922 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3922 precursor RNA folds spatially, forming GR3922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3922 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3922 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3922 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2926 precursor RNA and GAM39984 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2926 RNA and GAM39984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2926 target RNA into GAM2926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM39984 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39984 target RNA into GAM39984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3922 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3922 gene: GAM2926 target protein and GAM39984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2926 and GAM39984

GR3923 BG431065 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3923(GR3923) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3923 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3923 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3923 gene encodes GR3923 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3923 precursor RNA folds spatially, forming GR3923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3923 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3923 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3923 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3953 precursor RNA and GAM111340 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM3953 RNA and GAM111340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3953 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3953 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3953 target RNA into GAM3953 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111340 target RNA into GAM111340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3923 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3923 gene: GAM3953 target protein and GAM111340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3953 and GAM111340

GR3924 BE547413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3924(GR3924) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3924 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3924 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3924 gene encodes GR3924 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3924 precursor RNA folds spatially, forming GR3924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3924 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3924 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3924 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3308 precursor RNA, GAM17015 precursor RNA and GAM75045 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3308 RNA, GAM17015 RNA and GAM75045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3308 target RNA into GAM3308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17015 target RNA into GAM17015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75045 target RNA into GAM75045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3924 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3924 gene: GAM3308 target protein, GAM17015 target protein and GAM75045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM3308, GAM17015 and GAM75045

GR3925 BG203833 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3925(GR3925) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3925 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3925 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3925 gene encodes GR3925 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3925 precursor RNA folds spatially, forming GR3925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3925 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3925 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3925 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM173305 precursor RNA and GAM277515 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173305 RNA and GAM277515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173305 target RNA into GAM173305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM277515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277515 target RNA into GAM277515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3925 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3925 gene: GAM173305 target protein and GAM277515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173305 and GAM277515

GR3926 BG696564 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3926(GR3926) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3926 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3926 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3926 gene encodes GR3926 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3926 precursor RNA folds spatially, forming GR3926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3926 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3926 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3926 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM571 precursor RNA and GAM244836 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM571 RNA and GAM244836 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM571 target RNA into GAM571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244836 target RNA into GAM244836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3926 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3926 gene: GAM571 target protein and GAM244836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM571 and GAM244836

GR3927 AL600771 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3927(GR3927) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3927 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3927 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3927 gene encodes GR3927 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3927 precursor RNA folds spatially, forming GR3927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3927 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3927 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3927 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4886 precursor RNA, GAM106686 precursor RNA and GAM175070 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4886 RNA, GAM106686 RNA and GAM175070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4886 target RNA into GAM4886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM106686 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM106686 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM106686 target RNA into GAM106686 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175070 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175070 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175070 target RNA into GAM175070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3927 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3927 gene: GAM4886 target protein, GAM106686 target protein and GAM175070 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4886, GAM106686 and

GAM175070

GR3928 BF692045 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3928(GR3928) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3928 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3928 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3928 gene encodes GR3928 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3928 precursor RNA folds spatially, forming GR3928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3928 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3928 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3928 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM22795 precursor RNA, GAM313383 precursor RNA and GAM323476 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM22795 RNA, GAM313383 RNA and GAM323476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22795 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22795 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22795 target RNA into GAM22795 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM313383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM313383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM313383 target RNA into GAM313383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323476 target RNA into GAM323476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3928 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3928 gene: GAM22795 target protein, GAM313383 target protein and GAM323476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22795, GAM313383 and GAM323476

GR3929 AA627127 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3929(GR3929) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3929 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3929 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3929 gene encodes GR3929 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3929 precursor RNA folds spatially, forming GR3929 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3929 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3929 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3929 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM165050 precursor RNA and GAM201110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165050 RNA and GAM201110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165050 target RNA into GAM165050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201110 target RNA into GAM201110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3929 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3929 gene: GAM165050 target protein and GAM201110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165050 and GAM201110

GR3930 AI089211 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3930(GR3930) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3930 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3930 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3930 gene encodes GR3930 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3930 precursor RNA folds spatially, forming GR3930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3930 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3930 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3930 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8199 precursor RNA and GAM250790 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8199 RNA and GAM250790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8199 target RNA into GAM8199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250790 target RNA into GAM250790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3930 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3930 gene: GAM8199 target protein and GAM250790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8199 and GAM250790

GR3931 AW083895 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3931(GR3931) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3931 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3931 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3931 gene encodes GR3931 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3931 precursor RNA folds spatially, forming GR3931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3931 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3931 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3931 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM58740 precursor RNA, GAM159397 precursor RNA and GAM336115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58740 RNA, GAM159397 RNA and GAM336115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58740 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58740 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58740 target RNA into GAM58740 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159397 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159397 target RNA into GAM159397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336115 target RNA into GAM336115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3931 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3931 gene: GAM58740 target protein, GAM159397 target protein and GAM336115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58740, GAM159397 and GAM336115

GR3932 BG024513 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3932(GR3932) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3932 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3932 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3932 gene encodes GR3932 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3932 precursor RNA folds spatially, forming GR3932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3932 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3932 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3932 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM2222 precursor RNA and GAM67794 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2222 RNA and GAM67794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2222 target RNA into GAM2222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM67794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67794 target RNA into GAM67794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3932 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3932 gene: GAM2222 target protein and GAM67794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2222 and GAM67794

GR3933 BI002194 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3933(GR3933) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3933 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3933 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3933 gene encodes GR3933 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR3933 precursor RNA folds spatially, forming GR3933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3933 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3933 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3933 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8098 precursor RNA and GAM66114 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8098 RNA and GAM66114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8098 target RNA into GAM8098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66114 target RNA into GAM66114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3933 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3933 gene: GAM8098 target protein and GAM66114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8098 and GAM66114

GR3934 BI115444 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3934(GR3934) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3934 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3934 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3934 gene encodes GR3934 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3934 precursor RNA folds spatially, forming GR3934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3934 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3934 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3934 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM124728 precursor RNA and GAM279222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM124728 RNA and GAM279222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM124728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124728 target RNA into GAM124728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279222 target RNA into GAM279222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3934 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3934 gene: GAM124728 target protein and GAM279222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM124728 and GAM279222

GR3935 BE094641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3935(GR3935) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3935 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3935 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3935 gene encodes GR3935 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3935 precursor RNA folds spatially, forming GR3935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3935 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3935 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3935 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM693 precursor RNA and GAM6954 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM693 RNA and GAM6954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM693 target RNA into GAM693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6954 target RNA into GAM6954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3935 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3935 gene: GAM693 target protein and GAM6954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM693 and GAM6954

GR3936 BE834926 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3936(GR3936) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3936 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3936 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3936 gene encodes GR3936 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3936 precursor RNA folds spatially, forming GR3936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3936 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3936 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3936 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2460 precursor RNA and GAM3728 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2460 RNA and GAM3728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2460 target RNA into GAM2460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3728 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3728 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3728 target RNA into GAM3728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3936 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3936 gene: GAM2460 target protein and GAM3728 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2460 and GAM3728

GR3937 BM686008 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3937(GR3937) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3937 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3937 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3937 gene encodes GR3937 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3937 precursor RNA folds spatially, forming GR3937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3937 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3937 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3937 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM172944 precursor RNA and GAM225366 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM172944 RNA and GAM225366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM172944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172944 target RNA into GAM172944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225366 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225366 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225366 target RNA into GAM225366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3937 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3937 gene: GAM172944 target protein and GAM225366 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM172944 and GAM225366

GR3938 BG494413 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3938(GR3938) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3938 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3938 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3938 gene encodes GR3938 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3938 precursor RNA folds spatially, forming GR3938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3938 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3938 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3938 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1098 precursor RNA and GAM77259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1098 RNA and GAM77259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1098 target RNA into GAM1098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77259 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77259 target RNA into GAM77259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3938 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3938 gene: GAM1098 target protein and GAM77259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1098 and GAM77259

GR3939 BG235922 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3939(GR3939) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3939 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3939 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3939 gene encodes GR3939 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3939 precursor RNA folds spatially, forming GR3939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3939 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3939 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3939 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM30261 precursor RNA and GAM174765 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30261 RNA and GAM174765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM30261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30261 target RNA into GAM30261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM174765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM174765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM174765 target RNA into GAM174765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3939 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3939 gene: GAM30261 target protein and GAM174765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30261 and GAM174765

GR3940 AV731397 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3940(GR3940) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3940 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3940 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3940 gene encodes GR3940 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3940 precursor RNA folds spatially, forming GR3940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3940 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3940 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3940 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2457 precursor RNA and GAM7086 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2457 RNA and GAM7086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2457 target RNA into GAM2457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7086 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7086 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7086 target RNA into GAM7086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3940 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3940 gene: GAM2457 target protein and GAM7086 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2457 and GAM7086

GR3941 BE787887 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3941(GR3941) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3941 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3941

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3941 gene encodes GR3941 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3941 precursor RNA folds spatially, forming GR3941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3941 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3941 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3941 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6422 precursor RNA, GAM7139 precursor RNA, GAM261739 precursor RNA and GAM285104 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6422 RNA, GAM7139 RNA, GAM261739 RNA and GAM285104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6422 target RNA into GAM6422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7139 target RNA into GAM7139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261739 target RNA into GAM261739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285104 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285104 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285104 target RNA into GAM285104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3941 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3941 gene: GAM6422 target protein, GAM7139 target protein, GAM261739 target protein and GAM285104 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6422, GAM7139, GAM261739 and GAM285104

GR3942 AI114529 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3942(GR3942) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3942 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3942 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3942 gene encodes GR3942 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3942 precursor RNA folds spatially, forming GR3942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3942 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3942 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3942 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM128270 precursor RNA, GAM284882 precursor RNA and GAM316554 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128270 RNA, GAM284882 RNA and GAM316554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128270 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128270 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128270 target RNA into GAM128270 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284882 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284882 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284882 target RNA into GAM284882 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316554 target RNA into GAM316554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3942 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3942 gene: GAM128270 target protein, GAM284882 target protein and GAM316554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128270, GAM284882 and GAM316554

GR3943 BI488753 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3943(GR3943) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3943 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3943 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3943 gene encodes GR3943 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3943 precursor RNA folds spatially, forming GR3943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3943 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3943 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3943 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM47563 precursor RNA, GAM57130 precursor RNA, GAM100063 precursor RNA and GAM315720 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47563 RNA, GAM57130 RNA, GAM100063 RNA and GAM315720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47563 target RNA into GAM47563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57130 target RNA into GAM57130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100063 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100063 target RNA into GAM100063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315720 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315720 target RNA into GAM315720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3943 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3943 gene: GAM47563 target protein, GAM57130 target protein, GAM100063 target protein and GAM315720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47563, GAM57130, GAM100063 and GAM315720

GR3944 H21208 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3944(GR3944) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3944 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3944 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3944 gene encodes GR3944 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3944 precursor RNA folds spatially, forming GR3944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3944 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3944 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3944 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5147 precursor RNA and GAM5782 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5147 RNA and GAM5782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5147 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5147 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5147 target RNA into GAM5147 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5782 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5782 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5782 target RNA into GAM5782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3944 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3944 gene: GAM5147 target protein and GAM5782 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5147 and GAM5782

GR3945 AA436000 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3945(GR3945) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3945 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3945 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3945 gene encodes GR3945 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3945 precursor RNA folds spatially, forming GR3945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3945 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3945 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3945 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM100340 precursor RNA and GAM255188 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100340 RNA and GAM255188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100340 target RNA into GAM100340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255188 target RNA into GAM255188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3945 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3945 gene: GAM100340 target protein and GAM255188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM100340 and GAM255188

GR3946 BG470868 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3946(GR3946) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3946 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3946 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3946 gene encodes GR3946 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3946 precursor RNA folds spatially, forming GR3946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3946 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3946 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3946 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM135243 precursor RNA and GAM147845 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM135243 RNA and GAM147845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM135243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135243 target RNA into GAM135243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147845 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147845 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147845 target RNA into GAM147845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3946 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3946 gene: GAM135243 target protein and GAM147845 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM135243 and GAM147845

GR3947 AW673977 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3947(GR3947) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3947 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3947 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3947 gene encodes GR3947 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3947 precursor RNA folds spatially, forming GR3947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3947 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3947 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3947 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM152870 precursor RNA and GAM259424 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM152870 RNA and GAM259424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM152870 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152870 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152870 target RNA into GAM152870 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259424 target RNA into GAM259424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3947 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3947 gene: GAM152870 target protein and GAM259424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM152870 and GAM259424

GR3948 BG617252 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3948(GR3948) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3948 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3948 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3948 gene encodes GR3948 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3948 precursor RNA folds spatially, forming GR3948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3948 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3948 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3948 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4872 precursor RNA and GAM317333 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4872 RNA and GAM317333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4872 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4872 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4872 target RNA into GAM4872 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317333 target RNA into GAM317333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3948 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3948 gene: GAM4872 target protein and GAM317333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4872 and GAM317333

GR3949 AI948769 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3949(GR3949) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3949 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3949

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3949 gene encodes GR3949 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3949 precursor RNA folds spatially, forming GR3949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3949 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3949 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3949 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM302814 precursor RNA and GAM325045 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM302814 RNA and GAM325045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM302814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302814 target RNA into GAM302814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325045 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325045 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325045 target RNA into GAM325045 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3949 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3949 gene: GAM302814 target protein and GAM325045 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM302814 and GAM325045

GR3950 BF308552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3950(GR3950) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3950 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3950 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3950 gene encodes GR3950 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3950 precursor RNA folds spatially, forming GR3950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3950 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3950 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3950 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5692 precursor RNA and GAM59398 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5692 RNA and GAM59398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5692 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5692 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5692 target RNA into GAM5692 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59398 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59398 target RNA into GAM59398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3950 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3950 gene: GAM5692 target protein and GAM59398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5692 and GAM59398

GR3951 BF128848 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3951(GR3951) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3951 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3951 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3951 gene encodes GR3951 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3951 precursor RNA folds spatially, forming GR3951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3951 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3951 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3951 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM26083 precursor RNA, GAM82750 precursor RNA and GAM268469 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26083 RNA, GAM82750 RNA and GAM268469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26083 target RNA into GAM26083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM82750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82750 target RNA into GAM82750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268469 target RNA into GAM268469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3951 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3951 gene: GAM26083 target protein, GAM82750 target protein and GAM268469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26083, GAM82750 and GAM268469

GR3952 BM680403 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3952(GR3952) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3952 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3952 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3952 gene encodes GR3952 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3952 precursor RNA folds spatially, forming GR3952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3952 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3952 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3952 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM89399 precursor RNA, GAM173474 precursor RNA and GAM268603 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89399 RNA, GAM173474 RNA and GAM268603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89399 target RNA into GAM89399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM173474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173474 target RNA into GAM173474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268603

target RNA into GAM268603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3952 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3952 gene: GAM89399 target protein, GAM173474 target protein and GAM268603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89399, GAM173474 and GAM268603

GR3953 BG746565 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3953(GR3953) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3953 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3953 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3953 gene encodes GR3953 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3953 precursor RNA folds spatially, forming GR3953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3953 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3953 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3953 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM72376 precursor RNA, GAM84219 precursor RNA, GAM228092 precursor RNA and GAM267105 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM72376 RNA, GAM84219 RNA, GAM228092 RNA and GAM267105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM72376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72376 target RNA into GAM72376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84219 target RNA into GAM84219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228092 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228092 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228092 target RNA into GAM228092 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267105 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267105 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267105 target RNA into GAM267105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3953 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3953 gene: GAM72376 target protein, GAM84219 target protein, GAM228092 target protein and GAM267105 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM72376, GAM84219, GAM228092 and GAM267105

GR3954 R13761 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3954(GR3954) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3954 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3954 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3954 gene encodes GR3954 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3954 precursor RNA folds spatially, forming GR3954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3954 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3954 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3954 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM193599 precursor RNA and GAM335115 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM193599 RNA and GAM335115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM193599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193599 target RNA into GAM193599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335115 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335115 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335115 target RNA into GAM335115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3954 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3954 gene: GAM193599 target protein and GAM335115 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM193599 and GAM335115

GR3955 AI418374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3955(GR3955) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3955 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3955 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3955 gene encodes GR3955 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3955 precursor RNA folds spatially, forming GR3955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3955 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3955 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3955 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM94375 precursor RNA and GAM188276 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM94375 RNA and GAM188276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM94375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM94375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM94375

target RNA into GAM94375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188276 target RNA into GAM188276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3955 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3955 gene: GAM94375 target protein and GAM188276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM94375 and GAM188276

GR3956 BF304289 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3956(GR3956) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3956 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3956 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3956 gene encodes GR3956 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3956 precursor RNA folds spatially, forming GR3956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3956 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3956 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3956 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM50848 precursor RNA and GAM287257 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50848 RNA and GAM287257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50848 target RNA into GAM50848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287257 target RNA into GAM287257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3956 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3956 gene: GAM50848 target protein and GAM287257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50848 and GAM287257

GR3957 BI832706 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3957(GR3957) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3957 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3957 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3957 gene encodes GR3957 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3957 precursor RNA folds spatially, forming GR3957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3957 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3957 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3957 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM128773 precursor RNA, GAM150894 precursor RNA and GAM279749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128773 RNA, GAM150894 RNA and GAM279749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128773 target RNA into GAM128773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM150894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM150894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM150894 target RNA into GAM150894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279749 target RNA into GAM279749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3957 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3957 gene: GAM128773 target

protein, GAM150894 target protein and GAM279749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128773, GAM150894 and GAM279749

GR3958 T90059 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3958(GR3958) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3958 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3958 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3958 gene encodes GR3958 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3958 precursor RNA folds spatially, forming GR3958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3958 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3958 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3958 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5850 precursor RNA and GAM180741 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5850 RNA and GAM180741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5850 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5850 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5850 target RNA into GAM5850 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180741 target RNA into GAM180741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3958 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3958 gene: GAM5850 target protein and GAM180741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5850 and GAM180741

GR3959 AA928552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3959(GR3959) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3959 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3959 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3959 gene encodes GR3959 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3959 precursor RNA folds spatially, forming GR3959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3959 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3959 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3959 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6010 precursor RNA and GAM247421 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6010 RNA and GAM247421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6010 target RNA into GAM6010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM247421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM247421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM247421 target RNA into GAM247421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3959 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3959 gene: GAM6010 target protein and GAM247421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6010 and GAM247421

GR3960 AW971499 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3960(GR3960) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3960 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3960 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3960 gene encodes GR3960 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3960 precursor RNA folds spatially, forming GR3960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3960 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3960 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3960 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2838 precursor RNA, GAM3410 precursor RNA and GAM59690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2838 RNA, GAM3410 RNA and GAM59690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2838 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2838 target RNA into GAM2838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3410 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3410 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3410 target RNA into GAM3410 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM59690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59690 target RNA into GAM59690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3960 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3960 gene: GAM2838 target protein, GAM3410 target protein and GAM59690 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2838, GAM3410 and GAM59690

GR3961 BM045049 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3961(GR3961) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3961 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3961 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3961 gene encodes GR3961 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3961 precursor RNA folds spatially, forming GR3961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3961 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3961 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3961 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2227 precursor RNA and GAM123106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2227 RNA and GAM123106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2227 target RNA into GAM2227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM123106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123106 target RNA into GAM123106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3961 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3961 gene: GAM2227 target protein and GAM123106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2227 and GAM123106

GR3962 BF916623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3962(GR3962) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3962 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3962 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3962 gene encodes GR3962 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3962 precursor RNA folds spatially, forming GR3962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3962 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3962 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3962 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5890 precursor RNA, GAM130682 precursor RNA and GAM238197 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5890 RNA, GAM130682 RNA and GAM238197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5890 target RNA into GAM5890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130682 target RNA into GAM130682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM238197 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM238197 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM238197 target RNA into GAM238197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3962 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3962 gene: GAM5890 target protein, GAM130682 target protein and GAM238197 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5890, GAM130682 and GAM238197

GR3963 AI718010 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3963(GR3963) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3963 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3963

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3963 gene encodes GR3963 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3963 precursor RNA folds spatially, forming GR3963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3963 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3963 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3963 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM98402 precursor RNA, GAM228010 precursor RNA and GAM280452 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM98402 RNA, GAM228010 RNA and GAM280452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM98402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM98402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM98402 target RNA into GAM98402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228010 target RNA into GAM228010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280452 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280452 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280452 target RNA into GAM280452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3963 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3963 gene: GAM98402 target protein, GAM228010 target protein and GAM280452 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM98402, GAM228010 and GAM280452

GR3964 AU126438 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3964(GR3964) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3964 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3964 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3964 gene encodes GR3964 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3964 precursor RNA folds spatially, forming GR3964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3964 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3964 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3964 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM33933 precursor RNA and GAM159300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM33933 RNA and GAM159300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM33933 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33933 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33933 target RNA into GAM33933 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM159300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM159300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM159300 target RNA into GAM159300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3964 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3964 gene: GAM33933 target protein and GAM159300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM33933 and GAM159300

GR3965 BF572502 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3965(GR3965) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3965 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3965 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3965 gene encodes GR3965 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3965 precursor RNA folds spatially, forming GR3965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3965 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3965 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3965 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM109327 precursor RNA, GAM141998 precursor RNA, GAM168450 precursor RNA, GAM187488 precursor RNA and GAM284838 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM109327 RNA, GAM141998 RNA, GAM168450 RNA, GAM187488 RNA and GAM284838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM109327 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM109327 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM109327 target RNA into GAM109327 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM141998 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM141998 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM141998 target RNA into GAM141998 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168450 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168450 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168450 target RNA into GAM168450 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187488 target RNA into GAM187488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284838 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284838 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284838 target RNA into GAM284838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3965 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3965 gene: GAM109327 target protein, GAM141998 target protein, GAM168450 target protein, GAM187488 target protein and GAM284838 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM109327, GAM141998, GAM168450, GAM187488 and GAM284838

GR3966 BM993763 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3966(GR3966) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3966 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3966 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3966 gene encodes GR3966 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3966 precursor RNA folds spatially, forming GR3966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3966 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3966 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3966 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208260 precursor RNA and GAM304316 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM208260 RNA and GAM304316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208260 target RNA into GAM208260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304316 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304316 target RNA into GAM304316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3966 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3966 gene: GAM208260 target protein and GAM304316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208260 and GAM304316

GR3967 BG979638 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3967(GR3967) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3967 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3967 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3967 gene encodes GR3967 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3967 precursor RNA folds spatially, forming GR3967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3967 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3967 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3967 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48470 precursor RNA and GAM309989 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48470 RNA and GAM309989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48470 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48470 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48470 target RNA into GAM48470 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309989 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309989 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309989 target RNA into GAM309989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3967 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3967 gene: GAM48470 target protein and GAM309989 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48470 and GAM309989

GR3968 AW338016 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3968(GR3968) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3968 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3968 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3968 gene encodes GR3968 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3968 precursor RNA folds spatially, forming GR3968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3968 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3968 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3968 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5504 precursor RNA, GAM5946 precursor RNA and GAM7103 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5504 RNA, GAM5946 RNA and GAM7103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5504 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5504 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5504 target RNA into GAM5504 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5946 target RNA into GAM5946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7103 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7103 target RNA into GAM7103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3968 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3968 gene: GAM5504 target protein, GAM5946 target protein and GAM7103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5504, GAM5946 and GAM7103

GR3969 BM829721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3969(GR3969) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3969 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3969 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3969 gene encodes GR3969 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3969 precursor RNA folds spatially, forming GR3969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3969 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3969 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3969 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM173099 precursor RNA and GAM218518 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173099 RNA and GAM218518 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173099 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173099 target RNA into GAM173099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218518 target RNA into GAM218518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3969 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3969 gene: GAM173099 target protein and GAM218518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173099 and GAM218518

GR3970 AW966132 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3970(GR3970) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3970 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3970 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3970 gene encodes GR3970 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3970 precursor RNA folds spatially, forming GR3970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3970 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3970 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3970 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3610 precursor RNA and GAM295894 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3610 RNA and GAM295894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3610 target RNA into GAM3610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295894 target RNA into GAM295894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3970 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3970 gene: GAM3610 target protein and GAM295894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3610 and GAM295894

GR3971 AA640824 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3971(GR3971) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3971 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3971 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3971 gene encodes GR3971 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3971 precursor RNA folds spatially, forming GR3971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3971 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3971 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3971 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3267 precursor RNA, GAM195723 precursor RNA and GAM335565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3267 RNA, GAM195723 RNA and GAM335565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3267 target RNA into GAM3267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM195723 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM195723 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM195723 target RNA into GAM195723 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335565 target RNA into GAM335565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3971 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3971 gene: GAM3267 target protein, GAM195723 target protein and GAM335565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3267, GAM195723 and GAM335565

GR3972 BF790298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3972(GR3972) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3972 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3972 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3972 gene encodes GR3972 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3972 precursor RNA folds spatially, forming GR3972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3972 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3972 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3972 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8230 precursor RNA and GAM142926 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8230 RNA and GAM142926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM8230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8230 target RNA into GAM8230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142926 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142926 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142926 target RNA into GAM142926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3972 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3972 gene: GAM8230 target protein and GAM142926 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8230 and GAM142926

GR3973 AA459126 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3973(GR3973) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3973 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3973 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3973 gene encodes GR3973 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3973 precursor RNA folds spatially, forming GR3973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3973 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3973 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR3973 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2106 precursor RNA and GAM107305 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2106 RNA and GAM107305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2106 target RNA into GAM2106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107305 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107305 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107305 target RNA into GAM107305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3973 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3973 gene: GAM2106 target protein and GAM107305 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2106 and GAM107305

GR3974 AV757207 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3974(GR3974) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3974 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3974

gene was detected is described hereinabove with reference to Figs. 8-18.

GR3974 gene encodes GR3974 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3974 precursor RNA folds spatially, forming GR3974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3974 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3974 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3974 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM55166 precursor RNA and GAM74300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55166 RNA and GAM74300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55166 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55166 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55166 target RNA into GAM55166 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM74300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74300 target RNA into GAM74300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3974 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3974 gene: GAM55166 target protein and GAM74300 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55166 and GAM74300

GR3975 BI518811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3975(GR3975) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3975 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3975 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3975 gene encodes GR3975 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3975 precursor RNA folds spatially, forming GR3975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3975 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3975 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3975 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8244 precursor RNA and GAM259688 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8244 RNA and GAM259688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8244 target RNA into GAM8244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259688 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259688 target RNA into GAM259688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3975 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3975 gene: GAM8244 target protein and GAM259688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8244 and GAM259688

GR3976 BM695724 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3976(GR3976) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3976 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3976 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3976 gene encodes GR3976 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3976 precursor RNA folds spatially, forming GR3976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3976 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3976 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3976 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67488 precursor RNA and GAM97515 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM67488 RNA and GAM97515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67488 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67488 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67488 target RNA into GAM67488 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM97515 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM97515 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM97515 target RNA into GAM97515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3976 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3976 gene: GAM67488 target protein and GAM97515 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67488 and GAM97515

GR3977 BM021955 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3977(GR3977) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3977 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3977 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3977 gene encodes GR3977 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3977 precursor RNA folds spatially, forming GR3977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3977 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3977 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3977 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM77792 precursor RNA and GAM152606 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77792 RNA and GAM152606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77792 target RNA into GAM77792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152606 target RNA into GAM152606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3977 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3977 gene: GAM77792 target protein and GAM152606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77792 and GAM152606

GR3978 BG214819 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3978(GR3978) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3978 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3978 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3978 gene encodes GR3978 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3978 precursor RNA folds spatially, forming GR3978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3978 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3978 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3978 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM32752 precursor RNA and GAM323690 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM32752 RNA and GAM323690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM32752 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32752 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32752 target RNA into GAM32752 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323690 target RNA into GAM323690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3978 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3978 gene: GAM32752 target protein and GAM323690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM32752 and GAM323690

GR3979 BG260559 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3979(GR3979) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3979 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3979 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3979 gene encodes GR3979 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3979 precursor RNA folds spatially, forming GR3979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3979 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3979 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3979 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122491 precursor RNA and GAM270665 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122491 RNA and GAM270665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122491 target RNA into GAM122491 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270665 target RNA into GAM270665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3979 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3979 gene: GAM122491 target protein and GAM270665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122491 and GAM270665

GR3980 AU121792 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3980(GR3980) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3980 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3980 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3980 gene encodes GR3980 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3980 precursor RNA folds spatially, forming GR3980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3980 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3980 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3980 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM191823 precursor RNA and GAM218699 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM191823 RNA and GAM218699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM191823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191823 target RNA into GAM191823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218699 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218699 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218699 target RNA into GAM218699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3980 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3980 gene: GAM191823 target protein and GAM218699 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM191823 and GAM218699

GR3981 BI334731 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3981(GR3981) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3981 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3981 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3981 gene encodes GR3981 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3981 precursor RNA folds spatially, forming GR3981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3981 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3981 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3981 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3121 precursor RNA and GAM253185 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3121 RNA and GAM253185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3121 target RNA into GAM3121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253185 target RNA into GAM253185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3981 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3981 gene: GAM3121 target protein and GAM253185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3121 and GAM253185

GR3982 BG610975 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3982(GR3982) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR3982 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3982 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3982 gene encodes GR3982 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3982 precursor RNA folds spatially, forming GR3982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3982 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3982 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3982 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM170775 precursor RNA, GAM188780 precursor RNA and GAM236397 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM170775 RNA, GAM188780 RNA and GAM236397 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM170775 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170775 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170775 target RNA into GAM170775 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188780 target RNA into GAM188780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM236397 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236397 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236397 target RNA into GAM236397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3982 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3982 gene: GAM170775 target protein, GAM188780 target protein and GAM236397 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM170775, GAM188780 and GAM236397

GR3983 AI436267 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3983(GR3983) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3983 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3983 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3983 gene encodes GR3983 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3983 precursor RNA folds spatially, forming GR3983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3983 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3983 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3983 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1136 precursor RNA and GAM252894 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1136 RNA and GAM252894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1136 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1136 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1136 target RNA into GAM1136 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252894 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252894 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252894 target RNA into GAM252894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3983 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3983 gene: GAM1136 target protein and GAM252894 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1136 and GAM252894

GR3984 AV723614 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3984(GR3984) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3984 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3984 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3984 gene encodes GR3984 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3984 precursor RNA folds spatially, forming GR3984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3984 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3984 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3984 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8394 precursor RNA, GAM15017 precursor RNA and GAM279958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8394 RNA, GAM15017 RNA and GAM279958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8394 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8394 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8394 target RNA into GAM8394 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15017 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15017 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15017 target RNA into GAM15017 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279958 target RNA into GAM279958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3984 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3984 gene: GAM8394 target protein, GAM15017 target protein and GAM279958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8394, GAM15017 and GAM279958

GR3985 BF243717 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3985(GR3985) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3985 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3985 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3985 gene encodes GR3985 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3985 precursor RNA folds spatially, forming GR3985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3985 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3985 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3985 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM26924 precursor RNA and GAM144307 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM26924 RNA and GAM144307 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM26924 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26924 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26924 target RNA into GAM26924 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144307 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144307 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144307 target RNA into GAM144307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3985 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3985 gene: GAM26924 target protein and GAM144307 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM26924 and GAM144307

GR3986 AI910997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3986(GR3986) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3986 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3986 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3986 gene encodes GR3986 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3986 precursor RNA folds spatially, forming GR3986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3986 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3986 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3986 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7342 precursor RNA and GAM254645 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7342 RNA and GAM254645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7342 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7342 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7342 target RNA into GAM7342 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254645 target RNA into GAM254645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3986 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3986 gene: GAM7342 target protein and GAM254645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7342 and GAM254645

GR3987 AA879276 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3987(GR3987) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3987 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3987 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3987 gene encodes GR3987 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3987 precursor RNA folds spatially, forming GR3987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3987 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3987 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3987 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1195 precursor RNA and GAM324367 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1195 RNA and GAM324367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1195 target RNA into GAM1195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM324367 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM324367 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM324367 target RNA into GAM324367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3987 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3987 gene: GAM1195 target protein and GAM324367 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1195 and GAM324367

GR3988 AA701671 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3988(GR3988) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3988 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3988 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3988 gene encodes GR3988 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3988 precursor RNA folds spatially, forming GR3988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3988 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3988 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3988 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM210409 precursor RNA and GAM222968 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM210409 RNA and GAM222968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM210409 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210409 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210409 target RNA into GAM210409 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM222968 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222968 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222968 target RNA into GAM222968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3988 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR3988 gene: GAM210409 target protein and GAM222968 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM210409 and GAM222968

GR3989 BE276733 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3989(GR3989) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3989 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3989 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3989 gene encodes GR3989 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3989 precursor RNA folds spatially, forming GR3989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3989 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3989 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3989 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM972 precursor RNA, GAM113899 precursor RNA and GAM270880 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM972 RNA, GAM113899 RNA and GAM270880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM972 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM972 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM972 target RNA into

GAM972 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113899 target RNA into GAM113899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270880 target RNA into GAM270880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3989 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3989 gene: GAM972 target protein, GAM113899 target protein and GAM270880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM972, GAM113899 and GAM270880

GR3990 AL046152 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3990(GR3990) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3990 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3990 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3990 gene encodes GR3990 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3990 precursor RNA folds spatially, forming GR3990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3990 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3990 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3990 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM10372 precursor RNA and GAM336110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM10372 RNA and GAM336110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM10372 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM10372 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM10372 target RNA into GAM10372 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336110 target RNA into GAM336110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3990 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3990 gene: GAM10372 target protein and GAM336110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM10372 and GAM336110

GR3991 BQ021743 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3991(GR3991) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3991 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR3991 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3991 gene encodes GR3991 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3991 precursor RNA folds spatially, forming GR3991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3991 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3991 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3991 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM48291 precursor RNA and GAM188577 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM48291 RNA and GAM188577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM48291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM48291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM48291 target RNA into GAM48291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM188577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188577 target RNA into GAM188577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3991 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3991 gene: GAM48291 target

protein and GAM188577 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM48291 and GAM188577

GR3992 BE566431 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3992(GR3992) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3992 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3992 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3992 gene encodes GR3992 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3992 precursor RNA folds spatially, forming GR3992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3992 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3992 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3992 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM143 precursor RNA and GAM26323 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM143 RNA and GAM26323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM143 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM143 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM143 target RNA into GAM143 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26323 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26323 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26323 target RNA into GAM26323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3992 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3992 gene: GAM143 target protein and GAM26323 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM143 and GAM26323

GR3993 AW167837 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3993(GR3993) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3993 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3993 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3993 gene encodes GR3993 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3993 precursor RNA folds spatially, forming GR3993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3993 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3993 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3993 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM136287 precursor RNA and GAM180586 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM136287 RNA and GAM180586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM136287 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM136287 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM136287 target RNA into GAM136287 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180586 target RNA into GAM180586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3993 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3993 gene: GAM136287 target protein and GAM180586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM136287 and GAM180586

GR3994 BM562312 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3994(GR3994) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3994 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3994 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3994 gene encodes GR3994 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3994 precursor RNA folds spatially, forming GR3994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3994 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR3994 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3994 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2111 precursor RNA and GAM147780 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2111 RNA and GAM147780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2111 target RNA into GAM2111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147780 target RNA into GAM147780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3994 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3994 gene: GAM2111 target protein and GAM147780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2111 and GAM147780

GR3995 R45785 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3995(GR3995) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3995 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3995 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3995 gene encodes GR3995 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3995 precursor RNA folds spatially, forming GR3995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3995 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3995 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3995 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7630 precursor RNA and GAM118309 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7630 RNA and GAM118309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7630 target RNA into GAM7630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118309 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118309 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118309 target RNA into GAM118309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3995 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3995 gene: GAM7630 target protein and GAM118309 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7630 and GAM118309

GR3996 BI546216 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3996(GR3996) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3996 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3996 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3996 gene encodes GR3996 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3996 precursor RNA folds spatially, forming GR3996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3996 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3996 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3996 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4867 precursor RNA and GAM29040 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4867 RNA and GAM29040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4867 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4867 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4867 target RNA into

GAM4867 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29040 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29040 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29040 target RNA into GAM29040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3996 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3996 gene: GAM4867 target protein and GAM29040 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4867 and GAM29040

GR3997 AU142435 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3997(GR3997) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3997 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3997 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3997 gene encodes GR3997 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3997 precursor RNA folds spatially, forming GR3997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3997 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3997 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3997 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM223961 precursor RNA and GAM288071 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223961 RNA and GAM288071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223961 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223961 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223961 target RNA into GAM223961 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288071 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288071 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288071 target RNA into GAM288071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3997 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3997 gene: GAM223961 target protein and GAM288071 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223961 and GAM288071

GR3998 BM839985 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3998(GR3998) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR3998 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3998 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3998 gene encodes GR3998 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3998 precursor RNA folds spatially, forming GR3998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR3998 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3998 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3998 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4129 precursor RNA and GAM322574 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4129 RNA and GAM322574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4129 target RNA into GAM4129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322574 target RNA into GAM322574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3998 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3998 gene: GAM4129 target protein and GAM322574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4129 and GAM322574

GR3999 BE889298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 3999(GR3999) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR3999 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR3999 gene was detected is described hereinabove with reference to Figs. 8-18.

GR3999 gene encodes GR3999 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR3999 precursor RNA folds spatially, forming GR3999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR3999 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR3999 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR3999 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5948 precursor RNA and GAM177745 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5948 RNA and GAM177745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5948 target RNA into GAM5948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177745 target RNA into GAM177745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR3999 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR3999 gene: GAM5948 target protein and GAM177745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5948 and GAM177745

GR4000 AV699521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4000(GR4000) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4000 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4000 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4000 gene encodes GR4000 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4000 precursor RNA folds spatially, forming GR4000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4000 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4000 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4000 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7252 precursor RNA, GAM257946 precursor RNA and GAM258100 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7252 RNA, GAM257946 RNA and GAM258100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7252 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7252 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7252 target RNA into GAM7252 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257946 target RNA into GAM257946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM258100 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258100 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258100 target RNA into GAM258100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4000 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4000 gene: GAM7252 target protein, GAM257946 target protein and GAM258100 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7252, GAM257946 and GAM258100

GR4001 BG943084 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4001(GR4001) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4001 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4001 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4001 gene encodes GR4001 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4001 precursor RNA folds spatially, forming GR4001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4001 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4001 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4001 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM685 precursor RNA and GAM86313 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM685 RNA and GAM86313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM685 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM685 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM685 target RNA into GAM685 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86313 target RNA into GAM86313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4001 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4001 gene: GAM685 target protein and GAM86313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM685 and GAM86313

GR4002 BI868471 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4002(GR4002) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4002 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4002 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4002 gene encodes GR4002 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4002 precursor RNA folds spatially, forming GR4002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4002 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4002 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4002 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7308 precursor RNA and GAM64034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7308 RNA and GAM64034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7308 target RNA into GAM7308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64034 target RNA into GAM64034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4002 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4002 gene: GAM7308 target protein and GAM64034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7308 and GAM64034

GR4003 AW958396 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4003(GR4003) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4003 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4003 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4003 gene encodes GR4003 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4003 precursor RNA folds spatially, forming GR4003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4003 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4003 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4003 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM253780 precursor RNA and GAM254945 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253780 RNA and GAM254945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253780 target RNA into GAM253780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254945 target RNA into GAM254945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4003 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4003 gene: GAM253780 target protein and GAM254945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253780 and GAM254945

GR4004 BG771854 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4004(GR4004) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4004 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4004 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4004 gene encodes GR4004 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4004 precursor RNA folds spatially, forming GR4004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4004 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4004 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4004 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1520 precursor RNA, GAM3177 precursor RNA and GAM278802 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1520 RNA, GAM3177 RNA and GAM278802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1520 target RNA into GAM1520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3177 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3177 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3177 target RNA into GAM3177 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278802 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278802 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278802 target RNA into GAM278802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4004 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4004 gene: GAM1520 target protein, GAM3177 target protein and GAM278802 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1520, GAM3177 and GAM278802

GR4005 BI256576 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4005(GR4005) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4005 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4005 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4005 gene encodes GR4005 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4005 precursor RNA folds spatially, forming GR4005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4005 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4005 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4005 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1215 precursor RNA and GAM234804 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1215 RNA and GAM234804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1215 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1215 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1215 target RNA into GAM1215 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM234804 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM234804 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM234804 target RNA into GAM234804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4005 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4005 gene: GAM1215 target protein and GAM234804 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1215 and GAM234804

GR4006 H01373 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4006(GR4006) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4006 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4006 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4006 gene encodes GR4006 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4006 precursor RNA folds spatially, forming GR4006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4006 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4006 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4006 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7206 precursor RNA and GAM33345 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7206 RNA and GAM33345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7206 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7206 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7206 target RNA into

GAM7206 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM33345 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM33345 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM33345 target RNA into GAM33345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4006 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4006 gene: GAM7206 target protein and GAM33345 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7206 and GAM33345

GR4007 AW372694 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4007(GR4007) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4007 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4007 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4007 gene encodes GR4007 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4007 precursor RNA folds spatially, forming GR4007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4007 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4007 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4007 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6205 precursor RNA and GAM194760 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6205 RNA and GAM194760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6205 target RNA into GAM6205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194760 target RNA into GAM194760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4007 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4007 gene: GAM6205 target protein and GAM194760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6205 and GAM194760

GR4008 AW820125 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4008(GR4008) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4008 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4008 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4008 gene encodes GR4008 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4008 precursor RNA folds spatially, forming GR4008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR4008 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4008 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4008 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM124790 precursor RNA and GAM213010 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM124790 RNA and GAM213010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM124790 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM124790 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM124790 target RNA into GAM124790 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213010 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213010 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213010 target RNA into GAM213010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4008 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4008 gene: GAM124790 target protein and GAM213010 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM124790 and GAM213010

GR4009 BE002337 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4009(GR4009) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR4009 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4009 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4009 gene encodes GR4009 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4009 precursor RNA folds spatially, forming GR4009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4009 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4009 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4009 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2196 precursor RNA, GAM4575 precursor RNA and GAM135537 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2196 RNA, GAM4575 RNA and GAM135537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2196 target RNA into GAM2196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4575 target RNA into GAM4575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM135537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM135537 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM135537 target RNA into GAM135537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4009 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4009 gene: GAM2196 target protein, GAM4575 target protein and GAM135537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2196, GAM4575 and GAM135537

GR4010 BM974923 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4010(GR4010) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4010 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4010 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4010 gene encodes GR4010 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4010 precursor RNA folds spatially, forming GR4010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4010 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4010 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4010 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6401 precursor RNA and GAM228396 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6401 RNA and GAM228396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6401 target RNA into GAM6401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228396 target RNA into GAM228396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4010 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4010 gene: GAM6401 target protein and GAM228396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6401 and GAM228396

GR4011 BM852612 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4011(GR4011) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4011 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4011 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4011 gene encodes GR4011 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4011 precursor RNA folds spatially, forming GR4011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4011 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4011 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4011 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8125 precursor RNA and GAM89517 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8125 RNA and GAM89517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8125 target RNA into GAM8125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM89517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89517 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89517 target RNA into GAM89517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4011 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4011 gene: GAM8125 target protein and GAM89517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8125 and GAM89517

GR4012 N69827 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4012(GR4012) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4012 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4012 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4012 gene encodes GR4012 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4012 precursor RNA folds spatially, forming GR4012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4012 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4012 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4012 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM11128 precursor RNA and GAM75391 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM11128 RNA and GAM75391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM11128 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11128 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11128 target RNA into GAM11128 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM75391 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM75391 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM75391 target RNA into GAM75391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4012 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4012 gene: GAM11128 target protein and GAM75391 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM11128 and GAM75391

GR4013 AW363941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4013(GR4013) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4013 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4013 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4013 gene encodes GR4013 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4013 precursor RNA folds spatially, forming GR4013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4013 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4013 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4013 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM253680 precursor RNA, GAM301483 precursor RNA and GAM306956 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM253680 RNA, GAM301483 RNA and GAM306956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM253680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253680 target RNA into GAM253680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301483 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301483 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301483 target RNA into GAM301483 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM306956 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM306956 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM306956 target RNA into GAM306956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4013 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4013 gene: GAM253680 target protein, GAM301483 target protein and GAM306956 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM253680, GAM301483 and GAM306956

GR4014 AV762349 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4014(GR4014) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4014 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4014 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4014 gene encodes GR4014 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4014 precursor RNA folds spatially, forming GR4014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4014 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR4014 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4014 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM70087 precursor RNA and GAM224674 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM70087 RNA and GAM224674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM70087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70087 target RNA into GAM70087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224674 target RNA into GAM224674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4014 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4014 gene: GAM70087 target protein and GAM224674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM70087 and GAM224674

GR4015 AI497776 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4015(GR4015) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4015 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4015 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4015 gene encodes GR4015 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4015 precursor RNA folds spatially, forming GR4015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4015 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4015 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4015 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1024 precursor RNA and GAM6841 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1024 RNA and GAM6841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1024 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1024 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1024 target RNA into GAM1024 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6841 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6841 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6841 target RNA into GAM6841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4015 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4015 gene: GAM1024 target protein and GAM6841 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1024 and GAM6841

GR4016 AU144225 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4016(GR4016) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4016 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4016 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4016 gene encodes GR4016 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4016 precursor RNA folds spatially, forming GR4016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4016 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4016 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4016 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3199 precursor RNA, GAM290853 precursor RNA and GAM294930 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3199 RNA, GAM290853 RNA and GAM294930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3199 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3199 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM3199 target RNA into GAM3199 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290853 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290853 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290853 target RNA into GAM290853 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294930 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294930 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294930 target RNA into GAM294930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4016 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4016 gene: GAM3199 target protein, GAM290853 target protein and GAM294930 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3199, GAM290853 and GAM294930

GR4017 BI752719 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4017(GR4017) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4017 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4017 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4017 gene encodes GR4017 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4017 precursor RNA folds spatially, forming GR4017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4017 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4017 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4017 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6548 precursor RNA and GAM298300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6548 RNA and GAM298300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6548 target RNA into GAM6548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298300 target RNA into GAM298300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4017 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4017 gene: GAM6548 target protein and GAM298300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6548 and GAM298300

GR4018 BE466472 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4018(GR4018) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4018 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4018 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4018 gene encodes GR4018 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4018 precursor RNA folds spatially, forming GR4018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4018 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4018 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4018 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM67591 precursor RNA, GAM101343 precursor RNA and GAM185899 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67591 RNA, GAM101343 RNA and GAM185899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67591 target RNA into GAM67591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101343 target RNA into GAM101343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185899 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185899 target RNA into GAM185899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4018 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4018 gene: GAM67591 target protein, GAM101343 target protein and GAM185899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67591, GAM101343 and GAM185899

GR4019 BI062381 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4019(GR4019) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4019 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4019 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4019 gene encodes GR4019 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4019 precursor RNA folds spatially, forming GR4019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4019 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4019 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4019 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5110 precursor RNA, GAM223510 precursor RNA and GAM269405 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5110 RNA, GAM223510 RNA and GAM269405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5110 target RNA into GAM5110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223510 target RNA into GAM223510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269405 target RNA into GAM269405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4019 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4019 gene: GAM5110 target protein, GAM223510 target protein and GAM269405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5110, GAM223510 and GAM269405

GR4020 BQ029062 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4020(GR4020) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4020 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4020 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4020 gene encodes GR4020 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4020 precursor RNA folds spatially, forming GR4020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4020 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4020 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4020 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3819 precursor RNA and GAM279667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3819 RNA and GAM279667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3819 target RNA into GAM3819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279667 target RNA into GAM279667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4020 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4020 gene: GAM3819 target protein and GAM279667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM3819 and GAM279667

GR4021 T49471 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4021(GR4021) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4021 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4021 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4021 gene encodes GR4021 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4021 precursor RNA folds spatially, forming GR4021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4021 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4021 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4021 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM30406 precursor RNA, GAM171356 precursor RNA and GAM196932 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM30406 RNA, GAM171356 RNA and GAM196932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM30406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30406 target RNA into GAM30406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM171356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171356 target RNA into GAM171356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196932 target RNA into GAM196932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4021 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4021 gene: GAM30406 target protein, GAM171356 target protein and GAM196932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM30406, GAM171356 and GAM196932

GR4022 AL710975 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4022(GR4022) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4022 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4022 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4022 gene encodes GR4022 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4022 precursor RNA folds spatially, forming GR4022 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4022 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4022 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4022 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM117196 precursor RNA, GAM117843 precursor RNA and GAM256176 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM117196 RNA, GAM117843 RNA and GAM256176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM117196 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117196 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117196 target RNA into GAM117196 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM117843 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM117843 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM117843 target RNA into GAM117843 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256176 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256176 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256176 target RNA into GAM256176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4022 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4022 gene: GAM117196 target protein, GAM117843 target protein and GAM256176 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM117196, GAM117843 and GAM256176

GR4023 BG188625 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

4023(GR4023) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4023 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4023 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4023 gene encodes GR4023 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4023 precursor RNA folds spatially, forming GR4023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4023 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4023 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4023 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5524 precursor RNA, GAM288700 precursor RNA and GAM328908 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5524 RNA, GAM288700 RNA and GAM328908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5524 target RNA into GAM5524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288700

target RNA into GAM288700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328908 target RNA into GAM328908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4023 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4023 gene: GAM5524 target protein, GAM288700 target protein and GAM328908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5524, GAM288700 and GAM328908

GR4024 BE903219 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4024(GR4024) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4024 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4024 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4024 gene encodes GR4024 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4024 precursor RNA folds spatially, forming GR4024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4024 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4024 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4024 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60275 precursor RNA and GAM91633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60275 RNA and GAM91633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60275 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60275 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60275 target RNA into GAM60275 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91633 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91633 target RNA into GAM91633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4024 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4024 gene: GAM60275 target protein and GAM91633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60275 and GAM91633

GR4025 AA309372 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4025(GR4025) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4025 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4025 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4025 gene encodes GR4025 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4025 precursor RNA folds spatially, forming GR4025 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4025 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4025 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4025 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM741 precursor RNA and GAM15495 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM741 RNA and GAM15495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM741 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM741 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM741 target RNA into GAM741 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM15495 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15495 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15495 target RNA into GAM15495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4025 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4025 gene: GAM741 target protein and GAM15495 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM741 and GAM15495

GR4026 AI751175 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4026(GR4026) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4026 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4026 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4026 gene encodes GR4026 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4026 precursor RNA folds spatially, forming GR4026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4026 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4026 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4026 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40754 precursor RNA and GAM103149 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40754 RNA and GAM103149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40754 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40754 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40754 target RNA into GAM40754 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103149 target RNA into GAM103149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4026 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4026 gene: GAM40754 target protein and GAM103149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40754 and GAM103149

GR4027 BE535910 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4027(GR4027) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4027 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4027 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4027 gene encodes GR4027 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4027 precursor RNA folds spatially, forming GR4027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4027 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4027 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4027 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM7227 precursor RNA, GAM26851 precursor RNA, GAM64447 precursor RNA and GAM254224 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7227 RNA, GAM26851 RNA, GAM64447 RNA and GAM254224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7227 target RNA into GAM7227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26851 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26851 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26851 target RNA into GAM26851 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM64447 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM64447 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM64447 target RNA into GAM64447 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254224 target RNA into GAM254224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4027 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4027 gene: GAM7227 target protein, GAM26851 target protein, GAM64447 target protein and GAM254224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7227, GAM26851, GAM64447 and GAM254224

GR4028 BG765599 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4028(GR4028) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4028 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4028

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4028 gene encodes GR4028 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4028 precursor RNA folds spatially, forming GR4028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4028 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4028 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4028 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3558 precursor RNA, GAM6819 precursor RNA and GAM320175 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3558 RNA, GAM6819 RNA and GAM320175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3558 target RNA into GAM3558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6819 target RNA into GAM6819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320175 target RNA into GAM320175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4028 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4028 gene: GAM3558 target protein, GAM6819 target protein and GAM320175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3558, GAM6819 and GAM320175

GR4029 BE045791 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4029(GR4029) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4029 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4029 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4029 gene encodes GR4029 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4029 precursor RNA folds spatially, forming GR4029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4029 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4029 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4029 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM118705 precursor RNA and GAM218337 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM118705 RNA and GAM218337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM118705 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118705 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118705 target RNA into GAM118705 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218337 target RNA into GAM218337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4029 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4029 gene: GAM118705 target protein and GAM218337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM118705 and GAM218337

GR4030 BE778903 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4030(GR4030) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4030 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4030 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4030 gene encodes GR4030 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4030 precursor RNA folds spatially, forming GR4030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4030 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4030 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4030 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM225 precursor RNA and GAM231758 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM225 RNA and GAM231758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM225 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225 target RNA into GAM225 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM231758 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM231758 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM231758 target RNA into GAM231758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4030 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4030 gene: GAM225 target protein and GAM231758 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM225 and GAM231758

GR4031 BG251991 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4031(GR4031) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4031 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4031 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4031 gene encodes GR4031 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4031 precursor RNA folds spatially, forming GR4031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4031 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4031 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4031 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM431 precursor RNA, GAM7608 precursor RNA and GAM221979 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM431 RNA, GAM7608 RNA and GAM221979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM431 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM431 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM431 target RNA into GAM431 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7608 target RNA into GAM7608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221979 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221979 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221979

target RNA into GAM221979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4031 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4031 gene: GAM431 target protein, GAM7608 target protein and GAM221979 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM431, GAM7608 and GAM221979

GR4032 BF095329 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4032(GR4032) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4032 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4032 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4032 gene encodes GR4032 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4032 precursor RNA folds spatially, forming GR4032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4032 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4032 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4032 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5464 precursor RNA and GAM261986 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5464 RNA and GAM261986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5464 target RNA into GAM5464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261986 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261986 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261986 target RNA into GAM261986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4032 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4032 gene: GAM5464 target protein and GAM261986 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5464 and GAM261986

GR4033 R54458 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4033(GR4033) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4033 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4033 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4033 gene encodes GR4033 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4033 precursor RNA folds spatially, forming GR4033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4033 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4033 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4033 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5589 precursor RNA and GAM7065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5589 RNA and GAM7065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5589 target RNA into GAM5589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7065 target RNA into GAM7065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4033 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4033 gene: GAM5589 target protein and GAM7065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5589 and GAM7065

GR4034 BE296159 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4034(GR4034) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4034 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4034 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4034 gene encodes GR4034 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4034 precursor RNA folds spatially, forming GR4034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4034 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4034 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4034 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7751 precursor RNA, GAM108477 precursor RNA and GAM309373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7751 RNA, GAM108477 RNA and GAM309373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7751 target RNA into GAM7751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108477 target RNA into GAM108477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309373 target RNA into GAM309373 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4034 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4034 gene: GAM7751 target protein, GAM108477 target protein and GAM309373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7751, GAM108477 and GAM309373

GR4035 BF835912 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4035(GR4035) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4035 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4035 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4035 gene encodes GR4035 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4035 precursor RNA folds spatially, forming GR4035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4035 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4035 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4035 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM331 precursor RNA, GAM5727 precursor RNA and GAM255059 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM331 RNA, GAM5727 RNA and GAM255059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM331 target RNA into GAM331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5727 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5727 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5727 target RNA into GAM5727 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255059 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255059 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255059 target RNA into GAM255059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4035 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4035 gene: GAM331 target protein, GAM5727 target protein and GAM255059 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM331, GAM5727 and GAM255059

GR4036 AA677961 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4036(GR4036) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4036 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4036 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4036 gene encodes GR4036 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4036 precursor RNA folds spatially, forming GR4036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4036 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4036 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4036 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM315 precursor RNA, GAM7562 precursor RNA and GAM250034 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM315 RNA, GAM7562 RNA and GAM250034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315 target RNA into GAM315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7562 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7562 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7562 target RNA into GAM7562 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250034 target RNA into GAM250034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4036 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4036 gene: GAM315 target protein, GAM7562 target protein and GAM250034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM315, GAM7562 and GAM250034

GR4037 BG928481 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4037(GR4037) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4037 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4037 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4037 gene encodes GR4037 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4037 precursor RNA folds spatially, forming GR4037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4037 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4037 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4037 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM8578 precursor RNA, GAM16482 precursor RNA, GAM251665 precursor RNA and GAM274373 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8578 RNA, GAM16482 RNA, GAM251665 RNA and GAM274373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8578 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8578 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8578 target RNA into GAM8578 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16482 target RNA into GAM16482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251665 target RNA into GAM251665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274373 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274373 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274373 target RNA into GAM274373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4037 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4037 gene: GAM8578 target protein, GAM16482 target protein, GAM251665 target protein and GAM274373 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8578, GAM16482, GAM251665 and GAM274373

GR4038 BI839068 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4038(GR4038) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4038 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4038 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4038 gene encodes GR4038 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4038 precursor RNA folds spatially, forming GR4038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4038 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4038 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4038 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8314 precursor RNA and GAM72743 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8314 RNA and GAM72743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8314 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8314 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8314 target RNA into GAM8314 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM72743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM72743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM72743 target RNA into GAM72743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4038 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4038 gene: GAM8314 target protein and GAM72743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM8314 and GAM72743

GR4039 BG530725 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4039(GR4039) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4039 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4039 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4039 gene encodes GR4039 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4039 precursor RNA folds spatially, forming GR4039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4039 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4039 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4039 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM42083 precursor RNA and GAM88472 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42083 RNA and GAM88472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42083 target RNA into GAM42083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM88472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM88472 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM88472 target RNA into GAM88472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4039 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4039 gene: GAM42083 target protein and GAM88472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42083 and GAM88472

GR4040 AA143026 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4040(GR4040) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4040 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4040 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4040 gene encodes GR4040 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4040 precursor RNA folds spatially, forming GR4040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4040 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4040 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4040 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM68229 precursor RNA, GAM70014 precursor RNA and GAM101106 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68229 RNA, GAM70014 RNA and GAM101106 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68229 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68229 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68229 target RNA into GAM68229 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM70014 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM70014 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM70014 target RNA into GAM70014 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101106 target RNA into GAM101106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4040 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4040 gene: GAM68229 target protein, GAM70014 target protein and GAM101106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68229, GAM70014 and GAM101106

GR4041 BF196448 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4041(GR4041) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4041 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4041 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4041 gene encodes GR4041 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4041 precursor RNA folds spatially, forming GR4041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4041 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4041 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4041 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9690 precursor RNA and GAM278865 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9690 RNA and GAM278865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9690 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9690 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9690 target RNA into GAM9690 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278865 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278865 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278865 target RNA into GAM278865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4041 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4041 gene: GAM9690 target protein and GAM278865 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9690 and GAM278865

GR4042 BM718454 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4042(GR4042) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4042 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4042 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4042 gene encodes GR4042 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4042 precursor RNA folds spatially, forming GR4042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4042 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4042 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4042 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2893 precursor RNA and GAM148880 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2893 RNA and GAM148880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2893 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2893 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2893 target RNA into GAM2893 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148880 target RNA into GAM148880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4042 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4042 gene: GAM2893 target protein and GAM148880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2893 and GAM148880

GR4043 BM147230 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4043(GR4043) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4043 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4043 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4043 gene encodes GR4043 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4043 precursor RNA folds spatially, forming GR4043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4043 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4043 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4043 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4988 precursor RNA and GAM148773 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4988 RNA and GAM148773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4988 target RNA into GAM4988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148773 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148773 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148773 target RNA into GAM148773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4043 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4043 gene: GAM4988 target protein and GAM148773 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4988 and GAM148773

GR4044 BM981983 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4044(GR4044) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4044 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4044 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4044 gene encodes GR4044 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4044 precursor RNA folds spatially, forming GR4044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4044 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4044 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4044 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2240 precursor RNA and GAM187946 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2240 RNA and GAM187946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2240 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2240 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2240 target RNA into GAM2240 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM187946 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187946 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187946 target RNA into GAM187946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4044 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4044 gene: GAM2240 target protein and GAM187946 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2240 and GAM187946

GR4045 BF369040 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4045(GR4045) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4045 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4045 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4045 gene encodes GR4045 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4045 precursor RNA folds spatially, forming GR4045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4045 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4045 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4045 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6130 precursor RNA and GAM182708 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6130 RNA and GAM182708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6130 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6130 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6130 target RNA into GAM6130 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182708 target RNA into GAM182708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4045 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4045 gene: GAM6130 target protein and GAM182708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6130 and GAM182708

GR4046 BG105487 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4046(GR4046) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4046 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4046 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4046 gene encodes GR4046 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4046 precursor RNA folds spatially, forming GR4046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4046 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4046 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4046 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55246 precursor RNA, GAM269934 precursor RNA and GAM281879 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55246 RNA, GAM269934 RNA and GAM281879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55246 target RNA into GAM55246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM269934 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM269934 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM269934 target RNA into GAM269934 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281879 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281879 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281879 target RNA into GAM281879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4046 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4046 gene: GAM55246 target protein, GAM269934 target protein and GAM281879 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55246, GAM269934 and GAM281879

GR4047 BI523517 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4047(GR4047) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4047 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4047 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4047 gene encodes GR4047 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4047 precursor RNA folds spatially, forming GR4047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4047 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4047 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4047 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55449 precursor RNA, GAM92568 precursor RNA and GAM266043 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55449 RNA, GAM92568 RNA and GAM266043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55449 target RNA into GAM55449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92568 target RNA into GAM92568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266043 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266043 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266043 target RNA into GAM266043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4047 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4047 gene: GAM55449 target protein, GAM92568 target protein and GAM266043 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55449, GAM92568 and GAM266043

GR4048 BF745084 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 4048(GR4048) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4048 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4048 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4048 gene encodes GR4048 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4048 precursor RNA folds spatially, forming GR4048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4048 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4048 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4048 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM149388 precursor RNA and GAM317042 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM149388 RNA and GAM317042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM149388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149388 target RNA into GAM149388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317042

target RNA into GAM317042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4048 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4048 gene: GAM149388 target protein and GAM317042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM149388 and GAM317042

GR4049 AI309206 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4049(GR4049) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4049 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4049 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4049 gene encodes GR4049 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4049 precursor RNA folds spatially, forming GR4049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4049 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4049 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4049 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM128889 precursor RNA and GAM176401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128889 RNA and GAM176401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128889 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128889 target RNA into GAM128889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176401 target RNA into GAM176401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4049 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4049 gene: GAM128889 target protein and GAM176401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128889 and GAM176401

GR4050 AA772395 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4050(GR4050) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4050 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4050 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4050 gene encodes GR4050 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4050 precursor RNA folds spatially, forming GR4050 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4050 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4050 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4050 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3709 precursor RNA and GAM178142 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3709 RNA and GAM178142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3709 target RNA into GAM3709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178142 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178142 target RNA into GAM178142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4050 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4050 gene: GAM3709 target protein and GAM178142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3709 and GAM178142

GR4051 BG716552 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4051(GR4051) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4051 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4051 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4051 gene encodes GR4051 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4051 precursor RNA folds spatially, forming GR4051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4051 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4051 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4051 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5539 precursor RNA, GAM213178 precursor RNA and GAM271749 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5539 RNA, GAM213178 RNA and GAM271749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5539 target RNA into GAM5539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM213178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213178 target RNA into GAM213178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271749 target RNA into GAM271749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4051 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4051 gene: GAM5539 target protein, GAM213178 target protein and GAM271749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5539, GAM213178 and GAM271749

GR4052 BG830900 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4052(GR4052) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4052 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4052 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4052 gene encodes GR4052 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4052 precursor RNA folds spatially, forming GR4052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4052 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4052 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4052 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7665 precursor RNA and GAM325975 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7665 RNA and GAM325975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7665 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM7665 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7665 target RNA into GAM7665 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325975 target RNA into GAM325975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4052 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4052 gene: GAM7665 target protein and GAM325975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7665 and GAM325975

GR4053 BF672379 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4053(GR4053) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4053 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4053 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4053 gene encodes GR4053 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4053 precursor RNA folds spatially, forming GR4053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4053 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4053 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4053 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM125801 precursor RNA and GAM227993 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125801 RNA and GAM227993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125801 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125801 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125801 target RNA into GAM125801 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227993 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227993 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227993 target RNA into GAM227993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4053 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4053 gene: GAM125801 target protein and GAM227993 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125801 and GAM227993

GR4054 AI656668 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4054(GR4054) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4054 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4054 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4054 gene encodes GR4054 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR4054 precursor RNA folds spatially, forming GR4054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4054 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4054 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4054 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5392 precursor RNA and GAM323191 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5392 RNA and GAM323191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5392 target RNA into GAM5392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM323191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM323191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM323191 target RNA into GAM323191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4054 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4054 gene: GAM5392 target protein and GAM323191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5392 and GAM323191

GR4055 AA278640 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4055(GR4055) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4055 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4055 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4055 gene encodes GR4055 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4055 precursor RNA folds spatially, forming GR4055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4055 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4055 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4055 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3757 precursor RNA and GAM245663 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3757 RNA and GAM245663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3757 target RNA into GAM3757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245663 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245663 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245663 target RNA into GAM245663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4055 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4055 gene: GAM3757 target protein and GAM245663 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3757 and GAM245663

GR4056 BF815090 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4056(GR4056) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4056 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4056 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4056 gene encodes GR4056 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4056 precursor RNA folds spatially, forming GR4056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4056 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4056 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4056 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM67689 precursor RNA and GAM212443 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM67689 RNA and GAM212443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM67689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM67689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM67689 target RNA into GAM67689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM212443 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM212443 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM212443 target RNA into GAM212443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4056 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4056 gene: GAM67689 target protein and GAM212443 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM67689 and GAM212443

GR4057 BQ069661 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4057(GR4057) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4057 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4057 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4057 gene encodes GR4057 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4057 precursor RNA folds spatially, forming GR4057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4057 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4057 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4057 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM125815 precursor RNA and GAM209087 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM125815 RNA and GAM209087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM125815 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125815 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125815 target RNA into GAM125815 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209087 target RNA into GAM209087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4057 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4057 gene: GAM125815 target protein and GAM209087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM125815 and GAM209087

GR4058 BI551521 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4058(GR4058) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4058 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4058 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4058 gene encodes GR4058 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4058 precursor RNA folds spatially, forming GR4058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4058 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4058 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4058 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM196178 precursor RNA, GAM223832 precursor RNA and GAM233576 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM196178 RNA, GAM223832 RNA and GAM233576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM196178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196178 target RNA into GAM196178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223832 target RNA into GAM223832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233576 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233576 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233576 target RNA into GAM233576 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4058 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4058 gene: GAM196178 target protein, GAM223832 target protein and GAM233576 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM196178, GAM223832 and GAM233576

GR4059 AA740647 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4059(GR4059) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4059 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4059 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4059 gene encodes GR4059 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4059 precursor RNA folds spatially, forming GR4059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4059 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4059 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4059 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56338 precursor RNA and GAM196288 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56338 RNA and GAM196288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56338 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56338 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56338 target RNA into GAM56338 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM196288 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM196288 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM196288 target RNA into GAM196288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4059 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4059 gene: GAM56338 target protein and GAM196288 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56338 and GAM196288

GR4060 BF361095 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4060(GR4060) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4060 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4060 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4060 gene encodes GR4060 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4060 precursor RNA folds spatially, forming GR4060 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4060 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4060 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4060 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5117 precursor RNA, GAM148232 precursor RNA and GAM235750 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5117 RNA, GAM148232 RNA and GAM235750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5117 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5117 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5117 target RNA into GAM5117 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM148232 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM148232 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM148232 target RNA into GAM148232 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235750 target RNA into GAM235750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4060 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4060 gene: GAM5117 target protein, GAM148232 target protein and GAM235750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5117, GAM148232 and GAM235750

GR4061 BE713561 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

4061(GR4061) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4061 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4061 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4061 gene encodes GR4061 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4061 precursor RNA folds spatially, forming GR4061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4061 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4061 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4061 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6761 precursor RNA and GAM58402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6761 RNA and GAM58402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6761 target RNA into GAM6761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM58402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58402 target RNA into GAM58402 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4061 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4061 gene: GAM6761 target protein and GAM58402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6761 and GAM58402

GR4062 BG189430 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4062(GR4062) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4062 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4062 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4062 gene encodes GR4062 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4062 precursor RNA folds spatially, forming GR4062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4062 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4062 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4062 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6687 precursor RNA and GAM52778 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6687 RNA and GAM52778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6687 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM6687 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6687 target RNA into GAM6687 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52778 target RNA into GAM52778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4062 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4062 gene: GAM6687 target protein and GAM52778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6687 and GAM52778

GR4063 AW023566 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4063(GR4063) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4063 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4063 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4063 gene encodes GR4063 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4063 precursor RNA folds spatially, forming GR4063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4063 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4063 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4063 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM4026 precursor RNA and GAM17913 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4026 RNA and GAM17913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4026 target RNA into GAM4026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17913 target RNA into GAM17913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4063 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4063 gene: GAM4026 target protein and GAM17913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4026 and GAM17913

GR4064 BI117011 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4064(GR4064) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4064 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4064 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4064 gene encodes GR4064 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR4064 precursor RNA folds spatially, forming GR4064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4064 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4064 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4064 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120080 precursor RNA and GAM192286 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120080 RNA and GAM192286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120080 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120080 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120080 target RNA into GAM120080 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192286 target RNA into GAM192286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4064 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4064 gene: GAM120080 target protein and GAM192286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120080 and GAM192286

GR4065 BF026763 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4065(GR4065) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4065 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4065 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4065 gene encodes GR4065 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4065 precursor RNA folds spatially, forming GR4065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4065 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4065 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4065 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM169474 precursor RNA and GAM305388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM169474 RNA and GAM305388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM169474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM169474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM169474 target RNA into GAM169474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305388 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305388 target RNA into GAM305388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4065 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4065 gene: GAM169474 target protein and GAM305388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM169474 and GAM305388

GR4066 BG402766 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4066(GR4066) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4066 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4066 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4066 gene encodes GR4066 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4066 precursor RNA folds spatially, forming GR4066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4066 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4066 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4066 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM58 precursor RNA and GAM32346 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM58 RNA and GAM32346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM58 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM58 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM58 target RNA into GAM58 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM32346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM32346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM32346 target RNA into GAM32346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4066 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4066 gene: GAM58 target protein and GAM32346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM58 and GAM32346

GR4067 BI547728 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4067(GR4067) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4067 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4067 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4067 gene encodes GR4067 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4067 precursor RNA folds spatially, forming GR4067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4067 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4067 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4067 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7316 precursor RNA, GAM8291 precursor RNA and GAM50700 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7316 RNA, GAM8291 RNA and GAM50700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7316 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7316 target RNA into GAM7316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8291 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8291 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8291 target RNA into GAM8291 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM50700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50700 target RNA into GAM50700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4067 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4067 gene: GAM7316 target protein, GAM8291 target protein and GAM50700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7316, GAM8291 and GAM50700

GR4068 AU158526 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 4068(GR4068) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4068 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4068 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4068 gene encodes GR4068 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4068 precursor RNA folds spatially, forming GR4068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4068 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4068 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4068 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5325 precursor RNA and GAM65171 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5325 RNA and GAM65171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5325 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5325 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5325 target RNA into GAM5325 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65171 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65171 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65171

target RNA into GAM65171 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4068 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4068 gene: GAM5325 target protein and GAM65171 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5325 and GAM65171

GR4069 BF205383 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4069(GR4069) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4069 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4069 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4069 gene encodes GR4069 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4069 precursor RNA folds spatially, forming GR4069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4069 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4069 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4069 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM110 precursor RNA and GAM290487 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM110 RNA and GAM290487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM110 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110 target RNA into GAM110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290487 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290487 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290487 target RNA into GAM290487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4069 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4069 gene: GAM110 target protein and GAM290487 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM110 and GAM290487

GR4070 BG534665 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4070(GR4070) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4070 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4070 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4070 gene encodes GR4070 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4070 precursor RNA folds spatially, forming GR4070 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4070 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4070 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4070 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3020 precursor RNA and GAM26648 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3020 RNA and GAM26648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3020 target RNA into GAM3020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26648 target RNA into GAM26648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4070 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4070 gene: GAM3020 target protein and GAM26648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3020 and GAM26648

GR4071 BI860894 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4071(GR4071) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4071 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4071 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4071 gene encodes GR4071 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4071 precursor RNA folds spatially, forming GR4071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4071 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4071 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4071 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2717 precursor RNA and GAM116756 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2717 RNA and GAM116756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2717 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2717 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2717 target RNA into GAM2717 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116756 target RNA into GAM116756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4071 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4071 gene: GAM2717 target protein and GAM116756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2717 and GAM116756

GR4072 BF676133 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4072(GR4072) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4072 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4072 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4072 gene encodes GR4072 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4072 precursor RNA folds spatially, forming GR4072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4072 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4072 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4072 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM258 precursor RNA, GAM80517 precursor RNA, GAM185567 precursor RNA and GAM288885 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM258 RNA, GAM80517 RNA, GAM185567 RNA and GAM288885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM258 target RNA into GAM258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM80517 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM80517 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM80517 target RNA into GAM80517 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185567 target RNA into GAM185567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288885 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288885 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288885 target RNA into GAM288885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4072 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4072 gene: GAM258 target protein, GAM80517 target protein, GAM185567 target protein and GAM288885 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM258, GAM80517, GAM185567 and GAM288885

GR4073 AA502716 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4073(GR4073) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4073 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4073 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4073 gene encodes GR4073 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4073 precursor RNA folds spatially, forming GR4073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4073 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4073 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4073 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM45548 precursor RNA and GAM46062 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45548 RNA and GAM46062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45548 target RNA into GAM45548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM46062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM46062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM46062 target RNA into GAM46062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4073 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4073 gene: GAM45548 target protein and GAM46062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45548 and GAM46062

GR4074 AI636931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4074(GR4074) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4074 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4074 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4074 gene encodes GR4074 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4074 precursor RNA folds spatially, forming GR4074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4074 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4074 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4074 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40468 precursor RNA and GAM158027 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40468 RNA and GAM158027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40468 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40468 target RNA into GAM40468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM158027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158027 target RNA into GAM158027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4074 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4074 gene: GAM40468 target protein and GAM158027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40468 and GAM158027

GR4075 BG011620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4075(GR4075) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4075 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4075 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4075 gene encodes GR4075 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4075 precursor RNA folds spatially, forming GR4075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4075 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4075 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4075 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM266722 precursor RNA, GAM287022 precursor RNA and GAM317163 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM266722 RNA, GAM287022 RNA and GAM317163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM266722 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266722 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266722 target RNA into GAM266722 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287022 target RNA into GAM287022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM317163 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM317163 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM317163 target RNA into GAM317163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4075 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4075 gene: GAM266722 target protein, GAM287022 target protein and GAM317163 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM266722, GAM287022 and GAM317163

GR4076 AA724307 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4076(GR4076) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4076 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4076 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4076 gene encodes GR4076 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4076 precursor RNA folds spatially, forming GR4076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4076 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR4076 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4076 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7988 precursor RNA, GAM118186 precursor RNA and GAM134726 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7988 RNA, GAM118186 RNA and GAM134726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7988 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7988 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7988 target RNA into GAM7988 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118186 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118186 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118186 target RNA into GAM118186 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134726 target RNA into GAM134726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4076 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4076 gene: GAM7988 target protein, GAM118186 target protein and GAM134726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7988, GAM118186 and GAM134726

GR4077 BF374069 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4077(GR4077) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4077 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4077 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4077 gene encodes GR4077 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4077 precursor RNA folds spatially, forming GR4077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4077 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4077 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4077 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1214 precursor RNA, GAM3295 precursor RNA and GAM178599 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1214 RNA, GAM3295 RNA and GAM178599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1214 target RNA into GAM1214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3295 target RNA into GAM3295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178599 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178599 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178599 target RNA into GAM178599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4077 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4077 gene: GAM1214 target protein, GAM3295 target protein and GAM178599 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1214, GAM3295 and GAM178599

GR4078 AV658699 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4078(GR4078) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4078 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4078 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4078 gene encodes GR4078 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4078 precursor RNA folds spatially, forming GR4078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4078 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4078 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4078 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2652 precursor RNA and GAM220927 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2652 RNA and GAM220927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2652 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2652 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2652 target RNA into GAM2652 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220927 target RNA into GAM220927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4078 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4078 gene: GAM2652 target protein and GAM220927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2652 and GAM220927

GR4079 BG025916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4079(GR4079) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4079 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4079 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4079 gene encodes GR4079 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4079 precursor RNA folds spatially, forming GR4079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4079 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4079 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4079 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217836 precursor RNA and GAM275759 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217836 RNA and GAM275759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217836 target RNA into GAM217836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275759 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275759 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275759 target RNA into GAM275759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4079 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4079 gene: GAM217836 target protein and GAM275759 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217836 and GAM275759

GR4080 BI561162 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4080(GR4080) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4080 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4080 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4080 gene encodes GR4080 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4080 precursor RNA folds spatially, forming GR4080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4080 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4080 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4080 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2446 precursor RNA, GAM6137 precursor RNA, GAM180230 precursor RNA and GAM223788 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2446 RNA, GAM6137 RNA, GAM180230 RNA and GAM223788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2446 target RNA into GAM2446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6137 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6137 target RNA into GAM6137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180230 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180230 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180230 target RNA into GAM180230 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223788 target RNA into GAM223788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4080 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4080 gene: GAM2446 target protein, GAM6137 target protein, GAM180230 target protein and GAM223788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2446, GAM6137, GAM180230 and GAM223788

GR4081 C17367 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4081(GR4081) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4081 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4081 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4081 gene encodes GR4081 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4081 precursor RNA folds spatially, forming GR4081 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4081 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4081 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4081 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3688 precursor RNA and GAM140952 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3688 RNA and GAM140952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3688 target RNA into GAM3688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140952 target RNA into GAM140952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4081 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4081 gene: GAM3688 target protein and GAM140952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3688 and GAM140952

GR4082 W52009 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4082(GR4082) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4082 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4082 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4082 gene encodes GR4082 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4082 precursor RNA folds spatially, forming GR4082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4082 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4082 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4082 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM56594 precursor RNA and GAM206611 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM56594 RNA and GAM206611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM56594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56594 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56594 target RNA into GAM56594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206611 target RNA into GAM206611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4082 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4082 gene: GAM56594 target protein and GAM206611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM56594 and GAM206611

GR4083 BI912049 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4083(GR4083) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4083 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4083 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4083 gene encodes GR4083 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4083 precursor RNA folds spatially, forming GR4083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4083 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4083 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4083 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM768 precursor RNA and GAM1905 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM768 RNA and GAM1905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM768 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM768 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM768 target RNA into GAM768 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1905 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1905 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1905 target RNA into GAM1905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4083 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4083 gene: GAM768 target protein and GAM1905 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM768 and GAM1905

GR4084 BG179747 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4084(GR4084) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4084 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4084 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4084 gene encodes GR4084 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4084 precursor RNA folds spatially, forming GR4084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4084 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4084 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4084 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1106 precursor RNA and GAM29733 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1106 RNA and GAM29733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1106 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1106 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1106 target RNA into GAM1106 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM29733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29733 target RNA into GAM29733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4084 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4084 gene: GAM1106 target protein and GAM29733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1106 and GAM29733

GR4085 BI544309 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4085(GR4085) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4085 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4085 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4085 gene encodes GR4085 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4085 precursor RNA folds spatially, forming GR4085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4085 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4085 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4085 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM127623 precursor RNA, GAM144490 precursor RNA and GAM217276 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM127623 RNA, GAM144490 RNA and GAM217276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM127623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM127623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM127623 target RNA into GAM127623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM144490 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144490 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144490 target RNA into GAM144490 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217276 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217276 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217276 target RNA into GAM217276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4085 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4085 gene: GAM127623 target protein, GAM144490 target protein and GAM217276 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM127623, GAM144490 and GAM217276

GR4086 BG707457 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4086(GR4086) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4086 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4086 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4086 gene encodes GR4086 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4086 precursor RNA folds spatially, forming GR4086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4086 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4086 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4086 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2042 precursor RNA, GAM56034 precursor RNA and GAM114152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2042 RNA, GAM56034 RNA and GAM114152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2042 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2042 target RNA into GAM2042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM56034 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM56034 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM56034 target RNA into GAM56034 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM114152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114152 target RNA into GAM114152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4086 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4086 gene: GAM2042 target protein, GAM56034 target protein and GAM114152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2042, GAM56034 and GAM114152

GR4087 AI288192 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4087(GR4087) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4087 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4087 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4087 gene encodes GR4087 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4087 precursor RNA folds spatially, forming GR4087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4087 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4087 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4087 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM236733 precursor RNA and GAM336074 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM236733 RNA and GAM336074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM236733 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM236733 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM236733 target RNA into GAM236733 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336074 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336074 target RNA into GAM336074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4087 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4087 gene: GAM236733 target protein and GAM336074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM236733 and GAM336074

GR4088 BE220655 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4088(GR4088) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4088 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4088 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4088 gene encodes GR4088 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4088 precursor RNA folds spatially, forming GR4088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4088 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4088 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4088 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4826 precursor RNA and GAM9534 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4826 RNA and GAM9534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4826 target RNA into GAM4826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM9534 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9534 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9534 target RNA into GAM9534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4088 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4088 gene: GAM4826 target protein and GAM9534 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4826 and GAM9534

GR4089 BF433299 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4089(GR4089) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4089 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4089 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4089 gene encodes GR4089 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4089 precursor RNA folds spatially, forming GR4089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4089 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4089 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4089 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15917 precursor RNA and GAM252156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15917 RNA and GAM252156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15917 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15917 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15917 target RNA into GAM15917 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM252156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252156 target RNA into GAM252156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4089 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4089 gene: GAM15917 target protein and GAM252156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15917 and GAM252156

GR4090 AI371226 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4090(GR4090) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4090 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4090 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4090 gene encodes GR4090 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4090 precursor RNA folds spatially, forming GR4090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4090 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4090 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4090 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2289 precursor RNA, GAM93518 precursor RNA and GAM336065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2289 RNA, GAM93518 RNA and GAM336065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2289 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2289 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2289 target RNA into GAM2289 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM93518 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93518 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93518 target RNA into GAM93518 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336065 target RNA into GAM336065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4090 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4090 gene: GAM2289 target protein, GAM93518 target protein and GAM336065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2289, GAM93518 and GAM336065

GR4091 BF212660 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4091(GR4091) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4091 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4091 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4091 gene encodes GR4091 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4091 precursor RNA folds spatially, forming GR4091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4091 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4091 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4091 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259258 precursor RNA and GAM292355 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259258 RNA and GAM292355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259258 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259258 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259258 target RNA into GAM259258 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292355 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292355 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292355 target RNA into GAM292355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4091 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4091 gene: GAM259258 target protein and GAM292355 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259258 and GAM292355

GR4092 BE390615 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4092(GR4092) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4092 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4092 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4092 gene encodes GR4092 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4092 precursor RNA folds spatially, forming GR4092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4092 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4092 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4092 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM261401 precursor RNA and GAM287055 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM261401 RNA and GAM287055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM261401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261401

target RNA into GAM261401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287055 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287055 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287055 target RNA into GAM287055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4092 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4092 gene: GAM261401 target protein and GAM287055 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM261401 and GAM287055

GR4093 BF973653 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4093(GR4093) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4093 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4093 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4093 gene encodes GR4093 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4093 precursor RNA folds spatially, forming GR4093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4093 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4093 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4093 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1739 precursor RNA, GAM5442 precursor RNA and GAM95001 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1739 RNA, GAM5442 RNA and GAM95001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1739 target RNA into GAM1739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5442 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5442 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5442 target RNA into GAM5442 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM95001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95001 target RNA into GAM95001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4093 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4093 gene: GAM1739 target protein, GAM5442 target protein and GAM95001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1739, GAM5442 and GAM95001

GR4094 W92947 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4094(GR4094) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4094 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4094 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4094 gene encodes GR4094 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4094 precursor RNA folds spatially, forming GR4094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4094 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4094 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4094 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8022 precursor RNA and GAM68087 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8022 RNA and GAM68087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8022 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8022 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8022 target RNA into GAM8022 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68087 target RNA into GAM68087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4094 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4094 gene: GAM8022 target protein and GAM68087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8022 and GAM68087

GR4095 BM907705 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4095(GR4095) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4095 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4095 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4095 gene encodes GR4095 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4095 precursor RNA folds spatially, forming GR4095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4095 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4095 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4095 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM586 precursor RNA, GAM20503 precursor RNA and GAM63890 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM586 RNA, GAM20503 RNA and GAM63890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM586 target RNA into

GAM586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20503 target RNA into GAM20503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63890 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63890 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63890 target RNA into GAM63890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4095 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4095 gene: GAM586 target protein, GAM20503 target protein and GAM63890 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM586, GAM20503 and GAM63890

GR4096 BI084103 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4096(GR4096) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4096 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4096 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4096 gene encodes GR4096 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4096 precursor RNA folds spatially, forming GR4096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4096 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4096 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4096 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6729 precursor RNA and GAM315818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6729 RNA and GAM315818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6729 target RNA into GAM6729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM315818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM315818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM315818 target RNA into GAM315818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4096 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4096 gene: GAM6729 target protein and GAM315818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6729 and GAM315818

GR4097 BM563079 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4097(GR4097) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4097 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4097 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4097 gene encodes GR4097 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4097 precursor RNA folds spatially, forming GR4097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4097 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4097 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4097 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2860 precursor RNA, GAM79304 precursor RNA and GAM257813 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2860 RNA, GAM79304 RNA and GAM257813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2860 target RNA into GAM2860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM79304 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79304 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79304 target RNA into GAM79304 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257813 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257813 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257813 target RNA into GAM257813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4097 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4097 gene: GAM2860 target protein, GAM79304 target protein and GAM257813 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2860, GAM79304 and GAM257813

GR4098 AA018224 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4098(GR4098) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4098 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4098 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4098 gene encodes GR4098 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4098 precursor RNA folds spatially, forming GR4098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4098 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4098 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4098 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5980 precursor RNA and GAM223520 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5980 RNA and GAM223520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM5980 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5980 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5980 target RNA into GAM5980 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223520 target RNA into GAM223520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4098 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4098 gene: GAM5980 target protein and GAM223520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5980 and GAM223520

GR4099 R68634 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4099(GR4099) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4099 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4099 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4099 gene encodes GR4099 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4099 precursor RNA folds spatially, forming GR4099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4099 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4099 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4099 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM267295 precursor RNA and GAM307617 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM267295 RNA and GAM307617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM267295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267295 target RNA into GAM267295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307617 target RNA into GAM307617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4099 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4099 gene: GAM267295 target protein and GAM307617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM267295 and GAM307617

GR4100 BE693423 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4100(GR4100) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4100 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4100

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4100 gene encodes GR4100 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4100 precursor RNA folds spatially, forming GR4100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4100 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4100 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4100 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM16346 precursor RNA and GAM268402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM16346 RNA and GAM268402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM16346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16346 target RNA into GAM16346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM268402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM268402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM268402 target RNA into GAM268402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4100 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4100 gene: GAM16346 target protein and GAM268402 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM16346 and GAM268402

GR4101 BG423946 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4101(GR4101) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4101 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4101 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4101 gene encodes GR4101 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4101 precursor RNA folds spatially, forming GR4101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4101 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4101 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4101 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM21400 precursor RNA and GAM215958 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM21400 RNA and GAM215958 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM21400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM21400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM21400 target RNA into GAM21400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215958 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215958 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215958 target RNA into GAM215958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4101 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4101 gene: GAM21400 target protein and GAM215958 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM21400 and GAM215958

GR4102 AA923113 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4102(GR4102) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4102 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4102 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4102 gene encodes GR4102 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4102 precursor RNA folds spatially, forming GR4102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4102 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4102 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4102 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3511 precursor RNA, GAM7058 precursor RNA and GAM128664 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3511 RNA, GAM7058 RNA and GAM128664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3511 target RNA into GAM3511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7058 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7058 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7058 target RNA into GAM7058 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128664 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128664 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128664 target RNA into GAM128664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4102 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4102 gene: GAM3511 target protein, GAM7058 target protein and GAM128664 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3511, GAM7058 and GAM128664

GR4103 BF797941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4103(GR4103) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4103 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4103 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4103 gene encodes GR4103 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4103 precursor RNA folds spatially, forming GR4103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4103 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4103 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4103 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM992 precursor RNA, GAM2266 precursor RNA and GAM147198 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM992 RNA, GAM2266 RNA and GAM147198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM992 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM992 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM992 target RNA into GAM992 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2266 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2266 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2266 target RNA into GAM2266 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147198 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147198 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147198

target RNA into GAM147198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4103 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4103 gene: GAM992 target protein, GAM2266 target protein and GAM147198 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM992, GAM2266 and GAM147198

GR4104 BM973239 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4104(GR4104) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4104 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4104 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4104 gene encodes GR4104 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4104 precursor RNA folds spatially, forming GR4104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4104 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4104 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4104 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7001 precursor RNA, GAM178175 precursor RNA and GAM180932 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7001 RNA, GAM178175 RNA and GAM180932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7001 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7001 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7001 target RNA into GAM7001 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178175 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178175 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178175 target RNA into GAM178175 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM180932 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM180932 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM180932 target RNA into GAM180932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4104 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4104 gene: GAM7001 target protein, GAM178175 target protein and GAM180932 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7001, GAM178175 and GAM180932

GR4105 AW816387 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4105(GR4105) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4105 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4105 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4105 gene encodes GR4105 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4105 precursor RNA folds spatially, forming GR4105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4105 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4105 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4105 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4952 precursor RNA, GAM19430 precursor RNA and GAM230688 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4952 RNA, GAM19430 RNA and GAM230688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4952 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4952 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4952 target RNA into GAM4952 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19430 target RNA into GAM19430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230688 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230688 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230688 target RNA into GAM230688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4105 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4105 gene: GAM4952 target protein, GAM19430 target protein and GAM230688 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4952, GAM19430 and GAM230688

GR4106 BM771415 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4106(GR4106) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4106 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4106 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4106 gene encodes GR4106 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4106 precursor RNA folds spatially, forming GR4106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4106 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4106 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4106 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230320 precursor RNA and GAM263929 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230320 RNA and GAM263929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230320 target RNA into GAM230320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263929 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263929 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263929 target RNA into GAM263929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4106 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4106 gene: GAM230320 target protein and GAM263929 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230320 and GAM263929

GR4107 BF669273 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4107(GR4107) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4107 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4107 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4107 gene encodes GR4107 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4107 precursor RNA folds spatially, forming GR4107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4107 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4107 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4107 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29906 precursor RNA and GAM302657 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29906 RNA and GAM302657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29906 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29906 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29906 target RNA into GAM29906 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM302657 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM302657 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM302657 target RNA into GAM302657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4107 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4107 gene: GAM29906 target protein and GAM302657 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29906 and GAM302657

GR4108 BF843293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4108(GR4108) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4108 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4108 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4108 gene encodes GR4108 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4108 precursor RNA folds spatially, forming GR4108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4108 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4108 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4108 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5260 precursor RNA and GAM314662 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5260 RNA and GAM314662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5260 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5260 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5260 target RNA into GAM5260 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314662 target RNA into GAM314662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4108 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4108 gene: GAM5260 target protein and GAM314662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5260 and GAM314662

GR4109 BG776115 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

4109(GR4109) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4109 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4109 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4109 gene encodes GR4109 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4109 precursor RNA folds spatially, forming GR4109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4109 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4109 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4109 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM128509 precursor RNA, GAM260449 precursor RNA and GAM328510 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM128509 RNA, GAM260449 RNA and GAM328510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM128509 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128509 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128509 target RNA into GAM128509 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260449 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260449 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260449

target RNA into GAM260449 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328510 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328510 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328510 target RNA into GAM328510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4109 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4109 gene: GAM128509 target protein, GAM260449 target protein and GAM328510 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM128509, GAM260449 and GAM328510

GR4110 BI195169 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4110(GR4110) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4110 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4110 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4110 gene encodes GR4110 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4110 precursor RNA folds spatially, forming GR4110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4110 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4110 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4110 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1460 precursor RNA, GAM2829 precursor RNA and GAM272125 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded

precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1460 RNA, GAM2829 RNA and GAM272125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1460 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1460 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1460 target RNA into GAM1460 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2829 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2829 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2829 target RNA into GAM2829 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272125 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272125 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272125 target RNA into GAM272125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4110 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4110 gene: GAM1460 target protein, GAM2829 target protein and GAM272125 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1460, GAM2829 and GAM272125

GR4111 BG429298 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4111(GR4111) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4111 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4111 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4111 gene encodes GR4111 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4111 precursor RNA folds spatially, forming GR4111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4111 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4111 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4111 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM89818 precursor RNA and GAM316406 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM89818 RNA and GAM316406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM89818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM89818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM89818 target RNA into GAM89818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316406 target RNA into GAM316406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4111 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4111 gene: GAM89818 target protein and GAM316406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM89818 and GAM316406

GR4112 AL157550 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4112(GR4112) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4112 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4112 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4112 gene encodes GR4112 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4112 precursor RNA folds spatially, forming GR4112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4112 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4112 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4112 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7786 precursor RNA, GAM112858 precursor RNA and GAM333620 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7786 RNA, GAM112858 RNA and GAM333620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM7786 target RNA into GAM7786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112858 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112858 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112858 target RNA into GAM112858 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333620 target RNA into GAM333620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4112 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4112 gene: GAM7786 target protein, GAM112858 target protein and GAM333620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7786, GAM112858 and GAM333620

GR4113 BF948653 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4113(GR4113) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4113 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4113 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4113 gene encodes GR4113 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4113 precursor RNA folds spatially, forming GR4113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4113 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4113 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4113 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3205 precursor RNA and GAM120204 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3205 RNA and GAM120204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3205 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3205 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3205 target RNA into GAM3205 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM120204 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120204 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120204 target RNA into GAM120204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4113 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4113 gene: GAM3205 target protein and GAM120204 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3205 and GAM120204

GR4114 AI809022 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4114(GR4114) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4114 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4114 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4114 gene encodes GR4114 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4114 precursor RNA folds spatially, forming GR4114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4114 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4114 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4114 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM276267 precursor RNA and GAM316180 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM276267 RNA and GAM316180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM276267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM276267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM276267 target RNA into GAM276267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316180 target RNA into GAM316180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4114 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4114 gene: GAM276267 target protein and GAM316180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM276267 and GAM316180

GR4115 AW978099 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4115(GR4115) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4115 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4115 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4115 gene encodes GR4115 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4115 precursor RNA folds spatially, forming GR4115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4115 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4115 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4115 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM126496 precursor RNA and GAM140185 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM126496 RNA and GAM140185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM126496 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM126496 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM126496 target RNA into GAM126496 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM140185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140185 target RNA into GAM140185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4115 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4115 gene: GAM126496 target protein and GAM140185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM126496 and GAM140185

GR4116 AI244260 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4116(GR4116) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4116 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4116 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4116 gene encodes GR4116 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4116 precursor RNA folds spatially, forming GR4116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4116 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4116 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4116 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM278767 precursor RNA and GAM282912 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM278767 RNA and GAM282912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM278767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278767 target RNA into GAM278767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282912 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282912 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282912 target RNA into GAM282912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4116 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4116 gene: GAM278767 target protein and GAM282912 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM278767 and GAM282912

GR4117 AI918076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4117(GR4117) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4117 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4117 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4117 gene encodes GR4117 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4117 precursor RNA folds spatially, forming GR4117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4117 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4117 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4117 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM8165 precursor RNA, GAM125035 precursor RNA and GAM312859 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8165 RNA, GAM125035 RNA and GAM312859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8165 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8165 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8165 target RNA into GAM8165 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM125035 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM125035 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM125035 target RNA into GAM125035 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312859 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312859 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312859 target RNA into GAM312859 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4117 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4117 gene: GAM8165 target protein, GAM125035 target protein and GAM312859 target protein, herein

schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8165, GAM125035 and GAM312859

GR4118 AA195743 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4118(GR4118) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4118 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4118 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4118 gene encodes GR4118 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4118 precursor RNA folds spatially, forming GR4118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4118 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4118 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4118 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40118 precursor RNA and GAM157267 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM40118 RNA and GAM157267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40118 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40118 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40118 target RNA into GAM40118 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM157267 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM157267 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM157267 target RNA into GAM157267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4118 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4118 gene: GAM40118 target protein and GAM157267 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40118 and GAM157267

GR4119 BG497219 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4119(GR4119) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4119 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4119 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4119 gene encodes GR4119 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4119 precursor RNA folds spatially, forming GR4119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4119 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4119 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4119 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM9354 precursor RNA, GAM16416 precursor RNA and GAM214261 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9354 RNA, GAM16416 RNA and GAM214261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9354 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9354 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9354 target RNA into GAM9354 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM16416 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM16416 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM16416 target RNA into GAM16416 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214261 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214261 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214261 target RNA into GAM214261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4119 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4119 gene: GAM9354 target protein, GAM16416 target protein and GAM214261 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9354, GAM16416 and GAM214261

GR4120 AI571695 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4120(GR4120) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4120 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4120

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4120 gene encodes GR4120 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4120 precursor RNA folds spatially, forming GR4120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4120 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4120 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4120 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM177774 precursor RNA and GAM328591 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM177774 RNA and GAM328591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM177774 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177774 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177774 target RNA into GAM177774 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328591 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328591 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328591 target RNA into GAM328591 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4120 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4120 gene: GAM177774 target protein and GAM328591 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM177774 and GAM328591

GR4121 AA778547 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4121(GR4121) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4121 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4121 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4121 gene encodes GR4121 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4121 precursor RNA folds spatially, forming GR4121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4121 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4121 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4121 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM111061 precursor RNA and GAM214088 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM111061 RNA and GAM214088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM111061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111061 target RNA into GAM111061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM214088 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM214088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM214088 target RNA into GAM214088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4121 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4121 gene: GAM111061 target protein and GAM214088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM111061 and GAM214088

GR4122 BG036914 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4122(GR4122) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4122 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4122 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4122 gene encodes GR4122 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4122 precursor RNA folds spatially, forming GR4122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4122 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4122 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4122 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM440 precursor RNA, GAM4792 precursor RNA and GAM257776 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM440 RNA, GAM4792 RNA and GAM257776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM440 target RNA into GAM440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4792 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4792 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4792 target RNA into GAM4792 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM257776 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM257776 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM257776 target RNA into GAM257776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4122 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4122 gene: GAM440 target protein, GAM4792 target protein and GAM257776 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM440, GAM4792 and GAM257776

GR4123 BG218771 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4123(GR4123) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4123 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4123 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4123 gene encodes GR4123 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4123 precursor RNA folds spatially, forming GR4123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4123 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4123 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4123 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM132469 precursor RNA and GAM142467 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132469 RNA and GAM142467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132469 target RNA into GAM132469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM142467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142467 target RNA into GAM142467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4123 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4123 gene: GAM132469 target protein and GAM142467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132469 and GAM142467

GR4124 BF239216 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4124(GR4124) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4124 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4124 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4124 gene encodes GR4124 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4124 precursor RNA folds spatially, forming GR4124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4124 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4124 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4124 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM165736 precursor RNA and GAM307866 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM165736 RNA and GAM307866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM165736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM165736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM165736 target RNA into GAM165736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307866 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM307866 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307866 target RNA into GAM307866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4124 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4124 gene: GAM165736 target protein and GAM307866 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM165736 and GAM307866

GR4125 AW858780 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4125(GR4125) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4125 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4125 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4125 gene encodes GR4125 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4125 precursor RNA folds spatially, forming GR4125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4125 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4125 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4125 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM282462 precursor RNA and GAM285990 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM282462 RNA and GAM285990 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM282462 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282462 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282462 target RNA into GAM282462 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285990 target RNA into GAM285990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4125 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4125 gene: GAM282462 target protein and GAM285990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM282462 and GAM285990

GR4126 BF340115 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4126(GR4126) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4126 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4126 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4126 gene encodes GR4126 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4126 precursor RNA folds spatially, forming GR4126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4126 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4126 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4126 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM60698 precursor RNA and GAM239557 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM60698 RNA and GAM239557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM60698 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM60698 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM60698 target RNA into GAM60698 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239557 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239557 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239557 target RNA into GAM239557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4126 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4126 gene: GAM60698 target protein and GAM239557 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM60698 and GAM239557

GR4127 BG336113 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4127(GR4127) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4127 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4127 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4127 gene encodes GR4127 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4127 precursor RNA folds spatially, forming GR4127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4127 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4127 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4127 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM132257 precursor RNA, GAM183983 precursor RNA and GAM218013 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM132257 RNA, GAM183983 RNA and GAM218013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM132257 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM132257 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM132257 target RNA into GAM132257 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM183983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM183983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM183983 target RNA into GAM183983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM218013 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218013 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218013 target RNA into GAM218013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4127 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4127 gene: GAM132257 target protein, GAM183983 target protein and GAM218013 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM132257, GAM183983 and GAM218013

GR4128 BF590551 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4128(GR4128) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4128 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4128 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4128 gene encodes GR4128 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4128 precursor RNA folds spatially, forming GR4128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4128 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4128 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4128 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3943 precursor RNA and GAM312200 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3943 RNA and GAM312200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM3943 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3943 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3943 target RNA into GAM3943 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM312200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM312200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM312200 target RNA into GAM312200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4128 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4128 gene: GAM3943 target protein and GAM312200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3943 and GAM312200

GR4129 N39862 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4129(GR4129) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4129 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4129 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4129 gene encodes GR4129 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4129 precursor RNA folds spatially, forming GR4129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4129 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4129 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4129 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1837 precursor RNA, GAM7025 precursor RNA and GAM138682 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1837 RNA, GAM7025 RNA and GAM138682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1837 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1837 target RNA into GAM1837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7025 target RNA into GAM7025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM138682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138682 target RNA into GAM138682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4129 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4129 gene: GAM1837 target protein, GAM7025 target protein and GAM138682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1837, GAM7025 and GAM138682

GR4130 BF510785 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4130(GR4130) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4130 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4130 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4130 gene encodes GR4130 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4130 precursor RNA folds spatially, forming GR4130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4130 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4130 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4130 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM218063 precursor RNA and GAM242334 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM218063 RNA and GAM242334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM218063 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM218063 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM218063 target RNA into GAM218063 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242334 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242334 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242334 target RNA into GAM242334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4130 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4130 gene: GAM218063 target protein and GAM242334 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM218063 and GAM242334

GR4131 BG687624 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4131(GR4131) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4131 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4131 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4131 gene encodes GR4131 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4131 precursor RNA folds spatially, forming GR4131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4131 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4131 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4131 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15430 precursor RNA and GAM65156 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15430 RNA and GAM65156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15430 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15430 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15430 target RNA into GAM15430 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM65156 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM65156 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM65156 target RNA into GAM65156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4131 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4131 gene: GAM15430 target protein and GAM65156 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15430 and GAM65156

GR4132 BG492630 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4132(GR4132) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4132 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4132 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4132 gene encodes GR4132 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4132 precursor RNA folds spatially, forming GR4132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4132 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4132 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4132 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM252846 precursor RNA and GAM288611 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM252846 RNA and GAM288611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM252846 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM252846 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM252846 target RNA into GAM252846 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288611 target RNA into GAM288611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4132 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4132 gene: GAM252846 target protein and GAM288611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM252846 and GAM288611

GR4133 BG170984 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4133(GR4133) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4133 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4133 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4133 gene encodes GR4133 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4133 precursor RNA folds spatially, forming GR4133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4133 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4133 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4133 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM39874 precursor RNA and GAM166964 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM39874 RNA and GAM166964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM39874 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM39874 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM39874 target RNA into GAM39874 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM166964 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM166964 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM166964 target RNA into GAM166964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4133 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4133 gene: GAM39874 target protein and GAM166964 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM39874 and GAM166964

GR4134 BF690916 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4134(GR4134) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4134 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4134 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4134 gene encodes GR4134 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4134 precursor RNA folds spatially, forming GR4134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4134 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4134 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4134 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM266945 precursor RNA and GAM284531 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM266945 RNA and GAM284531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM266945 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266945 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266945 target RNA into GAM266945 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284531 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM284531 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284531 target RNA into GAM284531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4134 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4134 gene: GAM266945 target protein and GAM284531 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM266945 and GAM284531

GR4135 BF764477 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4135(GR4135) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4135 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4135 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4135 gene encodes GR4135 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4135 precursor RNA folds spatially, forming GR4135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4135 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4135 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4135 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM66764 precursor RNA and GAM204669 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM66764 RNA and GAM204669 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM66764 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66764 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66764 target RNA into GAM66764 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204669 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204669 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204669 target RNA into GAM204669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4135 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4135 gene: GAM66764 target protein and GAM204669 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM66764 and GAM204669

GR4136 BG433884 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4136(GR4136) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4136 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4136 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4136 gene encodes GR4136 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4136 precursor RNA folds spatially, forming GR4136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4136 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4136 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4136 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7123 precursor RNA, GAM192672 precursor RNA and GAM210016 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7123 RNA, GAM192672 RNA and GAM210016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7123 target RNA into GAM7123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192672 target RNA into GAM192672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210016 target RNA into GAM210016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4136 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4136 gene: GAM7123 target protein, GAM192672 target protein and GAM210016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7123, GAM192672 and

GR4137 BF881739 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4137(GR4137) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4137 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4137 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4137 gene encodes GR4137 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4137 precursor RNA folds spatially, forming GR4137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4137 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4137 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4137 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM14702 precursor RNA and GAM128633 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM14702 RNA and GAM128633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM14702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM14702 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM14702 target RNA into GAM14702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128633 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128633 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128633 target RNA into GAM128633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4137 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4137 gene: GAM14702 target protein and GAM128633 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM14702 and GAM128633

GR4138 AI702122 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4138(GR4138) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4138 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4138 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4138 gene encodes GR4138 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4138 precursor RNA folds spatially, forming GR4138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4138 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4138 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4138 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM729 precursor RNA and GAM189110 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM729 RNA and GAM189110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM729 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM729 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM729 target RNA into GAM729 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM189110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189110 target RNA into GAM189110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4138 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4138 gene: GAM729 target protein and GAM189110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM729 and GAM189110

GR4139 N22717 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4139(GR4139) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4139 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4139 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4139 gene encodes GR4139 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4139 precursor RNA folds spatially, forming GR4139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4139 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4139 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4139 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM73860 precursor RNA and GAM235763 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM73860 RNA and GAM235763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM73860 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM73860 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM73860 target RNA into GAM73860 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235763 target RNA into GAM235763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4139 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4139 gene: GAM73860 target protein and GAM235763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM73860 and GAM235763

GR4140 AA608813 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4140(GR4140) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4140 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4140

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4140 gene encodes GR4140 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4140 precursor RNA folds spatially, forming GR4140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4140 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4140 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4140 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4144 precursor RNA, GAM152891 precursor RNA and GAM262772 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4144 RNA, GAM152891 RNA and GAM262772 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4144 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4144 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4144 target RNA into GAM4144 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152891 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152891 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152891 target RNA into GAM152891 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM262772 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM262772 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM262772 target RNA into GAM262772 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4140 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4140 gene: GAM4144 target protein, GAM152891 target protein and GAM262772 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4144, GAM152891 and GAM262772

GR4141 BG570898 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4141(GR4141) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4141 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4141 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4141 gene encodes GR4141 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4141 precursor RNA folds spatially, forming GR4141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4141 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4141 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4141 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1383 precursor RNA and GAM3614 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1383 RNA and GAM3614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1383 target RNA into GAM1383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3614 target RNA into GAM3614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4141 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4141 gene: GAM1383 target protein and GAM3614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1383 and GAM3614

GR4142 BM752618 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4142(GR4142) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4142 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4142 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4142 gene encodes GR4142 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4142 precursor RNA folds spatially, forming GR4142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4142 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4142 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4142 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4857 precursor RNA, GAM5493 precursor RNA and GAM229756 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4857 RNA, GAM5493 RNA and GAM229756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4857 target RNA into GAM4857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5493 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5493 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5493 target RNA into GAM5493 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM229756 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM229756 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM229756 target RNA into GAM229756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4142 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4142 gene: GAM4857 target protein, GAM5493 target protein and GAM229756 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4857, GAM5493 and GAM229756

GR4143 AI124709 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4143(GR4143) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4143 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4143 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4143 gene encodes GR4143 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4143 precursor RNA folds spatially, forming GR4143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4143 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4143 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4143 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4506 precursor RNA and GAM12648 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4506 RNA and GAM12648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4506 target RNA into GAM4506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM12648 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM12648 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM12648 target RNA into GAM12648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4143 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4143 gene: GAM4506 target protein and GAM12648 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4506 and GAM12648

GR4144 AI820503 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4144(GR4144) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4144 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4144 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4144 gene encodes GR4144 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4144 precursor RNA folds spatially, forming GR4144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4144 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4144 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4144 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3677 precursor RNA, GAM230458 precursor RNA and GAM290661 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3677 RNA, GAM230458 RNA and GAM290661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3677 target RNA into GAM3677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230458 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230458 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230458 target RNA into GAM230458 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290661 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290661 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290661 target RNA into GAM290661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4144 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4144 gene: GAM3677 target protein, GAM230458 target protein and GAM290661 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3677, GAM230458 and GAM290661

GR4145 AA706832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4145(GR4145) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4145 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4145 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4145 gene encodes GR4145 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4145 precursor RNA folds spatially, forming GR4145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4145 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4145 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4145 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM43886 precursor RNA and GAM296108 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM43886 RNA and GAM296108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM43886 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43886 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43886 target RNA into GAM43886 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296108 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296108 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296108 target RNA into GAM296108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4145 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4145 gene: GAM43886 target protein and GAM296108 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM43886 and GAM296108

GR4146 BM504578 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 4146(GR4146) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4146 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4146 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4146 gene encodes GR4146 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4146 precursor RNA folds spatially, forming GR4146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4146 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4146 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4146 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM164962 precursor RNA and GAM314191 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM164962 RNA and GAM314191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM164962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM164962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM164962 target RNA into GAM164962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314191 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314191 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314191

target RNA into GAM314191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4146 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4146 gene: GAM164962 target protein and GAM314191 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM164962 and GAM314191

GR4147 AW844105 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4147(GR4147) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4147 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4147 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4147 gene encodes GR4147 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4147 precursor RNA folds spatially, forming GR4147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4147 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4147 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4147 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM188720 precursor RNA and GAM248565 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM188720 RNA and GAM248565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM188720 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188720 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188720 target RNA into GAM188720 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248565 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248565 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248565 target RNA into GAM248565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4147 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4147 gene: GAM188720 target protein and GAM248565 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM188720 and GAM248565

GR4148 AW609209 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4148(GR4148) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4148 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4148 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4148 gene encodes GR4148 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4148 precursor RNA folds spatially, forming GR4148 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4148 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4148 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4148 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8295 precursor RNA and GAM17065 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8295 RNA and GAM17065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8295 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8295 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8295 target RNA into GAM8295 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM17065 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17065 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17065 target RNA into GAM17065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4148 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4148 gene: GAM8295 target protein and GAM17065 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8295 and GAM17065

GR4149 AA081742 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4149(GR4149) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4149 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4149 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4149 gene encodes GR4149 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4149 precursor RNA folds spatially, forming GR4149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4149 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4149 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4149 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6809 precursor RNA and GAM226550 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6809 RNA and GAM226550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6809 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6809 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6809 target RNA into GAM6809 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM226550 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM226550 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM226550 target RNA into GAM226550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4149 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4149 gene: GAM6809 target protein and GAM226550 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6809 and GAM226550

GR4150 AL598969 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4150(GR4150) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4150 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4150 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4150 gene encodes GR4150 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4150 precursor RNA folds spatially, forming GR4150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4150 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4150 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4150 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8589 precursor RNA and GAM201751 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8589 RNA and GAM201751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8589 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8589 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8589 target RNA into GAM8589 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM201751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM201751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM201751 target RNA into GAM201751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4150 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4150 gene: GAM8589 target protein and GAM201751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8589 and GAM201751

GR4151 BE865987 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4151(GR4151) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4151 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4151 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4151 gene encodes GR4151 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4151 precursor RNA folds spatially, forming GR4151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4151 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4151 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4151 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95682 precursor RNA and GAM199347 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95682 RNA and GAM199347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95682 target RNA into GAM95682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199347 target RNA into GAM199347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4151 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4151 gene: GAM95682 target protein and GAM199347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95682 and GAM199347

GR4152 AW390730 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4152(GR4152) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4152 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4152 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4152 gene encodes GR4152 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4152 precursor RNA folds spatially, forming GR4152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4152 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4152 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4152 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5880 precursor RNA, GAM7965 precursor RNA and GAM77808 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5880 RNA, GAM7965 RNA and GAM77808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5880 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5880 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5880 target RNA into GAM5880 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7965 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7965 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7965 target RNA into GAM7965 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM77808 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77808 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77808 target RNA into GAM77808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4152 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4152 gene: GAM5880 target protein, GAM7965 target protein and GAM77808 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5880, GAM7965 and GAM77808

GR4153 BG702452 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4153(GR4153) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4153 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4153 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4153 gene encodes GR4153 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4153 precursor RNA folds spatially, forming GR4153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4153 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4153 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4153 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM1588 precursor RNA, GAM91836 precursor RNA, GAM113011 precursor RNA, GAM230350 precursor RNA and GAM243889 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1588 RNA, GAM91836 RNA, GAM113011 RNA, GAM230350 RNA and GAM243889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1588 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1588 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1588 target RNA into GAM1588 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91836 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91836 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91836 target RNA into GAM91836 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113011 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113011 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113011 target RNA into GAM113011 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230350 target RNA into GAM230350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243889 target RNA into GAM243889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4153 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4153 gene: GAM1588 target protein, GAM91836 target protein, GAM113011 target protein, GAM230350 target protein and GAM243889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1588, GAM91836, GAM113011, GAM230350 and GAM243889

GR4154 BG742714 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4154(GR4154) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4154 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4154 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4154 gene encodes GR4154 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4154 precursor RNA folds spatially, forming GR4154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4154 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4154 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4154 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5902 precursor RNA and GAM7767 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5902 RNA and GAM7767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5902 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5902 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5902 target RNA into GAM5902 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7767 target RNA into GAM7767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4154 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4154 gene: GAM5902 target protein and GAM7767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5902 and GAM7767

GR4155 AW064351 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4155(GR4155) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4155 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4155 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4155 gene encodes GR4155 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4155 precursor RNA folds spatially, forming GR4155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4155 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4155 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4155 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM223393 precursor RNA and GAM275140 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223393 RNA and GAM275140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223393 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223393 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223393 target RNA into GAM223393 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275140 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM275140 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275140 target RNA into GAM275140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4155 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4155 gene: GAM223393 target protein and GAM275140 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223393 and GAM275140

GR4156 BF964838 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4156(GR4156) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4156 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4156 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4156 gene encodes GR4156 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4156 precursor RNA folds spatially, forming GR4156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4156 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4156 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4156 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM211315 precursor RNA and GAM240422 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM211315 RNA and GAM240422 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM211315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211315 target RNA into GAM211315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM240422 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM240422 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM240422 target RNA into GAM240422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4156 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4156 gene: GAM211315 target protein and GAM240422 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM211315 and GAM240422

GR4157 BM690687 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4157(GR4157) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4157 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4157 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4157 gene encodes GR4157 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4157 precursor RNA folds spatially, forming GR4157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4157 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4157 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4157 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM175608 precursor RNA and GAM305560 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM175608 RNA and GAM305560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM175608 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175608 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175608 target RNA into GAM175608 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305560 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305560 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305560 target RNA into GAM305560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4157 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4157 gene: GAM175608 target protein and GAM305560 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM175608 and GAM305560

GR4158 AA809130 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4158(GR4158) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4158 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4158 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4158 gene encodes GR4158 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4158 precursor RNA folds spatially, forming GR4158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4158 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4158 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4158 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20141 precursor RNA and GAM215535 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20141 RNA and GAM215535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20141 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20141 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20141 target RNA into GAM20141 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215535 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215535 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215535 target RNA into GAM215535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4158 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4158 gene: GAM20141 target

protein and GAM215535 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20141 and GAM215535

GR4159 BG032204 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4159(GR4159) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4159 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4159 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4159 gene encodes GR4159 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4159 precursor RNA folds spatially, forming GR4159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4159 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4159 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4159 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1025 precursor RNA, GAM25120 precursor RNA and GAM61120 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1025 RNA, GAM25120 RNA and GAM61120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1025 target RNA into GAM1025 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM25120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM25120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM25120 target RNA into GAM25120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61120 target RNA into GAM61120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4159 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4159 gene: GAM1025 target protein, GAM25120 target protein and GAM61120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1025, GAM25120 and GAM61120

GR4160 AA481961 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4160(GR4160) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4160 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4160 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4160 gene encodes GR4160 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4160 precursor RNA folds spatially, forming GR4160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4160 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4160 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4160 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM1180 precursor RNA, GAM35889 precursor RNA, GAM99415 precursor RNA, GAM215032 precursor RNA and GAM241468 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1180 RNA, GAM35889 RNA, GAM99415 RNA, GAM215032 RNA and GAM241468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1180 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1180 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1180 target RNA into GAM1180 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM35889 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM35889 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM35889 target RNA into GAM35889 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99415 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99415 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99415 target RNA into GAM99415 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215032 target RNA into GAM215032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM241468 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM241468 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM241468 target RNA into GAM241468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4160 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4160 gene: GAM1180 target protein, GAM35889 target protein, GAM99415 target protein, GAM215032 target protein and GAM241468 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1180, GAM35889, GAM99415, GAM215032 and GAM241468

GR4161 BE396290 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4161(GR4161) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4161 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4161 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4161 gene encodes GR4161 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4161 precursor RNA folds spatially, forming GR4161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4161 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4161 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4161 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2673 precursor RNA and GAM5269 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM2673 RNA and GAM5269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2673 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2673 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2673 target RNA into GAM2673 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5269 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5269 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5269 target RNA into GAM5269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4161 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4161 gene: GAM2673 target protein and GAM5269 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2673 and GAM5269

GR4162 BF219870 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4162(GR4162) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4162 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4162 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4162 gene encodes GR4162 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4162 precursor RNA folds spatially, forming GR4162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4162 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4162 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4162 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM81386 precursor RNA, GAM105219 precursor RNA and GAM286193 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM81386 RNA, GAM105219 RNA and GAM286193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM81386 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM81386 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM81386 target RNA into GAM81386 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM105219 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM105219 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM105219 target RNA into GAM105219 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM286193 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM286193 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM286193 target RNA into GAM286193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4162 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4162 gene: GAM81386 target protein, GAM105219 target protein and GAM286193 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM81386, GAM105219 and GAM286193

GR4163 BM047937 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4163(GR4163) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4163 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4163 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4163 gene encodes GR4163 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4163 precursor RNA folds spatially, forming GR4163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4163 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4163 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4163 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34751 precursor RNA and GAM275654 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34751 RNA and GAM275654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34751 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34751 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34751 target RNA into GAM34751 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275654 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM275654 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275654 target RNA into GAM275654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4163 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4163 gene: GAM34751 target protein and GAM275654 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34751 and GAM275654

GR4164 AA227696 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4164(GR4164) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4164 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4164 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4164 gene encodes GR4164 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4164 precursor RNA folds spatially, forming GR4164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4164 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4164 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4164 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM189783 precursor RNA and GAM307643 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM189783 RNA and GAM307643 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM189783 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM189783 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM189783 target RNA into GAM189783 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM307643 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM307643 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM307643 target RNA into GAM307643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4164 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4164 gene: GAM189783 target protein and GAM307643 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM189783 and GAM307643

GR4165 AA837541 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4165(GR4165) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4165 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4165 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4165 gene encodes GR4165 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4165 precursor RNA folds spatially, forming GR4165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4165 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4165 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4165 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM144662 precursor RNA, GAM186121 precursor RNA and GAM328137 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM144662 RNA, GAM186121 RNA and GAM328137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM144662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM144662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM144662 target RNA into GAM144662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM186121 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM186121 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM186121 target RNA into GAM186121 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM328137 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM328137 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM328137 target RNA into GAM328137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4165 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4165 gene: GAM144662 target protein, GAM186121 target protein and GAM328137 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM144662, GAM186121 and

GR4166 BG110739 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4166(GR4166) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4166 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4166 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4166 gene encodes GR4166 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4166 precursor RNA folds spatially, forming GR4166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4166 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4166 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4166 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM243263 precursor RNA and GAM243388 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM243263 RNA and GAM243388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM243263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243263 target RNA into GAM243263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243388 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243388 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243388 target RNA into GAM243388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4166 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4166 gene: GAM243263 target protein and GAM243388 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM243263 and GAM243388

GR4167 BI761472 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4167(GR4167) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4167 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4167 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4167 gene encodes GR4167 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4167 precursor RNA folds spatially, forming GR4167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4167 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4167 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4167 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM788 precursor RNA, GAM1280 precursor RNA, GAM224780 precursor RNA and GAM246351 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM788 RNA, GAM1280 RNA, GAM224780 RNA and GAM246351

RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM788 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM788 target RNA into GAM788 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM1280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1280 target RNA into GAM1280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224780 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224780 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224780 target RNA into GAM224780 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246351 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246351 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246351 target RNA into GAM246351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4167 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4167 gene: GAM788 target protein, GAM1280 target protein, GAM224780 target protein and GAM246351 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM788, GAM1280, GAM224780 and GAM246351

GR4168 BE548700 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4168(GR4168) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR4168 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4168 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4168 gene encodes GR4168 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4168 precursor RNA folds spatially, forming GR4168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4168 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4168 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4168 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6856 precursor RNA and GAM8383 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6856 RNA and GAM8383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6856 target RNA into GAM6856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8383 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8383 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8383 target RNA into GAM8383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4168 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4168 gene: GAM6856 target protein and GAM8383 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6856 and GAM8383

GR4169 AW247095 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4169(GR4169) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4169 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4169 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4169 gene encodes GR4169 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4169 precursor RNA folds spatially, forming GR4169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4169 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4169 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4169 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7594 precursor RNA, GAM69421 precursor RNA and GAM118167 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7594 RNA, GAM69421 RNA and GAM118167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7594 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7594 target RNA, herein schematically represented by

GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7594 target RNA into GAM7594 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69421 target RNA into GAM69421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118167 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118167 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118167 target RNA into GAM118167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4169 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4169 gene: GAM7594 target protein, GAM69421 target protein and GAM118167 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7594, GAM69421 and GAM118167

GR4170 BM020450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4170(GR4170) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4170 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4170 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4170 gene encodes GR4170 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4170 precursor RNA folds spatially, forming GR4170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4170 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4170 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4170 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM5620 precursor RNA, GAM108610 precursor RNA, GAM255375 precursor RNA and GAM261002 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5620 RNA, GAM108610 RNA, GAM255375 RNA and GAM261002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5620 target RNA into GAM5620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108610 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108610 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108610 target RNA into GAM108610 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM255375 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255375 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255375 target RNA into GAM255375 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261002 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261002 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261002

target RNA into GAM261002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4170 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4170 gene: GAM5620 target protein, GAM108610 target protein, GAM255375 target protein and GAM261002 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5620, GAM108610, GAM255375 and GAM261002

GR4171 BF569198 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4171(GR4171) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4171 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4171 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4171 gene encodes GR4171 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4171 precursor RNA folds spatially, forming GR4171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4171 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4171 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4171 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5099 precursor RNA and GAM34189 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5099 RNA and GAM34189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5099 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5099 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5099 target RNA into GAM5099 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM34189 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34189 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34189 target RNA into GAM34189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4171 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4171 gene: GAM5099 target protein and GAM34189 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5099 and GAM34189

GR4172 BQ004336 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4172(GR4172) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4172 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4172 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4172 gene encodes GR4172 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4172 precursor RNA folds spatially, forming GR4172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4172 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4172 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4172 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM27571 precursor RNA and GAM297050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM27571 RNA and GAM297050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM27571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27571 target RNA into GAM27571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297050 target RNA into GAM297050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4172 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4172 gene: GAM27571 target protein and GAM297050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM27571 and GAM297050

GR4173 BM708824 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4173(GR4173) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4173 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4173 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4173 gene encodes GR4173 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4173 precursor RNA folds spatially, forming GR4173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4173 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4173 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4173 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM215031 precursor RNA and GAM330227 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM215031 RNA and GAM330227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM215031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215031 target RNA into GAM215031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM330227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM330227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM330227 target RNA into GAM330227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4173 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4173 gene: GAM215031 target protein and GAM330227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM215031 and GAM330227

GR4174 AW578450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4174(GR4174) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4174 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4174 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4174 gene encodes GR4174 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4174 precursor RNA folds spatially, forming GR4174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4174 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4174 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4174 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7511 precursor RNA and GAM199935 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7511 RNA and GAM199935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7511 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7511 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7511 target RNA into GAM7511 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199935 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199935 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199935 target RNA into GAM199935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4174 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4174 gene: GAM7511 target protein and GAM199935 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7511 and GAM199935

GR4175 AW991468 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4175(GR4175) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4175 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4175 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4175 gene encodes GR4175 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4175 precursor RNA folds spatially, forming GR4175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4175 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4175 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4175 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM194037 precursor RNA and GAM233620 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM194037 RNA and GAM233620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM194037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194037 target RNA into GAM194037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM233620 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM233620 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM233620 target RNA into GAM233620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4175 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4175 gene: GAM194037 target protein and GAM233620 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM194037 and GAM233620

GR4176 BG282216 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4176(GR4176) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4176 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4176 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4176 gene encodes GR4176 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4176 precursor RNA folds spatially, forming GR4176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4176 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4176 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4176 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM259218 precursor RNA and GAM281960 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM259218 RNA and GAM281960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM259218 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259218 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259218 target RNA into GAM259218 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281960 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281960 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281960 target RNA into GAM281960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4176 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4176 gene: GAM259218 target protein and GAM281960 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM259218 and GAM281960

GR4177 BF527148 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4177(GR4177) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4177 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4177

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4177 gene encodes GR4177 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4177 precursor RNA folds spatially, forming GR4177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4177 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4177 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4177 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM2814 precursor RNA and GAM8003 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2814 RNA and GAM8003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2814 target RNA into GAM2814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8003 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8003 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8003 target RNA into GAM8003 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4177 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4177 gene: GAM2814 target protein and GAM8003 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2814 and GAM8003

GR4178 BI459649 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4178(GR4178) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4178 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4178 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4178 gene encodes GR4178 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4178 precursor RNA folds spatially, forming GR4178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4178 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4178 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4178 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM63975 precursor RNA, GAM99995 precursor RNA and GAM320061 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM63975 RNA, GAM99995 RNA and GAM320061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM63975 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63975 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63975 target RNA into GAM63975 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM99995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM99995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM99995 target RNA into GAM99995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320061 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320061 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320061 target RNA into GAM320061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4178 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4178 gene: GAM63975 target protein, GAM99995 target protein and GAM320061 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM63975, GAM99995 and GAM320061

GR4179 BQ016509 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4179(GR4179) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4179 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4179 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4179 gene encodes GR4179 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4179 precursor RNA folds spatially, forming GR4179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4179 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4179 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4179 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7340 precursor RNA and GAM322593 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7340 RNA and GAM322593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7340 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7340 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7340 target RNA into GAM7340 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322593 target RNA into GAM322593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4179 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4179 gene: GAM7340 target protein and GAM322593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7340 and GAM322593

GR4180 BF245161 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4180(GR4180) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4180 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4180 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4180 gene encodes GR4180 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4180 precursor RNA folds spatially, forming GR4180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4180 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4180 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4180 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM245078 precursor RNA and GAM325777 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM245078 RNA and GAM325777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM245078 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245078 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245078 target RNA into GAM245078 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325777 target RNA into GAM325777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4180 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4180 gene: GAM245078 target protein and GAM325777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes

is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM245078 and GAM325777

GR4181 AI979293 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4181(GR4181) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4181 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4181 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4181 gene encodes GR4181 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4181 precursor RNA folds spatially, forming GR4181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4181 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4181 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4181 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8406 precursor RNA and GAM43041 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8406 RNA and GAM43041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8406 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8406 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8406 target RNA into GAM8406 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43041 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM43041 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43041 target RNA into GAM43041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4181 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4181 gene: GAM8406 target protein and GAM43041 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8406 and GAM43041

GR4182 BG747438 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4182(GR4182) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4182 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4182 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4182 gene encodes GR4182 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4182 precursor RNA folds spatially, forming GR4182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4182 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4182 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4182 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4542 precursor RNA, GAM216242 precursor RNA and GAM219025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM4542 RNA, GAM216242 RNA and GAM219025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4542 target RNA into GAM4542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM216242 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216242 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216242 target RNA into GAM216242 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219025 target RNA into GAM219025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4182 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4182 gene: GAM4542 target protein, GAM216242 target protein and GAM219025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4542, GAM216242 and GAM219025

GR4183 BG615578 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4183(GR4183) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4183 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4183 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4183 gene encodes GR4183 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4183 precursor RNA folds spatially, forming GR4183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4183 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4183 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4183 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM17606 precursor RNA and GAM112161 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM17606 RNA and GAM112161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM17606 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM17606 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM17606 target RNA into GAM17606 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112161 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112161 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112161 target RNA into GAM112161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4183 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4183 gene: GAM17606 target protein and GAM112161 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM17606 and GAM112161

GR4184 BE267186 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4184(GR4184) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4184 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4184 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4184 gene encodes GR4184 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4184 precursor RNA folds spatially, forming GR4184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4184 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4184 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4184 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM826 precursor RNA, GAM280786 precursor RNA and GAM288898 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM826 RNA, GAM280786 RNA and GAM288898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM826 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM826 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM826 target RNA into GAM826 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280786 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM280786 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280786 target RNA into GAM280786 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM288898 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM288898 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM288898 target RNA into GAM288898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4184 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4184 gene: GAM826 target protein, GAM280786 target protein and GAM288898 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM826, GAM280786 and GAM288898

GR4185 BE783811 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4185(GR4185) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4185 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4185 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4185 gene encodes GR4185 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4185 precursor RNA folds spatially, forming GR4185 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4185 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4185 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4185 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM47025 precursor RNA, GAM219719 precursor RNA and GAM305401 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47025 RNA, GAM219719 RNA and GAM305401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47025 target RNA into GAM47025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM219719 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM219719 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM219719 target RNA into GAM219719 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM305401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM305401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM305401 target RNA into GAM305401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4185 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4185 gene: GAM47025 target protein, GAM219719 target protein and GAM305401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47025, GAM219719 and GAM305401

GR4186 BG254035 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

4186(GR4186) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4186 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4186 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4186 gene encodes GR4186 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4186 precursor RNA folds spatially, forming GR4186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4186 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4186 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4186 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 5 separate GAM precursor RNAs, GAM53760 precursor RNA, GAM90400 precursor RNA, GAM167087 precursor RNA, GAM171263 precursor RNA and GAM199259 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53760 RNA, GAM90400 RNA, GAM167087 RNA, GAM171263 RNA and GAM199259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53760 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53760 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53760 target RNA into GAM53760 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90400

target RNA into GAM90400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167087 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167087 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167087 target RNA into GAM167087 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171263 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171263 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171263 target RNA into GAM171263 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM199259 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM199259 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM199259 target RNA into GAM199259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4186 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4186 gene: GAM53760 target protein, GAM90400 target protein, GAM167087 target protein, GAM171263 target protein and GAM199259 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53760, GAM90400, GAM167087, GAM171263 and GAM199259

GR4187 AA633738 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4187(GR4187) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4187 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4187 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4187 gene encodes GR4187 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4187 precursor RNA folds spatially, forming GR4187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4187 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4187 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4187 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8524 precursor RNA and GAM259478 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8524 RNA and GAM259478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8524 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8524 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8524 target RNA into GAM8524 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259478 target RNA into GAM259478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4187 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4187 gene: GAM8524 target protein and GAM259478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8524 and GAM259478

GR4188 BF132920 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4188(GR4188) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4188 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4188 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4188 gene encodes GR4188 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4188 precursor RNA folds spatially, forming GR4188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4188 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4188 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4188 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM216282 precursor RNA and GAM221114 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM216282 RNA and GAM221114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM216282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM216282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM216282 target RNA into GAM216282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221114 target RNA into GAM221114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4188 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4188 gene: GAM216282 target protein and GAM221114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM216282 and GAM221114

GR4189 BE260595 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4189(GR4189) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4189 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4189 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4189 gene encodes GR4189 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4189 precursor RNA folds spatially, forming GR4189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4189 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4189 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4189 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3971 precursor RNA and GAM4224 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3971 RNA and GAM4224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3971 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3971 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3971 target RNA into GAM3971 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM4224 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4224 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4224 target RNA into GAM4224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4189 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4189 gene: GAM3971 target protein and GAM4224 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3971 and GAM4224

GR4190 BF888374 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4190(GR4190) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4190 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4190 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4190 gene encodes GR4190 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4190 precursor RNA folds spatially, forming GR4190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4190 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4190 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4190 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM123446 precursor RNA, GAM235133 precursor RNA and GAM272651 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM123446 RNA, GAM235133 RNA and GAM272651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM123446 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM123446 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM123446 target RNA into GAM123446 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235133 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235133 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235133 target RNA into GAM235133 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM272651 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM272651 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM272651 target RNA into GAM272651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4190 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4190 gene: GAM123446 target protein, GAM235133 target protein and GAM272651 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM123446, GAM235133 and GAM272651

GR4191 BG757675 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4191(GR4191) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4191 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4191 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4191 gene encodes GR4191 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4191 precursor RNA folds spatially, forming GR4191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4191 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4191 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4191 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM303856 precursor RNA and GAM335222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM303856 RNA and GAM335222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM303856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM303856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM303856 target RNA into GAM303856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335222 target RNA into GAM335222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4191 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4191 gene: GAM303856 target protein and GAM335222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM303856 and GAM335222

GR4192 BG480233 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4192(GR4192) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4192 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4192 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4192 gene encodes GR4192 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4192 precursor RNA folds spatially, forming GR4192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4192 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4192 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4192 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM55444 precursor RNA, GAM66630 precursor RNA and GAM224990 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM55444 RNA, GAM66630 RNA and GAM224990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM55444 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55444 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55444 target RNA into GAM55444 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM66630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM66630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM66630 target RNA into GAM66630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224990 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224990 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224990 target RNA into GAM224990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4192 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4192 gene: GAM55444 target protein, GAM66630 target protein and GAM224990 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM55444, GAM66630 and GAM224990

GR4193 BF741348 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4193(GR4193) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4193 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4193 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4193 gene encodes GR4193 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4193 precursor RNA folds spatially, forming GR4193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4193 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4193 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4193 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3168 precursor RNA, GAM6185 precursor RNA and GAM246927 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3168 RNA, GAM6185 RNA and GAM246927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3168 target RNA into GAM3168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6185 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6185 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6185 target RNA into GAM6185 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM246927 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM246927 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM246927 target RNA into GAM246927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4193 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4193 gene: GAM3168 target protein, GAM6185 target protein and GAM246927 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3168, GAM6185 and GAM246927

GR4194 BG576000 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4194(GR4194) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4194 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4194 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4194 gene encodes GR4194 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4194 precursor RNA folds spatially, forming GR4194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4194 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4194 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4194 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM9674 precursor RNA and GAM294674 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM9674 RNA and GAM294674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM9674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM9674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM9674 target RNA into GAM9674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294674 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294674 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294674 target RNA into GAM294674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4194 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4194 gene: GAM9674 target protein and GAM294674 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM9674 and GAM294674

GR4195 BM149660 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4195(GR4195) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4195 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4195 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4195 gene encodes GR4195 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4195 precursor RNA folds spatially, forming GR4195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4195 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4195 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4195 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM34814 precursor RNA and GAM115623 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM34814 RNA and GAM115623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM34814 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM34814 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM34814 target RNA into GAM34814 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM115623 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM115623 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM115623 target RNA into GAM115623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4195 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4195 gene: GAM34814 target protein and GAM115623 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM34814 and GAM115623

GR4196 BM837488 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4196(GR4196) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4196 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4196 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4196 gene encodes GR4196 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4196 precursor RNA folds spatially, forming GR4196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4196 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4196 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4196 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15625 precursor RNA and GAM204503 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15625 RNA and GAM204503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15625 target RNA into GAM15625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204503 target RNA into GAM204503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4196 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4196 gene: GAM15625 target protein and GAM204503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15625 and GAM204503

GR4197 BI335515 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

4197(GR4197) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4197 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4197 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4197 gene encodes GR4197 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4197 precursor RNA folds spatially, forming GR4197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4197 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4197 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4197 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM163614 precursor RNA, GAM215832 precursor RNA and GAM223440 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM163614 RNA, GAM215832 RNA and GAM223440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM163614 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM163614 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM163614 target RNA into GAM163614 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215832

target RNA into GAM215832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223440 target RNA into GAM223440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4197 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4197 gene: GAM163614 target protein, GAM215832 target protein and GAM223440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM163614, GAM215832 and GAM223440

GR4198 BG106154 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4198(GR4198) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4198 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4198 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4198 gene encodes GR4198 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4198 precursor RNA folds spatially, forming GR4198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4198 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4198 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4198 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM85811 precursor RNA and GAM332222 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85811 RNA and GAM332222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85811 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85811 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85811 target RNA into GAM85811 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332222 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332222 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332222 target RNA into GAM332222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4198 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4198 gene: GAM85811 target protein and GAM332222 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85811 and GAM332222

GR4199 BQ020718 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4199(GR4199) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4199 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4199 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4199 gene encodes GR4199 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4199 precursor RNA folds spatially, forming GR4199 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4199 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4199 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4199 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM173942 precursor RNA, GAM304848 precursor RNA and GAM322567 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM173942 RNA, GAM304848 RNA and GAM322567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM173942 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM173942 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM173942 target RNA into GAM173942 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304848 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304848 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304848 target RNA into GAM304848 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM322567 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322567 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322567 target RNA into GAM322567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4199 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4199 gene: GAM173942 target protein, GAM304848 target protein and GAM322567 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM173942, GAM304848 and GAM322567

GR4200 T79569 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4200(GR4200) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4200 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4200 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4200 gene encodes GR4200 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4200 precursor RNA folds spatially, forming GR4200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4200 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4200 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4200 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4478 precursor RNA, GAM26857 precursor RNA and GAM298155 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4478 RNA, GAM26857 RNA and GAM298155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4478 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4478 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM4478 target RNA into GAM4478 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM26857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM26857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM26857 target RNA into GAM26857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM298155 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM298155 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM298155 target RNA into GAM298155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4200 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4200 gene: GAM4478 target protein, GAM26857 target protein and GAM298155 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4478, GAM26857 and GAM298155

GR4201 BF513877 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4201(GR4201) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4201 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4201 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4201 gene encodes GR4201 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4201 precursor RNA folds spatially, forming GR4201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4201 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4201 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4201 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM208 precursor RNA and GAM325794 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM208 RNA and GAM325794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208 target RNA into GAM208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM325794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM325794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM325794 target RNA into GAM325794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4201 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4201 gene: GAM208 target protein and GAM325794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM208 and GAM325794

GR4202 BM015746 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4202(GR4202) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4202 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4202 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4202 gene encodes GR4202 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4202 precursor RNA folds spatially, forming GR4202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4202 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4202 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4202 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM223160 precursor RNA and GAM297667 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223160 RNA and GAM297667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223160 target RNA into GAM223160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM297667 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM297667 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM297667 target RNA into GAM297667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4202 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4202 gene: GAM223160 target protein and GAM297667 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223160 and GAM297667

GR4203 BM682012 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4203(GR4203) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4203 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4203 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4203 gene encodes GR4203 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4203 precursor RNA folds spatially, forming GR4203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4203 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4203 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4203 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM2742 precursor RNA, GAM3346 precursor RNA, GAM54227 precursor RNA and GAM130255 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2742 RNA, GAM3346 RNA, GAM54227 RNA and GAM130255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2742 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2742 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2742 target RNA into

GAM2742 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3346 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3346 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3346 target RNA into GAM3346 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54227 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54227 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54227 target RNA into GAM54227 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130255 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130255 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130255 target RNA into GAM130255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4203 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4203 gene: GAM2742 target protein, GAM3346 target protein, GAM54227 target protein and GAM130255 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2742, GAM3346, GAM54227 and GAM130255

GR4204 H18401 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4204(GR4204) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4204 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4204 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4204 gene encodes GR4204 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR4204 precursor RNA folds spatially, forming GR4204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4204 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4204 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4204 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4539 precursor RNA and GAM205018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4539 RNA and GAM205018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4539 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4539 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4539 target RNA into GAM4539 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM205018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM205018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM205018 target RNA into GAM205018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4204 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4204 gene: GAM4539 target protein and GAM205018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4539 and GAM205018

GR4205 BE564957 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4205(GR4205) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4205 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4205 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4205 gene encodes GR4205 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4205 precursor RNA folds spatially, forming GR4205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4205 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4205 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4205 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM77330 precursor RNA and GAM110672 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM77330 RNA and GAM110672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM77330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM77330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM77330 target RNA into GAM77330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM110672 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM110672 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM110672 target RNA into GAM110672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4205 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4205 gene: GAM77330 target protein and GAM110672 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM77330 and GAM110672

GR4206 BF126361 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4206(GR4206) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4206 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4206 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4206 gene encodes GR4206 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4206 precursor RNA folds spatially, forming GR4206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4206 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4206 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4206 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6572 precursor RNA and GAM182464 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6572 RNA and GAM182464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6572 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6572 target RNA into GAM6572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM182464 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM182464 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM182464 target RNA into GAM182464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4206 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4206 gene: GAM6572 target protein and GAM182464 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6572 and GAM182464

GR4207 AV716419 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4207(GR4207) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4207 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4207 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4207 gene encodes GR4207 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4207 precursor RNA folds spatially, forming GR4207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4207 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4207 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4207 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5122 precursor RNA, GAM239745 precursor RNA and GAM293710 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5122 RNA, GAM239745 RNA and GAM293710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5122 target RNA into GAM5122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM239745 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM239745 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM239745 target RNA into GAM239745 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293710 target RNA into GAM293710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4207 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4207 gene: GAM5122 target protein, GAM239745 target protein and GAM293710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5122, GAM239745 and GAM293710

GR4208 BG116351 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 4208(GR4208) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4208 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4208 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4208 gene encodes GR4208 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4208 precursor RNA folds spatially, forming GR4208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4208 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4208 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4208 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1209 precursor RNA and GAM57548 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1209 RNA and GAM57548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1209 target RNA into GAM1209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57548 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57548 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57548

target RNA into GAM57548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4208 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4208 gene: GAM1209 target protein and GAM57548 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1209 and GAM57548

GR4209 BF929994 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4209(GR4209) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4209 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4209 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4209 gene encodes GR4209 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4209 precursor RNA folds spatially, forming GR4209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4209 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4209 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4209 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5844 precursor RNA and GAM292536 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5844 RNA and GAM292536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5844 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5844 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5844 target RNA into GAM5844 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292536 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292536 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292536 target RNA into GAM292536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4209 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4209 gene: GAM5844 target protein and GAM292536 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5844 and GAM292536

GR4210 AW273431 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4210(GR4210) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4210 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4210 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4210 gene encodes GR4210 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4210 precursor RNA folds spatially, forming GR4210 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4210 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4210 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4210 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM178120 precursor RNA and GAM287290 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM178120 RNA and GAM287290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM178120 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178120 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178120 target RNA into GAM178120 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM287290 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM287290 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM287290 target RNA into GAM287290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4210 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4210 gene: GAM178120 target protein and GAM287290 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM178120 and GAM287290

GR4211 AI138257 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4211(GR4211) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4211 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4211 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4211 gene encodes GR4211 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4211 precursor RNA folds spatially, forming GR4211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4211 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4211 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4211 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1018 precursor RNA, GAM5987 precursor RNA and GAM61818 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1018 RNA, GAM5987 RNA and GAM61818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1018 target RNA into GAM1018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5987 target RNA into GAM5987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM61818 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM61818 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM61818 target RNA into GAM61818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4211 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4211 gene: GAM1018 target protein, GAM5987 target protein and GAM61818 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1018, GAM5987 and GAM61818

GR4212 BG461605 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4212(GR4212) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4212 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4212 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4212 gene encodes GR4212 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4212 precursor RNA folds spatially, forming GR4212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4212 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4212 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4212 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3744 precursor RNA, GAM128586 precursor RNA and GAM197202 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3744 RNA, GAM128586 RNA and GAM197202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3744 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3744 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3744 target RNA into GAM3744 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM128586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM128586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM128586 target RNA into GAM128586 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM197202 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM197202 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM197202 target RNA into GAM197202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4212 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4212 gene: GAM3744 target protein, GAM128586 target protein and GAM197202 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3744, GAM128586 and GAM197202

GR4213 N53971 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4213(GR4213) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4213 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4213 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4213 gene encodes GR4213 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4213 precursor RNA folds spatially, forming GR4213 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4213 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4213 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4213 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7392 precursor RNA, GAM103581 precursor RNA and GAM111032 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7392 RNA, GAM103581 RNA and GAM111032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7392 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7392 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7392 target RNA into GAM7392 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM103581 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103581 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103581 target RNA into GAM103581 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111032 target RNA into GAM111032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4213 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4213 gene: GAM7392 target protein, GAM103581 target protein and GAM111032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7392, GAM103581 and GAM111032

GR4214 AI471249 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4214(GR4214) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4214 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4214 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4214 gene encodes GR4214 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4214 precursor RNA folds spatially, forming GR4214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4214 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4214 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4214 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM251593 precursor RNA and GAM279910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM251593 RNA and GAM279910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM251593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251593

target RNA into GAM251593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM279910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM279910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM279910 target RNA into GAM279910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4214 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4214 gene: GAM251593 target protein and GAM279910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM251593 and GAM279910

GR4215 BG248269 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4215(GR4215) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4215 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4215 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4215 gene encodes GR4215 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4215 precursor RNA folds spatially, forming GR4215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4215 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4215 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4215 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1072 precursor RNA, GAM210212 precursor RNA and GAM293031 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED

PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1072 RNA, GAM210212 RNA and GAM293031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1072 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1072 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1072 target RNA into GAM1072 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM210212 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM210212 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM210212 target RNA into GAM210212 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293031 target RNA into GAM293031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4215 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4215 gene: GAM1072 target protein, GAM210212 target protein and GAM293031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1072, GAM210212 and GAM293031

GR4216 AV759303 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4216(GR4216) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4216 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4216 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4216 gene encodes GR4216 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4216 precursor RNA folds spatially, forming GR4216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4216 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4216 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4216 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM1330 precursor RNA, GAM245082 precursor RNA, GAM282153 precursor RNA and GAM284380 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1330 RNA, GAM245082 RNA, GAM282153 RNA and GAM284380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1330 target RNA into GAM1330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM245082 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM245082 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM245082 target RNA into GAM245082 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM282153 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM282153 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM282153 target RNA into GAM282153 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM284380 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM284380 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM284380 target RNA into GAM284380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4216 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4216 gene: GAM1330 target protein, GAM245082 target protein, GAM282153 target protein and GAM284380 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1330, GAM245082, GAM282153 and GAM284380

GR4217 AU129828 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4217(GR4217) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4217 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4217 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4217 gene encodes GR4217 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4217 precursor RNA folds spatially, forming GR4217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4217 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4217 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4217 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3

separate GAM precursor RNAs, GAM4280 precursor RNA, GAM260823 precursor RNA and GAM290160 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4280 RNA, GAM260823 RNA and GAM290160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4280 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4280 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4280 target RNA into GAM4280 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260823 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260823 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260823 target RNA into GAM260823 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290160 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290160 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290160 target RNA into GAM290160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4217 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4217 gene: GAM4280 target protein, GAM260823 target protein and GAM290160 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4280, GAM260823 and GAM290160

GR4218 AW664381 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4218(GR4218) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4218 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4218 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4218 gene encodes GR4218 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4218 precursor RNA folds spatially, forming GR4218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4218 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4218 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4218 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7762 precursor RNA, GAM24178 precursor RNA and GAM40689 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7762 RNA, GAM24178 RNA and GAM40689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7762 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7762 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7762 target RNA into GAM7762 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM24178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24178 target RNA into GAM24178 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM40689 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40689 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40689 target RNA into GAM40689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4218 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4218 gene: GAM7762 target protein, GAM24178 target protein and GAM40689 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7762, GAM24178 and GAM40689

GR4219 BG289532 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4219(GR4219) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4219 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4219 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4219 gene encodes GR4219 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4219 precursor RNA folds spatially, forming GR4219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4219 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4219 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4219 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM53963 precursor RNA and GAM271321 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM53963 RNA and GAM271321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM53963 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53963 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53963 target RNA into GAM53963 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM271321 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM271321 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM271321 target RNA into GAM271321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4219 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4219 gene: GAM53963 target protein and GAM271321 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM53963 and GAM271321

GR4220 BI713516 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4220(GR4220) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4220 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4220 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4220 gene encodes GR4220 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4220 precursor RNA folds spatially, forming GR4220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR4220 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4220 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4220 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6516 precursor RNA, GAM6637 precursor RNA, GAM78987 precursor RNA and GAM278203 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6516 RNA, GAM6637 RNA, GAM78987 RNA and GAM278203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6516 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6516 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6516 target RNA into GAM6516 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6637 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6637 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6637 target RNA into GAM6637 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM78987 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78987 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78987 target RNA into GAM78987 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278203 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278203 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278203 target RNA into GAM278203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4220 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4220 gene: GAM6516 target protein, GAM6637 target protein, GAM78987 target protein and GAM278203 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6516, GAM6637, GAM78987 and GAM278203

GR4221 BM997989 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4221(GR4221) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4221 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4221 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4221 gene encodes GR4221 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4221 precursor RNA folds spatially, forming GR4221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4221 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4221 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4221 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8402 precursor RNA and GAM295379 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8402 RNA and GAM295379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8402 target RNA into GAM8402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM295379 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM295379 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM295379 target RNA into GAM295379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4221 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4221 gene: GAM8402 target protein and GAM295379 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8402 and GAM295379

GR4222 BE315344 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4222(GR4222) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4222 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4222 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4222 gene encodes GR4222 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4222 precursor RNA folds spatially, forming GR4222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4222 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4222 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4222 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2402 precursor RNA, GAM7558 precursor RNA and GAM41800 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2402 RNA, GAM7558 RNA and GAM41800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2402 target RNA into GAM2402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7558 target RNA into GAM7558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM41800 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41800 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41800 target RNA into GAM41800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4222 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4222 gene: GAM2402 target protein, GAM7558 target protein and GAM41800 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2402, GAM7558 and GAM41800

GR4223 BQ027314 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4223(GR4223) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4223 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4223 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4223 gene encodes GR4223 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4223 precursor RNA folds spatially, forming GR4223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4223 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4223 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4223 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM15226 precursor RNA and GAM107582 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM15226 RNA and GAM107582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM15226 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM15226 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM15226 target RNA into GAM15226 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107582 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107582 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107582 target RNA into GAM107582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4223 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4223 gene: GAM15226 target protein and GAM107582 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM15226 and GAM107582

GR4224 AW452064 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4224(GR4224) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4224 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4224 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4224 gene encodes GR4224 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4224 precursor RNA folds spatially, forming GR4224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4224 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4224 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4224 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7482 precursor RNA and GAM41693 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7482 RNA and GAM41693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7482 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7482 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7482 target RNA into GAM7482 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM41693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM41693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM41693 target RNA into GAM41693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4224 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4224 gene: GAM7482 target protein and GAM41693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7482 and GAM41693

GR4225 BE047231 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4225(GR4225) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4225 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4225 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4225 gene encodes GR4225 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4225 precursor RNA folds spatially, forming GR4225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4225 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4225 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4225 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5726 precursor RNA, GAM43310 precursor RNA and GAM178037 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5726 RNA, GAM43310 RNA and GAM178037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5726 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5726 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5726 target RNA into GAM5726 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM43310 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM43310 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM43310 target RNA into GAM43310 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM178037 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM178037 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM178037 target RNA into GAM178037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4225 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4225 gene: GAM5726 target protein, GAM43310 target protein and GAM178037 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5726, GAM43310 and GAM178037

GR4226 BF092795 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 4226(GR4226) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4226 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4226 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4226 gene encodes GR4226 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4226 precursor RNA folds spatially, forming GR4226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4226 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4226 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4226 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5018 precursor RNA, GAM90311 precursor RNA and GAM293713 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5018 RNA, GAM90311 RNA and GAM293713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5018 target RNA into GAM5018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90311 target RNA into GAM90311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM293713 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM293713 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM293713 target RNA into GAM293713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4226 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4226 gene: GAM5018 target protein, GAM90311 target protein and GAM293713 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5018, GAM90311 and GAM293713

GR4227 AA666196 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4227(GR4227) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4227 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4227 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4227 gene encodes GR4227 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4227 precursor RNA folds spatially, forming GR4227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4227 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4227 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4227 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM103271 precursor RNA, GAM146162 precursor RNA and GAM248015 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM103271 RNA, GAM146162 RNA and GAM248015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM103271 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM103271 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM103271 target RNA into GAM103271 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146162 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146162 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146162 target RNA into GAM146162 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM248015 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM248015 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM248015 target RNA into GAM248015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4227 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4227 gene: GAM103271 target protein, GAM146162 target protein and GAM248015 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM103271, GAM146162 and GAM248015

GR4228 AI799074 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4228(GR4228) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4228 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4228 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4228 gene encodes GR4228 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4228 precursor RNA folds spatially, forming GR4228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4228 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4228 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4228 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7950 precursor RNA and GAM100209 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7950 RNA and GAM100209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7950 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7950 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7950 target RNA into GAM7950 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM100209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100209 target RNA into GAM100209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4228 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4228 gene: GAM7950 target protein and GAM100209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7950 and GAM100209

GR4229 AU137878 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4229(GR4229) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4229 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4229 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4229 gene encodes GR4229 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4229 precursor RNA folds spatially, forming GR4229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4229 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4229 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4229 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5396 precursor RNA and GAM68701 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5396 RNA and GAM68701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5396 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5396 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING

SITE III of Fig. 8, thereby inhibiting translation of GAM5396 target RNA into GAM5396 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM68701 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68701 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68701 target RNA into GAM68701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4229 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4229 gene: GAM5396 target protein and GAM68701 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5396 and GAM68701

GR4230 BM848664 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4230(GR4230) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4230 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4230 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4230 gene encodes GR4230 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4230 precursor RNA folds spatially, forming GR4230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4230 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4230 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4230 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6150 precursor RNA, GAM63484 precursor RNA, GAM131265 precursor RNA and GAM261456 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA,

each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6150 RNA, GAM63484 RNA, GAM131265 RNA and GAM261456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6150 target RNA into GAM6150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63484 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63484 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63484 target RNA into GAM63484 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131265 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131265 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131265 target RNA into GAM131265 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261456 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261456 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261456 target RNA into GAM261456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4230 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4230 gene: GAM6150 target protein, GAM63484 target protein, GAM131265 target protein and GAM261456 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references

to GAM6150, GAM63484, GAM131265 and GAM261456

GR4231 BE900997 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4231(GR4231) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4231 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4231 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4231 gene encodes GR4231 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4231 precursor RNA folds spatially, forming GR4231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4231 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4231 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4231 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1695 precursor RNA and GAM320030 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1695 RNA and GAM320030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1695 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1695 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1695 target RNA into GAM1695 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM320030 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM320030 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM320030 target RNA into GAM320030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4231 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4231 gene: GAM1695 target protein and GAM320030 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1695 and GAM320030

GR4232 BE743159 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4232(GR4232) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4232 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4232 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4232 gene encodes GR4232 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4232 precursor RNA folds spatially, forming GR4232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4232 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4232 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4232 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM42313 precursor RNA, GAM137284 precursor RNA and GAM192025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM42313 RNA, GAM137284 RNA and GAM192025 RNA, herein

schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM42313 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM42313 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM42313 target RNA into GAM42313 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM137284 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM137284 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM137284 target RNA into GAM137284 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM192025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM192025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM192025 target RNA into GAM192025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4232 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4232 gene: GAM42313 target protein, GAM137284 target protein and GAM192025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM42313, GAM137284 and GAM192025

GR4233 BM803892 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4233(GR4233) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4233 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4233 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4233 gene encodes GR4233 precursor RNA, herein designated GR

PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4233 precursor RNA folds spatially, forming GR4233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4233 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4233 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4233 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4246 precursor RNA, GAM194521 precursor RNA and GAM278050 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4246 RNA, GAM194521 RNA and GAM278050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4246 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4246 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4246 target RNA into GAM4246 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM194521 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM194521 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM194521 target RNA into GAM194521 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM278050 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278050 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278050 target RNA into GAM278050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4233 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4233 gene: GAM4246 target protein, GAM194521 target protein and GAM278050 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4246, GAM194521 and GAM278050

GR4234 AV763417 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4234(GR4234) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4234 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4234 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4234 gene encodes GR4234 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4234 precursor RNA folds spatially, forming GR4234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4234 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4234 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4234 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4908 precursor RNA and GAM256335 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4908 RNA and GAM256335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4908 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4908 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4908 target RNA into GAM4908 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM256335 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM256335 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM256335 target RNA into GAM256335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4234 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4234 gene: GAM4908 target protein and GAM256335 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4908 and GAM256335

GR4235 AI049826 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4235(GR4235) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4235 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4235 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4235 gene encodes GR4235 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4235 precursor RNA folds spatially, forming GR4235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4235 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4235 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4235 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2

separate GAM precursor RNAs, GAM158337 precursor RNA and GAM273114 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM158337 RNA and GAM273114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM158337 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM158337 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM158337 target RNA into GAM158337 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM273114 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM273114 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM273114 target RNA into GAM273114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4235 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4235 gene: GAM158337 target protein and GAM273114 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM158337 and GAM273114

GR4236 BE540375 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4236(GR4236) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4236 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4236 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4236 gene encodes GR4236 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR4236 precursor RNA folds spatially, forming GR4236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4236 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4236 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4236 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM74466 precursor RNA and GAM289747 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM74466 RNA and GAM289747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM74466 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM74466 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM74466 target RNA into GAM74466 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM289747 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM289747 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM289747 target RNA into GAM289747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4236 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4236 gene: GAM74466 target protein and GAM289747 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM74466 and GAM289747

GR4237 BM452728 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4237(GR4237) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4237 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4237 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4237 gene encodes GR4237 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4237 precursor RNA folds spatially, forming GR4237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4237 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4237 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4237 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM102300 precursor RNA, GAM274400 precursor RNA and GAM291311 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102300 RNA, GAM274400 RNA and GAM291311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM102300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102300 target RNA into GAM102300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274400 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274400 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274400 target RNA into GAM274400 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291311 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291311 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291311 target RNA into GAM291311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4237 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4237 gene: GAM102300 target protein, GAM274400 target protein and GAM291311 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102300, GAM274400 and GAM291311

GR4238 BG773245 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4238(GR4238) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4238 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4238 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4238 gene encodes GR4238 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4238 precursor RNA folds spatially, forming GR4238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4238 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4238 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4238 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM914 precursor RNA and GAM7129 precursor

RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM914 RNA and GAM7129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM914 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM914 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM914 target RNA into GAM914 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7129 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7129 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7129 target RNA into GAM7129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4238 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4238 gene: GAM914 target protein and GAM7129 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM914 and GAM7129

GR4239 AA904993 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4239(GR4239) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4239 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4239 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4239 gene encodes GR4239 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4239 precursor RNA folds spatially, forming GR4239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4239 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4239 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4239 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM140828 precursor RNA, GAM145213 precursor RNA and GAM177662 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM140828 RNA, GAM145213 RNA and GAM177662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM140828 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM140828 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM140828 target RNA into GAM140828 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM145213 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM145213 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM145213 target RNA into GAM145213 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM177662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM177662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM177662 target RNA into GAM177662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4239 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4239 gene: GAM140828 target protein, GAM145213 target protein and GAM177662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM140828, GAM145213 and GAM177662

GR4240 BI603164 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4240(GR4240) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4240 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4240 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4240 gene encodes GR4240 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4240 precursor RNA folds spatially, forming GR4240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4240 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4240 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4240 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM47331 precursor RNA and GAM266552 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47331 RNA and GAM266552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47331 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47331 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47331 target RNA into GAM47331 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266552 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266552 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266552 target RNA into GAM266552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4240 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4240 gene: GAM47331 target protein and GAM266552 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47331 and GAM266552

GR4241 BM893882 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4241(GR4241) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4241 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4241 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4241 gene encodes GR4241 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4241 precursor RNA folds spatially, forming GR4241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4241 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4241 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4241 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6540 precursor RNA, GAM63941 precursor RNA and GAM92440 precursor RNA,herein schematically represented by GAM1 FOLDED

PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6540 RNA, GAM63941 RNA and GAM92440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6540 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6540 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6540 target RNA into GAM6540 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM63941 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM63941 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM63941 target RNA into GAM63941 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM92440 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM92440 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM92440 target RNA into GAM92440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4241 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4241 gene: GAM6540 target protein, GAM63941 target protein and GAM92440 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6540, GAM63941 and GAM92440

GR4242 AI906360 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4242(GR4242) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4242 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4242 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4242 gene encodes GR4242 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4242 precursor RNA folds spatially, forming GR4242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4242 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4242 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4242 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM235363 precursor RNA and GAM270603 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM235363 RNA and GAM270603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM235363 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235363 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235363 target RNA into GAM235363 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM270603 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM270603 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM270603 target RNA into GAM270603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4242 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4242 gene: GAM235363 target protein and GAM270603 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM235363 and GAM270603

GR4243 BE067648 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4243(GR4243) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4243 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4243 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4243 gene encodes GR4243 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4243 precursor RNA folds spatially, forming GR4243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4243 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4243 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4243 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4245 precursor RNA, GAM259026 precursor RNA and GAM335122 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4245 RNA, GAM259026 RNA and GAM335122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4245 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4245 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4245 target RNA into GAM4245 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM259026 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM259026 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM259026 target RNA into GAM259026 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335122 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335122 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335122 target RNA into GAM335122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4243 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4243 gene: GAM4245 target protein, GAM259026 target protein and GAM335122 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4245, GAM259026 and GAM335122

GR4244 AL043124 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4244(GR4244) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4244 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4244 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4244 gene encodes GR4244 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4244 precursor RNA folds spatially, forming GR4244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4244 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR4244 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4244 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5772 precursor RNA, GAM96819 precursor RNA and GAM176750 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5772 RNA, GAM96819 RNA and GAM176750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5772 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5772 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5772 target RNA into GAM5772 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM96819 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96819 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96819 target RNA into GAM96819 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM176750 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM176750 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM176750 target RNA into GAM176750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4244 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4244 gene: GAM5772 target protein, GAM96819 target protein and GAM176750 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5772, GAM96819 and GAM176750

GR4245 BE252350 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4245(GR4245) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4245 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4245 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4245 gene encodes GR4245 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4245 precursor RNA folds spatially, forming GR4245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4245 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4245 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4245 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM47332 precursor RNA and GAM225238 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM47332 RNA and GAM225238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM47332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM47332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM47332 target RNA into GAM47332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM225238 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM225238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM225238 target RNA into GAM225238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4245 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4245 gene: GAM47332 target protein and GAM225238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM47332 and GAM225238

GR4246 AW752495 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4246(GR4246) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4246 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4246 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4246 gene encodes GR4246 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4246 precursor RNA folds spatially, forming GR4246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4246 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4246 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4246 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM22944 precursor RNA and GAM304152 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM22944 RNA and GAM304152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM22944 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22944 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22944 target RNA into GAM22944 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304152 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304152 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304152 target RNA into GAM304152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4246 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4246 gene: GAM22944 target protein and GAM304152 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM22944 and GAM304152

GR4247 BI522544 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4247(GR4247) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4247 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4247 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4247 gene encodes GR4247 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4247 precursor RNA folds spatially, forming GR4247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4247 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4247 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4247 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM6574 precursor RNA, GAM19020 precursor RNA and GAM130077 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6574 RNA, GAM19020 RNA and GAM130077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6574 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6574 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6574 target RNA into GAM6574 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM19020 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM19020 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM19020 target RNA into GAM19020 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM130077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM130077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM130077 target RNA into GAM130077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4247 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4247 gene: GAM6574 target protein, GAM19020 target protein and GAM130077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM6574, GAM19020 and GAM130077

GR4248 AA452028 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4248(GR4248) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4248 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4248 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4248 gene encodes GR4248 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4248 precursor RNA folds spatially, forming GR4248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4248 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4248 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4248 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6492 precursor RNA and GAM179832 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6492 RNA and GAM179832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6492 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6492 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6492 target RNA into GAM6492 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM179832 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM179832 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM179832 target RNA into GAM179832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4248 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4248 gene: GAM6492 target protein and GAM179832 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6492 and GAM179832

GR4249 AW302755 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4249(GR4249) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4249 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4249 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4249 gene encodes GR4249 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4249 precursor RNA folds spatially, forming GR4249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4249 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4249 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4249 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM13593 precursor RNA and GAM277937 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM13593 RNA and GAM277937 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM13593 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM13593 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM13593 target RNA into GAM13593 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277937 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277937 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277937 target RNA into GAM277937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4249 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4249 gene: GAM13593 target protein and GAM277937 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM13593 and GAM277937

GR4250 BE383450 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4250(GR4250) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4250 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4250 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4250 gene encodes GR4250 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4250 precursor RNA folds spatially, forming GR4250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4250 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4250 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4250 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM114425 precursor RNA, GAM193031 precursor RNA and GAM261710 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM114425 RNA, GAM193031 RNA and GAM261710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM114425 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM114425 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM114425 target RNA into GAM114425 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM193031 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM193031 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM193031 target RNA into GAM193031 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM261710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM261710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM261710 target RNA into GAM261710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4250 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4250 gene: GAM114425 target protein, GAM193031 target protein and GAM261710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM114425, GAM193031 and

GAM261710

GR4251 AA768091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4251(GR4251) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4251 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4251 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4251 gene encodes GR4251 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4251 precursor RNA folds spatially, forming GR4251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4251 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4251 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4251 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM7763 precursor RNA, GAM161441 precursor RNA and GAM290408 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7763 RNA, GAM161441 RNA and GAM290408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7763 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7763 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7763 target RNA into GAM7763 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM161441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM161441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM161441 target RNA into GAM161441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM290408 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM290408 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM290408 target RNA into GAM290408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4251 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4251 gene: GAM7763 target protein, GAM161441 target protein and GAM290408 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7763, GAM161441 and GAM290408

GR4252 BI599803 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4252(GR4252) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4252 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4252 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4252 gene encodes GR4252 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4252 precursor RNA folds spatially, forming GR4252 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4252 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4252 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4252 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM100330 precursor RNA, GAM147159 precursor RNA, GAM230356 precursor RNA and GAM327025 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM100330 RNA, GAM147159 RNA, GAM230356 RNA and GAM327025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM100330 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM100330 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM100330 target RNA into GAM100330 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147159 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147159 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147159 target RNA into GAM147159 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230356 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230356 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230356 target RNA into GAM230356 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM327025 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327025 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327025 target RNA into GAM327025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4252 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4252 gene: GAM100330 target

protein, GAM147159 target protein, GAM230356 target protein and GAM327025 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM100330, GAM147159, GAM230356 and GAM327025

GR4253 BE537304 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4253(GR4253) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4253 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4253 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4253 gene encodes GR4253 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4253 precursor RNA folds spatially, forming GR4253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4253 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4253 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4253 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6577 precursor RNA and GAM52520 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6577 RNA and GAM52520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6577 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6577 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6577 target RNA into GAM6577 target protein, herein schematically represented by GAM1 TARGET

PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM52520 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM52520 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM52520 target RNA into GAM52520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4253 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4253 gene: GAM6577 target protein and GAM52520 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6577 and GAM52520

GR4254 AW152419 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4254(GR4254) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4254 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4254 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4254 gene encodes GR4254 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4254 precursor RNA folds spatially, forming GR4254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4254 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4254 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4254 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7500 precursor RNA and GAM304954 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7500 RNA and GAM304954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7500 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7500 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7500 target RNA into GAM7500 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM304954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM304954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM304954 target RNA into GAM304954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4254 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4254 gene: GAM7500 target protein and GAM304954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7500 and GAM304954

GR4255 AI559470 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4255(GR4255) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4255 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4255 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4255 gene encodes GR4255 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4255 precursor RNA folds spatially, forming GR4255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4255 folded precursor RNA comprises a plurality of what is known in the

art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4255 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4255 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3700 precursor RNA and GAM108585 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3700 RNA and GAM108585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3700 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3700 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3700 target RNA into GAM3700 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM108585 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM108585 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM108585 target RNA into GAM108585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4255 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4255 gene: GAM3700 target protein and GAM108585 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3700 and GAM108585

GR4256 BM676642 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4256(GR4256) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is

known in the art.

GR4256 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4256 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4256 gene encodes GR4256 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4256 precursor RNA folds spatially, forming GR4256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4256 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4256 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4256 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM278743 precursor RNA and GAM309424 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM278743 RNA and GAM309424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM278743 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM278743 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM278743 target RNA into GAM278743 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309424 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309424 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309424 target RNA into GAM309424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly

utilities, of GR4256 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4256 gene: GAM278743 target protein and GAM309424 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM278743 and GAM309424

GR4257 BI032427 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4257(GR4257) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4257 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4257 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4257 gene encodes GR4257 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4257 precursor RNA folds spatially, forming GR4257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4257 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4257 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4257 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM28096 precursor RNA and GAM84474 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM28096 RNA and GAM84474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM28096 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM28096 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM28096 target RNA into GAM28096 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM84474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM84474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM84474 target RNA into GAM84474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4257 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4257 gene: GAM28096 target protein and GAM84474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM28096 and GAM84474

GR4258 AW361629 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4258(GR4258) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4258 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4258 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4258 gene encodes GR4258 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4258 precursor RNA folds spatially, forming GR4258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4258 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4258 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4258 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM95849 precursor RNA and GAM253716 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM95849 RNA and GAM253716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM95849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM95849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM95849 target RNA into GAM95849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM253716 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM253716 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM253716 target RNA into GAM253716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4258 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4258 gene: GAM95849 target protein and GAM253716 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM95849 and GAM253716

GR4259 AA746035 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4259(GR4259) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4259 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4259 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4259 gene encodes GR4259 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4259 precursor RNA folds spatially, forming GR4259 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4259 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4259 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4259 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8545 precursor RNA and GAM211463 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8545 RNA and GAM211463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8545 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8545 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8545 target RNA into GAM8545 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM211463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM211463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM211463 target RNA into GAM211463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4259 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4259 gene: GAM8545 target protein and GAM211463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8545 and GAM211463

GR4260 BE931123 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4260(GR4260) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4260 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4260 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4260 gene encodes GR4260 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4260 precursor RNA folds spatially, forming GR4260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4260 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4260 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4260 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM187710 precursor RNA, GAM242586 precursor RNA and GAM292376 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM187710 RNA, GAM242586 RNA and GAM292376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM187710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM187710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM187710 target RNA into GAM187710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM242586 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM242586 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM242586 target RNA into GAM242586 target protein, herein schematically represented by

GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM292376 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM292376 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM292376 target RNA into GAM292376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4260 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4260 gene: GAM187710 target protein, GAM242586 target protein and GAM292376 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM187710, GAM242586 and GAM292376

GR4261 AI874215 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4261(GR4261) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4261 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4261 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4261 gene encodes GR4261 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4261 precursor RNA folds spatially, forming GR4261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4261 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4261 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4261 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6592 precursor RNA and GAM152835 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6592 RNA and GAM152835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6592 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6592 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6592 target RNA into GAM6592 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM152835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM152835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM152835 target RNA into GAM152835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4261 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4261 gene: GAM6592 target protein and GAM152835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6592 and GAM152835

GR4262 AA148553 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4262(GR4262) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4262 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4262 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4262 gene encodes GR4262 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4262 precursor RNA folds spatially, forming GR4262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR4262 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4262 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4262 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5857 precursor RNA and GAM22036 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5857 RNA and GAM22036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5857 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5857 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5857 target RNA into GAM5857 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM22036 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM22036 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM22036 target RNA into GAM22036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4262 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4262 gene: GAM5857 target protein and GAM22036 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5857 and GAM22036

GR4263 AI193014 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4263(GR4263) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR4263 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4263 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4263 gene encodes GR4263 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4263 precursor RNA folds spatially, forming GR4263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4263 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4263 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4263 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM113123 precursor RNA, GAM208316 precursor RNA and GAM291300 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM113123 RNA, GAM208316 RNA and GAM291300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM113123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113123 target RNA into GAM113123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM208316 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM208316 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM208316 target RNA into GAM208316 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291300 target RNA into GAM291300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4263 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4263 gene: GAM113123 target protein, GAM208316 target protein and GAM291300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM113123, GAM208316 and GAM291300

GR4264 BM669500 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4264(GR4264) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4264 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4264 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4264 gene encodes GR4264 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4264 precursor RNA folds spatially, forming GR4264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4264 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4264 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4264 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM50405 precursor RNA, GAM251954 precursor RNA and GAM321168 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM50405 RNA, GAM251954 RNA and GAM321168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM50405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM50405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM50405 target RNA into GAM50405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM251954 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM251954 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM251954 target RNA into GAM251954 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM321168 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM321168 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM321168 target RNA into GAM321168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4264 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4264 gene: GAM50405 target protein, GAM251954 target protein and GAM321168 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM50405, GAM251954 and GAM321168

GR4265 AI761850 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4265(GR4265) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4265 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4265 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4265 gene encodes GR4265 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4265 precursor RNA folds spatially, forming GR4265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4265 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4265 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4265 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM255308 precursor RNA and GAM333208 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM255308 RNA and GAM333208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM255308 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM255308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM255308 target RNA into GAM255308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM333208 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM333208 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM333208 target RNA into GAM333208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4265 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4265 gene: GAM255308 target

protein and GAM333208 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM255308 and GAM333208

GR4266 BF827389 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4266(GR4266) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4266 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4266 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4266 gene encodes GR4266 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4266 precursor RNA folds spatially, forming GR4266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4266 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4266 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4266 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM327421 precursor RNA and GAM335123 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM327421 RNA and GAM335123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM327421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM327421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM327421 target RNA into GAM327421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335123 target RNA into GAM335123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4266 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4266 gene: GAM327421 target protein and GAM335123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM327421 and GAM335123

GR4267 AW173577 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4267(GR4267) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4267 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4267 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4267 gene encodes GR4267 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4267 precursor RNA folds spatially, forming GR4267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4267 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4267 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4267 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3241 precursor RNA and GAM316077 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3241 RNA and GAM316077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3241 target RNA into GAM3241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM316077 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM316077 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM316077 target RNA into GAM316077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4267 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4267 gene: GAM3241 target protein and GAM316077 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3241 and GAM316077

GR4268 AA442163 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4268(GR4268) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4268 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4268 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4268 gene encodes GR4268 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4268 precursor RNA folds spatially, forming GR4268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4268 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR4268 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4268 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7883 precursor RNA and GAM314083 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7883 RNA and GAM314083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7883 target RNA into GAM7883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314083 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314083 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314083 target RNA into GAM314083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4268 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4268 gene: GAM7883 target protein and GAM314083 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7883 and GAM314083

GR4269 BF913490 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4269(GR4269) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4269 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4269 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4269 gene encodes GR4269 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4269 precursor RNA folds spatially, forming GR4269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4269 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4269 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4269 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM230923 precursor RNA and GAM301005 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM230923 RNA and GAM301005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM230923 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230923 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230923 target RNA into GAM230923 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM301005 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM301005 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM301005 target RNA into GAM301005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4269 gene, herein designated GR GENE, correlate with, and may

be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4269 gene: GAM230923 target protein and GAM301005 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM230923 and GAM301005

GR4270 BM799560 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4270(GR4270) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4270 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4270 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4270 gene encodes GR4270 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4270 precursor RNA folds spatially, forming GR4270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4270 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4270 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4270 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6347 precursor RNA and GAM250411 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6347 RNA and GAM250411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6347 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6347 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6347 target RNA into

GAM6347 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM250411 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM250411 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM250411 target RNA into GAM250411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4270 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4270 gene: GAM6347 target protein and GAM250411 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6347 and GAM250411

GR4271 R59832 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4271(GR4271) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4271 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4271 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4271 gene encodes GR4271 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4271 precursor RNA folds spatially, forming GR4271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4271 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4271 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4271 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM441 precursor RNA and GAM54677 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM441 RNA and GAM54677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM441 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM441 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM441 target RNA into GAM441 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54677 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54677 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54677 target RNA into GAM54677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4271 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4271 gene: GAM441 target protein and GAM54677 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM441 and GAM54677

GR4272 AI500354 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4272(GR4272) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4272 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4272 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4272 gene encodes GR4272 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4272 precursor RNA folds spatially, forming GR4272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated

that GR4272 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4272 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4272 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5732 precursor RNA and GAM267320 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5732 RNA and GAM267320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5732 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5732 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5732 target RNA into GAM5732 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM267320 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM267320 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM267320 target RNA into GAM267320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4272 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4272 gene: GAM5732 target protein and GAM267320 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5732 and GAM267320

GR4273 AW500221 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4273(GR4273) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one

target gene, the function and utility of which at least one target gene is known in the art.

GR4273 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4273 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4273 gene encodes GR4273 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4273 precursor RNA folds spatially, forming GR4273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4273 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4273 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4273 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7188 precursor RNA and GAM8467 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7188 RNA and GAM8467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7188 target RNA into GAM7188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8467 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8467 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8467 target RNA into GAM8467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4273 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4273 gene: GAM7188 target protein and GAM8467 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7188 and GAM8467

GR4274 BF700557 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4274(GR4274) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4274 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4274 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4274 gene encodes GR4274 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4274 precursor RNA folds spatially, forming GR4274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4274 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4274 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4274 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1662 precursor RNA and GAM54339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1662 RNA and GAM54339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1662 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1662 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds

to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1662 target RNA into GAM1662 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM54339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54339 target RNA into GAM54339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4274 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4274 gene: GAM1662 target protein and GAM54339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1662 and GAM54339

GR4275 BG767395 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4275(GR4275) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4275 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4275 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4275 gene encodes GR4275 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4275 precursor RNA folds spatially, forming GR4275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4275 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4275 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4275 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM472 precursor RNA and GAM230849 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3

FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM472 RNA and GAM230849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM472 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM472 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM472 target RNA into GAM472 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM230849 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM230849 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM230849 target RNA into GAM230849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4275 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4275 gene: GAM472 target protein and GAM230849 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM472 and GAM230849

GR4276 AI027546 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4276(GR4276) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4276 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4276 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4276 gene encodes GR4276 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4276 precursor RNA folds spatially, forming GR4276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4276 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4276 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4276 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1272 precursor RNA and GAM171359 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1272 RNA and GAM171359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1272 target RNA into GAM1272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM171359 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM171359 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM171359 target RNA into GAM171359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4276 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4276 gene: GAM1272 target protein and GAM171359 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1272 and GAM171359

GR4277 BE256310 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record

4277(GR4277) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4277 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4277 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4277 gene encodes GR4277 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4277 precursor RNA folds spatially, forming GR4277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4277 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4277 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4277 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM59243 precursor RNA, GAM116477 precursor RNA and GAM168910 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM59243 RNA, GAM116477 RNA and GAM168910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM59243 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM59243 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM59243 target RNA into GAM59243 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM116477 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM116477 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM116477

target RNA into GAM116477 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM168910 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM168910 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM168910 target RNA into GAM168910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4277 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4277 gene: GAM59243 target protein, GAM116477 target protein and GAM168910 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM59243, GAM116477 and GAM168910

GR4278 AW947539 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4278(GR4278) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4278 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4278 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4278 gene encodes GR4278 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4278 precursor RNA folds spatially, forming GR4278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4278 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4278 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4278 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6434 precursor RNA and GAM7799 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin

shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6434 RNA and GAM7799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6434 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6434 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6434 target RNA into GAM6434 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7799 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7799 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7799 target RNA into GAM7799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4278 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4278 gene: GAM6434 target protein and GAM7799 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6434 and GAM7799

GR4279 BF306206 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4279(GR4279) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4279 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4279 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4279 gene encodes GR4279 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4279 precursor RNA folds spatially, forming GR4279 folded

precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4279 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4279 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4279 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1899 precursor RNA and GAM91423 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1899 RNA and GAM91423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1899 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1899 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1899 target RNA into GAM1899 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM91423 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM91423 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM91423 target RNA into GAM91423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4279 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4279 gene: GAM1899 target protein and GAM91423 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1899 and GAM91423

GR4280 BI251986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4280(GR4280) gene, which encodes an `operon-like` cluster of novel micro

RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4280 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4280 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4280 gene encodes GR4280 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4280 precursor RNA folds spatially, forming GR4280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4280 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4280 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4280 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM90200 precursor RNA and GAM224315 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM90200 RNA and GAM224315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM90200 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90200 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90200 target RNA into GAM90200 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224315 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224315 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224315 target RNA into GAM224315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4280 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4280 gene: GAM90200 target protein and GAM224315 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM90200 and GAM224315

GR4281 BI830933 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4281(GR4281) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4281 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4281 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4281 gene encodes GR4281 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4281 precursor RNA folds spatially, forming GR4281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4281 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4281 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4281 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM4239 precursor RNA, GAM76268 precursor RNA, GAM265064 precursor RNA and GAM280404 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4239 RNA, GAM76268 RNA, GAM265064 RNA and GAM280404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4239 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM4239 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4239 target RNA into GAM4239 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM76268 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM76268 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM76268 target RNA into GAM76268 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265064 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265064 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265064 target RNA into GAM265064 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM280404 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM280404 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM280404 target RNA into GAM280404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4281 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4281 gene: GAM4239 target protein, GAM76268 target protein, GAM265064 target protein and GAM280404 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4239, GAM76268, GAM265064 and GAM280404

GR4282 H46064 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4282(GR4282) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4282 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4282

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4282 gene encodes GR4282 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4282 precursor RNA folds spatially, forming GR4282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4282 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4282 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4282 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5508 precursor RNA and GAM55590 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5508 RNA and GAM55590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5508 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5508 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5508 target RNA into GAM5508 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM55590 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM55590 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM55590 target RNA into GAM55590 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4282 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4282 gene: GAM5508 target protein and GAM55590 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5508 and GAM55590

GR4283 BM755934 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4283(GR4283) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4283 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4283 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4283 gene encodes GR4283 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4283 precursor RNA folds spatially, forming GR4283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4283 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4283 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4283 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM93278 precursor RNA and GAM101978 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM93278 RNA and GAM101978 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM93278 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM93278 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM93278 target RNA into GAM93278 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM101978 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101978 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101978 target RNA into GAM101978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4283 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4283 gene: GAM93278 target protein and GAM101978 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM93278 and GAM101978

GR4284 BF670701 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4284(GR4284) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4284 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4284 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4284 gene encodes GR4284 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4284 precursor RNA folds spatially, forming GR4284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4284 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4284 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4284 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5088 precursor RNA and GAM8123 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5088 RNA and GAM8123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5088 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5088 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5088 target RNA into GAM5088 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8123 target RNA into GAM8123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4284 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4284 gene: GAM5088 target protein and GAM8123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5088 and GAM8123

GR4285 BG533324 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4285(GR4285) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4285 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4285 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4285 gene encodes GR4285 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4285 precursor RNA folds spatially, forming GR4285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4285 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4285 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4285 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1210 precursor RNA, GAM7282 precursor RNA and GAM146475 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1210 RNA, GAM7282 RNA and GAM146475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1210 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1210 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1210 target RNA into GAM1210 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7282 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7282 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7282 target RNA into GAM7282 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM146475 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM146475 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM146475 target RNA into GAM146475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4285 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4285 gene: GAM1210 target protein, GAM7282 target protein and GAM146475 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM1210, GAM7282 and GAM146475

GR4286 BE391708 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4286(GR4286) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4286 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4286 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4286 gene encodes GR4286 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4286 precursor RNA folds spatially, forming GR4286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4286 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4286 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4286 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM249948 precursor RNA and GAM319542 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM249948 RNA and GAM319542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM249948 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM249948 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM249948 target RNA into GAM249948 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319542 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM319542 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319542 target RNA into GAM319542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4286 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4286 gene: GAM249948 target protein and GAM319542 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM249948 and GAM319542

GR4287 BM543181 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4287(GR4287) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4287 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4287 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4287 gene encodes GR4287 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4287 precursor RNA folds spatially, forming GR4287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4287 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4287 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4287 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM85170 precursor RNA and GAM227116 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM85170 RNA and GAM227116 RNA, herein schematically

represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM85170 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM85170 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM85170 target RNA into GAM85170 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227116 target RNA into GAM227116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4287 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4287 gene: GAM85170 target protein and GAM227116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM85170 and GAM227116

GR4288 AW387809 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4288(GR4288) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4288 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4288 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4288 gene encodes GR4288 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4288 precursor RNA folds spatially, forming GR4288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4288 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4288 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4288 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1817 precursor RNA and GAM308350 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1817 RNA and GAM308350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1817 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1817 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1817 target RNA into GAM1817 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM308350 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM308350 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM308350 target RNA into GAM308350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4288 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4288 gene: GAM1817 target protein and GAM308350 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1817 and GAM308350

GR4289 BF824859 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4289(GR4289) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4289 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4289 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4289 gene encodes GR4289 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4289 precursor RNA folds spatially, forming GR4289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4289 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4289 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4289 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM154414 precursor RNA, GAM175339 precursor RNA and GAM224962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM154414 RNA, GAM175339 RNA and GAM224962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM154414 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM154414 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM154414 target RNA into GAM154414 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM175339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM175339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM175339 target RNA into GAM175339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224962 target RNA into GAM224962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4289 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4289 gene: GAM154414 target protein, GAM175339 target protein and GAM224962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM154414, GAM175339 and GAM224962

GR4290 BE973249 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4290(GR4290) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4290 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4290 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4290 gene encodes GR4290 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4290 precursor RNA folds spatially, forming GR4290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4290 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4290 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4290 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM102810 precursor RNA and GAM277463 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM102810 RNA and GAM277463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM102810 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102810 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102810 target RNA into GAM102810 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM277463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM277463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM277463 target RNA into GAM277463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4290 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4290 gene: GAM102810 target protein and GAM277463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM102810 and GAM277463

GR4291 BF984381 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4291(GR4291) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4291 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4291 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4291 gene encodes GR4291 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4291 precursor RNA folds spatially, forming GR4291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4291 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4291 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4291 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM223244 precursor RNA and GAM265506 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM223244 RNA and GAM265506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM223244 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223244 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223244 target RNA into GAM223244 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM265506 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM265506 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM265506 target RNA into GAM265506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4291 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4291 gene: GAM223244 target protein and GAM265506 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM223244 and GAM265506

GR4292 AW838691 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4292(GR4292) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4292 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4292

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4292 gene encodes GR4292 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4292 precursor RNA folds spatially, forming GR4292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4292 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4292 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4292 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3214 precursor RNA and GAM53765 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3214 RNA and GAM53765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3214 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3214 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3214 target RNA into GAM3214 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53765 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53765 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53765 target RNA into GAM53765 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4292 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4292 gene: GAM3214 target protein and GAM53765 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3214 and GAM53765

GR4293 BE153227 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4293(GR4293) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4293 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4293 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4293 gene encodes GR4293 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4293 precursor RNA folds spatially, forming GR4293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4293 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4293 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4293 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7681 precursor RNA and GAM102006 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7681 RNA and GAM102006 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7681 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7681 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7681 target RNA into GAM7681 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM102006 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM102006 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM102006 target RNA into GAM102006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4293 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4293 gene: GAM7681 target protein and GAM102006 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7681 and GAM102006

GR4294 BQ067690 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4294(GR4294) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4294 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4294 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4294 gene encodes GR4294 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4294 precursor RNA folds spatially, forming GR4294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4294 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4294 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4294 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5837 precursor RNA and GAM224103 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM5837 RNA and GAM224103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5837 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5837 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5837 target RNA into GAM5837 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM224103 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM224103 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM224103 target RNA into GAM224103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4294 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4294 gene: GAM5837 target protein and GAM224103 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5837 and GAM224103

GR4295 BI909455 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4295(GR4295) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4295 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4295 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4295 gene encodes GR4295 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4295 precursor RNA folds spatially, forming GR4295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4295 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4295 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4295 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM54032 precursor RNA, GAM138913 precursor RNA and GAM335016 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM54032 RNA, GAM138913 RNA and GAM335016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM54032 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM54032 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM54032 target RNA into GAM54032 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM138913 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138913 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138913 target RNA into GAM138913 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM335016 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM335016 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM335016 target RNA into GAM335016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4295 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4295 gene: GAM54032 target protein, GAM138913 target protein and GAM335016 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM54032, GAM138913 and GAM335016

GR4296 AA483989 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4296(GR4296) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4296 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4296 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4296 gene encodes GR4296 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4296 precursor RNA folds spatially, forming GR4296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4296 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4296 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4296 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM24190 precursor RNA, GAM147308 precursor RNA and GAM228563 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM24190 RNA, GAM147308 RNA and GAM228563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM24190 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM24190 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM24190 target RNA into GAM24190 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM147308 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM147308 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM147308 target RNA into GAM147308 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228563 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228563 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228563 target RNA into GAM228563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4296 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4296 gene: GAM24190 target protein, GAM147308 target protein and GAM228563 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM24190, GAM147308 and GAM228563

GR4297 BG540076 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4297(GR4297) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4297 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4297 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4297 gene encodes GR4297 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4297 precursor RNA folds spatially, forming GR4297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4297 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4297 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4297 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM2326 precursor RNA, GAM69039 precursor RNA and GAM111339 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM2326 RNA, GAM69039 RNA and GAM111339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM2326 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2326 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2326 target RNA into GAM2326 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM69039 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69039 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69039 target RNA into GAM69039 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM111339 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM111339 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM111339 target RNA into GAM111339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4297 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4297 gene: GAM2326 target protein, GAM69039 target protein and GAM111339 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM2326, GAM69039 and GAM111339

GR4298 BI085068 Fig. 16 further provides a conceptual description of novel

bioinformatically detected regulatory gene, referred to here as Genomic Record 4298(GR4298) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4298 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4298 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4298 gene encodes GR4298 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4298 precursor RNA folds spatially, forming GR4298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4298 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4298 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4298 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4042 precursor RNA and GAM5736 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4042 RNA and GAM5736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4042 target RNA into GAM4042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5736 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5736 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5736 target RNA into

GAM5736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4298 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4298 gene: GAM4042 target protein and GAM5736 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4042 and GAM5736

GR4299 AI016743 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4299(GR4299) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4299 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4299 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4299 gene encodes GR4299 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4299 precursor RNA folds spatially, forming GR4299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4299 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4299 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4299 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM68572 precursor RNA and GAM167554 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM68572 RNA and GAM167554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM68572 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM68572 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM68572 target RNA into GAM68572 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM167554 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM167554 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM167554 target RNA into GAM167554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4299 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4299 gene: GAM68572 target protein and GAM167554 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM68572 and GAM167554

GR4300 BG391839 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4300(GR4300) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4300 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4300 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4300 gene encodes GR4300 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4300 precursor RNA folds spatially, forming GR4300 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4300 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4300 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4300 folded precursor RNA, herein designated GR FOLDED PRECURSOR

RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM82123 precursor RNA, GAM243709 precursor RNA, GAM291286 precursor RNA and GAM309820 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM82123 RNA, GAM243709 RNA, GAM291286 RNA and GAM309820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM82123 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM82123 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM82123 target RNA into GAM82123 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM243709 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM243709 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM243709 target RNA into GAM243709 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291286 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291286 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291286 target RNA into GAM291286 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM309820 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM309820 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM309820 target RNA into GAM309820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4300 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4300 gene: GAM82123 target

protein, GAM243709 target protein, GAM291286 target protein and GAM309820 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM82123, GAM243709, GAM291286 and GAM309820

GR4301 BI559582 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4301(GR4301) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4301 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4301 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4301 gene encodes GR4301 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4301 precursor RNA folds spatially, forming GR4301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4301 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4301 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4301 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM613 precursor RNA, GAM711 precursor RNA and GAM314983 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM613 RNA, GAM711 RNA and GAM314983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM613 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM613 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM613 target RNA into

GAM613 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM711 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM711 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM711 target RNA into GAM711 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM314983 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM314983 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM314983 target RNA into GAM314983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4301 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4301 gene: GAM613 target protein, GAM711 target protein and GAM314983 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM613, GAM711 and GAM314983

GR4302 BF346848 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4302(GR4302) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4302 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4302 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4302 gene encodes GR4302 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4302 precursor RNA folds spatially, forming GR4302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4302 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4302 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4302 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM260042 precursor RNA and GAM319398 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM260042 RNA and GAM319398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM260042 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260042 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260042 target RNA into GAM260042 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM319398 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM319398 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM319398 target RNA into GAM319398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4302 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4302 gene: GAM260042 target protein and GAM319398 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM260042 and GAM319398

GR4303 BQ101073 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4303(GR4303) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4303 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4303 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4303 gene encodes GR4303 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4303 precursor RNA folds spatially, forming GR4303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4303 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4303 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4303 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1575 precursor RNA and GAM227119 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1575 RNA and GAM227119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1575 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1575 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1575 target RNA into GAM1575 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM227119 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM227119 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM227119 target RNA into GAM227119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4303 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4303 gene: GAM1575 target

protein and GAM227119 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1575 and GAM227119

GR4304 BF840018 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4304(GR4304) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4304 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4304 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4304 gene encodes GR4304 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4304 precursor RNA folds spatially, forming GR4304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4304 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4304 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4304 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8317 precursor RNA and GAM263558 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8317 RNA and GAM263558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8317 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8317 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8317 target RNA into GAM8317 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM263558 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM263558 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM263558 target RNA into GAM263558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4304 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4304 gene: GAM8317 target protein and GAM263558 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8317 and GAM263558

GR4305 BG184620 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4305(GR4305) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4305 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4305 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4305 gene encodes GR4305 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4305 precursor RNA folds spatially, forming GR4305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4305 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4305 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4305 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1803 precursor RNA and GAM90497 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1803 RNA and GAM90497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1803 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1803 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1803 target RNA into GAM1803 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM90497 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM90497 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM90497 target RNA into GAM90497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4305 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4305 gene: GAM1803 target protein and GAM90497 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1803 and GAM90497

GR4306 BM971365 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4306(GR4306) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4306 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4306 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4306 gene encodes GR4306 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4306 precursor RNA folds spatially, forming GR4306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4306 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR4306 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4306 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM29116 precursor RNA and GAM209537 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM29116 RNA and GAM209537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM29116 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM29116 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM29116 target RNA into GAM29116 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM209537 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM209537 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM209537 target RNA into GAM209537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4306 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4306 gene: GAM29116 target protein and GAM209537 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM29116 and GAM209537

GR4307 AA745016 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4307(GR4307) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4307 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4307 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4307 gene encodes GR4307 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4307 precursor RNA folds spatially, forming GR4307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4307 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4307 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4307 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM45194 precursor RNA, GAM131544 precursor RNA and GAM213469 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM45194 RNA, GAM131544 RNA and GAM213469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM45194 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM45194 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM45194 target RNA into GAM45194 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM131544 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM131544 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM131544 target RNA into GAM131544 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM213469 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an

untranslated region of GAM213469 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM213469 target RNA into GAM213469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4307 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4307 gene: GAM45194 target protein, GAM131544 target protein and GAM213469 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM45194, GAM131544 and GAM213469

GR4308 BE960100 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4308(GR4308) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4308 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4308 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4308 gene encodes GR4308 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4308 precursor RNA folds spatially, forming GR4308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4308 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4308 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4308 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM40238 precursor RNA and GAM87062 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM40238 RNA and GAM87062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM40238 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM40238 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM40238 target RNA into GAM40238 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM87062 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM87062 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM87062 target RNA into GAM87062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4308 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4308 gene: GAM40238 target protein and GAM87062 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM40238 and GAM87062

GR4309 BI597371 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4309(GR4309) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4309 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4309 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4309 gene encodes GR4309 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4309 precursor RNA folds spatially, forming GR4309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4309 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4309 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4309 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM79739 precursor RNA and GAM221911 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM79739 RNA and GAM221911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM79739 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM79739 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM79739 target RNA into GAM79739 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM221911 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM221911 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM221911 target RNA into GAM221911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4309 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4309 gene: GAM79739 target protein and GAM221911 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM79739 and GAM221911

GR4310 BF340755 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4310(GR4310) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4310 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4310 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4310 gene encodes GR4310 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4310 precursor RNA folds spatially, forming GR4310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4310 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4310 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4310 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5995 precursor RNA, GAM285746 precursor RNA and GAM334915 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5995 RNA, GAM285746 RNA and GAM334915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5995 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5995 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5995 target RNA into GAM5995 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM285746 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM285746 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM285746 target RNA into GAM285746 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM334915 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM334915 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM334915 target RNA into GAM334915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4310 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4310 gene: GAM5995 target protein, GAM285746 target protein and GAM334915 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5995, GAM285746 and GAM334915

GR4311 BG201805 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4311(GR4311) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4311 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4311 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4311 gene encodes GR4311 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4311 precursor RNA folds spatially, forming GR4311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4311 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4311 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4311 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM513 precursor RNA, GAM181150 precursor RNA and GAM206625 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM513 RNA, GAM181150 RNA and GAM206625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM513 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM513 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM513 target RNA into GAM513 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM181150 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM181150 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM181150 target RNA into GAM181150 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM206625 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM206625 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM206625 target RNA into GAM206625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4311 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4311 gene: GAM513 target protein, GAM181150 target protein and GAM206625 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM513, GAM181150 and GAM206625

GR4312 BM469136 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4312(GR4312) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4312 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4312 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4312 gene encodes GR4312 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4312 precursor RNA folds spatially, forming GR4312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4312 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4312 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4312 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5480 precursor RNA and GAM30445 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5480 RNA and GAM30445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5480 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5480 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5480 target RNA into GAM5480 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM30445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM30445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM30445 target RNA into GAM30445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4312 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4312 gene: GAM5480 target protein and GAM30445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM5480 and GAM30445

GR4313 BI914567 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4313(GR4313) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4313 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4313 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4313 gene encodes GR4313 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4313 precursor RNA folds spatially, forming GR4313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4313 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4313 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4313 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5277 precursor RNA and GAM294702 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5277 RNA and GAM294702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5277 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5277 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5277 target RNA into GAM5277 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM294702 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM294702 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM294702 target RNA into GAM294702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4313 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4313 gene: GAM5277 target protein and GAM294702 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5277 and GAM294702

GR4314 AW809485 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4314(GR4314) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4314 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4314 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4314 gene encodes GR4314 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4314 precursor RNA folds spatially, forming GR4314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4314 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4314 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4314 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM3693 precursor RNA and GAM191241 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3693 RNA and GAM191241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM3693 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3693 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3693 target RNA into GAM3693 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM191241 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM191241 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM191241 target RNA into GAM191241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4314 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4314 gene: GAM3693 target protein and GAM191241 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3693 and GAM191241

GR4315 H85688 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4315(GR4315) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4315 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4315 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4315 gene encodes GR4315 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4315 precursor RNA folds spatially, forming GR4315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4315 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4315 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4315 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM322501 precursor RNA and GAM332332 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM322501 RNA and GAM332332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM322501 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM322501 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM322501 target RNA into GAM322501 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM332332 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM332332 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM332332 target RNA into GAM332332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4315 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4315 gene: GAM322501 target protein and GAM332332 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM322501 and GAM332332

GR4316 BM746178 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4316(GR4316) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4316 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4316

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4316 gene encodes GR4316 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4316 precursor RNA folds spatially, forming GR4316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4316 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4316 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4316 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM204333 precursor RNA and GAM274111 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM204333 RNA and GAM274111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM204333 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204333 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204333 target RNA into GAM204333 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM274111 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM274111 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM274111 target RNA into GAM274111 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4316 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4316 gene: GAM204333 target protein and GAM274111 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM204333 and GAM274111

GR4317 BG528195 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4317(GR4317) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4317 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4317 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4317 gene encodes GR4317 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4317 precursor RNA folds spatially, forming GR4317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4317 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4317 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4317 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5835 precursor RNA and GAM162098 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5835 RNA and GAM162098 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5835 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5835 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5835 target RNA into GAM5835 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM162098 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM162098 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM162098 target RNA into GAM162098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4317 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4317 gene: GAM5835 target protein and GAM162098 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5835 and GAM162098

GR4318 BF679042 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4318(GR4318) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4318 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4318 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4318 gene encodes GR4318 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4318 precursor RNA folds spatially, forming GR4318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4318 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4318 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4318 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM6169 precursor RNA and GAM318876 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM6169 RNA and GAM318876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6169 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6169 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6169 target RNA into GAM6169 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM318876 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM318876 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM318876 target RNA into GAM318876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4318 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4318 gene: GAM6169 target protein and GAM318876 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6169 and GAM318876

GR4319 BF808623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4319(GR4319) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4319 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4319 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4319 gene encodes GR4319 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4319 precursor RNA folds spatially, forming GR4319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4319 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4319 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4319 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM4149 precursor RNA, GAM5457 precursor RNA and GAM118611 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4149 RNA, GAM5457 RNA and GAM118611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4149 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4149 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4149 target RNA into GAM4149 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM5457 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5457 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5457 target RNA into GAM5457 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM118611 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM118611 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM118611 target RNA into GAM118611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4319 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4319 gene: GAM4149 target protein, GAM5457 target protein and GAM118611 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6,

hereby incorporated by reference, with references to GAM4149, GAM5457 and GAM118611

GR4320 BM979139 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4320(GR4320) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4320 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4320 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4320 gene encodes GR4320 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4320 precursor RNA folds spatially, forming GR4320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4320 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4320 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4320 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM710 precursor RNA, GAM2647 precursor RNA and GAM336069 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM710 RNA, GAM2647 RNA and GAM336069 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM710 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM710 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM710 target RNA into GAM710 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM2647 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM2647 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM2647 target RNA into GAM2647 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM336069 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM336069 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM336069 target RNA into GAM336069 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4320 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4320 gene: GAM710 target protein, GAM2647 target protein and GAM336069 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM710, GAM2647 and GAM336069

GR4321 BE740699 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4321(GR4321) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4321 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4321 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4321 gene encodes GR4321 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4321 precursor RNA folds spatially, forming GR4321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4321 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4321 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4321 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5038 precursor RNA and GAM20977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5038 RNA and GAM20977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5038 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5038 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5038 target RNA into GAM5038 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM20977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20977 target RNA into GAM20977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4321 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4321 gene: GAM5038 target protein and GAM20977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5038 and GAM20977

GR4322 BI160629 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4322(GR4322) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4322 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4322 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4322 gene encodes GR4322 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4322 precursor RNA folds spatially, forming GR4322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4322 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4322 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4322 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4131 precursor RNA and GAM220428 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4131 RNA and GAM220428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM4131 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4131 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4131 target RNA into GAM4131 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM220428 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM220428 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM220428 target RNA into GAM220428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4322 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4322 gene: GAM4131 target protein and GAM220428 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM4131 and GAM220428

GR4323 BM763590 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4323(GR4323) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4323 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4323 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4323 gene encodes GR4323 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4323 precursor RNA folds spatially, forming GR4323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4323 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4323 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4323 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM122617 precursor RNA and GAM275074 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM122617 RNA and GAM275074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM122617 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM122617 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM122617 target RNA into GAM122617 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275074 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275074 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275074 target RNA into GAM275074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4323 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4323 gene: GAM122617 target protein and GAM275074 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM122617 and GAM275074

GR4324 BF665691 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4324(GR4324) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4324 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4324 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4324 gene encodes GR4324 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4324 precursor RNA folds spatially, forming GR4324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4324 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4324 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4324 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM4962 precursor RNA and GAM275977 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM4962 RNA and GAM275977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM4962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM4962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM4962 target RNA into GAM4962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM275977 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM275977 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM275977 target RNA into GAM275977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4324 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4324 gene: GAM4962 target protein and GAM275977 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM4962 and GAM275977

GR4325 AU146184 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4325(GR4325) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4325 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4325 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4325 gene encodes GR4325 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4325 precursor RNA folds spatially, forming GR4325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4325 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4325 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4325 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7895 precursor RNA and GAM228794 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM7895 RNA and GAM228794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7895 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7895 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7895 target RNA into GAM7895 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM228794 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM228794 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM228794 target RNA into GAM228794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4325 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4325 gene: GAM7895 target protein and GAM228794 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7895 and GAM228794

GR4326 BE384665 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4326(GR4326) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4326 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4326

gene was detected is described hereinabove with reference to Figs. 8-18.

GR4326 gene encodes GR4326 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4326 precursor RNA folds spatially, forming GR4326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4326 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4326 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4326 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM20027 precursor RNA and GAM149018 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM20027 RNA and GAM149018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM20027 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM20027 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM20027 target RNA into GAM20027 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM149018 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM149018 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM149018 target RNA into GAM149018 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4326 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4326 gene: GAM20027 target protein and GAM149018 target protein, herein schematically represented by GAM1

TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM20027 and GAM149018

GR4327 AW009238 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4327(GR4327) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4327 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4327 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4327 gene encodes GR4327 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4327 precursor RNA folds spatially, forming GR4327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4327 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4327 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4327 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM69491 precursor RNA and GAM86767 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM69491 RNA and GAM86767 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM69491 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM69491 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM69491 target RNA into GAM69491 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM86767 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM86767 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM86767 target RNA into GAM86767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4327 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4327 gene: GAM69491 target protein and GAM86767 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM69491 and GAM86767

GR4328 AV661513 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4328(GR4328) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4328 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4328 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4328 gene encodes GR4328 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4328 precursor RNA folds spatially, forming GR4328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4328 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4328 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4328 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7680 precursor RNA and GAM27708 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7680 RNA and GAM27708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7680 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7680 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7680 target RNA into GAM7680 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM27708 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM27708 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM27708 target RNA into GAM27708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4328 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4328 gene: GAM7680 target protein and GAM27708 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7680 and GAM27708

GR4329 BF376986 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4329(GR4329) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4329 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4329 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4329 gene encodes GR4329 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4329 precursor RNA folds spatially, forming GR4329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4329 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4329 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4329 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM78110 precursor RNA and GAM134779 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM78110 RNA and GAM134779 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM78110 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM78110 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM78110 target RNA into GAM78110 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM134779 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM134779 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM134779 target RNA into GAM134779 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4329 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4329 gene: GAM78110 target protein and GAM134779 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM78110 and GAM134779

GR4330 BQ059588 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4330(GR4330) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4330 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4330 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4330 gene encodes GR4330 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4330 precursor RNA folds spatially, forming GR4330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4330 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4330 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4330 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5046 precursor RNA and GAM57778 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5046 RNA and GAM57778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5046 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5046 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5046 target RNA into GAM5046 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM57778 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM57778 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM57778 target RNA into GAM57778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4330 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4330 gene: GAM5046 target protein and GAM57778 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5046 and GAM57778

GR4331 BI547065 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4331(GR4331) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4331 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4331 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4331 gene encodes GR4331 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4331 precursor RNA folds spatially, forming GR4331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4331 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4331 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4331 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM5522 precursor RNA, GAM31300 precursor RNA and GAM170322 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5522 RNA, GAM31300 RNA and GAM170322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5522 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5522 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5522 target RNA into

GAM5522 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM31300 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM31300 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM31300 target RNA into GAM31300 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM170322 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM170322 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM170322 target RNA into GAM170322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4331 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4331 gene: GAM5522 target protein, GAM31300 target protein and GAM170322 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5522, GAM31300 and GAM170322

GR4332 AA503931 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4332(GR4332) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4332 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4332 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4332 gene encodes GR4332 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4332 precursor RNA folds spatially, forming GR4332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4332 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4332 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence

which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4332 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM120981 precursor RNA and GAM185368 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM120981 RNA and GAM185368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM120981 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM120981 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM120981 target RNA into GAM120981 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM185368 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM185368 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM185368 target RNA into GAM185368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4332 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4332 gene: GAM120981 target protein and GAM185368 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM120981 and GAM185368

GR4333 BE464769 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4333(GR4333) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4333 gene, herein designated GR GENE, is a novel bioinformatically

detected regulatory, non protein coding, RNA gene. The method by which GR4333 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4333 gene encodes GR4333 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4333 precursor RNA folds spatially, forming GR4333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4333 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4333 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4333 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM222184 precursor RNA and GAM296503 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM222184 RNA and GAM296503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM222184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM222184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM222184 target RNA into GAM222184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM296503 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM296503 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM296503 target RNA into GAM296503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4333 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4333 gene: GAM222184 target

protein and GAM296503 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM222184 and GAM296503

GR4334 AW102641 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4334(GR4334) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4334 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4334 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4334 gene encodes GR4334 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4334 precursor RNA folds spatially, forming GR4334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4334 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4334 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4334 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM682 precursor RNA and GAM7445 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM682 RNA and GAM7445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM682 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM682 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM682 target RNA into GAM682 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM7445 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7445 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7445 target RNA into GAM7445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4334 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4334 gene: GAM682 target protein and GAM7445 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM682 and GAM7445

GR4335 BF206681 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4335(GR4335) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4335 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4335 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4335 gene encodes GR4335 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4335 precursor RNA folds spatially, forming GR4335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4335 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4335 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4335 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1474 precursor RNA and GAM235883 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER

COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1474 RNA and GAM235883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1474 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1474 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1474 target RNA into GAM1474 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM235883 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM235883 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM235883 target RNA into GAM235883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4335 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4335 gene: GAM1474 target protein and GAM235883 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1474 and GAM235883

GR4336 BI859491 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4336(GR4336) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4336 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4336 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4336 gene encodes GR4336 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4336 precursor RNA folds spatially, forming GR4336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4336 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact

that the nucleotide sequence of GR4336 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4336 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM1319 precursor RNA, GAM8319 precursor RNA and GAM254568 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1319 RNA, GAM8319 RNA and GAM254568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1319 target RNA into GAM1319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8319 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8319 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8319 target RNA into GAM8319 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM254568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM254568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM254568 target RNA into GAM254568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4336 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4336 gene: GAM1319 target protein, GAM8319 target protein and GAM254568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN.

The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1319, GAM8319 and GAM254568

GR4337 BF435722 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4337(GR4337) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4337 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4337 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4337 gene encodes GR4337 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4337 precursor RNA folds spatially, forming GR4337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4337 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4337 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4337 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5984 precursor RNA and GAM172806 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5984 RNA and GAM172806 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5984 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5984 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5984 target RNA into GAM5984 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM172806 RNA, herein schematically represented by GAM1 RNA through

GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM172806 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM172806 target RNA into GAM172806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4337 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4337 gene: GAM5984 target protein and GAM172806 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5984 and GAM172806

GR4338 BF956429 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4338(GR4338) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4338 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4338 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4338 gene encodes GR4338 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4338 precursor RNA folds spatially, forming GR4338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4338 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4338 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4338 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM7749 precursor RNA and GAM281178 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22

nucleotides in length, GAM7749 RNA and GAM281178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM7749 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM7749 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM7749 target RNA into GAM7749 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM281178 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM281178 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM281178 target RNA into GAM281178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4338 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4338 gene: GAM7749 target protein and GAM281178 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM7749 and GAM281178

GR4339 AI817549 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4339(GR4339) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4339 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4339 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4339 gene encodes GR4339 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4339 precursor RNA folds spatially, forming GR4339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4339 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4339 precursor RNA comprises a plurality of

segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4339 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM138405 precursor RNA and GAM260571 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM138405 RNA and GAM260571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM138405 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM138405 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM138405 target RNA into GAM138405 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM260571 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM260571 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM260571 target RNA into GAM260571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4339 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4339 gene: GAM138405 target protein and GAM260571 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM138405 and GAM260571

GR4340 AI085175 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4340(GR4340) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4340 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4340 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4340 gene encodes GR4340 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4340 precursor RNA folds spatially, forming GR4340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4340 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4340 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4340 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM856 precursor RNA and GAM217962 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM856 RNA and GAM217962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM856 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM856 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM856 target RNA into GAM856 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM217962 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217962 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217962 target RNA into GAM217962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4340 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM

RNAs comprised in the `operon-like` cluster of GR4340 gene: GAM856 target protein and GAM217962 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM856 and GAM217962

GR4341 AL598141 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4341(GR4341) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4341 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4341 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4341 gene encodes GR4341 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4341 precursor RNA folds spatially, forming GR4341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4341 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4341 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4341 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 4 separate GAM precursor RNAs, GAM6272 precursor RNA, GAM8195 precursor RNA, GAM112187 precursor RNA and GAM266412 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM6272 RNA, GAM8195 RNA, GAM112187 RNA and GAM266412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM6272 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6272 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6272 target RNA into

GAM6272 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8195 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8195 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8195 target RNA into GAM8195 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM112187 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM112187 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM112187 target RNA into GAM112187 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM266412 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM266412 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM266412 target RNA into GAM266412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4341 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4341 gene: GAM6272 target protein, GAM8195 target protein, GAM112187 target protein and GAM266412 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM6272, GAM8195, GAM112187 and GAM266412

GR4342 AA705542 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4342(GR4342) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4342 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4342 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4342 gene encodes GR4342 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand

nucleotides long.

GR4342 precursor RNA folds spatially, forming GR4342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4342 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4342 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4342 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM18401 precursor RNA and GAM204216 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM18401 RNA and GAM204216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM18401 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM18401 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM18401 target RNA into GAM18401 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM204216 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM204216 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM204216 target RNA into GAM204216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4342 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4342 gene: GAM18401 target protein and GAM204216 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM18401 and GAM204216

GR4343 BG165623 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4343(GR4343) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4343 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4343 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4343 gene encodes GR4343 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4343 precursor RNA folds spatially, forming GR4343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4343 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4343 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4343 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8645 precursor RNA and GAM113402 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8645 RNA and GAM113402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8645 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8645 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8645 target RNA into GAM8645 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM113402 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM113402 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II

or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM113402 target RNA into GAM113402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4343 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4343 gene: GAM8645 target protein and GAM113402 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8645 and GAM113402

GR4344 BG207384 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4344(GR4344) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4344 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4344 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4344 gene encodes GR4344 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4344 precursor RNA folds spatially, forming GR4344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4344 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4344 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4344 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM217757 precursor RNA and GAM244777 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM217757 RNA and GAM244777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM217757 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM217757 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM217757 target RNA into GAM217757 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM244777 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM244777 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM244777 target RNA into GAM244777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4344 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4344 gene: GAM217757 target protein and GAM244777 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM217757 and GAM244777

GR4345 AA936282 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4345(GR4345) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4345 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4345 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4345 gene encodes GR4345 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4345 precursor RNA folds spatially, forming GR4345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4345 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4345 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4345 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM155463 precursor RNA and GAM291184 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM155463 RNA and GAM291184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM155463 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM155463 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM155463 target RNA into GAM155463 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM291184 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM291184 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM291184 target RNA into GAM291184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4345 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4345 gene: GAM155463 target protein and GAM291184 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM155463 and GAM291184

GR4346 AI699091 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4346(GR4346) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4346 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4346 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4346 gene encodes GR4346 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4346 precursor RNA folds spatially, forming GR4346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4346 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4346 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4346 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM101766 precursor RNA and GAM107220 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM101766 RNA and GAM107220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM101766 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM101766 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM101766 target RNA into GAM101766 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM107220 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM107220 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM107220 target RNA into GAM107220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4346 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4346 gene: GAM101766 target protein and GAM107220 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference,

with references to GAM101766 and GAM107220

GR4347 BG027088 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4347(GR4347) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4347 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4347 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4347 gene encodes GR4347 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4347 precursor RNA folds spatially, forming GR4347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4347 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4347 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4347 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM142209 precursor RNA and GAM223142 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM142209 RNA and GAM223142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM142209 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM142209 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM142209 target RNA into GAM142209 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM223142 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM223142 target RNA, herein schematically represented

by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM223142 target RNA into GAM223142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4347 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4347 gene: GAM142209 target protein and GAM223142 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM142209 and GAM223142

GR4348 N45941 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4348(GR4348) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4348 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4348 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4348 gene encodes GR4348 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4348 precursor RNA folds spatially, forming GR4348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4348 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4348 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4348 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM96476 precursor RNA and GAM104630 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM96476 RNA and GAM104630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding

to GAM RNA of Fig. 8.

GAM96476 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM96476 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM96476 target RNA into GAM96476 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM104630 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM104630 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM104630 target RNA into GAM104630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4348 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4348 gene: GAM96476 target protein and GAM104630 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM96476 and GAM104630

GR4349 BF216140 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4349(GR4349) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4349 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4349 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4349 gene encodes GR4349 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4349 precursor RNA folds spatially, forming GR4349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4349 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4349 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half

thereof, as is well known in the art.

GR4349 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM3568 precursor RNA, GAM8139 precursor RNA and GAM329761 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM3568 RNA, GAM8139 RNA and GAM329761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM3568 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3568 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3568 target RNA into GAM3568 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM8139 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8139 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8139 target RNA into GAM8139 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM329761 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM329761 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM329761 target RNA into GAM329761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4349 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4349 gene: GAM3568 target protein, GAM8139 target protein and GAM329761 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM3568, GAM8139 and GAM329761

GR4350 AA025721 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4350(GR4350) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4350 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4350 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4350 gene encodes GR4350 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4350 precursor RNA folds spatially, forming GR4350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4350 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4350 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4350 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM8454 precursor RNA and GAM215343 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM8454 RNA and GAM215343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM8454 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM8454 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM8454 target RNA into GAM8454 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM215343 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM215343 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site

corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM215343 target RNA into GAM215343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4350 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4350 gene: GAM8454 target protein and GAM215343 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM8454 and GAM215343

GR4351 BF790883 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4351(GR4351) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4351 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4351 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4351 gene encodes GR4351 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4351 precursor RNA folds spatially, forming GR4351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4351 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4351 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4351 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM5684 precursor RNA and GAM11399 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM5684 RNA and GAM11399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM5684 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM5684 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM5684 target RNA into GAM5684 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM11399 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM11399 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM11399 target RNA into GAM11399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4351 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4351 gene: GAM5684 target protein and GAM11399 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM5684 and GAM11399

GR4352 BF855144 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4352(GR4352) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4352 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4352 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4352 gene encodes GR4352 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4352 precursor RNA folds spatially, forming GR4352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4352 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4352 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4352 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM1250 precursor RNA and GAM53302 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM1250 RNA and GAM53302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM1250 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM1250 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM1250 target RNA into GAM1250 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM53302 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM53302 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM53302 target RNA into GAM53302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4352 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4352 gene: GAM1250 target protein and GAM53302 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM1250 and GAM53302

GR4353 AI582402 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4353(GR4353) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4353 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4353 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4353 gene encodes GR4353 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4353 precursor RNA folds spatially, forming GR4353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4353 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4353 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4353 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 3 separate GAM precursor RNAs, GAM188 precursor RNA, GAM3306 precursor RNA and GAM6421 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM188 RNA, GAM3306 RNA and GAM6421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.

GAM188 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM188 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM188 target RNA into GAM188 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM3306 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM3306 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM3306 target RNA into GAM3306 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

GAM6421 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, binds complementarily to a target binding site located in an untranslated region of GAM6421 target RNA, herein schematically represented by GAM1 TARGET RNA through GAM3 TARGET RNA, which target binding site corresponds to a target binding site such as BINDING SITE I, BINDING SITE II or BINDING SITE III of Fig. 8, thereby inhibiting translation of GAM6421 target RNA into

GAM6421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN, both of Fig. 8.

It is appreciated that specific functions, and accordingly utilities, of GR4353 gene, herein designated GR GENE, correlate with, and may be deduced from, the identity of the target genes, which are inhibited by GAM RNAs comprised in the `operon-like` cluster of GR4353 gene: GAM188 target protein, GAM3306 target protein and GAM6421 target protein, herein schematically represented by GAM1 TARGET PROTEIN through GAM3 TARGET PROTEIN. The function of these target genes is elaborated with reference to Table 6, hereby incorporated by reference, with references to GAM188, GAM3306 and GAM6421

GR4354 BG213782 Fig. 16 further provides a conceptual description of novel bioinformatically detected regulatory gene, referred to here as Genomic Record 4354(GR4354) gene, which encodes an `operon-like` cluster of novel micro RNA-like genes, each of which in turn modulates expression of at least one target gene, the function and utility of which at least one target gene is known in the art.

GR4354 gene, herein designated GR GENE, is a novel bioinformatically detected regulatory, non protein coding, RNA gene. The method by which GR4354 gene was detected is described hereinabove with reference to Figs. 8-18.

GR4354 gene encodes GR4354 precursor RNA, herein designated GR PRECURSOR RNA, an RNA molecule, typically several hundred to several thousand nucleotides long.

GR4354 precursor RNA folds spatially, forming GR4354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA. It is appreciated that GR4354 folded precursor RNA comprises a plurality of what is known in the art as `hairpin` structures. These `hairpin` structures are due to the fact that the nucleotide sequence of GR4354 precursor RNA comprises a plurality of segments, the first half of each such segment having a nucleotide sequence which is at least a partial inversed-reversed sequence of the second half thereof, as is well known in the art.

GR4354 folded precursor RNA, herein designated GR FOLDED PRECURSOR RNA, is naturally processed by cellular enzymatic activity into at least 2 separate GAM precursor RNAs, GAM150923 precursor RNA and GAM177788 precursor RNA,herein schematically represented by GAM1 FOLDED PRECURSOR RNA through GAM3 FOLDED PRECURSOR RNA, each of which GAM folded precursor RNAs being a hairpin shaped RNA segment, corresponding to GAM FOLDED PRECURSOR RNA of Fig.8.

The above mentioned GAM folded precursor RNAs are diced by DICER COMPLEX of Fig.8, yielding respective short RNA segments of about 22 nucleotides in length, GAM150923 RNA and GAM177788 RNA, herein schematically represented by GAM1 RNA through GAM3 RNA, each of which GAM RNAs corresponding to GAM RNA of Fig. 8.